Volume II. Supporting Document (Appendix)

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY (ESIA) FOR WESTERN CORRIDOR OF DEDICATED FREIGHT CORRIDOR PROJECT (PHASE 2) FOR JNPT–VADODARA AND REWARI–DADRI SECTIONS

FINAL REPORT

NOVEMBER 2011

Dedicated Freight Corridor Corporation of India Ltd.
(A Govt. of India Undertaking under
Ministry of Railways)

Environmental and Social Impact Assessment Study for Western Corridor of Dedicated Freight Corridor Project (phase 2) for Vadodara-JNPT and Rewari-Dadri Sections

Final Report

Volume II. Supporting Document (Appendix)

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Appendix-1
Socio-Economic Profile of Project affected Area

Appendix-1
Socio-Economic Conditions of the Project Affected Area

Socio-economic conditions with respect to demography of the immediate project affected area are provided below:

1. Demographic profile

(1) JNPT-Vadodara Section

1) Raigad District

There are 41 villages falling under the project area, however, new 6 villages (Shemtekhar, Khatkhar, Bandkhar, Pandeghar, Asudgaon, and Vaklan) which divided after 2001, their data is not available in Census 2001. The total population of these villages as per Census of 2001 (35 villages except new 6 villages) is 267,579. There are 4 large size villages which population are greater than 5,000. There are 15 small size villages whose population is less than 1,000. The average percentage of male population (53.8%) is more than the female population (46.2%). Male population is also more than the female population in 24 out of 35 villages. The Schedule Caste population constitutes 1.4% of the total population and Schedule Tribe population constitutes 13.4 % in affected villages in Thane District.

Maximum literacy rate is in Juchandra (78.4%) whereas minimum literacy rate is Pen Rural (12.0%). Literacy rate is more than 60% in 27 out of 35 villages. The average literacy rate in affected villages in the District is 62.4% which is lower than the literacy rate (83.4%) of whole the district.

The work participation rate varies substantially from 26.8% to 65.5%. The highest work participation rate is in Tembhode (65.5%). There are 10 villages where work participation rate is 50% or more.

Table 1-1 Demographic Profile of DFC Villages in Raigad District

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Jaskhar	2,693	1,503	1,190	3.2	2.3	70.0	37.4
Sonari	2,581	1,409	1,172	0.2	0.0	71.3	33.0
Karal	791	390	401	0.0	0.0	66.0	27.9
Pagote	1,123	575	548	0.4	1.3	72.1	27.0
Sawarkhar	816	430	386	0.0	0.4	67.8	26.8
Jasai	6,477	3,511	2,966	3.5	1.8	61.6	38.2
Chirle	2,931	1,530	1,401	1.5	8.4	66.6	50.3
Paundkhar	173	89	84	0.0	0.0	70.5	35.3
Wahal	4,580	2,359	2,221	0.6	4.7	68.7	35.1
Bambavi	628	318	310	0.8	17.7	50.5	51.1
Kundevahal	1,344	665	679	0.0	15.6	65.5	40.3
Owale	290	119	171	0.0	0.0	62.7	38.9
Dapoli	474	223	251	0.0	3.6	67.1	43.3
Pargaon	259	125	134	0.0	27.0	50.2	62.9
Kopar	737	396	341	0.7	2.9	64.0	37.3
Vadghar	5,320	2,713	2,607	3.7	5.5	64.6	34.2
Karanjade	2,821	1,517	1,304	3.9	8.8	64.9	36.9
Kalundre (CT) - Ward No.1	7,584	3,928	3,656	4.2	2.4	78.4	30.9
Vichumbe	2,163	1,194	969	1.1	1.8	68.0	47.8
Panvel	204,336	111,015	93,321	4.0	2.8	74.1	35.0
Tembhode	145	68	77	0.0	100.0	17.9	65.5
Walawali	913	461	452	0.0	41.8	45.7	55.0

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Ambeghar	1,467	757	710	0.4	36.6	60.1	34.4
Rudravali	704	324	380	0.0	2.8	70.0	35.8
Navandhe	1,306	685	621	2.8	29.3	55.1	48.1
Pen Rural	534	253	281	0.0	97.6	12.0	58.4
Taloje Majkur	1,763	897	866	0.0	4.1	70.0	43.9
Pisarve	1,220	584	636	0.0	12.8	57.4	56.6
Rohinjan	2,308	1,202	1,106	2.2	0.3	68.9	30.2
Dhansar	2,025	1,047	978	3.2	0.3	68.4	42.0
Nilghun	679	323	356	0.0	4.9	56.9	59.5
Usroli	961	488	473	10.1	9.2	67.6	39.3
Kolkhe	2,964	1,670	1,294	0.9	2.1	72.0	42.1
Kune	532	256	276	0.0	6.8	65.2	53.4
Chikhale	1,937	1,038	899	0.0	18.3	73.3	40.2
Total	267,579	144,062	123,517	-	-	-	-
Average	7,645	4,116 (53.8%)	3,529 (46.2%)	1.4	13.5	62.4	42.1

Note: SC: Scheduled Caste, ST: Scheduled Tribe
New 6 village data is not available in Census of India 2001
Source: Census of India 2001

2) Thane District

There are 94 villages falling under the project area, the total population of these villages as per Census of 2001 (88 villages except new 6 villages) is 430,771. There are 15 large size villages which population are greater than 5,000. There are 16 small size villages whose population is less than 1,000. The average percentage of male population (54.0%) is more than the female population (46.0%). Male population is also more than the female population in 72 out of 88 villages. The Schedule Caste population constitutes 2.5% of the total population and Schedule Tribe population constitutes 38.4% in affected villages in Thane District.

Maximum literacy rate is in Juchandra (64.8%) whereas minimum literacy rate is Patilpada (9.3%). Literacy rate is more than 60% in 48 out of 88 villages. The average literacy rate in affected villages in the District is 58.9% which is lower than the literacy rate (86.2%) of whole the district.

The work participation rate varies substantially from 24.8% to 64.1%. The highest work participation rate is in Katai (CT) - Ward No.1 (64.1%). There are 27 villages where work participation rate is 50% or more.

Table 1-2 Demographic Profile of DFC Villages in Thane District

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Narivali	1,527	790	737	0.3	1.1	64.7	53.6
Vadavali	3,637	1,821	1,816	0.0	13.6	80.2	37.1
Katai (CT) - Ward No.1	11,252	8,347	2,905	4.5	8.4	65.6	64.1
Usarani	1,557	782	775	0.6	2.0	78.6	35.3
Betegaon	1,817	966	851	0.0	38.1	65.4	58.0
Nanivali	2,552	1,329	1,223	0.0	90.8	32.7	51.8
Ayare	1,132	560	572	0.0	100.0	23.1	51.8
Kopar	1,004	536	468	2.5	0.0	70.3	34.5
Thakurwadi	853	445	408	1.2	21.6	73.7	53.2
Navgaon	447	217	230	0.0	22.6	55.0	57.5
Pimpalner	1,748	929	819	0.0	5.6	63.5	38.8
Pimpalas	3,386	1,750	1,636	0.9	7.9	67.4	45.7

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Ovali	1,215	652	563	0.0	17.9	60.3	43.3
Rahanal	6,906	4,095	2,811	6.8	6.2	59.2	44.8
Kalwar	2,941	1,589	1,352	2.1	2.9	68.4	40.0
Vadghar	1,267	682	585	9.4	0.0	67.2	49.3
Dunge	1,729	881	848	1.7	6.2	68.9	24.8
Vadunavaghar	2,584	1,322	1,262	0.0	0.7	67.0	45.5
Kharbav	5,323	2,738	2,585	2.2	28.8	64.0	41.4
Malodi (N.V.)	1,974	1,037	937	0.0	69.7	39.9	51.6
Paygaon	2,068	1,050	1,018	0.2	59.1	51.6	52.1
Paye	3,248	1,620	1,628	0.7	71.0	29.0	48.7
Nagale	1,404	703	701	0.5	86.0	39.6	53.4
Shilottar	812	398	414	12.3	20.7	59.9	45.1
Sasunavghar	2,049	1,131	918	6.9	53.7	51.7	57.0
Sarjamori	349	184	165	0.0	90.3	33.5	44.7
Mori	910	462	448	0.7	66.6	46.6	54.5
Kaman	4,635	2,580	2,055	0.8	44.5	59.9	45.2
Bapane	929	511	418	2.9	34.7	68.9	33.1
Juchandra	5,911	3,214	2,697	1.1	2.2	80.3	38.7
Tivari	1,265	665	600	2.2	32.9	66.7	41.4
Rajavali	2,319	1,172	1,147	3.3	72.6	41.1	44.4
Gokhivare (CT) - Ward No.1	20,075	11,439	8,636	2.6	9.5	63.0	38.0
Bilalpada	5,808	3,302	2,506	0.6	16.3	68.2	40.6
Dhaniv	3,972	2,236	1,736	0.7	27.0	64.6	38.5
Bhatpada	1,548	798	750	0.0	52.1	52.7	37.3
Chandansar	3,630	1,908	1,722	8.5	18.7	59.4	37.4
Shirgaon	5,059	2,573	2,486	3.4	20.2	76.0	36.3
Dahisar	1,314	634	680	8.3	56.3	50.4	45.2
Kasarali	3,134	1,972	1,162	1.0	3.4	66.2	55.6
Wadhiv Saravali	1,089	589	500	0.0	9.2	65.5	34.9
Kandarwan	411	233	178	1.7	15.3	55.5	39.9
Karavale	1,089	577	512	5.6	3.5	64.1	62.8
Saratodi	754	395	359	0.7	57.0	57.0	52.5
Saphale	3,419	1,740	1,679	4.0	29.2	71.1	36.9
Umbarpada	1,948	997	951	2.6	0.6	69.1	46.0
Kardal	1,375	696	679	0.3	21.9	76.4	40.4
Kapase	1,477	744	733	0.0	67.9	62.6	46.0
Makunsar	2,673	1,385	1,288	8.3	12.9	75.1	55.8
Rothe	327	182	145	0.0	70.0	64.8	42.8
Kelwa Road	4,530	2,281	2,249	0.4	60.6	53.3	50.0
Mahim	9,647	4,892	4,755	1.3	34.2	62.2	47.9
Navale	2,156	1,158	998	0.2	6.0	74.3	52.7
Palghar	110,701	59,910	50,791	4.9	12.8	74.0	37.4
Gorthan	778	394	384	0.0	99.4	47.2	57.5
Kolgaon	1,635	910	725	4.7	44.6	68.1	47.4
Umroli	3,707	1,909	1,798	10.3	7.0	79.8	41.5
Birwadi	4,308	2,249	2,059	7.6	21.0	69.9	38.7
Panchali	1,187	611	576	19.6	20.1	72.9	51.6
Kambalgaon	52	26	26	0.0	7.7	53.9	36.5
Kharadpada (N.V.)	535	255	280	0.0	100.0	38.3	48.8
Dandi	778	394	384	0.0	99.4	47.2	57.5
Boisar (CT) - Ward No.1	1,635	910	725	4.7	44.6	68.1	47.4
Katkar (CT) - Ward No.1	3,707	1,909	1,798	10.3	7.0	79.8	41.5
Ranishigaon	4,308	2,249	2,059	7.6	21.0	69.9	38.7
Navale	1,187	611	576	19.6	20.1	72.9	51.6
Kolavali	52	26	26	0.0	7.7	53.9	36.5
Vangaon	535	255	280	0.0	100.0	38.3	48.8
Kapshi	12,281	7,427	4,854	1.8	7.9	67.5	41.9

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Asangaon	14,685	8,329	6,356	5.4	0.9	76.7	35.4
Dehane	6,108	3,421	2,687	5.8	16.1	69.2	40.0
Pale	1,331	671	660	0.1	98.1	51.4	51.8
Agwan	2,156	1,158	998	0.2	6.0	74.3	52.7
Saravali	1,784	893	891	5.2	26.9	70.9	49.7
Patilpada	6,454	3,476	2,978	3.3	38.8	65.8	40.7
Man	1,153	588	565	3.1	68.1	56.2	46.8
Junnarpada	7,557	4,063	3,494	5.1	30.2	70.0	30.1
Nandore	2,797	1,380	1,417	0.0	66.0	35.7	39.6
Dahanu	2,376	1,169	1,207	0.0	41.7	34.9	37.1
Kasara	3,476	1,769	1,707	0.0	74.4	39.7	40.0
Waki	1,877	1,075	802	0.8	5.7	69.3	39.5
Ambewadi	2,416	1,194	1,222	0.0	94.1	28.6	46.9
Chikhale	1,665	880	785	0.3	46.0	54.8	43.8
Gholwad	2,862	1,385	1,477	0.0	97.5	24.2	45.9
Bordi	2,330	1,231	1,099	0.1	85.5	54.6	48.1
Brahmanpada	57,838	29,729	28,109	3.4	18.7	72.1	38.0
Borigaon	1,733	847	886	0.0	89.7	39.7	49.6
Vevaji	1,124	554	570	0.4	95.9	54.3	46.9
Narivali	892	460	432	0.5	86.4	29.7	47.0
Vadavali	379	199	180	0.0	8.2	56.5	59.9
Katai (CT) - Ward No.1	4,327	2,183	2,144	15.7	20.6	78.6	37.1
Usarani	6,900	3,728	3,172	9.4	26.4	79.9	37.4
Betegaon	2,050	1,004	1,046	0.0	89.7	35.0	53.6
Nanivali	786	390	396	0.0	91.9	26.6	52.2
Ayare	2,346	1,154	1,192	1.8	67.3	51.3	44.8
Total	430,771	232,510	198,261	-	-	-	-
Average	4,895	2,642 (54.0%)	2,253 (46.0%)	2.5	38.4	58.9	45.2

Note: SC: Scheduled Caste, ST: Scheduled Tribe
New 6 village data is not available in Census of India 2001.
Source: Census of India 2001

3) Valsad District

There are 37 villages falling under the project area, however, new 1 village (Jora vasan) which divided after 2001, the data is not available in Census 2001. The total population of these villages as per Census of 2001 is 238,543 (not include Jura vasan village). There are 11 large size villages which population are greater than 5,000. There are 3 small size villages whose population is less than 1,000. The average percentage of male population (54.2%) is more than the female population (46.8%). Male population is also more than the female population in 33 out of 37 villages. The Schedule Caste population constitutes 3.7% of the total population and Schedule Tribe population constitutes 47.2% in affected villages in Valsad District.

Literacy rate is one of important indicators of the development. Maximum literacy rate is in Atul(CT) (83.7%) whereas minimum literacy rate is Humran (30.2%). Literacy rate is more than 60% in 28 out of 36 villages. The average literacy rate in affected villages in the District is (65.7%) which is lower than the literacy rate (79.3%) of the District.

The work participation rate varies substantially from 28.4% to 55.8%. The highest work participation rate is in Humran (55.8%). There are four villages where work participation rate is 50% or more.

Table 1-3 Demographic Profile of DFC Villages in Valsad District

Villages	Total Population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Govada	1,838	934	904	0.1	65.5	45.5	40.6
Dahad	1,088	570	518	2.0	60.5	55.8	39.7
Solsumba	12,130	6,832	5,298	2.0	25.9	66.5	39.8
Humran	713	365	348	0.0	94.7	30.2	55.8
Sanjan	12,760	6,546	6,214	0.7	28.2	64.3	34.1
Ghimsa Kankariya	1,144	603	541	0.0	37.6	47.1	36.6
Tumb	3,129	1,529	1,600	1.3	88.6	32.3	28.4
Malav	2,119	1,034	1,085	0.0	93.8	42.9	35.5
Daheli	7,763	4,325	3,438	1.3	52.7	54.5	46.4
Vankachh	458	239	219	0.0	100.0	78.2	49.6
Bhilad	6,810	3,759	3,051	2.2	55.6	52.5	43.1
Karambele	3,214	1,641	1,573	8.7	42.8	68.9	44.2
Valwada	3,640	1,866	1,774	5.7	55.6	69.0	47.7
Vapi (M)	71,406	41,623	29,783	2.7	7.9	71.7	41.6
Orvad	4,207	2,225	1,982	3.8	23.9	66.8	40.3
Rentlav	3,617	1,732	1,885	7.3	20.9	77.9	31.8
Motiwada	3,289	1,705	1,584	4.3	53.6	63.1	42.1
Umarsadi	15,044	7,550	7,494	1.6	36.2	70.6	43.0
Hariya	2,620	1,311	1,309	6.6	64.1	71.2	40.8
Atul (CT)	5,352	2,813	2,539	4.5	25.8	83.7	35.3
Dived	2,208	1,132	1,076	2.5	38.1	72.0	33.8
Magod	3,502	1,747	1,755	1.2	35.3	70.2	38.1
Pardi Parnera	5,527	2,976	2,551	4.9	48.7	68.5	44.5
Vashiyar	1,486	754	732	4.0	63.0	73.8	38.3
Abrama (CT)	20,967	11,137	9,830	6.3	36.38	77.2	35.0
Mogarwadi (CT) - Ward No.1	17,525	9,319	8,206	5.3	25.9	76.8	33.7
Pardi Sondhpur (OG) - Ward No.16	5,066	2,704	2,362	1.2	36.2	71.4	33.3
Vejalpore	2,499	1,261	1,238	1.1	55.1	64.2	41.7
Lilapore	2,515	1,283	1,232	15.9	36.1	68.8	36.9
Sarodhi	1,521	777	744	6.0	52.1	73.2	48.3
Chikhla	2,516	1,307	1,209	6.9	36.3	77.5	42.3
Shanker Talav	619	329	290	4.9	41.4	78.2	46.0
Dungri	4,836	2,496	2,340	1.9	51.4	70.8	50.7
Rola	2,309	1,190	1,119	4.4	43.1	68.4	53.4
Jeshpor	1,574	799	775	0.0	12.8	78.4	48.0
Olgam	1,535	775	760	8.3	53.8	62.7	52.
Total	238,546	129,188	109,358	-	-	-	-
Average	6,626	3,589 (54.2%)	3,038 (46.8%)	3.6	47.2	65.7	41.5

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Jora Vasan data is not available in Census of India 2001.
Source: Census of India 2001

4) Navsari District

There are 22 villages falling under the project area. The total population of these villages as per Census of 2001 is 71,775. There are 4 large size villages which population are greater than 5,000. There are 2 small size villages whose population is less than 1,000. The average percentage of male population (51.1%) is slightly more than the female population (48.9%). Also, male population is also more than the female population in 19 out of 22 villages. The Schedule Caste population constitutes 1.5% of the total population and Schedule Tribe population constitutes 33.3% in affected villages in Navsari District.

Maximum literacy rate is in Sagra (82.2%) whereas minimum literacy rate is Vijalpor (47.4%). Literacy rate is more than 60% in 19 out of 22 villages. The average literacy rate in affected villages in Valsad District is 70.4% which is lower than the literacy rate (84.8%) of whole the District.

The work participation rate varies substantially from 29.2% to 59.4%. The highest work participation rate is in Vijalpor (59.4%). There are only one village where work participation rate is 50% or more.

Table 1-4 Demographic Profile of DFC Villages in Navsari District

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Desra (Gandevi)	1,271	637	634	0.0	93.9	62.2	46.1
Bilimora (Talodh) (OG) - Ward No.11	6,353	3,299	3,054	1.5	33.3	72.0	37.3
Bhatha	3,023	1,548	1,475	0.0	12.4	77.1	47.3
Devdha	2,820	1,411	1,409	1.9	20.0	76.2	38.7
Sarikhurd	1,619	821	798	4.5	48.9	57.3	49.1
Saribujrang	8,752	4,424	4,328	4.6	28.4	76.4	38.4
Amalsad	7,283	3,645	3,638	4.2	44.7	76.1	44.6
Ancheli	1,428	733	695	2.5	33.5	78.0	48.8
Mohanpur	1,072	542	530	2.2	20.7	76.8	29.2
Khaparwada	3,256	1,728	1,528	3.1	15.4	74.7	35.0
Vedchha	2,780	1,402	1,378	6.3	28.3	71.9	38.1
Mandir	3,398	1,691	1,707	1.9	32.1	72.6	40.1
Hansapor	2,282	1,185	1,097	12.3	38.7	71.6	39.9
Vijalpor	1,256	659	597	10.8	60.8	47.8	59.4
Viraval	3,500	1,740	1,760	4.1	42.3	72.6	42.7
Tavdi	2,125	1,051	1,074	5.2	33.7	65.0	43.3
Sagra	944	479	465	12.2	13.6	82.2	39.2
Chhinam	1,981	1,029	952	4.9	42.7	62.8	44.7
Kadoli	1,500	767	733	4.9	46.0	73.9	42.3
Mahuvar (CT) - Ward No.1	9,718	5,046	4,672	6.8	20.3	77.2	34.1
Ponsara	2,129	1,090	1,039	8.5	39.6	61.4	42.0
Maroli	3,285	1,731	1,554	3.7	27.8	62.4	43.4
Total	71,775	36,658	35,117	0.0	93.9	62.2	-
Average	3,263	1,666 (51.1%)	1,596 (48.9%)	1.5	33.3	72.0	42.0

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

5) Surat District

There are 34 villages falling under the project area. The total population of these villages as per Census of 2001 is 198,161. There are 10 large size villages which population are greater than 5,000. There are 6 small size villages whose population is less than 1,000. The average percentage of male population (55.2%) is more than the female population (44.8%). Also, male population is also more than the female population in 32 out of 34 villages. The Schedule Caste population constitutes 6.7% of the total population and Schedule Tribe population constitutes 31.3% in affected villages in Surat District.

Maximum literacy rate is in Sachin INA (INA) - Ward No.1 (76.5%) whereas minimum literacy rate is Dindoli (OG) - Ward No.72 (5.3%). Literacy rate is more than 60% in 13 out of 34 villages. The average literacy rate in affected villages in the District is 52.5% which is lower than the literacy rate (86.7%) of the District.

The work participation rate varies substantially from 32.3% to 79.9%. The highest work participation rate is in Sachin (79.9%). There are nine villages where work participation rate is 50% or more.

Table 1-5 Demographic profile of DFC Villages in Surat District

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Kansad	17,384	9,956	7,428	2.6	7.9	74.2	39.7
Sachin INA (INA) - Ward No.1	3,319	2,831	488	0.0	2.9	76.5	79.9
Un	1,397	707	690	1.7	61.1	46.2	60.1
Bhesan	2,011	1,009	1,002	0.0	19.6	70.4	45.1
Bhatvada	812	411	401	0.0	100.0	19.2	59.0
Dindoli (OG) - Ward No.72	13,014	7,299	5,715	1.6	11.0	5.3	35.8
Gadodara (OG) - Ward No.71	23,234	13,547	9,687	1.5	3.6	65.3	39.0
Devadh	1,158	590	568	12.1	14.1	44.7	46.6
Dakhkhanvada	227	119	108	0.0	47.1	48.0	62.1
Sedhav	551	283	268	0.0	1.6	37.6	60.6
Niyol	1,650	844	806	4.1	54.5	61.0	46.9
Vedchha	457	239	218	0.0	79.7	34.4	60.6
Chhedchha	367	172	195	1.4	61.3	46.9	47.4
Kosmada	2,127	1,089	1,038	4.8	58.9	47.1	52.7
Pasodara	829	432	397	39.8	15.9	48.7	33.9
Laskana	8,452	4,517	3,935	5.0	11.7	50.0	47.2
Valak	1,644	873	771	0.3	27.1	49.2	42.8
Bhada	1,842	927	915	13.6	31.5	49.9	46.5
Bharthana Kosad	4,743	2,543	2,200	1.6	13.3	46.3	35.2
Variav	14,003	7,541	6,462	11.0	20.8	56.7	37.0
Kosad	28,663	15,863	12,800	6.1	10.0	70.6	38.2
Abrama	3,041	1,529	1,512	23.7	19.5	38.9	45.9
Shekhpur	2,251	1,165	1,086	3.3	71.4	38.5	51.7
Kathodra	3,183	1,737	1,446	13.3	14.5	51.7	43.4
Gothan	3,193	1,632	1,561	9.3	31.3	61.1	47.7
Umra	2,306	1,158	1,148	6.6	50.0	59.9	44.2
Sayan (CT) - Ward No.1	12,847	7,262	5,585	6.3	11.9	63.6	41.6
Kareli	1,281	651	630	8.8	55.0	47.9	52.1
Kudsad	7,014	4,212	2,802	0.7	19.0	61.4	53.8
Kim	12,766	6,864	5,902	5.3	12.6	73.7	36.4
Kumvarda	2,519	1,322	1,197	25.1	31.4	61.7	35.1
Siyalaj	1,711	857	854	9.4	25.7	57.2	36.1
Kosamba (CT) - Ward No.1	13,543	6,982	6,561	6.4	18.3	66.2	32.3
Hathuran	4,622	2,302	2,320	3.8	49.6	46.2	42.0
Total	198,161	109,465	88,696	-	-	-	-
Average	5,828	3,220 (55.2%)	2,609 (44.8%)	6.7	31.3	52.2	46.4

Note: SC: Scheduled Caste, ST: Scheduled Tribe, CT: Census Town
Source: Census of India 2001

6) Bharuch District

There are 29 villages falling under the project area. The total population of these villages as per Census of 2001 is 158,862. There are 7 large size villages which population are greater than 5,000. There are 5 small size villages whose population is less than 1,000. The average percentage of male population (55.5%) is more than the female population (47.6%). Also, male population is also more than the female population in 26 out of 29 villages. The

Schedule Caste population constitutes 4.5% of the total population and Schedule Tribe population constitutes 33.1% in affected villages in Bharuch District.

Maximum literacy rate is in Padariya (87.5%) whereas minimum literacy rate is Dora (45.6%). Literacy rate is more than 60% in 20 out of 29villages. The average literacy rate in affected villages in the District is 65.0% which is lower than the literacy rate (83.0%) of whole the district.

The work participation rate varies substantially from 21.9% to 61.9%. The highest work participation rate is in Sarfuddin (61.9%). There are 6 villages where work participation rate is 50% or more.

Table 1-6 Demographic Profile of DFC Villages in Bharuch District

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Ochhan	1,657	847	810	5.4	43.3	60.9	49.0
Telod	1,167	602	565	3.8	42.0	49.6	52.2
Ikhar	6,118	3,089	3,029	3.7	21.0	65.5	39.5
Dora	2,763	1,448	1,315	3.1	52.9	45.6	51.7
Vantarsa	1,348	696	652	3.0	26.6	62.3	42.7
Tankariya	9,014	4,676	4,338	1.3	15.1	76.8	29.5
Padariya	889	476	413	15.3	24.5	87.4	49.3
Parkhet	2,808	1,460	1,348	3.0	23.0	73.5	33.7
Pipalia	880	449	431	7.2	30.7	58.2	49.0
Pariej	3,746	1,884	1,862	2.4	22.9	69.2	37.0
Tralsa	2,710	1,394	1,316	4.9	38.9	55.7	50.2
Tralsi	712	365	347	7.7	49.7	55.8	45.2
Derol	2,904	1,460	1,444	7.1	26.2	70.9	32.2
Mahudhala	1,370	711	659	10.7	22.3	69.3	41.2
Tham	2,221	1,016	1,205	4.6	21.2	67.7	29.3
Kanthariya	5,733	3,640	2,093	1.9	18.6	69.2	25.0
Manubar	5,561	1,968	3,593	3.8	13.1	77.5	21.9
Dahegam	2,468	1,256	1,212	4.9	21.1	62.9	37.4
Kukarwada	1,903	996	907	3.0	24.6	57.4	37.7
Sarfuddin	501	262	239	0.0	100.0	63.5	61.9
Diva	5,999	3,024	2,975	2.4	17.1	67.9	41.0
Anklesvar	67,569	35,655	31,914	4.6	13.4	75.4	33.3
Piraman (Part)	1,913	990	923	5.4	49.4	73.4	37.7
Umarwada	3,333	1,680	1,653	5.5	51.8	55.9	37.9
Bhadkodara	8,620	5,050	3,570	3.0	10.2	70.2	39.4
Kapodara	2,633	1,374	1,259	3.4	51.7	57.2	39.5
Sakkarpor	2,704	1,411	1,293	1.9	75.3	52.0	57.3
Sanjali	4,839	3,327	1,512	2.4	20.3	69.7	60.0
Panoli	4,779	2,110	2,669	3.6	32.4	63.1	27.1
Total	158,862	83,316	75,546	-	-	-	-
Average	5,478	2,873 (55.5%)	2,605 (47.6%)	4.5	33.1	65.0	41.0

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

7) Vadodara District

There are 10 villages falling under the project area. The total population of these villages as per Census of 2001 is 12,557. There are no large size villages which population are greater than 5,000. There are 4 small size villages whose population is less than 1,000. The average percentage of male population (52.2%) is more than the female population (47.8%). Also, male population is also more than the female population in all villages. The Schedule Caste

population constitutes 7.1% of the total population and Schedule Tribe population constitutes 38.0% in affected villages in Vadodara District.

Maximum literacy rate is in Handod (64.8%) whereas minimum literacy rate is Kandha (38.5%). Literacy rate is more than 60% in 3 out of 11 villages. The average literacy rate in affected villages in the District is 53.7% which is lower than the literacy rate (81.2%) of whole the District.

The work participation rate varies substantially from 35.5% to 67.3%. The highest work participation rate is in Kandha (67.3%). There are 7 villages where work participation rate is 50% or more.

Table 1-7 Demographic Profile of DFC Villages in Vadodara District

Villages	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Mesrad	2,116	1,109	1,007	3.5	23.9	60.5	35.5
Mangrol	1,679	877	802	3.8	48.2	48.0	41.6
Kambola	1,428	739	689	5.5	19.3	51.3	40.4
Bodaka	1,438	753	685	4.2	24.9	54.5	57.9
Handod	828	433	395	13.5	49.5	57.9	50.2
Kandha	605	304	301	0.0	87.9	38.5	67.3
Kurai	1,545	830	715	13.2	47.0	62.7	50.8
Pingalwada	1,276	668	608	7.6	22.9	50.6	62.1
Untiya (Medhad)	705	367	338	4.7	23.3	55.5	53.6
Gosindra	937	475	462	15.6	32.7	58.1	64.9
Total	12,557	6,555	6,002	-	-	-	-
Average	1,256	656 (52.2%)	600 (47.8%)	7.2	38.0	53.7	52.4

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001 SC: Scheduled Caste, ST: Scheduled Tribe

(2) Rewari-Dadri Section

1) Rewari District

There are 17 villages falling under the project area. The total population of these villages as per is 25,028. There are no large size villages which population are greater than 5,000. There are 10 small size villages whose population is less than 1,000. The average percentage of male population (53.3%) is more than the female population (46.8%). Male population is also more than the female population in all 17 villages. The Schedule Caste population constitutes 23.7% of the total population and Schedule Tribe population constitutes 0% in affected villages in Thane District.

Maximum literacy rate is in Devlawas (70.5%) whereas minimum literacy rate is Kamalpur (35.0%). Literacy rate is more than 60% in 11 out of 17 villages. The average literacy rate in affected villages in the District is 57.8% which is lower than the literacy rate (82.2%) of whole the district.

The work participation rate varies substantially from 35.5% to 56.0%. The highest work participation rate is in Dhamlaka (56.0%). There are 10 villages where work participation rate is 50% or more.

Table 1-8 Demographic Profile of DFC Villages in Rewari District

Village	Total population			SC population %	ST population %	Literacy %	Work participation %
	Person	Male	Female				
Daliaki	746	405	341	56.2	0.0	66.1	38.3
Jatuwas	1,300	690	610	16.7	0.0	62.2	45.9
Bhadawas	4,169	2,212	1957	18.6	0.0	63.8	41.2
Bithwana	1,783	945	838	23.1	0.0	66.5	51.6
Bhiwari	400	225	175	0.5	0.0	47.8	56.0
Kamalpur	923	513	410	3.5	0.0	35.0	49.7
Devlawas	457	234	223	21.0	0.0	70.5	54.9
Dhamlaka	605	336	269	57.9	0.0	41.7	56.0
Dawana	629	335	294	31.0	0.0	60.4	43.4
Lalpur	972	518	454	22.4	0.0	58.2	43.4
Kasola	922	485	437	21.2	0.0	44.6	45.0
Lodhana	719	388	331	13.5	0.0	65.0	35.5
Pithanwas	1,260	666	594	9.9	0.0	62.4	53.2
Mukundpur Basi	596	316	280	41.4	0.0	58.4	54.9
Asiakitappa Jarthal	1,512	784	728	18.8	0.0	62.8	47.0
Jarthal	3,298	1,732	1,566	11.1	0.0	56.0	36.3
Nandrampur Bas	4,737	2,543	2194	35.4	0.0	61.2	38.8
Total	25,028	13,327	11,701	-	-	-	-
Average	1,472	784 (53.3%)	688 (46.8%)	23.7	0.0	57.8	46.5

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

2) Alwar District

There are 13 villages falling under the project area. The total population of these villages as per is 25,028. There are no large size villages which population are greater than 5,000. There are 6 small size villages whose population is less than 1,000. The average percentage of male population (52.7%) is more than the female population (47.3%). Male population is also more than the female population in all 13 villages. The Schedule Caste population constitutes 16.2% of the total population and Schedule Tribe population constitutes 0.4% in affected villages in Alwar District.

Maximum literacy rate is in Khairthal (M) - Ward No.9 (76.7%) whereas minimum literacy rate is Kahrani (26.4%). Literacy rate is more than 60% in 3 out of 11 villages. The average literacy rate in affected villages in the District is 49.71 % which is lower than literacy rate (71.7%) whole the district.

The work participation rate varies substantially from 30.9% to 77.7%. The highest work participation rate is in Thara (77.7%). There are 7 villages where work participation rate is 50% or more.

Table 1-9 Demographic Profile of DFC Villages in Alwar District

Village	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Rabadka	1,261	675	586	25.8	0.0	57.7	66.4
Salarpur	524	277	247	12.0	0.0	33.2	66.8
Shahpur	601	312	289	29.3	0.0	54.6	61.1
Kalaka	601	317	284	27.6	0.0	52.9	46.8
Tatarpur	1,763	993	770	11.1	0.3	64.7	59.2
Thara	762	395	367	8.4	0.0	62.5	77.7

Village	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Khairthal (M) - Ward No.9	1,283	684	599	2.1	0.1	76.7	30.9
Jhiwana	3,875	1,972	1,903	18.4	0.0	39.3	46.4
Banban	618	318	300	31.4	0.0	30.3	62.5
Kahrani	2,114	1,093	1,021	19.1	0.0	26.4	47.8
Mundana Meo	803	441	362	11.2	4.9	63.4	55.5
Amlaki	307	152	155	0.0	0.0	34.9	35.8
Shahdod	1,376	739	637	14.5	0.0	49.8	45.5
Total	15,888	8,368	7,520	-	-	-	-
Average	1,222	644 (52.7%)	578 (47.3%)	16.2	0.4	49.7	54.0

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

3) Mewat District

There are 19 villages falling under the project area. The total population of these villages as per is 19,788. There are 2 large size villages which population are greater than 5,000. There are 6 small size villages whose population is less than 1,000. The average percentage of male population (57.0%) is more than the female population (43.0%). Male population is also more than the female population in all 19 villages. The Schedule Caste population constitutes 12.6% of the total population and Schedule Tribe population constitutes 0.0% in affected villages in Alwar District.

Maximum literacy rate is in Sehsaula (72.7%) whereas minimum literacy rate is Kahrani (21.1%). Literacy rate is more than 60% in 6 out of 19 villages. The average literacy rate in affected villages in the District is 40.8% which is lower than the literacy rate (56.1%) of whole the district.

The work participation rate varies substantially from 23.7% to 66.0%. The highest work participation rate is in Dhorka (66.8%). There is only one village where work participation rate is 50% or more.

Table 1-10 Demographic Profile of DFC Villages in Mewat District

Village	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Sewka	937	495	442	24.7	0.0	38.2	23.7
Raniaki	1,385	724	661	40.7	0.0	39.6	47.2
Gurnawat	1,592	853	739	6.3	0.0	22.1	38.4
Didhara	1,802	912	890	11.2	0.0	43.1	39.7
Bharangpur	682	366	316	1.9	0.0	33.6	39.4
Taoru	17,328	9,310	8,018	20.7	0.0	65.9	32.0
Gawarka	1,698	927	771	31.0	0.0	66.4	32.3
Buraka Taoru	1,264	638	626	6.6	0.0	39.5	40.3
Raheri	306	177	129	0.0	0.0	64.7	48.7
Malahka	1,223	672	551	1.8	0.0	28.1	36.5
Dhorka	554	299	255	9.9	0.0	60.1	66.8
Dhulawat	3,607	1,886	1,721	2.0	0.0	21.1	49.1
Sehsaula	6,033	3,925	2,108	13.4	0.0	72.7	47.3
Khor	667	361	306	4.8	0.0	31.3	38.8
Maraula	832	433	399	0.0	0.0	27.8	43.4
Rojka	1,970	1,059	911	1.7	0.0	21.2	31.5
Atta	1,344	739	605	53.5	0.0	52.5	46.1
Rampur	2,286	1,239	1,047	14.1	0.0	65.0	43.0
Udaka	3,049	1,645	1,404	10.9	0.0	34.4	33.6
Total	19,788	11,287	8,501	-	-	-	-
Average	2,474	1,411 (57.0%)	1,063 (43.0%)	12.6	0.0	40.8	41.6

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

4) Palwal District

There are 8 villages falling under the project area. The total population of these villages as per is 27,371. There are 2 large size villages which population are greater than 5,000. There is 1 small size village whose population is less than 1,000. The average percentage of male population (54.5%) is more than the female population (45.5%). Male population is also more than the female population in all 8 villages. The Schedule Caste population constitutes 21.1% of the total population and Schedule Tribe population constitutes 0.0% in affected villages in Palwal District.

Maximum literacy rate is in Sehsaula (60.6%) whereas minimum literacy rate is Kahrani (36.0%). Literacy rate is more than 60% in 1 out of 8 villages. The average literacy rate in affected villages in the District is 40.8% which is lower than the literacy rate (70.3%) of whole the district.

The work participation rate varies substantially from 25.9% to 40.8%. The highest work participation rate is in Dehlaka (40.8%). There is no village where work participation rate is 50% or more.

Table 1-11 Demographic Profile of DFC Villages in Palwal District

Village	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Parauli	2,361	1,308	1,053	12.3	0.0	54.9	36.3
Dehlaka	530	302	228	2.8	0.0	59.1	40.8
Kalwaka	2,633	1,395	1,238	17.5	0.0	38.2	25.9
Chhapraula	1,905	1,021	884	27.7	0.0	55.5	36.1
Pirthala	5,468	3,019	2,449	34.8	0.0	36.0	27.4
Jataula	1,194	634	560	24.3	0.0	60.6	36.2
Asawati	2,313	1,281	1,032	24.2	0.0	49.0	33.8
Ladpur	10,967	5,956	5,011	25.7	0.0	44.2	32.6
Total	27,371	14,916	12,455	-	-	-	-
Average	3,421	1,865 (54.5%)	1,557 (45.5%)	21.2	0.0	49.7	33.6

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

5) Gurgaon District

There are 8 villages falling under the project area. The total population of these villages as per is 36,887. There are 1 large size villages which population are greater than 5,000. There are 2 small size villages whose population is less than 1,000. The average percentage of male population (53.2%) is more than the female population (46.8%). Male population is also more than the female population in all 8 villages. The Schedule Caste population constitutes 20.0% of the total population and Schedule Tribe population constitutes 0% in affected villages in Gurgaon District.

Maximum literacy rate is in Sohna (61.8%) whereas minimum literacy rate is Sancholi (28.4%). Literacy rate is more than 60% in 2 out of 8 villages. The average literacy rate in affected villages in the District is 49.6% which is lower than the literacy rate (84.4%) of whole the district.

The work participation rate varies substantially from 31.3% to 52.3%. The highest work participation rate is in Khuntpuri (52.3%). There are 2 villages where work participation rate is 50% or more.

Table 1-12 Demographic Profile of DFC Villages in Gurgaon District

Village	Total population			SC population %	ST population %	Literacy %	Work Participation %
	Person	Male	Female				
Raipur	1,289	687	602	9.9	0.0	31.9	37.6
Sohna	27570	14690	12880	18.3	0.0	61.8	31.3
Lakhuwas	2,354	1248	1,106	11.4	0.0	57.5	44.8
Sancholi	1,739	906	833	11.2	0.0	28.4	50.2
Karanki	1,832	956	876	36.1	0.0	40.8	49.3
Silani	1,010	555	455	20.5	0.0	60.8	47.1
Khuntpuri	541	279	262	18.1	0.0	58.6	52.3
Barkhera	552	291	261	34.2	0.0	56.9	35.5
Total	36,887	19,612	17,275	-	-	-	-
Average	4,611	2,452 (53.2%)	2,159 (46.8%)	20.0	0.0	49.6	43.5

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

6) Faridabad District

There are 27 villages falling under the project area. The total population of these villages as per is 80,608 There are 1 large size villages which population are greater than 5,000. There are 7 small size villages whose population is less than 1,000. The average percentage of male population (53.8%) is more than the female population (46.2%). Male population is also more than the female population in all 27 villages. The Schedule Caste population constitutes 22.3% of the total population and Schedule Tribe population constitutes 0% in affected villages in Faridabad District.

Maximum literacy rate is in Saidpur (100.0%) whereas minimum literacy rate is Dhadar (21.3%). Literacy rate is more than 60% in 6 out of 27 villages. The average literacy rate in affected villages in the District is 48.6% which is lower than the literacy rate (83.0%) of whole the district.

The work participation rate varies substantially from 24.2% to 67.2%. The highest work participation rate is in Dhadar (67.2%). There are 6 villages where work participation rate is 50% or more.

Table 1-13 Demographic Profile of DFC Villages in Faridabad District

Village	Total population			SC population %	ST population %	Literacy %	Work participation %
	Person	Male	Female				
Paharpur	977	534	443	0.0	0.0	24.9	51.1
Fatehpur Taga	5,265	2,778	2,487	8.2	0.0	29.7	29.3
Ladhauli	1,833	1,011	822	6.2	0.0	45.9	53.0
Bahbalpur	2,268	1,207	1,061	10.6	0.0	54.9	47.1
Phophunda	1,752	1,110	642	7.4	0.0	33.3	61.6
Dayalpur	7,064	3,816	3,248	30.3	0.0	60.7	40.4
Machhgar	4,617	2,461	2,156	19.0	0.0	59.5	51.2
Bukharpur	2,427	1,341	1,086	27.9	0.0	55.1	50.4
Nawada Tigaon	2,538	1,350	1,188	0.0	0.0	57.1	38.1
Tigaon	18,068	9,689	8,379	14.4	0.0	61.5	32.0
Nimka	4,768	2,539	2,229	15.0	0.0	58.4	34.1
Saidpur	28	16	12	100.0	0.0	46.4	39.3
Faridpur	2,642	1,410	1,232	29.5	0.0	61.8	25.7
Kheri Kalan	6009	3253	2756	17.1	0.0	59.4	40.5
Nachauli	2,506	1,365	1,141	31.9	0.0	48.7	42.5
Bhopani	3128	1651	1477	30.4	0.0	50.3	41.3
Dhadar	122	64	58	0.0	0.0	21.3	67.2
Mahavatpur	830	441	389	1.5	0.0	63.1	36.1
Lalpur	1,077	586	491	0.0	0.0	53.0	24.4
Rawajpur	570	299	271	34.4	0.0	63.9	4.4
Tekawli	1331	731	600	53.4	0.0	49.2	31.8
Badshahpur	710	400	310	48.0	0.0	51.7	24.2
Palwali	1363	730	633	22.3	0.0	62.9	31.3
Wazirpur	1,048	571	477	1.1	0.0	35.5	46.7
Malai	5,692	3,021	2,671	1.4	0.0	27.1	49.6
Meghpur	708	371	337	85.6	0.0	46.8	33.9
Sanpal	1,267	657	610	5.7	0.0	29.0	49.6
Total	80,608	43,402	37,206	-	-	-	-
Average	2,985	1,607 (53.8%)	1,378 (46.2%)	22.3	0.0	48.6	39.9

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

7) Gautam Buddha Nagar District

There are 11 villages falling under the project area. The total population of these villages as per is 20,447 There are 1 large size villages which population are greater than 5,000. There are 5 small size villages whose population is less than 1,000. The average percentage of male population (53.6%) is more than the female population (46.4%). Male population is also more than the female population in all 27 villages. The Schedule Caste population constitutes 18.5% of the total population and Schedule Tribe population constitutes 0% in affected villages in Gautam Buddha Nagar District.

Maximum literacy rate is in Gulistanpur (62.5%) whereas minimum literacy rate is Dalelpur (47.0%). Literacy rate is more than 60% in 2 out of 11 villages. The average literacy rate in affected villages in the District is 54.3% which is lower than the literacy rate (82.2%) of whole the district.

The work participation rate varies substantially from 17.6% to 42.5%. The highest work participation rate is in Namauli (42.5%). There are no village where work participation rate is 50% or more.

Table 1-14 Demographic Profile of DFC Villages in Gautam Budh Nagar District

Village	Total population			SC population %	ST population %	Literacy %	Work participation %
	Person	Male	Female				
Dalelpur	185	106	79	0.0	0.0	47.0	34.6
Gulavali	1,341	728	613	20.5	0.0	58.5	17.6
Jhatta	849	462	387	2.8	0.0	54.1	23.1
Badauli Bangar	1,034	521	513	9.2	0.0	55.7	23.8
Mubarikpur	553	319	234	72.7	0.0	49.7	34.5
Gujarpur	123	68	55	0.0	0.0	49.6	30.1
Namauli	221	150	71	8.1	0.0	60.6	42.
Gulistanpur	1,471	779	692	23.7	0.0	62.5	23.4
Sakipur	4,620	2,457	2,163	21.9	0.0	49.3	34.3
Pali	3,248	1,757	1,491	16.7	0.0	55.4	22.4
Tilpata Karanwas	6,802	3,614	3,188	28.3	0.0	54.7	25.2
Total	20,447	10,961	9,486	-	-	-	-
Average	1,859	996 (53.6%)	862 (46.4%)	18.5	0.0	54.3	28.3

Note: SC: Scheduled Caste, ST: Scheduled Tribe
Source: Census of India 2001

Appendix-2 Information of Affected Village

Appendix-2a
List of Affected Village

Appendix-2a
List of Project-Affected Villages

S. No.	Section	CPM	Taluk / Tahsil	Name of Village
1. Raigad District, Maharashtra State				
1.	1	Mumbai	Uran	***Jaskhar***
2.				***Sonari***
3.				***Karal***
4.				***Pagote***
5.				***Sawarkhar***
6.				***Shemtekhar***
7.				***Jasai***
8.				***Chirle***
9.				***Paundkhar***
10.				***Khatkhar***
11.				***Bandkhar***
12.			Panvel	***Vahal***
13.				***Pandeghar***
14.				***Bambavi***
15.				Kunde Vahal
16.				Ovale
17.				Dapoli
18.				***Pargaon Inam***
19.				***Kopar***
20.				***Vadghar***
21.				Karanjade
22.				***Kalundre***
23.				Vichumbe
24.				Panvel
25.				Asudgaon
26.				Tembhode
27.				Valavali
28.				***Ambetkhar***
29.				***Rodpali***
30.				***Navadhe***
31.				***Pendhar***
32.				***Taloja***
33.				Pisarve
34.				Rohinjan
35.				Dhansar
36.				***Vaklan***
37.				***Nighu***
38.				Usroli
39.				Kolkhe
40.				Kone
41.				Chikhale
Sub-Total				**41 (16)**
2. Thane District, Maharashtra State				
1.	1	Mumbai	Thane	***Narivali***
2.				***Wadavali***
3.			Kalyan	***Ghesar***
4.				Nilaje
5.				Katai
6.				Usarghar
7.				Betavade
8.				Bhopar
9.				Nandivali

S. No.	Section	CPM	Taluk / Tahsil	Name of Village
10.				Aayre
11.				***Kopar***
12.				Juni-Dombivli
13.				Thakurli
14.				Navagaon
15.				Gaodevi
16.			Bhiwandi	***Pimpalner***
17.				Pimplas
18.				Ovali
19.				Kamatghar
20.				Rahanal
21.				Kalwar
22.				Wadghar
23.				Dunge
24.				Vadunavghar
25.				Kharbao
26.				Malodhi
27.				Payegaon
28.				Paye
29.			Vasai	Nagle
30.				Shilottar
31.				Sasunavghar
32.				Sarjamori
33.				Mori
34.				***Kaman***
35.				***Bapane***
36.				Juchandra
37.				Chandrapada
38.				Tivri
39.				Rajavalli
40.				Gokhivare
41.				Bilalpada
42.				Dhaniv
43.				***Bhatpadi***
44.				***Chandansar***
45.				Shirgaon
46.				***Dahisar***
47.				Kasrali
Sub-Total				**47 (37)**
1.	2	Mumbai	Palghar	Wadi Saravali
2.				***Kandanvan***
3.				Karvale
4.				Sartodi
5.				Saphale
6.				***Umbarpada Nandade***
7.				Kardal (Old Makan Kapase)
8.				Kapase
9.				Makunsar
10.				Rothe
11.				Kelve Road
12.				Kasbe Mahim
13.				Navli
14.				Palghar
15.				Gothanpur
16.				***Kolgaon***
17.				Umroli

S. No.	Section	CPM	Taluk / Tahsil	Name of Village
18.				Birwadi
19.				Panchali
20.				***Kambalgaon***
21.				Khairapada (Old Saravali)
22.				Dandipada
23.				Boisar
24.				***Katkar***
25.				Rani Shingaon
26.				Navale
27.			Dahanu	***Kolavali***
28.				Vangaon
29.				Kapshi
30.				Asangaon
31.				***Dehane***
32.				Pale
33.				Aagwan
34.				Saravali
35.				Patilpada
36.				Manfod
37.				Junnarpada
38.				Nandore
39.				Dahanu
40.				Kasara
41.				Waki
42.				Ambewadi
43.				Chikhale
44.				Gholwad
45.				Bordee
46.			Talasari	Brahmanpada
47.				Borigaon
48.				Vevaji
Sub-Total				**48 (41)**
3. Valsad District, Gujarat State				
1.	2	Mumbai	Umargaon	Govada
2.				Dahad
3.				Solsumba
4.				Humbran
5.				Sanjan
6.				Gumse Kankaria
7.				Tumb
8.				Malav
9.				Deheli
10.				***Vankash***
11.	3	Surat	Umergaon	Bhilad
12.				Karamveli
13.				Valvada
14.			Pardi	Vapi / Vapi-2
15.				Orvad
16.				Rentlav
17.				Motiwada
18.				Umersadi
19.			Valsad	Haria
20.				Atul
21.				Dived
22.				Maghod
23.				Pari Parnera

S. No.	Section	CPM	Taluk / Tahsil	Name of Village
24.				Vasiyer
25.				Abrama
26.				Mograwadi
27.				Pardi Sadpur
28.				Vejalpur
29.				Lilapur
30.				Sarodhi
31.				Chikhala
32.				Sankar talav
33.				Dungri
34.				Rolla
35.				Jespore
36.				Olgaon
37.				Jora Vasan
Sub-Total				**37 (36)**
4. Navsari District, Gujarat State				
1.	3	Surat	Gandevi	Desra
2.				Billimora
3.				Bhatha
4.				Devdha
5.				Sarikhurad
6.				Saribujrang
7.				Amalsad
8.				Ancheli
9.				Mohanpur
10.				Khaparwada
11.			Jalalpore	Vedchha
12.				Mandir
13.				Hansapore
14.				Vejalpore
15.			Navsari (Rural)	Veravan
16.			Jalalpore	Tavdi
17.				Sagra
18.				Chhinam
19.				Kadoli
20.				Mahuwar
21.				Ponsra
22.				Maroli
Sub-Total				**22 (22)**
5. Surat District, Gujarat State				
1.	4	Surat	Choryasi	Kansad
2.				Sachin
3.			Surat City	Unn
4.				Bhestan
5.				Bhedwad
6.			Choryasi	Dindoli
7.				Godadra
8.				Devach
9.				Dakhanwada
10.			Palsana	Sedhav
11.				Niyol
12.			Kamrej	Vedchha
13.				Chhedchha
14.				Kosmada
15.				Khadsad
16.				Pasodra

S. No.	Section	CPM	Taluk / Tahsil	Name of Village
17.				Laskana
18.				Valak
19.				Bhada
20.	4	Vadodara	Choryasi	Bharthana Kosad
21.			Surat City	Variyav
22.				Kosad
23.			Kamrej	Abrama
24.				Shekhpur
25.				Kathodara
26.			Olpad	Gothan
27.				Umara
28.				Sayan
29.			Olpad	Kareli
30.				Kudsad
31.				***Kim***
32.			Mangrol	Siyalaj
33.				Kunwarda
34.				Kosamba
35.				Hathuran
Sub-Total				**35 (34)**
6. Bharuch District, Gujarat State				
1.	5	Vadodara	Amod	Ochhan
2.				Telod
3.				Ikhar
4.				Dhora
5.				Wantarsa
6.				Tankariya
7.				Pardriya
8.			Bharuch	Parkhet
9.				Pipaliya
10.				Pariyej
11.				Tralsa
12.				Tralsi
13.				Derol
14.				Mahudhala
15.				Tham
16.				Kanthariya
17.				Manubar
18.				Dahegam
19.				Kukarwada
20.			Ankleshwar	Sarfudin
21.				Deeva
22.				Ankleswar
23.				Piraman
24.				Umarwada
25.				Bhatkodra
26.				Kapodra
27.				Sakkarpor
28.				***Sanjali***
29.				Panoli
Sub-Total				**29 (28)**
7. Vadodara District, Gujarat State				
1.	5	Vadodara	Karjan	Mesrad
2.				Mangrol
3.				Kambola
4.				Bodka

S. No.	Section	CPM	Taluk / Tahsil	Name of Village
5.				Handod
6.				Khanda
7.				Kurai
8.				Pingalwada
9.			Vadodara	Unitya Medad
10.				Gosindra
Sub-Total				**10 (10)**
8. Rewari District, Haryana State				
1.	15 & 16	Noida	Rewari	Daliaki
2.				Jatuwas
3.				Bhadawas
4.				Bithwana
5.				Bhiwari
6.				Kamalpur
7.				Devlawas
8.				Dhamlaka
9.				Dawana
10.				Lalpur
11.				Kasola
12.				Lodhana
13.				Pithanwas
14.				Mukandpur Basi
15.				Asiaki Tappa Jarthal
16.				Jarthal
17.				Nandrampur bas
Sub-Total				**17 (17)**
9. Alwar District, Rajasthan State				
1.	15 & 16	Noida	Tijara	Rabarka
2.				Salarpur
3.				Shahpur
4.				Kalaka
5.				Tatarpur
6.				Thara
7.				Khajooriwas
8.				Jiwana
9.				Banban
10.				Kehrani
11.				Mundana Meo
12.				Amlaki
13.				Shahdod
Sub-Total				**13 (13)**
10. Mewat District, Haryana State				
1.	15 & 16	Noida	Taoru	Sewaka
2.				Raniyaki
3.				Gunawat
4.				Dhidara
5.				Bharangpur
6.				Taoru
7.				Gaurka
8.				Buraka
9.				Rahedi
10.				Malaka
11.				Dalaka
12.				Dhulawat
13.				Sashol Patuka
14.				Khor

S. No.	Section	CPM	Taluk / Tahsil	Name of Village
15.				Marola
16.				Rojka
17.			Nuh	Aata
18.				Rampur
19.				Uddaka
Sub-Total				**19 (19)**
11. Gurgaon District, Haryana State				
1.	15 & 16	Noida	Sohna	Raipur
2.				Sohna
3.				Lakhuwas
4.				Sancholi
5.				Bhirawati
6.				Karanki
7.				Silani
8.				Khuntpuri
9.				Barkhera (Rati Ka Nawad)
Sub-Total				**9 (9)**
12. Palwal District, Haryana State				
1.	15 & 16	Noida	Palwal	Parauli
2.				Dahlaka
3.				Kalwaka
4.				Chhapraula
5.				Pirthala
6.				Jataula
7.				Asawati
8.				Laadpur
Sub-Total				**8 (8)**
13. Faridabad District, Haryana State				
1.	15 & 16	Noida	Ballabgarh	Pahaladpur
2.				Fatehpur Billoch
3.				Ladauli
4.				Bahbalpur
5.				Fafunda
6.				Dayalpur
7.				Machgar
8.				Bukharpur
9.				Nawada Tigaon
10.			Faridabad	Tigaon
11.				Nimka
12.				Saidpur
13.				Faridpur
14.				Kheri Kala
15.				Nachauli
16.				Bhopani
17.				Dhandhar
18.				Mahawatpur
19.				Laalpur
20.				Riwazpur
21.				Tikawali
22.				Baadshahpur
23.				Palwali
24.				Wazipur
25.				Mawai
26.				Mewala Maharajpur
27.				***Sarai Khawaza***
28.				***Pul Pahladpur***

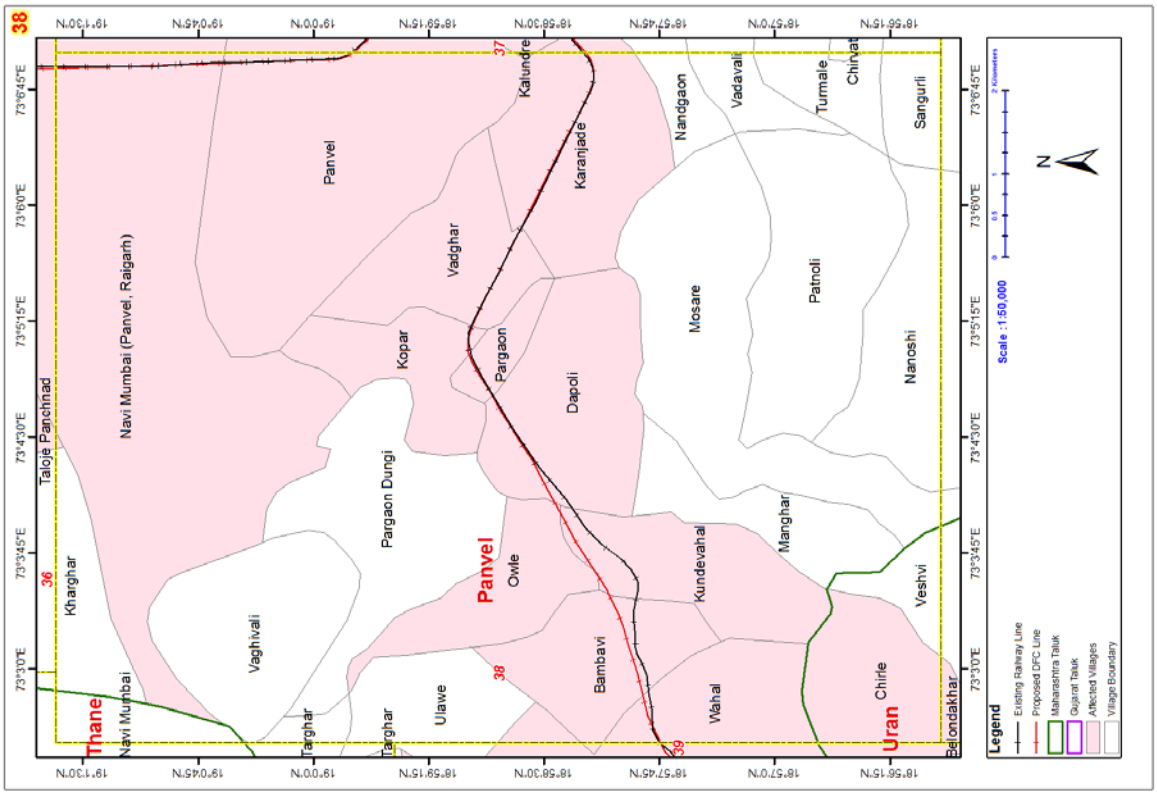
S. No.	Section	CPM	Taluk / Tahsil	Name of Village
Sub-Total				**28 (26)**
14. Gautam Budha Nagar District, Uttar Pradesh State				
1.	15 & 16	Noida	Sadar	Dalelpur
2.				Gulaoli
3.				Jhatta
4.				Badoli Bangar
5.				Mubarakpur
6.				Guijarpur
7.				Namoli
8.				***Gulistanpur***
9.				***Saquipur***
10.				***Pali***
11.				***Tilpata Karanbas***
Sub-Total				**11 (7)**
Total No. of Villages in DFC Phase 2 (Total No. of Villages with Private LA)				**374 (323)**

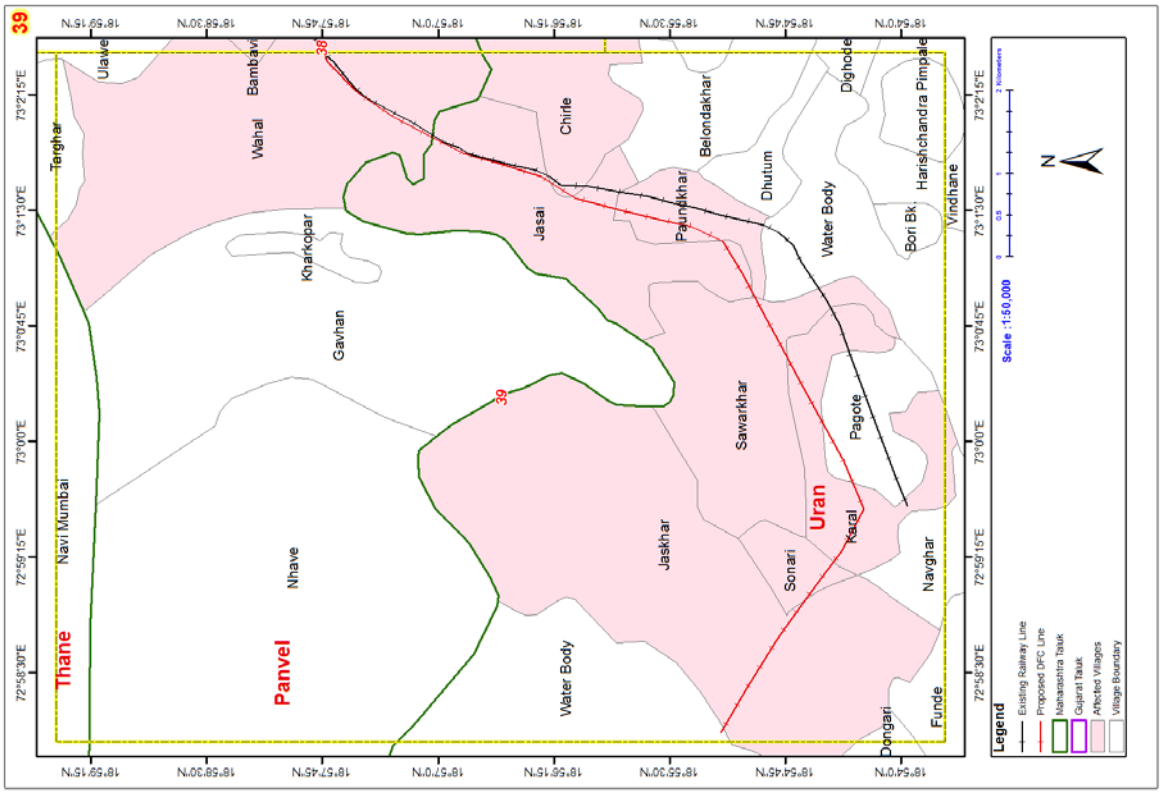
Note: Only villages in Bold Italic are affected villages without private land whereas the rest are affected villages with private land.
Figure in parenthesis shows no. of affected villages with private land.

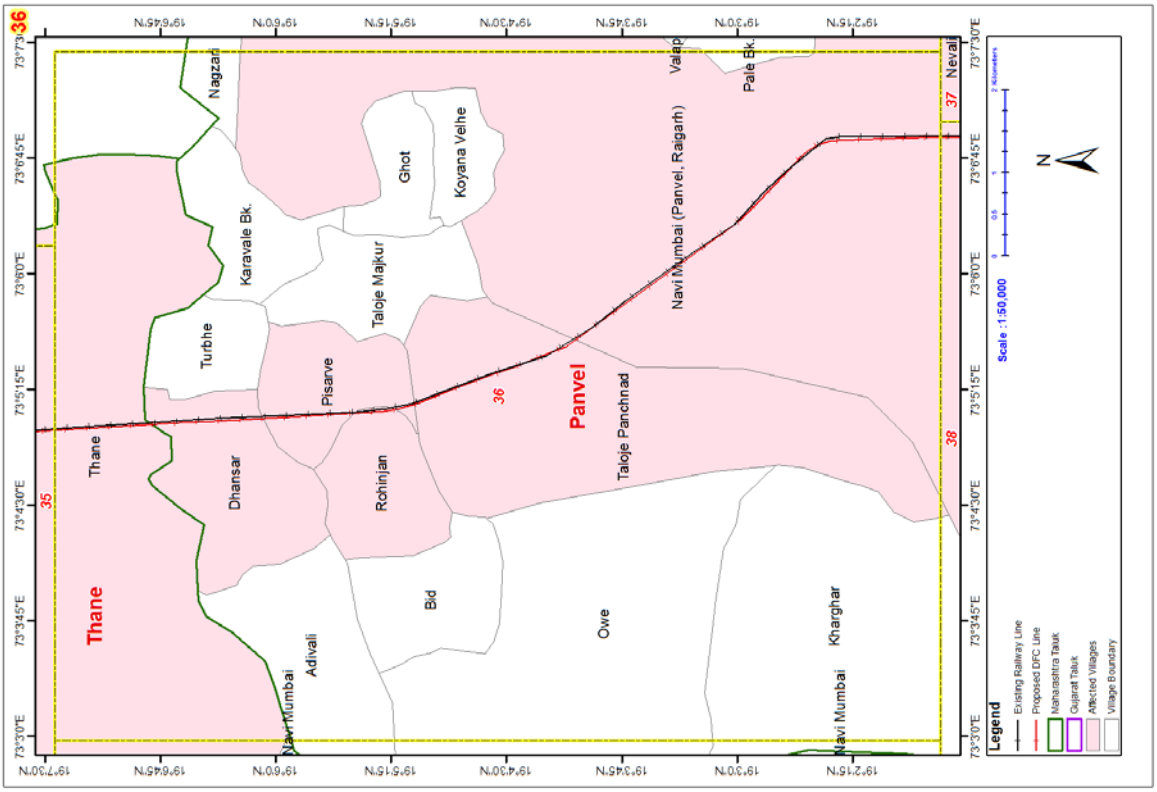
Appendix-2b
Map of Affected Village

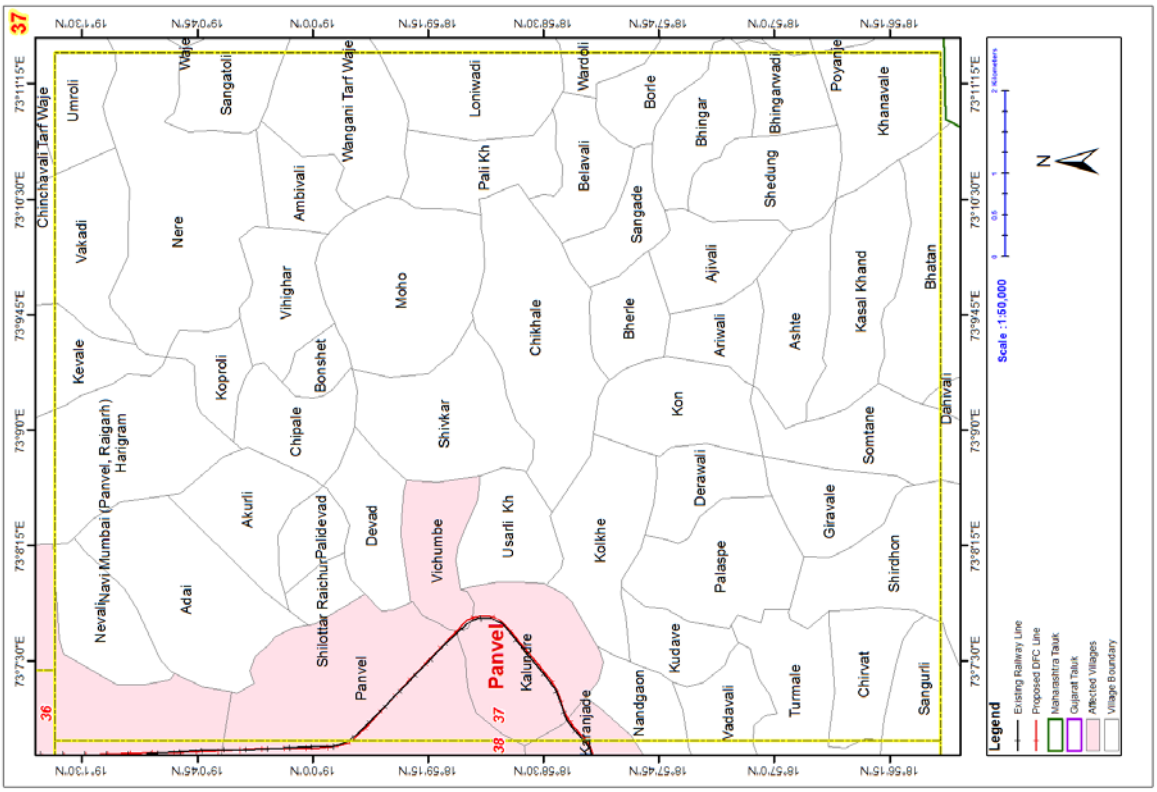
Appendix-2b
Map of Project-Affected Villages

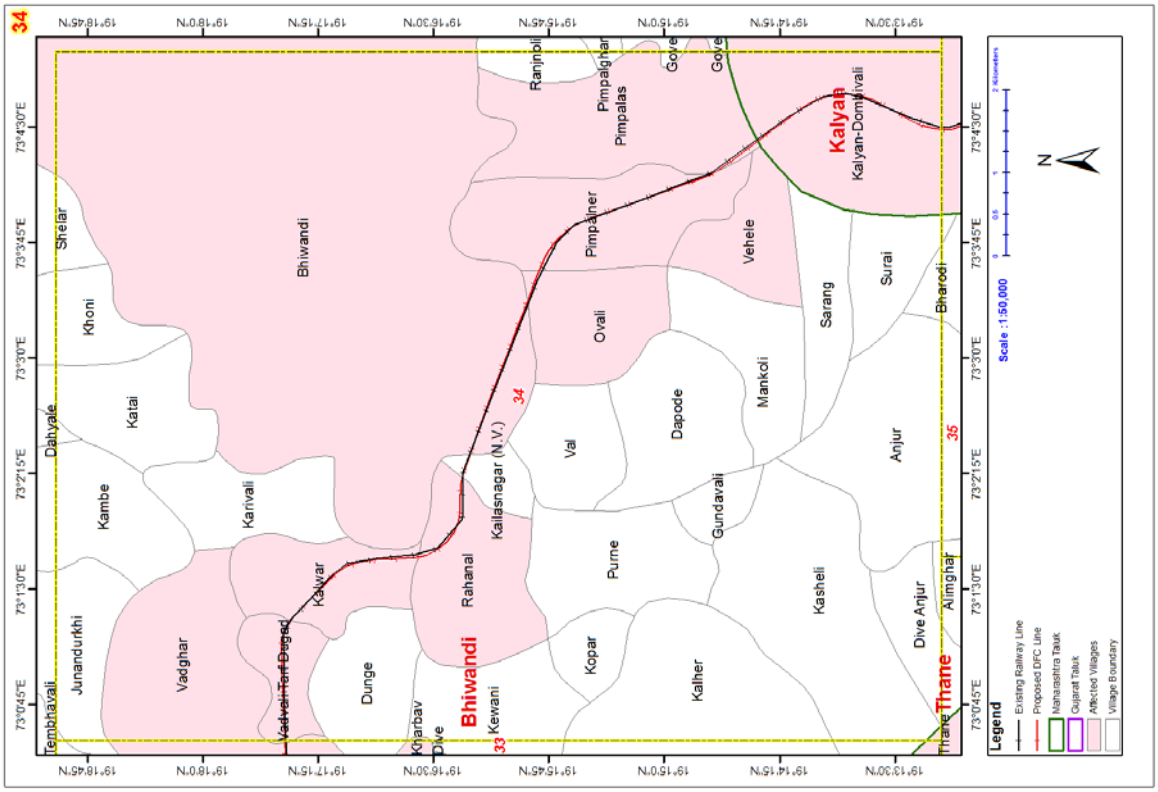
(JNPT-Vododara Section)

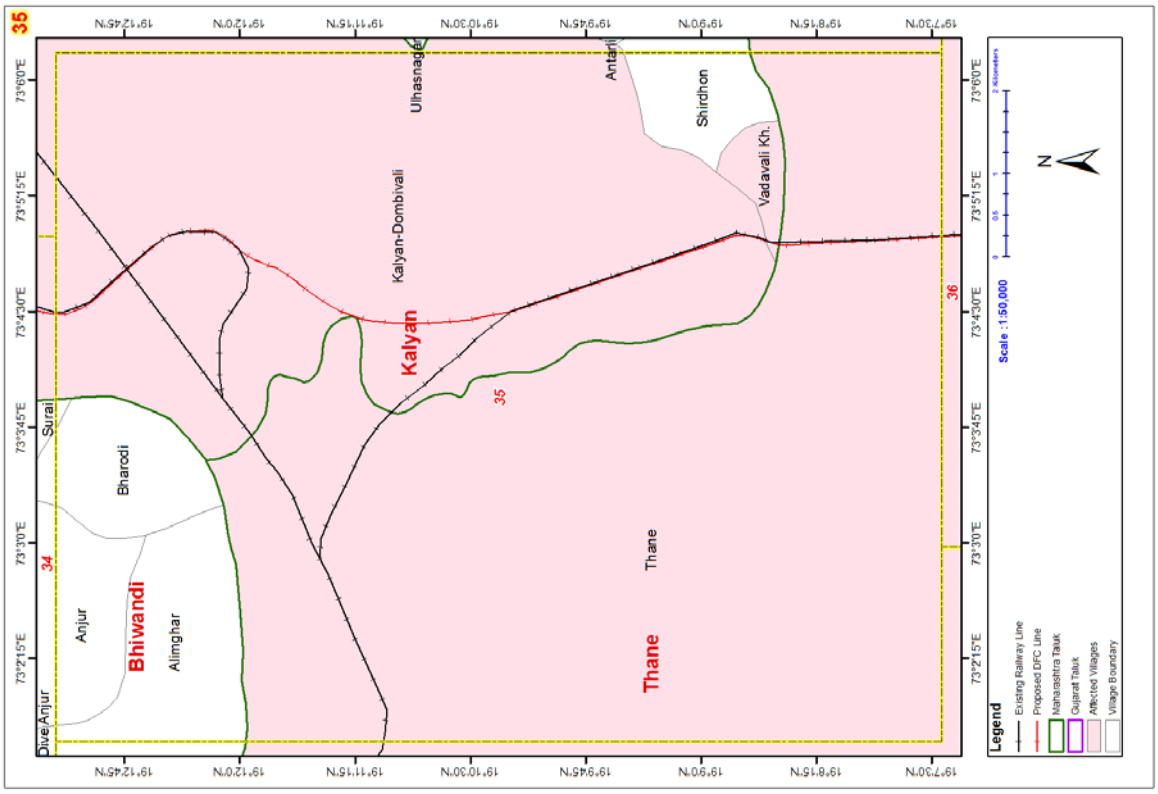


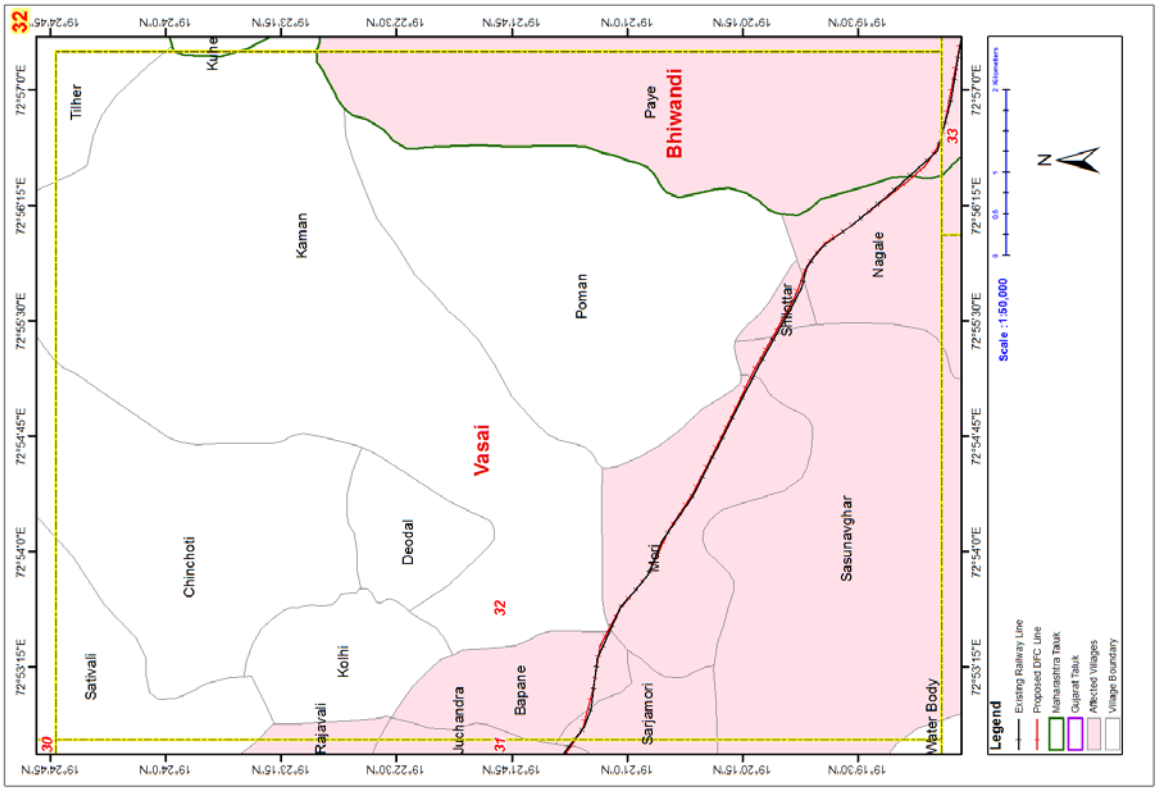


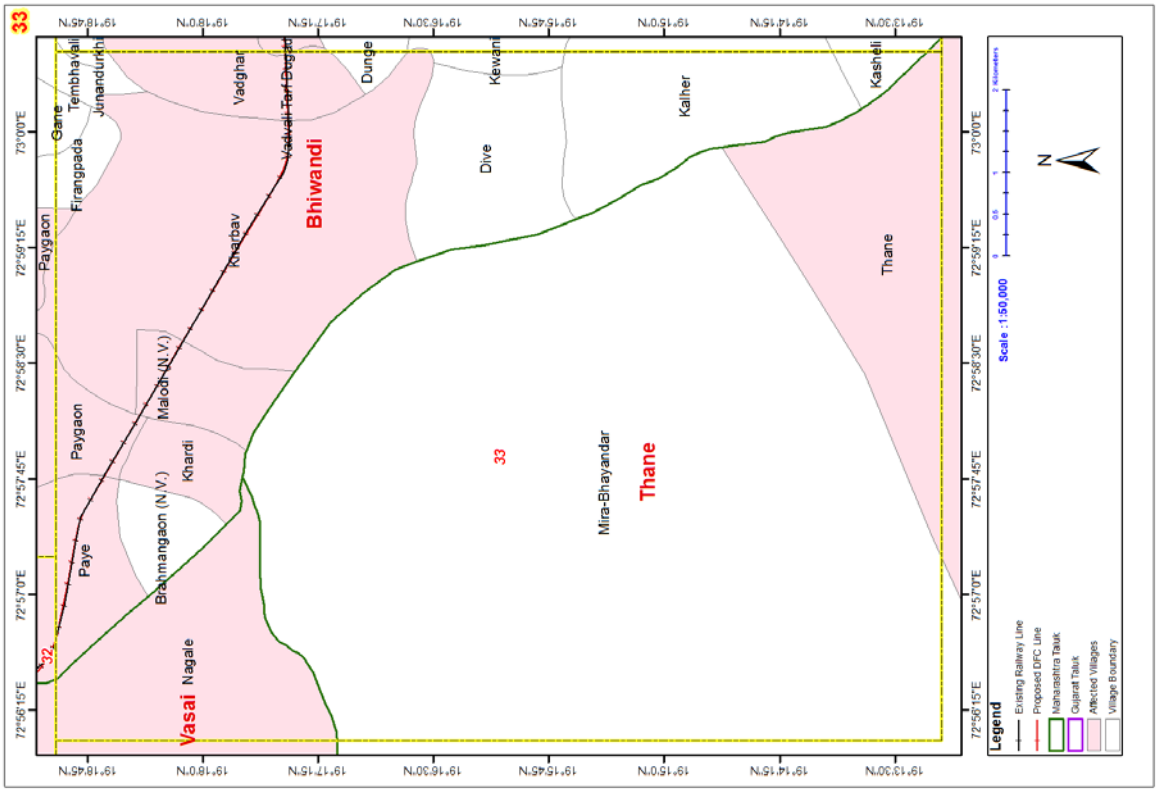

Thane
Panvel
Nagzari
Karavale Bk.
Ghot
Koyana Velhe
Turbhe
Taloje Majkur
Pisarve
Dhansar
Rohinjan
Taloje Panchnad
Navi Mumbai (Panvel, Raigarh)
Valap
Pale Bk.
Nevali
Bid
Owe
Kharghar
Adivali
Navi Mumbai
Scale :1:50,000
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary

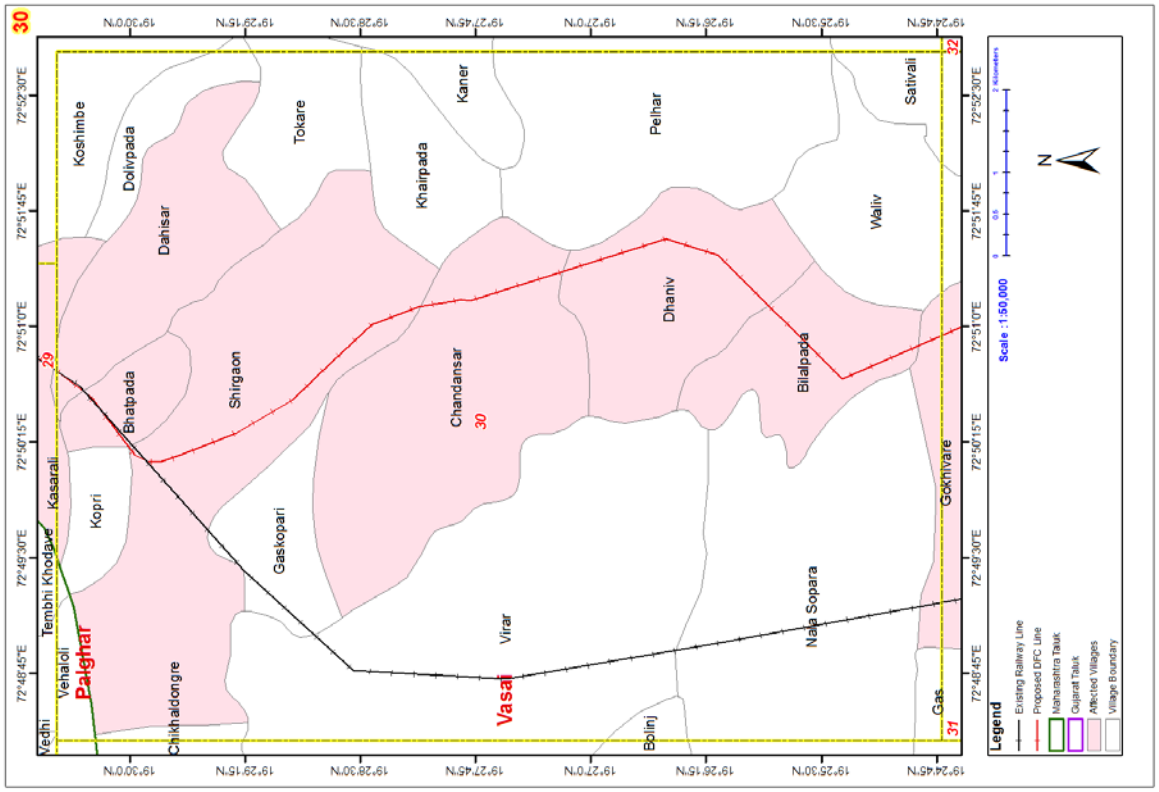

Panvel
Chinchavali Tarf Waje
Umroli
Waje
Sangatoli
Wangani Tarf Waje
Loniwadi
Wardoli
Borle
Bhingar
Bhingarwadi
Poyanje
Khanavale
Vakadi
Nere
Ambivali
Pali Kh
Belavali
Sangade
Shedung
Vihighar
Moho
Chikhale
Bherle
Ajivali
Ariwali
Ashte
Kasal Khand
Bhatan
Kevale
Koproli
Bonshet
Chipale
Shivkar
Kon
Somtane
Danivali
Navi Mumbai (Panvel, Raigarh)
Harigram
Akurli
Devad
Vichumbe
Usarli Kh
Kolkhe
Derawali
Giravale
Palaspe
Shirdhon
Nevali
Adai
Shilottar Raichur
Palidevad
Panvel
Kalundre
Karanjade
Nandgaon
Kudave
Vadavali
Turmale
Chirvat
Sangurli
Scale :1:50,000
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary

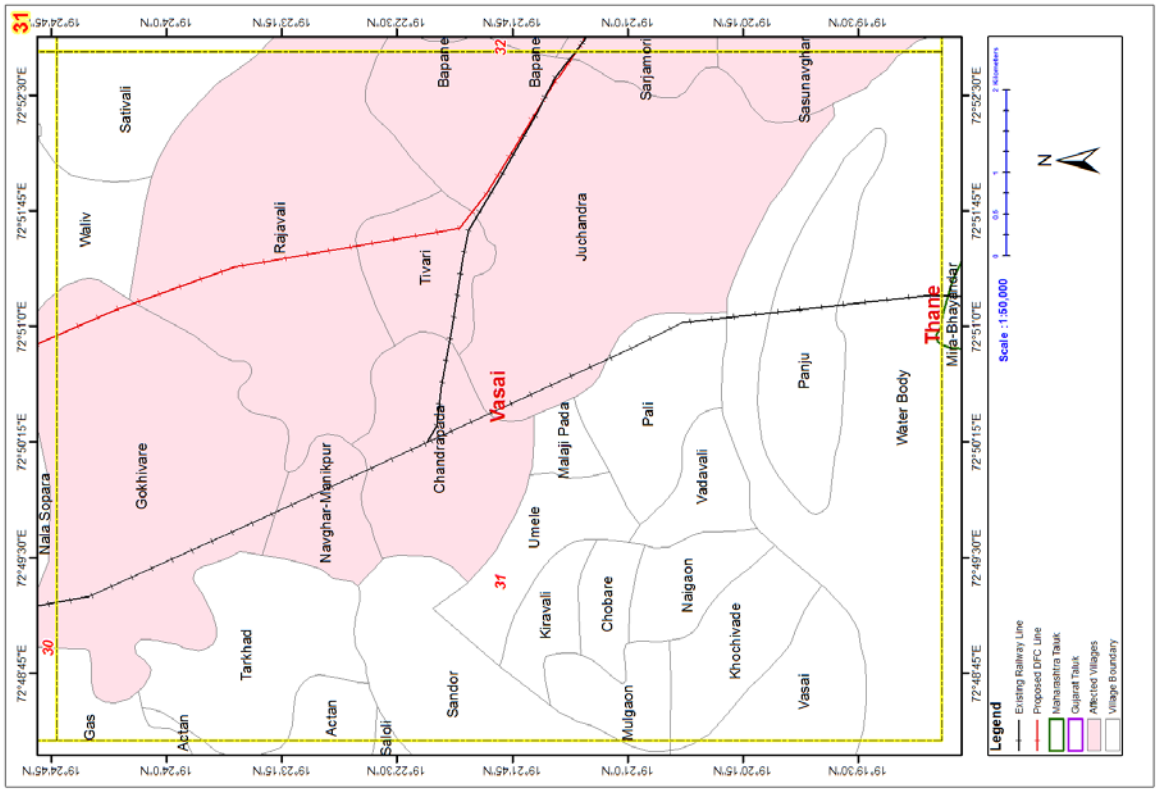

34
Bhiwandi
Kalyan
Thane
Shelar
Khoni
Katai
Dahyale
Kambe
Karivali
Junandurkhi
Vadghar
Vadvali Tarf Dugad
Kalwar
Dunge
Kharbav
Dive
Kewani
Rahanal
Kailasnagar (N.V.)
Val
Purne
Kopar
Kalher
Ovali
Pimpalner
Pimpalas
Pimpalghar
Ranjnoli
Gove
Vehele
Dapode
Gundavali
Mankoli
Sarang
Surai
Bharodi
Anjur
Kasheli
Dive Anjur
Alimghar
Tembhavali
Kalyan-Dombivali
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

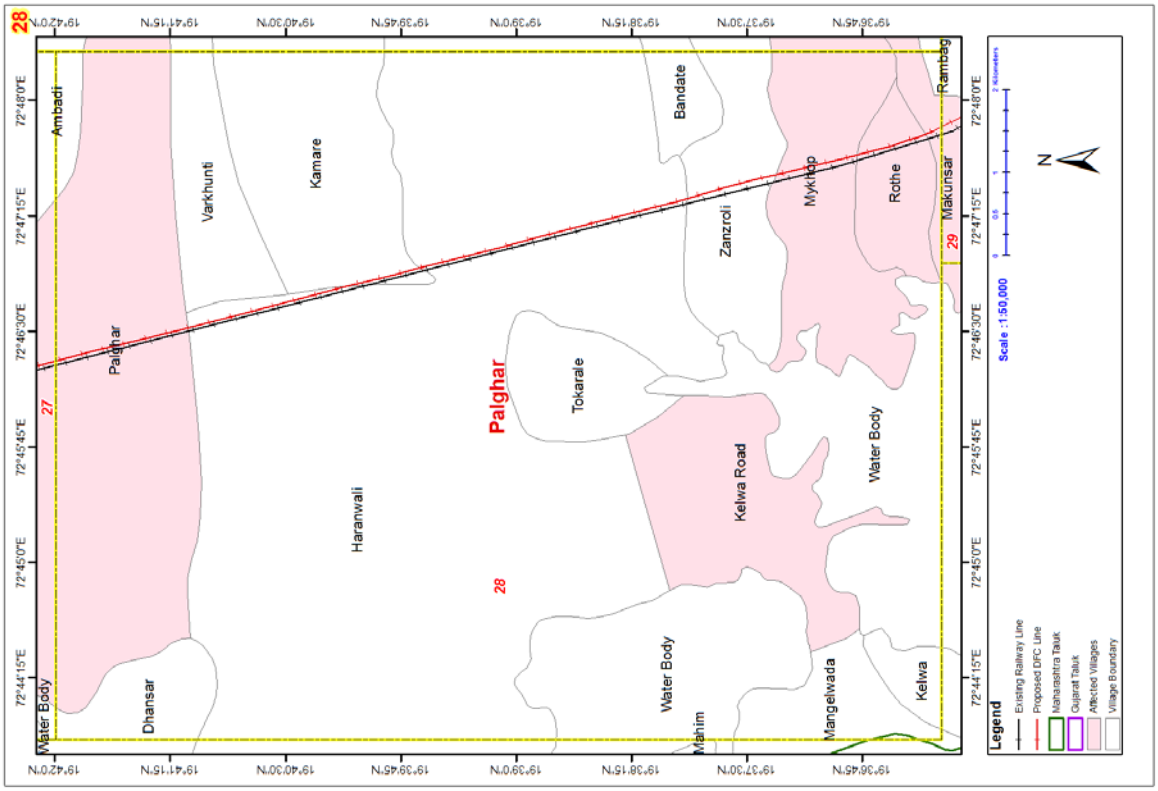

35
Bhiwandi
Kalyan
Thane
Surai
Bharodi
Anjur
Alimghar
Dive Anjur
Kalyan-Dombivali
Ulhasnagar
Antarli
Shirdhon
Vadavali Kh.
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

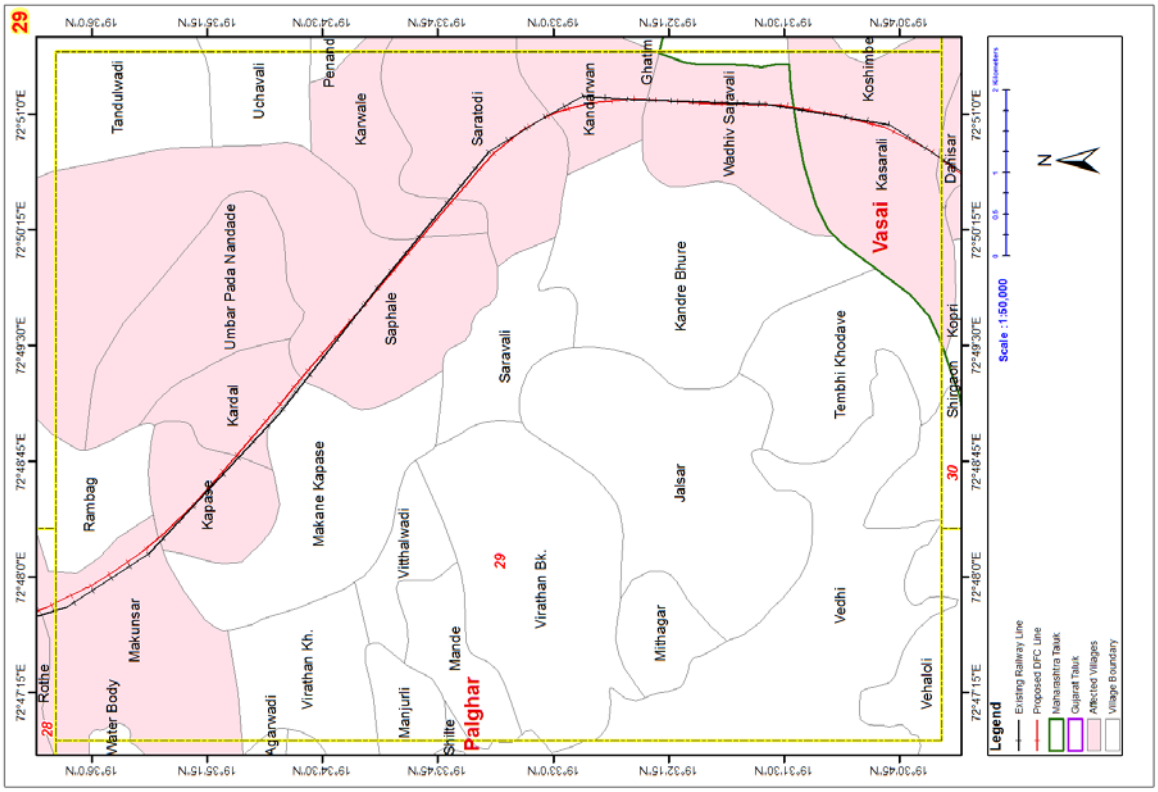

32
Tilher
Kuhe
Kaman
Paye
Bhiwandi
Poman
Nagale
Shilottar
Vasai
Chinchoti
Deodal
Mori
Sasunavghar
Sativali
Kolhi
Rajavali
Juchandra
Bapane
Sarjamori
Water Body
30
31
32
33
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

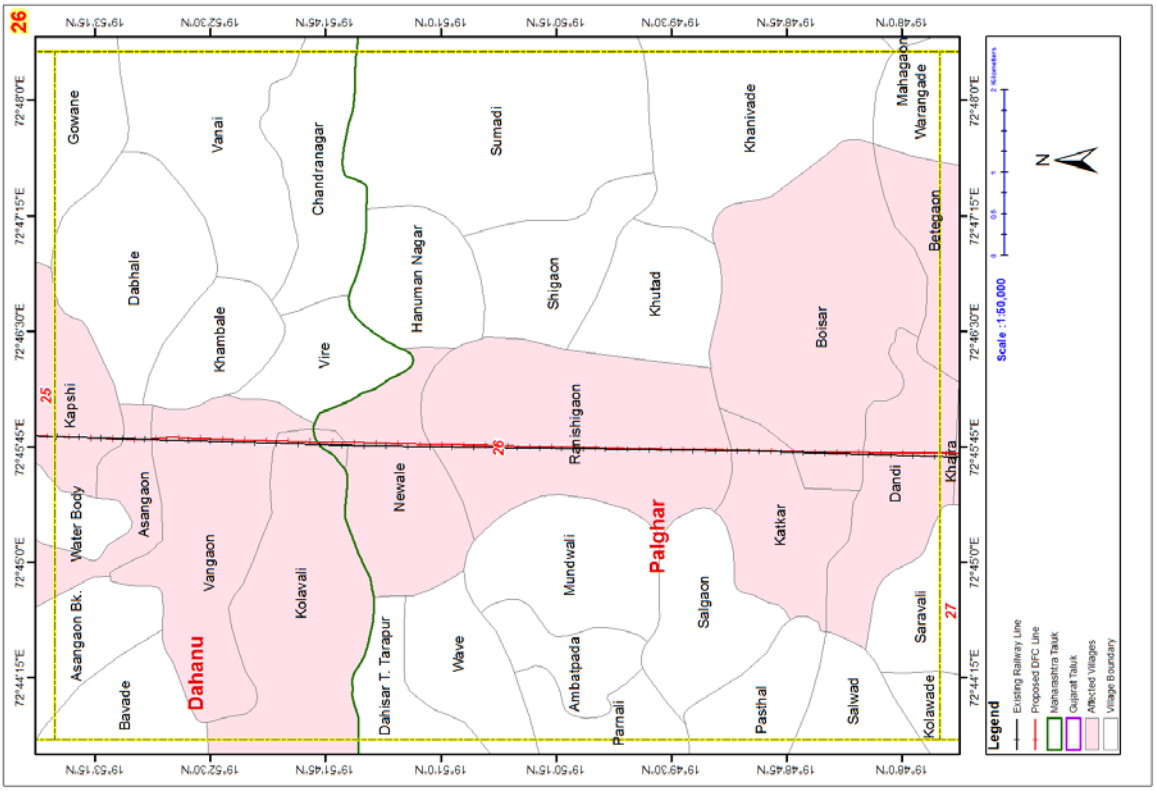

33
Gane
Tembhavali
Junandurkhi
Vadghar
Vadvali Tarf Dugad
Dunge
Kewani
Kalher
Kasheli
Firangpada
Paygaon
Kharbav
Bhiwandi
Dive
Thane
Malodi (N.V.)
Khardi
Brahmangaon (N.V.)
Paye
Nagale
Vasai
Mira-Bhayandar
Thane
32
33
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

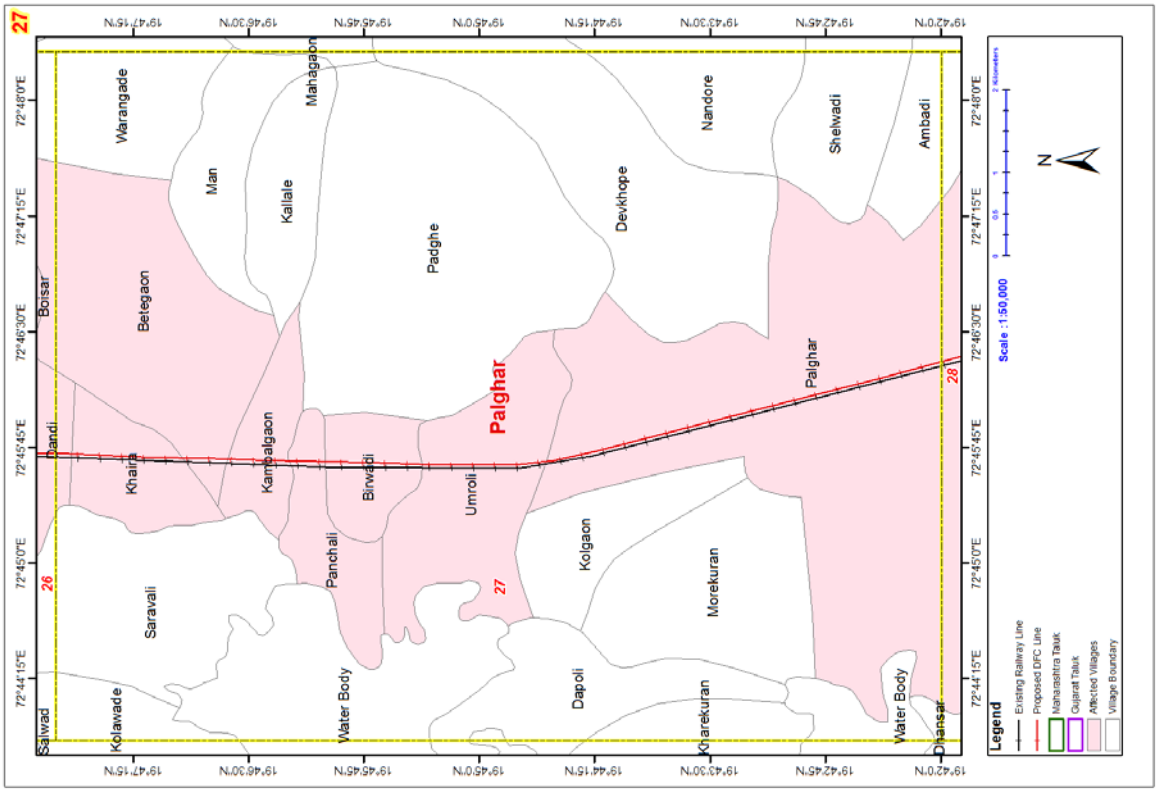

Palghar
Vasai
Koshimbe
Dolivpada
Dahisar
Tokare
Kaner
Khairpada
Pelhar
Sativali
Waliv
Dhaniv
Bilalpada
Chandansar
Shirgaon
Bhatpada
Kasarali
Kopri
Tembhi Khodave
Vehaloli
Medhi
Chikhaldongre
Gaskopari
Virar
Nala Sopara
Gokhivare
Bolinj
Gas
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

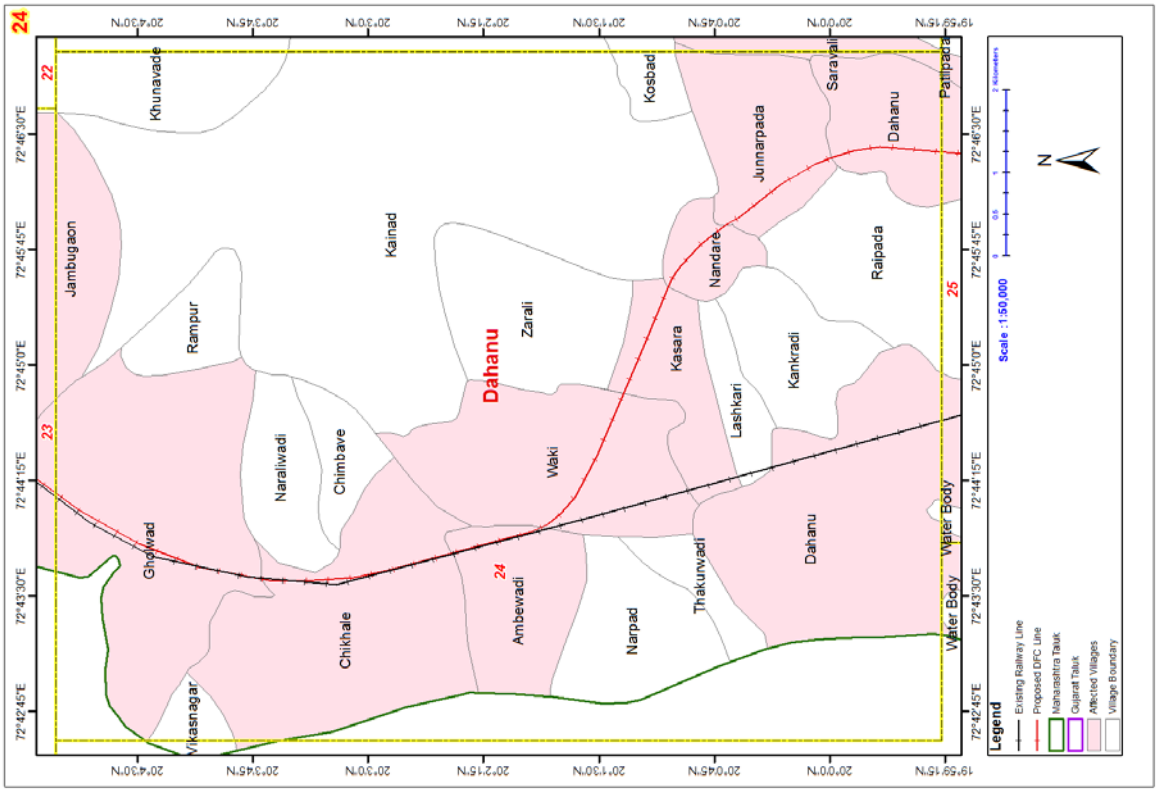

Thane
Vasai
Sativali
Waliv
Rajavali
Tivari
Bapane
Juchandra
Sarjamori
Sasunavghar
Nala Sopara
Gokhivare
Navghar-Manikpur
Chandrapada
Malaji Pada
Umele
Pali
Vadavali
Panju
Water Body
Mira-Bhayandar
Tarkhad
Kiravali
Chobare
Naigaon
Khochivade
Sandor
Mulgaon
Vasai
Actan
Saloli
Gas
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

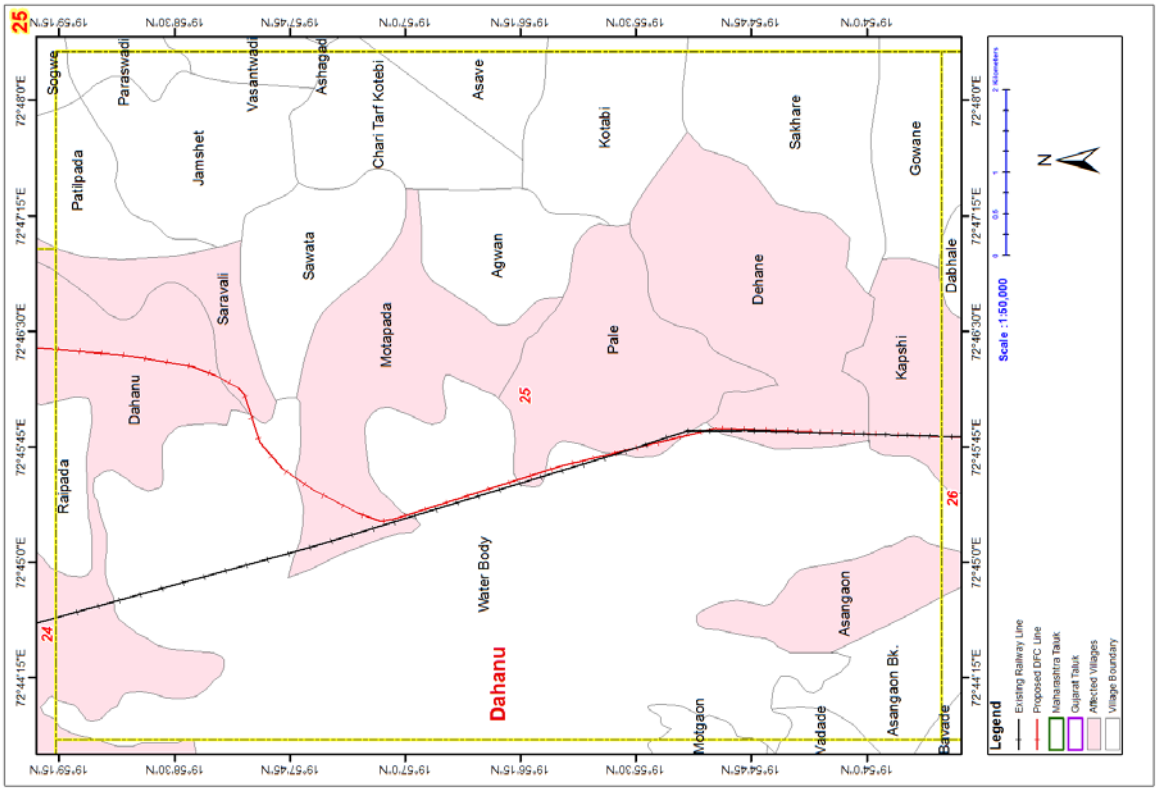

28
Ambadi
Palghar
Varkhunti
Kamare
Bandate
Rambag
Makunsar
Zanzroli
Mykhop
Rothe
Palghar
Tokarale
Haranwali
Kelwa Road
Water Body
Water Body
Dhansar
Mahim
Mangelwada
Kelwa
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

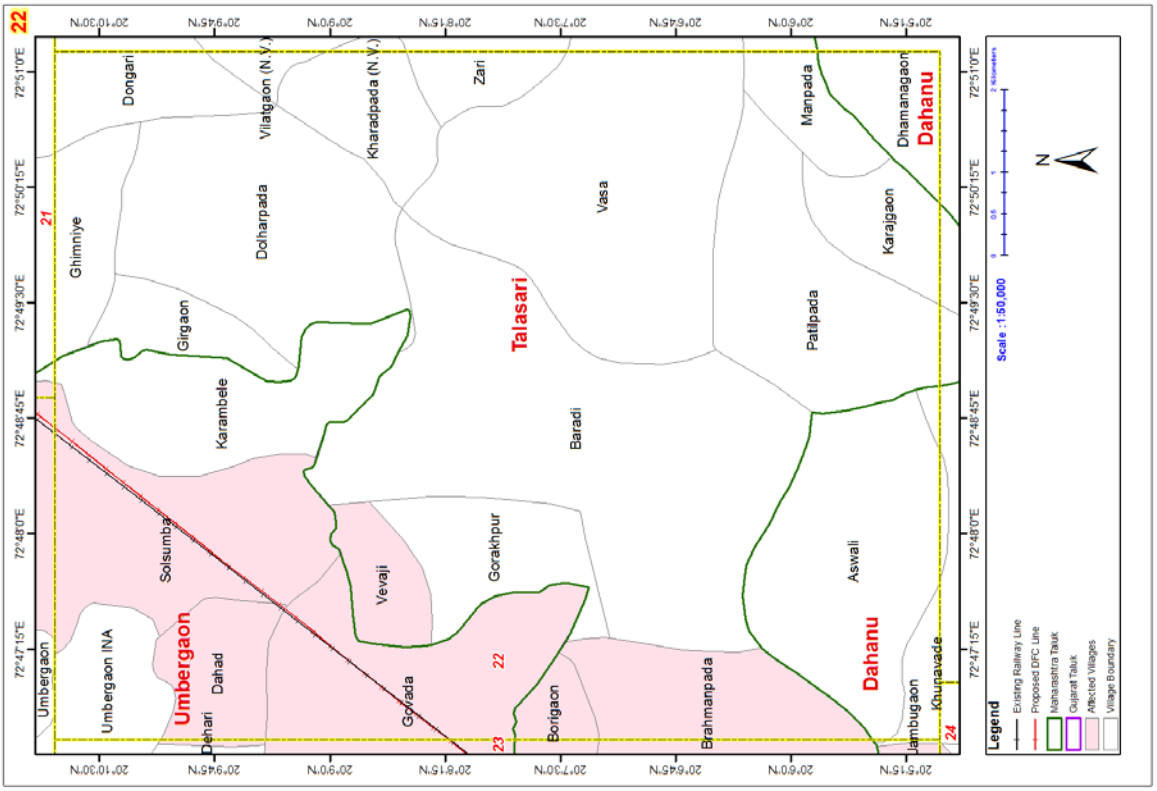

29
Tandulwadi
Uchavali
Penand
Karwale
Saratodi
Kandarwan
Ghatim
Wadhiv Sajavali
Koshimbe
Kasarali
Vasai
Dahisar
Umbar Pada Nandade
Kardal
Saphale
Saravali
Kandre Bhure
Tembhi Khodave
Shirgaon
Kopri
Rambag
Kapase
Makane Kapase
Vitthalvadi
Jalsar
Rothe
Makunsar
Water Body
Agarwadi
Virathan Kh.
Manjurli
Mande
Palghar
Virathan Bk.
Mithagar
Vedhi
Vehaloli
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

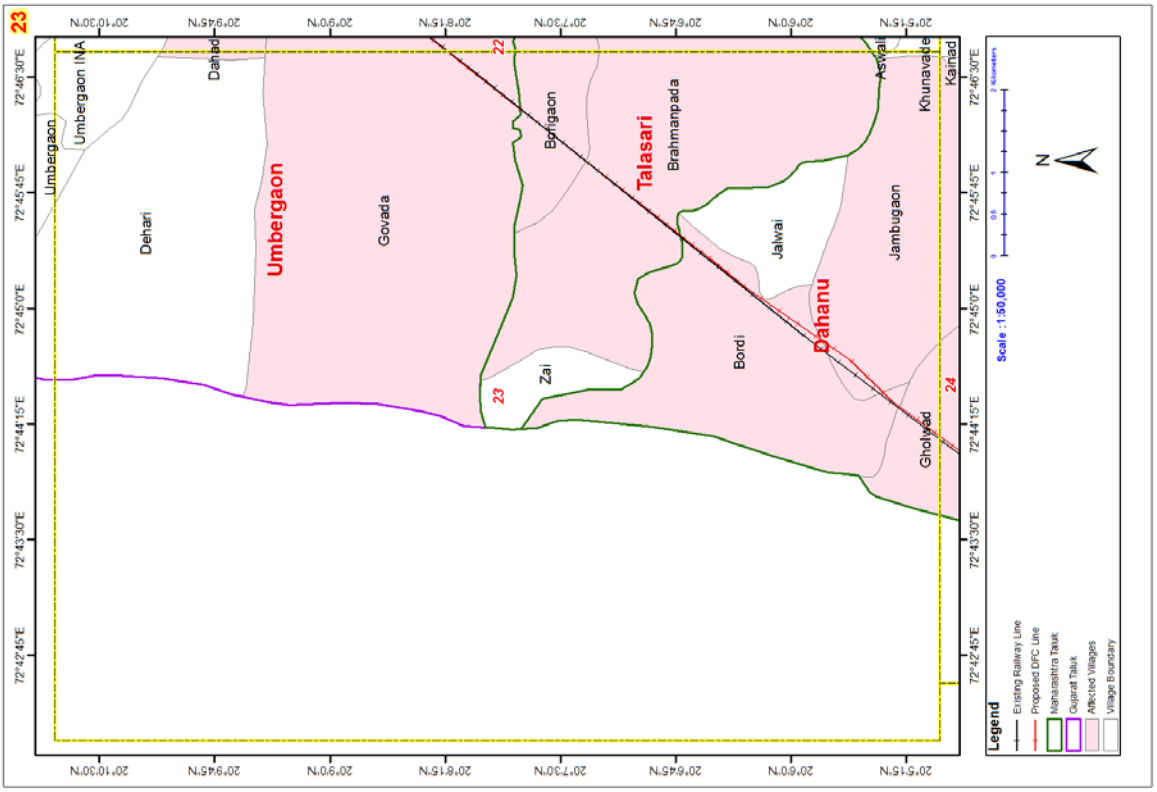

26
Gowane
Vanai
Chandranagar
Sumadi
Khanivade
Mahagaon
Warangade
Dabhale
Khambale
Vire
Hanuman Nagar
Shigaon
Khutad
Boisar
Betegaon
Kapshi
25
26
Ranishigaon
Water Body
Asangaon
Vangaon
Kolavali
Newale
Mundwali
Palghar
Katkar
Dandi
Khaira
Asangaon Bk.
Dahanu
Dahisar T. Tarapur
Wave
Ambatpada
Salgaon
Saravali
27
Bavade
Ramali
Pasthal
Salwad
Kolawade
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

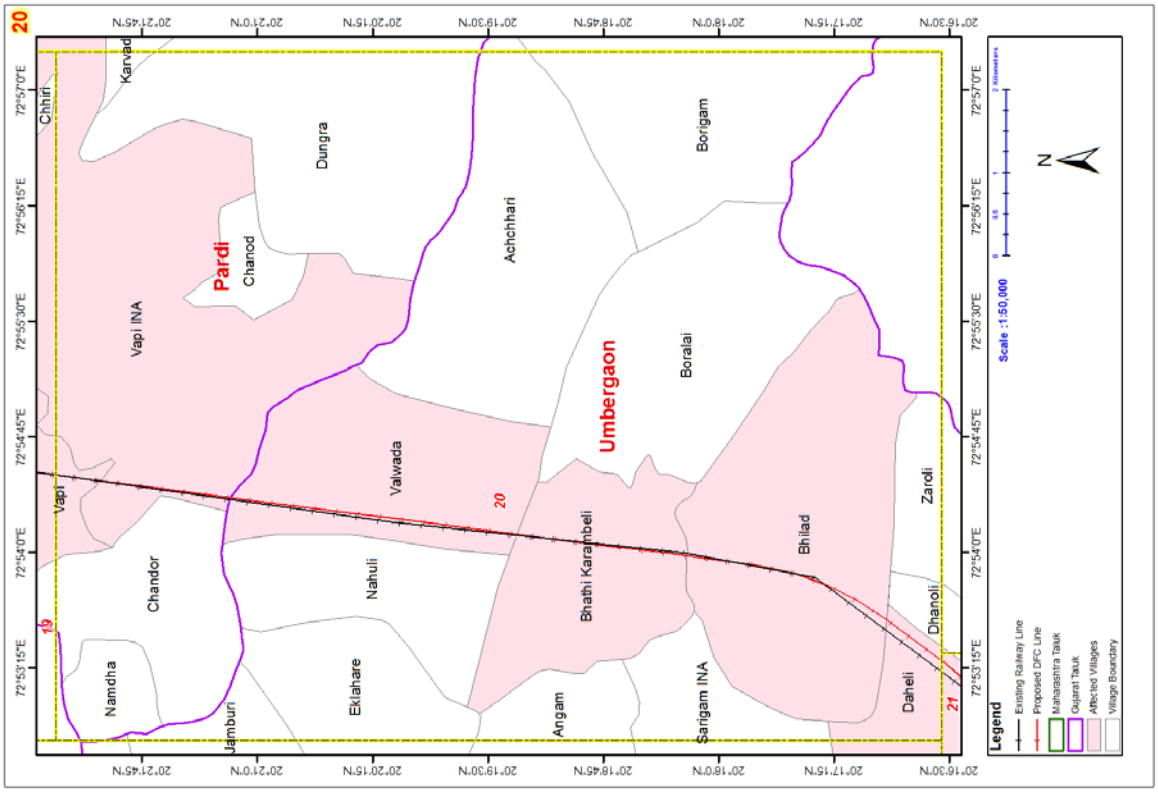

27
Warangade
Mahagaon
Man
Kallale
Padghe
Devkhope
Nandore
Shelwadi
Ambadi
Boisar
Betegaon
Palghar
Dandi
Khaira
Kamalgaon
Birwadi
Umroli
Palghar
28
26
Saravali
Panchali
27
Kolgaon
Morekuran
Salwad
Kolawade
Water Body
Dapoli
Kharekuran
Water Body
Dhansar
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

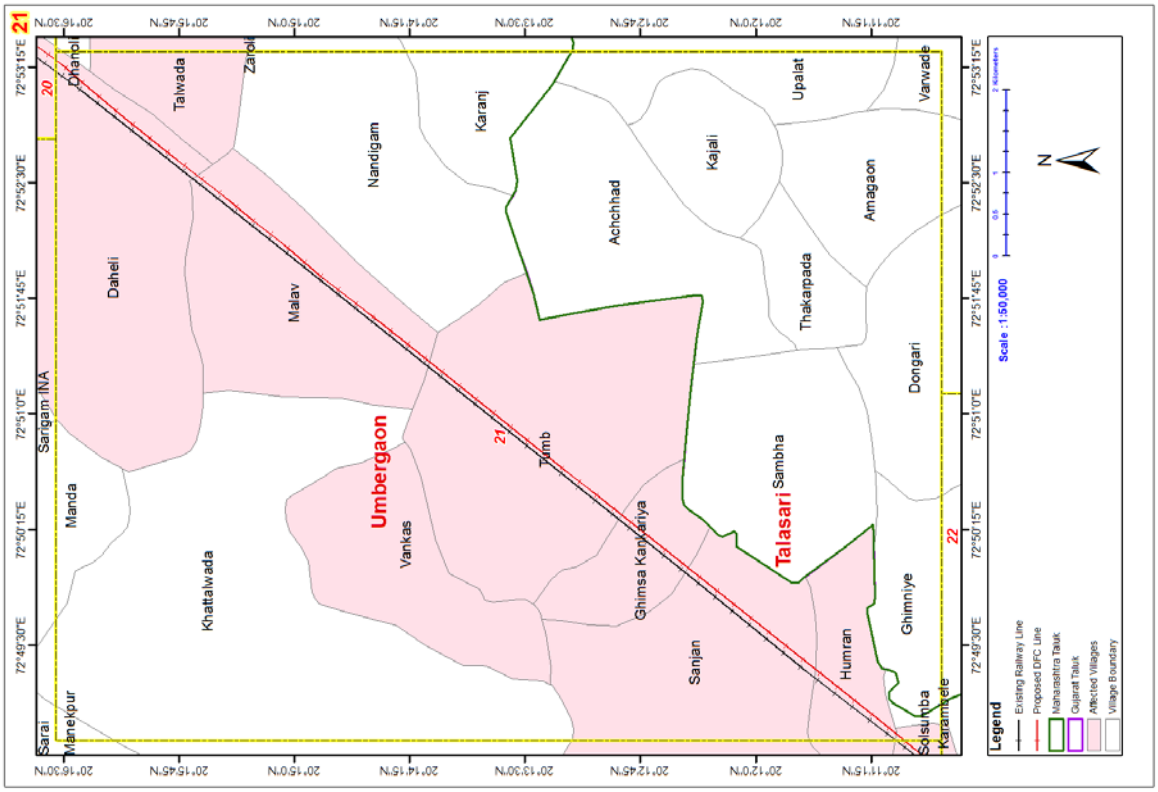

24
22
23
25
Khunavade
Kosbad
Saravali
Patilpada
Dahanu
Junnarpada
Jambugaon
Kainad
Nandare
Raipada
Rampur
Zarali
Kasara
Kankradi
Lashkari
Naraliwadi
Chimbave
Waki
Ghotwad
Ambewadi
Thakurwadi
Chikhale
Narpad
Vikasnagar
Water Body
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

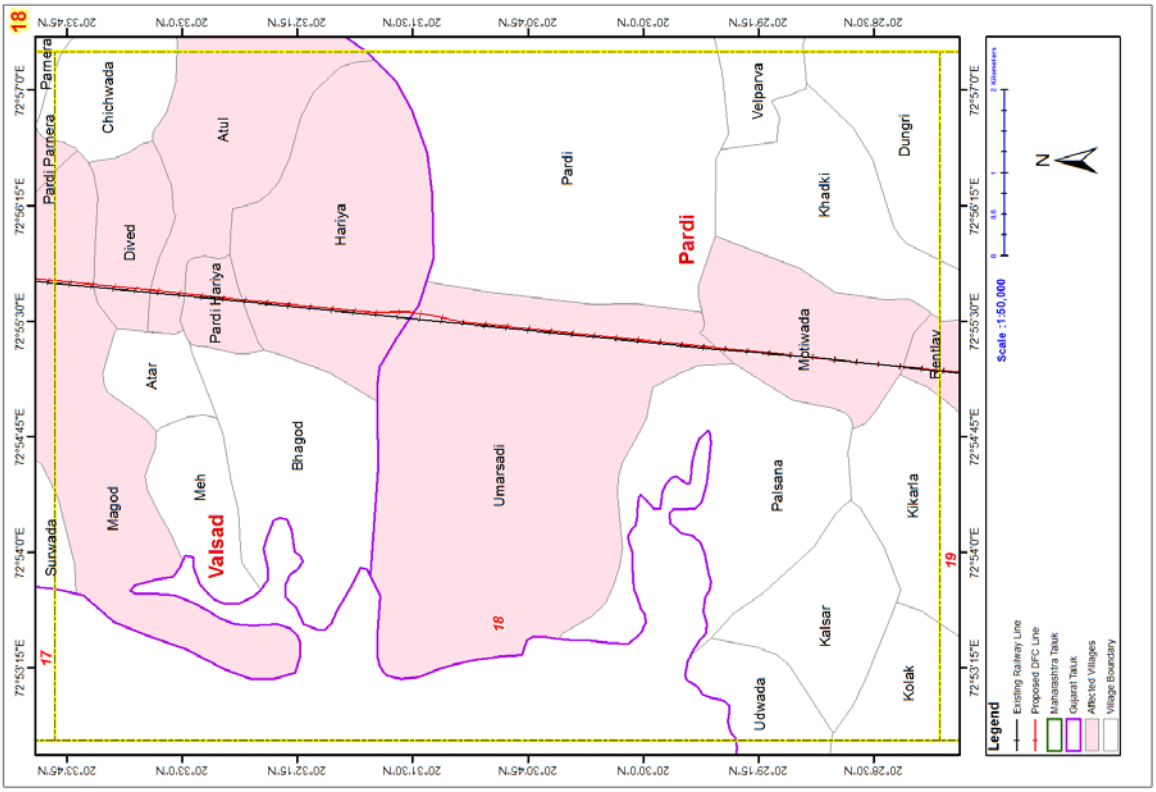

25
24
26
Sogwe
Paraswadi
Vasantwadi
Ashagad
Chari Tarf Kotebi
Asave
Kotabi
Sakhare
Gowane
Patilpada
Jamshet
Sawata
Agwan
Dehane
Dabhale
Saravali
Motapada
Pale
Kapshi
Dahanu
Raipada
Water Body
Asangaon
Asangaon Bk.
Motgaon
Vadade
Bavade
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

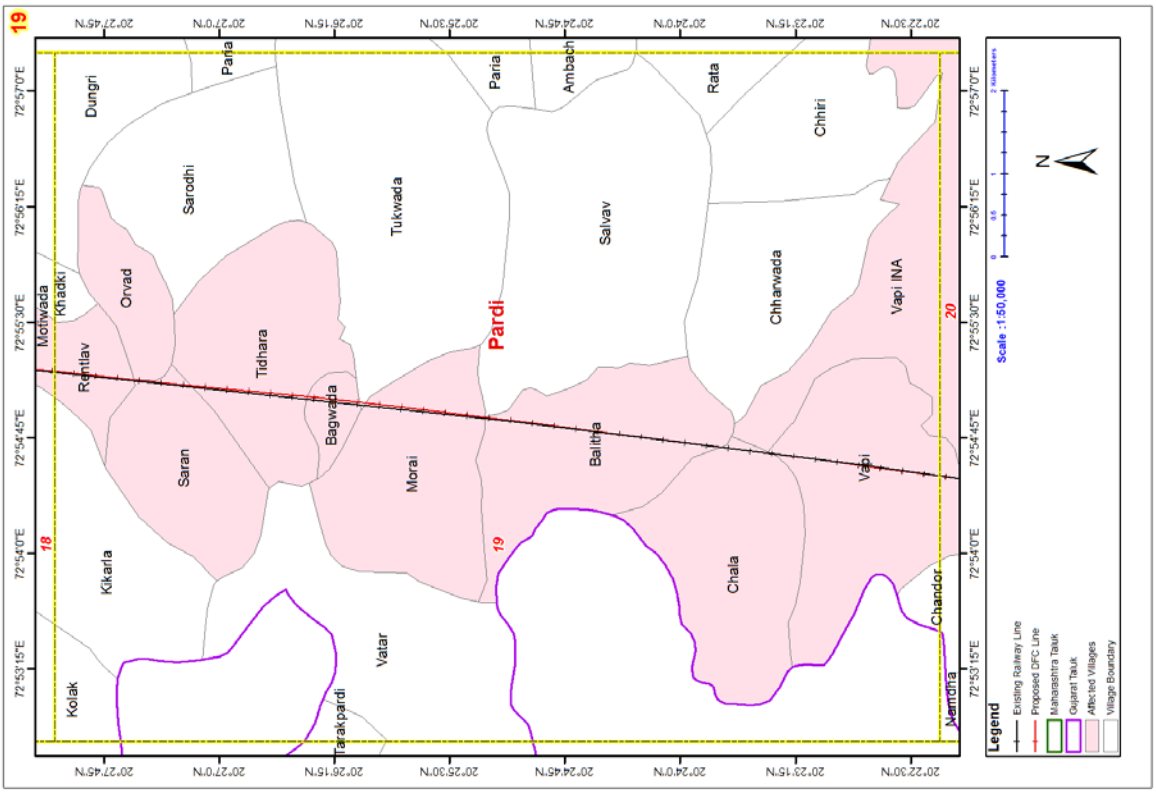

22
21
23
24
Umbergaon
Umbergaon INA
Dehari
Dahad
Solsumba
Ghimniye
Girgaon
Karambele
Dongari
Doharpada
Vilatgaon (N.V.)
Kharadpada (N.V.)
Zari
Vevaji
Govada
Gorakhpur
Borigaon
Baradi
Vasa
Talasari
Brahmanpada
Manpada
Patilpada
Karajgaon
Dhamanagaon
Aswali
Dahanu
Jambugaon
Khunavade
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

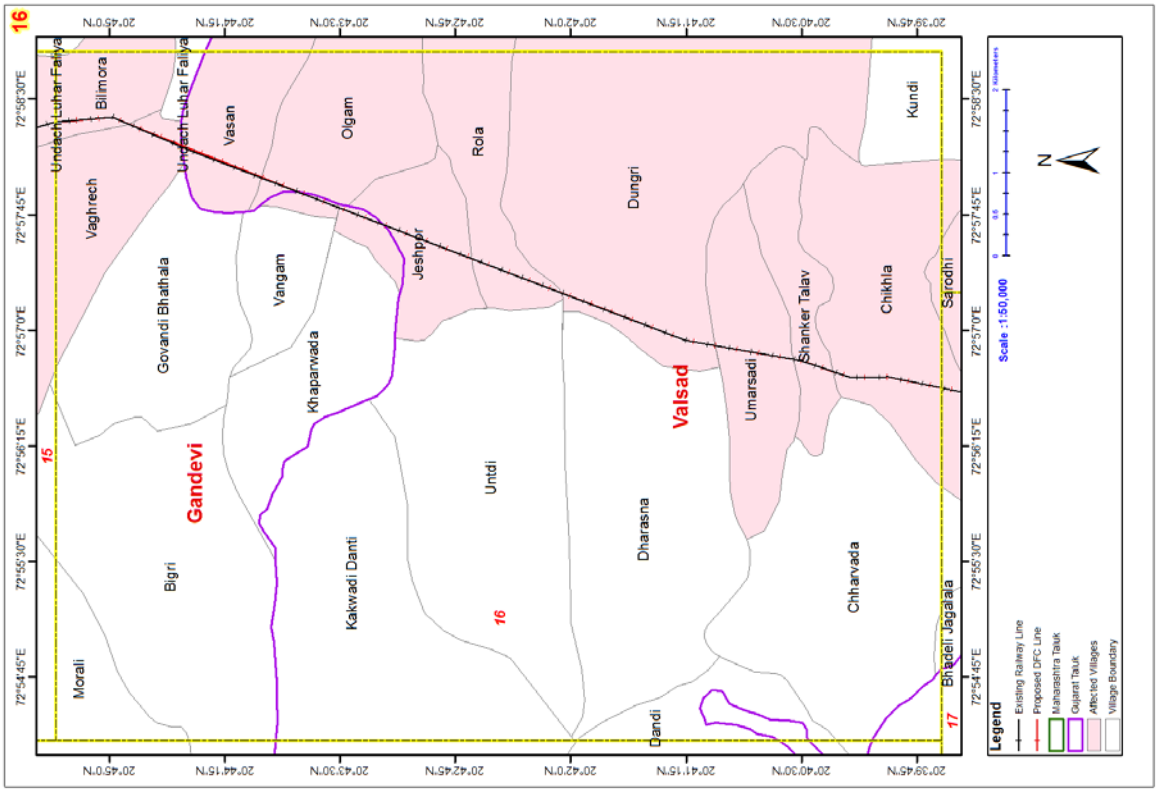

23
22
24
Umbergaon
Umbergaon INA
Dahad
Dehari
Govada
Borigaon
Zai
Talasari
Brahmanpada
Jalwai
Bordi
Dahanu
Aswali
Khunavade
Kainad
Jambugaon
Gholvad
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

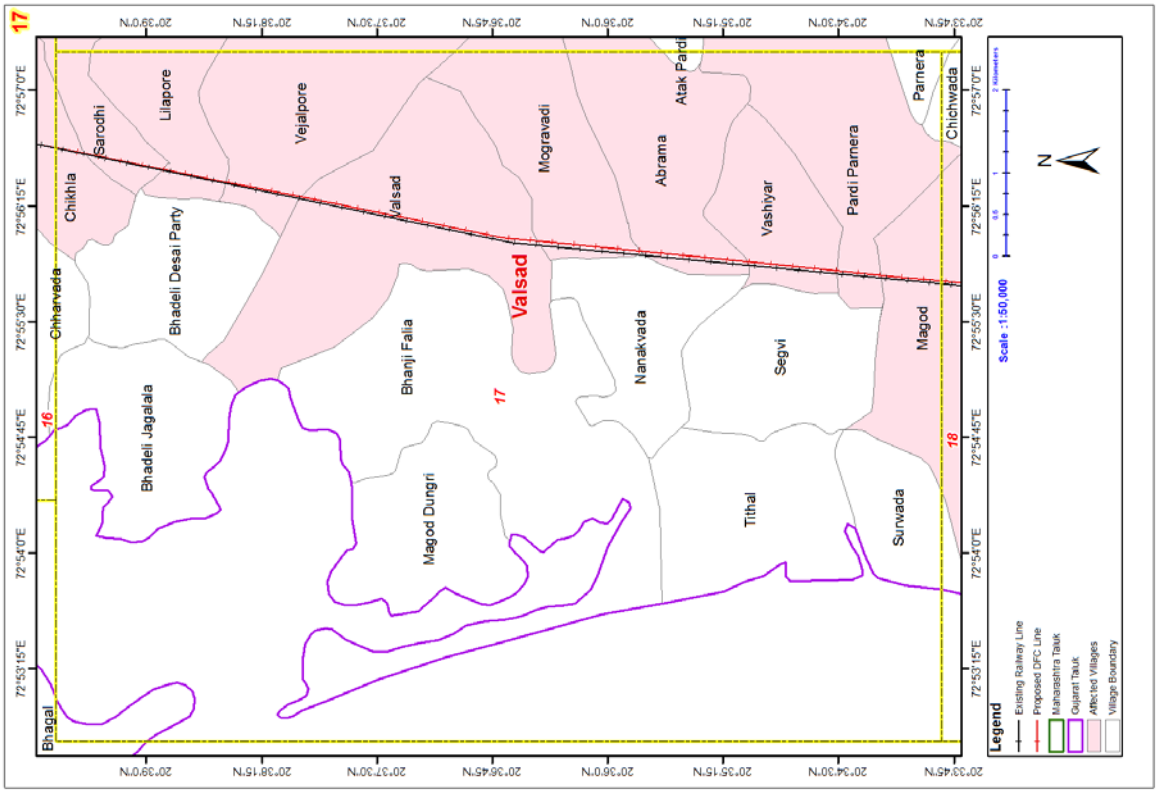

20
Pardi
Umbergaon
Chhiri
Karvad
Dungra
Chanod
Vapi INA
Achchhari
Borigam
Boralai
Valwada
Vapi
Chandor
Nahuli
Bhathi Karambeli
Bhilad
Zaroli
Dhanoli
Namdha
Jamburi
Eklahare
Angam
Sarigam INA
Daheli
19
20
21
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000
N

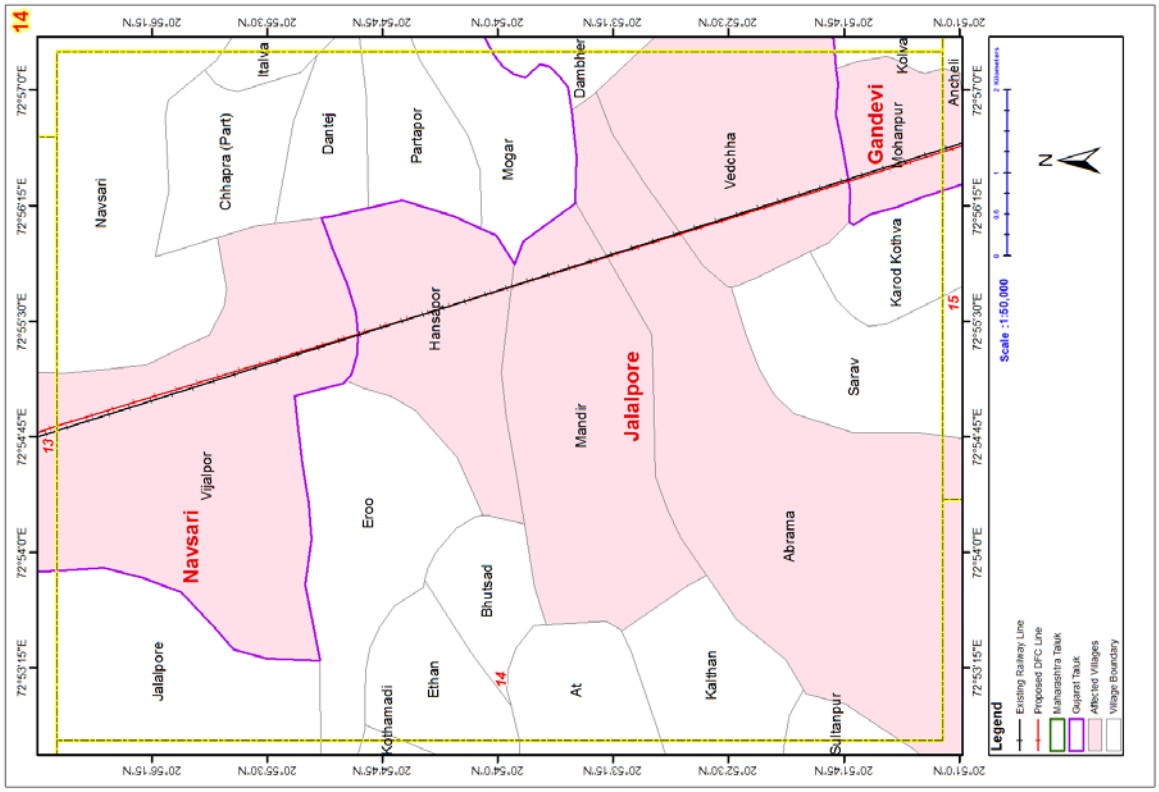

21
Umbergaon
Talasari
Dhanoli
Talwada
Zaroli
Nandigam
Karanj
Upalat
Varwade
Kajali
Achchhad
Amagaon
Daheli
Malav
Thakarpada
Dongari
Sarigam INA
Manda
Khattalwada
Vankas
Tumb
Sambha
Ghimsa Kankariya
Sanjan
Humran
Ghimniye
Sarai
Manekpur
Solsumba
Karambele
20
21
22
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000
N

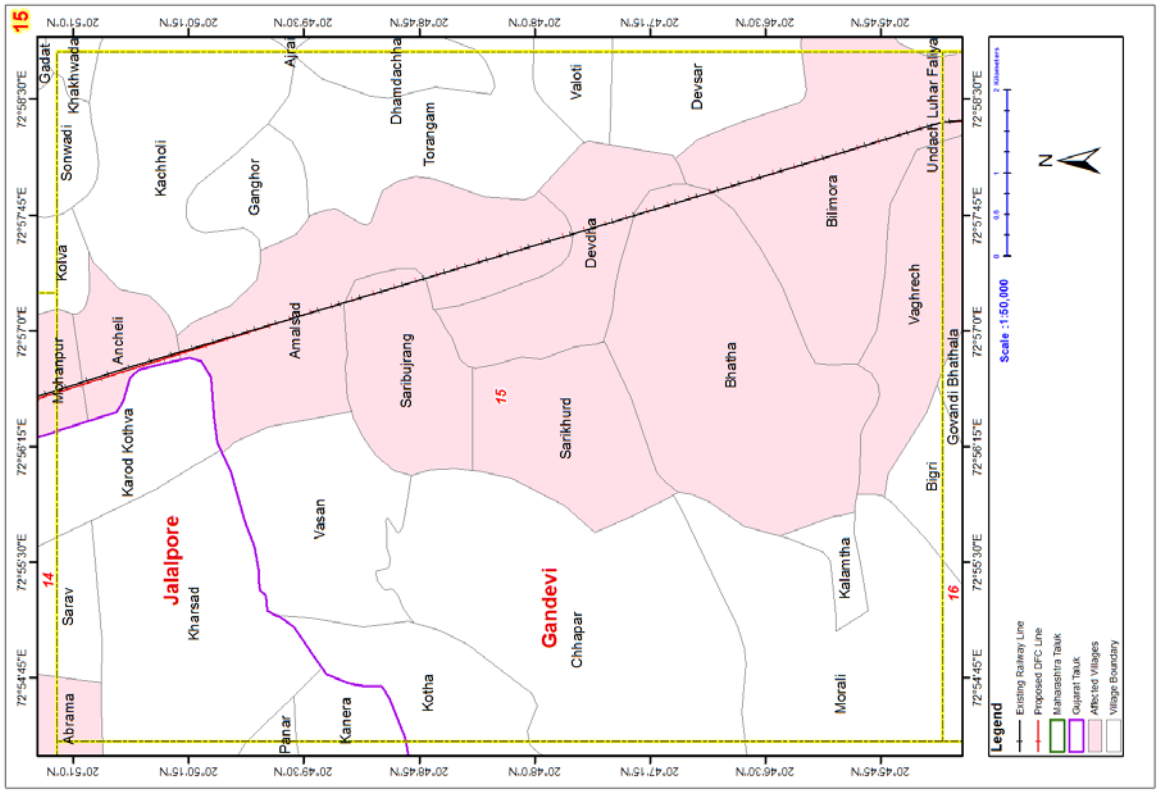

18
17
19
Pamera
Pardi Pamera
Chichwada
Atul
Dived
Pardi Hariya
Hariya
Pardi
Velparva
Khadki
Dungri
Atar
Bhagod
Umarsadi
Motiwada
Rentlav
Magod
Meh
Valsad
Surwada
Palsana
Kikarla
Kalsar
Udwada
Kolak
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

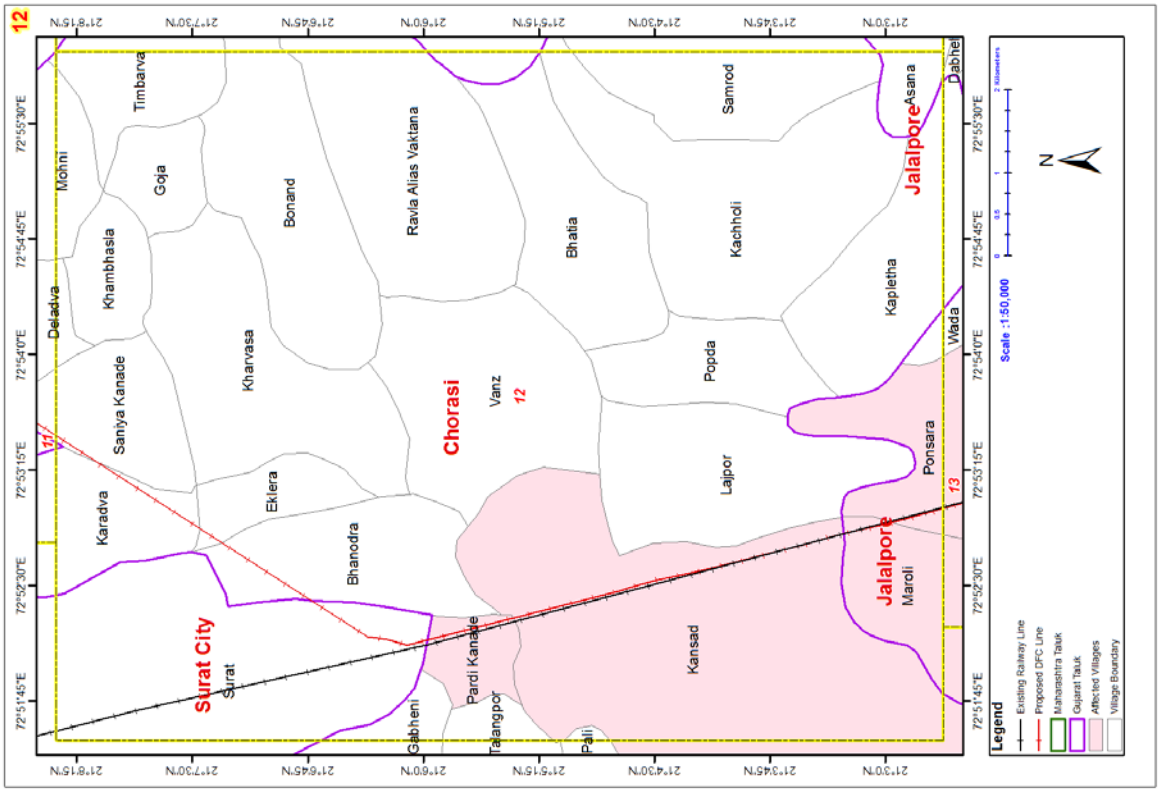

19
18
20
Dungri
Paria
Sarodhi
Tukwada
Ambach
Rata
Chhiri
Motwada
Khadki
Onvad
Rentlav
Tidhara
Pardi
Salvav
Chharwada
Vapi INA
Saran
Bagwada
Morai
Balitha
Vapi
Kikarla
Chala
Kolak
Vatar
Tarakpardi
Chandor
Nemdha
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

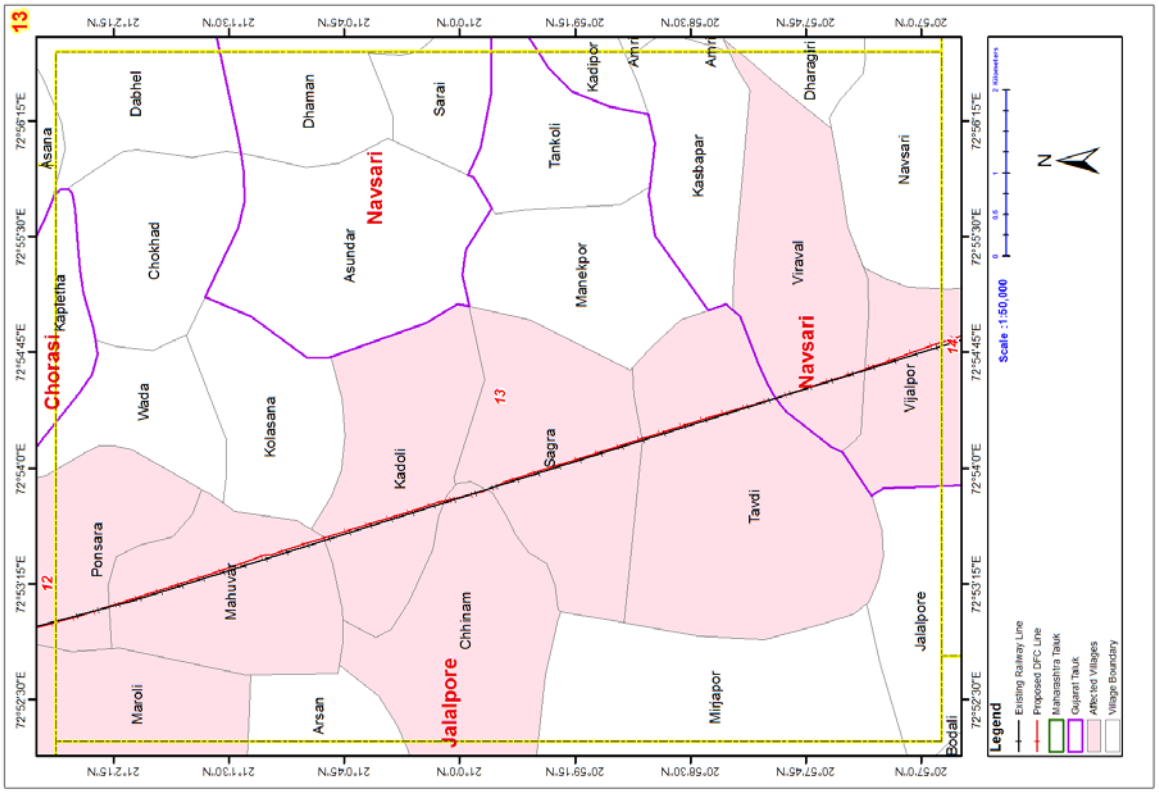

16
15
Gandevi
Valsad
Undach Luhar Faliya
Bilimora
Vaghrech
Govandi Bhathala
Bigri
Morali
Vasan
Vangam
Khaparwada
Kakwadi Danti
Olgam
Jeshpor
Untdi
Rola
Dungri
Dharasna
Dandi
Umarsadi
Shanker Talav
Chharvada
Chikhla
Kundi
Sarodhi
Bhadeli Jagalala
17
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

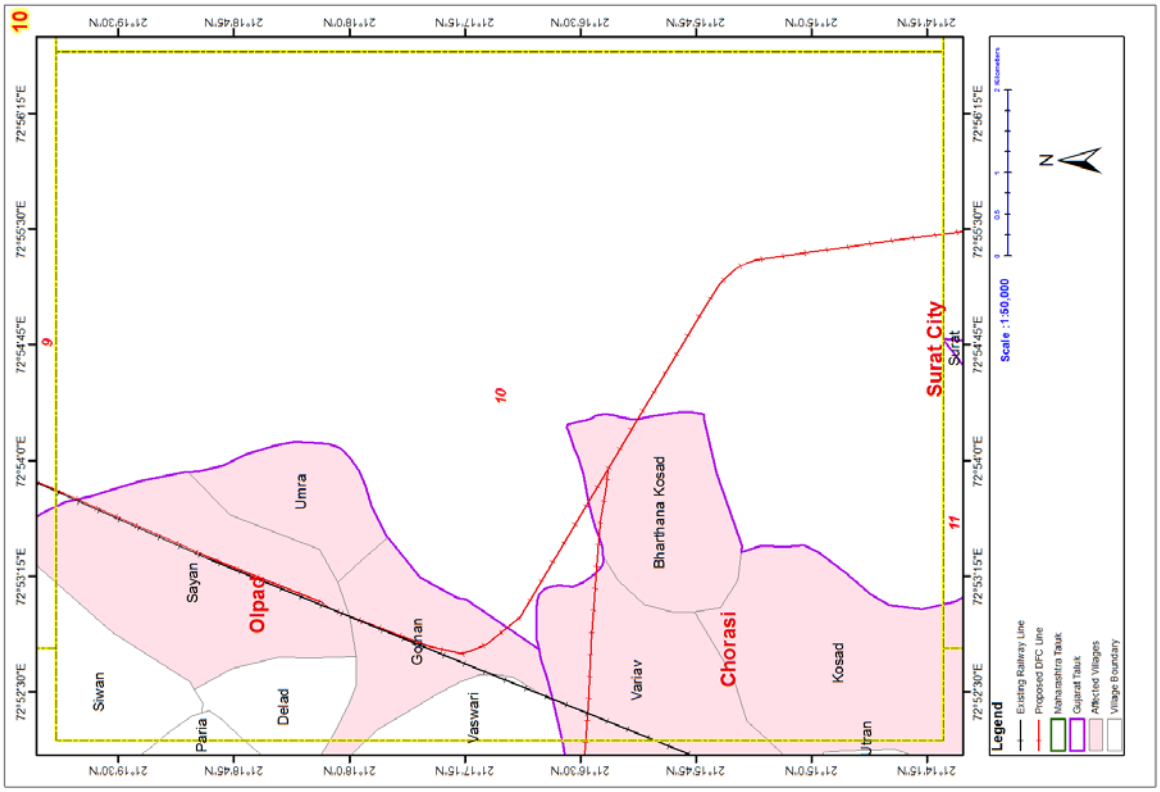

17
16
18
Valsad
Bhagal
Chikhla
Sarodhi
Chharvada
Lilapore
Bhadeli Desai Party
Bhadeli Jagalala
Vejalpore
Valsad
Bhanji Falia
Magod Dungri
Mogravadi
Nanakvada
Abrama
Atak Pardi
Tithal
Vashiyar
Segvi
Pardi Parnera
Parnera
Chichwada
Magod
Surwada
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

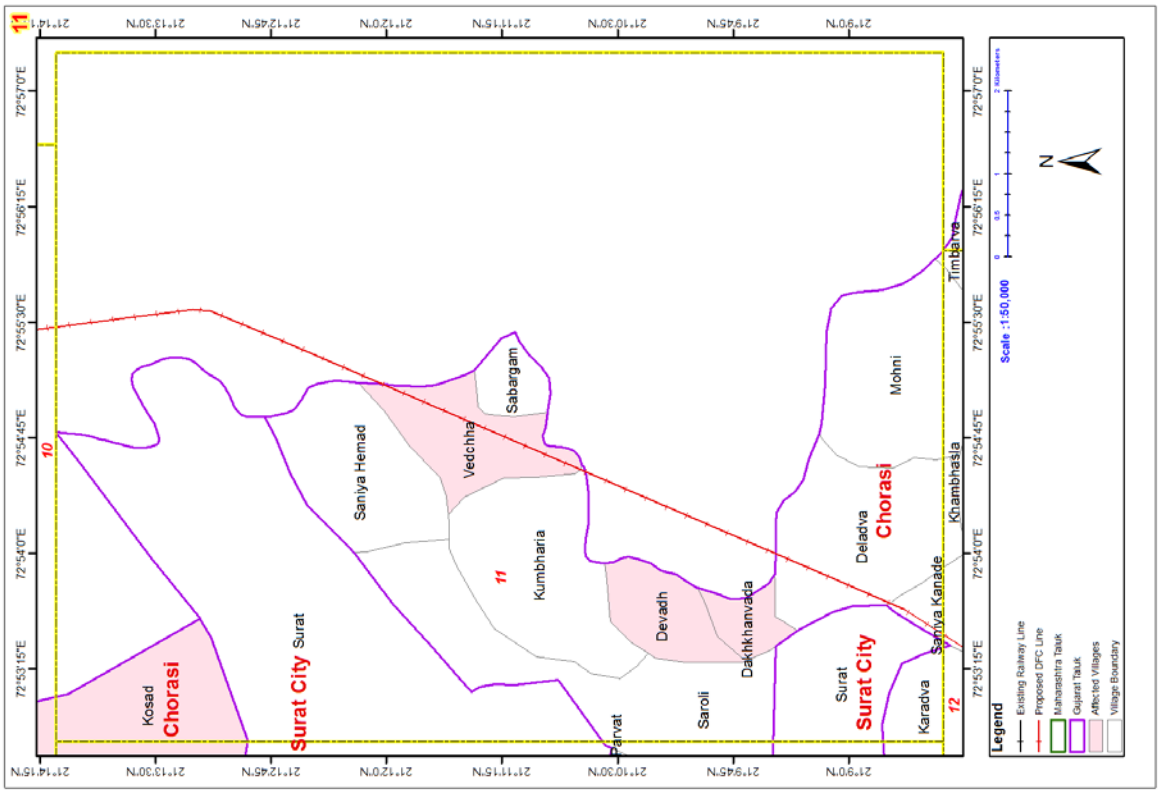

14
Navsari
Chhapra (Part)
Italva
Dantej
Partapor
Mogar
Dambher
Vedchha
Gandevi
Mohanpur
Kolva
Ancheli
Karod Kothva
Sarav
Jalalpore
Mandir
Hansapor
Vijalpor
Navsari
Eroo
Bhutsad
Abrama
Kothamadi
Ethan
At
Kalthan
Sultanpur
13
14
15
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

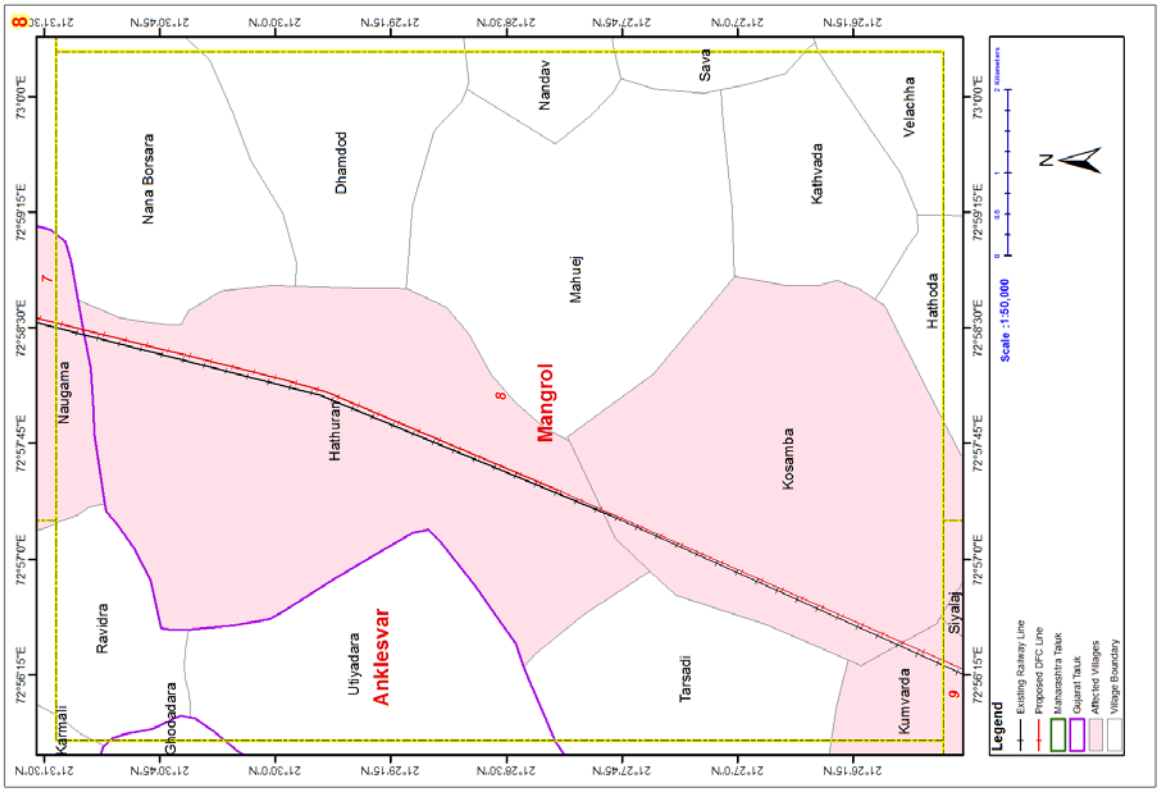

15
Gadat
Khakhwada
Sonwadi
Kachholi
Ganghor
Ajra
Dhamdachha
Torangam
Valoti
Devsar
Undach
Luhar Faliya
Kolva
Mohanpur
Ancheli
Amalsad
Saribujrang
Devdka
Bilmora
Vaghrech
Govandi
Bhathala
Karod Kothva
Jalalpore
Kharsad
Vasan
Sarikhurd
Bhatha
Bigri
Sarav
Gandevi
Chhapar
Kalamtha
Abrama
Panar
Kanera
Kotha
Morali
14
15
16
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

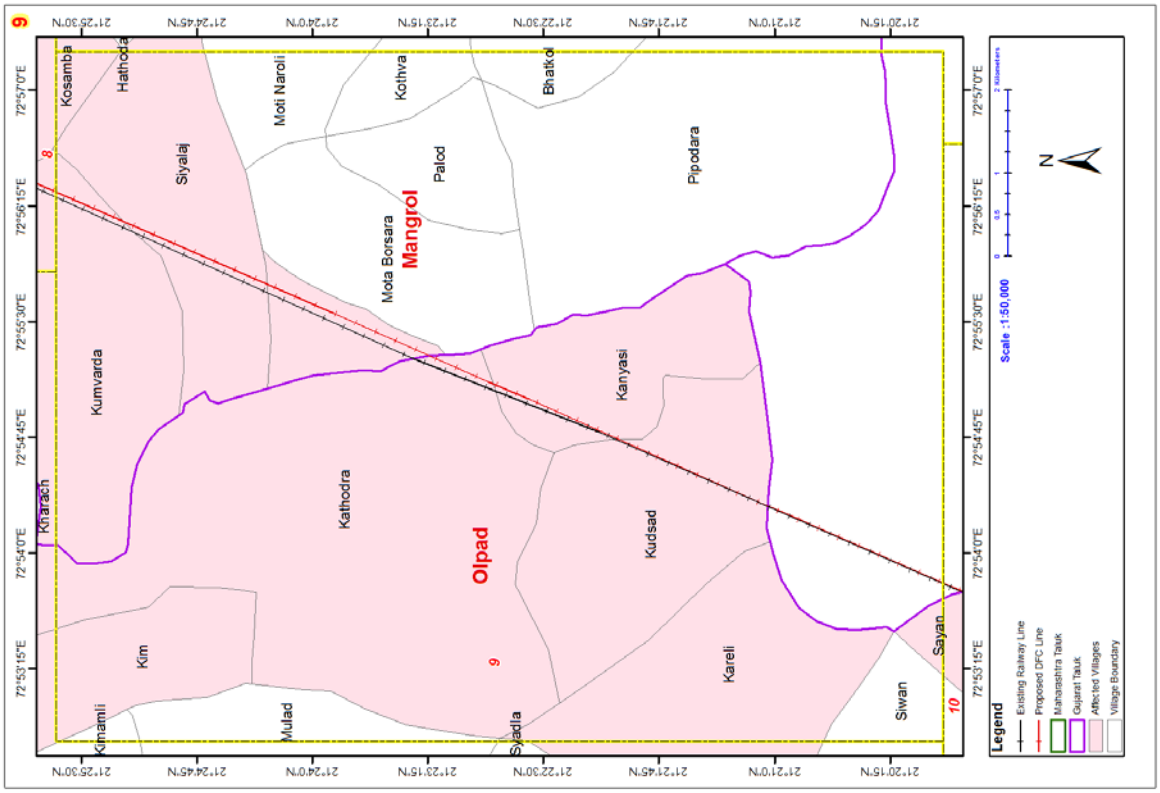

12
Timbarva
Mohni
Goja
Bonand
Ravla Alias Vaktana
Samrod
Asana
Dabhel
Jalalpore
Deladva
Khambhasla
Kharvasa
Bhatia
Kachholi
Kapletha
Saniya Kanade
Chorasi
Vanz
Popda
Wada
Karadva
Eklera
Bhanodra
Lajpor
Ponsara
Surat City
Surat
Pardi Kanade
Kansad
Maroli
Gabheni
Talangpor
Pali
11
13
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

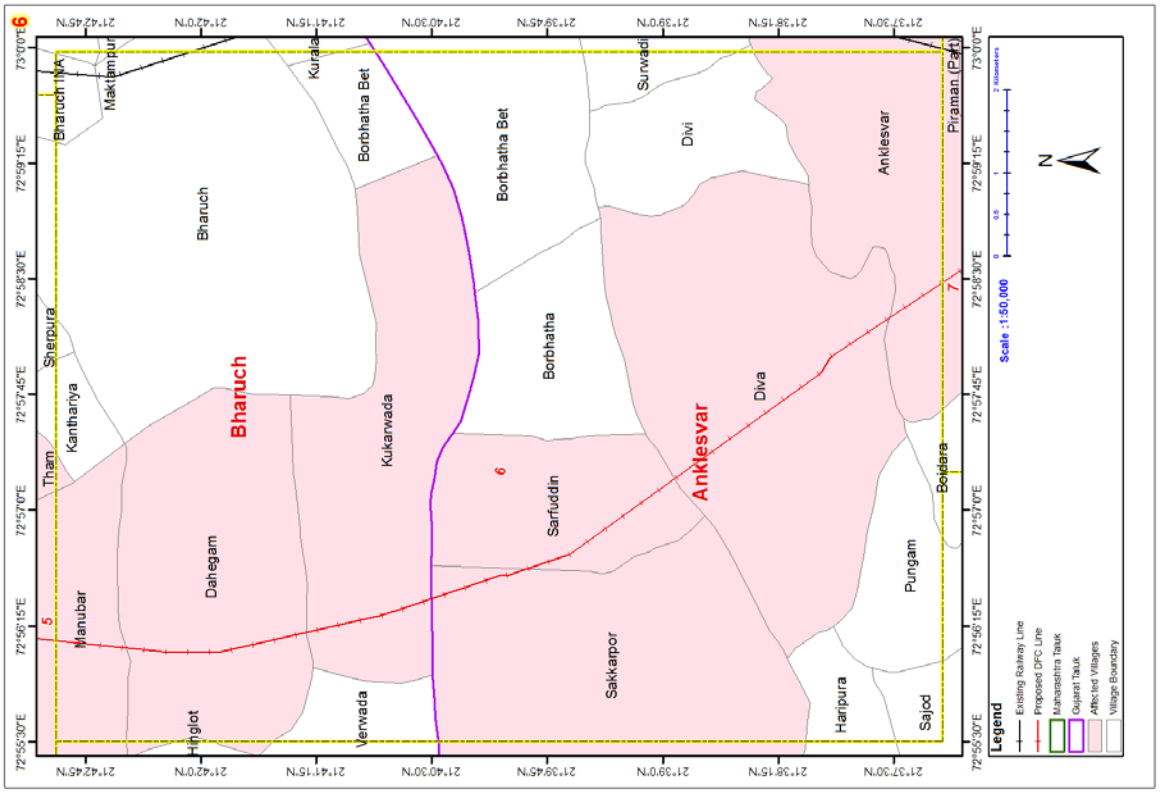

13
Asana
Dabhel
Dhaman
Sarai
Kadipor
Dharagini
Kapletha
Chokhad
Asundar
Navsari
Tankoli
Kasbapar
Navsari
Chorasi
Manekpor
Viraval
Wada
Kolasana
Kadoli
Sagra
Tavdi
Vijalpor
Ponsara
Mahuvad
Chhinam
Jalalpore
Jalalpore
Maroli
Arsan
Mijapor
Bodali
12
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

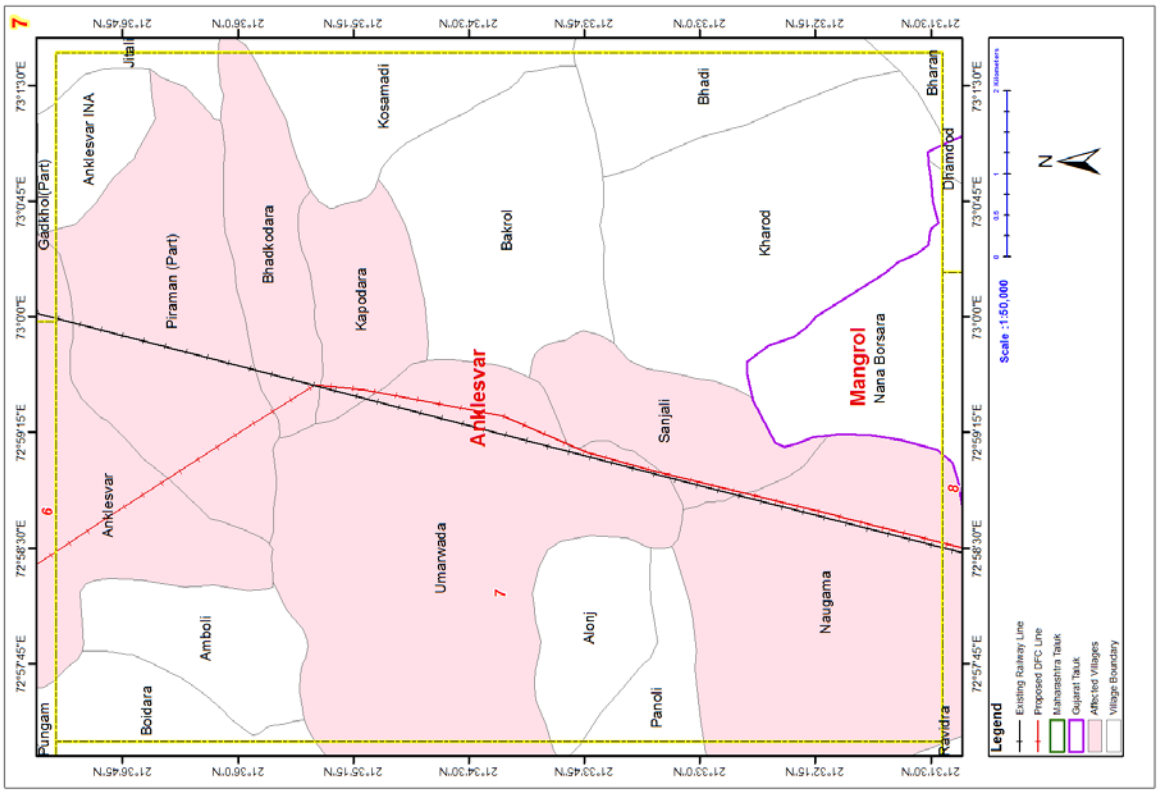

10
9
10
11
Siwan
Paria
Sayan
Olpad
Delad
Umra
Gothan
Vaswari
Variav
Bharthana Kosad
Chorasi
Kosad
Utran
Surat City
Surat
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

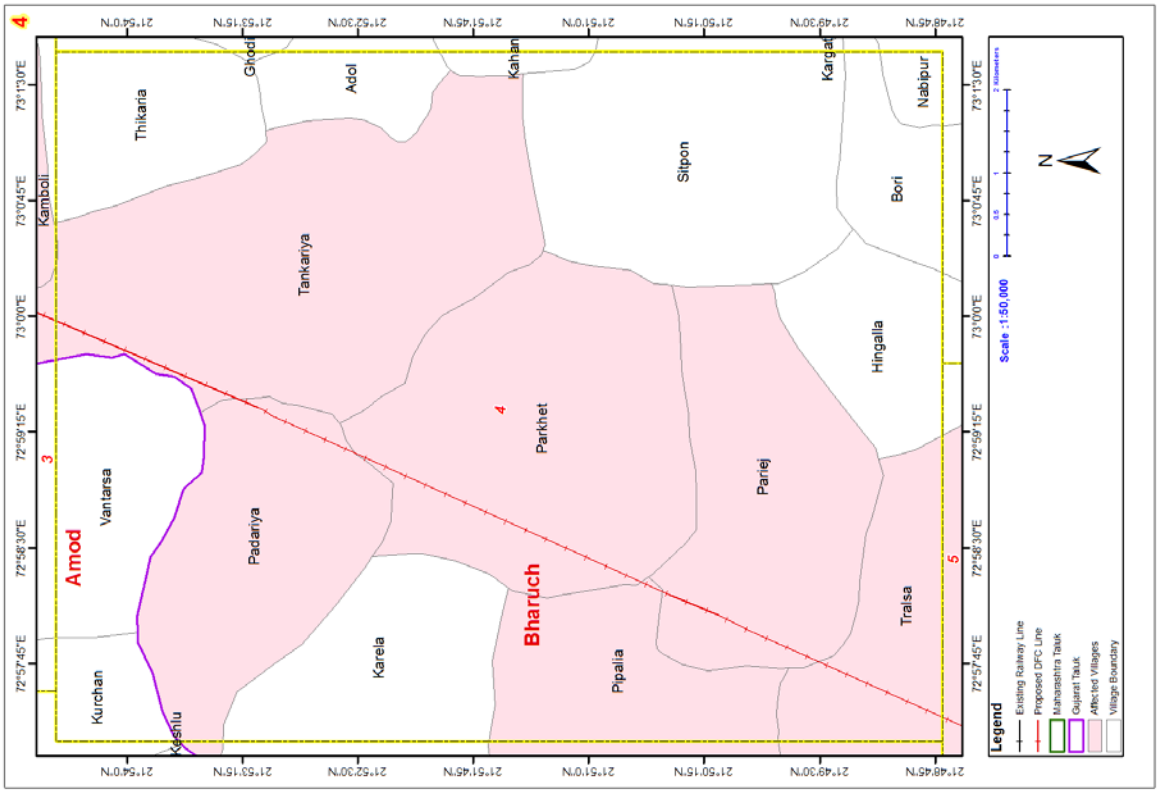

11
10
11
12
Kosad
Chorasi
Surat City
Surat
Saniya Hemad
Vedchha
Sabargam
Kumbharia
Devadh
Dakhkhanvada
Parvat
Saroli
Surat
Surat City
Karadva
Saniya Kanade
Deladva
Chorasi
Khambhasla
Mohni
Timbarva
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale : 1:50,000
N

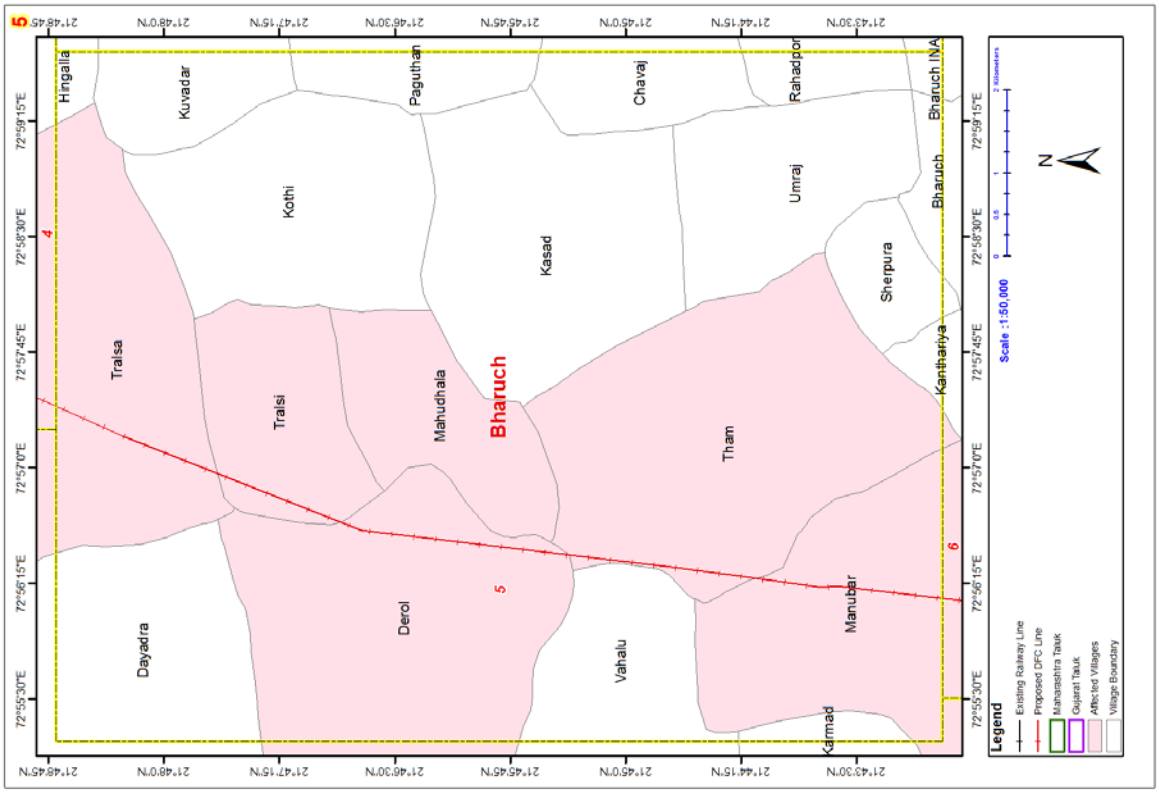

Nana Borsara
Dhamdod
Nandav
Sava
Velachha
Kathvada
Hathoda
Mahuej
Mangrol
Naugama
Hathuran
Kosamba
Ravidra
Utiyadara
Anklesvar
Tarsadi
Kumvarda
Siyalaj
Karmali
Ghodadara
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Tauk
Gujarat Tauk
Affected Villages
Village Boundary
Scale : 1:50,000
N

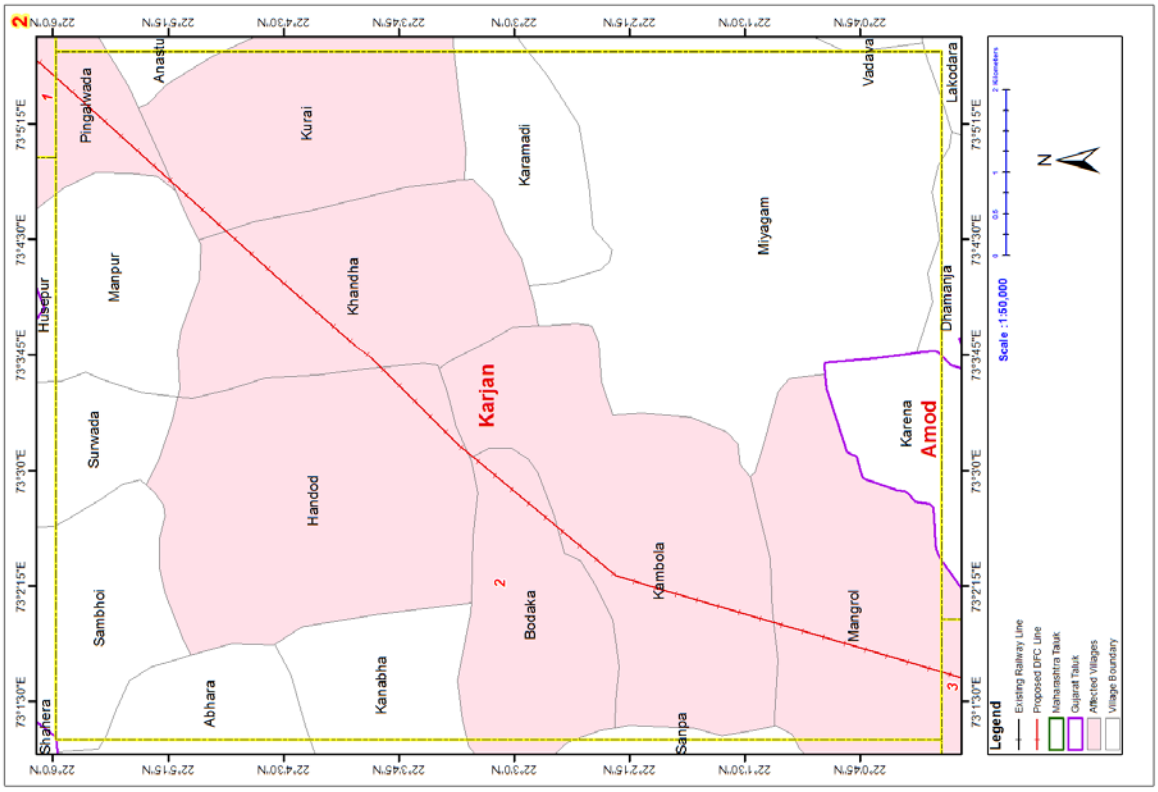

Kosamba
Hathoda
Moti Naroli
Kothva
Bhatkol
Siyalaj
Palod
Pipodara
Mola Borsara
Mangrol
Kumvarda
Kanyasi
Kharach
Kathodra
Olpad
Kudsad
Kim
Kareli
Sayan
Siwan
Kimamli
Mulad
Sijadla
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Tauk
Gujarat Tauk
Affected Villages
Village Boundary
Scale : 1:50,000
N

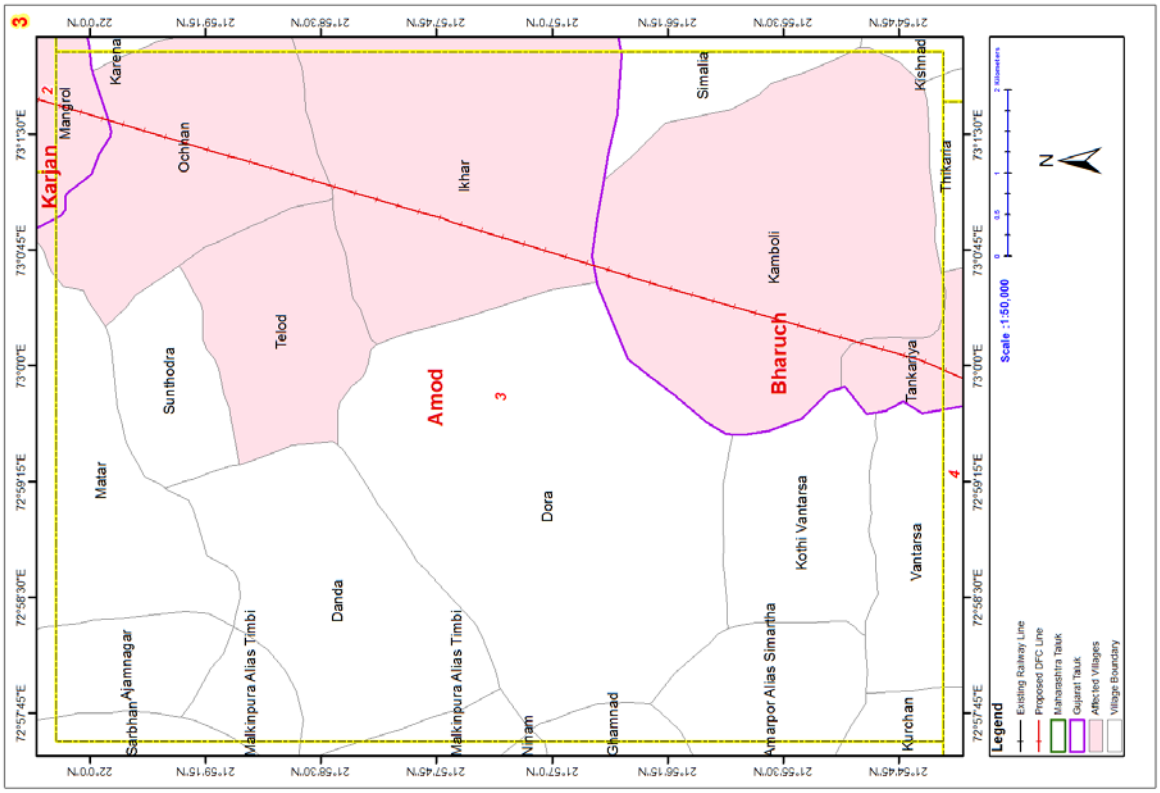

Bharuch
Anklesvar
Bharuch INA
Maktampur
Kurala
Borbhatha Bet
Surwadi
Divi
Anklesvar
Piraman (Part)
Sherpura
Kanthariya
Tham
Manubar
Dahegam
Kukarwada
Borbhatha
Sarfuddin
Diva
Boidara
Pungam
Sakkarpor
Haripura
Sajod
Verwada
Hinglot
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000

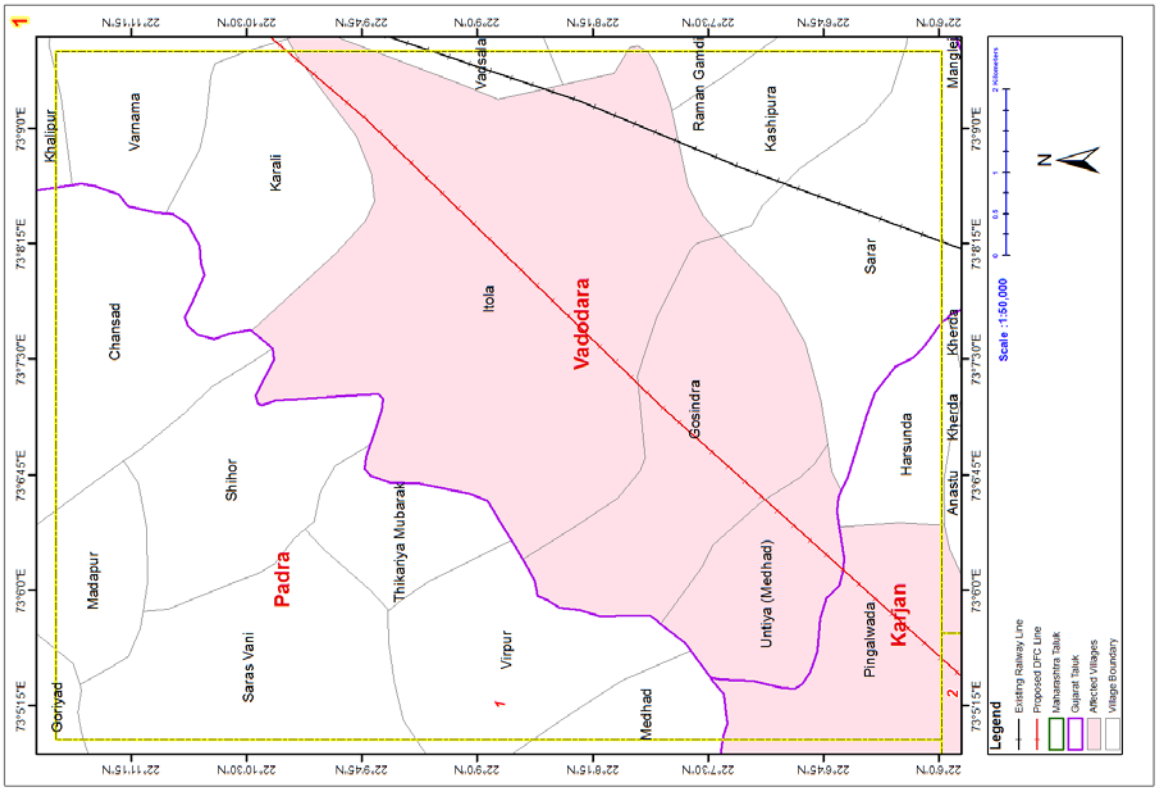

Anklesvar
Mangrol
Anklesvar INA
Jitali
Kosamadi
Bhadi
Bharan
Dhamdod
Gadkhol(Part)
Piraman (Part)
Bhadkodara
Kapodara
Bakrol
Kharod
Nana Borsara
Sanjali
Anklesvar
Umarwada
Amboli
Alonj
Naugama
Boidara
Panoli
Pungam
Ravdra
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000


Amod
Bharuch
Thikaria
Ghodi
Adol
Kahan
Kargat
Nabipur
Kamboli
Tankariya
Sitpon
Bori
Hingalla
Parkhet
Pariej
Vantarsa
Padariya
Tralsa
Karela
Pipalia
Kurchan
Keshlu
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000
N

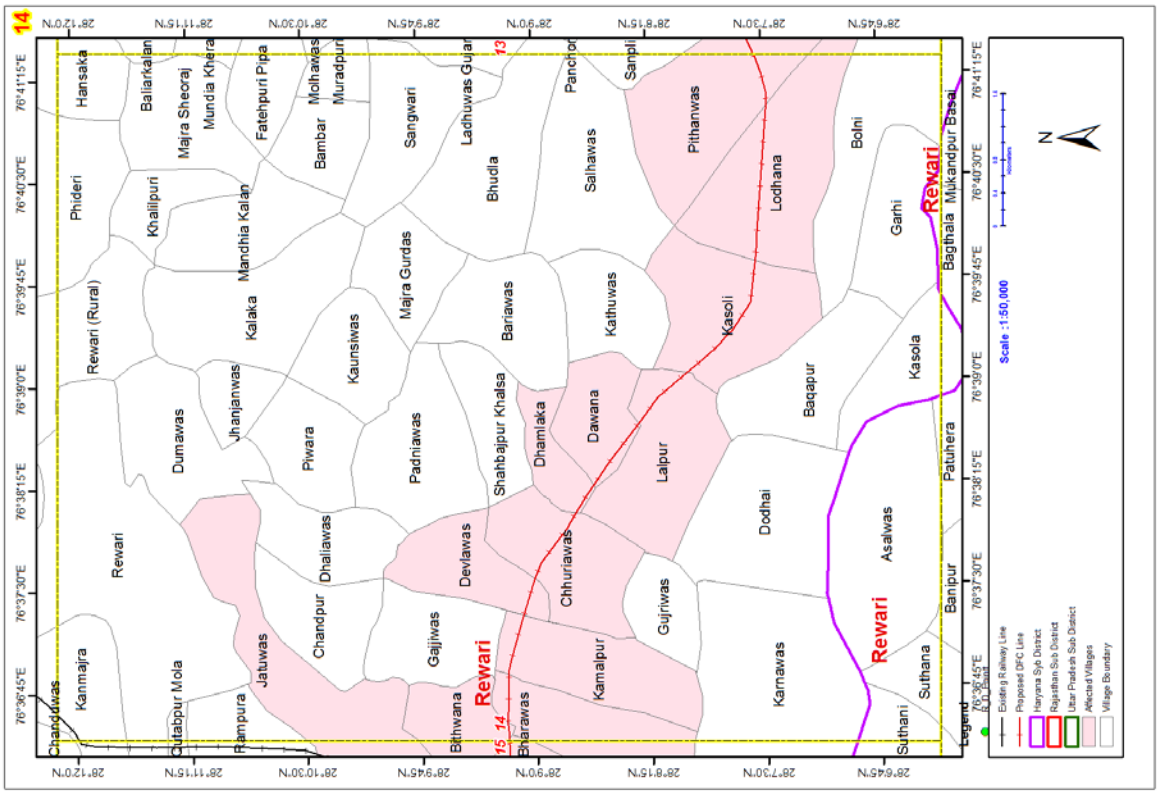

Bharuch
Hingalla
Kuvadar
Paguthan
Chavaj
Rahadpor
Bharuch INA
Kothi
Umraj
Bharuch
Kasad
Sherpura
Tralsa
Tralsi
Mahudhala
Kanthariya
Tham
Dayadra
Derol
Vahalu
Manubar
Karmad
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000
N

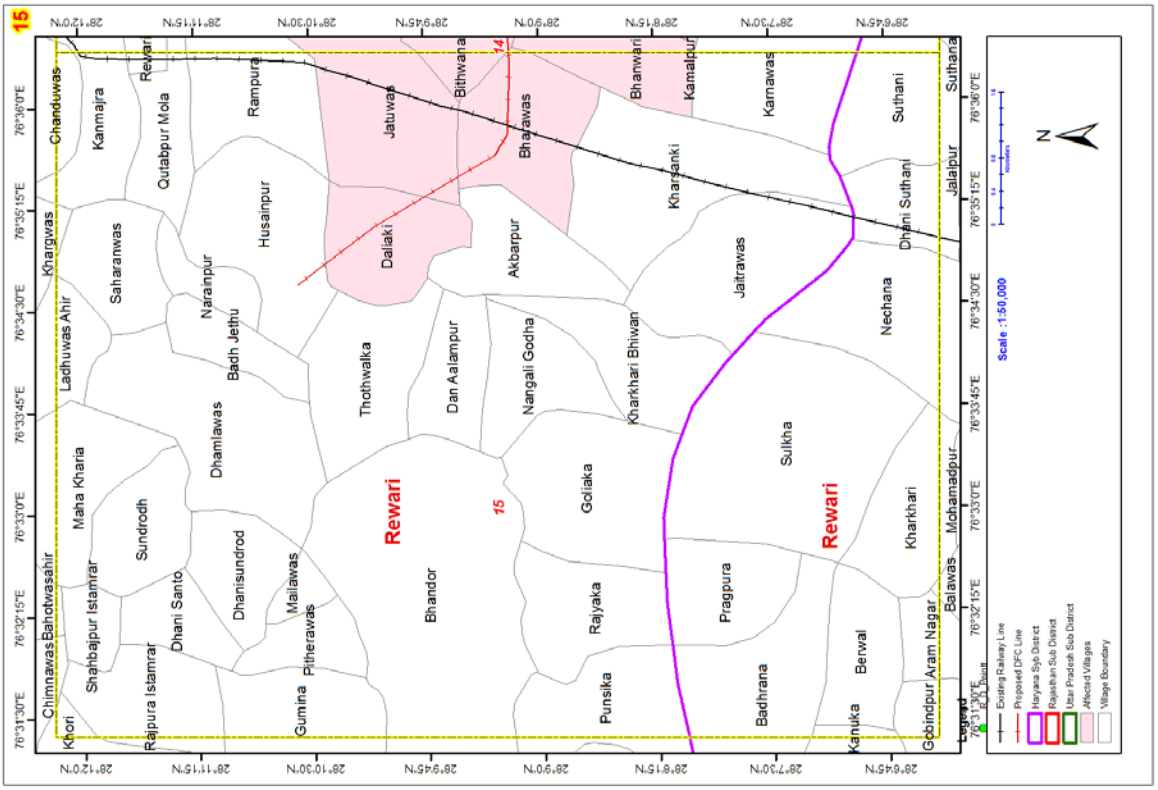

Karjan
Amod
Pingalwada
Anastu
Kurai
Karamadi
Vadava
Lakodara
Miyagam
Dhamanja
Husepur
Manpur
Khandha
Surwada
Handod
Karena
Sambhoi
Bodaka
Kambola
Mangrol
Abhara
Kanabha
Sanpa
Shahera
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000

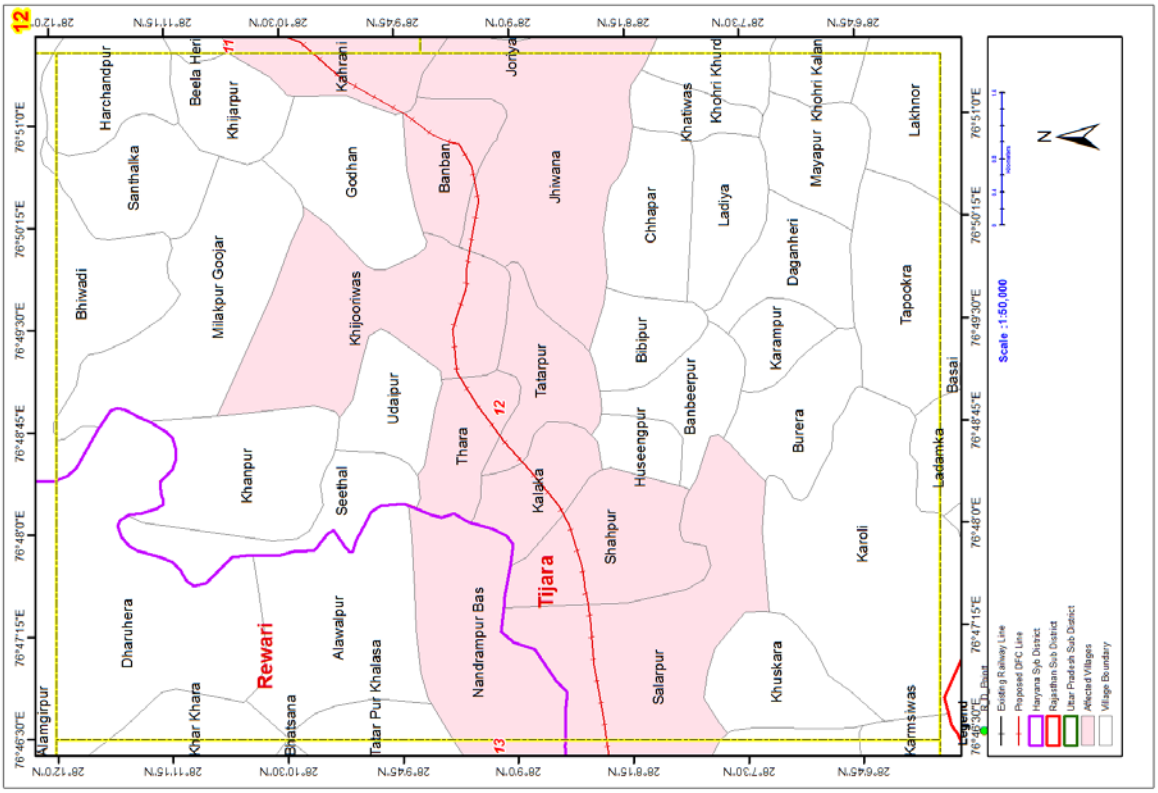

Karjan
Amod
Bharuch
Mangrol
Karena
Ochhan
Ikhar
Simalia
Kishnad
Thikaria
Kamboli
Telod
Sunthodra
Tankariya
Matar
Dora
Kothi Vantarsa
Vantarsa
Danda
Ajamnagar
Sarbhan
Malkinpura Alias Timbi
Ninam
Ghamnad
Amarpor Alias Simartha
Kurchan
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000

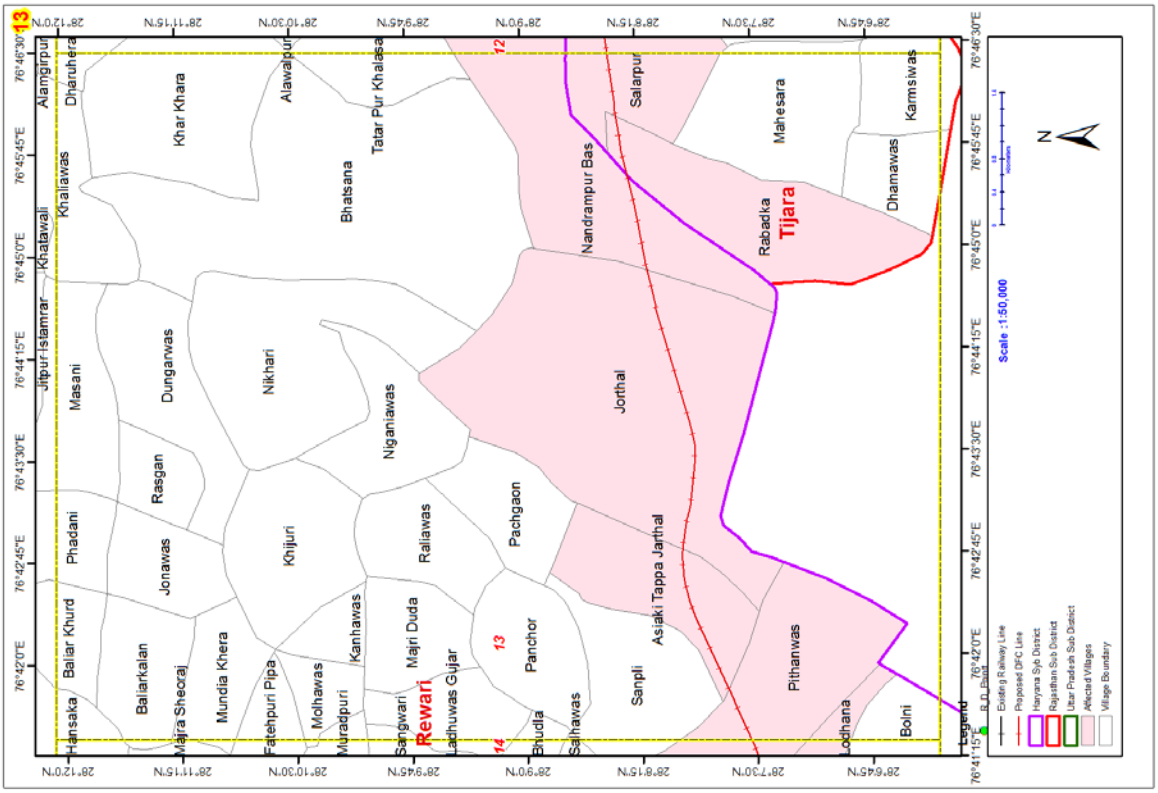

Khalipur
Varnama
Karali
Vadsala
Raman Gamdi
Kashipura
Mangleji
Chansad
Itola
Vadodara
Sarar
Kherda
Gosindra
Harsunda
Anastu
Shihor
Thikariya Mubarak
Madapur
Padra
Untiya (Medhad)
Pingalwada
Karjan
Saras Vani
Virpur
Medhad
Goriyad
Legend
Existing Railway Line
Proposed DFC Line
Maharashtra Taluk
Gujarat Taluk
Affected Villages
Village Boundary
Scale :1:50,000
N

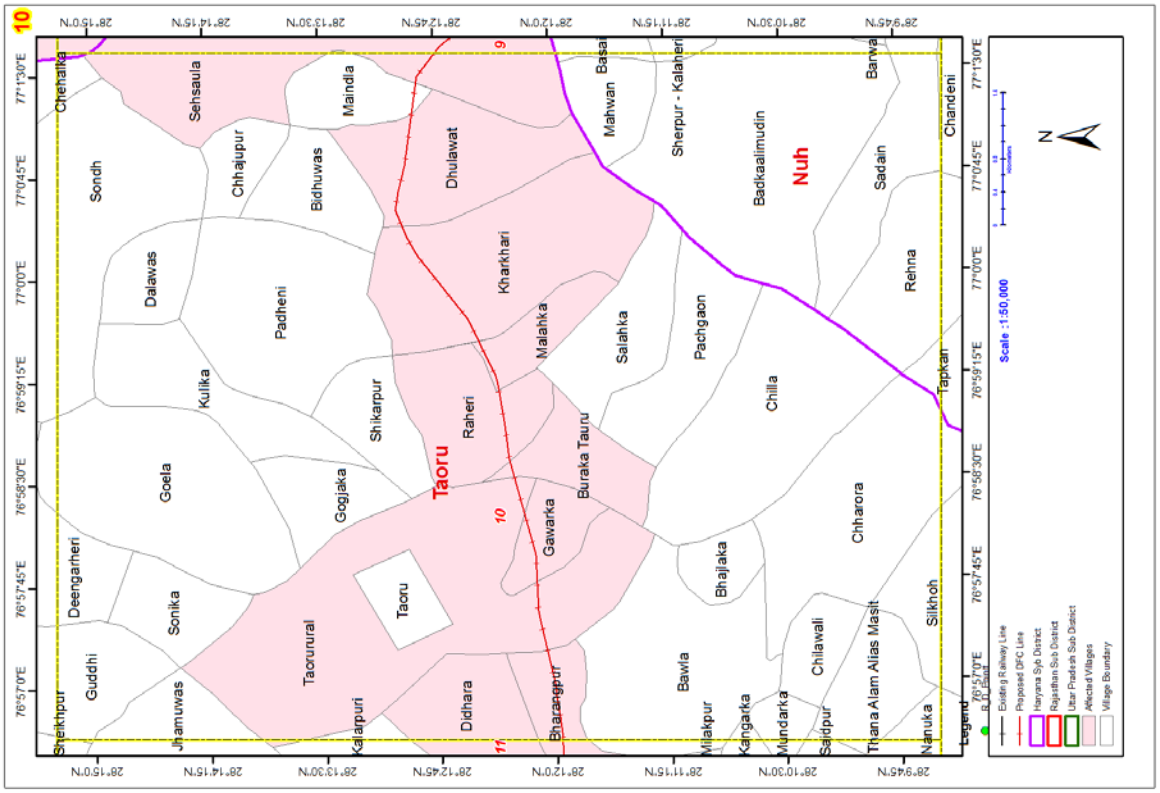
(Rewari-Dadri Section)

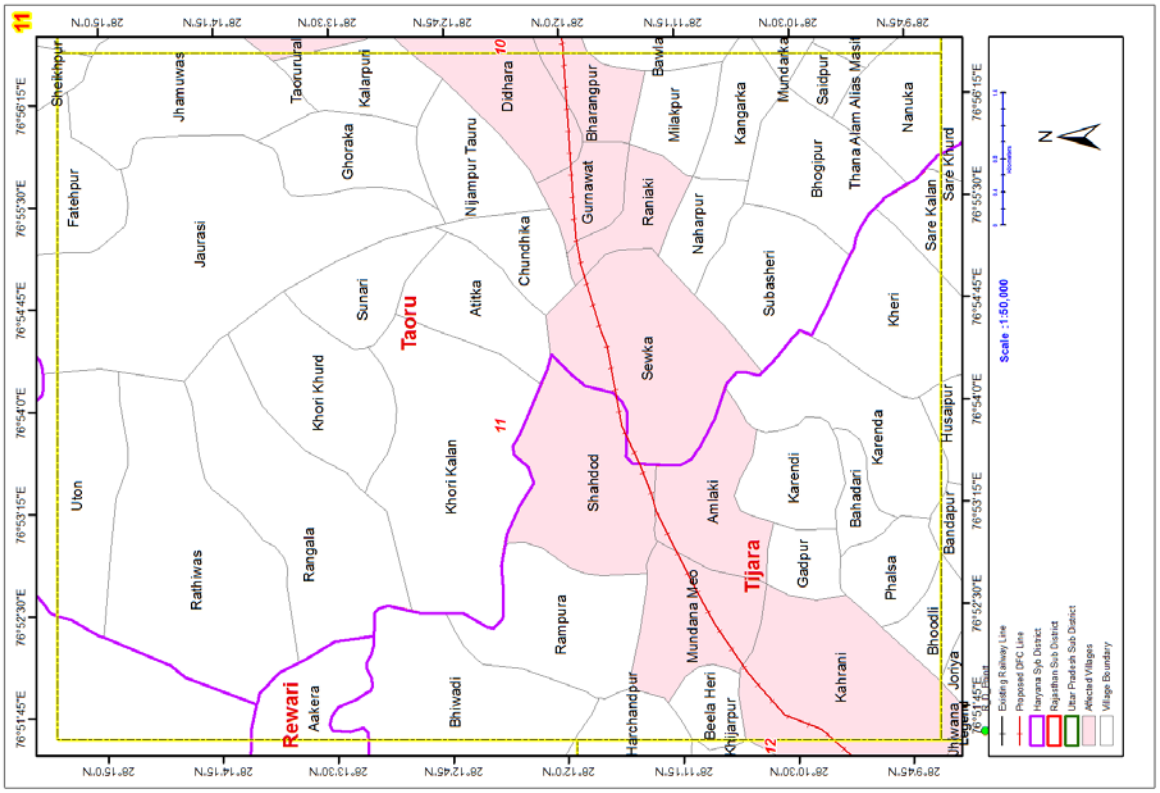


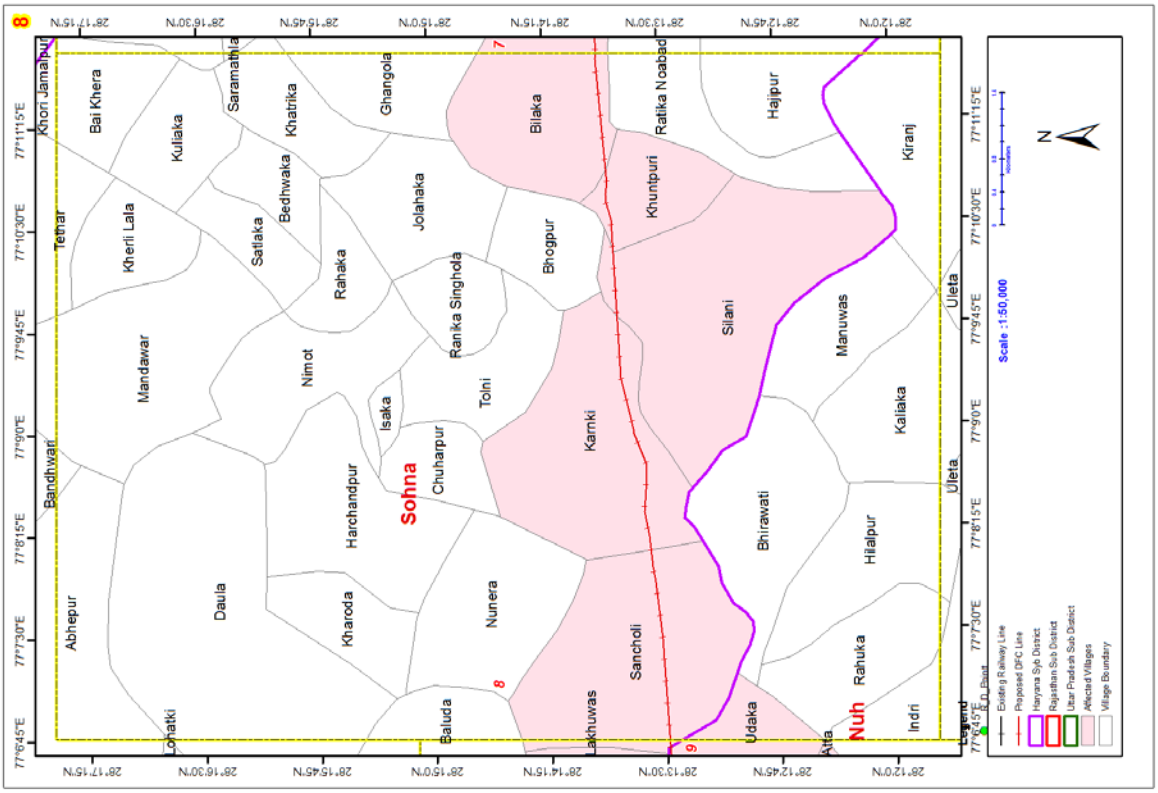


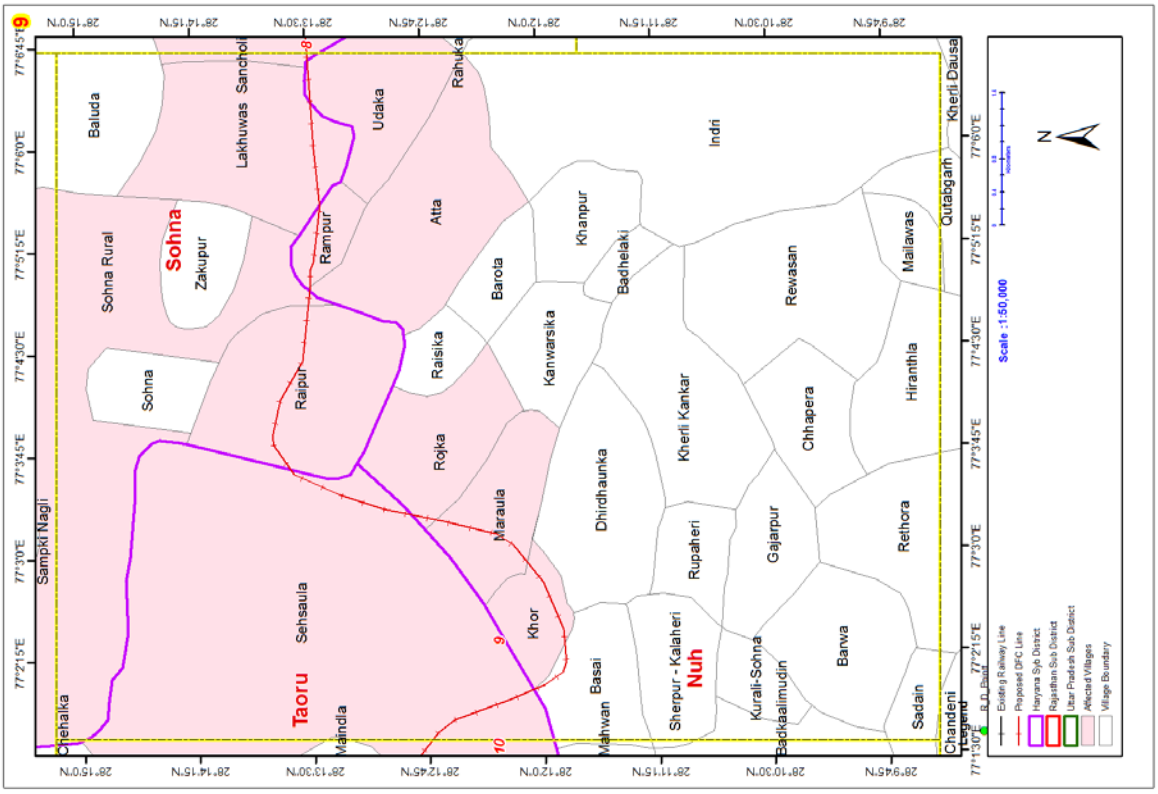

12
Harchandpur
Beela Heri
Khijarpur
Kahrani
Jonya
Khatiwas
Khohri Khurd
Mayapur
Khohri Kalan
Lakhnor
Santhalka
Godhan
Banban
Jhiwana
Chhapar
Ladiya
Daganheri
Bhiwadi
Milakpur Goojar
Khijooriwas
Bibipur
Karampur
Tapookra
Udaipur
Tatarpur
Banbeerpur
Burera
Basai
Khanpur
Seethal
Thara
Kalaka
Huseengpur
Ladamka
Tijara
Shahpur
Karoli
Dharuhera
Rewari
Alawalpur
Nandrampur Bas
Salarpur
Khuskara
Alamgirpur
Khar Khara
Bhatsana
Talar Pur Khalasa
Karmsiwas
Legend
R.D. Point
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary
Scale : 1:50,000
N

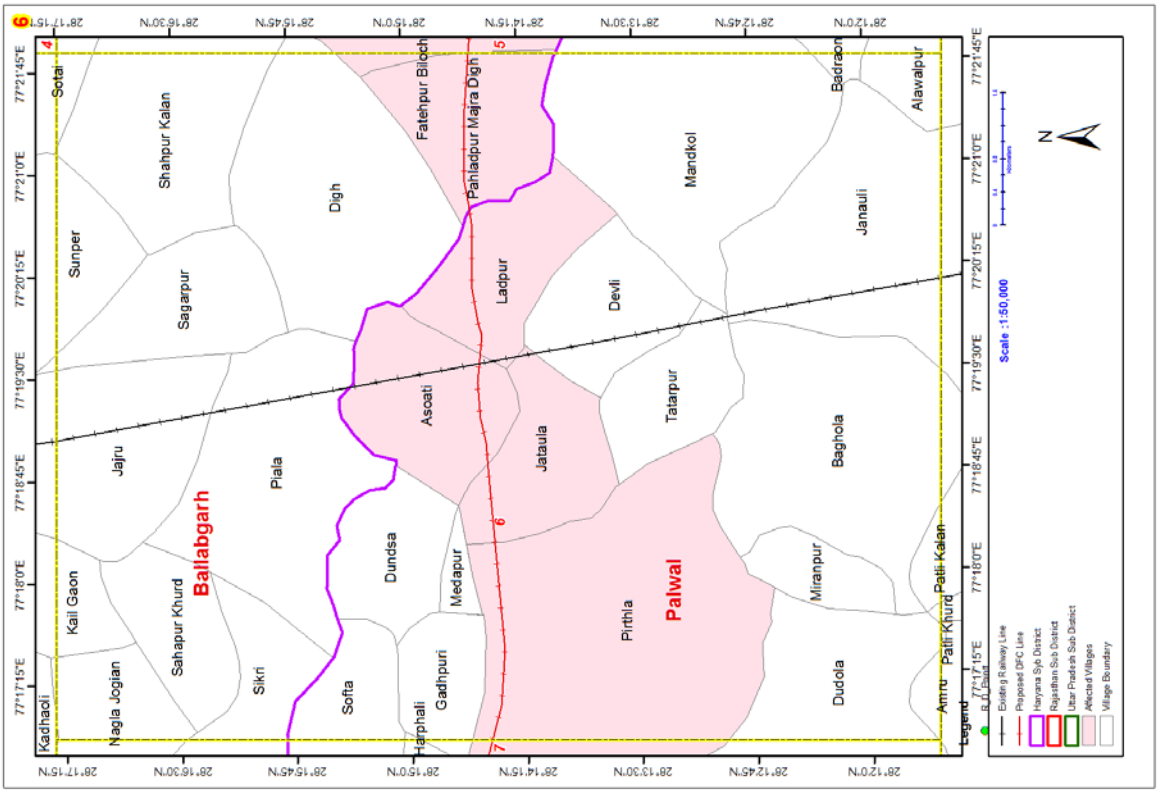

13
Alamgirpur
Dharuhera
Khar Khara
Alawalpur
Tatar Pur Khalasa
Salarpur
Mahesara
Karmsiwas
Khalawas
Khalawali
Bhatsana
Nandrampur Bas
Rabadka
Tijara
Dhamawas
Jitpur Islamrar
Masani
Dungarwas
Nikhari
Jorthal
Phadani
Rasgan
Niganiwas
Pachgaon
Jonawas
Khijuri
Raliawas
Asiaki Tappa Jarthal
Baliar Khurd
Kanhawas
Majri Duda
Panchor
Pithanwas
Baliarkalan
Mundia Khera
Molhawas
Ladhuwas Gujar
Sanpli
Hansaka
Majra Sheoraj
Fatehpuri Pipa
Muradpuri
Sangwari
Rewari
Bhudia
Salhawas
Lodhana
Boini
Legend
R.D. Point
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary
Scale : 1:50,000
N

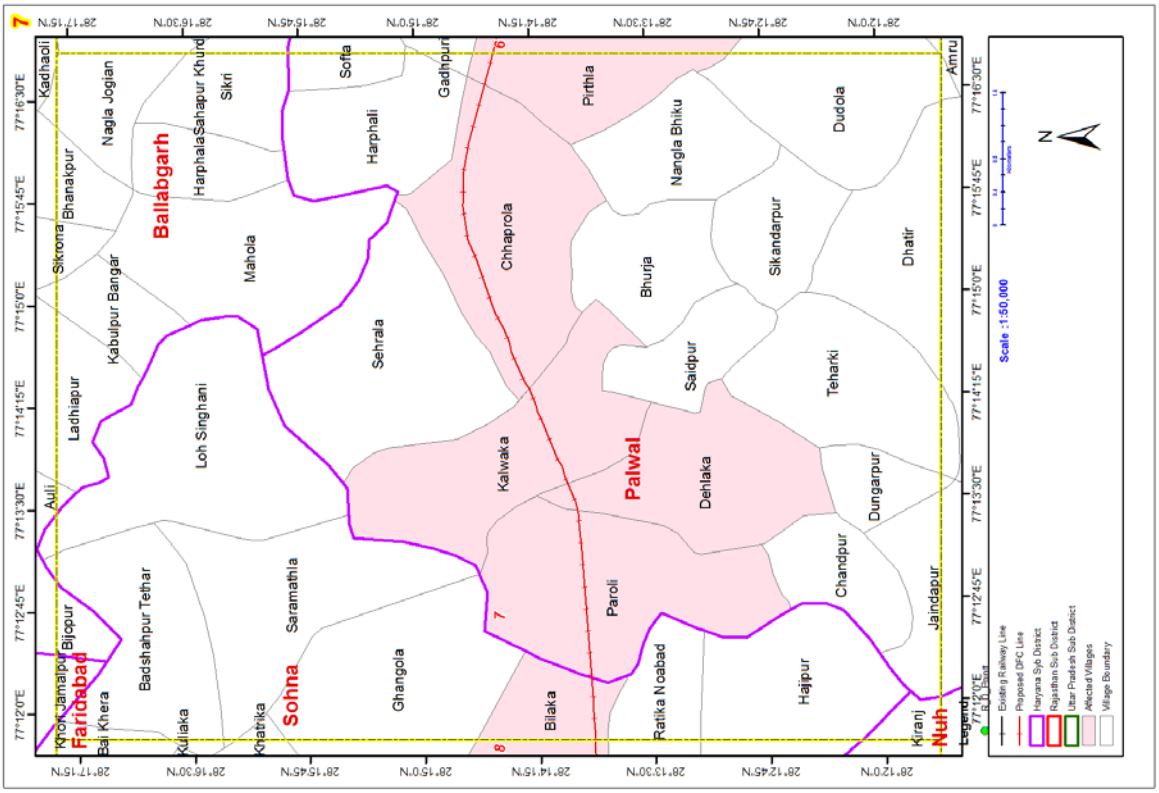

10
Taoru
Nuh
Chehalka
Sehsaula
Maindla
Sondh
Chhajupur
Bidhuwas
Dhulawat
Mahwan
Basai
Sherpur - Kalaheri
Badkaalimudin
Banwa
Chandeni
Sadain
Dalawas
Padheni
Kharkhari
Malahka
Salahka
Pachgaon
Rehna
Kulika
Shikarpur
Raheri
Chilla
Tapkan
Goela
Gogjaka
Buraka Tauru
Gawarka
Chharora
Deengarheri
Sonika
Taorurural
Bhajlaka
Silkhoh
Guddhi
Jhamuwas
Kalarpuri
Didhara
Bharangpur
Bawla
Milakpur
Kangarka
Mundarka
Chilawali
Saidpur
Thana Alam Alias Masit
Nanuka
Sheikhpur
Legend
Existing Railway Line
Proposed DFC Line
Haryana Syb District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary
Scale :1:50,000
N

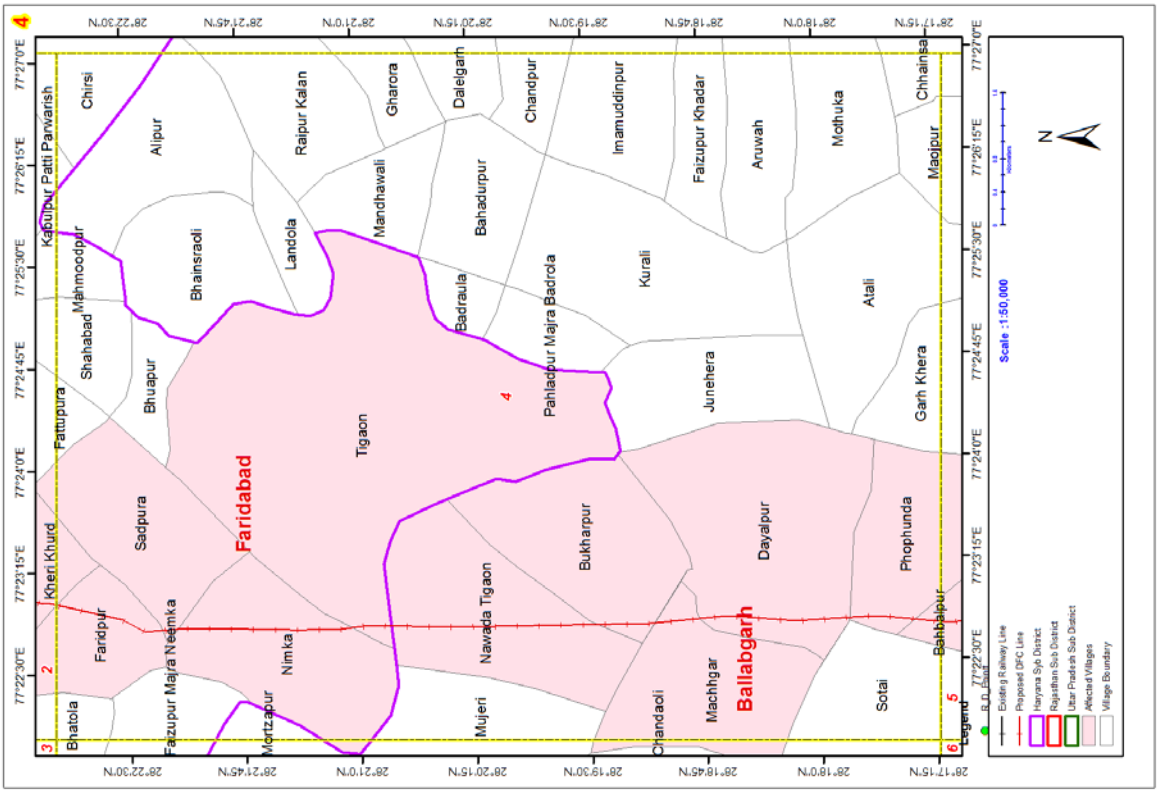

11
Taoru
Tijara
Rewari
Sheikhpur
Jhamuwas
Taorurural
Kalarpuri
Didhara
Bharangpur
Bawla
Milakpur
Kangarka
Mundarka
Saidpur
Thana Alam Alias Masit
Nanuka
Fatehpur
Ghoraka
Nijampur Tauru
Gurnawat
Raniaki
Naharpur
Bhogipur
Sare Khurd
Sare Kalan
Jaurasi
Chundhika
Subasheri
Sunari
Atitka
Kheri
Sewka
Khori Khurd
Khori Kalan
Shahdod
Amlaki
Karendi
Karenda
Husaipur
Bahadari
Bandapur
Uton
Rathiwas
Rangala
Gadpur
Phalsa
Rampura
Mundana Meo
Bhoodli
Kahrani
Aakera
Bhiwadi
Harchandpur
Beela Heri
Khijarpur
Jhwana
Joriya
Legend
Existing Railway Line
Proposed DFC Line
Haryana Syb District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary
Scale :1:50,000
N

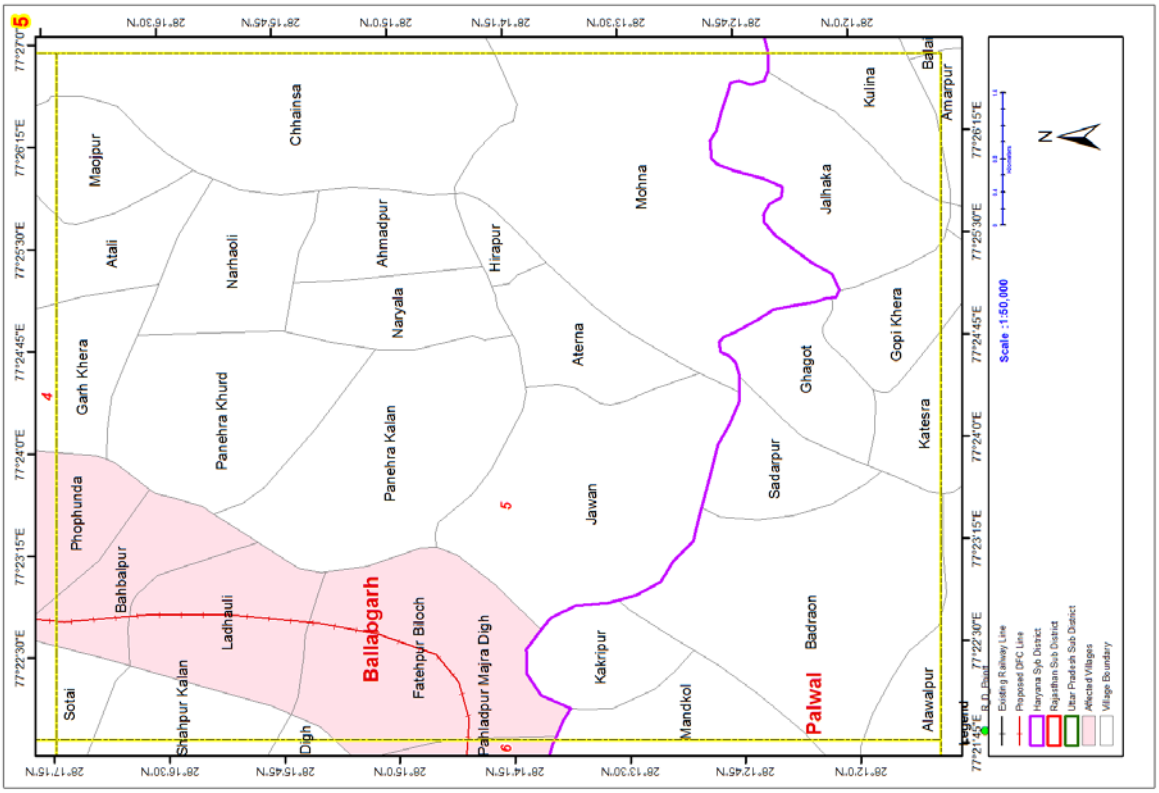

Sohna
Nuh
Khori Jamalpur
Bai Khera
Saramathla
Khatrika
Ghangola
Bilaka
Ratika Noabad
Hajipur
Kiranj
Kuliaka
Tethar
Kherli Lala
Satlaka
Bedhwaka
Jolahaka
Bhogpur
Khuntpuri
Rahaka
Ranika Singhola
Silani
Manuwas
Uleta
Mandawar
Nimot
Isaka
Tolni
Karnki
Kaliaka
Bandhwari
Harchandpur
Chuharpur
Bhirawati
Hilalpur
Abhepur
Daula
Kharoda
Nunera
Sancholi
Rahuka
Lohatki
Baluda
Lakhuwas
Udaka
Atta
Indri
Scale :1:50,000
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary


Sohna
Taoru
Nuh
Baluda
Lakhuwas
Sancholi
Udaka
Rahuka
Indri
Kherli Dausa
Sohna Rural
Zakupur
Rampur
Atta
Khanpur
Badhelaki
Rewasan
Mailawas
Qutabgarh
Sohna
Raipur
Raisika
Barota
Kanwarsika
Hiranthla
Rojka
Kherli Kankar
Chhapera
Sampki Nagli
Maraula
Dhirdhaunka
Rupaheri
Gajarpur
Rethora
Sehsaula
Khor
Basai
Sherpur - Kalaheri
Kurali-Sohna
Barwa
Chehalka
Maindla
Mahwan
Badkaalimudin
Sadain
Chandeni
Scale :1:50,000
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary


Ballabgarh
Palwal
Sotai
Shahpur Kalan
Sunper
Sagarpur
Digh
Fatehpur Biloch
Pahladpur Majra Digh
Badraon
Alawalpur
Mandkol
Janauli
Ladpur
Devli
Tatarpur
Asoati
Jataula
Baghola
Jajru
Piala
Kail Gaon
Sahapur Khurd
Dundsa
Medapur
Pirthla
Miranpur
Patli Khurd
Patli Kalan
Nagla Jogian
Sikri
Softa
Harphali
Gadhpuri
Dudola
Kadhaoli
Amru
Scale : 1:50,000
Legend
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary


Faridabad
Ballabgarh
Sohna
Palwal
Nuh
Kadhaoli
Nagla Jogian
Sahapur Khurd
Sikri
Softa
Gadhpuri
Pirthla
Amru
Bhanakpur
Harphala
Harphali
Nangla Bhiku
Dudola
Sikrona
Mahola
Chhaprola
Bhuria
Sikandarpur
Dhatir
Kabulpur Bangar
Sehrala
Saidpur
Teharki
Ladhiapur
Loh Singhani
Kalwaka
Dehlaka
Dungarpur
Auli
Bijopur
Badshahpur Tethar
Saramathia
Paroli
Chandpur
Jaindapur
Ghangola
Bilaka
Ratika Noabad
Hajipur
Kiranj
Kulaka
Khatrika
Scale : 1:50,000
Legend
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary


Faridabad
Ballabgarh
Chirsi
Alipur
Raipur Kalan
Gharora
Dalelgarh
Chandpur
Imamuddinpur
Faizupur Khadar
Aruwah
Mothuka
Chhainsa
Maojpur
Kabulpur Patti Parwarish
Mahmoodpur
Shahabad
Fattupura
Bhuapur
Bhainsraoli
Landola
Mandhawali
Bahadurpur
Badraula
Pahladpur Majra Badrola
Kurali
Atali
Junehera
Garh Khera
Tigaon
Sadpura
Kheri Khurd
Faridpur
Faizupur Majra Neemka
Nimka
Mortzapur
Bhatola
Nawada Tigaon
Mujeri
Bukharpur
Dayalpur
Phophunda
Bahbalpur
Machhgar
Chandaoli
Sotai
Legend
Scale :1:50,000
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary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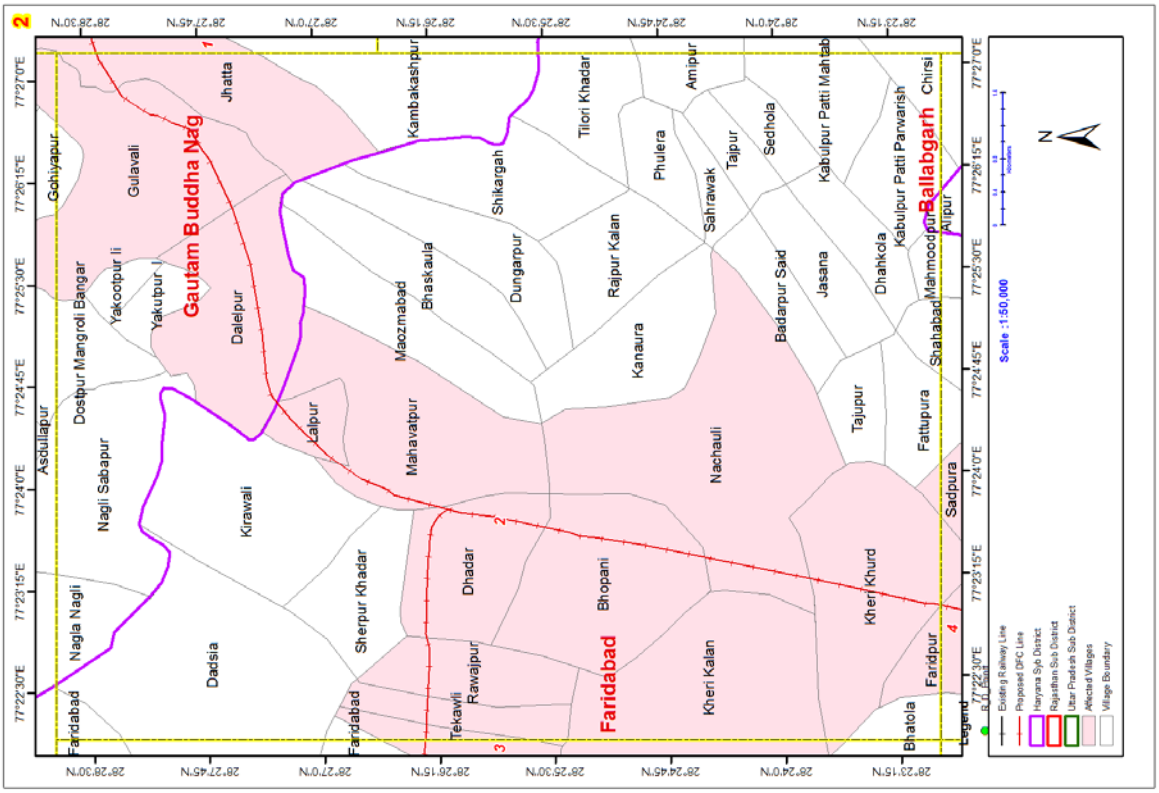
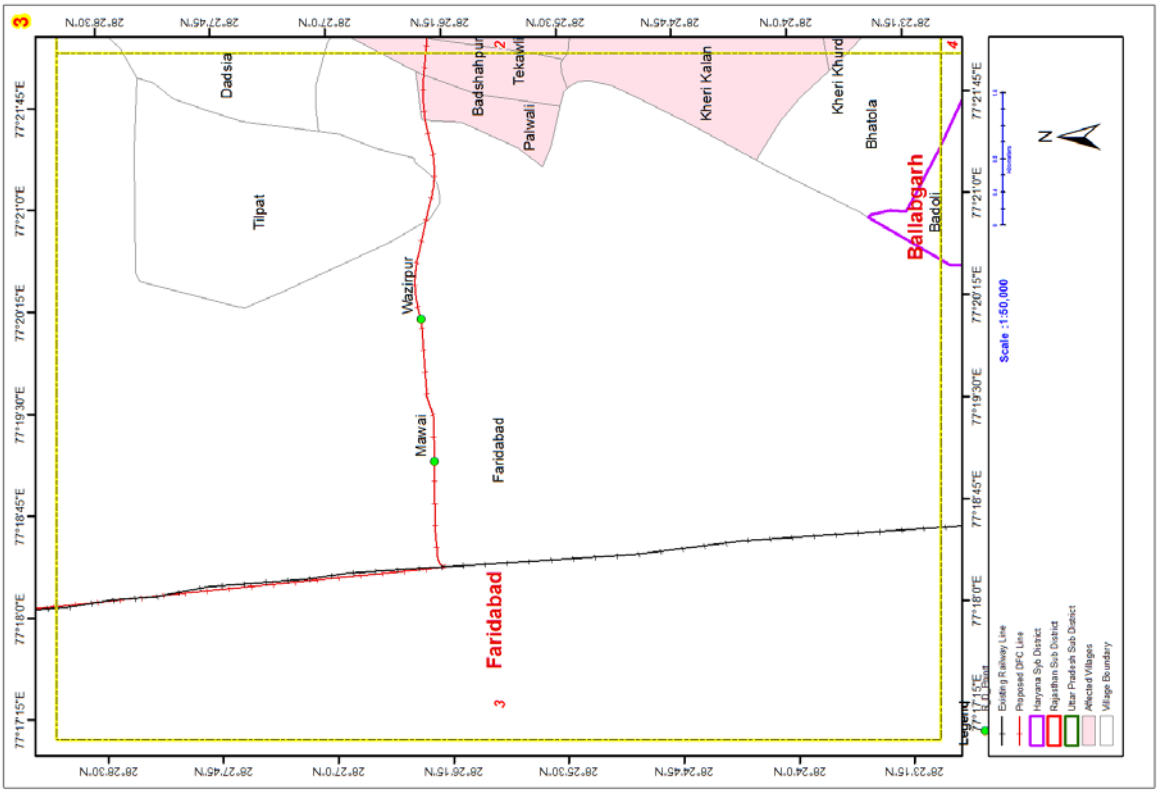
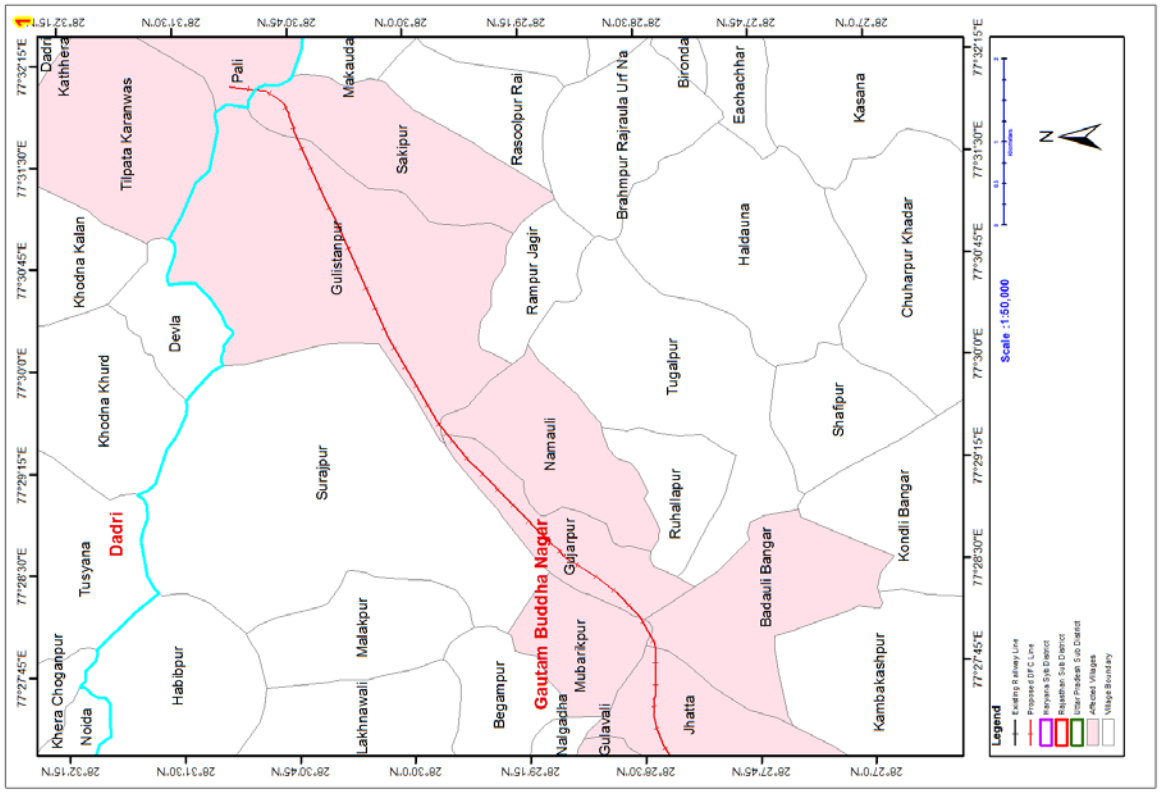
Chhainsa
Atali
Narhaoli
Ahmadpur
Hirapur
Mohna
Jalhaka
Kulina
Balai
Amarpur
Garh Khera
Panehra Khurd
Naryala
Aterna
Ghagot
Gopi Khera
Katesra
Phophunda
Panehra Kalan
Jawan
Sadarpur
Bahbalpur
Ladhauli
Fatehpur Biloch
Pahladpur Majra Digh
Kakripur
Badraon
Sotai
Shahpur Kalan
Digh
Mandkol
Alawalpur
Legend
Scale :1:50,000
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary


2
Gautam Buddha Nag
Faridabad
Ballabgarh
Gohiyapur
Gulavali
Jhatta
Kambakashpur
Tilori Khadar
Amipur
Sedhola
Kabulpur Patti Mahtab
Chirsi
Shikargah
Phulera
Tajpur
Sahrawak
Kabulpur Patti Parwarish
Alipur
Dostpur Mangroli Bangar
Yakootpur Ii
Yakutpur I
Dalelpur
Maozmabad
Bhaskaula
Dungarpur
Rajpur Kalan
Badarpur Said
Jasana
Dhahkola
Mahmoodpur
Shahabad
Kanaura
Asdullapur
Nagli Sabapur
Kirawali
Lalpur
Mahavatpur
Nachauli
Tajupur
Fattupura
Sadpura
Nagla Nagli
Dadsia
Sherpur Khadar
Dhadar
Bhopani
Kheri Khurd
Faridpur
Tekawli
Rawajpur
Kheri Kalan
Bhatola
Legend
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary
Scale : 1:50,000
N


3
Faridabad
Ballabgarh
Dadsia
Badshahpur
Tekawli
Kheri Kalan
Kheri Khurd
Bhatola
Palwali
Tilpat
Wazirpur
Mawai
Badoli
Legend
Existing Railway Line
Proposed DFC Line
Haryana Sub District
Rajasthan Sub District
Uttar Pradesh Sub District
Affected Villages
Village Boundary
Scale : 1:50,000
N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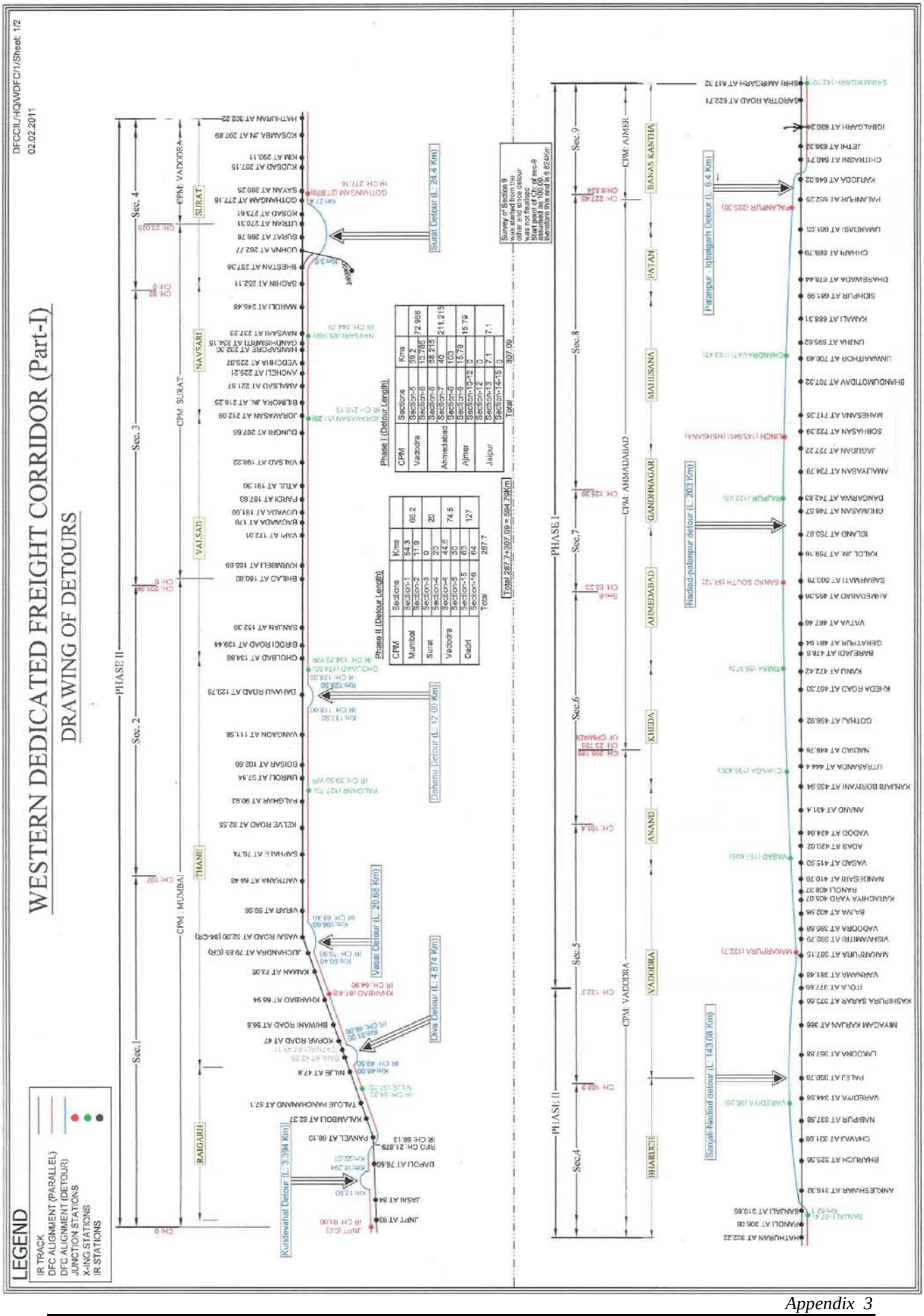
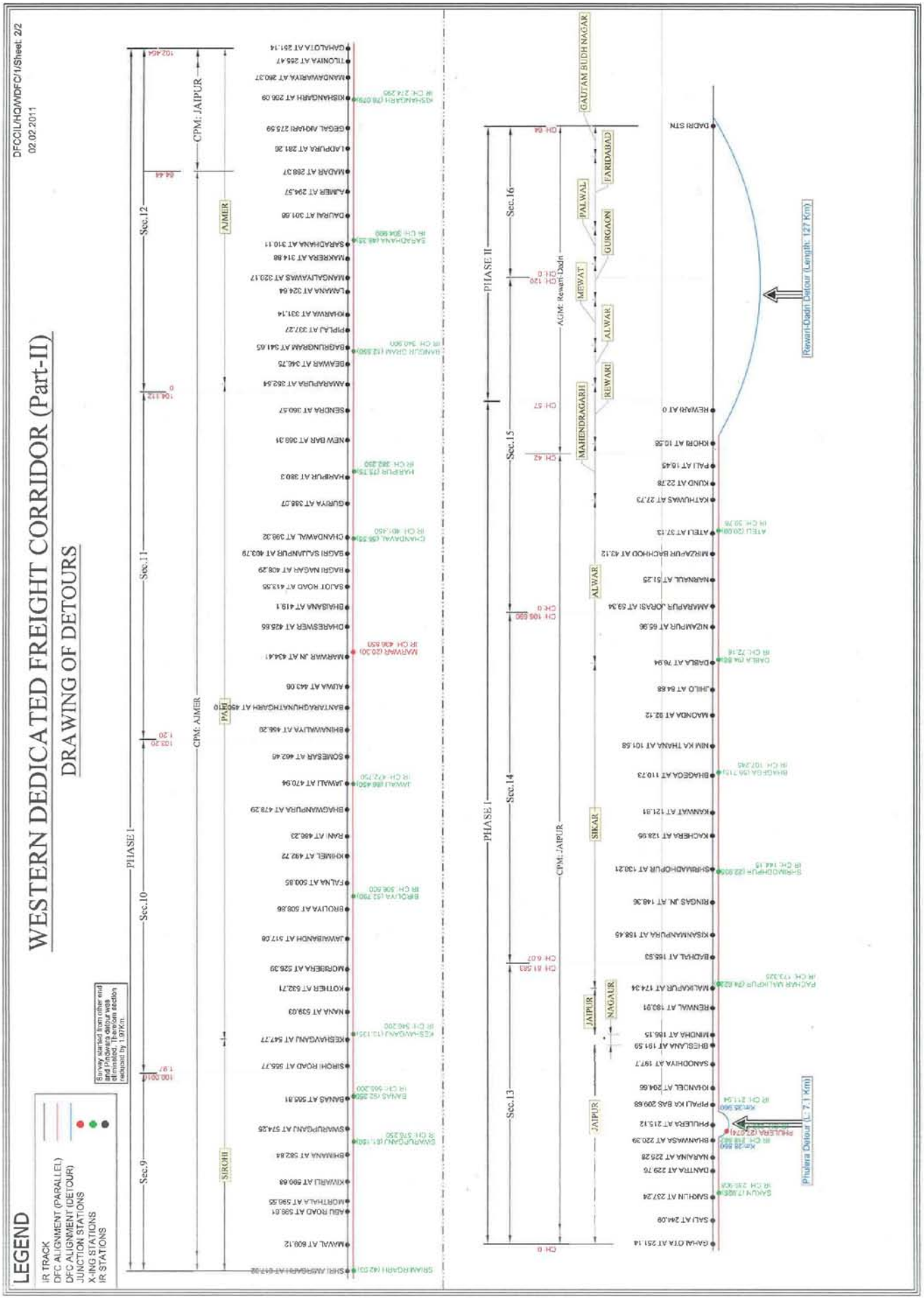
Kathhera
Tilpata Karanwas
Pali
Makauda
Sakipur
Rasoolpur Rai
Brahmpur Rajrauta Urf Na
Bironda
Eachachhar
Kasana
Khodna Kalan
Devla
Gulistanpur
Rampur Jagir
Haldauna
Chuharpur Khadar
Khodna Khurd
Surajpur
Namauli
Tugalpur
Shafipur
Tusyana
Dadri
Gujarpur
Ruhallapur
Kondli Bangar
Badauli Bangar
Khera Choganpur
Noida
Habibpur
Malakpur
Gautam Buddha Nagar
Mubarikpur
Begampur
Lakhnawali
Nalgadha
Gulavali
Jhatta
Kambakashpur
Legend
Scale : 1:50,000
N

Appendix-3
Project Alignment


WESTERN DEDICATED FREIGHT CORRIDOR (Part-I)
DRAWING OF DETOURS
LEGEND
IR TRACK
DFC ALIGNMENT (PARALLEL)
DFC ALIGNMENT (DETOUR)
JUNCTION STATIONS
X-ING STATIONS
IR STATIONS
DFCCIL/HQ/WDFC/1/Sheet: 1/2
02.02.2011
PHASE II
PHASE I
Sec. 1
Sec. 2
Sec. 3
Sec. 4
Sec. 5
Sec. 6
Sec. 7
Sec. 8
Sec. 9
CPM: MUMBAI
CPM: SURAT
CPM: VADODRA
CPM: AHMADABAD
CPM: AJMER
RAIGARH
THANE
VALSAD
NAVSARI
SURAT
BHARUCH
VADODRA
ANAND
KHEDA
AHMEDABAD
GANDHINAGAR
MAHESANA
PATAN
BANAS KANTHA
Kundevahal Detour (L: 3.394 Km)
Vasai Detour (L: 20.68 Km)
Diva Detour (L: 4.874 Km)
Dahanu Detour (L: 12.00 Km)
Surat Detour (L: 24.4 Km)
Nadiad-palanpur detour (L: 203 Km)
Patanpur - Iqbalgarh Detour (L: 6.4 Km)
Sanjali-Nadiad detour (L: 143.08 Km)
Survey of Section 9 was started from the other end since detour was not finalised
Start point of Ch. of sec-9 assumed as 100.00, therefore this end is 6.824Km
Total 287.7+307.09 = 594.79Km
Phase II (Detour Length)
CPM | Sections | Kms
Mumbai | Section-1 | 54.3 | 66.2
Surat | Section-2 | 11.9
Section-3 | 0 | 20
Vadodra | Section-4 | 44.5 | 74.5
Dadri | Section-5 | 30
Section-16 | 63 | 127
Total | 287.7
Phase I (Detour Length)
CPM | Sections | Kms
Vadodra | Section-5 | 59.2 | 72.968
Section-6 | 13.785
Ahmedabad | Section-6 | 68.215 | 211.215
Section-7 | 40
Section-8 | 103
Ajmer | Section-9 | 15.79 | 15.79
Section-10-12 | 0
Section-12 | 0
Jaipur | Section-13 | 7.1 | 7.1
Section-14-15 | 0
Total | 307.09


DFCCIL/HQ/WDFC/1/Sheet: 2/2
02.02.2011
WESTERN DEDICATED FREIGHT CORRIDOR (Part-II)
DRAWING OF DETOURS
LEGEND
IR TRACK
DFC ALIGNMENT (PARALLEL)
DFC ALIGNMENT (DETOUR)
JUNCTION STATIONS
X-ING STATIONS
IR STATIONS
Survey started from other end and Pindwara detour was eliminated. Therefore section reduced by 1.97Km.
PHASE I
PHASE II
Sec.9
Sec.10
Sec.11
Sec.12
Sec.13
Sec.14
Sec.15
Sec.16
CPM: JAIPUR
CPM: AJMER
AJMER
PALI
SIROHI
JAIPUR
NAGAUR
SIKAR
ALWAR
REWARI
MAHENDRAGARH
PALWAL
MEWAT
GURGAON
FARIDABAD
GAUTAM BUDH NAGAR
Rewari-Dadri Detour (Length: 127 Km)
Phulera Detour (L: 7.1 Km)

Appendix-4 Detail Survey Reports of Noise and Vibration Survey

Appendix-4a
Noise Survey

Appendix-4a

NOISE SURVEY

1. Railway and Background Noise in Parallel Section

1-1 Photographs on Measurement Sites In Parallel Section

(1) Panvel

Photographs on each measurement site and surrounding land use in Panvel are given in Figure 1.1-1.

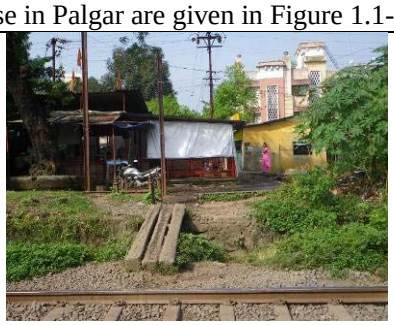
No.1	Measurement Site	Surrounding Land Use
No.2	Measurement Site	Surrounding Land Use

Source: JICA survey team

Figure 1.1-1 Measurement Sites and Surrounding Land Use in Panvel

(2) Palgar

Photographs on each measurement site and surrounding land use in Palgar are given in Figure 1.1-2.

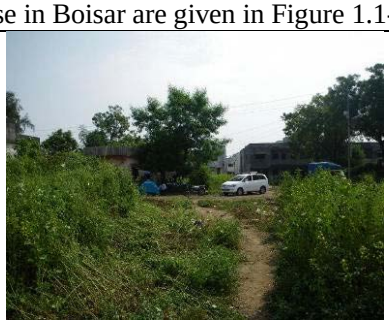
No.1	Measurement Site	 Surrounding Land Use
No.2	Measurement Site	Surrounding Land Use

Source: JICA survey team

Figure 1.1-2 Measurement Sites and Surrounding Land Use in Palgar

(3) Boisar

Photographs on each measurement site and surrounding land use in Boisar are given in Figure 1.1-3.

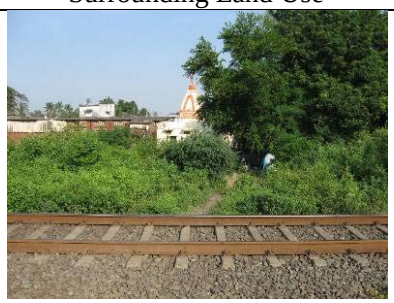
No.1	Measurement Site	 Surrounding Land Use
No.2	Measurement Site	Surrounding Land Use

Source: JICA survey team

Figure 1.1-3 Measurement Sites and Surrounding Land Use in Boisar

(4) Vapi

Photographs on each measurement site and surrounding land use in Vapi are given in Figure 1.1-4.

No.1	Measurement Site	Surrounding Land Use
No.2	Measurement Site	 Surrounding Land Use

Source: JICA survey team

Figure 1.1-4 Measurement Sites and Surrounding Land Use in Vapi

(5) Valsad

Photographs on each measurement site and surrounding land use in Valsad are given in Figure 1.1-5.

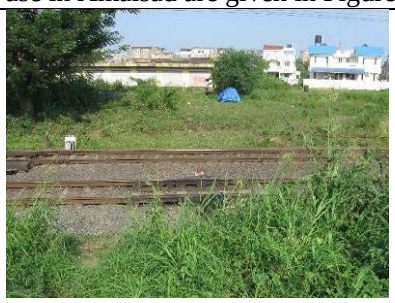
No.1	Measurement Site	Surrounding Land Use
No.2	Measurement Site	Surrounding Land Use

Source: JICA survey team

Figure 1.1-5 Measurement Sites and Surrounding Land Use in Valsad

(6) Amalsad

Photographs on each measurement site and surrounding land use in Amalsad are given in Figure 1.1-6.

No.1	Measurement Site	 Surrounding Land Use
No.2	Measurement Site	Surrounding Land Use

Source: JICA survey team

Figure 1.1-6 Measurement Sites and Surrounding Land Use in Amalsad

(7) Kim

Photographs on each measurement site and surrounding land use in Kim are given in Figure 1.1-7.

No.1	Measurement Site	Surrounding Land Use
No.2	Measurement Site	Surrounding Land Use

Source: JICA survey team

Figure1.1-7 Measurement Sites and Surrounding Land Use In Kim

(8) Asaoti

Photographs on each measurement site and surrounding land use in Asaoti are given in Figure 1.1-8.

No.1	Measurement Site	Surrounding Land Use
No.2	Measurement Site	Surrounding Land Use

Source: JICA survey team

Figure1.1-8 Measurement Sites and Surrounding Land Use in Asaoti

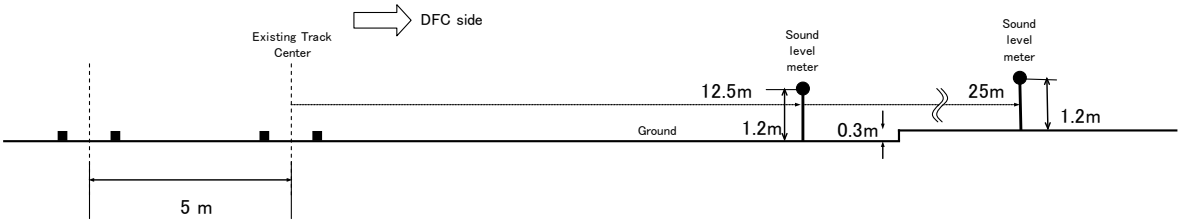
1-2 Results of Railway and Background Noise in Parallel Section

Results of railway and background noise in parallel section are shown below.

(1) Panvel

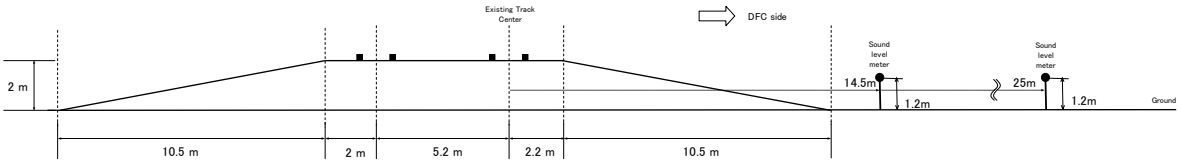
1) Cross-section View

Cross-section view of measurement site in Panvel are given in Figure 1.2-1 and Fiure 1.2-2.



Source: JICA survey team

Figure 1.2-1 Cross-section View of Measurement Site in Panvel №1



Source: JICA survey team

Figure 1.2-2 Cross-section View of Measurement Site in Panvel №2

2) Result of Background Noise

Result of background noise measurement in Panvel is given in Table 1.2-1.

Table 1.2-1 Result of Background Noise Measurement in Panvel

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Panvel	9-Oct	1	51.7	54.6	52.0	52.1	52.7
	9-Oct	2	55.3	54.9	56.6	55.9	55.8

Source: JICA survey team

3) Result of Railway Noise

Result of railway noise measurement in Panvel is given in Table 1.2-2 and Table 1.2-3.

Table 1.2-2 Result of Railway Noise Measurement in Panvel No. 1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	9-Oct	10:23	F	18.1	139.2	143.1	655	up	84.6	75.5	82.5	73.3
2	9-Oct	11:01	F	25.1	75.6	101.8	586	up	100.9	92.9	83.7	75.7
3	9-Oct	11:17	F	40.8	54.4	67.8	655	up	104.5	96.3	89.0	81.2
4	9-Oct	11:40	F	17.0	129.1	146.7	669	up	98.6	90.6	80.7	72.3
5	9-Oct	12:17	P	64.4	24.0	30.7	399	up	91.2	81.7	89.9	80.4
6	9-Oct	12:49	P	35.2	40.4	50.9	422	down	101.3	97.0	92.9	89.0
7	9-Oct	13:03	P	32.1	50.0	76.2	489	up	103.0	97.9	94.2	88.1
8	9-Oct	13:58	P	36.5	18.3	28.7	266	down	97.3	92.9	90.1	84.3
9	9-Oct	15:04	F	21.2	83.6	46.2	647	down	80.1	73.1	78.2	71.2
10	9-Oct	15:38	F	41.2	61.4	55.7	655	down	83.4	77.8	81.6	76.0
11	9-Oct	16:21	F	37.8	68.7	40.9	655	down	82.4	76.6	80.6	74.7
12	9-Oct	16:35	F	18.4	53.5	82.9	222	up	93.7	86.0	80.4	71.6
13	9-Oct	16:55	F	31.6	64.4	50.5	655	down	87.1	77.9	85.3	76.1
14	9-Oct	17:21	P	39.5	39.7	56.6	422	UP	101.1	90.4	88.9	78.8
average		Passenger(P)		45.4	37.9	54.5	437	up	98.4	90.0	91.0	82.4
				35.8	29.3	39.8	344	down	99.3	95.0	91.5	86.7
		Freight(F)		23.9	90.4	108.5	557	up	96.5	88.3	83.3	74.8
				32.9	69.5	48.3	653	down	83.3	76.3	81.4	74.5

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA survey team

Table 1.2-3 Result of Railway Noise Measurement in Panvel No. 2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									14.5m	25.0m	14.5m	25.0m
1	9-Oct	10:20	F	28.8	82.2	78.6	655	up	79.6	78.3	77.7	76.4
2	9-Oct	10:41	P	25.8	51.0	49.2	422	up	87.6	84.4	85.9	82.7
3	9-Oct	10:44	F	37.5	53.7	35.7	669	down	74.0	72.9	72.3	71.2
4	9-Oct	10:59	F	21.4	83.3	65.9	586	up	79.8	76.1	77.9	74.2
5	9-Oct	11:16	F	38.7	54.0	47.7	655	up	84.3	81.8	82.6	80.1
6	9-Oct	11:41	F	13.8	148.7	127.3	669	up	77.1	75.8	74.9	73.6
7	9-Oct	12:17	P	66.3	21.9	23.2	399	up	85.6	81.0	84.3	79.6
8	9-Oct	12:50	P	44.7	29.9	44.7	422	down	99.1	97.3	91.0	87.8
9	9-Oct	13:02	P	25.0	60.4	32.4	489	up	89.8	87.3	88.0	85.5
10	9-Oct	13:09	P	35.8	34.6	48.2	422	down	96.5	94.3	87.2	83.9
11	9-Oct	13:59	P	41.8	15.0	26.3	266	down	95.4	93.8	89.2	86.3
12	9-Oct	14:24	F	24.9	68.8	84.9	641	down	93.0	91.7	83.4	80.6
13	9-Oct	15:04	F	24.0	69.3	94.9	647	down	89.2	88.4	72.4	74.8
14	9-Oct	15:26	P	51.0	28.7	24.6	466	up	82.0	79.2	80.5	77.7
15	9-Oct	15:39	F	45.7	52.0	49.5	655	down	76.2	75.0	74.5	73.3
16	9-Oct	15:55	F	14.6	147.1	112.9	669	up	78.7	75.6	76.5	73.4
17	9-Oct	16:09	P	36.1	28.7	28.0	333	down	84.9	81.8	83.5	80.3
18	9-Oct	16:23	F	46.0	53.0	56.5	655	down	78.8	77.1	77.0	75.3
19	9-Oct	16:34	F	37.2	24.9	18.2	222	up	82.0	79.7	80.6	78.3
20	9-Oct	16:56	F	37.4	51.1	59.5	655	down	90.9	89.7	76.8	75.0
21	9-Oct	17:20	P	42.7	34.5	26.5	422	up	77.9	78.7	76.4	77.1
average		Passenger(P)		42.2	39.3	31.2	440	up	84.6	82.1	83.0	80.6
				39.6	27.0	36.8	360	down	94.0	91.8	87.7	84.6
		Freight(F)		25.7	90.0	75.1	576	up	80.2	77.9	78.4	76.0
				35.9	58.0	63.5	654	down	83.7	82.5	76.1	75.0

Note P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA survey team

4) Result of Frequency Analysis

Result of 1/3 octave band frequency analysis is given in Table 1.2-4 and Table 1.2-5. In Panvel No. 1, in consideration of all results roughly, the frequency of 800Hz was mainly dominated. In Panvel No. 2, in consideration of all results roughly, the frequency of 800Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was similar to the case in Japan, and this would be suitable value. In addition, in case of countermeasure (e.g. soundproof) for railway noise, Japanese countermeasure method might be available.

Table 1.2-4 Result of 1/3 Octave Band Frequency Analysis of Railway Noise in Panvel No.1

No.	train type	Noise Level [dB(A)]																											
		Frequency [Hz]																											
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	F	36	36	38	41	45	48	50	50	51	50	50	47	49	53	55	54	56	55	56	55	53	51	50	48	44	45	42	66
2	F	38	39	42	48	52	57	58	62	66	67	66	63	65	69	71	69	71	71	72	72	70	70	69	67	64	63	60	82
3	F	38	39	43	49	52	53	56	63	67	70	72	70	71	75	78	76	77	76	75	73	72	71	70	69	65	63	59	86
4	F	39	38	39	43	49	53	56	60	63	61	62	57	60	65	67	67	68	68	68	67	66	65	64	63	62	58	52	78
5	P	44	43	42	45	46	50	53	59	61	65	68	68	69	78	77	75	78	76	72	70	70	66	63	61	55	55	51	85
6	P	41	40	39	40	43	45	50	57	60	63	59	53	58	63	63	63	65	64	63	63	63	61	58	57	52	51	51	74
7	P	41	40	40	42	47	48	55	60	63	65	66	62	65	70	72	72	74	72	68	67	68	65	62	59	54	52	46	81
8	P	40	39	40	41	43	44	51	58	63	64	63	59	63	69	70	69	72	70	69	69	69	67	63	63	58	56	55	80
9	F	37	37	38	44	49	53	58	61	63	61	56	51	55	59	58	58	60	62	64	64	63	62	61	58	56	56	54	73
10	F	37	37	41	46	49	52	55	60	65	67	64	59	62	67	69	68	69	69	70	69	69	68	67	65	63	60	57	80
11	F	37	37	39	44	48	50	54	60	66	67	64	58	62	66	67	66	68	68	69	69	68	67	66	63	59	58	55	79
12	F	37	37	41	45	49	56	59	61	60	61	60	58	62	63	63	63	66	65	64	65	63	62	61	58	56	55	50	75
13	F	40	40	45	48	52	58	60	64	69	68	66	60	64	68	68	67	69	70	71	72	70	69	67	65	61	59	57	81
14	P	39	39	41	45	50	49	55	62	65	70	69	68	71	73	74	73	76	74	70	70	70	68	64	62	57	55	51	83

Note P: passenger train, F: freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.

Source: JICA survey team

Table 1.2-5 Result of 1/3 Octave Band Frequency Analysis of Railway Noise in Panvel No.2

No.	train type	Noise Level [dB(A)]																											
		Frequency [Hz]																											
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	F	33	34	37	45	48	52	54	56	59	57	57	57	58	60	61	61	63	63	64	64	63	64	64	62	59	56	53	74
2	P	35	34	36	41	43	46	53	54	54	56	52	54	56	58	57	57	56	56	55	55	56	56	54	52	51	48	45	68
3	F	38	40	42	50	50	51	51	50	52	51	53	54	55	57	60	59	60	58	58	57	57	58	57	55	53	49	46	70
4	F	36	37	40	44	50	55	55	55	58	55	55	56	57	59	60	61	63	63	64	64	63	64	64	61	62	57	56	74
5	F	36	36	40	46	48	52	54	58	61	61	63	64	65	67	70	69	70	69	69	68	68	69	69	66	67	62	58	80
6	F	37	37	38	42	45	48	48	49	47	45	46	46	49	52	52	56	56	56	57	56	56	57	57	54	52	49	48	67
7	P	38	37	39	44	48	50	54	56	60	61	61	64	68	72	71	71	71	69	66	64	65	64	62	59	58	54	52	80
8	P	39	37	38	39	46	50	52	52	54	52	54	60	59	60	60	62	61	60	60	59	60	61	58	58	56	50	46	72
9	P	39	38	38	41	43	47	51	54	54	53	50	53	55	56	56	60	58	61	62	62	62	59	56	55	52	49	45	71
10	P	39	38	38	40	46	49	51	53	54	54	54	56	58	59	59	59	60	58	57	57	58	58	56	54	51	48	45	70
11	P	38	37	37	42	45	51	54	53	55	54	56	61	63	66	67	67	69	68	66	66	66	67	64	62	60	56	53	77
12	F	37	38	40	45	52	54	53	53	50	50	51	55	56	55	56	58	58	57	56	57	56	56	55	53	51	48	45	69
13	F	35	35	35	41	47	51	52	53	53	53	52	53	56	55	54	56	57	57	59	59	58	60	60	56	56	51	49	70
14	P	35	35	38	45	49	51	53	56	60	60	61	65	67	68	67	69	68	66	63	62	63	63	61	58	57	53	51	77
15	F	36	37	41	47	51	53	53	52	54	53	56	56	57	60	62	61	62	61	61	60	60	61	60	58	56	53	51	72
16	F	36	38	43	43	48	50	49	50	50	48	49	49	50	52	53	54	56	56	57	57	56	57	57	55	52	50	46	68
17	P	35	34	34	39	43	46	48	48	49	50	53	55	57	56	58	58	58	56	55	56	58	58	56	54	51	47	44	69
18	F	36	36	38	43	49	51	52	52	54	54	55	56	57	59	61	61	62	60	60	59	60	61	60	58	56	52	49	72
19	F	36	36	42	47	51	58	60	61	62	62	62	65	66	67	67	68	68	69	68	69	67	67	66	63	64	59	54	79
20	F	36	37	40	45	50	54	53	52	55	53	55	57	58	60	62	62	62	61	61	59	60	62	61	59	57	53	51	72
21	P	35	34	37	42	46	48	53	55	57	58	58	62	63	64	63	65	63	62	64	63	64	63	62	61	59	54	51	75

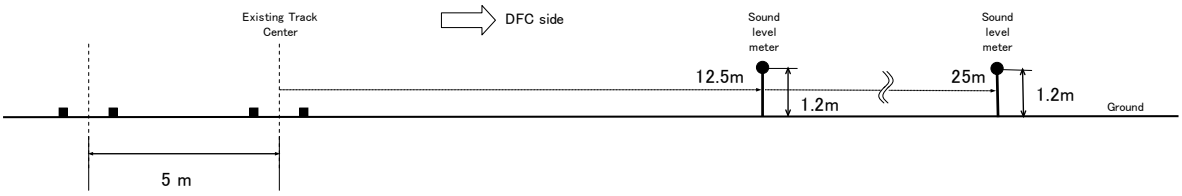
Note: P: passenger train, F: freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.

Source: JICA survey team

(2) Palgar

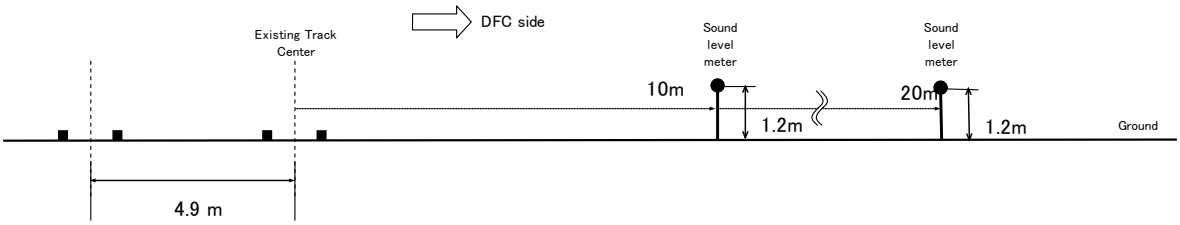
1) Cross-section View

Cross-section view of measurement site in Palgar are given in Figure 1.2-3 and Figure 1.2-4.



Source: JICA survey team

Figure 1.2-3 Cross-section View of Measurement Site in Palgar №1



Source: JICA survey team

Figure 1.2-4 Cross-section View of Measurement Site in Palgar №2

2) Result of Background Noise

Result of background noise measurement in Palgar is given in Table1.2-6.

Table 1.2-6 Result of Background Noise Measurement in Palgar

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Palgar	7-Oct	1	52.5	53.4	50.2	52.0	52.0
	7-Oct	2	54.6	52.5	50.7	50.4	51.6

Source: JICA survey team

3) Result of Railway Noise

Result of railway noise measurement in Palgar is given in Table 1.2-7 and Table 1.2-8.

Table 1.2-7 Result of Railway Noise Measurement in Palgar №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	7-Oct	10:18	P	68.7	24.8	40.5	489	up	95.8	89.5	91.2	84.2
2	7-Oct	10:24	P	35.5	38.7	52.6	422	down	85.6	79.6	73.9	66.8
3	7-Oct	10:31	P	98.9	18.0	25.3	489	up	87.4	77.8	86.1	76.5
4	7-Oct	10:46	P	96.9	20.9	30.5	556	up	86.4	77.3	85.1	75.9
5	7-Oct	11:06	P	103.6	14.8	15.3	444	up	86.5	78.6	85.3	77.5
6	7-Oct	11:14	F	80.7	28.2	30.8	641	up	84.3	75.8	82.9	74.4
7	7-Oct	11;26	P	45.4	27.9	33.6	377	down	79.7	72.2	78.2	70.8
8	7-Oct	11:31	F	58.2	36.9	51.4	641	down	92.9	86.6	79.3	72.0
9	7-Oct	11:42	P	79.3	22.7	37.9	511	up	93.7	85.3	83.9	73.8
10	7-Oct	12:32	P	40.5	35.5	46.9	422	down	76.9	70.6	75.4	69.0
11	7-Oct	12:39	P	52.2	34.7	37.3	422	up	77.4	67.8	75.9	66.3
12	7-Oct	12:43	F	91.7	26.6	31.2	641	down	85.1	78.5	83.7	77.1
13	7-Oct	12:49	P	82.2	24.7	29.4	489	up	83.2	73.0	81.8	71.6
14	7-Oct	12:51	P	68.5	14.8	25.8	288	down	88.1	81.6	78.0	70.7
15	7-Oct	12:56	P	66.9	35.9	36.7	556	up	77.3	89.6	75.8	88.1
16	7-Oct	13:09	F	73.4	32.3	54.0	641	up	84.4	75.7	82.9	74.2
17	7-Oct	13:15	P	98.2	18.7	28.5	422	up	86.9	79.5	85.7	78.3
18	7-Oct	13:22	P	112.5	17.2	34.9	556	down	96.6	90.1	85.0	78.0
19	7-Oct	13:43	F	85.4	32.2	44.1	650	down	96.8	91.4	83.2	78.0
20	7-Oct	14:06	P	51.6	16.7	28.3	308	down	88.6	72.6	79.3	71.4
21	7-Oct	14:16	F	113.1	25.1	45.6	655	up	99.2	78.9	90.9	77.5
22	7-Oct	14:27	P	66.0	23.1	24.5	422	up	82.1	73.0	80.8	71.6
23	7-Oct	14:37	F	83.3	28.2	52.3	675	up	98.3	78.1	86.1	76.7
24	7-Oct	14:51	P	41.6	26.4	28.8	288	down	75.7	68.8	74.3	67.3
25	7-Oct	14:55	F	60.3	37.4	41.4	641	up	84.5	75.7	82.9	74.1
26	7-Oct	15:02	P	99.3	20.6	33.1	556	down	95.2	88.2	84.3	76.1
27	7-Oct	15:18	P	119.4	14.4	25.9	288	down	96.3	89.8	85.8	79.0
28	7-Oct	15:32	F	86.9	27.5	31.0	641	down	85.7	78.7	84.3	77.3
29	7-Oct	16:13	P	103.3	19.3	33.6	489	down	94.8	88.7	83.6	76.8
30	7-Oct	16:18	F	47.0	38.4	45.6	650	up	83.9	76.2	82.3	74.6
31	7-Oct	16:19	P	102.3	16.9	28.2	489	down	85.8	79.5	84.6	78.2
32	7-Oct	16:38	P	31.4	55.3	77.7	556	down	87.1	81.8	75.6	68.4
33	7-Oct	16:55	F	52.3	43.4	52.3	641	up	82.0	74.3	80.3	72.7
34	7-Oct	17:09	P	140.8	18.9	19.8	531	up	86.0	76.1	84.8	74.8
average		Passenger(P)		86.7	23.4	29.6	484	up	85.7	78.9	83.3	76.2
				71.0	25.3	37.4	420	down	87.5	80.3	79.8	72.7
		Freight(F)		72.9	33.3	46.0	649	up	88.1	76.4	84.1	74.9
				80.6	30.8	39.4	643	down	90.1	83.8	82.6	76.1

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

Table 1.2-8 Result of Railway Noise Measurement in Palgar №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									10.0m	20.0m	10.0m	20.0m
1	7-Oct	13:44	F	85.3	32.3	44.8	650	down	99.4	94.4	85.4	80.1
2	7-Oct	14:17	F	115.7	24.5	27.1	655	up	87.6	82.2	86.2	80.9
3	7-Oct	14:26	P	83.0	18.4	27.1	422	up	91.1	84.9	89.9	83.6
4	7-Oct	14:37	F	83.5	28.1	38.3	650	up	90.9	84.1	89.4	82.7
5	7-Oct	14:47	P	81.5	18.8	17.7	288	up	81.9	75.3	80.6	74.1
6	7-Oct	14:50	P	57.1	19.2	29.1	288	down	92.4	87.6	81.9	77.3
7	7-Oct	14:53	F	58.9	38.3	39.5	641	up	86.8	80.2	85.2	78.7
8	7-Oct	15:00	P	100.5	20.3	31.4	556	down	98.1	93.0	87.3	82.6
9	7-Oct	15:32	F	88.8	26.9	47.2	641	down	100.6	95.3	87.5	82.0
10	7-Oct	15:36	P	110.7	15.6	28.4	355	up	86.7	81.5	85.5	80.3
11	7-Oct	16:12	P	104.7	19.0	34.5	489	down	86.8	81.7	85.5	80.4
12	7-Oct	16:16	F	46.9	38.5	49.3	650	up	87.2	80.1	85.6	78.5
13	7-Oct	16:18	P	96.0	18.1	33.5	489	down	96.5	91.3	85.2	80.0
14	7-Oct	16:37	P	44.0	39.6	60.0	556	down	91.7	86.9	80.0	75.3
15	7-Oct	16:40	P	88.8	19.0	23.5	466	up	86.5	83.1	85.3	81.8
16	7-Oct	16:53	F	55.4	41.0	47.3	641	up	85.0	78.1	83.4	76.5
17	7-Oct	17:08	P	96.0	27.8	41.3	531	up	100.1	96.9	93.7	90.4
average		Passenger(P)		92.0	19.9	27.6	412	up	89.3	84.3	87.0	82.0
				80.4	23.2	37.7	475	down	93.1	88.1	84.0	79.1
		Freight(F)		72.1	34.1	40.3	648	up	87.5	80.9	86.0	79.4
				87.0	29.6	46.0	646	down	100.0	94.9	86.4	81.0

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

4) Result of Frequency Analysis

Result of 1/3 octave band frequency analysis is given in Table1.2-9 and Table1.2-10. In Palgar No.1, in consideration of all results roughly, the frequency of 1000Hz was mainly dominated. In Palgar No.2, in consideration of all results roughly, the frequency of 800Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was similar to the case in Japan, and this would be suitable value. In addition, in case of countermeasure (e.g. soundproof) for railway noise, Japanese countermeasure method might be available.

Table 1.2-9 Result of 1/3 Octave Band Frequency Analysis of Railway Noise in Palgar №1

a	train type	Noise Level [dB(A)]																											
		Frequency [Hz]																											
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	34	35	36	36	41	44	47	49	53	57	58	60	63	64	66	67	68	69	67	61	61	63	62	59	57	52	47	76
2	P	35	34	35	36	39	39	38	40	41	44	45	52	55	55	54	55	55	54	54	54	57	57	54	51	48	45	41	66
3	P	36	36	38	40	43	47	50	52	57	58	60	63	66	67	70	72	74	74	73	69	70	69	68	66	64	59	56	82
4	P	37	37	39	41	44	47	49	53	55	55	58	63	65	67	70	71	74	74	72	69	69	68	66	65	62	58	55	81
5	P	38	38	40	40	44	47	51	52	56	57	59	67	67	69	72	73	76	77	75	71	71	70	68	67	65	59	56	84
6	F	38	40	44	47	49	52	53	55	59	60	63	62	64	66	69	70	71	70	71	69	68	67	67	65	62	58	55	80
7	P	38	38	38	39	42	42	40	41	43	44	48	53	57	58	58	59	61	61	59	58	62	63	60	57	55	49	46	71
8	F	38	41	44	45	51	52	51	50	55	55	56	58	59	61	63	64	65	65	64	63	65	68	66	63	61	57	53	76
9	P	39	38	39	39	45	47	49	49	52	55	56	60	62	65	67	69	71	71	69	64	65	64	63	60	57	54	51	78
10	P	39	38	39	40	41	41	39	42	42	44	47	52	58	58	58	59	61	62	58	58	62	63	59	56	54	49	45	71
11	P	39	38	38	38	39	40	43	47	49	51	51	58	57	58	59	60	60	59	57	55	58	57	55	52	49	46	41	70
12	F	40	46	52	57	55	56	52	53	56	55	56	58	62	66	68	70	72	71	71	70	71	72	70	67	66	62	59	81
13	P	39	39	39	39	42	43	47	50	52	56	57	62	64	64	66	68	69	70	68	63	64	64	64	61	58	52	48	77
14	P	40	39	40	41	43	41	42	43	46	46	48	54	58	59	61	62	65	66	62	62	64	65	62	58	56	53	51	74
15	P	39	38	38	39	43	45	45	46	51	54	54	61	60	60	63	63	64	63	60	56	57	58	55	53	50	47	43	72
16	F	39	40	43	45	49	52	53	55	57	60	62	63	63	66	69	69	69	69	70	66	66	68	67	65	62	59	56	79
17	P	39	39	42	42	45	48	53	52	56	57	58	65	66	68	71	72	75	75	73	69	70	69	67	66	63	59	55	82
18	P	39	40	45	45	49	49	47	47	51	52	53	63	65	66	68	71	74	74	72	71	74	73	70	69	67	62	60	83
19	F	39	40	45	49	50	54	56	57	60	60	63	68	70	66	67	68	69	70	69	71	70	71	69	67	65	60	58	81
20	P	39	39	39	40	40	42	41	42	44	44	46	53	57	58	60	61	63	64	60	60	62	63	60	57	53	49	47	72
21	F	40	41	44	47	53	54	55	57	61	63	65	65	67	68	71	72	73	74	74	70	70	72	72	70	68	63	60	83
22	P	39	39	39	38	42	43	47	48	50	57	57	61	64	64	66	68	69	69	66	60	61	63	60	57	55	51	46	76
23	F	41	42	46	49	53	55	57	56	60	61	65	64	66	68	70	72	73	73	72	70	72	71	71	68	67	62	59	82
24	P	39	39	39	40	40	41	40	40	42	44	47	54	57	57	57	58	60	60	57	58	62	63	59	56	54	49	45	71
25	F	40	41	42	46	51	50	51	51	56	58	60	60	61	62	65	67	67	68	66	63	63	65	64	62	59	55	52	76
26	P	40	40	41	44	49	47	47	46	48	50	52	60	64	65	67	70	73	74	72	70	73	72	69	67	65	60	58	82
27	P	40	40	45	43	48	49	48	48	50	51	52	60	65	67	68	71	75	76	73	72	75	75	71	69	68	63	61	84
28	F	40	44	45	47	54	58	56	53	59	57	58	61	63	65	67	70	71	72	71	71	71	72	72	68	67	63	59	81
29	P	39	40	43	45	48	48	48	48	48	51	52	60	63	64	66	69	72	72	70	68	71	69	67	65	62	59	57	80
30	F	39	38	39	41	43	46	52	56	62	60	61	64	63	62	62	65	65	64	64	63	63	64	63	60	56	52	48	75
31	P	39	39	40	45	48	47	47	48	49	51	52	59	64	65	67	70	73	73	70	69	72	72	69	67	65	60	58	81
32	P	39	38	37	38	39	40	41	41	41	43	45	54	54	55	56	56	58	57	55	55	58	58	55	52	49	45	41	68
33	F	39	38	39	41	40	45	46	47	52	57	60	60	60	60	64	66	67	67	65	60	61	62	62	59	56	53	49	75
34	P	38	38	40	41	43	47	50	52	55	55	57	64	66	67	69	69	72	71	70	68	69	69	68	66	63	59	56	80

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

Table 1.2-10 Result of 1/3 Octave Band Frequency Analysis of Railway Noise In Palgar №2

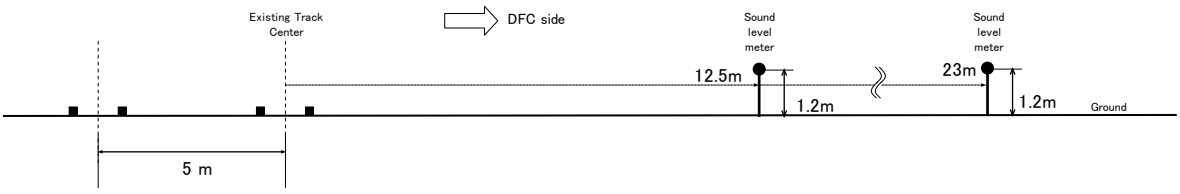
№	train type	Noise Level [dB(A)]																											
		Frequency [Hz]																											
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	F	39	38	39	45	51	56	59	61	63	62	63	66	67	67	70	72	75	74	72	73	73	73	73	72	71	66	64	84
2	F	40	41	43	47	51	57	57	59	61	62	63	62	63	68	73	73	76	76	76	72	71	72	72	71	69	66	63	84
3	P	39	39	38	39	43	48	51	54	55	58	56	60	63	65	70	74	76	77	72	68	68	67	68	65	63	60	56	83
4	F	42	43	44	50	54	61	62	60	61	62	63	62	63	67	71	73	75	75	74	72	72	72	73	69	68	65	62	83
5	P	40	39	38	39	42	47	48	49	53	54	52	55	57	60	64	66	68	68	62	62	61	60	60	56	53	50	47	75
6	P	40	38	38	39	46	48	52	54	55	53	47	58	61	63	65	67	69	68	65	64	68	69	67	65	64	58	55	78
7	F	40	40	40	47	51	55	55	58	64	65	66	64	62	66	72	74	75	75	72	71	70	71	72	69	67	65	62	83
8	P	40	39	39	44	46	52	58	58	58	54	52	63	64	68	70	75	76	76	73	72	75	74	72	71	70	65	63	84
9	F	41	46	47	51	58	60	59	58	60	58	58	59	62	67	72	74	75	75	74	74	74	76	76	74	74	70	67	85
10	P	40	39	39	41	44	48	50	53	56	58	56	60	61	63	69	71	74	73	70	67	68	66	67	65	63	61	58	80
11	P	40	40	40	45	49	53	60	58	58	55	52	58	61	69	71	75	75	75	72	70	74	72	70	69	68	64	61	83
12	F	40	39	39	39	46	49	53	55	58	59	59	61	61	62	63	67	67	65	66	65	65	65	65	62	58	54	52	76
13	P	40	39	38	43	47	52	59	58	57	55	52	59	64	68	70	74	75	74	72	71	74	73	71	71	70	64	61	83
14	P	40	39	38	39	42	46	51	54	52	49	45	54	57	60	62	65	66	65	62	61	65	66	62	61	60	55	51	75
15	P	40	39	39	41	46	49	52	55	59	62	61	62	63	66	71	73	77	76	72	70	70	68	67	65	63	60	57	83
16	F	40	40	38	38	41	46	45	49	54	57	60	57	56	61	67	70	72	72	70	64	64	65	66	62	61	57	54	79
17	P	40	39	38	41	47	48	49	53	58	60	58	61	62	65	70	72	75	75	72	71	72	70	70	68	66	62	58	83

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

(3) Boisar

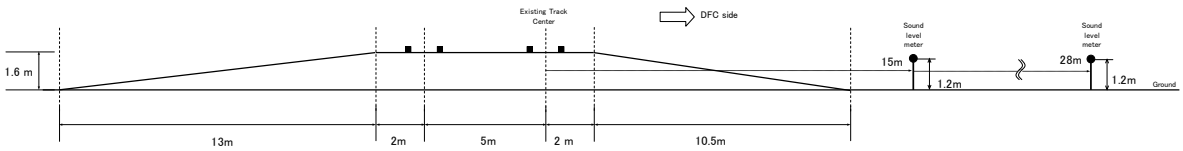
1) Cross-section View

Cross-section view of measurement site in Boisar are given in Figure 1.2-5 and Figure 1.2-6.



Source : JICA Survey Team

Figure 1.2-5 Cross-section view of Measurement Site in Boisar №1



Source : JICA Survey Team

Figure 1.2-6 Cross-section view of Measurement Site in Boisar №2

2) Result of Background Noise

Result of background noise measurement in Boisar is given in Table 1.2-11.

Table 1.2-11 Result of Background Noise Measurement in Boisar

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Boisar	5-Oct	1	54.4	49.9	53.2	53.2	53.0
	5-Oct	2	52.4	47.1	45.6	47.2	50.0

Source : JICA Survey Team

3) Result of Railway Noise

Result of railway noise measurement in Boisar are given in Table 1.2-12 and Table 1.2-13.

Table 1.2-12 Result of Railway Noise Measurement in Boisar №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	23.0m	12.5m	23.0m
1	5-Oct	10:28	P	41.5	31.5	46.7	399	down	85.9	82.3	77.1	71.7
2	5-Oct	10:49	P	105.4	16.0	17.4	444	up	88.3	84.0	87.1	82.8
3	5-Oct	11:10	F	75.7	33.0	31.7	571	up	85.9	82.2	84.4	80.7
4	5-Oct	11:38	P	48.3	26.2	36.1	399	down	87.7	83.7	79.0	73.7
5	5-Oct	11:50	P	85.6	15.5	17.0	333	up	90.4	83.8	89.2	82.6
6	5-Oct	11:59	F	62.5	72.0	91.5	641	up	92.0	87.2	76.4	71.1
7	5-Oct	12:22	F	77.6	29.8	39.8	612	down	96.9	93.1	89.1	84.3
8	5-Oct	12:25	P	99.8	16.4	26.4	556	up	91.4	80.2	90.2	78.9
9	5-Oct	12:45	P	46.9	27.8	42.2	399	down	87.9	83.4	79.4	73.5
10	5-Oct	12:57	F	52.7	41.1	33.8	626	up	81.5	76.3	79.9	74.7
11	5-Oct	13:00	P	67.1	14.1	21.4	288	down	87.2	83.4	77.3	73.0
12	5-Oct	13:05	F	83.7	24.8	37.8	641	down	95.6	90.9	85.6	79.5
13	5-Oct	13:14	P	82.8	19.4	23.8	556	down	85.9	82.6	84.6	81.3
14	5-Oct	13:19	P	77.1	20.1	23.8	511	up	91.6	83.1	90.3	81.8
15	5-Oct	13:53	F	55.7	39.7	32.8	626	up	82.0	77.8	80.4	76.2
16	5-Oct	14:24	P	93.6	15.4	33.6	466	down	97.5	95.1	91.5	88.9
17	5-Oct	14:28	F	17.6	11.3	47.4	612	up	80.8	79.1	79.8	78.1
18	5-Oct	14:36	P	67.8	14.3	33.1	288	up	90.5	86.0	79.9	75.4
19	5-Oct	15:12	P	108.3	20.7	31.3	556	down	85.5	80.7	84.2	79.4
20	5-Oct	15:17	F	59.9	40.7	38.0	647	up	83.2	77.4	81.6	75.8
21	5-Oct	15:22	P	97.1	13.5	15.0	377	down	86.2	82.0	85.1	80.9
22	5-Oct	15:32	P	33.9	40.0	30.9	310	down	77.5	72.8	75.9	71.2
23	5-Oct	16:14	P	15.3	6.5	25.8	511	up	87.4	83.1	86.6	82.3
24	5-Oct	16:23	P	81.0	23.0	30.4	489	down	94.0	90.7	84.1	80.2
25	5-Oct	16:40	P	79.7	25.5	26.9	489	down	85.5	78.8	84.1	77.4
26	5-Oct	16:56	P	89.1	15.4	29.6	399	down	96.4	94.4	90.7	87.9
average		Passenger(P)		75.2	14.8	23.9	440	up	89.9	83.4	87.2	80.6
				72.5	22.7	30.7	427	down	88.1	84.2	82.8	78.3
		Freight(F)		54.0	39.6	45.9	621	up	84.2	80.0	80.4	76.1
				80.7	27.3	38.8	627	down	96.3	92.0	87.3	81.9

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

Table 1.2-13 Result of Railway Noise Measurement in Boisar №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									15.0m	28.0m	15.0m	28.0m
1	5-Oct	10:47	P	100.0	16.6	24.9	444	up	94.7	83.4	84.5	82.2
2	5-Oct	11:11	F	73.4	34.0	48.9	571	up	93.4	90.1	81.3	77.1
3	5-Oct	11:25	P	103.0	10.6	12.5	288	up	81.8	81.4	80.8	80.4
4	5-Oct	11:26	F	54.5	44.2	49.2	641	down	88.8	94.7	76.2	73.8
5	5-Oct	11:34	P	85.3	18.6	28.3	399	down	88.5	92.2	79.9	77.0
6	5-Oct	11:49	P	88.3	13.9	18.3	333	up	91.6	79.4	81.5	78.3
7	5-Oct	12:13	P	104.7	17.9	26.0	511	up	94.2	81.1	82.9	79.8
8	5-Oct	12:47	P	70.0	25.5	27.4	399	down	88.0	94.5	78.5	76.0
9	5-Oct	12:55	F	49.1	48.5	46.6	626	up	74.7	71.1	73.0	69.4
10	5-Oct	13:01	P	80.4	12.1	17.9	288	down	87.2	92.7	78.0	75.8
11	5-Oct	13:05	F	80.9	26.5	39.1	641	down	93.2	95.8	81.5	79.2
12	5-Oct	13:14	P	128.7	19.3	33.4	556	down	93.1	94.8	83.0	79.6
13	5-Oct	13:18	P	98.6	20.3	24.9	511	up	86.4	84.0	85.1	82.7
14	5-Oct	13:53	F	53.6	42.7	47.2	626	up	80.9	74.6	79.2	73.0
15	5-Oct	14:15	P	100.5	17.9	26.1	422	up	93.5	94.2	82.8	79.8
16	5-Oct	14:24	P	89.6	17.0	26.0	466	down	91.0	87.9	89.8	86.6
17	5-Oct	14:26	F	53.8	59.1	78.0	612	up	88.4	74.6	77.7	72.8
18	5-Oct	14:28	P	68.6	14.2	22.6	288	down	86.6	93.0	76.3	73.2
19	5-Oct	14:34	P	79.3	12.3	23.1	288	up	87.3	92.2	78.5	74.0
20	5-Oct	15:13	P	93.0	21.8	33.9	556	down	91.4	93.6	81.4	78.1
21	5-Oct	15:19	P	46.9	28.3	39.1	399	up	86.3	93.9	76.8	72.3
22	5-Oct	15:28	F	67.3	34.9	41.7	675	up	93.1	95.2	85.0	80.6
23	5-Oct	15:29	P	112.6	16.6	25.6	444	down	92.1	92.6	81.9	79.1
24	5-Oct	16:09	P	111.7	15.6	27.9	422	down	92.0	93.2	81.9	78.2
25	5-Oct	16:13	P	53.8	29.4	40.3	511	up	90.9	94.5	80.4	75.9
26	5-Oct	16:21	P	78.5	18.8	29.0	489	down	92.3	89.4	81.9	78.1
27	5-Oct	16:42	P	91.8	21.2	35.7	489	down	92.6	89.7	81.9	77.8
28	5-Oct	16:43	F	27.0	143.8	158.9	641	up	88.0	84.1	81.6	75.7
29	5-Oct	17:03	P	109.4	22.3	28.8	377	up	91.2	88.4	82.5	79.5
average		Passenger(P)		88.5	18.9	26.4	408	up	89.8	87.2	81.6	78.5
				91.8	18.2	28.0	436	down	90.4	92.1	81.3	78.1
		Freight(F)		54.0	60.5	70.2	625	up	86.4	81.6	79.6	74.8
				67.7	35.3	44.1	641	down	91.0	95.3	78.9	76.5

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

4) Result of Frequency Analysis

Result of 1/3 octave band frequency analysis are given in Table 1.2-14 and Table 1.2-15. In Boisar No.1, in consideration of all results roughly, the frequency of 1000Hz was mainly dominated. In Boisar No.2, in consideration of all results roughly, the frequency of 1000Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was similar to the case in Japan, and this would be suitable value. In addition, in case of countermeasure (e.g. soundproof) for railway noise, Japanese countermeasure method might be available.

Table 1.2-14 Result of 1/3 Octave Band Frequency Analysis of Railway Noise in Boisar №1

No.	train type	20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	30	31	33	38	39	41	44	48	50	54	52	52	51	52	55	56	58	57	54	55	58	57	55	51	47	45	40	67
2	P	33	33	34	40	45	48	50	50	56	58	62	70	69	68	72	75	79	79	76	73	74	70	69	68	62	59	56	85
3	F	34	34	40	44	49	54	57	61	67	69	68	68	68	67	69	71	74	74	72	72	70	69	69	66	63	60	58	82
4	P	36	36	36	38	43	43	45	47	50	55	53	55	53	53	56	57	59	59	56	56	58	60	56	54	50	47	43	69
5	P	37	36	37	40	45	44	47	51	55	60	61	68	69	66	68	71	73	72	68	65	66	64	63	60	56	54	51	80
6	F	38	37	37	39	45	49	50	52	57	58	56	58	56	55	57	59	60	61	61	58	58	57	57	54	50	48	44	71
7	F	40	40	47	50	54	56	57	59	60	61	61	60	60	60	64	67	69	69	68	70	68	66	67	64	61	56	53	78
8	P	39	38	38	41	47	47	49	49	54	58	61	70	70	67	71	73	76	76	72	69	70	67	66	64	58	56	52	83
9	P	40	39	38	39	42	42	45	48	50	55	54	53	53	53	55	57	59	60	57	56	61	61	58	55	50	46	42	70
10	F	40	39	41	44	48	50	51	58	62	65	65	65	65	61	63	65	68	69	67	68	67	65	66	63	60	56	53	78
11	P	40	40	41	43	43	45	46	47	52	54	55	57	54	55	58	63	65	65	62	64	61	62	60	56	52	49	46	73
12	F	41	43	47	53	55	54	57	58	61	63	63	61	59	62	67	68	69	71	71	68	67	70	69	66	64	59	56	80
13	P	40	40	43	49	48	49	50	53	55	59	58	61	59	62	66	70	72	73	70	68	69	68	67	65	60	56	53	80
14	P	41	40	40	43	46	51	52	51	56	59	62	70	71	69	73	76	79	78	76	73	74	70	69	67	62	60	56	85
15	F	40	39	40	44	48	50	51	59	63	66	65	65	66	62	63	66	68	69	68	69	68	67	67	64	62	61	61	79
16	P	40	40	41	48	48	50	51	54	57	59	58	62	60	61	65	68	71	72	70	70	71	69	68	65	61	57	55	80
17	F	40	40	40	43	47	49	51	58	62	63	63	63	64	60	62	63	67	67	66	67	65	64	65	62	58	55	53	77
18	P	40	39	39	43	44	46	50	50	57	60	62	66	65	62	65	69	71	70	66	64	63	62	62	58	55	53	50	78
19	P	40	40	42	46	45	48	52	54	54	58	57	60	60	62	66	69	73	74	71	69	69	68	66	64	60	56	52	80
20	F	40	39	40	43	46	49	52	59	62	65	65	65	65	62	62	65	68	69	66	67	66	65	65	63	60	56	54	78
21	P	40	39	42	49	47	50	52	53	56	59	58	61	60	61	66	69	72	73	72	73	73	73	72	71	66	61	58	82
22	P	40	39	38	38	39	40	43	47	48	51	48	47	45	48	50	52	51	52	52	51	54	53	50	48	44	42	38	65
23	P	40	39	39	42	44	47	49	50	54	59	61	67	67	66	69	72	75	75	71	67	68	67	67	64	59	56	53	81
24	P	39	39	43	46	46	48	50	54	54	58	58	60	59	62	66	68	71	73	70	69	70	69	67	65	60	55	52	80
25	P	39	39	42	46	47	49	51	55	55	58	58	60	59	61	65	68	71	72	70	69	70	69	68	65	60	56	53	79
26	P	39	39	43	46	47	47	50	53	53	57	59	59	58	63	66	68	70	71	69	68	68	66	65	62	59	55	52	78

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

Table 1.2-15 Result of 1/3 Octave Band Frequency Analysis of Railway Noise in Boisar №2

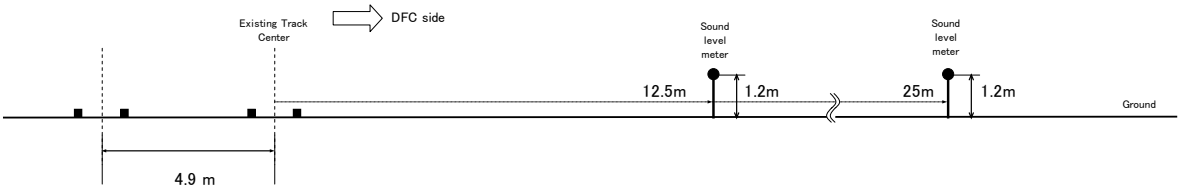
No.	train type	Noise Level [dB(A)]																											
		Frequency [Hz]																											
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	36	35	35	36	39	42	50	54	56	58	56	61	62	64	68	70	73	75	73	68	70	68	63	62	59	53	47	81
2	F	37	36	36	39	45	50	58	60	63	63	64	63	64	63	64	65	67	68	65	65	65	65	63	61	58	54	50	77
3	P	38	37	36	38	39	44	48	51	56	57	57	59	56	59	63	67	71	72	69	70	65	62	60	57	53	50	45	78
4	F	39	39	39	43	47	49	48	50	53	52	51	52	52	54	59	58	59	59	59	58	62	63	60	58	55	51	44	71
5	P	38	38	38	41	42	43	46	48	51	50	48	55	60	58	58	59	63	63	61	60	65	65	61	58	56	52	46	73
6	P	39	38	37	38	41	43	50	51	56	56	56	63	64	64	66	68	70	72	68	66	67	67	63	61	58	52	46	79
7	P	40	39	38	40	43	47	55	59	56	59	58	60	62	63	67	70	73	74	71	69	71	69	65	63	60	54	50	81
8	P	41	40	40	40	44	42	46	48	50	50	48	54	59	57	58	60	63	63	61	59	66	65	62	58	57	51	44	73
9	F	42	41	40	39	42	45	49	54	56	58	56	56	59	57	58	57	58	59	59	59	59	59	57	54	51	47	42	71
10	P	42	41	41	41	42	44	46	49	52	51	49	54	57	56	58	62	65	65	62	64	65	66	63	59	57	52	46	74
11	F	42	43	44	50	53	55	55	57	57	57	57	58	59	61	64	65	67	68	67	65	69	70	68	65	62	57	51	78
12	P	42	41	40	42	47	46	51	52	54	53	50	58	61	61	64	65	69	70	68	66	71	72	68	65	63	57	51	79
13	P	42	40	40	40	43	46	53	54	55	58	56	60	61	63	67	70	71	74	72	67	69	66	62	61	57	52	46	80
14	F	41	40	39	40	43	46	50	54	56	59	57	57	60	58	59	60	60	62	60	61	61	60	59	57	54	50	46	72
15	P	40	38	38	38	40	44	50	53	56	57	56	59	62	63	68	70	73	75	71	66	68	66	63	61	58	52	47	80
16	P	40	39	39	41	45	50	52	51	55	54	52	60	62	62	63	66	69	70	67	66	70	71	68	65	63	58	52	79
17	F	40	39	38	38	41	43	49	53	54	55	54	53	55	55	55	55	56	58	57	57	56	56	54	53	49	47	44	69
18	P	40	39	39	39	40	41	43	47	50	49	48	52	54	55	58	62	65	65	61	64	66	66	62	59	56	53	47	74
19	P	40	38	38	38	39	46	49	52	56	57	57	58	58	59	62	65	67	69	65	64	62	60	57	54	51	48	43	75
20	P	40	39	38	44	44	46	48	51	52	52	51	57	60	61	62	65	68	69	66	64	68	68	65	62	60	55	49	77
21	P	40	39	38	37	39	41	48	50	52	53	53	55	56	56	58	59	59	60	57	53	57	57	53	51	48	44	39	69
22	F	40	40	40	41	47	51	54	55	56	57	59	57	56	60	64	63	65	66	66	62	62	63	62	59	57	52	48	75
23	P	40	39	38	41	45	48	51	53	54	53	51	60	61	62	64	66	69	70	66	65	69	69	66	63	61	56	50	78
24	P	39	38	37	41	46	48	50	54	55	52	50	53	58	61	63	65	69	70	67	65	71	71	68	65	62	58	53	79
25	P	39	38	37	37	39	42	47	50	53	56	56	57	59	60	62	64	66	67	64	58	61	62	59	56	53	47	42	74
26	P	39	38	38	42	44	47	49	51	54	53	51	57	59	60	63	65	69	69	66	66	70	71	68	65	63	57	51	78
27	P	38	38	37	42	43	46	49	52	53	52	51	58	59	61	63	65	68	69	67	65	71	71	67	64	61	56	50	78
28	F	39	37	37	37	40	44	46	50	51	51	51	48	48	49	53	51	53	54	55	52	54	55	53	51	49	45	40	66
29	P	39	38	37	36	39	41	48	51	55	57	58	60	62	61	64	64	66	66	63	58	60	60	57	54	51	48	43	74

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

(4) Vapi

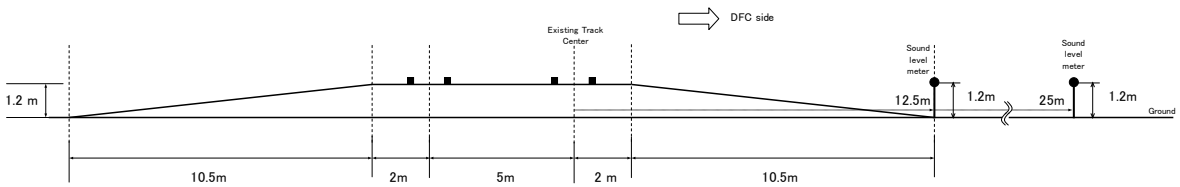
1) Cross-section View

Cross-section view of measurement site in Vapi are given in Figure 1.2-7 and Figure 1.2-8.



Source : JICA Survey Team

Figure 1.2-7 Cross-section View of Measurement Site in Vapi №1



Source : JICA Survey Team

Figure 1.2-8 Cross-section View of Measurement Site in Vapi №2

2) Result of Background Noise

Result of background noise measurement in Vapi is given in Table 1.2-16.

Table 1.2-16 Result of Background Noise Measurement in Vapi

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Vapi	1-Oct	1	48.2	51.8	50.2	50.7	50.5
	1-Oct	2	52.6	52.2	52.5	52.7	52.5

Source : JICA Survey Team

3) Result of Railway Noise

Result of railway noise measurement in Vapi is given in Table 1.2-17 and Table 1.2-18.

Table 1.2-17 Result of Railway Noise Measurement in Vapi №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	1-Oct	10:10	P	90.0	19.2	31.7	444	up	98.5	90.5	87.8	79.8
2	1-Oct	10:12	F	56.1	38.9	47.5	641	down	79.3	73.9	77.7	72.3
3	1-Oct	10:22	P	82.1	13.0	19.6	288	up	85.0	77.9	83.9	76.8
4	1-Oct	10:30	F	60.2	38.3	53.8	655	up	98.5	90.8	84.2	76.4
5	1-Oct	10:34	P	60.2	31.8	52.6	489	down	87.8	82.0	78.5	72.6
6	1-Oct	10:47	F	58.5	40.3	50.5	641	up	83.5	77.0	81.9	75.4
7	1-Oct	11:14	P	87.4	12.5	28.0	399	down	93.2	86.9	83.5	77.5
8	1-Oct	11:43	P	83.4	21.2	32.8	489	up	86.9	78.3	85.6	77.0
9	1-Oct	11:45	P	87.4	14.5	28.5	399	down	94.0	87.7	85.0	79.0
10	1-Oct	11:51	P	74.2	25.9	28.8	533	up	83.4	75.1	82.0	73.7
11	1-Oct	12:21	P	101.9	18.7	30.5	288	up	96.4	88.2	87.3	79.0
12	1-Oct	12:31	P	72.7	27.4	40.5	556	up	84.0	76.0	82.6	74.6
13	1-Oct	13:09	P	83.4	19.1	22.2	399	down	81.3	74.8	80.1	73.5
14	1-Oct	13:22	P	74.5	20.0	37.1	422	up	96.7	88.7	85.0	77.2
15	1-Oct	13:31	F	75.0	30.9	35.3	655	up	88.2	79.8	86.8	78.3
16	1-Oct	13:47	F	93.5	33.7	42.9	655	down	82.1	76.2	80.6	74.7
17	1-Oct	13:55	P	75.8	12.5	25.7	399	down	92.7	86.7	82.8	77.2
18	1-Oct	14:02	P	65.7	20.0	26.0	399	up	83.2	75.5	81.9	74.2
19	1-Oct	14:16	P	100.5	21.7	26.5	556	down	82.5	76.2	81.2	74.9
20	1-Oct	14:19	F	52.0	48.0	61.0	742	up	85.8	79.6	84.1	77.9
21	1-Oct	14:34	P	91.1	10.2	27.0	268	down	91.1	85.5	81.7	76.3
22	1-Oct	14:53	F	52.3	38.9	42.9	641	up	85.7	78.8	84.2	77.3
23	1-Oct	15:00	P	87.4	21.3	37.7	511	down	93.8	88.0	84.4	79.3
24	1-Oct	15:12	P	79.4	19.0	30.2	511	up	100.1	92.0	90.1	82.2
25	1-Oct	15:21	F	71.1	18.3	24.6	338	down	83.6	77.7	82.3	76.4
26	1-Oct	15:26	P	76.9	19.2	22.4	444	up	85.2	76.9	83.9	75.6
27	1-Oct	15:36	F	67.1	32.0	37.8	655	down	82.6	76.6	81.1	75.1
28	1-Oct	15:40	F	57.6	40.1	57.5	655	up	97.1	90.1	82.1	75.2
29	1-Oct	15:56	P	87.4	17.7	30.6	533	down	82.4	76.1	81.1	74.9
30	1-Oct	16:07	P	103.3	13.1	22.5	375	down	96.3	90.7	85.9	80.5
31	1-Oct	16:15	P	111.3	16.6	17.0	444	down	84.6	77.1	83.4	75.9
32	1-Oct	16:34	P	85.4	11.7	21.4	288	down	83.1	77.4	82.1	76.3
33	1-Oct	16:38	P	97.3	12.8	23.9	333	up	88.2	80.8	87.1	79.7
34	1-Oct	16:47	F	53.6	40.8	57.7	626	up	96.7	90.3	81.5	75.7
35	1-Oct	16:49	P	61.2	23.5	36.3	333	down	78.8	73.3	77.5	71.9
36	1-Oct	16:59	F	69.0	28.9	39.2	586	up	86.3	79.5	84.9	78.0
37	1-Oct	17:11	P	83.4	15.3	20.2	397	up	87.5	79.7	86.4	78.5
average		Passenger(P)		81.8	19.3	28.6	425	up	89.6	81.6	85.3	77.4
				86.3	17.4	28.9	415	down	87.8	81.7	82.1	76.1
		Freight(F)		59.8	38.3	49.7	650	up	90.2	83.2	83.7	76.8
				71.9	30.7	38.2	572	down	81.9	76.1	80.4	74.6

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

Table 1.2-18 Result of Railway Noise Measurement in Vapi №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	1-Oct	9:23	F	59.9	38.8	46.3	641	up	85.9	81.7	84.3	80.2
2	1-Oct	10:11	P	58.1	25.5	26.7	444	up	84.5	80.7	83.1	79.3
3	1-Oct	10:22	P	61.3	14.9	16.9	288	up	82.3	79.2	81.1	78.0
4	1-Oct	10:26	P	95.7	23.3	37.8	556	down	94.4	91.4	84.5	81.3
5	1-Oct	10:29	F	48.0	45.0	55.3	655	up	82.8	79.3	81.1	77.7
6	1-Oct	10:47	F	52.6	42.5	38.9	641	up	83.3	79.3	81.7	77.6
7	1-Oct	10:57	P	69.6	13.6	17.7	288	up	87.5	83.7	86.4	82.6
8	1-Oct	10:58	F	33.6	66.9	57.2	655	down	74.7	71.4	72.9	69.6
9	1-Oct	11:13	P	86.4	14.8	24.8	399	down	89.6	86.8	78.3	75.4
10	1-Oct	11:44	P	109.8	16.0	27.6	399	down	91.8	88.6	80.4	76.8
11	1-Oct	11:49	P	59.0	29.1	27.2	533	up	82.0	77.5	80.5	76.0
12	1-Oct	12:19	P	79.6	11.8	22.8	288	up	93.9	90.4	85.4	81.7
13	1-Oct	12:29	P	59.5	32.1	44.6	556	up	94.4	90.5	81.3	77.1
14	1-Oct	13:30	F	62.1	36.7	42.5	655	up	84.7	80.1	83.1	78.5
15	1-Oct	13:47	F	75.7	32.8	45.4	655	down	93.7	77.1	79.3	75.6
16	1-Oct	13:55	P	101.7	16.5	20.2	399	down	79.6	76.1	78.4	74.9
17	1-Oct	14:01	P	41.2	37.7	56.2	399	up	88.7	85.0	78.3	73.8
18	1-Oct	14:17	P	91.8	24.2	35.6	556	down	92.4	88.6	81.8	77.7
19	1-Oct	14:18	F	67.4	34.3	49.5	742	up	101.2	97.0	87.0	83.1
20	1-Oct	14:34	P	74.5	13.5	22.2	268	down	77.9	74.1	76.8	73.0
21	1-Oct	14:49	F	69.1	32.3	36.5	655	down	88.3	85.7	86.8	84.2
22	1-Oct	14:50	F	63.7	40.0	56.6	641	up	97.7	93.5	83.9	79.3
23	1-Oct	15:01	P	51.8	38.2	42.9	511	down	78.1	76.5	76.5	74.9
24	1-Oct	15:13	P	124.3	18.9	35.5	511	up	98.6	95.2	89.3	85.4
25	1-Oct	15:23	F	60.2	22.8	36.6	338	down	90.0	86.7	78.7	74.4
26	1-Oct	15:25	P	58.7	24.8	25.1	444	up	81.0	76.4	79.6	75.0
27	1-Oct	15:35	F	74.0	32.0	46.4	655	down	94.9	91.7	80.3	77.0
28	1-Oct	15:39	F	50.8	41.5	49.3	655	up	83.9	79.7	82.3	78.1
29	1-Oct	15:57	P	95.3	20.5	33.6	533	down	93.8	91.1	81.3	78.6
30	1-Oct	16:08	P	156.1	12.6	16.6	375	down	85.4	82.6	84.3	81.5
31	1-Oct	16:15	P	90.0	18.0	16.6	444	down	81.9	79.0	80.6	77.8
32	1-Oct	16:34	P	63.7	16.3	27.5	288	down	88.8	85.4	78.7	74.3
33	1-Oct	16:37	P	71.3	17.0	24.7	333	up	93.3	89.6	82.5	78.4
34	1-Oct	16:46	F	43.5	49.4	65.4	626	up	96.1	92.6	81.5	78.9
35	1-Oct	16:58	F	73.8	28.0	42.2	586	up	98.6	95.0	84.7	80.8
36	1-Oct	17:09	P	71.9	20.4	23.3	397	up	82.8	78.3	81.5	77.0
average		Passenger(P)		68.6	22.4	29.1	407	up	88.1	84.2	82.6	78.6
				92.4	19.4	27.8	430	down	86.7	83.7	80.1	76.9
		Freight(F)		58.0	39.6	49.6	649	up	90.5	86.5	83.3	79.3
				62.5	37.4	44.4	592	down	88.3	82.5	79.6	76.2

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

4) Result of Frequency Analysis

Result of 1/3 octave band frequency analysis are given in Table 1.2-19 and Table 1.2-20. In Vapi No.1, in consideration of all results roughly, the frequency of 800Hz was mainly dominated. In Vapi No.2, in consideration of all results roughly, the frequency of 400Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was similar to the case in Japan, and this would be suitable value. In addition, in case of countermeasure (e.g. soundproof) for railway noise, Japanese countermeasure method might be available.

Table 1.2-19 Result of 1/3 Octave Band Frequency Analysis of Railway Noise in Vapi №1

No.	train type	Noise Level [dB(A)]																										
		Frequency [Hz]																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	31	32	34	39	42	44	52	61	60	64	64	69	70	71	73	73	76	76	72	70	70	68	67	63	61	57	52	83
2	F	30	30	31	38	46	50	53	56	57	62	60	59	61	62	62	63	64	66	66	67	66	66	65	63	61	58	56	76
3	P	29	30	31	35	41	44	54	58	59	63	63	67	69	69	71	72	73	73	69	67	67	67	65	61	59	55	50	81
4	F	36	44	48	51	53	56	57	58	62	63	64	64	68	70	72	72	74	72	70	69	68	68	68	64	63	59	55	82
5	P	31	30	30	34	40	42	45	48	51	53	53	56	56	57	58	58	60	59	56	54	56	55	53	51	48	46	42	68
6	F	32	33	35	39	47	55	56	63	66	68	67	67	70	68	68	66	67	68	69	70	69	69	69	66	67	64	61	81
7	P	32	32	34	37	44	46	49	52	54	58	59	62	64	66	67	69	73	73	71	69	71	70	68	66	63	61	59	81
8	P	34	33	35	37	43	46	54	58	58	62	63	68	70	70	73	74	76	76	71	69	68	68	66	63	60	56	51	83
9	P	34	33	35	39	43	47	48	51	53	56	57	60	63	67	68	69	73	73	71	68	70	68	67	65	62	59	55	80
10	P	34	33	33	36	43	46	54	57	57	61	61	67	69	69	71	72	73	73	68	65	65	65	63	60	57	54	49	81
11	P	35	33	34	39	41	47	50	58	62	64	68	70	70	71	74	75	80	77	73	75	72	71	69	65	63	61	59	86
12	P	35	35	35	35	43	47	55	58	58	63	62	66	69	70	71	71	73	72	68	66	66	66	64	61	58	54	50	81
13	P	35	34	34	36	43	44	47	50	54	55	57	60	63	63	64	66	70	69	66	64	65	65	64	61	58	54	50	77
14	P	35	34	34	35	42	44	53	57	57	62	62	68	70	70	73	75	76	76	71	67	68	67	65	62	60	55	51	83
15	F	36	37	39	44	47	52	56	59	62	65	67	67	69	72	74	74	76	75	73	72	71	71	71	67	66	62	59	84
16	F	36	36	38	41	49	52	54	55	59	60	62	60	60	63	66	66	68	68	68	66	66	66	66	63	62	62	60	78
17	P	36	36	37	38	44	45	48	52	53	56	58	60	63	65	65	67	71	72	69	68	68	67	66	64	62	59	56	79
18	P	37	38	38	38	45	47	54	57	56	61	61	66	68	68	70	70	71	71	67	65	65	65	63	60	58	54	50	79
19	P	37	38	38	39	45	46	48	52	55	58	59	63	64	66	66	67	72	72	69	66	67	66	64	62	58	55	50	79
20	F	40	40	41	44	51	56	62	65	67	69	68	69	70	69	68	67	68	69	69	69	68	68	68	65	64	62	62	81
21	P	37	37	38	40	44	49	50	53	55	58	61	62	62	64	65	68	72	71	67	69	67	67	66	64	62	62	60	79
22	F	36	36	36	40	46	53	57	64	66	68	67	68	70	69	67	66	67	68	69	70	69	69	69	66	64	61	58	80
23	P	36	35	35	36	44	47	50	50	54	55	57	64	62	65	65	67	71	71	68	68	67	66	64	62	58	54	50	78
24	P	35	35	35	40	44	45	50	56	60	63	66	71	73	72	76	77	79	80	76	73	74	72	70	67	64	60	56	86
25	F	35	38	41	49	55	55	55	58	59	59	60	60	62	62	64	67	69	69	68	68	66	65	65	62	61	58	54	78
26	P	35	35	35	37	42	46	52	59	58	63	63	67	70	70	72	73	74	74	70	68	67	66	65	61	58	55	50	82
27	F	37	38	41	48	54	55	53	54	57	58	60	60	61	64	65	68	70	70	70	68	69	69	69	65	64	60	58	79
28	F	37	39	42	45	54	59	58	60	64	64	65	65	67	69	70	69	70	70	70	69	68	68	68	64	64	60	58	80
29	P	36	35	36	37	44	45	47	54	55	57	59	62	63	65	66	68	73	73	70	67	68	66	65	63	59	55	50	80
30	P	36	35	36	39	45	48	50	52	55	57	59	64	64	67	69	72	76	78	75	74	74	74	73	71	67	63	59	85
31	P	37	36	36	39	44	48	48	51	52	58	58	63	63	68	67	69	78	74	71	70	70	68	66	64	60	56	51	82
32	P	38	37	36	38	44	46	47	50	54	54	57	62	62	65	66	69	72	72	70	67	68	66	65	63	59	55	50	79
33	P	38	37	37	38	44	43	52	58	60	64	65	70	71	71	74	75	78	78	74	72	73	71	69	66	62	58	54	85
34	F	38	37	37	41	48	55	57	62	65	68	66	66	69	67	66	64	66	67	68	69	68	69	68	66	66	64	64	80
35	P	39	37	37	38	41	43	46	51	54	56	55	59	59	59	59	59	61	61	58	57	59	56	55	52	48	46	41	71
36	F	39	38	41	46	48	52	59	60	64	67	68	68	69	72	73	73	74	74	74	72	71	71	71	68	68	62	61	84
37	P	39	38	38	39	43	44	52	56	61	62	65	68	72	72	75	75	77	77	74	73	73	71	69	67	64	61	57	85

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

Table 1.2-20 Result of 1/3 Octave Band Frequency Analysis of Railway Noise in Vapi №2

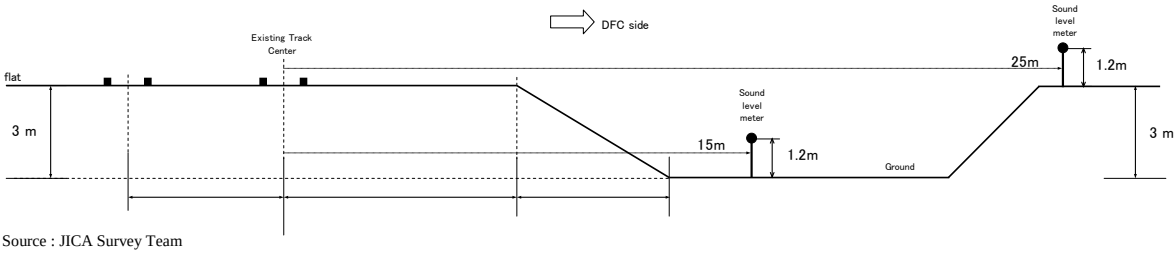
No.	train type																												
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	F	28	29	33	38	48	55	61	64	70	70	70	70	71	71	69	67	67	68	69	69	71	72	70	67	66	63	61	82
2	P	31	31	30	34	42	48	56	59	63	64	64	69	67	70	69	68	68	66	63	61	65	65	61	58	55	50	45	78
3	P	32	31	32	35	44	47	56	59	60	66	66	66	70	69	69	69	68	67	63	61	64	67	63	58	56	51	47	79
4	P	33	32	32	35	43	44	50	55	57	58	55	62	66	69	69	68	68	68	66	67	70	70	66	64	61	55	50	79
5	F	38	41	47	52	56	56	58	60	62	64	66	65	65	67	69	68	68	66	65	64	65	66	64	63	61	56	51	78
6	F	33	33	33	37	45	52	58	64	68	69	68	67	69	68	66	64	64	65	68	68	69	70	69	65	66	61	58	80
7	P	34	33	33	36	46	50	55	57	61	65	66	69	71	72	74	74	76	74	69	66	69	69	65	61	59	54	50	83
8	F	34	34	35	39	43	46	49	52	56	56	54	52	56	60	60	56	56	57	59	59	60	61	59	54	53	51	48	70
9	P	35	34	34	35	41	44	49	55	55	56	55	59	65	68	67	67	66	67	65	65	67	68	65	62	58	53	48	77
10	P	35	34	34	37	43	44	47	53	56	56	55	59	65	69	69	68	68	68	67	67	71	70	67	64	61	56	51	79
11	P	35	34	34	36	44	47	55	60	61	64	65	66	68	69	69	69	68	66	63	61	64	65	61	58	56	50	46	78
12	P	36	34	36	39	45	51	55	59	62	67	66	69	69	70	70	73	72	69	66	66	69	67	66	63	62	60	58	81
13	P	35	34	33	36	42	49	57	59	62	62	63	65	67	68	69	69	68	66	61	59	64	66	61	58	55	50	45	78
14	F	36	36	36	43	51	56	57	59	66	66	67	66	67	70	70	69	69	68	67	66	67	68	67	64	62	58	55	80
15	F	36	37	39	42	49	53	55	56	60	60	61	60	64	68	69	66	65	65	66	64	66	67	65	61	59	55	53	77
16	P	36	36	35	36	42	42	49	54	54	57	55	59	66	68	68	66	65	66	64	63	67	67	64	61	57	52	47	77
17	P	37	36	35	37	42	48	56	56	57	58	59	60	64	65	65	63	63	62	58	57	61	61	57	53	50	47	41	74
18	P	37	37	36	37	42	43	50	54	55	57	56	61	66	69	68	66	65	66	65	64	67	67	63	60	57	52	47	77
19	F	37	36	36	40	49	56	63	69	73	75	74	73	75	73	71	70	71	72	72	73	73	73	72	69	68	65	62	85
20	P	38	37	36	37	39	42	47	50	51	56	54	56	62	65	65	64	63	63	62	66	65	65	62	58	54	49	45	75
21	F	38	38	39	43	48	55	56	58	59	60	61	59	63	68	69	66	66	66	67	65	67	68	66	63	59	55	52	78
22	F	38	37	37	38	45	52	58	63	67	70	69	67	69	69	66	65	65	66	67	68	69	70	69	66	65	62	60	80
23	P	38	37	36	36	40	42	51	50	53	57	53	58	60	61	59	56	55	54	53	54	58	57	53	49	46	43	39	69
24	P	38	37	37	39	46	51	56	59	61	65	67	71	73	75	75	75	76	75	72	70	73	73	69	67	64	58	53	85
25	F	38	39	40	48	52	53	53	56	57	57	57	57	65	65	62	61	62	63	62	64	64	64	61	58	55	51	47	74
26	P	38	37	36	37	43	48	56	59	60	64	64	66	68	68	69	68	68	67	63	60	64	65	62	57	55	49	44	78
27	F	39	39	41	47	52	55	54	56	58	59	59	58	64	68	68	67	66	67	68	67	70	70	68	64	61	58	55	79
28	F	39	40	40	45	54	57	60	62	65	66	67	65	66	68	68	67	66	66	67	67	69	70	68	64	63	59	57	79
29	P	39	38	37	38	42	43	50	54	57	57	56	61	66	69	69	69	69	69	68	67	71	71	66	63	60	55	50	80
30	P	39	38	37	39	44	52	54	56	59	60	57	63	68	70	70	70	71	73	72	73	75	76	71	69	65	61	56	83
31	P	39	38	37	37	43	43	49	54	56	58	56	63	66	70	69	68	67	67	67	67	69	69	64	61	58	54	49	79
32	P	39	38	36	36	41	40	46	51	53	56	55	57	63	67	66	63	64	64	62	61	65	65	61	57	54	49	44	75
33	P	39	37	37	37	43	48	55	59	61	64	66	67	70	69	69	70	70	69	65	63	66	68	64	60	57	52	47	80
34	F	39	38	37	39	45	53	57	63	65	67	67	64	67	66	63	61	61	63	65	66	67	68	66	63	63	61	58	78
35	F	39	38	41	45	50	55	61	61	66	69	70	68	70	72	73	72	72	72	71	70	71	73	71	67	67	61	59	83
36	P	39	37	37	37	44	49	56	60	61	64	67	66	71	70	70	69	69	69	65	63	65	67	64	60	57	52	47	79

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

(5) Valsad

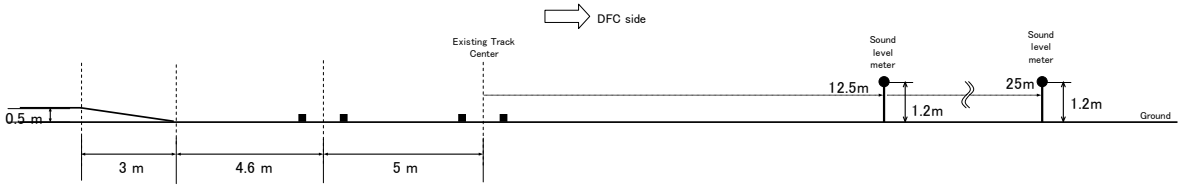
1) Cross-section View

Cross-section view of measurement site in Valsad are given in Figure 1.2-9 and Figure 1.2-10.



Source : JICA Survey Team

Figure 1.2-9 Cross-section View of Measurement Site in Valsad №1



Source : JICA Survey Team

Figure 1.2-10 Cross-section View of Measurement Site in Valsad №2

2) Result of Background Noise

Result of background noise measurement in Valsad is given in Table 1.2-21.

Table 1.2-21 Result of Background Noise Measurement in Valsad

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Valsad	2-Oct	1	48.6	46.8	47.2	47.1	47.1
	2-Oct	2	49.8	46.9	49.2	50.1	49.2

Source : JICA Survey Team

3) Result of Railway Noise

Result of railway noise measurement in Valsad is given in Table 1.2-22 and Table 1.2-23.

Table 1.2-22 Result of Railway Noise Measurement in Valsad №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	2-Oct	10:35	P	26.0	13.0	11.1	288	up	81.8	84.0	80.7	82.9
2	2-Oct	10:49	P	87.7	19.6	30.7	466	down	71.9	75.7	70.6	74.4
3	2-Oct	11:02	P	63.5	27.6	45.9	489	up	90.9	92.4	79.4	79.9
4	2-Oct	11:14	P	49.3	37.5	35.5	533	up	76.3	76.5	74.7	74.9
5	2-Oct	11:23	F	75.9	26.9	35.7	572	up	95.6	96.6	86.6	87.0
6	2-Oct	11:30	F	91.0	26.6	36.9	641	up	96.7	97.9	89.6	89.9
7	2-Oct	11:39	P	61.7	25.4	44.1	288	down	77.2	81.5	66.2	69.8
8	2-Oct	11:41	P	49.2	18.8	32.1	399	up	88.6	88.7	80.8	78.7
9	2-Oct	11:51	P	67.4	29.8	47.0	556	up	90.4	91.7	78.2	78.8
10	2-Oct	12:03	F	74.8	33.3	46.9	641	up	94.3	95.3	83.0	83.5
11	2-Oct	12:19	F	98.1	25.7	39.0	593	up	96.2	98.0	84.9	87.0
12	2-Oct	12:25	P	78.5	19.5	27.2	489	down	69.0	72.7	67.7	71.4
13	2-Oct	12:36	F	54.7	46.4	68.9	641	down	82.5	86.4	70.8	73.3
14	2-Oct	12:43	P	73.8	16.2	19.2	422	up	78.7	80.0	77.5	78.8
15	2-Oct	13:45	F	77.0	12.4	49.0	628	up	95.1	95.1	85.6	85.6
16	2-Oct	13:59	F	81.0	30.3	43.4	641	up	93.5	94.7	82.8	83.3
17	2-Oct	14:14	F	83.1	27.0	28.2	641	up	87.1	87.1	85.7	85.7
18	2-Oct	14:19	P	87.9	16.1	34.8	422	down	81.2	85.7	70.6	74.8
19	2-Oct	14:36	P	98.1	20.6	27.6	556	down	79.5	79.5	78.2	78.2
20	2-Oct	14:37	P	60.8	23.8	37.3	422	up	90.9	90.9	80.1	80.1
21	2-Oct	14:46	F	69.3	34.0	47.1	626	down	84.7	88.0	72.6	74.5
22	2-Oct	14:55	F	59.3	48.5	66.4	641	down	80.3	83.8	70.2	71.3
23	2-Oct	15:09	P	79.3	13.3	14.9	266	down	66.6	70.6	65.4	69.5
24	2-Oct	15:18	F	77.9	29.1	32.3	641	down	72.3	77.1	70.8	75.7
25	2-Oct	15:29	P	59.1	24.3	51.1	399	up	94.8	95.5	88.4	87.2
26	2-Oct	15:40	F	66.2	33.8	55.6	641	up	93.2	94.5	83.0	83.8
27	2-Oct	16:02	P	63.6	17.6	42.4	355	up	89.3	90.7	79.8	80.0
28	2-Oct	16:11	P	101.4	20.3	34.3	556	down	84.6	89.0	72.9	77.2
29	2-Oct	16:16	F	40.9	65.5	86.2	603	up	90.2	91.2	76.8	76.0
30	2-Oct	16:34	P	35.2	47.2	75.9	444	down	79.5	81.4	70.0	69.8
31	2-Oct	16:36	P	59.9	23.1	22.3	399	up	78.9	81.7	77.6	80.4
32	2-Oct	16:44	F	56.9	42.4	64.7	641	up	93.2	94.1	80.3	80.8
33	2-Oct	16:45	F	48.1	59.6	81.5	593	down	71.6	73.0	69.8	71.2
34	2-Oct	16:53	P	66.9	26.9	48.4	556	up	92.4	93.5	81.0	80.8
35	2-Oct	16:58	P	88.5	4.9	10.0	288	down	74.1	77.8	73.4	77.2
average		Passenger(P)		58.1	23.5	35.7	438	up	86.6	87.8	79.8	80.2
				79.8	20.8	33.3	419	down	76.0	79.3	70.6	73.6
		Freight(F)		74.5	32.4	48.6	624	up	93.5	94.4	83.8	84.3
				61.9	43.5	59.3	629	down	78.3	81.7	70.8	73.2

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

Table 1.2-23 Result of Railway Noise Measurement in Valsad №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	2-Oct	10:33	P	62.6	15.7	20.3	288	up	82.9	74.3	81.7	73.1
2	2-Oct	10:49	P	61.6	27.0	21.2	466	down	76.4	69.6	75.0	68.2
3	2-Oct	11:01	P	28.8	53.2	53.3	489	up	75.4	67.9	73.7	66.2
4	2-Oct	11:12	P	50.2	46.8	51.2	533	up	77.4	68.2	75.7	66.5
5	2-Oct	11:20	F	32.6	47.2	51.4	572	up	86.1	78.3	84.4	76.6
6	2-Oct	11:28	F	88.6	27.1	34.9	641	up	85.7	77.4	84.2	76.0
7	2-Oct	11:40	P	36.8	22.7	32.8	288	up	79.7	72.7	78.3	71.3
8	2-Oct	11:40	P	44.5	30.0	38.0	399	down	72.6	67.4	71.1	66.0
9	2-Oct	11:50	P	40.3	42.5	60.1	556	up	90.5	84.0	78.5	70.8
10	2-Oct	12:00	F	60.2	37.3	43.7	641	up	82.7	76.5	81.2	74.9
11	2-Oct	12:17	F	90.0	26.1	37.4	593	up	93.0	85.8	91.6	84.4
12	2-Oct	12:35	F	47.6	48.4	60.0	641	down	90.3	85.1	78.9	72.7
13	2-Oct	13:44	F	68.4	33.4	58.4	628	up	96.2	89.1	85.8	78.5
14	2-Oct	13:57	F	71.5	35.4	51.5	641	up	96.3	89.6	83.3	77.0
15	2-Oct	14:06	F	84.5	27.0	45.9	641	up	99.0	92.1	88.7	81.2
16	2-Oct	14:17	P	46.0	30.2	54.8	422	down	82.2	77.3	70.6	64.7
17	2-Oct	14:36	P	37.7	36.6	46.1	422	up	89.2	82.4	79.6	70.7
18	2-Oct	14:38	P	36.5	24.1	34.0	556	down	81.0	75.3	79.6	73.9
19	2-Oct	14:47	F	43.9	44.4	63.4	626	down	88.6	83.9	75.3	69.8
20	2-Oct	15:19	F	80.0	26.2	32.5	641	down	81.4	77.6	80.0	76.2
21	2-Oct	15:27	P	40.2	33.6	72.8	399	up	98.4	93.5	92.1	86.4
22	2-Oct	15:38	F	49.8	40.2	51.3	641	up	84.8	78.5	83.2	76.9
23	2-Oct	16:00	P	29.5	33.7	49.6	355	up	87.7	82.1	76.4	70.0
24	2-Oct	16:49	F	37.4	52.4	79.4	593	down	88.0	83.5	74.2	69.3
25	2-Oct	16:51	P	48.4	36.5	63.8	556	up	93.2	87.3	81.5	74.6
26	2-Oct	16:59	P	94.5	11.8	30.9	288	down	90.0	85.3	80.4	75.3
27	2-Oct	17:06	P	45.3	35.0	63.1	489	up	100.1	95.4	92.7	88.2
average		Passenger(P)		42.0	35.6	51.3	437	up	87.4	80.8	81.0	73.8
				56.6	24.6	35.8	426	down	80.5	75.0	75.4	69.6
		Freight(F)		68.2	34.2	46.8	625	up	90.5	83.4	85.3	78.2
				52.2	42.9	58.8	625	down	87.1	82.5	77.1	72.0

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-24 and Table 1.2-25. In Valsad No.1, in consideration of all results roughly, the frequency of 500Hz was mainly dominated. In Valsad No.2, in consideration of all results roughly, the frequency of 1000Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was similar to the case in Japan, and this would be suitable value. In addition, in case of countermeasure (e.g. soundproof) for railway noise, Japanese countermeasure method might be available.

Table 1.2-24 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Valsad №1

No.	train type	Noise Level [dB(A)]																										
		Frequency [Hz]																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	26	27	30	36	43	47	48	51	52	53	54	60	61	66	69	71	72	70	68	67	68	66	65	63	60	54	50	79
2	P	31	29	31	36	40	41	46	47	47	47	46	50	53	56	57	56	56	57	55	54	53	53	53	50	48	46	42	66
3	P	31	30	31	38	44	48	49	51	53	54	55	57	62	66	67	67	67	66	63	62	63	62	60	58	55	50	46	75
4	P	33	32	31	35	40	44	46	46	48	48	49	53	56	62	63	63	63	61	58	58	60	58	56	54	52	47	45	71
5	F	35	36	40	47	51	52	52	55	56	56	56	55	59	67	72	71	71	69	68	66	66	65	64	61	61	55	52	79
6	F	35	38	40	45	51	55	56	57	58	59	59	59	61	68	71	72	72	70	69	68	69	68	67	64	62	57	54	80
7	P	34	33	33	35	34	37	42	45	46	45	43	48	49	54	53	49	50	50	47	45	47	48	44	42	39	41	36	62
8	P	34	33	32	37	42	43	45	47	49	50	50	54	57	62	64	64	65	63	60	60	60	59	58	55	53	49	45	73
9	P	34	33	34	36	43	48	49	51	53	55	54	60	60	65	67	67	67	65	63	61	62	61	59	56	53	49	44	75
10	F	35	39	44	49	52	54	55	54	55	56	56	57	59	66	70	70	69	67	67	64	64	64	63	60	57	53	50	78
11	F	37	46	46	53	53	55	56	58	58	58	58	58	60	67	72	74	74	72	71	67	67	66	65	63	61	55	51	81
12	P	35	34	34	39	41	43	47	50	50	49	47	50	54	57	57	56	56	56	53	51	52	51	49	47	43	42	38	66
13	F	36	37	36	39	42	46	48	48	50	49	48	48	48	53	55	51	50	50	50	49	48	49	47	44	42	42	37	63
14	P	35	34	34	38	45	47	51	51	51	52	52	57	59	64	67	68	68	66	64	62	62	61	60	57	54	49	44	76
15	F	37	38	43	49	53	58	58	59	58	59	58	59	63	67	68	68	69	67	66	64	65	65	64	61	60	56	51	78
16	F	38	40	44	50	53	56	54	56	56	57	56	56	58	65	70	69	69	67	66	64	65	64	63	60	58	53	50	77
17	F	37	37	39	48	51	53	55	55	56	57	57	57	60	66	71	71	72	70	69	67	67	66	66	63	61	56	53	79
18	P	36	35	35	39	40	41	46	47	47	47	45	50	54	56	58	57	57	57	55	53	54	53	51	48	45	43	38	67
19	P	36	35	35	39	42	45	50	53	49	50	47	51	55	60	60	60	62	61	58	57	57	55	53	51	48	44	40	70
20	P	36	35	35	37	43	46	48	48	50	51	50	54	58	63	65	65	65	64	61	59	60	60	58	55	51	47	42	73
21	F	36	37	41	46	51	54	53	54	52	52	50	50	54	57	57	57	58	58	57	57	56	55	54	51	48	45	41	69
22	F	36	36	35	38	41	45	46	47	48	47	46	44	46	49	51	48	48	48	47	46	46	46	44	41	40	41	36	62
23	P	36	35	34	37	38	42	44	48	47	47	46	50	51	53	55	54	54	53	50	51	49	50	50	48	46	44	41	65
24	F	37	38	41	47	49	52	54	52	53	52	50	50	53	58	60	59	59	59	58	56	56	56	55	52	50	46	43	69
25	P	36	35	34	38	43	45	48	50	50	50	50	54	59	62	65	64	66	65	61	59	61	61	59	56	53	49	44	74
26	F	36	36	37	43	49	52	53	56	55	56	56	55	58	64	68	67	67	66	65	64	64	64	64	60	58	54	50	76
27	P	36	35	34	37	41	47	48	49	50	51	50	56	60	64	66	66	67	67	64	61	62	62	61	57	54	49	45	75
28	P	36	36	35	36	41	44	48	51	49	49	47	50	55	60	61	61	61	61	58	57	58	57	54	52	49	46	41	70
29	F	36	35	35	40	42	47	51	51	51	52	52	53	60	63	61	59	62	60	59	60	59	59	58	55	54	50	48	71
30	P	37	36	35	34	34	35	40	43	44	43	41	45	47	52	50	46	45	44	44	43	43	43	40	37	37	40	35	61
31	P	37	36	35	39	42	46	48	49	49	50	49	53	57	62	64	64	64	62	60	59	60	61	58	55	53	48	44	73
32	F	37	38	38	45	49	52	52	53	55	55	54	55	58	65	67	66	66	64	63	61	62	62	62	58	56	52	50	75
33	F	37	36	35	39	41	42	43	46	49	46	44	44	46	51	52	49	47	47	47	45	46	46	45	42	41	41	37	62
34	P	37	36	36	39	44	47	51	51	52	53	52	56	60	65	68	69	69	67	65	62	63	62	61	58	55	50	46	76
35	P	37	37	36	40	42	43	48	51	50	50	48	53	56	61	62	62	64	64	61	60	60	59	56	54	50	46	41	72

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

Table 1.2-25 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Valsad №2

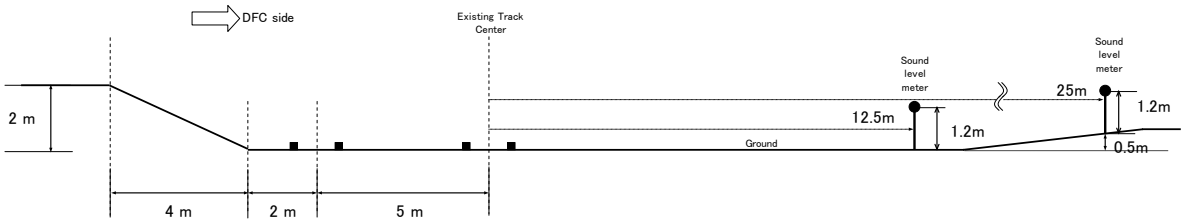
No.	train type	Noise Level [dB(A)]																										
		Frequency [Hz]																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	29	28	28	34	43	44	46	48	53	54	51	57	58	62	66	68	72	72	68	65	65	65	65	62	59	54	49	78
2	P	33	32	31	32	36	37	43	45	49	52	52	53	53	55	57	56	58	59	55	54	57	59	55	54	53	52	52	68
3	P	34	33	32	33	38	41	44	43	45	46	45	53	54	57	58	59	60	60	57	56	58	57	55	52	49	45	41	69
4	P	35	33	32	33	35	35	38	39	42	45	45	47	50	53	54	55	55	56	53	52	54	53	52	48	45	43	39	65
5	F	35	35	37	40	45	46	46	45	50	51	51	50	50	56	61	63	65	64	63	60	62	61	60	57	54	51	47	73
6	F	36	37	40	45	50	53	55	53	56	58	57	56	57	62	68	71	73	74	74	71	71	71	71	68	66	62	59	82
7	P	36	35	34	35	36	41	43	43	46	48	46	49	52	58	60	63	66	64	60	60	60	59	58	55	51	48	43	72
8	P	36	35	34	34	36	37	41	45	48	52	50	54	52	56	56	56	59	60	56	56	60	60	56	54	51	47	42	69
9	P	36	36	35	35	40	42	44	44	46	48	48	54	56	59	61	64	66	66	61	59	62	62	60	57	54	49	44	73
10	F	37	41	43	47	50	52	53	51	54	56	55	56	55	61	66	70	71	72	71	66	66	67	67	65	61	57	54	79
11	F	40	45	46	53	54	54	56	55	57	59	57	56	57	64	71	76	79	80	77	70	70	71	71	69	66	61	58	85
12	F	38	38	37	39	44	48	49	49	53	56	56	53	52	56	59	58	58	59	60	60	60	61	59	56	54	50	47	71
13	F	40	42	43	47	52	56	58	55	56	58	58	58	57	62	66	69	71	72	70	66	67	69	69	65	64	60	56	79
14	F	39	40	43	49	53	55	53	54	56	55	56	57	55	62	67	69	71	73	72	67	67	68	69	67	64	60	56	80
15	F	40	40	41	47	52	54	55	54	56	56	56	57	57	63	69	73	75	76	74	70	70	71	71	70	67	62	59	83
16	P	39	38	37	37	36	37	41	45	48	49	46	49	47	52	51	50	53	53	50	52	55	55	52	49	47	44	39	65
17	P	39	38	37	37	39	42	44	43	45	48	47	53	56	58	60	62	64	64	60	58	60	60	59	55	52	48	43	72
18	P	39	38	38	38	41	44	44	48	50	53	53	56	57	60	63	62	66	67	64	63	61	63	61	57	55	51	48	74
19	F	39	39	39	46	49	51	54	55	54	56	55	54	53	54	55	56	59	60	58	59	60	59	57	55	54	49	46	70
20	F	39	39	40	47	48	50	51	50	54	56	58	56	58	61	64	65	68	69	67	67	66	66	67	63	62	57	54	77
21	P	39	38	37	36	38	42	43	46	49	46	46	50	53	58	62	64	65	64	60	59	61	60	59	55	52	47	43	72
22	F	39	39	40	45	49	52	53	51	52	53	53	54	53	59	64	66	68	68	67	63	65	67	67	63	60	56	52	77
23	P	38	37	37	36	39	39	40	41	44	47	46	55	54	57	60	62	65	64	59	58	61	59	58	54	50	46	42	72
24	F	38	38	37	42	45	46	48	48	53	54	55	52	50	54	57	56	58	58	59	58	60	61	60	56	56	53	49	70
25	P	38	37	37	37	40	44	45	46	47	48	47	54	55	58	61	63	66	65	61	60	63	61	60	57	54	51	46	73
26	P	39	37	37	37	39	41	45	48	48	51	51	55	57	62	64	65	70	72	68	65	66	65	63	61	58	54	50	78
27	P	39	38	37	39	41	44	47	47	48	50	48	56	54	57	61	64	65	65	60	59	62	62	60	57	54	50	46	73

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

(6) Amalsad

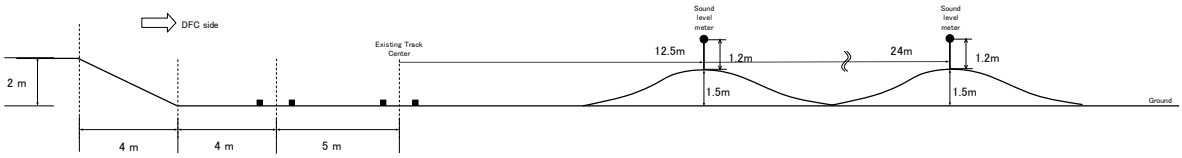
1) Cross-section View

Cross-section view of measurement site in Amalsad are given in Figure 1.2-11 and Figure 1.2-12.



Source : JICA Survey Team

Figure 1.2-11 Cross-section View of Measurement Site in Amalsad №1



Source : JICA Survey Team

Figure 1.2-12 Cross-section View of Measurement Site in Amalsad №2

2) Result of Background Noise

Results of background noise measurement in Amalsad is given in Table 1.2-26.

Table 1.2-26 Result of background Noise Measurement in Amalsad

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Amalsad	30-Sep	1	51.0	49.9	46.7	48.8	50.0
	30-Sep	2	49.5	47.9	46.5	50.2	49.0

Source : JICA Survey Team

3) Result of Railway Noise

Results of railway noise measurement in Amalsad are given in Table 1.2-27 and Table 1.2-28.

Table 1.2-27 Result of Railway Noise Measurement in Amalsad №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	30-Sep	9:43	P	89.5	19.7	16.5	489	up	87.8	82.1	86.5	80.8
2	30-Sep	9:46	P	101.5	16.1	17.9	422	down	85.6	80.3	84.4	79.1
3	30-Sep	9:52	F	84.5	30.9	30.2	662	down	85.9	80.2	84.5	78.7
4	30-Sep	10:01	F	101.1	24.9	24.6	662	down	88.7	83.4	87.3	82.0
5	30-Sep	10:04	P	98.8	10.3	15.5	288	up	91.4	83.3	90.4	82.3
6	30-Sep	10:35	P	96.2	18.7	15.0	489	up	88.4	81.0	87.1	79.7
7	30-Sep	10:43	P	41.7	28.7	26.6	264	up	69.8	67.7	68.3	66.3
8	30-Sep	10:51	P	91.0	22.3	21.2	533	up	86.2	81.0	84.8	79.7
9	30-Sep	11:07	P	63.5	15.6	24.3	533	down	97.4	92.2	85.6	80.1
10	30-Sep	11:25	P	100.8	19.7	17.6	556	up	92.7	85.1	91.4	83.8
11	30-Sep	12:07	P	108.8	16.8	13.1	422	up	88.1	81.2	86.8	80.0
12	30-Sep	13:14	P	31.3	37.6	53.0	399	down	78.8	73.1	77.2	71.5
13	30-Sep	13:20	F	71.7	29.7	40.0	572	down	96.8	92.0	84.0	78.7
14	30-Sep	13:51	F	69.5	33.6	32.6	540	up	87.8	81.6	86.3	80.1
15	30-Sep	14:01	F	21.8	99.4	74.4	641	up	76.3	71.0	74.3	69.0
16	30-Sep	14:27	P	51.6	23.4	17.4	355	up	78.4	73.7	77.1	72.4
17	30-Sep	14:36	F	94.9	25.6	32.7	641	down	98.6	93.9	85.3	80.5
18	30-Sep	15:03	P	102.5	18.1	14.8	511	up	88.5	82.5	87.2	81.2
19	30-Sep	15:11	F	90.1	23.3	33.0	572	down	98.4	93.4	87.7	82.0
20	30-Sep	15:14	F	92.3	26.7	25.0	655	up	89.7	83.5	88.3	82.1
21	30-Sep	15:24	F	68.1	30.6	32.1	572	up	86.0	80.0	84.5	78.5
22	30-Sep	15:36	F	85.0	28.7	34.7	655	down	98.4	93.6	85.5	80.8
23	30-Sep	15:59	P	42.9	20.5	16.3	399	down	81.1	75.3	79.8	73.9
24	30-Sep	16:19	F	62.9	37.3	31.9	641	up	84.5	77.6	82.9	76.1
25	30-Sep	16:26	F	77.5	22.9	31.5	434	up	84.3	80.6	82.9	79.3
26	30-Sep	16:32	F	102.5	19.0	27.8	381	down	96.3	91.4	85.1	79.4
27	30-Sep	16:58	P	113.3	14.7	15.5	444	down	87.1	82.6	86.0	81.4
28	30-Sep	16:59	P	86.7	16.4	30.2	399	up	85.7	80.7	84.5	79.5
29	30-Sep	17:07	P	91.2	17.7	24.6	489	up	88.5	82.6	87.3	81.4
average		Passenger(P)		87.2	19.2	19.3	436	up	85.9	80.1	84.7	78.8
				70.5	20.9	25.4	440	down	86.0	80.7	82.6	77.2
		Freight(F)		65.4	41.7	37.9	581	up	84.8	79.1	83.2	77.5
				90.0	26.0	31.9	592	down	94.7	89.7	85.6	80.3

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

Table 1.2-28 Result of Railway Noise Measurement in Amalsad №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	24.0m	12.5m	24.0m
1	30-Sep	9:43	P	89.5	19.7	20.3	489	up	85.4	78.1	84.1	76.8
2	30-Sep	9:46	P	101.5	16.1	26.4	422	down	94.6	79.8	85.5	78.6
3	30-Sep	9:52	F	84.5	30.9	39.3	662	down	96.4	91.0	85.1	78.3
4	30-Sep	10:01	F	101.1	24.9	33.6	662	down	98.5	92.6	89.9	82.9
5	30-Sep	10:04	P	98.8	10.3	13.4	288	up	87.2	81.8	86.2	80.8
6	30-Sep	10:21	P	105.7	14.5	27.7	399	down	94.3	88.0	83.5	76.8
7	30-Sep	10:35	P	96.2	18.7	18.1	489	up	86.4	79.0	85.1	77.7
8	30-Sep	10:43	P	41.7	28.7	28.2	264	up	73.8	68.3	72.4	66.9
9	30-Sep	10:51	P	91.0	22.3	24.0	533	up	83.2	75.9	81.9	74.6
10	30-Sep	10:59	F	56.8	57.9	55.0	641	up	78.8	73.1	77.1	71.4
11	30-Sep	11:07	P	63.5	15.6	25.2	533	down	96.0	89.7	85.0	78.2
12	30-Sep	11:25	P	100.8	19.7	31.7	556	up	98.0	84.3	90.5	83.0
13	30-Sep	12:07	P	108.8	16.8	15.1	422	up	85.1	77.8	83.9	76.6
14	30-Sep	12:37	P	39.7	29.1	35.0	333	down	87.4	71.3	76.9	69.9
15	30-Sep	13:14	P	31.3	37.6	46.4	399	down	88.8	82.9	79.2	72.3
16	30-Sep	13:20	F	71.7	29.7	37.1	572	down	94.5	78.2	84.0	76.7
17	30-Sep	13:40	P	92.3	19.0	18.1	444	up	84.2	75.6	83.0	74.3
18	30-Sep	13:51	F	69.5	33.6	44.0	540	up	95.2	77.2	82.2	75.7
19	30-Sep	14:27	P	51.6	23.4	34.8	355	up	88.3	81.7	78.9	72.4
20	30-Sep	14:36	F	94.9	25.6	30.9	641	down	84.0	78.5	82.6	77.1
21	30-Sep	15:02	P	107.8	19.0	27.0	556	down	94.8	78.4	83.5	77.1
22	30-Sep	15:03	P	102.5	18.1	19.2	511	up	85.7	78.2	84.4	77.0
23	30-Sep	15:11	F	90.1	23.3	37.1	572	down	95.3	89.1	85.6	78.9
24	30-Sep	15:14	F	92.3	26.7	23.4	655	up	86.3	79.8	84.9	78.4
25	30-Sep	15:24	F	68.1	30.6	38.5	572	up	88.5	86.0	87.0	84.5
26	30-Sep	15:36	F	85.0	28.7	54.7	655	down	101.4	97.6	90.5	84.8
27	30-Sep	15:59	P	42.9	20.5	26.1	399	down	82.5	81.7	81.2	80.4
28	30-Sep	16:04	P	58.5	15.5	36.1	466	down	94.7	85.2	88.6	78.3
29	30-Sep	16:19	F	62.9	37.3	39.8	641	up	85.9	74.1	84.3	72.5
30	30-Sep	16:26	F	77.5	22.9	23.3	434	up	83.2	76.6	81.9	75.2
31	30-Sep	16:32	F	102.5	19.0	28.8	381	down	94.2	88.0	83.7	76.9
32	30-Sep	16:58	P	113.3	14.7	19.7	444	down	86.3	80.3	85.2	79.2
33	30-Sep	17:07	P	91.2	17.7	14.7	489	up	88.8	81.3	87.6	80.1
average		Passenger(P)		87.7	19.5	21.6	440	up	86.0	78.4	83.4	76.4
				73.8	20.3	30.0	439	down	91.0	81.9	83.2	76.7
		Freight(F)		71.2	34.8	37.3	581	up	86.3	77.8	82.9	76.3
				90.0	26.0	37.3	592	down	94.9	87.8	85.9	79.4

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-29 and Table 1.2-30. In Amalsad No.1, in consideration of all results roughly, the frequency of 1000Hz was mainly dominated. In Amalsad No.2, in consideration of all results roughly, the frequency of 1000Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was similar to the case in Japan, and this would be suitable value. In addition, in case of countermeasure (e.g. soundproof) for railway noise, Japanese countermeasure method might be available.

Table 1.2-29 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Amalsad №1

No.	train type	20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	30	30	34	42	46	50	52	54	56	59	61	64	69	74	76	75	75	77	75	73	73	71	70	69	65	63	59	85
2	P	30	30	32	36	44	48	52	54	55	56	57	61	65	68	69	69	72	74	73	71	71	70	71	70	68	66	65	82
3	F	38	46	50	55	56	55	56	59	59	58	57	59	64	68	70	69	72	73	73	71	72	71	73	71	69	68	66	83
4	F	32	37	41	48	53	55	55	57	59	60	60	60	65	70	72	72	74	76	76	75	75	75	76	74	72	70	68	85
5	P	35	35	36	41	46	49	54	55	58	59	60	65	70	76	76	76	77	78	76	74	74	72	71	70	66	64	60	86
6	P	34	34	34	42	48	51	55	56	58	62	64	65	71	76	76	76	76	77	76	74	74	72	71	69	66	64	60	86
7	P	35	35	35	40	47	49	53	55	56	60	62	64	70	74	76	76	75	77	75	73	73	71	70	68	66	63	59	85
8	P	35	33	35	39	46	49	51	55	56	58	60	65	69	72	75	73	72	74	72	70	70	68	67	66	62	61	57	82
9	P	36	36	35	38	45	46	50	54	55	56	56	63	66	69	69	70	73	75	74	73	73	73	72	71	69	67	66	83
10	P	37	36	36	41	47	52	57	57	59	61	63	66	70	77	76	76	76	77	75	74	74	72	71	69	66	64	61	86
11	P	38	38	37	41	46	50	52	54	56	59	61	64	70	75	76	76	75	76	74	73	72	71	71	69	65	63	60	85
12	P	41	40	38	38	39	40	43	45	46	47	46	51	56	57	58	55	58	59	61	59	58	60	60	58	57	57	57	71
13	F	42	42	45	53	58	60	56	55	59	58	57	57	61	66	69	67	69	70	71	70	69	70	72	70	70	66	64	81
14	F	41	41	40	47	53	58	59	62	66	67	67	68	71	70	72	72	71	72	71	72	70	69	69	68	65	62	59	82
15	F	42	41	40	40	44	47	46	47	52	52	52	52	53	57	59	57	57	57	58	58	57	56	57	55	53	51	47	70
16	P	42	41	40	40	42	45	47	49	51	54	55	57	61	64	65	63	63	63	60	60	61	59	58	56	53	51	47	73
17	F	43	43	46	52	57	57	57	57	59	59	59	60	63	68	72	70	72	73	74	73	72	73	74	72	70	68	66	83
18	P	42	41	40	43	48	51	56	56	58	59	61	65	71	76	75	75	75	77	75	74	74	72	73	71	67	65	61	85
19	F	42	42	42	48	52	54	54	55	57	57	57	59	62	68	72	70	72	73	73	72	71	73	74	73	70	67	66	83
20	F	43	42	42	46	51	55	55	57	60	61	64	66	69	74	76	76	75	76	76	75	74	74	74	73	71	68	66	86
21	F	44	46	50	53	55	54	55	57	61	62	62	63	65	71	73	72	71	72	72	71	70	69	70	69	66	66	64	82
22	F	46	49	52	56	58	57	59	59	60	60	59	59	64	69	71	70	72	74	73	73	72	72	73	71	69	67	64	83
23	P	41	40	39	39	40	42	44	48	47	47	47	51	58	58	59	61	61	62	62	62	61	61	62	60	59	59	61	73
24	F	40	40	39	42	50	54	55	57	60	64	63	64	67	69	69	68	68	70	70	71	70	70	70	69	68	66	64	81
25	F	41	40	43	48	55	58	57	58	62	65	65	65	69	70	72	72	72	74	73	73	72	71	71	71	69	69	69	83
26	F	40	39	39	40	44	49	51	55	55	56	56	62	65	68	69	68	71	73	72	72	71	71	71	70	67	65	64	82
27	P	40	39	40	42	47	47	52	55	56	57	57	65	66	70	70	71	74	76	75	75	74	73	74	72	70	67	66	84
28	P	40	39	38	42	48	51	53	55	56	59	60	63	69	73	75	74	74	75	74	72	71	70	69	68	65	63	59	84
29	P	40	39	39	42	47	49	55	55	56	58	60	64	71	76	76	75	76	77	76	74	74	73	72	70	67	65	61	86

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

Table 1.2-30 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Amalsad №2

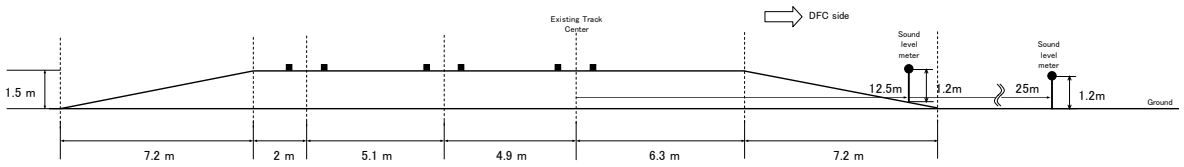
No.	train type	Noise Level [dB(A)]																											
		Frequency [Hz]																											
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	30	30	34	37	47	49	49	52	55	61	67	64	64	66	68	70	74	75	74	69	69	69	67	66	63	61	59	82
2	P	30	30	32	38	42	48	51	54	55	58	57	59	62	66	66	67	73	75	71	69	69	69	68	67	64	60	56	81
3	F	37	45	49	53	54	54	56	57	58	58	58	59	61	64	65	68	71	72	71	69	69	69	69	67	67	63	59	80
4	F	33	37	40	50	51	54	54	56	59	59	59	60	63	66	69	69	74	75	74	71	72	73	72	69	69	65	63	83
5	P	32	31	32	38	45	49	51	53	55	61	65	65	65	66	70	72	76	79	76	71	71	71	69	67	64	60	57	84
6	P	32	32	34	42	44	47	50	52	55	57	57	58	62	65	65	66	72	74	72	69	70	70	67	66	64	60	57	81
7	P	33	32	34	39	49	50	53	54	57	64	67	69	67	69	69	71	75	76	74	70	71	71	69	67	64	61	58	83
8	P	32	32	31	32	35	40	44	45	47	50	53	53	51	52	53	55	55	56	53	53	51	53	51	49	49	49	50	65
9	P	33	32	34	37	45	47	51	52	55	58	63	62	63	64	65	66	70	72	69	65	65	65	63	61	58	55	52	78
10	F	33	32	33	36	40	45	50	53	54	55	55	53	52	56	58	56	59	61	63	60	59	61	61	59	58	54	49	71
11	P	33	32	33	40	45	49	54	55	56	57	58	59	64	66	66	67	74	76	73	71	73	72	70	68	67	62	58	82
12	P	34	33	34	39	47	50	53	54	56	59	63	65	65	67	70	72	76	77	75	70	71	70	68	66	63	60	57	83
13	P	34	34	35	37	47	48	49	53	54	58	62	63	64	66	67	69	73	75	73	68	69	68	67	65	62	58	55	81
14	P	34	33	33	34	40	41	44	46	48	50	50	53	58	60	59	58	61	63	60	59	62	61	59	56	53	49	45	71
15	P	34	33	32	33	40	41	45	46	47	49	50	53	56	58	58	56	58	60	57	57	60	61	58	56	53	49	45	70
16	F	36	40	42	48	54	56	54	54	57	58	55	55	58	61	63	64	67	69	69	66	65	68	68	65	66	60	58	78
17	P	35	35	35	38	46	49	50	52	53	57	62	62	65	66	67	69	73	76	73	67	66	65	65	63	60	57	55	81
18	F	36	36	37	44	50	53	57	60	63	66	66	64	65	65	66	66	67	68	67	67	66	66	65	63	61	57	55	78
19	P	36	35	34	36	42	45	47	49	53	55	56	58	59	60	61	62	64	66	63	59	61	61	58	56	53	52	50	73
20	F	36	39	44	54	53	55	55	55	59	58	58	58	60	64	66	65	69	72	72	70	70	71	71	69	68	64	61	81
21	P	37	36	36	41	44	49	53	54	57	58	56	60	62	65	65	66	71	73	71	69	70	68	66	65	63	59	56	80
22	P	37	36	36	39	47	50	52	55	55	59	62	64	64	66	68	70	73	75	74	70	70	70	70	67	65	63	60	82
23	F	36	37	41	46	50	54	53	55	56	56	56	57	59	64	65	65	69	71	70	68	69	70	69	68	66	62	59	79
24	F	37	37	38	46	50	52	53	55	58	62	68	66	63	65	68	68	71	73	73	70	69	69	69	67	66	63	61	81
25	F	45	50	53	57	60	59	59	60	65	69	70	66	67	69	72	71	74	76	76	74	72	73	73	71	70	68	66	85
26	F	47	53	57	61	62	61	61	62	63	62	63	64	66	69	70	72	76	77	76	75	74	74	74	72	71	68	65	85
27	P	43	42	41	42	45	49	51	51	54	56	54	55	60	62	63	62	66	68	64	64	63	64	62	60	56	54	51	75
28	P	43	42	41	42	48	49	52	52	53	56	55	58	63	64	64	63	67	70	66	64	66	68	65	62	60	56	54	77
29	F	43	42	42	47	52	56	59	62	65	68	66	65	67	66	67	67	68	71	72	71	70	71	72	70	69	68	70	82
30	F	38	37	39	46	51	52	54	56	61	64	65	62	64	64	65	66	67	69	68	68	68	68	68	67	67	67	67	79
31	F	38	38	38	41	44	48	52	54	54	57	55	59	62	64	64	64	70	72	70	68	69	68	66	65	63	59	56	79
32	P	39	38	39	42	48	48	54	52	56	57	57	60	63	66	66	67	73	76	73	72	73	71	69	68	66	62	59	82
33	P	39	38	38	41	46	49	51	52	54	61	64	64	64	65	67	68	73	75	73	68	69	68	67	65	63	60	57	81

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

(7) Kim

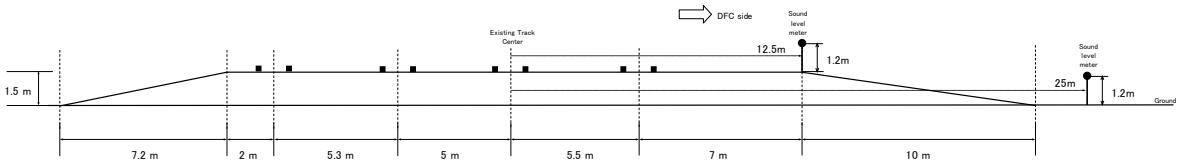
1) Cross-section View

Cross-section view of measurement site in Kim are given in Figure 1.2-13 and Figure 1.2-14.



Source : JICA Survey Team

Figure 1.2-13 Cross-section View of Measurement Site in Kim №1



Source : JICA Survey Team

Figure 1.2-14 Cross-section View of Measurement Site in Kim №2

2) Result of Background Noise

Results of background noise measurement in Kim is given in Table 1.2-31.

Table 1.2-31 Result of Background Noise Measurement in Kim

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Kim	28-Sep	1	51.0	49.3	47.3	50.6	49.5
	28-Sep	2	50.5	46.0	49.4	49.4	48.9

Source : JICA Survey Team

3) Result of Railway Noise

Results of railway noise measurement in Kim is given in Table 1.2-32 and Table 1.2-33.

Table 1.2-32 Result of Railway Noise Measurement in Kim №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	28-Sep	10:09	P	108.6	19.4	37.8	556	up	100.0	99.1	91.7	91.1
2	28-Sep	10:15	P	90.2	20.6	35.9	533	up	98.1	96.5	86.1	83.8
3	28-Sep	10:29	F	70.0	33.4	38.0	655	up	86.6	83.9	85.1	82.4
4	28-Sep	10:37	P	97.5	18.5	29.7	489	down	96.8	79.1	89.3	77.8
5	28-Sep	10:54	P	60.8	34.7	45.7	422	down	85.7	84.7	74.7	73.5
6	28-Sep	11:16	F	47.0	49.5	53.7	641	up	83.7	80.7	82.0	79.0
7	28-Sep	11:23	F	65.3	32.8	34.2	586	down	77.8	78.4	76.3	76.9
8	28-Sep	11:41	F	60.3	38.4	53.7	641	up	97.8	82.1	85.0	80.6
9	28-Sep	11:54	F	60.5	40.0	58.8	641	up	98.1	82.3	84.6	80.7
10	28-Sep	12:05	P	28.1	58.1	79.9	399	up	87.4	85.9	74.9	71.4
11	28-Sep	12:09	F	38.2	56.3	73.0	655	up	94.8	92.3	83.3	76.7
12	28-Sep	13:00	F	62.2	40.3	52.2	612	up	97.1	95.6	82.8	80.3
13	28-Sep	13:14	F	114.5	24.6	26.0	675	down	83.2	92.8	81.8	80.5
14	28-Sep	13:28	F	51.5	49.8	26.1	650	down	78.1	91.5	76.4	76.8
15	28-Sep	13:40	P	26.2	41.6	61.6	333	up	88.0	86.4	75.2	72.1
16	28-Sep	13:47	F	62.0	38.8	57.8	641	up	98.2	96.4	85.3	81.9
17	28-Sep	14:05	P	67.2	20.5	33.7	333	down	86.3	84.7	76.7	74.3
18	28-Sep	14:06	F	63.8	36.8	53.5	650	up	100.2	98.4	85.4	83.3
19	28-Sep	14:19	P	105.0	13.7	25.7	399	up	98.2	94.7	87.9	83.6
20	28-Sep	14:21	P	28.2	57.1	52.5	268	up	86.6	84.9	73.0	71.3
21	28-Sep	14:43	P	110.3	18.1	15.0	533	down	83.9	81.5	82.6	80.3
22	28-Sep	14:54	P	70.0	4.3	16.3	399	down	73.7	75.4	73.1	74.8
23	28-Sep	15:00	F	16.9	29.4	38.6	675	up	100.9	98.4	88.6	85.2
24	28-Sep	15:02	P	20.6	73.1	97.7	489	up	89.2	87.5	76.3	71.9
25	28-Sep	15:04	F	59.5	41.0	35.2	641	down	78.1	77.2	76.5	75.6
26	28-Sep	15:18	F	34.5	60.6	78.9	641	up	94.7	93.5	78.8	77.0
27	28-Sep	15:28	P	36.9	58.4	43.4	533	down	70.1	69.3	68.3	67.6
28	28-Sep	15:49	F	86.3	29.7	43.8	641	down	94.8	92.9	81.3	80.0
29	28-Sep	16:08	P	114.8	19.0	35.1	556	down	94.6	92.6	82.5	80.0
30	28-Sep	16:21	F	94.0	25.6	40.8	655	up	100.1	97.4	87.4	83.9
31	28-Sep	16:23	P	123.6	14.5	26.6	466	down	98.2	96.7	91.8	89.8
32	28-Sep	16:33	F	66.2	35.4	50.0	655	up	99.1	85.0	87.4	83.5
average		Passenger(P)		58.1	40.5	55.9	425	up	92.5	90.7	80.7	77.9
				85.1	23.5	30.7	466	down	86.2	83.0	79.9	77.2
		Freight(F)		56.3	40.4	54.1	647	up	95.9	90.5	84.6	81.2
				75.4	35.6	33.1	639	down	82.4	86.6	78.5	78.0

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

Table 1.2-33 Result of Railway Noise Measurement in Kim №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	28-Sep	10:01	P	112.9	18.0	25.75	533	up	102.5	79.6	92.7	78.3
2	28-Sep	10:05	P	103.5	12.2	27.45	399	down	99.4	91.3	88.7	82.9
3	28-Sep	10:09	P	108.6	19.4	30.62	556	up	100.9	90.7	88.8	79.3
4	28-Sep	10:15	P	90.2	20.6	31.44	533	up	100.1	89.3	89.1	77.1
5	28-Sep	10:29	F	70.0	33.4	32.92	655	up	88.1	77.5	86.6	76.0
6	28-Sep	10:37	P	97.5	18.5	15.85	489	down	83.8	104.5	82.5	99.9
7	28-Sep	10:54	P	60.8	34.7	61.98	422	down	85.2	62.5	74.9	61.0
8	28-Sep	11:16	F	47.0	49.5	71.91	641	up	96.8	87.4	85.5	74.7
9	28-Sep	11:23	F	65.3	32.8	30.73	586	down	81.7	73.4	80.2	71.9
10	28-Sep	11:41	F	60.3	38.4	33.50	641	up	84.5	77.2	82.9	75.6
11	28-Sep	11:54	F	60.5	40.0	50.82	641	up	99.6	75.3	90.4	73.7
12	28-Sep	13:00	F	62.2	40.3	59.61	612	up	97.5	62.1	84.4	48.8
13	28-Sep	13:47	F	62.0	38.8	51.20	641	up	98.7	89.3	86.0	74.7
14	28-Sep	14:14	F	66.2	18.8	14.14	453	down	85.2	100.1	83.9	94.0
15	28-Sep	14:43	P	110.3	18.1	15.72	533	down	86.1	76.6	84.8	75.3
16	28-Sep	15:04	F	59.5	41.0	50.29	641	down	80.0	71.5	78.4	69.9
17	28-Sep	15:18	F	34.5	60.6	89.28	641	up	93.8	86.0	79.7	69.6
18	28-Sep	15:49	F	86.3	29.7	52.09	641	down	96.9	89.8	83.3	78.1
19	28-Sep	16:21	F	94.0	25.6	41.17	655	up	103.7	93.9	90.1	80.4
20	28-Sep	16:23	P	123.6	14.5	15.59	466	down	86.9	79.3	85.7	78.1
21	28-Sep	16:33	F	66.2	35.4	51.74	655	up	101.1	77.8	88.5	76.3
average		Passenger(P)		103.9	19.3	29.3	541	up	101.2	86.5	90.2	78.2
				99.1	19.6	27.3	462	down	88.3	82.8	83.3	79.4
		Freight(F)		61.9	40.2	53.6	642	up	96.0	80.7	86.0	72.2
				69.3	30.6	36.8	580	down	86.0	83.7	81.5	78.5

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-34 and Table 1.2-35. In Kim No.1, in consideration of all results roughly, the frequency of 2000Hz was mainly dominated. In Kim No.2, in consideration of all results roughly, the frequency of 1000Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was similar to the case in Japan, and this would be suitable value. In addition, in case of countermeasure (e.g. soundproof) for railway noise, Japanese countermeasure method might be available.

Table 1.2-34 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Kim №1

No.	train type	Noise Level [dB(A)]																										
		Frequency [Hz]																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	26	30	33	39	49	52	55	58	60	63	65	71	74	73	75	75	73	74	73	74	75	74	73	72	69	65	62	85
2	P	28	30	32	38	49	52	54	56	59	61	64	70	72	73	75	74	73	73	72	73	74	73	72	71	67	64	60	84
3	F	41	46	50	55	59	59	58	59	62	64	64	64	68	72	74	72	71	70	71	71	72	70	71	69	67	64	61	83
4	P	31	31	34	38	45	46	51	54	55	59	60	62	64	66	68	66	66	66	66	67	69	68	69	68	66	62	58	79
5	P	32	32	31	34	40	39	45	48	50	51	52	54	55	55	58	57	59	56	56	57	58	57	57	56	54	51	46	69
6	F	33	34	35	38	46	52	56	57	60	61	62	62	66	66	66	65	65	66	66	68	69	68	68	66	64	61	58	78
7	F	33	35	38	45	51	52	54	55	59	61	59	57	58	62	65	62	62	62	63	63	64	64	64	63	61	57	53	75
8	F	33	34	34	42	48	53	57	60	61	63	62	63	67	68	68	67	67	67	67	70	71	70	70	68	66	63	60	80
9	F	34	34	36	41	48	54	56	59	60	63	63	63	66	67	68	67	67	68	68	70	72	70	71	69	67	66	60	80
10	P	33	32	32	34	40	42	44	45	47	48	49	53	55	56	58	57	55	55	55	57	58	56	55	53	50	47	43	68
11	F	34	37	40	45	48	52	52	54	56	57	58	59	60	64	67	65	64	62	63	64	65	64	64	63	61	57	54	75
12	F	34	34	36	42	50	55	57	58	62	63	62	64	67	67	68	67	66	68	68	70	70	70	70	69	67	65	63	80
13	F	36	40	42	48	52	55	56	58	61	62	62	62	62	67	70	68	68	68	69	69	71	70	71	70	68	64	60	81
14	F	35	34	34	39	46	51	53	56	58	59	58	57	60	60	62	60	60	61	62	64	64	64	65	64	63	60	57	75
15	P	34	33	33	34	43	42	46	47	49	51	52	56	60	61	62	61	58	58	58	59	60	59	57	56	53	50	46	71
16	F	34	34	36	43	49	55	57	59	61	64	63	64	68	69	69	68	68	69	69	71	71	71	71	70	67	64	61	81
17	P	34	33	33	36	43	42	47	51	52	55	55	58	59	60	62	60	60	60	59	59	61	60	61	60	57	54	50	72
18	F	34	34	36	44	52	57	62	63	66	67	67	69	71	71	72	71	72	72	73	75	74	73	74	72	70	69	65	84
19	P	35	35	35	40	50	52	54	58	59	61	64	69	74	73	76	76	75	75	74	74	75	74	73	71	68	65	62	86
20	P	34	33	33	36	39	41	45	47	49	50	52	55	60	60	61	59	57	58	56	60	60	58	57	55	52	49	45	70
21	P	34	34	34	39	48	49	53	57	58	60	61	64	66	67	70	68	69	68	68	69	71	70	70	69	67	63	59	80
22	P	34	33	32	35	42	41	47	50	51	54	55	55	59	59	61	59	59	58	58	58	60	59	60	59	57	54	49	71
23	F	34	35	38	46	53	56	59	61	63	65	66	66	68	72	74	73	71	71	72	72	73	73	74	73	72	67	64	84
24	P	34	33	32	34	40	41	43	46	48	49	51	54	55	56	58	57	56	56	55	56	59	57	56	54	51	48	44	68
25	F	33	33	33	40	46	51	54	56	59	61	59	58	61	62	63	61	61	62	62	64	64	64	65	64	62	59	55	75
26	F	34	34	35	40	46	51	54	56	58	60	60	60	63	63	63	64	63	64	64	66	68	67	66	65	63	60	57	77
27	P	34	33	32	34	39	40	44	47	48	51	50	53	53	54	56	54	53	54	54	54	57	55	55	54	51	48	43	67
28	F	35	39	45	50	54	57	57	60	59	60	61	61	64	64	67	67	67	67	67	69	70	69	69	68	66	63	58	79
29	P	34	33	34	39	48	49	52	56	58	60	60	64	65	67	69	67	68	68	68	69	71	70	71	70	67	64	59	80
30	F	40	46	48	55	58	59	59	61	64	65	67	67	70	73	76	75	74	74	75	75	75	74	75	73	71	68	66	86
31	P	34	34	35	40	46	52	56	57	59	61	61	66	67	69	71	71	72	70	71	73	74	73	73	72	69	66	61	83
32	F	36	40	46	53	57	59	60	60	62	64	64	64	66	70	72	70	69	69	70	70	71	71	72	70	69	65	61	82

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

Table 1.2-35 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Kim №2

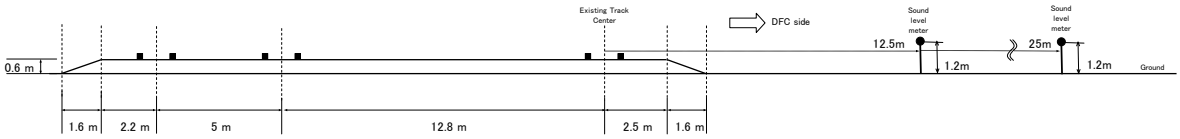
No.	train type	Noise Level [dB(A)]																										
		Frequency [Hz]																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	29	31	34	40	48	54	58	59	60	59	62	67	69	72	76	79	81	81	80	79	81	79	78	76	73	71	68	90
2	P	27	30	31	37	42	57	60	54	58	58	61	63	71	68	70	75	76	77	75	80	79	78	78	74	70	67	65	87
3	P	29	30	32	37	48	54	58	59	57	57	59	65	67	69	75	77	78	79	77	76	78	77	75	73	71	69	66	87
4	P	29	30	32	38	47	51	57	57	55	56	59	64	67	70	74	77	78	78	77	75	77	75	74	72	69	68	64	86
5	F	37	44	52	57	60	60	58	58	60	58	60	62	64	68	74	74	76	76	76	73	74	73	73	72	70	67	64	85
6	P	33	33	33	37	42	43	49	52	56	55	55	60	64	66	68	70	73	73	71	70	71	70	71	68	66	63	60	81
7	P	33	32	32	33	38	37	41	46	44	46	47	49	54	54	55	56	56	55	54	53	55	54	53	52	49	48	44	66
8	F	34	34	35	37	44	51	52	53	56	57	58	60	63	62	63	66	67	69	68	69	67	68	68	66	66	63	61	78
9	F	36	37	37	44	51	53	53	55	55	55	57	58	58	63	67	68	69	69	70	67	67	68	68	67	65	62	59	79
10	F	35	35	36	38	48	53	54	56	57	58	61	62	64	63	65	67	69	71	70	70	70	70	71	69	70	68	67	81
11	F	36	35	37	39	47	52	54	56	56	59	61	61	64	63	65	68	70	72	71	72	70	70	71	69	68	65	62	81
12	F	39	38	38	43	50	55	55	57	57	58	59	60	64	63	63	67	68	70	70	70	70	70	71	69	70	67	63	80
13	F	41	39	39	41	49	52	55	55	57	59	60	62	65	65	66	68	70	72	71	72	71	71	72	70	71	69	69	82
14	F	42	44	49	52	56	62	60	61	60	59	60	62	65	66	68	71	77	74	72	74	71	71	71	70	69	66	64	83
15	P	42	41	40	40	44	45	51	52	53	55	54	61	66	67	70	72	74	75	74	72	74	73	71	70	67	64	62	83
16	F	41	40	39	40	43	48	51	53	54	54	56	58	61	61	61	63	65	66	65	67	66	65	67	65	63	60	58	76
17	F	41	40	40	40	45	51	52	53	53	54	55	57	58	57	58	60	63	65	65	66	64	65	65	63	61	59	58	75
18	F	41	41	44	49	54	55	55	57	56	56	57	60	64	65	67	70	72	74	71	73	72	70	70	69	66	63	61	82
19	F	42	44	47	54	59	59	59	60	62	59	64	65	67	70	75	77	79	79	79	78	79	78	78	77	76	73	71	89
20	P	41	40	39	39	44	46	54	54	56	56	55	63	66	68	71	73	75	75	74	75	76	75	73	71	69	66	64	85
21	F	41	44	47	53	59	60	61	60	61	62	64	64	64	68	71	73	74	74	75	73	74	74	75	73	73	69	67	85

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

(8) Asaoti

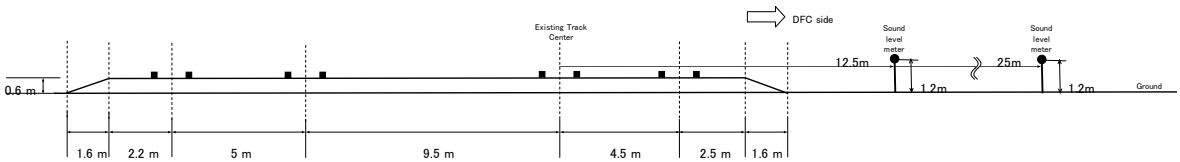
1) Cross-section View

Cross-section view of measurement site in Asaoti are given in Figure 1.2-15 and Figure 1.2-16.



Source : JICA Survey Team

Figure 1.2-15 Cross-section View of Measurement Site in Asaoti №1



Source : JICA Survey Team

Figure 1.2-16 Cross-section View of Measurement Site in Asaoti №2

2) Result of Background Noise

Results of background noise measurement in Asaoti is given in Table 1.2-36.

Table1.2-36 Result of Background Noise Measurement in Asaoti

Station	date	No.	Backgroung Noise Level LAeq [dB(A)]				
			10:00～12:00	12:00～14:00	14:00～16:00	16:00～18:00	Overall 10:00～18:00
Asaoti	13-Oct	1	51.3	47.7	59.2	58.2	56.4
	13-Oct	2	48.3	49.1	48.4	47.7	48.3

Source : JICA Survey Team

3) Result of Railway Noise

Results of railway noise measurement in Asaoti are given in Table 1.2-37 and Table 1.2-38.

Table 1.2-37 Result of Railway noise measurement in Asaoti №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	13-Oct	10:20	P	37.8	22.3	24.4	243	up	68.4	68.6	67.0	67.3
2	13-Oct	10:25	P	18.7	13.1	9.9	422	down	84.3	82.3	83.2	81.2
3	13-Oct	10:27	F	64.2	39.3	38.3	626	down	87.6	84.6	86.0	83.0
4	13-Oct	10:30	P	64.9	20.1	20.3	377	down	75.7	73.8	74.4	72.5
5	13-Oct	10:45	P	47.8	34.0	59.0	489	up	93.2	91.1	91.7	89.6
6	13-Oct	10:58	F	67.5	35.2	24.5	641	down	86.7	85.4	75.7	75.1
7	13-Oct	11:17	F	62.9	39.8	39.3	635	down	88.5	85.2	86.9	83.6
8	13-Oct	11:51	P	138.9	10.7	20.2	399	up	89.7	89.4	80.2	79.8
9	13-Oct	12:00	P	105.5	18.4	20.9	511	up	84.4	87.1	73.5	80.0
10	13-Oct	12:05	F	74.8	35.1	31.5	641	up	81.6	80.1	69.2	68.8
11	13-Oct	12:18	P	26.6	27.5	20.7	288	up	64.9	63.9	63.5	62.5
12	13-Oct	12:30	P	114.7	12.7	10.9	377	down	81.0	80.7	79.9	79.6
13	13-Oct	12:37	P	137.8	18.2	25.8	556	up	78.3	76.9	77.0	75.7
14	13-Oct	12:38	P	106.4	18.4	8.2	556	down	86.8	78.9	78.5	77.7
15	13-Oct	13:15	F	111.6	25.3	33.0	641	up	88.5	88.0	75.0	74.8
16	13-Oct	13:24	P	101.2	14.3	9.7	422	up	86.6	81.9	81.6	80.7
17	13-Oct	13:34	P	108.6	13.9	9.9	422	down	82.0	82.5	80.9	81.4
18	13-Oct	14:17	F	62.5	39.9	37.9	656	down	89.9	88.9	76.9	76.0
19	13-Oct	14:19	F	83.6	31.3	24.3	586	up	73.6	73.9	72.2	72.4
20	13-Oct	14:32	F	56.0	41.0	39.1	626	up	72.1	71.2	70.5	69.6
21	13-Oct	14:52	P	56.3	29.8	16.1	466	down	83.2	83.4	74.3	73.3
22	13-Oct	15:05	P	102.6	18.7	12.9	333	up	89.5	86.6	80.8	77.9
23	13-Oct	15:07	P	105.5	18.3	17.1	533	up	76.6	75.5	75.4	74.3
24	13-Oct	15:16	P	104.9	12.9	22.1	377	up	75.3	74.5	74.2	73.4
25	13-Oct	15:20	P	13.6	75.9	37.9	489	down	95.0	93.6	85.1	81.9
26	13-Oct	15:33	P	110.6	15.8	15.4	467	up	75.9	75.4	74.7	74.2
27	13-Oct	15:34	F	42.4	60.0	68.6	650	up	82.7	80.9	81.0	79.2
28	13-Oct	15:50	F	56.0	39.5	13.5	650	down	74.8	73.5	73.2	71.9
29	13-Oct	15:57	P	114.7	17.2	25.1	516	up	86.2	85.0	77.5	75.5
30	13-Oct	16:13	P	117.3	18.2	24.4	564	up	87.9	78.0	77.1	76.7
31	13-Oct	16:18	F	48.7	47.1	16.7	650	down	85.7	87.3	74.6	73.7
32	13-Oct	16:19	P	118.4	13.7	20.1	499	up	81.4	80.0	80.3	78.9
33	13-Oct	16:43	F	30.3	76.2	93.4	650	up	96.2	93.1	80.9	76.2
34	13-Oct	16:55	P	108.6	12.6	16.3	392	up	85.2	84.7	75.3	74.2
35	13-Oct	16:55	P	30.5	42.0	26.1	438	down	70.2	69.6	68.6	67.9
36	13-Oct	17:13	P	21.0	14.4	16.2	440	down	89.4	88.1	81.8	80.8
average		Passenger(P)		98.6	18.2	22.3	439	up	81.6	79.9	76.6	76.0
				59.4	26.7	17.3	443	down	83.1	81.4	78.5	77.4
		Freight(F)		66.4	44.8	48.3	633	up	82.5	81.2	74.8	73.5
				60.3	40.1	28.4	643	down	85.5	84.2	78.9	77.2

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

Table 1.2-38 Result of Railway Noise Measurement in Asaoti №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Noise level [dB]			
									LAE		LAmax	
									12.5m	25.0m	12.5m	25.0m
1	13-Oct	10:05	P	39.9	25.3	36.8	422	up	74.2	73.8	61.6	60.7
2	13-Oct	10:08	P	51.6	37.0	49.9	243	up	77.7	77.1	67.7	65.5
3	13-Oct	10:40	P	25.5	53.3	66.6	489	up	95.9	95.4	87.1	84.7
4	13-Oct	10:48	F	33.7	69.4	91.9	650	up	83.3	83.0	70.0	68.3
5	13-Oct	10:53	F	88.0	31.6	45.1	641	down	94.0	92.3	81.5	79.4
6	13-Oct	11:06	P	65.1	25.4	36.8	357	up	75.3	75.5	62.7	62.1
7	13-Oct	11:10	P	32.3	27.7	46.4	268	down	79.3	67.7	69.2	66.3
8	13-Oct	11:20	F	61.4	41.7	50.2	635	down	87.6	85.5	86.0	83.9
9	13-Oct	11:21	P	133.3	10.8	13.7	333	down	81.4	81.9	80.4	80.9
10	13-Oct	11:26	P	116.4	15.3	23.5	399	down	83.4	82.1	73.9	71.5
11	13-Oct	11:38	P	79.8	9.1	22.2	310	up	77.2	76.1	67.9	65.8
12	13-Oct	11:50	F	69.9	39.4	48.3	655	down	99.5	97.0	85.1	82.5
13	13-Oct	11:51	P	125.4	11.3	12.4	399	up	84.3	84.2	83.2	83.1
14	13-Oct	12:00	P	108.6	18.8	29.1	511	up	85.5	84.3	74.8	72.3
15	13-Oct	12:02	P	111.7	18.4	15.2	556	down	79.2	76.4	77.9	75.1
16	13-Oct	12:05	F	88.9	27.7	29.3	641	up	74.6	73.8	73.1	72.4
17	13-Oct	12:13	P	75.0	13.3	21.8	288	up	79.1	78.5	67.9	67.1
18	13-Oct	12:32	P	104.8	12.7	20.7	377	down	86.1	84.8	77.4	75.1
19	13-Oct	12:37	P	113.0	18.0	26.5	556	up	87.4	86.2	77.2	75.4
20	13-Oct	12:40	P	107.3	18.3	24.9	556	down	79.6	77.4	78.4	76.2
21	13-Oct	13:07	F	58.2	36.8	46.7	476	down	76.5	75.8	74.9	74.2
22	13-Oct	13:15	F	104.4	22.2	39.0	641	up	88.2	87.2	74.6	73.5
23	13-Oct	12:23	P	85.6	14.2	16.6	422	up	86.2	84.7	85.1	83.6
24	13-Oct	13:35	P	111.2	13.9	24.4	422	down	79.6	77.4	78.5	76.3
25	13-Oct	13:43	P	84.5	13.5	28.5	288	up	78.5	78.6	69.8	70.9
26	13-Oct	14:00	P	15.0	59.5	19.9	288	down	71.9	68.6	70.1	66.9
27	13-Oct	14:05	P	118.4	13.4	12.4	377	up	76.0	79.6	74.9	78.5
28	13-Oct	14:07	F	52.0	46.1	56.2	641	down	84.9	84.2	74.5	72.3
29	13-Oct	14:31	F	61.0	40.1	53.6	626	up	85.9	84.9	72.5	71.6
30	13-Oct	14:54	P	72.1	23.3	35.7	466	down	83.7	82.4	73.8	72.0
31	13-Oct	14:56	P	148.5	10.1	20.0	310	up	92.7	85.4	86.4	84.4
32	13-Oct	14:57	P	112.6	0.9	14.5	87	down	83.1	81.6	77.6	75.1
33	13-Oct	15:04	P	46.8	24.8	22.8	333	up	84.2	78.4	82.8	77.0
34	13-Oct	15:07	P	120.5	18.0	24.2	533	up	78.9	78.7	77.7	77.5
35	13-Oct	15:16	P	107.3	12.7	11.2	377	up	75.2	77.0	74.1	75.9
36	13-Oct	15:29	P	81.5	11.5	18.8	243	up	69.2	68.5	68.1	67.5
37	13-Oct	15:53	F	46.6	39.6	49.4	650	down	84.3	83.5	72.8	70.3
38	13-Oct	16:11	P	108.6	18.5	21.6	560	up	86.2	84.9	77.4	75.4
39	13-Oct	16:19	P	97.8	13.6	23.5	495	up	82.6	80.9	81.5	79.8
40	13-Oct	16:20	F	63.1	37.7	47.5	650	down	87.5	87.1	74.8	72.8
41	13-Oct	16:57	P	75.0	19.9	31.9	435	down	83.8	80.9	75.9	74.3
42	13-Oct	17:14	P	103.7	14.2	23.6	437	down	88.8	77.7	78.1	76.6
average		Passenger(P)		88.6	19.0	26.4	395	up	81.4	80.4	75.1	74.1
				91.3	19.6	24.5	385	down	81.7	78.3	75.9	73.8
		Freight(F)		72.0	39.8	53.4	640	up	83.0	82.2	72.5	71.4
				62.8	39.0	49.1	621	down	87.8	86.5	78.5	76.5

Note) P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway noise measurement time for LAE and LAmax in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source : JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-39 and Table 1.2-40. In Asaoti No.1, in consideration of all results roughly, the frequency of 2500Hz was mainly dominated. In Asaoti No.2, in consideration of all results roughly, the frequency of 2500Hz was mainly dominated. In Japan, the main noise of train includes[1] (1)traction, (2)structures and (3) machines equipped to the train, and predominant frequency from each noise is said to be almost from 250 to 2000Hz as well. Therefore, result of predominant frequency was not similar to the case in Japan, and this would not be suitable value.

Table 1.2-39 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Asaoti №1

No.	train type	Noise Level [dB(A)]																										
		Frequency [Hz]																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	29	28	28	33	40	41	43	44	43	41	42	46	51	47	45	50	54	52	50	49	51	50	46	44	42	42	39	62
2	P	36	35	36	39	47	50	52	56	56	54	55	59	58	61	61	62	64	65	65	69	68	69	68	64	62	57	53	77
3	F	29	36	42	53	57	57	59	64	69	69	69	72	71	71	72	70	70	72	73	74	74	74	75	73	72	69	66	85
4	P	32	31	31	40	45	46	48	51	53	53	53	53	56	57	57	58	59	61	61	61	62	63	61	59	58	54	50	72
5	P	33	32	33	37	45	44	46	50	51	47	48	49	52	51	53	54	53	55	57	61	61	59	57	56	54	50	44	68
6	F	34	34	34	42	50	51	52	55	56	56	57	57	59	59	58	60	61	62	63	64	64	64	63	61	61	58	56	74
7	F	36	38	43	56	57	59	61	65	68	68	68	71	70	70	72	70	71	71	74	76	74	74	74	72	72	69	67	85
8	P	36	36	36	41	52	51	58	56	52	52	50	59	59	59	59	61	64	67	66	67	69	69	68	67	66	61	57	77
9	P	36	35	35	42	50	51	54	54	53	49	50	58	59	57	57	59	61	63	62	60	63	63	60	59	57	53	49	72
10	F	36	36	38	43	49	50	52	51	50	49	50	51	52	54	54	55	56	56	56	55	56	56	56	54	52	49	45	68
11	P	36	35	35	37	42	42	46	51	45	42	45	48	48	54	46	48	53	50	48	48	48	48	48	45	44	42	38	63
12	P	37	37	38	43	49	50	55	57	57	55	56	59	61	62	62	64	65	66	67	68	70	70	70	68	66	63	61	79
13	P	37	37	36	44	51	51	54	54	50	48	49	55	60	57	58	60	62	64	63	62	64	64	62	60	60	55	51	73
14	P	37	36	38	44	48	49	54	57	57	56	56	59	60	63	63	63	64	66	66	67	68	69	67	65	64	60	57	77
15	F	37	38	39	47	52	54	55	55	52	50	52	54	54	57	59	59	62	62	63	63	63	64	65	63	61	58	55	74
16	P	40	39	39	44	51	53	56	58	57	52	53	59	62	59	62	64	68	70	67	67	70	70	69	67	66	62	59	79
17	P	38	37	38	44	50	49	55	59	59	56	56	61	62	64	63	65	66	68	67	69	70	70	69	66	64	60	57	79
18	F	37	37	37	42	49	50	52	56	59	56	56	59	60	61	60	61	63	64	65	66	66	66	66	63	62	59	57	76
19	F	38	37	39	42	49	52	53	51	50	50	52	52	52	55	57	58	60	59	59	58	58	59	59	57	55	51	47	70
20	F	38	37	37	39	47	49	51	51	50	50	50	52	57	54	52	54	55	57	58	60	60	60	60	58	57	53	49	70
21	P	38	37	37	43	48	47	51	56	57	56	55	62	59	60	60	60	62	62	62	62	62	62	60	58	56	52	48	73
22	P	38	38	38	46	53	54	54	58	62	66	66	68	67	68	69	68	68	68	68	67	68	68	68	65	64	60	56	80
23	P	38	37	36	41	46	48	53	53	51	48	49	54	58	56	57	61	64	65	64	62	65	65	63	62	60	56	53	74
24	P	38	37	36	43	51	50	54	53	49	47	48	53	56	56	56	59	62	63	61	60	62	61	59	57	55	51	47	71
25	P	38	37	39	44	46	53	54	63	62	63	63	60	64	66	67	70	72	75	74	75	73	73	72	70	69	68	65	83
26	P	38	38	37	43	51	50	54	54	54	49	50	54	59	58	58	59	61	63	62	60	62	62	62	60	58	55	51	72
27	F	38	38	39	48	51	54	57	62	65	65	63	64	64	64	64	63	63	66	69	70	68	68	67	65	64	61	59	79
28	F	38	37	37	42	44	47	50	56	55	53	55	56	55	56	57	58	59	60	63	62	62	61	60	58	55	52	48	72
29	P	38	37	37	43	51	50	54	53	50	48	49	53	59	57	56	60	61	62	61	60	62	61	60	59	57	54	49	72
30	P	38	37	37	43	50	51	52	54	51	48	50	56	58	57	57	60	63	65	63	63	65	66	64	63	62	58	54	74
31	F	38	37	36	41	48	51	53	57	57	57	58	57	57	57	58	59	60	62	62	62	62	62	61	58	57	53	50	73
32	P	38	37	37	42	52	52	52	55	53	50	51	59	59	59	60	62	66	68	66	67	69	69	67	65	63	59	56	77
33	F	38	38	38	42	49	54	55	57	59	59	58	59	59	60	60	59	61	62	64	65	63	62	63	60	60	58	58	74
34	P	38	37	36	43	51	51	54	53	51	48	48	53	57	57	56	58	63	63	62	61	62	63	61	60	59	55	52	73
35	P	38	37	36	39	43	42	46	49	49	48	48	52	51	53	54	56	59	56	57	55	56	55	54	53	50	47	44	68
36	P	38	37	38	42	50	49	53	57	57	56	56	61	61	63	63	64	66	68	68	69	70	71	70	68	67	63	60	79

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

Table 1.2-40 Results of 1/3 Octave Band Frequency Analysis of Railway Noise in Asaoti №2

No.	train type	Noise Level [dB(A)]																										
		Frequency [Hz]																										
		20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	AP
1	P	32	31	32	34	39	43	44	42	41	41	45	45	47	49	47	48	50	47	45	45	46	46	45	46	43	43	40	60
2	P	33	32	32	35	39	41	45	41	41	41	40	42	46	48	48	45	45	45	44	46	48	49	45	44	42	42	38	60
3	P	36	35	36	38	41	45	48	54	52	52	50	50	50	50	52	53	53	56	58	59	58	56	56	55	55	51	47	68
4	F	36	36	36	40	44	49	52	48	45	45	45	45	47	48	48	48	50	51	50	52	52	53	51	50	47	45	42	64
5	F	37	37	42	46	51	65	62	54	56	56	56	54	56	59	60	60	62	64	66	66	68	70	70	69	68	65	64	78
6	P	36	35	35	36	40	43	43	41	41	41	42	45	45	47	47	47	48	47	46	47	48	48	46	44	42	42	38	61
7	P	36	35	34	33	35	39	40	41	37	36	44	50	42	48	55	49	49	49	45	45	46	46	44	43	42	43	38	62
8	F	37	38	43	50	61	64	62	63	65	63	64	65	66	66	68	69	70	73	74	75	75	76	76	73	74	72	68	85
9	P	37	37	36	38	45	46	52	51	50	49	45	50	53	56	57	58	62	64	62	64	65	66	64	64	62	60	57	74
10	P	37	37	36	38	42	48	52	52	48	46	47	48	52	55	56	58	59	60	58	57	59	59	56	56	53	50	45	69
11	P	37	36	36	39	46	47	48	45	43	45	45	51	50	53	54	53	54	55	52	54	55	57	54	52	51	48	44	66
12	F	38	44	47	54	57	60	60	63	64	64	65	64	64	66	68	69	70	71	72	72	73	75	74	73	73	70	68	84
13	P	38	37	38	41	52	51	59	53	50	52	51	57	58	61	61	61	64	67	65	66	70	72	69	68	67	63	59	78
14	P	38	37	38	42	50	51	51	50	48	48	48	51	55	59	58	58	60	61	59	59	62	63	59	58	56	52	48	71
15	P	38	38	37	39	48	46	51	54	50	48	48	51	55	56	57	58	61	63	61	62	64	64	64	61	59	57	53	73
16	F	38	39	43	46	53	56	55	51	49	50	52	52	55	57	59	58	59	60	59	59	60	60	59	58	56	53	50	71
17	P	39	38	38	40	48	47	52	54	50	49	47	50	54	58	56	57	61	62	61	62	63	63	61	61	59	56	53	72
18	P	39	38	38	39	48	47	52	54	50	49	47	50	54	58	56	57	61	62	61	62	63	63	61	61	59	56	53	72
19	P	39	38	38	41	50	54	54	49	49	49	49	54	57	60	60	60	63	64	61	61	64	65	62	61	59	56	51	73
20	P	40	38	38	40	46	47	53	53	50	49	48	50	54	57	58	59	63	66	63	64	65	64	61	61	58	54	49	74
21	F	39	38	38	41	48	52	54	56	53	54	53	51	52	53	52	53	55	56	57	58	58	59	58	57	56	54	51	69
22	F	39	39	40	47	52	54	54	49	49	50	51	51	54	59	60	59	60	61	61	61	62	63	62	60	58	55	52	72
23	P	39	38	38	40	50	52	54	52	49	49	49	55	59	61	61	61	65	67	65	65	68	69	67	65	63	60	56	77
24	P	39	38	38	40	47	49	55	54	51	49	48	52	56	57	58	59	62	65	62	64	65	65	63	62	61	58	55	74
25	P	39	38	38	39	45	48	48	45	44	45	46	48	49	51	51	51	54	55	52	53	52	54	53	51	49	48	43	66
26	P	39	38	37	36	37	39	40	41	38	39	40	41	43	47	51	57	55	56	57	56	55	54	52	48	42	42	37	66
27	P	39	39	40	41	49	52	53	50	48	49	49	52	55	60	59	58	65	63	61	60	64	63	60	58	56	52	48	73
28	F	39	38	37	39	43	49	50	50	47	48	47	47	50	51	49	48	51	53	51	53	52	54	52	51	50	47	43	65
29	F	39	38	38	41	50	51	52	50	48	48	48	50	52	53	52	52	53	55	56	57	58	60	59	58	57	55	51	69
30	P	39	39	37	37	43	47	52	49	45	45	44	45	50	53	53	52	55	57	54	54	54	56	52	51	49	46	41	67
31	P	41	40	41	44	54	55	58	58	59	63	61	61	64	67	69	73	72	75	74	73	74	76	74	73	71	69	67	84
32	P	39	38	38	38	40	43	47	48	44	43	42	44	48	51	53	56	61	63	61	62	62	62	59	57	53	50	46	71
33	P	39	40	42	45	52	50	54	58	61	59	58	60	60	60	62	62	64	66	64	65	67	69	65	63	60	57	53	76
34	P	39	38	39	41	53	54	52	50	49	49	49	54	56	60	60	58	62	64	62	62	65	65	63	62	60	57	53	74
35	P	39	39	39	42	51	53	51	50	49	49	47	51	55	60	59	58	61	63	60	59	63	63	60	60	58	55	51	72
36	P	39	38	38	38	44	48	48	47	45	46	48	50	49	52	52	54	56	57	54	54	57	58	55	53	52	49	45	67
37	F	39	38	36	38	42	45	49	50	50	48	49	52	51	51	50	52	53	53	55	55	55	57	55	53	50	48	43	67
38	P	39	38	37	40	50	53	53	50	49	50	49	53	56	60	60	60	62	64	61	62	66	66	64	63	61	58	54	74
39	P	39	39	39	41	52	54	56	54	52	51	52	58	58	61	61	62	65	67	65	67	70	71	67	66	64	61	58	78
40	F	39	38	37	40	45	50	52	53	52	56	57	54	56	57	58	59	61	60	59	60	59	60	58	57	54	51	46	71
41	P	39	38	37	38	42	48	53	51	46	45	45	50	53	54	53	54	57	58	56	56	57	58	56	54	52	49	45	68
42	P	38	38	37	39	48	48	52	53	50	48	48	50	55	58	58	59	63	66	64	64	66	67	64	64	62	60	55	75

Note) P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source : JICA Survey Team

2. Impact Assessment

2-1 Time Table of Passenger Train in Parallel Section

Time Tables of Passenger Train in Parallel Section used for setting of noise prediction are shown from Figure 2.1-1 to Figure 2.1-8. These time table were made based on actual time table of each station (September 2010).

Table 2.1-1 Time Table (Panvel)

Time		Up															Down														Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00	1														1															0	1
1:00	2:00	1														1															0	1
2:00	3:00															0	1														1	1
3:00	4:00															0	1														1	1
4:00	5:00															0	2														2	2
5:00	6:00	3														3	1														1	4
6:00	7:00	1														1	1														1	2
7:00	8:00	1														1	1														1	2
8:00	9:00	2														2															0	2
9:00	10:00	2														2	1														1	3
10:00	11:00	1														1	1														1	2
11:00	12:00															0	3														3	3
12:00	13:00	2														2	1														1	3
13:00	14:00	1														1	1														1	2
14:00	15:00															0															0	0
15:00	16:00															0	1														1	1
16:00	17:00	1														1	1														1	2
17:00	18:00	1														1	1	1													2	3
18:00	19:00	4														4	2														2	6
19:00	20:00															0	2														2	2
20:00	21:00	1														1	2														2	3
21:00	22:00	1	1													2	3														3	5
22:00	23:00	3														3	1														1	4
23:00	0:00	1														1															0	1
Daytime Total		17	1	0	0	0	0	0	0	0	0	0	0	0	0	18	20	1	0	0	0	0	0	0	0	0	0	0	0	0	21	39
Nighttime Total		10	0	0	0	0	0	0	0	0	0	0	0	0	0	10	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7	17
Total		27	1	0	0	0	0	0	0	0	0	0	0	0	0	28	27	1	0	0	0	0	0	0	0	0	0	0	0	0	28	56

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

Table 2.1-2 Time Table (Palgar)

Time		Up															Down														Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00															0									3		2	1			6	6
1:00	2:00	1														1	2	1							4	2					9	10
2:00	3:00	1	1		1					1	1	2	1			8															0	8
3:00	4:00	1	1							2		1				5															0	5
4:00	5:00	1	2									1				4	1														1	5
5:00	6:00	2	2													4	1														1	5
6:00	7:00	1										1	1			3	2														2	5
7:00	8:00	2	1							2						5	1	1							2		1			1	6	11
8:00	9:00	2	2													4	1	1													2	6
9:00	10:00	2	2							3						7	2											1			3	10
10:00	11:00	1	1								4					6	1														1	7
11:00	12:00	1								1		1				3	1														1	4
12:00	13:00	1	1			1						1				4	2														2	6
13:00	14:00		1													1	1	1								1					3	4
14:00	15:00	2														2	1	1							3			1			6	8
15:00	16:00	1								1	1					3		1							1	1	1				4	7
16:00	17:00	1											1			2	1	1													2	4
17:00	18:00	2								2		1				5	1	1			1				1		1				5	10
18:00	19:00	1	1													2	2	1							1	1	1				6	8
19:00	20:00	1								3	1				1	6	2	1													3	9
20:00	21:00	2														2	1	2							1		2				6	8
21:00	22:00	1								3	2					6	3								1	1					5	11
22:00	23:00	2														2	1	2													3	5
23:00	0:00									4						4	2	1							6	3					12	16
Daytime Total		20	9	0	0	1	0	0	0	15	8	3	1	0	1	58	20	11	0	0	1	0	0	0	10	4	6	2	0	1	55	113
Nighttime Total		9	6	0	1	0	0	0	0	7	1	5	2	0	0	31	9	4	0	0	0	0	0	0	13	5	2	1	0	0	34	65
Total		29	15	0	1	1	0	0	0	22	9	8	3	0	1	89	29	15	0	0	1	0	0	0	23	9	8	3	0	1	89	178

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

Table 2.1-3 Time Table (Boisar)

Time		Up																Down														Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00															0					1	1			8	4	1				15	15
1:00	2:00	1	1													2	1	2	1												4	6
2:00	3:00		1			1	1			3	2	2				10									1						1	11
3:00	4:00		3													3															0	3
4:00	5:00		3									1				4	1														1	5
5:00	6:00	2	2													4	1														1	5
6:00	7:00	1	1									1	1			4	1														1	5
7:00	8:00	1								2						3	2								2		1			1	6	9
8:00	9:00	1	4													5	3														3	8
9:00	10:00	2	2							3	3					10	2											1			3	13
10:00	11:00		1								1					2	1														1	3
11:00	12:00	2								1		1				4	1														1	5
12:00	13:00		1									2				3	2														2	5
13:00	14:00		1													1		1								1					2	3
14:00	15:00	2														2	1								3			1			5	7
15:00	16:00	1								1	1					3	1	2								1					4	7
16:00	17:00	1								2		1	1			5		2								1	1				4	9
17:00	18:00	2														2	1	1							1		2				5	7
18:00	19:00	2		1						2	1					6	2	1							1	1	1				6	12
19:00	20:00	1													1	2		3													3	5
20:00	21:00	2														2	1	2							1		2				6	8
21:00	22:00	1								3	2					6	3														3	9
22:00	23:00	2								4						6		3													3	9
23:00	0:00															0	1	2	1						3	1	1				9	9
Daytime Total		18	9	1	0	0	0	0	0	14	8	4	1	0	1	56	20	12	0	0	0	0	0	0	8	4	7	2	0	1	54	110
Nighttime Total		6	11	0	0	1	1	0	0	7	2	4	1	0	0	33	5	7	2	0	1	1	0	0	12	5	2	0	0	0	35	68
Total		24	20	1	0	1	1	0	0	21	10	8	2	0	1	89	25	19	2	0	1	1	0	0	20	9	9	2	0	1	89	178

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

Table 2.1-4 Time Table (Vapi)

Time		Up																Down														Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00	1														1	1	1							2	1					5	6
1:00	2:00		1	1			1				2	2				7			6	2		1			4	2	2				17	24
2:00	3:00		2	1						1		1				5	1	1													2	7
3:00	4:00	2	2									1				5	1														1	6
4:00	5:00	1	1													2															0	2
5:00	6:00	1		1								1	1			4															0	4
6:00	7:00		1							1						2	1														1	3
7:00	8:00	4														4	1														1	5
8:00	9:00	2	1		1					3						7	1				1			1	2						5	12
9:00	10:00	1									3					4	1														1	5
10:00	11:00	2								1		1				4	1					1									2	6
11:00	12:00	1				2										3	2														2	5
12:00	13:00	2														2															0	2
13:00	14:00	2														2	2														2	4
14:00	15:00									1	1					2	2			1								1			4	6
15:00	16:00	1				1	1			2						5		1							3						4	9
16:00	17:00	1														1	2									2	1				5	6
17:00	18:00	2		1						2	1					6	3														3	9
18:00	19:00	1														1		1	1		2				1		1				6	7
19:00	20:00	1						1								2	1									1					2	4
20:00	21:00	1		1	2					2						6	4														4	10
21:00	22:00			4												4		2							1		2				5	9
22:00	23:00															0	2		1							1					4	4
23:00	0:00	1														1	2	1													3	4
Daytime Total		21	1	6	3	3	1	0	1	11	5	1	0	0	0	53	20	4	1	1	3	1	0	1	7	3	4	1	0	0	46	99
Nighttime Total		6	7	3	0	0	1	0	0	2	2	5	1	0	0	27	8	3	7	2	0	1	0	0	6	4	2	0	0	0	33	60
Total		27	8	9	3	3	2	0	1	13	7	6	1	0	0	80	28	7	8	3	3	2	0	1	13	7	6	1	0	0	79	159

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

Table 2.1-5 Time Table (Valsad)

Time		Up																Down														Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00	1				1	1									3	1	2													3	6
1:00	2:00	1								3	3	1				8	1		4	3					2	2	1				13	21
2:00	3:00	3	1													4	1		5		1	1			2						10	14
3:00	4:00	2	1									1				4	1														1	5
4:00	5:00		2													2	1														1	3
5:00	6:00		1	1								1	1			4															0	4
6:00	7:00	2								1						3															0	3
7:00	8:00	3								3						6	2														2	8
8:00	9:00	1	1								3					5														1	1	6
9:00	10:00	2									1					3	1		2		1										4	7
10:00	11:00	2		1		1										4	1											1			2	6
11:00	12:00	1	1			1						1				4	1														1	5
12:00	13:00	1														1	2														2	3
13:00	14:00															0															0	0
14:00	15:00	1								1	1		1			4	2									1					3	7
15:00	16:00	1								2		1				4	1								3			1			5	9
16:00	17:00	1		2	1					1						5	1	1								1					3	8
17:00	18:00	1														1	2				1					1					4	5
18:00	19:00	1													1	2	2	1													3	5
19:00	20:00	1														1			1		1				3		2				7	8
20:00	21:00	1		2	2					1						6	3														3	9
21:00	22:00			4												4	2	1									1				4	8
22:00	23:00															0	2								1		1				4	4
23:00	0:00	1														1	2								1	1					4	5
Daytime Total		17	2	9	3	2	0	0	0	8	5	2	1	0	1	50	20	3	3	0	3	0	0	0	6	3	3	2	0	1	44	94
Nighttime Total		10	5	1	0	1	1	0	0	4	3	3	1	0	0	29	9	2	9	3	1	1	0	0	6	3	2	0	0	0	36	65
Total		27	7	10	3	3	1	0	0	12	8	5	2	0	1	79	29	5	12	3	4	1	0	0	12	6	5	2	0	1	80	159

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

Table 2.1-6 Time Table (Amalsad)

Time		Up															Down															Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00									1	1	1	1			4		4													4	8
1:00	2:00		2							2	1	2				7		1							3	3	1				8	15
2:00	3:00	1	3													4		1							10	2	1	1			15	19
3:00	4:00		2									1				3		1													1	4
4:00	5:00		1							2						3	2														2	5
5:00	6:00	1	1							1		1	1			5															0	5
6:00	7:00	1	3													4	1														1	5
7:00	8:00		1							4						5		1													1	6
8:00	9:00	1	1								3					5	2														2	7
9:00	10:00		1							1	1	1				4		1							2		1			1	5	9
10:00	11:00	1	2									2				5		1													1	6
11:00	12:00		1													1	1											1			2	3
12:00	13:00		1													1	1														1	2
13:00	14:00	1								1	1					3	1														1	4
14:00	15:00	1								2		1	1			5		1													1	6
15:00	16:00															0	1								3	1		1			6	6
16:00	17:00		1							3	1					5		2								1					3	8
17:00	18:00	1														1		1								1	1				3	4
18:00	19:00	1													1	2	1	2													3	5
19:00	20:00	2								2						4		1							2	1	3				7	11
20:00	21:00		1							7	2					10		2							3						5	15
21:00	22:00															0	1	1									1				3	3
22:00	23:00	1														1	1	2							1		1				5	6
23:00	0:00	1	1													2		1							1	1					3	5
Daytime Total		8	9	0	0	0	0	0	0	20	8	4	1	0	1	51	8	13	0	0	0	0	0	0	10	4	7	2	0	1	45	95
Nighttime Total		5	13	0	0	0	0	0	0	6	2	5	2	0	0	33	4	10	0	0	0	0	0	0	15	6	3	1	0	0	39	72
Total		13	22	0	0	0	0	0	0	26	10	9	3	0	1	84	12	23	0	0	0	0	0	0	25	10	9	3	0	1	83	167

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

Table 2.1-7 Time Table (Kim)

Time		Up															Down															Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00		4													4		1							3	1					5	9
1:00	2:00		3													3		3													3	6
2:00	3:00		1									1				2		2								2	1				5	7
3:00	4:00		2													2									8	3	1	2			14	16
4:00	5:00		1							1		1	1			4		2							6						8	12
5:00	6:00	1	3							3						7									2		1				3	10
6:00	7:00		2							1	1					4	1														1	5
7:00	8:00	1									2					3	1														1	4
8:00	9:00	2	1							1	1	1				6	2														2	8
9:00	10:00		2									2				4		1													1	5
10:00	11:00	1	1							2						4	2								2		1			1	6	10
11:00	12:00	1														1															0	1
12:00	13:00									1	1					2												1			1	3
13:00	14:00	2								2		1	1			6		1													1	7
14:00	15:00	1	1													2	2														2	4
15:00	16:00									3	1					4		1													1	5
16:00	17:00															0		1								1		1			3	3
17:00	18:00	1								3					1	5	1	2							4	1					8	13
18:00	19:00									3	2					5	2									1	1				4	9
19:00	20:00	2								6		1				9	1	2													3	12
20:00	21:00															0		1							1		3				5	5
21:00	22:00		1							3			1			5		1							3	1					5	10
22:00	23:00	1										1	1			3	1	2									1				4	7
23:00	0:00									3	2	2				7		2							3		1				6	13
Daytime Total		11	6	0	0	0	0	0	0	24	7	5	2	0	1	56	11	10	0	0	0	0	0	0	10	4	5	2	0	1	43	99
Nighttime Total		2	16	0	0	0	0	0	0	8	3	5	2	0	0	36	2	12	0	0	0	0	0	0	22	6	5	2	0	0	49	85
Total		13	22	0	0	0	0	0	0	32	10	10	4	0	1	92	13	22	0	0	0	0	0	0	32	10	10	4	0	1	92	184

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

Table 2.1-8 Time Table (Asaoti)

Time		Up															Down															Total Trains
From	To	Daily		Stop per week						Through per week							Daily		Stop per week						Through per week							
		Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	Stop	Through	1	2	3	4	5	6	1	2	3	4	5	6	Total	
0:00	1:00									1						1									1						1	2
1:00	2:00	1														1															0	1
2:00	3:00															0															0	0
3:00	4:00															0		3							2			1			6	6
4:00	5:00															0	1	1									2				4	4
5:00	6:00	1	1													2		3									1	1			5	7
6:00	7:00		1	2	1					1					1	6	2	2								2			1		7	13
7:00	8:00	2	1								1	1		1		6	3	3													6	12
8:00	9:00	2	1													3	3							1	1		3		1		9	12
9:00	10:00	1	1								1	2				5	1	2							2	3	1				9	14
10:00	11:00		1													1		4							1	1					6	7
11:00	12:00	2	1								2					5	1	2									1				4	9
12:00	13:00		2													2	1	2								1					4	6
13:00	14:00	1	1													2		1							1		1				3	5
14:00	15:00		3							2	2	1				8	2														2	10
15:00	16:00	1	2							2	1	1		1		8	1										1				2	10
16:00	17:00	1	1							3	3	1				9	2								2	2					6	15
17:00	18:00	2	3									2				7	1	1							1		1				4	11
18:00	19:00	2	1					1								4	1	1							1						3	7
19:00	20:00	3	2													5		1						1	2						4	9
20:00	21:00		1													1	1	1													2	3
21:00	22:00	1	2					1				1				5		1									1			1	3	8
22:00	23:00	1	2							2	1	1	1			8	1								1						2	10
23:00	0:00	1	2													3	1														1	4
Daytime Total		20	23	0	0	0	0	0	2	7	10	8	1	2	0	73	17	19	0	0	0	0	0	2	11	7	9	0	1	1	67	138
Nighttime Total		4	6	2	1	0	0	0	0	4	1	1	1	0	1	21	5	9	0	0	0	0	0	0	4	2	3	2	1	0	26	47
Total		22	29	2	1	0	0	0	2	11	11	9	2	2	1	92	22	28	0	0	0	0	0	2	15	9	12	2	2	1	93	185

Note) up : to Mumbai down : to Delhi
Stop: This indicates number of trains which stops at this station.
Through: This indicates number of trains which pass through this station.
Daytime:7:00-22:00 Nighttime:22:00-7:00
Source : JICA Survey Team

2-2 Results of Noise Prediction

2-2-1 Parallel Section

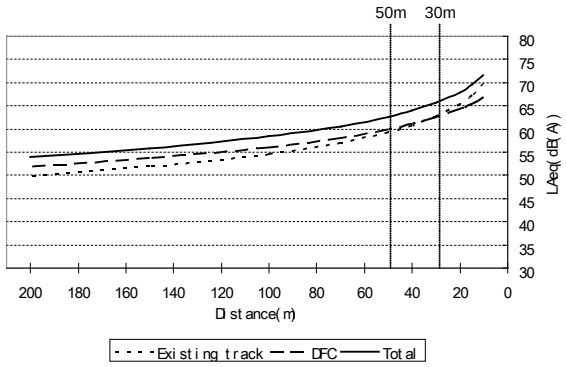
Results of noise prediction in parallel section are given below. Range of distance from near railway to 200 m is indicated on graphs. As well, results of noise prediction with countermeasure by soundproof wall are given below. Countermeasure1 are the methods of setting up the soundproof wall to meet the guideline value in 30-m point(in Panvel No.1, Kopar No.1, Palgar No.1, Boisar No.2, Valsad No.1, Kim No.1, No.2 and Asaoti No.1 is a point of 40 m) from the center of the existing railway, and countermeasure2 are the methods of setting up the soundproof wall to meet the guideline value in 50 m point from the center of the existing railway.

Note: Distance 0 m in each graphs indicates center position of each existing track. And prediction point (30 m and 50 m) were put down with each graphs.

(1) Panvel No.1

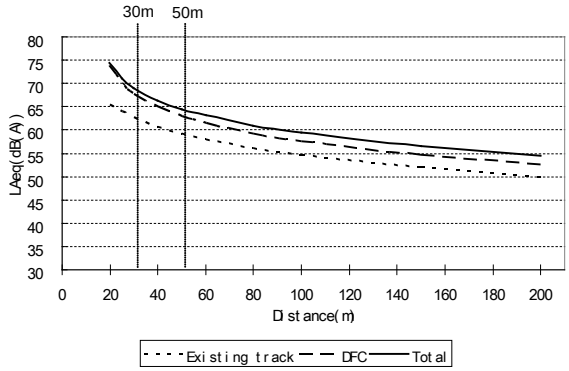
Results of noise prediction for Panvel No.1 are given from Figure 2.2(1)-1 to Figure 2.2(1)-12.

1) without countermeasure



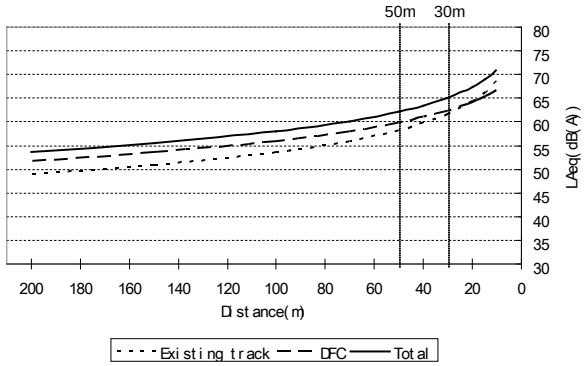
Source : JICA Survey Team

Figure 2.2(1)-1 Result of Noise Prediction Without Countermeasure on Daytime At Panvel-1(Existing track side)



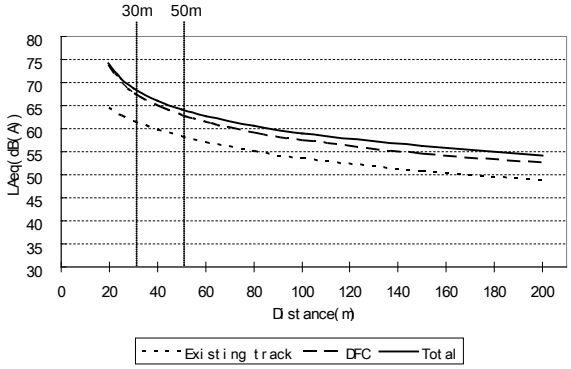
Source : JICA Survey Team

Figure 2.2(1)-2 Result of Noise Prediction Without Countermeasure on Daytime At Panvel-1 (DFC side)



Source : JICA Survey Team

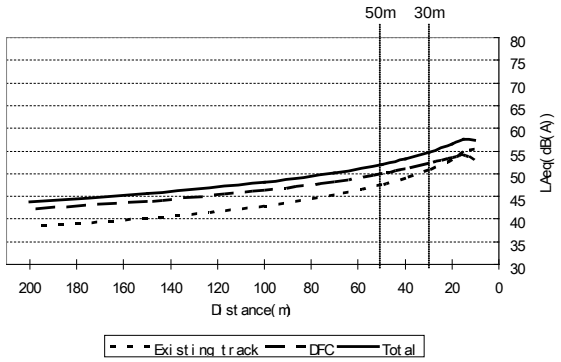
Figure 2.2(1)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Panvel-1 (Existing track side)



Source : JICA Survey Team

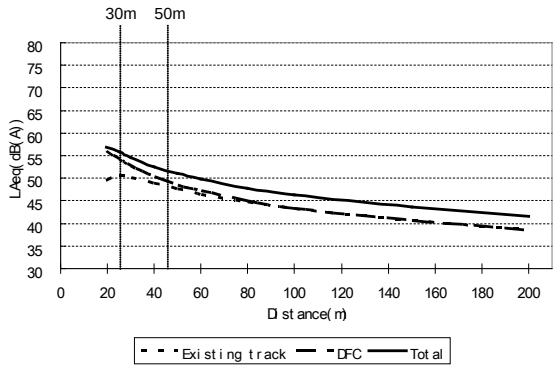
Figure 2.2(1)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Panvel-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 4.0 m Existing track side: 3.0 m)



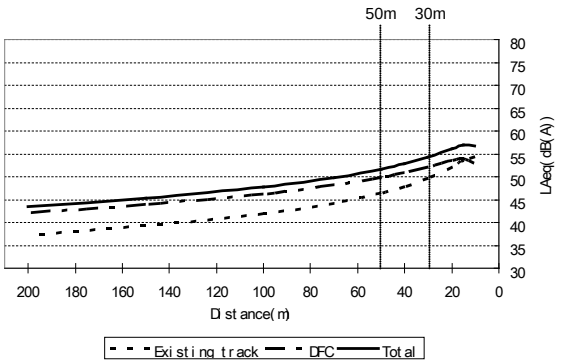
Source : JICA Survey Team

Figure 2.2(1)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Panvel-1 (Existing track side)



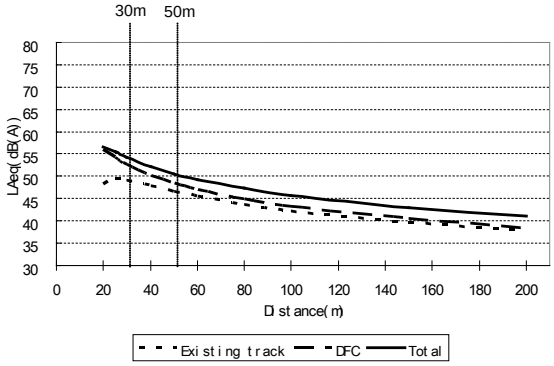
Source : JICA Survey Team

Figure 2.2(1)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Panvel-1 (DFC side)



Source : JICA Survey Team

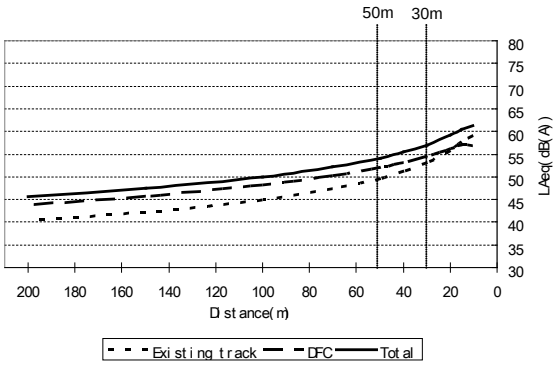
Figure 2.2(1)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Panvel-1 (Existing track side)



Source : JICA Survey Team

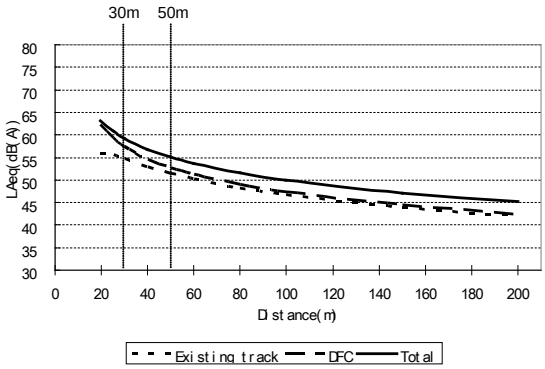
Figure 2.2(1)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Panvel-1 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 2.0 m Existing track side: 2.0 m)



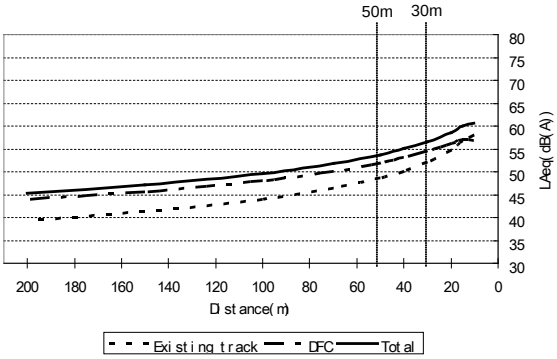
Source : JICA Survey Team

Figure 2.2(1)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Panvel-1 (Existing track side)



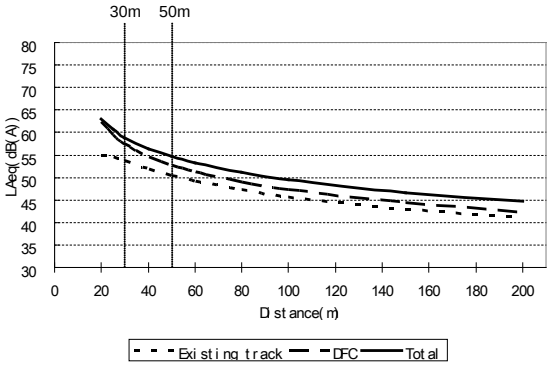
Source : JICA Survey Team

Figure 2.2(1)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Panvel-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(1)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Panvel-1 (Existing track side)



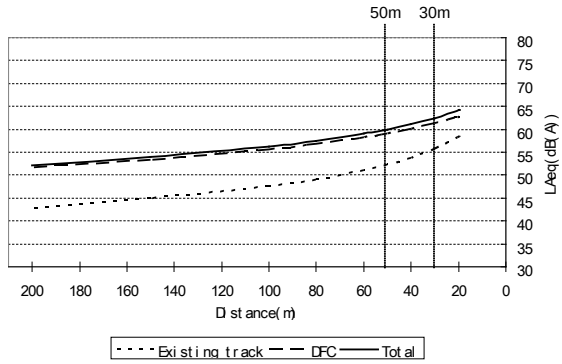
Source : JICA Survey Team

Figure 2.2(1)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Panvel-1 (DFC side)

(2) Panvel No.2

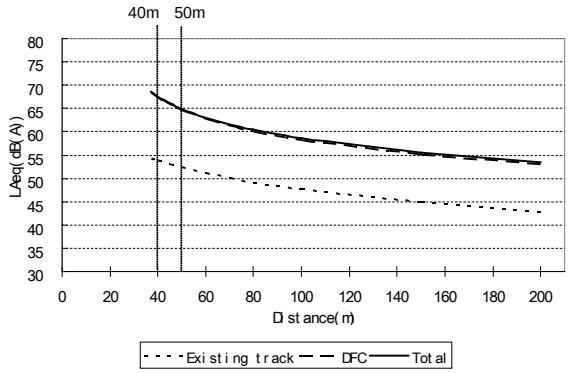
Results of noise prediction for Panvel No.2 are given from Figure 2.2(2)-1 to Figure 2.2(2)-12.

1) without countermeasure



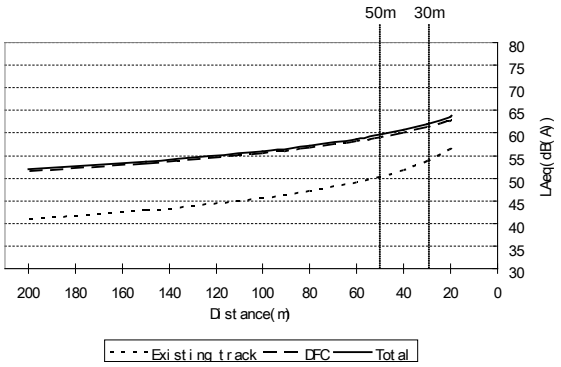
Source : JICA Survey Team

Figure 2.2(2)-1 Result of Noise Prediction Without Countermeasure on Daytime At Panvel-2 (Existing track side)



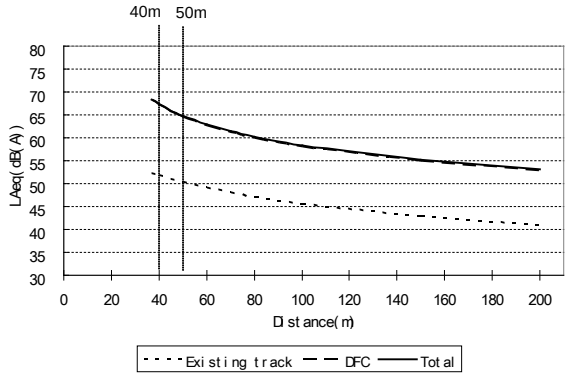
Source : JICA Survey Team

Figure 2.2(2)-2 Result of Noise Prediction Without Countermeasure on Daytime At Panvel-2 (DFC side)



Source : JICA Survey Team

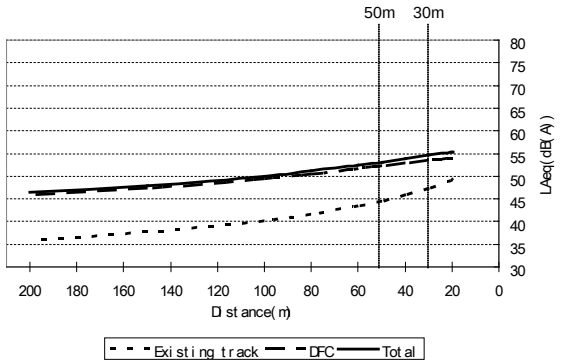
Figure 2.2(2)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Panvel-2 (Existing track side)



Source : JICA Survey Team

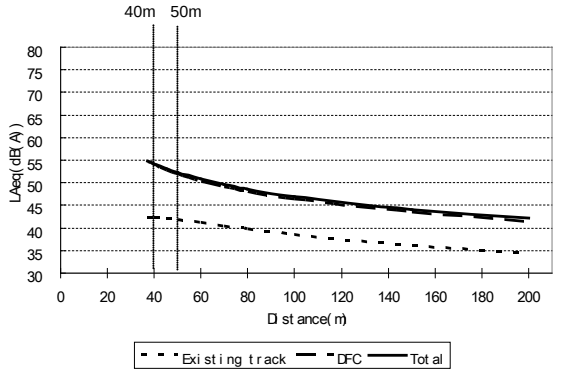
Figure 2.2(2)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Panvel-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 2.5 m Existing track side: 1.0 m)



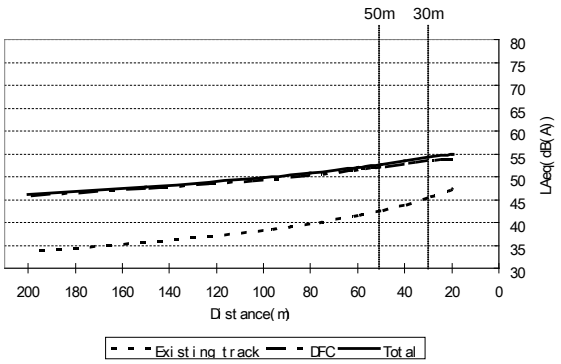
Source : JICA Survey Team

Figure 2.2(2)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Panvel-2 (Existing track side)



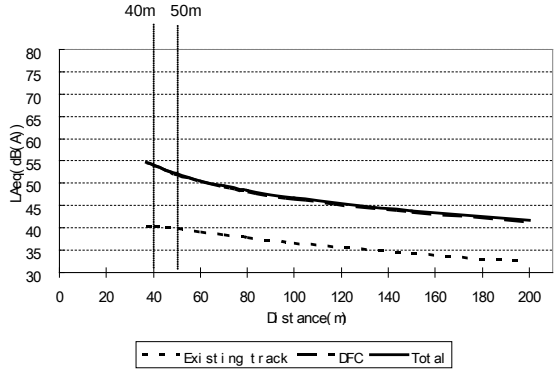
Source : JICA Survey Team

Figure 2.2(2)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Panvel-2 (DFC side)



Source : JICA Survey Team

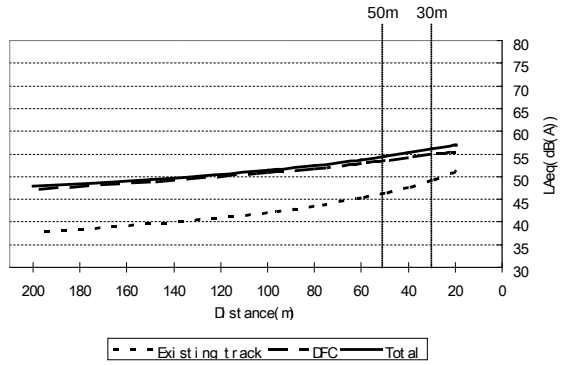
Figure 2.2(2)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Panvel-2 (Existing track side)



Source : JICA Survey Team

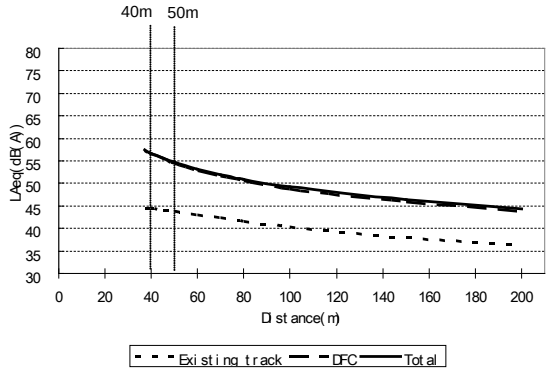
Figure 2.2(2)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Panvel-2 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 1.5 m Existing track side: 0.5 m)



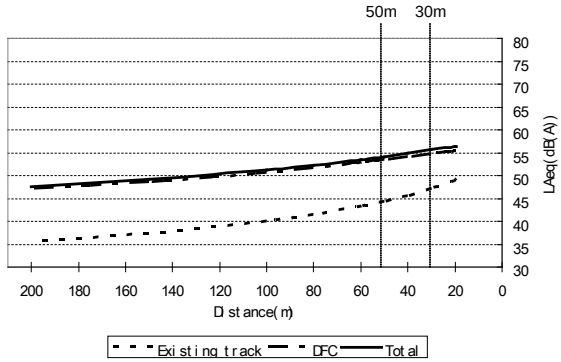
Source : JICA Survey Team

Figure 2.2(2)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Panvel-2 (Existing track side)



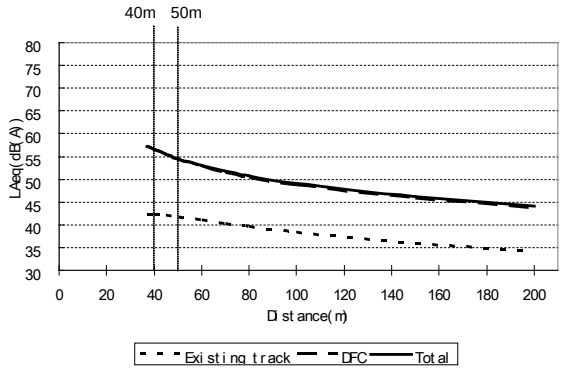
Source : JICA Survey Team

Figure 2.2(2)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Panvel-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(2)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Panvel-2 (Existing track side)



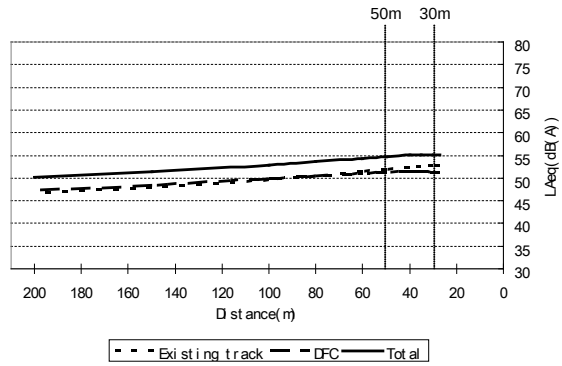
Source : JICA Survey Team

Figure 2.2(2)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Panvel-2 (DFC side)

(3) Kopar

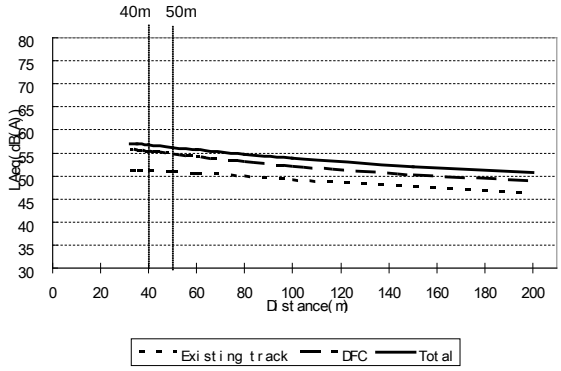
Results of noise prediction for Kopar are given from Figure 2.2(3)-1 to Figure 2.2(3)-8.

1) without countermeasure



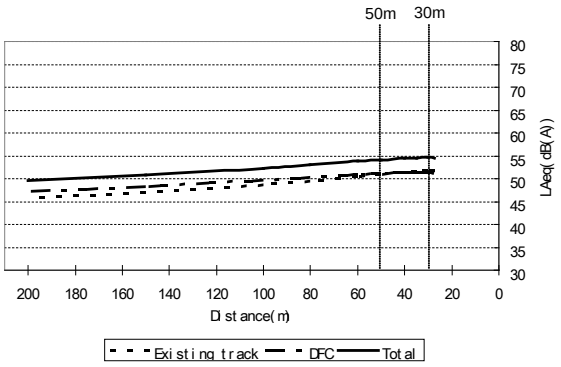
Source : JICA Survey Team

Figure 2.2(3)-1 Result of Noise Prediction Without Countermeasure on Daytime At Kopar (Existing track side)



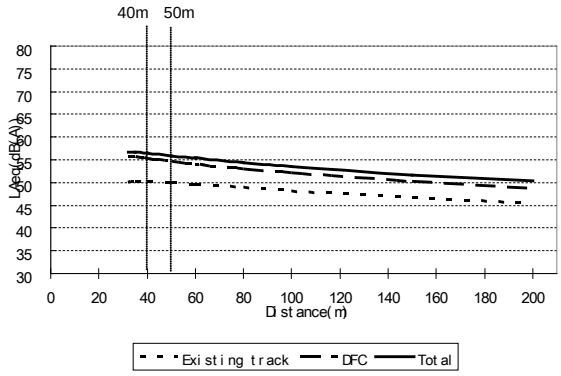
Source : JICA Survey Team

Figure 2.2(3)-2 Result of Noise Prediction Without Countermeasure on Daytime At Kopar (DFC side)



Source : JICA Survey Team

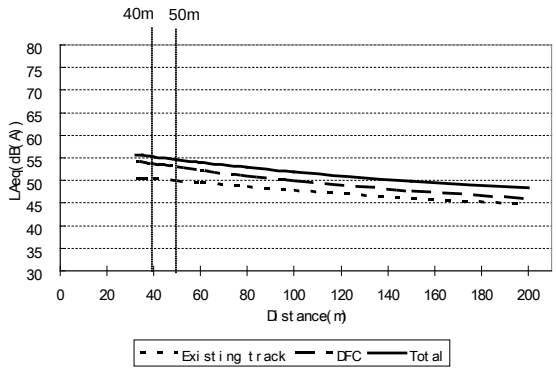
Figure 2.2(3)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Kopar (Existing track side)



Source : JICA Survey Team

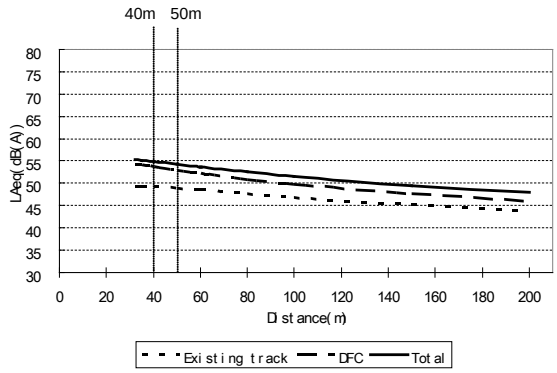
Figure 2.2(3)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Kopar (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 0.5 m Existing track side:—m)



Source : JICA Survey Team

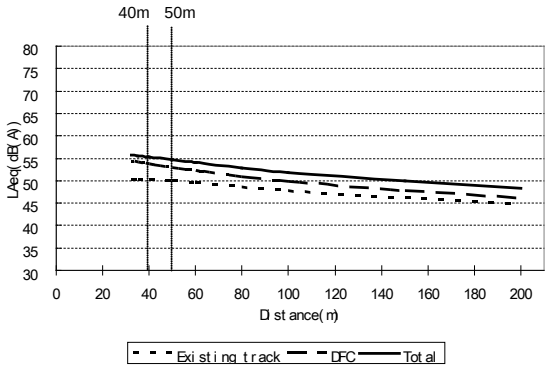
Figure 2.2(3)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Kopar (DFC side)



Source : JICA Survey Team

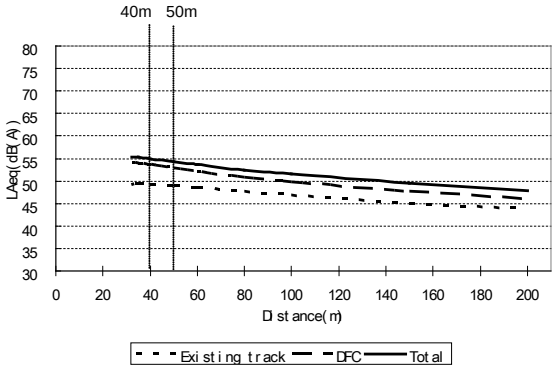
Figure 2.2(3)-6 Result of Noise Prediction With Countermeasure 1 on Nighttime At Kopar (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 0.5 m Existing track side:—m)



Source : JICA Survey Team

Figure 2.2(3)-7 Result of Noise Prediction With Countermeasure 2 on Daytime At Kopar (DFC side)



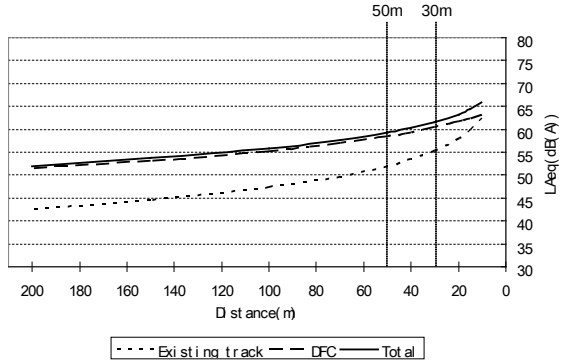
Source : JICA Survey Team

Figure 2.2(3)-8 Result of Noise Prediction With Countermeasure 2 on Nighttime At Kopar (DFC side)

(4) Palgar No.1

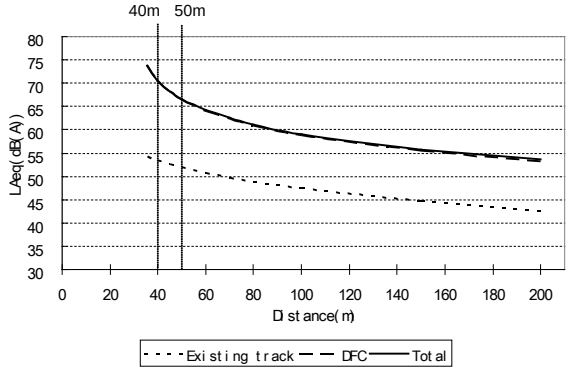
Results of noise prediction for Palgar No.1 are given from Figure 2.2(4)-1 to Figure 2.2(4)-12.

1) without countermeasure



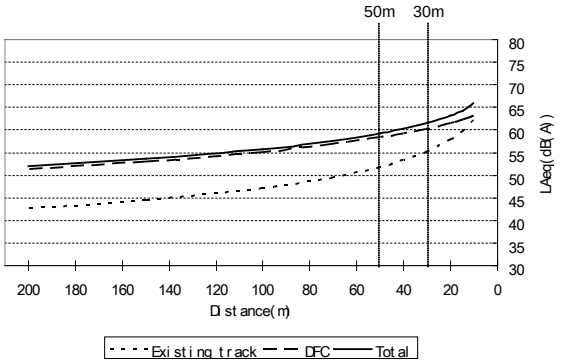
Source : JICA Survey Team

Figure 2.2(4)-1 Result of Noise Prediction Without Countermeasure on Daytime At Palgar-1 (Existing track side)



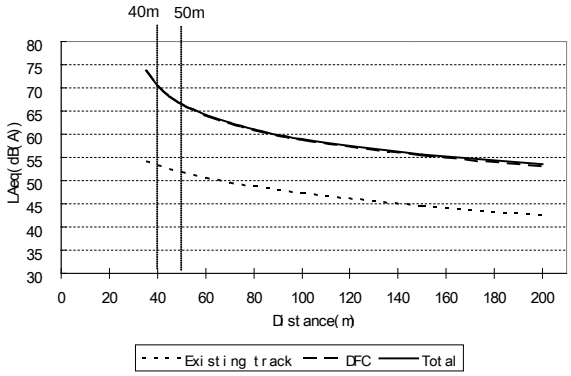
Source : JICA Survey Team

Figure 2.2(4)-2 Result of Noise Prediction Without Countermeasure on Daytime At Palgar-1 (DFC side)



Source : JICA Survey Team

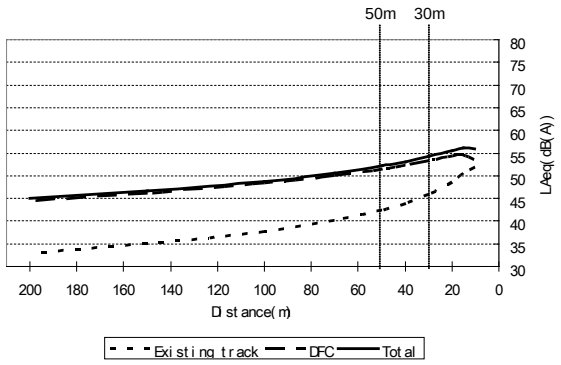
Figure 2.2(4)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Palgar-1 (Existing track side)



Source : JICA Survey Team

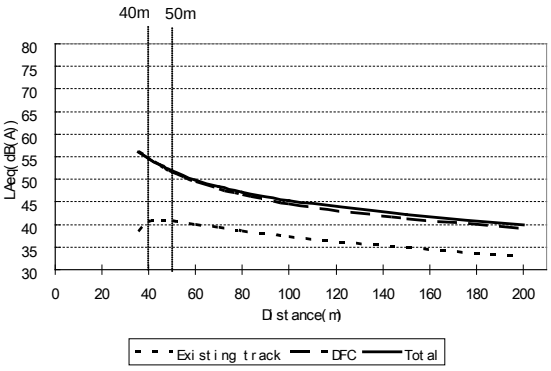
Figure 2.2(4)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Palgar-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 4.0 m Existing track side :2.0 m)



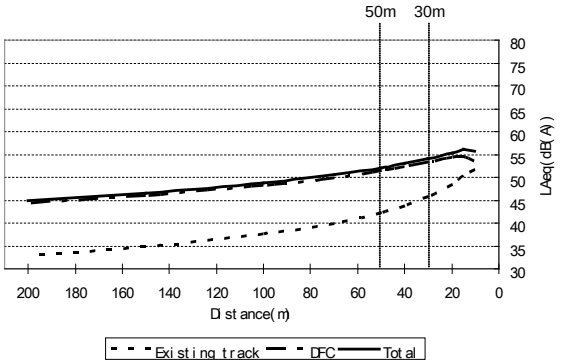
Source : JICA Survey Team

Figure 2.2(4)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Palgar-1 (Existing track side)



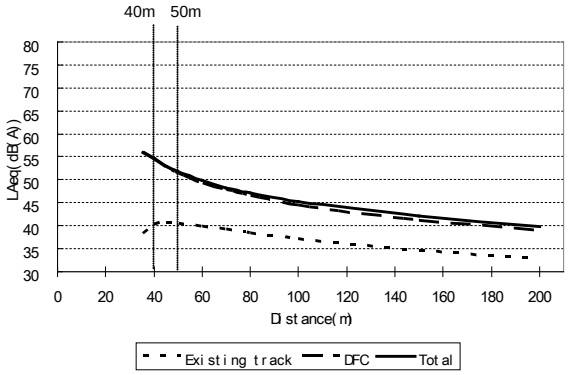
Source : JICA Survey Team

Figure 2.2(4)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Palgar-1 (DFC side)



Source : JICA Survey Team

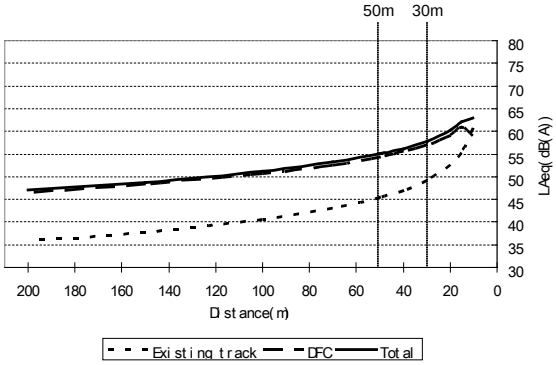
Figure 2.2(4)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Palgar-1 (Existing track side)



Source : JICA Survey Team

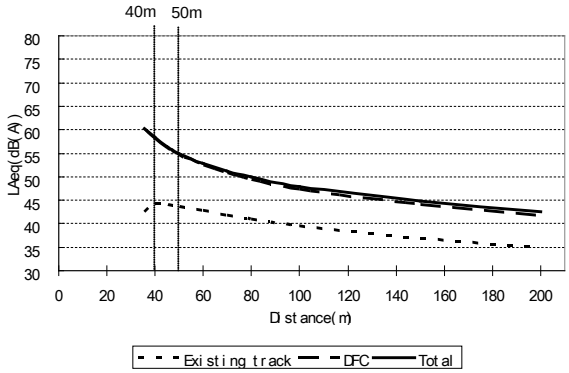
Figure 2.2(4)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Palgar-1 (DFC side)

3) with countermeasure2 (soundproof height DFC side: 2.5 m Existing track side: 1.0 m)



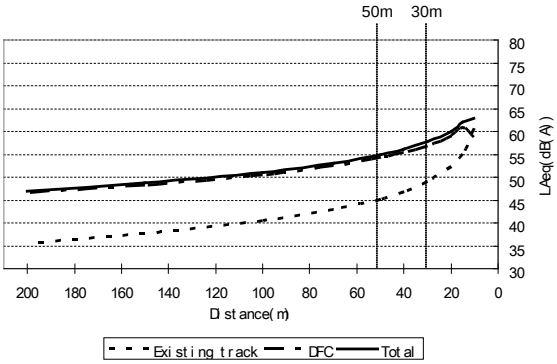
Source : JICA Survey Team

Figure 2.2(4)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Palgar-1 (Existing track side)



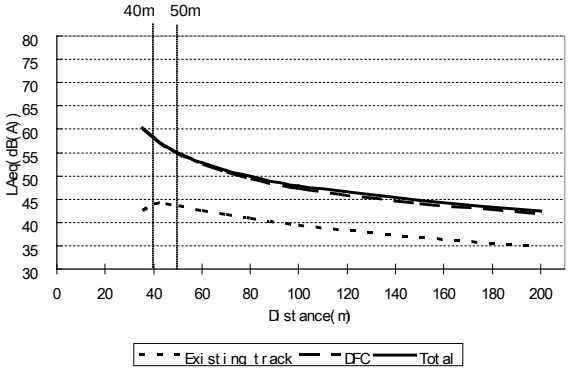
Source : JICA Survey Team

Figure 2.2(4)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Palgar-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(4)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Palgar-1 (Existing track side)



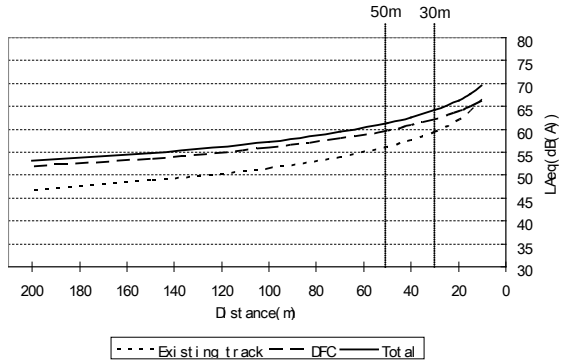
Source : JICA Survey Team

Figure 2.2(4)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Palgar-1 (DFC side)

(5) Palgar No.2

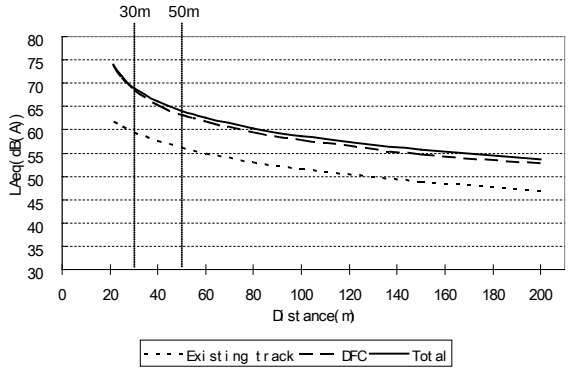
Results of noise prediction for Palgar No.2 are given from Figure 2.2(5)-1 to Figure 2.2(5)-12.

1) without countermeasure



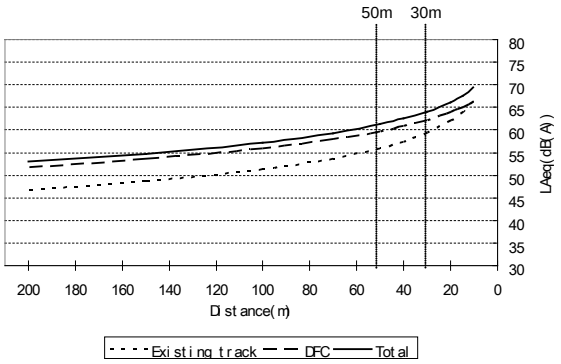
Source : JICA Survey Team

Figure 2.2(5)-1 Result of Noise Prediction Without Countermeasure on Daytime At Palgar-2 (Existing track side)



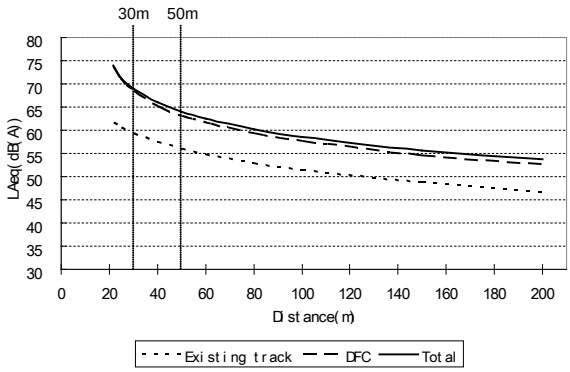
Source : JICA Survey Team

Figure 2.2(5)-2 Result of Noise Prediction Without Countermeasure on Daytime At Palgar-2 (DFC side)



Source : JICA Survey Team

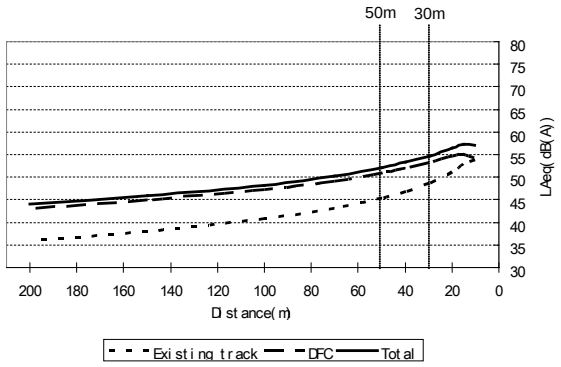
Figure 2.2(5)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Palgar-2 (Existing track side)



Source : JICA Survey Team

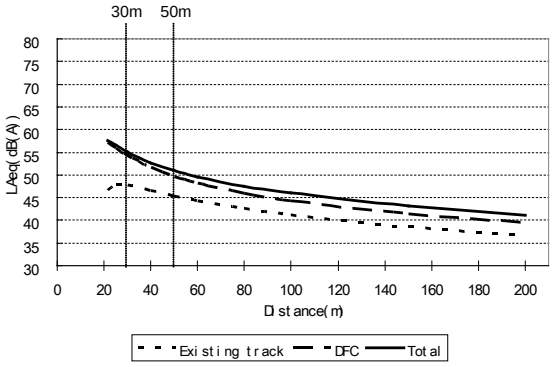
Figure 2.2(5)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Palgar-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 3.5 m Existing track side: 2.5m)



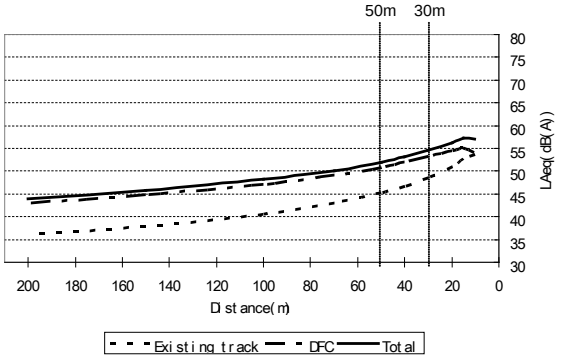
Source : JICA Survey Team

Figure 2.2(5)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Palgar-2 (Existing track side)



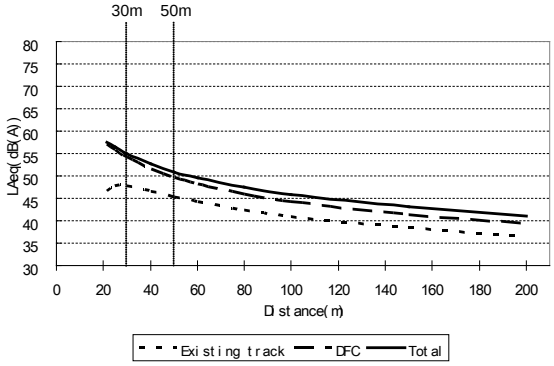
Source : JICA Survey Team

Figure 2.2(5)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Palgar-2 (DFC side)



Source : JICA Survey Team

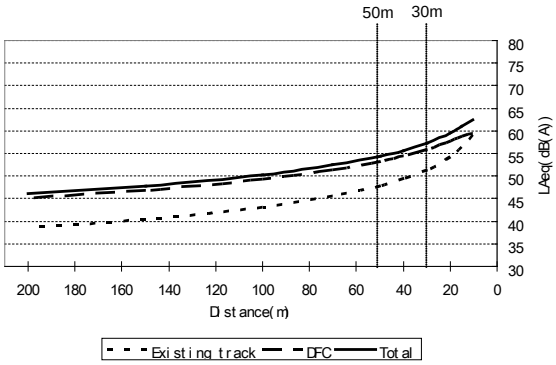
Figure 2.2(5)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Palgar-2 (Existing track side)



Source : JICA Survey Team

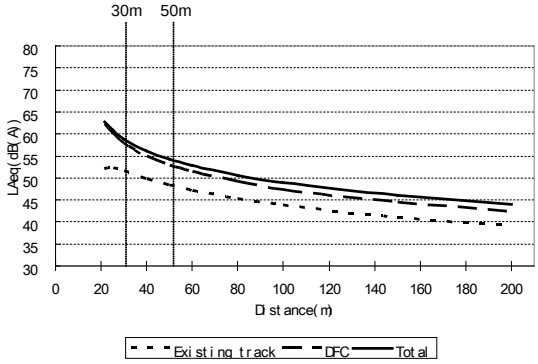
Figure 2.2(5)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Palgar-2 (DFC side)

3) with countermeasure2 (soundproof height DFC side: 2.0 m Existing track side: 1.5 m)



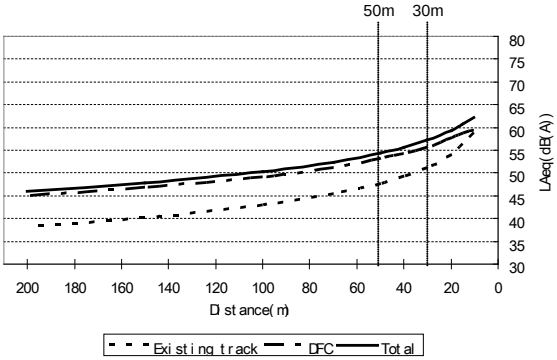
Source : JICA Survey Team

Figure 2.2(5)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Palgar-2 (Existing track side)



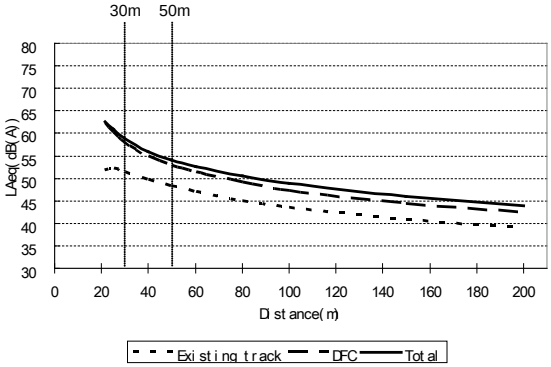
Source : JICA Survey Team

Figure 2.2(5)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Palgar-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(5)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Palgar-2 (Existing track side)



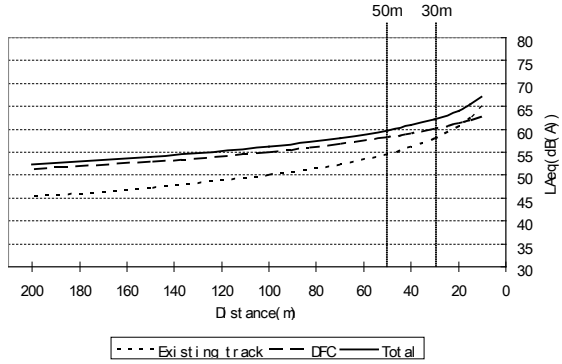
Source : JICA Survey Team

Figure 2.2(5)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Palgar-2 (DFC side)

(6) Boisar No.1

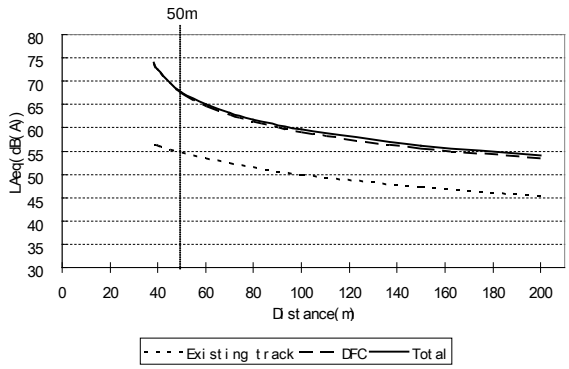
Results of noise prediction for Boisar No.1 are given from Figure 2.2(6)-1 to Figure 2.2(6)-10.

1) without countermeasure



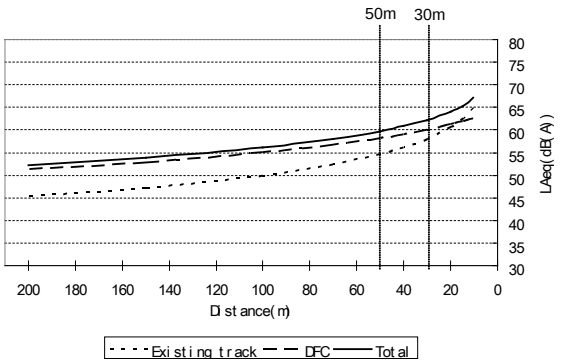
Source : JICA Survey Team

Figure 2.2(6)-1 Result of Noise Prediction Without Countermeasure on Daytime At Boisar-1 (Existing track side)



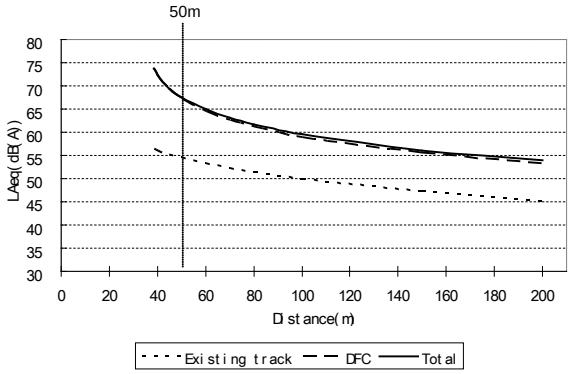
Source : JICA Survey Team

Figur e2.2(6)-2 Result of Noise Prediction Without Countermeasure on Daytime At Boisar-1 (DFC side)



Source : JICA Survey Team

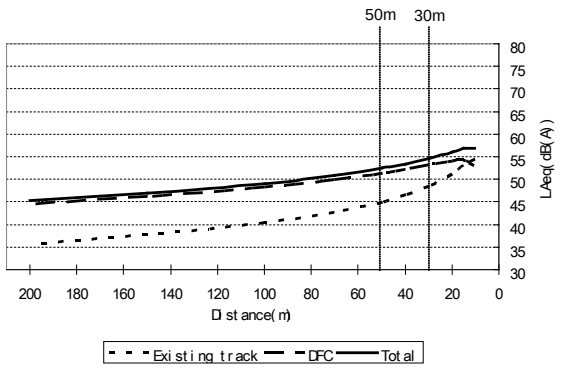
Figure 2.2(6)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Boisar-1 (Existing track side)



Source : JICA Survey Team

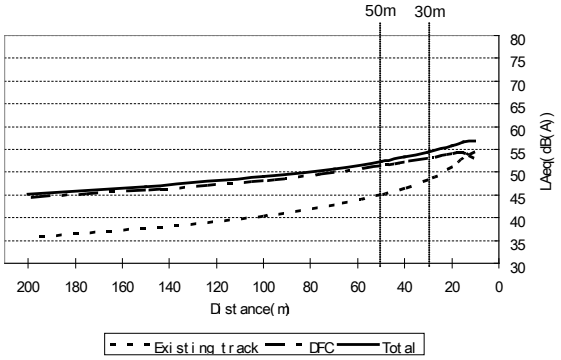
Figure 2.2(6)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Boisar-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side:—m Existing track side: 2.0 m)



Source : JICA Survey Team

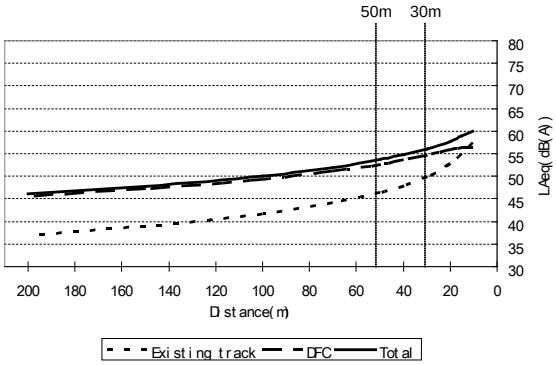
Figure 2.2(6)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Boisar-1 (Existing track side)



Source : JICA Survey Team

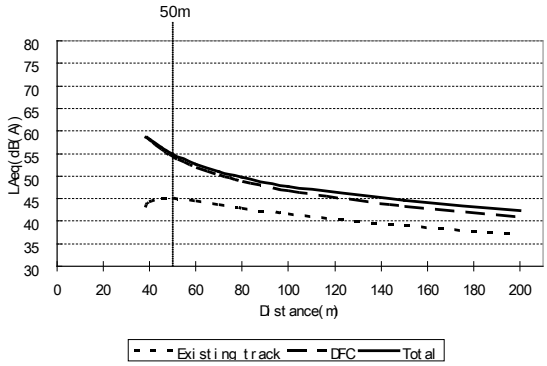
Figure 2.2(6)-6 Result of Noise Prediction With Countermeasure 1 on Nighttime At Boisar-1 (Existing track side)

3) with countermeasure 2 (soundproof height DFC side: 3.0 m Existing track side: 1.5 m)



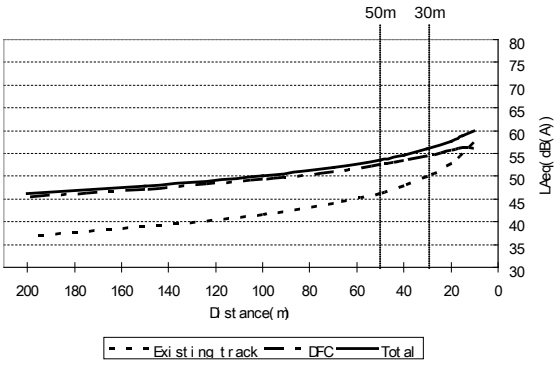
Source : JICA Survey Team

Figure 2.2(6)-7 Result of Noise Prediction With Countermeasure 2 on Daytime At Boisar-1 (Existing track side)



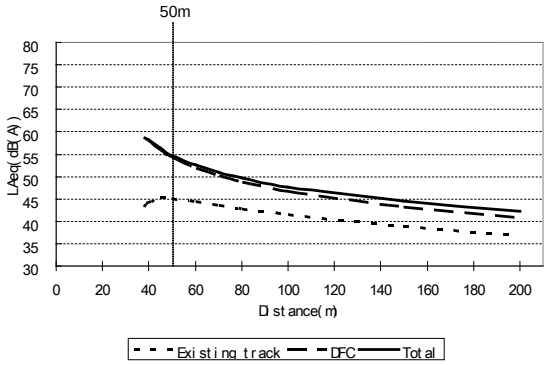
Source : JICA Survey Team

Figure 2.2(6)-8 Result of Noise Prediction With Countermeasure 2 on Daytime At Boisar-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(6)-9 Result of Noise Prediction With Countermeasure 2 on Nighttime At Boisar-1 (Existing track side)



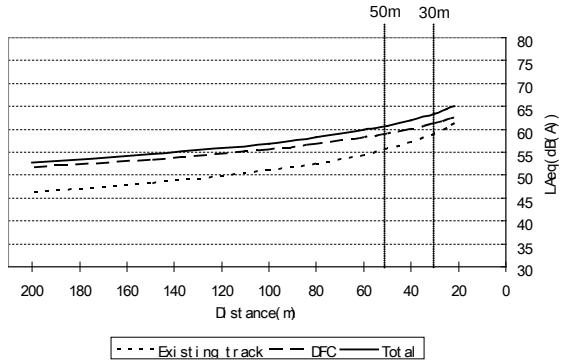
Source : JICA Survey Team

Figure 2.2(6)-10 Result of Noise Prediction With Countermeasure 2 on Nighttime At Boisar-1 (DFC side)

(7)Boisar No.2

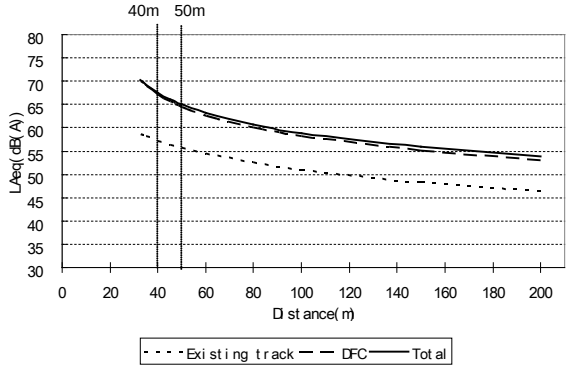
Results of noise prediction for Boisar No.2 are given from Figure 2.2(7)-1 to Figure 2.2(7)-12.

1) without countermeasure



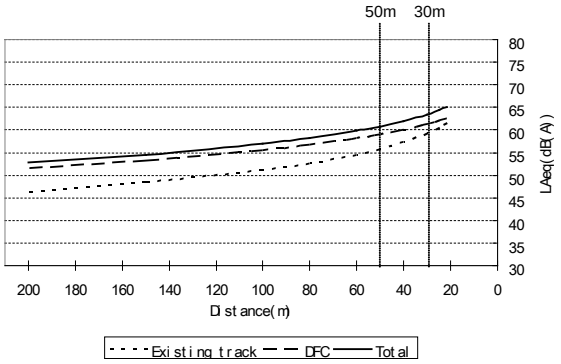
Source : JICA Survey Team

Figure 2.2(7)-1 Result of Noise Prediction Without Countermeasure on Daytime At Boisar-2 (Existing track side)



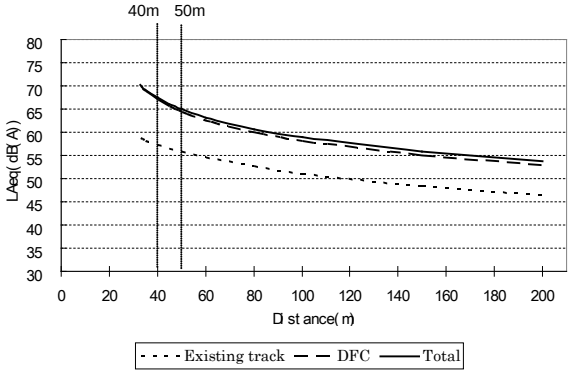
Source : JICA Survey Team

Figure 2.2(7)-2 Result of Noise Prediction Without Countermeasure on Daytime At Boisar-2 (DFC side)



Source : JICA Survey Team

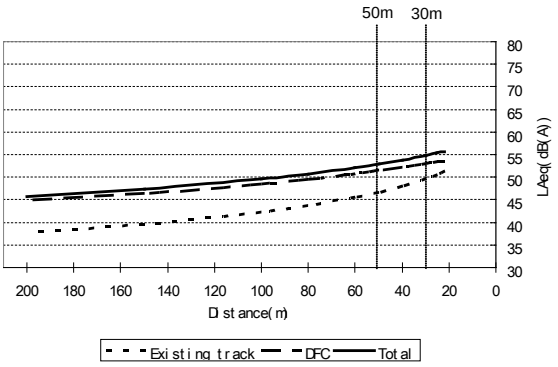
Figure 2.2(7)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Boisar-2 (Existing track side)



Source : JICA Survey Team

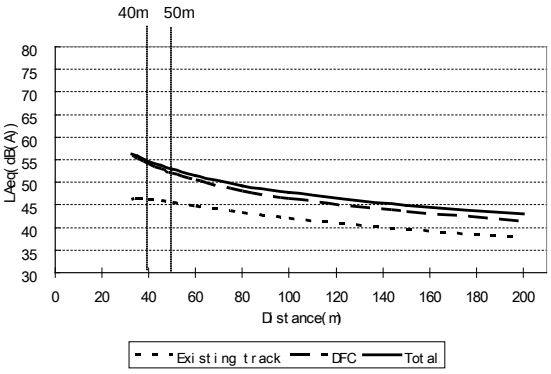
Figure 2.2(7)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Boisar-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 2.5 m Existing track side: 1.5 m)



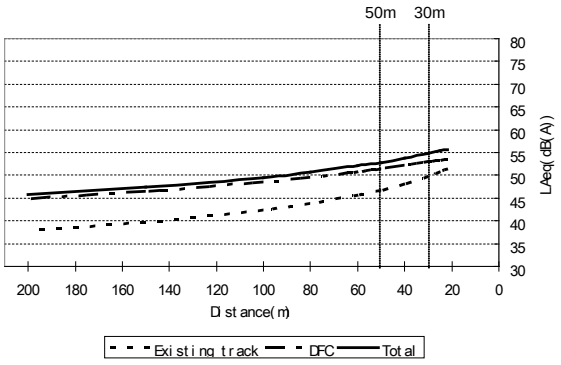
Source : JICA Survey Team

Figure 2.2(7)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Boisar-2 (Existing track side)



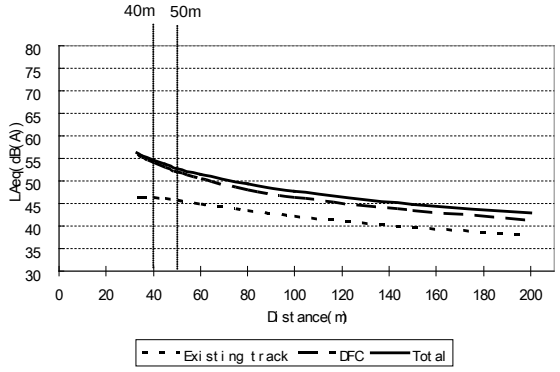
Source : JICA Survey Team

Figure 2.2(7)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Boisar-2 (DFC side)



Source : JICA Survey Team

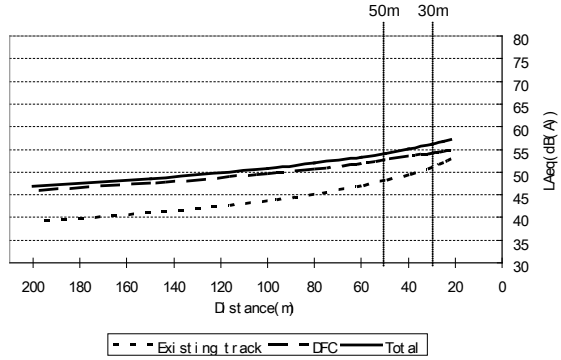
Figure 2.2(7)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Boisar-2 (Existing track side)



Source : JICA Survey Team

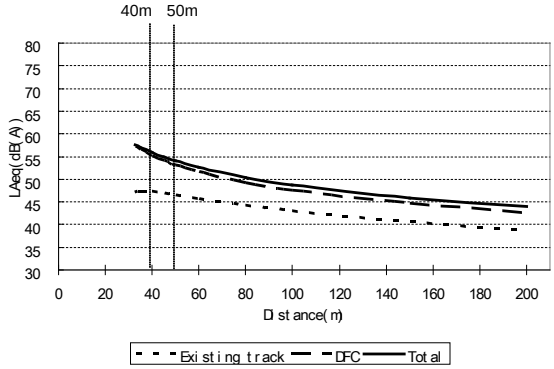
Figure 2.2(7)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Boisar-2 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 2.0 m Existing track side: 1.0 m)



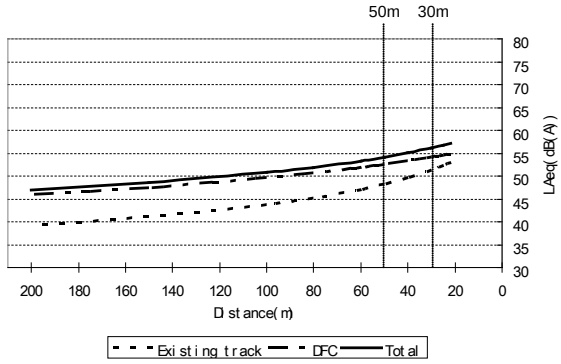
Source : JICA Survey Team

Figure 2.2(7)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Boisar-2 (Existing track side)



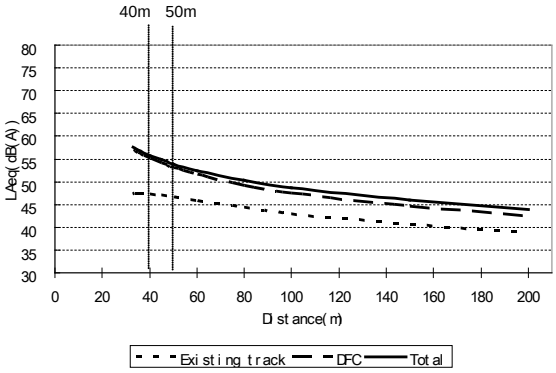
Source : JICA Survey Team

Figure 2.2(7)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Boisar-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(7)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Boisar-2 (Existing track side)



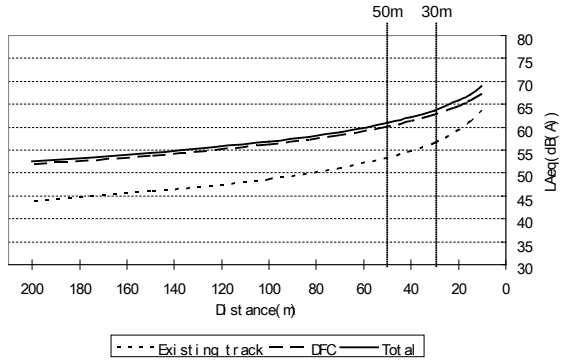
Source : JICA Survey Team

Figure 2.2(7)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Boisar-2 (DFC side)

(8) Vapi No.1

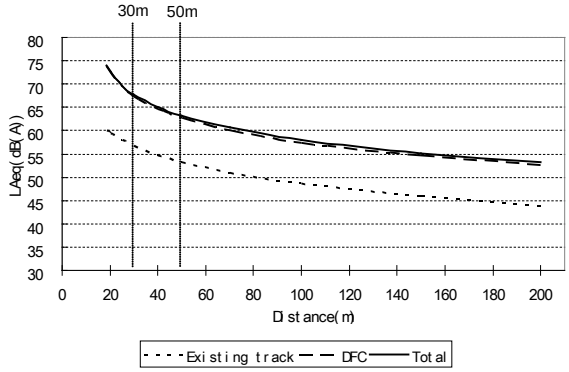
Results of noise prediction for Vapi No.1 are given from Figure 2.2(8)-1 to Figure 2.2(8)-12.

1) without countermeasure



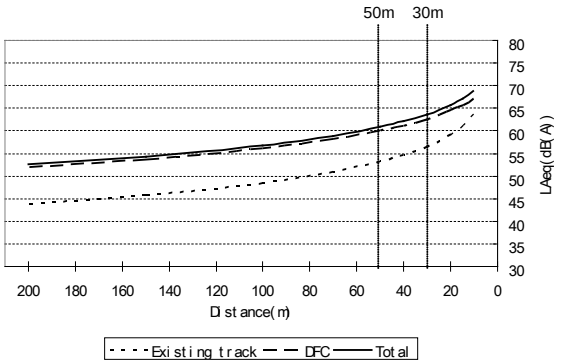
Source : JICA Survey Team

Figure 2.2(8)-1 Result of Noise Prediction Without Countermeasure on Daytime At Vapi-1 (Existing track side)



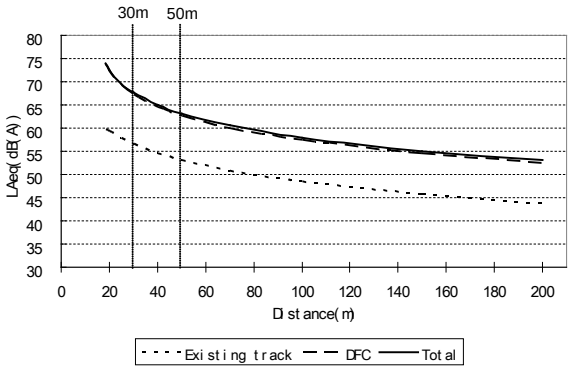
Source : JICA Survey Team

Figure 2.2(8)-2 Result of Noise Prediction Without Countermeasure on Daytime At Vapi-1 (DFC side)



Source : JICA Survey Team

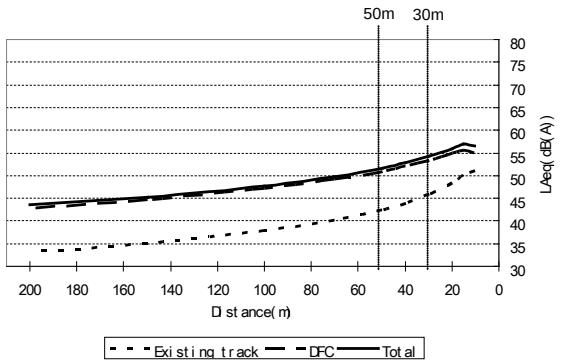
Figure 2.2(8)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Vapi-1 (Existing track side)



Source : JICA Survey Team

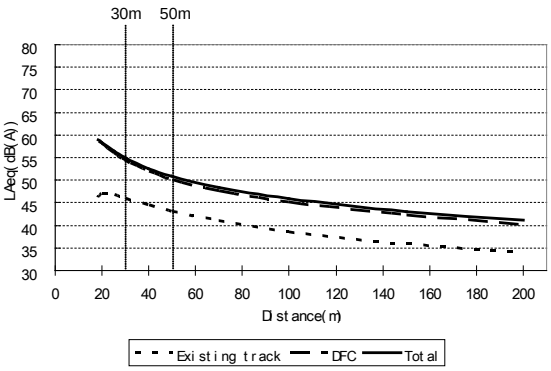
Figure 2.2(8)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Vapi-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 3.0 m Existing track side: 2.5 m)



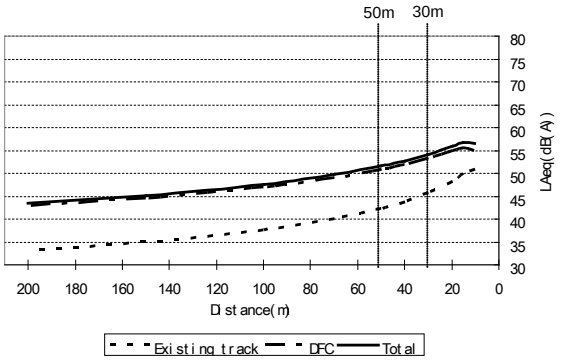
Source : JICA Survey Team

Figure 2.2(8)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Vapi-1 (Existing track side)



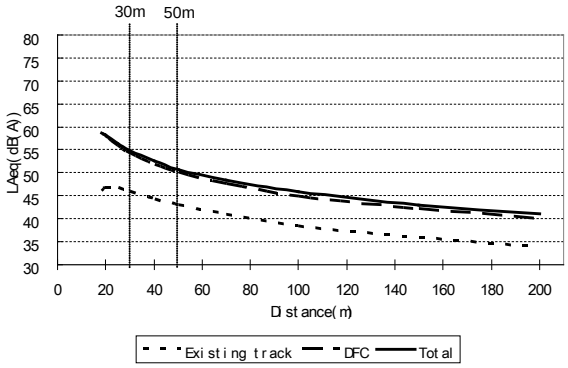
Source : JICA Survey Team

Figure 2.2(8)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Vapi-1 (DFC side)



Source : JICA Survey Team

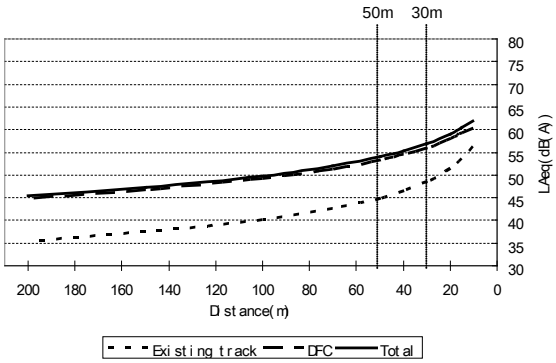
Figure 2.2(8)-7 Result of Noise Prediction With Countermeasure1 on Nighttime At Vapi-1 (Existing track side)



Source : JICA Survey Team

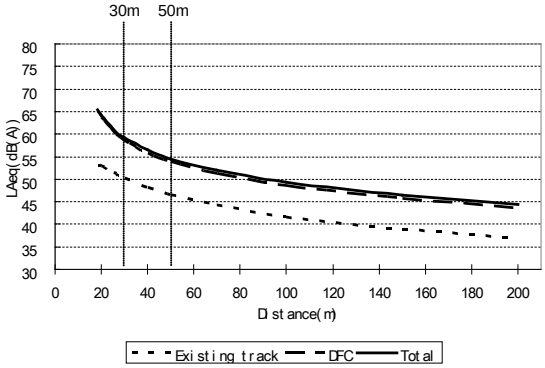
Figure 2.2(8)-8 Result of Noise Prediction With Countermeasure1 on Nighttime At Vapi-1 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 1.5m Existing track side: 1.5 m)



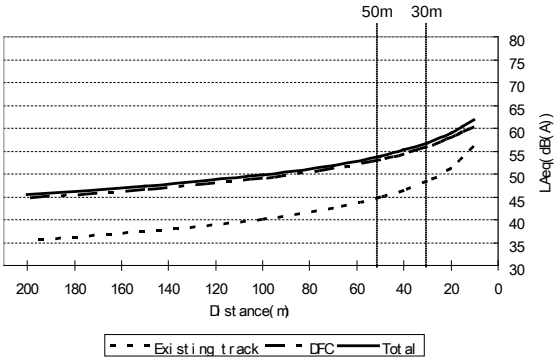
Source : JICA Survey Team

Figure 2.2(8)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Vapi-1 (Existing track side)



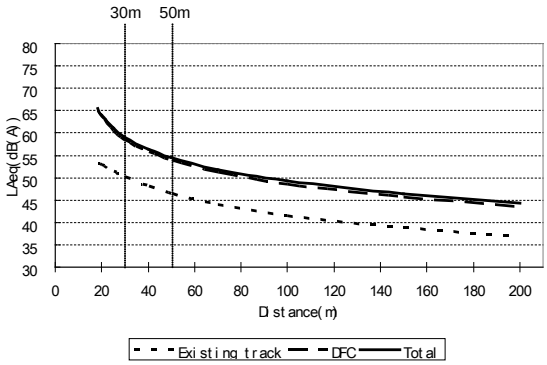
Source : JICA Survey Team

Figure 2.2(8)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Vapi-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(8)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Vapi-1 (Existing track side)



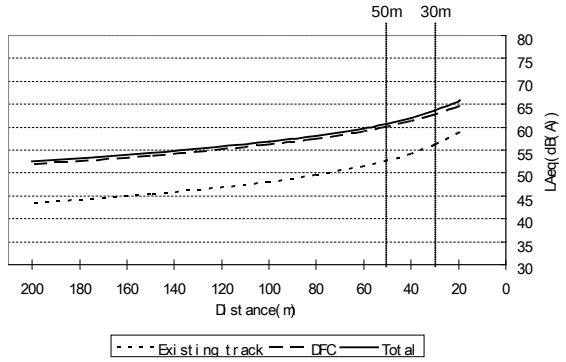
Source : JICA Survey Team

Figure 2.2(8)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Vapi-1 (DFC side)

(9) Vapi No.2

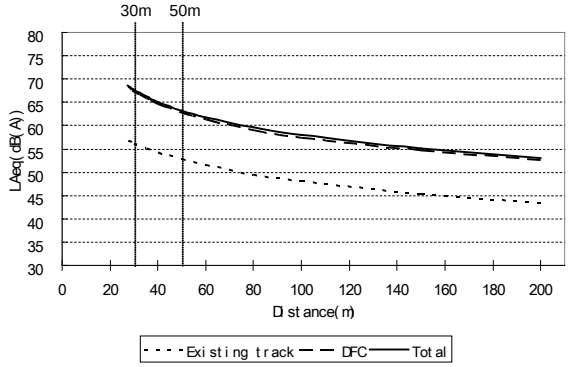
Results of noise prediction for Vapi No.2 are given from Figure 2.2(9)-1 to Figure 2.2(9)-12.

1) without countermeasure



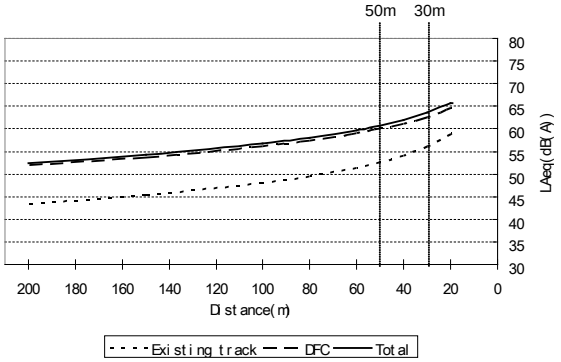
Source : JICA Survey Team

Figure 2.2(9)-1 Result of Noise Prediction Without Countermeasure on Daytime At Vapi-2 (Existing track side)



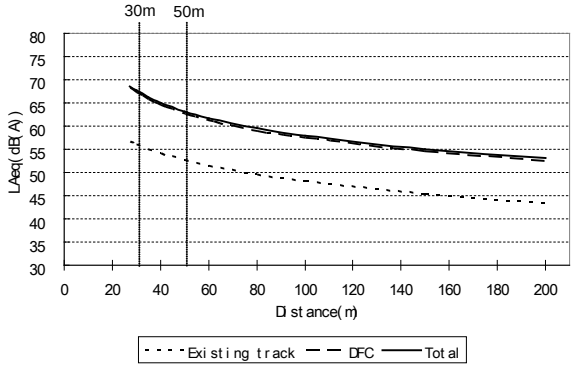
Source : JICA Survey Team

Figure 2.2(9)-2 Result of Noise Prediction Without Countermeasure on Daytime At Vapi-2 (DFC side)



Source : JICA Survey Team

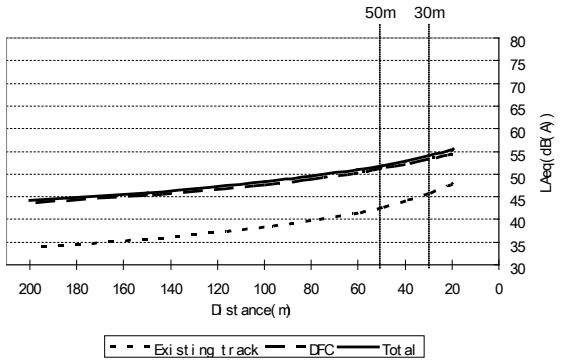
Figure 2.2(9)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Vapi-2 (Existing track side)



Source : JICA Survey Team

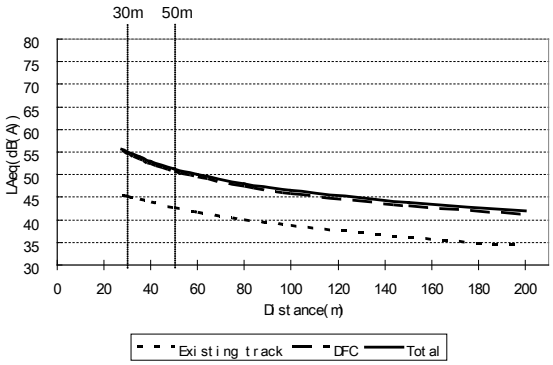
Figure 2.2(9)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Vapi-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 2.5 m Existing track side: 2.0 m)



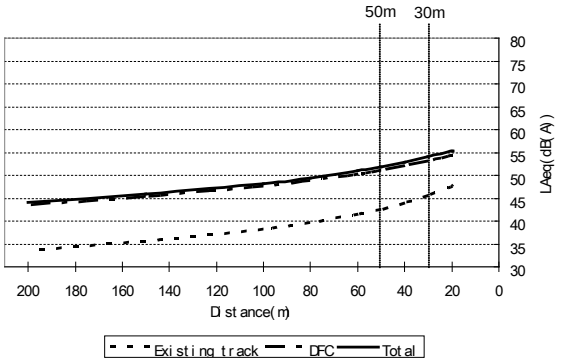
Source : JICA Survey Team

Figure 2.2(9)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Vapi-2 (Existing track side)



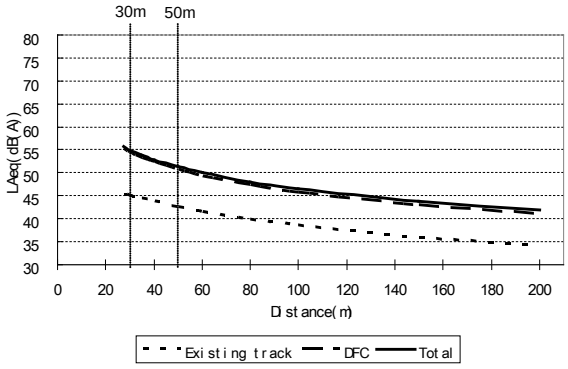
Source : JICA Survey Team

Figure 2.2(9)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Vapi-2 (DFC side)



Source : JICA Survey Team

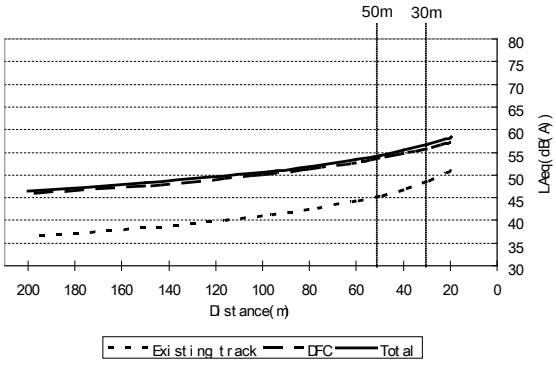
Figure 2.2(9)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Vapi-2 (Existing track side)



Source : JICA Survey Team

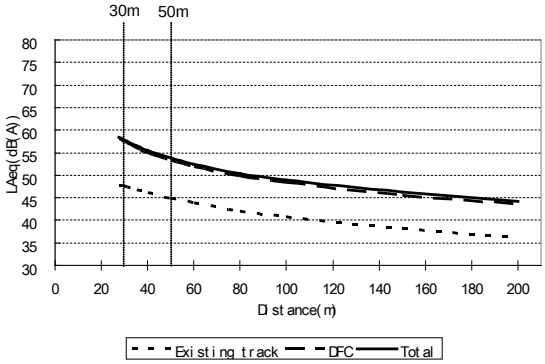
Figure 2.2(9)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Vapi-2 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 1.5 m Existing track side: 1.0 m)



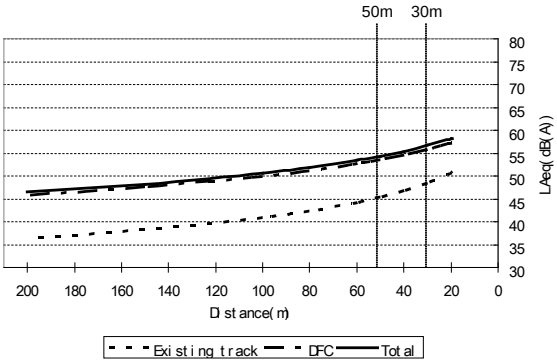
Source : JICA Survey Team

Figure 2.2(9)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Vapi-2 (Existing track side)



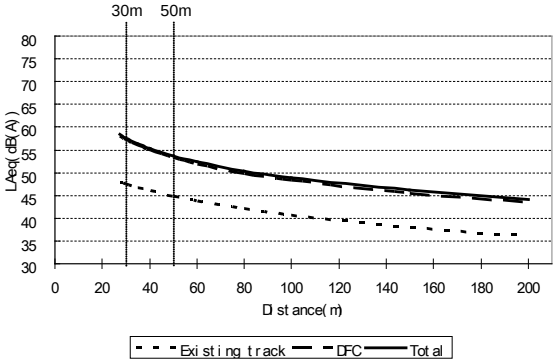
Source : JICA Survey Team

Figure 2.2(9)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Vapi-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(9)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Vapi-2 (Existing track side)



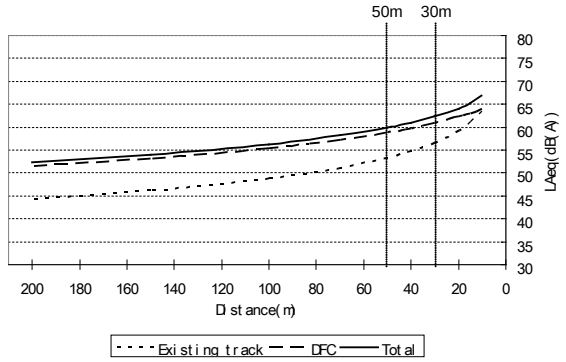
Source : JICA Survey Team

Figure 2.2(9)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Vapi-2 (DFC side)

(10) Valsad No.1

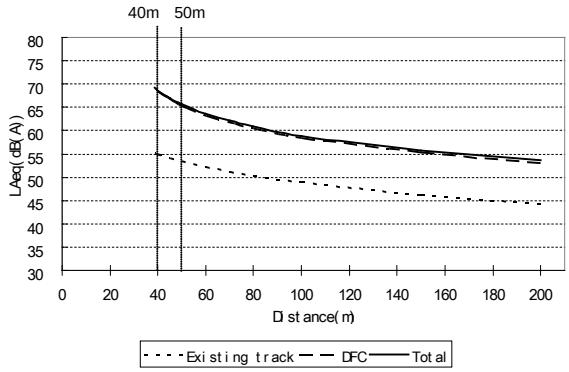
Results of noise prediction for Valsad No.1 are given from Figure 2.2(10)-1 to Figure 2.2(10)-12.

1) without countermeasure



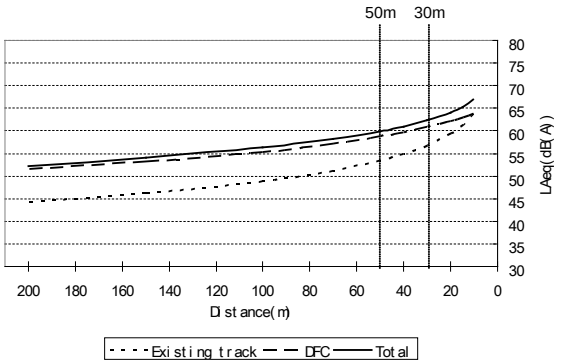
Source : JICA Survey Team

Figure 2.2(10)-1 Result of Noise Prediction Without Countermeasure on Daytime At Valsad-1 (Existing track side)



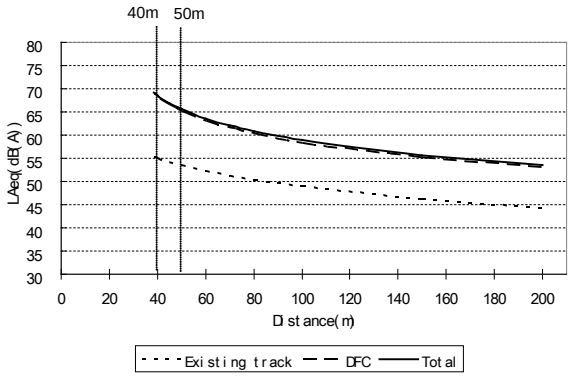
Source : JICA Survey Team

Figure 2.2(10)-2 Result of Noise Prediction Without Countermeasure on Daytime At Valsad-1 (DFC side)



Source : JICA Survey Team

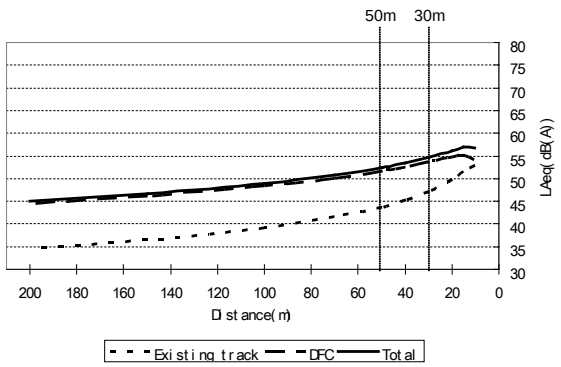
Figure 2.2(10)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Valsad-1 (Existing track side)



Source : JICA Survey Team

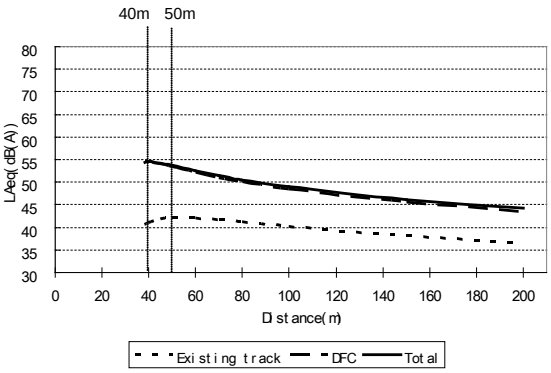
Figure 2.2(10)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Valsad-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 2.0 m Existing track side: 2.0 m)



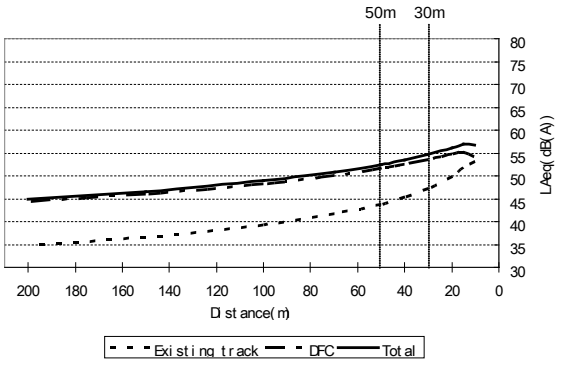
Source : JICA Survey Team

Figure 2.2(10)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Valsad-1 (Existing track side)



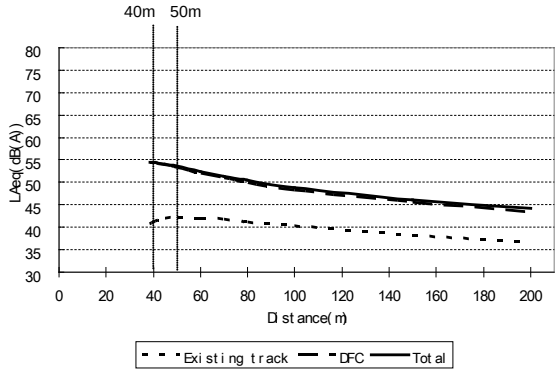
Source : JICA Survey Team

Figure 2.2(10)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Valsad-1 (DFC side)



Source : JICA Survey Team

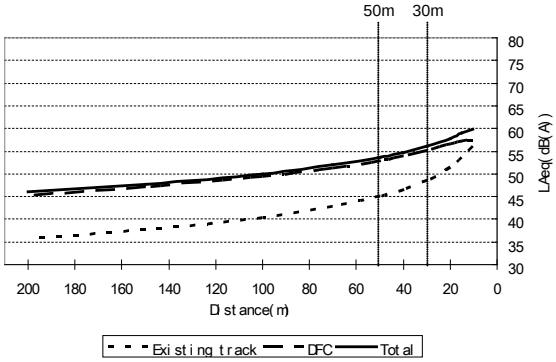
Figure 2.2(10)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Valsad-1 (Existing track side)



Source : JICA Survey Team

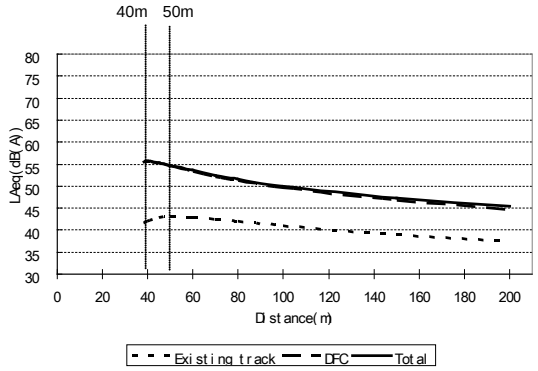
Figure 2.2(10)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Valsad-1 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 1.5 m Existing track side: 1.5 m)



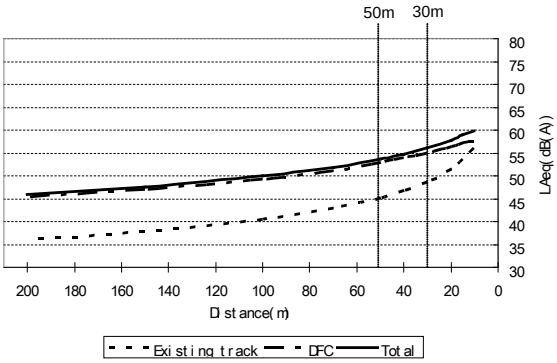
Source : JICA Survey Team

Figure 2.2(10)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Valsad-1 (Existing track side)



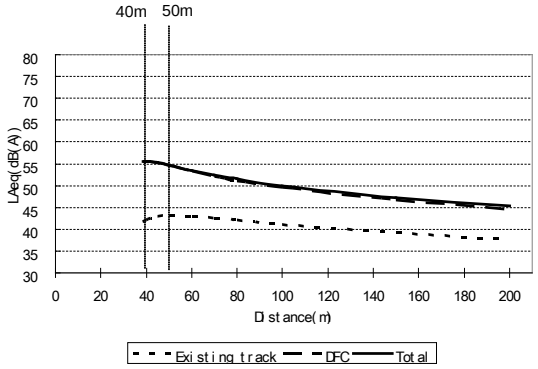
Source : JICA Survey Team

Figure 2.2(10)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Valsad-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(10)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Valsad-1 (Existing track side)



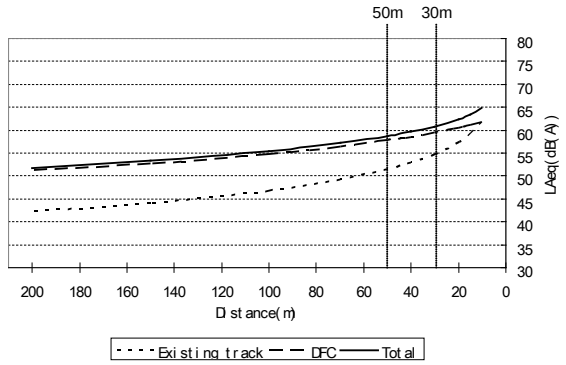
Source : JICA Survey Team

Figure 2.2(10)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Valsad-1 (DFC side)

(11) Valsad No.2

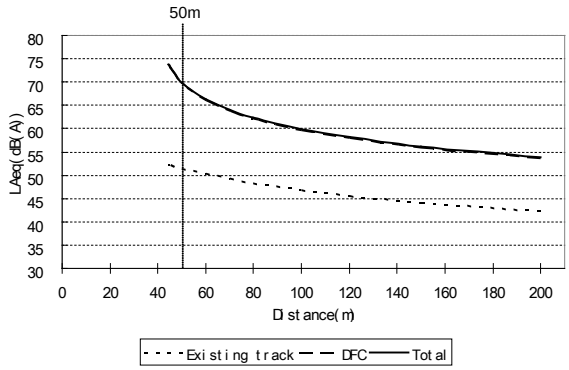
Results of noise prediction for Valsad No.2 are given from Figure 2.2(11)-1 to Figure 2.2(11)-10.

1) without countermeasure



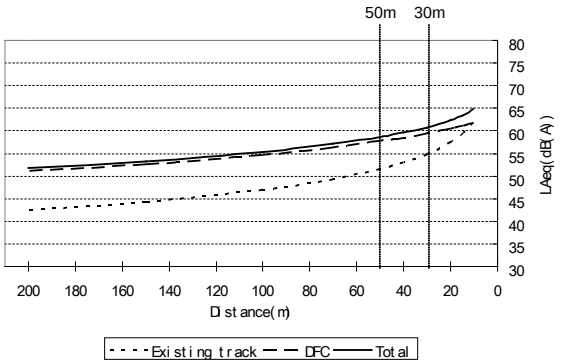
Source : JICA Survey Team

Figure 2.2(11)-1 Result of Noise Prediction Without Countermeasure on Daytime At Valsad-2 (Existing track side)



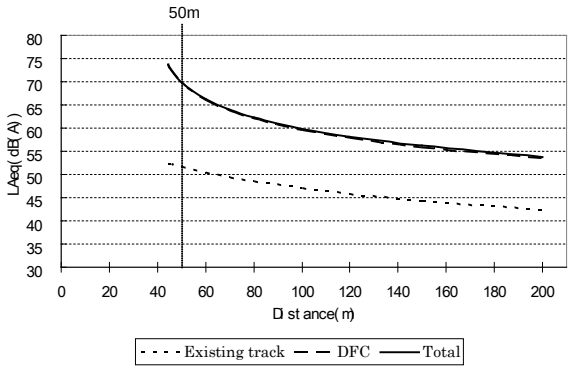
Source : JICA Survey Team

Figure 2.2(11)-2 Result of Noise Prediction Without Countermeasure on Daytime At Valsad-2 (DFC side)



Source : JICA Survey Team

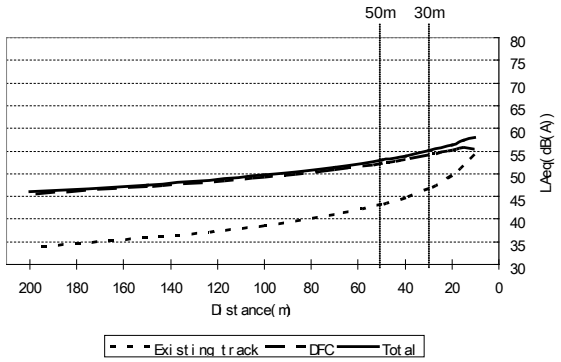
Figure 2.2(11)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Valsad-2 (Existing track side)



Source : JICA Survey Team

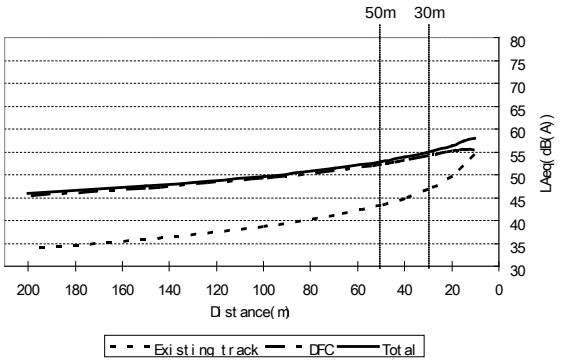
Figure 2.2(11)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Valsad-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side:—m Existing track side: 1.5 m)



Source : JICA Survey Team

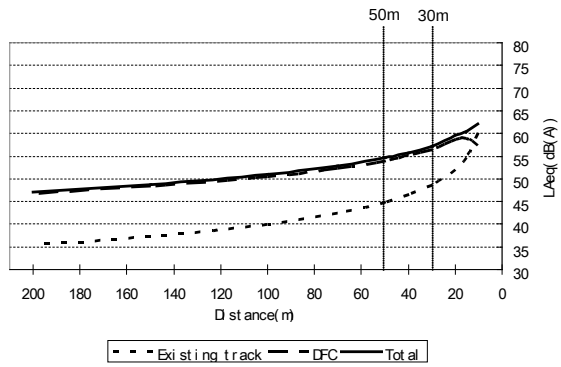
Figure 2.2(11)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Valsad-2 (Existing track side)



Source : JICA Survey Team

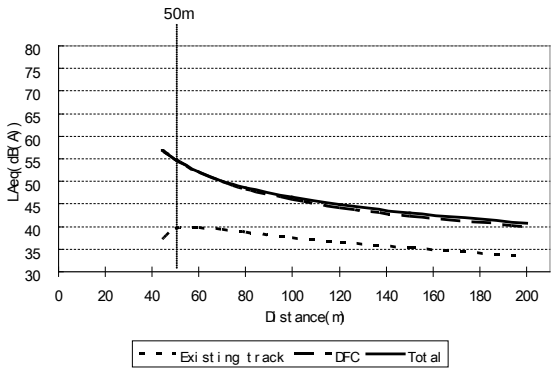
Figure 2.2(11)-6 Result of Noise Prediction With Countermeasure 1 on Nighttime At Valsad-2 (Existing track side)

3) with countermeasure 2 (soundproof height DFC side: 4.0 m Existing track side: 1.0 m)



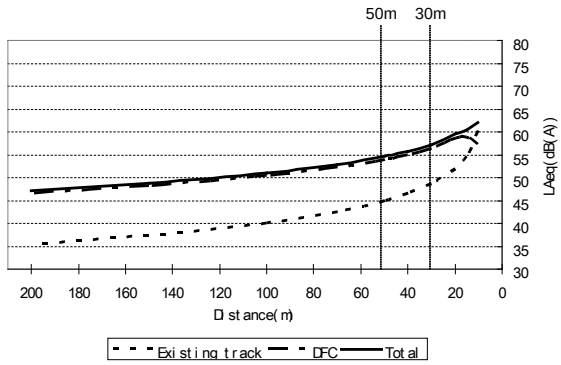
Source : JICA Survey Team

Figure 2.2(11)-7 Result of Noise Prediction With Countermeasure 2 on Daytime At Valsad-2 (Existing track side)



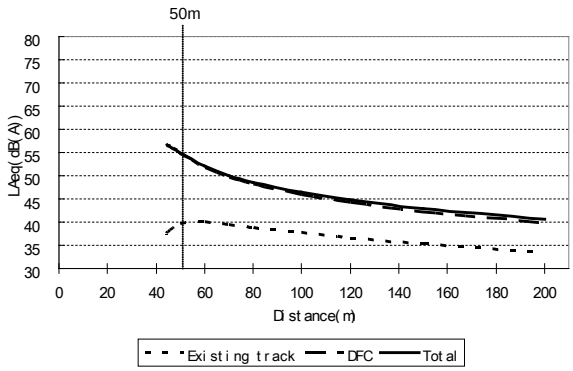
Source : JICA Survey Team

Figure 2.2(11)-8 Result of Noise Prediction With Countermeasure 2 on Daytime At Valsad-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(11)-9 Result of Noise Prediction With Countermeasure 2 on Nighttime At Valsad-2 (Existing track side)



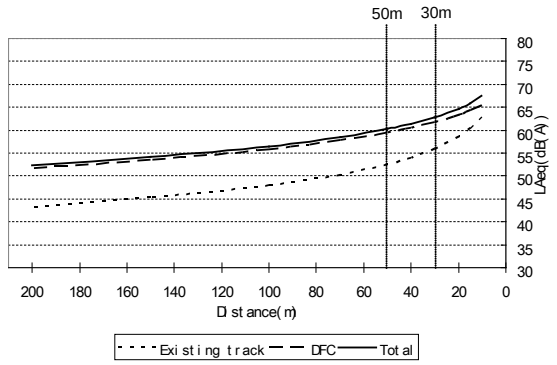
Source : JICA Survey Team

Figure 2.2(11)-10 Result of Noise Prediction With Countermeasure 2 on Nighttime At Valsad-2 (DFC side)

(12) Amalsad No.1

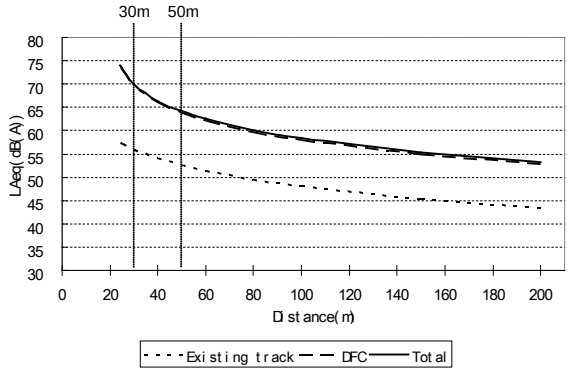
Results of noise prediction for Amalsad No.1 are given from Figure 2.2(12)-1 to Figure 2.2(12)-12.

1) without countermeasure



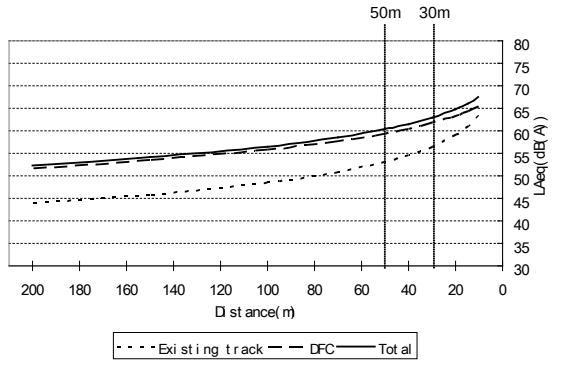
Source : JICA Survey Team

Figure 2.2(12)-1 Result of Noise Prediction Without Countermeasure on Daytime At Amalsad-1 (Existing track side)



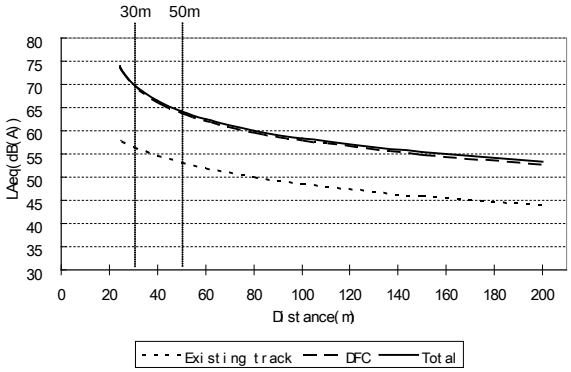
Source : JICA Survey Team

Figure 2.2(12)-2 Result of Noise Prediction Without Countermeasure on Daytime At Amalsad-1 (DFC side)



Source : JICA Survey Team

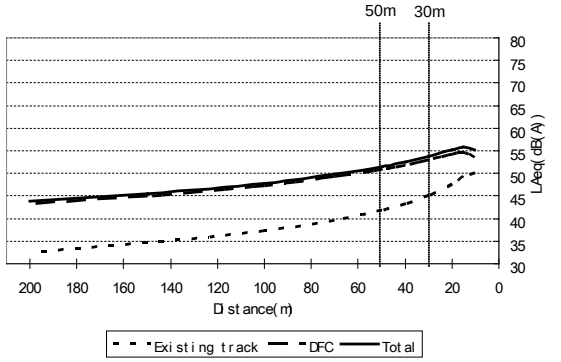
Figure 2.2(12)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Amalsad-1 (Existing track side)



Source : JICA Survey Team

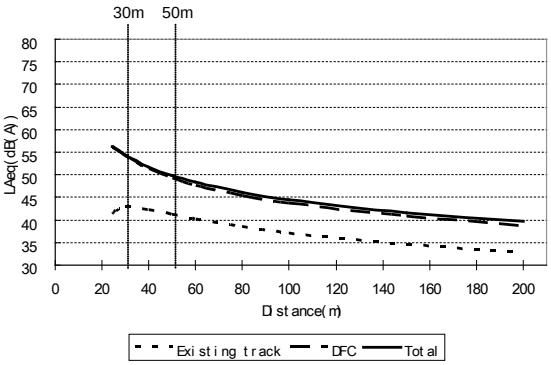
Figure 2.2(12)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Amalsad-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 4.0 m Existing track side: 2.5 m)



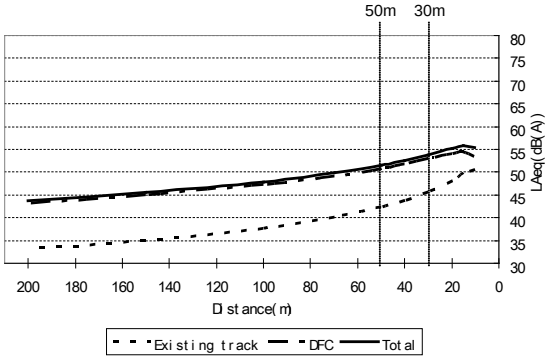
Source : JICA Survey Team

Figure 2.2(12)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Amalsad-1 (Existing track side)



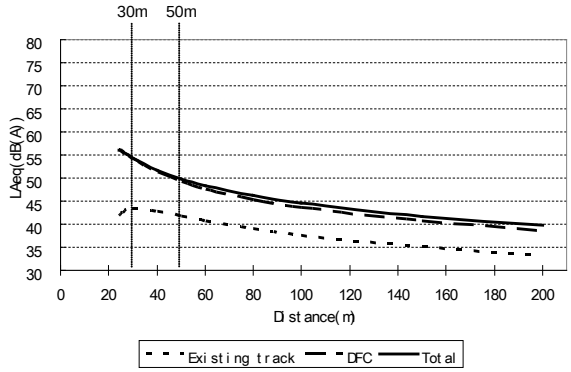
Source : JICA Survey Team

Figure 2.2(12)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Amalsad-1 (DFC side)



Source : JICA Survey Team

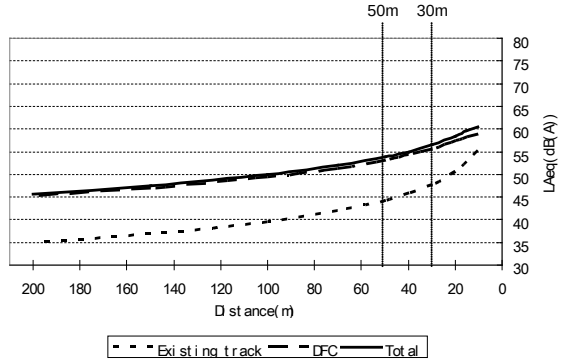
Figure 2.2(12)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Amalsad-1 (Existing track side)



Source : JICA Survey Team

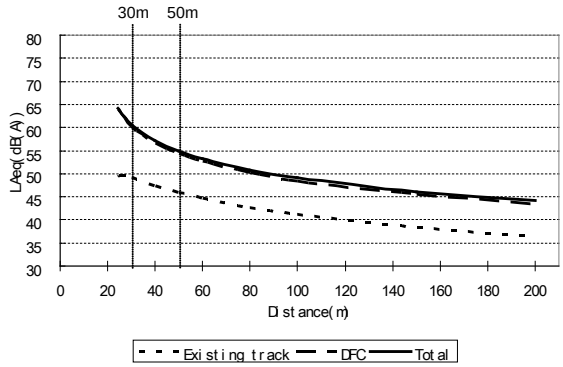
Figure 2.2(12)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Amalsad-1 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 2.0 m Existing track side: 1.5 m)



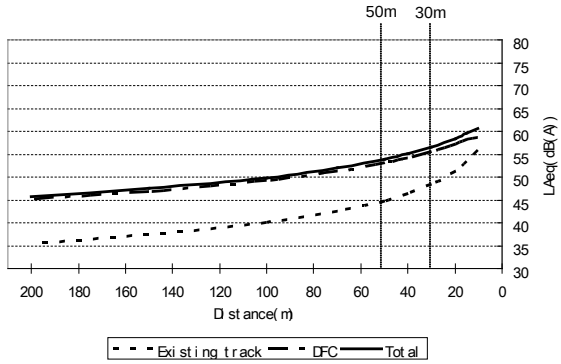
Source : JICA Survey Team

Figure 2.2(12)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Amalsad-1 (Existing track side)



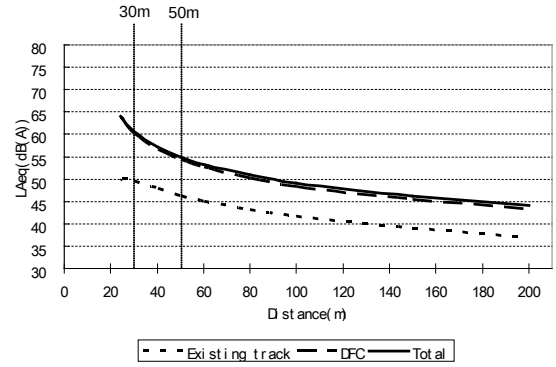
Source : JICA Survey Team

Figure 2.2(12)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Amalsad-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(12)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Amalsad-1 (Existing track side)



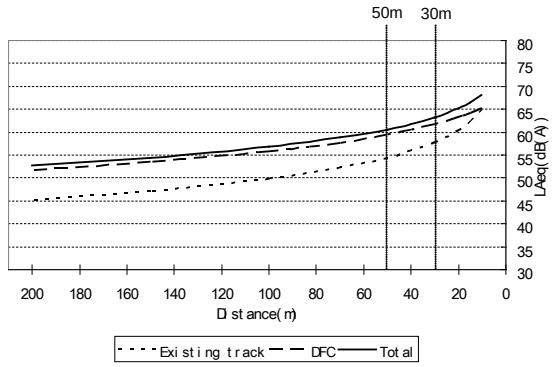
Source : JICA Survey Team

Figure 2.2(12)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Amalsad-1 (DFC side)

(13) Amalsad No.2

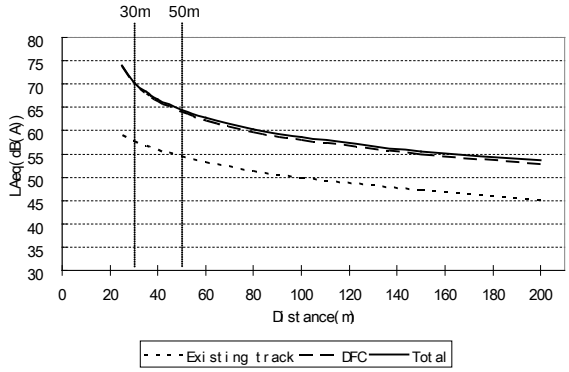
Results of noise prediction for Amalsad No.2 are given from Figure 2.2(13)-1 to Figure 2.2(13)-12.

1) without countermeasure



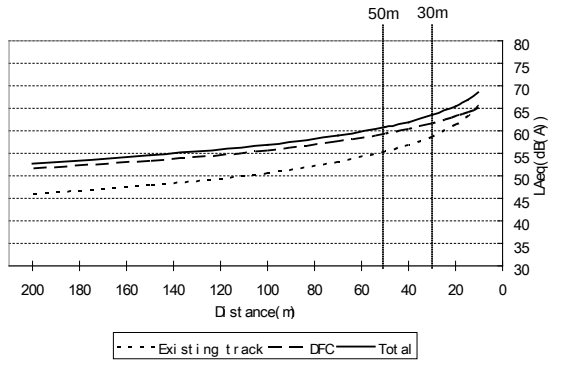
Source : JICA Survey Team

Figure 2.2(13)-1 Result of Noise Prediction Without Countermeasure on Daytime At Amalsad-2 (Existing track side)



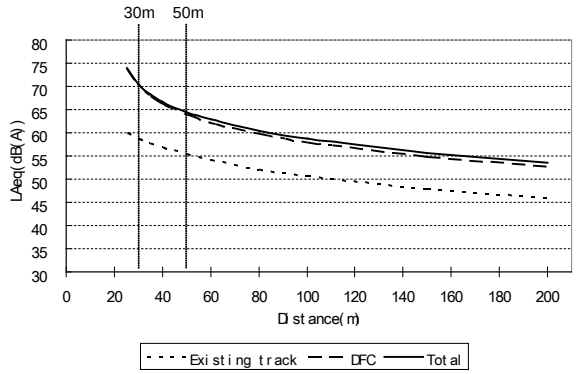
Source : JICA Survey Team

Figure 2.2(13)-2 Result of Noise Prediction Without Countermeasure on Daytime At Amalsad-2 (DFC side)



Source : JICA Survey Team

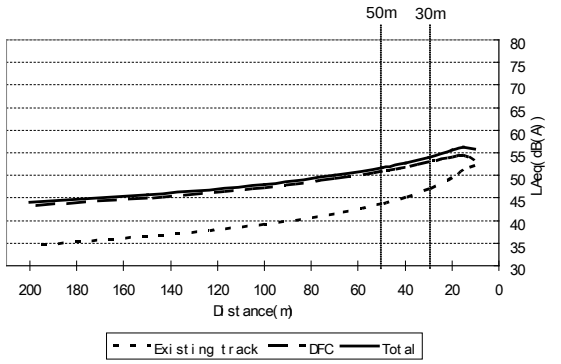
Figure 2.2(13)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Amalsad-2 (Existing track side)



Source : JICA Survey Team

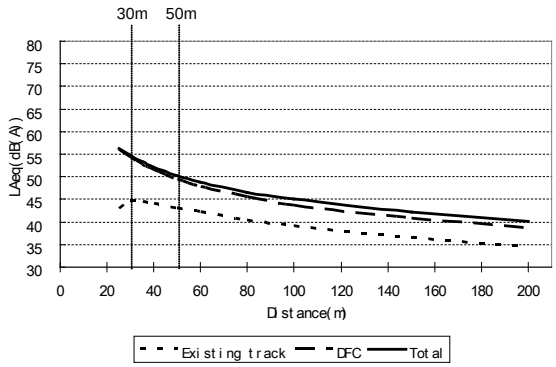
Figure 2.2(13)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Amalsad-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 4.0 m Existing track side: 2.5 m)



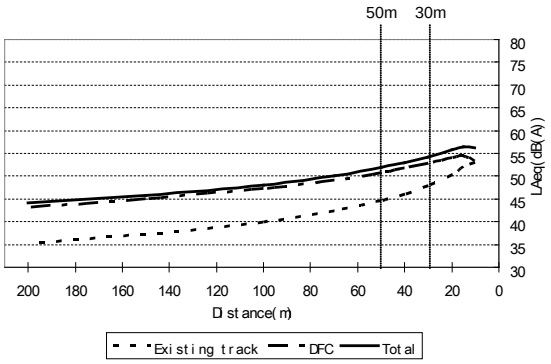
Source : JICA Survey Team

Figure 2.2(13)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Amalsad-2 (Existing track side)



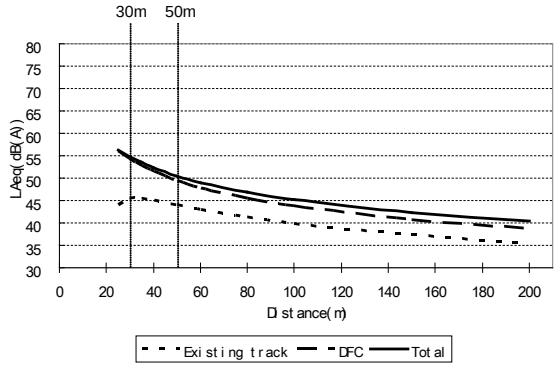
Source : JICA Survey Team

Figure 2.2(13)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Amalsad-2 (DFC side)



Source : JICA Survey Team

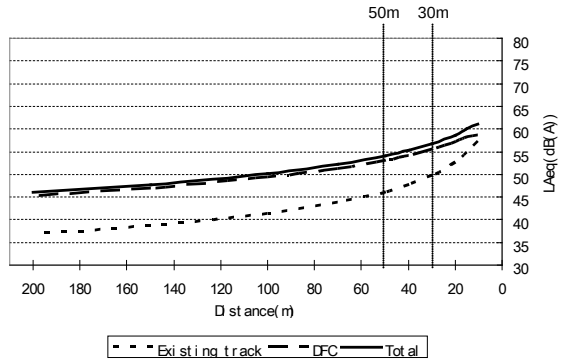
Figure 2.2(13)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Amalsad-2 (Existing track side)



Source : JICA Survey Team

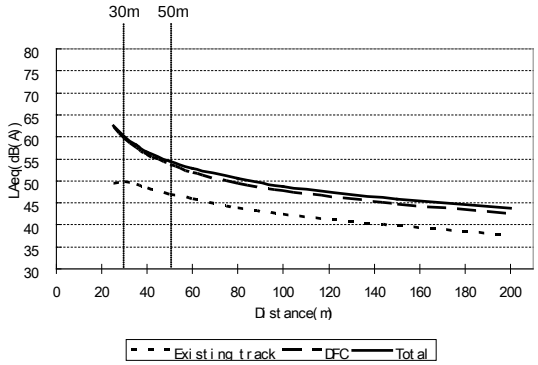
Figure 2.2(13)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Amalsad-2 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 2.0 m Existing track side: 1.5 m)



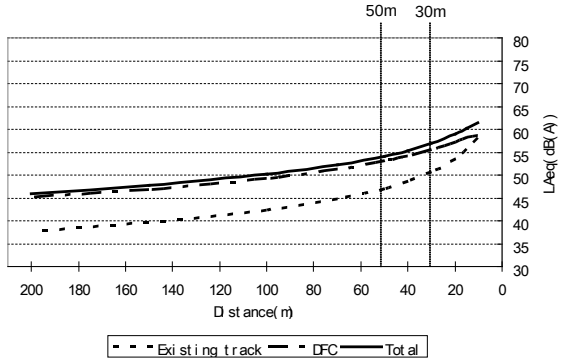
Source : JICA Survey Team

Figure 2.2(13)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Amalsad-2 (Existing track side)



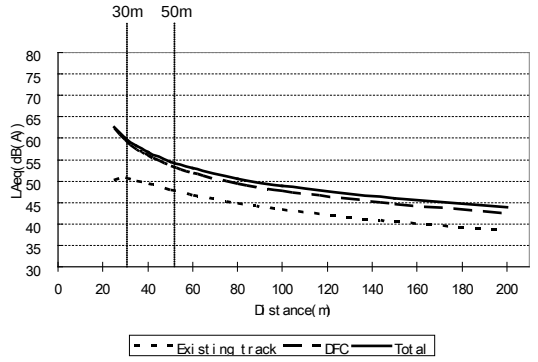
Source : JICA Survey Team

Figure 2.2(13)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Amalsad-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(13)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Amalsad-2 (Existing track side)



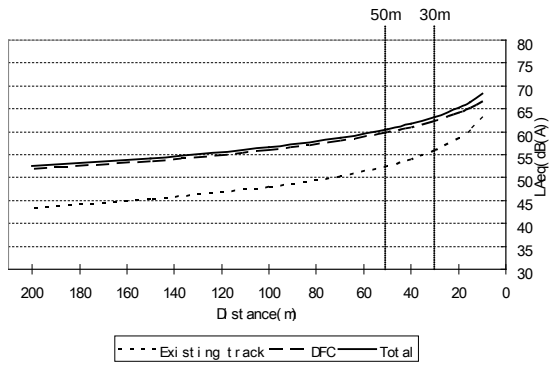
Source : JICA Survey Team

Figure 2.2(13)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Amalsad-2 (DFC side)

(14) Navsari

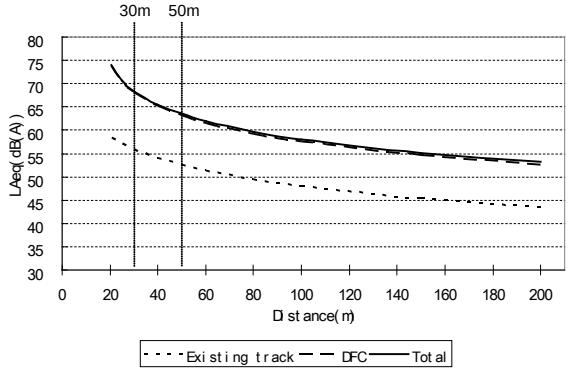
Results of noise prediction for Navsari are given from Figure 2.2(14)-1 to Figure 2.2(14)-12.

1) without countermeasure



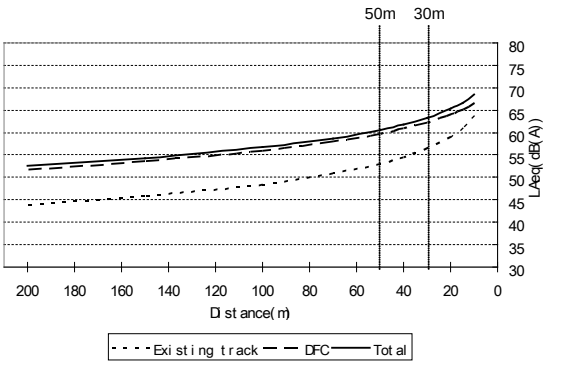
Source : JICA Survey Team

Figure 2.2(14)-1 Result of Noise Prediction Without Countermeasure on Daytime At Navsari (Existing track side)



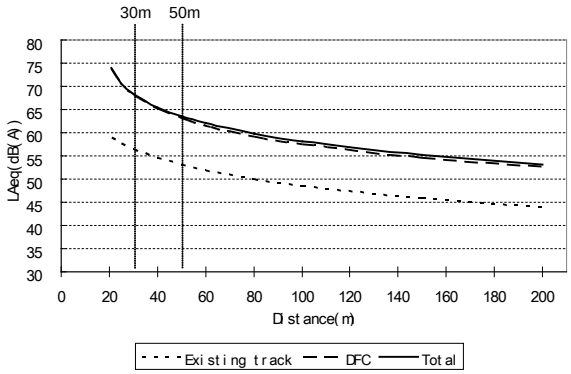
Source : JICA Survey Team

Figure 2.2(14)-2 Result of Noise Prediction Without Countermeasure on Daytime At Navsari (DFC side)



Source : JICA Survey Team

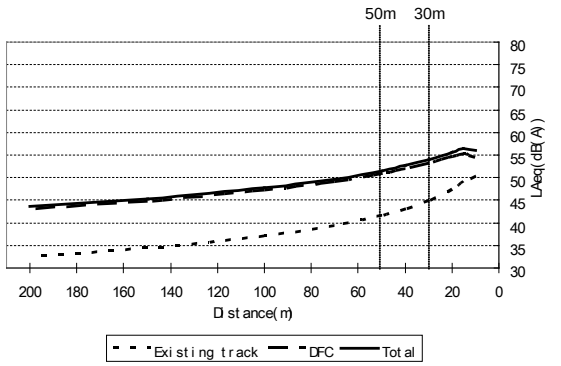
Figure 2.2(14)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Navsari (Existing track side)



Source : JICA Survey Team

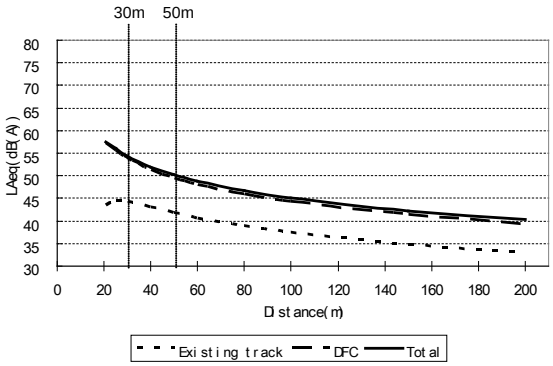
Figure 2.2(14)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Navsari (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 3.5 m Existing track side: 2.5 m)



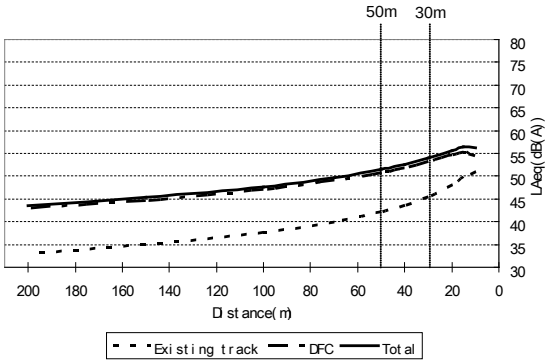
Source : JICA Survey Team

Figure 2.2(14)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Navsari (Existing track side)



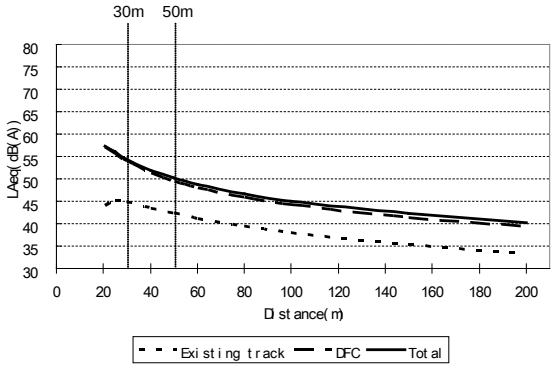
Source : JICA Survey Team

Figure 2.2(14)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Navsari (DFC side)



Source : JICA Survey Team

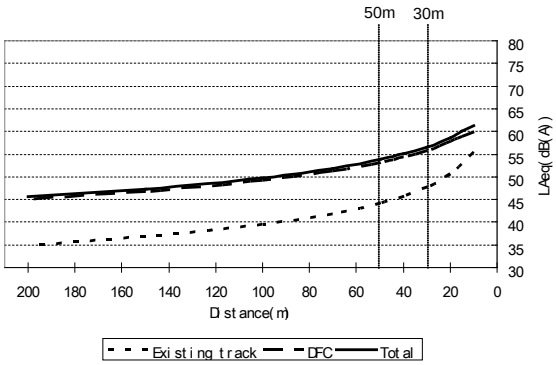
Figure 2.2(14)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Navsari (Existing track side)



Source : JICA Survey Team

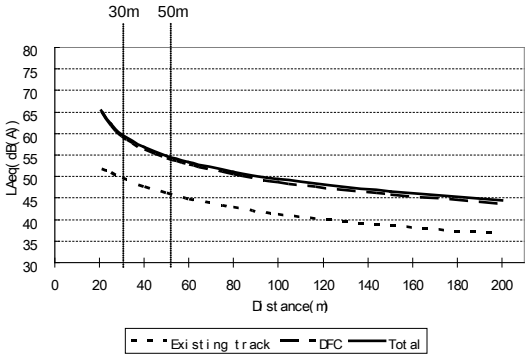
Figure 2.2(14)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Navsari (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 1.5 m Existing track side: 1.5 m)



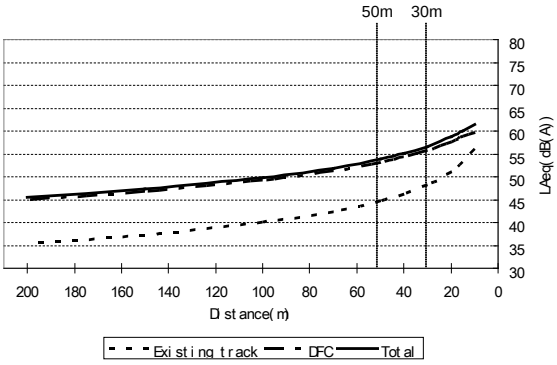
Source : JICA Survey Team

Figure 2.2(14)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Navsari (Existing track side)



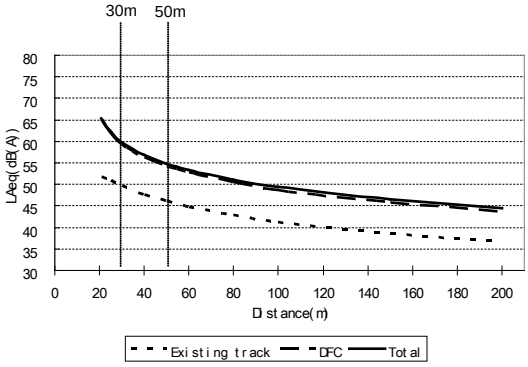
Source : JICA Survey Team

Figure 2.2(14)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Navsari (DFC side)



Source : JICA Survey Team

Figure 2.2(14)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Navsari (Existing track side)



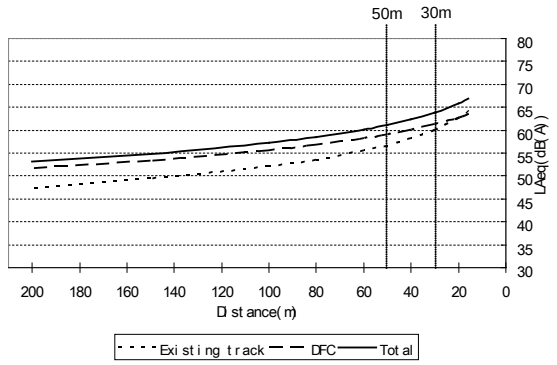
Source : JICA Survey Team

Figure 2.2(14)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Navsari (DFC side)

(15) Kim No.1

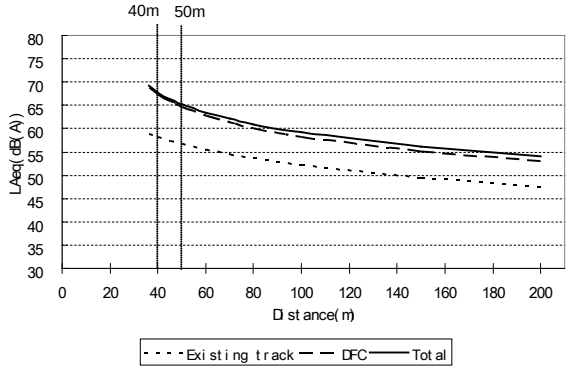
Results of noise prediction for Kim No.1 are given from Figure 2.2(15)-1 to Figure 2.2(15)-12.

1) without countermeasure



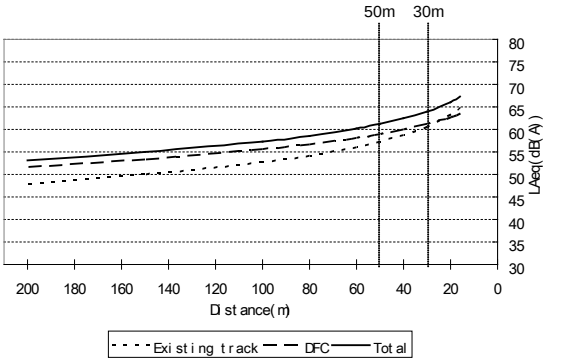
Source : JICA Survey Team

Figure 2.2(15)-1 Result of Noise Prediction Without Countermeasure on Daytime At Kim-1 (Existing track side)



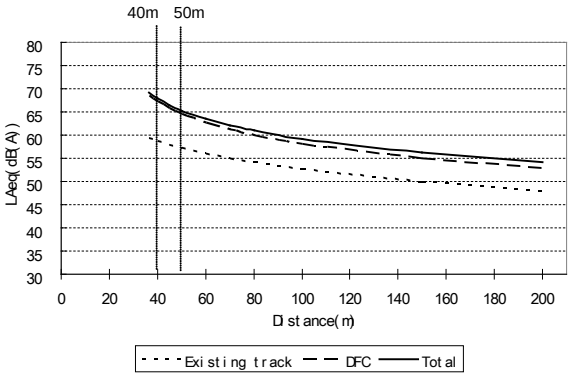
Source : JICA Survey Team

Figure 2.2(15)-2 Result of Noise Prediction Without Countermeasure on Daytime At Kim-1 (DFC side)



Source : JICA Survey Team

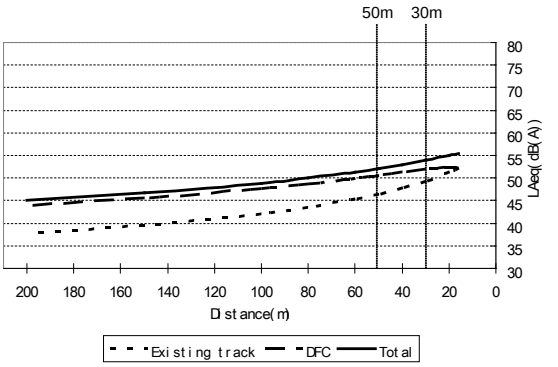
Figure 2.2(15)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Kim-1 (Existing track side)



Source : JICA Survey Team

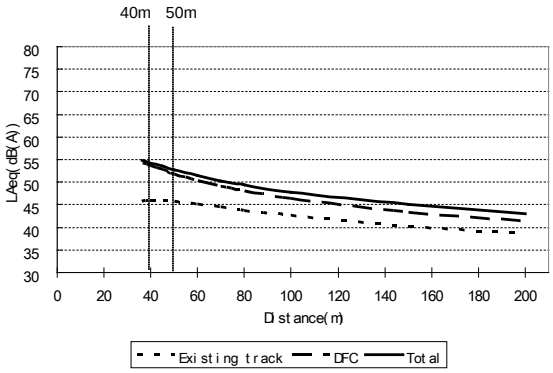
Figure 2.2(15)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Kim-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 3.0 m Existing track side: 2.0 m)



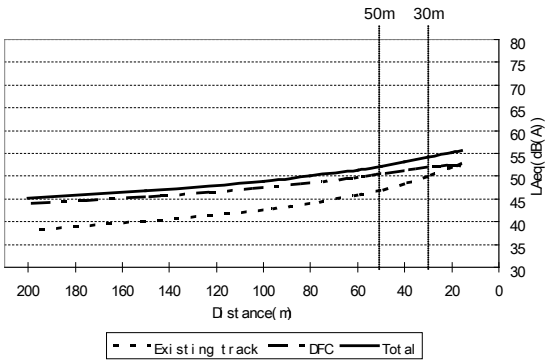
Source : JICA Survey Team

Figure 2.2(15)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Kim-1 (Existing track side)



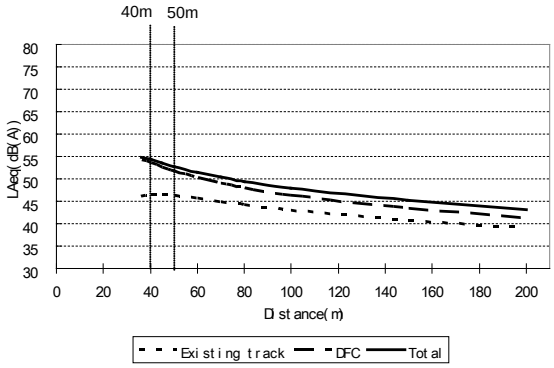
Source : JICA Survey Team

Figure 2.2(15)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Kim-1 (DFC side)



Source : JICA Survey Team

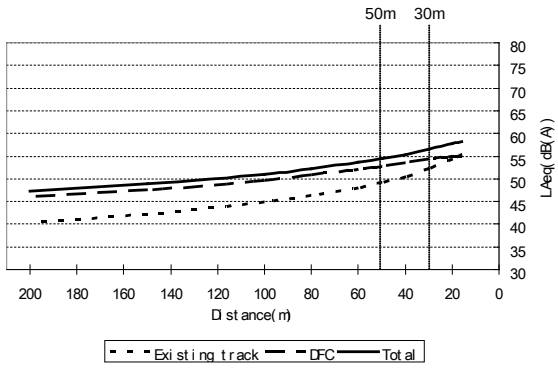
Figure 2.2(15)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Kim-1 (Existing track side)



Source : JICA Survey Team

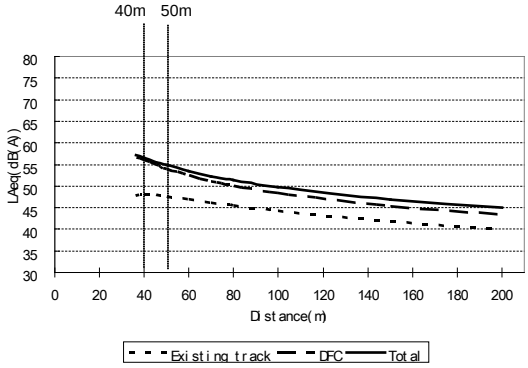
Figure 2.2(15)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Kim-1 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 2.0 m Existing track side: 1.0 m)



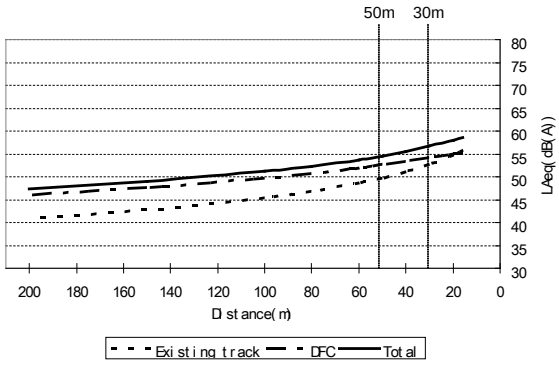
Source : JICA Survey Team

Figure 2.2(15)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Kim-1 (Existing track side)



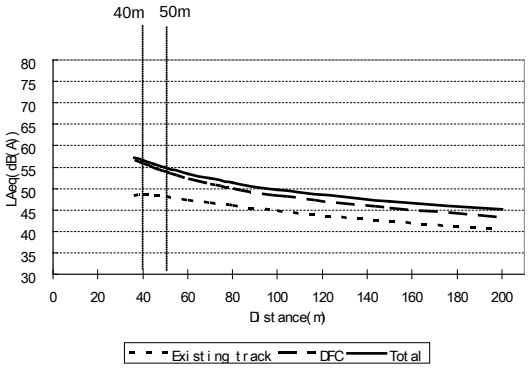
Source : JICA Survey Team

Figure 2.2(15)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Kim-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(15)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Kim-1 (Existing track side)



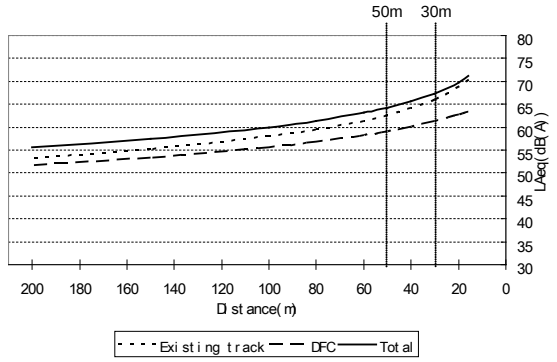
Source : JICA Survey Team

Figure 2.2(15)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Kim-1 (DFC side)

(16) Kim No.2

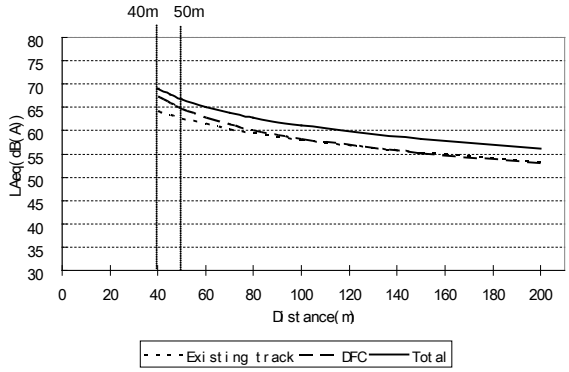
Results of noise prediction for Kim No.2 are given from Figure 2.2(16)-1 to Figure 2.2(16)-12.

1) without countermeasure



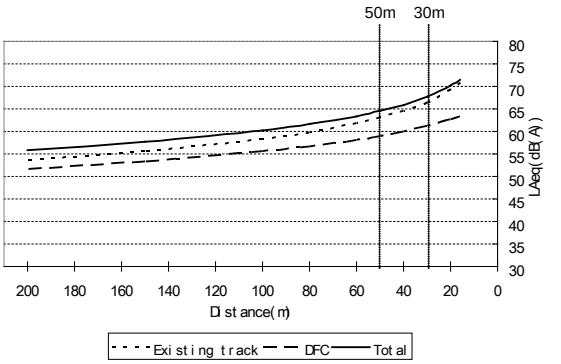
Source : JICA Survey Team

Figure 2.2(16)-1 Result of Noise Prediction Without Countermeasure on Daytime At Kim-2 (Existing track side)



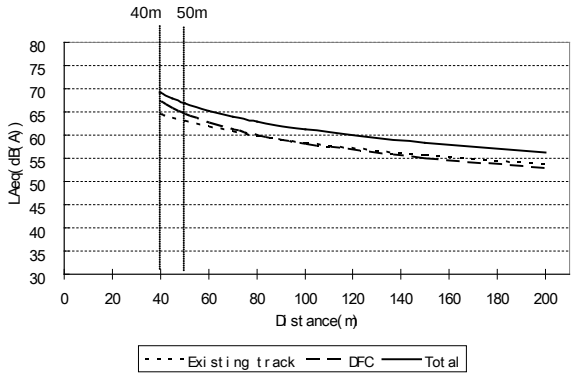
Source : JICA Survey Team

Figure 2.2(16)-2 Result of Noise Prediction Without Countermeasure on Daytime At Kim-2 (DFC side)



Source : JICA Survey Team

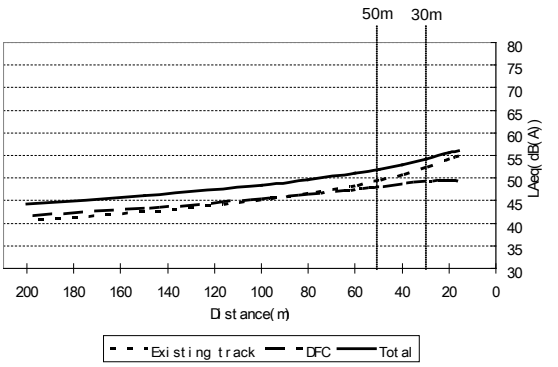
Figure 2.2(16)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Kim-2 (Existing track side)



Source : JICA Survey Team

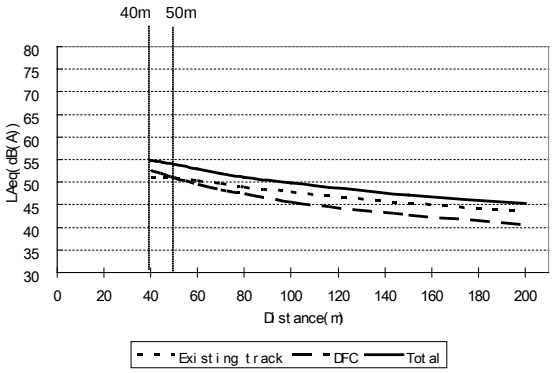
Figure 2.2(16)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Kim-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 3.5 m Existing track side: 3.5 m)



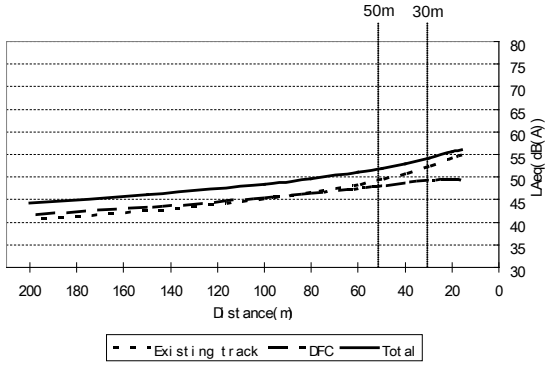
Source : JICA Survey Team

Figure 2.2(16)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Kim-2 (Existing track side)



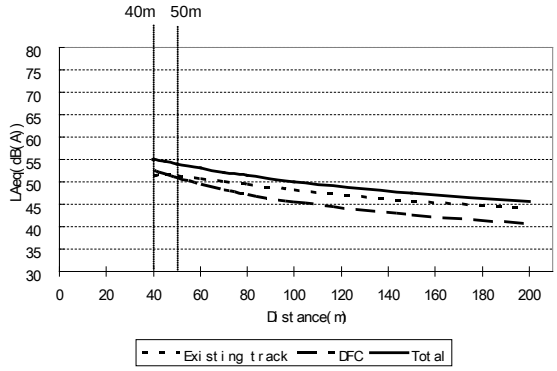
Source : JICA Survey Team

Figure 2.2(16)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Kim-2 (DFC side)



Source : JICA Survey Team

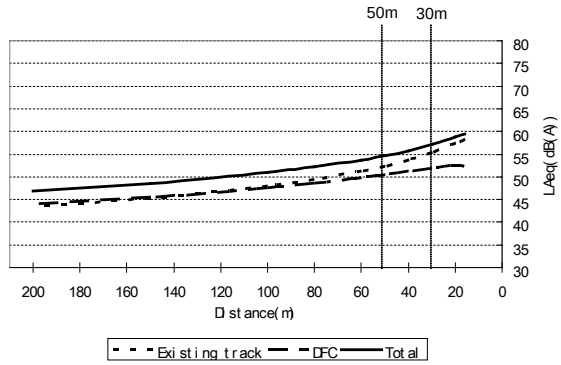
Figure 2.2(16)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Kim-2 (Existing track side)



Source : JICA Survey Team

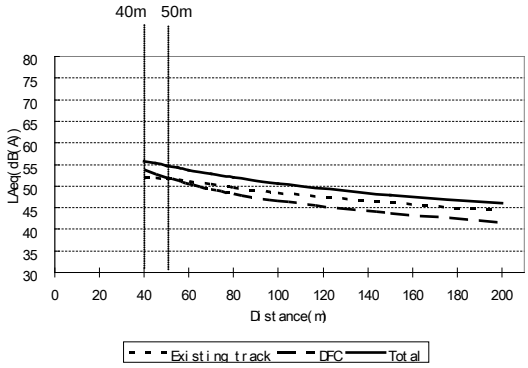
Figure 2.2(16)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Kim-2 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 3.0 m Existing track side: 2.0 m)



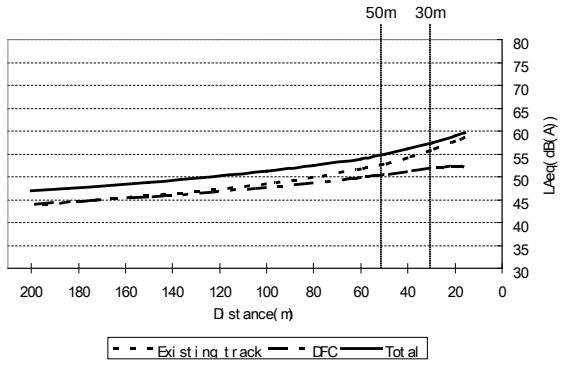
Source : JICA Survey Team

Figure 2.2(16)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Kim-2 (Existing track side)



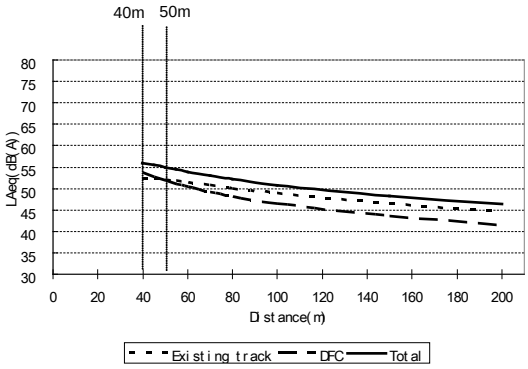
Source : JICA Survey Team

Figure 2.2(16)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Kim-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(16)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Kim-2 (Existing track side)



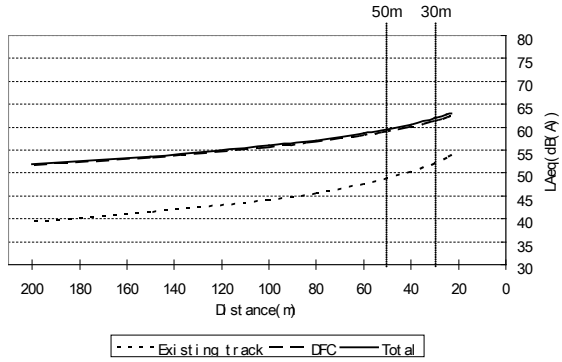
Source : JICA Survey Team

Figure 2.2(16)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Kim-2 (DFC side)

(17) Asaoti No.1

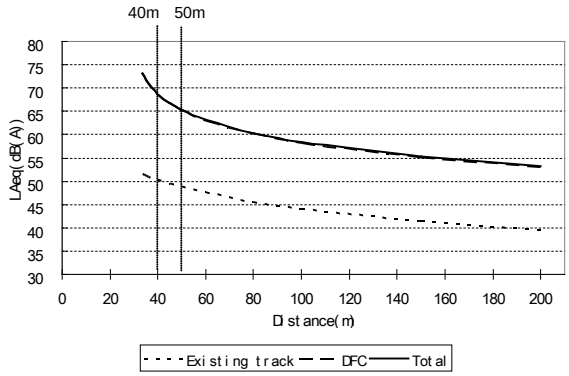
Results of noise prediction for Asaoti No.1 are given from Figure 2.2(17)-1 to Figure 2.2(17)-12.

1) without countermeasure



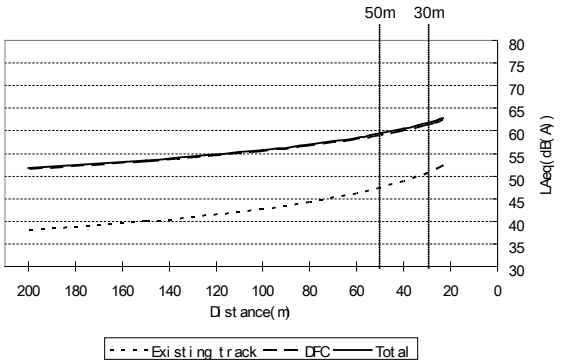
Source : JICA Survey Team

Figure 2.2(17)-1 Result of Noise Prediction Without Countermeasure on Daytime At Asaoti-1 (Existing track side)



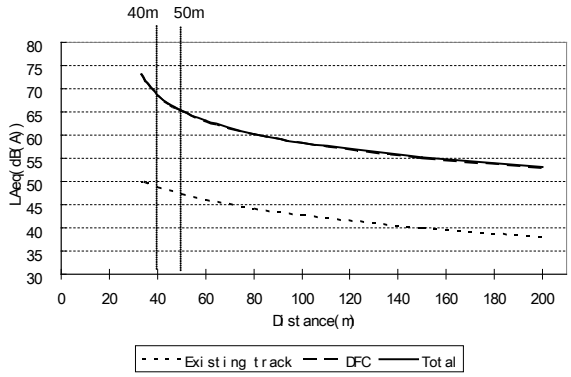
Source : JICA Survey Team

Figure 2.2(17)-2 Result of Noise Prediction Without Countermeasure on Daytime At Asaoti-1 (DFC side)



Source : JICA Survey Team

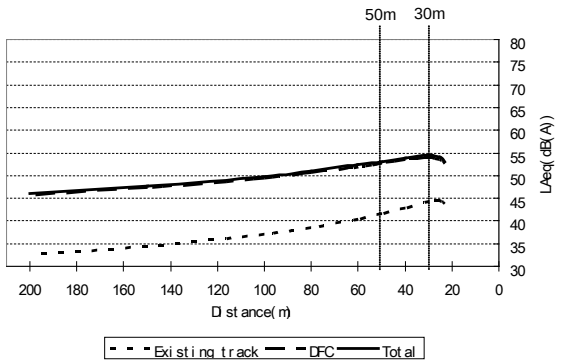
Figure 2.2(17)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Asaoti-1 (Existing track side)



Source : JICA Survey Team

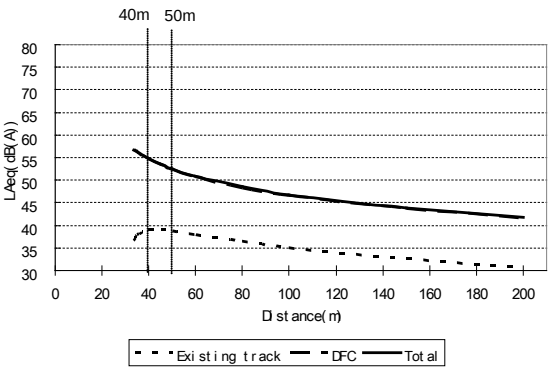
Figure 2.2(17)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Asaoti-1 (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 3.0 m Existing track side: 1.5 m)



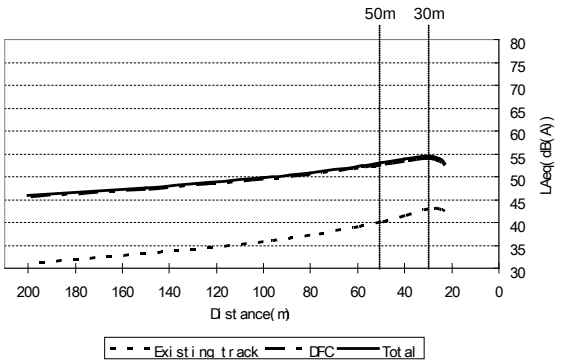
Source : JICA Survey Team

Figure 2.2(17)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Asaoti-1 (Existing track side)



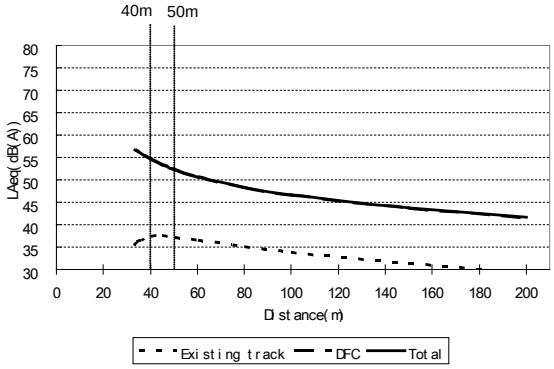
Source : JICA Survey Team

Figure 2.2(17)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Asaoti-1 (DFC side)



Source : JICA Survey Team

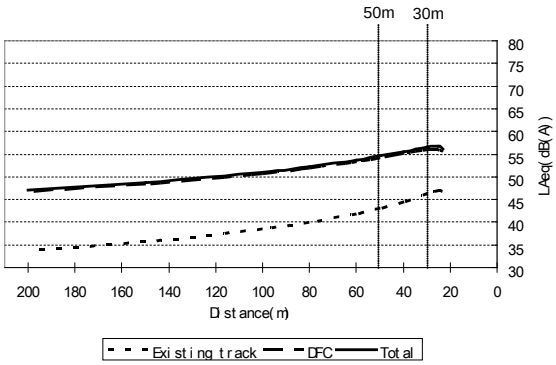
Figure 2.2(17)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Asaoti-1 (Existing track side)



Source : JICA Survey Team

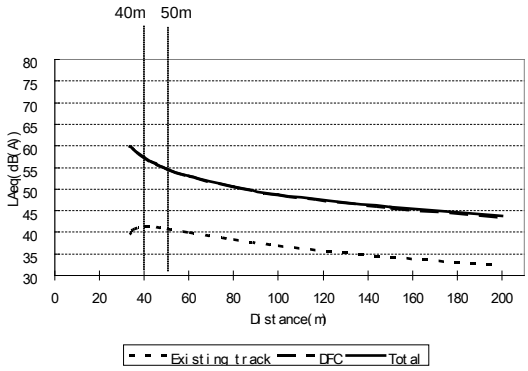
Figure 2.2(17)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Asaoti-1 (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 2.0 m Existing track side: 1.0 m)



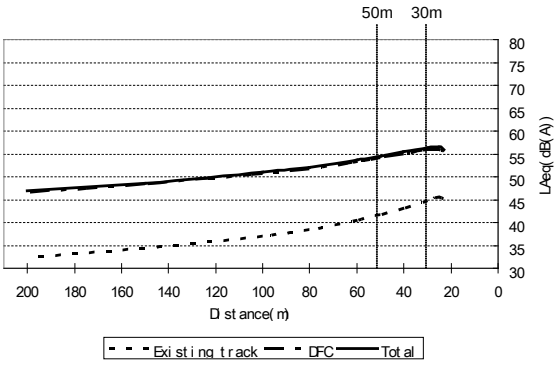
Source : JICA Survey Team

Figure 2.2(17)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Asaoti-1 (Existing track side)



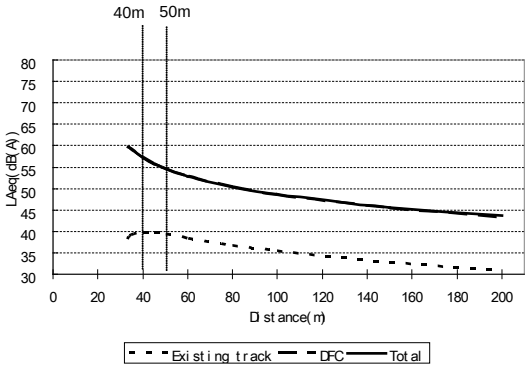
Source : JICA Survey Team

Figure 2.2(17)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Asaoti-1 (DFC side)



Source : JICA Survey Team

Figure 2.2(17)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Asaoti-1 (Existing track side)



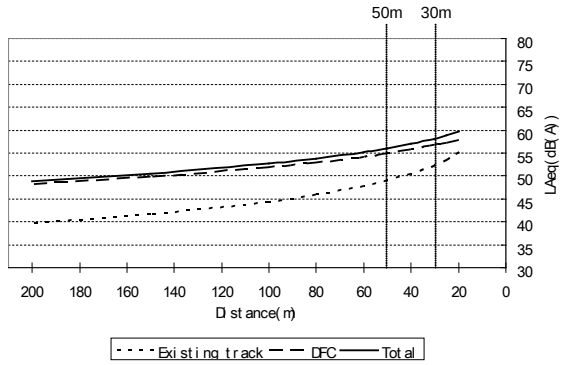
Source : JICA Survey Team

Figure 2.2(17)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Asaoti-1 (DFC side)

(18) Asaoti No.2

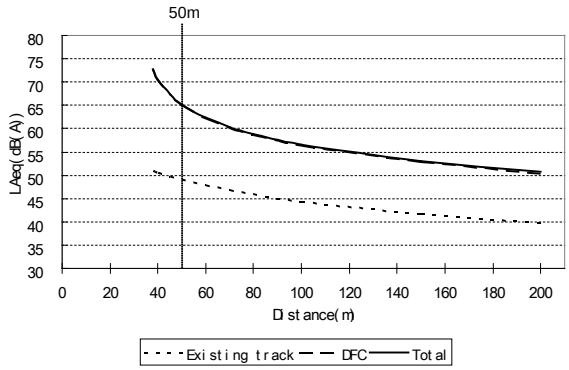
Results of noise prediction for Asaoti No.2 are given from Figure 2.2(18)-1 to Figure 2.2(18)-10.

1) without countermeasure



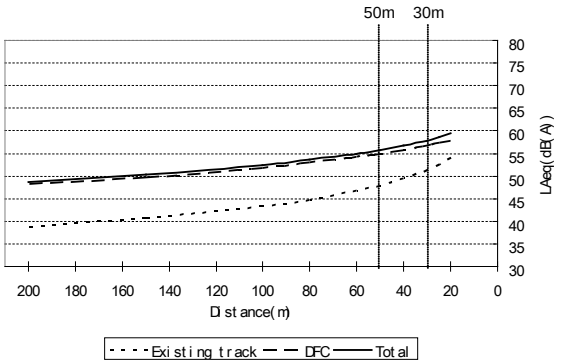
Source : JICA Survey Team

Figure 2.2(18)-1 Result of Noise Prediction Without Countermeasure on Daytime At Asaoti-2 (Existing track side)



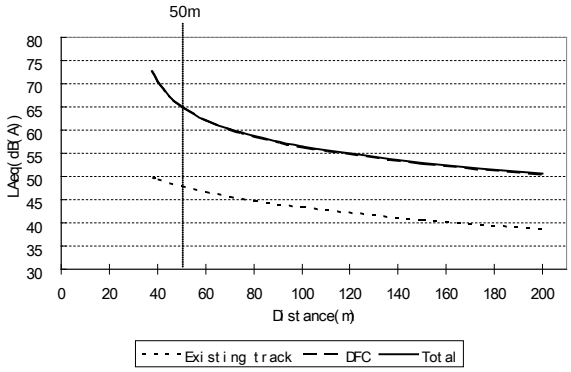
Source : JICA Survey Team

Figure 2.2(18)-2 Result of Noise Prediction Without Countermeasure on Daytime At Asaoti-2 (DFC side)



Source : JICA Survey Team

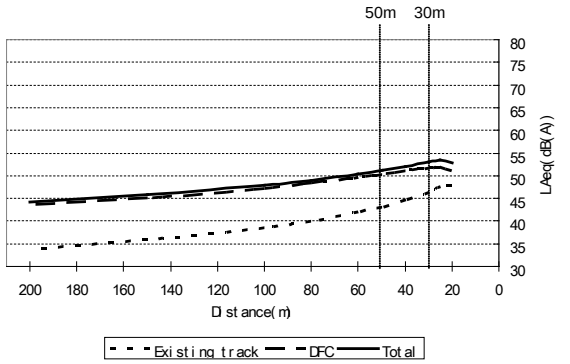
Figure 2.2(18)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Asaoti-2 (Existing track side)



Source : JICA Survey Team

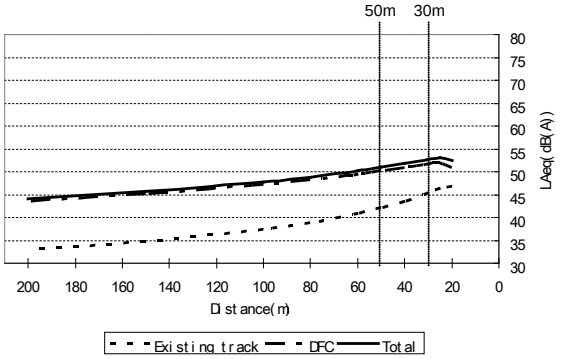
Figure 2.2(18)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Asaoti-2 (DFC side)

2) with countermeasure 1 (soundproof height DFC side:—m Existing track side: 1.0 m)



Source : JICA Survey Team

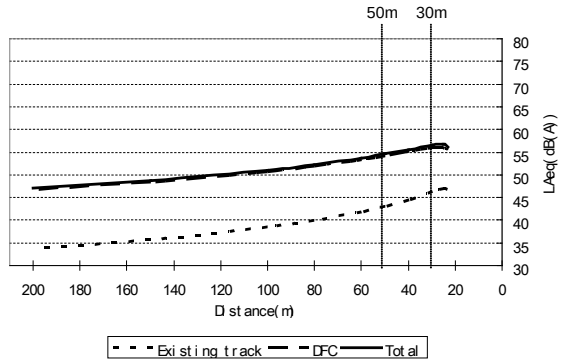
Figure 2.2(18)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Asaoti-2 (Existing track side)



Source : JICA Survey Team

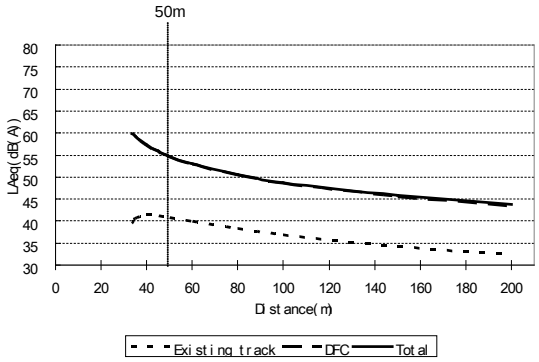
Figure 2.2(18)-6 Result of Noise Prediction With Countermeasure 1 on Nighttime At Asaoti-2 (Existing track side)

3) with countermeasure 2 (soundproof height DFC side: 1.5 m Existing track side: 0.5 m)



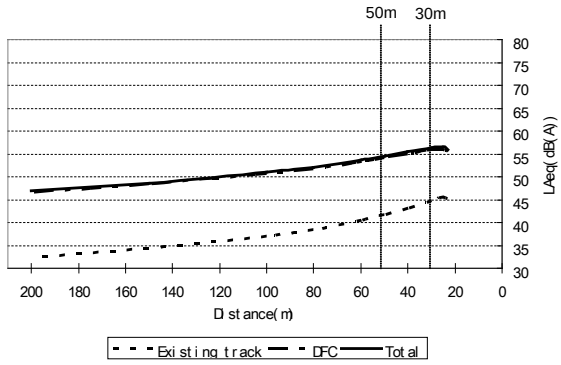
Source : JICA Survey Team

Figure 2.2(18)-7 Result of Noise Prediction With Countermeasure 2 on Daytime At Asaoti-2 (Existing track side)



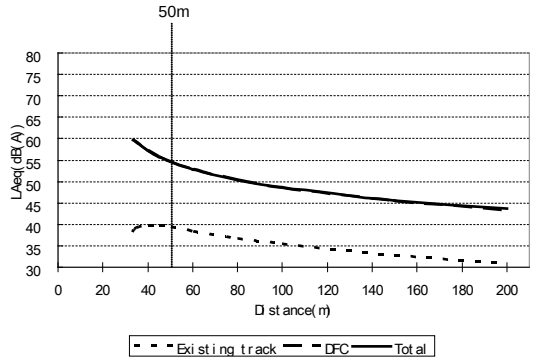
Source : JICA Survey Team

Figure 2.2(18)-8 Result of Noise Prediction With Countermeasure 2 on Daytime At Asaoti-2 (DFC side)



Source : JICA Survey Team

Figure 2.2(18)-9 Result of Noise Prediction With Countermeasure 2 on Nighttime At Asaoti-2 (Existing track side)



Source : JICA Survey Team

Figure 2.2(18)-10 Result of Noise Prediction With Countermeasure 2 on Nighttime At Asaoti-2 (DFC side)

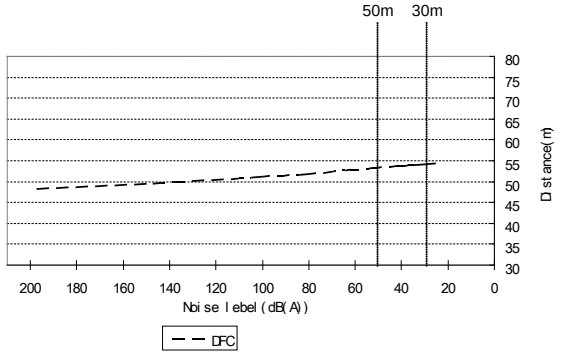
2-2-2 detour section

Results of noise prediction in detour section are given below. Range of distance from near railway to 200m is indicated on graphs.

(19) Bharuch

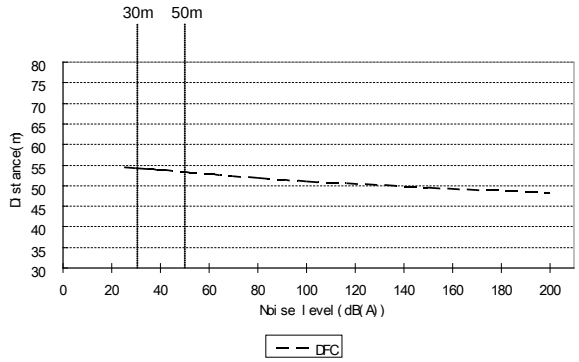
Results of noise prediction for Bharuch are given from Figure 2.2(19)-1 to Figure 2.2(19)-4.

1) without countermeasure



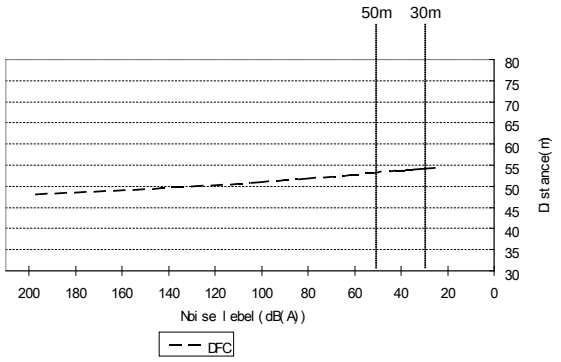
Source : JICA Survey Team

Figure 2.2(19)-1 Result of Noise Prediction Without Countermeasure on Daytime At Bharuch (Existing track side)



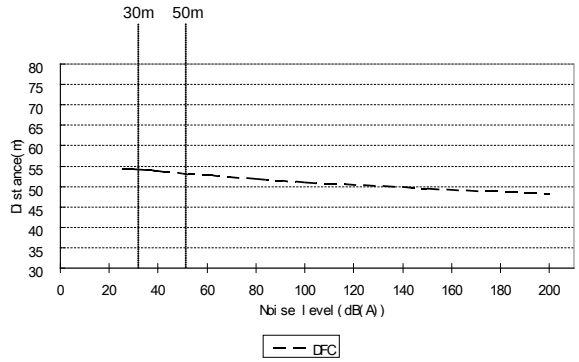
Source : JICA Survey Team

Figure 2.2(19)-2 Result of Noise Prediction Without Countermeasure on Daytime At Bharuch (DFC side)



Source : JICA Survey Team

Figure 2.2(19)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Bharuch (Existing track side)



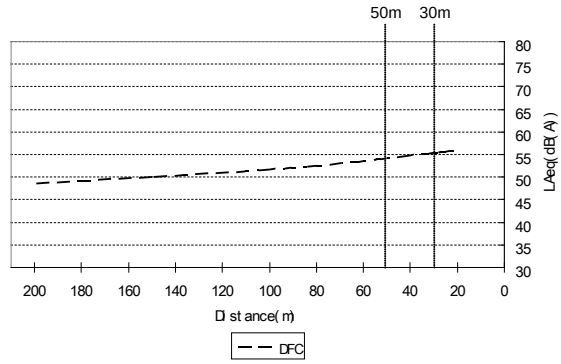
Source : JICA Survey Team

Figure 2.2(19)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Bharuch (DFC side)

(20) Miyagam,

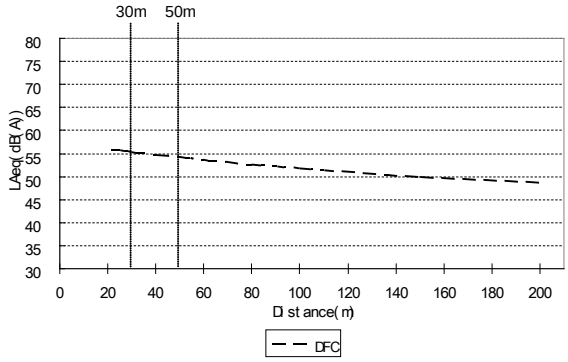
Results of noise prediction for Miyagam are given from Figure 2.2(20)-1 to Figure 2.2(20)-4.

1) without countermeasure



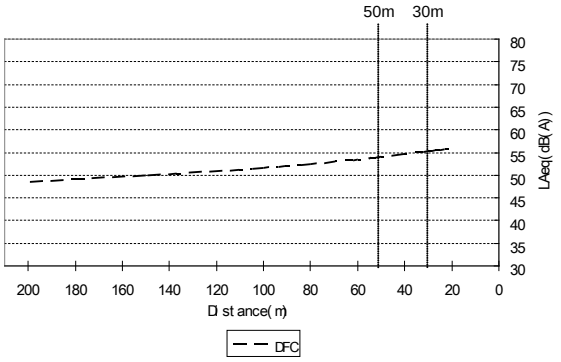
Source : JICA Survey Team

Figure 2.2(20)-1 Result of Noise Prediction Without Countermeasure on Daytime At Miyagam (Existing track side)



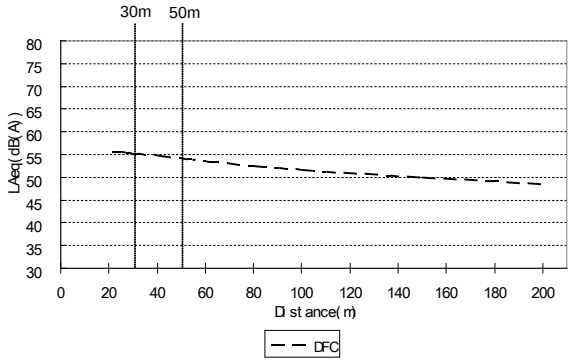
Source : JICA Survey Team

Figure 2.2(20)-2 Result of Noise Prediction Without Countermeasure on Daytime At Miyagam (DFC side)



Source : JICA Survey Team

Figure 2.2(20)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Miyagam (Existing track side)



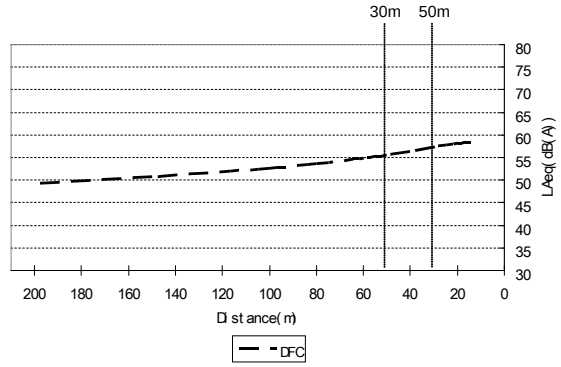
Source : JICA Survey Team

Figure 2.2(20)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Miyagam (DFC side)

(21) Sohona

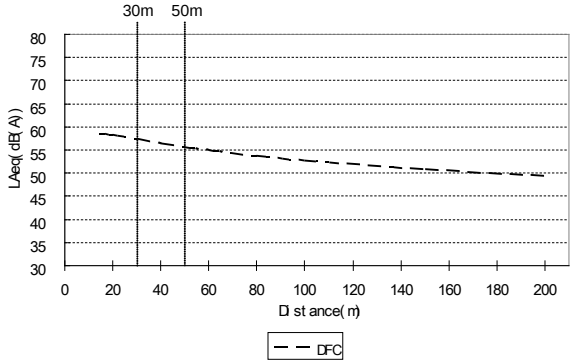
Results of noise prediction for Sohona are given from Figure 2.2(21)-1 to Figure 2.2(21)-12

1) without countermeasure



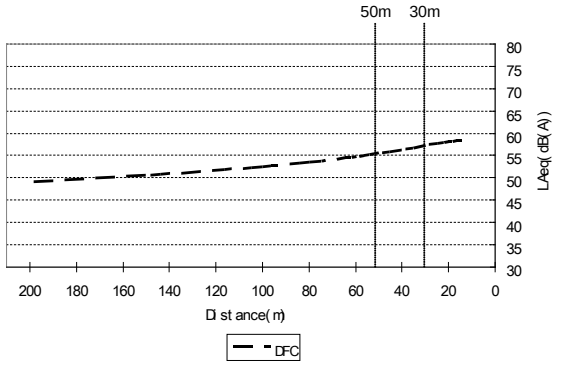
Source : JICA Survey Team

Figure 2.2(21)-1 Result of Noise Prediction Without Countermeasure on Daytime At Sohona (Existing track side)



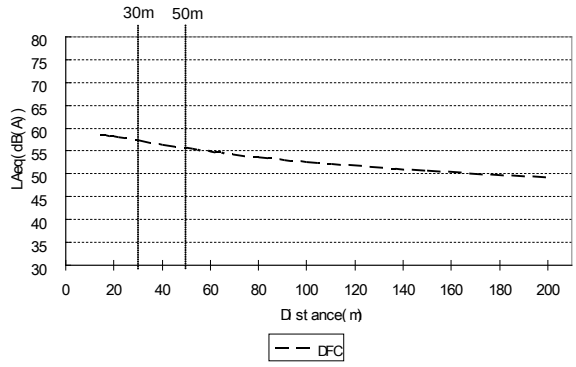
Source : JICA Survey Team

Figure 2.2(21)-2 Result of Noise Prediction Without Countermeasure on Daytime At Sohona (DFC side)



Source : JICA Survey Team

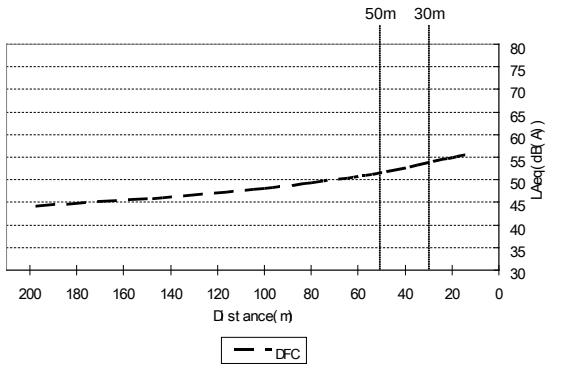
Figure 2.2(21)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Sohona (Existing track side)



Source : JICA Survey Team

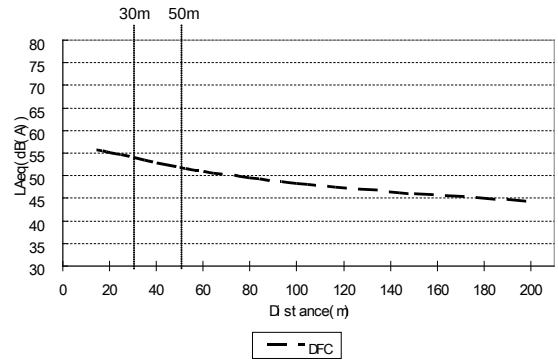
Figure 2.2(21)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Sohona (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 1.0 m Existing track side: 1.0 m)



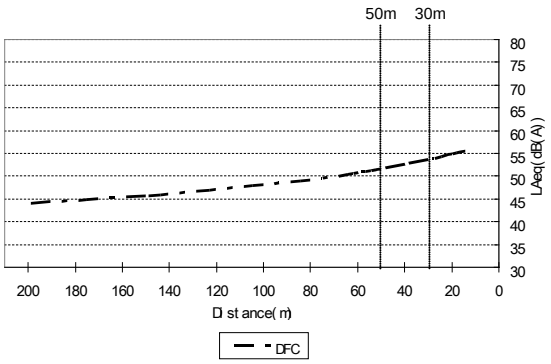
Source : JICA Survey Team

Figure 2.2(21)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Sohona (Existing track side)



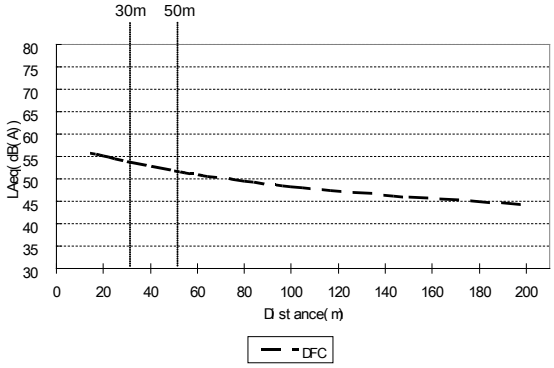
Source : JICA Survey Team

Figure 2.2(21)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Sohona (DFC side)



Source : JICA Survey Team

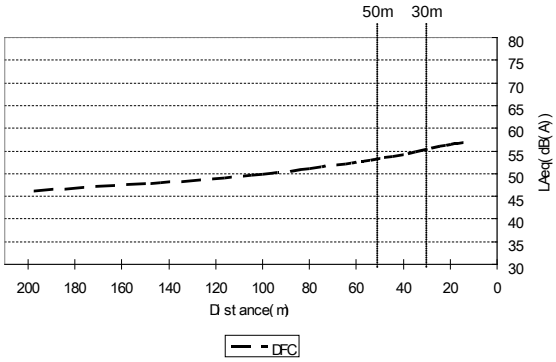
Figure 2.2(21)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Sohona (Existing track side)



Source : JICA Survey Team

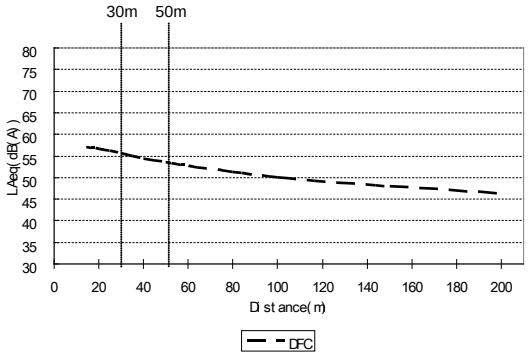
Figure 2.2(21)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Sohona (DFC side)

3) with countermeasure 2 (soundproof height DFC side: 0.5 m Existing track side: 0.5 m)



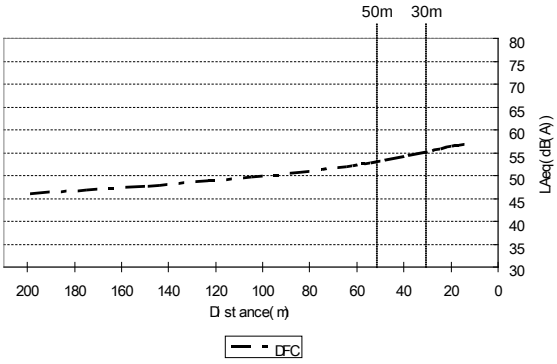
Source : JICA Survey Team

Figure 2.2(21)-9 Result of Noise Prediction With Countermeasure 2 on Daytime At Sohona (Existing track side)



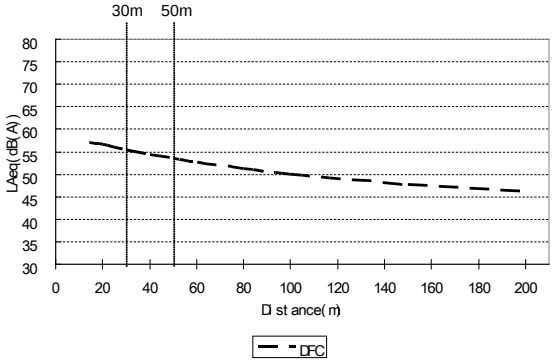
Source : JICA Survey Team

Figure 2.2(21)-10 Result of Noise Prediction With Countermeasure 2 on Daytime At Sohona (DFC side)



Source : JICA Survey Team

Figure 2.2(21)-11 Result of Noise Prediction With Countermeasure 2 on Nighttime At Sohona (Existing track side)



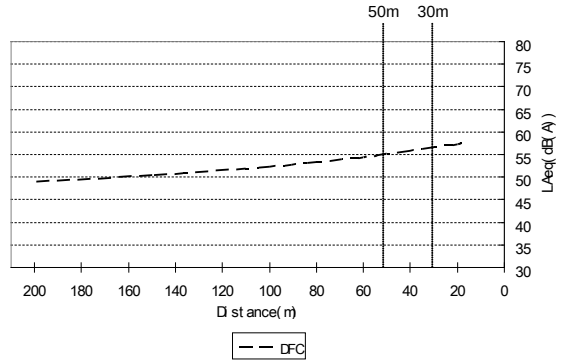
Source : JICA Survey Team

Figure 2.2(21)-12 Result of Noise Prediction With Countermeasure 2 on Nighttime At Sohona (DFC side)

(22) Tigaon

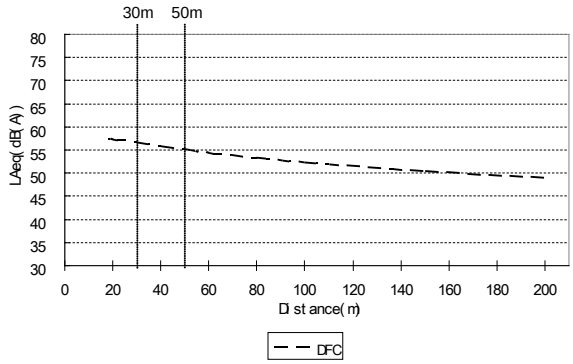
Results of noise prediction for Tigaon are given from Figure 2.2(22)-1 to Figure 2.2(22)-8.

1) without countermeasure



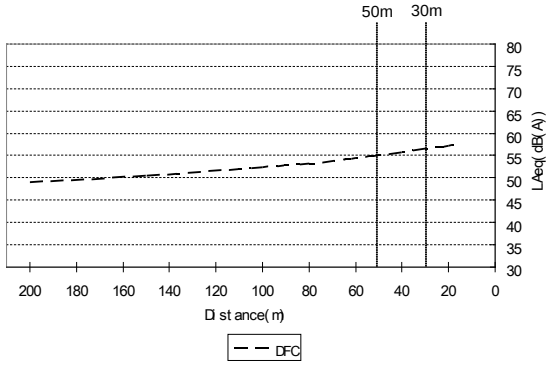
Source : JICA Survey Team

Figure 2.2(22)-1 Result of Noise Prediction Without Countermeasure on Daytime At Tigaon (Existing track side)



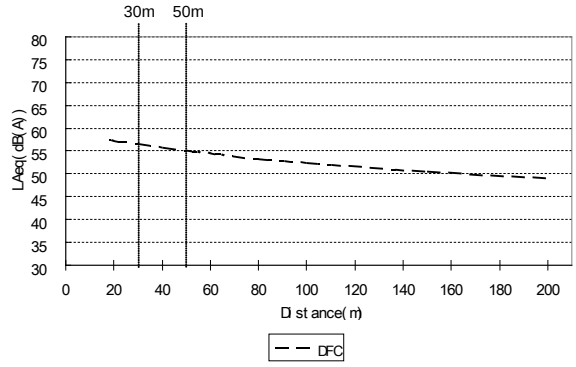
Source : JICA Survey Team

Figure 2.2(22)-2 Result of Noise Prediction Without Countermeasure on Daytime At Tigaon (DFC side)



Source : JICA Survey Team

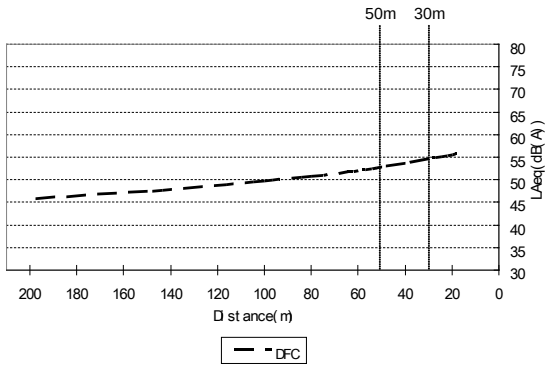
Figure 2.2(22)-3 Result of Noise Prediction Without Countermeasure on Nighttime At Tigaon (Existing track side)



Source : JICA Survey Team

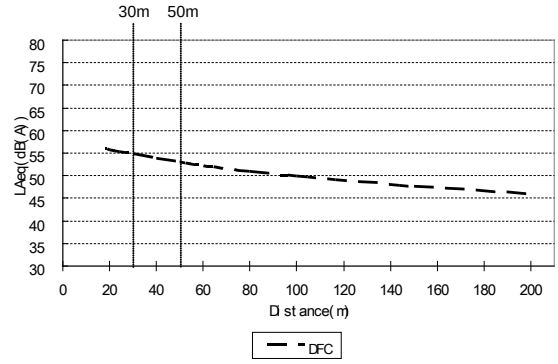
Figure 2.2(22)-4 Result of Noise Prediction Without Countermeasure on Nighttime At Tigaon (DFC side)

2) with countermeasure 1 (soundproof height DFC side: 0.5 m Existing track side: 0.5 m)



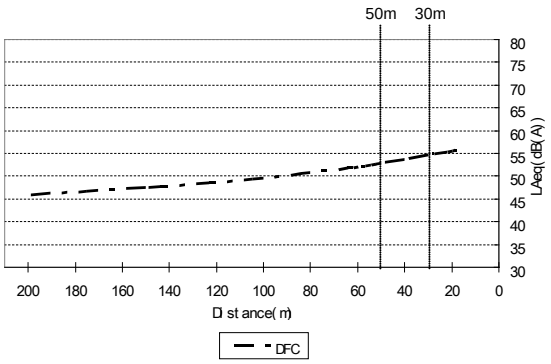
Source : JICA Survey Team

Figure 2.2(22)-5 Result of Noise Prediction With Countermeasure 1 on Daytime At Tigaon (Existing track side)



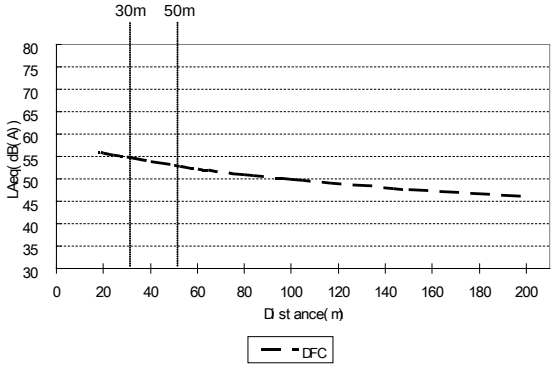
Source : JICA Survey Team

Figure 2.2(22)-6 Result of Noise Prediction With Countermeasure 1 on Daytime At Tigaon (DFC side)



Source : JICA Survey Team

Figure 2.2(22)-7 Result of Noise Prediction With Countermeasure 1 on Nighttime At Tigaon (Existing track side)



Source : JICA Survey Team

Figure 2.2(22)-8 Result of Noise Prediction With Countermeasure 1 on Nighttime At Tigaon (DFC side)

Appendix-4b
Vibration Survey

Appendix-4b

VIBRATION SURVEY

1. Railway and Background Vibration in Parallel Section

1-1 Photographs on Measurement Sites in Parallel Section

Refer to APPENDIX NOISE SURVEY.

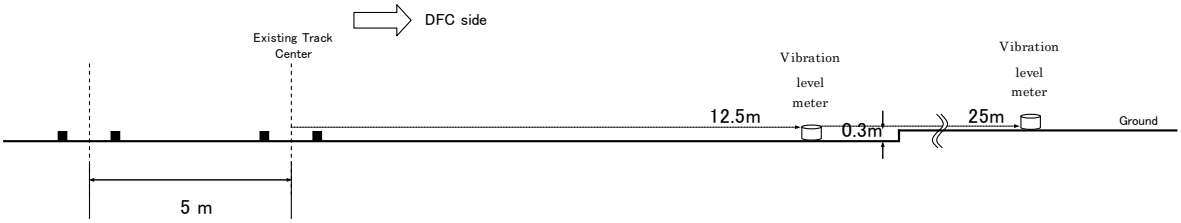
1-2 Results of Railway and Background Vibration in Parallel Section

Results of railway and background vibration in parallel section are shown below.

(1) Panvel

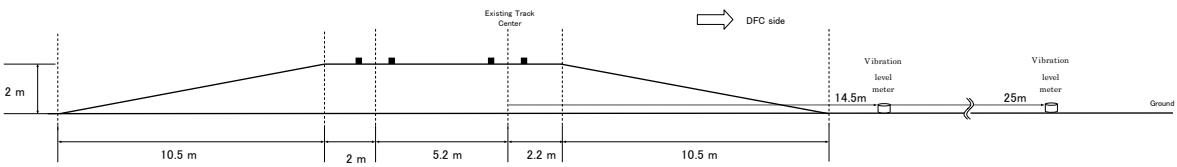
1) Cross-section View

Cross-section view of measurement site in Panvel are given in Figure 1.2-1 and Figure 1.2-2.



Source: JICA Survey Team

Figure 1.2-1 Cross-section View of Measurement Site in Panvel №1



Source: JICA Survey Team

Figure 1.2-2 Cross-section View of Measurement Site in Panvel №2

2) Result of Background Vibration

Results of background vibration measurement in Abu Road is given in Table 1.2-1-1.

Table 1.2-1 Result of Background Vibration Measurement in Panvel

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Panvel	9-Oct	1	32.0	31.1	<25	31.9	31.3	28.7	<30	<30	29.7	<30	<30	<25	32.0	31.3	29.7
	9-Oct	2	39.7	32.5	42.6	<30	31.8	33.6	33.1	30.4	40.2	<30	<30	36.0	39.7	32.5	42.6

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Vibration

A result of railway vibration measurement in Panvel is given in Table 1.2-2 and Table 1.2-3.

Table 1.2-2 Result of Railway Vibration Measurement in Panvel №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	9-Oct	10:23	F	18.1	139.2	163.2	655	up	54.5	32.5	54.5	33.2	63.8	39.4
2	9-Oct	11:01	F	25.1	75.6	101.8	586	up	54.5	31.5	53.5	32.9	63.2	38.6
3	9-Oct	11:17	F	40.8	54.4	67.8	655	up	54.0	32.1	63.0	33.5	62.4	38.4
4	9-Oct	11:40	F	17.0	129.1	146.7	669	up	54.1	33.7	53.5	33.8	62.8	38.6
5	9-Oct	12:17	P	64.4	24.0	33.3	399	up	53.9	31.2	54.9	34.0	62.4	39.2
6	9-Oct	12:49	P	35.2	40.4	50.9	422	down	44.4	28.3	44.1	28.4	51.0	33.0
7	9-Oct	13:03	P	32.1	50.0	76.2	489	up	52.6	30.3	53.5	32.4	63.1	41.1
8	9-Oct	13:58	P	36.5	18.3	28.7	266	down	47.7	28.8	46.6	29.3	49.9	33.1
9	9-Oct	15:04	F	21.2	83.6	105.8	647	down	45.6	25.6	45.0	27.9	50.3	33.6
10	9-Oct	15:38	F	41.2	61.4	77.0	655	down	45.3	29.8	45.9	29.2	52.0	33.0
11	9-Oct	16:21	F	37.8	68.7	83.6	655	down	46.1	25.5	45.4	25.6	51.6	32.8
12	9-Oct	16:35	F	18.4	53.5	82.9	222	up	53.9	29.4	54.2	31.3	63.3	39.8
13	9-Oct	16:55	F	31.6	64.4	82.0	655	down	46.3	26.3	46.5	27.2	53.6	33.8
14	9-Oct	17:21	P	39.5	39.7	56.6	422	UP	53.4	31.2	53.9	32.3	61.5	37.9
average		Passenger(P)		45.4	37.9	55.4	437	up	53.3	30.9	54.1	32.9	62.3	39.4
				35.8	29.3	39.8	344	down	46.0	28.5	45.3	28.9	50.4	33.1
		Freight(F)		23.9	90.4	112.5	557	up	54.2	31.8	55.7	33.0	63.1	39.0
				32.9	69.5	87.1	653	down	45.8	26.8	45.7	27.5	51.9	33.3

Note: P: passenger train F : freight train
up: to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average: value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-3 Result of Railway Vibration measurement in Panvel №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									14.5m	25.0m	14.5m	25.0m	14.5m	25.0m
1	9-Oct	10:20	F	28.8	82.2	98.2	655	up	39.7	35.9	42.4	35.8	45.4	41.1
2	9-Oct	10:41	P	25.8	51.0	71.4	422	up	39.9	31.8	43.5	36.2	44.1	39.6
3	9-Oct	10:44	F	37.5	53.7	67.9	669	down	36.8	34.0	38.8	34.8	45.6	39.7
4	9-Oct	10:59	F	21.4	83.3	95.9	586	up	43.1	35.4	49.6	37.8	56.1	41.1
5	9-Oct	11:16	F	38.7	54.0	65.8	655	up	43.3	36.5	48.5	38.6	54.2	41.8
6	9-Oct	11:41	F	13.8	148.7	175.1	669	up	41.0	30.6	47.2	34.2	53.7	37.5
7	9-Oct	12:17	P	66.3	21.9	37.2	399	up	42.0	34.4	47.8	37.1	52.8	42.1
8	9-Oct	12:50	P	44.7	29.9	44.7	422	down	40.4	33.7	42.9	35.4	51.2	40.3
9	9-Oct	13:02	P	25.0	60.4	94.0	489	up	41.2	30.5	48.0	36.2	54.3	40.2
10	9-Oct	13:09	P	35.8	34.6	48.2	422	down	37.8	35.7	41.1	35.7	48.7	39.4
11	9-Oct	13:59	P	41.8	15.0	26.3	266	down	40.4	35.5	42.3	36.8	50.5	40.5
12	9-Oct	14:24	F	24.9	68.8	84.9	641	down	36.4	30.3	40.1	31.9	48.4	37.8
13	9-Oct	15:04	F	24.0	69.3	94.9	647	down	37.1	35.4	39.9	36.6	50.2	39.9
14	9-Oct	15:26	P	51.0	28.7	42.5	466	up	39.4	33.4	44.5	35.5	50.5	39.0
15	9-Oct	15:39	F	45.7	52.0	64.3	655	down	36.8	33.9	41.7	33.9	50.4	39.3
16	9-Oct	15:55	F	14.6	147.1	160.8	669	up	40.7	28.0	48.8	36.6	53.9	40.7
17	9-Oct	16:09	P	36.1	28.7	38.3	333	down	36.3	31.6	40.0	33.1	49.1	38.1
18	9-Oct	16:23	F	46.0	53.0	65.1	655	down	36.7	32.2	40.6	33.9	48.8	38.2
19	9-Oct	16:34	F	37.2	24.9	37.5	222	up	40.3	31.1	46.5	35.2	51.8	40.4
20	9-Oct	16:56	F	37.4	51.1	59.5	655	down	37.4	36.0	41.1	36.8	49.0	40.8
21	9-Oct	17:20	P	42.7	34.5	52.9	422	up	39.4	30.6	45.6	34.5	51.6	38.2
average		Passenger(P)		42.2	39.3	59.6	440	up	40.4	32.1	45.9	35.9	50.7	39.8
				39.6	27.0	39.4	360	down	38.7	34.1	41.6	35.2	49.9	39.6
		Freight(F)		25.7	90.0	105.6	576	up	41.3	32.9	47.2	36.4	52.5	40.4
				35.9	58.0	72.8	654	down	36.9	33.6	40.4	34.7	48.7	39.3

Note: P: passenger train F : freight train
up: to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average: value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-4 and Table 1.2-5. In Panvel No.1, in consideration of all results roughly, frequency of the range from 20 to 40Hz at X-axis excelled, range from 25 to 50Hz at Y-axis excelled, range from 31.5 to 40Hz at Z-axis excelled. In Panvel No.2, in consideration of all results roughly, frequency of the range from 31.5 to 50Hz at X-axis excelled, range from 25 to 31.5Hz at Y-axis excelled, range from 25 to 50Hz at Z-axis excelled. In Japan, in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed.

Table 1.2-4 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Panvel №1

Direction	No.	train type	Vibration Level [dB]																									
			Frequency [Hz]																									
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	F	17	20	23	23	21	22	19	17	19	17	16	15	13	13	11	13	31	34	35	38	39	36	30	22	45
	2	F	18	20	22	23	25	22	20	21	19	18	18	16	15	14	13	17	29	35	39	44	42	39	37	34	49
	3	F	18	20	22	22	22	22	21	21	20	18	17	17	16	16	16	18	36	38	37	41	42	41	36	32	48
	4	F	19	21	24	24	24	23	23	22	20	19	18	17	16	15	13	15	32	36	36	42	43	40	36	31	48
	5	P	2	8	10	13	16	20	21	22	24	23	23	23	22	21	21	22	35	39	36	39	40	40	35	33	47
	6	P	21	22	25	26	26	25	23	23	22	21	20	19	18	17	16	16	26	30	27	27	32	26	27	23	39
	7	P	21	22	25	26	28	26	24	22	22	22	21	20	19	18	17	18	29	35	35	38	42	40	36	32	47
	8	P	19	21	24	25	24	24	23	23	21	20	19	18	17	16	15	16	28	39	32	31	33	27	26	23	42
	9	F	17	19	21	22	22	21	21	20	19	18	16	16	15	14	14	14	24	30	29	32	38	32	31	27	42
	10	F	16	18	21	22	22	24	22	20	20	18	17	16	15	14	13	16	32	36	32	35	35	28	27	23	42
	11	F	16	18	20	21	21	21	20	19	19	17	16	15	14	14	13	12	26	30	32	36	32	27	26	23	41
	12	F	16	18	21	21	21	20	21	19	18	17	16	15	14	14	13	18	33	41	40	44	43	37	35	31	49
	13	F	16	18	21	21	21	21	20	19	18	17	16	15	14	13	12	11	28	31	29	30	32	28	28	24	39
	14	P	16	17	20	21	21	20	20	19	18	16	16	15	14	13	12	17	31	36	35	40	42	40	35	30	47
Y	1	F	12	14	15	16	18	16	16	15	14	13	12	11	10	8	8	18	35	36	42	38	39	36	29	26	46
	2	F	14	16	18	19	20	17	17	17	15	14	14	13	11	11	10	15	32	36	42	41	42	40	36	34	48
	3	F	13	15	18	19	18	18	19	18	16	14	14	13	11	10	7	17	31	37	41	42	40	38	34	31	48
	4	F	15	17	19	19	21	20	19	16	16	15	14	13	12	11	9	16	34	37	41	41	42	40	35	31	48
	5	P	−2	4	6	9	11	15	17	18	20	20	20	19	19	18	18	23	35	37	40	39	38	41	35	35	48
	6	P	17	19	21	21	21	21	22	20	18	18	16	15	14	14	13	15	28	29	32	26	28	23	27	23	38
	7	P	17	19	21	22	23	20	20	19	19	18	17	16	14	13	12	18	33	35	39	35	39	41	35	33	47
	8	P	16	18	19	19	20	20	19	18	16	16	15	14	13	11	11	15	30	34	35	31	28	25	26	21	40
	9	F	13	14	17	18	19	18	18	16	16	14	13	12	11	11	11	14	27	27	31	29	32	31	32	25	39
	10	F	11	13	15	13	14	15	17	17	14	13	12	11	9	8	7	15	35	32	38	31	31	28	29	24	42
	11	F	12	14	16	16	16	15	16	15	14	13	11	10	9	8	8	14	29	34	35	33	29	29	29	24	41
	12	F	12	14	17	17	17	18	17	16	15	13	12	12	9	7	5	18	34	42	46	42	41	39	36	33	50
	13	F	12	14	16	16	18	16	14	13	12	12	11	9	9	7	5	11	30	32	37	31	30	31	29	26	41
	14	P	11	13	16	17	17	15	15	14	13	12	11	10	9	9	10	19	33	36	40	38	40	40	34	32	47
Z	1	F	15	17	20	21	21	20	20	19	18	18	17	17	16	15	14	15	23	31	44	49	53	46	35	28	55
	2	F	16	18	20	21	22	21	20	19	18	18	17	17	16	16	17	17	21	32	46	56	55	46	42	35	59
	3	F	17	18	21	21	21	21	20	20	18	17	17	16	16	16	16	18	27	32	45	55	52	49	39	32	58
	4	F	17	19	21	22	22	22	21	20	20	18	17	17	16	16	16	16	25	31	45	53	54	48	40	34	58
	5	P	0	6	9	12	14	18	20	21	22	22	22	21	20	20	18	18	26	30	47	52	51	45	40	31	56
	6	P	19	21	23	24	25	22	23	22	21	20	20	19	18	16	15	13	18	26	32	37	40	33	32	26	44
	7	P	19	21	23	24	24	23	23	22	21	20	19	18	17	16	16	15	24	31	44	50	52	45	41	32	55
	8	P	18	20	22	23	23	22	21	20	20	18	18	16	15	14	13	12	19	28	37	41	41	34	33	24	46
	9	F	16	17	20	20	20	20	19	18	17	16	15	15	14	13	13	12	18	27	35	39	44	36	37	30	47
	10	F	15	16	19	19	19	20	19	17	17	16	15	14	13	13	12	13	24	28	39	44	45	35	34	29	49
	11	F	15	16	19	19	20	19	18	17	17	16	15	13	13	12	11	13	19	27	38	45	47	36	33	29	50
	12	F	15	17	19	20	20	19	19	18	17	16	15	14	13	13	13	15	24	35	48	56	55	46	40	35	59
	13	F	14	16	19	19	19	19	17	17	16	15	14	13	12	11	11	10	18	26	36	44	44	36	34	31	48
	14	P	14	16	18	19	19	19	17	17	16	14	14	13	11	11	10	11	23	32	45	51	53	45	39	34	56

Note: P: passenger train, F: freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-5 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Panvel №2

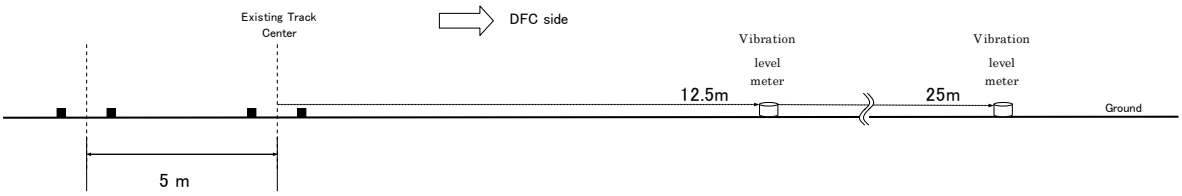
Direction	No.	train type	Vibration Level [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	F	11	12	13	13	18	17	16	11	12	12	11	10	8	7	6	5	15	24	26	24	21	26	24	24	35
	2	P	12	14	17	17	18	18	17	17	14	13	14	12	11	10	9	8	11	20	22	20	18	21	22	24	33
	3	F	12	13	16	17	15	17	16	16	14	13	12	11	10	9	9	8	18	22	22	24	20	19	15	23	32
	4	F	13	14	14	15	18	18	15	15	16	13	12	11	11	10	8	7	10	26	30	31	27	31	25	27	39
	5	F	14	15	18	19	18	19	19	17	16	15	14	12	12	11	10	9	14	29	29	28	27	29	23	26	39
	6	F	15	17	19	19	19	19	19	18	17	16	14	13	13	12	11	9	11	21	30	32	29	29	18	21	37
	7	P	16	17	19	20	19	21	20	18	18	16	16	14	13	12	11	10	11	23	24	24	26	25	20	26	37
	8	P	16	18	21	22	22	19	19	19	20	18	15	14	14	13	12	11	10	20	22	26	27	23	19	25	36
	9	P	16	19	21	22	21	19	21	20	18	16	16	15	14	13	12	11	11	22	22	26	24	23	21	23	35
	10	P	16	18	20	22	22	22	21	19	18	17	17	16	15	14	13	11	11	17	18	27	26	24	20	28	37
	11	P	15	17	19	21	21	19	18	20	19	17	16	15	14	13	12	11	10	18	22	28	28	23	21	24	37
	12	F	14	16	18	20	22	20	18	17	14	14	14	13	12	11	10	8	10	22	23	28	24	22	18	18	34
	13	F	13	15	17	18	19	18	15	15	15	14	13	11	11	10	9	8	9	18	23	28	26	26	23	27	36
	14	P	13	15	17	18	19	17	17	16	16	14	14	12	11	10	9	8	8	13	21	24	22	26	18	22	34
	15	F	14	17	19	18	14	17	18	12	13	12	12	11	10	9	8	7	11	22	23	29	25	22	18	22	34
	16	F	12	15	18	19	19	16	14	15	13	12	12	10	9	9	8	8	11	23	25	33	26	26	16	14	36
	17	P	13	15	18	18	17	18	16	15	14	13	12	12	10	10	8	8	10	13	22	25	24	18	17	23	33
	18	F	12	14	16	18	17	18	16	16	15	14	13	11	11	10	9	8	12	23	22	29	26	21	19	24	34
	19	F	12	14	17	18	18	16	17	15	14	13	12	12	11	11	10	9	14	28	27	32	28	30	22	21	38
	20	F	12	14	17	19	18	18	16	16	15	14	12	12	11	10	9	7	12	23	24	28	25	20	18	23	34
	21	P	13	15	17	16	18	17	16	15	14	14	12	12	10	9	8	8	10	20	21	25	23	24	18	21	33
Y	1	F	9	11	15	15	15	13	12	10	10	10	9	8	8	8	7	7	18	27	31	29	21	27	22	20	36
	2	P	12	13	16	17	18	17	17	17	14	13	13	12	11	9	8	8	12	22	27	25	20	22	20	21	34
	3	F	12	14	16	17	17	17	15	14	14	13	13	12	10	10	9	9	21	26	27	28	20	16	13	17	34
	4	F	12	14	18	19	18	18	17	16	15	13	14	13	12	12	13	14	19	33	40	36	29	34	24	25	44
	5	F	14	15	17	18	18	17	17	16	15	14	14	13	12	11	11	11	19	33	41	33	29	31	22	28	44
	6	F	14	16	18	18	20	19	19	17	16	15	14	13	12	11	10	9	15	28	38	38	30	31	19	20	42
	7	P	15	16	18	20	21	19	20	18	18	16	15	14	13	13	12	10	15	27	35	27	25	24	21	24	40
	8	P	16	17	19	21	22	21	20	16	15	16	14	13	13	12	11	9	13	25	30	31	24	20	21	26	38
	9	P	16	17	21	22	23	24	21	19	19	17	16	15	14	14	13	12	14	27	33	30	24	26	21	23	39
	10	P	18	19	20	19	18	21	20	20	19	18	17	16	15	14	13	13	18	28	26	31	23	21	22	32	39
	11	P	16	18	21	22	21	22	20	16	16	15	14	14	13	12	11	11	17	22	31	33	26	21	18	24	38
	12	F	15	17	20	18	18	18	19	18	16	15	14	13	12	11	10	9	19	29	32	33	24	19	20	17	38
	13	F	13	14	17	17	18	17	17	16	15	13	12	11	11	10	9	9	18	26	30	33	26	25	23	29	38
	14	P	13	14	16	17	17	17	17	15	14	13	12	12	11	10	9	10	17	25	33	28	23	25	18	21	37
	15	F	11	11	14	16	16	18	16	18	15	14	14	12	11	10	9	9	21	31	31	34	26	20	20	22	38
	16	F	12	14	16	17	17	18	16	14	14	13	12	11	10	10	10	10	18	31	35	40	31	30	18	13	42
	17	P	12	13	16	18	18	17	16	14	13	13	12	11	10	9	9	10	17	23	32	31	23	18	16	24	36
	18	F	12	14	16	17	18	17	16	16	15	13	12	11	10	10	8	7	18	31	30	35	29	20	18	22	39
	19	F	13	14	15	16	19	17	17	15	14	13	12	12	10	9	8	11	19	32	40	38	28	29	22	22	43
	20	F	12	14	17	17	15	17	14	16	14	13	12	10	9	8	6	6	21	31	31	34	26	20	18	23	38
	21	P	11	13	15	14	17	17	17	16	14	14	11	11	9	8	6	6	12	29	33	31	25	25	18	20	38
Z	1	F	10	12	14	15	15	15	14	12	10	11	10	12	7	7	6	6	8	14	24	29	31	32	30	31	40
	2	P	11	13	15	16	17	16	15	15	14	11	13	11	11	9	8	8	8	14	23	26	29	27	28	30	39
	3	F	12	13	15	16	17	16	15	14	13	12	10	10	10	9	8	8	11	17	23	28	32	31	26	30	38
	4	F	12	13	16	17	18	16	16	15	15	14	14	14	13	15	16	17	24	39	46	40	38	44	37	32	50
	5	F	13	14	17	17	18	17	16	15	15	13	12	11	9	9	7	10	23	38	46	38	36	41	37	32	49
	6	F	14	16	18	18	19	18	18	16	16	14	14	14	12	12	11	11	20	32	43	44	39	40	33	26	48
	7	P	15	17	19	20	20	19	19	17	16	15	14	13	12	12	11	12	19	33	40	35	33	36	34	34	45
	8	P	15	17	20	20	20	20	18	17	18	17	15	13	14	13	12	11	17	30	36	37	39	38	34	30	45
	9	P	16	18	20	20	20	20	19	18	17	16	15	14	14	13	11	11	16	32	38	37	33	39	34	30	45
	10	P	16	18	21	21	22	21	20	19	18	16	15	15	14	14	13	12	20	32	31	38	38	39	37	35	46
	11	P	15	17	19	19	20	19	19	18	18	16	15	14	13	12	12	11	20	28	36	39	38	35	35	30	45
	12	F	14	15	18	20	20	19	18	17	16	15	14	12	13	12	12	12	23	32	37	39	34	37	32	24	44
	13	F	12	14	17	17	17	17	16	15	15	13	12	12	11	10	10	9	21	30	35	38	38	43	41	35	48
	14	P	13	14	16	17	18	17	17	16	14	12	13	15	12	13	17	14	22	29	37	34	33	37	35	31	44
	15	F	12	14	16	17	17	17	15	15	15	14	13	11	12	14	15	16	25	35	35	41	39	37	34	31	45
	16	F	12	14	16	17	17	17	15	15	14	12	12	15	12	12	22	24	26	34	39	45	40	39	33	23	48
	17	P	12	14	16	16	17	16	15	15	13	14	13	16	16	20	22	22	26	29	37	36	36	34	32	30	43
	18	F	12	14	16	17	17	15	16	15	15	13	12	11	13	16	21	20	26	35	34	41	40	36	35	32	46
	19	F	12	14	17	17	17	17	16	14	14	13	13	14	16	19	23	23	27	37	45	43	37	39	39	31	49
	20	F	12	14	16	17	17	17	16	16	14	14	13	13	15	15	19	20	27	35	36	41	39	35	34	30	46
	21	P	13	14	16	16	17	17	16	16	14	14	12	13	15	15	15	19	21	33	37	36	33	36	34	29	44

Note: P: passenger train, F: freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

(2) Palgar

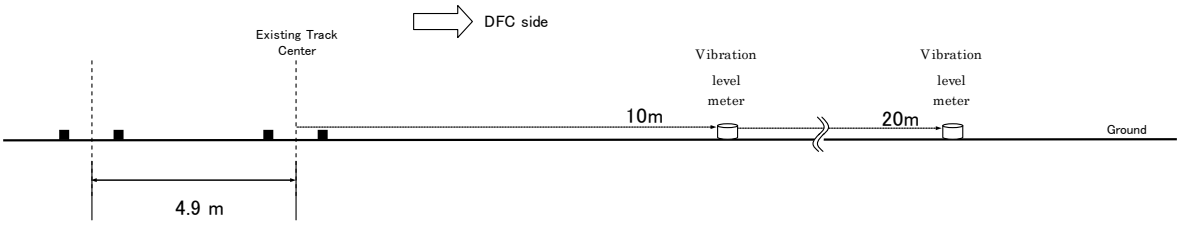
1) Cross-section View

Cross-section view of measurement site in Palgar are given in Figure 1.2-3 and Figure 1.2-4.



Source: JICA Survey Team

Figure 1.2-3 Cross-section View of Measurement Site in Palgar №1



Source: JICA Survey Team

Figure 1.2-4 Cross-section View of Measurement Site in Palgar №2

2) Result of Background Vibration

Results of background vibration measurement in Palgar is given in Table 1.2-6.

Table 1.2-6 Result of Background Vibration Measurement in Palgar

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Palgar	7-Oct	1	37.0	<30	25.5	35.9	<30	32.2	36.9	<30	28.4	37.1	<30	29.4	37.1	<30	32.2
	7-Oct	2	<30	<30	26.2	30.8	33.2	29.0	30.4	30.6	29.4	<30	<30	29.1	30.8	33.2	29.4

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Vibration

Results of railway vibration measurement in Palgar are given in Table 1.2-7 and Table 1.2-8.

Table 1.2-7 Result of Railway Vibration Measurement in Palgar №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	7-Oct	10:18	P	68.7	24.8	40.5	489	up	41.6	48.4	47.0	42.8	54.2	43.8
2	7-Oct	10:24	P	35.5	38.7	52.6	422	down	34.9	41.2	39.7	36.0	43.7	37.7
3	7-Oct	10:31	P	98.9	18.0	25.3	489	up	46.3	51.0	47.2	44.4	56.8	47.4
4	7-Oct	10:46	P	96.9	20.9	33.2	556	up	43.9	50.2	46.9	44.1	57.2	46.0
5	7-Oct	11:06	P	103.6	14.8	25.2	444	up	45.8	50.7	47.1	44.0	55.7	45.8
6	7-Oct	11:14	F	80.7	28.2	45.1	641	up	43.5	49.6	50.5	43.2	56.4	45.2
7	7-Oct	11;26	P	45.4	27.9	52.7	377	down	35.6	45.1	41.9	37.4	45.4	39.2
8	7-Oct	11:31	F	58.2	36.9	51.4	641	down	40.3	47.3	47.7	42.2	51.4	43.3
9	7-Oct	11:39	P	29.7	33.6	44.3	288	up	35.0	41.3	35.7	33.4	42.8	37.5
10	7-Oct	11:42	P	79.3	22.7	37.9	511	up	44.4	48.7	46.5	44.2	54.5	44.4
11	7-Oct	12:32	P	40.5	35.5	46.9	422	down	34.7	41.8	41.5	35.6	44.0	37.3
12	7-Oct	12:39	P	52.2	34.7	44.0	422	up	38.7	44.5	43.1	37.7	48.5	40.5
13	7-Oct	12:43	F	91.7	26.6	42.8	641	down	49.8	50.6	51.0	44.9	54.4	47.3
14	7-Oct	12:49	P	82.2	24.7	42.5	489	up	41.9	47.0	47.7	40.0	53.5	43.0
15	7-Oct	12:51	P	68.5	14.8	25.8	288	down	37.5	44.9	44.8	40.7	49.4	42.9
16	7-Oct	12:56	P	66.9	35.9	44.3	556	up	41.8	46.7	47.7	40.6	53.1	42.3
17	7-Oct	13:09	F	73.4	32.3	49.2	641	up	44.0	50.1	47.2	44.4	56.5	46.1
18	7-Oct	13:15	P	98.2	18.7	33.3	422	up	45.4	49.6	47.9	43.4	55.9	46.2
19	7-Oct	13:22	P	112.5	17.2	34.9	556	down	44.2	50.3	48.5	44.5	53.8	47.2
20	7-Oct	13:43	F	85.4	32.2	44.1	650	down	45.2	51.7	50.7	48.0	55.4	49.2
21	7-Oct	14:06	P	51.6	16.7	28.3	308	down	38.3	44.1	44.6	38.4	48.5	41.6
22	7-Oct	14:16	F	113.1	25.1	45.6	655	up	46.1	51.6	48.8	44.1	57.8	47.6
23	7-Oct	14:27	P	66.0	23.1	30.9	422	up	42.4	47.3	46.6	41.2	53.3	43.1
24	7-Oct	14:37	F	83.3	28.2	52.3	675	up	44.9	51.6	50.1	44.9	57.7	47.1
25	7-Oct	14:49	P	52.0	29.4	72.4	288	up	34.4	41.3	37.9	34.7	44.4	36.5
26	7-Oct	14:51	P	41.6	26.4	39.8	288	down	35.6	42.6	41.6	36.2	45.1	38.5
27	7-Oct	14:55	F	60.3	37.4	53.9	641	up	43.8	49.7	48.7	42.1	54.2	44.9
28	7-Oct	15:02	P	99.3	20.6	33.1	556	down	41.3	48.3	48.5	44.4	52.9	45.4
29	7-Oct	15:18	P	119.4	14.4	25.9	288	down	44.5	49.7	49.4	44.4	54.8	47.9
30	7-Oct	15:32	F	86.9	27.5	37.8	641	down	45.0	51.3	52.9	45.4	55.2	47.1
31	7-Oct	16:13	P	103.3	19.3	33.6	489	down	42.5	49.1	48.4	44.6	53.0	46.3
32	7-Oct	16:18	F	47.0	38.4	50.4	650	up	42.1	48.4	46.0	40.4	53.2	43.1
33	7-Oct	16:19	P	102.3	16.9	33.4	489	down	40.9	49.3	48.4	44.9	52.5	45.9
34	7-Oct	16:38	P	31.4	55.3	77.7	556	down	32.8	39.6	39.2	34.8	41.2	35.2
35	7-Oct	16:55	F	52.3	43.4	57.4	641	up	43.3	47.9	46.3	41.4	52.9	44.8
36	7-Oct	17:09	P	140.8	18.9	34.2	531	up	46.2	51.5	49.1	45.4	58.6	48.9
average		Passenger (P)		79.6	24.6	39.1	454	up	42.1	47.6	45.4	41.2	52.9	43.5
				71.0	25.3	40.4	420	down	38.6	45.5	44.7	40.2	48.7	42.1
		Freight (F)		72.9	33.3	50.6	649	up	44.0	49.8	48.2	42.9	55.5	45.5
				80.6	30.8	44.0	643	down	45.1	50.2	50.6	45.1	54.1	46.7

Note): P: passenger train F: freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average: value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-8 Result of Railway Vibration Measurement in Palgar №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									10.0m	20.0m	10.0m	20.0m	10.0m	20.0m
1	7-Oct	10:12	P	101.8	10.6	14.7	288	up	54.8	67.8	58.3	67.8	61.7	67.8
2	7-Oct	10:17	P	69.3	24.6	31.0	489	up	57.3	39.2	60.4	39.9	64.6	46.4
3	7-Oct	10:29	P	97.4	18.3	23.1	489	up	59.3	40.8	61.2	43.5	65.7	48.0
4	7-Oct	10:44	P	98.1	20.6	26.4	556	up	57.9	40.0	60.2	41.4	64.2	46.6
5	7-Oct	11:04	P	101.3	15.1	20.9	444	up	59.9	42.8	64.2	44.7	65.3	49.2
6	7-Oct	11:12	F	80.0	28.4	35.1	641	up	58.9	43.1	61.1	43.4	66.5	50.0
7	7-Oct	11:26	P	63.0	20.1	26.2	377	down	56.9	40.4	58.1	40.7	60.6	46.8
8	7-Oct	11:36	P	66.5	15.0	20.3	288	up	53.8	37.5	56.8	38.2	59.9	44.1
9	7-Oct	11:40	P	75.8	23.7	28.8	511	up	58.4	38.9	59.1	39.7	62.8	46.1
10	7-Oct	12:31	P	55.9	25.8	31.7	422	down	55.4	37.9	58.4	40.0	58.9	45.4
11	7-Oct	12:37	P	64.1	28.2	32.1	422	up	55.5	36.4	58.9	38.4	61.8	44.6
12	7-Oct	12:42	F	90.6	26.9	33.9	641	down	58.0	42.6	63.0	44.0	64.0	50.2
13	7-Oct	12:47	P	75.4	26.9	32.5	489	up	54.7	36.4	59.1	38.1	61.8	45.5
14	7-Oct	12:50	P	79.6	12.8	18.7	288	down	53.3	39.2	57.0	38.8	58.5	45.6
15	7-Oct	12:55	P	85.8	28.0	33.6	556	up	57.6	37.1	58.8	39.3	62.1	46.3
16	7-Oct	13:07	F	71.7	33.1	39.6	641	up	58.6	40.8	61.7	41.3	65.0	47.5
17	7-Oct	13:14	P	101.3	18.2	23.9	422	up	58.7	41.3	63.9	44.4	65.9	48.6
18	7-Oct	13:44	F	85.3	32.3	44.8	650	down	58.7	42.2	61.9	43.5	62.9	50.1
19	7-Oct	14:17	F	115.7	24.5	42.0	655	up	60.5	42.9	64.5	46.5	66.5	49.6
20	7-Oct	14:26	P	83.0	18.4	30.7	422	up	61.3	41.6	64.0	45.8	64.8	48.6
21	7-Oct	14:37	F	83.5	28.1	49.5	650	up	59.1	41.9	62.1	42.5	65.2	48.1
22	7-Oct	14:47	P	81.5	18.8	25.6	288	up	52.8	35.7	56.4	37.5	59.5	43.2
23	7-Oct	14:50	P	57.1	19.2	29.1	288	down	56.1	38.5	57.8	40.0	59.0	46.3
24	7-Oct	14:53	F	58.9	38.3	51.1	641	up	57.2	38.4	60.6	41.5	66.5	45.7
25	7-Oct	15:00	P	100.5	20.3	31.4	556	down	58.4	42.2	60.9	42.4	62.1	49.1
26	7-Oct	15:32	F	88.8	26.9	47.2	641	down	58.5	43.9	61.4	42.7	62.6	48.8
27	7-Oct	15:36	P	110.7	15.6	32.2	355	up	57.3	38.9	62.2	42.8	63.1	46.2
28	7-Oct	16:12	P	104.7	19.0	43.7	489	down	57.5	42.6	61.2	42.3	61.7	48.7
29	7-Oct	16:16	F	46.9	38.5	62.2	650	up	55.8	37.8	59.5	39.2	62.7	44.9
30	7-Oct	16:18	P	96.0	18.1	33.5	489	down	57.9	41.9	61.0	41.7	61.5	48.4
31	7-Oct	16:37	P	44.0	39.6	60.0	556	down	56.4	38.1	58.7	38.3	57.7	44.1
32	7-Oct	16:40	P	88.8	19.0	38.9	466	up	59.1	42.3	64.3	45.5	63.6	46.4
33	7-Oct	16:53	F	55.4	41.0	59.5	641	up	55.7	39.2	62.0	40.8	64.2	47.4
34	7-Oct	17:08	P	96.0	27.8	41.3	531	up	60.0	41.8	63.1	43.8	66.5	49.9
average		Passenger(P)		87.3	20.5	28.5	438	up	57.4	41.1	60.7	43.2	63.3	48.0
				75.1	21.9	34.3	433	down	56.5	40.1	59.1	40.5	60.0	46.8
		Freight(F)		73.2	33.1	48.4	646	up	58.0	40.6	61.6	42.2	65.2	47.6
				88.2	28.7	42.0	644	down	58.4	42.9	62.1	43.4	63.2	49.7

Note: P: passenger train F: freight train
up: to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average: value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table1.2-9, Table1.2-10. In Palgar No.1, in consideration of all results roughly, frequency of the range from 25 to 80Hz at X-axis excelled, range from 20 to 31.5Hz at Y-axis excelled, range from 25 to 50Hz at Z-axis excelled. In Palgar No.2, in consideration of all results roughly, frequency of the range from 20 to 63Hz at X-axis excelled, range from 20 to 31.5Hz at Y-axis excelled, range from 40 to 63Hz at Z-axis excelled. In Japan ,in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed.

Table 1.2-9 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Palgar №1

Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	F	15	17	19	20	20	20	20	18	17	18	15	14	13	12	12	17	20	19	21	20	25	26	27	29	36
	2	F	16	17	19	21	22	20	19	19	18	18	16	16	15	13	10	13	19	19	20	17	25	21	18	15	33
	3	F	16	18	20	21	21	19	20	19	17	18	16	16	13	14	15	18	26	23	23	24	30	29	27	32	36
	4	F	17	19	21	22	22	22	21	20	19	18	18	16	15	15	15	20	25	23	24	25	30	26	27	32	36
	5	F	18	20	22	22	23	24	22	22	20	19	18	18	16	16	15	19	23	27	24	25	29	30	26	32	39
	6	F	18	20	22	23	23	23	22	21	20	19	18	17	16	16	15	22	25	25	27	28	32	34	33	32	41
	7	F	19	21	23	23	23	24	22	21	20	19	18	17	16	15	15	15	19	21	24	21	28	23	21	18	35
	8	F	19	21	23	23	24	24	22	22	21	20	19	18	17	16	15	17	23	23	26	25	27	29	29	22	37
	9	F	19	21	23	24	24	24	23	22	21	20	19	18	17	16	15	16	21	18	20	19	23	25	21	22	35
	10	F	19	21	23	24	25	24	23	22	21	20	19	18	17	16	15	17	25	21	24	23	29	29	29	30	36
	11	F	19	21	23	25	24	22	24	22	20	20	19	18	17	16	15	16	20	22	26	19	25	22	19	17	35
	12	F	19	21	23	24	23	23	23	23	23	21	20	19	18	17	17	17	21	17	19	21	24	23	22	25	36
	13	F	20	22	24	24	24	24	23	22	21	20	19	18	17	16	16	21	29	35	36	26	34	27	25	23	41
	14	F	20	21	23	24	26	24	22	22	22	20	19	18	17	16	15	19	18	20	20	19	26	29	27	23	37
	15	F	19	21	24	25	24	23	24	22	21	19	19	18	17	17	16	19	19	22	26	24	28	25	22	20	37
	16	F	20	22	24	25	24	24	23	22	21	20	19	18	17	16	15	15	21	19	22	23	28	27	26	27	37
	17	F	19	21	24	24	23	24	23	21	21	20	19	18	17	17	16	19	23	23	24	26	31	33	33	26	40
	18	F	20	22	24	24	22	22	22	22	20	20	18	17	16	15	15	18	25	26	21	24	28	30	29	33	39
	19	F	19	21	23	25	25	24	25	22	21	20	19	18	18	17	17	20	26	31	29	27	34	32	26	30	41
	20	F	19	21	23	23	25	24	21	21	21	20	19	18	17	16	15	17	23	27	23	26	26	30	23	26	36
	21	F	19	21	23	24	24	23	21	23	21	20	19	18	17	16	16	17	22	22	27	20	28	24	22	16	36
	22	F	19	21	24	23	25	24	24	22	21	20	19	18	17	16	17	23	26	27	31	29	35	35	31	33	42
	23	F	19	20	22	23	25	26	24	23	22	20	20	19	18	17	16	16	20	19	21	20	24	29	26	26	37
	24	F	19	21	23	24	22	24	23	22	21	20	19	18	17	16	15	23	26	25	25	26	31	33	34	32	41
	25	F	19	21	23	24	23	23	23	21	22	20	19	18	17	17	17	18	20	18	18	21	23	24	23	25	35
	26	F	20	21	23	24	24	24	23	22	21	20	19	18	17	16	16	17	20	21	25	20	23	21	21	16	35
	27	F	20	22	25	25	25	24	23	22	21	19	19	18	17	17	15	18	22	20	27	24	28	31	26	27	38
	28	F	19	21	24	24	25	23	21	22	22	20	19	18	17	16	16	17	22	25	24	22	31	32	26	29	39
	29	F	19	22	26	26	27	25	24	23	22	20	19	18	17	16	15	20	25	33	29	28	34	33	29	29	41
	30	F	20	22	24	24	24	23	23	22	20	19	19	17	17	16	15	20	27	33	35	25	33	30	26	26	41
	31	F	19	21	23	24	24	24	23	22	21	20	19	18	17	16	15	18	25	30	25	26	32	32	30	30	40
	32	F	19	20	23	24	24	23	21	21	20	19	18	17	16	15	14	19	21	21	22	21	23	24	23	28	36
	33	F	19	21	23	23	23	22	23	22	21	20	19	18	16	15	14	16	24	25	23	22	30	32	26	30	38
	34	F	19	21	23	24	25	24	22	22	20	19	18	17	16	16	15	15	20	20	21	17	23	19	17	15	34
	35	F	18	20	22	23	23	23	22	21	20	19	18	17	16	15	15	18	22	25	27	29	30	29	26	25	38
	36	F	19	20	22	23	23	23	23	21	20	19	18	17	16	15	15	20	27	23	24	25	29	29	26	32	39
Y	1	F	10	12	14	15	15	14	14	13	12	10	9	9	10	11	16	21	24	26	33	26	26	26	26	27	36
	2	F	11	12	13	15	17	15	13	16	13	13	11	11	7	8	13	17	22	23	28	25	21	20	15	13	33
	3	F	12	13	15	16	17	16	15	14	12	12	11	11	9	13	19	27	29	32	30	32	30	30	26	33	40
	4	F	12	14	17	17	18	18	17	15	14	14	13	12	11	13	16	26	29	32	33	33	30	30	26	33	41
	5	F	14	15	17	18	18	20	17	16	16	16	14	14	13	12	19	29	28	36	31	30	28	27	28	33	41
	6	F	14	16	18	19	19	19	18	17	17	19	17	14	12	13	16	26	29	36	43	38	31	29	31	30	45
	7	F	15	17	19	19	20	19	18	16	15	15	13	12	11	13	23	21	18	26	36	27	25	22	18	15	36
	8	F	15	16	19	20	20	19	18	16	17	15	15	13	12	12	11	14	21	29	39	32	26	26	23	21	41
	9	F	15	17	19	20	20	19	19	19	17	16	15	14	13	12	13	23	24	23	27	25	22	21	20	21	35
	10	F	15	17	19	20	21	20	19	17	16	15	14	13	11	11	16	24	29	26	34	32	26	26	30	26	40
	11	F	15	17	20	21	20	19	19	16	17	16	15	14	13	12	11	16	16	31	31	30	26	20	17	17	37
	12	F	15	17	20	21	21	20	19	19	17	17	16	14	13	12	12	21	24	25	27	26	23	20	23	24	35
	13	F	15	17	20	21	20	20	20	16	17	17	17	14	14	14	20	29	29	38	41	36	31	27	22	18	44
	14	F	15	17	19	20	20	20	19	16	16	16	16	14	13	13	13	22	22	29	36	30	27	23	26	26	39
	15	F	16	17	19	20	20	22	16	16	16	16	15	14	13	13	11	22	22	29	37	30	26	27	21	15	40
	16	F	15	17	20	20	19	16	19	17	16	15	15	14	13	12	14	17	21	30	32	28	25	26	22	26	36
	17	F	15	17	20	21	21	20	19	16	16	17	15	15	14	14	14	24	26	34	39	36	30	30	31	27	43
	18	F	16	16	20	20	19	20	19	19	17	17	16	15	15	16	20	29	27	37	31	32	29	29	27	33	42
	19	F	15	17	19	19	21	20	20	17	16	17	16	14	15	15	21	32	26	37	38	40	32	30	25	26	44
	20	F	15	17	19	21	21	21	19	17	16	16	15	13	12	12	12	20	24	38	34	38	32	28	28	26	43
	21	F	15	17	18	19	19	18	17	17	16	15	14	13	13	13	20	23	23	29	35	29	25	23	16	14	36
	22	F	15	17	20	21	21	19	19	20	17	15	17	15	15	14	19	27	26	32	39	37	35	32	29	31	44
	23	F	15	17	18	18	20	19	19	18	18	16	16	15	14	13	12	20	22	26	34	28	25	24	24	25	36
	24	F	15	16	18	20	20	19	21	19	18	17	14	16	15	14	20	22	28	32	41	36	32	30	31	30	44
	25	F	16	18	21	22	22	19	19	17	17	16	16	15	14	15	25	26	28	25	26	24	23	22	23	22	36
	26	F	15	17	19	20	21	20	19	19	18	17	16	15	13	12	12	19	19	30	33	29	26	21	16	17	37
	27	F	16	18	20	20	22	21	20	19	17	15	16	17	16	15	19	20	23	32	38	34	30	29	27	26	42
	28	F	15	17	19	20	20	20	20	19	19	16	16	15	14	14	23	20	22	29	37	38	34	32	24	23	43
	29	F	15	17	20	22	23	22	21	19	18	16	15	15	12	13	19	31	26	37	38	39	32	29	25	25	44
	30	F	16	17	20	21	21	20	20	16	16	17	15	14	13	13	16	23	25	39	42	38	34	27	24	21	45
	31	F	15	17	19	20	20	19	18	16	17	16	15	14	13	14	25	26	25	33	36	37	34	30	24	24	42
	32	F	15	17	19	19	19	21	19	17	17	15	15	14	13	13	17	26	26	29	31	25	24	22	24	26	37
	33	F	15	17	19	19	20	19	18	16	17	15	14	13	12	10	22	21	24	29	36	37	33	31	23	23	42
	34	F	15	17	19	20	20	19	18	16	17	15	14	14	13	12	12	19	20	23	28	26	21	18	14	12	34
	35	F	15	17	19	19	21	19	19	17	16	15	15	12	13	12	13	22	24	32	35	32	27	25	24	23	39
	36	F	14	16	18	19	20	19	18	16	17	16	15	14	14	15	21	26	28	31	32	32	29	27	26	32	40
Z	1	F	13	15	17	18	18	18	17	16	15	15	13	12	11	11	11	13	22	33	36	36	34	36	34	37	44
	2	F	14	16	18	18	19	18	17	16	17	15	13	12	11	12	17	17	21	29	32	29	33	32	27	25	39
	3	F	15	16	19	19	19	19	18	17	16	15	13	12	13	12	12	22	31	36	38	43	37	42	38	41	48
	4	F	15	17	20	20	20	20	20	18	18	16	15	15	14	13	14	17	32	35	40	43	39	42	37	42	49
	5	F	16	18	20	21	21	21	20	19	18	18	17	16	16	15	17	17	28	39	38	42	38	40	35	38	48
	6	F	17	19	21	22	22	22	21	20	19	19	18	18	15	15	15	22	29	39	43	43	42	40	38	41	50
	7	F	17	19	21	22	22	21	21	20	19	18	17	16	15	14	17	14	23	32	35	30	34	33	30	29	41
	8	F	17	19	21	22	22	22	21	20	20	18	17	17	15	16	14	16	28	33	39	36	35	37	33	33	44
	9	F	18	19	22	22	22	22	21	20	19	18	17	16	16	15	14	14	21	27	33	33	31	34	28	29	41
	10	F	18	19	22	22	22	22	21	20	19	18	17	17	16	16	16	17	25	31	40	39	36	39	37	38	47
	11	F	18	20	22	23	23	22	21	21	19	18	17	17	16	15	13	14	20	30	31	30	34	31	27	27	40
	12	F	18	20	22	23	23	22	21	20	20	19	18	17	16	15	14	16	22	29	29	32	33	32	29	32	41
	13	F	18	20	22	23	23	22	22	21	20	19	18	17	16	16	19	21	30	44	48	40	43	36	30	33	50
	14	F	18	20	22	23	23	23	21	20	20	18	18	16	15	15	13	14	21	33	37	35	35	34	35	37	44
	15	F	18	20	22	23	23	23	22	21	20	19	18	17	16	15	15	16	27	36	38	34	36	35	31	30	44
	16	F	18	20	22	22	23	22	22	20	19	18	17	16	16	15	14	14	24	30	35	37	36	39	32	35	45
	17	F	18	20	22	23	23	22	22	20	20	19	17	16	16	16	17	19	26	36	40	41	39	43	39	38	49
	18	F	18	20	22	23	23	22	21	20	19	19	17	17	16	15	17	18	28	39	37	43	37	40	38	39	48
	19	F	18	19	22	23	23	22	22	20	20	18	17	16	15	15	15	19	30	44	38	41	44	42	38	40	50
	20	F	18	19	22	22	22	22	21	20	19	19	17	16	16	15	16	16	28	37	35	38	42	42	38	39	48
	21	F	18	19	22	22	22	22	21	20	19	18	17	16	15	15	15	15	22	30	34	32	35	34	28	28	41
	22	F	18	20	22	23	23	22	21	20	20	19	19	16	16	16	17	24	31	40	45	44	42	44	38	39	51
	23	F	18	20	22	23	23	23	22	20	20	18	18	17	16	15	14	14	21	32	34	35	31	38	33	35	44
	24	F	18	20	22	23	23	22	22	21	20	19	18	18	17	16	16	23	30	38	42	42	42	41	39	41	50
	25	F	18	20	22	23	23	22	22	20	20	18	17	17	16	15	15	16	26	29	27	33	33	34	30	31	41
	26	F	18	20	22	23	23	22	21	21	20	19	17	17	16	14	13	14	22	31	31	30	36	31	26	26	40
	27	F	18	20	22	23	23	23	22	21	19	19	18	17	16	16	16	18	28	31	38	39	39	41	36	34	47
	28	F	18	20	22	23	23	22	21	20	20	19	18	17	16	15	15	16	28	34	38	40	42	40	35	39	48
	29	F	18	20	22	23	24	23	22	21	20	19	18	18	17	18	18	19	30	44	40	42	44	42	37	38	50
	30	F	18	20	22	23	23	22	22	20	19	19	17	17	14	14	17	19	31	43	42	39	43	39	36	36	49
	31	F	18	19	22	22	22	22	21	20	19	19	18	16	14	16	16	18	31	40	37	39	42	42	34	39	48
	32	F	17	19	21	22	22	22	21	20	19	18	17	17	16	17	16	19	26	33	31	33	34	32	31	34	42
	33	F	17	19	21	22	22	22	21	20	19	18	17	16	15	15	16	19	29	35	37	39	43	40	33	37	47
	34	F	17	19	21	22	22	22	21	20	19	18	17	16	15	14	13	13	19	30	31	29	32	26	25	24	39
	35	F	17	19	21	22	22	22	21	20	19	18	17	16	15	15	14	15	27	36	40	43	39	36	31	31	47
	36	F	17	19	21	22	22	21	21	20	19	18	17	16	15	14	15	19	32	35	40	42	36	39	35	40	48

Note: P: passenger train, F: freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-10 Results of 1/3 Octave Band Frequency Analysis of Railway vibration in Palgar №2

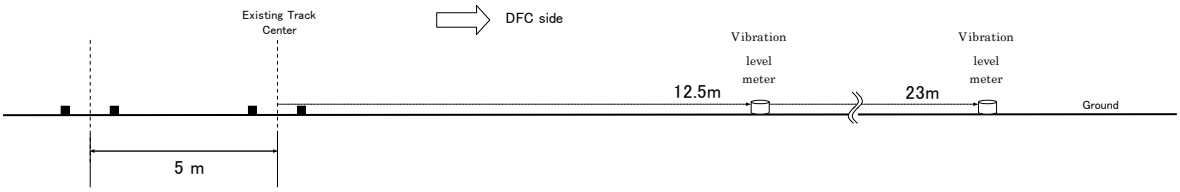
Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.2	1.6	2	2.5	3.2	4	5	6.3	8	10	12	16	20	25	32	40	50	63	80	AP
X	1	F	8	11	13	11	10	12	10	7	7	9	7	6	14	19	31	38	43	43	43	43	46	44	45	40	53
	2	F	8	9	13	16	14	16	13	13	13	10	9	11	11	14	28	35	39	39	40	41	39	40	44	41	50
	3	F	11	12	13	17	17	18	16	16	16	17	18	20	21	24	38	40	47	46	43	45	47	45	43	42	54
	4	F	12	14	15	16	19	19	15	16	15	14	13	13	12	16	34	36	44	44	43	43	46	43	43	41	53
	5	F	14	16	20	20	19	19	18	17	16	15	14	15	14	16	30	40	42	48	44	45	46	46	40	41	54
	6	F	13	14	17	19	20	16	16	15	15	17	18	19	14	16	33	42	44	47	49	47	47	46	47	41	56
	7	F	14	17	19	18	19	18	17	15	15	15	13	11	10	8	22	36	40	43	39	43	42	41	38	29	50
	8	F	15	16	18	18	19	20	19	18	16	15	15	14	14	16	28	34	41	42	40	40	38	41	44	37	50
	9	F	15	18	20	21	20	18	19	18	17	16	15	16	15	19	27	38	41	41	42	47	43	41	42	40	52
	10	F	16	17	19	19	19	21	21	18	18	18	17	17	16	17	22	36	39	39	37	38	40	39	37	31	48
	11	F	16	18	20	18	23	19	20	19	17	16	15	15	15	15	23	31	38	38	40	37	37	39	42	37	48
	12	F	16	18	19	19	22	19	19	19	19	16	16	16	13	15	32	44	41	48	47	46	48	42	36	30	55
	13	F	16	18	21	21	21	21	21	19	18	17	16	16	15	15	22	30	37	38	39	38	38	39	42	38	48
	14	F	16	17	20	23	21	23	21	19	18	17	16	14	13	12	31	37	43	43	41	45	42	42	39	29	51
	15	F	17	19	22	23	23	23	21	21	19	18	18	17	17	17	25	34	38	41	40	42	40	40	41	38	49
	16	F	16	18	20	22	23	22	21	20	19	19	17	18	18	19	27	32	38	45	48	46	44	45	44	41	54
	17	F	16	19	21	23	23	21	20	20	17	18	17	17	17	21	39	41	41	47	44	46	45	46	39	41	54
	18	F	17	19	20	20	19	21	20	19	18	17	16	15	14	15	31	38	39	47	40	49	46	43	42	35	54
	19	F	17	18	19	20	22	21	21	18	18	18	17	17	16	19	36	38	42	45	46	48	48	45	42	39	55
	20	F	16	19	21	21	23	23	20	20	19	18	17	17	17	18	24	34	38	38	37	47	39	40	40	38	51
	21	F	18	18	18	22	21	21	23	21	18	18	18	15	15	16	28	40	42	43	46	46	46	46	47	41	55
	22	F	17	19	22	23	23	23	21	21	20	18	18	17	16	17	26	33	41	40	40	39	36	40	41	33	49
	23	F	17	19	20	20	20	19	22	20	18	18	17	15	14	13	23	34	40	40	39	41	41	38	35	28	48
	24	F	17	19	20	21	21	20	22	22	19	18	17	16	16	16	23	32	38	44	45	45	48	46	45	40	54
	25	F	17	19	21	22	22	21	21	20	19	17	16	14	11	13	36	40	41	46	41	42	46	44	37	36	52
	26	F	18	19	21	21	22	21	21	20	20	19	18	18	19	21	34	44	40	46	46	46	47	46	41	32	54
	27	F	17	19	21	22	22	23	22	20	20	18	18	18	18	20	29	35	42	41	42	43	43	41	42	38	51
	28	F	18	19	22	23	24	22	20	20	20	19	19	18	18	21	39	41	40	46	43	43	46	44	38	35	53
	29	F	18	19	22	22	24	23	22	20	20	19	20	18	18	22	28	39	38	39	42	37	34	36	40	35	48
	30	F	17	19	22	22	21	21	21	20	19	17	16	14	12	13	35	38	38	46	40	41	44	43	38	34	51
	31	F	18	20	22	22	22	22	21	21	19	18	17	15	13	12	27	38	35	41	41	37	38	38	34	26	48
	32	F	17	19	22	23	23	22	21	20	19	18	19	16	18	20	27	37	44	41	41	45	44	43	42	39	52
	33	F	18	20	22	23	23	23	21	20	19	18	17	16	16	16	26	33	39	42	47	44	40	39	40	30	51
	34	F	18	19	22	22	21	21	21	20	20	19	18	17	17	21	34	38	45	45	42	43	46	41	41	37	52
Y	1	F	5	9	13	15	16	16	13	17	14	16	17	18	24	33	39	42	48	45	49	47	45	45	43	43	56
	2	F	6	7	11	15	17	11	13	14	12	9	9	13	16	20	35	38	40	42	47	44	41	40	45	46	53
	3	F	10	10	13	15	16	17	16	16	17	17	21	23	27	31	43	46	47	45	46	46	44	45	44	46	55
	4	F	11	14	17	17	15	16	17	13	14	14	12	13	18	27	38	39	44	44	45	44	45	45	42	45	54
	5	F	13	14	14	14	16	17	16	15	15	14	13	13	19	29	41	41	43	47	46	46	45	46	42	43	55
	6	F	12	14	16	17	19	18	18	19	18	20	27	27	24	20	39	44	47	46	49	52	47	46	44	44	57
	7	F	14	16	19	18	18	20	18	17	16	15	14	14	14	18	33	38	40	47	42	43	43	42	40	37	52
	8	F	14	16	19	17	18	20	19	17	17	16	16	16	16	22	37	42	40	43	48	42	39	39	43	43	53
	9	F	15	17	18	19	19	18	18	17	15	15	15	16	21	24	37	44	46	44	46	49	41	42	43	46	55
	10	F	17	20	21	21	20	15	14	18	16	14	13	12	12	16	33	41	39	40	42	42	42	42	39	35	50
	11	F	16	19	20	21	22	19	19	18	17	16	16	16	16	19	37	36	40	43	46	42	37	39	41	43	52
	12	F	16	18	20	21	21	21	19	19	17	16	16	22	17	23	44	49	45	54	54	50	51	44	37	36	60
	13	F	15	18	19	23	23	20	20	18	17	18	16	15	17	19	33	37	40	41	47	41	41	38	42	42	52
	14	F	16	18	21	23	20	21	22	19	18	17	15	14	13	24	40	42	47	46	49	47	43	42	41	36	55
	15	F	16	18	21	21	20	21	20	19	19	17	17	16	19	21	34	41	40	42	46	46	40	38	42	42	52
	16	F	16	18	21	22	22	22	22	19	18	16	17	20	19	23	35	36	40	46	44	51	45	43	45	43	55
	17	F	17	19	21	21	20	21	20	19	18	18	18	18	22	31	40	44	44	48	47	45	45	45	41	42	55
	18	F	17	19	22	23	22	21	18	17	16	17	15	16	16	24	42	44	43	45	44	52	48	44	43	41	56
	19	F	16	18	21	22	21	20	20	19	21	20	21	22	21	25	37	44	45	49	52	47	49	45	43	44	57
	20	F	16	18	20	21	22	21	21	20	19	19	19	19	21	23	31	40	44	42	47	48	39	40	39	43	54
	21	F	17	18	21	22	21	23	21	21	21	21	23	19	19	23	34	43	43	44	46	49	44	44	43	41	55
	22	F	18	20	22	22	21	20	21	21	19	18	18	18	19	22	37	40	39	44	45	41	39	38	40	39	51
	23	F	17	19	20	19	19	21	20	20	18	18	18	16	16	19	32	38	38	43	42	41	40	41	38	34	50
	24	F	17	19	22	23	24	21	20	20	21	19	19	21	20	22	34	36	41	45	50	48	49	46	43	44	56
	25	F	17	19	21	21	23	20	21	19	19	18	17	17	19	27	48	46	41	48	40	42	49	42	42	38	55
	26	F	18	20	22	22	23	22	22	22	21	20	20	20	22	28	45	47	45	47	48	50	51	47	40	38	57
	27	F	18	20	21	22	22	23	22	21	20	19	19	22	23	25	35	38	46	42	48	49	43	41	40	40	54
	28	F	17	19	22	22	22	22	21	20	20	19	19	19	20	28	47	49	41	51	44	44	50	42	41	38	56
	29	F	18	20	22	22	23	22	22	20	21	19	20	21	21	34	37	50	43	42	45	39	35	36	37	38	53
	30	F	18	20	22	21	21	23	20	20	19	17	16	14	13	23	45	44	39	47	40	42	48	42	41	38	54
	31	F	18	19	22	22	22	22	21	20	18	18	16	15	14	19	40	42	39	41	40	38	41	38	36	32	49
	32	F	17	20	22	23	23	23	22	21	20	18	18	18	25	27	34	39	47	44	47	50	44	42	41	42	55
	33	F	18	20	22	23	23	23	22	21	20	19	17	16	15	20	35	37	45	47	51	45	44	39	37	34	55
	34	F	17	19	22	22	23	22	21	20	19	18	18	19	21	33	44	43	48	46	46	45	45	43	39	39	55
Z	1	F	4	5	8	10	11	11	11	8	8	7	7	6	7	11	18	30	38	44	49	51	52	53	55	49	60
	2	F	6	8	9	11	13	12	9	10	11	10	9	8	7	9	16	24	34	43	50	47	45	51	56	52	59
	3	F	10	12	14	14	15	14	14	13	13	11	12	11	13	13	22	31	40	45	47	49	52	52	52	52	59
	4	F	11	13	15	16	15	15	15	13	13	13	12	10	11	12	18	28	37	43	48	49	53	52	52	51	59
	5	F	12	14	16	17	18	17	16	16	16	16	14	15	16	18	21	30	35	42	48	49	53	52	51	49	59
	6	F	13	15	17	18	17	18	17	16	15	14	14	14	14	15	20	30	40	50	52	58	53	51	55	50	62
	7	F	13	15	17	18	19	18	18	15	15	14	14	14	14	17	26	34	44	42	44	47	49	47	38	34	54
	8	F	14	16	19	20	19	18	17	16	16	15	14	13	13	13	16	28	34	39	48	45	46	50	54	50	57
	9	F	14	16	18	19	19	19	17	17	16	16	15	16	17	17	31	38	46	49	49	49	49	54	52	39	59
	10	F	15	16	19	20	20	20	20	18	18	17	17	14	15	16	17	28	35	44	44	41	43	46	45	38	52
	11	F	15	17	19	21	20	20	19	19	18	16	16	15	15	14	18	23	33	39	46	45	42	49	55	49	57
	12	F	15	17	20	20	20	21	19	19	18	17	17	16	17	20	28	35	38	54	54	54	52	48	42	39	60
	13	F	16	17	19	19	20	21	19	18	17	16	16	15	15	15	18	24	33	39	48	47	46	49	55	51	58
	14	F	16	18	20	19	20	19	19	18	18	17	15	15	15	14	19	30	41	45	49	49	51	47	48	38	57
	15	F	15	17	19	20	20	20	20	19	19	18	18	18	19	19	21	28	34	46	50	48	46	49	54	50	58
	16	F	16	17	20	21	21	21	20	19	18	17	15	15	16	19	24	33	42	51	53	48	51	54	52	50	60
	17	F	16	17	19	20	20	21	20	18	18	17	17	16	16	17	23	30	37	42	48	50	53	54	50	48	59
	18	F	16	17	20	21	21	21	19	19	18	16	15	15	15	22	29	37	46	43	51	54	50	47	41	38	58
	19	F	16	18	21	21	21	21	20	20	18	18	18	18	19	26	32	38	45	51	53	57	54	54	49	62	62
	20	F	16	18	20	21	21	20	20	20	19	18	16	15	15	16	28	33	41	44	48	48	48	53	51	57	57
	21	F	16	18	21	21	22	21	20	19	19	18	17	16	15	14	17	30	36	48	50	54	54	50	56	50	61
	22	F	16	19	20	21	22	21	21	19	19	17	16	15	14	13	17	28	32	39	46	45	43	51	54	47	57
	23	F	17	19	21	22	22	22	21	20	19	17	16	16	16	17	18	28	33	44	45	43	45	45	44	38	52
	24	F	17	18	21	21	21	22	19	19	18	17	16	16	14	16	24	33	44	50	54	56	56	57	52	63	
	25	F	16	18	21	21	22	21	21	19	19	17	16	15	13	13	27	30	36	47	44	47	52	49	48	44	57
	26	F	17	19	21	22	21	21	20	19	18	17	17	15	16	26	33	37	45	52	54	54	51	46	41	39	59
	27	F	17	19	21	22	23	21	21	19	19	18	17	16	15	15	17	27	35	38	46	50	51	49	53	51	58
	28	F	17	19	21	21	22	22	21	20	20	18	18	17	16	17	28	33	37	48	45	47	52	49	49	43	57
	29	F	17	19	21	22	22	22	21	19	19	18	18	16	17	25	23	37	37	41	47	42	43	49	50	46	55
	30	F	17	19	21	22	23	22	21	21	18	18	17	16	15	16	26	29	36	47	43	47	52	48	47	44	56
	31	F	17	19	21	22	22	22	21	20	18	18	17	16	15	15	20	27	32	44	44	42	45	45	42	35	52
	32	F	17	19	21	23	23	21	21	20	19	17	17	15	15	13	16	29	37	40	48	50	52	54	55	51	60
	33	F	17	19	21	21	21	22	22	20	20	19	19	19	19	20	21	27	38	47	55	50	48	48	50	46	59
	34	F	17	19	21	22	22	22	21	20	19	17	17	15	15	15	24	29	39	42	49	49	53	51	51	49	59

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

(3) Boisar

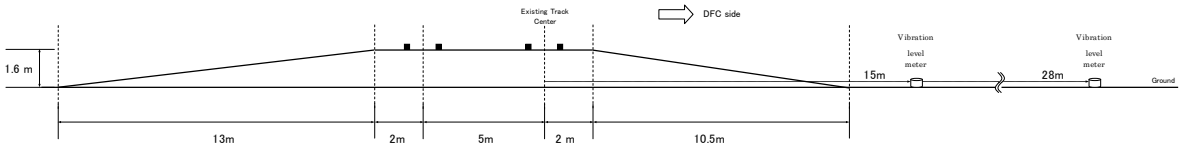
1) Cross-section View

Cross-section view of measurement site in Boisar are given in Figure 1.2-5 and Figure 1.2-6.



Source: JICA Survey Team

Figure 1.2-5 Cross-section View of Measurement Site in Boisar №1



Source: JICA Survey Team

Figure 1.2-6 Cross-section View of Measurement Site in Boisar №2

2) Result of Background Vibration

Results of background vibration measurement in Boisar is given in Table 1.2-11,

Table 1.2-11 Result of Background Vibration Measurement in Boisar

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Boisar	5-Oct	1	33.9	<30	<25	33.5	30.2	25.5	32.2	<30	<25	<30	<30	<25	33.9	30.2	25.5
	5-Oct	2	32.8	<30	27.0	<30	32.8	<25	<30	32.6	25.8	31.2	34.1	26.3	32.8	34.1	27.0

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Noise

Results of railway vibration measurement in Boisar is given in Table 1.2-12 and Table 1.2-13.

Table 1.2-12 Result of Railway Vibration Measurement in Boisar №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	23.0m	12.5m	23.0m	12.5m	23.0m
1	5-Oct	10:28	P	41.5	31.5	46.7	399	down	32.2	38.6	36.1	39.3	48.1	45.5
2	5-Oct	10:49	P	105.4	16.0	26.7	444	up	39.3	45.4	41.2	44.2	51.5	48.0
3	5-Oct	11:10	F	75.7	33.0	44.9	571	up	41.5	46.8	44.9	49.1	55.6	53.2
4	5-Oct	11:38	P	48.3	26.2	36.1	399	down	33.8	40.1	38.8	40.9	51.0	47.8
5	5-Oct	11:50	P	85.6	15.5	36.4	333	up	38.1	42.8	40.8	43.8	49.6	46.1
6	5-Oct	11:59	F	62.5	72.0	91.5	641	up	35.0	39.4	38.5	42.7	48.8	44.8
7	5-Oct	12:22	F	77.6	29.8	39.8	612	down	39.6	53.8	44.7	44.4	57.2	54.9
8	5-Oct	12:25	P	99.8	16.4	34.6	556	up	39.1	55.0	41.9	44.1	51.6	47.8
9	5-Oct	12:45	P	46.9	27.8	42.2	399	down	35.9	50.8	38.2	41.4	50.9	47.7
10	5-Oct	12:57	F	52.7	41.1	58.1	626	up	37.4	51.6	40.2	44.5	50.1	46.8
11	5-Oct	13:00	P	67.1	14.1	21.4	288	down	33.8	47.4	38.0	40.7	49.3	47.1
12	5-Oct	13:05	F	83.7	24.8	37.8	641	down	39.7	56.7	47.6	48.0	57.7	54.5
13	5-Oct	13:14	P	82.8	19.4	28.4	556	down	37.6	60.1	44.2	50.8	56.3	53.2
14	5-Oct	13:19	P	77.1	20.1	35.0	511	up	38.1	54.2	41.3	43.9	51.7	48.4
15	5-Oct	13:53	F	55.7	39.7	52.5	626	up	38.1	52.8	41.7	45.2	52.1	49.0
16	5-Oct	14:24	P	93.6	15.4	33.6	466	down	37.2	58.1	45.5	48.4	56.0	52.9
17	5-Oct	14:28	F	17.6	11.3	62.3	612	up	37.2	52.2	39.7	44.0	50.1	47.4
18	5-Oct	14:36	P	67.8	14.3	33.1	288	up	34.8	49.6	36.9	40.7	46.7	44.7
19	5-Oct	15:12	P	108.3	20.7	36.7	556	down	35.1	54.8	43.9	47.4	55.6	53.1
20	5-Oct	15:17	F	59.9	40.7	53.8	647	up	37.9	53.2	41.0	45.9	51.1	48.2
21	5-Oct	15:20	P	61.4	23.1	29.1	399	up	35.7	51.6	39.1	41.6	49.0	46.2
22	5-Oct	15:22	P	97.1	13.5	22.1	377	down	37.1	58.9	44.5	49.8	56.4	53.2
23	5-Oct	15:32	P	33.9	40.0	51.5	310	down	32.9	50.8	33.3	40.6	47.1	43.2
24	5-Oct	16:14	P	15.3	6.5	38.2	511	up	39.6	52.8	40.5	44.8	50.7	47.8
25	5-Oct	16:23	P	81.0	23.0	30.4	489	down	35.4	55.4	44.6	48.2	55.6	53.1
26	5-Oct	16:40	P	79.7	25.5	36.5	489	down	35.0	55.2	44.3	48.4	55.9	53.3
27	5-Oct	16:56	P	89.1	15.4	29.6	399	down	37.5	56.8	48.0	48.2	58.3	55.7
average		Passenger (P)		73.2	16.0	33.3	434	up	37.8	50.2	40.2	43.3	50.1	47.0
				72.5	22.7	34.6	427	down	35.3	52.2	41.6	45.4	53.4	50.5
		Freight (F)		54.0	39.6	60.5	621	up	37.8	49.3	41.0	45.2	51.3	48.2
				80.7	27.3	38.8	627	down	39.7	55.2	46.2	46.2	57.4	54.7

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-13 Result of Railway Vibration Measurement in Boisar №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									15.0m	28.0m	15.0m	28.0m	15.0m	28.0m
1	5-Oct	11:11	F	73.4	34.0	48.9	571	up	41.7	42.4	42.5	41.5	49.0	47.0
2	5-Oct	11:25	P	103.0	10.6	19.7	288	up	36.2	38.4	38.3	37.4	44.3	41.0
3	5-Oct	11:26	F	54.5	44.2	49.2	641	down	39.6	42.7	41.7	41.1	46.4	43.9
4	5-Oct	11:34	P	85.3	18.6	28.3	399	down	40.9	45.2	42.6	41.9	46.9	47.2
5	5-Oct	12:13	P	104.7	17.9	26.0	511	up	40.1	42.1	41.0	39.8	47.6	43.8
6	5-Oct	12:55	F	49.1	48.5	61.9	626	up	36.8	36.8	39.3	37.2	43.3	41.0
7	5-Oct	13:01	P	80.4	12.1	17.9	288	down	40.0	42.1	40.9	40.5	45.5	43.8
8	5-Oct	13:05	F	80.9	26.5	39.1	641	down	45.0	46.9	44.4	46.5	52.0	49.3
9	5-Oct	13:14	P	128.7	19.3	33.4	556	down	41.4	45.5	43.4	46.1	50.4	49.4
10	5-Oct	13:18	P	98.6	20.3	33.5	511	up	38.7	41.2	40.3	39.8	47.2	44.1
11	5-Oct	13:53	F	53.6	42.7	57.0	626	up	39.8	40.7	41.1	41.8	45.6	45.2
12	5-Oct	14:15	P	100.5	17.9	26.1	422	up	39.1	40.8	42.4	41.0	46.7	44.7
13	5-Oct	14:24	P	89.6	17.0	30.4	466	down	43.6	48.1	44.6	45.8	53.6	49.4
14	5-Oct	14:26	F	53.8	59.1	78.0	612	up	35.3	36.2	36.8	36.9	44.7	41.1
15	5-Oct	14:28	P	68.6	14.2	22.6	288	down	36.6	38.3	39.3	38.8	44.4	43.2
16	5-Oct	14:34	P	79.3	12.3	23.1	288	up	34.5	35.5	35.6	39.0	42.6	39.8
17	5-Oct	15:13	P	93.0	21.8	33.9	556	down	40.7	45.8	41.7	44.1	51.6	47.8
18	5-Oct	15:19	P	46.9	28.3	39.1	399	up	34.7	36.9	36.4	35.7	43.1	40.6
19	5-Oct	15:28	F	67.3	34.9	41.7	675	up	39.9	41.3	42.5	40.6	48.0	46.7
20	5-Oct	15:29	P	112.6	16.6	25.6	444	down	41.1	47.0	43.2	43.8	51.7	48.5
21	5-Oct	16:09	P	111.7	15.6	27.9	422	down	40.7	47.6	43.0	44.2	51.8	49.1
22	5-Oct	16:13	P	53.8	29.4	40.3	511	up	38.8	38.2	38.9	38.6	46.3	45.0
23	5-Oct	16:21	P	78.5	18.8	29.0	489	down	40.5	47.0	42.2	43.9	52.0	47.7
24	5-Oct	16:42	P	91.8	21.2	35.7	489	down	40.0	47.2	42.5	43.5	51.5	48.6
25	5-Oct	16:43	F	27.0	143.8	158.9	641	up	35.8	36.2	35.9	37.2	44.9	40.1
26	5-Oct	17:03	P	109.4	22.3	28.8	377	up	36.2	38.1	37.7	39.7	46.1	42.0
average		Passenger (P)		87.0	19.9	29.6	413	up	37.3	38.9	38.8	38.9	45.5	42.6
				94.0	17.5	28.5	440	down	40.5	45.4	42.3	43.3	49.9	47.5
		Freight (F)		54.0	60.5	74.4	625	up	38.2	38.9	39.7	39.2	45.9	43.5
				67.7	35.3	44.1	641	down	42.3	44.8	43.1	43.8	49.2	46.6

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-14 and Table 1.2-15. In Boisar No.1, in consideration of all results roughly, frequency of the range from 40 to 80Hz at X-axis excelled, range from 25 to 50Hz at Y-axis excelled, range from 25 to 50Hz at Z-axis excelled. In Boisar No.2, in consideration of all results roughly, frequency of the range from 31.5 to 50Hz at X-axis excelled, range from 25 to 63Hz at Y-axis excelled, range from 31.5 to 50Hz at Z-axis excelled. In Japan, in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed.

Table 1.2-14 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Boisar №1

Direction	№	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	P	12	14	17	16	8	15	15	13	16	13	12	11	10	9	7	7	7	16	21	15	16	16	16	17	29
	2	P	14	16	18	20	20	20	22	18	15	15	15	13	12	11	10	9	11	18	21	22	24	21	24	28	35
	3	F	16	18	20	18	20	20	21	19	17	15	14	13	13	12	11	10	11	18	22	26	30	27	29	30	38
	4	P	17	19	22	23	20	21	22	20	19	17	17	16	15	14	13	12	12	16	18	18	17	21	21	18	33
	5	P	17	19	22	22	22	18	21	22	19	19	17	17	15	15	14	12	12	15	18	20	25	21	21	25	34
	6	F	18	20	23	25	24	25	23	21	20	19	18	17	16	15	14	13	13	14	16	17	20	20	22	24	35
	7	F	20	21	22	22	24	21	24	21	21	20	19	18	17	16	15	14	15	25	26	28	25	23	22	20	36
	8	P	19	21	23	25	24	23	24	23	22	20	19	18	17	16	16	14	14	17	21	22	23	21	25	26	36
	9	P	20	21	25	26	26	24	23	23	20	19	19	18	17	16	15	14	13	16	21	17	18	21	19	17	35
	10	F	21	22	25	25	25	24	24	24	22	21	20	19	18	17	16	15	14	16	22	26	25	25	24	26	37
	11	P	20	22	24	24	25	24	23	24	21	21	19	19	18	17	16	15	14	20	23	23	19	22	20	17	35
	12	F	21	23	26	25	26	24	25	23	22	21	20	19	18	17	16	15	16	21	28	22	29	28	28	26	38
	13	P	21	22	23	23	24	25	23	23	22	20	19	18	17	17	16	15	15	23	19	19	25	27	24	28	37
	14	P	20	22	24	25	26	25	25	23	22	21	20	19	18	17	16	15	15	21	22	22	25	23	25	28	37
	15	F	20	21	23	23	23	22	22	20	20	19	18	17	16	15	14	13	12	17	23	25	24	23	27	27	37
	16	P	18	20	23	23	25	22	22	21	23	21	20	19	18	17	16	15	15	21	21	20	22	24	26	26	36
	17	F	19	21	24	25	26	24	24	24	21	20	20	19	18	17	16	15	15	19	24	23	24	22	24	27	37
	18	P	19	21	23	24	25	25	23	22	21	19	19	18	17	16	15	14	13	18	21	21	22	21	22	21	35
	19	P	19	20	24	25	25	24	24	23	22	20	19	18	17	17	16	14	16	20	24	19	21	23	24	22	36
	20	F	19	22	25	25	26	24	23	21	22	20	19	18	17	16	15	14	14	15	22	24	25	25	27	26	37
	21	P	20	21	23	25	25	22	24	21	21	20	19	18	17	16	15	14	13	14	19	24	23	21	22	24	35
	22	P	20	22	23	24	24	23	22	22	21	20	19	18	17	16	16	14	14	23	21	18	24	26	24	26	36
	23	P	19	21	24	24	24	24	24	22	21	20	19	18	17	16	15	14	13	15	15	14	12	14	17	18	34
	24	P	19	21	23	23	24	24	23	23	22	21	19	19	18	17	16	15	14	18	18	19	25	21	24	29	36
	25	P	19	21	23	24	25	23	23	22	21	20	19	18	17	17	15	15	16	20	24	19	21	24	24	22	36
	26	P	18	20	22	23	24	24	23	22	21	20	19	18	17	16	15	14	15	21	23	20	21	25	25	25	35
	27	P	19	20	23	24	23	23	22	22	20	19	18	17	16	15	14	13	15	20	24	19	22	25	24	22	35
Y	1	P	5	6	3	9	14	11	11	12	9	5	6	5	4	3	2	1	8	19	23	19	19	19	16	17	29
	2	P	7	10	14	14	13	13	16	14	11	11	9	8	6	5	5	5	10	25	26	24	27	29	27	28	37
	3	F	9	9	13	15	13	15	16	14	13	11	10	10	10	8	8	8	12	23	22	29	32	31	33	28	40
	4	P	13	14	15	16	15	17	16	16	14	13	13	11	11	9	9	7	9	20	27	25	24	19	17	17	33
	5	P	12	14	17	20	19	15	17	18	16	15	13	12	11	10	9	8	9	15	16	28	25	23	24	25	35
	6	F	14	15	19	22	21	20	18	17	15	14	14	12	11	11	10	9	10	13	16	22	26	26	22	25	34
	7	F	16	17	19	18	20	17	20	17	17	16	15	14	12	12	11	10	12	26	31	31	34	27	23	19	39
	8	P	15	17	19	20	18	18	19	18	17	15	15	14	13	13	12	11	13	24	26	25	27	30	26	28	37
	9	P	16	18	22	23	20	21	20	18	17	16	15	13	12	11	10	9	8	19	25	22	23	19	19	18	33
	10	F	17	19	21	22	21	20	19	18	18	17	15	15	14	13	12	10	12	17	26	26	27	27	26	26	37
	11	P	16	18	21	22	22	21	20	19	18	17	16	15	14	13	12	11	11	26	28	28	26	22	21	16	36
	12	F	17	19	21	22	22	20	21	19	19	18	16	15	14	13	12	12	14	22	31	30	36	27	29	24	40
	13	P	17	18	20	19	21	22	20	20	18	17	16	14	14	13	13	11	14	23	28	31	33	30	25	25	38
	14	P	16	18	20	22	22	22	21	20	19	18	17	16	15	14	14	12	15	27	27	25	26	31	28	27	38
	15	F	16	18	21	22	20	19	19	18	17	16	15	14	13	12	12	11	13	16	27	27	28	25	28	26	38
	16	P	15	16	20	21	21	21	20	19	19	18	16	15	15	13	13	12	16	24	25	31	30	29	25	24	38
	17	F	16	18	21	22	22	20	20	19	18	17	16	15	13	13	11	10	12	19	24	26	28	26	25	28	37
	18	P	16	17	19	20	21	21	19	18	17	15	15	14	13	12	11	10	9	15	23	29	28	26	23	24	36
	19	P	15	17	19	20	19	18	19	19	18	17	15	14	13	13	12	11	13	21	31	28	27	26	23	23	36
	20	F	15	17	19	19	20	20	20	18	18	16	15	15	13	12	11	10	12	16	26	27	28	26	27	27	37
	21	P	16	17	18	20	21	19	21	17	17	17	15	14	12	12	11	10	10	14	18	26	25	24	22	25	35
	22	P	16	18	20	21	21	20	18	17	17	17	16	15	13	13	12	11	14	23	25	30	31	29	24	24	37
	23	P	16	18	20	22	20	21	20	19	18	16	15	15	14	13	12	10	10	15	18	17	18	15	15	15	31
	24	P	16	18	20	21	21	20	21	19	17	16	15	14	14	13	12	11	12	18	17	26	28	24	26	28	36
	25	P	15	17	19	20	20	20	18	18	17	16	16	14	13	13	11	10	12	21	29	28	28	26	23	23	36
	26	P	15	17	19	20	21	20	18	18	17	16	15	14	13	12	12	10	13	23	29	30	28	28	23	23	37
	27	P	15	16	19	20	20	20	18	18	17	16	15	14	13	12	12	10	14	21	30	29	28	27	21	22	36
Z	1	P	9	11	14	14	14	14	13	13	12	11	9	8	8	7	6	6	18	32	34	33	32	29	30	27	40
	2	P	11	13	16	16	17	16	16	14	12	12	12	10	10	10	10	10	22	36	36	35	36	39	39	38	46
	3	F	13	15	17	18	18	18	17	16	15	16	13	12	12	12	12	13	21	31	33	41	43	38	42	40	49
	4	P	15	17	19	20	20	20	19	18	17	16	15	14	14	13	13	12	20	34	40	36	33	34	33	27	44
	5	P	16	18	20	21	21	20	19	19	18	16	16	14	14	13	11	12	16	27	28	33	34	36	34	35	42
	6	F	17	18	21	22	22	21	20	19	19	17	17	16	15	14	13	13	19	26	27	31	33	35	34	34	42
	7	F	18	19	22	22	23	22	21	21	19	18	18	16	16	15	14	18	22	41	45	43	43	37	33	29	50
	8	P	17	19	22	22	22	22	22	20	20	19	17	16	15	15	15	14	23	36	36	36	36	39	38	37	46
	9	P	18	20	22	23	23	22	21	21	20	19	18	17	16	16	15	15	20	33	37	33	34	32	32	28	42
	10	F	19	20	23	23	23	23	22	21	20	19	18	18	16	16	15	14	20	27	35	38	35	39	38	36	46
	11	P	19	20	23	23	24	23	22	21	20	19	19	17	17	16	15	15	19	36	39	40	38	34	32	26	45
	12	F	19	20	23	24	24	23	23	21	20	19	18	18	17	17	17	17	26	37	44	41	46	42	43	35	51
	13	P	19	20	22	23	23	23	22	21	21	19	18	17	16	16	16	15	22	37	42	45	39	42	39	35	49
	14	P	19	20	23	23	24	23	22	21	20	19	18	17	17	16	15	15	23	38	37	36	36	39	40	38	47
	15	F	18	20	22	23	23	22	22	21	20	19	18	17	16	15	14	13	20	28	36	39	36	37	38	37	46
	16	P	18	20	22	23	23	22	21	20	20	19	18	17	17	17	17	16	24	38	40	44	38	40	38	33	48
	17	F	18	20	22	23	23	23	22	21	20	19	19	17	17	16	16	17	22	32	38	36	35	38	37	36	45
	18	P	18	20	22	22	23	22	22	21	20	18	18	17	16	15	15	14	20	30	36	39	37	37	33	34	45
	19	P	18	20	22	22	23	22	21	21	19	18	18	16	16	15	13	12	21	35	42	40	38	39	37	31	47
	20	F	18	20	22	22	23	22	22	20	20	19	17	16	16	15	14	13	18	26	37	39	36	37	39	36	46
	21	P	18	19	22	23	23	22	22	20	19	18	18	17	16	15	14	14	17	26	30	33	32	36	34	34	42
	22	P	18	20	22	23	23	22	21	20	19	19	18	17	16	16	17	17	23	37	40	43	39	39	38	34	48
	23	P	18	20	22	23	23	22	22	21	20	19	18	16	16	15	15	13	16	26	30	29	27	26	29	26	38
	24	P	18	20	22	23	23	23	21	21	20	19	17	17	16	15	14	15	18	30	31	33	36	35	37	37	44
	25	P	17	19	21	22	22	22	21	20	19	18	17	17	16	14	14	14	22	36	41	40	38	39	37	31	47
	26	P	17	19	21	22	22	21	21	20	19	18	17	16	15	14	13	13	22	37	42	42	38	40	37	31	48
	27	P	17	19	21	22	22	21	21	20	18	17	17	15	14	13	11	9	23	36	43	41	39	40	37	31	48

Note: P : passenger train F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-15 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Boisar №2

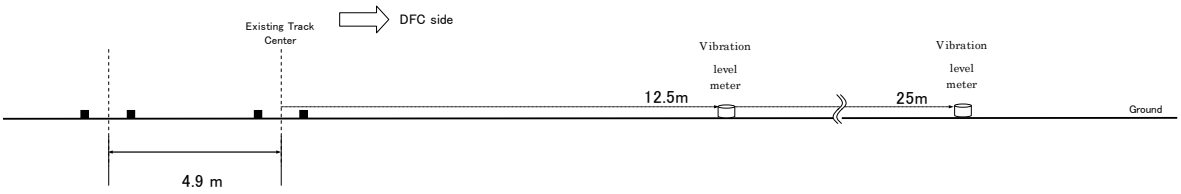
Direction	№	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	F	15	16	19	20	20	21	19	19	18	16	15	14	13	13	14	14	15	22	25	27	22	34	29	23	37
	2	P	15	16	18	19	19	18	19	18	16	16	15	14	12	16	17	13	18	15	23	22	25	25	24	22	34
	3	F	15	17	20	20	20	18	19	17	18	16	14	13	13	13	11	14	17	22	26	27	26	25	20	14	34
	4	P	14	16	19	21	17	20	20	18	17	16	15	14	13	13	12	14	17	17	21	29	30	23	20	18	35
	5	P	18	20	23	24	24	23	21	21	19	18	17	17	15	15	19	18	23	20	24	23	23	26	28	26	37
	6	F	19	21	23	24	24	23	23	21	21	19	18	17	16	15	15	14	14	22	19	18	20	24	23	19	35
	7	P	19	20	23	24	23	23	22	21	21	20	19	18	17	17	17	16	23	18	21	29	34	27	19	17	38
	8	F	19	21	24	24	24	24	21	21	21	20	19	18	17	16	20	18	19	27	26	27	34	31	25	20	39
	9	P	19	21	23	23	23	23	22	22	21	19	18	17	16	16	21	15	15	22	18	22	29	33	25	22	38
	10	P	18	20	23	24	24	22	22	21	21	19	18	17	16	16	17	16	16	17	19	22	24	25	26	22	35
	11	F	18	20	21	20	23	20	23	21	19	19	17	17	15	15	14	12	15	17	25	18	22	28	26	19	35
	12	P	17	19	21	21	21	20	20	21	17	17	15	14	14	14	15	12	15	17	22	21	22	23	23	23	34
	13	P	17	19	20	22	23	21	21	20	19	18	17	16	15	14	17	16	17	20	22	24	30	32	25	21	37
	14	F	16	17	19	21	20	22	21	19	19	18	17	16	15	14	13	12	14	14	20	17	19	23	22	15	33
	15	P	16	17	20	20	22	23	22	20	20	18	17	15	14	14	12	19	18	25	22	29	27	27	21	13	36
	16	P	16	18	20	21	23	20	20	19	18	17	16	15	14	14	13	11	17	19	23	23	23	25	25	19	34
	17	P	17	19	21	21	22	22	20	19	18	17	16	15	14	14	16	14	15	19	26	23	29	26	20	19	35
	18	P	16	17	19	19	20	20	20	20	19	18	16	15	14	14	12	11	13	19	18	19	21	21	21	19	32
	19	F	17	18	19	20	22	22	21	20	19	18	17	15	15	15	14	15	17	20	25	26	24	29	24	18	35
	20	P	17	18	20	19	18	21	19	19	18	17	16	15	14	13	17	13	14	20	22	25	30	34	23	21	37
	21	P	16	19	20	19	21	21	20	20	19	17	16	15	14	13	16	14	15	24	22	26	30	34	23	19	38
	22	P	16	18	19	20	21	21	20	19	19	17	16	15	14	13	13	11	11	14	22	19	18	22	21	19	32
	23	P	16	18	20	21	20	20	20	19	18	17	15	15	14	15	17	13	15	19	25	26	29	28	21	21	35
	24	P	15	18	20	20	18	21	20	17	18	16	16	15	13	13	13	13	16	21	23	26	30	30	21	20	36
	25	F	15	16	20	21	19	18	19	19	16	16	15	14	13	12	12	12	11	14	16	16	19	20	19	15	31
	26	P	16	18	20	21	21	21	19	18	17	16	15	14	13	12	11	11	11	15	21	21	18	22	22	18	32
Y	1	F	14	16	18	16	17	16	17	16	17	14	14	13	15	16	18	16	19	25	28	32	26	30	34	25	39
	2	P	15	17	20	20	20	19	19	17	16	15	15	13	12	15	18	19	25	25	27	24	27	25	24	22	36
	3	F	15	17	20	19	20	18	17	16	16	16	14	13	13	13	13	20	19	26	31	29	27	27	22	16	37
	4	P	16	18	20	21	21	23	18	18	17	16	15	15	14	19	20	20	22	26	24	29	32	27	22	22	37
	5	P	18	19	21	22	22	22	21	21	19	18	17	17	16	19	20	21	28	24	27	29	28	28	26	28	38
	6	F	19	21	24	24	24	24	23	21	21	20	19	18	17	16	15	18	18	25	26	25	23	23	27	20	36
	7	P	19	21	23	23	23	23	23	21	21	20	18	17	16	19	24	20	26	21	27	33	32	31	25	19	39
	8	F	20	21	22	21	23	24	23	21	20	20	19	18	17	17	23	25	23	27	30	28	35	38	27	22	41
	9	P	19	20	22	23	23	24	23	22	21	20	19	18	17	19	23	26	24	28	26	28	28	33	30	22	39
	10	P	19	21	23	24	24	22	23	22	21	20	19	18	17	21	21	19	20	22	25	27	25	26	23	25	37
	11	F	17	20	24	25	21	22	21	21	20	19	18	17	16	16	13	15	19	22	25	25	26	24	26	21	36
	12	P	17	20	22	19	21	23	19	18	20	18	17	16	15	17	17	17	23	20	26	21	25	24	24	23	35
	13	P	17	19	22	21	22	21	20	20	18	17	16	15	15	19	24	25	27	25	27	27	28	33	27	21	39
	14	F	17	20	21	22	24	24	23	20	19	18	17	17	15	14	14	13	17	17	23	24	22	22	24	18	35
	15	P	18	20	23	25	25	21	20	20	19	17	17	15	15	14	14	25	24	28	26	31	27	27	19	15	38
	16	P	17	19	21	22	23	20	21	20	19	18	16	16	16	18	15	20	22	23	26	25	23	24	25	21	36
	17	P	17	18	20	21	20	21	21	20	19	17	17	15	14	16	22	21	26	23	30	29	31	31	24	24	38
	18	P	18	20	21	22	22	21	20	20	20	18	17	16	15	14	14	14	18	23	21	20	18	20	20	21	33
	19	F	17	19	22	23	23	23	21	20	20	18	20	16	16	15	15	18	21	27	31	29	27	29	26	21	38
	20	P	16	18	22	24	23	21	21	19	19	17	16	15	14	20	25	23	28	26	28	27	27	34	26	23	39
	21	P	17	18	20	21	20	22	21	19	19	18	17	16	15	21	24	22	28	26	28	27	29	35	27	22	39
	22	P	17	19	22	23	23	23	20	20	19	18	17	16	15	14	13	16	16	19	24	26	21	21	20	21	34
	23	P	16	18	21	21	21	21	20	18	18	17	16	15	14	21	24	19	26	25	29	29	30	32	23	24	38
	24	P	16	18	20	22	24	23	20	19	19	17	16	15	14	17	23	19	26	25	28	28	30	33	23	24	38
	25	F	17	19	20	20	22	22	20	19	19	17	16	15	14	15	13	12	12	14	19	20	19	21	22	16	32
	26	P	15	17	20	21	21	20	18	18	17	16	15	14	14	13	12	17	15	21	24	27	22	20	20	20	34
Z	1	F	14	16	18	19	19	18	18	16	15	14	14	13	15	13	16	18	23	33	28	36	32	37	32	33	43
	2	P	14	16	18	19	19	19	18	17	16	15	14	14	13	14	12	15	30	28	25	31	36	33	30	30	41
	3	F	14	16	19	20	19	20	18	17	16	16	15	13	14	13	13	23	24	28	33	38	34	33	31	27	42
	4	P	15	16	18	20	21	19	18	17	17	15	14	14	12	14	15	15	21	25	29	37	35	31	30	29	41
	5	P	17	18	20	21	21	21	21	20	19	18	17	16	16	16	15	19	29	33	28	27	35	34	35	37	43
	6	F	19	20	23	23	23	23	22	21	20	19	18	18	16	15	16	16	23	31	25	25	31	34	30	28	40
	7	P	18	20	23	23	24	23	22	21	20	20	18	18	16	16	19	17	22	26	32	36	40	36	31	29	44
	8	F	18	20	22	24	24	23	22	21	20	19	18	17	17	17	25	27	27	32	33	34	40	39	33	30	45
	9	P	19	20	23	23	23	23	22	21	20	19	18	17	15	15	21	22	25	30	36	40	37	39	34	29	45
	10	P	18	20	23	23	23	23	22	21	20	19	19	18	16	18	17	15	23	32	23	29	33	30	31	32	40
	11	F	18	20	22	22	23	22	22	21	20	18	17	16	15	15	13	17	23	28	27	26	34	34	32	28	40
	12	P	17	18	21	22	22	21	22	20	18	18	17	15	15	15	13	14	26	26	26	31	34	30	30	32	40
	13	P	17	18	21	21	21	21	20	20	18	17	16	16	14	15	20	17	25	29	36	40	38	42	34	29	46
	14	F	17	19	21	22	22	21	20	19	19	17	17	16	14	14	13	14	26	25	25	22	31	30	29	26	38
	15	P	17	18	21	21	21	21	20	20	19	18	17	16	15	14	14	18	21	31	33	36	35	33	31	29	42
	16	P	17	19	21	21	21	21	20	19	19	17	17	16	15	15	14	15	25	27	28	29	32	34	32	27	40
	17	P	17	19	21	22	21	21	20	19	18	17	17	16	15	15	15	16	19	25	36	33	42	38	32	29	45
	18	P	17	19	21	21	22	21	21	20	18	17	17	16	15	14	13	12	16	26	27	24	27	30	27	29	37
	19	F	17	19	21	21	21	20	19	19	18	18	17	16	14	16	15	18	26	32	30	30	36	40	31	28	43
	20	P	17	19	21	21	21	21	21	19	18	17	16	15	14	15	18	18	26	28	37	38	39	41	33	30	46
	21	P	16	18	20	21	22	21	20	19	18	17	16	16	14	16	19	17	26	29	38	39	40	43	34	30	47
	22	P	16	18	21	21	22	21	20	19	18	17	16	15	14	14	13	14	20	25	24	24	28	32	29	30	38
	23	P	16	18	20	21	21	21	20	19	18	17	16	15	14	14	16	15	22	26	36	33	41	38	32	29	45
	24	P	16	17	19	20	20	19	19	18	17	16	15	14	13	15	17	13	24	26	37	34	40	41	32	29	45
	25	F	16	17	19	20	21	21	19	18	17	17	15	14	14	13	13	13	15	19	21	23	28	29	26	25	36
	26	P	15	17	19	20	20	20	20	18	18	17	15	14	14	14	13	14	18	27	22	25	27	32	28	29	38

Note: P : passenger train F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

(4) Vapi

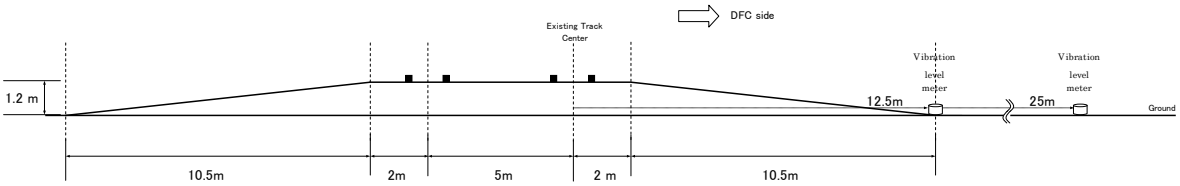
1) Cross-section View

Cross-section view of measurement site in Vapi are given in Figure 1.2-7 and Figure 1.2-8.



Source: JICA Survey Team

Figure 1.2-7 Cross-section View of Measurement Site in Vapi №1



Source: JICA Survey Team

Figure 1.2-8 Cross-section View of Measurement Site in Vapi №2

2) Result of Background Vibration

Results of background vibration measurement in Vapi is given in Table 1.2-16.

Table 1.2-16 Result of Background Vibration Measurement in Vapi

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Vapi	1-Oct	1	<30	<30	<25	33.4	<30	33.0	31.0	<30	27.6	<30	<30	26.6	33.4	<30	33.0
	1-Oct	2	<30	<30	37.5	31.1	31.3	25.9	<30	<30	<25	<30	<30	38.3	31.1	31.3	38.3

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Vibration

Results of railway vibration measurement in Vapi are given in Table 1.2-17 and Table 1.2-18.

Table 1.2-17 Result of Railway Vibration Measurement in Vapi №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	1-Oct	10:10	P	90.0	19.2	31.7	444	up	52.5	41.3	54.6	45.9	64.4	49.4
2	1-Oct	10:12	F	56.1	38.9	50.9	641	down	44.8	35.8	48.0	39.7	56.4	44.5
3	1-Oct	10:22	P	82.1	13.0	22.5	288	up	51.1	39.7	53.4	45.6	62.8	48.4
4	1-Oct	10:30	F	60.2	38.3	53.8	655	up	52.4	40.2	54.8	45.5	63.4	49.7
5	1-Oct	10:34	P	60.2	31.8	52.6	489	down	46.0	35.6	48.4	39.7	57.0	43.9
6	1-Oct	10:47	F	58.5	40.3	69.0	641	up	51.0	39.4	53.5	44.2	62.9	48.0
7	1-Oct	11:14	P	87.4	12.5	28.0	399	down	48.6	40.4	49.0	42.2	57.0	44.2
8	1-Oct	11:43	P	83.4	21.2	44.1	489	up	53.1	41.5	54.0	47.0	64.3	50.0
9	1-Oct	11:45	P	87.4	14.5	28.5	399	down	49.4	42.2	51.6	43.0	58.8	46.1
10	1-Oct	11:51	P	74.2	25.9	42.5	533	up	49.4	38.8	52.3	43.3	63.7	46.4
11	1-Oct	12:21	P	101.9	18.7	30.5	288	up	51.9	41.9	53.5	47.2	61.6	47.6
12	1-Oct	12:31	P	72.7	27.4	52.6	556	up	50.6	40.1	52.9	44.6	63.7	46.6
13	1-Oct	13:09	P	83.4	19.1	31.1	399	down	49.0	38.6	51.5	42.9	59.5	46.3
14	1-Oct	13:22	P	74.5	20.0	37.1	422	up	50.8	40.2	52.6	44.5	63.9	47.2
15	1-Oct	13:31	F	75.0	30.9	45.3	655	up	52.5	42.2	55.7	45.8	64.6	50.1
16	1-Oct	13:47	F	93.5	33.7	49.4	655	down	49.5	38.4	51.4	42.7	59.0	46.5
17	1-Oct	13:55	P	75.8	12.5	25.7	399	down	52.0	44.8	52.3	46.3	57.7	45.3
18	1-Oct	14:02	P	65.7	20.0	36.1	399	up	52.9	40.7	53.1	43.8	64.9	49.4
19	1-Oct	14:16	P	100.5	21.7	40.9	556	down	51.2	41.5	52.3	45.6	58.5	45.5
20	1-Oct	14:19	F	52.0	48.0	67.3	742	up	50.1	38.9	53.6	42.7	63.6	47.8
21	1-Oct	14:34	P	91.1	10.2	27.0	268	down	50.7	40.9	51.6	43.5	58.3	46.7
22	1-Oct	14:53	F	52.3	38.9	55.6	641	up	50.2	39.1	53.4	43.6	62.5	46.8
23	1-Oct	15:00	P	87.4	21.3	37.7	511	down	48.7	39.5	48.8	40.8	58.0	43.9
24	1-Oct	15:12	P	79.4	19.0	30.2	511	up	51.2	98.5	53.1	95.4	63.5	95.7
25	1-Oct	15:21	F	71.1	18.3	30.7	338	down	47.9	39.4	49.7	40.6	58.3	46.6
26	1-Oct	15:26	P	76.9	19.2	31.9	444	up	51.3	43.0	53.3	45.0	64.1	49.1
27	1-Oct	15:36	F	67.1	32.0	44.8	655	down	58.2	46.3	55.2	50.4	64.9	55.5
28	1-Oct	15:40	F	57.6	40.1	57.5	655	up	51.0	41.3	53.6	44.3	64.0	48.5
29	1-Oct	15:56	P	87.4	17.7	38.2	533	down	50.2	42.7	53.2	45.4	64.2	46.8
30	1-Oct	16:07	P	103.3	13.1	22.5	375	down	50.0	41.4	51.3	45.2	58.2	46.0
31	1-Oct	16:15	P	111.3	16.6	32.2	444	down	46.7	38.9	49.7	42.1	58.3	44.3
32	1-Oct	16:34	P	85.4	11.7	24.1	288	down	48.2	37.9	50.1	42.6	58.5	43.9
33	1-Oct	16:38	P	97.3	12.8	28.8	333	up	50.2	41.0	54.2	44.9	65.2	49.2
34	1-Oct	16:47	F	53.6	40.8	57.7	626	up	51.4	39.2	52.0	41.8	63.3	47.3
35	1-Oct	16:49	P	61.2	23.5	46.3	333	down	45.9	36.6	48.5	39.5	55.1	44.2
36	1-Oct	16:59	F	69.0	28.9	46.3	586	up	51.2	40.5	53.5	42.8	65.6	51.3
37	1-Oct	17:11	P	83.4	15.3	28.7	397	up	52.7	41.9	56.2	48.3	65.5	50.1
average		Passenger (P)		81.8	19.3	34.7	425	up	51.5	45.7	53.6	49.6	64.0	52.4
				86.3	17.4	33.4	415	down	49.0	40.1	50.6	43.0	58.4	45.2
		Freight (F)		59.8	38.3	56.6	650	up	51.2	40.1	53.8	43.8	63.7	48.7
				71.9	30.7	44.0	572	down	50.1	40.0	51.1	43.3	59.7	48.3

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-18 Result of Railway Vibration Measurement in Vapi №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	1-Oct	9:23	F	59.9	38.8	51.1	641	up	53.6	46.0	56.1	47.8	64.5	52.4
2	1-Oct	10:11	P	58.1	25.5	35.4	444	up	53.9	45.7	56.7	47.9	63.0	54.2
3	1-Oct	10:22	P	61.3	14.9	27.4	288	up	53.3	46.3	56.8	48.1	64.6	53.6
4	1-Oct	10:26	P	95.7	23.3	37.8	556	down	56.8	53.8	56.1	49.8	62.7	53.9
5	1-Oct	10:29	F	48.0	45.0	61.5	655	up	53.3	44.0	58.1	46.8	65.3	53.1
6	1-Oct	10:47	F	52.6	42.5	60.5	641	up	52.5	44.8	57.7	47.4	65.8	53.8
7	1-Oct	10:57	P	69.6	13.6	21.9	288	up	52.6	46.3	58.3	49.4	63.8	54.7
8	1-Oct	10:58	F	33.6	66.9	82.1	655	down	46.8	42.6	51.4	45.6	58.4	50.6
9	1-Oct	11:13	P	86.4	14.8	24.8	399	down	50.4	45.9	51.3	46.2	60.0	49.7
10	1-Oct	11:44	P	109.8	16.0	27.6	399	down	53.9	50.7	53.6	50.4	61.7	52.2
11	1-Oct	11:49	P	59.0	29.1	42.8	533	up	52.9	45.1	56.2	45.9	63.6	52.7
12	1-Oct	12:19	P	79.6	11.8	22.8	288	up	53.7	48.9	55.6	50.1	62.3	51.5
13	1-Oct	12:29	P	59.5	32.1	44.6	556	up	52.8	46.6	56.4	47.6	62.8	53.6
14	1-Oct	13:30	F	62.1	36.7	47.3	655	up	54.1	48.3	57.2	51.0	65.4	53.9
15	1-Oct	13:47	F	75.7	32.8	45.4	655	down	50.8	47.0	54.6	46.9	62.0	50.2
16	1-Oct	13:55	P	101.7	16.5	28.5	399	down	52.7	50.7	52.8	50.7	61.0	51.5
17	1-Oct	14:01	P	41.2	37.7	56.2	399	up	51.8	42.7	54.3	44.4	64.9	51.8
18	1-Oct	14:17	P	91.8	24.2	35.6	556	down	58.4	56.3	57.7	53.6	63.0	52.7
19	1-Oct	14:18	F	67.4	34.3	49.5	742	up	54.1	48.5	56.6	48.8	65.2	53.3
20	1-Oct	14:34	P	74.5	13.5	27.6	268	down	49.7	47.5	51.4	48.0	59.4	46.7
21	1-Oct	14:49	F	69.1	32.3	44.5	655	down	52.5	47.3	55.0	47.8	62.6	50.8
22	1-Oct	14:50	F	63.7	40.0	56.6	641	up	53.2	47.6	56.1	46.4	63.8	52.3
23	1-Oct	15:01	P	51.8	38.2	64.2	511	down	47.2	42.2	52.0	42.7	59.7	49.9
24	1-Oct	15:13	P	124.3	18.9	35.5	511	up	55.8	48.9	57.5	50.3	64.8	53.5
25	1-Oct	15:23	F	60.2	22.8	36.6	338	down	47.1	43.4	52.2	44.3	61.3	49.8
26	1-Oct	15:25	P	58.7	24.8	31.5	444	up	52.7	44.3	54.8	46.9	63.0	52.2
27	1-Oct	15:35	F	74.0	32.0	46.4	655	down	51.3	46.7	54.3	48.2	60.1	49.3
28	1-Oct	15:39	F	50.8	41.5	54.5	655	up	52.2	45.2	57.2	47.0	66.6	54.3
29	1-Oct	15:57	P	95.3	20.5	33.6	533	down	54.1	50.8	54.7	53.1	61.8	54.1
30	1-Oct	16:08	P	156.1	12.6	24.9	375	down	57.4	52.7	58.6	53.3	64.3	55.3
31	1-Oct	16:15	P	90.0	18.0	25.7	444	down	52.4	49.1	55.5	51.4	61.6	53.0
32	1-Oct	16:34	P	63.7	16.3	27.5	288	down	46.1	43.7	51.6	46.6	59.4	48.4
33	1-Oct	16:37	P	71.3	17.0	24.7	333	up	53.2	46.0	57.5	48.5	65.6	54.4
34	1-Oct	16:46	F	43.5	49.4	65.4	626	up	50.8	43.3	57.1	45.9	64.2	52.6
35	1-Oct	16:58	F	73.8	28.0	42.2	586	up	54.9	49.4	57.6	48.0	65.5	53.7
36	1-Oct	17:09	P	71.9	20.4	35.1	397	up	54.3	45.5	57.8	49.1	65.9	53.9
average		Passenger(P)		68.6	22.4	34.4	407	up	53.4	46.0	56.5	48.0	64.0	53.3
				92.4	19.4	32.5	430	down	52.7	49.4	54.1	49.6	61.3	51.6
		Freight(F)		58.0	39.6	54.3	649	up	53.2	46.3	57.1	47.7	65.1	53.3
				62.5	37.4	51.0	592	down	49.7	45.4	53.5	46.6	60.9	50.1

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table1.2-19, Table1.2-20. In Vapi No.1, in consideration of all results roughly, frequency of the range from 12.5 to 31.5Hz at X-axis excelled, range from 16 to 31.5Hz at Y-axis excelled, range from 25 to 40Hz at Z-axis excelled. In Vapi No.2, in consideration of all results roughly, frequency of the range from 10 to 40Hz at X-axis excelled, range from 8 to 25Hz at Y-axis excelled, range from 25 to 50Hz at Z-axis excelled. In Japan, in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed.

Table 1.2-19 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Vapi №1

Direction	No.	train type	Vibration Level of X-direction [dB]																							
			Frequency [Hz]																							
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
	1	P	12	14	16	16	17	16	16	15	14	12	12	12	14	18	26	30	38	36	36	36	32	33	32	35	45
	2	F	13	14	16	17	18	18	15	14	15	13	13	12	12	18	28	29	32	34	35	31	30	31	30	27	42
	3	P	12	14	17	17	17	16	15	13	13	13	12	11	11	15	24	29	34	33	34	36	30	31	30	33	43
	4	F	12	14	17	18	18	17	18	16	15	14	14	14	17	18	28	28	34	39	40	41	37	33	32	33	47
	5	P	13	15	17	17	17	17	17	16	15	14	13	12	12	14	21	30	30	30	30	25	25	23	23	21	38
	6	F	14	16	18	18	19	17	17	16	15	14	12	12	11	20	30	30	33	34	42	33	34	33	33	36	47
	7	P	14	16	18	18	19	19	17	17	15	15	15	14	16	20	32	40	41	37	33	30	29	32	29	27	46
	8	P	16	17	19	20	18	19	17	16	15	14	13	12	11	16	25	27	34	33	34	36	30	31	32	34	43
	9	P	15	17	18	20	23	18	19	18	17	16	14	13	13	21	35	37	39	35	32	33	29	30	29	26	44
	10	P	15	16	17	19	21	20	21	17	18	16	15	15	14	16	22	35	30	33	35	36	30	28	30	30	43
	11	P	16	17	18	19	20	22	20	18	17	17	16	16	18	26	37	37	36	39	37	36	36	35	34	30	46
	12	P	16	18	21	20	22	19	19	18	18	16	15	15	13	18	20	37	34	34	34	35	31	30	31	32	44
	13	P	16	17	20	21	21	20	20	18	17	17	16	14	14	17	30	34	36	33	32	32	30	27	28	21	42
	14	P	16	18	19	18	21	20	18	17	17	16	15	14	11	14	19	31	30	32	33	37	29	27	30	29	42
	15	F	16	17	20	21	21	21	19	19	19	17	16	14	16	19	28	33	34	33	40	42	40	34	31	32	47
	16	F	16	17	18	22	23	22	21	17	17	16	15	15	14	18	28	33	34	34	33	35	33	35	29	23	43
	17	P	16	18	22	23	23	21	22	20	19	18	17	16	18	19	31	42	42	35	32	31	31	29	27	23	46
	18	P	17	19	22	22	23	21	21	22	19	20	20	20	21	22	25	32	29	33	35	35	29	28	30	30	42
X	19	P	16	20	23	22	23	23	20	19	22	23	24	23	26	26	32	31	37	34	31	29	29	30	28	27	43
	20	F	17	19	20	19	21	19	25	23	19	18	19	20	19	23	28	29	32	36	38	34	34	37	36	35	45
	21	P	17	19	20	19	19	24	24	21	19	22	25	26	25	31	35	35	42	33	36	33	32	32	27	26	46
	22	F	16	18	19	20	21	22	20	20	18	18	16	16	16	20	30	29	33	35	41	33	34	31	34	35	46
	23	P	16	18	21	22	22	21	20	19	18	17	16	15	15	20	28	36	40	33	30	30	28	27	27	20	43
	24	P	16	18	20	21	20	21	19	19	19	17	16	15	15	19	32	29	31	35	35	34	36	32	31	28	43
	25	F	16	18	21	21	21	21	19	19	18	18	17	16	16	20	32	36	37	40	34	35	36	31	26	20	45
	26	P	16	18	20	20	21	21	19	17	17	17	16	15	15	18	26	31	34	33	34	36	31	30	28	28	42
	27	F	16	18	19	21	22	20	19	19	16	19	17	14	13	19	35	37	39	40	36	37	33	32	27	21	46
	28	F	16	18	21	22	21	21	19	19	19	17	16	16	15	18	27	31	30	33	41	40	37	35	36	32	47
	29	P	16	19	21	22	20	19	20	20	19	17	17	16	18	23	34	36	39	35	31	28	30	27	27	24	43
	30	P	17	18	21	22	21	22	20	20	19	17	16	15	17	19	35	39	39	38	33	34	30	30	27	25	45
	31	P	17	19	21	22	21	21	21	20	18	17	17	16	18	20	32	36	38	36	32	30	29	30	29	26	44
	32	P	18	20	22	23	23	23	22	20	20	18	18	18	17	19	32	33	40	31	30	29	31	25	28	23	43
	33	P	18	20	22	23	23	23	22	22	20	19	18	17	17	18	28	32	34	33	35	33	32	30	31	28	43
	34	F	18	20	22	23	23	23	22	21	20	19	19	18	18	20	27	30	33	35	41	37	32	34	35	33	46
	35	P	19	20	23	24	24	23	22	22	20	19	18	17	17	16	19	26	29	31	30	26	24	23	22	21	38
	36	F	19	21	23	24	24	23	23	21	21	19	19	18	18	21	28	34	33	37	37	40	39	33	31	33	46
	37	P	19	21	23	24	24	23	23	21	21	20	19	20	19	23	33	35	35	36	37	35	33	32	31	28	45
	1	P	2	3	5	5	10	9	4	5	0	9	2	4	11	27	36	35	36	35	38	33	34	33	33	34	46
	2	F	5	6	7	7	9	9	5	9	12	14	12	13	13	18	30	31	30	33	40	33	34	35	30	26	45
	3	P	4	6	9	10	7	9	10	9	8	11	9	10	12	24	32	33	34	34	38	37	33	32	33	35	45
	4	F	5	6	8	9	10	9	11	11	13	9	10	11	17	19	25	30	33	39	43	40	37	34	37	32	48
	5	P	6	7	9	11	10	13	9	8	8	7	7	8	9	19	27	29	32	31	29	35	29	28	26	23	40
	6	F	7	9	12	11	12	7	9	7	11	12	12	11	10	14	25	28	36	40	41	39	33	36	42	37	49
	7	P	8	9	11	10	12	12	10	10	10	7	7	16	21	24	36	41	39	36	36	36	32	31	32	27	46
	8	P	9	10	10	8	12	14	11	11	11	10	8	7	10	24	33	34	33	33	39	36	33	34	34	34	45
	9	P	8	10	12	14	16	14	16	13	12	10	11	17	20	28	38	37	39	40	35	39	33	28	31	26	47
	10	P	9	10	11	12	15	13	15	11	13	11	10	11	10	18	27	33	30	37	41	36	33	32	35	33	45
	11	P	10	12	14	14	17	15	12	14	15	15	14	13	13	27	42	40	39	39	40	40	41	36	37	31	49
	12	P	10	13	15	16	18	14	15	14	15	12	12	13	14	25	31	34	32	35	41	37	34	33	35	34	46
	13	P	10	12	15	16	16	15	15	13	12	12	12	11	16	19	29	33	35	31	35	35	29	28	29	24	42
	14	P	14	17	20	21	21	19	15	13	6	1	-1	2	7	21	28	31	29	34	39	36	33	31	33	33	44
	15	F	11	13	15	16	16	13	13	15	15	11	16	13	16	19	28	32	33	39	44	44	39	35	37	34	49
	16	F	11	10	8	21	24	22	16	13	17	13	15	13	15	22	27	29	32	37	34	39	36	32	32	23	44
	17	P	11	12	16	13	16	16	17	16	15	15	15	17	21	22	34	43	39	35	37	35	32	30	30	24	47
	18	P	12	15	16	14	18	16	16	18	17	20	17	18	20	22	28	29	29	34	40	35	33	31	33	34	44
Y	19	P	11	12	14	15	18	15	17	16	18	16	20	22	24	24	32	33	38	35	36	34	31	32	31	28	44
	20	F	12	14	16	17	16	13	17	17	15	15	20	20	22	25	26	32	33	38	42	38	36	39	38	37	48
	21	P	13	13	16	18	18	17	15	23	23	22	28	28	27	32	33	38	42	38	38	37	33	34	34	29	48
	22	F	12	13	15	16	19	17	16	16	14	14	15	14	17	16	24	28	35	36	42	39	34	37	42	37	48
	23	P	12	13	15	16	18	16	16	14	13	11	11	7	13	22	30	37	39	33	33	36	30	27	29	24	44
	24	P	11	13	15	15	14	17	15	13	15	13	12	11	13	24	37	33	33	37	38	39	39	31	35	33	46
	25	F	11	13	15	16	17	16	14	13	17	17	15	17	15	24	33	38	37	38	38	41	37	33	28	20	47
	26	P	11	13	14	14	16	16	14	13	12	13	10	10	11	27	32	35	31	33	37	37	33	31	31	33	44
	27	F	10	12	14	14	12	14	13	10	15	25	16	13	13	25	32	36	33	38	36	41	34	30	31	20	46
	28	F	11	13	16	16	16	16	16	15	14	13	16	15	15	17	24	32	33	40	44	39	34	39	40	35	48
	29	P	11	14	16	16	14	16	14	15	14	13	12	13	17	24	34	34	38	32	36	33	31	29	30	24	44
	30	P	12	14	16	17	15	16	15	14	14	12	10	17	19	27	38	42	37	42	35	41	32	29	30	26	48
	31	P	12	14	17	17	18	16	17	15	14	14	14	16	20	27	37	38	40	41	35	39	33	30	31	26	47
	32	P	14	16	17	18	19	18	18	17	17	15	15	17	16	21	36	35	35	29	35	34	33	30	30	28	43
	33	P	14	16	19	19	19	19	19	18	16	16	14	12	14	25	37	36	37	35	40	33	35	31	33	32	46
	34	F	14	16	18	19	20	21	17	16	16	18	17	15	16	17	27	29	32	39	41	39	34	37	39	35	47
	35	P	15	16	18	19	20	19	19	17	16	16	15	14	14	18	22	29	29	28	29	34	28	29	26	21	39
	36	F	15	17	19	20	19	18	20	18	17	17	17	17	16	20	27	28	29	33	41	43	39	37	38	35	48
	37	P	15	17	19	20	20	17	19	17	17	17	19	17	17	27	35	39	35	37	38	38	38	32	34	32	47
	1	P	8	10	12	13	13	14	13	12	12	11	12	12	13	15	20	26	40	39	45	53	48	46	43	46	56
	2	F	9	11	13	13	14	13	12	12	11	11	11	10	9	11	16	24	33	45	51	42	47	44	39	36	55
	3	P	9	11	13	13	14	13	13	12	12	10	9	11	10	13	16	24	34	39	44	54	50	46	42	48	57
	4	F	9	11	14	15	14	14	13	13	11	11	10	10	9	11	17	26	41	45	53	55	52	49	50	43	59
	5	P	10	12	14	14	15	14	14	13	12	11	10	10	10	10	12	25	35	43	44	41	40	39	35	34	49
	6	F	11	12	15	16	16	15	14	13	13	11	11	10	11	10	16	26	40	49	54	52	48	52	50	47	60
	7	P	12	13	16	16	17	16	15	14	13	13	11	11	12	11	21	33	41	44	49	45	42	45	40	36	53
	8	P	13	15	17	17	17	17	16	16	15	15	15	15	16	18	19	25	33	39	45	55	49	47	46	47	58
	9	P	12	14	15	18	16	19	18	17	17	16	15	15	14	16	21	29	41	47	47	46	42	45	37	36	53
	10	P	13	15	18	17	18	18	18	18	18	18	19	19	19	20	22	28	34	42	51	54	50	47	47	47	58
	11	P	13	15	18	18	19	18	18	17	15	15	13	13	12	14	25	28	42	47	46	51	55	53	47	41	59
	12	P	13	15	18	18	19	19	18	17	17	16	16	16	16	18	19	26	35	41	51	55	51	48	46	47	58
	13	P	14	16	18	19	19	18	18	17	16	15	14	14	13	14	19	27	40	44	48	45	46	43	39	32	53
	14	P	11	10	5	11	16	19	20	19	20	19	19	19	19	19	19	25	34	41	48	54	51	47	45	47	58
	15	F	14	16	18	19	19	18	18	17	17	17	16	17	18	18	21	28	41	49	53	58	56	52	47	45	62
	16	F	15	19	23	23	19	20	26	25	21	24	20	20	18	17	17	26	33	44	51	47	47	48	40	33	55
	17	P	14	16	19	20	20	19	19	19	19	19	19	19	18	17	20	33	40	44	49	45	44	46	33	33	53
	18	P	17	18	19	17	21	22	24	21	25	23	26	23	23	25	28	29	37	43	51	54	50	48	46	46	58
Z	19	P	15	17	19	19	20	21	21	16	17	20	18	24	22	27	28	31	33	44	49	43	40	45	39	36	53
	20	F	15	17	20	18	15	25	25	26	26	30	28	29	32	30	30	34	41	49	52	52	54	54	51	50	61
	21	P	15	17	19	20	17	22	24	18	18	19	25	27	29	31	34	35	46	46	49	47	42	47	40	36	55
	22	F	14	16	18	18	19	19	18	17	15	13	13	10	8	8	16	26	40	46	54	52	50	52	51	45	60
	23	P	15	16	19	19	20	19	18	17	17	15	14	13	13	13	15	29	42	42	48	43	45	42	39	32	52
	24	P	14	16	18	19	19	18	18	17	16	15	14	15	14	15	21	25	40	44	43	50	54	50	46	43	57
	25	F	14	16	18	19	19	19	18	17	16	14	14	12	13	17	19	27	40	47	50	43	51	49	38	31	56
	26	P	14	16	18	19	19	18	18	17	16	16	15	15	17	18	19	26	36	39	45	55	50	47	41	46	57
	27	F	14	15	18	18	18	18	17	16	15	16	14	12	13	15	22	31	43	48	49	50	49	45	41	32	56
	28	F	14	16	18	19	19	19	18	17	17	16	16	16	16	17	19	28	40	46	52	55	51	55	52	45	60
	29	P	14	16	19	19	19	19	18	17	16	16	14	14	14	16	19	28	39	44	49	42	41	43	36	33	52
	30	P	15	16	19	20	20	20	19	18	18	17	17	17	18	21	25	32	41	48	46	47	44	45	36	38	54
	31	P	15	17	19	20	20	20	19	18	16	16	15	13	13	15	23	25	42	43	48	46	42	45	39	35	54
	32	P	16	18	21	21	22	21	21	19	19	18	17	16	16	16	19	26	33	42	49	43	44	45	41	34	53
	33	P	17	19	21	21	21	21	20	20	19	18	17	16	16	17	21	25	41	43	44	51	50	47	44	44	56
	34	F	17	19	21	22	22	21	21	19	18	17	16	15	14	14	17	25	39	47	51	58	50	52	50	46	59
	35	P	17	19	21	22	22	22	21	20	19	18	17	16	15	14	14	22	34	43	44	41	39	38	35	32	49
	36	F	17	19	22	22	22	22	21	20	19	19	18	17	17	17	19	23	33	46	51	56	55	52	47	48	61
	37	P	17	19	22	22	22	22	21	20	19	18	17	17	16	17	20	26	40	44	47	51	52	49	44	44	57

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-20 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Vapi №2

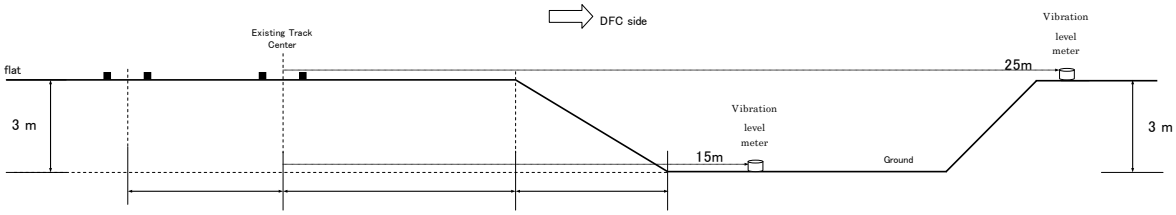
Direction	No.	train type	0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	F	3	5	8	11	12	8	8	11	12	12	11	12	25	34	41	34	37	36	42	38	38	38	30	24	48
	2	F	8	11	14	14	16	13	14	13	12	12	11	10	20	26	31	35	35	38	38	37	36	35	27	24	45
	3	F	8	12	15	17	17	16	15	10	13	11	8	10	19	33	32	36	33	38	34	35	37	35	30	25	45
	4	F	11	13	15	15	17	16	15	13	13	12	13	15	27	39	43	36	37	34	30	34	30	30	24	13	46
	5	F	11	13	14	16	15	17	15	14	14	12	11	13	23	33	39	35	34	38	36	41	45	37	33	20	48
	6	F	11	13	17	18	17	12	15	16	13	13	14	19	25	34	38	33	36	40	41	37	37	35	32	22	48
	7	F	11	13	16	18	18	15	16	15	14	14	12	13	20	32	31	35	36	38	37	35	39	34	31	24	46
	8	F	12	14	17	17	16	14	15	14	13	12	14	11	21	25	30	28	32	33	32	28	28	30	23	11	40
	9	F	11	12	14	15	18	18	16	16	16	12	10	11	23	36	38	36	34	31	30	33	29	28	21	13	44
	10	F	13	14	18	18	18	17	17	17	17	17	17	21	34	44	47	40	37	36	34	33	30	30	22	13	50
	11	F	12	15	18	19	21	19	18	18	15	13	13	13	22	29	34	34	36	36	37	35	37	34	30	21	45
	12	F	13	15	16	15	18	19	18	18	16	17	16	17	26	37	39	40	43	39	38	37	37	36	28	21	48
	13	F	14	16	17	16	19	19	18	17	15	14	14	13	17	25	30	33	34	38	35	36	34	33	26	21	44
	14	F	14	16	17	18	20	17	18	18	14	14	16	18	31	31	36	33	35	36	38	40	43	38	31	22	48
	15	F	14	16	18	20	16	20	18	17	16	18	16	17	28	38	38	38	34	37	38	35	31	33	28	14	46
	16	F	14	16	17	17	20	18	20	17	16	14	13	13	25	33	44	36	35	32	30	33	29	28	22	12	47
	17	F	15	18	20	19	18	20	19	16	15	15	13	12	11	26	24	27	32	34	35	33	35	35	27	21	42
	18	F	15	18	21	21	19	21	18	18	16	16	16	16	23	38	41	34	35	31	30	34	27	28	22	14	45
	19	F	15	17	18	17	19	20	21	21	17	21	19	21	31	38	40	37	36	44	42	40	41	38	33	22	50
	20	F	16	18	20	21	19	22	18	18	17	16	15	16	28	39	38	36	33	32	31	32	29	27	19	9	44
	21	F	15	16	17	20	22	21	21	19	18	17	19	17	28	37	37	37	37	38	37	37	32	33	25	13	46
	22	F	16	17	20	20	21	19	20	22	19	18	21	23	27	36	43	40	40	38	44	37	37	36	32	23	50
	23	F	16	18	20	21	21	19	19	18	17	17	15	14	15	22	28	30	34	27	35	27	22	23	18	10	38
	24	F	15	17	20	20	20	21	20	19	18	16	16	14	22	34	41	38	34	41	37	34	35	36	33	23	47
	25	F	16	18	20	20	21	20	20	18	18	17	16	14	23	35	34	32	31	35	33	36	32	28	20	10	43
	26	F	16	18	20	21	22	21	19	19	17	17	16	15	20	27	32	33	34	35	38	36	36	34	27	22	45
	27	F	17	19	21	22	22	22	21	19	22	20	16	18	29	38	40	39	37	39	37	39	34	33	23	13	48
	28	F	16	18	20	21	22	22	20	20	19	17	17	17	25	33	36	36	36	39	36	40	43	39	33	21	48
	29	F	17	18	20	21	22	23	22	20	20	19	18	19	33	47	42	42	38	33	33	33	30	30	23	13	50
	30	F	16	18	21	21	21	22	21	21	21	22	22	27	38	45	47	43	41	38	34	31	30	31	28	13	52
	31	F	17	18	21	21	22	21	21	19	19	18	17	16	30	38	42	38	37	34	30	33	29	28	24	13	47
	32	F	16	18	20	21	22	20	20	19	18	17	16	14	20	27	34	35	28	29	32	28	29	29	20	9	41
	33	F	16	18	20	21	22	21	20	20	19	17	16	16	21	29	32	37	34	37	34	34	35	34	23	24	45
	34	F	16	18	20	20	20	20	21	20	18	17	18	20	24	32	33	34	35	40	40	37	36	35	31	22	46
	35	F	16	18	20	21	21	21	18	18	18	15	15	14	24	41	41	35	35	40	40	39	44	39	31	24	50
	36	F	16	18	19	19	22	22	20	19	18	18	16	16	21	30	35	36	33	37	35	35	36	35	30	24	45
Y	1	F	0	1	4	7	5	15	13	16	21	11	16	23	26	32	38	34	41	41	46	43	40	39	38	30	51
	2	F	8	9	12	13	15	14	14	12	12	12	10	13	26	28	34	32	36	41	43	41	35	35	34	28	48
	3	F	9	11	14	15	14	14	13	12	11	12	12	14	23	33	31	32	34	43	44	39	40	36	33	30	49
	4	F	10	12	15	16	16	17	13	14	14	15	17	21	31	43	41	34	37	34	36	34	32	27	28	20	47
	5	F	11	12	14	14	15	17	14	15	11	12	10	15	27	33	32	36	36	46	48	49	45	37	36	26	54
	6	F	11	13	13	14	12	17	17	23	16	14	16	23	25	34	37	35	41	41	46	41	41	38	35	31	51
	7	F	11	13	15	13	15	16	15	14	14	14	15	15	24	34	32	31	36	44	44	40	41	38	36	28	50
	8	F	11	12	12	14	13	13	16	15	13	12	14	15	18	24	28	30	36	34	33	30	31	28	25	14	41
	9	F	12	14	16	17	16	14	16	17	15	14	15	17	28	38	36	33	36	34	35	34	37	28	28	17	45
	10	F	12	14	16	18	18	17	18	19	18	18	21	25	35	47	42	37	38	38	35	37	35	28	27	17	50
	11	F	13	14	15	16	17	17	18	17	14	13	13	15	21	30	33	33	36	42	45	40	39	35	33	27	49
	12	F	13	14	16	14	17	18	16	17	16	14	15	15	23	36	38	39	41	46	45	42	40	38	33	28	51
	13	F	12	13	17	19	16	14	16	18	16	13	14	12	21	27	31	32	33	41	41	38	36	36	34	28	47
	14	F	13	14	17	18	19	20	18	18	21	18	27	24	32	38	38	34	38	43	45	45	38	34	28	22	52
	15	F	13	14	15	18	20	20	21	18	19	18	22	22	29	38	40	38	34	38	37	36	34	28	28	16	47
	16	F	13	15	18	18	17	18	18	18	18	15	17	17	31	41	41	34	35	34	35	31	33	28	27	15	46
	17	F	14	15	18	20	18	17	18	17	15	15	14	15	15	23	23	30	34	39	36	33	36	35	30	25	44
	18	F	15	16	18	21	24	19	18	19	17	16	16	18	32	42	37	32	36	34	37	32	32	27	27	17	46
	19	F	15	17	19	22	21	22	25	18	18	21	20	23	30	36	39	35	42	48	42	42	46	38	35	28	53
	20	F	16	18	20	21	22	18	19	19	17	15	15	16	29	38	37	35	33	37	35	32	31	27	25	14	45
	21	F	16	18	21	21	20	17	19	19	17	16	28	21	28	37	39	34	36	41	38	36	34	28	28	17	47
	22	F	15	17	20	20	19	20	19	21	22	19	17	22	28	39	40	38	43	41	46	41	40	38	35	28	51
	23	F	15	17	19	20	20	20	20	19	16	16	16	15	17	27	31	32	30	32	31	27	24	20	22	13	40
	24	F	16	17	20	20	20	22	20	19	17	15	16	17	22	34	35	35	39	42	43	42	37	37	34	26	49
	25	F	15	17	19	20	20	21	20	18	17	16	17	20	25	34	36	30	31	41	39	38	38	27	25	15	46
	26	F	15	17	19	21	21	20	19	19	17	16	16	16	25	31	31	32	35	40	43	40	36	34	32	26	46
	27	F	17	19	21	21	21	20	20	20	22	23	20	23	33	36	41	39	36	40	38	36	36	29	28	15	48
	28	F	16	18	21	22	22	21	19	23	19	19	21	23	28	33	34	37	38	43	45	47	43	40	35	27	52
	29	F	16	18	20	21	21	21	20	20	20	19	21	24	36	48	43	37	37	39	34	36	37	31	28	19	51
	30	F	16	18	20	21	22	21	20	20	17	17	18	31	40	45	49	45	39	41	38	36	33	28	28	20	53
	31	F	16	18	19	20	20	19	20	18	19	18	19	21	33	46	40	33	36	34	36	35	31	28	28	19	49
	32	F	16	18	21	21	20	20	20	18	18	16	16	16	20	29	29	33	31	37	38	31	33	25	23	13	43
	33	F	16	18	20	21	21	20	20	18	19	17	17	17	23	34	29	34	34	42	44	39	38	34	32	27	49
	34	F	16	18	21	22	22	21	22	19	17	17	19	21	24	30	33	37	37	43	43	37	37	37	33	26	49
	35	F	16	18	20	21	20	20	23	19	20	21	20	22	23	34	38	34	37	46	45	43	44	38	32	32	52
	36	F	16	18	20	20	21	21	21	19	17	17	19	17	24	36	33	33	33	43	44	39	39	35	32	28	49
Z	1	F	1	3	5	7	8	7	5	8	8	4	12	18	22	28	32	37	47	45	52	53	54	54	45	38	60
	2	F	8	10	13	14	15	12	14	12	12	11	11	13	23	23	28	36	40	47	51	52	50	50	44	41	58
	3	F	10	12	14	15	17	17	17	16	16	19	20	21	23	29	27	36	41	44	52	47	50	51	44	43	57
	4	F	9	11	13	15	14	15	13	12	13	13	13	16	25	37	34	33	44	44	50	48	46	44	39	30	55
	5	F	9	11	14	14	14	14	15	13	12	12	12	15	24	29	32	44	48	50	55	62	54	53	48	38	64
	6	F	10	12	14	15	16	15	16	13	12	14	15	21	20	28	31	37	44	48	53	55	47	48	48	40	59
	7	F	10	12	15	16	16	17	16	16	17	17	18	19	23	30	35	34	45	48	52	49	52	53	47	41	59
	8	F	10	12	14	15	16	15	14	12	12	12	13	14	15	20	24	35	43	41	43	44	42	45	38	25	51
	9	F	11	13	16	16	16	15	15	13	11	11	10	11	22	33	30	35	43	43	48	47	45	47	37	28	54
	10	F	11	13	15	15	16	17	16	15	15	15	15	15	30	42	36	35	44	44	52	47	45	45	38	28	56
	11	F	12	13	16	17	17	16	16	14	12	13	13	14	18	26	28	36	39	45	51	49	50	51	44	39	57
	12	F	12	14	16	17	18	17	17	16	16	16	16	17	21	31	33	40	46	51	51	52	52	52	43	36	59
	13	F	12	13	16	16	17	16	16	14	13	13	11	12	18	22	28	29	42	45	50	52	49	49	46	38	57
	14	F	12	14	17	17	18	16	16	14	17	15	22	21	28	31	33	36	45	48	54	52	58	55	45	39	62
	15	F	13	15	18	18	18	18	18	18	15	15	18	19	24	32	36	37	40	47	50	50	49	49	40	28	56
	16	F	13	15	17	18	19	17	17	16	15	15	13	16	27	34	34	36	44	44	47	48	46	47	37	28	54
	17	F	13	15	17	17	18	18	17	17	15	15	14	13	17	13	32	40	40	43	48	48	51	42	37	30	56
	18	F	14	16	18	19	17	19	19	18	16	14	13	12	27	36	31	35	45	44	48	49	44	46	38	28	54
	19	F	14	16	18	19	19	19	17	16	16	15	17	20	26	32	36	41	46	50	51	50	56	54	46	41	61
	20	F	14	16	18	18	19	19	18	17	15	15	13	13	25	32	31	36	40	47	50	45	47	44	38	28	55
	21	F	14	16	18	19	20	20	18	17	16	15	23	18	25	33	35	37	39	48	50	51	49	48	40	28	57
	22	F	14	16	18	19	20	19	18	18	18	18	20	21	27	34	34	38	48	47	53	54	52	52	45	40	60
	23	F	14	16	18	19	19	19	18	18	17	16	16	15	17	22	28	34	40	40	44	41	37	36	32	26	49
	24	F	14	16	18	19	19	19	18	17	16	16	16	17	21	29	36	36	42	49	51	51	50	53	47	41	59
	25	F	15	16	19	19	19	19	18	17	16	15	16	16	20	29	29	30	39	48	52	53	49	48	37	28	57
	26	F	15	16	19	19	19	19	18	18	18	17	16	17	23	28	27	34	37	45	50	51	51	52	43	41	58
	27	F	15	17	20	21	21	20	19	19	17	19	17	20	29	30	36	40	44	49	52	51	51	47	40	28	58
	28	F	16	18	20	20	21	21	20	19	19	19	20	23	28	34	42	49	48	51	58	55	56	45	38	23	63
	29	F	15	17	20	20	21	19	20	18	18	18	17	21	42	33	37	44	45	51	48	44	46	38	28	25	55
	30	F	15	17	19	20	20	20	19	18	17	16	16	27	36	39	44	41	42	49	50	51	47	47	38	31	57
	31	F	15	17	20	21	22	21	20	19	17	16	16	17	27	40	35	34	44	44	51	48	46	44	39	29	55
	32	F	15	17	19	20	20	19	19	18	18	16	16	14	17	24	28	34	37	41	47	45	45	44	36	27	52
	33	F	15	17	19	20	20	20	19	18	18	17	16	16	19	29	24	37	43	44	52	48	49	50	43	42	57
	34	F	15	17	19	20	20	19	19	18	17	17	17	20	21	24	30	36	44	48	53	51	50	52	45	40	58
	35	F	15	17	19	20	20	21	19	18	18	20	18	20	22	33	34	39	48	52	53	55	58	52	45	41	62
	36	F	15	17	19	19	20	19	19	19	17	16	16	16	21	31	25	35	41	44	52	47	50	51	44	42	57

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

(5) Valsad

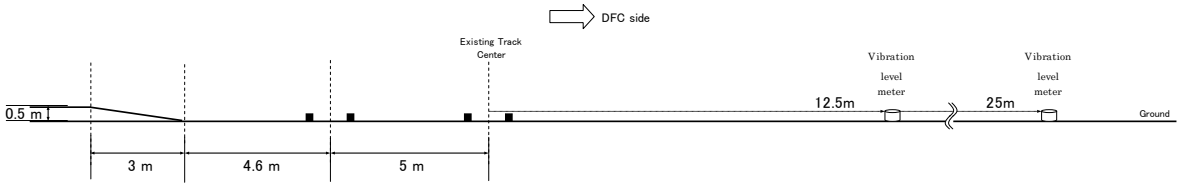
1) Cross-section View

Cross-section view of measurement site in Valsad are given in Figure 1.2-9 and Figure 1.2-10.



Source: JICA Survey Team

Figure 1.2-9 Cross-section View of Measurement Site in Valsad №1



Source: JICA Survey Team

Figure 1.2-10 Cross-section View of Measurement Site in Valsad №2

2) Result of Background Vibration

Results of background vibration measurement in Valsad is given in Table 1.2-21.

Table 1.2-21 Result of background Vibration Measurement in Valsad

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Valsad	2-Oct	1	<30	<30	<25	32.9	<30	<25	32.6	<30	<25	<30	<30	<25	32.9	<30	<25
	2-Oct	2	32.7	<30	33.1	<30	32.1	<25	<30	32.4	25.6	42.6	46.7	54.2	42.6	46.7	54.2

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Vibration

Results of railway vibration measurement in Valsad are given in Table 1.2-22 and Table 1.2-23.

Table 1.2-22 Result of Railway Vibration Measurement in Valsad №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	2-Oct	10:35	P	26.0	13.0	21.4	288	up	58.4	48.6	58.1	48.8	65.1	54.8
2	2-Oct	10:49	P	87.7	19.6	34.0	466	down	49.9	46.8	51.2	46.6	55.7	51.0
3	2-Oct	11:02	P	63.5	27.6	45.9	489	up	56.1	46.3	57.5	47.2	63.2	53.9
4	2-Oct	11:14	P	49.3	37.5	47.1	533	up	54.2	46.1	54.4	44.4	60.1	52.0
5	2-Oct	11:23	F	75.9	26.9	35.7	572	up	56.6	50.7	57.8	53.1	64.2	57.5
6	2-Oct	11:30	F	91.0	26.6	36.9	641	up	57.8	52.3	60.4	52.2	65.6	57.7
7	2-Oct	11:39	P	61.7	25.4	44.1	288	down	45.4	40.5	45.3	41.5	52.8	45.7
8	2-Oct	11:41	P	49.2	18.8	32.1	399	up	54.2	45.4	55.4	44.6	62.0	53.0
9	2-Oct	11:51	P	67.4	29.8	47.0	556	up	55.0	71.2	57.5	70.0	63.0	77.6
10	2-Oct	12:03	F	74.8	33.3	46.9	641	up	57.8	73.1	57.7	75.9	63.7	80.2
11	2-Oct	12:19	F	98.1	25.7	39.0	593	up	59.2	77.0	60.9	74.5	66.3	83.0
12	2-Oct	12:25	P	78.5	19.5	33.7	489	down	49.1	40.2	49.3	42.5	54.8	48.7
13	2-Oct	12:36	F	54.7	46.4	68.9	641	down	48.1	43.9	48.1	48.0	55.1	49.5
14	2-Oct	12:43	P	73.8	16.2	31.3	422	up	57.2	47.9	57.5	48.0	64.1	53.4
15	2-Oct	13:45	F	77.0	12.4	49.0	628	up	50.5	50.5	50.3	50.3	58.9	58.9
16	2-Oct	13:59	F	81.0	30.3	43.4	641	up	58.9	52.8	58.6	51.9	65.4	56.4
17	2-Oct	14:14	F	83.1	27.0	41.4	641	up	52.1	52.1	52.6	52.6	59.1	59.1
18	2-Oct	14:19	P	87.9	16.1	34.8	422	down	52.0	50.3	54.2	47.9	57.7	52.5
19	2-Oct	14:36	P	98.1	20.6	36.4	556	down	55.3	57.4	58.0	57.5	57.0	53.0
20	2-Oct	14:37	P	60.8	23.8	37.3	422	up	47.1	47.1	45.3	45.3	52.5	52.5
21	2-Oct	14:46	F	69.3	34.0	47.1	626	down	48.9	44.7	49.6	45.5	55.4	49.7
22	2-Oct	14:55	F	59.3	48.5	66.4	641	down	49.2	45.6	49.4	46.0	56.0	50.0
23	2-Oct	15:09	P	79.3	13.3	23.8	266	down	46.2	40.1	46.5	41.0	52.1	46.3
24	2-Oct	15:18	F	77.9	29.1	40.6	641	down	55.4	54.9	59.0	58.0	58.5	54.6
25	2-Oct	15:29	P	59.1	24.3	51.1	399	up	55.3	46.2	56.5	47.8	63.4	53.5
26	2-Oct	15:40	F	66.2	33.8	55.6	641	up	58.2	48.8	58.5	49.2	65.1	56.0
27	2-Oct	16:02	P	63.6	17.6	42.4	355	up	56.1	47.1	57.3	45.3	63.2	53.8
28	2-Oct	16:11	P	101.4	20.3	34.3	556	down	49.8	46.0	51.8	47.3	57.2	49.9
29	2-Oct	16:16	F	40.9	65.5	86.2	603	up	54.0	47.4	57.4	47.6	61.8	54.4
30	2-Oct	16:34	P	35.2	47.2	75.9	444	down	43.5	37.5	42.6	35.2	48.5	43.8
31	2-Oct	16:36	P	59.9	23.1	40.0	399	up	53.1	46.6	56.6	45.5	62.6	53.6
32	2-Oct	16:44	F	56.9	42.4	64.7	641	up	57.9	50.8	60.2	48.3	65.7	58.3
33	2-Oct	16:45	F	48.1	59.6	87.6	593	down	47.3	40.8	45.9	40.9	55.1	47.0
34	2-Oct	16:53	P	66.9	26.9	48.4	556	up	56.7	49.1	58.2	48.1	64.3	54.6
35	2-Oct	16:58	P	88.5	4.9	35.9	288	down	50.9	45.4	54.1	46.2	56.0	52.8
average		Passenger (P)		58.1	23.5	40.3	438	up	54.9	49.2	55.8	48.6	62.1	55.7
				79.8	20.8	39.2	419	down	49.1	44.9	50.3	45.1	54.6	49.3
		Freight (F)		74.5	32.4	49.9	624	up	56.3	55.5	57.4	55.5	63.6	62.1
				61.9	43.5	62.1	629	down	49.8	46.0	50.4	47.7	56.0	50.1

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-23 Result of Railway Vibration Measurement in Valsad №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	2-Oct	10:33	P	62.6	15.7	29.8	288	up	49.8	46.1	50.2	45.0	58.2	51.0
2	2-Oct	10:49	P	61.6	27.0	35.7	466	down	44.5	41.0	48.4	42.2	57.8	50.9
3	2-Oct	11:01	P	28.8	53.2	67.7	489	up	44.8	43.1	46.1	42.0	55.4	48.4
4	2-Oct	11:12	P	50.2	46.8	70.8	533	up	47.5	44.7	49.0	45.3	59.6	51.0
5	2-Oct	11:20	F	32.6	47.2	78.7	572	up	47.6	46.7	48.8	44.8	58.3	51.4
6	2-Oct	11:28	F	88.6	27.1	44.7	641	up	52.7	50.3	52.6	50.3	63.3	59.5
7	2-Oct	11:40	P	36.8	22.7	32.1	288	up	48.0	42.6	46.0	41.9	54.9	47.9
8	2-Oct	11:40	P	44.5	30.0	43.0	399	down	42.6	39.8	47.8	42.1	57.5	51.3
9	2-Oct	11:50	P	40.3	42.5	60.1	556	up	48.0	45.3	49.7	43.2	58.1	51.6
10	2-Oct	12:00	F	60.2	37.3	54.9	641	up	50.7	46.3	51.3	45.8	59.8	54.9
11	2-Oct	12:17	F	90.0	26.1	54.3	593	up	52.7	50.5	52.2	49.2	62.6	55.7
12	2-Oct	12:35	F	47.6	48.4	60.0	641	down	44.2	41.3	50.1	45.5	61.0	52.6
13	2-Oct	12:39	P	35.8	36.1	58.3	422	up	46.3	45.3	47.1	41.9	57.4	48.6
14	2-Oct	13:44	F	68.4	33.4	58.4	628	up	49.0	46.4	51.7	45.4	60.0	55.4
15	2-Oct	13:57	F	71.5	35.4	51.5	641	up	51.8	48.3	53.9	49.3	62.8	55.6
16	2-Oct	14:06	F	84.5	27.0	45.9	641	up	52.5	52.0	53.1	49.7	63.7	58.2
17	2-Oct	14:17	P	46.0	30.2	54.8	422	down	41.4	38.8	47.7	41.5	59.0	51.0
18	2-Oct	14:36	P	37.7	36.6	46.1	422	up	45.3	44.8	46.4	42.3	55.7	48.3
19	2-Oct	14:38	P	36.5	24.1	38.6	556	down	45.8	44.3	51.1	47.4	59.9	53.8
20	2-Oct	14:47	F	43.9	44.4	63.4	626	down	44.3	41.6	47.7	42.6	58.7	51.0
21	2-Oct	15:11	P	55.3	19.5	49.2	266	down	39.9	37.0	42.1	37.5	52.2	45.4
22	2-Oct	15:19	F	80.0	26.2	46.8	641	down	50.8	47.0	55.3	53.1	61.0	53.8
23	2-Oct	15:27	P	40.2	33.6	72.8	399	up	49.3	45.8	47.7	43.6	57.7	50.8
24	2-Oct	15:38	F	49.8	40.2	70.6	641	up	51.4	47.8	52.7	47.0	61.5	54.0
25	2-Oct	16:00	P	29.5	33.7	49.6	355	up	44.6	43.0	44.4	42.3	55.0	46.8
26	2-Oct	16:14	F	21.9	91.7	111.3	779	up	51.2	47.6	51.7	44.5	61.1	53.2
27	2-Oct	16:36	P	162.0	29.4	45.8	444	down	42.5	39.7	48.3	39.5	59.1	52.6
28	2-Oct	16:49	F	37.4	52.4	79.4	593	down	43.7	38.5	47.8	41.9	58.3	52.6
29	2-Oct	16:51	P	48.4	36.5	63.8	556	up	48.8	45.3	49.2	45.2	59.7	51.3
30	2-Oct	16:59	P	94.5	11.8	30.9	288	down	47.3	45.8	50.0	44.9	58.8	52.5
31	2-Oct	17:06	P	45.3	35.0	63.1	489	up	49.4	45.4	50.1	44.1	59.5	54.3
average		Passenger(P)		41.4	35.7	55.8	436	up	47.4	44.7	47.8	43.3	57.4	50.0
				71.5	24.6	42.6	406	down	43.4	40.9	47.9	42.2	57.8	51.1
		Freight(F)		63.1	40.6	63.4	642	up	51.1	48.4	52.0	47.3	61.5	55.3
				52.2	42.9	62.4	625	down	45.8	42.1	50.2	45.8	59.7	52.5

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-24 and Table 1.2-25. In Valsad No.1, in consideration of all results roughly, frequency of the range from 20 to 40Hz at X-axis excelled, range from 16 to 31.5Hz at Y-axis excelled, range from 20 to 40Hz at Z-axis excelled. In Valsad No.2, in consideration of all results roughly, frequency of the range from 20 to 40Hz at X-axis excelled, range from 16 to 40Hz at Y-axis excelled, range from 16 to 40Hz at Z-axis excelled. In Japan, in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed.

Table 1.2-24 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Valsad №1

Direction	No.	train type	Vibration Level of X-direction [dB]																							
			Frequency [Hz]																							
			0.4	0.5	0.6	0.8	1	1.2	1.6	2	2.5	3.2	4	5	6.3	8	10	12	16	20	25	32	40	50	63	80	AP
X	1	F	11	12	13	15	16	14	13	14	12	12	18	24	28	32	30	34	41	39	43	41	39	38	43	38	50
	2	F	13	15	16	17	18	18	18	19	15	16	22	36	35	37	33	35	38	34	40	40	34	31	28	28	47
	3	F	14	16	18	19	18	16	17	14	14	13	19	24	23	23	28	34	38	39	41	42	41	40	44	39	50
	4	F	15	16	17	18	19	20	18	16	16	15	19	23	21	24	30	28	35	38	40	39	36	35	38	38	47
	5	F	15	16	18	19	22	20	19	18	19	20	30	33	31	41	40	37	41	45	44	45	43	40	41	37	53
	6	F	16	17	18	21	21	20	20	18	18	18	30	33	31	34	41	40	42	46	49	45	45	41	43	41	54
	7	F	15	17	19	20	19	21	19	17	17	16	18	23	22	16	22	25	29	29	32	35	27	25	24	26	40
	8	F	15	17	19	19	18	20	19	19	17	16	22	25	21	23	30	30	35	42	41	40	35	39	37	38	48
	9	F	15	17	20	19	18	20	19	17	17	14	19	26	24	28	29	33	35	38	39	38	39	37	38	40	48
	10	F	16	19	20	19	20	21	19	18	17	17	26	29	31	35	37	37	38	43	45	46	45	40	40	37	53
	11	F	16	17	19	21	20	19	19	16	19	20	30	29	30	31	39	46	44	43	51	47	45	41	41	40	55
	12	F	16	18	20	20	21	20	19	18	18	17	20	25	25	27	24	30	31	27	36	39	35	30	27	27	43
	13	F	16	17	19	21	22	19	18	18	18	16	28	33	34	32	27	27	28	35	38	38	34	28	24	25	45
	14	F	15	17	20	22	22	21	20	20	18	18	17	24	25	27	26	35	37	42	40	42	40	38	38	39	48
	15	F	16	18	21	22	20	23	19	20	19	18	29	26	29	39	39	38	40	43	43	45	43	38	39	40	52
	16	F	17	19	21	23	21	23	20	20	19	29	31	37	35	35	40	35	39	46	45	46	43	40	41	38	53
	17	F	16	20	23	23	23	20	21	18	21	26	31	37	32	32	40	41	44	47	49	45	46	41	41	40	55
	18	F	17	18	19	22	22	20	19	18	18	19	32	36	35	28	33	33	35	31	37	40	34	28	26	27	42
	19	F	17	18	20	22	21	23	21	20	20	20	28	29	24	30	38	37	30	31	35	36	32	29	30	29	45
	20	F	16	18	21	21	21	21	20	18	19	19	22	26	22	24	27	32	34	38	40	39	39	36	37	36	47
	21	F	17	19	21	22	21	20	19	19	19	19	27	31	31	34	32	31	33	35	38	40	40	31	26	24	46
	22	F	18	20	22	22	22	23	23	21	20	21	27	31	28	30	26	30	31	33	36	34	33	31	26	23	43
	23	F	17	19	20	20	21	21	21	19	19	18	20	27	29	30	28	31	33	32	36	36	37	28	25	24	43
	24	F	17	18	21	21	21	19	19	17	19	16	34	44	33	38	42	35	36	36	39	43	39	35	29	26	50
	25	F	17	18	21	21	21	20	20	18	18	17	19	18	20	22	31	27	36	38	40	41	37	35	36	39	48
	26	F	18	18	21	22	21	22	21	20	21	20	28	28	35	40	38	38	38	43	42	43	41	37	38	40	51
	27	F	17	18	20	20	22	21	20	18	17	16	19	25	23	27	27	31	32	39	40	40	40	38	37	39	48
	28	F	17	19	21	22	22	21	21	20	20	18	24	35	36	38	35	34	35	34	38	38	33	29	30	29	48
	29	F	18	18	21	21	22	22	22	20	18	18	31	36	32	29	33	34	38	37	39	39	39	38	37	37	48
	30	F	17	18	20	21	21	21	21	20	19	18	19	15	16	16	23	26	26	25	26	29	24	21	21	23	37
	31	F	17	19	21	22	22	22	20	19	18	18	20	20	22	24	30	30	35	38	40	41	39	35	37	38	48
	32	F	17	19	21	22	21	20	21	20	20	18	25	27	36	32	32	37	39	42	41	41	39	38	38	37	50
	33	F	17	19	21	22	22	22	22	20	20	18	22	18	24	27	28	31	34	30	32	32	29	29	25	21	41
	34	F	17	19	21	22	22	21	21	20	19	18	18	26	25	27	28	36	35	42	40	42	39	38	38	37	49
	35	F	17	19	22	23	23	23	22	21	22	23	28	27	33	35	33	33	34	34	35	36	34	27	30	28	45
Y	1	F	1	4	7	8	10	10	11	11	13	16	23	25	34	30	35	34	43	42	45	42	41	45	44	37	52
	2	F	6	8	10	10	13	14	10	11	9	11	28	38	43	35	35	36	38	32	36	32	32	33	31	23	47
	3	F	7	10	12	14	12	10	10	11	9	10	24	28	24	24	28	35	38	40	39	44	42	43	44	38	51
	4	F	9	11	13	14	13	8	12	10	10	8	18	20	21	24	31	33	40	40	41	40	37	38	41	40	49
	5	F	8	10	11	13	15	13	13	13	15	25	38	36	33	39	37	38	42	47	41	50	45	42	42	37	55
	6	F	10	11	12	16	16	15	17	16	19	22	38	39	34	34	41	44	43	43	47	46	46	42	43	42	55
	7	F	12	14	16	15	17	18	15	13	13	12	15	23	21	18	26	28	32	29	30	31	25	30	25	26	38
	8	F	9	10	12	13	13	13	14	14	13	12	20	21	19	24	34	34	42	40	42	43	39	38	40	39	50
	9	F	9	12	14	14	13	14	13	10	11	8	19	25	26	28	28	34	37	44	42	42	38	41	42	42	51
	10	F	9	11	14	13	12	13	16	14	15	21	41	39	34	35	35	40	43	44	47	50	45	41	45	40	55
	11	F	9	12	14	15	16	15	17	22	25	23	34	35	29	30	42	47	46	41	49	48	48	42	42	40	56
	12	F	11	12	14	15	15	16	16	13	13	11	19	25	28	32	28	31	32	29	34	32	35	34	30	28	43
	13	F	11	14	16	16	17	19	16	15	14	15	30	39	34	30	26	30	29	33	35	35	34	37	28	25	45
	14	F	10	12	15	17	17	16	16	15	13	11	14	26	25	26	26	35	40	40	41	44	42	41	41	41	51
	15	F	11	13	16	17	20	18	24	19	21	23	34	31	30	40	36	42	42	46	42	49	43	40	44	41	54
	16	F	11	13	15	17	15	16	15	9	18	33	43	40	36	35	41	41	41	46	42	49	44	43	42	41	55
	17	F	13	15	17	17	18	18	19	21	30	35	35	34	33	33	40	43	44	46	49	47	47	44	40	42	55
	18	F	12	14	16	17	17	16	16	15	14	15	32	40	39	30	32	32	34	32	35	32	31	32	29	28	46
	19	F	13	15	16	16	15	17	16	14	13	16	20	27	27	34	36	38	33	34	34	32	33	32	33	30	45
	20	F	12	14	17	17	16	18	13	15	13	12	17	22	25	28	29	33	38	42	40	42	39	40	40	41	50
	21	F	12	13	16	17	15	14	15	14	23	16	32	34	35	32	34	35	35	35	39	37	39	33	29	26	46
	22	F	13	15	18	18	19	16	17	17	15	16	31	37	28	26	26	33	30	33	36	31	33	34	28	24	44
	23	F	11	13	16	17	18	17	17	13	15	16	21	27	33	32	29	35	36	33	34	34	35	32	27	25	44
	24	F	11	13	15	16	17	18	17	20	17	26	43	46	37	35	40	40	38	36	35	37	38	40	31	28	51
	25	F	12	14	15	16	17	18	17	15	16	15	26	21	22	21	32	33	40	37	41	41	37	37	38	40	48
	26	F	11	12	15	17	18	14	15	16	17	19	36	33	34	39	36	40	41	41	44	46	42	40	43	43	53
	27	F	12	14	17	18	16	16	17	15	15	15	20	23	24	28	28	32	37	43	42	42	40	40	41	41	50
	28	F	13	15	17	17	17	17	15	16	16	16	17	22	33	38	38	35	35	32	32	34	33	33	28	28	46
	29	F	12	14	16	18	18	18	18	17	16	23	31	40	33	28	34	37	38	38	39	39	38	38	39	40	48
	30	F	13	15	17	17	17	16	16	15	14	13	13	14	14	13	23	27	28	25	27	26	24	26	21	23	38
	31	F	13	15	16	18	19	17	16	14	14	13	17	25	24	25	28	31	36	41	39	42	39	39	39	39	48
	32	F	13	15	17	18	17	17	15	16	15	16	27	30	32	27	31	36	40	43	41	42	39	40	40	41	50
	33	F	13	14	16	18	17	16	16	16	16	15	24	24	25	23	26	28	28	31	30	35	30	32	24	22	46
	34	F	13	14	17	18	17	17	18	16	15	15	19	27	27	31	30	36	40	41	42	43	41	41	40	40	51
	35	F	13	15	18	19	18	19	18	16	17	18	32	32	32	34	36	34	34	31	32	34	33	32	28	28	44
Z	1	F	6	8	11	12	12	12	12	13	13	14	15	20	28	38	46	40	47	45	53	48	49	45	47	37	56
	2	F	10	11	14	14	15	14	14	13	12	13	18	26	33	38	40	39	41	42	40	40	37	38	31	29	49
	3	F	11	13	15	16	16	16	16	14	15	15	18	20	24	35	36	41	42	45	43	49	50	47	47	40	58
	4	F	12	14	16	17	18	17	16	16	15	14	15	16	21	30	42	37	43	45	50	46	47	42	42	37	55
	5	F	12	14	16	18	18	18	17	18	19	28	28	36	53	49	43	45	53	52	54	53	47	44	37	51	61
	6	F	13	15	17	18	18	18	18	18	18	28	31	33	41	49	48	48	51	55	53	55	48	47	42	51	61
	7	F	13	15	17	18	18	18	17	15	16	14	14	14	15	23	32	32	30	41	35	38	33	33	28	28	45
	8	F	13	14	17	18	18	17	17	15	15	14	13	16	20	25	41	38	45	48	51	49	47	46	42	37	58
	9	F	13	15	17	18	18	18	17	16	15	14	15	18	24	32	37	39	44	46	49	48	48	44	44	41	56
	10	F	13	15	17	18	19	18	18	18	19	19	30	29	37	47	46	43	44	52	55	55	53	48	45	39	51
	11	F	13	15	17	18	18	18	18	17	16	19	25	29	33	42	47	42	48	48	53	54	50	48	46	41	53
	12	F	13	15	18	18	19	18	17	16	15	14	13	17	25	35	29	32	36	40	42	44	39	34	33	30	46
	13	F	14	16	18	19	19	19	18	17	17	16	22	30	35	38	32	31	35	45	43	40	41	39	30	25	50
	14	F	14	16	18	19	19	19	18	17	17	17	21	26	42	35	33	41	50	49	50	51	47	44	42	37	57
	15	F	14	16	18	19	19	19	18	17	15	15	25	24	36	52	51	45	44	51	51	53	51	45	44	42	60
	16	F	15	16	19	20	20	20	19	18	18	24	33	32	34	45	51	44	43	50	52	54	51	47	45	40	60
	17	F	15	17	19	20	21	21	21	21	22	25	26	31	33	44	46	46	46	53	56	55	56	51	44	42	62
	18	F	15	16	19	19	19	19	18	17	16	16	23	32	34	36	34	37	38	42	39	40	38	38	31	31	48
	19	F	15	16	19	19	20	19	18	18	17	16	18	20	22	35	43	38	38	46	41	42	39	35	36	33	51
	20	F	15	16	19	19	20	19	18	17	16	14	12	13	23	30	35	38	42	43	51	48	50	44	42	41	56
	21	F	15	17	19	20	20	19	19	18	18	16	23	26	37	43	41	40	41	47	44	43	43	37	31	27	53
	22	F	15	17	19	19	20	19	19	17	17	16	22	27	28	38	32	34	36	42	38	39	40	38	31	26	48
	23	F	15	17	19	19	20	19	19	18	17	16	16	18	31	37	35	37	38	42	41	42	40	34	30	27	49
	24	F	14	16	19	20	19	19	19	18	17	18	32	36	33	44	49	41	41	46	44	45	46	45	33	30	55
	25	F	15	17	19	20	20	19	19	17	17	17	18	19	25	27	40	41	41	44	50	48	45	42	41	41	55
	26	F	15	17	19	20	20	20	19	18	18	17	28	24	36	46	47	42	45	50	51	51	50	45	44	42	58
	27	F	15	17	19	20	20	19	19	17	18	16	15	14	25	34	35	38	42	46	51	49	50	44	43	40	58
	28	F	15	17	19	20	20	19	19	18	17	18	27	34	40	42	40	40	45	40	41	37	35	35	31	31	51
	29	F	15	17	19	20	20	19	18	17	17	20	34	35	38	43	41	41	44	45	48	49	45	43	38	35	55
	30	F	15	17	20	20	20	20	19	17	16	15	15	16	19	26	30	31	35	33	31	32	29	24	25	26	41
	31	F	16	17	19	20	20	20	19	18	17	17	18	16	22	29	35	41	43	43	51	49	50	44	42	40	56
	32	F	15	17	19	19	19	19	20	17	18	12	17	24	37	42	40	42	42	46	51	49	51	47	44	40	57
	33	F	16	17	19	19	20	21	20	19	17	17	18	21	29	35	34	33	35	36	35	37	40	36	27	23	46
	34	F	16	17	20	20	20	19	20	19	17	17	18	20	27	42	37	42	43	51	49	49	50	45	45	40	57
	35	F	16	17	20	20	21	20	19	19	19	17	22	22	28	37	42	37	39	45	39	39	36	35	34	31	50

Note: P : passenger train F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-25 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Valsad №2

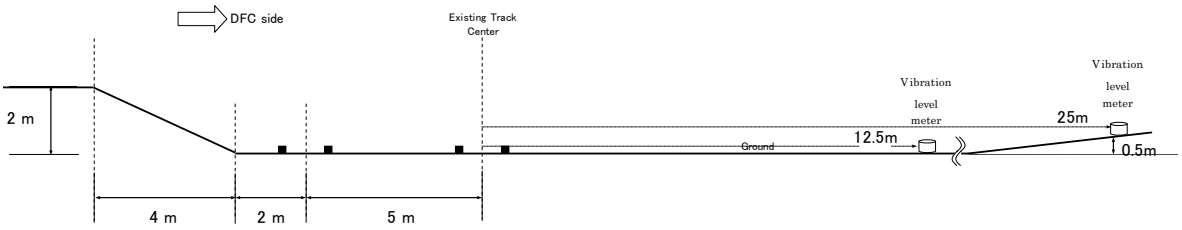
Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	P	7	9	10	12	10	15	9	14	8	7	8	13	19	20	21	27	30	31	37	39	35	29	29	23	43
	2	P	10	11	14	16	17	14	12	13	11	10	11	9	15	14	21	24	28	29	32	29	28	22	18	13	38
	3	P	11	13	16	16	17	18	17	13	15	13	13	11	13	16	25	28	32	32	32	34	29	25	20	16	40
	4	P	12	13	17	17	18	17	17	15	14	14	13	11	11	13	20	28	25	27	32	30	28	24	18	14	38
	5	F	13	14	16	15	17	18	17	16	15	13	19	21	23	25	27	27	34	34	35	39	34	31	24	20	44
	6	F	13	15	16	16	19	18	17	12	15	22	32	30	24	32	40	37	39	38	41	42	43	35	29	24	49
	7	P	14	15	17	17	18	18	17	18	15	14	15	16	14	16	21	24	31	35	37	32	31	30	23	17	42
	8	P	14	16	18	19	18	17	19	17	16	16	15	17	16	17	23	23	27	32	28	28	24	22	15	10	37
	9	P	15	16	18	21	20	19	16	17	16	14	14	14	14	16	21	25	27	32	36	30	28	28	21	19	40
	10	F	15	17	18	19	21	19	19	19	17	16	18	22	34	32	29	28	35	36	40	38	37	34	27	22	46
	11	F	15	16	19	20	20	20	17	16	18	20	26	26	26	32	38	36	35	35	41	42	44	35	28	25	49
	12	F	16	18	21	20	21	21	22	21	20	18	21	28	27	25	27	24	29	33	30	32	27	24	18	12	40
	13	P	15	17	19	20	22	21	19	18	17	16	16	14	15	17	19	25	30	32	30	32	30	25	20	15	39
	14	F	17	19	22	22	23	22	22	21	17	15	24	23	32	37	33	31	33	35	40	39	35	35	27	23	46
	15	F	17	19	21	21	23	22	22	19	17	32	31	25	28	33	33	31	31	34	38	45	39	33	29	24	46
	16	F	17	19	21	22	21	20	21	23	20	24	24	25	27	31	33	35	35	35	40	43	42	34	29	24	46
	17	P	17	19	21	23	23	22	22	20	19	17	17	16	16	16	18	19	24	22	25	27	24	19	13	12	35
	18	P	17	19	22	24	23	21	20	19	19	17	17	17	16	17	18	24	31	35	33	31	31	28	21	18	41
	19	P	17	18	21	22	23	23	20	20	19	18	17	21	21	30	25	27	32	31	31	37	30	24	17	12	41
	20	F	17	19	21	21	23	24	21	20	19	18	18	17	22	24	21	24	26	29	33	31	28	25	17	13	39
	21	P	16	18	21	21	21	22	21	18	18	16	17	16	15	18	19	24	30	28	24	25	24	19	15	11	36
	22	F	16	18	20	21	22	21	22	19	18	21	26	27	27	31	36	33	32	34	39	38	37	28	21	14	46
	23	P	16	18	20	20	21	21	21	19	18	18	16	17	16	16	20	25	31	33	32	33	31	26	19	16	40
	24	F	16	18	20	21	21	21	21	17	18	18	20	23	36	32	28	29	34	33	37	36	36	34	28	21	46
	25	P	16	18	19	21	22	21	19	18	18	17	17	16	15	16	18	24	31	32	31	33	32	28	19	15	40
	26	F	16	18	20	21	22	20	19	19	17	18	21	20	29	26	30	26	26	30	35	32	28	21	17	14	40
	27	P	16	18	20	20	20	20	19	18	18	17	16	16	15	16	21	22	26	32	29	28	26	22	16	11	37
	28	F	16	18	21	22	21	20	20	17	17	16	18	19	23	21	20	22	29	24	27	30	29	23	17	13	37
	29	P	16	17	19	21	22	20	20	18	17	16	18	17	16	18	25	27	29	34	37	33	30	30	22	17	42
	30	P	16	18	20	21	22	21	21	20	19	17	17	18	21	27	27	25	28	28	32	34	31	28	19	15	40
	31	P	16	18	20	21	20	20	19	18	17	16	16	17	17	16	24	26	28	32	36	31	31	30	24	20	41
Y	1	P	5	7	10	11	14	12	13	11	10	5	9	12	17	23	24	29	31	33	35	32	34	32	27	22	42
	2	P	10	12	13	13	14	14	13	11	14	9	11	14	18	20	27	28	30	31	33	31	26	22	14	14	39
	3	P	11	12	14	15	15	15	16	12	14	12	9	10	12	19	31	32	34	35	32	31	32	28	21	19	41
	4	P	11	13	15	17	18	15	14	13	13	13	12	10	14	17	30	28	31	33	30	28	30	25	17	12	39
	5	F	11	13	15	17	19	18	15	15	14	14	21	28	27	25	26	31	35	36	37	36	35	33	24	18	44
	6	F	12	14	16	20	21	17	17	20	19	28	42	35	28	35	39	36	38	42	40	38	42	39	28	28	50
	7	P	12	14	18	19	19	18	17	16	16	16	20	18	16	21	27	31	34	36	31	31	34	33	22	15	42
	8	P	13	15	16	17	18	18	18	15	14	14	13	15	16	20	26	25	30	34	32	28	25	22	14	12	38
	9	P	13	16	18	20	16	18	20	20	17	16	16	17	16	21	31	30	34	36	34	28	33	31	23	18	42
	10	F	14	16	17	20	21	22	20	20	19	20	23	26	28	32	33	30	37	38	38	37	40	38	28	21	47
	11	F	15	17	19	21	19	19	20	22	24	25	31	29	28	30	37	35	38	37	41	37	42	37	31	28	46
	12	F	16	17	19	20	19	20	18	20	20	16	24	25	31	25	27	28	28	37	32	31	31	27	18	14	42
	13	P	15	17	20	20	18	18	20	18	17	16	16	16	16	20	26	32	32	36	33	30	32	30	21	14	42
	14	F	17	19	21	22	22	27	25	16	22	26	28	25	31	35	33	33	38	40	39	38	38	39	32	23	46
	15	F	17	18	20	22	24	24	24	25	30	37	34	26	28	35	33	34	34	44	35	40	40	35	32	22	49
	16	F	17	19	21	22	21	23	22	25	24	26	29	31	29	37	37	35	37	43	39	38	41	38	29	26	49
	17	P	16	18	19	21	23	22	22	20	19	18	17	16	16	22	22	25	32	32	24	28	24	20	11	10	38
	18	P	17	19	20	21	21	19	21	18	17	16	18	18	16	26	26	32	33	35	31	30	32	30	21	14	41
	19	P	16	18	21	21	21	20	19	18	18	18	18	22	28	32	33	28	35	30	28	34	27	25	18	12	42
	20	F	16	17	21	22	23	21	21	19	19	18	22	26	26	27	27	28	32	35	36	31	32	25	18	11	42
	21	P	16	16	18	23	26	24	21	21	18	17	17	18	17	21	26	31	32	32	26	23	24	22	13	10	38
	22	F	17	18	20	21	20	21	19	18	23	27	36	36	31	33	37	36	33	37	38	36	35	30	22	15	46
	23	P	16	18	20	20	21	23	20	20	18	17	16	16	17	24	24	33	33	36	32	28	32	30	20	14	42
	24	F	16	17	19	18	20	22	18	18	21	19	21	27	31	33	30	32	37	37	38	36	39	36	28	19	46
	25	P	16	17	20	21	19	18	19	19	17	16	16	17	17	18	25	31	32	37	34	28	32	30	21	12	42
	26	F	16	17	18	20	21	18	19	17	14	17	20	25	33	23	27	26	27	32	34	30	28	24	18	14	40
	27	P	16	17	20	20	20	19	19	20	16	16	16	17	18	18	31	25	28	33	32	28	24	20	15	13	39
	28	F	16	17	20	22	20	18	20	18	17	16	22	25	24	18	20	23	34	32	28	30	27	25	17	11	38
	29	P	16	17	20	21	21	20	18	18	18	18	18	21	21	25	35	30	35	37	35	28	33	30	23	18	44
	30	P	16	18	19	18	20	20	20	17	18	17	17	22	25	31	32	28	35	33	34	34	26	24	18	16	42
	31	P	16	17	19	18	20	20	18	18	17	16	17	17	17	20	34	30	35	37	35	28	32	34	25	17	44
Z	1	P	7	9	11	12	12	12	10	9	10	7	5	8	20	26	26	38	42	44	46	42	42	38	38	32	51
	2	P	10	11	13	14	14	15	14	14	13	13	13	15	21	21	28	33	40	42	45	37	36	31	26	24	48
	3	P	11	12	15	15	15	14	12	14	12	11	10	8	13	18	28	33	40	40	42	38	37	33	28	28	47
	4	P	11	13	16	16	16	15	15	14	14	13	11	8	8	15	26	32	36	40	41	33	33	32	22	24	45
	5	F	12	14	16	17	16	16	16	13	14	12	11	21	30	35	44	43	46	45	47	46	45	42	34	31	54
	6	F	12	14	17	18	18	17	18	18	18	18	30	28	32	47	55	48	48	48	48	48	50	44	40	36	50
	7	P	13	15	17	17	17	17	16	15	15	14	13	15	15	23	31	38	43	43	41	42	40	37	34	27	50
	8	P	13	14	16	17	18	17	16	16	15	13	13	15	16	22	31	35	41	43	44	34	36	30	25	22	48
	9	P	14	15	17	18	19	18	17	16	15	14	14	16	14	19	27	34	41	41	44	41	40	36	33	29	49
	10	F	14	16	18	19	20	18	18	18	17	17	18	22	37	43	43	40	47	46	51	45	45	42	38	31	56
	11	F	14	16	18	19	19	19	19	18	17	19	23	25	32	41	51	46	48	47	48	48	52	46	39	36	56
	12	F	14	16	18	19	19	19	17	18	16	17	21	30	34	34	36	40	39	48	45	38	40	37	29	22	52
	13	P	15	17	19	20	19	19	19	17	16	14	13	13	14	22	25	35	42	44	42	39	38	34	31	27	48
	14	F	16	18	20	21	21	20	20	19	19	17	20	23	42	51	46	44	47	48	48	48	46	46	40	34	57
	15	F	16	18	21	21	21	21	20	19	18	18	21	26	33	44	46	46	46	51	46	51	48	43	39	34	57
	16	F	15	18	20	20	21	20	18	18	15	16	16	25	27	45	47	46	49	49	46	46	50	44	38	35	56
	17	P	16	18	20	21	21	20	20	19	18	17	15	15	14	20	24	32	38	41	35	34	34	28	23	21	45
	18	P	16	18	20	20	21	21	20	19	18	17	16	16	16	19	27	41	40	44	42	40	37	35	33	27	49
	19	P	16	18	20	21	21	20	20	18	17	17	16	18	25	35	32	38	44	39	42	38	38	35	30	25	49
	20	F	16	18	20	20	20	20	19	18	17	16	15	17	25	35	32	35	38	45	48	40	43	36	31	22	52
	21	P	16	18	21	21	21	19	19	18	18	16	17	17	18	25	31	38	41	42	40	32	32	28	24	18	47
	22	F	16	18	20	20	21	20	19	18	17	17	23	28	28	41	46	47	43	47	50	44	47	38	33	27	56
	23	P	16	18	20	21	21	21	20	18	18	16	16	14	14	19	25	40	42	44	42	40	37	35	31	27	49
	24	F	16	17	20	20	20	19	20	19	18	18	19	27	40	43	39	45	48	46	49	43	43	41	38	33	55
	25	P	16	17	19	20	20	20	19	18	17	16	14	14	14	20	25	36	42	46	43	41	38	34	31	27	50
	26	F	16	17	19	20	20	19	18	17	15	15	14	26	38	33	43	38	37	41	46	41	35	32	31	27	50
	27	P	16	17	19	20	20	18	18	17	17	16	14	13	14	19	29	33	40	46	43	34	36	32	24	22	48
	28	F	16	17	19	20	20	20	19	18	17	16	16	23	26	28	31	36	43	46	41	37	40	34	27	22	50
	29	P	16	17	19	20	20	20	18	18	17	16	15	12	13	23	34	38	45	44	46	41	41	37	34	30	51
	30	P	16	17	19	20	21	20	19	18	17	16	15	17	28	31	37	35	44	40	46	38	40	34	32	26	50
	31	P	16	17	19	20	20	20	19	18	17	16	15	16	14	18	33	38	46	44	46	40	41	36	33	28	51

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

(6) Amalsad

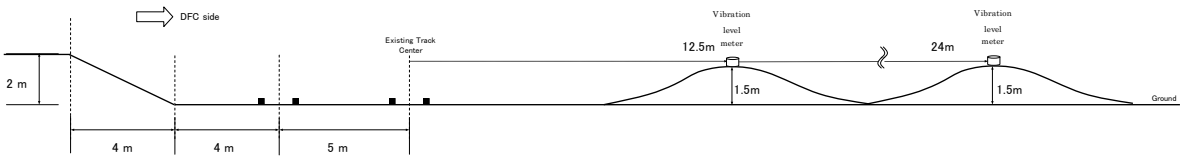
1) Cross-section View

Cross-section view of measurement site in Amalsad are given in Figure 1.2-11 and Figure 1.2-12.



Source: JICA Survey Team

Figure 1.2-11 Cross-section View of Measurement Site in Amalsad №1



Source: JICA Survey Team

Figure 1.2-12 Cross-section View of Measurement Site in Amalsad №2

2) Result of Background Vibration

Results of background vibration measurement in Amalsad is given in Table 1.2-26.

Table 1.2-26 Result of Background Vibration Measurement in Amalsad

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Amalsad	30-Sep	1	31.9	31.0	37.3	33.6	34.6	36.6	31.7	30.2	<25	34.0	<30	31.3	34.0	34.6	37.3
	30-Sep	2	<30	<30	<25	<30	<30	<25	<30	<30	<25	<30	<30	<25	<30	<30	<25

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Vibration

Results of railway vibration measurement in Amalsad are given in Table 1.2-27 and Table 1.2-28.

Table 1.2-27 Result of Railway Vibration Measurement in Amalsad №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	30-Sep	9:43	P	89.5	19.7	28.4	489	up	58.2	49.7	58.5	51.6	65.3	56.8
2	30-Sep	9:46	P	101.5	16.1	23.3	422	down	53.1	48.3	56.2	51.7	63.3	54.6
3	30-Sep	9:52	F	84.5	30.9	37.5	662	down	53.8	48.5	56.2	52.1	63.4	55.4
4	30-Sep	10:01	F	101.1	24.9	32.2	662	down	55.3	50.1	59.3	56.4	66.1	57.9
5	30-Sep	10:04	P	98.8	10.3	70.6	288	up	58.5	52.3	62.0	56.3	68.3	59.2
6	30-Sep	10:35	P	96.2	18.7	25.3	489	up	57.2	52.3	58.9	51.8	66.0	57.5
7	30-Sep	10:43	P	41.7	28.7	46.3	264	up	48.0	44.0	50.3	44.9	55.2	48.2
8	30-Sep	10:51	P	91.0	22.3	40.2	533	up	57.4	49.9	56.2	51.5	65.4	57.3
9	30-Sep	10:59	F	56.8	57.9	68.8	641	up	55.3	48.9	54.5	49.3	62.5	55.0
10	30-Sep	11:07	P	63.5	15.6	24.3	533	down	56.2	48.9	56.8	55.6	65.7	57.4
11	30-Sep	11:25	P	100.8	19.7	28.2	556	up	60.7	53.1	59.9	56.3	69.8	61.1
12	30-Sep	12:07	P	108.8	16.8	35.9	422	up	58.7	50.3	58.3	51.8	65.8	56.2
13	30-Sep	13:14	P	31.3	37.6	69.3	399	down	47.0	40.4	50.0	42.9	55.4	46.6
14	30-Sep	13:20	F	71.7	29.7	40.0	572	down	55.4	49.4	56.4	52.6	62.3	54.2
15	30-Sep	13:51	F	69.5	33.6	41.8	540	up	55.0	51.4	58.9	55.0	63.1	56.7
16	30-Sep	14:01	F	21.8	99.4	109.1	641	up	51.1	47.7	52.1	45.9	58.1	51.7
17	30-Sep	14:27	P	51.6	23.4	28.2	355	up	52.8	46.9	53.8	48.2	61.6	52.7
18	30-Sep	14:36	F	94.9	25.6	32.7	641	down	56.0	50.7	58.4	53.5	65.0	57.4
19	30-Sep	15:03	P	102.5	18.1	25.6	511	up	59.0	52.8	59.8	54.9	65.8	60.3
20	30-Sep	15:11	F	90.1	23.3	33.0	572	down	54.7	50.2	57.4	53.2	66.6	58.9
21	30-Sep	15:14	F	92.3	26.7	38.7	655	up	58.8	53.4	59.5	53.8	67.4	58.6
22	30-Sep	15:24	F	68.1	30.6	41.3	572	up	56.7	52.2	56.7	52.2	63.8	56.9
23	30-Sep	15:36	F	85.0	28.7	34.7	655	down	55.1	49.8	57.0	52.8	64.5	56.8
24	30-Sep	15:59	P	42.9	20.5	31.6	399	down	47.8	41.6	52.9	47.5	59.4	51.3
25	30-Sep	16:04	P	58.5	15.5	25.9	466	down	51.0	43.9	54.5	48.2	61.5	53.6
26	30-Sep	16:19	F	62.9	37.3	47.5	641	up	55.2	50.9	56.5	51.3	63.3	56.8
27	30-Sep	16:26	F	77.5	22.9	31.0	434	up	57.9	50.6	58.4	51.3	64.9	56.6
28	30-Sep	16:32	F	102.5	19.0	27.8	381	down	54.5	48.7	55.2	52.2	65.0	56.6
29	30-Sep	16:58	P	113.3	14.7	31.0	444	down	55.8	50.9	57.3	54.9	65.0	58.6
30	30-Sep	16:59	P	86.7	16.4	25.6	399	up	58.1	49.1	57.5	51.9	65.9	57.6
31	30-Sep	17:07	P	91.2	17.7	35.8	489	up	57.9	53.2	60.3	55.5	67.6	59.9
average		Passenger (P)		87.2	19.2	35.5	436	up	56.9	50.3	57.8	52.2	65.1	57.0
				68.5	20.0	34.2	444	down	51.8	45.6	54.6	50.1	61.7	53.7
		Freight (F)		64.2	44.1	54.0	589	up	55.7	50.7	56.7	51.2	63.3	56.0
				90.0	26.0	34.0	592	down	55.0	49.6	57.1	53.3	64.7	56.7

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-28 Result of Railway Vibration Measurement in Amalsad №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	24.0m	12.5m	24.0m	12.5m	24.0m
1	30-Sep	9:43	P	89.5	19.7	35.0	489	up	57.5	48.6	58.2	49.8	62.4	54.6
2	30-Sep	9:46	P	101.5	16.1	26.4	422	down	53.1	48.0	56.2	49.4	61.2	54.2
3	30-Sep	9:52	F	84.5	30.9	39.3	662	down	55.6	50.5	56.3	50.5	61.3	55.1
4	30-Sep	10:01	F	101.1	24.9	33.6	662	down	57.2	51.4	60.9	50.8	62.2	58.0
5	30-Sep	10:04	P	98.8	10.3	21.2	288	up	59.0	50.0	59.3	50.7	63.9	58.0
6	30-Sep	10:21	P	105.7	14.5	27.7	399	down	53.3	48.9	57.2	49.5	62.6	55.3
7	30-Sep	10:35	P	96.2	18.7	34.5	489	up	57.5	50.2	58.9	50.4	63.7	55.4
8	30-Sep	10:43	P	41.7	28.7	41.3	264	up	49.1	41.7	51.4	44.2	55.8	49.2
9	30-Sep	10:51	P	91.0	22.3	44.0	533	up	55.5	48.4	58.7	50.4	62.6	55.1
10	30-Sep	10:59	F	56.8	57.9	67.3	641	up	53.5	48.4	56.9	47.9	62.4	54.6
11	30-Sep	11:07	P	63.5	15.6	25.2	533	down	52.7	46.2	56.3	49.0	61.3	56.2
12	30-Sep	11:25	P	100.8	19.7	31.7	556	up	58.6	49.8	60.7	51.8	65.5	57.0
13	30-Sep	12:07	P	108.8	16.8	38.9	422	up	56.9	48.8	58.8	49.4	63.3	54.9
14	30-Sep	12:37	P	39.7	29.1	35.0	333	down	49.5	41.6	53.0	44.5	58.3	50.8
15	30-Sep	13:14	P	31.3	37.6	46.4	399	down	49.8	42.7	52.7	44.6	56.7	48.6
16	30-Sep	13:20	F	71.7	29.7	37.1	572	down	56.4	50.3	56.4	50.9	62.3	56.5
17	30-Sep	13:40	P	92.3	19.0	26.4	444	up	57.4	47.4	57.5	49.1	63.4	55.5
18	30-Sep	13:51	F	69.5	33.6	44.0	540	up	54.2	47.4	57.1	51.2	61.9	56.6
19	30-Sep	14:01	F	21.8	99.4	115.2	641	up	51.8	44.4	54.2	46.0	58.1	51.8
20	30-Sep	14:27	P	51.6	23.4	34.8	355	up	52.4	45.0	55.6	46.3	60.3	53.2
21	30-Sep	14:36	F	94.9	25.6	45.8	641	down	57.2	50.3	59.0	51.5	61.9	56.6
22	30-Sep	15:02	P	107.8	19.0	27.0	556	down	55.4	49.4	58.4	51.5	63.1	58.3
23	30-Sep	15:03	P	102.5	18.1	30.4	511	up	58.3	50.7	59.6	50.5	63.5	57.0
24	30-Sep	15:11	F	90.1	23.3	37.1	572	down	56.7	48.8	58.6	50.7	61.6	56.8
25	30-Sep	15:14	F	92.3	26.7	34.9	655	up	58.7	51.2	59.6	52.5	65.0	58.3
26	30-Sep	15:24	F	68.1	30.6	45.4	572	up	60.7	57.4	63.6	61.1	68.3	65.8
27	30-Sep	15:36	F	85.0	28.7	54.7	655	down	63.6	59.4	65.4	60.6	70.5	65.1
28	30-Sep	15:59	P	42.9	20.5	35.3	399	down	55.9	50.7	56.6	53.8	62.7	58.1
29	30-Sep	16:04	P	58.5	15.5	36.1	466	down	58.6	45.3	59.9	47.1	64.6	53.0
30	30-Sep	16:19	F	62.9	37.3	59.5	641	up	61.7	58.5	62.6	57.4	68.1	64.2
31	30-Sep	16:26	F	77.5	22.9	35.5	434	up	55.0	48.3	57.1	49.7	61.5	56.5
32	30-Sep	16:32	F	102.5	19.0	28.8	381	down	54.0	48.3	57.7	49.8	60.2	54.0
33	30-Sep	16:58	P	113.3	14.7	27.3	444	down	54.4	50.0	58.8	51.0	62.3	57.9
34	30-Sep	16:59	P	86.7	16.4	26.1	399	up	56.8	47.3	58.0	49.0	62.9	54.0
35	30-Sep	17:07	P	91.2	17.7	27.5	489	up	59.1	50.0	59.5	51.5	64.9	57.9
average		Passenger(P)		87.6	19.2	32.7	436	up	56.5	48.2	58.0	49.4	62.7	55.1
				73.8	20.3	31.8	439	down	53.6	47.0	56.6	48.9	61.4	54.7
		Freight(F)		64.2	44.1	57.4	589	up	56.5	50.8	58.7	52.3	63.6	58.2
				90.0	26.0	39.5	592	down	57.2	51.3	59.2	52.1	62.9	57.4

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table1.2-29, Table1.2-30. In Amalsad No.1, in consideration of all results roughly, frequency of the range from 8 to 20Hz at X-axis excelled, range from 10 to 25Hz at Y-axis excelled, range from 10 to 31.5Hz at Z-axis excelled. In Amalsad No.2, in consideration of all results roughly, frequency of the range from 8 to 25Hz at X-axis excelled, range from 10 to 40Hz at Y-axis excelled, range from 10 to 25Hz at Z-axis excelled. In Japan, in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed

Table 1.2-29 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Amalsad №1

Direction	No.	train type	0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	P	7	8	11	12	12	17	14	18	15	16	19	24	32	41	45	41	47	45	41	36	38	33	26	21	52
	2	P	7	10	14	12	16	11	12	10	12	8	13	16	29	35	42	36	38	37	34	30	31	26	23	18	46
	3	F	9	11	14	13	13	17	14	13	15	14	23	24	33	45	46	42	43	41	40	42	33	28	21	13	52
	4	F	9	11	13	13	14	13	12	5	17	25	32	33	32	37	42	43	45	41	38	40	38	29	22	15	51
	5	P	4	6	10	11	13	16	16	15	16	14	16	22	30	40	47	44	45	45	40	36	37	33	28	21	53
	6	P	12	14	16	17	18	19	17	15	16	15	17	25	35	38	46	43	45	45	40	38	36	32	27	24	52
	7	P	8	11	14	15	12	15	17	14	16	16	15	23	37	39	47	43	45	45	40	37	36	32	25	21	52
	8	P	12	15	18	18	17	18	17	18	17	16	18	22	31	42	43	38	45	43	42	39	35	33	26	22	51
	9	F	13	15	18	19	18	18	17	15	13	16	25	23	30	34	36	37	41	38	45	36	33	29	21	17	48
	10	P	9	12	14	16	19	18	19	18	18	18	24	24	28	37	41	44	37	35	30	27	28	27	24	17	48
	11	P	14	16	19	19	16	17	18	17	18	18	20	25	30	38	46	45	45	47	43	38	36	35	27	20	53
	12	P	16	18	22	21	22	17	21	21	21	19	20	24	29	39	42	41	45	43	43	37	36	31	24	21	51
	13	P	18	20	22	23	22	23	21	22	20	19	20	21	20	22	32	36	37	33	31	26	26	22	16	12	42
	14	F	18	20	22	22	23	23	23	21	20	21	26	28	35	45	43	42	39	42	35	39	33	29	24	17	50
	15	F	18	21	23	22	22	23	23	22	20	22	24	29	34	40	42	41	43	46	40	39	38	37	32	23	51
	16	F	19	21	24	23	24	24	23	22	21	21	20	20	30	41	38	39	40	40	37	32	28	25	19	15	47
	17	P	18	20	23	24	25	23	22	22	22	20	19	18	22	31	34	35	40	41	38	35	33	27	19	16	47
	18	F	18	21	23	25	26	24	24	24	24	26	32	33	32	40	48	47	46	40	39	34	36	31	25	19	53
	19	P	18	21	23	24	24	24	23	22	21	20	21	28	32	40	47	43	45	48	42	38	37	34	26	22	53
	20	F	20	22	24	24	24	24	23	21	20	23	29	32	33	39	45	45	47	42	40	34	35	29	25	19	52
	21	F	19	21	23	25	26	25	24	24	24	25	29	34	33	39	49	50	51	46	49	42	38	34	27	22	57
	22	F	20	22	24	24	23	24	23	23	23	25	28	30	39	47	42	45	46	49	45	40	36	35	25	19	54
	23	F	19	21	24	24	24	25	23	22	21	27	37	35	33	41	46	44	43	41	42	40	34	31	23	19	52
	24	P	18	20	22	22	23	24	23	22	21	19	17	18	20	27	28	35	37	36	30	27	28	23	16	10	43
	25	P	18	20	22	23	24	22	22	21	20	19	19	19	19	25	35	35	40	37	35	29	30	27	18	10	45
	26	F	18	20	22	23	22	21	20	19	19	21	27	28	38	43	40	42	46	43	44	37	41	37	30	23	52
	27	F	17	19	21	23	23	22	22	18	23	28	26	24	36	40	45	46	44	47	42	45	40	37	30	25	53
	28	F	18	19	22	23	23	22	20	20	21	19	19	26	33	38	45	41	39	38	37	30	32	27	22	16	49
	29	P	17	18	21	22	23	21	20	20	19	18	19	21	34	42	43	47	40	36	35	32	34	30	23	17	51
	30	P	17	19	21	22	22	22	21	20	19	19	18	20	32	41	42	41	46	44	43	37	35	32	27	23	51
	31	P	17	18	21	22	22	22	21	20	20	21	20	26	33	40	49	45	46	46	42	37	38	34	27	22	54
Y	1	P	5	8	12	14	11	14	13	12	10	17	22	30	41	45	50	41	41	42	46	45	41	34	31	26	54
	2	P	7	9	9	9	7	10	13	15	16	13	18	19	29	36	46	37	42	44	41	37	36	29	28	22	51
	3	F	8	10	12	13	14	12	14	14	24	23	28	30	36	46	45	43	42	42	44	46	37	32	26	19	53
	4	F	8	10	12	12	14	13	15	15	22	34	42	37	35	37	47	52	46	42	44	44	43	32	28	21	55
	5	P	2	5	8	10	11	12	12	17	16	18	19	24	31	46	46	42	43	49	43	43	42	36	32	28	54
	6	P	11	12	15	17	18	16	16	15	14	16	20	33	38	44	49	44	43	44	46	45	40	34	33	30	54
	7	P	9	12	15	16	17	19	21	20	21	22	24	31	40	45	51	45	42	44	46	44	40	34	32	28	55
	8	P	13	15	18	19	17	16	16	17	14	16	22	26	32	44	49	38	43	43	43	44	42	35	31	27	53
	9	F	12	14	16	13	16	19	16	16	14	16	21	25	29	33	39	37	36	38	41	41	38	33	24	22	48
	10	P	10	12	15	17	17	18	18	13	14	16	21	28	32	36	42	40	38	45	35	38	38	30	28	23	50
	11	P	14	16	17	16	16	13	17	15	18	16	20	25	32	44	46	43	43	50	44	44	38	37	33	30	54
	12	P	15	16	18	21	18	21	21	20	18	18	20	28	37	45	49	41	43	42	46	44	38	34	32	26	54
	13	P	18	21	24	24	24	23	23	22	21	21	21	21	20	23	33	36	36	36	35	37	34	27	21	16	44
	14	F	18	18	22	24	23	21	24	20	23	25	26	28	34	43	40	41	41	45	40	43	41	35	29	18	51
	15	F	19	21	22	23	23	24	26	21	20	22	24	27	32	44	53	42	42	48	48	48	47	40	32	29	57
	16	F	19	21	23	23	23	23	22	21	21	21	20	23	31	39	39	39	39	38	42	38	32	26	23	18	48
	17	P	18	20	23	24	24	25	24	22	22	21	20	20	27	34	36	39	38	38	39	39	35	31	23	23	47
	18	F	19	21	23	24	24	24	25	24	22	30	36	34	34	40	44	45	42	38	45	45	42	35	29	19	53
	19	P	19	21	23	24	24	24	23	23	23	22	23	36	39	47	50	45	44	47	43	44	41	35	31	29	55
	20	F	19	21	23	24	24	24	23	24	21	25	32	35	33	38	45	46	42	41	45	46	41	33	28	20	53
	21	F	19	21	24	24	24	25	27	26	27	33	37	37	34	44	46	52	48	46	48	45	43	35	30	25	57
	22	F	20	22	23	24	25	25	24	24	24	34	38	31	35	42	44	43	42	47	49	46	40	36	29	24	54
	23	F	20	22	24	24	25	23	23	22	28	38	41	37	33	41	45	46	45	42	46	48	40	30	25	17	55
	24	P	19	20	22	23	24	24	23	22	20	20	22	19	22	26	31	36	39	36	38	36	36	29	21	14	46
	25	P	18	20	22	23	23	23	22	21	20	20	20	21	20	28	37	35	39	36	37	41	37	33	23	16	47
	26	F	18	19	21	22	23	24	23	23	27	29	32	30	36	37	45	43	45	46	48	43	43	38	33	29	54
	27	F	18	20	22	23	24	22	25	25	28	28	34	29	35	41	49	46	46	46	44	48	42	39	33	31	55
	28	F	17	19	22	22	22	22	20	20	19	16	17	29	38	43	46	40	43	46	41	38	38	32	29	21	52
	29	P	17	19	21	21	22	22	21	21	19	19	26	31	38	45	43	42	37	43	36	39	38	33	27	22	51
	30	P	17	19	21	22	23	22	22	23	23	22	23	28	38	44	49	42	43	42	45	44	40	35	31	28	54
	31	P	17	18	21	22	21	20	21	20	18	19	20	33	36	46	48	44	43	47	45	45	42	36	30	28	55
Z	1	P	7	9	11	12	13	10	12	11	11	13	14	21	33	44	45	46	53	52	52	48	50	42	38	30	59
	2	P	8	9	11	11	12	12	10	11	11	12	15	18	30	38	49	44	47	46	46	44	45	34	34	23	55
	3	F	9	11	14	16	17	18	19	20	21	23	26	33	34	49	47	48	47	47	53	49	47	37	31	20	58
	4	F	8	10	13	14	14	15	15	15	17	23	31	32	30	39	49	54	51	47	50	45	51	40	34	24	59
	5	P	2	5	8	11	12	12	13	13	11	10	9	17	24	37	46	45	49	51	46	49	48	43	37	31	57
	6	P	10	12	15	16	16	15	15	15	15	16	16	21	31	39	45	47	51	51	50	47	48	44	37	33	58
	7	P	7	10	12	15	16	16	15	13	14	13	10	21	33	37	44	47	51	52	51	47	47	43	37	32	58
	8	P	11	12	13	16	17	17	17	16	15	16	18	19	30	41	42	46	54	49	48	49	46	41	37	30	58
	9	F	12	14	16	17	17	18	17	17	18	20	28	35	42	37	40	42	44	46	47	44	45	38	34	26	53
	10	P	9	12	15	16	16	17	18	16	17	17	18	23	31	41	46	48	44	45	41	42	44	34	36	25	54
	11	P	13	14	17	18	18	19	18	17	18	18	20	22	32	40	44	42	50	54	47	49	50	43	38	32	58
	12	P	15	17	18	20	20	21	21	20	20	21	22	24	31	42	45	45	54	52	51	47	50	42	38	31	59
	13	P	17	19	22	22	23	23	21	20	20	18	18	20	19	23	32	37	38	38	41	38	37	30	25	17	47
	14	F	17	18	21	22	22	22	20	20	19	18	25	30	38	49	45	44	44	46	49	48	46	41	38	25	56
	15	F	18	20	22	23	23	22	21	20	19	22	26	35	48	45	54	49	50	56	51	50	54	47	41	32	62
	16	F	18	20	22	23	23	23	21	21	20	18	21	27	32	41	40	45	48	47	48	42	38	34	30	22	54
	17	P	18	20	22	23	24	23	23	21	21	19	19	19	21	35	38	42	42	44	44	43	45	38	31	27	52
	18	F	18	20	22	23	24	24	24	24	23	25	28	38	38	41	48	50	48	46	53	50	48	42	37	24	58
	19	P	19	21	23	24	24	24	24	23	23	23	25	28	38	41	47	48	53	54	47	49	48	42	38	33	59
	20	F	19	21	23	24	24	23	23	21	21	22	27	35	35	38	48	51	48	46	54	51	48	41	37	23	59
	21	F	18	20	23	24	24	24	24	23	23	23	27	32	37	45	49	57	55	53	54	49	49	46	38	30	62
	22	F	19	21	23	24	24	24	23	22	21	21	23	30	42	50	48	50	52	52	51	50	47	42	35	27	60
	23	F	19	21	23	24	24	24	23	22	20	20	25	29	38	44	47	51	50	49	52	51	48	38	34	20	59
	24	P	18	20	22	23	23	23	21	20	19	18	19	17	19	30	31	41	44	43	46	39	40	35	27	17	51
	25	P	18	20	22	23	23	23	22	20	20	18	18	24	25	29	38	40	44	42	41	44	42	37	29	19	51
	26	F	17	19	21	22	22	21	20	18	17	19	28	37	44	43	45	47	53	52	51	47	48	47	43	32	59
	27	F	18	19	22	22	22	22	21	20	23	24	33	34	43	43	47	48	50	55	50	51	50	45	43	34	60
	28	F	17	19	22	22	21	20	19	18	14	10	22	37	41	48	46	47	46	47	46	45	46	36	23	15	55
	29	P	17	18	21	22	21	21	21	18	18	18	20	23	38	45	47	55	45	46	43	45	40	36	36	24	58
	30	P	17	19	21	21	22	21	21	20	19	18	18	21	33	41	40	44	53	50	49	49	49	40	38	32	58
	31	P	17	18	21	22	22	21	21	20	20	19	20	25	33	40	47	46	52	55	46	49	50	43	37	32	59

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-30 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Amalsad №2

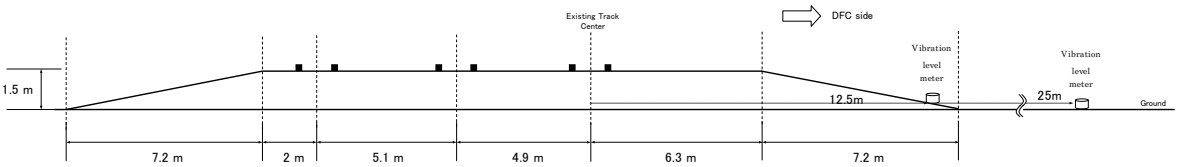
Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	F	13	14	16	16	16	17	16	15	15	17	16	21	37	37	39	41	42	40	44	38	36	32	28	23	50
	2	F	12	14	16	17	16	16	16	15	14	15	14	12	18	31	43	40	38	35	39	35	34	30	25	16	47
	3	F	14	16	16	19	19	19	17	16	16	25	24	23	35	44	44	41	39	41	46	43	36	28	25	16	52
	4	F	14	16	16	19	19	19	20	19	20	29	37	29	35	40	45	48	40	36	46	43	37	33	29	19	54
	5	F	13	16	19	20	19	18	19	19	17	18	17	22	31	39	41	41	38	41	36	37	37	35	26	23	49
	6	F	14	16	18	19	20	18	18	17	17	17	19	22	31	31	41	44	38	36	37	38	33	31	25	15	48
	7	F	14	17	19	19	19	19	19	18	18	17	18	24	35	36	40	37	41	41	40	38	38	35	30	24	49
	8	F	14	16	18	19	20	19	19	16	17	15	15	15	19	22	31	34	36	34	33	30	28	24	21	17	42
	9	F	14	16	18	18	19	19	18	17	17	16	16	19	32	34	35	39	37	39	42	38	39	32	29	23	48
	10	F	15	17	19	20	20	19	20	18	19	21	28	31	36	35	41	37	40	38	35	32	33	28	26	21	47
	11	F	14	16	19	19	19	21	19	19	18	17	19	21	29	34	39	41	38	37	35	38	33	29	26	17	47
	12	F	14	16	18	20	20	19	19	19	17	17	17	17	28	39	42	41	38	41	35	36	37	36	28	23	49
	13	F	15	17	20	22	23	18	17	20	19	16	17	20	35	34	39	40	41	38	42	37	35	32	27	22	49
	14	F	15	18	21	19	15	19	21	21	18	18	17	15	22	24	31	33	35	34	37	31	24	25	20	11	42
	15	F	17	20	22	22	17	21	18	17	17	14	17	16	20	22	31	35	38	33	34	30	25	25	19	12	42
	16	F	19	20	21	19	20	22	22	20	19	25	25	27	36	49	46	40	37	40	45	42	34	30	27	16	53
	17	F	17	19	22	22	21	20	19	19	19	17	15	19	34	35	37	36	39	37	42	36	36	31	28	22	47
	18	F	18	17	20	22	19	20	19	18	19	29	28	30	37	38	43	42	38	39	40	42	36	34	33	22	50
	19	F	17	18	20	19	21	19	20	19	18	16	16	25	37	35	36	38	38	34	35	25	29	27	23	15	48
	20	F	15	17	20	22	24	22	21	21	19	18	19	20	22	24	29	32	37	37	39	34	32	30	25	20	44
	21	F	16	18	21	23	21	22	20	20	21	27	31	32	34	38	45	45	42	41	48	44	37	33	27	16	53
	22	F	17	20	22	23	23	22	21	20	19	20	20	26	26	35	43	43	38	39	37	38	33	30	27	17	49
	23	F	18	19	21	21	22	21	19	19	20	17	19	24	31	35	42	42	38	40	37	37	37	34	29	22	49
	24	F	17	19	20	20	21	21	21	20	19	24	29	34	30	39	42	44	40	40	48	42	36	33	27	17	52
	25	F	18	20	22	22	22	23	22	19	21	22	27	33	34	41	49	45	45	45	47	40	40	33	29	21	54
	26	F	23	25	27	27	27	28	28	26	28	30	38	38	40	54	49	50	48	49	49	48	43	40	34	25	58
	27	F	23	25	27	27	28	28	25	24	27	41	39	35	38	46	49	52	49	46	53	47	42	34	32	22	59
	28	F	22	24	27	28	30	28	27	26	25	24	23	26	27	29	40	45	44	41	44	41	32	31	31	21	51
	29	F	23	25	27	27	27	28	28	27	25	25	24	24	30	31	38	41	40	42	42	40	33	31	30	19	49
	30	F	23	25	27	28	28	27	28	26	25	29	30	38	43	44	46	47	48	44	48	42	41	38	36	28	55
	31	F	17	19	22	24	24	23	23	21	24	24	28	34	41	40	42	41	40	46	42	43	36	31	30	24	52
	32	F	17	19	22	23	24	24	22	21	21	21	20	23	29	36	41	43	41	38	39	36	33	30	25	15	49
	33	F	19	21	23	23	23	23	23	22	22	21	21	25	33	39	43	46	41	38	40	38	37	31	29	17	50
	34	F	19	21	23	24	24	23	22	21	20	20	20	21	28	33	36	38	40	39	43	37	37	31	28	22	48
	35	F	19	20	23	24	24	23	23	21	20	19	18	24	32	38	41	41	39	41	38	38	37	35	28	21	49
Y	1	F	5	7	10	10	11	14	12	13	14	15	19	29	37	43	45	42	46	43	48	40	39	35	33	26	54
	2	F	4	6	9	10	10	9	13	15	15	9	14	14	29	37	46	41	40	41	38	40	40	31	28	25	51
	3	F	7	9	11	11	11	12	15	14	22	29	29	31	37	44	45	44	40	44	42	43	43	35	28	22	53
	4	F	8	9	11	13	14	12	15	21	22	34	41	34	33	38	47	46	46	39	45	45	47	38	30	23	54
	5	F	6	10	13	13	12	15	16	17	18	20	16	22	31	38	45	42	43	44	41	43	42	40	37	29	52
	6	F	8	10	11	12	12	11	12	14	15	13	19	31	37	40	45	42	39	42	38	42	41	33	28	25	51
	7	F	9	12	14	13	13	17	14	20	20	17	21	31	36	38	43	40	44	43	44	42	42	42	37	31	52
	8	F	8	10	12	14	15	14	12	11	12	13	11	11	21	32	35	40	39	38	38	34	30	28	28	22	48
	9	F	8	10	12	13	12	13	15	9	13	13	15	18	32	36	43	41	43	42	47	40	38	38	32	27	52
	10	F	9	11	13	14	14	14	19	14	14	16	26	26	32	30	36	36	46	38	41	35	35	33	32	26	47
	11	F	10	12	15	16	16	16	17	18	19	21	23	29	36	40	44	46	41	42	38	42	41	35	30	24	52
	12	F	8	9	12	14	15	9	11	15	18	18	19	20	30	41	46	43	43	45	41	43	42	40	37	30	53
	13	F	9	13	16	16	19	12	11	17	21	12	14	22	29	40	45	43	45	42	46	39	39	40	34	28	52
	14	F	10	12	13	14	14	15	17	15	13	12	15	16	21	31	33	41	41	35	35	33	35	29	23	17	46
	15	F	10	11	14	15	16	15	15	15	13	14	14	17	19	29	34	41	38	36	34	31	32	27	24	17	45
	16	F	11	12	15	17	14	16	24	24	28	28	25	29	38	44	45	42	42	46	40	44	44	35	27	21	53
	17	F	12	14	17	16	17	17	15	17	19	20	20	23	32	38	44	40	42	42	47	38	38	38	33	27	52
	18	F	10	12	15	17	17	17	21	15	19	21	25	34	39	40	48	42	40	46	42	42	43	41	37	31	53
	19	F	12	13	16	17	16	16	16	14	14	15	15	22	36	34	38	40	38	37	38	31	34	33	31	19	47
	20	F	11	14	16	16	16	18	17	14	14	14	15	18	21	28	34	37	38	41	38	37	35	35	30	24	47
	21	F	12	13	16	16	18	19	22	19	22	27	33	37	35	39	47	44	41	38	43	43	47	38	29	22	53
	22	F	13	15	17	19	20	18	18	17	16	19	19	35	33	41	47	49	40	41	36	43	41	36	31	24	53
	23	F	13	14	16	17	17	10	14	19	16	17	15	26	39	41	47	45	45	45	41	43	42	40	36	30	54
	24	F	13	15	17	15	16	19	22	20	23	25	33	37	35	38	44	45	44	39	43	43	47	38	29	22	53
	25	F	13	15	17	18	20	16	17	19	27	32	38	37	33	40	48	45	48	45	50	43	45	41	34	27	56
	26	F	19	21	23	23	22	22	22	24	32	39	43	37	41	51	50	49	48	56	53	51	48	44	36	28	61
	27	F	19	21	22	23	22	22	23	15	33	46	42	42	43	45	50	51	50	50	46	45	51	39	33	25	58
	28	F	18	20	22	23	25	23	22	20	19	19	19	24	26	31	41	42	47	41	41	43	41	35	34	23	51
	29	F	19	21	24	24	23	23	22	22	22	19	20	21	28	31	40	40	48	43	43	42	42	35	33	23	52
	30	F	18	20	23	23	23	25	20	28	35	27	34	36	43	41	49	49	49	47	50	46	45	42	39	32	57
	31	F	13	15	18	20	21	21	20	21	32	29	29	31	38	38	43	43	40	45	42	44	42	37	34	29	52
	32	F	13	15	17	19	20	19	19	17	20	18	15	24	34	41	44	40	41	41	39	41	40	32	28	24	50
	33	F	15	17	19	19	20	20	20	19	20	22	28	32	39	43	46	47	43	41	41	44	41	38	32	26	53
	34	F	15	17	19	20	20	20	20	19	17	17	20	21	32	37	42	39	45	42	46	39	39	39	33	27	52
	35	F	15	17	19	20	19	18	19	19	18	18	17	31	33	38	47	44	42	45	42	43	41	40	37	30	53
Z	1	F	10	12	15	16	17	18	18	19	20	21	23	29	39	38	42	44	51	46	49	41	46	45	38	36	57
	2	F	10	11	14	14	15	15	14	12	13	14	16	24	35	40	51	44	50	50	44	45	44	43	36	33	57
	3	F	11	13	15	16	17	17	17	16	16	18	28	33	45	50	50	45	42	54	46	51	46	41	34	28	58
	4	F	11	13	15	16	16	16	16	15	15	20	29	41	39	41	46	52	50	47	47	46	49	44	38	29	58
	5	F	11	13	15	16	16	17	15	15	15	15	17	24	37	40	44	41	47	52	41	41	50	44	44	38	57
	6	F	12	13	16	16	17	16	15	14	13	13	15	31	40	38	46	46	50	51	44	45	44	45	37	33	57
	7	F	12	14	16	17	17	16	16	16	16	20	22	29	34	38	44	40	50	50	45	46	49	47	45	42	57
	8	F	12	13	16	16	17	16	16	15	15	13	13	16	25	26	39	38	46	50	41	38	36	36	35	32	53
	9	F	11	13	15	16	16	17	15	14	13	13	10	23	36	39	40	40	50	47	51	45	48	44	38	37	57
	10	F	12	14	16	16	17	15	14	13	13	23	39	40	40	37	40	41	48	48	44	38	42	40	42	35	54
	11	F	12	14	16	17	17	16	16	15	14	14	16	28	35	38	46	46	48	51	41	45	43	45	37	32	58
	12	F	12	13	16	17	17	16	16	15	16	16	14	25	36	39	45	44	47	53	43	41	50	44	45	39	57
	13	F	13	15	16	16	19	19	17	17	19	17	19	26	32	36	42	41	50	49	45	41	49	44	38	37	56
	14	F	13	15	17	18	17	17	18	16	16	15	17	23	23	33	35	43	43	45	38	38	38	37	28	24	50
	15	F	13	15	17	18	18	19	18	17	17	16	19	26	22	30	33	40	42	42	38	38	38	36	29	24	48
	16	F	14	15	17	18	18	16	16	15	11	13	33	38	46	50	51	45	46	53	45	46	48	46	34	28	59
	17	F	14	16	19	19	19	19	19	18	18	17	19	23	30	38	39	38	50	47	48	43	49	44	37	36	56
	18	F	15	17	20	22	22	23	24	25	27	31	37	44	47	47	52	46	50	51	47	50	45	46	44	41	59
	19	F	15	16	19	19	19	19	19	18	17	15	18	31	43	39	42	40	43	47	40	38	45	41	40	28	53
	20	F	14	16	18	19	19	19	19	17	16	14	12	25	28	29	36	38	45	49	43	41	42	44	37	33	53
	21	F	15	16	19	20	20	20	19	19	19	23	31	44	39	43	50	49	48	46	46	47	49	43	34	29	57
	22	F	16	17	19	20	21	20	19	18	18	19	20	26	35	41	49	51	45	52	43	46	43	46	38	34	57
	23	F	16	17	20	20	20	20	19	19	18	16	15	17	30	40	40	45	45	49	52	42	43	50	46	45	59	57
	24	F	16	17	20	20	20	20	19	19	19	20	32	45	39	42	49	51	47	47	45	48	47	43	34	28	57
	25	F	16	17	19	20	21	20	19	18	17	18	29	45	42	44	51	48	52	54	56	47	51	48	41	35	61
	26	F	21	23	25	26	27	26	26	25	25	27	33	38	48	57	52	51	58	59	56	54	57	51	46	38	66
	27	F	21	23	25	26	26	26	25	24	22	30	34	40	47	49	55	58	55	57	54	54	54	47	37	31	64
	28	F	21	23	25	26	26	26	26	24	23	22	23	29	32	34	48	46	59	49	51	46	45	45	38	31	56
	29	F	21	23	25	26	26	26	25	24	23	22	21	31	31	38	45	43	51	49	51	46	45	45	37	30	57
	30	F	21	23	26	26	27	27	27	26	29	32	38	47	52	49	48	50	54	53	54	46	50	49	47	42	62
	31	F	16	18	20	21	21	21	20	19	20	23	28	38	46	43	43	45	47	51	49	47	47	48	42	38	58
	32	F	16	18	20	21	22	21	21	20	20	19	21	33	39	45	48	44	51	50	46	48	44	45	35	31	57
	33	F	17	19	21	22	22	22	21	20	19	19	21	32	41	47	45	54	45	52	43	46	44	45	34	32	58
	34	F	17	19	21	22	23	22	22	21	21	21	21	24	35	38	43	38	50	49	50	43	49	43	36	36	58
	35	F	17	19	21	22	22	22	21	20	19	18	17	33	36	41	48	44	48	52	41	43	50	45	44	38	57

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

(7) Kim

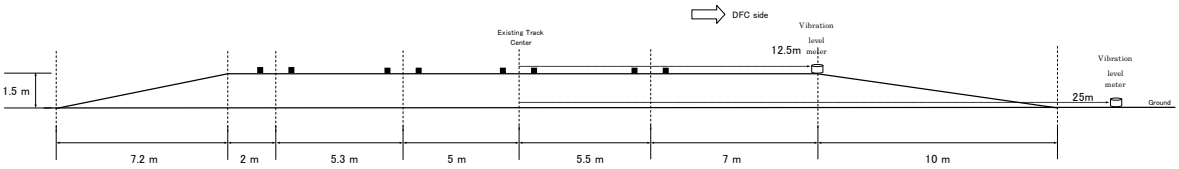
1) Cross-section View

Cross-section view of measurement site in Kim are given in Figure 1.2-13 and Figure 1.2-14.



Source: JICA Survey Team

Figure 1.2-13 Cross-section View of Measurement Site in Kim №1



Source: JICA Survey Team

Figure 1.2-14 Cross-section View of Measurement Site in Kim №2

2) Result of Background Vibration

Results of background vibration measurement in Kim is given in Table 1.2-31.

Table 1.2-31 Result of Background Vibration Measurement in Kim

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Kim	28-Sep	1	30.6	30.5	31.1	<30	<30	<25	32.4	<30	29.4	<30	<30	<25	32.4	30.5	31.1
	28-Sep	2	33.2	31.2	29.7	31.0	30.2	36.3	32.2	30.5	36.7	30.2	<30	<25	33.2	31.2	36.7

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Vibration

Results of railway vibration measurement in Kim are given in Table 1.2-32 and Table 1.2-33.

Table 1.2-32 Result of Railway Vibration Measurement in Kim №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	28-Sep	10:09	P	108.6	19.4	37.8	556	up	60.7	58.1	62.6	51.5	74.8	63.0
2	28-Sep	10:15	P	90.2	20.6	35.9	533	up	60.1	56.8	61.6	50.2	74.5	62.4
3	28-Sep	10:29	F	70.0	33.4	51.7	655	up	60.8	51.1	63.8	55.9	72.8	62.7
4	28-Sep	10:37	P	97.5	18.5	29.7	489	down	61.9	50.9	60.0	50.3	69.7	59.0
5	28-Sep	10:54	P	60.8	34.7	45.7	422	down	55.0	47.1	54.1	45.0	67.3	54.6
6	28-Sep	11:16	F	47.0	49.5	68.0	641	up	58.1	50.9	56.6	50.6	67.8	60.1
7	28-Sep	11:23	F	65.3	32.8	46.7	586	down	57.3	49.1	55.0	49.4	68.7	57.6
8	28-Sep	11:41	F	60.3	38.4	53.7	641	up	59.0	53.1	61.1	54.8	69.4	60.6
9	28-Sep	11:54	F	60.5	40.0	58.8	641	up	58.8	53.7	61.4	56.0	68.8	61.6
10	28-Sep	12:05	P	28.1	58.1	79.9	399	up	52.8	48.5	54.9	45.3	64.7	54.8
11	28-Sep	12:09	F	38.2	56.3	73.0	655	up	57.0	49.5	58.0	51.2	67.4	60.1
12	28-Sep	13:00	F	62.2	40.3	52.2	612	up	59.2	53.1	60.4	53.4	68.8	60.3
13	28-Sep	13:14	F	114.5	24.6	37.3	675	down	65.7	53.6	63.5	55.9	72.7	62.1
14	28-Sep	13:28	F	51.5	49.8	63.4	650	down	56.8	49.3	55.4	49.9	66.9	59.4
15	28-Sep	13:40	P	26.2	41.6	61.6	333	up	52.8	49.4	54.8	46.6	65.6	56.4
16	28-Sep	13:47	F	62.0	38.8	57.8	641	up	59.8	52.4	61.1	52.9	69.2	61.1
17	28-Sep	14:05	P	67.2	20.5	33.7	333	down	56.2	46.2	55.5	47.6	65.3	57.8
18	28-Sep	14:06	F	63.8	36.8	53.5	650	up	59.2	52.8	62.0	54.5	69.8	60.6
19	28-Sep	14:19	P	105.0	13.7	25.7	399	up	61.2	57.3	61.4	53.3	74.7	62.0
20	28-Sep	14:21	P	28.2	57.1	52.5	268	up	51.5	46.3	53.2	44.8	61.9	53.3
21	28-Sep	14:43	P	110.3	18.1	29.0	533	down	62.5	49.6	59.1	50.0	70.4	58.6
22	28-Sep	14:54	P	70.0	4.3	33.0	399	down	53.9	46.6	54.8	46.7	67.3	56.3
23	28-Sep	15:00	F	16.9	29.4	38.6	675	up	61.0	55.0	63.4	54.8	74.0	63.9
24	28-Sep	15:02	P	20.6	73.1	97.7	489	up	51.2	47.4	54.2	46.7	63.7	54.0
25	28-Sep	15:04	F	59.5	41.0	57.9	641	down	60.3	55.5	55.9	50.7	69.1	64.2
26	28-Sep	15:18	F	34.5	60.6	78.9	641	up	57.1	51.2	57.8	51.8	67.4	60.3
27	28-Sep	15:28	P	36.9	58.4	73.1	533	down	50.3	46.2	49.9	42.6	62.9	53.8
28	28-Sep	15:49	F	86.3	29.7	43.8	641	down	59.7	51.2	58.7	51.8	68.7	57.8
29	28-Sep	16:08	P	114.8	19.0	35.1	556	down	59.7	49.7	57.8	49.3	68.8	60.0
30	28-Sep	16:21	F	94.0	25.6	40.8	655	up	62.0	59.0	63.1	57.2	76.6	66.6
31	28-Sep	16:23	P	123.6	14.5	26.6	466	down	61.4	51.7	59.7	51.4	71.7	60.4
32	28-Sep	16:33	F	66.2	35.4	50.0	655	up	58.1	51.3	60.0	52.3	69.6	60.2
average		Passenger(P)		58.1	40.5	55.9	425	up	55.8	52.0	57.5	48.3	68.6	58.0
				85.1	23.5	38.2	466	down	57.6	48.5	56.4	47.9	67.9	57.6
		Freight(F)		56.3	40.4	56.4	647	up	59.2	52.8	60.7	53.8	70.1	61.5
				75.4	35.6	49.8	639	down	60.0	51.7	57.7	51.5	69.2	60.2

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-33 Result of Railway Vibration Measurement in Kim №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	28-Sep	10:01	P	112.9	18.0	25.8	533	up	57.4	51.6	62.5	52.8	69.0	59.8
2	28-Sep	10:05	P	103.5	12.2	27.5	399	down	53.4	47.2	58.4	47.1	68.0	59.6
3	28-Sep	10:09	P	108.6	19.4	30.6	556	up	56.5	47.9	59.6	47.0	68.0	59.0
4	28-Sep	10:15	P	90.2	20.6	31.4	533	up	56.0	46.5	59.4	47.2	66.5	58.0
5	28-Sep	10:29	F	70.0	33.4	46.5	655	up	70.9	52.0	60.2	54.4	69.3	59.6
6	28-Sep	10:37	P	97.5	18.5	36.3	489	down	52.6	45.6	57.7	43.5	68.2	57.3
7	28-Sep	10:54	P	60.8	34.7	62.0	422	down	46.6	39.9	50.4	39.5	62.0	51.6
8	28-Sep	11:16	F	47.0	49.5	71.9	641	up	55.0	48.0	55.0	50.2	66.1	59.4
9	28-Sep	11:23	F	65.3	32.8	42.5	586	down	53.3	48.3	56.3	47.9	66.8	57.3
10	28-Sep	11:41	F	60.3	38.4	56.4	641	up	56.4	50.4	57.5	50.2	69.0	61.8
11	28-Sep	11:54	F	60.5	40.0	50.8	641	up	56.9	49.8	58.2	51.5	69.9	62.0
12	28-Sep	13:00	F	62.2	40.3	59.6	612	up	56.0	48.8	56.5	49.7	67.2	59.6
13	28-Sep	13:47	F	62.0	38.8	51.2	641	up	57.2	51.8	58.1	51.9	68.6	61.6
14	28-Sep	14:14	F	66.2	18.8	28.0	453	down	54.4	49.5	60.2	49.8	69.4	60.0
15	28-Sep	14:43	P	110.3	18.1	29.0	533	down	53.2	48.1	57.3	48.0	68.0	58.4
16	28-Sep	15:04	F	59.5	41.0	62.4	641	down	55.4	51.6	54.6	49.3	65.5	60.0
17	28-Sep	15:18	F	34.5	60.6	89.3	641	up	53.8	49.1	54.0	48.3	65.6	56.7
18	28-Sep	15:49	F	86.3	29.7	52.1	641	down	53.1	47.3	57.6	48.4	68.2	58.0
19	28-Sep	16:21	F	94.0	25.6	41.2	655	up	60.4	51.5	61.0	53.3	70.4	59.9
20	28-Sep	16:23	P	123.6	14.5	27.3	466	down	53.1	46.6	57.7	47.5	69.1	58.7
21	28-Sep	16:33	F	66.2	35.4	51.7	655	up	58.4	51.7	58.0	52.4	69.2	60.9
average		Passenger(P)		103.9	19.3	29.3	541	up	56.6	48.7	60.5	49.0	67.8	58.9
				99.1	19.6	36.4	462	down	51.8	45.5	56.3	45.1	67.1	57.1
		Freight(F)		61.9	40.2	57.6	642	up	58.3	50.3	57.6	51.3	68.4	60.2
				69.3	30.6	46.2	580	down	54.1	49.2	57.2	48.9	67.5	58.8

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table 1.2-34 and Table 1.2-35. In Kim No.1, in consideration of all results roughly, frequency of the range from 8 to 16Hz at X-axis excelled, range from 10 to 20Hz at Y-axis excelled, range from 12.5 to 25Hz at Z-axis excelled. In Kim No2,in consideration of all results roughly, frequency of the range from 6.3 to 40Hz at X-axis excelled, range from 6.3 to 25Hz at Y-axis excelled, range from 25 to 40Hz at Z-axis excelled. In Japan, in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed.

Table 1.2-34 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Kim №1

Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	P	5	8	5	7	10	13	15	15	15	18	29	28	35	45	46	48	43	50	43	42	38	32	30	25	55
	2	P	6	9	11	12	14	15	17	18	21	22	24	29	41	41	52	44	46	44	42	40	34	32	28	25	55
	3	F	10	13	15	19	19	18	22	23	27	34	29	35	40	50	52	47	43	45	44	40	37	31	23	19	56
	4	P	10	11	13	11	11	13	12	14	19	22	24	27	39	42	45	41	42	42	39	34	28	25	20	17	51
	5	P	9	12	17	21	24	19	20	14	18	25	20	25	25	36	38	36	36	33	31	28	21	20	13	9	45
	6	F	10	12	15	15	17	16	19	18	29	28	38	40	44	48	43	43	42	42	41	35	29	29	27	20	53
	7	F	11	12	12	16	21	21	19	16	25	28	36	33	42	50	47	44	41	40	36	34	28	25	19	12	54
	8	F	12	16	19	19	18	21	21	28	32	38	37	41	46	46	51	42	47	44	43	37	34	28	28	21	55
	9	F	12	14	16	19	22	19	21	29	27	38	34	36	47	46	49	41	46	41	41	37	34	28	27	19	55
	10	P	11	12	15	16	15	18	16	14	17	17	19	26	29	33	35	34	39	36	32	29	23	19	19	11	44
	11	F	10	13	16	14	17	12	19	12	22	26	38	38	42	44	44	43	42	42	43	35	32	28	23	13	52
	12	F	12	14	15	18	11	18	27	26	30	39	33	41	45	47	47	41	45	40	41	37	31	28	27	20	54
	13	F	10	12	14	16	17	21	22	24	28	34	40	41	39	45	47	54	46	41	38	37	28	26	22	17	57
	14	F	12	14	16	16	17	13	12	18	24	24	36	39	47	43	42	46	39	42	38	32	25	27	18	10	52
	15	P	10	12	14	13	13	19	16	17	17	22	23	25	25	36	34	34	41	37	38	31	24	22	19	12	46
	16	F	10	12	16	20	20	24	19	21	33	36	35	41	44	46	52	42	46	43	40	38	33	29	27	21	56
	17	P	12	13	13	13	17	14	16	18	14	12	28	26	35	31	43	42	38	34	32	31	24	20	13	7	47
	18	F	10	13	16	15	17	17	22	19	32	35	36	36	37	50	45	41	46	47	41	36	36	33	28	23	55
	19	P	11	13	16	17	18	20	19	20	19	21	27	34	39	47	43	46	43	50	43	38	37	28	27	21	54
	20	P	12	14	16	15	17	15	14	22	21	27	21	27	29	39	39	36	41	39	34	31	24	23	19	12	47
	21	P	11	12	13	14	16	16	14	14	22	17	30	33	40	46	45	48	41	43	38	34	27	24	21	16	53
	22	P	11	14	16	16	17	17	12	18	15	19	28	28	29	28	36	34	37	35	31	28	24	21	14	8	43
	23	F	10	10	13	13	14	13	18	21	27	47	41	42	39	53	53	52	42	47	42	40	35	34	29	20	59
	24	P	9	11	15	17	20	20	17	20	19	17	21	25	27	37	33	33	40	38	32	28	23	20	15	10	45
	25	F	11	12	14	16	17	17	19	28	29	34	37	39	43	45	48	44	45	41	41	33	27	23	19	11	53
	26	F	12	14	14	10	18	14	21	20	23	32	40	37	43	42	49	45	43	45	41	33	28	27	24	19	54
	27	P	11	12	13	12	15	15	13	14	19	18	19	14	24	27	34	35	35	33	33	28	22	17	11	7	42
	28	F	11	14	16	16	16	16	21	16	29	31	30	34	35	42	44	46	43	45	36	36	31	25	19	10	52
	29	P	11	12	14	16	16	14	14	8	24	21	29	28	36	40	46	49	41	43	37	35	25	24	20	15	54
	30	F	12	14	16	18	19	20	24	26	32	42	48	42	40	44	58	52	46	41	43	40	37	32	26	20	56
	31	P	11	14	17	18	20	20	20	23	25	25	29	31	38	51	47	52	42	43	39	32	28	25	19	11	56
	32	F	12	14	15	17	18	21	18	23	34	30	42	35	41	46	49	43	44	45	42	37	37	35	25	19	54
Y	1	P	6	4	12	14	12	16	13	18	23	23	32	33	38	47	49	46	43	42	40	47	34	34	33	27	55
	2	P	3	3	3	6	10	13	6	17	20	24	27	32	38	41	46	46	48	43	43	43	36	36	32	21	54
	3	F	7	9	12	14	17	16	21	26	35	43	40	38	39	49	50	47	45	51	47	46	38	38	28	20	57
	4	P	9	11	12	11	11	14	14	20	25	27	30	30	37	43	47	43	42	40	36	34	29	31	22	14	51
	5	P	10	12	13	11	7	17	16	13	17	19	19	23	20	32	34	33	36	35	32	32	27	24	18	9	43
	6	F	10	13	15	12	19	18	23	26	32	34	37	41	40	42	38	47	43	42	40	38	32	34	31	21	52
	7	F	10	13	16	17	18	21	24	22	30	33	38	35	36	45	42	39	39	37	41	35	32	33	23	14	50
	8	F	11	12	11	14	22	29	22	26	34	39	35	39	45	41	46	43	48	43	46	42	36	35	30	24	55
	9	F	12	13	15	16	23	22	14	28	34	40	36	33	41	40	45	42	49	44	43	42	37	34	32	22	54
	10	P	10	11	13	14	14	18	17	16	15	16	18	19	28	33	43	42	41	32	33	34	26	25	24	14	49
	11	F	12	14	16	18	20	21	17	15	24	27	37	38	37	38	43	45	41	42	42	44	34	32	29	17	52
	12	F	11	13	16	18	13	19	30	33	33	39	34	39	40	43	45	43	49	41	44	40	35	34	31	23	54
	13	F	10	14	19	21	22	23	25	34	35	38	52	44	42	40	47	53	43	42	44	43	35	32	22	14	58
	14	F	10	12	14	15	15	25	28	26	35	33	42	39	47	42	40	44	39	43	36	35	30	30	24	16	52
	15	P	10	12	15	16	15	16	13	13	16	24	24	25	26	36	43	42	38	35	34	34	27	24	24	18	47
	16	F	10	12	13	13	21	26	25	27	32	43	41	41	40	43	45	43	48	43	44	41	36	35	31	25	54
	17	P	11	12	13	17	17	17	15	14	14	19	18	28	36	32	36	38	37	35	35	35	27	27	20	11	45
	18	F	12	14	16	18	22	28	27	23	34	36	40	38	41	45	46	43	49	45	44	41	38	37	31	25	55
	19	P	10	12	14	16	16	18	16	20	24	28	33	36	41	46	48	46	43	44	38	47	34	32	30	26	55
	20	P	12	14	13	13	18	18	16	21	21	21	23	30	30	39	42	42	38	34	34	34	27	25	23	16	48
	21	P	11	12	15	17	15	21	17	22	24	23	28	33	40	43	48	43	39	42	37	36	29	32	22	14	52
	22	P	11	13	14	15	18	12	15	14	19	21	22	31	31	29	36	35	35	37	35	32	26	26	20	12	44
	23	F	12	14	15	17	21	23	29	27	33	43	40	43	39	49	50	51	46	42	47	43	38	39	36	22	57
	24	P	10	12	15	16	18	16	16	15	17	19	17	21	28	34	45	42	40	35	34	34	26	26	22	13	48
	25	F	11	14	16	17	22	23	26	24	35	41	37	36	40	42	44	42	46	41	40	36	28	31	24	13	52
	26	F	10	11	11	13	15	20	21	23	24	34	40	38	38	38	42	41	44	38	40	39	33	36	31	24	51
	27	P	11	13	15	14	17	16	12	12	15	15	16	17	24	28	35	37	35	34	32	31	26	21	16	10	43
	28	F	10	12	15	15	17	17	26	30	36	40	37	37	40	39	42	47	43	46	41	39	33	29	21	10	53
	29	P	10	12	16	19	20	16	17	19	22	26	27	30	36	43	48	43	37	44	37	35	28	31	23	14	52
	30	F	11	13	16	17	18	20	29	29	36	50	51	44	40	41	50	56	46	44	49	46	38	41	31	22	60
	31	P	11	13	15	14	17	18	14	21	25	31	30	27	37	41	43	49	39	39	38	33	28	27	25	14	52
	32	F	11	13	15	16	17	26	26	23	35	37	41	34	35	44	47	44	44	45	44	43	38	38	28	20	54
Z	1	P	8	10	11	12	13	14	15	15	19	20	22	30	43	50	51	56	52	56	54	59	53	46	42	35	54
	2	P	6	8	11	12	13	14	14	15	17	18	18	30	38	44	58	53	54	57	59	55	50	48	40	33	54
	3	F	12	15	19	21	23	24	25	27	29	30	34	38	53	59	58	56	59	66	53	57	51	47	37	28	70
	4	P	8	10	12	13	14	13	14	14	14	16	19	30	44	51	55	49	59	58	52	49	44	42	31	24	54
	5	P	8	10	12	11	11	15	13	14	13	13	16	26	31	43	42	42	46	50	46	46	41	36	25	19	55
	6	F	10	13	15	17	19	20	21	26	27	32	44	52	54	52	48	55	56	55	55	54	49	48	41	33	54
	7	F	14	17	20	22	24	26	26	28	29	30	37	44	53	54	54	50	54	54	55	49	47	42	33	24	52
	8	F	11	14	17	19	19	18	21	22	25	29	35	51	56	51	55	50	62	58	60	54	53	50	41	34	57
	9	F	15	17	21	24	25	27	28	29	31	32	37	48	55	53	54	52	62	55	58	54	54	48	40	32	56
	10	P	11	13	15	15	16	13	14	11	13	12	18	22	28	35	38	47	53	50	47	46	45	40	34	24	57
	11	F	11	12	15	18	19	18	20	20	20	20	35	46	51	49	49	57	57	56	59	56	49	44	36	27	55
	12	F	12	14	17	18	20	20	22	26	26	33	39	51	52	50	52	54	60	53	56	53	52	46	42	36	55
	13	F	11	13	16	17	19	20	20	20	25	31	39	45	52	48	51	60	56	58	60	57	48	42	33	24	56
	14	F	11	13	16	18	21	23	22	23	25	29	41	49	54	50	51	47	54	58	51	50	46	40	34	25	53
	15	P	10	12	15	16	17	15	16	14	15	19	18	25	27	36	42	48	53	52	50	45	43	40	34	24	58
	16	F	10	12	15	16	19	19	20	21	20	31	37	49	55	52	53	51	60	56	58	54	53	50	41	34	55
	17	P	11	13	16	16	16	16	16	15	14	13	13	19	25	36	35	45	44	51	51	52	48	42	39	29	22	58
	18	F	11	13	15	16	17	14	16	14	17	22	31	43	50	57	54	51	63	58	58	56	55	53	41	35	57
	19	P	10	12	15	15	16	16	14	13	14	19	24	39	46	51	51	57	55	55	52	58	54	46	41	36	54
	20	P	12	14	17	18	19	19	20	20	20	22	22	30	32	38	44	52	51	51	51	46	42	39	33	25	58
	21	P	12	14	16	18	18	18	19	19	20	21	23	32	46	52	52	51	51	61	54	48	44	41	37	28	54
	22	P	11	13	15	16	18	18	17	17	18	19	21	29	34	35	41	42	48	54	51	46	42	39	30	24	57
	23	F	12	14	16	18	20	19	21	22	24	39	38	50	48	51	51	57	54	59	63	55	52	53	44	33	58
	24	P	12	13	15	15	15	16	15	13	13	10	12	22	26	37	40	50	54	49	50	46	44	38	33	24	58
	25	F	11	13	16	17	19	18	19	18	23	29	35	50	52	51	52	50	57	54	55	50	45	40	34	26	53
	26	F	14	17	21	24	26	27	28	29	32	36	49	50	54	47	50	52	54	52	52	51	47	47	41	32	62
	27	P	11	13	16	17	17	16	16	15	14	12	14	21	30	34	42	42	46	49	47	43	38	33	26	22	54
	28	F	11	13	15	17	18	18	16	20	19	26	32	40	47	49	50	55	55	60	57	53	47	38	31	22	54
	29	P	11	13	15	14	16	16	16	11	11	12	24	28	43	53	51	54	50	61	54	46	44	40	38	28	53
	30	F	12	14	16	17	17	18	18	19	24	32	42	54	53	55	56	66	51	57	65	60	52	52	42	32	71
	31	P	11	13	16	17	17	17	18	17	18	18	28	32	42	50	56	58	51	59	55	47	38	37	32	26	55
	32	F	12	14	16	16	16	17	18	16	21	23	37	44	52	56	54	53	51	61	58	55	53	52	39	31	57

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-35 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Kim №2

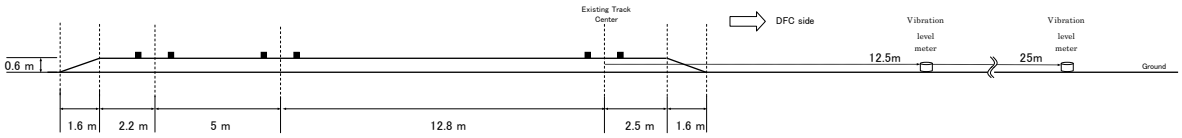
Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	P	16	15	15	15	15	16	17	17	18	19	25	33	40	41	41	47	41	41	41	41	45	43	41	30	53
	2	P	18	20	19	22	25	22	23	23	26	25	29	25	33	37	40	40	40	39	40	39	37	32	27	20	49
	3	P	17	17	19	18	16	21	17	19	17	17	22	27	33	45	43	44	37	40	39	40	44	43	39	29	52
	4	P	17	17	19	19	16	19	19	18	18	19	20	24	36	40	42	38	41	38	40	40	45	42	38	31	51
	5	F	13	16	19	18	19	21	19	18	24	32	32	31	42	49	46	41	38	39	46	46	52	44	36	28	56
	6	P	14	16	19	16	20	20	16	17	18	20	18	26	30	37	39	34	38	38	40	39	37	30	25	19	48
	7	P	15	16	15	16	22	21	14	17	18	16	21	15	21	22	26	26	26	25	30	33	31	28	20	14	39
	8	F	16	19	22	20	18	20	21	21	27	27	39	44	39	37	38	37	36	39	40	41	43	42	37	27	51
	9	F	15	17	20	21	22	19	21	16	27	26	33	31	43	47	42	37	34	35	37	40	38	35	27	20	51
	10	F	15	18	20	20	23	23	18	22	27	25	29	36	45	42	44	39	41	39	45	41	46	42	38	32	53
	11	F	16	18	19	15	20	23	20	23	24	28	32	37	48	43	39	39	42	41	44	41	46	43	39	32	54
	12	F	19	22	24	23	24	23	24	24	27	29	32	36	40	40	41	39	42	41	42	42	45	42	40	30	52
	13	F	20	21	23	24	26	21	20	22	27	29	33	35	44	45	46	40	44	41	43	40	45	42	38	32	54
	14	F	20	22	25	26	25	25	25	24	25	25	28	31	36	45	47	42	37	38	41	46	40	35	31	19	52
	15	P	21	23	26	28	27	25	25	25	26	23	24	30	35	38	36	39	36	38	39	42	36	31	27	19	48
	16	F	21	22	25	25	27	25	26	25	22	34	32	34	46	43	37	36	35	33	36	39	34	36	26	18	50
	17	F	20	22	25	25	25	25	25	23	24	32	39	39	37	37	43	37	40	40	41	39	42	39	32	24	51
	18	F	20	21	24	26	27	25	23	23	24	33	36	33	36	42	39	38	35	38	40	46	39	33	29	18	51
	19	F	20	22	25	26	25	25	25	26	29	36	41	34	41	45	50	52	43	40	45	44	46	45	40	29	57
	20	P	20	22	24	25	25	25	24	22	23	27	29	33	36	41	41	38	37	39	37	43	35	31	27	19	49
	21	F	20	21	24	25	25	23	27	25	30	29	32	32	40	52	43	42	41	41	42	42	48	46	38	31	56
Y	1	P	13	12	16	17	19	21	24	25	30	31	38	43	48	45	47	45	42	45	41	41	39	40	38	34	55
	2	P	11	10	11	10	8	12	11	16	29	32	36	32	39	37	47	47	44	45	51	44	38	35	27	18	55
	3	P	13	13	14	12	15	24	19	22	28	28	38	33	36	42	47	41	42	42	41	41	37	41	36	32	52
	4	P	11	11	10	11	15	18	19	24	25	32	29	31	37	43	47	41	42	38	42	39	39	38	35	32	52
	5	F	7	9	9	13	13	15	20	23	36	45	41	37	43	52	48	41	41	46	44	45	43	38	33	29	56
	6	P	9	13	14	7	16	13	17	19	24	25	26	32	36	38	41	38	38	41	48	45	36	33	25	19	52
	7	P	8	10	11	12	17	17	9	15	15	14	18	20	22	27	29	28	31	31	37	33	31	29	17	12	42
	8	F	9	12	16	18	19	21	23	19	26	35	34	38	36	40	36	41	42	45	44	43	41	37	37	27	52
	9	F	10	11	10	9	11	23	26	22	34	31	33	33	40	47	43	40	41	38	48	42	41	39	31	17	53
	10	F	9	11	14	12	17	22	18	27	33	38	37	36	46	42	42	40	41	46	49	43	41	40	36	31	55
	11	F	12	13	15	17	25	24	25	25	31	38	38	36	47	43	42	41	42	44	48	44	42	40	36	32	54
	12	F	16	18	19	18	24	27	25	31	29	38	35	36	47	41	43	38	40	45	45	43	42	38	38	30	53
	13	F	17	19	21	22	25	24	27	31	34	42	40	38	46	46	42	40	40	43	46	42	41	41	35	31	54
	14	F	17	19	21	23	24	24	28	26	30	34	32	32	41	49	49	47	44	51	49	50	41	36	33	21	58
	15	P	18	20	23	23	24	23	23	23	26	29	33	37	37	38	42	43	36	43	44	43	37	33	25	16	51
	16	F	17	19	21	22	21	22	26	24	32	37	31	35	40	41	41	37	39	38	40	40	37	38	29	16	50
	17	F	18	20	23	24	24	25	23	27	25	35	35	36	41	35	38	36	36	39	45	43	38	36	32	26	50
	18	F	18	20	22	23	22	23	28	29	34	41	39	36	40	43	43	41	40	47	48	47	39	32	27	15	54
	19	F	17	19	21	21	21	21	27	32	42	48	44	43	38	45	51	51	45	41	48	41	42	40	40	31	58
	20	P	17	18	21	21	21	20	23	19	23	31	30	38	38	44	44	45	39	46	46	42	35	34	29	19	53
	21	F	17	19	21	21	23	30	27	27	39	37	39	38	44	48	46	38	43	42	44	42	45	41	38	32	55
Z	1	P	15	14	15	14	13	12	14	14	16	19	24	32	47	49	51	57	50	53	51	56	53	51	48	45	63
	2	P	15	14	15	14	12	12	12	10	12	16	29	29	42	43	53	55	55	54	61	57	52	49	37	30	65
	3	P	15	14	14	13	10	10	7	4	5	11	22	30	42	53	52	55	50	53	51	55	52	51	48	39	63
	4	P	15	15	17	14	14	12	11	12	12	16	16	30	49	47	48	46	55	52	53	52	55	52	47	41	62
	5	F	13	15	18	19	21	22	23	25	26	29	35	40	51	61	57	51	52	56	56	57	63	53	46	39	67
	6	P	11	13	15	15	16	16	15	13	11	10	14	28	41	47	48	46	49	52	59	57	52	44	35	32	63
	7	P	12	14	16	17	17	17	16	15	15	15	21	21	30	30	36	39	41	43	49	47	43	37	31	26	53
	8	F	13	15	17	18	17	17	17	16	19	25	45	54	50	49	48	48	46	52	55	56	51	52	49	38	63
	9	F	15	18	21	23	24	25	26	28	28	30	35	45	54	57	52	47	51	49	58	55	54	48	40	31	64
	10	F	13	15	17	17	17	16	14	12	15	29	36	47	58	53	52	47	49	53	56	57	55	50	49	41	64
	11	F	14	16	18	18	19	20	19	20	21	28	35	49	59	52	50	49	50	52	56	57	55	50	48	41	65
	12	F	18	20	23	23	24	24	25	25	27	31	39	50	60	49	50	44	49	52	54	57	57	51	49	40	65
	13	F	19	20	23	24	24	24	24	24	26	26	35	53	58	56	53	48	48	52	57	57	56	51	48	40	65
	14	F	19	21	23	24	24	23	22	21	19	21	28	43	48	54	55	53	53	62	61	61	53	46	43	33	67
	15	P	19	21	23	24	25	24	23	22	20	19	20	27	40	48	48	52	47	55	56	57	50	45	36	31	62
	16	F	19	21	23	23	23	23	20	16	14	28	33	51	56	50	48	44	48	49	51	53	47	45	38	32	61
	17	F	19	21	23	24	25	25	24	25	24	29	46	52	50	45	47	45	46	51	57	57	50	48	44	36	63
	18	F	19	21	24	24	24	24	23	23	23	21	33	36	45	47	47	49	49	57	58	61	52	42	38	28	65
	19	F	19	20	22	23	23	22	20	19	16	29	39	48	55	55	57	58	53	51	59	55	57	52	48	40	66
	20	P	19	21	23	24	25	25	25	25	25	26	30	31	43	51	51	56	49	55	57	57	50	42	38	30	63
	21	F	19	21	23	25	26	26	26	27	28	31	39	50	55	60	52	47	49	52	54	56	60	55	47	42	66

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

(8) Asaoti

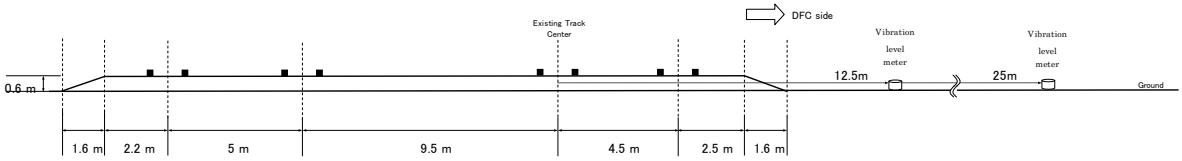
1) Cross-section View

Cross-section view of measurement site in Asaoti are given in Figure 1.2-15 and Figure 1.2-16.



Source: JICA Survey Team

Figure 1.2-15 Cross-section View of Measurement Site in Asaoti №1



Source: JICA Survey Team

Figure 1.2-16 Cross-section View of Measurement Site in Asaoti №2

2) Result of Background Vibration

Results of background vibration measurement in Asaoti is given in Table 1.2-36.

Table 1.2-36 Result of Background Vibration Measurement in Asaoti

Station	date	No.	Backgroung Vibration Level Lp [dB(A)]														
			10:00～12:00			12:00～14:00			14:00～16:00			16:00～18:00			Overall 10:00～18:00		
			X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
Asaoti	13-Oct	1	32.6	32.7	34.6	33.4	37.0	26.8	25.7	28.3	33.4	26.1	27.7	33.4	33.4	37.0	34.6
	13-Oct	2	36.0	34.8	36.4	37.8	32.8	31.3	27.0	31.5	29.4	24.9	26.9	33.2	37.8	34.8	36.4

Note: Measurement lower limit of vibration level meter is 30dB for XandY-direction,25dB for Z-direction, therefore , measurement value under these limit indicates with [<]
Source: JICA Survey Team

3) Result of Railway Vibration

Results of railway vibration measurement in Asaoti are given in Table 1.2-37 and Table 1.2-38.

Table 1.2-37 Result of Railway Vibration Measurement in Asaoti №1

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	13-Oct	10:20	P	37.8	22.3	36.1	243	up	44.9	41.0	47.1	43.4	58.9	50.6
2	13-Oct	10:25	P	18.7	13.1	21.8	422	down	54.6	54.5	56.7	58.3	69.9	61.8
3	13-Oct	10:27	F	64.2	39.3	49.1	626	down	63.6	55.5	62.5	57.9	72.6	66.7
4	13-Oct	10:30	P	64.9	20.1	31.9	377	down	52.2	48.3	51.3	50.8	63.6	57.3
5	13-Oct	10:45	P	47.8	34.0	59.0	489	up	50.2	44.0	47.4	47.3	59.8	52.4
6	13-Oct	10:58	F	67.5	35.2	51.3	641	down	57.2	50.4	55.0	53.7	68.1	60.3
7	13-Oct	11:17	F	62.9	39.8	50.9	635	down	64.5	58.3	64.6	60.2	75.1	68.4
8	13-Oct	11:42	P	86.3	9.4	25.0	310	up	45.8	44.9	48.2	45.5	59.1	53.0
9	13-Oct	11:48	F	53.5	42.6	62.1	655	down	65.5	55.5	63.9	59.7	72.8	68.3
10	13-Oct	11:51	P	138.9	10.7	20.2	399	up	52.5	53.2	53.8	53.4	65.0	59.0
11	13-Oct	12:00	P	105.5	18.4	29.8	511	up	50.5	50.4	52.9	50.3	63.8	56.4
12	13-Oct	12:01	P	121.9	18.3	32.9	556	down	56.0	54.8	56.4	57.3	68.4	61.9
13	13-Oct	12:05	F	74.8	35.1	47.3	641	up	49.7	48.0	52.6	49.9	64.3	57.4
14	13-Oct	12:18	P	26.6	27.5	47.3	288	up	44.4	40.5	46.4	42.6	58.1	49.7
15	13-Oct	12:30	P	114.7	12.7	24.5	377	down	54.5	52.4	55.7	56.6	68.4	61.2
16	13-Oct	12:37	P	137.8	18.2	25.8	556	up	51.3	51.4	53.5	52.9	64.3	58.0
17	13-Oct	12:38	P	106.4	18.4	32.6	556	down	55.5	54.6	56.1	58.4	69.3	61.5
18	13-Oct	12:47	P	64.2	16.1	37.9	260	down	49.0	0.0	48.0	0.0	60.7	0.0
19	13-Oct	13:05	F	68.3	144.2	52.6	476	down	53.7	50.7	55.0	52.8	66.0	60.3
20	13-Oct	13:15	F	111.6	25.3	33.0	641	up	51.9	49.9	54.7	52.2	67.3	58.2
21	13-Oct	13:24	P	101.2	14.3	23.2	422	up	51.6	49.3	54.0	52.0	64.3	58.1
22	13-Oct	13:34	P	108.6	13.9	25.4	422	down	55.7	54.4	57.1	58.6	69.4	62.2
23	13-Oct	13:45	P	69.2	13.3	28.8	288	up	46.5	44.2	48.7	45.4	59.9	52.5
24	13-Oct	14:17	F	62.5	39.9	60.7	656	down	54.0	50.9	54.1	51.5	64.9	59.1
25	13-Oct	14:19	F	83.6	31.3	44.4	586	up	50.6	49.0	55.1	52.6	62.5	59.3
26	13-Oct	14:32	F	56.0	41.0	53.6	626	up	49.1	47.2	50.9	48.5	62.9	56.5
27	13-Oct	14:48	P	52.2	19.1	29.7	260	down	49.3	44.5	48.7	46.9	61.0	54.7
28	13-Oct	14:52	P	56.3	29.8	42.8	466	down	51.9	46.8	51.5	49.3	63.8	56.9
29	13-Oct	14:57	P	110.6	10.8	28.7	310	up	50.3	48.5	52.7	51.3	63.8	56.9
30	13-Oct	15:05	P	102.6	18.7	37.2	333	up	62.0	54.9	63.7	56.7	73.2	65.4
31	13-Oct	15:07	P	105.5	18.3	27.0	533	up	50.1	49.6	52.0	51.0	62.7	56.6
32	13-Oct	15:16	P	104.9	12.9	22.1	377	up	49.9	49.3	52.2	51.7	63.0	56.5
33	13-Oct	15:20	P	13.6	75.9	114.6	489	down	47.3	44.7	45.6	45.8	57.4	51.5
34	13-Oct	15:33	P	110.6	15.8	23.6	467	up	49.7	49.3	52.4	51.5	62.5	56.4
35	13-Oct	15:34	F	42.4	60.0	78.3	650	up	61.2	54.6	62.2	57.8	72.4	66.5
36	13-Oct	15:50	F	56.0	39.5	79.4	650	down	50.7	49.5	53.8	51.9	63.2	60.1
37	13-Oct	15:56	P	38.1	16.5	46.3	247	down	47.1	45.0	48.0	45.9	60.4	53.9
38	13-Oct	15:57	P	114.7	17.2	25.1	516	up	49.6	50.1	52.2	51.4	63.2	56.5
39	13-Oct	16:13	P	117.3	18.2	24.4	564	up	50.8	50.7	53.4	51.8	62.0	57.5
40	13-Oct	16:18	F	48.7	47.1	63.3	650	down	52.6	47.0	53.2	51.1	64.0	58.2
41	13-Oct	16:19	P	118.4	13.7	30.1	499	up	51.4	52.8	54.0	53.7	64.9	59.4
42	13-Oct	16:35	P	128.7	11.3	26.3	410	up	51.6	52.1	53.6	53.9	65.5	59.6
43	13-Oct	16:43	F	30.3	76.2	93.4	650	up	58.9	53.3	60.0	53.4	71.1	63.3
44	13-Oct	16:55	P	108.6	12.6	20.8	392	up	49.5	49.3	52.5	50.8	62.6	56.5
45	13-Oct	16:55	P	30.5	42.0	52.8	438	down	48.1	44.4	48.4	49.4	60.8	54.2
46	13-Oct	17:13	P	21.0	14.4	26.1	440	down	53.6	53.2	57.1	58.7	69.1	61.5
average		Passenger (P)		98.6	16.7	29.5	416	up	50.1	48.7	52.1	50.3	63.0	56.4
				62.4	23.9	39.9	408	down	51.9	46.0	52.3	48.9	64.8	53.7
		Freight (F)		66.4	44.8	58.3	633	up	53.6	50.3	55.9	52.4	66.7	60.2
				60.5	53.4	58.7	624	down	57.7	52.2	57.8	54.8	68.3	62.7

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

Table 1.2-38 Result of Railway Vibration Measurement in Asaoti №2

No.	date	time	train type	train speed [kn/hr] V	train passage time [s]	measurement time [s]	train length [m]	train direction	Railway Vibration level [dB]					
									Lpx		Lpy		Lpz	
									12.5m	25.0m	12.5m	25.0m	12.5m	25.0m
1	13-Oct	10:05	P	39.9	25.3	36.8	422	up	70.2	43.9	51.8	46.5	61.4	56.2
2	13-Oct	10:08	P	51.6	37.0	49.9	243	up	50.0	45.9	54.1	48.9	63.4	57.2
3	13-Oct	10:40	P	25.5	53.3	66.6	489	up	46.7	43.6	50.8	46.2	60.2	54.5
4	13-Oct	10:48	F	33.7	69.4	91.9	650	up	52.0	48.7	56.3	51.7	65.0	61.0
5	13-Oct	10:53	F	88.0	31.6	45.1	641	down	54.5	50.7	59.2	52.5	69.0	61.0
6	13-Oct	11:06	P	65.1	25.4	36.8	357	up	49.6	45.2	52.6	49.6	62.7	57.7
7	13-Oct	11:10	P	32.3	27.7	46.4	268	down	44.2	41.0	46.2	43.2	57.7	51.0
8	13-Oct	11:20	F	61.4	41.7	57.7	635	down	65.4	60.6	69.0	62.6	81.1	71.5
9	13-Oct	11:21	P	133.3	10.8	22.7	333	down	52.6	48.2	55.0	51.9	65.5	58.3
10	13-Oct	11:26	P	116.4	15.3	23.5	399	down	50.6	47.5	54.3	52.7	65.5	58.4
11	13-Oct	11:38	P	79.8	9.1	22.2	310	up	51.4	48.4	55.2	50.0	64.3	59.5
12	13-Oct	11:50	F	69.9	39.4	48.3	655	down	65.0	60.1	69.3	63.7	80.0	72.1
13	13-Oct	11:51	P	125.4	11.3	23.8	399	up	56.0	56.4	59.4	56.9	68.8	66.1
14	13-Oct	12:00	P	108.6	18.8	29.1	511	up	55.7	53.4	56.7	55.1	66.3	62.3
15	13-Oct	12:02	P	111.7	18.4	43.9	556	down	54.2	49.1	55.4	52.4	68.6	59.4
16	13-Oct	12:05	F	88.9	27.7	40.8	641	up	55.6	52.5	59.6	55.5	67.0	62.4
17	13-Oct	12:13	P	75.0	13.3	21.8	288	up	52.5	49.2	54.4	49.5	63.9	59.3
18	13-Oct	12:32	P	104.8	12.7	20.7	377	down	51.4	48.4	55.0	51.6	65.6	57.7
19	13-Oct	12:37	P	113.0	18.0	26.5	556	up	56.2	53.9	59.9	56.8	67.5	63.7
20	13-Oct	12:40	P	107.3	18.3	29.0	556	down	53.6	48.6	54.9	51.8	66.5	58.7
21	13-Oct	13:07	F	58.2	36.8	47.3	476	down	53.1	50.4	54.1	50.7	66.3	58.1
22	13-Oct	13:15	F	104.4	22.2	39.0	641	up	57.0	53.2	59.9	56.7	68.0	63.4
23	13-Oct	12:23	P	85.6	14.2	25.7	422	up	56.5	54.3	58.6	55.1	67.7	64.6
24	13-Oct	13:35	P	111.2	13.9	26.6	422	down	53.6	48.8	56.7	53.7	67.6	60.7
25	13-Oct	13:43	P	84.5	13.5	28.5	288	up	51.9	47.9	54.5	51.6	63.7	59.0
26	13-Oct	14:00	P	15.0	59.5	77.6	288	down	41.6	39.7	45.0	39.8	57.0	48.8
27	13-Oct	14:05	P	118.4	13.4	23.4	377	up	55.9	52.6	58.9	56.6	67.2	63.6
28	13-Oct	14:07	F	52.0	46.1	56.2	641	down	50.0	46.7	52.2	48.7	65.6	58.6
29	13-Oct	14:31	F	61.0	40.1	53.6	626	up	52.4	49.0	57.2	52.7	65.7	61.2
30	13-Oct	14:54	P	72.1	23.3	35.7	466	down	50.1	46.2	53.5	48.6	64.3	57.1
31	13-Oct	14:56	P	148.5	10.1	20.0	310	up	56.1	54.9	57.6	55.8	66.4	64.2
32	13-Oct	14:57	P	112.6	0.9	14.5	87	down	51.9	49.1	54.2	51.2	66.2	57.4
33	13-Oct	15:04	P	46.8	24.8	34.9	333	up	64.5	58.7	67.4	60.3	77.6	72.2
34	13-Oct	15:07	P	120.5	18.0	28.3	533	up	56.9	53.6	58.6	55.6	66.6	63.0
35	13-Oct	15:16	P	107.3	12.7	28.3	377	up	56.9	53.9	59.3	55.2	66.8	63.4
36	13-Oct	15:28	P	22.9	71.0	88.7	489	down	43.0	39.3	46.0	42.7	57.3	49.5
37	13-Oct	15:29	P	81.5	11.5	23.0	243	up	51.1	47.4	54.4	51.2	62.9	59.2
38	13-Oct	15:53	F	46.6	39.6	49.4	650	down	47.7	46.7	51.2	50.3	62.2	57.8
39	13-Oct	15:57	P	97.4	17.2	30.7	513	up	55.8	52.9	59.4	56.8	67.3	63.9
40	13-Oct	16:11	P	108.6	18.5	31.4	560	up	56.3	54.0	59.2	55.8	66.1	63.2
41	13-Oct	16:19	P	97.8	13.6	23.5	495	up	57.7	55.5	59.0	56.9	68.6	66.7
42	13-Oct	16:20	F	63.1	37.7	47.5	650	down	53.2	47.1	52.5	48.7	64.1	56.2
43	13-Oct	16:35	P	162.5	11.2	30.4	407	up	56.4	56.3	59.0	57.0	69.5	66.4
44	13-Oct	16:54	P	121.5	12.7	32.6	389	up	55.8	52.6	58.6	55.7	66.9	63.2
45	13-Oct	16:57	P	75.0	19.9	31.9	435	down	48.4	45.5	50.9	46.7	62.8	56.2
46	13-Oct	17:14	P	103.7	14.2	29.6	437	down	52.2	48.1	54.9	51.8	66.4	58.2
average		Passenger (P)		93.9	18.3	30.7	401	up	55.5	51.6	57.2	53.8	66.2	62.2
				86.0	23.5	37.7	393	down	49.8	46.1	52.5	49.1	63.9	56.3
		Freight (F)		72.0	39.8	56.3	640	up	54.3	50.8	58.2	54.2	66.4	62.0
				62.8	39.0	50.2	621	down	55.6	51.8	58.2	53.9	69.8	62.2

Note: P : passenger train F : freight train
up : to Mumbai down : to Delhi
train passage time (s): time until the back of the train passes after the head of the train passes at a certain point
measurement time (s): This indicates railway vibration measurement time for Lp in time that is 10dB or more higher than background noise.
average : value calculated by the simple arithmetic average in each up side passenger train, down side passenger train, up side freight train, down side freight train
Source: JICA Survey Team

4) Result of Frequency Analysis

Results of 1/3 octave band frequency analysis are given in Table1.2-39, Table1.2-40. In Asaoti No.1, in consideration of all results roughly, frequency of the range from 20 to 40Hz at X-axis excelled, range from 10 to 40Hz at Y-axis excelled, range from 20 to 40Hz at Z-axis excelled. In Asaoti No.2, in consideration of all results roughly, frequency of the range from 12.5 to 40Hz at X-axis excelled, range from 20 to 50Hz at Y-axis excelled, range from 25 to 50Hz at Z-axis excelled. In Japan, in the example[2] of bullet train, existing train and subway, 20Hz, 10 and 40Hz and 60Hz of predominant frequency at Z-axis have been confirmed respectively. Although result in this survey differs from such example, this reason might be due to difference situation between Japan and India. On the other hand, it is said to vary predominant frequency by type of train, structure of rail, and ground which vibration diffuses, and such a difference might have been confirmed.

Table 1.2-39 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Asaoti №1

Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	P	5	5	10	11	11	5	5	8	9	4	12	12	16	20	21	29	34	32	34	37	33	31	24	16	42
	2	P	-13	-12	-10	-5	-3	1	4	7	10	13	19	21	26	28	40	39	40	36	34	34	35	35	30	23	47
	3	F	8	10	14	16	16	18	10	14	16	25	27	35	41	39	45	44	51	46	54	51	51	48	42	35	59
	4	P	4	6	10	13	15	14	15	15	16	14	17	21	25	31	31	36	32	35	37	40	35	32	27	20	45
	5	P	12	14	16	17	15	8	15	15	16	14	12	17	13	22	24	26	30	36	32	35	34	32	26	18	42
	6	F	12	13	17	19	19	16	16	18	18	21	35	32	36	38	36	37	40	41	40	44	40	39	34	26	50
	7	F	12	15	16	14	12	15	16	16	18	24	24	38	41	52	46	42	53	49	55	54	54	50	43	34	61
	8	P	14	16	19	19	18	18	20	19	15	15	16	18	23	23	25	34	35	37	35	35	35	32	28	18	44
	9	F	14	15	19	20	19	17	21	18	19	24	25	32	46	46	44	44	50	50	54	48	51	49	42	35	59
	10	P	13	15	18	18	20	19	20	17	18	16	20	29	33	33	38	41	40	39	43	38	37	34	34	26	49
	11	P	14	16	18	19	20	20	19	18	18	16	17	18	25	33	34	33	35	39	35	41	42	39	31	24	48
	12	P	13	16	18	18	18	17	15	12	11	14	21	31	33	34	40	46	41	48	44	43	42	38	34	26	53
	13	F	14	14	15	15	13	16	19	18	16	17	25	28	35	36	35	31	31	36	38	38	41	37	30	21	47
	14	P	15	17	19	15	17	18	20	17	14	16	16	14	16	17	19	29	34	32	34	36	35	30	24	16	42
	15	P	13	15	17	18	20	17	18	18	17	17	23	27	31	34	38	44	39	47	44	43	43	38	33	27	52
	16	P	14	16	18	19	20	19	19	18	17	16	19	24	25	33	36	39	34	43	38	39	38	38	30	26	48
	17	P	14	16	18	18	18	17	19	17	15	14	14	25	30	32	38	44	39	48	44	41	41	38	33	26	52
	18	P	15	17	18	17	19	19	19	18	18	17	16	12	18	21	27	32	33	36	37	37	35	33	28	19	44
	19	F	15	17	19	17	18	17	21	20	19	24	24	40	41	37	32	33	40	40	44	45	42	41	33	24	52
	20	F	15	16	17	17	21	20	18	18	16	27	35	36	33	31	34	40	37	36	40	41	44	39	30	22	49
	21	P	6	10	12	14	15	17	17	15	20	18	18	25	31	31	35	38	38	40	42	41	39	39	33	27	49
	22	P	15	16	16	16	18	19	18	17	16	12	17	24	32	34	41	44	38	49	43	42	41	39	32	27	52
	23	P	15	17	20	19	21	17	18	17	14	12	13	22	25	27	29	36	31	35	36	39	35	33	29	19	45
	24	F	14	16	19	22	22	20	22	21	20	23	29	37	38	43	37	31	39	38	45	42	41	40	34	24	51
	25	F	15	17	20	19	21	22	20	17	25	26	30	25	33	43	34	34	30	37	38	42	38	34	28	22	48
	26	F	15	16	19	20	21	19	19	21	20	22	26	37	34	33	34	32	35	38	40	38	36	36	28	20	47
	27	P	15	16	19	20	18	17	21	18	17	17	15	15	19	21	27	29	33	35	39	37	35	33	27	20	44
	28	P	15	17	20	20	21	22	19	17	17	17	19	19	23	22	31	32	36	37	42	45	39	38	31	26	49
	29	P	15	17	19	21	20	21	20	20	17	18	21	24	26	32	35	37	37	39	39	41	38	34	31	26	48
	30	P	16	18	20	21	21	21	20	19	17	17	18	21	28	32	36	43	40	47	51	46	46	46	40	32	55
	31	P	16	19	21	21	22	22	19	19	17	18	18	19	27	32	35	31	33	38	38	39	38	36	29	25	46
	32	P	15	16	20	23	22	19	16	19	18	16	16	19	24	32	33	34	32	39	38	39	39	33	31	27	46
	33	P	16	17	20	21	20	20	20	18	16	17	16	16	16	23	29	31	35	35	38	36	37	35	30	21	45
	34	P	16	17	20	20	20	19	20	18	17	16	18	30	30	34	38	36	34	41	38	40	38	38	30	26	48
	35	F	15	17	19	20	18	20	19	19	17	20	32	36	45	36	38	43	49	47	49	49	47	44	42	36	57
	36	F	16	18	20	20	20	21	19	18	21	24	28	29	38	44	34	36	35	36	37	36	35	33	27	21	48
	37	P	16	17	20	21	21	19	19	17	18	16	15	16	19	21	29	29	34	32	35	38	35	32	26	20	43
	38	P	16	17	20	21	21	21	19	19	18	17	19	21	22	32	35	32	33	38	38	39	40	33	32	26	47
	39	P	15	17	19	20	19	19	18	18	18	17	17	20	28	32	37	37	34	42	38	40	38	38	29	26	48
	40	F	16	18	19	20	20	18	19	16	17	15	23	32	35	37	30	28	32	36	41	41	40	36	28	24	48
	41	P	15	17	19	20	21	20	19	19	20	18	20	25	34	35	38	40	40	38	43	40	38	35	35	26	49
	42	P	15	17	19	20	20	20	18	18	18	17	17	21	30	31	37	38	38	37	42	38	40	32	34	24	48
	43	F	15	17	19	20	20	19	18	17	17	20	30	36	36	41	34	40	41	46	46	47	47	46	42	35	54
	44	P	15	17	19	20	20	20	19	18	18	15	18	22	25	31	36	36	35	38	35	38	40	33	31	27	46
	45	P	15	17	20	19	20	19	18	17	17	16	17	13	17	24	25	35	32	36	35	38	34	33	28	21	44
	46	P	15	17	19	19	20	19	18	19	19	19	20	25	27	34	38	44	38	46	38	41	42	37	32	26	51
Y	1	P	5	7	9	11	13	12	8	12	11	14	16	15	18	24	27	31	34	37	36	37	36	33	27	17	44
	2	P	-12	-11	-10	-6	-3	-2	0	4	10	16	22	24	27	29	38	45	46	37	40	37	37	34	31	22	50
	3	F	9	11	12	10	16	20	16	22	27	23	31	34	38	38	43	42	47	50	56	50	49	51	45	37	60
	4	P	5	8	11	13	14	12	16	15	15	15	18	23	30	38	32	35	38	37	35	38	38	34	31	21	47
	5	P	9	12	16	15	17	16	17	16	12	11	16	15	22	26	28	29	31	37	33	37	36	34	25	17	44
	6	F	12	15	17	16	17	13	13	16	25	28	30	30	36	37	38	41	40	42	42	44	42	38	33	24	51
	7	F	13	15	16	18	20	22	28	19	28	37	32	38	40	40	49	47	45	53	58	56	54	50	47	34	63
	8	P	14	16	18	19	19	18	16	17	15	16	16	18	25	26	30	36	35	36	38	41	38	36	28	20	46
	9	F	13	15	19	20	20	18	21	19	24	27	27	28	36	41	43	43	45	50	56	51	49	50	43	33	60
	10	P	13	14	17	19	19	21	19	18	20	19	30	43	38	38	38	44	45	37	42	40	41	38	28	23	52
	11	P	13	16	20	22	22	15	17	20	19	20	19	20	29	38	37	34	37	43	36	40	40	37	33	25	49
	12	P	14	15	16	17	15	12	16	18	18	21	23	34	43	46	45	46	42	43	40	43	41	38	31	24	53
	13	F	12	14	15	17	18	21	20	18	19	20	28	33	35	41	38	33	36	38	42	42	42	37	30	21	50
	14	P	13	15	18	21	17	18	18	17	17	13	19	17	18	21	23	33	36	36	36	38	35	33	26	17	44
	15	P	16	17	18	20	21	21	21	18	16	21	27	35	40	45	48	47	42	43	40	42	43	38	31	24	54
	16	P	14	16	17	18	20	20	18	17	19	20	25	32	37	40	43	43	37	43	41	43	41	36	28	24	51
	17	P	14	16	17	18	20	20	20	21	23	18	22	29	38	42	46	46	39	43	38	42	41	38	31	24	53
	18	P	14	16	20	21	18	20	19	16	17	16	17	20	21	27	32	33	36	35	36	38	38	37	30	17	46
	19	F	14	16	19	19	21	23	28	32	23	28	28	40	43	45	41	40	40	40	46	40	45	43	37	24	53
	20	F	14	16	19	21	22	20	20	23	21	31	37	38	38	38	35	40	43	42	38	46	43	47	40	30	53
	21	P	6	11	13	14	16	17	19	19	18	14	25	39	32	35	44	39	39	45	38	42	40	38	31	26	51
	22	P	14	17	20	21	22	23	21	20	21	18	24	33	38	43	45	46	40	43	38	41	40	38	31	25	52
	23	P	15	17	19	20	18	20	17	17	16	15	16	21	23	24	31	37	35	32	41	39	37	37	30	18	46
	24	F	14	17	19	18	16	16	22	21	16	24	25	35	38	47	39	36	43	38	42	42	47	43	35	25	53
	25	F	15	17	20	19	18	22	17	19	20	25	30	26	34	49	37	38	35	38	37	43	41	37	30	22	52
	26	F	15	17	19	21	21	19	21	25	24	24	27	35	36	36	36	36	34	36	38	38	40	36	30	21	48
	27	P	15	16	18	19	20	20	18	18	16	19	19	18	23	28	30	31	33	33	36	38	38	38	31	17	46
	28	P	16	18	20	19	21	18	20	18	18	17	18	21	28	24	35	38	37	36	40	41	40	38	33	23	48
	29	P	15	17	19	20	21	21	19	19	19	23	23	31	33	38	37	38	38	47	38	40	38	37	28	24	50
	30	P	16	17	19	21	22	21	23	20	18	21	21	23	28	35	39	38	43	48	58	49	49	48	43	36	60
	31	P	16	17	17	16	18	20	17	21	22	18	22	24	34	38	38	36	37	46	37	38	38	37	28	25	50
	32	P	15	17	18	20	23	23	20	17	18	18	20	29	28	40	38	38	37	47	38	41	38	37	28	24	51
	33	P	16	17	18	19	20	21	19	18	17	16	17	18	20	28	33	34	35	36	36	36	36	32	27	19	44
	34	P	16	17	18	20	20	22	20	18	18	20	25	35	37	40	43	40	38	45	40	42	38	37	28	25	51
	35	F	15	17	20	21	21	21	18	20	18	25	33	40	40	34	38	41	50	52	56	51	50	46	42	36	60
	36	F	16	17	20	20	21	22	19	20	24	34	34	38	38	48	37	38	35	38	37	37	36	35	29	19	51
	37	P	16	17	20	20	20	18	20	18	16	17	17	15	22	26	33	36	37	36	37	37	37	34	28	18	46
	38	P	16	18	19	20	20	19	19	19	19	17	25	33	28	38	40	38	36	46	38	41	38	36	27	25	50
	39	P	15	17	20	20	21	20	19	18	18	19	24	31	38	37	41	41	37	44	41	41	40	36	28	24	50
	40	F	15	17	20	20	20	21	22	17	18	20	24	34	34	35	35	36	38	37	38	38	40	40	28	20	48
	41	P	15	17	20	21	21	21	20	20	21	23	29	40	44	42	38	44	41	38	42	41	41	38	30	24	52
	42	P	15	17	19	20	20	20	18	18	19	22	23	35	36	36	37	42	44	36	43	41	41	38	28	23	51
	43	F	15	17	19	20	20	18	17	18	22	24	31	32	32	36	36	43	42	48	52	51	47	46	43	34	57
	44	P	15	17	19	20	20	21	18	18	18	18	18	25	28	41	42	41	38	45	38	40	38	36	28	23	50
	45	P	15	17	19	21	20	20	20	18	17	14	16	18	24	28	31	36	35	36	35	35	37	38	36	28	18	45
	46	P	15	17	19	20	19	20	19	19	22	23	24	28	30	43	45	46	41	43	38	42	41	38	30	23	52

Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
Z	1	P	7	9	12	12	11	11	9	11	9	9	14	19	29	36	37	39	42	46	48	49	48	41	37	29	55
	2	P	-15	-13	-13	-9	-5	-3	1	4	7	9	19	31	34	43	47	52	53	48	54	51	44	45	41	35	60
	3	F	10	13	17	19	22	22	24	23	27	30	36	41	50	47	52	46	56	59	65	65	62	62	58	47	71
	4	P	5	8	10	11	11	13	14	14	13	12	17	28	34	42	36	49	49	52	50	51	47	46	43	35	59
	5	P	10	12	14	15	15	16	14	15	14	13	19	23	27	28	36	35	40	50	50	48	45	42	36	31	55
	6	F	12	14	16	16	16	17	16	16	23	26	38	40	46	48	47	47	48	53	54	57	52	52	48	40	62
	7	F	12	14	16	17	18	18	20	17	19	26	36	49	53	53	54	50	55	63	69	67	61	66	56	47	73
	8	P	13	15	17	17	18	17	16	14	15	15	18	25	32	33	37	43	44	49	53	52	48	43	39	34	58
	9	F	13	15	16	16	17	18	16	15	19	23	30	40	52	53	52	46	54	57	60	64	64	61	55	45	70
	10	P	13	15	17	17	18	18	16	16	17	17	24	39	44	43	49	54	47	52	59	51	52	48	45	37	63
	11	P	13	14	18	19	19	18	17	16	17	17	18	25	37	46	46	41	43	46	50	52	50	47	45	39	58
	12	P	13	15	17	18	18	18	16	15	16	18	22	36	44	44	49	52	48	53	54	54	52	48	44	39	61
	13	F	13	15	18	19	21	18	18	18	20	22	31	39	45	51	46	42	45	49	56	56	51	46	42	36	61
	14	P	13	15	17	19	19	19	18	17	15	16	13	17	24	29	32	38	43	48	49	51	47	43	36	30	56
	15	P	14	16	19	19	19	20	19	18	18	18	23	36	44	50	50	51	51	55	56	53	53	48	44	39	62
	16	P	14	16	18	19	19	19	19	18	19	20	22	36	41	45	48	48	44	54	51	53	49	43	39	39	59
	17	P	14	16	18	20	19	20	20	19	20	21	25	33	40	43	49	54	49	54	55	52	51	48	44	40	62
	18	P	14	16	18	19	19	18	19	17	17	17	19	17	26	36	37	39	46	50	50	50	49	46	39	32	57
	19	F	14	16	18	20	21	19	18	19	22	26	35	52	52	52	46	44	54	54	56	55	55	52	48	39	63
	20	F	14	16	19	20	20	19	20	19	20	26	36	38	42	44	45	51	49	51	59	56	57	49	41	35	63
	21	P	5	9	12	14	16	18	20	20	21	23	26	38	44	43	52	49	48	53	53	53	51	48	45	40	61
	22	P	14	16	19	20	20	19	19	19	19	21	25	33	44	44	46	53	49	55	54	54	51	49	46	41	62
	23	P	14	15	18	19	19	19	17	17	16	15	17	28	32	36	37	44	43	47	54	54	46	44	40	33	58
	24	F	15	16	19	20	21	21	21	21	24	29	31	45	49	55	43	46	53	53	53	53	58	55	47	40	64
	25	F	14	16	19	20	21	20	19	19	22	27	43	32	43	53	44	46	43	51	49	55	52	46	42	36	60
	26	F	15	18	20	21	21	22	22	21	24	31	36	48	47	45	46	41	48	50	54	51	48	45	42	35	59
	27	P	15	17	18	19	19	20	18	18	17	16	16	19	28	35	36	38	44	47	48	51	50	50	39	32	57
	28	P	15	17	19	20	20	19	19	18	17	18	20	26	36	32	42	45	50	52	54	56	52	47	44	39	61
	29	P	15	17	19	20	20	20	18	17	17	18	18	32	42	43	48	46	46	53	49	52	46	45	40	38	58
	30	P	15	17	19	20	20	19	19	19	19	18	22	28	34	40	41	44	49	58	65	60	62	60	54	46	69
	31	P	15	17	19	20	20	19	20	18	17	19	21	28	37	42	42	39	44	52	47	51	49	43	41	38	57
	32	P	15	17	19	19	19	20	20	17	17	17	21	20	36	43	47	45	43	54	49	53	46	45	40	38	59
	33	P	15	17	19	20	20	19	19	18	18	18	18	24	29	35	39	41	49	49	49	50	46	42	41	33	56
	34	P	15	17	19	20	20	20	18	17	18	16	27	42	45	46	50	47	44	51	50	54	49	44	40	39	59
	35	F	15	17	19	20	19	19	18	16	16	24	38	46	54	45	44	46	59	61	65	64	61	57	54	47	70
	36	F	15	17	19	20	19	19	17	14	14	30	38	45	47	53	43	47	51	53	52	49	48	44	39	34	60
	37	P	15	17	19	20	20	20	19	18	17	17	18	21	29	30	34	39	47	50	49	49	50	45	38	32	57
	38	P	15	17	20	20	20	20	19	19	19	19	25	28	37	42	46	43	42	53	49	54	46	45	42	38	59
	39	P	15	17	19	20	20	20	19	18	18	18	23	31	46	45	48	45	43	52	51	52	50	44	39	38	59
	40	F	15	17	19	20	20	19	18	19	17	23	35	45	46	44	42	44	50	52	52	54	52	51	44	38	60
	41	P	15	17	19	20	20	20	19	18	18	19	25	37	48	48	52	56	49	52	59	52	52	49	45	38	63
	42	P	15	17	19	20	20	20	19	18	17	18	21	32	42	43	50	54	49	52	59	52	51	49	44	38	63
	43	F	15	17	19	20	20	20	19	19	20	23	37	44	44	45	41	49	49	59	63	61	56	57	56	49	68
	44	P	15	17	19	20	20	20	20	19	20	21	24	29	38	45	47	46	44	54	50	53	47	45	40	38	59
	45	P	15	17	19	19	20	19	18	18	17	17	17	17	29	35	34	46	45	48	48	50	48	46	39	33	56
	46	P	15	17	19	20	21	20	20	19	20	20	20	31	36	43	50	52	49	54	55	53	51	48	42	39	61

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

Table 1.2-40 Results of 1/3 Octave Band Frequency Analysis of Railway Vibration in Asaoti №2

Direction	No.	train type	Vibration Level of X-direction [dB]																									
			Frequency [Hz]																									
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
X	1	P	22	25	20	20	20	23	25	25	25	24	22	22	21	27	31	34	35	36	39	39	38	34	30	28	46
	2	P	14	15	17	20	19	16	15	15	15	15	15	15	17	24	30	35	34	36	35	35	37	35	29	30	45
	3	P	15	17	20	22	24	24	17	21	19	18	19	18	17	25	27	28	34	35	37	35	35	29	29	27	44
	4	F	17	19	21	21	21	21	19	20	17	16	17	19	24	32	34	33	37	42	44	41	38	33	29	27	49
	5	F	15	17	19	19	23	24	19	20	19	19	27	27	34	43	39	34	37	39	42	47	45	42	46	42	54
	6	P	17	19	23	23	24	19	20	18	17	18	17	16	17	28	31	34	36	39	40	40	41	36	30	25	48
	7	P	16	18	21	20	21	23	21	20	19	18	18	17	15	15	22	30	30	35	30	34	32	30	26	21	41
	8	F	16	18	22	22	25	27	26	23	21	25	31	40	39	46	47	46	51	50	54	51	53	53	49	48	61
	9	P	16	19	22	25	24	24	22	19	21	18	21	25	25	30	37	38	36	39	37	37	37	36	32	34	47
	10	P	17	19	22	22	22	22	22	20	20	19	19	17	25	32	36	35	39	39	36	39	41	36	32	30	48
	11	P	18	20	23	24	21	21	22	21	21	20	20	25	23	28	31	44	41	40	38	40	40	40	31	27	50
	12	F	17	19	21	22	24	24	22	23	22	20	25	31	39	42	41	43	51	52	54	52	52	52	46	42	61
	13	P	19	21	24	25	23	22	22	22	19	18	18	27	31	34	42	46	44	39	44	41	45	42	38	35	53
	14	P	18	19	23	25	19	24	20	20	18	20	17	19	28	36	41	38	43	43	40	40	45	43	36	36	52
	15	P	18	20	23	21	22	24	20	20	21	18	21	29	28	33	41	38	38	41	40	41	42	40	34	36	50
	16	F	18	20	24	24	24	21	24	21	19	29	29	31	30	36	43	41	42	43	42	44	46	44	36	31	53
	17	P	18	19	22	22	23	25	24	23	22	20	21	25	28	34	39	36	38	38	38	40	41	41	33	36	49
	18	P	18	19	22	22	21	22	21	21	20	20	20	25	28	34	38	36	38	38	39	40	41	41	33	36	49
	19	P	19	21	25	25	23	20	25	23	23	21	20	24	30	36	37	45	42	44	42	44	42	40	38	32	52
	20	P	18	20	21	22	24	24	22	22	21	19	18	24	24	31	38	37	33	35	38	40	41	38	32	36	48
	21	F	19	21	24	25	24	22	23	18	23	19	24	33	36	36	33	31	33	38	45	42	38	40	37	29	50
	22	F	18	19	22	24	25	24	23	22	25	29	30	34	34	34	39	45	44	40	46	47	45	44	38	31	54
	23	P	18	20	22	23	23	24	22	21	20	20	20	29	30	34	39	46	44	41	41	43	43	39	37	33	52
	24	P	19	21	23	23	24	24	25	24	23	22	22	29	27	32	38	39	40	40	41	43	42	41	36	37	50
	25	P	18	20	24	26	26	24	25	25	24	22	22	22	26	28	31	43	37	37	41	44	42	37	33	28	50
	26	P	19	21	23	23	24	25	21	22	21	20	19	18	18	18	20	21	24	30	28	32	31	30	26	21	40
	27	P	18	21	23	24	24	23	24	22	22	21	21	22	24	33	38	43	39	42	41	43	43	40	37	34	51
	28	F	20	22	25	24	25	22	23	21	23	23	30	33	34	32	31	35	32	37	39	36	36	36	35	31	47
	29	F	18	20	21	21	21	22	22	23	20	21	26	35	37	33	33	35	41	38	43	41	42	42	35	28	50
	30	P	18	20	23	24	22	24	22	23	20	21	20	18	23	24	28	31	32	37	38	37	36	36	32	32	45
	31	P	13	15	19	21	20	22	24	24	21	21	24	24	27	36	39	43	46	47	44	43	43	42	37	33	53
	32	P	19	21	22	21	22	23	21	22	21	20	19	18	22	28	32	33	33	33	32	35	36	33	27	28	43
	33	P	19	22	25	25	22	21	22	23	22	21	23	22	22	24	32	39	43	50	53	52	50	48	41	37	58
	34	P	18	20	23	25	21	26	23	19	20	20	21	21	30	38	40	45	46	45	42	44	42	41	37	32	53
	35	P	19	20	22	23	23	24	21	22	20	19	19	21	28	34	38	42	39	43	42	43	43	40	36	32	51
	36	P	19	20	22	24	24	23	21	21	19	19	19	17	15	16	21	25	28	28	32	31	32	29	25	23	40
	37	P	18	20	23	25	25	22	21	22	22	21	20	23	25	30	31	43	37	36	41	43	42	38	33	28	50
	38	F	19	20	21	22	25	22	19	22	21	22	30	32	30	38	33	33	34	36	34	32	31	32	28	26	45
	39	P	18	20	23	24	22	22	21	21	20	19	19	23	28	35	38	43	38	42	41	44	44	40	35	32	51
	40	P	18	20	22	26	26	26	27	27	27	25	24	23	27	34	38	45	38	40	38	43	43	38	35	31	51
	41	P	18	20	23	24	23	22	20	21	20	21	23	27	34	33	42	45	45	41	45	41	46	43	38	36	53
	42	F	19	20	22	24	25	23	23	21	22	23	23	30	36	36	34	30	36	35	40	36	34	36	33	30	46
	43	P	19	21	23	23	24	23	23	20	21	19	19	22	28	33	43	46	44	40	45	42	46	43	35	35	53
	44	P	18	20	22	23	23	22	21	21	20	19	20	21	27	36	41	42	40	40	41	44	43	41	36	32	51
	45	P	18	20	22	23	24	22	22	21	20	19	19	22	25	33	30	34	35	33	38	40	39	33	32	32	46
	46	P	18	20	22	23	23	22	22	20	18	18	19	23	26	34	38	36	38	38	40	42	42	41	32	34	49
Y	1	P	7	9	12	13	12	12	7	10	12	11	16	14	19	28	30	35	38	45	43	43	41	38	32	28	50
	2	P	9	10	11	11	13	10	12	11	6	10	13	13	20	26	30	32	38	40	42	43	38	38	31	29	49
	3	P	11	13	15	11	21	21	14	17	16	16	17	16	19	28	28	32	36	38	38	38	37	37	31	27	46
	4	F	11	14	16	15	14	17	17	16	16	18	21	27	28	34	40	37	42	45	46	49	40	39	33	26	54
	5	F	11	14	16	16	18	22	23	16	19	30	27	30	33	40	36	38	44	42	45	49	49	46	50	46	57
	6	P	12	14	16	16	16	16	16	13	14	14	13	21	17	28	34	36	37	45	41	44	43	41	34	26	51
	7	P	12	13	16	15	16	19	18	13	14	16	14	17	19	26	29	32	31	32	31	35	34	33	30	25	42
	8	F	13	15	19	18	23	23	26	24	30	33	28	39	44	50	41	42	50	51	53	50	61	59	54	47	66
	9	P	12	14	16	19	18	18	17	13	21	20	28	38	40	40	40	38	38	40	37	38	42	40	35	33	50
	10	P	13	15	16	18	20	20	16	17	16	17	21	24	35	37	36	35	36	37	38	40	44	37	37	37	49
	11	P	14	16	19	19	16	19	17	16	16	17	17	19	29	33	32	40	43	44	44	45	45	42	38	28	53
	12	F	14	16	18	18	18	23	20	25	28	26	28	33	40	46	42	43	52	54	58	60	59	56	53	46	66
	13	P	15	17	19	20	20	18	20	20	19	18	24	39	42	37	40	47	49	45	49	43	45	49	40	36	56
	14	P	14	16	19	21	16	17	16	14	11	14	19	25	34	38	40	36	42	45	43	41	45	42	38	34	52
	15	P	14	16	19	19	17	20	16	17	19	23	27	37	40	42	38	41	38	44	38	41	44	40	37	38	52
	16	F	14	16	18	19	17	17	16	22	19	35	40	37	35	38	43	44	43	45	46	51	49	53	40	36	58
	17	P	14	16	19	20	20	19	19	20	20	19	24	36	38	43	38	40	40	42	38	38	45	42	37	36	52
	18	P	14	16	19	20	20	20	16	19	18	17	23	36	38	43	38	40	40	42	38	38	44	42	37	36	52
	19	P	15	17	21	20	19	20	22	20	23	23	24	33	38	38	42	48	43	52	48	43	44	46	38	35	56
	20	P	15	17	19	20	20	21	18	19	21	19	23	36	34	40	41	38	35	43	38	38	43	41	37	35	51
	21	F	15	17	20	21	21	20	23	26	22	23	26	35	33	35	34	33	38	41	45	41	41	42	42	34	51
	22	F	14	16	19	19	19	19	16	18	24	27	32	35	35	37	38	45	47	46	48	50	50	52	41	34	58
	23	P	15	17	19	21	19	22	20	21	24	27	30	37	38	40	42	46	44	52	45	43	46	46	38	36	56
	24	P	15	16	19	21	20	18	20	18	18	19	27	41	41	40	38	42	42	44	40	40	44	43	40	37	53
	25	P	14	15	18	19	16	16	18	18	17	18	18	22	28	28	37	38	41	44	43	46	44	46	38	28	53
	26	P	15	17	19	18	19	20	19	18	18	16	16	15	20	21	26	26	28	31	31	33	33	34	28	25	41
	27	P	14	16	17	13	16	17	22	20	18	19	23	30	33	41	43	45	43	51	44	42	46	45	41	37	56
	28	F	15	17	19	18	19	19	16	18	20	22	28	31	32	31	32	33	36	38	38	38	38	41	38	31	48
	29	F	15	17	18	18	18	20	19	24	18	22	27	33	38	38	36	37	44	45	47	44	42	48	38	32	54
	30	P	14	16	19	20	19	20	17	20	19	15	15	21	30	36	31	37	35	35	36	36	36	39	36	33	47
	31	P	9	12	15	16	16	17	21	19	22	23	24	26	31	37	40	44	49	52	46	46	44	47	40	35	56
	32	P	15	16	18	19	20	18	17	18	18	22	20	23	25	34	34	35	36	37	32	34	40	36	31	30	46
	33	P	15	18	21	22	19	19	18	19	18	17	16	19	24	33	37	42	44	51	58	56	54	52	46	41	63
	34	P	15	16	18	21	20	21	20	18	20	21	22	31	35	41	44	45	46	53	45	43	44	46	41	37	56
	35	P	15	17	19	20	20	21	20	20	21	19	23	31	33	40	44	43	43	52	45	42	45	43	40	37	55
	36	P	15	16	18	20	20	19	18	19	17	14	15	14	15	21	29	28	30	32	32	32	32	28	28	27	41
	37	P	14	16	18	19	20	19	18	17	21	19	17	23	27	30	37	40	42	42	45	47	44	44	38	29	53
	38	F	15	17	18	19	21	18	16	17	24	34	41	32	35	38	35	37	38	38	35	34	36	37	31	30	48
	39	P	14	16	18	20	19	18	16	17	18	15	20	30	30	42	45	46	43	53	45	40	45	45	41	37	56
	40	P	15	17	20	20	22	19	15	21	18	13	24	29	34	41	43	47	42	52	47	41	45	46	40	37	56
	41	P	15	17	19	21	23	23	25	22	25	29	30	38	40	40	41	46	48	46	50	43	45	49	40	35	56
	42	F	15	16	18	19	19	18	20	23	28	23	24	33	34	38	33	33	37	41	41	38	41	39	38	33	49
	43	P	15	17	19	20	20	20	22	17	17	19	19	33	38	37	40	46	48	45	50	43	46	49	40	35	56
	44	P	14	16	19	19	20	18	16	18	20	19	22	23	31	41	45	46	43	52	45	40	43	46	41	36	56
	45	P	15	16	19	20	19	18	20	18	18	19	19	23	26	34	31	34	38	34	35	41	41	36	36	36	48
	46	P	14	16	18	19	19	18	18	16	19	17	22	30	40	41	39	41	42	43	38	42	44	42	37	37	52

Direction	No.	train type	Vibration Level of X-direction [dB]																								
			Frequency [Hz]																								
			0.4	0.5	0.6	0.8	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20	25	32	40	50	63	80	AP
Z	1	P	11	13	15	16	16	16	14	14	14	13	17	20	25	34	39	42	46	47	52	53	55	49	44	35	59
	2	P	11	13	16	16	17	16	16	15	15	15	15	19	27	33	34	38	44	46	50	51	51	49	41	37	57
	3	P	14	16	18	19	19	20	18	17	15	15	17	20	26	34	36	40	45	45	48	49	48	48	42	35	56
	4	F	15	16	19	19	19	19	18	16	15	17	23	28	36	42	46	45	48	54	53	55	51	49	45	35	61
	5	F	14	16	19	19	20	21	20	20	21	24	28	36	44	51	47	43	51	52	57	61	61	59	56	54	67
	6	P	15	17	19	20	20	20	19	18	18	18	19	23	26	37	42	41	47	50	49	51	53	51	45	34	59
	7	P	15	17	19	19	19	19	19	17	16	16	15	17	22	27	36	38	40	43	43	46	45	45	40	33	53
	8	F	15	17	19	19	19	19	18	17	24	32	35	46	50	56	55	51	57	60	68	74	72	68	62	59	78
	9	P	15	17	19	20	21	20	20	19	18	18	21	33	43	44	50	47	47	53	52	48	53	54	44	43	61
	10	P	16	17	20	21	21	20	20	19	18	18	18	24	41	48	48	41	47	48	51	52	53	48	44	44	59
	11	P	16	18	20	21	20	20	19	18	18	17	20	25	35	39	38	49	48	50	53	54	56	55	49	38	62
	12	F	18	21	24	26	28	29	30	31	32	35	38	42	49	55	50	50	59	61	68	75	74	68	58	55	79
	13	P	17	19	21	23	24	24	24	25	25	26	28	38	43	46	56	53	50	52	57	54	58	58	50	43	65
	14	P	17	19	21	23	24	24	24	25	25	26	28	31	40	46	52	45	48	51	49	55	58	55	49	42	63
	15	P	16	18	20	21	21	21	20	19	19	21	24	38	41	49	50	48	47	55	52	52	55	55	45	44	62
	16	F	16	18	20	21	22	21	19	20	20	25	34	39	40	48	51	48	51	52	56	60	58	60	50	40	66
	17	P	17	19	22	22	22	23	22	22	23	24	27	35	41	47	51	47	49	55	50	53	55	56	45	45	62
	18	P	17	19	21	22	22	21	21	20	19	19	23	34	41	47	51	47	48	55	50	53	55	56	45	45	62
	19	P	17	19	21	21	21	21	20	19	18	17	21	36	42	47	48	53	49	53	52	53	57	56	50	43	63
	20	P	17	19	21	22	22	22	21	20	19	19	19	30	36	42	51	46	45	54	51	49	54	55	45	45	61
	21	F	17	19	21	22	22	22	21	21	22	27	33	44	46	45	42	41	46	51	58	51	52	57	50	41	63
	22	F	17	19	21	22	22	22	22	22	24	29	33	39	43	45	49	52	53	52	54	58	62	58	50	41	66
	23	P	17	19	21	21	21	21	20	19	19	19	22	37	47	46	50	49	50	51	51	54	57	57	49	42	63
	24	P	17	19	21	22	22	21	20	19	16	15	22	37	45	46	51	49	49	54	53	51	55	57	48	46	63
	25	P	17	19	21	22	22	22	21	20	20	19	21	27	32	40	43	45	46	50	55	54	56	54	48	36	62
	26	P	17	19	21	22	22	22	21	20	20	18	18	21	22	25	29	33	36	42	42	44	48	44	37	33	52
	27	P	17	19	21	22	23	22	22	22	23	24	27	30	39	45	49	52	47	51	51	55	56	57	49	42	63
	28	F	17	19	22	22	23	22	22	22	23	24	35	42	44	40	41	40	44	52	52	48	49	52	49	40	59
	29	F	17	19	21	22	23	23	23	22	24	31	33	42	44	45	43	44	49	53	58	53	55	58	50	41	64
	30	P	17	19	21	22	22	22	21	20	20	19	21	27	32	34	33	45	39	49	53	50	48	51	46	41	58
	31	P	11	14	17	19	20	21	22	22	21	23	30	31	40	44	49	54	55	56	54	57	58	57	50	43	65
	32	P	17	19	21	22	22	22	21	20	20	19	21	24	33	43	44	42	41	48	45	47	49	48	39	40	56
	33	P	17	19	21	23	24	23	23	23	23	24	24	27	30	38	43	49	53	60	68	69	68	62	54	52	74
	34	P	17	19	21	22	23	22	22	22	21	21	23	32	41	49	52	52	50	51	52	54	57	58	49	42	64
	35	P	17	19	21	22	22	21	21	20	20	19	19	32	39	47	47	49	45	52	53	55	56	57	49	42	63
	36	P	17	19	21	21	22	21	21	20	19	17	18	18	22	26	33	32	36	41	44	43	43	44	37	36	51
	37	P	17	19	21	22	22	22	21	21	22	22	23	28	36	42	44	46	47	51	54	53	56	54	48	38	62
	38	F	17	19	21	22	22	22	21	21	21	27	34	38	45	50	45	43	44	49	49	47	48	48	39	38	57
	39	P	17	19	21	22	22	22	20	20	20	20	21	27	35	47	50	51	45	51	52	54	58	57	50	43	63
	40	P	17	19	21	22	22	21	21	20	19	18	16	26	41	48	48	50	47	53	53	54	58	56	50	44	63
	41	P	17	19	21	22	22	21	20	19	16	18	27	38	45	48	57	52	52	53	57	54	59	58	52	45	65
	42	F	17	19	21	22	23	22	21	21	26	24	31	41	46	47	45	41	45	49	53	49	52	52	48	42	60
	43	P	17	20	22	23	25	24	24	25	26	26	29	33	39	46	57	51	52	53	57	55	57	58	51	44	65
	44	P	17	18	21	21	22	21	20	19	18	18	24	28	36	48	50	52	48	52	51	53	57	56	48	43	63
	45	P	17	19	21	21	22	21	20	20	20	19	21	30	37	40	39	40	45	48	54	51	51	49	43	43	59
	46	P	17	18	21	22	23	22	22	22	22	23	25	33	43	49	50	49	51	54	50	54	56	55	45	44	63

Note: P : passenger train, F : freight train, Each frequency indicates center frequency of 1/3 octave band. Shaded sections indicate maximum one of each measurement.
Source: JICA Survey Team

2. Impact Assessment

2-1 Time Table of Passenger Train in Parallel Section

Refer to APPENDIX NOISE SURVEY.

2-2 Results of Vibration Prediction

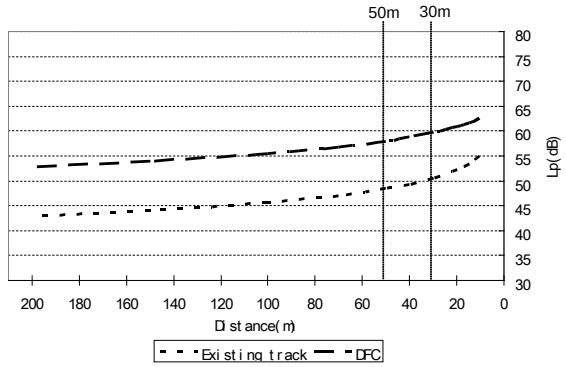
2-2-1 parallel section

Results of vibration prediction in parallel section are given below. Range of distance from near railway to 200 m is indicated on graphs.

Note: Distance 0 m in each graph indicates center position of each existing track. And prediction point (30 m and 50 m) were put down with each graphs.

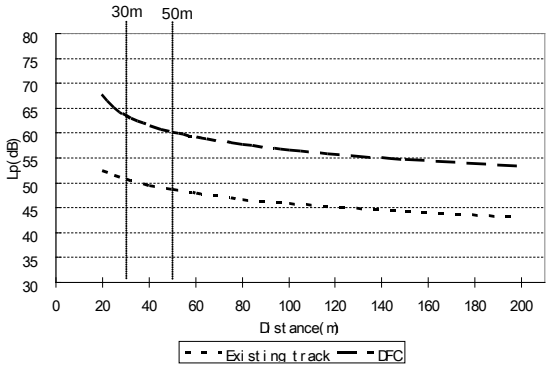
(1) Panvel No.1

Results of Vibration prediction for Panvel No.1 are given from Figure 2.2(1)-1 to Figure 2.2(1)-6.



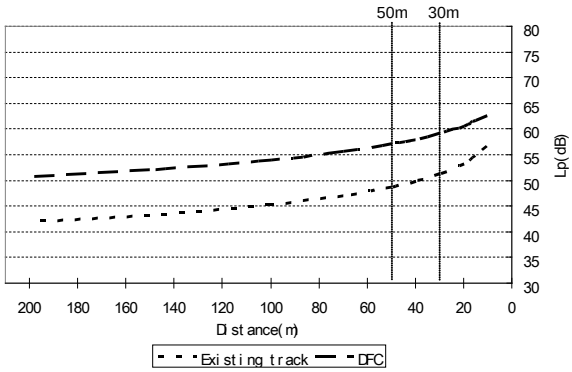
Source : JICA Survey Team

Figure 2.2(1)-1 Result of vibration Prediction at X-axis in Panvel-1 (Existing track side)



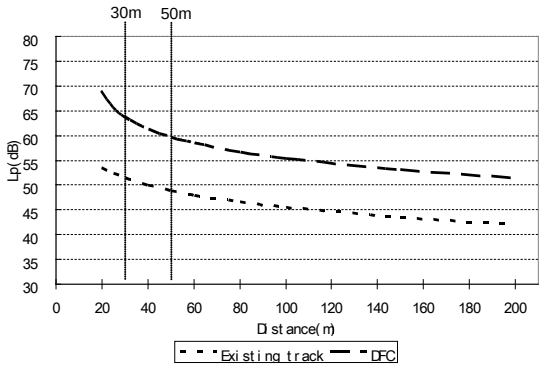
Source : JICA Survey Team

Figure 2.2(1)-2 Result of Vibration Prediction at X-axis in Panvel-1 (DFC track side)



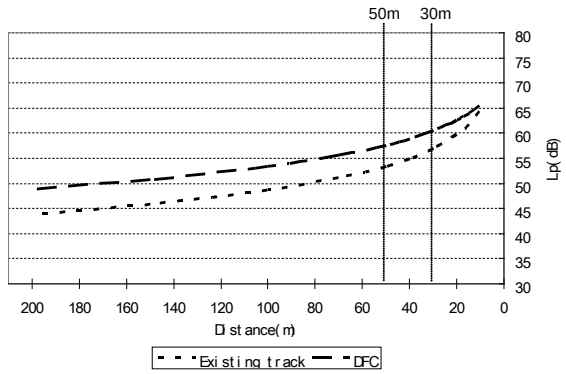
Source : JICA Survey Team

Figure 2.2(1)-3 Result of vibration Prediction at Y-axis in Panvel-1 (Existing track side)



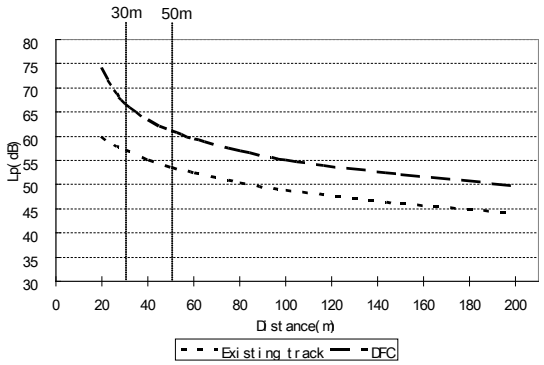
Source : JICA Survey Team

Figure 2.2(1)-4 Result of Vibration Prediction at Y-axis in Panvel-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(1)-5 Result of vibration Prediction at Z-axis in Panvel-1 (Existing track side)

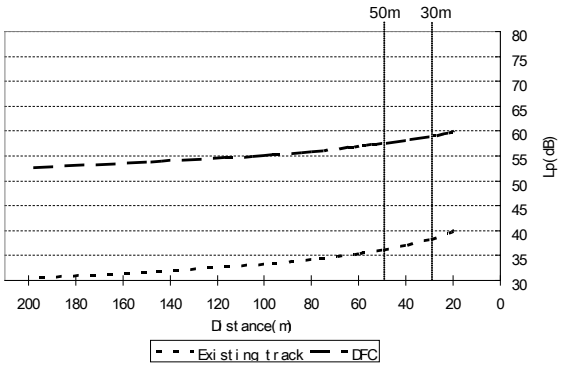


Source : JICA Survey Team

Figure 2.2(1)-6 Result of Vibration Prediction at Z-axis in Panvel-1 (DFC track side)

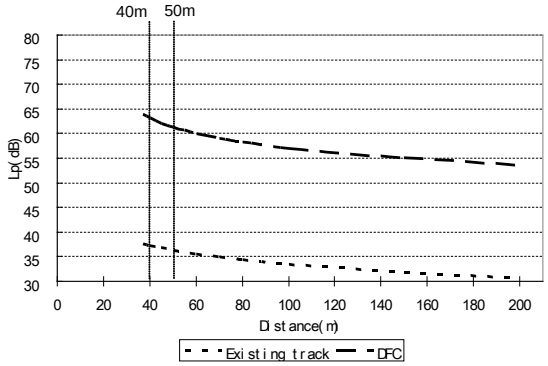
(2) Panvel No.2

Results of Vibration prediction for Panvel No.2 are given from Figure 2.2(2)-1 to Figure 2.2(2)-6.



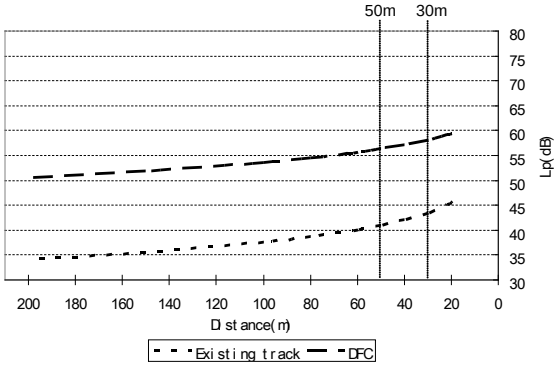
Source : JICA Survey Team

Figure 2.2(2)-1 Result of vibration Prediction at X-axis in Panvel-2 (Existing track side)



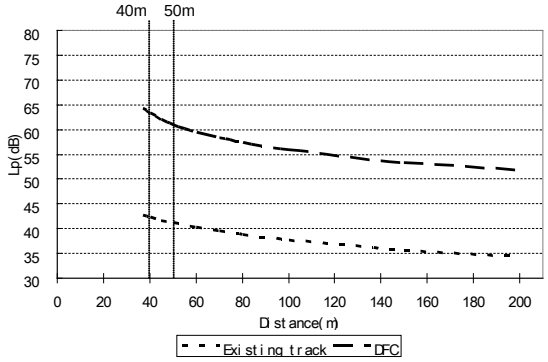
Source : JICA Survey Team

Figure 2.2(2)-2 Result of Vibration Prediction at X-axis in Panvel-2 (DFC track side)



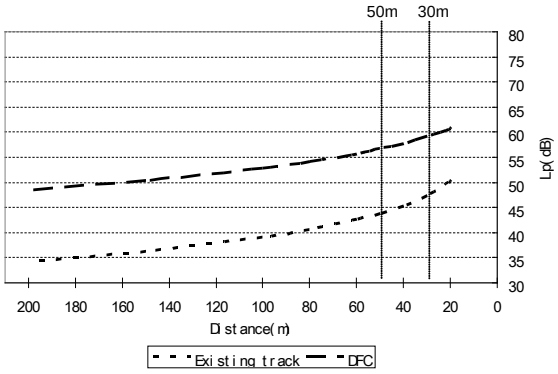
Source : JICA Survey Team

Figure 2.2(2)-3 Result of vibration Prediction at Y-axis in Panvel-2 (Existing track side)



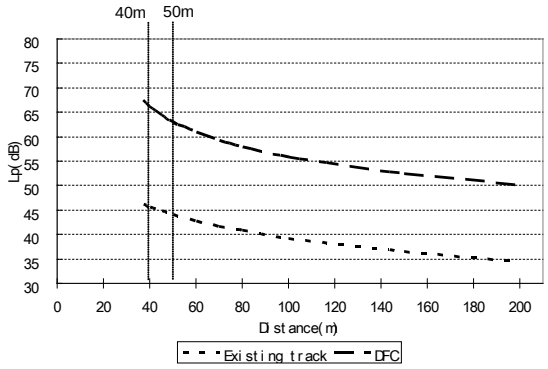
Source : JICA Survey Team

Figure 2.2(2)-4 Result of Vibration Prediction at Y-axis in Panvel-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(2)-5 Result of vibration Prediction at Z-axis in Panvel-2 (Existing track side)

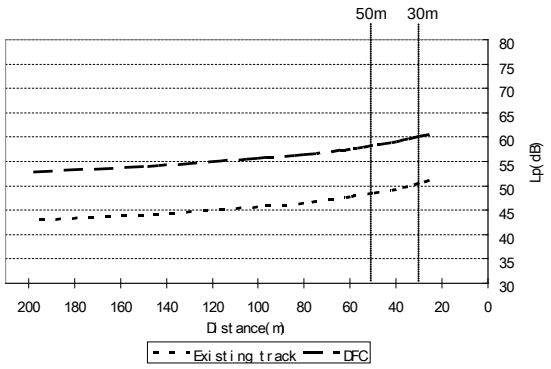


Source : JICA Survey Team

Figure 2.2(2)-6 Result of Vibration Prediction at Z-axis in Panvel-2 (DFC track side)

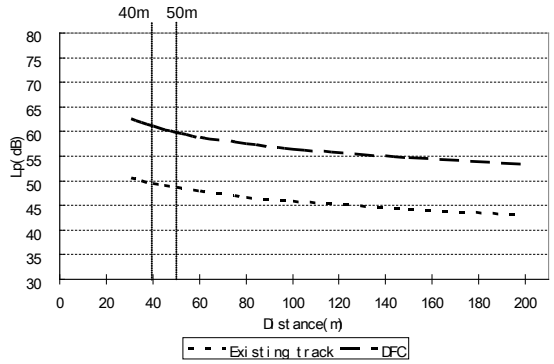
(3) Kopar

Results of Vibration prediction for Kopar are given from Figure 2.2(3)-1 to Figure 2.2(3)-6.



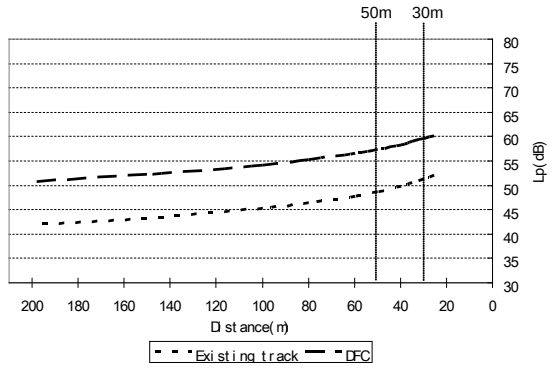
Source : JICA Survey Team

Figure 2.2(3)-1 Result of vibration Prediction at X-axis in Kopar (Existing track side)



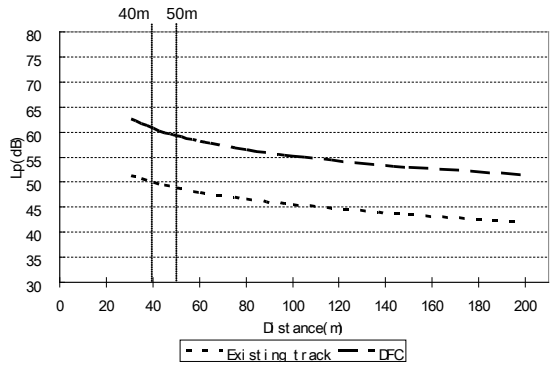
Source : JICA Survey Team

Figure 2.2(3)-2 Result of Vibration Prediction at X-axis in Kopar (DFC track side)



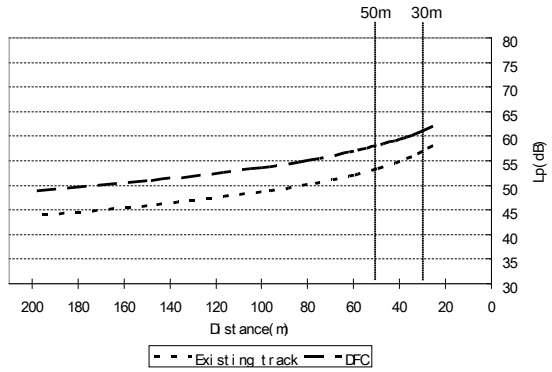
Source : JICA Survey Team

Figure 2.2(3)-3 Result of vibration Prediction at Y-axis in Kopar (Existing track side)



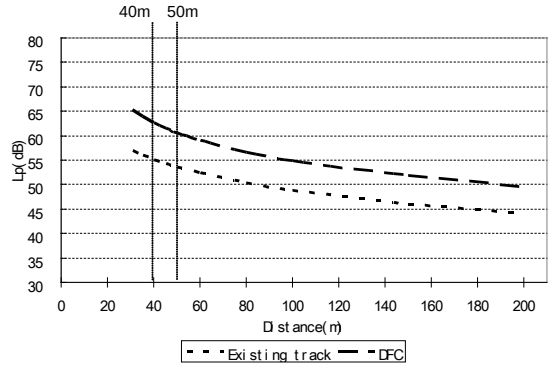
Source : JICA Survey Team

Figure 2.2(3)-4 Result of Vibration Prediction at Y-axis in Kopar (DFC track side)



Source :JICA Survey Team

Figure 2.2(3)-5 Result of vibration Prediction at Z-axis in Kopar (Existing track side)

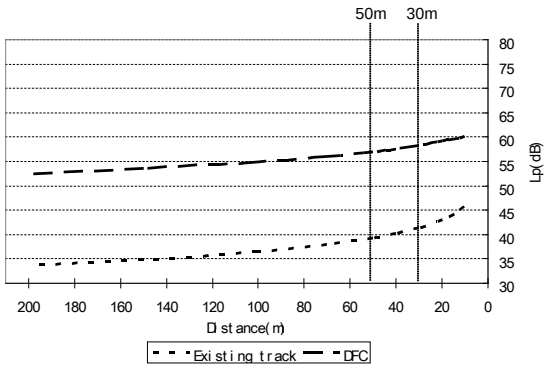


Source : JICA Survey Team

Figure 2.2(3)-6 Result of Vibration Prediction at Z-axis in Kopar (DFC track side)

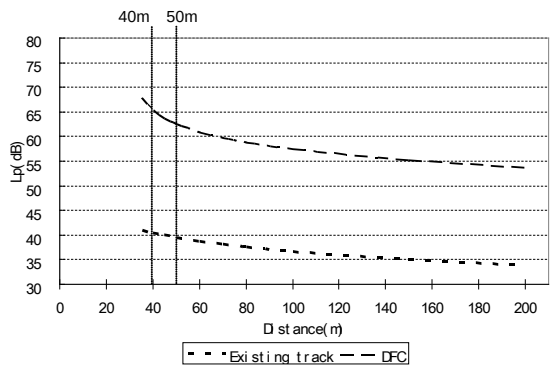
(4) Palgar No.1

Results of Vibration prediction for Palgar No.1 are given from Figure 2.2(4)-1 to Figure2.2(4)-6.



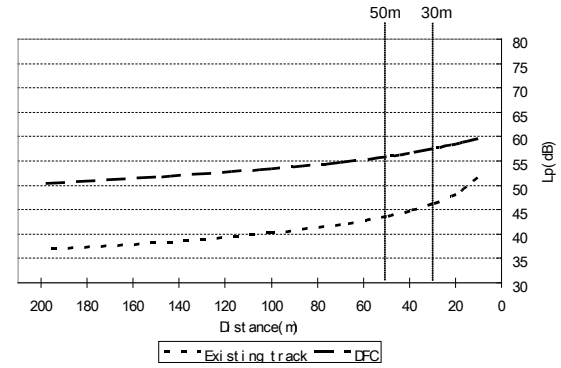
Source : JICA Survey Team

Figure 2.2(4)-1 Result of vibration Prediction at X-axis in Palgar-1 (Existing track side)



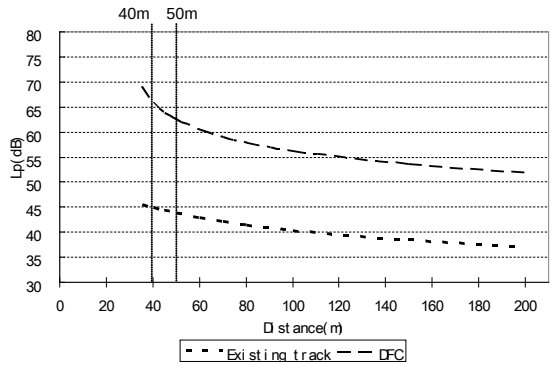
Source : JICA Survey Team

Figure 2.2(4)-2 Result of Vibration Prediction at X-axis in Palgar-1 (DFC track side)



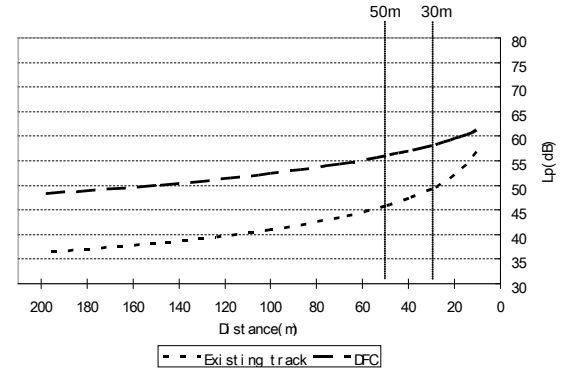
Source : JICA Survey Team

Figure 2.2(4)-3 Result of vibration Prediction at Y-axis in Palgar-1 (Existing track side)



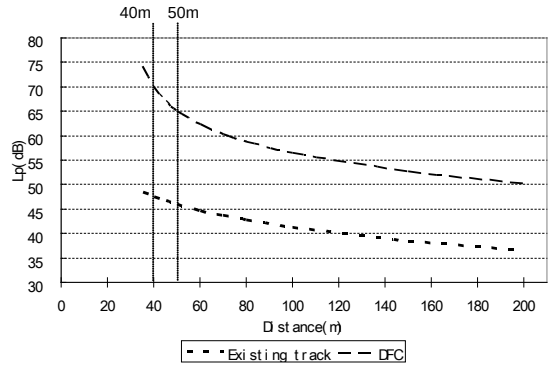
Source : JICA Survey Team

Figure 2.2(4)-4 Result of Vibration Prediction at Y-axis in Palgar-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(4)-5 Result of vibration Prediction at Z-axis in Palgar-1 (Existing track side)

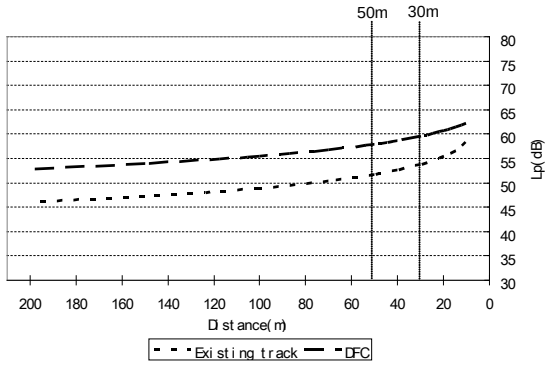


Source : JICA Survey Team

Figure 2.2(4)-6 Result of Vibration Prediction at Z-axis In Palgar-1 (DFC track side)

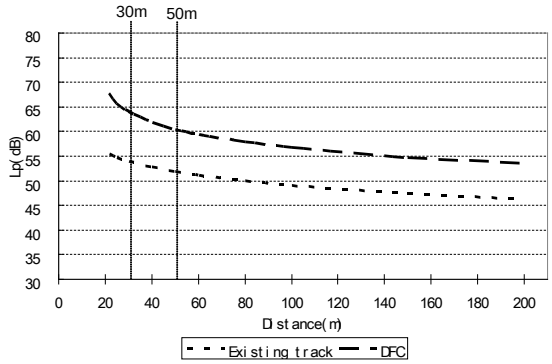
(5) Palgar No.2

Results of Vibration prediction for Palgar No.2 are given from Figure 2.2(5)-1 to Figure 2.2(5)-6.



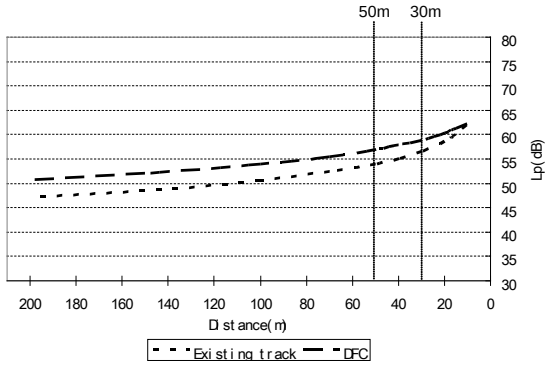
Source : JICA Survey Team

Figure 2.2(5)-1 Result of vibration Prediction at X-axis in Palgar-2 (Existing track side)



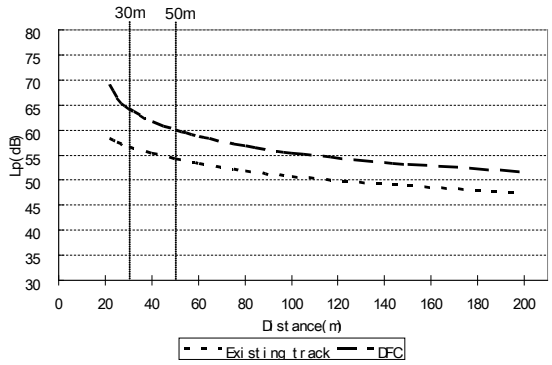
Source : JICA Survey Team

Figure 2.2(5)-2 Result of Vibration Prediction at X-axis in Palgar-2 (DFC track side)



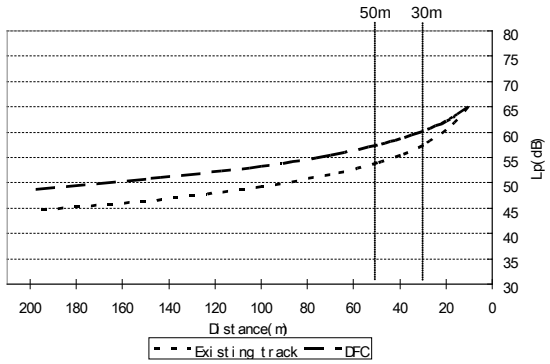
Source : JICA Survey Team

Figure 2.2(5)-3 Result of vibration Prediction at Y-axis In Palgar-2 (Existing track side)



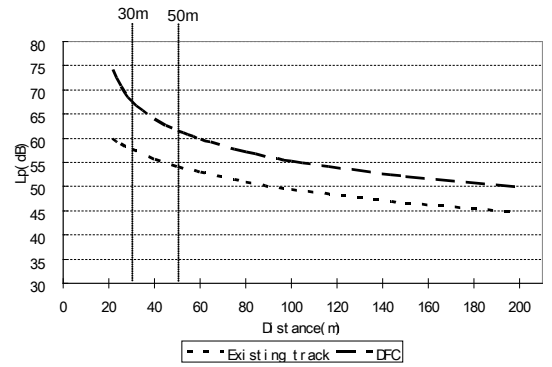
Source : JICA Survey Team

Figure 2.2(5)-4 Result of Vibration Prediction at Y-axis in Palgar-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(5)-5 Result of vibration Prediction at Z-axis in Palgar-2 (Existing track side)

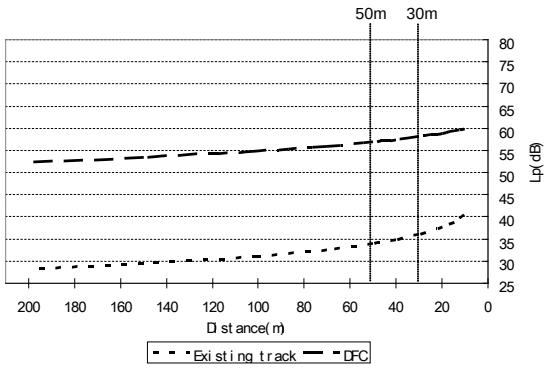


Source : JICA Survey Team

Figure 2.2(5)-6 Result of Vibration Prediction at Z-axis in Palgar-2 (DFC track side)

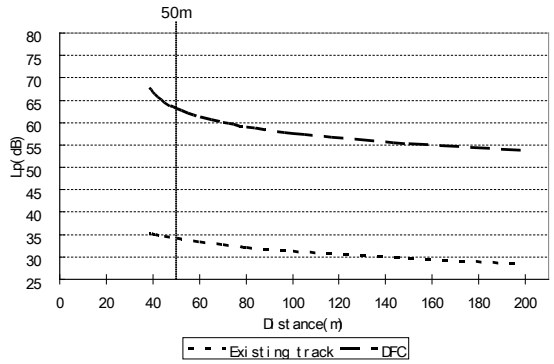
(6) Boisar No.1

Results of Vibration prediction for Boisar No.1 are given from Figure 2.2(6)-1 to Figure 2.2(6)-6.



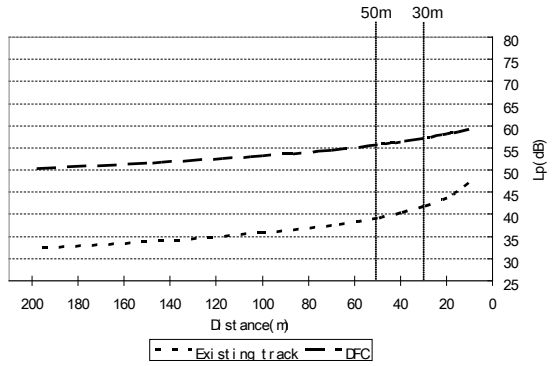
Source : JICA Survey Team

Figure 2.2(6)-1 Result of vibration Prediction at X-axis in Boisar-1 (Existing track side)



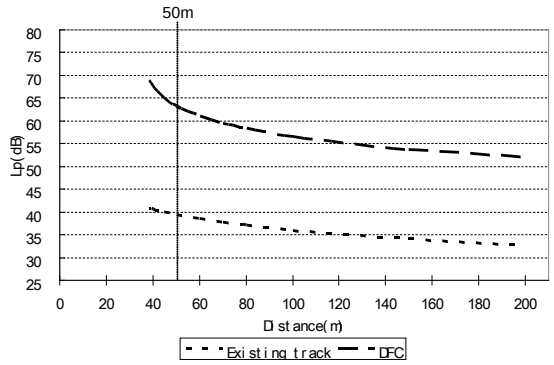
Source : JICA Survey Team

Figure 2.2(6)-2 Result of Vibration Prediction at X-axis in Boisar-1 (DFC track side)



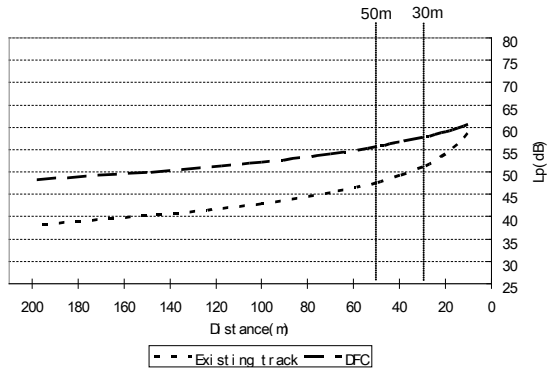
Source : JICA Survey Team

Figure 2.2(6)-3 Result of vibration Prediction at Y-axis in Boisar-1 (Existing track side)



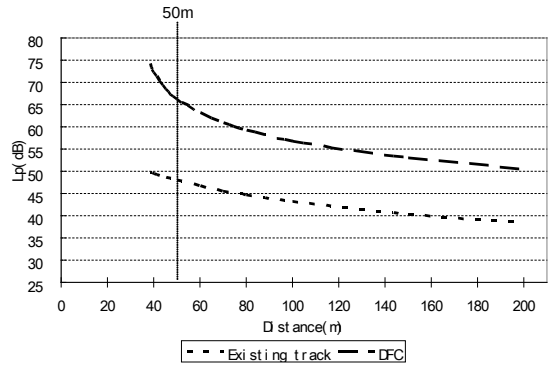
Source : JICA Survey Team

Figure 2.2(6)-4 Result of Vibration Prediction at Y-axis in Boisar-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(6)-5 Result of vibration Prediction at Z-axis in Boisar-1 (Existing track side)

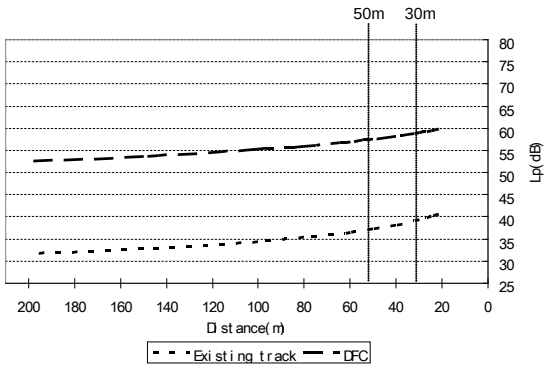


Source : JICA Survey Team

Figure 2.2(6)-6 Result of Vibration Prediction at Z-axis in Boisar-1 (DFC track side)

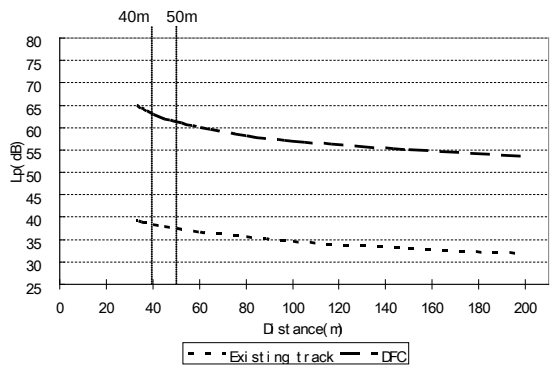
(7) Boisar No.2

Results of Vibration prediction for Boisar No.2 are given from Figure 2.2(7)-1 to Figure 2.2(7)-6.



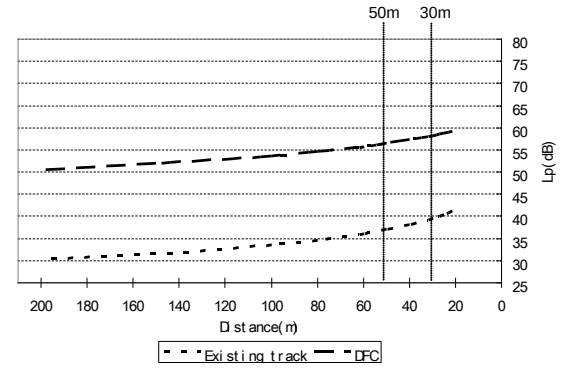
Source : JICA Survey Team

Figure 2.2(7)-1 Result of vibration Prediction at X-axis in Boisar-2 (Existing track side)



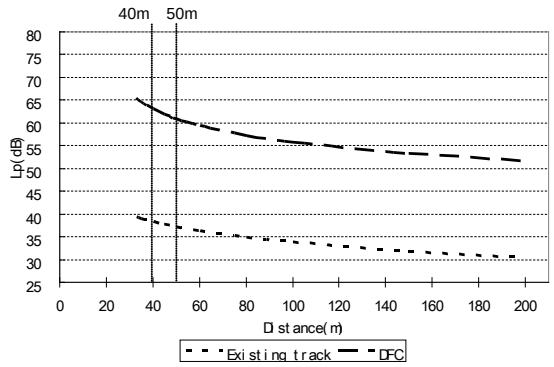
Source : JICA Survey Team

Figure 2.2(7)-2 Result of Vibration Prediction at X-axis in Boisar-2 (DFC track side)



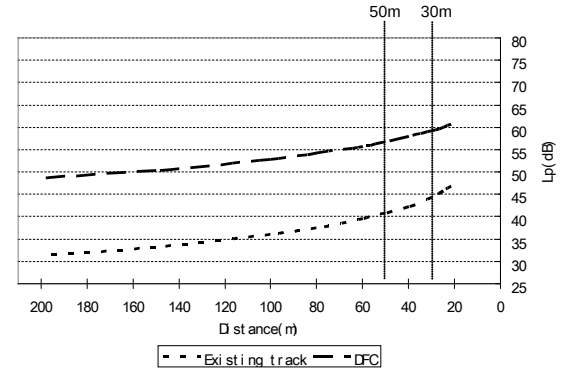
Source : JICA Survey Team

Figure 2.2(7)-3 Result of vibration Prediction at Y-axis in Boisar-2 (Existing track side)



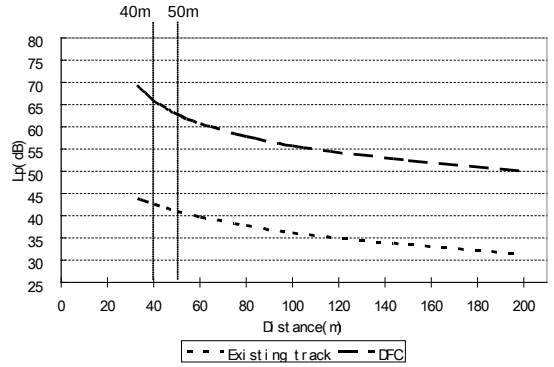
Source : JICA Survey Team

Figure 2.2(7)-4 Result of Vibration Prediction at Y-axis in Boisar-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(7)-5 Result of vibration Prediction at Z-axis in Boisar-2 (Existing track side)

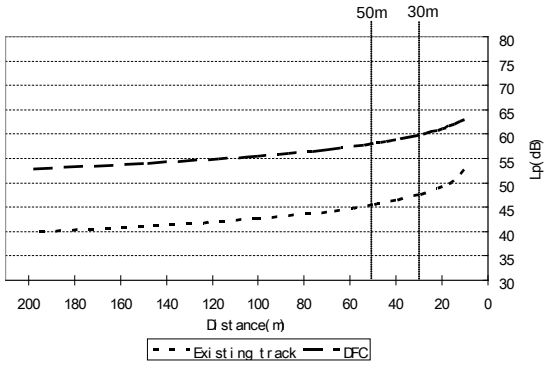


Source : JICA Survey Team

Figure 2.2(7)-6 Result of Vibration Prediction at Z-axis in Boisar-2 (DFC track side)

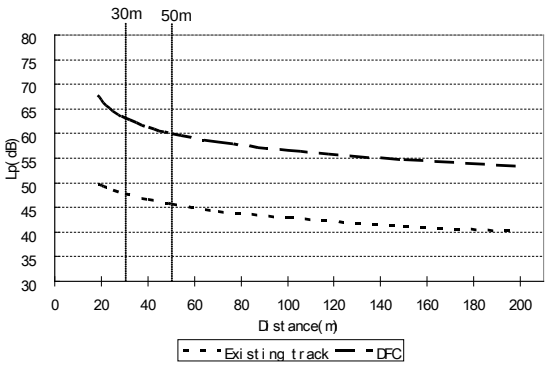
(8) Vapi No.1

Results of Vibration prediction for Vapi No.1 are given from Figure 2.2(8)-1 to Figure 2.2(8)-6.



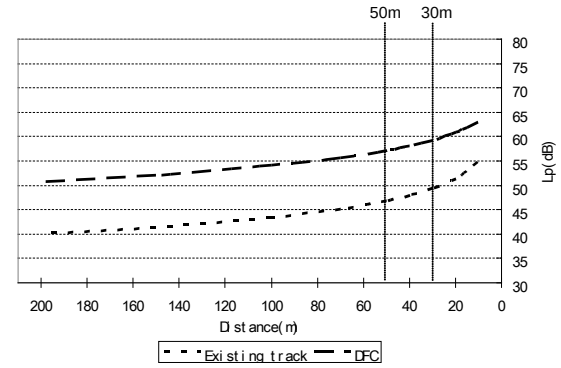
Source : JICA Survey Team

Figure 2.2(8)-1 Result of vibration Prediction at X-axis in Vapi-1 (Existing track side)



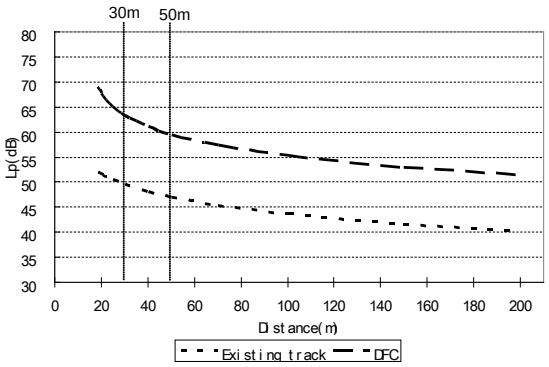
Source : JICA Survey Team

Figure 2.2(8)-2 Result of Vibration Prediction at X-axis in Vapi-1 (DFC track side)



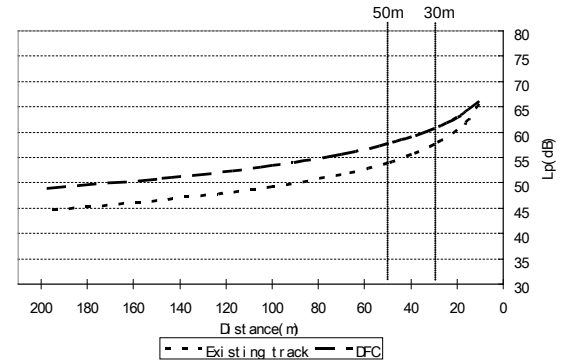
Source : JICA Survey Team

Figure 2.2(8)-3 Result of vibration Prediction at Y-axis in Vapi-1 (Existing track side)



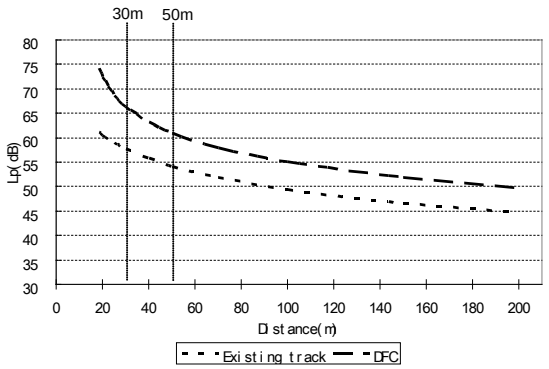
Source : JICA Survey Team

Figure 2.2(8)-4 Result of Vibration Prediction at Y-axis in Vapi-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(8)-5 Result of vibration Prediction at Z-axis in Vapi-1 (Existing track side)

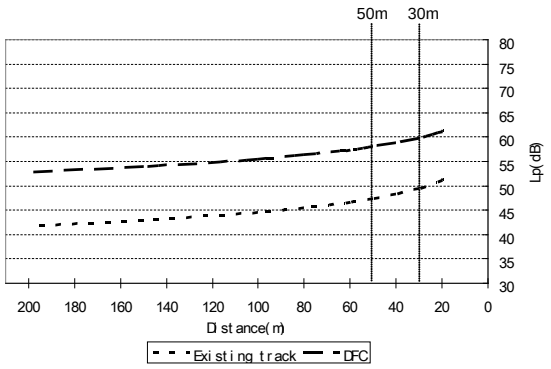


Source : JICA Survey Team

Figure 2.2(8)-6 Result of Vibration Prediction at Z-axis in Vapi-1 (DFC track side)

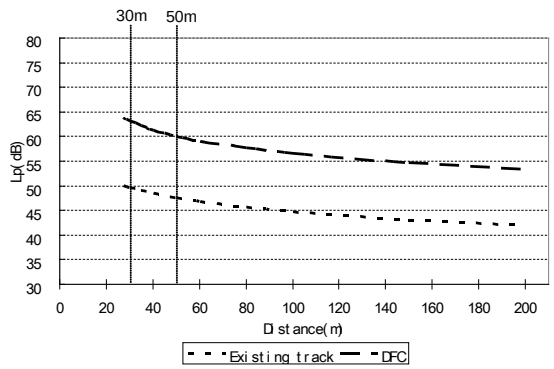
(9) Vapi No.2

Results of Vibration prediction for Vapi No.2 are given from Figure 2.2(9)-1 to Figure 2.2(9)-6.



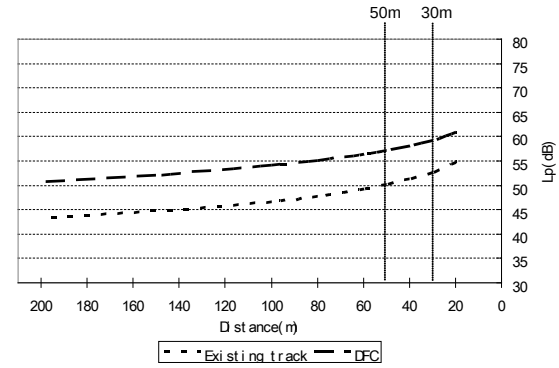
Source : JICA Survey Team

Figure 2.2(9)-1 Result of vibration Prediction at X-axis in Vapi-2 (Existing track side)



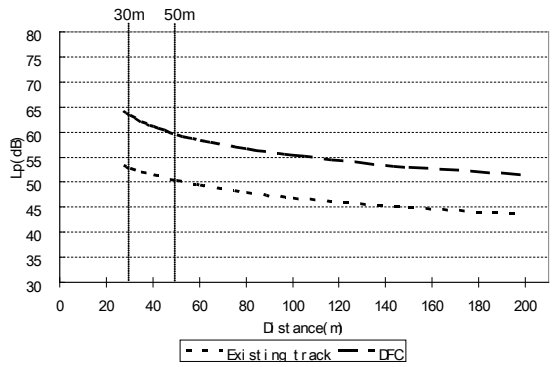
Source : JICA Survey Team

Figure 2.2(9)-2 Result of Vibration Prediction at X-axis in Vapi-2 (DFC track side)



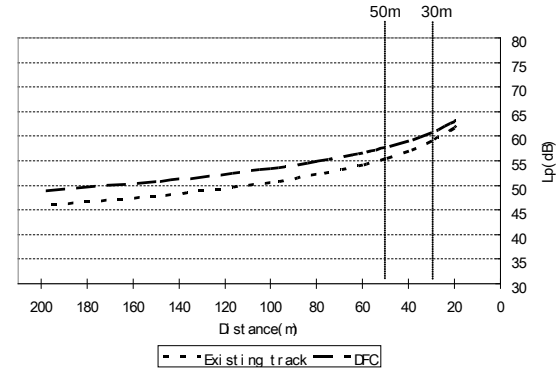
Source : JICA Survey Team

Figure 2.2(9)-3 Result of vibration Prediction at Y-axis in Vapi-2 (Existing track side)



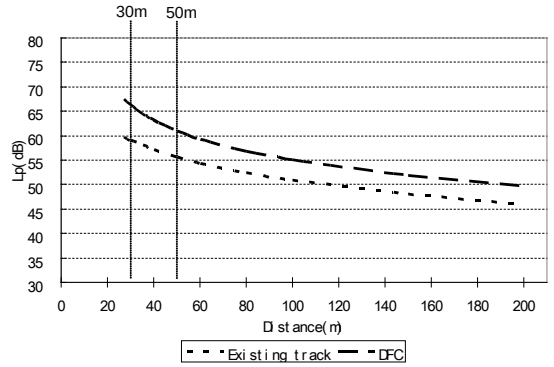
Source : JICA Survey Team

Figure 2.2(9)-4 Result of Vibration Prediction at Y-axis in Vapi-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(9)-5 Result of vibration Prediction at Z-axis in Vapi-2 (Existing track side)

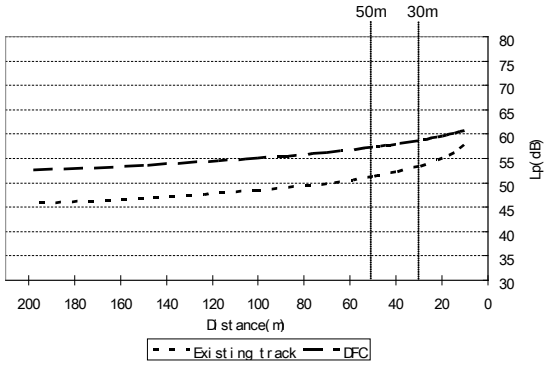


Source : JICA Survey Team

Figure 2.2(9)-6 Result of Vibration Prediction at Z-axis in Vapi-2 (DFC track side)

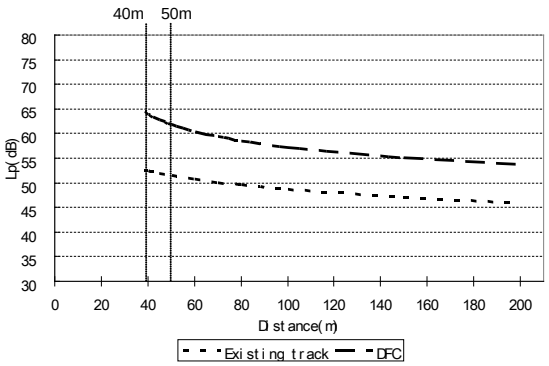
(10) Valsad No.1

Results of Vibration prediction for Valsad No.1 are given from Figure 2.2(10)-1 to Figure 2.2(10)-6.



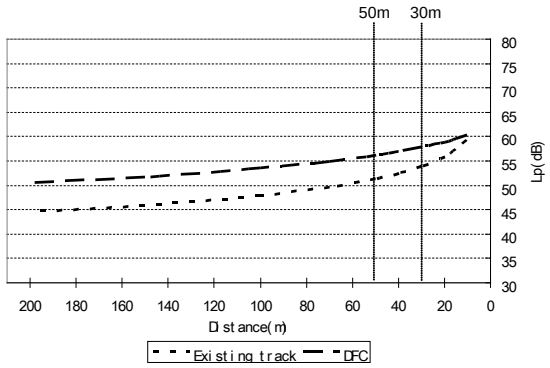
Source : JICA Survey Team

Figure 2.2(10)-1 Result of vibration Prediction at X-axis in Valsad-1 (Existing track side)



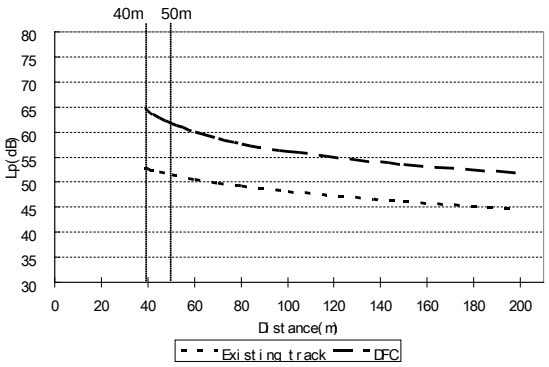
Source : JICA Survey Team

Figure 2.2(10)-2 Result of Vibration Prediction at X-axis in Valsad-1 (DFC track side)



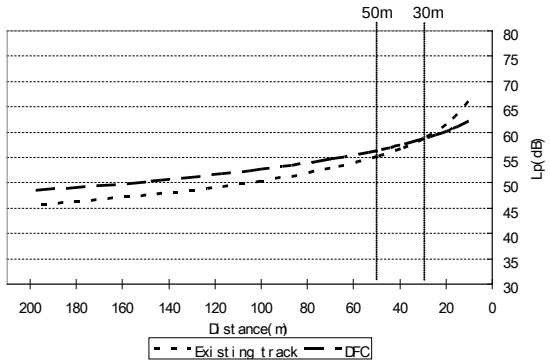
Source : JICA Survey Team

Figure 2.2(10)-3 Result of vibration Prediction at Y-axis in Valsad-1 (Existing track side)



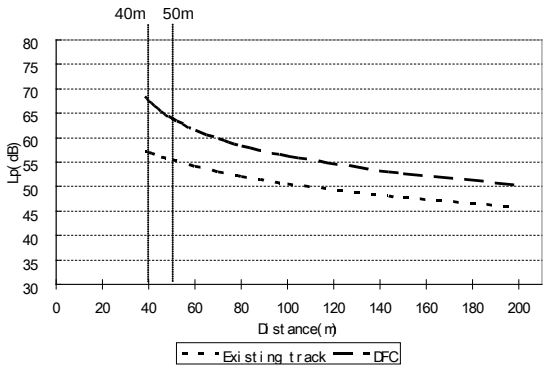
Source : JICA Survey Team

Figure 2.2(10)-4 Result of Vibration Prediction at Y-axis in Valsad-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(10)-5 Result of vibration Prediction at Z-axis in Valsad-1 (Existing track side)

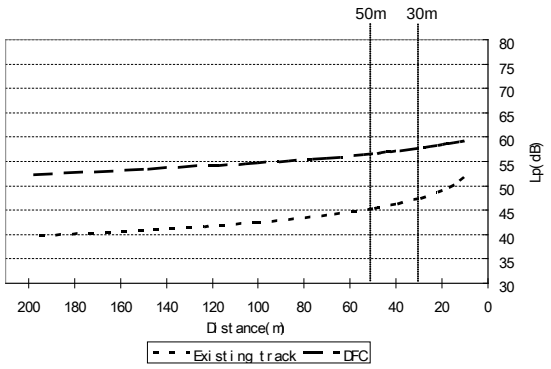


Source : JICA Survey Team

Figure 2.2(10)-6 Result of Vibration Prediction at Z-axis in Valsad-1 (DFC track side)

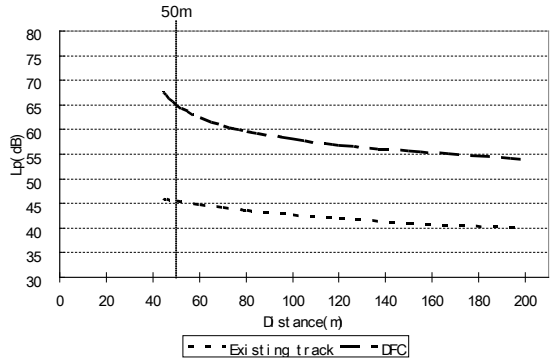
(11) Valsad No.2

Results of Vibration prediction for Valsad No.2 are given from Figure 2.2(11)-1 to Figure 2.2(11)-6.



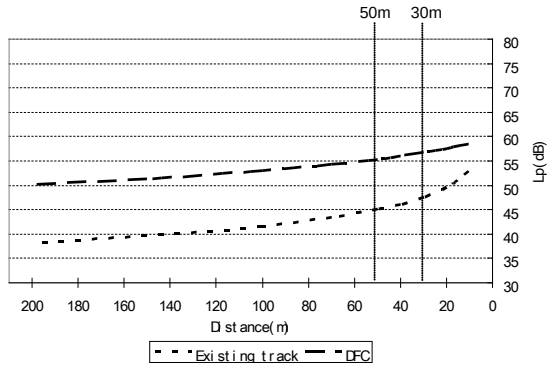
Source : JICA Survey Team

Figure 2.2(11)-1 Result of vibration Prediction at X-axis in Valsad-2 (Existing track side)



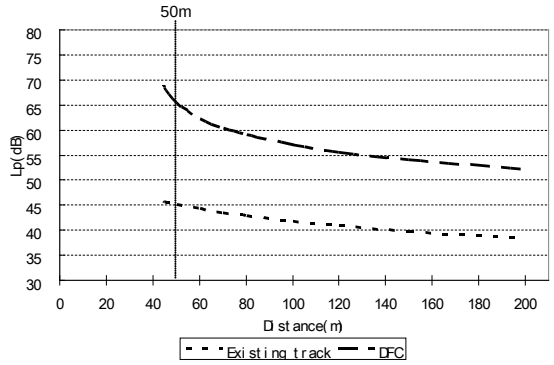
Source : JICA Survey Team

Figure 2.2(11)-2 Result of Vibration Prediction at X-axis in Valsad-2 (DFC track side)



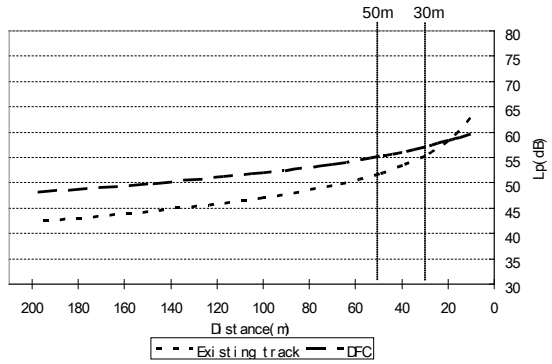
Source : JICA Survey Team

Figure 2.2(11)-3 Result of vibration Prediction at Y-axis in Valsad-2 (Existing track side)



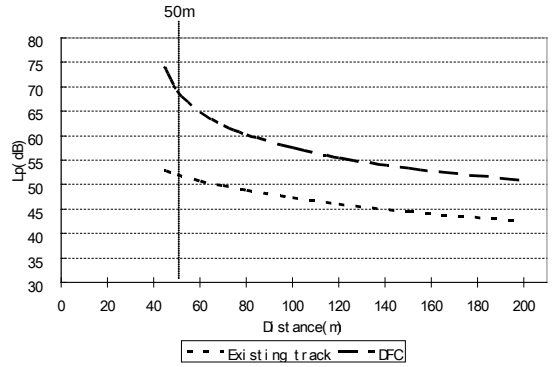
Source : JICA Survey Team

Figure 2.2(11)-4 Result of Vibration Prediction at Y-axis in Valsad-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(11)-5 Result of vibration Prediction at Z-axis in Valsad-2 (Existing track side)

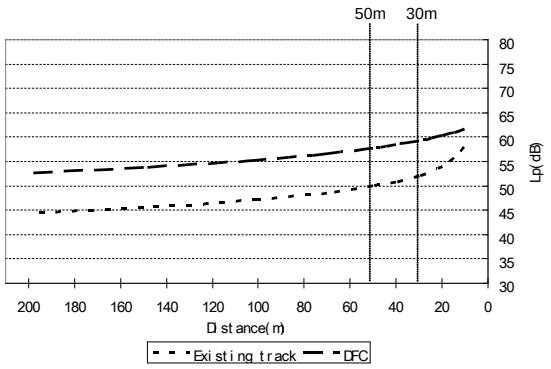


Source : JICA Survey Team

Figure 2.2(11)-6 Result of Vibration Prediction at Z-axis in Valsad-2 (DFC track side)

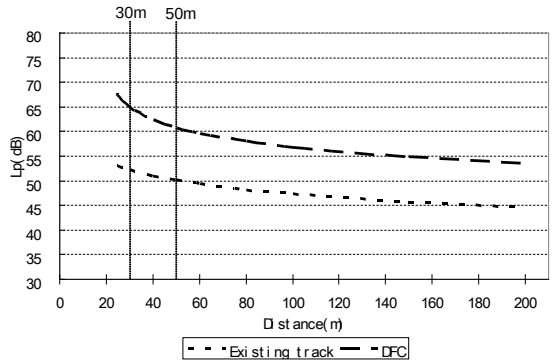
(12) Amalsad No.1

Results of Vibration prediction for Amalsad No.1 are given from Figure 2.2(12)-1 to Figure 2.2(12)-6.



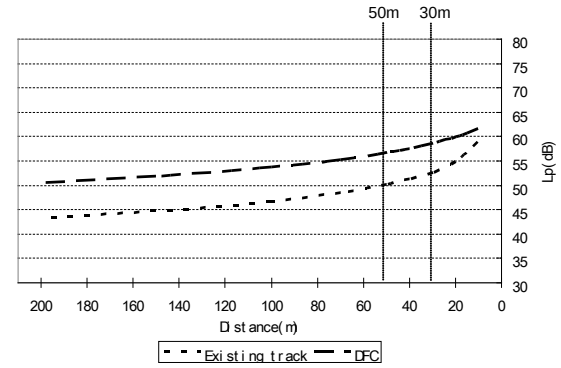
Source : JICA Survey Team

Figure 2.2(12)-1 Result of vibration Prediction at X-axis in Amalsad-1 (Existing track side)



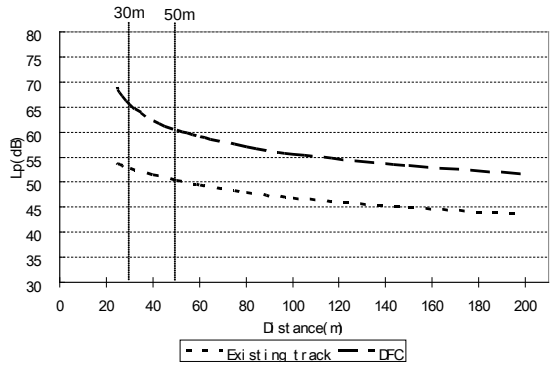
Source : JICA Survey Team

Figure 2.2(12)-2 Result of Vibration Prediction at X-axis in Amalsad-1 (DFC track side)



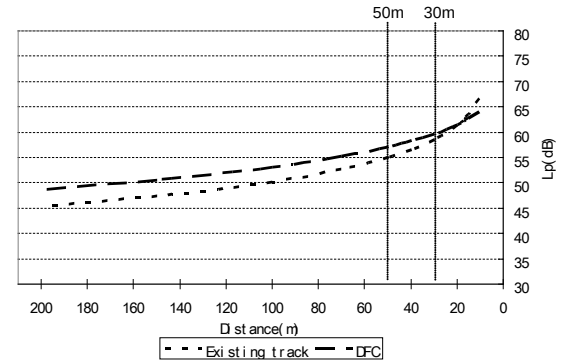
Source : JICA Survey Team

Figure 2.2(12)-3 Result of vibration Prediction at Y-axis in Amalsad-1 (Existing track side)



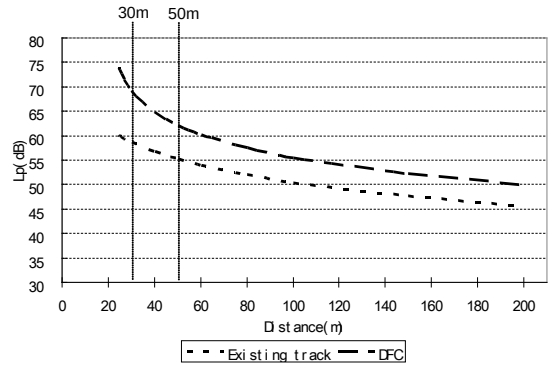
Source : JICA Survey Team

Figure 2.2(12)-4 Result of Vibration Prediction at Y-axis in Amalsad-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(12)-5 Result of vibration Prediction at Z-axis in Amalsad-1 (Existing track side)

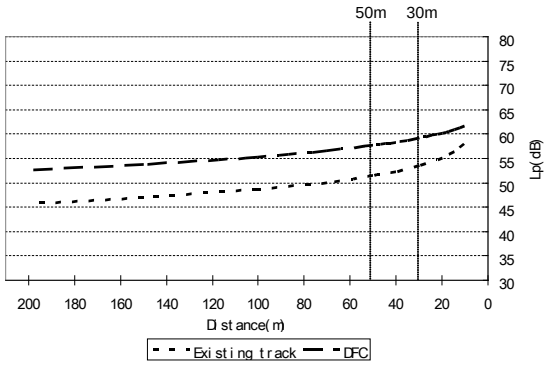


Source : JICA Survey Team

Figure 2.2(12)-6 Result of Vibration Prediction at Z-axis in Amalsad-1 (DFC track side)

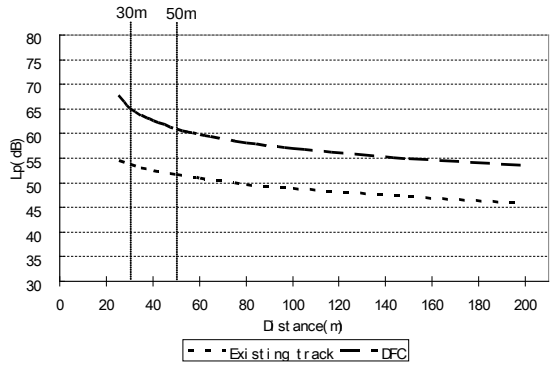
(13) Amalsad No.2

Results of Vibration prediction for Amalsad No.2 are given from Figure 2.2(13)-1 to Figure 2.2(13)-6.



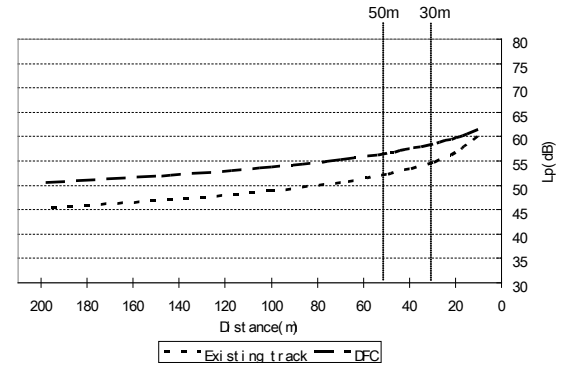
Source : JICA Survey Team

Figure 2.2(13)-1 Result of vibration Prediction at X-axis in Amalsad-2 (Existing track side)



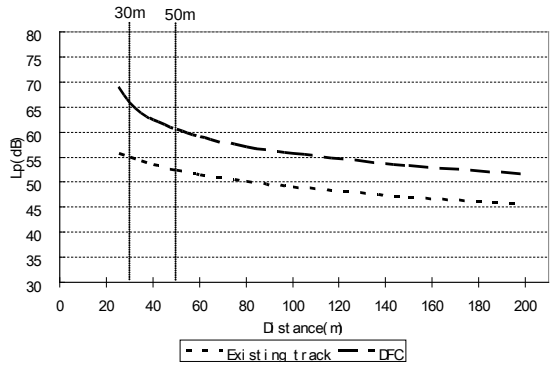
Source : JICA Survey Team

Figure 2.2(13)-2 Result of Vibration Prediction at X-axis in Amalsad-2 (DFC track side)



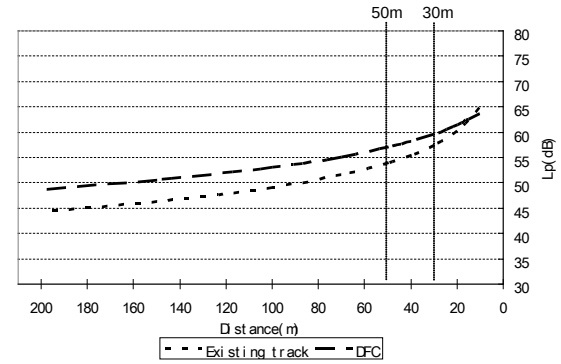
Source : JICA Survey Team

Figure 2.2(13)-3 Result of vibration Prediction at Y-axis in Amalsad-2 (Existing track side)



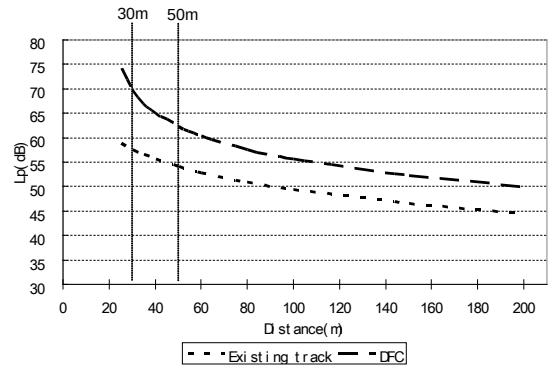
Source : JICA Survey Team

Figure 2.2(13)-4 Result of Vibration Prediction at Y-axis in Amalsad-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(13)-5 Result of vibration Prediction at Z-axis in Amalsad-2 (Existing track side)

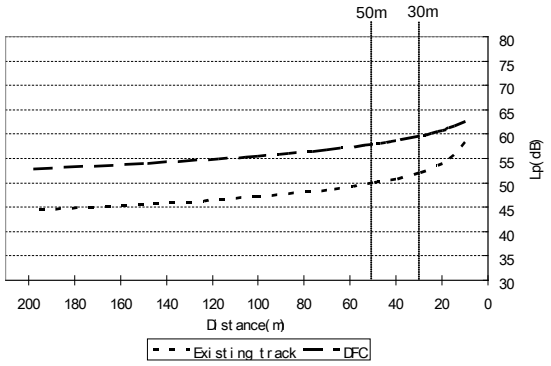


Source : JICA Survey Team

Figure 2.2(13)-6 Result of Vibration Prediction at Z-axis in Amalsad-2 (DFC track side)

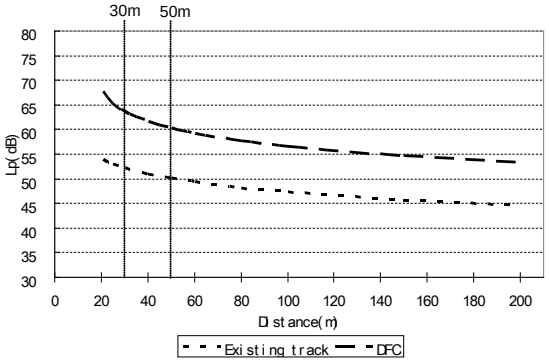
(14) Navsari

Results of Vibration prediction for Navsari are given from Figure 2.2(14)-1 to Figure 2.2(14)-6.



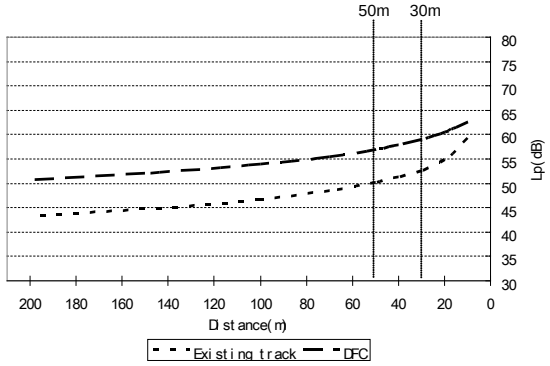
Source : JICA Survey Team

Figure 2.2(14)-1 Result of vibration Prediction at X-axis in Navsari (Existing track side)



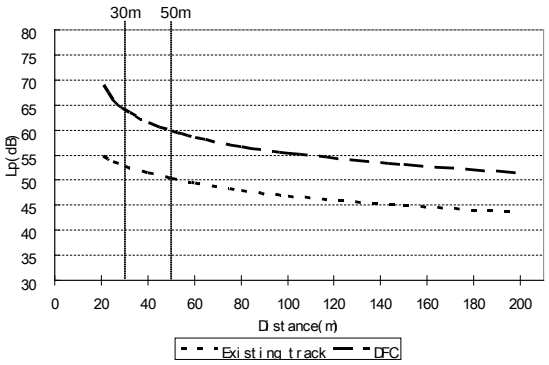
Source : JICA Survey Team

Figure 2.2(14)-2 Result of Vibration Prediction at X-axis in Navsari (DFC track side)



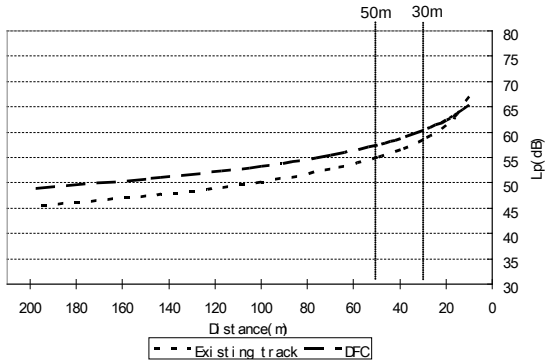
Source : JICA Survey Team

Figure 2.2(14)-3 Result of vibration Prediction at Y-axis in Navsari (Existing track side)



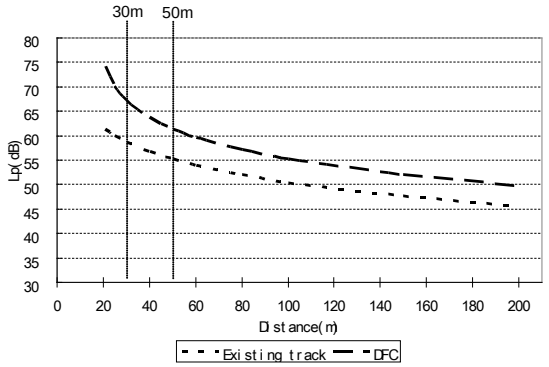
Source : JICA Survey Team

Figure 2.2(14)-4 Result of Vibration Prediction at Y-axis in Navsari (DFC track side)



Source :JICA Survey Team

Figure 2.2(14)-5 Result of vibration Prediction at Z-axis in Navsari (Existing track side)

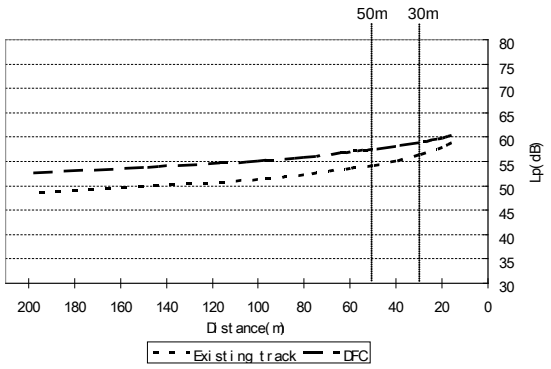


Source : JICA Survey Team

Figure 2.2(14)-6 Result of Vibration Prediction at Z-axis in Navsari (DFC track side)

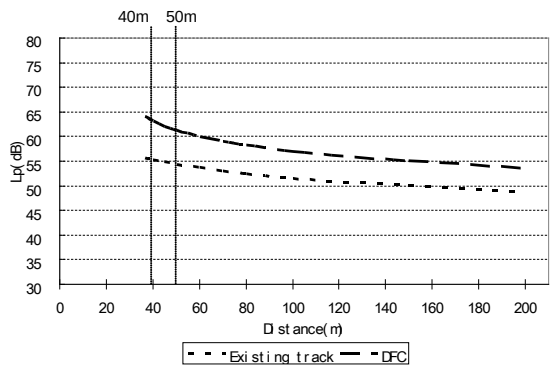
(15) Kim No.1

Results of Vibration prediction for Kim No.1 are given from Figure 2.2(15)-1 to Figure 2.2(15)-6.



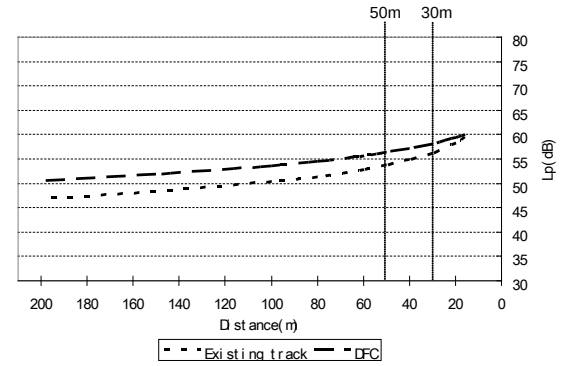
Source : JICA Survey Team

Figure 2.2(15)-1 Result of vibration Prediction at X-axis in Kim-1 (Existing track side)



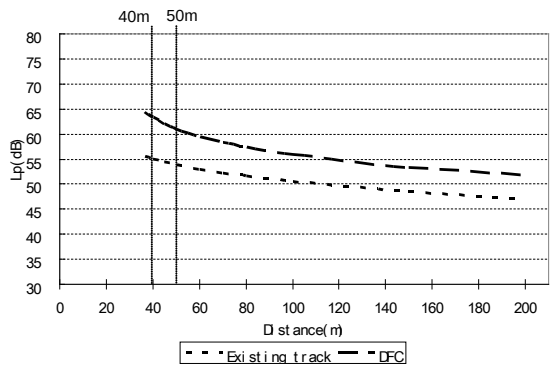
Source : JICA Survey Team

Figure 2.2(15)-2 Result of Vibration Prediction at X-axis in Kim-1 (DFC track side)



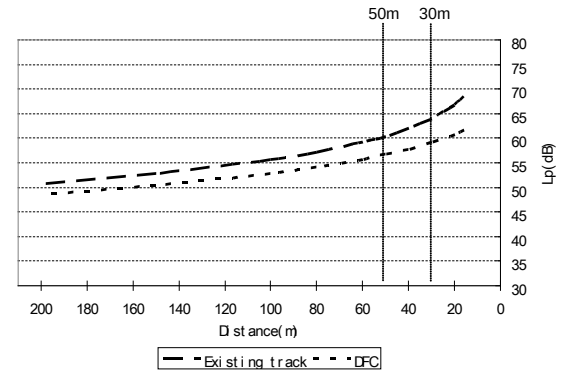
Source : JICA Survey Team

Figure 2.2(15)-3 Result of vibration Prediction at Y-axis in Kim-1 (Existing track side)



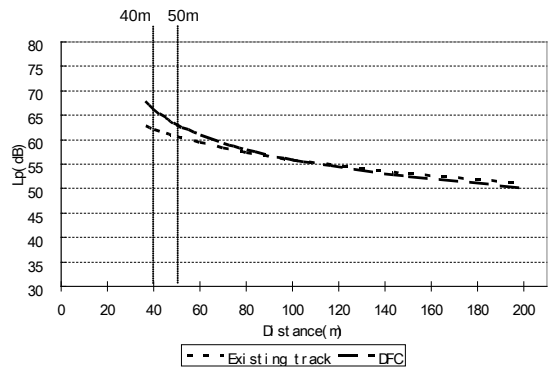
Source : JICA Survey Team

Figure 2.2(15)-4 Result of Vibration Prediction at Y-axis in Kim-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(15)-5 Result of vibration Prediction at Z-axis in Kim-1 (Existing track side)

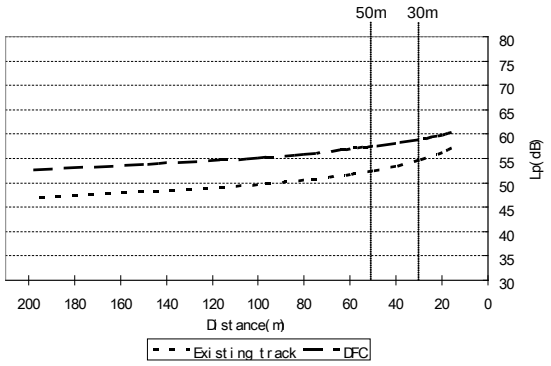


Source : JICA Survey Team

Figure 2.2(15)-6 Result of Vibration Prediction at Z-axis in Kim-1 (DFC track side)

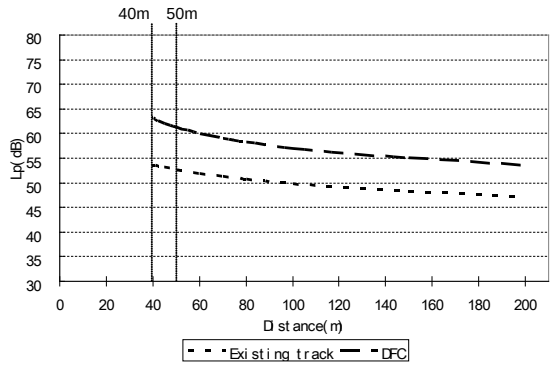
(16) Kim No.2

Results of Vibration prediction for Kim No.2 are given from Figure 2.2(16)-1 to Figure 2.2(16)-6.



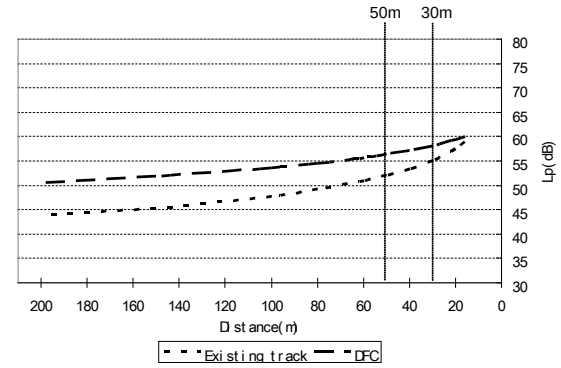
Source : JICA Survey Team

Figure 2.2(16)-1 Result of vibration Prediction at X-axis in Kim-2 (Existing track side)



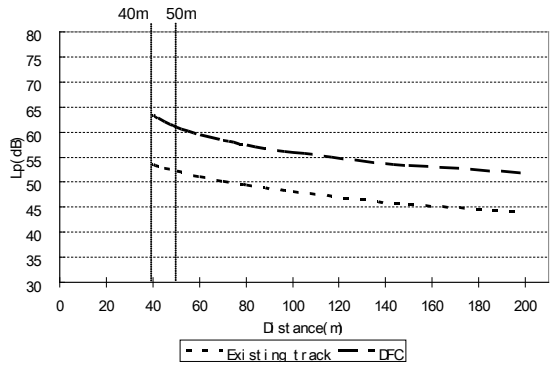
Source : JICA Survey Team

Figure 2.2(16)-2 Result of Vibration Prediction at X-axis in Kim-2 (DFC track side)



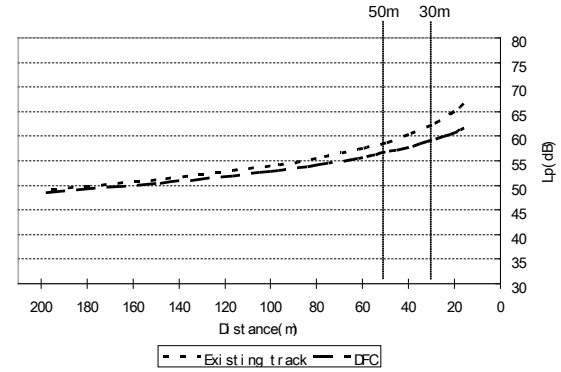
Source : JICA Survey Team

Figure 2.2(16)-3 Result of vibration Prediction at Y-axis in Kim-2 (Existing track side)



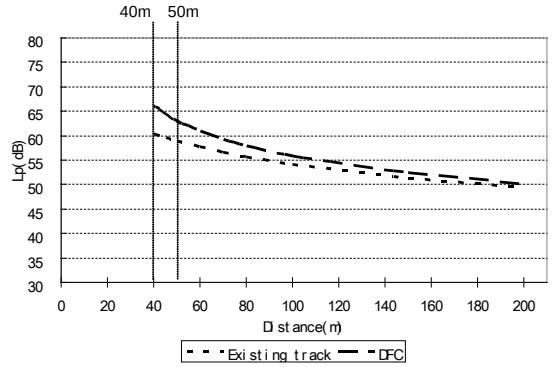
Source : JICA Survey Team

Figure 2.2(16)-4 Result of Vibration Prediction at Y-axis in Kim-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(16)-5 Result of vibration Prediction at Z-axis in Kim-2 (Existing track side)

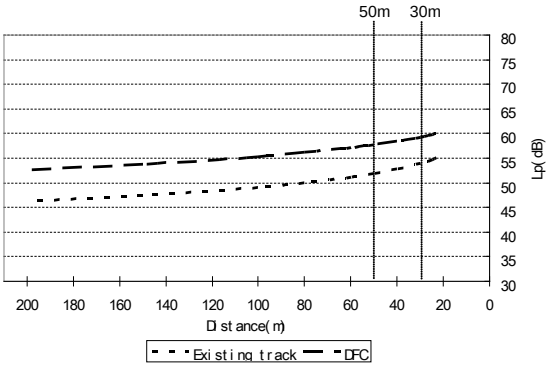


Source : JICA Survey Team

Figure 2.2(16)-6 Result of Vibration Prediction at Z-axis in Kim-2 (DFC track side)

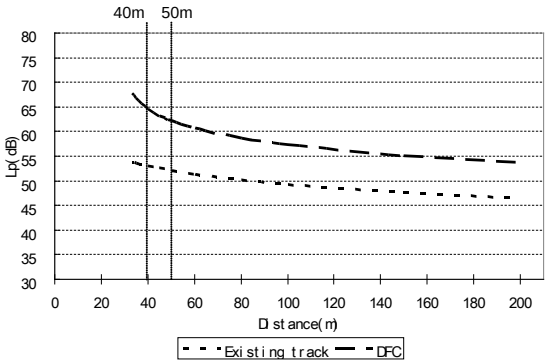
(17) Asaoti No.1

Results of Vibration prediction for Asaoti No.1 are given from Figure 2.2(17)-1 to Figure 2.2(17)-6.



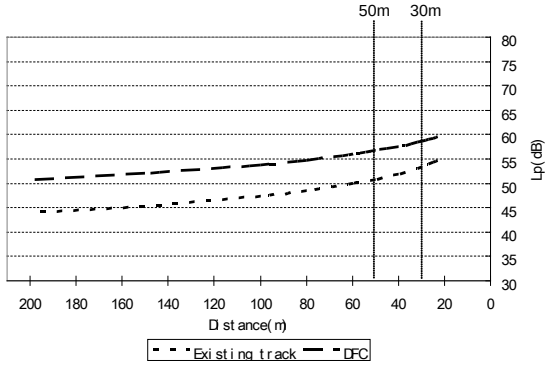
Source : JICA Survey Team

Figure 2.2(17)-1 Result of vibration Prediction at X-axis in Asaoti-1 (Existing track side)



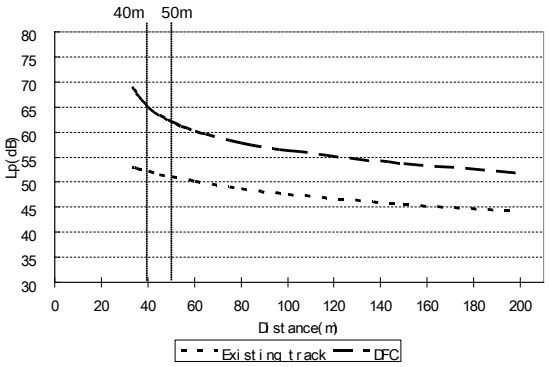
Source : JICA Survey Team

Figure 2.2(17)-2 Result of Vibration Prediction at X-axis in Asaoti-1 (DFC track side)



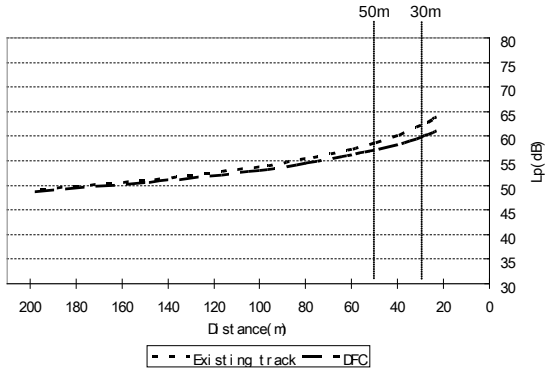
Source : JICA Survey Team

Figure 2.2(17)-3 Result of vibration Prediction at Y-axis in Asaoti-1 (Existing track side)



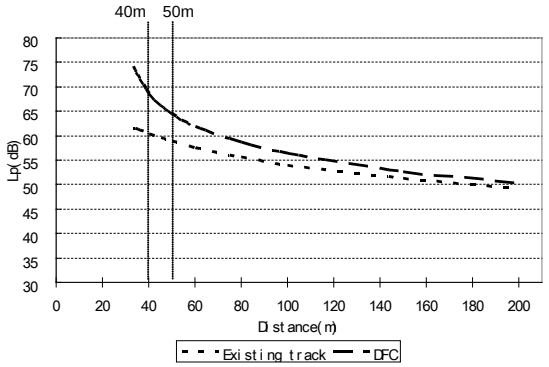
Source : JICA Survey Team

Figure 2.2(17)-4 Result of Vibration Prediction at Y-axis in Asaoti-1 (DFC track side)



Source :JICA Survey Team

Figure 2.2(17)-5 Result of vibration Prediction at Z-axis in Asaoti-1 (Existing track side)

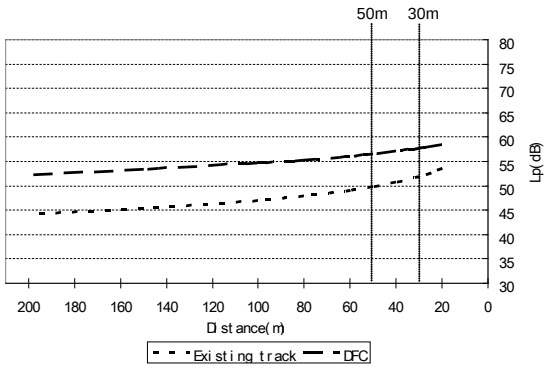


Source : JICA Survey Team

Figure 2.2(17)-6 Result of Vibration Prediction at Z-axis in Asaoti-1 (DFC track side)

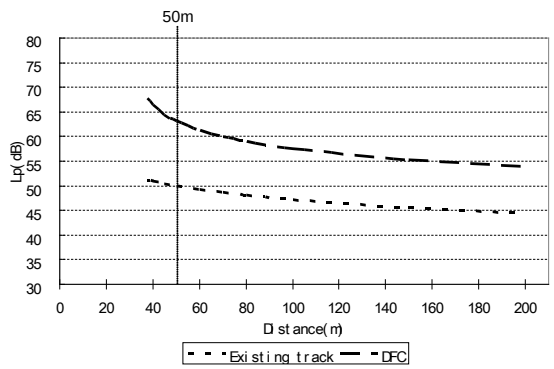
(18) Asaoti No.2

Results of Vibration prediction for Asaoti No.2 are given from Figure 2.2(18)-1 to Figure 2.2(18)-6.



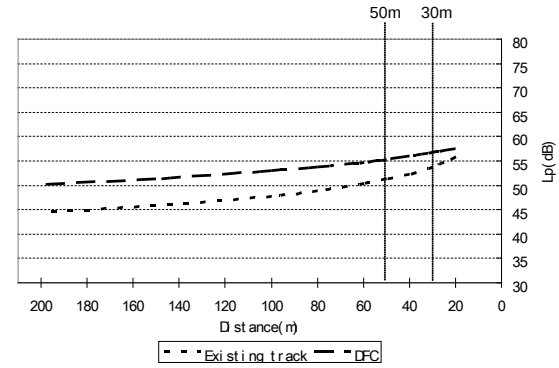
Source : JICA Survey Team

Figure 2.2(18)-1 Result of vibration Prediction at X-axis in Asaoti-2 (Existing track side)



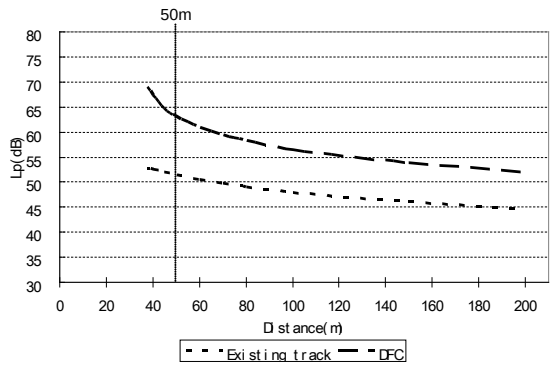
Source : JICA Survey Team

Figure 2.2(18)-2 Result of Vibration Prediction at X-axis in Asaoti-2 (DFC track side)



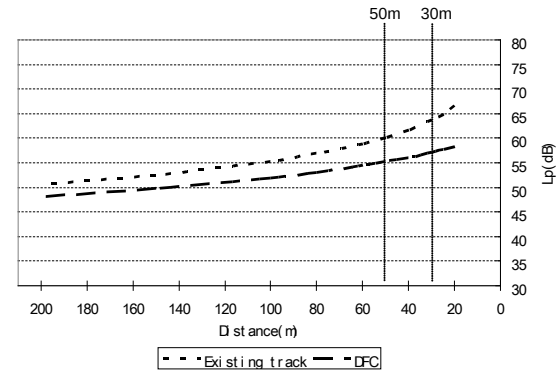
Source : JICA Survey Team

Figure 2.2(18)-3 Result of vibration Prediction at Y-axis in Asaoti-2 (Existing track side)



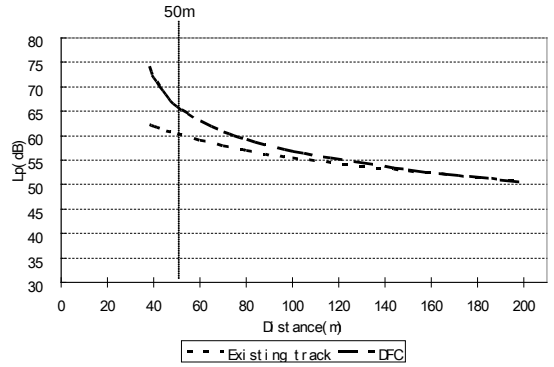
Source : JICA Survey Team

Figure 2.2(18)-4 Result of Vibration Prediction at Y-axis in Asaoti-2 (DFC track side)



Source :JICA Survey Team

Figure 2.2(18)-5 Result of vibration Prediction at Z-axis in Asaoti-2 (Existing track side)



Source : JICA Survey Team

Figure 2.2(18)-6 Result of Vibration Prediction at Z-axis in Asaoti-2 (DFC track side)

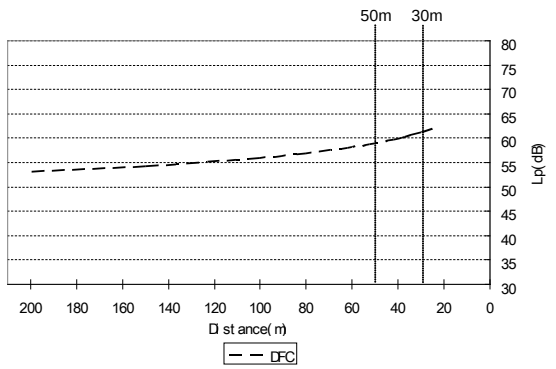
2-2-2 detour section

Results of vibration prediction in detour section are given below. Range of distance from near railway to 200 m is indicated on graphs.

Note: Distance 0m in each graph indicates center position of each existing track. And prediction point (30 m and 50 m) were put down with each graphs.

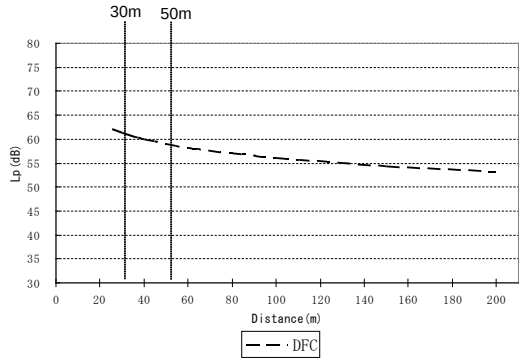
(19) Bharuch

Results of Vibration prediction for Bharuch are given from Figure 2.2(19)-1 to Figure 2.2(19)-6.



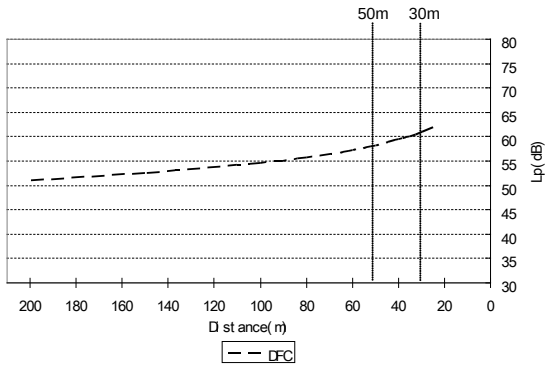
Source : JICA Survey Team

Figure 2.2(19)-1 Result of vibration Prediction at X-axis in Bharuch (Existing track side)



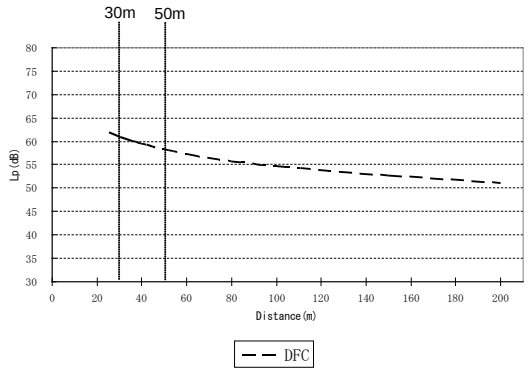
Source : JICA Survey Team

Figure 2.2(19)-2 Result of Vibration Prediction at X-axis in Bharuch (DFC track side)



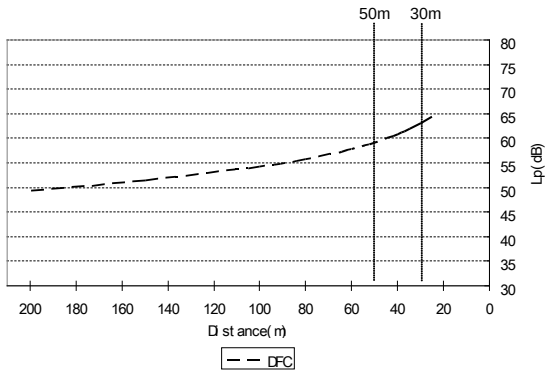
Source : JICA Survey Team

Figure 2.2(19)-3 Result of vibration Prediction at Y-axis in Bharuch (Existing track side)



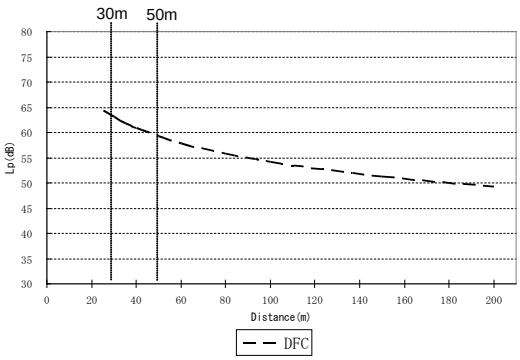
Source : JICA Survey Team

Figure 2.2(19)-4 Result of Vibration Prediction at Y-axis in Bharuch (DFC track side)



Source :JICA Survey Team

Figure 2.2(19)-5 Result of vibration Prediction at Z-axis in Bharuch (Existing track side)

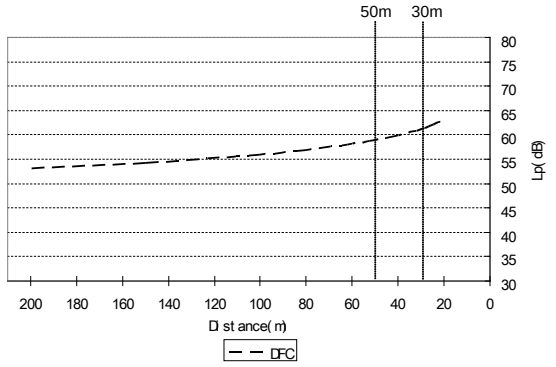


Source : JICA Survey Team

Figure 2.2(19)-6 Result of Vibration Prediction at Z-axis in Bharuch (DFC track side)

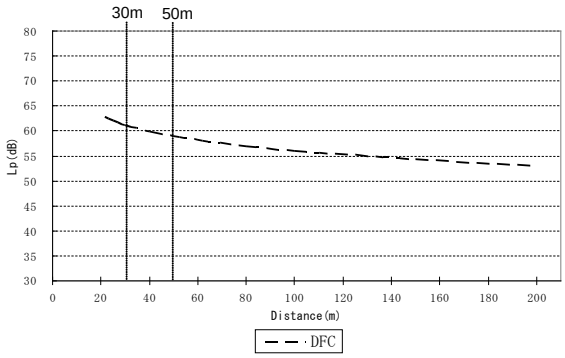
(20) Miyagam

Results of Vibration prediction for Miyagam are given from Figure 2.2(20)-1 to Figure 2.2(20)-6.



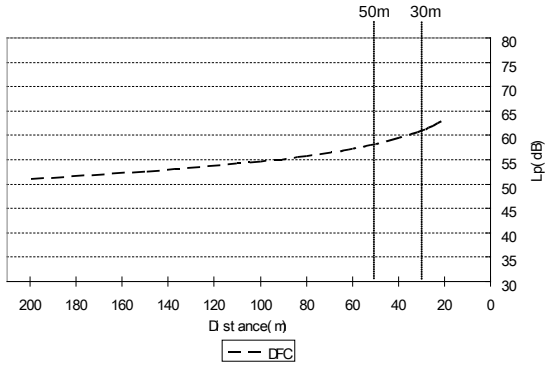
Source : JICA Survey Team

Figure 2.2(20)-1 Result of vibration Prediction at X-axis in Miyagam (Existing track side)



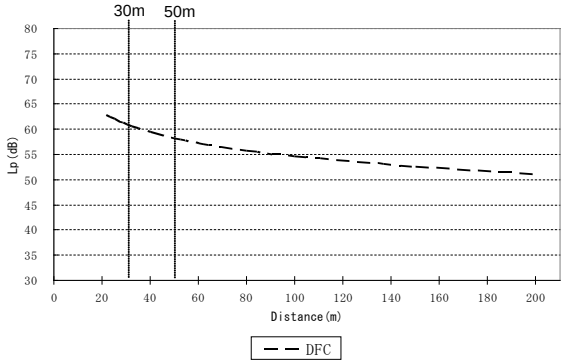
Source : JICA Survey Team

Figure 2.2(20)-2 Result of Vibration Prediction at X-axis in Miyagam (DFC track side)



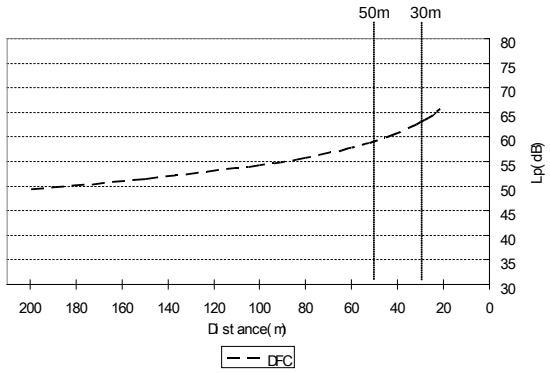
Source : JICA Survey Team

Figure 2.2(20)-3 Result of vibration Prediction at Y-axis in Miyagam (Existing track side)



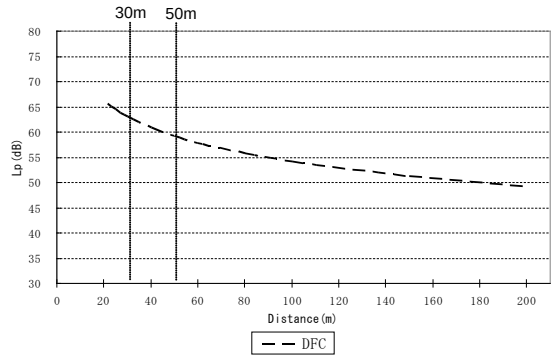
Source : JICA Survey Team

Figure 2.2(20)-4 Result of Vibration Prediction at Y-axis in Miyagam (DFC track side)



Source :JICA Survey Team

Figure 2.2(20)-5 Result of vibration Prediction at Z-axis in Miyagam (Existing track side)

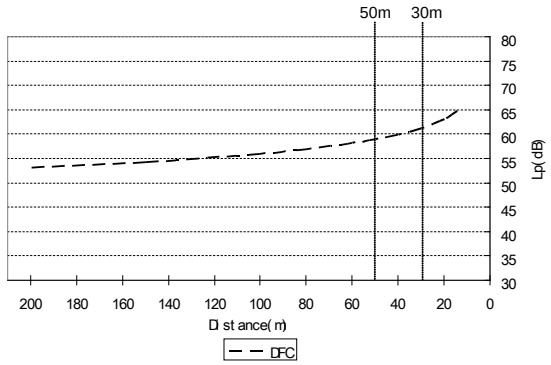


Source : JICA Survey Team

Figure 2.2(20)-6 Result of Vibration Prediction at Z-axis in Miyagam (DFC track side)

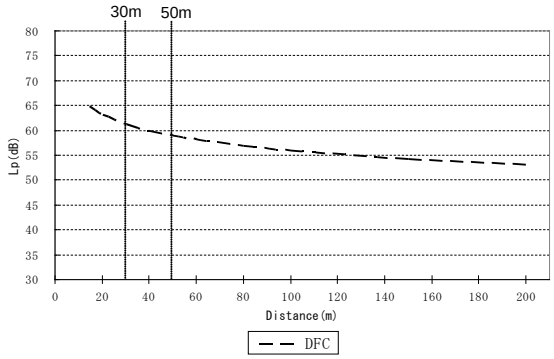
(21) Sohona

Results of Vibration prediction for Sohona are given from Figure 2.2(21)-1 to Figure 2.2(21)-6.



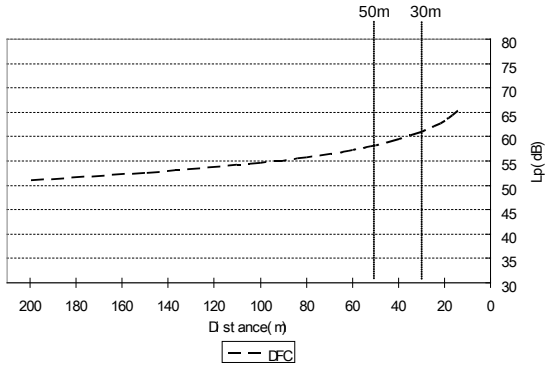
Source : JICA Survey Team

Figure 2.2(21)-1 Result of vibration Prediction at X-axis in Sohona (Existing track side)



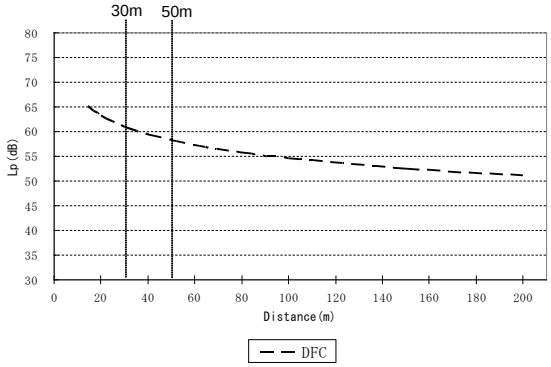
Source : JICA Survey Team

Figure 2.2(21)-2 Result of Vibration Prediction at X-axis in Sohona (DFC track side)



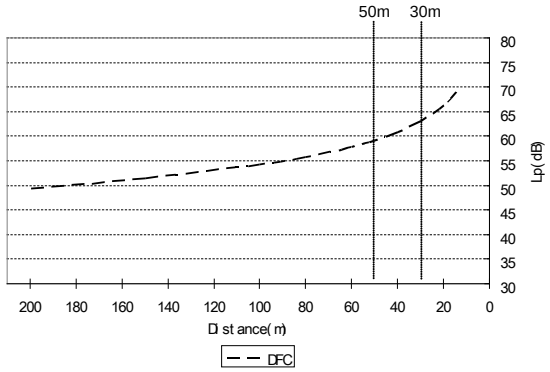
Source : JICA Survey Team

Figure 2.2(21)-3 Result of vibration Prediction at Y-axis in Sohona (Existing track side)



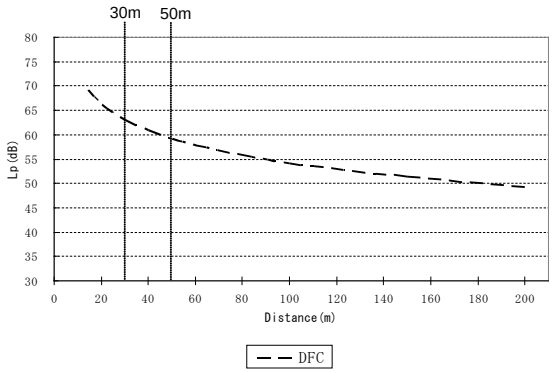
Source : JICA Survey Team

Figure 2.2(21)-4 Result of Vibration Prediction at Y-axis in Sohona (DFC track side)



Source :JICA Survey Team

Figure 2.2(21)-5 Result of vibration Prediction at Z-axis in Sohona (Existing track side)

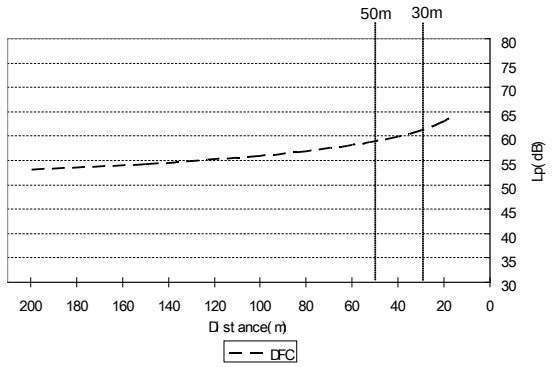


Source : JICA Survey Team

Figure 2.2(21)-6 Result of Vibration Prediction at Z-axis in Sohona (DFC track side)

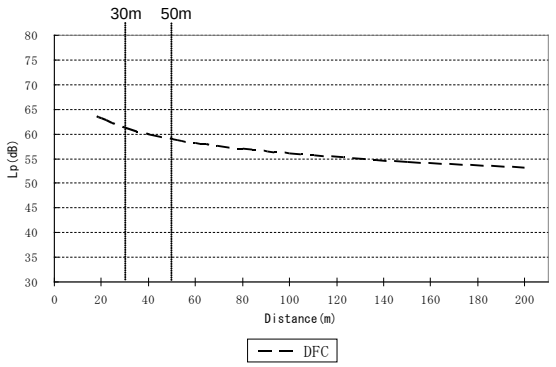
(22) Tigaon

Results of Vibration prediction for Tigaon are given from Figure 2.2(22)-1 to Figure 2.2(22)-6.



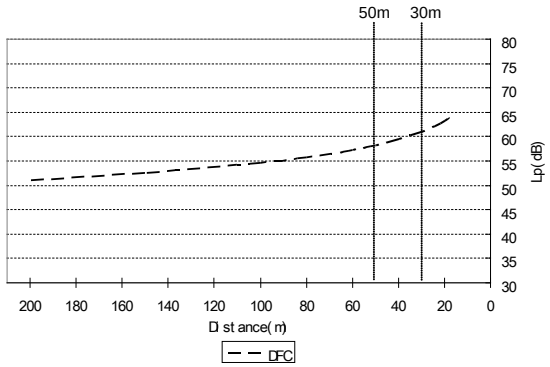
Source : JICA Survey Team

Figure 2.2(22)-1 Result of vibration Prediction at X-axis in Tigaon (Existing track side)



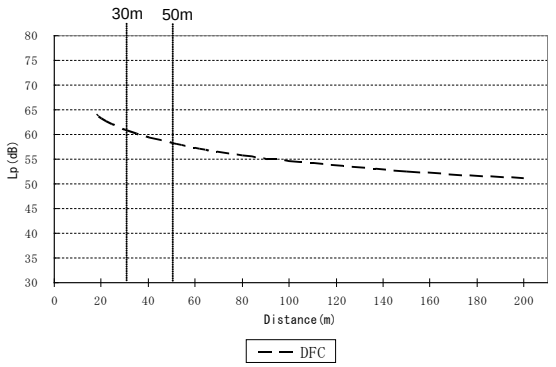
Source : JICA Survey Team

Figure 2.2(22)-2 Result of Vibration Prediction at X-axis in Tigaon (DFC track side)



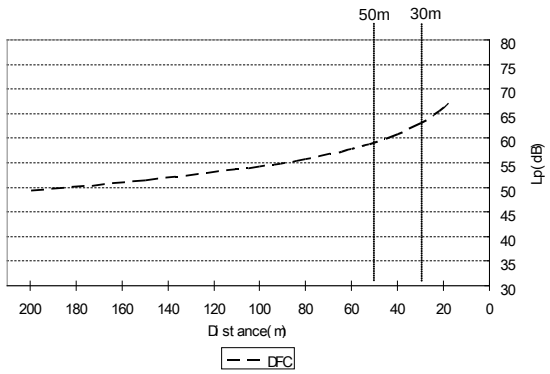
Source : JICA Survey Team

Figure 2.2(22)-3 Result of vibration Prediction at Y-axis in Tigaon (Existing track side)



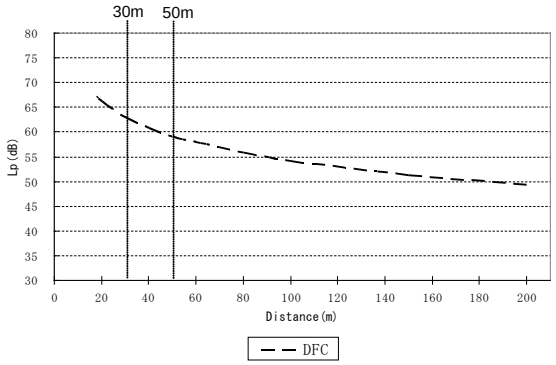
Source : JICA Survey Team

Figure 2.2(22)-4 Result of Vibration Prediction at Y-axis in Tigaon (DFC track side)



Source :JICA Survey Team

Figure 2.2(22)-5 Result of vibration Prediction at Z-axis in Tigaon (Existing track side)



Source : JICA Survey Team

Figure 2.2(22)-6 Result of Vibration Prediction at Z-axis in Tigaon (DFC track side)

Appendix-5 Detail Survey Reports of Sensitive Receptor Survey

Appendix-5a
Sensitive Receptor Survey

Appendix-5a

SENSITIVE RECEPTOR SURVEY

1. Rewari-Dadri section

S.No.	Village	Taluka	District	Nearest DFC Chainage to identify SR	*Type of SR	Specific/ official Name of SR	Approx. Size/ Capacity of SR	Latitude and Longitude	Distance from Proposed DFC outer track (m)	Direction from the Railway Line i.e. N/S or E/W for SR	Surrounding Environment	Any distinguishing finding about SR
1	Karanki	Sohna	Gurgaon	77.70-80.8	2B	Temple	4*4	28° 13.629' 77° 8.732'	60	N/S	Agriculture	Temple built inside the house. More than 600 villagers come to visit every week.
2	Silani	Sohna	Gurgaon	80.8-82.2	2B	Temple - under construction	3*4	28° 13.799' 77° 10.420'	5	N/S	Barren Land	Temple under construction. No such visitors for now but around 200 visitors every week expected
3	Raipur	Sohna	Gurgaon	70.88	2A	Raipur Masjid	6*7	28° 13'45.0" 77° 03'57.0"	50	N/S	Agriculture, Road in front, commercial shops	Old Mughal structure now used for prayers
4	Kuntpuri	Sohna	Gurgaon	81.82	2B	Ganesh Mandir (Temple)	6*8	28° 13'48.8" 77° 10'30.8"	80	N/S	Agricultural fields, Close to Gurgaon canal	Nearly 1000 people worship from surrounding 4 villages on every Thursday
5	Nachauli	Faridabad	Faridabad	40.55-41.65	2B	Temple	5*5	28° 24.894' 77° 23.517'	29	N/S	Agriculture, Road, Buildings	Near Pucca road. Near House and Gobar gas plant
6	Salarpur	Tijara	Alwar	35.8	3A	Sangam Madhyamik Vidyalaya	15*10	28° 08.483' 76° 46.713'	120	N/S	Agriculture	In between the agricultural land
7	Kalka	Tijara	Alwar	41.75	3A	Higher Secondary school	6*5	28° 09.02' 76° 48.36'	<5	N/S	Agriculture	200 Student Capacity up to Class 8th
8	Wazirpur	Faridabad	Faridabad	5.06-6.8	2B	Temple	3*3	20° 26.412' 77° 21.074'	100	N/S	Agriculture	Between agriculture land and few residents
9a	Mawai	Faridabad	Faridabad	6.8-8.936	2B	Shirdi Sai Vatsalya Dham	12*10	20° 26.372' 77° 19.998'	20	N/S	Agriculture	New house construction coming up, Between agriculture land
9b	Mawai	Faridabad	Faridabad	6.8-8.936	2B	Temple	12*10	20° 26.407' 77° 19.463'	30	N/S	Plantation	Surrounded by Eucalyptus plantation, approx 100-500 people visited daily
9c	Mawai	Faridabad	Faridabad	6.8-8.936	3B	Hermann Gmeiner School	35*30	20° 26.333' 77° 19.415'	School boundary under ROW	N/S	Residence	School boundary under ROW
9d	Mawai	Faridabad	Faridabad	6.8-8.936	2B	Hanuman Temple	20*15	20° 26.370' 77° 19.006'	25	N/S	Residence	Prachin Pawan Kutir Hanuman Temple boundary also have Aushdhalay and Satsang
9e	Mawai	Faridabad	Faridabad	6.8-8.936	2B	Sanidev Temple	10*10	20° 26.357' 77° 18.744'	15	N/S	Residence	Sanidev Temple in Residential area, approx 100-500 people visited daily
9f	Mawai	Faridabad	Faridabad	6.8-8.936	2B	Ram Temple	15*12	20° 26.337' 77° 18.620'	Temple Boundary under ROW	N/S	Industry	Approx 500 people visited daily

Photo 1: Temple in Karanki

Photo 2: Temple under Construction in Silani

Photo 3: Mosque in Raipur

Photo 4: Temple in Kuntpuri

Photo 5: Temple near RoW in Village Nachauli- 29 m from central line

Photo 6: Sangam Madhyamik Vidyalaya : Alwar

Photo 7: School in Kalka : Alwar

Photo 8: Temple in Wazirpur 100 m away the proposed line

Photo 9a: Shirdi Sai Vatsalya Dham in Mawai 20 m away the proposed line

Photo 9b: Temple in Mawai 30m away the proposed line

Photo 9c: School in Mawai 10m away the Proposed Central line

Photo 9d: Hanuman Temple in Mawai 5 m away the proposed line

Photo 9e: Sanidev Temple in Mawai 15 m away the proposed line

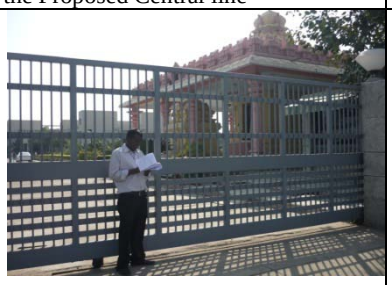


Photo 9f: Ram Temple in Mawai 10 m away the proposed Central line

2. Vadodara-JNPT section: Gujarat

S.No.	Village	Taluka	District	Nearest DFC Chainage to identify SR	*Type of SR	Specific/ official Name of SR	Approx. Size/ Capacity of SR	Latitude and Longitude	Distance from Proposed DFC outer track (m)	Direction from the Railway Line i.e. N/S or E/W for SR	Surrounding Environment	Any distinguishing finding about SR
1	Bhilad	Umergaon	Valsad	160/397-162/805	2B	Temple	10*10	20° 16.548' 72° 53.348'	100	N/S	Highway	Temple on the opposite side of Highway
2a	Karamveli	Umergaon	Valsad	162/805-164/942	2B	Temple (Under Construction)	10*8	20° 18.926' 72° 54.112'	10	N/S	Shops	Temple still in construction phase between highway and Proposed DFCC Line
2b	Karamveli	Umergaon	Valsad	162/805-164/942	2B	Temple	10*10	20° 18.39' 72° 54.044'	10	N/S	Residence	Approx 200-500 people daily visited here
3	Valvad	Umergaon	Valsad	164/942-168/978	2B	Temple	10*9	20° 20.335' 72° 54.39'	40	N/S	Riverbed	Temple on riverbed
4a	Vapi T/2	Pardi	Valsad	170/106-172/339	1B	Hospital	25*18	20° 22.638' 72° 54.566'	10	N/S	Residence	A big hospital where 500-1000 paitient daily visited here
4b	Vapi T/2	Pardi	Valsad	170/106-172/339	2B	Temple	7*7	20° 22.572' 72° 54.574'	5	N/S	Station	A small temple where 100-500 people visiting daily here
4c	Vapi T/2	Pardi	Valsad	170/106-172/339	3B	Mother Teresa High School	20*18	20° 21.835' 72° 54.471'	5	N/S	Residence	Approx 500 students alongwith other staffs visit here daily
4d	Vapi T/2	Pardi	Valsad	170/106-172/339	2B	Mansa sidhh Hanuman Temple	10*8	20° 21.469' 72° 54.464'	5	N/S	Residence	Approx 500 people daily visited here
5a	Vapi	Pardi	Valsad	176/648	2B	Temple	12*8	20° 24.659' 72° 54.985'	20	N/S	Residence	A temple on the highway
5b	Vapi	Pardi	Valsad	176/648-177/673	2B	Swami Narayan Gurukul (Girls)	25*22	20° 22.584' 72° 54.989'	10	N/S	Residence	Girls School Along side highway close to the proposed line
6	Orvad	Pardi	Valsad	179/940-181/692	2B	Jain Temple	12*12	20° 27.513' 72° 55.195'	10	N/S	Residence	Approx 500 people visited daily
7	Motivada	Pardi	Valsad	182/362-184/962	3D	Gram Panchayat	8*8	20° 28.144' 72° 55.221'	10	N/S	Residence	100-200 people daily visited here
8	Haria	Valsad	Valsad	188/671-190/580	2B	Temple	10*10	20° 32.024' 72° 55.602'	5	N/S	Residence	Approx 500 people visit daily
9	Mogravadi	Valsad	Valsad	197/901-198/872	1A	Railway School	25*22	20° 35.569' 72° 55.95'	30	N/S	Residence	Approx 500-1000 students and teachers with other staffs visit here
10a	Lilapur	Valsad	Valsad	200/862-201/142	2A	Mosque	12*12	20° 36.755' 72° 55.943'	60	N/S	Residence	Approx 500 people daily visited here
10b	Lilapur	Valsad	Valsad	200/862-201/142	2B	Temple	7*6	20° 36.709' 72° 55.968'	20	N/S	Station	A small temple At Platform
10c	Lilapur	Valsad	Valsad	200/862-201/142	1B	Hospital	25*20	20° 36.717' 72° 56.014'	30	N/S	Residence	Approx 500 paitient daily visit
10d	Lilapur	Valsad	Valsad	200/862-201/142	2B	Temple	7*6	20° 36.563' 72° 56.096'	50	N/S	Residence	A small temple where 500 people daily vist
10e	Lilapur	Valsad	Valsad	200/862-201/142	2B	Temple	4*3	20° 36.564' 72° 56.085'	50	N/S	Residence	A very small temple
10f	Lilapur	Valsad	Valsad	200/862-201/142	2C	Church	8*8	20° 36.486' 72° 56.068'	80	N/S	Residence	Only Church near station in Valsad
10g	Lilapur	Valsad	Valsad	200/862-201/142	2A	Mosque	20*15	20° 36.431' 72° 56.055'	90	N/S	Residence	A big mosque in Valsad where 1000 person visited daily
11	Lilapur	Valsad	Valsad	201/142-202/142	2B	Temple	4*4	20° 37.292' 72° 56.122'	100	N/S	Barren Land	A small temple in barren land
12a	Dungri	Valsad	Valsad	206/242-208/508	2A	Mosque	12*10	20° 41.349' 72° 56.965'	25	N/S	Residence	A temple where 500-800 people visiting daily

S.No.	Village	Taluka	District	Nearest DFC Chainage to identify SR	*Type of SR	Specific/ official Name of SR	Approx. Size/ Capacity of SR	Latitude and Longitude	Distance from Proposed DFC outer track (m)	Direction from the Railway Line i.e. N/S or E/W for SR	Surrounding Environment	Any distinguishing finding about SR
12b	Dungri	Valsad	Valsad	206/242-208/508	2B	Ambey Temple	7*7	20° 41.248' 72° 57.072'	80	N/S	Residence	A small temple in Dungri
12c	Dungri	Valsad	Valsad	206/242-208/508	2B	Swami NarayanTemple	18*15	20° 41.592' 72° 57.053'	35	N/S	Residence	A temple where 500-700 people visiting there
12d	Dungri	Valsad	Valsad	206/242-208/508	2B	Temple	10*8	20° 41.559' 72° 56.997'	45	N/S	Residence	A temple in residential area
12e	Dungri	Valsad	Valsad	206/242-208/508	3A	School	20*18	20° 41.569' 72° 56.994'	55	N/S	Residence	A primary school near station in Dungri
13a	Deshra	Gandevi	Navsari	214/133-216/136	3A	School	20*18	20° 45.468' 72° 58.384'	10	N/S	Residence	A primary school in Deshra near the proposed line
13b	Deshra	Gandevi	Navsari	214/133-216/136	2B	Temple	10*6	20° 45.301' 72° 58.422'	5	N/S	Residence	A temple on 1st floor with house on ground floor
13c	Deshra	Gandevi	Navsari	214/133-216/136	2A	Dargah	10*10	20° 45.283' 72° 58.374'	30	N/S	Residence	A Dargah in residential area where apprx 500 people visited daily
13d	Deshra	Gandevi	Navsari	214/133-216/136	2B	Ram Temple	12*10	20° 45.411' 72° 58.339'	40	N/S	Residence	Ram temple in residential area
13e	Deshra	Gandevi	Navsari	214/133-216/136	3D	Aanganwadi	8*8	20° 45.436' 72° 58.349'	20	N/S	Residence	Aanganwadi for less than 100 small child
13f	Deshra	Gandevi	Navsari	214/133-216/136	2A	Mosque	15*12	20° 45.436' 72° 58.331'	45	N/S	Residence	A mosque in Deshra with daily visit of approx 500 people
14a	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	4*4	20° 45.942' 72° 58.25'	10	N/S	Shops	A small Hanuman temple
14b	Billimora	Gandevi	Navsari	216/136-218/236	2A	Mosque		20° 45.713' 72° 58.228'	40	N/S	Residence	A mosque in Billimora
14c	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	4*4	20° 45.666' 72° 58.279'	150	N/S	Residence	A small temple in Residential area
14d	Billimora	Gandevi	Navsari	216/136-218/236	2A	Dargah	7*5	20° 45.639' 72° 58.296'	40	N/S	Station	A very small Dargah near station
14e	Billimora	Gandevi	Navsari	216/136-218/236	2A	Dargah	7*5	20° 45.565' 72° 58.358'	40	N/S	Station	A very small Dargah near station
14f	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	24*18	20° 37.292' 72° 56.122'	150	N/S	Residence	A huge temple in Billimora
14g	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	24*18	20° 45.642' 72° 58.356'	75	N/S	Residence	A huge temple in Billimora
14h	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	8*6	20° 46.635' 72° 58.017'	On central line	N/S	Plantation	A Sai temple where- 100-500 people visiting daily
14i	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	15*10	20° 46.629' 72° 58.032'	On central line	N/S	Residence	A temple in residential area
14j	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	10*8	20° 46.669' 72° 58.022'	5	N/S	Barren Land	A temple where 500-1000 people visiting daily
14k	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	8*8	20° 46.67' 72° 58.006'	15	N/S	Barren Land	A small temple in Billimora
14l	Billimora	Gandevi	Navsari	216/136-218/236	2B	Temple	6*5	20° 46.608' 72° 58.983'	5	N/S	Residence	A very small temple in Residential area
15	Devdha	Gandevi	Navsari	219/360-220/915	2B	Temple	8*6	20° 38.017' 72° 57.581'	5	N/S	Agriculture	A temple where 100-500 people visiting daily
16a	Sari Bujhrang	Gandevi	Navsari	220/910-222/615	2B	Temple	15*15	20° 48.759' 72° 56.849'	5	N/S	Plantation	A temple where 500-1000 people visiting daily
16b	Sari Bujhrang	Gandevi	Navsari	220/910-222/615	2B	Temple	12*12	20° 48.849' 72° 56.122'	15	N/S	Residence	A temple where approx 500 people visited daily
17	Amalsad	Gandevi	Navsari	222/615-224/803	2B	Temple (on the other side)	30*30	20° 49.396' 72° 57.067'	35	N/S	Residence	A huge Shiv temple where thousands of people visiting on Monday

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18a	Anchheli	Gandevi	Navsari	224/803-226/261	3B	School	25*18	20° 51.024' 72° 56.633'	30	N/S	Residence	A School in Anchheli just near level crossing
18b	Anchheli	Gandevi	Navsari	224/803-226/261	2A	Mosque	18*14	20° 50.778' 72° 56.704'	10	N/S	Residence	A mosque in residential area in Anchheli
18c	Anchheli	Gandevi	Navsari	224/803-226/261	2B	Temple	10*8	20° 50.731' 72° 56.721'	20	N/S	Residence	A temple in residential area in Anchheli
19	Mohanpur	Gandevi	Navsari	226/261-227/307	2B	Temple	6*6	20° 51.358' 72° 56.526'	10	N/S	Barren Land	A very small temple
20	Vedchha	Jalalpore	Navsari	227/307-229/457	2B	Guru Kripa Ashram	10*8	20° 52.548' 72° 56.190'	50	N/S	Agriculture	Approx 500 people daily visiting here
21	Hansapore	Jalalpore	Navsari	232/293-234/560	2B	Temple	10*10	20° 55.371' 72° 55.214'	150	N/S	Residence	Approx 500-700 people visiting daily here
22a	Vejalpur	Jalalpore	Navsari	234/560-236/626	2B	Temple	6*6	20° 56.282' 72° 54.993'	30	N/S	Residence	A temple in residential area in Vejalpur
22b	Vejalpur	Jalalpore	Navsari	234/560-236/626	2B	Jai Palan Pir	4*4	20° 56.110' 72° 55.063'	15	N/S	Station	A small temple in vejalpur
22c	Vejalpur	Jalalpore	Navsari	234/560-236/626	2B	Temple	2*2	20° 56.053' 72° 55.062'	10	N/S	Station	A very small temple in Vejalpur near railway track
22d	Vejalpur	Jalalpore	Navsari	234/560-236/626	2B	Temple	10*10	20° 55.980' 72° 55.081'	35	N/S	Residence	A temple where approx 500-1000 people visiting daily
22e	Vejalpur	Jalalpore	Navsari	234/560-236/626	2B	Temple (on the other side)	10*10	20° 55.891' 72° 55.106'	60	N/S	Residence	A temple where approx 500-1000 people visiting daily
22f	Vejalpur	Jalalpore	Navsari	234/560-236/626	2B	Temple	10*10	20° 55.760' 72° 55.161'	150	N/S	Residence	A temple where approx 500-1000 people visiting daily
23a	Vejalpur	Navsari	Navsari	236/626 – 238/517	2B	Temple	12*10	20° 57.207' 72° 54.670'	50	N/S	Residence	A temple in residential area near proposed line
23b	Vejalpur	Navsari	Navsari	236/626-238/517	1C	Dr. Rana Nursing Home	30*25	20° 57.020' 72° 54.783'	15	N/S	Residence	A Nursing home near the proposed line where approx 500-1000 paitient visiting daily
23c	Vejalpur	Navsari	Navsari	236/626-238/517	2B	Temple	10*10	20° 56.646' 72° 54.863'	60	N/S	Residence	A small temple in Navsari
23d	Vejalpur	Navsari	Navsari	236/626-238/517	2B	Sidhi VinayakTemple	10*8	20° 56.646' 72° 54.863'	70	N/S	Residence	A temple where 500-700 people visiting daily
23e	Vejalpur	Navsari	Navsari	236/626-238/517	2B	Temple	4*4	20° 56.646' 72° 54.853'	30	N/S	Barren Land	A very small temple in Barren land
23f	Vejalpur	Navsari	Navsari	236/626-238/517	3A, 2B	School, Temple	20*15	20° 56.452' 72° 54.915'	80	N/S	Plantation	School and temple adjacent to each other in Navsari
23g	Vejalpur	Navsari	Navsari	236/626-238/517	2B	Temple	6*6	20° 56.431' 72° 54.919'	50	N/S	Residence	A temple where approx 500 people visiting there daily
24a	Tavdi	Jalalpore	Navsari	236/836-241/07	2B	Temple	4*4	20° 57.995' 72° 54.401'	50	N/S	River Bed	A very small temple
24b	Tavdi	Jalalpore	Navsari	236/836-241/07	2B	Temple	4*4	20° 57.769' 72° 54.480'	40	N/S	Trees	A very small temple
25	Sagra	Jalalpore	Navsari	241/07-242/842	2B	Temple	8*8	20° 59.013' 72° 54.147'	10	N/S	Barren Land	A temple in Barren Land
26	Kadoli	Jalalpore	Navsari	242/920-245/096	2B	Temple (Under construction)	8*8	21° 00.851' 72° 53.500'	150	N/S	Barren Land	A temple in Barren Land in Kadoli
27a	Mahubar	Jalalpore	Navsari	245/096-246/594	2A	Mosque	12*12	21° 1.171' 72° 53.608'	150	N/S	Residence	A Mosque where approx 500 people visiting daily
27b	Mahubar	Jalalpore	Navsari	245/096-246/594	2B	Temple	2*2	21° 1.160' 72° 53.490'	10	N/S	Barren Land	A very small temple

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27c	Mahubar	Jalalpore	Navsari	245/096-246/594	2B	Temple	18*14	21° 1.125' 72° 53.398'		N/S	Residence	A temple in Mahubar where approx 500-1000 people visiting daily
28a	Maroli	Jalalpore	Navsari	248/426-249/407	2A	Mosque	15*14	21° 1.385' 72° 53.400'	15	N/S	Residence	A mosque whose boundary is very near to the proposed DFCC line
28b	Maroli	Jalalpore	Navsari	248/426-249/407	1A, 3A	School+Mental Hospital	40*30	21° 1.314' 72° 53.423'	5	N/S	Residence	Boundary of Kasturba sevaashram under proposed track and there ia a school and mental hospital in the sevaasram
29a	Sachin	Choryasi	Surat	-	1B	Satadhar Surgical Hospital	20*18	21° 4.713' 72° 52.403'	100	N/S	Shops	A hospital on the opposite side of the proposed track
29b	Sachin	Choryasi	Surat	-	3B	Primary School	15*12	21° 4.740' 72° 52.482'	20	N/S	Residence	A primary school near the proposed track
29c	Sachin	Choryasi	Surat	-	2B	Temple	6*5	21° 4.659' 72° 52.522'	50	N/S	Residence	A small temple
29d	Sachin	Choryasi	Surat	-	2B	Temple	15*12	21° 4.664' 72° 52.535'	70	N/S	Residence	A temple in Sachin where 500-1000 people visiting daily
29e	Sachin	Choryasi	Surat	-	2B	Temple	10*8	21° 4.580' 72° 52.541'	40	N/S	Residence	Approx 300-500 people visited daily
29f	Sachin	Choryasi	Surat	-	2B	Temple	10*10	21° 4.482' 72° 52.561'	50	N/S	Barren Land	Approx 300-500 people visited daily
29g	Sachin	Choryasi	Surat	-	2B	Temple	8*8	21° 4.336' 72° 52.595'	50	N/S	Trees	Approx 300-500 people visited daily
30	Unn	Surat city	Surat	2737-3440	2A	Mosque	18*16	21° 7.335' 72° 51.888'	30	N/S	Plantation	A mosque where 500-1000 people visiting daily
31	Abrama	Kamrej	Surat	22,736-22,736	2B	Temple	3*3	21° 15.987' 72° 54.49'	12	N/S	Residence	A very small temple
32a	Gothan	Olpad	Surat	0 - 3,200	2B	Temple	14*12	21° 17.66' 72° 52.833'	40	N/S	Agriculture	A temple where 500-1000 people visiting daily
32b	Gothan	Olpad	Surat	0 - 3,200	2B	Temple	12*12	21° 17.784' 72° 52.861'	45	N/S	Agriculture	A temple where 300-500 people visiting daily
32c	Gothan	Olpad	Surat	0 - 3,200	2B	Temple	12*10	21° 17.729' 72° 52.844'	40	N/S	Agriculture	A temple where 300-500 people visiting daily
33	Barthana Kosad	Choryasi	Surat	3,200 - 5,800	2B	Temple	12*12	21° 22.572' 72° 54.574'	50	N/S	Residence	A temple in residential area where 300-500 people visiting daily
34	Sayan	Olpad	Surat	0 - 743	2B	Temple	6*6	21° 18.887' 72° 54.373'	100	N/S	Residence	A temple where 300-500 people visiting daily
35a	Kim	Olpad	Surat	7,800-7,900	3C	Pharmacy College	25*25	21° 23.537' 72° 54.443'	20	N/S	Residence	Approx 500-800 students study here whose back boundary comes under DFCC proposed line
35b	Kim	Olpad	Surat	7,800-7,900	2B	Sant Nirankarisatsang Bhavan	12*10	21° 23.832' 72° 54.556'	On central line	N/S	Residence	It is on the central track
35c	Kim	Olpad	Surat	7,800-7,900	1B	Bhardra Hospital	20*18	21° 23.891' 72° 55.589'	15	N/S	Residence	It is very near the proposed line and approx 500-1000 patient visited daily
35d	Kim	Olpad	Surat	7,800-7,900	1B	Femi Gen. Hospital	10*10	21° 23.965' 72° 55.604'	20	N/S	Residence	t is very near the proposed line and approx 500-1000 patient visited daily

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35e	Kim	Olpad	Surat	7,800-7,900	2A	Mosque	15*15	21° 24.006' 72° 55.628'	25	N/S	Residence	Approx 500 people visiting here daily
35f	Kim	Olpad	Surat	7,800-7,900	3A	V Care English School	12*12	21° 24.184' 72° 55.597'	100	N/S	Residence	A School having approx 300 students
35g	Kim	Olpad	Surat	7,800-7,900	3B	School+ temple	15*15	21° 24.193' 72° 55.615'	105	N/S	Residence	A School having approx 200 students
36a	Kathodara	Kamrej	Surat	7,900-10,130	3B	Good SephardSchoo l	20*20	21° 24.547' 72° 55.714'	80	N/S	Residence	A School having approx 600-800 students
36b	Kathodara	Kamrej	Surat	7,900-10,130	2A	Temple	8*8	21° 24.693' 72° 55.791'	100	N/S	Residence	Approx 500 people visiting here daily
36c	Kathodara	Kamrej	Surat	7,900-10,130	2B	Temple	12*12	21° 24.764' 72° 55.731'	70	N/S	Residence	Approx 500 people visiting here daily
36d	Kathodara	Kamrej	Surat	7,900-10,130	2B	Mosque	6*6	21° 24.767' 72° 55.738'	70	N/S	Residence	Approx 500 people visiting here daily
36e	Kathodara	Kamrej	Surat	7,900-10,130	2A	Dargah	5*5	21° 24.759' 72° 55.736'	70	N/S	Residence	Approx 200 people visiting here daily
37a	Kosamba	Mangrol	Surat	13,838-17,600	2B	Temple	20*20	21° 27.975' 72° 57.311'	80	N/S	Residence	A very popular temple in Kosamba where thousands of people visiting daily
37b	Kosamba	Mangrol	Surat	13,838-17,600	2B	Temple	12*12	21° 28.176' 72° 57.42'	100	N/S	Residence	Approx 500-1000 people visiting here daily
38a	Hathuran	Mangrol	Surat	18,600-22,385	3A	Primary School	14*12	21° 29.965' 72° 58.188'	25	N/S	Residence	A Primary School having approx 200 students
38b	Hathuran	Mangrol	Surat	18,600-22,385	2A	Mosque	15*15	21° 49.927' 72° 58.205'	50	N/S	Residence	Approx 500 people visiting here daily
39	Bhatkodra	Ankleshwar	Bharuch	31,050-31,500	2A	Dargah	4*4	21° 35.6' 72° 59.56'	100	N/S	Agriculture	A Dargah under tree
40	Safruddin	Ankleshwar	Bharuch	39,700-41,800	2B	Temple	10*8	21° 39.949' 72° 56.662'	30	N/S	Agriculture	Approx 100-500 people visiting here daily
41	Sakkarpura	Ankleshwar	Bharuch	-	2B	Temple	10*10	21° 39.593' 72° 56.677'	25	N/S	Residence	Approx 100-500 people visiting here daily
42	Dahegham	Bharuch	Bharuch	113,830-115,845	2A	Mosque	25*18	21° 41.716' 72° 56.139'	60	N/S	Agriculture	Approx 500 people visiting here daily
43	Tham	Bharuch	Bharuch	109,730-109,955	2A	Dargah	14*12	21° 45.13' 72° 56.02'	100	N/S	Agriculture	Approx 500 people visiting here daily
44	Tankaria	Bharuch	Bharuch	90,595-91,385	3B	Madrasa	24*20	21° 53.059' 72° 59.534'	150	N/S	Agriculture	A very big Madarsha having 500-800 students and other people visiting here daily
45	Wantarsha	Amod	Bharuch	91,385-93,145	2A	Dargah	10*10	21° 53.5' 73° 0.001'	60	N/S	Agriculture	Approx 500 people visiting here daily
46a	Khanda	Karjan	Vadodara	69,000-71,500	2B	Temple	3*3	22° 4.573' 73° 4.291'	10	N/S	Agriculture	A very small temple in khanda
46b	Khanda	Karjan	Vadodara	69,000-71,500	2B	Temple	12*10	22° 4.571' 73° 4.313'	15	N/S	Agriculture	Temple on Track, Approx 500 people visiting here daily
47	Itola	Vadodara	Vadodara	59,600-61,200	2B	Temple	4*4	22° 7.837' 73° 7.21'	On Central line	N/S	Agriculture	A very small temple on proposed central line

Photo 1: Temple in Bhilad

Photo 2a: Temple in Karamwali

Photo 2b: Temple in Karamwali

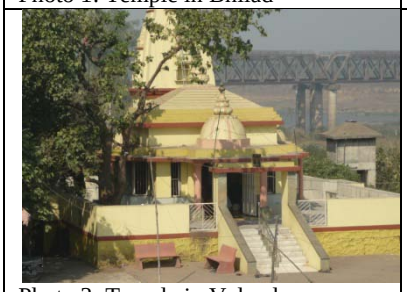


Photo 3: Temple in Valvad

Photo 4a: Hospital in Vapi T/2

Photo 4b : Temple in Vapi T/2

Photo 4c: School in Vapi T/2

Photo 4d: Temple in Vapi T/2

Photo 5a: Temple in Vapi

Photo 5b: Gurukul (Girls) in Vapi

Photo 6: Jain Temple in Orvard

Photo 7: Gram Panchayat in Motivada

Photo 8: Temple in Haria

Photo 9: Railway School in Mogravadi

Photo 10a: Mosque in Lilapur

Photo 10b: temple in Lilapur

Photo 10c: Mrinal Hospital in Lilapur

Photo 10d: Temple in Lilapur

Photo 10e: Temple in Lilapur

Photo 10f: Church in Lilapur

Photo 10g: Mosque in Lilapur

Photo 11: Temple in Lilapur

Photo 12a: Mosque in Dungri

Photo 12b: Temple in Dungri

Photo 12c: Temple in Dungri

Photo 12d: Temple in Dungri

Photo 12e: School in Dungri

Photo 13a: School in Deshra

Photo 13b: Temple in Deshra

Photo 13c: Dargah in Deshra

Photo 13d: Temple in Deshra

Photo 13e: Aanganwadi in Deshra

Photo 13f : Mosque in Deshra

Photo 14a: Temple in Billimora

Photo 14b: Mosque in Billimora

Photo 14c: Temple in Billimora

Photo 14d: Dargah in Bilimora

Photo 14e: Dargah in Bilimora

Photo 14f: Temple in Bilimora

Photo 14g:Temple in Bilimora

Photo 14h: Temple in Bilimora

Photo 14i: Temple in Bilimora

Photo 14j: Temple in Bilimora

Photo 14k: Temple in Bilimora

Photo 14l: Temple in Bilimora

Photo 15: Temple in Devdha

Photo 16a: Temple in Sari Bujhrang

Photo 16b: Temple in Sari Bujhrang

Photo 17: Temple in Amalsad

Photo 18a: School in Anchheli

Photo 18b: Mosque in Anchheli

Photo 18c: Temple in Anchheli

Photo 19: Temple in Mohanpur

Photo 20: Temple in Vedchha

Photo 21: Temple in Hansopore

Photo 22a: Temple in Vejalpur

Photo 22b: Temple in Vejalpur

Photo 22c: Temple in Vejalpur

Photo 22d: Temple in Vejalpur

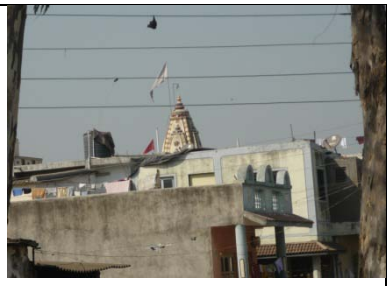


Photo 22e: Temple in Vejalpur

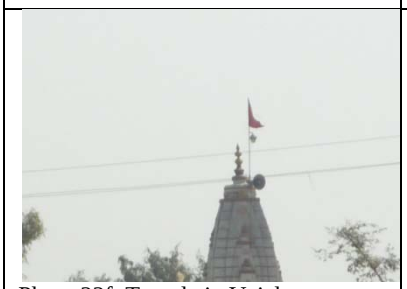


Photo 22f: Temple in Vejalpur

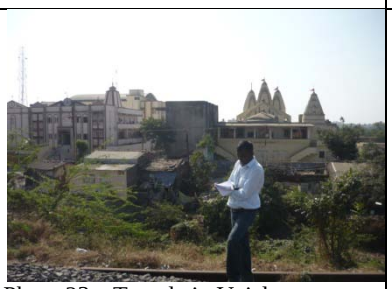


Photo 23a: Temple in Vejalpur

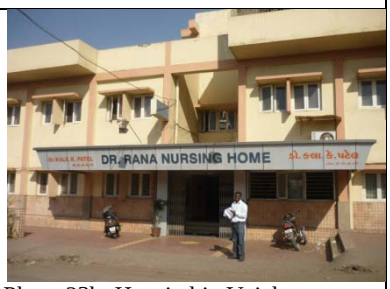


Photo 23b: Hospital in Vejalpur

Photo 23c: Temple in Vejalpur

Photo 23d: Temple in Vejalpur

Photo 23e: Temple in Vejalpur

Photo 23f: School and Temple in Vejalpur

Photo 23g: Temple in Vejalpur

Photo 24a: Temple in Tavdi

Photo 24b: Temple in Tavdi

Photo 25: Temple in Sagra

Photo 26: Temple in Kadoli

Photo 27a: Mosque in Mahubar

Photo 27b: Temple in Mahubar

Photo 27c: Temple in Mahubar

Photo 28a: Mosque in Maroli

Photo 28b: School and Mental hospital in Maroli

Photo 29a:Hospital in Sachin

Photo 29b: Primary School in Sachin

Photo 29c: Temple in Sachin

Photo 29d: Temple in Sachin

Photo 29e: Temple in Sachin

Photo 29f: Temple in Sachin

Photo 29g: Temple in Sachin

Photo 30: Mosque in Unn

Photo 31: Temple in Abrama

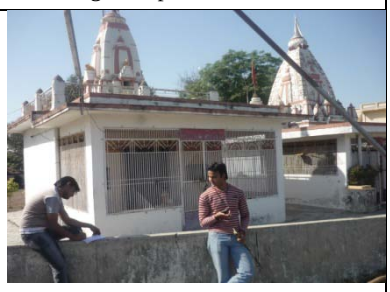


Photo 32a: Temple in Gothan

Photo 32b: Temple in Gothan

Photo 32c: Temple in Gothan

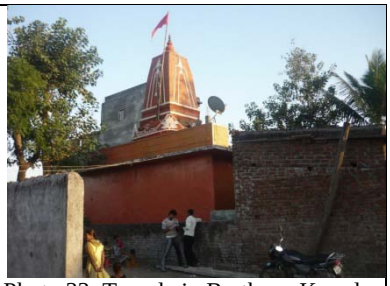


Photo 33: Temple in Barthana Kosad

Photo 34: Temple in Sayan

Photo 35a: Pharma College in Kim

Photo 35b: Satsang Bhavan in Kim

Photo 35c: Bhadra College in Kim

Photo 35d: Femi hospital in Kim

Photo 35e: Mosque in Kim

Photo 35f: V-Care School in Kim

Photo 35g: School and temple in Kim

Photo 36a: School in Kothodara

Photo 36b: Temple in Kothodara

Photo 36c: Temple in Kothodara

Photo 36d: Mosque in Kothodara

Photo 36e: Dargah in Kothodara

Photo 37 a: Temple in Kosamba

Photo 37 b: Temple in Kosamba

Photo 38a: School in Hathuran

Photo 38b: Mosque in Hathuran

Photo 39: Flag circled showing place of worship under this tree in Bhatkodra

Photo 40: Temple in saffrudin

Photo 41: Temple in Sakkarpur

Photo 42: Mosque in Dahegham

Photo 43: Dargah in Tham

Photo 44: Madrasa in Tankaria

Photo 45: Dargah in Wantarsha

Photo 46a: Temple in Khanda

Photo 46b: Temple in Khanda

Photo 47: Temple in Itola

3. Vadodara-JNPT section: Maharashtra

S.No.	Village	Taluka	District	Nearest DFC Chainage to identify SR	*Type of SR	Specific/ official Name of SR	Approx. Size/ Capacity of SR	Latitude and Longitude	Distance from Proposed DFC outer track (m)	Direction from the Railway Line i.e. N/S or E/W for SR	Surrounding Environment	Any distinguishing finding about SR
1	Bambavi pada	Panvel	Raigad	12,700-13,700	2B	Temple	6*5	18° 58'09" 73° 03'49"	33	N/S	Houses	Around 100 people visit every week
2	Bambavi pada	Panvel	Raigad	12,700-13,700	2B,3A	Anganwadi, Temple	7*7	18° 58'17" 73° 03'44"	67	N/S	Houses	Around 40 kids study along with temple
3	Bambavi pada	Panvel	Raigad	12,700-13,700	3A	School	7*6	18° 58'05" 73° 03'52"	72	N/S	Houses	Strength: around 100
4	Kalundre	Panvel	Raigad	21,100-23,500	2B	Temple	8*7	18° 8'35.9" 73° 07'33.3"	20	N/S	Houses	Large Temple. 300-400 Visitors every week
5	Panvel	Panvel	Raigad	23,500-2,5900	2A	Mosque	7*7	19° 00'20.6" 73° 6'98.3"	100	E/W	Houses	Daily Prayers 5 times for 100 people
6	Kundevahal	Panvel	Raigad	13,500-13,700	2B	Shiv Temple	8*7	18° 58.121' 73° 3.702'	198	E/W	Houses	Around 60 visitors every week.
7	Kundevahal	Panvel	Raigad	13,500-13,700	2B	Temple	8*6	18° 58.163' 73° 3.728'	137	E/W	Houses	Around 60-70 visitors every week
8	Kundevahal	Panvel	Raigad	13,500-13,700	2B	Shani Temple	7*7	18° 58'15.8" 73° 3'38.8"	105	E/W	Houses	Newly constructed Temple
9	Ovale	Panvel	Raigad	13,700-14,900	2B	Sai Temple	7*5	18° 58'21.8" 73° 3'44.8"	>100	E/W	Houses	Less than 100 visitors/week
10	Dapoli	Panvel	Raigad	149,00-16,300	3A	School	16*14	18° 58'51.7" 73° 4'31.7"	>100	E/W	Houses	Large School. Strength around 300
11	Pargaon Inam	Panvel	Raigad	16,300-17,000	2B	Hanuman Temple	8*7	18° 58'51.8" 73° 4'27.4"	>100	N/S	Houses	Around 100 visitors every week.
12	Pimplas	Bhiwandi	Thane	54,300-56,800	2B	Temple	7*6	19° 14'51.04" 73° 04'30796"	50	E/W	Vegetation	Nearly 100 visitor/week
13	Rahnal	Bhiwandi	Thane	59,700-61,300	-	Market/Mandi	15*12	19° 16'14.71" 73° 02'34.41"	89	E/W	Houses	1000-2000 Person accommodated there
14	Rahnal	Bhiwandi	Thane	59,700-61,300	3B	School	9*8	19° 16'21.01" 73° 02'04.84"	43.18	E/W	Vegetation	Less than 500 student
15	Rahnal	Bhiwandi	Thane	59,700-61,300	2B	Temple	6*6	19° 16'31.50" 73° 01'53.53"	251.34	E/W	vegetation	About 100 visitor/Week
16	Kopar	Kalyan	Thane	51,400-51,800	2B	Temple	7*6	19° 12.679' 73° 4.854'	31	E/W	Houses	150 Visitor/Week
17	Kopar	Kalyan	Thane	51,400-51,800	2B	Temple	7*6	19° 12.622' 73° 4.856'	35	E/W	Houses	Around 150/Week
18	Teveri	Vasai	Thane	82,400-83,700	3A	School	8*7	19° 22.224' 72° 51.662'	95	E/W	Houses	Less than 600 Student
19	Teveri	Vasai	Thane	82,400-83,700	2B	Temple	5*6	19° 22.25' 72° 51.671'	135	E/W	Houses	25-30 Visitor/Week
20	Rajavali	Vasai	Thane	83,700-84,200	2B	Temple	4*4	19° 22.793' 72° 51.384'	214	E/W	Pond	Comparatively Smaller in Size
21	Bilalpada	Vasai	Thane	89,000-90,400	3A	School	10*5	19° 25.24' 72° 50.381'	112	E/W	Houses	Nearly 300 Student Study there.
22	Dhaniv	Vasai	Thane	90,400-93,100	2B	Shiv Temple	8*5	19° 26.04' 72° 51.275'	218	N/S	Houses	About 100-200 visitor/Week
23	Dhaniv	Vasai	Thane	90,400-93,100	2B	Hanuman Temple	12*5	19° 26.093' 72° 51.193'	356	N/S	Houses	200-300 Visitor/Week
24	Wadiv	Palghar	Thane	300-2,600	2B	Sai Temple	7*6	19° 32'58.03" 72° 51'02.93"	60.63	N/S	Vegetation	25 Visitor/Week
25	Makansar	Palghar	Thane	9,700-11,400	3A	Primary School	10*9	19° 36'14.85" 72° 47'53.27"	103	N/S	Houses	Less than 400 Student
26	Rothe	Palghar	Thane	1,1400-12,600	2B	Temple	6*6	19° 36'41.95" 72° 47'41.28"	39.61	N/S	Houses	Surrounded by many houses
27	Rothe	Palghar	Thane	11,400-12,600	2B	Temple	4*4	19° 36'49.23" 72° 47'38.57"	10	N/S	Vegetation	Very small in Between Vegetation
28	Navli	Palghar	Thane	20,500-21,700	2B	Temple	5*5	19° 41'35.32" 72° 46'27.56"	70	N/S	Market	Very Close to market
29	Palghar	Palghar	Thane	21,700-23,300	2B	Temple	8*7	19° 42'13.13" 72° 46'16.21"	100	N/S	vegetation	Big Temple Near Electric Pole
30	Bhirwadi/Vaseli	Palghar	Thane	28,900-29,800	2B	Temple	4*3	19° 45'36.28" 72° 45'45.29"	130	N/S	vegetation	Small temple Just Adjacent to Railway Track

S.No.	Village	Taluka	District	Nearest DFC Chainage to identify SR	*Type of SR	Specific/ official Name of SR	Approx. Size/ Capacity of SR	Latitude and Longitude	Distance from Proposed DFC outer track (m)	Direction from the Railway Line i.e. N/S or E/W for SR	Surrounding Environment	Any distinguishing finding about SR
31	Shirgaon	Palghar	Thane	35,600-38,100	3A	School	9*8	19° 48'33.77" 72° 45'41.22"	80 (on the otherside)	N/S	Houses	Around 100-300 student Are there
32	Shirgaon	Palghar	Thane	35,600-38,100	3A	School	9*9	19° 48'39.96" 72° 45'40.01"	110(on other side)	N/S	Houses	100-200 Visitor/Week
33	Vangaon	Dahanu	Thane	40,800-43,100	2B	Temple	7*6	19° 52'30.10" 72° 45'47.85"	100	N/S	Houses	Temple Surrounded by big trees and Houses
34	Vangaon	Dahanu	Thane	40,800-43,100	3A	High School	13*12	19° 52'38.28" 72° 45'49.66"	50	N/S	Houses	Around 500-900 Student
35	Vangaon	Dahanu	Thane	40,800-43,100	3A, 2B	Temple+School	10*10	19° 52'38.28" 72° 45'49.75"	50	N/S	Houses	Old constructed in a small area
36	Vangaon	Dahanu	Thane	40,800-43,100	3A	School	11*10	19° 52'43.13" 72° 45'49.21"	50	N/S	Houses	Around 600-1000 student
37	Patharpada	Dahanu	Thane	50,700-51,500	3A	School	9*9	19° 58.246' 72° 46.206'	229.45	N/S	Houses	Primary School mainly for small Kids
38	Jhunarpada	Dahanu	Thane	55,500-57,100	3A	School	13*12	19° 59.879' 72° 46.355'	291	N/S	Houses	Constructed in large Area
39	Jhunarpada	Dahanu	Thane	55,500-5,7100	3A	School	9*8	20° 0.265' 72° 46.197'	78	N/S	Houses	Small school just adjacent to Agriculture field
40	Kasara	Dahanu	Thane	58,000-60,000	2B	Ganesh Temple	6*5	20° 1.129' 72° 45.202'	91	N/S	vegetation	Small temple under a tree

Photo 1: Temple in Bambavi Pada

Photo 2: Aanganwadi in Bambavi Pada

Photo 3: School Bambavi Pada

Photo 4: Temple in Kalundre

Photo 5: Mosque in Panvel

Photo 6: Shiv Temple in Kundevahal

Photo 7: Temple in Kundevahal

Photo 8: Sani Temple in Kundevahal

Photo 9: Sai Temple in Ovale

Photo 10: School in Dapoli

Photo 11: Temple in Pargaon

Photo 12: Temple in Pimplas

Photo 13: Market area in Rahnal

Photo 14: School in Rahnal

Photo 15: Temple in Rrahnal

Photo 16: Temple in Kopar

Photo 17: Temple in Kopar

Photo 18: School in Teveri

Photo 19: Temple in Teveri

Photo 20: Temple in Rajavali

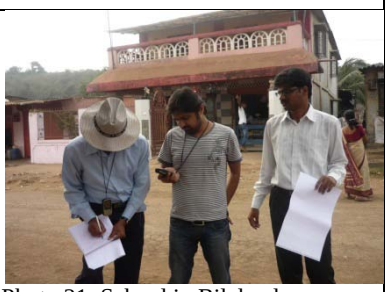


Photo 21: School in Bilalpada

Photo 22: Shiv Temple in Dhaniv

Photo 23: Hannuman Temple in Dhaniv

Photo 24: Sai Temple in Wadhiv

Photo 25: School in Makansar

Photo 26: Temple in Rothe

Photo 27: Another temple in Rothe

Photo 28: Temple in Navli

Photo 29: Temple in Palghar

Photo 30: Temple in Bhirwadi

Photo 31: School in Shirgaon

Photo 32: Another temple in Rothe

Photo 33: Temple in Navli

Photo 34: High School in Vangaon

Photo 35: High School in Vangaon

Photo 36: School in Vangaon

Photo 37: Another School in Shirgaon

Photo 38: School in Patharpada

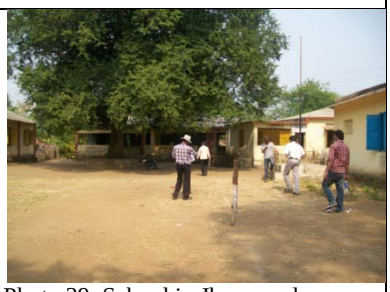


Photo 39: School in Jhunarpada

Photo 40: Another school in Jhunarpada

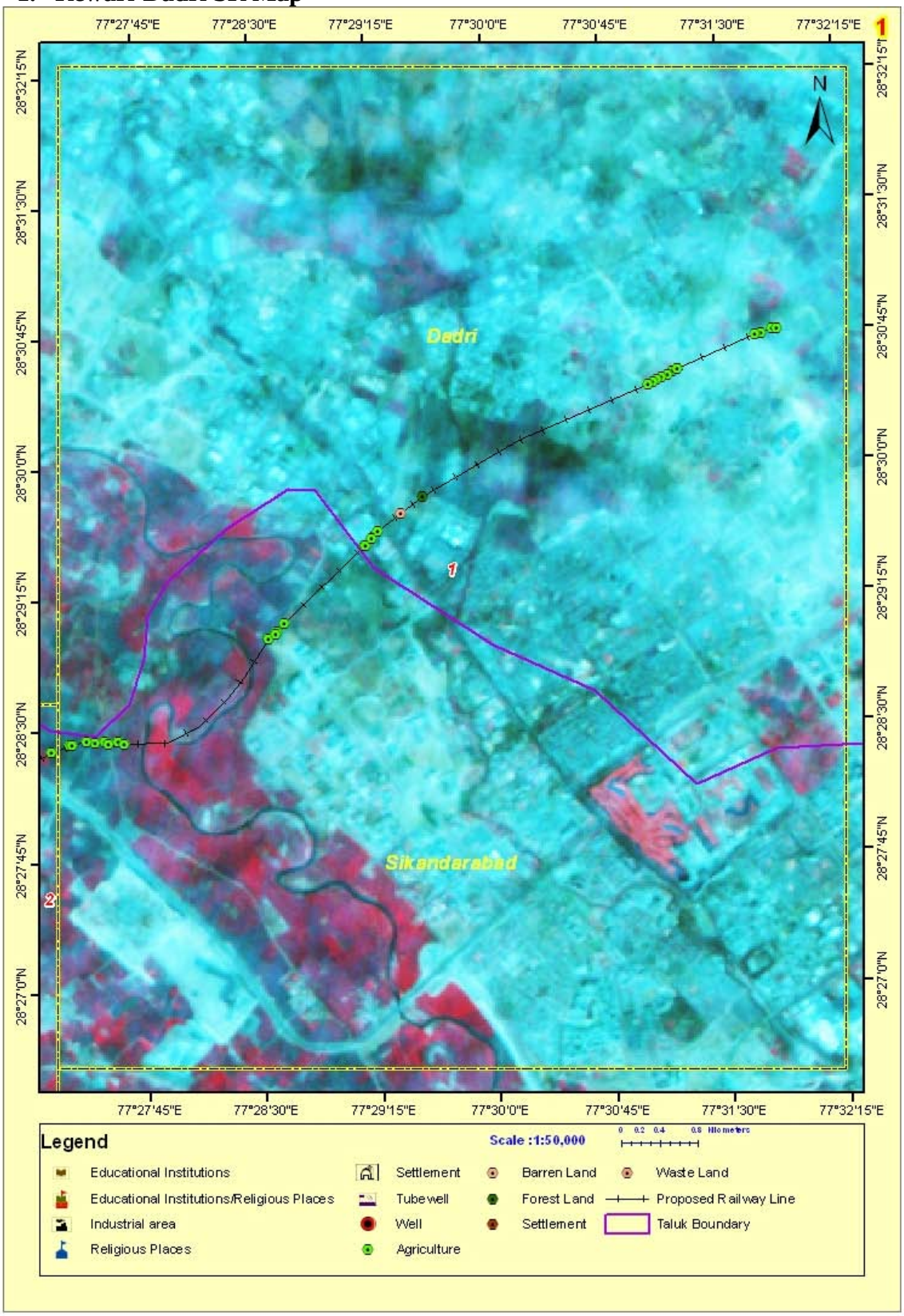
Photo 41: Temple in Kasara

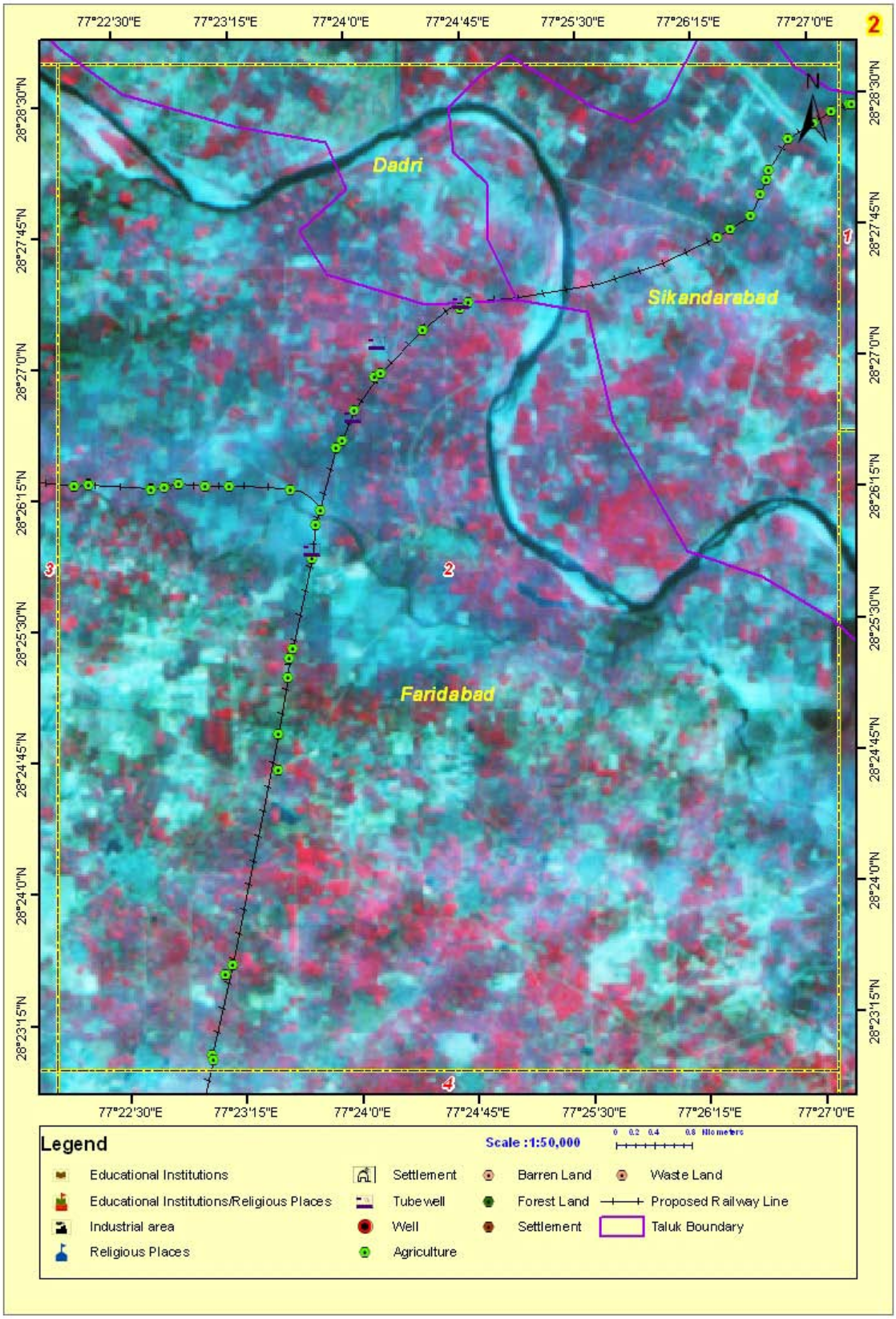
Appendix-5b
Sensitive Receptor Location Map

Appendix-5b

SENSITIVE RECEPTOR LOCATION MAP

1. Rewari-Dadri SR Map

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Barren Land
Forest Land
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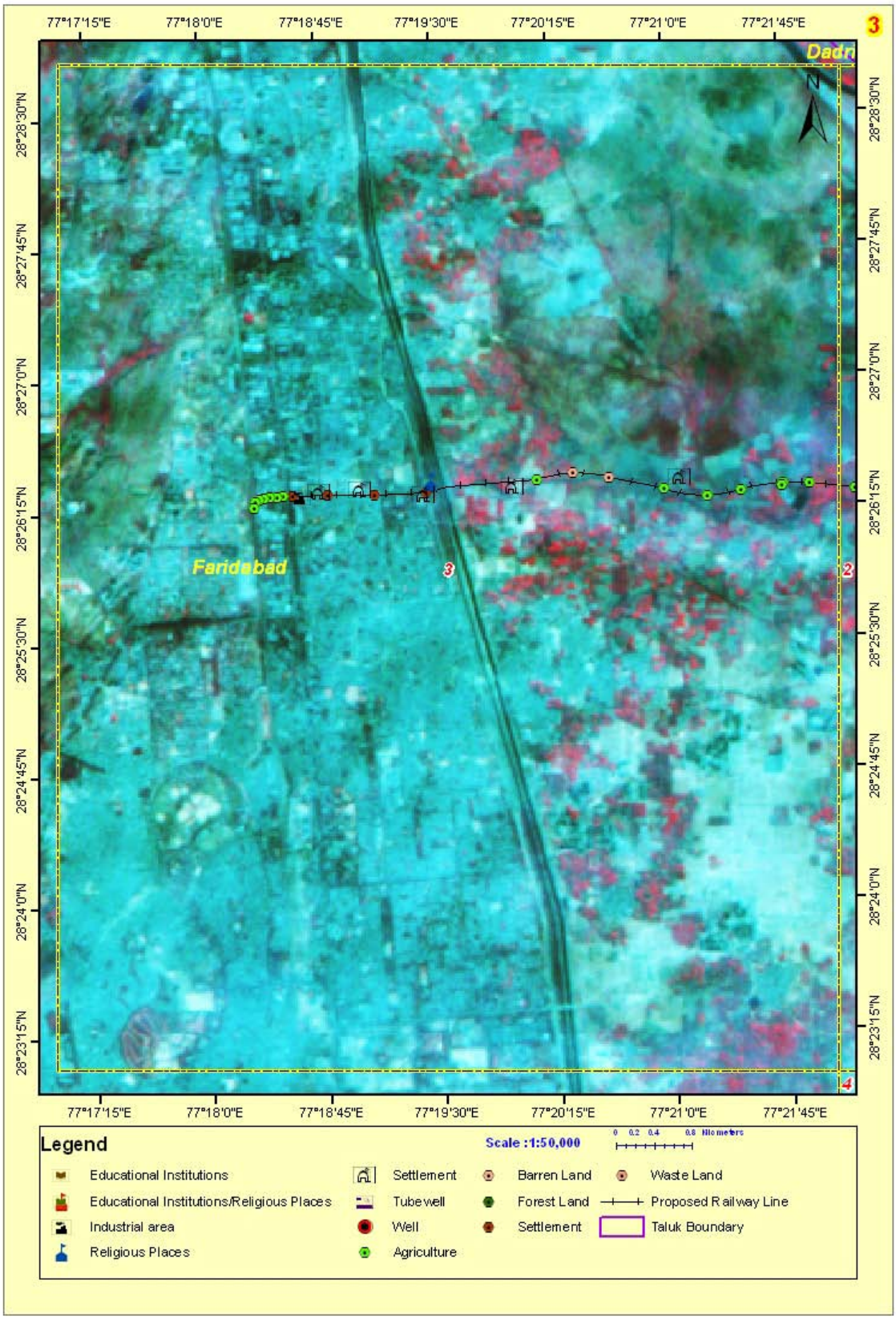
Proposed Railway Line
Taluk Boundary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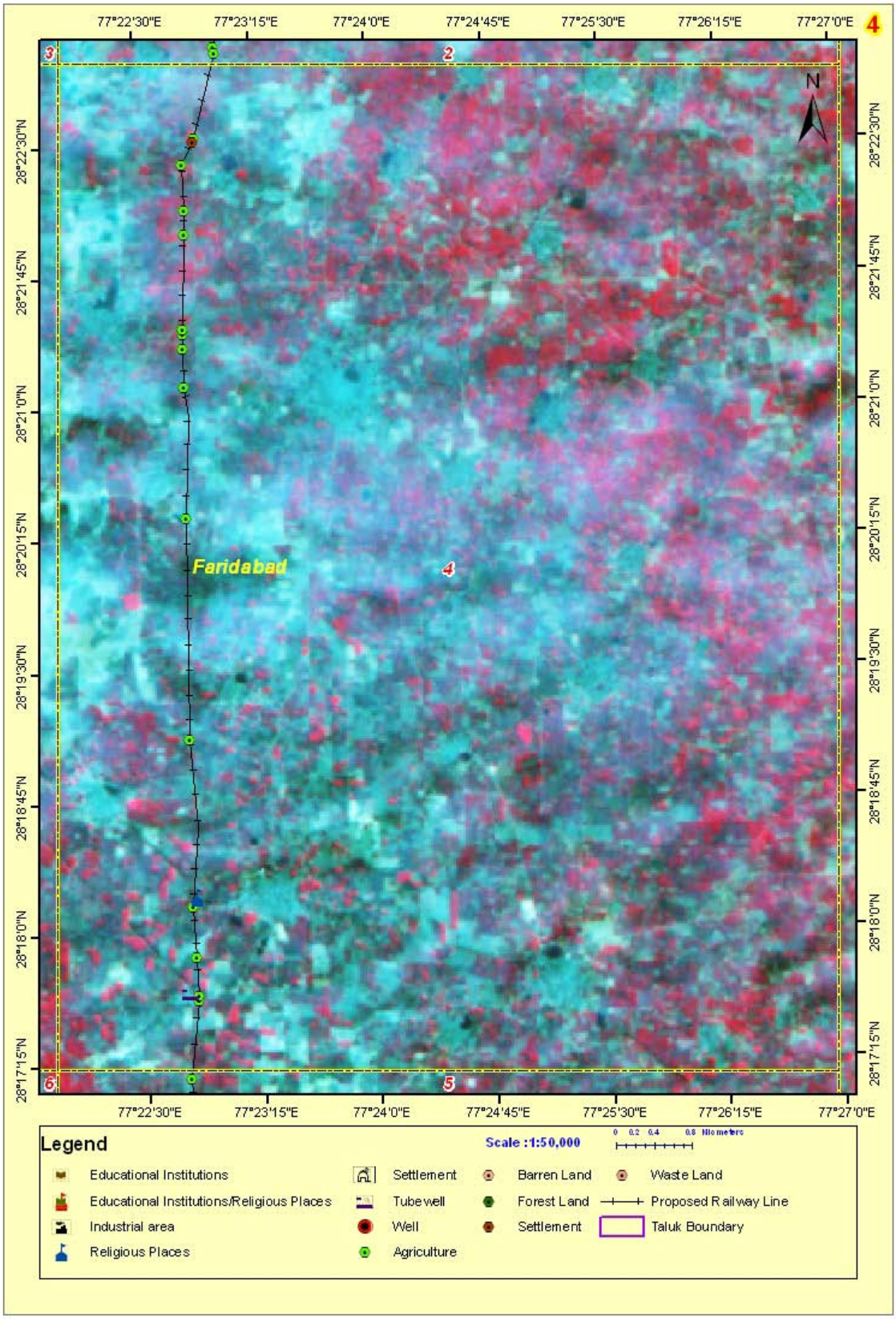
Proposed Railway Line
Taluk Boundary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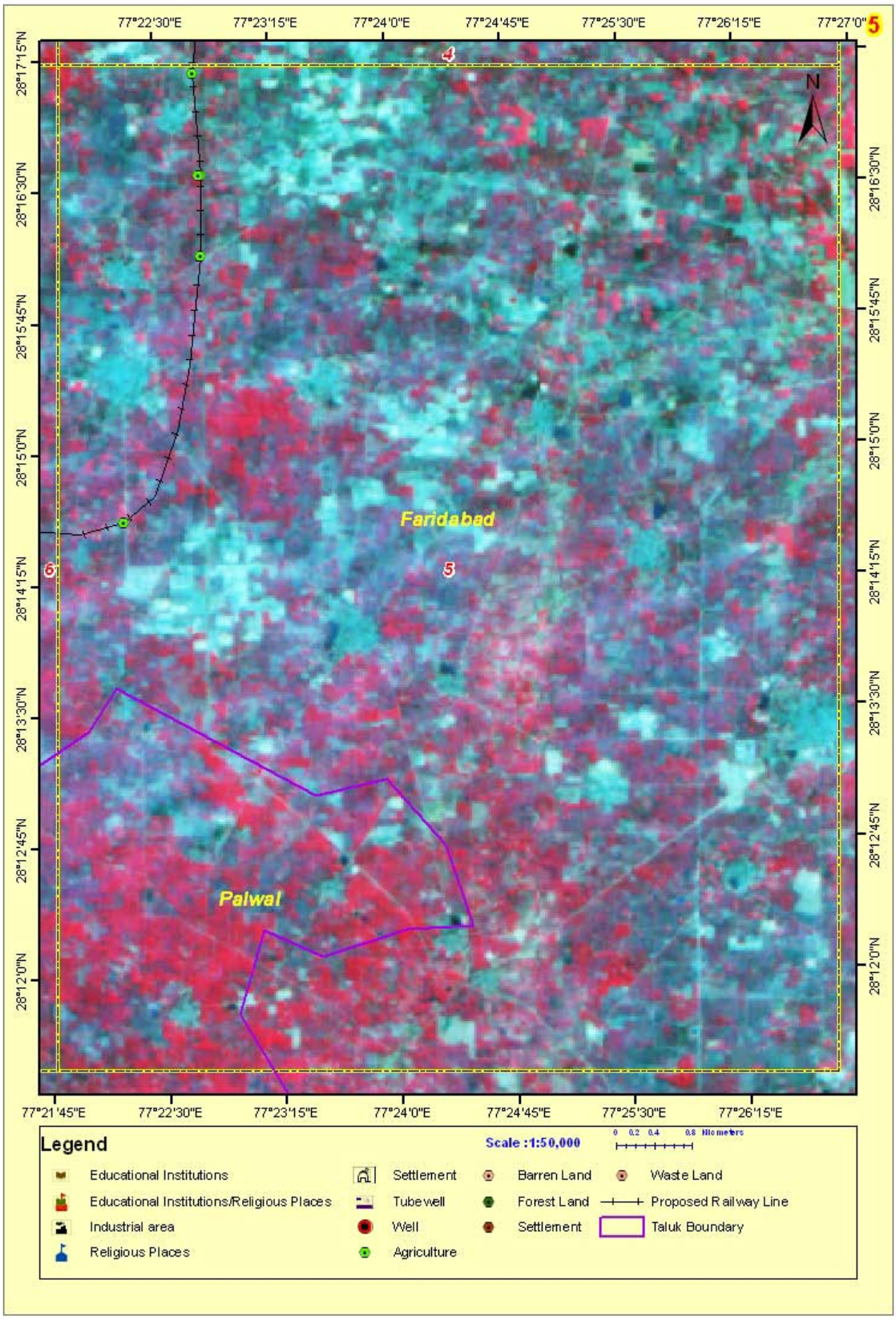
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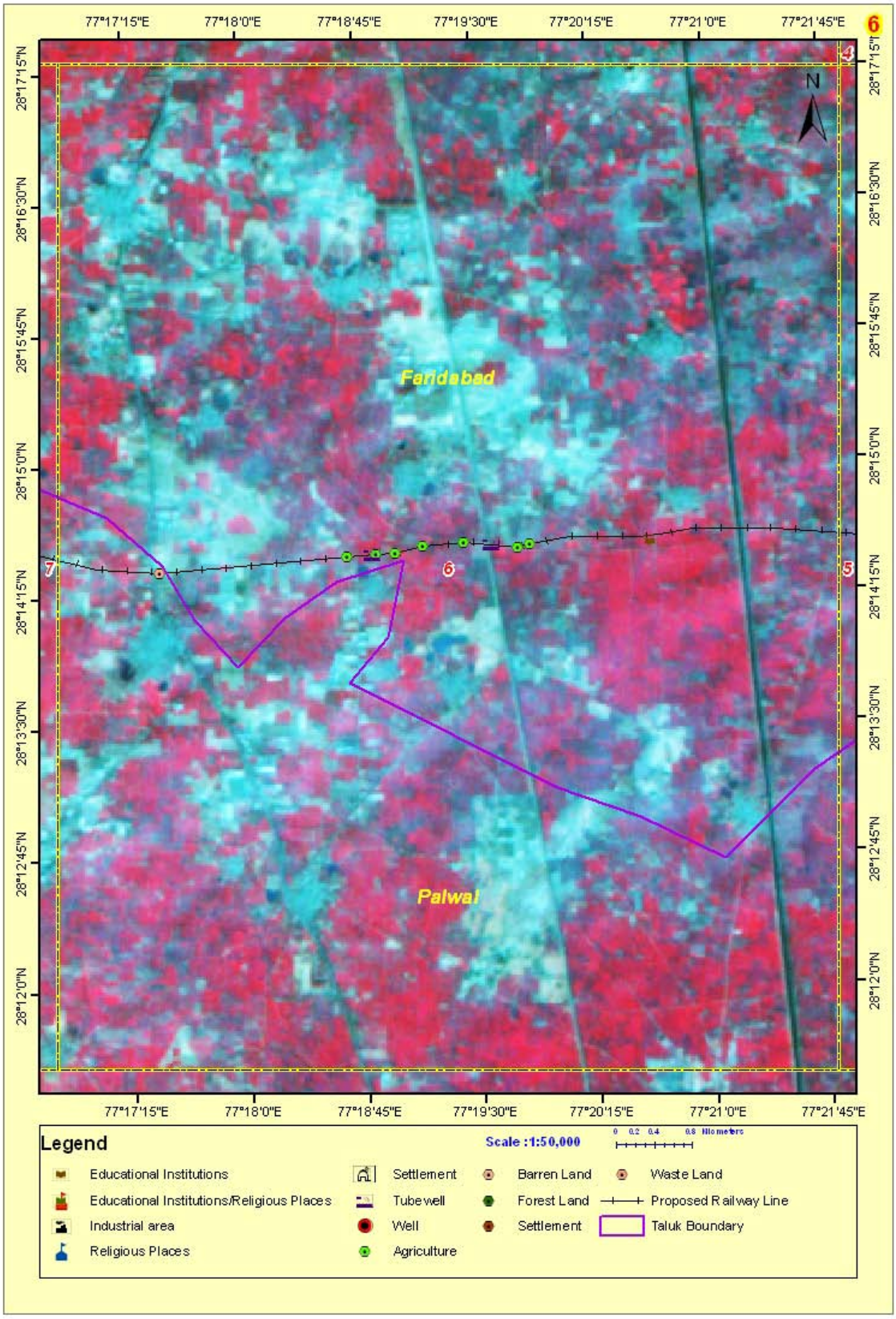
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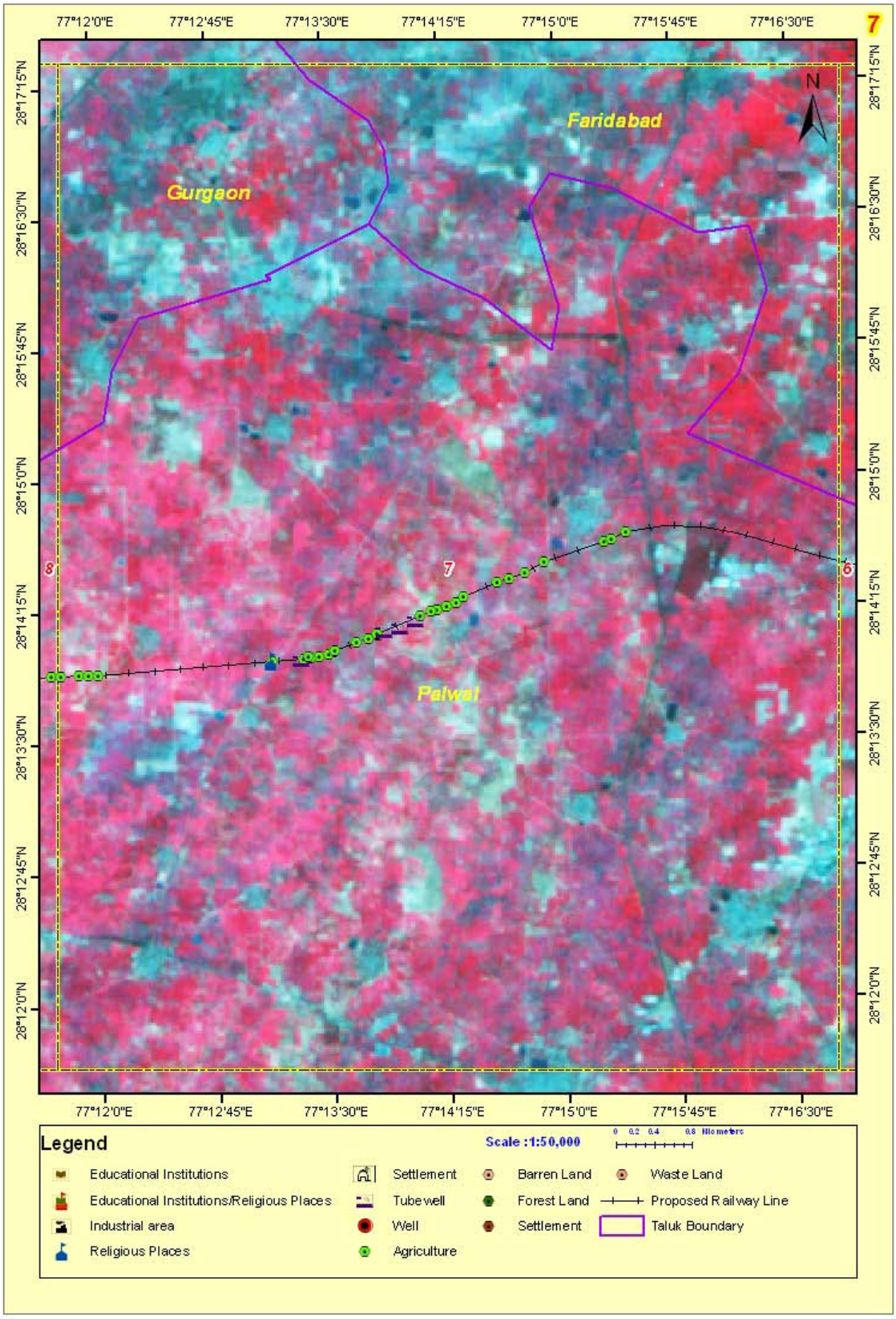
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Legend
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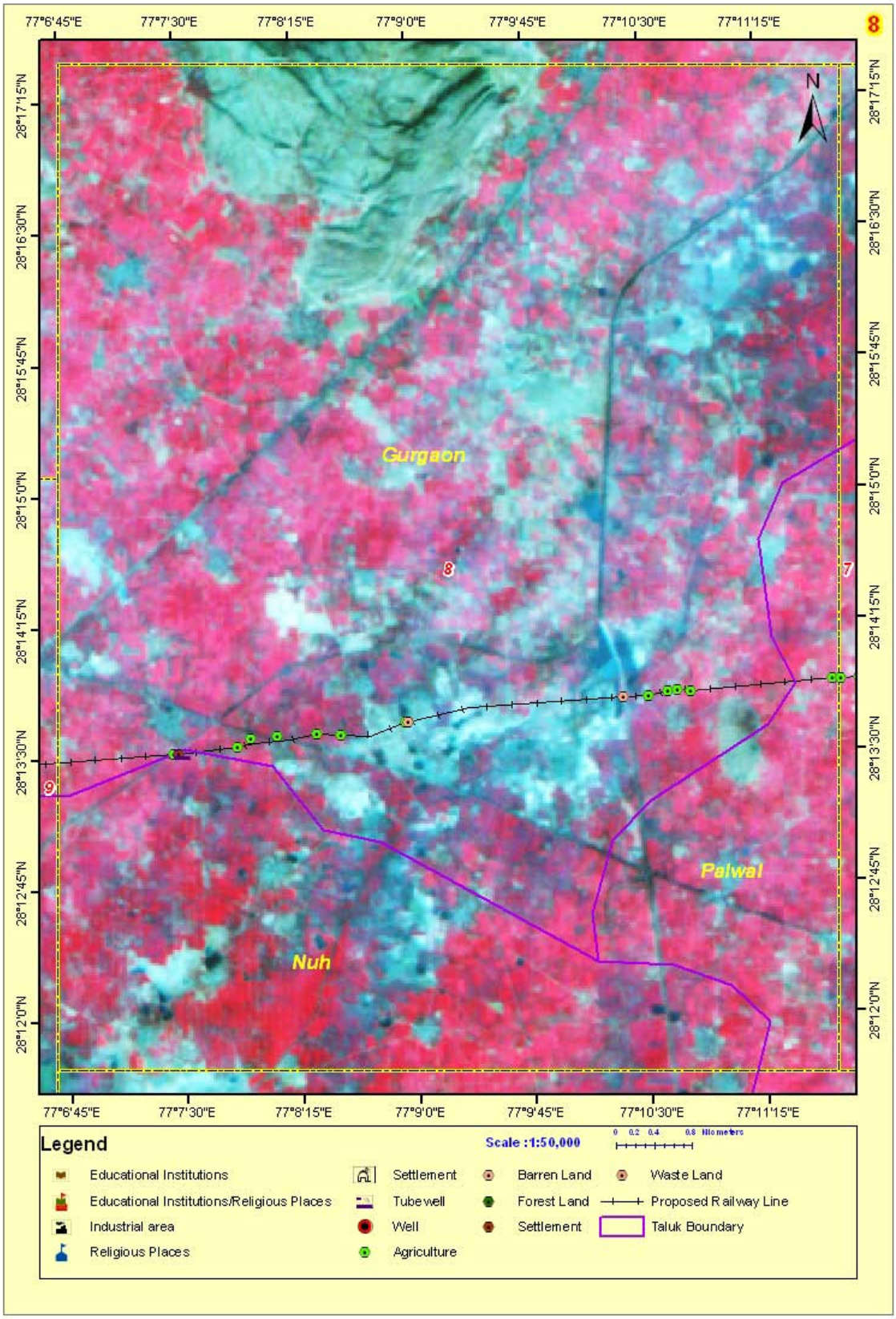
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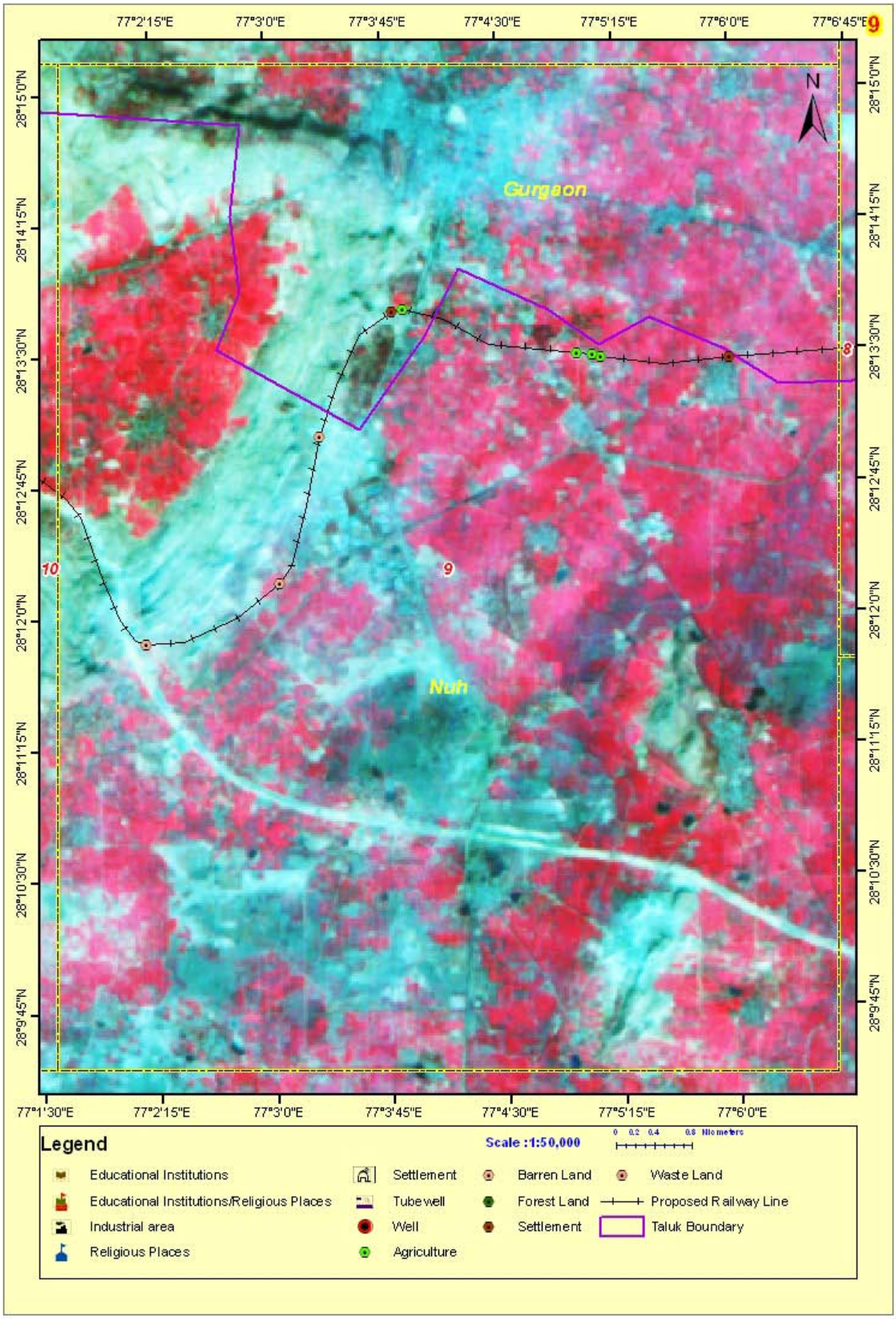
Taluk Boundary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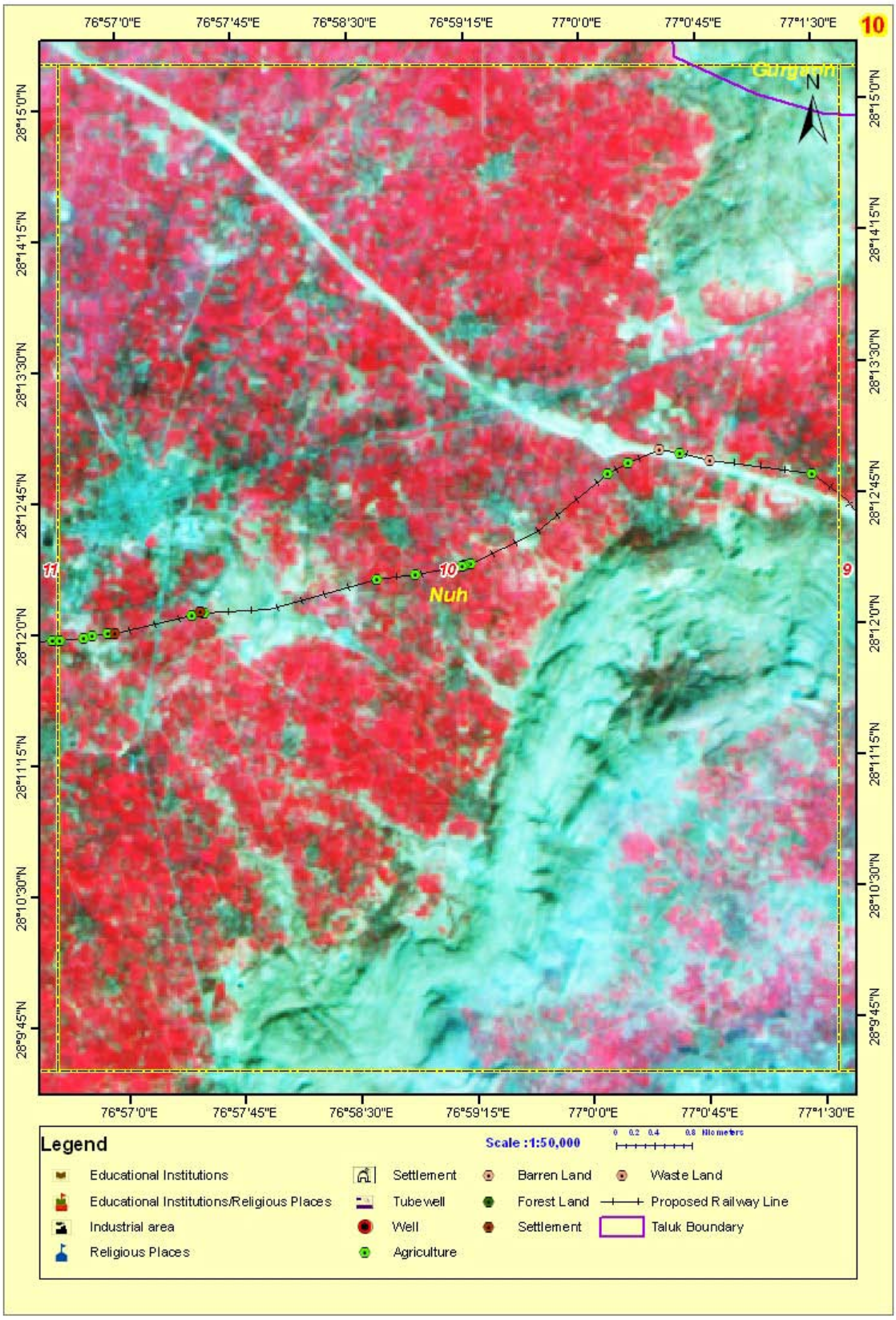
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Educational Institutions/Religious Places
Industrial area
Religious Places
Settlement
Tubewell
Well
Agriculture
Barren Land
Forest Land
Settlement
Waste Land
Proposed Railway Line
Taluk Boundary

11
Gurgaon
Nuh
Tijara
10
12
N
76°51'45"E
76°52'30"E
76°53'15"E
76°54'0"E
76°54'45"E
76°55'30"E
76°56'15"E
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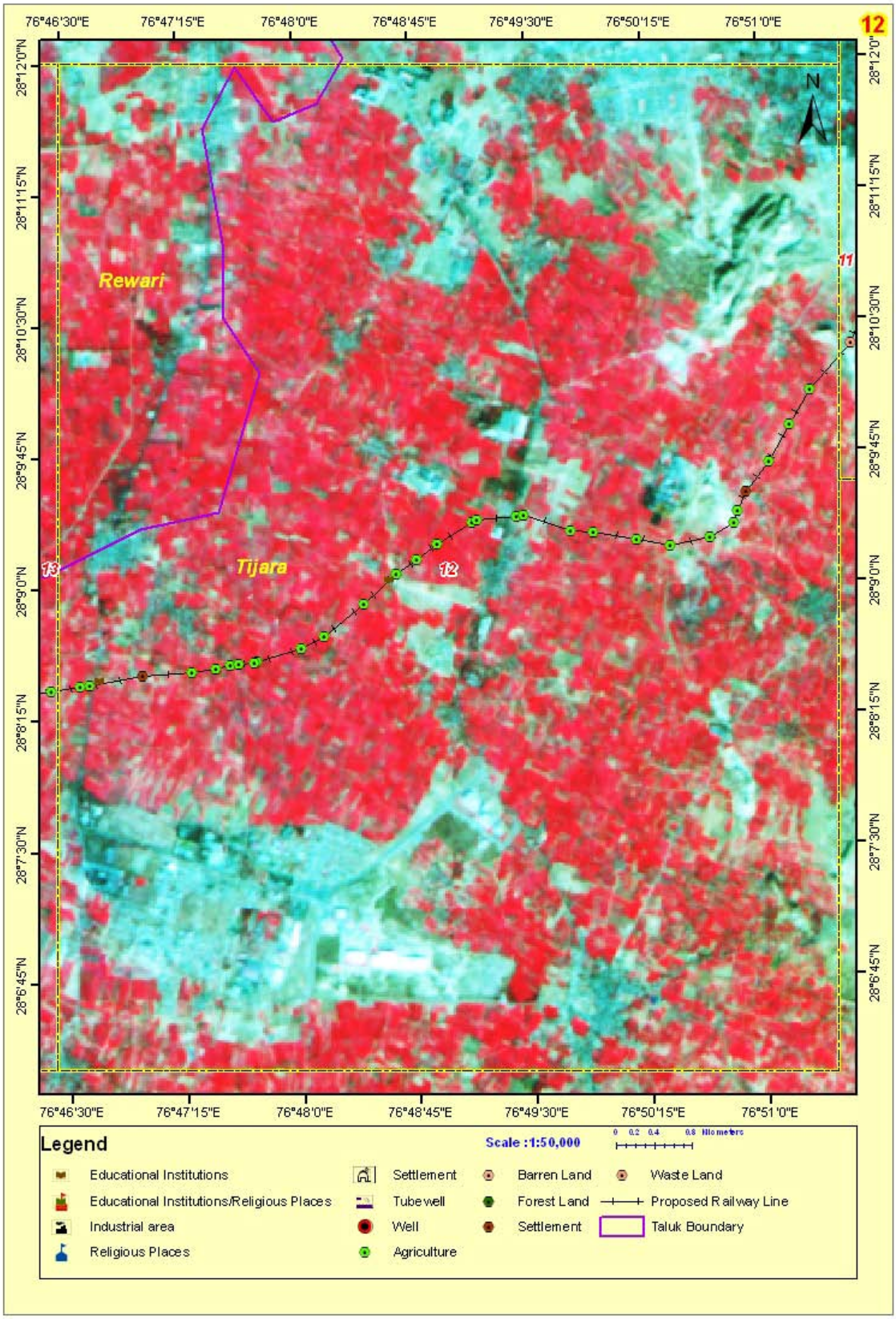
28°14'15"N
28°13'30"N
28°12'45"N
28°12'0"N
28°11'15"N
28°10'30"N
28°9'45"N
Legend
Scale :1:50,000
0 0.2 0.4 0.8 Kilometers
Educational Institutions
Educational Institutions/Religious Places
Industrial area
Religious Places
Settlement
Tubewell
Well
Agriculture
Barren Land
Forest Land
Settlement
Waste Land
Proposed Railway Line
Taluk Boundary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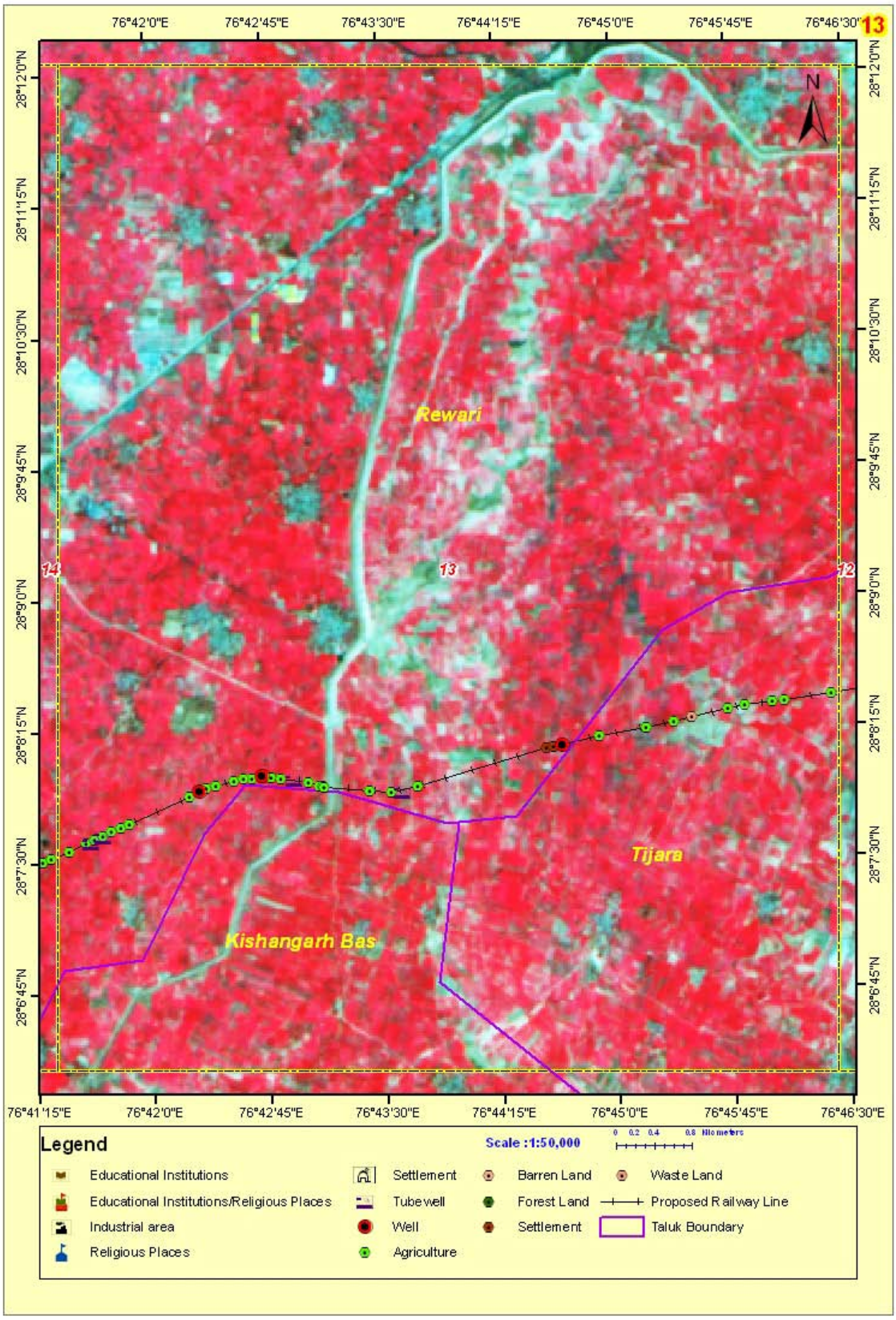
N
Rewari
Tijara
13
12
11
Legend
Scale :1:50,000
0 0.2 0.4 0.8 Kilometers
Educational Institutions
Educational Institutions/Religious Places
Industrial area
Religious Places
Settlement
Tubewell
Well
Agriculture
Barren Land
Forest Land
Settlement
Waste Land
Proposed Railway Line
Taluk Boundary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28°8'15"N
28°7'30"N
28°6'45"N
N
Rewari
Tijara
Kishangarh Bas
14
13
12
Legend
Scale :1:50,000
0 0.2 0.4 0.8 Kilometers
Educational Institutions
Educational Institutions/Religious Places
Industrial area
Religious Places
Settlement
Tubewell
Well
Agriculture
Barren Land
Forest Land
Settlement
Waste Land
Proposed Railway Line
Taluk Boundary

14
76°36'45"E
76°37'30"E
76°38'15"E
76°39'0"E
76°39'45"E
76°40'30"E
76°41'15"E
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28°11'15"N
28°10'30"N
28°9'45"N
28°9'0"N
28°8'15"N
28°7'30"N
28°6'45"N
N
Rewari
15
14
13
Bawal
Kishangarh Bas
Legend
Scale :1:50,000
0 0.2 0.4 0.8 Kilometers
Educational Institutions
Educational Institutions/Religious Places
Industrial area
Religious Places
Settlement
Tubewell
Well
Agriculture
Barren Land
Forest Land
Settlement
Waste Land
Proposed Railway Line
Taluk Boundary

15
76°31'30"E
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76°35'15"E
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28°11'15"N
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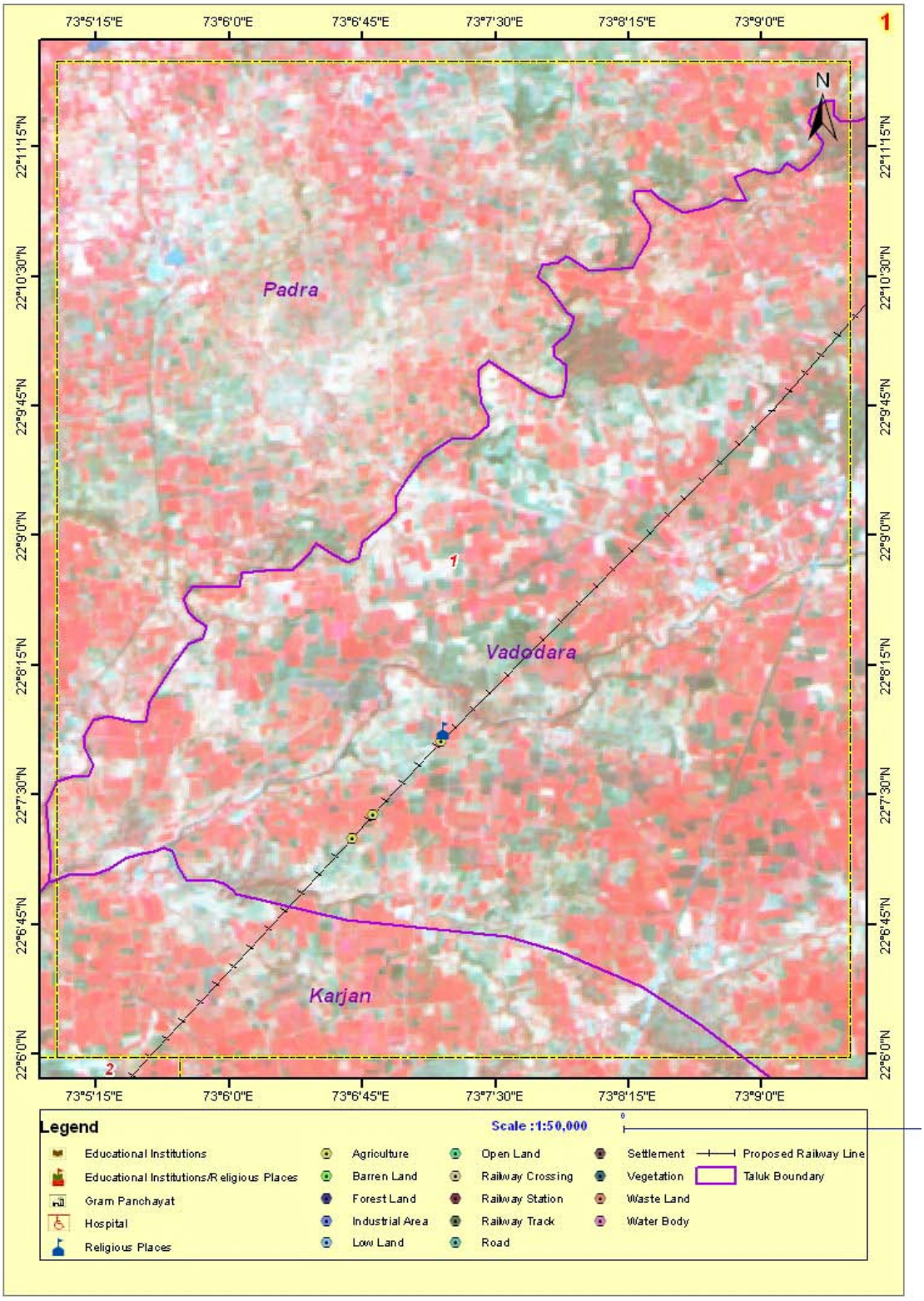
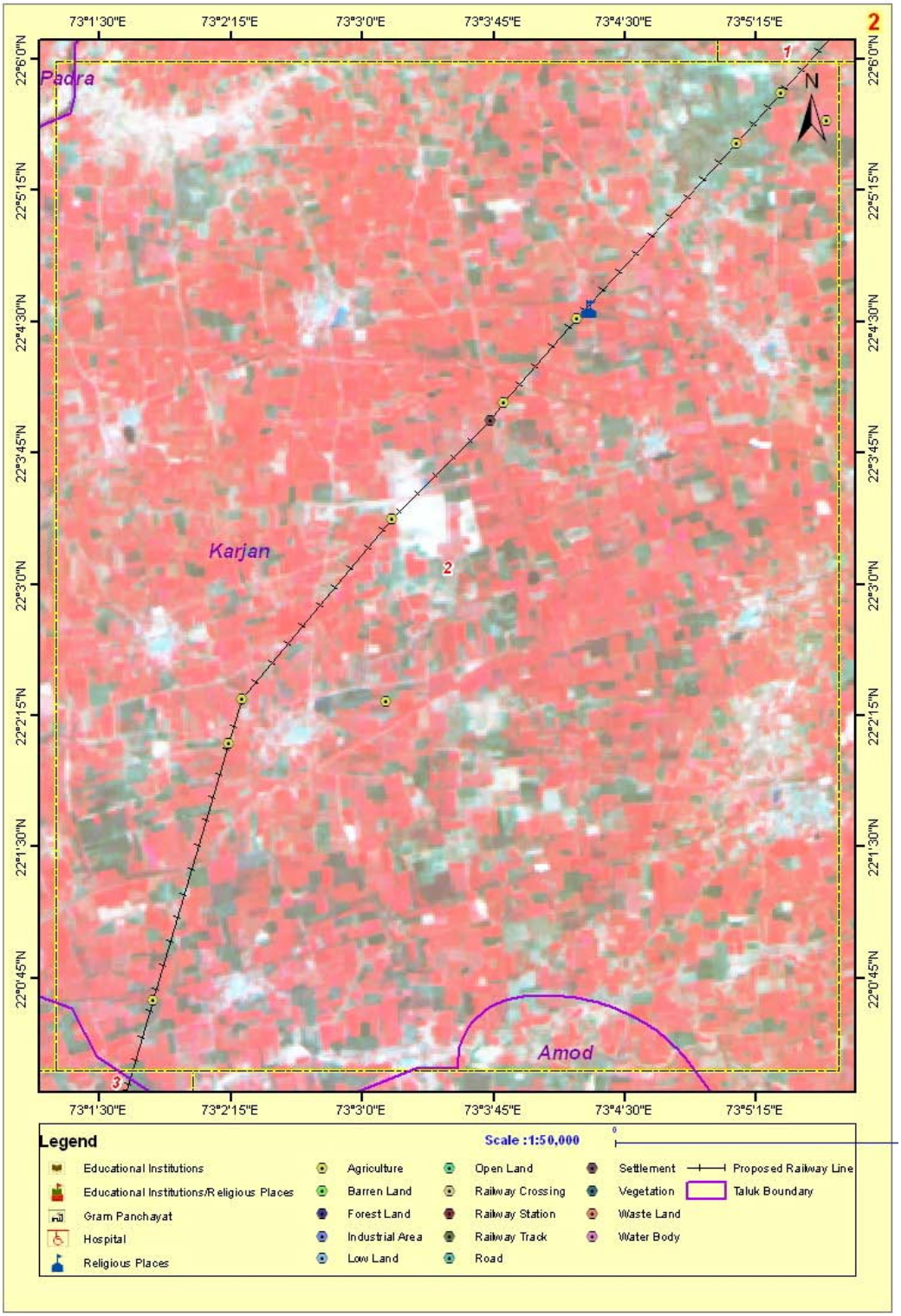
28°6'45"N
N
Rewari
15
14
Bawal
Legend
Scale :1:50,000
0 0.2 0.4 0.8 Kilometers
Educational Institutions
Educational Institutions/Religious Places
Industrial area
Religious Places
Settlement
Tubewell
Well
Agriculture
Barren Land
Forest Land
Settlement
Waste Land
Proposed Railway Line
Taluk Boundary

2. Vadodara to JNPT

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Padra
Karjan
Amod
N
1
2
3
Legend
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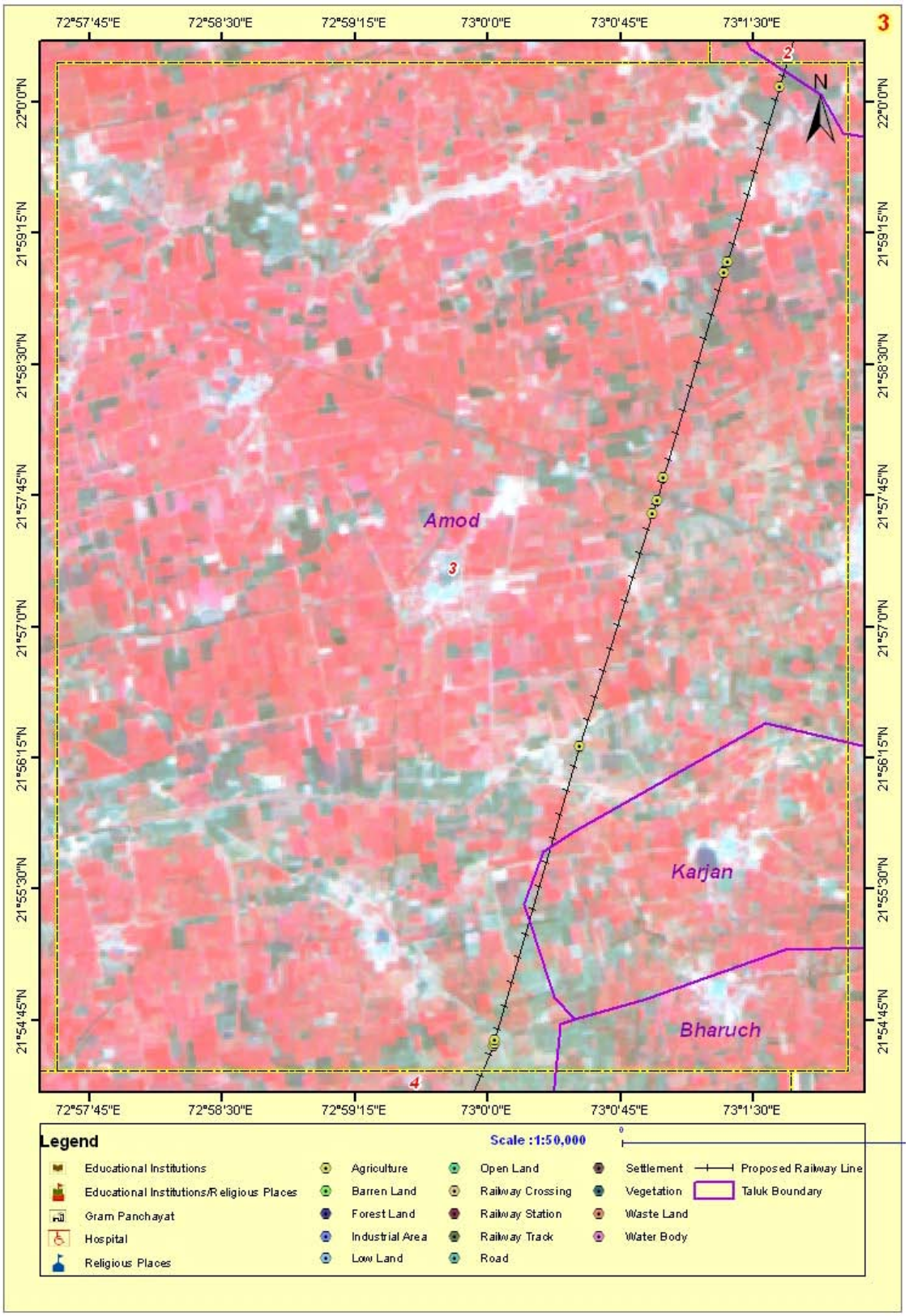
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
Hospital
Religious Places
Agriculture
Barren Land
Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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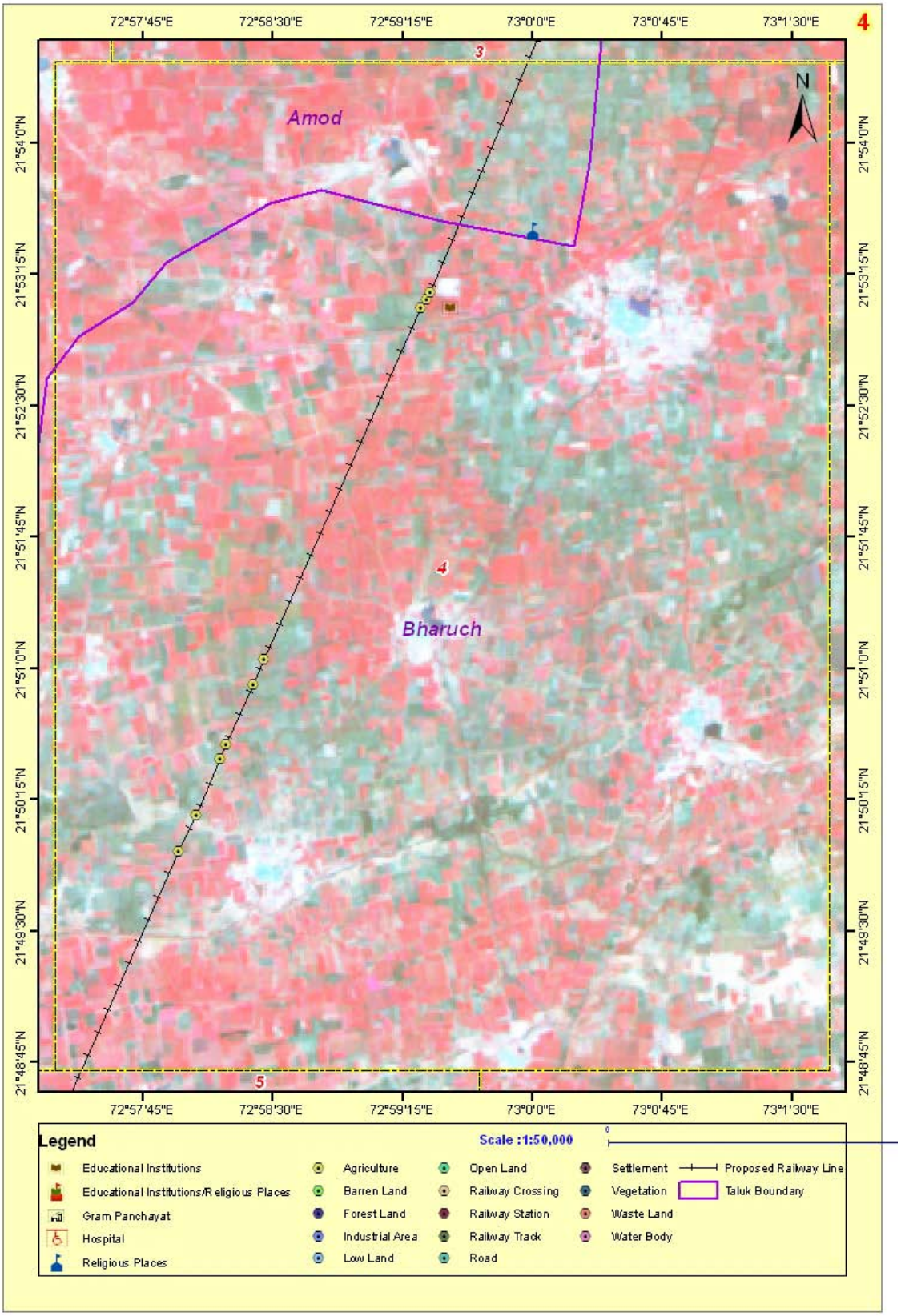
N
2
Amod
3
Karjan
Bharuch
4
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
Hospital
Religious Places
Agriculture
Barren Land
Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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21°51'0"N
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21°49'30"N
21°48'45"N
N
Amod
Bharuch
3
4
5
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
Hospital
Religious Places
Agriculture
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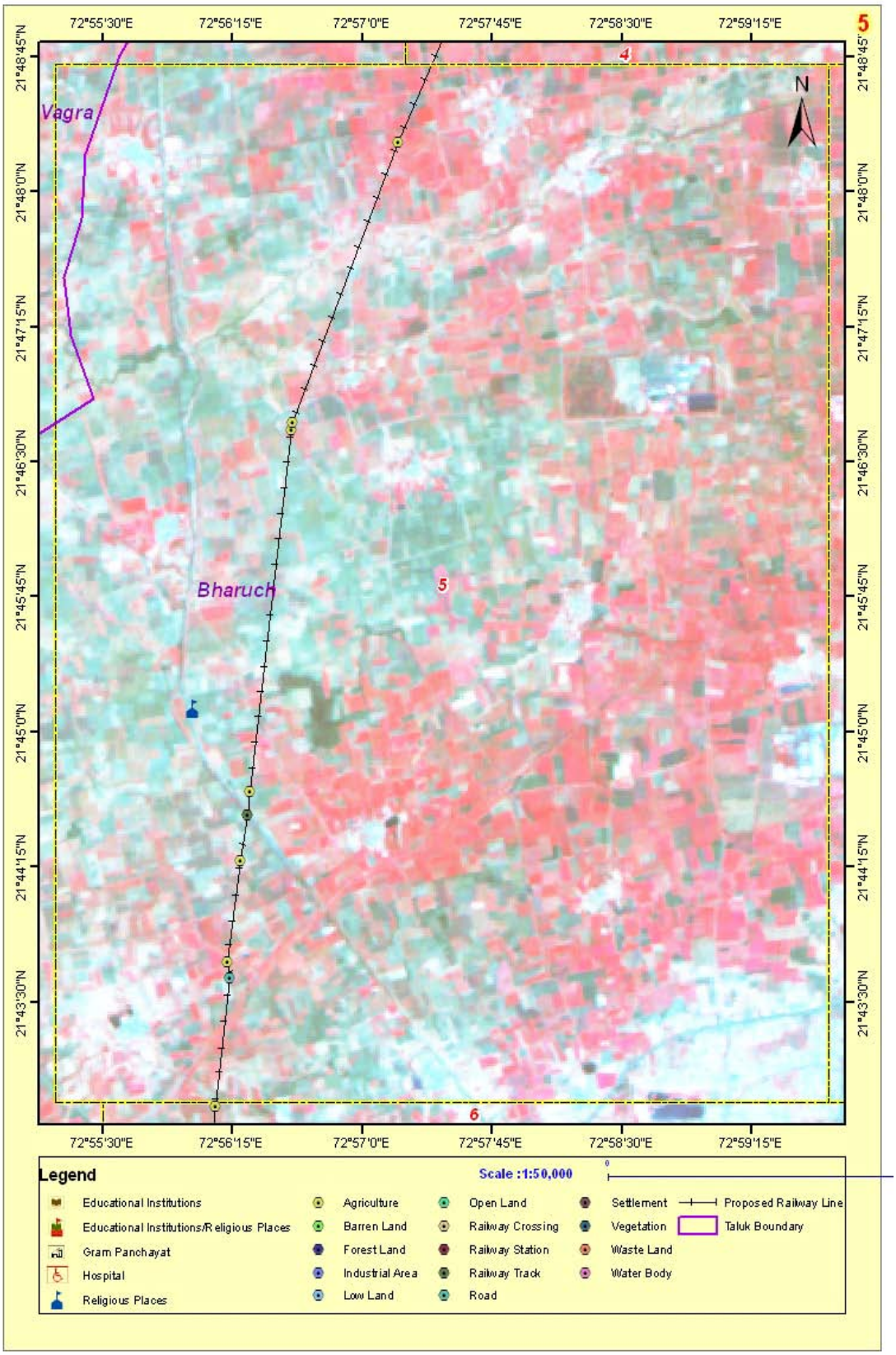
Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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Vagra
Bharuch
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Legend
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Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
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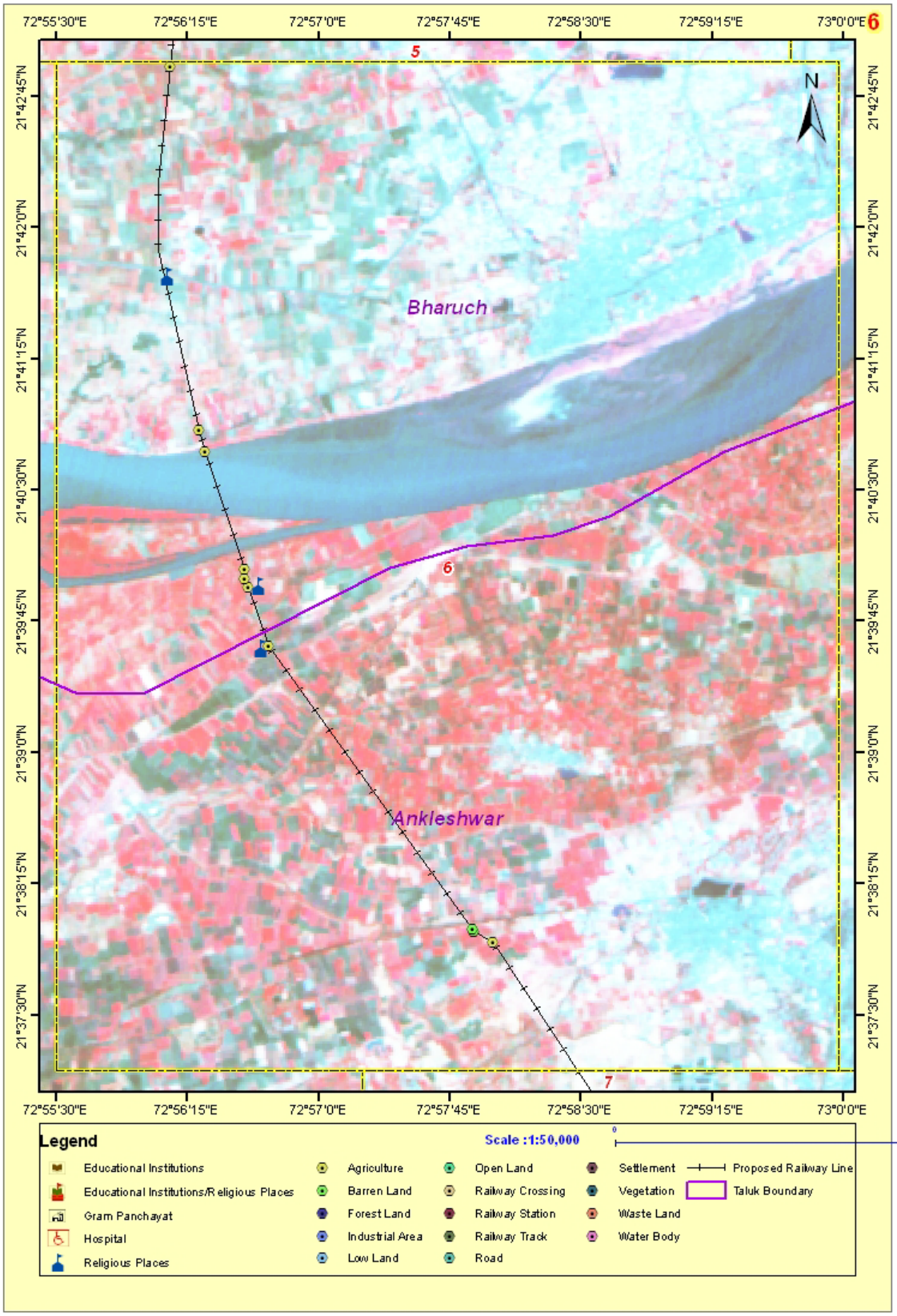
Religious Places
Agriculture
Barren Land
Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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Bharuch
Ankleshwar
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
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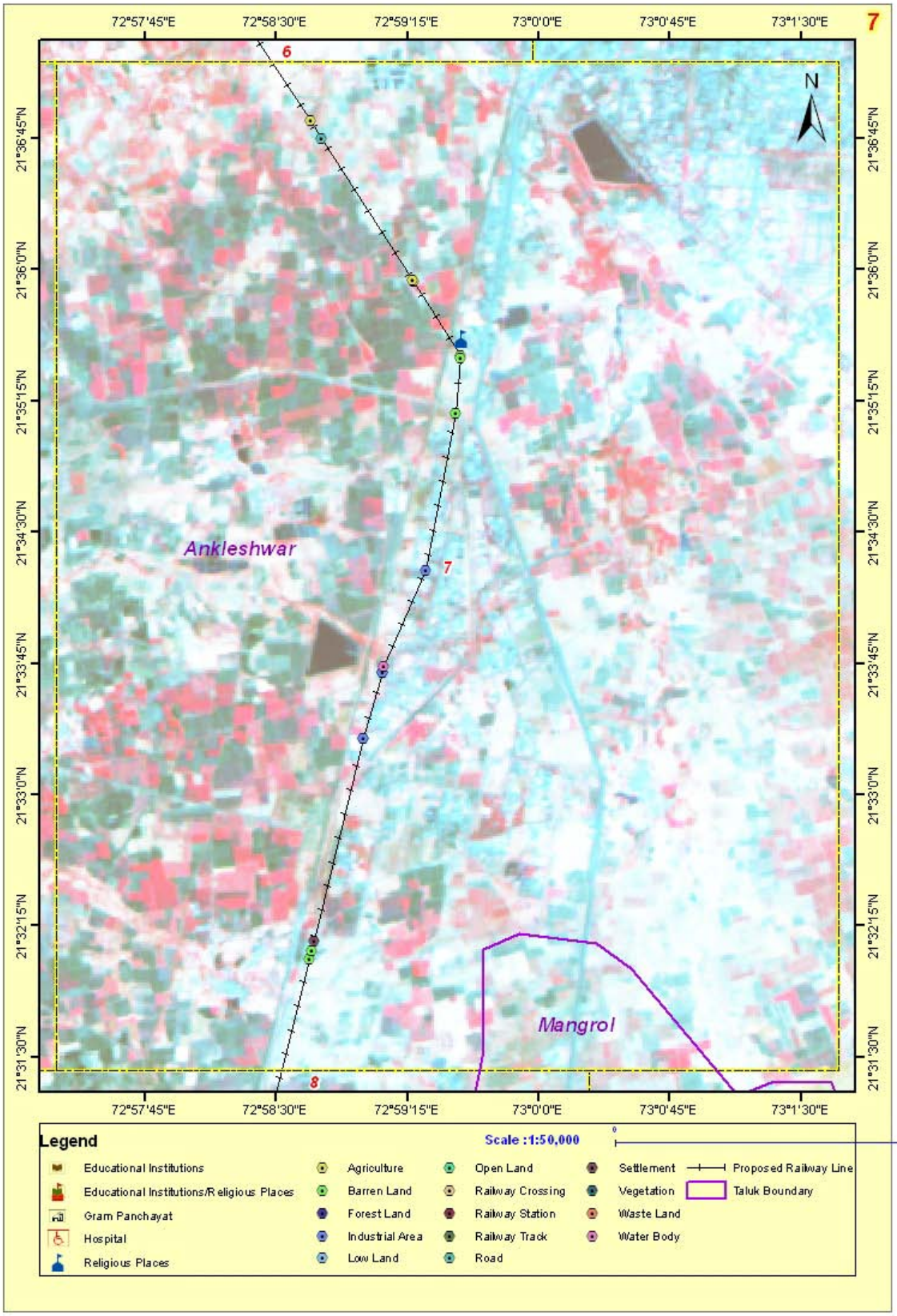
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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21°33'45"N
21°33'0"N
21°32'15"N
21°31'30"N
N
6
7
8
Ankleshwar
Mangrol
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
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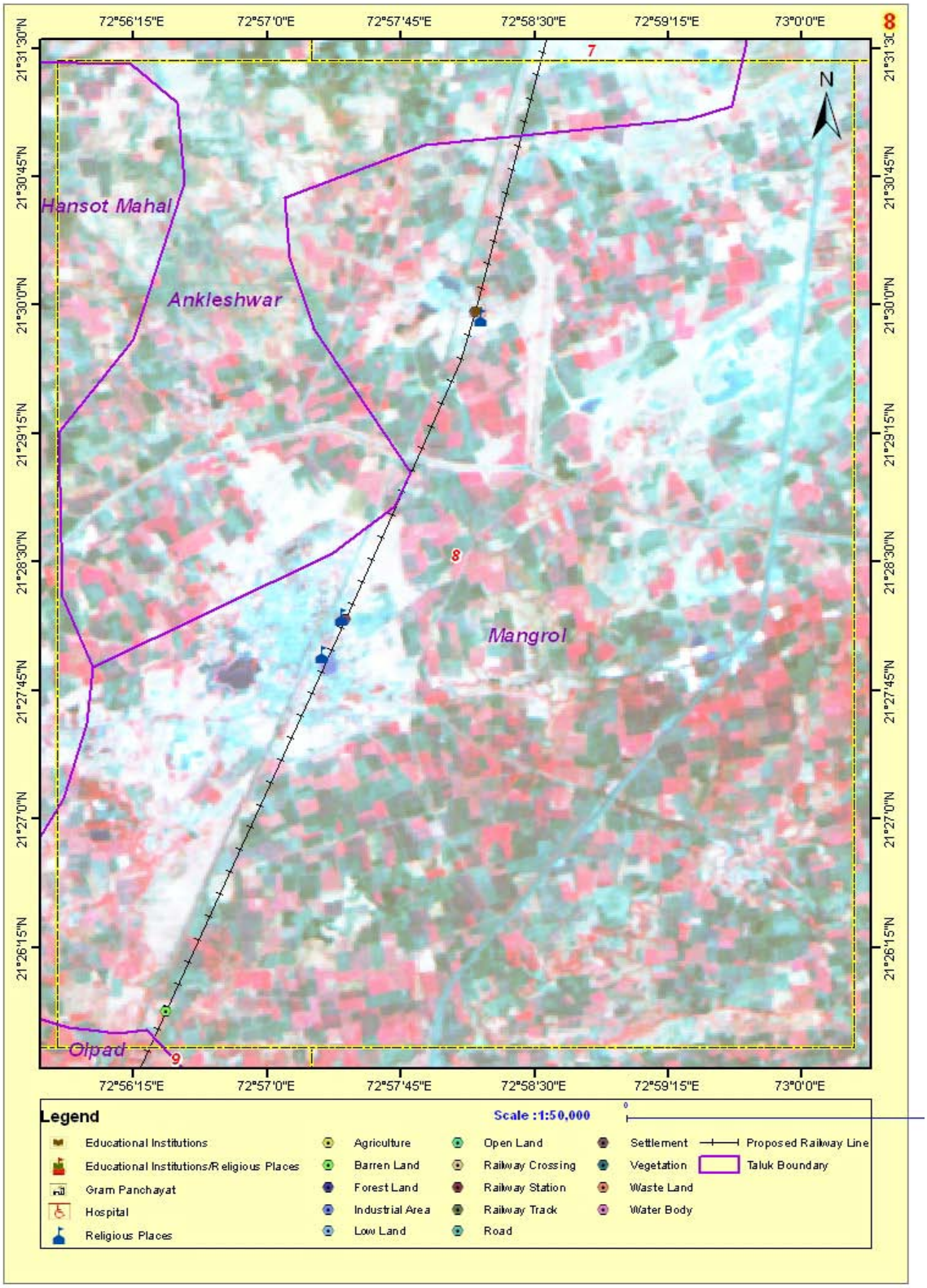
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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8
7
N
Hansot Mahal
Ankleshwar
8
Mangrol
Olpad
9
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
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Open Land
Railway Crossing
Railway Station
Railway Track
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Settlement
Vegetation
Waste Land
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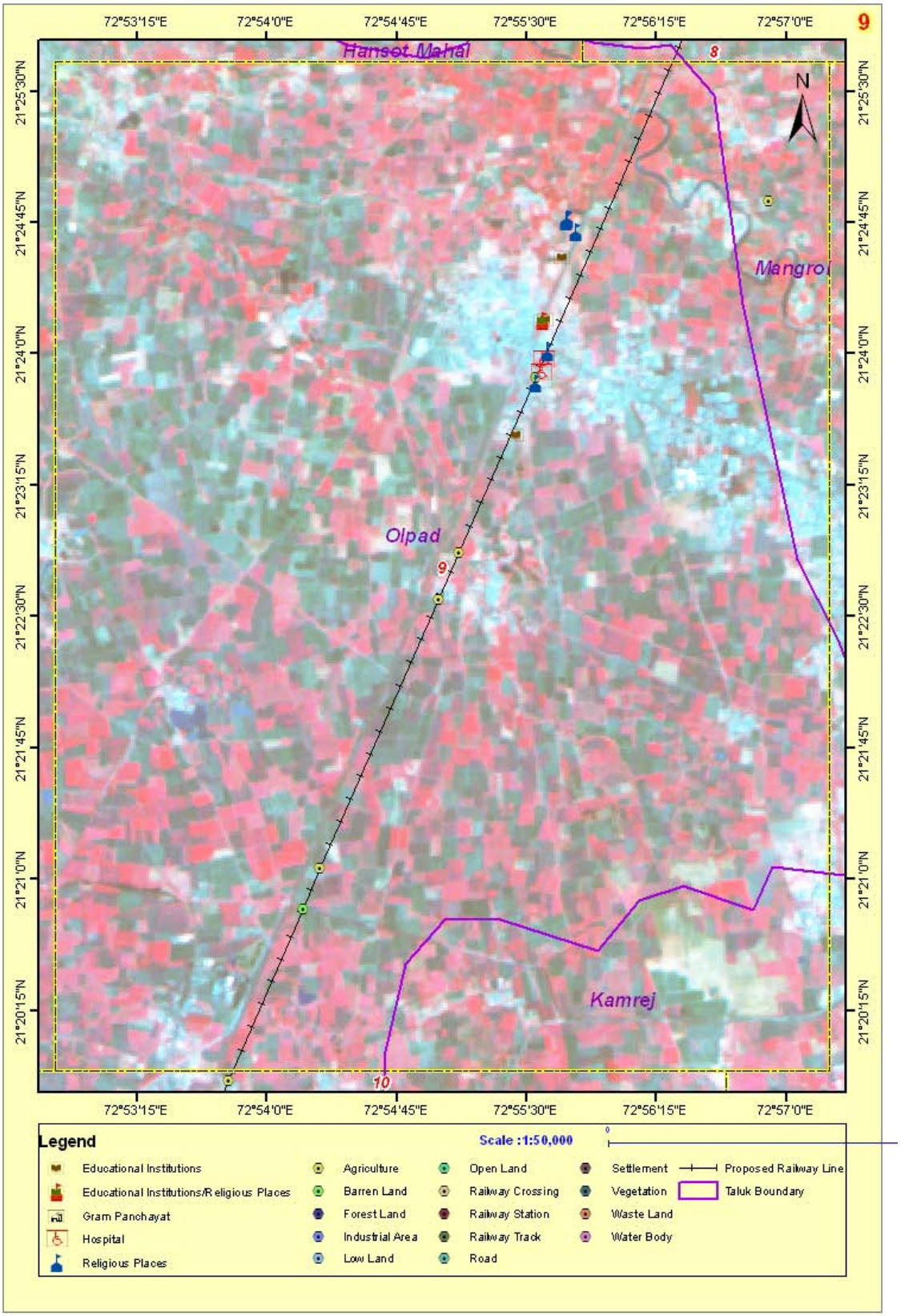
Proposed Railway Line
Taluk Boundary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Hansot Mahal
8
N
Mangrol
Olpad
9
Kamrej
10
Legend
Scale : 1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
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Barren Land
Forest Land
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Low Land
Open Land
Railway Crossing
Railway Station
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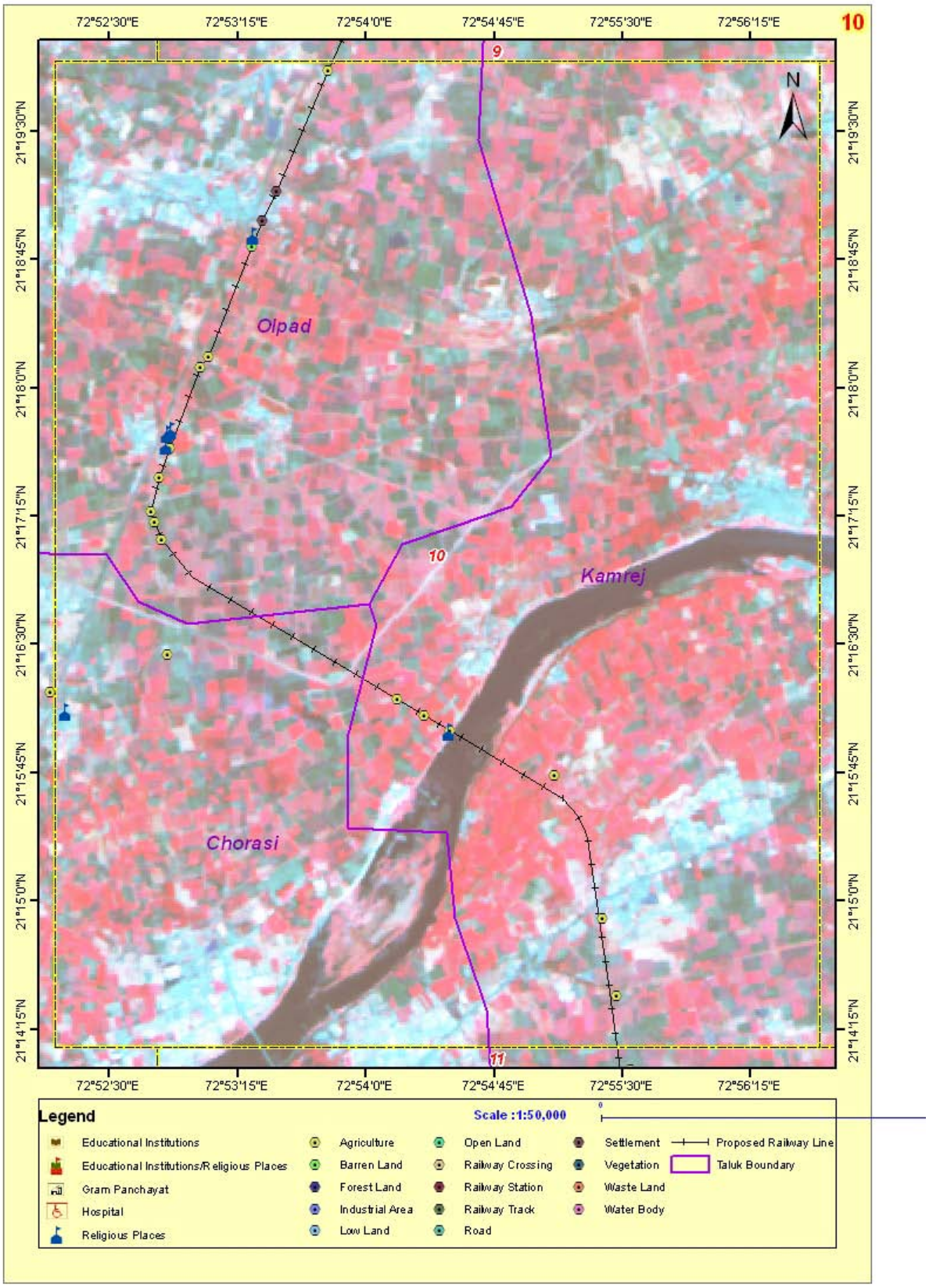
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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10
11
Olpad
Kamrej
Chorasi
Legend
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Educational Institutions
Educational Institutions/Religious Places
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Settlement
Vegetation
Waste Land
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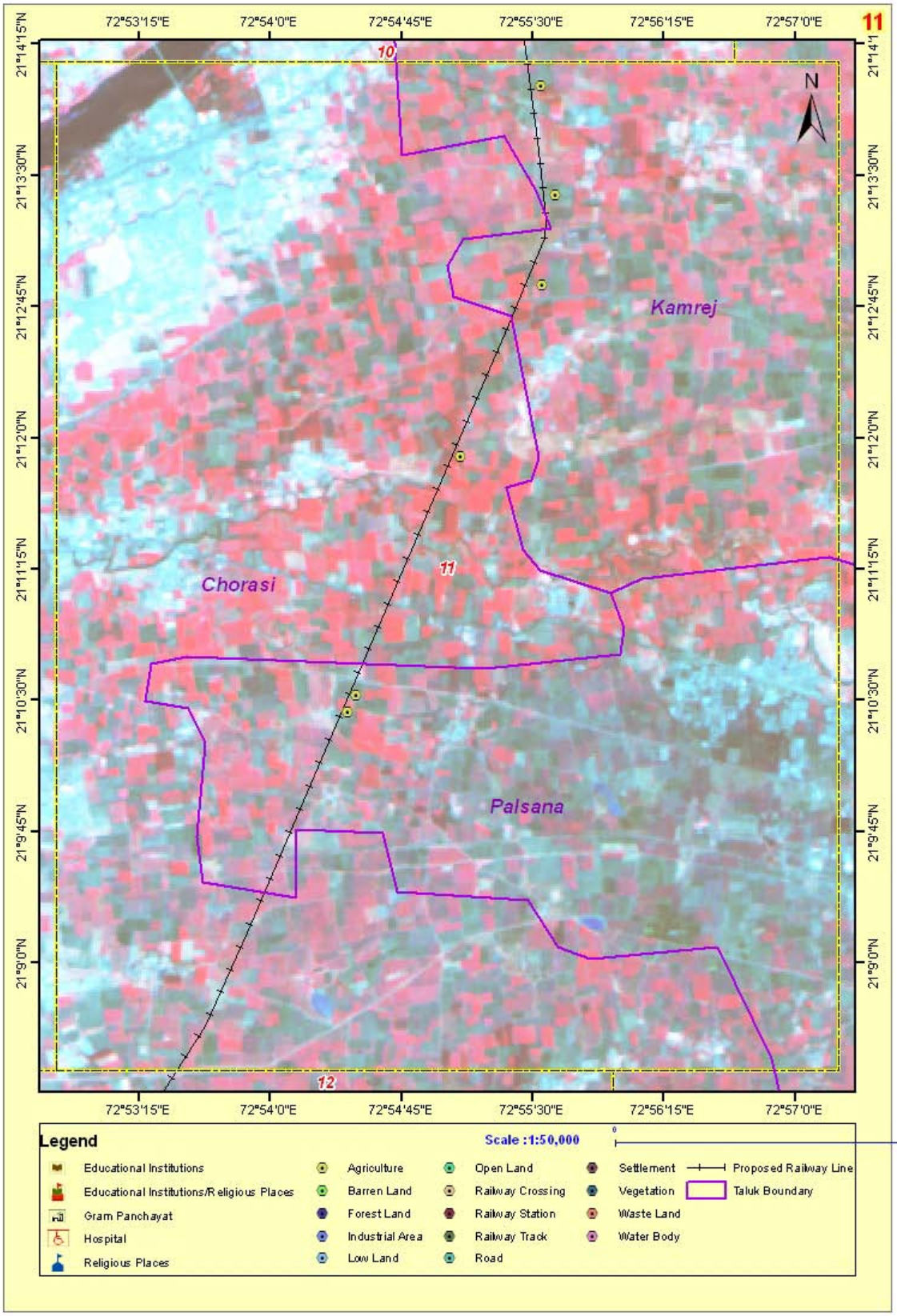
Proposed Railway Line
Taluk Boundary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12
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Kamrej
Chorasi
Palsana
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Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
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Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
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Railway Track
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Settlement
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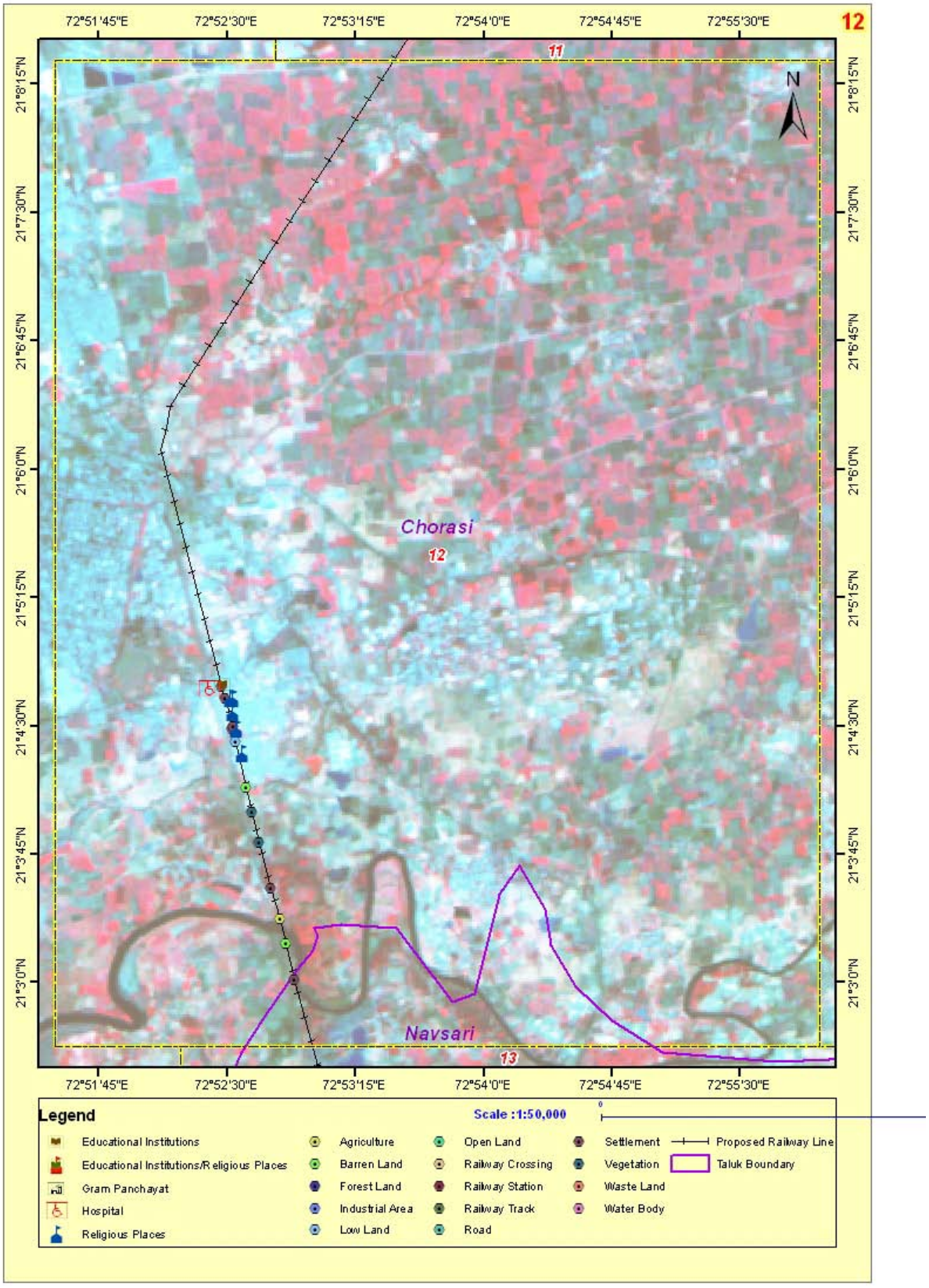
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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N
11
Chorasi
12
Navsari
13
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
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Low Land
Open Land
Railway Crossing
Railway Station
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Settlement
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Waste Land
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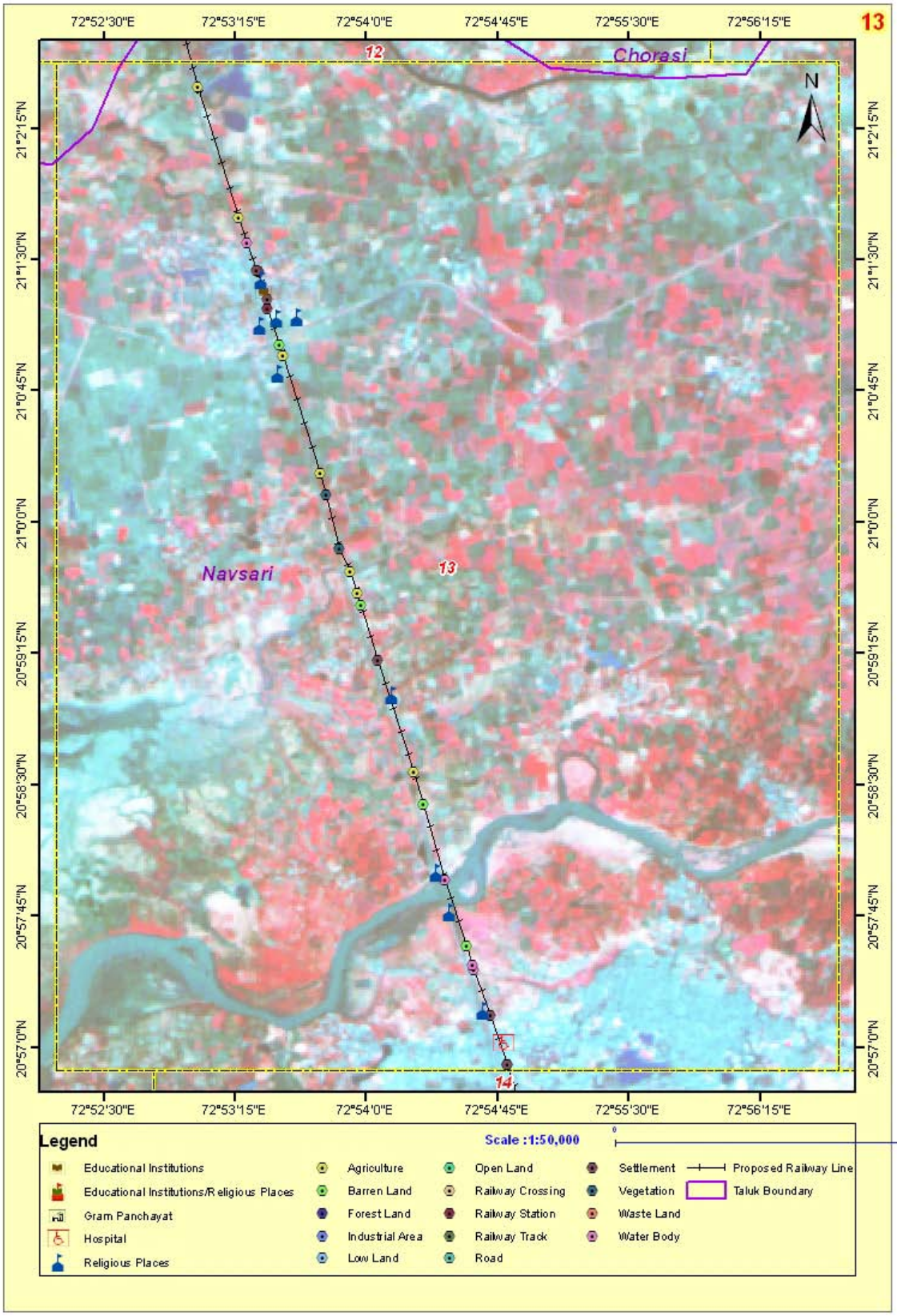
Proposed Railway Line
Taluk Boundary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12
Chorasi
N
Navsari
13
14
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
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Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
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Settlement
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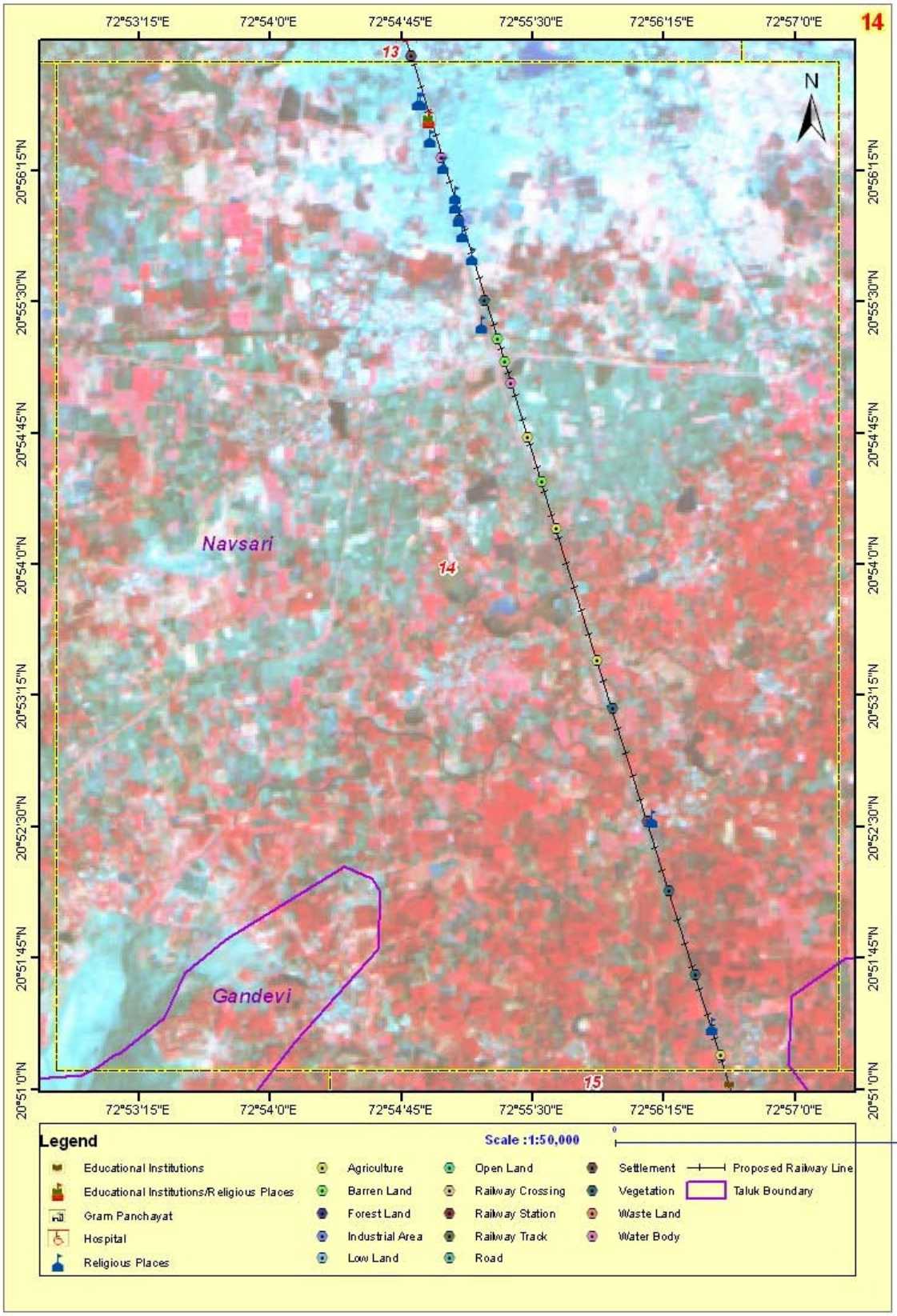
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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N
Navsari
14
Gandevi
15
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
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Open Land
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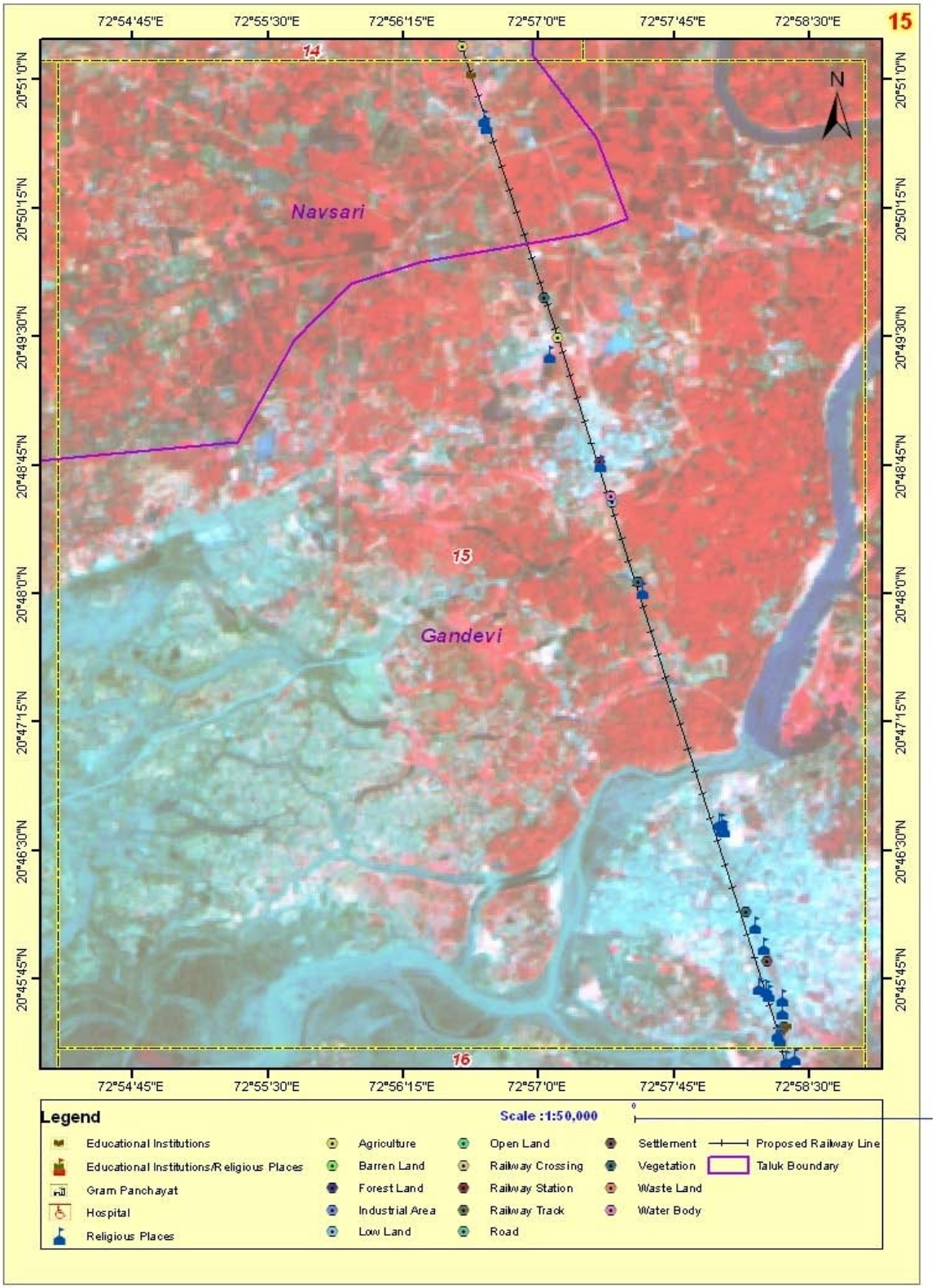
Proposed Railway Line
Taluk Boundary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Navsari
Gandevi
Legend
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Educational Institutions
Educational Institutions/Religious Places
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Open Land
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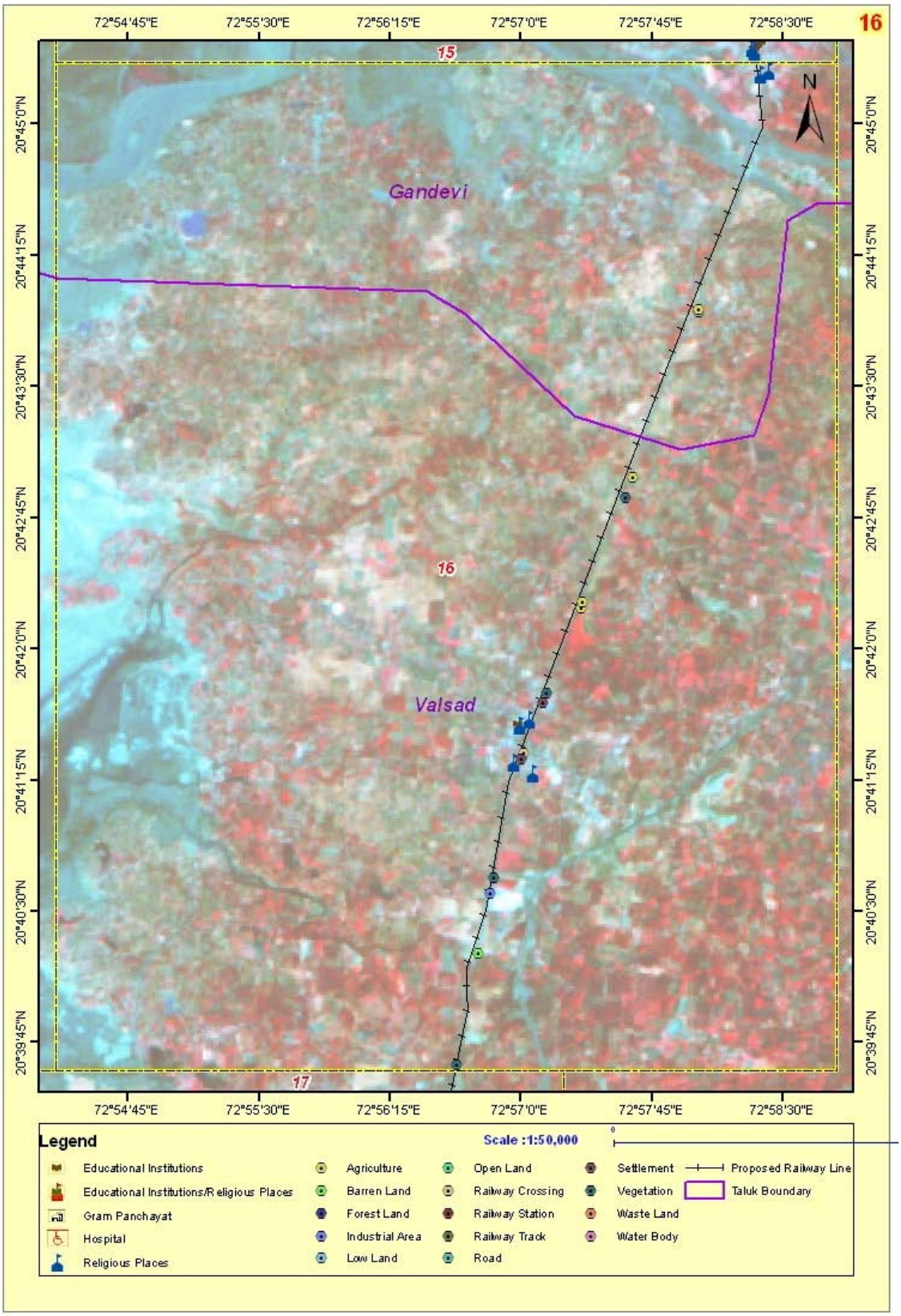
Proposed Railway Line
Taluk Boundary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Valsad
17
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
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Proposed Railway Line
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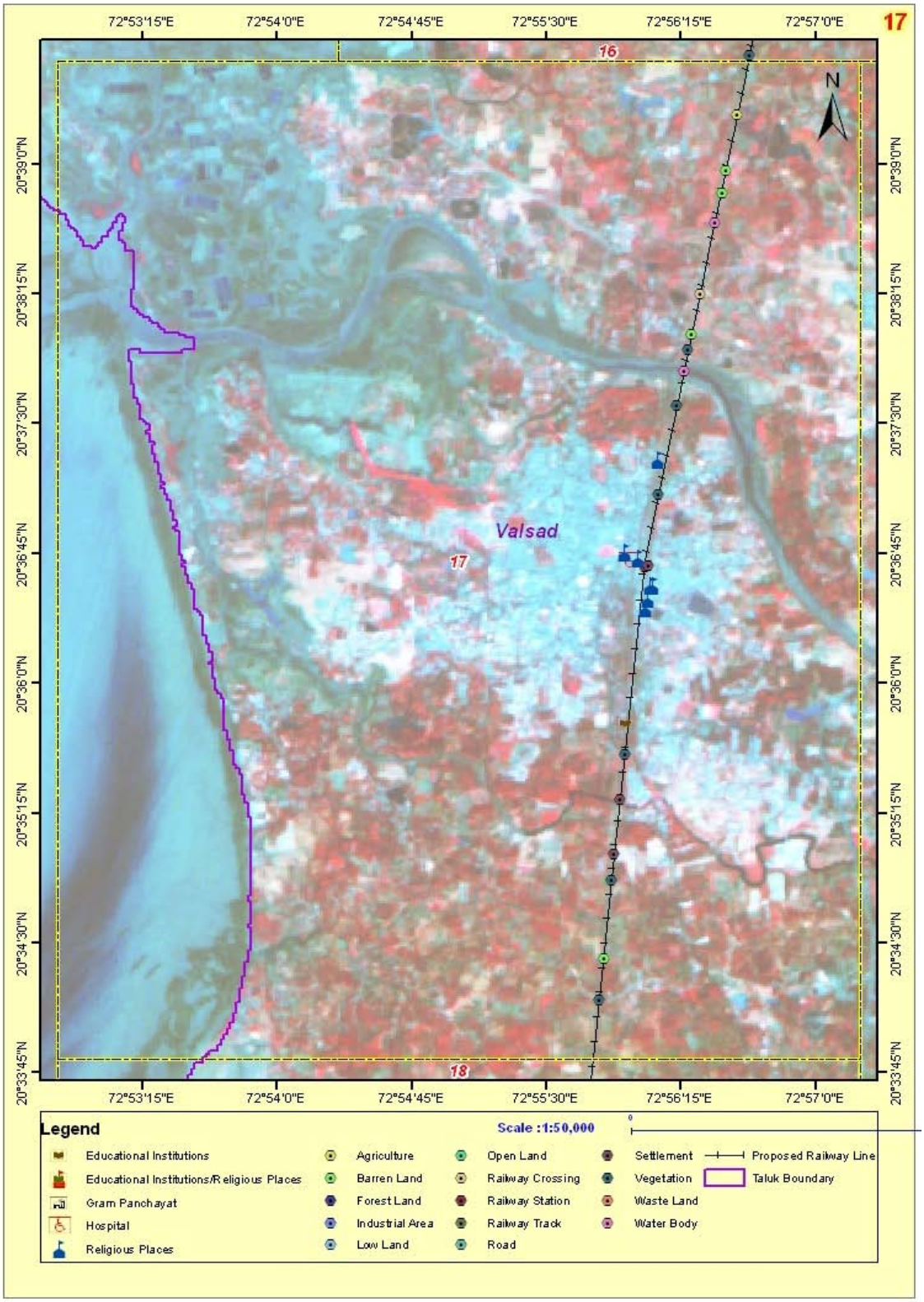
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Valsad
Legend
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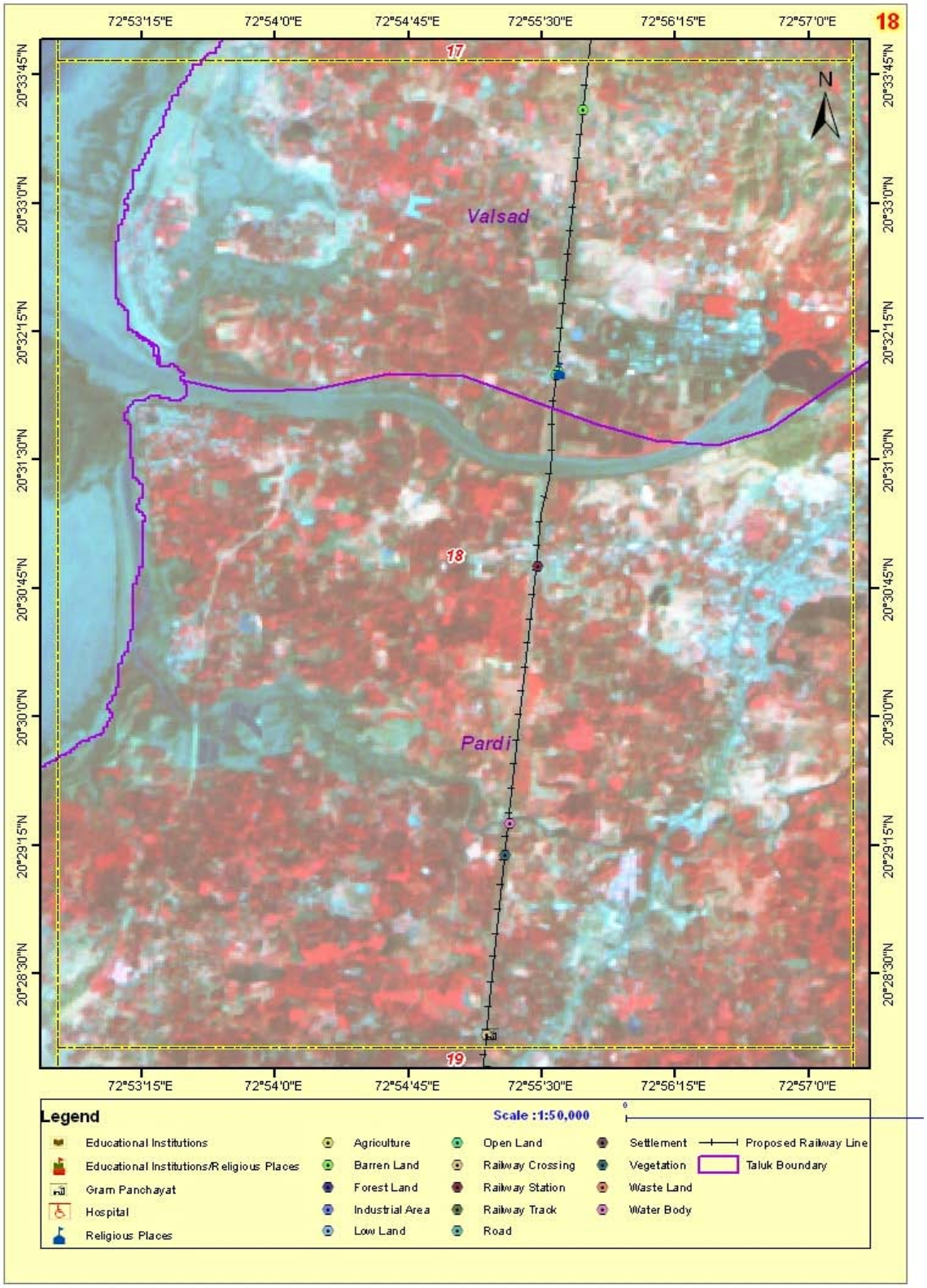
Educational Institutions/Religious Places
Gram Panchayat
Hospital
Religious Places
Agriculture
Barren Land
Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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Pardi
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Agriculture
Barren Land
Forest Land
Industrial Area
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Settlement
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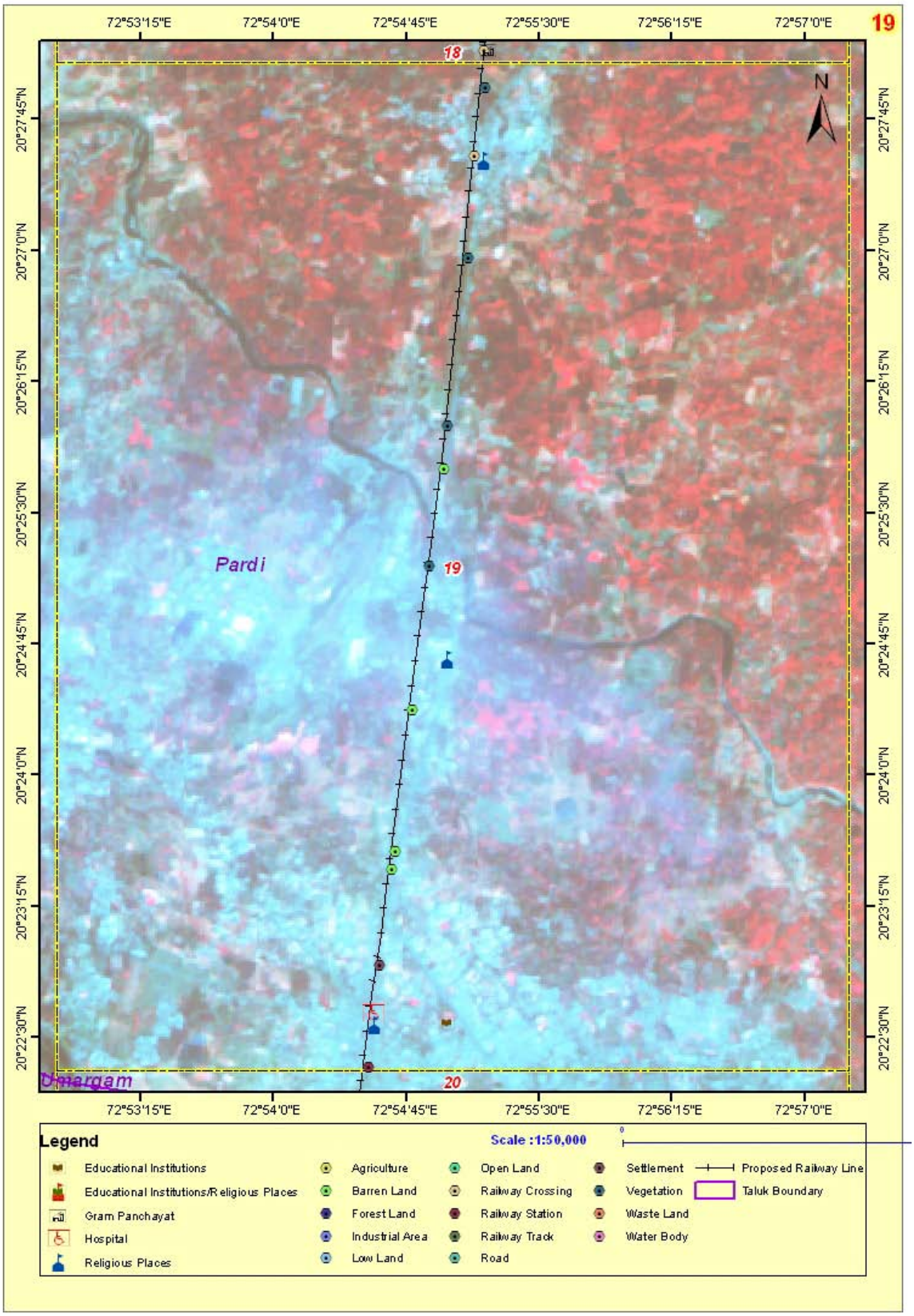
Water Body
Proposed Railway Line
Taluk Boundary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Settlement
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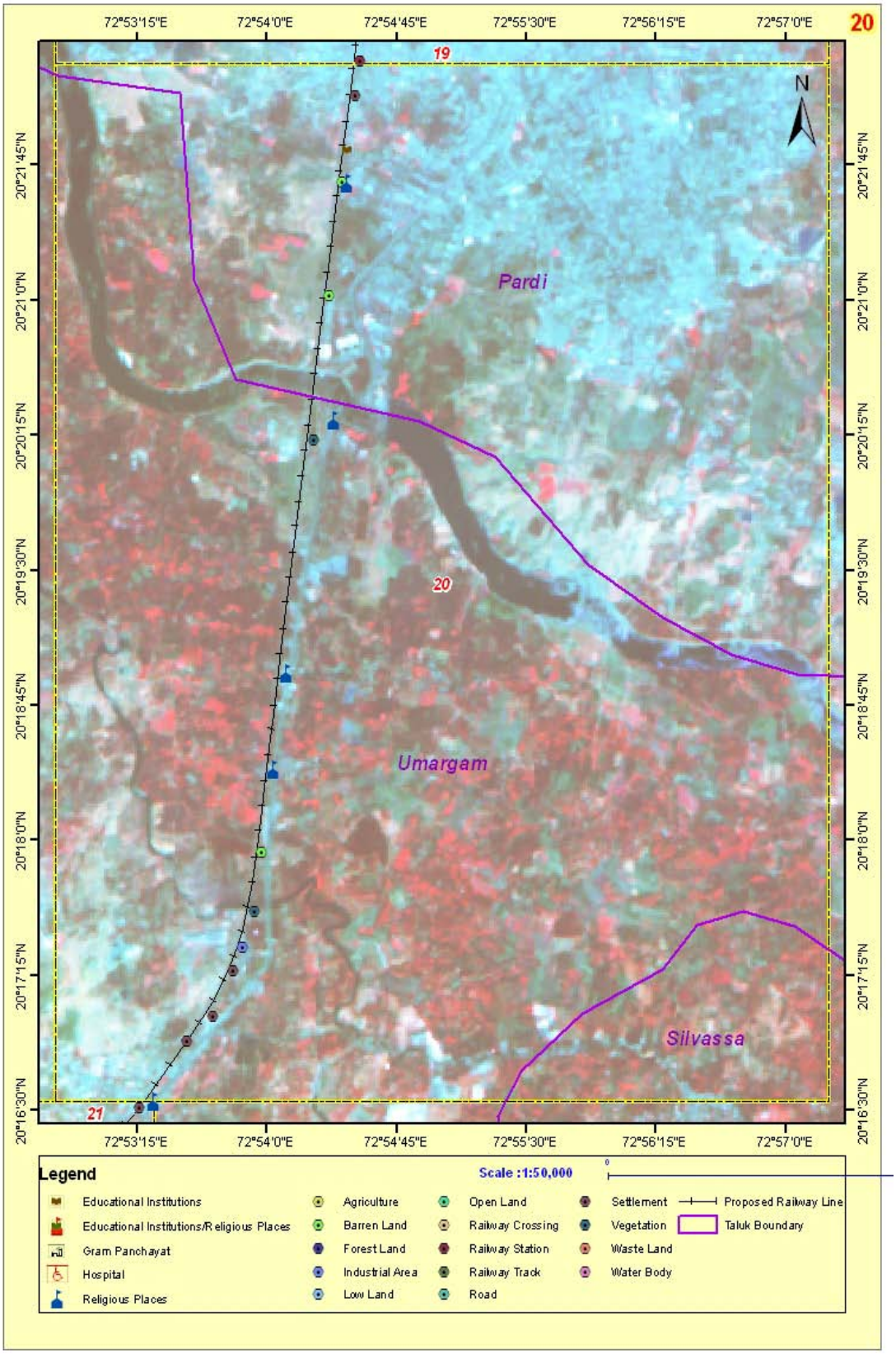
Water Body
Proposed Railway Line
Taluk Boundary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Settlement
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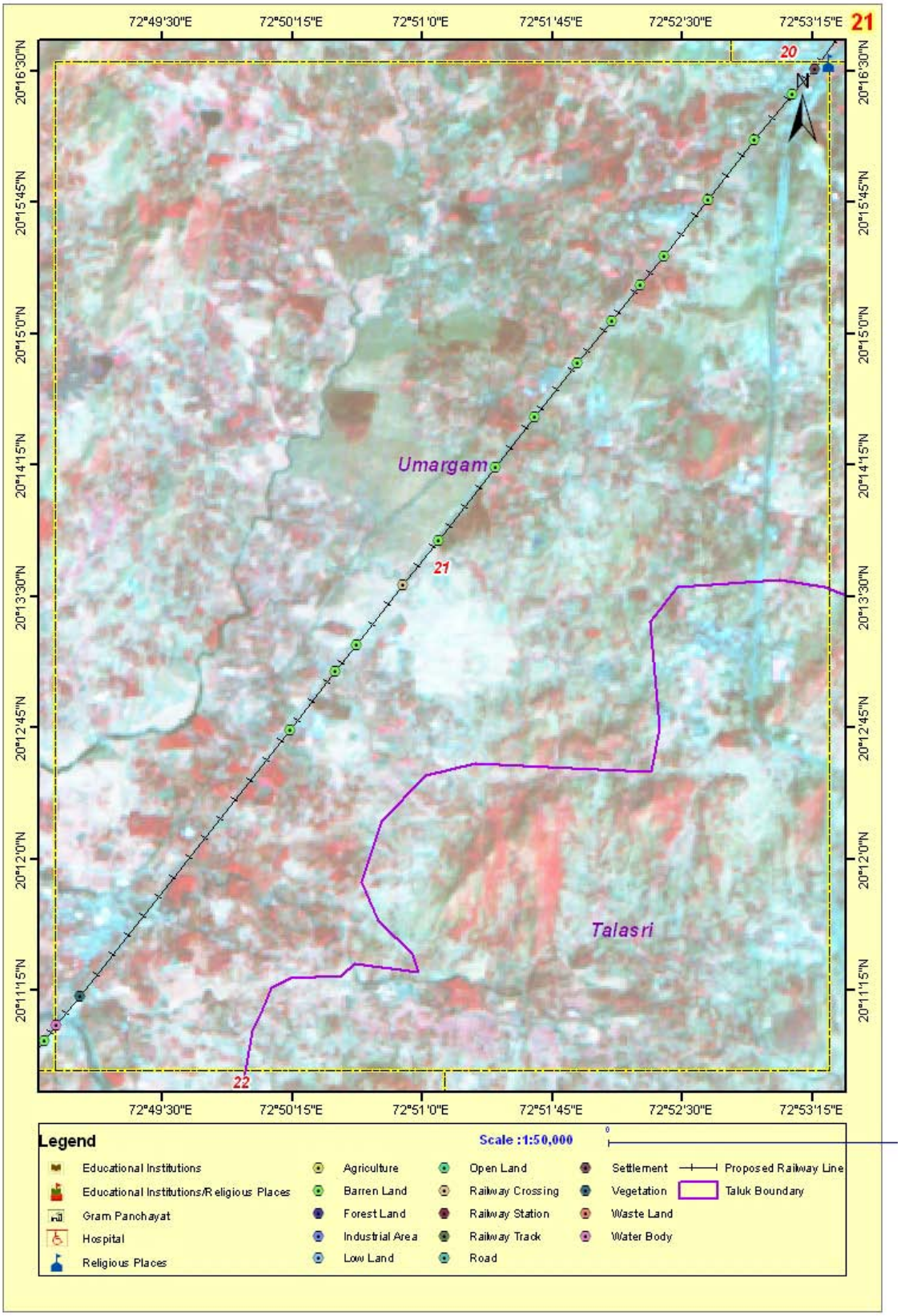
Water Body
Proposed Railway Line
Taluk Boundary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Water Body
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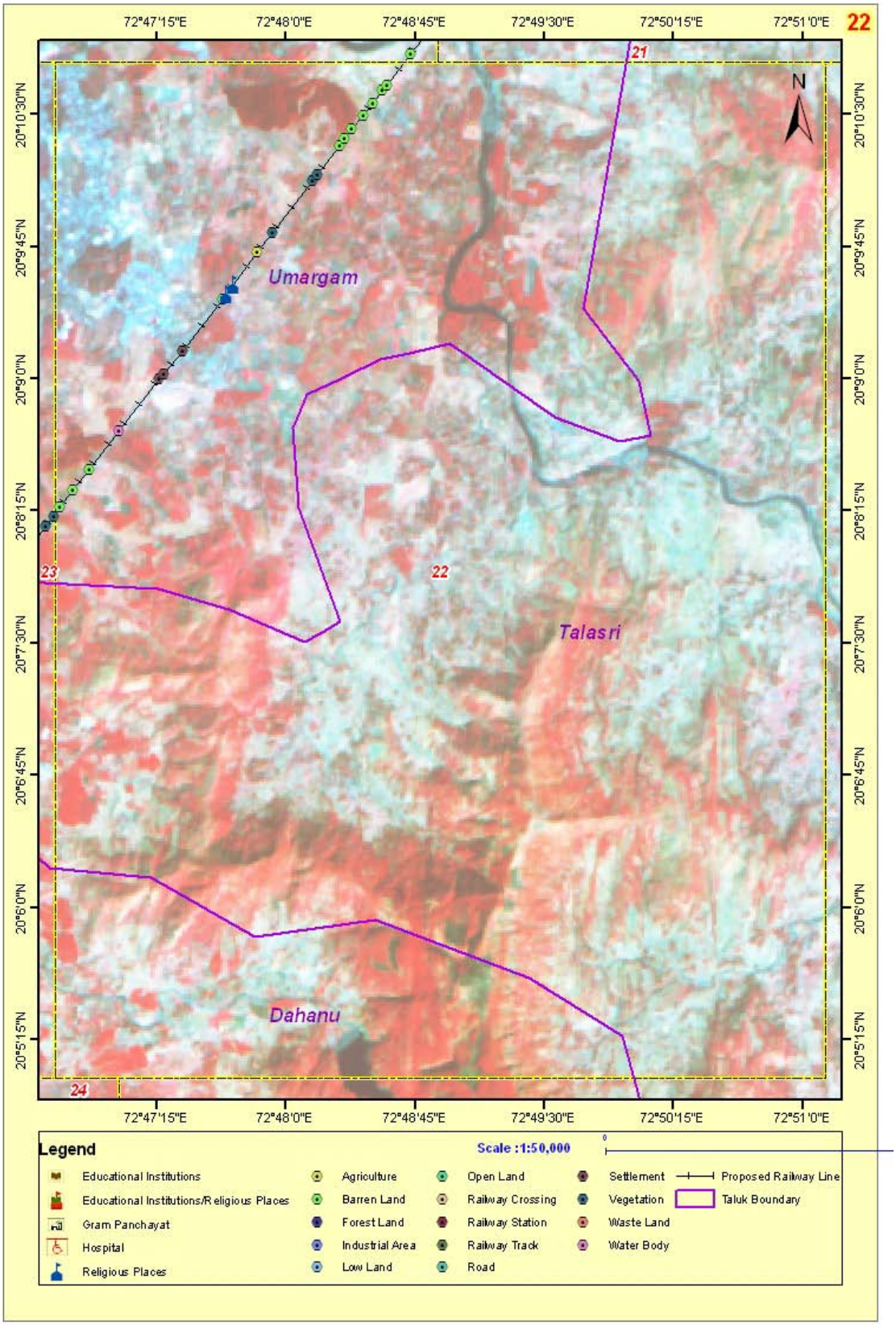
Taluk Boundary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Talasri
Dahanu
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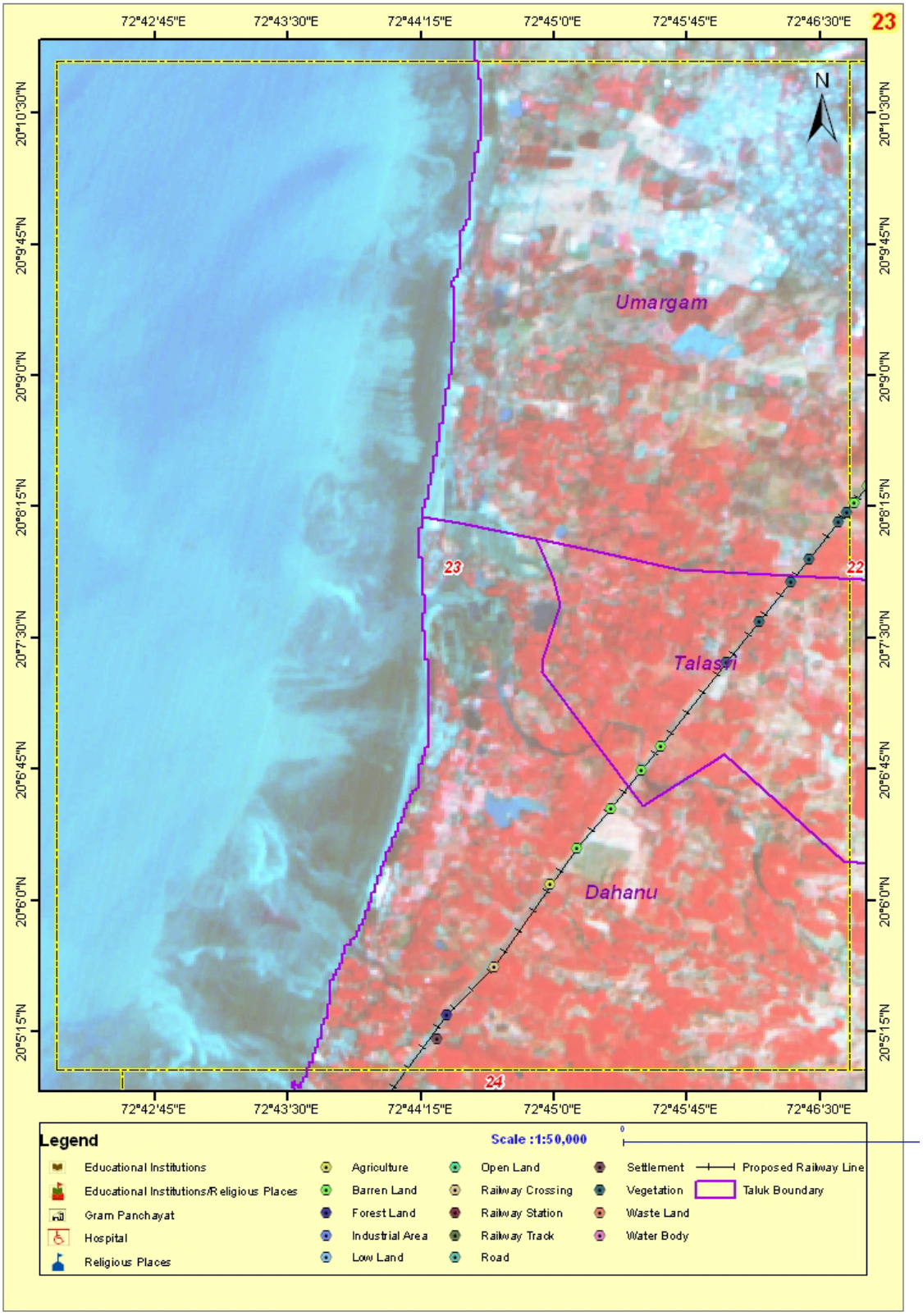
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Talasari
Dahanu
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Legend
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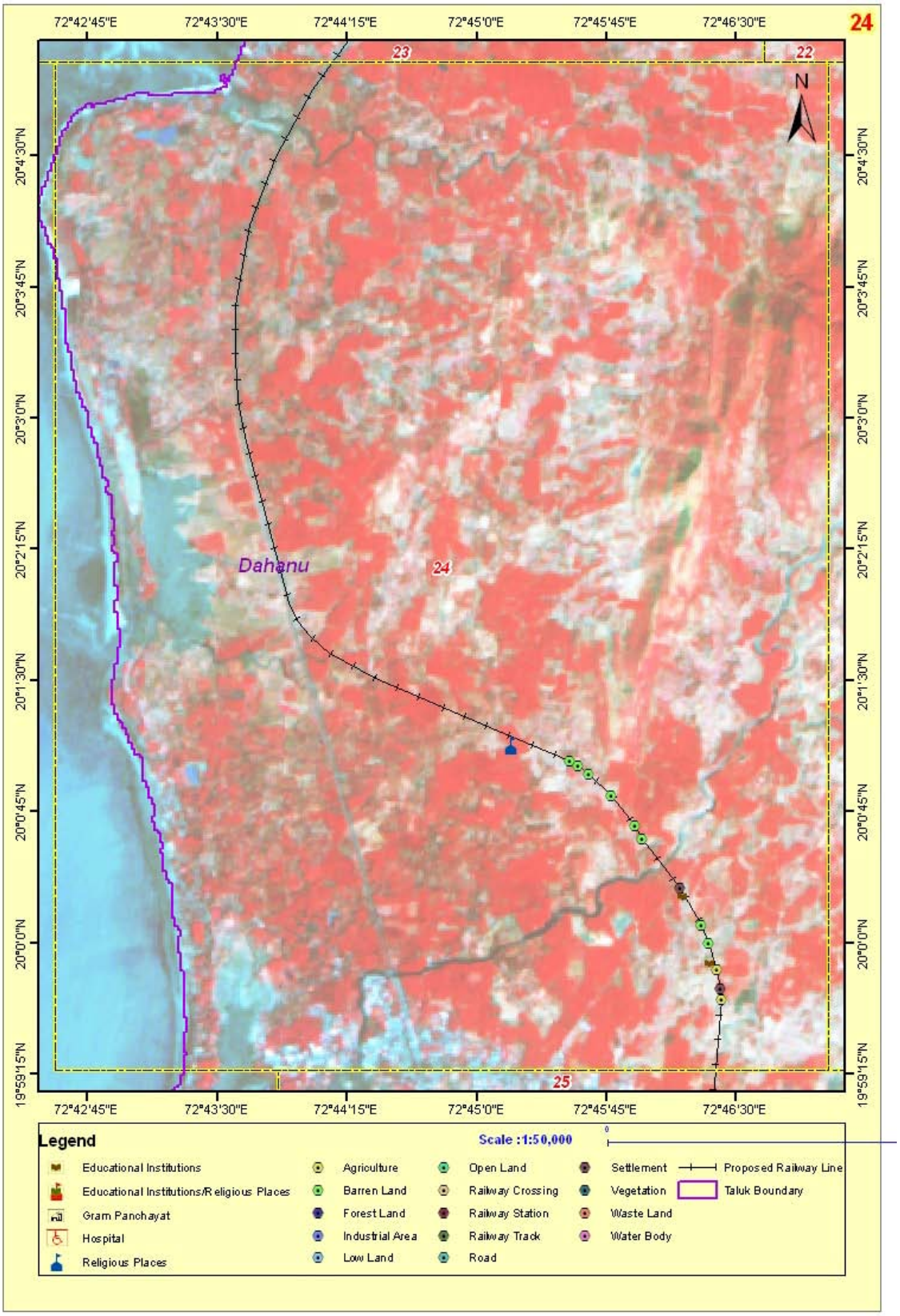
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Dahanu
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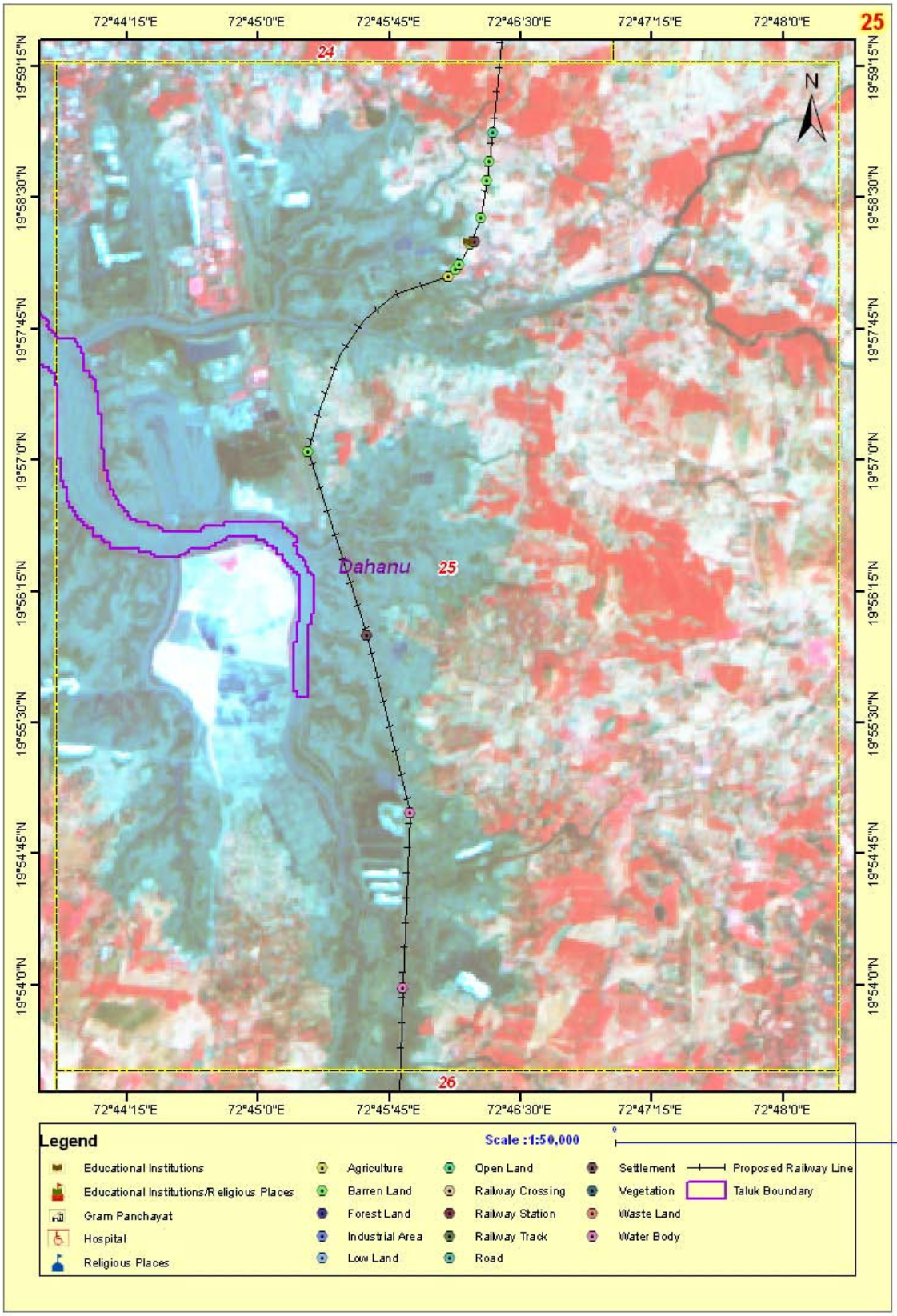
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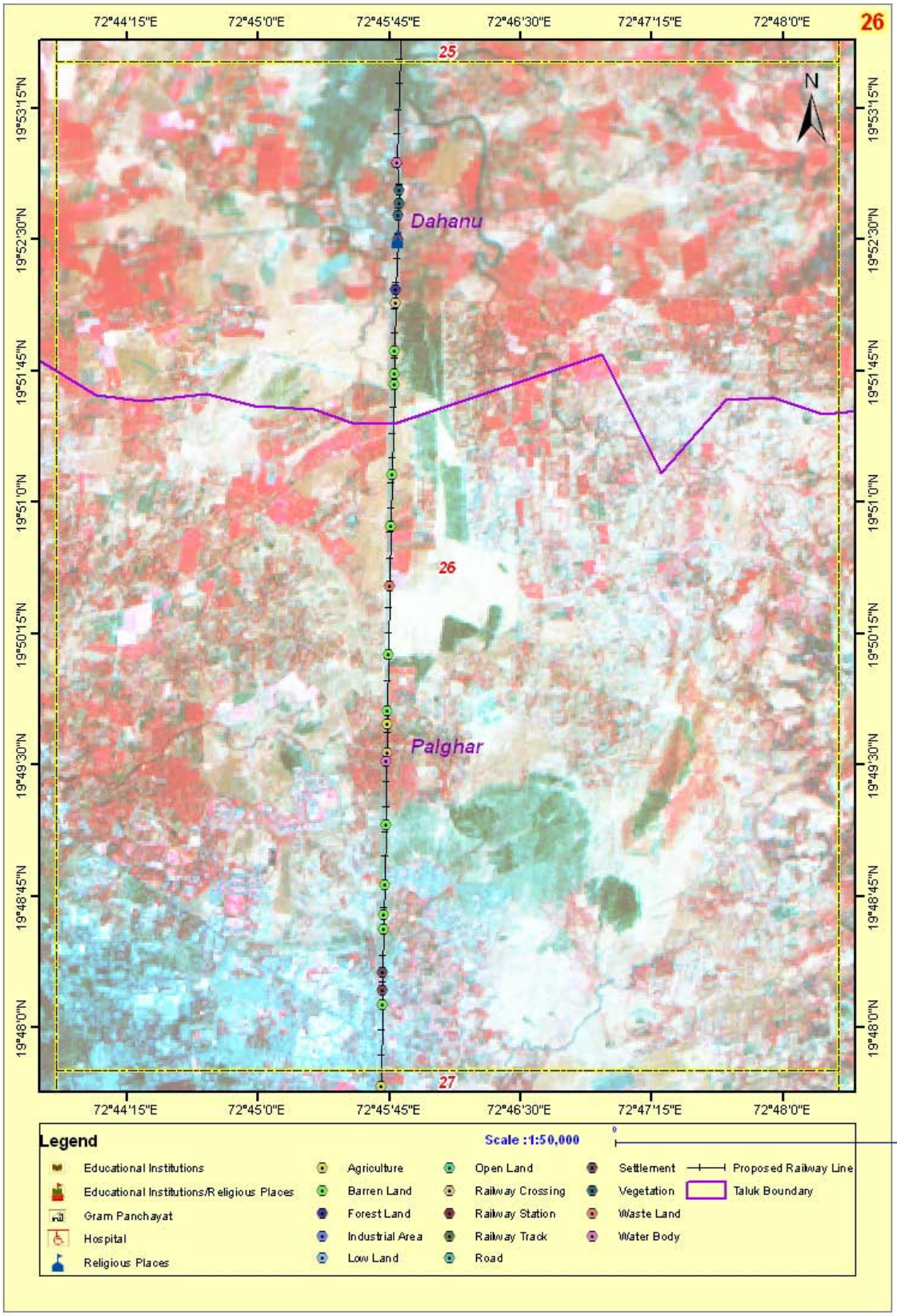
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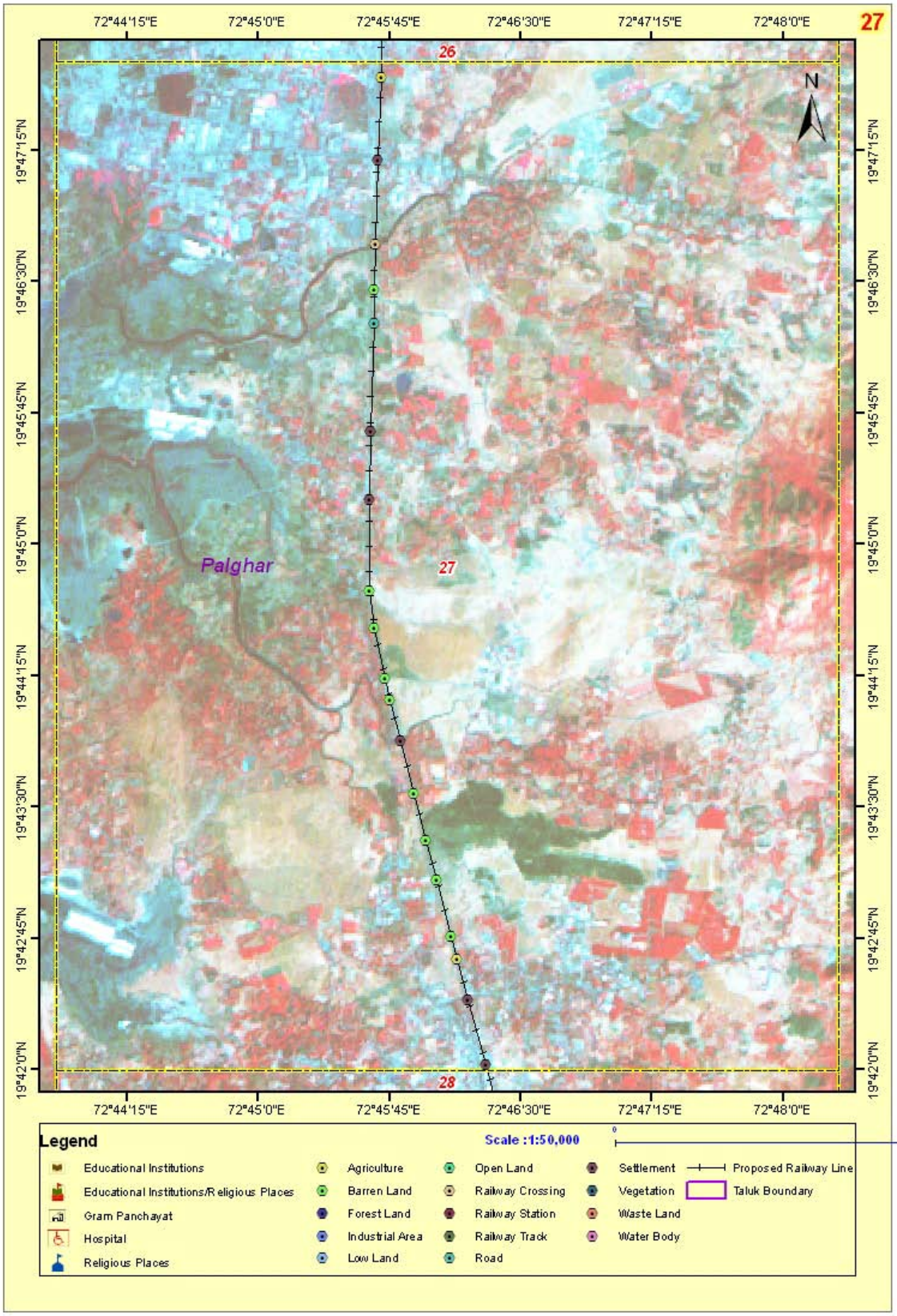
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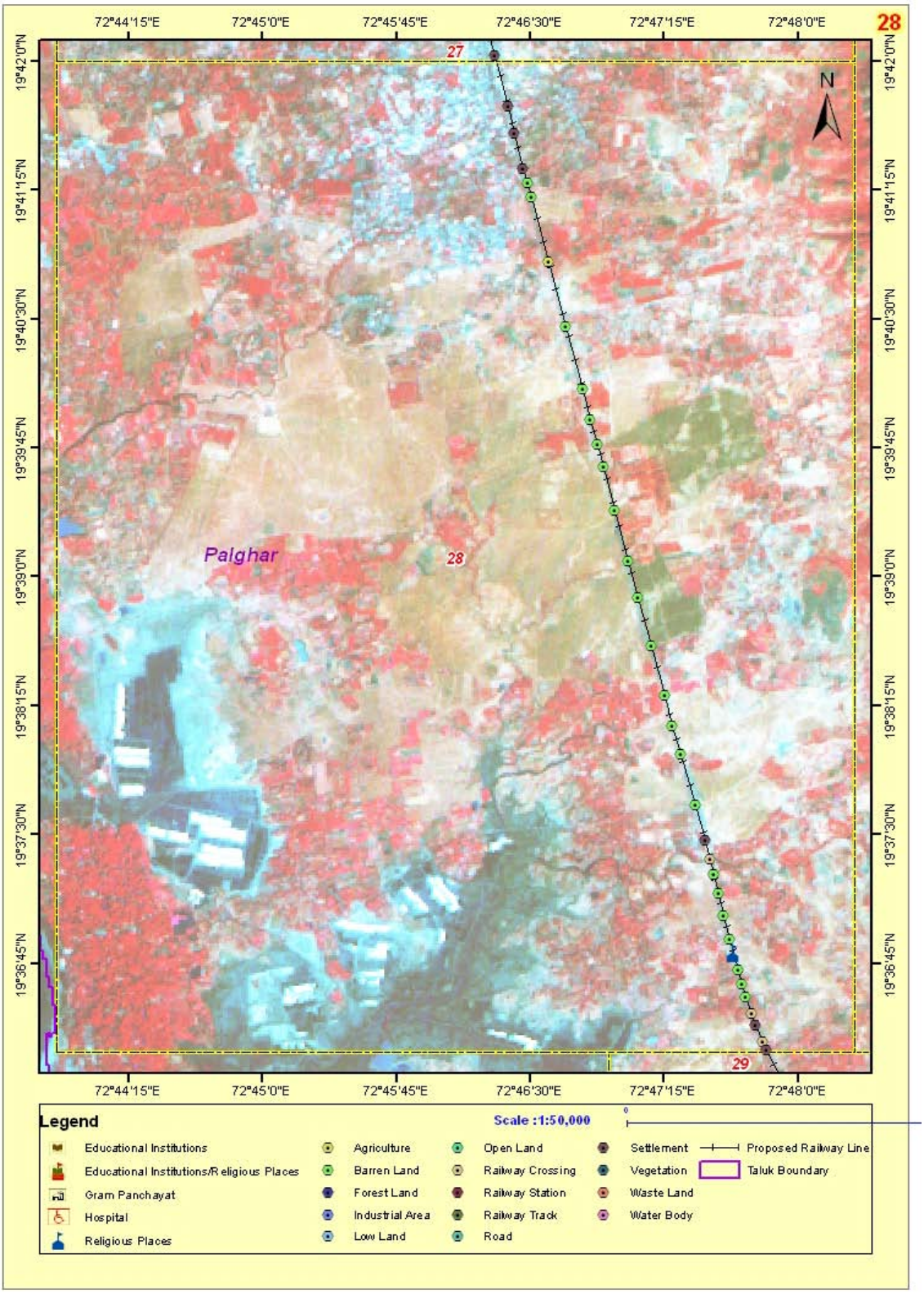
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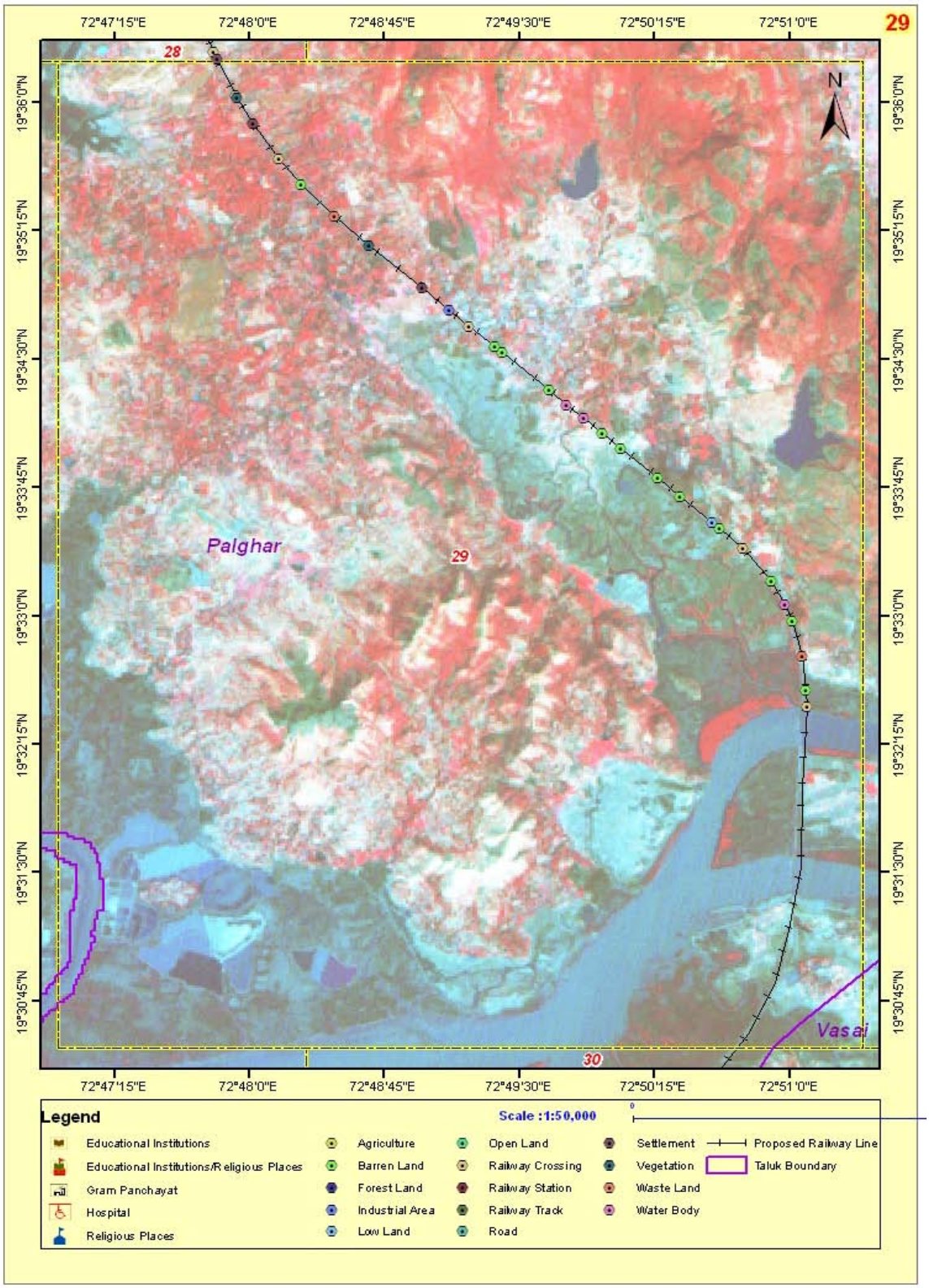
Proposed Railway Line
Taluk Boundary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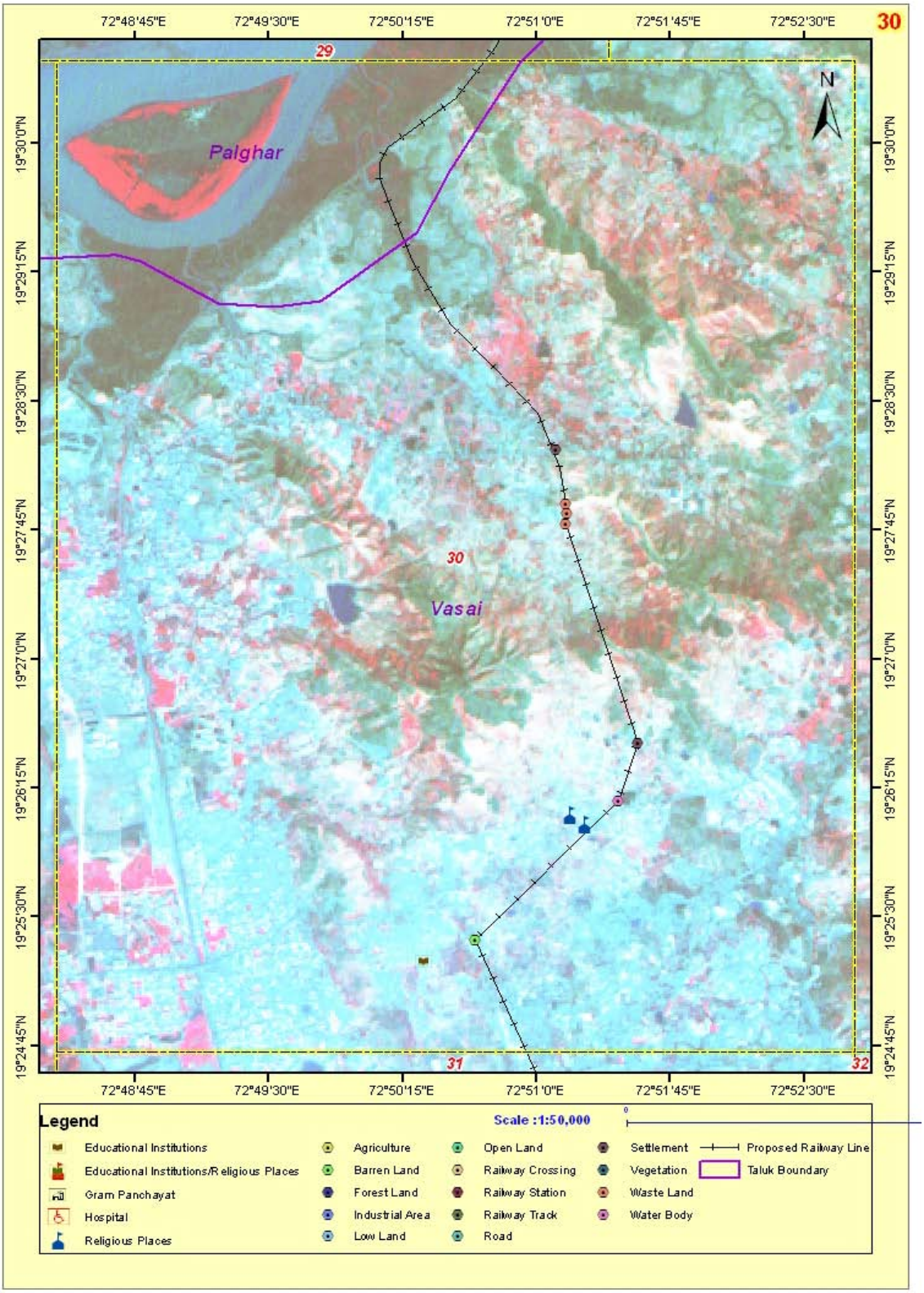
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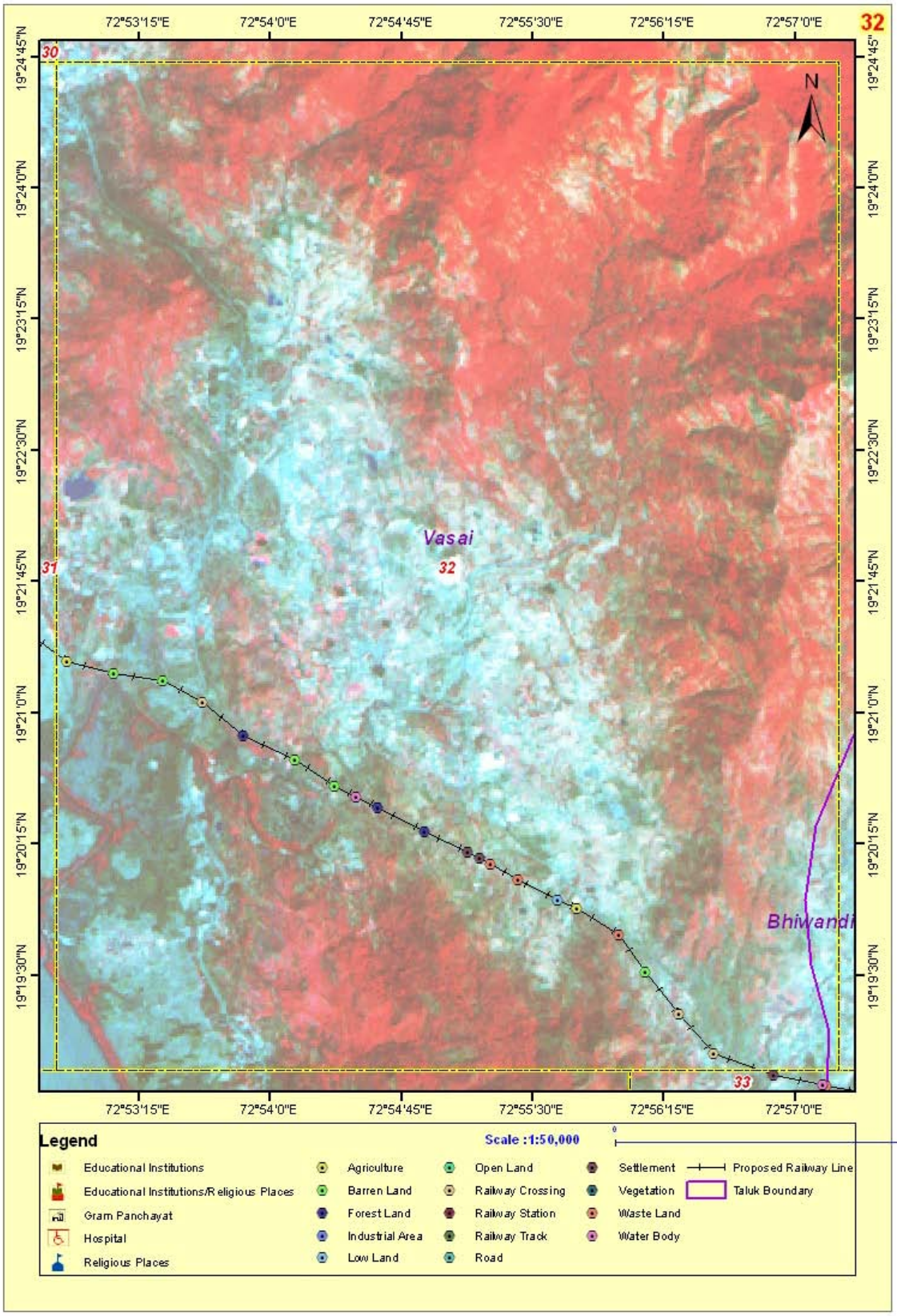
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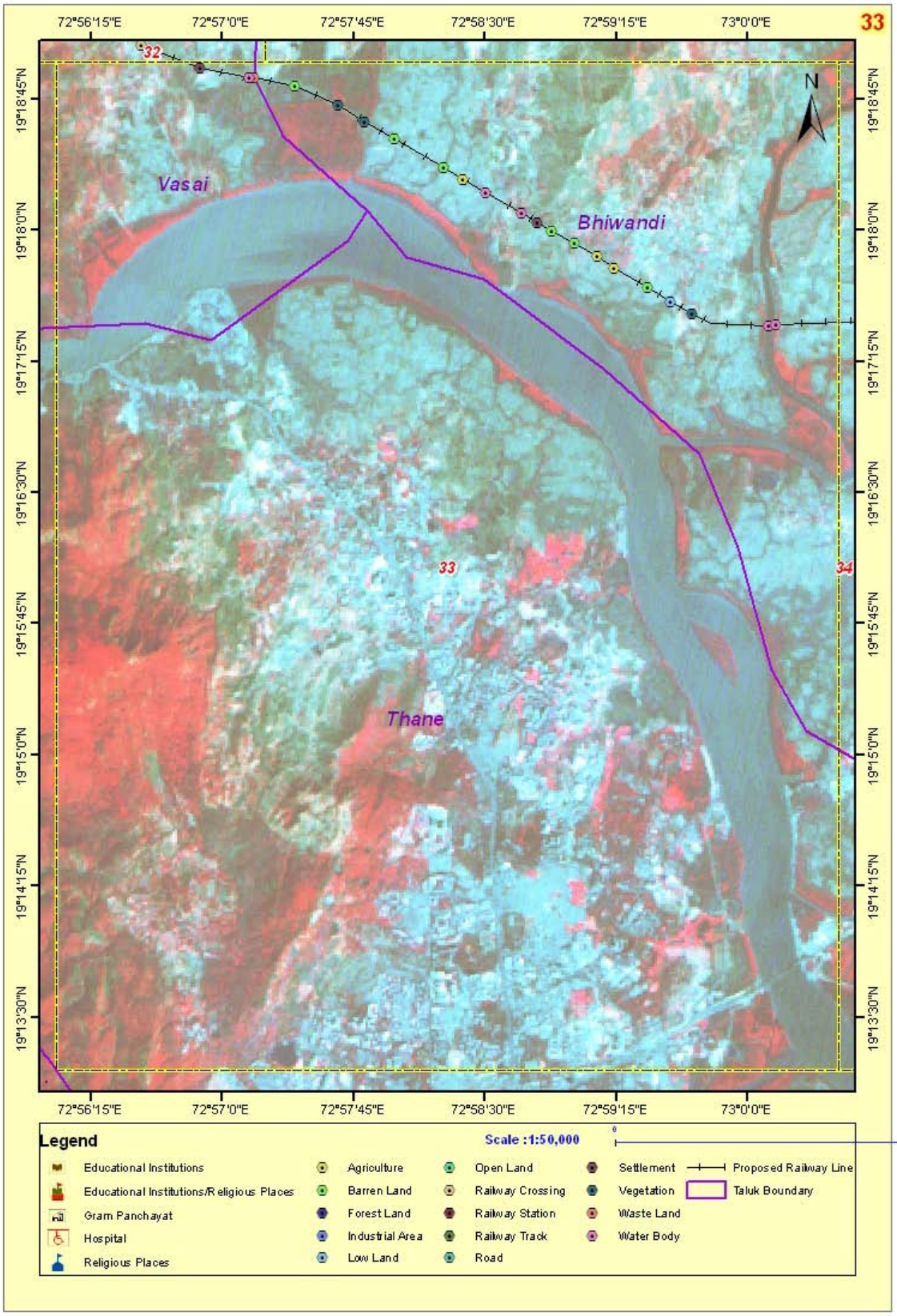
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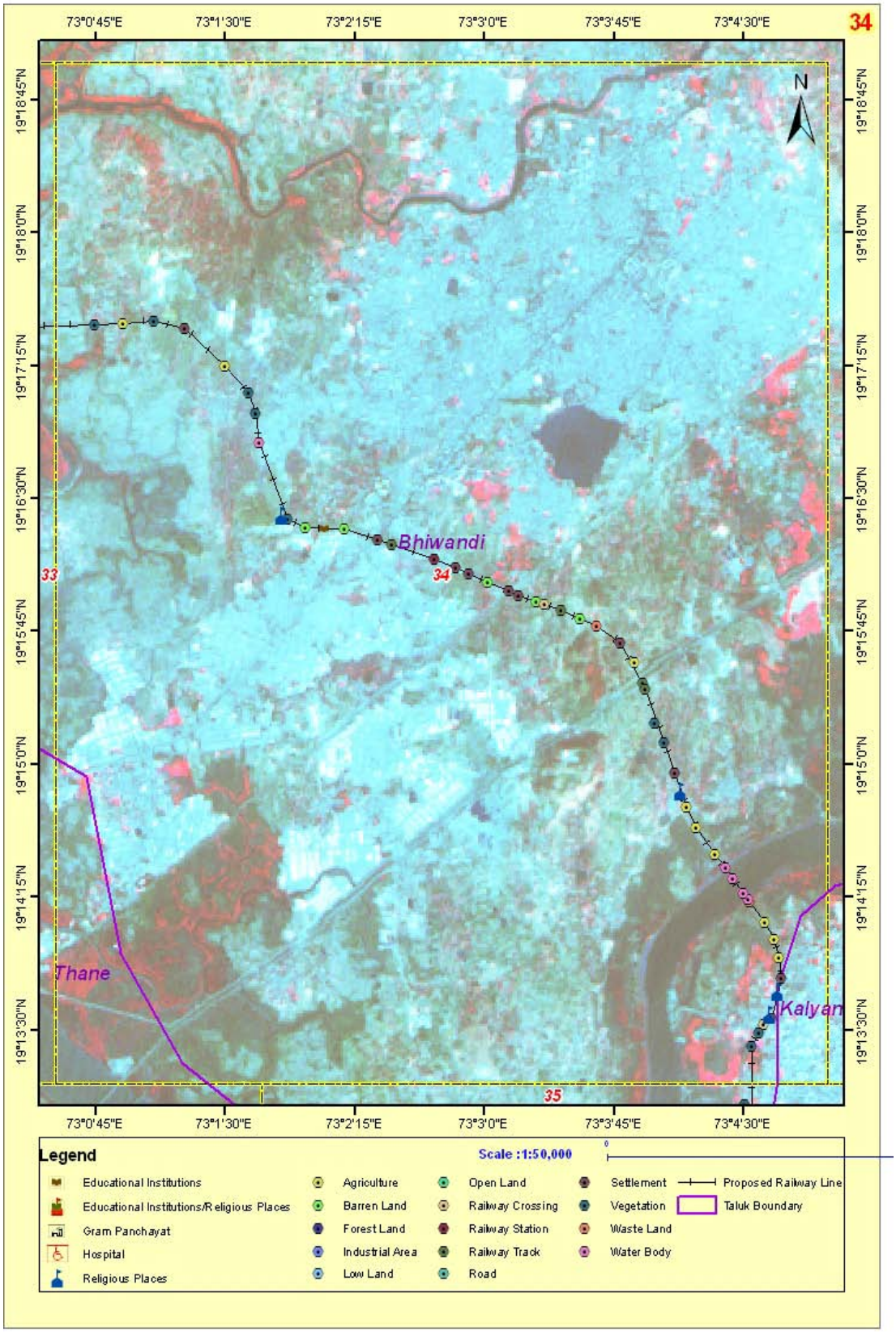
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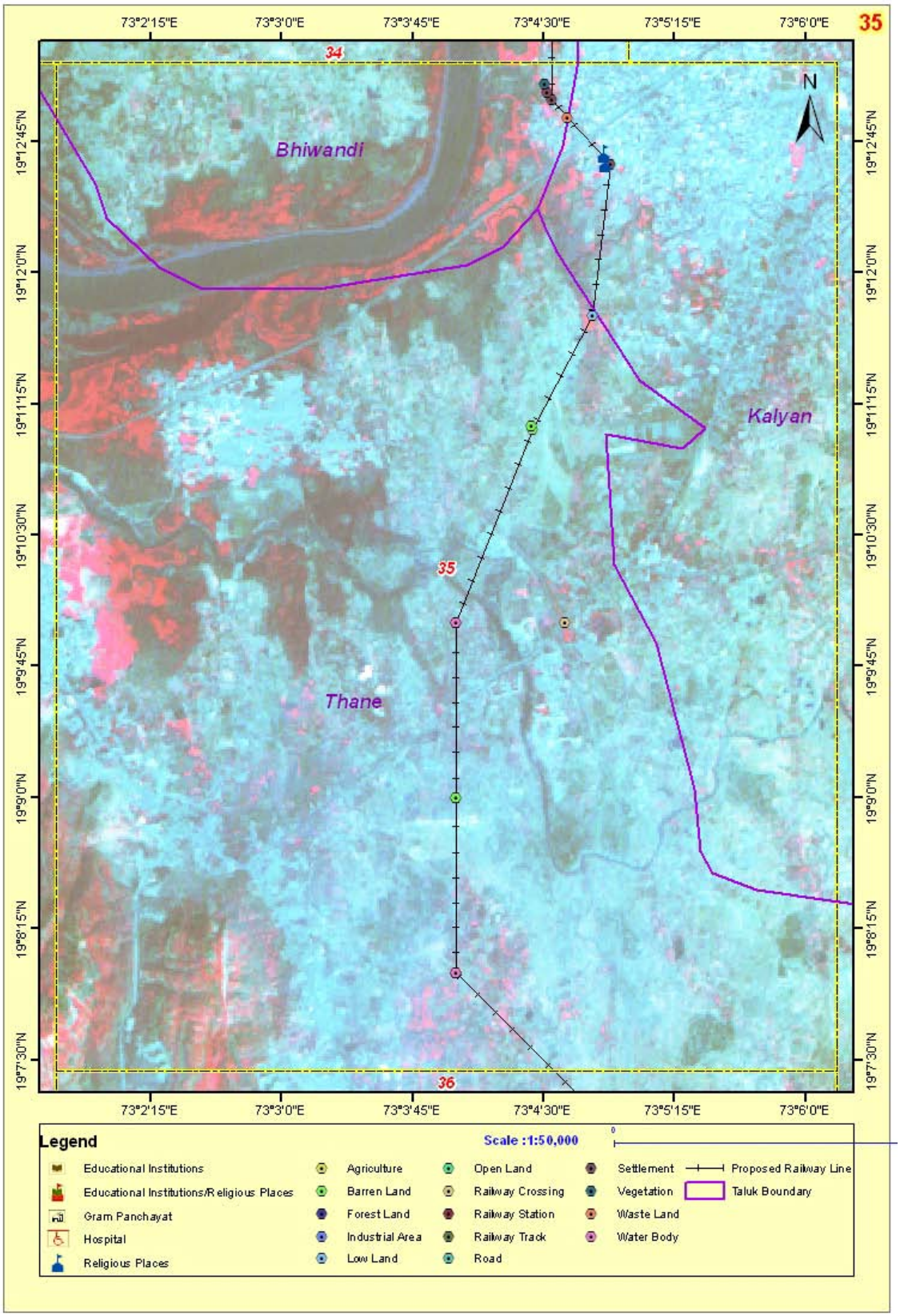
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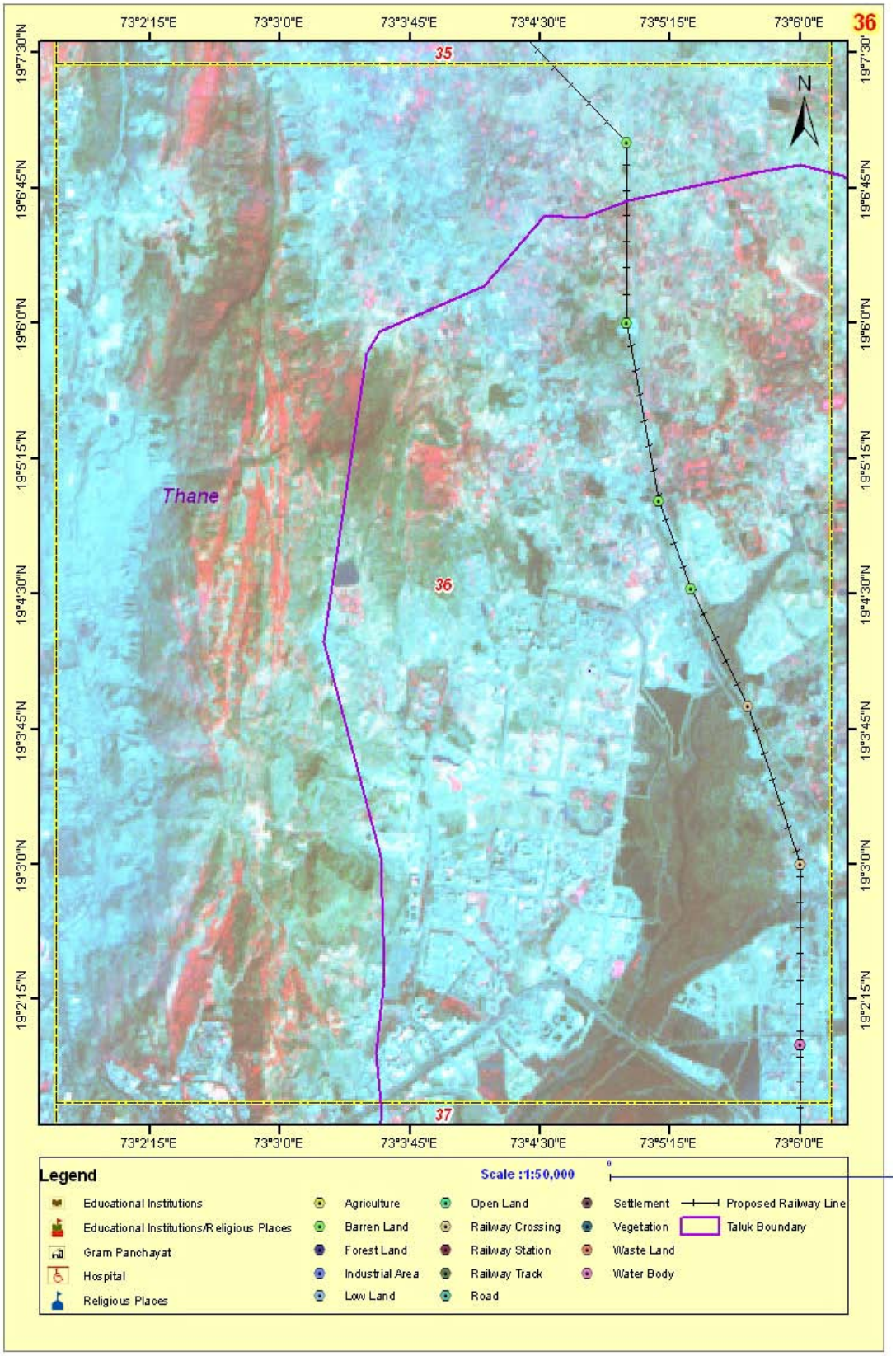
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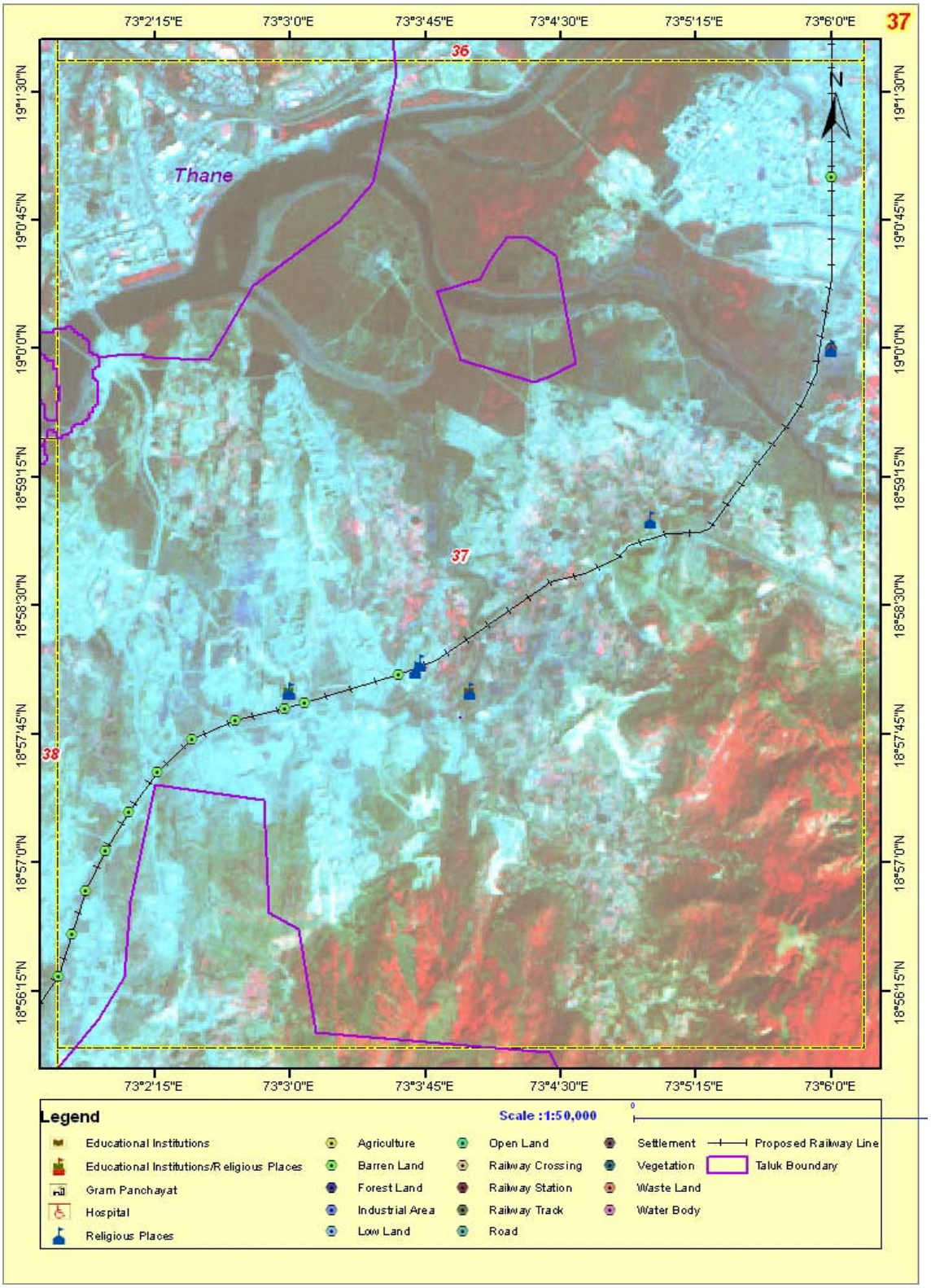
Proposed Railway Line
Taluk Boundary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73°2'15"E
73°3'0"E
73°3'45"E
73°4'30"E
73°5'15"E
73°6'0"E
19°1'30"N
19°0'45"N
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18°59'15"N
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36
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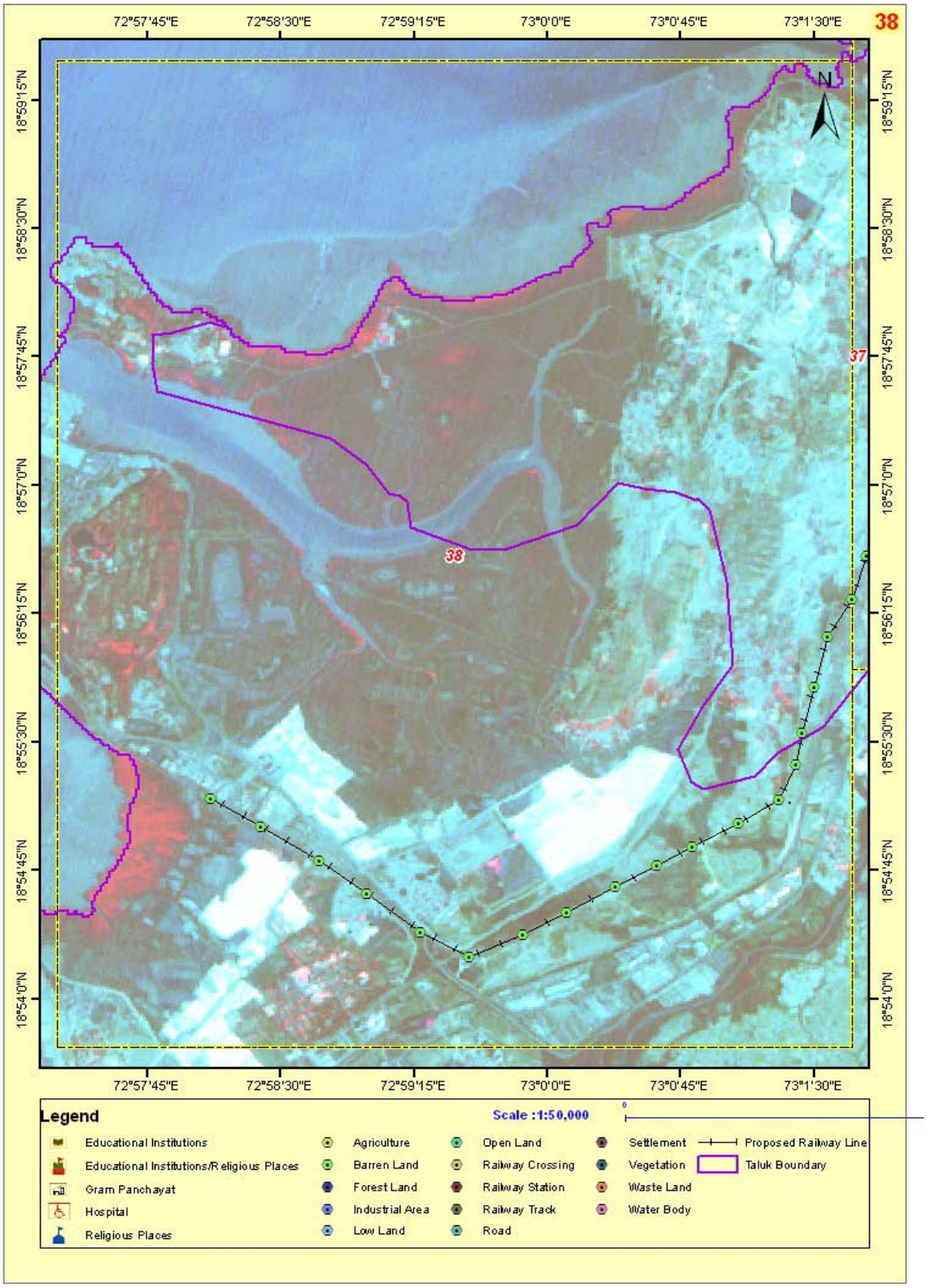
Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
Hospital
Religious Places
Agriculture
Barren Land
Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary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Legend
Scale :1:50,000
Educational Institutions
Educational Institutions/Religious Places
Gram Panchayat
Hospital
Religious Places
Agriculture
Barren Land
Forest Land
Industrial Area
Low Land
Open Land
Railway Crossing
Railway Station
Railway Track
Road
Settlement
Vegetation
Waste Land
Water Body
Proposed Railway Line
Taluk Boundary

Appendix-6 Result of Land Use Survey

Appendix-6a
Land Use Pattern of the Study Area

Appendix-6a

LAND USE PATTERN OF THE STUDY AREA

1. Rewari-Dadri section

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
SECTION 15 AND 16												
1	Daliaki	Rewari	Rewari	8-Dec-10	15.5	15.6	1	3	N/S	Tube well, agriculture field	19	27
2	Jatuwas	Rewari	Rewari	8-Dec-10	15.6	17.27	1	3	N/S	Highway, water line	22	31
3	Bhadawas	Rewari	Rewari	8-Dec-10	17.27	17.3	1	3	N/S	Tube well, Agricultural Field	27	36
4	Bithwana	Rewari	Rewari	8-Dec-10	17.3	17.9	1	3	N/S	Agriculture Field	27	36
5	Bhadawas	Rewari	Rewari	8-Dec-10	17.9	18.2	1	3	N/S	Agriculture Field	27	36
6	Bhiwari	Rewari	Rewari	8-Dec-10	18.2	19.11	1,3	3	N/S	Railway line, Reliance periphery	33	42
7	Kamalpur	Rewari	Rewari	9-Dec-10	19.11	19.73	1	3	E/W	Agriculture, Residence	30	39
8	Devlawas	Rewari	Rewari	9-Dec-10	19.73	20.515	1	3	E/W	Agriculture Field	29	37.5
9	Dhamlaka	Rewari	Rewari	9-Dec-10	20.515	21.54	1	3	E/W	Road	29	37.5
10	Dawana	Rewari	Rewari	9-Dec-10	21.54	23.36	1	3	E/W	Bore well, Highway, Agriculture, Road	29	37.5
11	Lalpur	Rewari	Rewari	9-Dec-10	23.36	24.2	1	3	N/S	Agriculture, Highway Road	20	17
12	Kasola	Rewari	Rewari	9-Dec-10	24.2	25.945	1	3	E/W	Highway ,Agriculture	21	24
13	Lodhana	Rewari	Rewari	10-Dec-10	25.945	28	1,3	3	E/W	Barren land, Agriculture	29	32
14	Pithanwas	Rewari	Rewari	10-Dec-10	28	28.885	1	3	E/W	Agriculture	29	32
15	Mukundpur Basi	Rewari	Rewari	10-Dec-10	28.885	29.72	1	3	E/W	Agriculture, Tube well	23	26
16	Asiaki Tappa Jarthal	Rewari	Rewari	10-Dec-10	29.72	30.925	1	3	E/W	Bore well, Electric line, Road, Tree, Agriculture	23	26
17	Jarthal	Rewari	Rewari	11-Dec-10	30.925	34.4	1	3	E/W	Tube well, Electric line, Residence, Agriculture, Bore well	29	30
18	Nandrampur Bas	Rewari	Rewari	11-Dec-10	34.4	35.525	1	3	E/W	Residence, Agriculture, Tree	32	35
19	Rebarka	Tijara	Alwar	11-Dec-10	35.525	35.8	1	3	E/W	Wasteland	32	35
20	Salarpur	Tijara	Alwar	11-Dec-10	35.8	39.24	1	3	E/W	Agriculture, House	32	35
21	Shahpur	Tijara	Alwar	11-Dec-10	39.24	40.8	1	3	E/W	Agricultural	23	26
22	Kalka	Tijara	Alwar	12-Dec-10	40.8	41.75	1	3	E/W	Agriculture	23	26
23	Tatarpur	Tijara	Alwar	12-Dec-10	41.75	42.25	1	3	E/W	Agriculture	19	26
24	Thara	Tijara	Alwar	12-Dec-10	42.25	42.57	1	3	E/W	Agriculture	19	26
25	Khajuriwas	Tijara	Alwar	12-Dec-10	42.57	44	1	3	E/W	Alwar-Bhiwandi highway	30	30
26	Jihwana	Tijara	Alwar	12-Dec-10	44	44.87	1	3	N/S	Agriculture	25	28
27	Banban	Tijara	Alwar	12-Dec-10	44.87	46.26	1	3	N/S	Agriculture, Residence, Kacha road	32	35
28	Godhan (Keherni)	Tijara	Alwar	12-Dec-10	46.26	46.7	1	3	N/S	Agriculture	32	35
29	Keherni	Tijara	Alwar	13-Dec-10	46.7	49.27	1,3,7,9	3	N/S	Agriculture, Waste land, Barren land, Hill, Bushes	32	35
30	Mundana	Tijara	Alwar	13-Dec-10	49.27	50.58	9	3	E/W	Waste land, Pastureland	35	38
31	Emlaki	Tijara	Alwar	13-Dec-10	50.58	51	1	3	E/W	Agriculture, well, Pump	35	38

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
32	Sarodh	Tijara	Alwar	13-Dec-10	51.4	51.8	1	3	E/W	Agriculture	22	25
33	Sewaka	Mewat	Mewat	2-Dec-10	51	51.4	1	3	E/W	Agriculture	35	38
34	Raniyaki	Mewat	Mewat	2-Dec-10	51.4	52.6	1	3	E/W	Agriculture	22	25
35	Gurnawat	Mewat	Mewat	2-Dec-10	52.6	53.832	1	3	E/W	Agricultural ,Residence, cattle shed, Boundary, Road	22	25
36	Dhidara	Mewat	Mewat	2-Dec-10	53.832	55	1	3	E/W	Agriculture Field, Bore well, Open well, Road, Electricity line	22	25
37	Bharavgpur-Bharagpur	Mewat	Mewat	2-Dec-10	55	55.55	1	3	E/W	Agriculture, Residence, Tube well	23	26
38	Taoru	Mewat	Mewat	2-Dec-10	57.725	58.755	1	3	E/W	Agriculture, Residence, Road, Tube well	20	23
39	Gaurka	Mewat	Mewat	3-Dec-10	56.43	57.725	1	3	E/W	Agriculture, House, Road	20	23
40	Taoru	Mewat	Mewat	3-Dec-10	57.725	58.755	1	3	E/W	Agriculture, Residence, Tube well	20	23
41	Rahedi	Mewat	Mewat	3-Dec-10	58.755	59.84	1	3	E/W	Agriculture, Road	20	23
42	Malaka	Mewat	Mewat	4-Dec-10	59.84	60.46	1	3	E/W	Agriculture	20	23
43	Dalka	Mewat	Mewat	4-Dec-10	60.46	60.72	1	3	E/W	Agriculture	20	23
44	Kharkhri	Mewat	Mewat	4-Dec-10	60.72	61.4	1	3	N/S	Agriculture	25	25
45	Dalka & Kharkhri	Mewat	Mewat	4-Dec-10	60.46	61.65	1	3	N/S	Agriculture, Katchha road	30	30
46	Dhulawat	Mewat	Mewat	4-Dec-10	61.65	63.64	1,3	3	E/W	Agriculture, Barren land	40	40
47	Mendla	Mewat	Mewat	4-Dec-10	63.64	63.69	1	3	E/W	Agriculture	40	40
48	Sasol Patuka	Mewat	Mewat	5-Dec-10	63.9	66.02	1	3	N/S	Agriculture	25	50
49	Khor	Mewat	Mewat	5-Dec-10	66.02	66.7	3	3	E/W	Barren land	50	70
50	Marola	Mewat	Mewat	5-Dec-10	66.7	67.15	3	3	N/S	Agriculture	50	40
51	Rojka	Mewat	Mewat	5-Dec-10	67.15	69.615	3	3	N/S	Barren land	70	50
52	Raipur	Sohna	Gurgaon	10-Dec-10	69.615	70.4	1	3	N/S	Agriculture	70	25
53	Sohna	Sohna	Gurgaon	10-Dec-10	70.4	72.2	1	3	E/W	Agriculture, Kacha road, Kabristan, Power line, Idgah, Shamsan, shop	60	60
54	Aata	Sohna	Gurgaon	10-Dec-10	72.2	72.4	1	3	E/W	Agricultural Field, power line, Farm house, Road	60	60
55	Rampur	Sohna	Gurgaon	10-Dec-10	72.4	73.3	1	3	E/W	Agriculture Field, Houses, Tube well, Power line	45	45
56	Lakhuwas	Sohna	Gurgaon	6-Dec-10	73.3	74.5	1	3	E/W	Residence, Tube well	45	47
57	Udakka	Sohna	Gurgaon	6-Dec-10	74.5	75.2	1	3	E/W	Agriculture	40	45
58	Sancholi	Sohna	Gurgaon	7-Dec-10	75.2	77.7	1,5	3	E/W	Agri, canal, Transformer, Tube well, kacha road, house	30	32
59	Karanki	Sohna	Gurgaon	6-Dec-10	77.7	80.8	1	3	E/W	Near sohna-Palval Main road	23	25

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
60	Silani	Sohna	Gurgaon	7-Dec-10	80.8	82.2	1,3	3	N/S	Agriculture, Near Road, Barren land	31	34
61	Kuntpuri	Sohna	Gurgaon	7-Dec-10	82.2	83	1	3	N/S	Agriculture, Power line, Transformer, Tube well, Pucca Road, Electric line	31	34
62	Barkhera (Rati ka Nawad)	Sohna	Gurgaon	8-Dec-10	83	84.1	1	3	N/S	Agriculture, Power line	35	37
63	Parauli	Palwal	Palwal	16-Nov-10	84.1	85.8	1	3	E/W	Agriculture	31	34
64	Dahlka	Palwal	Palwal	16-Nov-10	85.8	86.2	1	3	E/W	Agriculture, Tube well, Transformer, Temple, Electric Pole	36	39
65	Kalwaka (Mandpuri)	Palwal	Palwal	16-Nov-10	86.2	87.8	1	3	E/W	Agricultural ,Pole, Tube well, Road	36	39
66	Chhaprauli	Palwal	Palwal	16-Nov-10	87.8	90.4	1	3	E/W	Agriculture ,Bore well, Tube well, Grain storage, Road , H.P Line	28	30
67	Pirthala	Palwal	Palwal	17-Nov-10	90.4	94.3	3	3	E/W	Barren land, Electric Pole, Plot	28	30
68	Jhataula	Palwal	Palwal	17-Nov-10	94.3	95.6	1,3	3	E/W	Agri, Barren land, Graveyard, Tube well, Transformer, House	30	33
69	Asawati	Palwal	Palwal	17-Nov-10	95.6	97	1	3	E/W	Agri, Road	37	40
70	Laadpur	Palwal	Palwal	17-Nov-10	97	98.5	1	3	N/S	Agriculture, Tube well	31	34
71	Pahladpur	Ballabgarh	Faridabad	11-Nov-10	98.5	100.093	5	3	E/W	Just Before Agra canal	31	34
72	Fateh pur	Ballabgarh	Faridabad	11-Nov-10	100.093	103.407	1	3	E/W	Agriculture, Road	31	34
73	Ladauli	Ballabgarh	Faridabad	11-Nov-10	103.407	105.241	1	3	N/S	Agricultural Field	31	34
74	Bahbal pur	Ballabgarh	Faridabad	10-Dec-10	105.241	106.423	1	3	N/S	Agriculture Field	31	34
75	Fafunda	Ballabgarh	Faridabad	10-Dec-10	106.423	107.823	1,5	3	N/S	Agriculture, canal, Hanuman Temple, electric pole, Tube well, kacha road, Anand ashram	31	34
76	Dayalpur	Ballabgarh	Faridabad	10-Dec-10	107.823	109.689	1,7	3	N/S	Agriculture, Habitation, commercial	31	34
77	Machhgar	Ballabgarh	Faridabad	10-Dec-10	109.3	110.1	1	3	N/S	Agriculture	31	34
78	Bukharpur	Ballabgarh	Faridabad	10-Dec-10	109.689	111.509	1	3	N/S	Agriculture	31	34
79	Nawda-Tigaon	Ballabgarh	Faridabad	10-Dec-10	111.509	113.144	1,5	3	N/S	Agri, Temple, pond, wells, house	31	34
80	Tigaon	Faridabad	Faridabad	10-Dec-10	113.144	114.238	1	3	N/S	Agriculture, Road	31	34
81	Nimka	Faridabad	Faridabad	10-Dec-10	114.238	115.296	1	3	N/S	Agriculture, Grain storage	31	34
82	Sadpura	Faridabad	Faridabad	8-Nov-10	115.296	116.665	1	3	N/S	Agriculture, house, Tube well	35	37
83	Faridpur	Faridabad	Faridabad	8-Nov-10	116.665	118.238	1	3	N/S	Agriculture	35	37
84	Khedi Kala	Faridabad	Faridabad	8-Nov-10	118.238	119.814	1	3	N/S	Agriculture, Tube well	35	37

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
85	Nachauli	Faridabad	Faridabad	8-Nov-10	119.814	120.964	1	3	N/S	Agriculture, Residence, Temple, Road, building, Gobar gas plant	35	37
86	Bhopani	Faridabad	Faridabad	8-Nov-10	120.964	123.195	1	3	N/S	Agriculture, Tube well	35	37
87	Dhandhar	Faridabad	Faridabad	9-Nov-10	123.195	123.9	1	3	N/S	Tube well Agriculture	35	37
88	Mahabatpur	Faridabad	Faridabad	9-Nov-10	123.9	124.645	1	3	E/W	Agriculture, Tube well, Near road	35	37
89	Laalpur	Faridabad	Faridabad	10-Nov-10	124.645	125.544	1	3	E/W	Agriculture, Tube well	35	37
90	Dalelpur	Sadar	Gautam Buddha Nagar	10-Nov-10	125.544	126.338	1	3	E/W	Agriculture, Tube well, Kacha road	35.03	37
91	Yamuna River				126.338	127.164	9		E/W	RIVER BED		
92	Laalpur	Faridabad	Faridabad	10-Nov-10	127.164	127.658	1	3	E/W	Agriculture	35	37
93	Mahabatpur	Faridabad	Faridabad	10-Nov-10	127.658	127.96	1	3	E/W	Agriculture	35	37
94	Gulaoli	Sadar	GautamBuddha Nagar	12-Nov-10	127.9	130.625	1	3	E/W	Agriculture, , Bore well, Tube well, Expressway, HV Power line	23	25
95	Jhatta	Sadar	GautamBuddha Nagar	12-Nov-10	130.625	132.1	1	3	E/W	Agriculture, Tube well, Road	32	35
96	Mubarakpur and Badoli Bangar	Sadar	GautamBuddha Nagar	12-Nov-10	132.1	132.7	1	3	E/W	Agri, Road, Bore well	32	35
97	Gujarpur	Sadar	GautamBuddha Nagar	15-Nov-10	132.7	133.85	1,3	3	N/S	Agriculture, Barren land, Electric line, Kachha road	32	35
98	Namoli	Sadar	GautamBuddha Nagar	15-Nov-10	133.85	135.62	1,5	3	E/W	Agri, canal, High tension line, pucca road, Industry	27	35
99	Surajpur	Sadar	GautamBuddha Nagar	15-Nov-10	135.62	135.7	1	3	E/W	Agri, Residential Area	31	34
100	Gulistanpur	Sadar	GautamBuddha Nagar	10-Nov-10	135.7	139.6	3,8	3	N/S	Forest, Barren land	27	30
101	Saqipur	Sadar	GautamBuddha Nagar	10-Nov-10	139.6	140.5	1	3	E/W	Agriculture, Road, Electric pole	16	15
102	Pali	Sadar	GautamBuddha Nagar	12-Nov-10	140.5	141.3	1	3	E/W	Agricultural ,Pole	16	15
Faridabad – TKD Line												
103	Mahabatpur/ Dhandhar	Faridabad	Faridabad	18-Feb-11	0	1.1	1	3	N/S	Tube well, Electric Pole	30	30
104	Bhopani	Faridabad	Faridabad	18-Feb-11	0	2.2	1	3	N/S	Tube well, Electric Pole	30	30
105	Riwazpur	Faridabad	Faridabad	18-Feb-11	2.2	2.7	1	3	N/S	Tube well	30	30
106	Tikawali	Faridabad	Faridabad	18-Feb-11	2.7	3.4	1	3	N/S	New House Construction	30	30
107	Badshahpur	Faridabad	Faridabad	18-Feb-11	3.4	4	1	3	N/S	Treatment Plant	30	30
108	Palwali	Faridabad	Faridabad	18-Feb-11	4	5.06	1	3	N/S	Tube well	30	30
109	Wazirpur	Faridabad	Faridabad	18-Feb-11	5.06	6.8	1	3	N/S	Temple, Residence	30	30
110	Mawai	Faridabad	Faridabad	18-Feb-11	6.8	8.936	7	3	N/S	Temple, School, Residence, Agra canal, Nalla, Road	30	30

***Type of Land use Code:** Agriculture = 1, Vegetation Cover = 2, Barren land = 3, Low Land = 4, Water Body = 5, Industrial Area =6, Human Settlement =7, Forest Land =8, River Bed =9, and Waste Dumping Land = 10, Wet land=11

**** Area category Code:** Industrial Area= 1, Commercial Area= 2, Residential Area=3, Silence Zone= 4

*****Direction**: The direction for Railway line is taken as "To" where the DFC Chainage is increasing. For example, the direction for DFC Line in Rewari-Dadri is from "Rewari" to "Dadri" as start chainage is at Rewari and end chainage is at Dadri.

***2 IMPORTANT**: For distance from Right of way, left and right side would mean person looking at the chainage as it increases. The area falling on his/ her right would be written in right column and left area would be written in left column

Photo 1: DFC-center stone on agricultural land, village-Daliaki

Photo 2: Center stone on the agri. Land, Village:Jatuwas

Photo 3: Center Stone on the agricultural land, Village:Bhadawas

Photo 4: Center stone on the agricultural land in Bithwana Village

Photo 5: Center Stone inside Reliance premises in Bhiwari Village

Photo 6: Reliance Premises, Bhiwari Village

Photo 7: Center stone on the agricultural land in Kamalpur Village

Photo 8: Residence of satpal in Kamalpur Village

Photo 9: Center stone on the agricultural land in Devlawas Village

Photo 10: Center stone on the agri. land in Dhamlaka Village

Photo 11: Center stone on the agri. land in Dawana Village

Photo 12: Center stone on agricultural land in Lalpur Village

Photo 13: Center stone on the agricultural land in Kasola Village

Photo 14: Center stone on the agricultural land in Lodhana Village

Photo 15: Center stone on the agricultural land in Pithanwas Village

Photo 16: Center stone on the agri.land in Mukundpur Basi Village

Photo 17: Center stone on the agri. land in Asiaki Tappa Jarthal Village

Photo 18: Center stone on the agri. land in Jarthal Village

Photo 19: Residence in Jarthal Village

Photo 20: Center stone on the agri. land in Nandrampur Bas village

Photo 21: Center stone on the agri.land in Nandrampur Bas Village

Photo 22: Agricultural land in Rebarka Village

Photo 23: Agricultural land in Salarpur Village

Photo 24: Agricultural land in Shahpur Village

Photo 25: Agricultural land in Kalka Village

Photo 26: Agricultural land in Tatarpur Village

Photo 27: Agricultural land in Khajuriwas Village

Photo 28: Agricultural land in Jihwana Village

Photo 29: Agricultural land in Banban Village

Photo 30: Agricultural land in Godhan & Keherni Villages

Photo 31: Agricultural land in Keherni Village

Photo 32: Agricultural land in Mundana Village

Photo 33: Agricultural land in Emlaki Village

Photo 34: Agricultural land in Sarodh Village

Photo 35: Agricultural land in Sewaka Village

Photo 36: Agricultural land in Raniyaki Village

Photo 37: Agricultural land in Gurnawat Village

Photo 38: Agricultural land in Dhidara Village

Photo 39: Agricultural land in Bharavgpur-Bharagpur Village

Photo 40: Agricultural land in Taoru Village

Photo 41: Agricultural land in Gaurka Village

Photo 42: Agricultural land in Rahedi Village

Photo 43: Agricultural land in Malaka Village

Photo 44: Agricultural land in Dalka Village

Photo 45: Agricultural land in Kharkhri Village

Photo 46: Agricultural land in Village Kharkhri

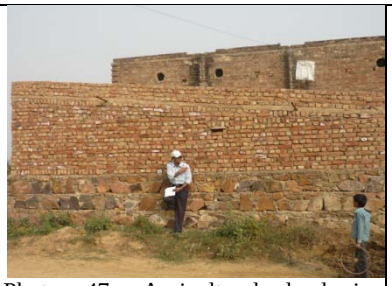


Photo 47: Agricultural land in Dhulawat Village

Photo 48: Agricultural land in Mendla Village

Photo 49: Agricultural land in Sasol Patuka Village

Photo 50: Agricultural land in Khor Village

Photo 51: Agricultural land in Marola Village

Photo 52: Agricultural land in Rojka Village

Photo 53: Agricultural land in Raipur Village

Photo 54: Agricultural land in Sohna Village

Photo 55: Agricultural land in Aata Village

Photo 56: Agricultural land in Rampur Village

Photo 57: Agricultural land in Lakhuwas Village

Photo 58: Agricultural land in Udakka Village

Photo 59: Agricultural land in Karanki Village

Photo 60: Agricultural land in Sancholi Village

Photo 61: Agricultural land in Karanki Village

Photo 62: Agricultural land in Silani Village

Photo 63: Agricultural land in Kuntpuri Village

Photo 64: Agricultural land in Barkhera Village

Photo 65: Agricultural land in Parauli Village

Photo 66: Agricultural land in Dahlka Village

Photo 67: Agricultural land in Kalwaka Village (Mandpuri)

Photo 68: Agricultural land in Chhaprauli Village

Photo 69: Agricultural land in Pirthala Village

Photo 70: Agricultural land in Jhataula Village

Photo 71: Agricultural land in Asawati Village

Photo 72: Agricultural land in Village Laadpur

Photo 73: Agricultural land in Pahladpur-Magra Deeg Village

Photo 74: Agricultural land in Fateh pur Village

Photo 75: Agricultural land in Ladauli Village

Photo 76: Agricultural land in Bahbalpur Village

Photo 77: Agricultural land in Fafunda Village

Photo 78: Agricultural land in Dayalpur Village

Photo 79: Agricultural land in Machhghar Village

Photo 80: Agricultural land in Bukharpur Village

Photo 81: Agricultural land in Nawada Tigaon Village

Photo 82: Agricultural land in Nimka Village

Photo 83: Agricultural land in Sadpura Village

Photo 84: Agricultural land in Faridpur Village

Photo 85: Agricultural land in Khedi Kala Village

Photo 86: Agricultural land in Nacauholi Village

Photo 87: Agricultural land in Bhopani Village

Photo 88: Agricultural land in Dhandhar Village

Photo 89: Agricultural land in Mahatbatpur Village

Photo 90: Agricultural land in Laalpur Village

Photo 91: Agricultural land in Dalelpur Village

Photo 92: Red Stone in Agricultural land in Mubarakpur Village

Photo 93: Red Stone in Barren land in Gujarpur Village

Photo 94: Red stone in Agricultural land in Namoli Village

Photo 95: Red Stone alongside Road in Surajpur Village

Photo 96: Forest land in Gulistanpur Village

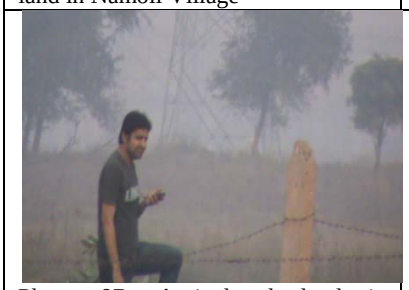


Photo 97: Agricultural land in Saqipur Village

Photo 98: Agricultural land in Pali

Photo 99: Agricultural Land in Dhandhar

Photo 100 Agricultural Land In Bhopani

Photo 101: Agricultural Land in Riwazpur

Photo 102: House and tubewell surrounded by Agricultural land in Tikawali

Photo 103: Agricultural land in Badshahpur	Photo 104: Tree in Agricultural Land in Palwali	Photo 105: Agricultural Land in Wazirpur
Photo 106: School In Residential Area in Mawai		

2. Vadodara-JNPT section: Gujarat

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
SECTION 3												
1	Bhilad	Umergaon	Valsad	28-Jan-11	160.397	162.805	2, 3, 4, 5, 7	2	E/W	Temple, Factory, Market, Station, Darotha River	-	20
2	Karambeli	Umergaon	Valsad	28-Jan-11	162.805	164.942	3	2	E/W	Petrol Pump, Highway	-	19
3	Valvada	Umergaon	Valsad	28-Jan-11	164.942	168.978	2, 4	2	E/W	None	-	25
4	Vapi T/2	Pardi	Valsad	28-Jan-11	170.106	172.339	3, 6, 7	4	E/W	Temple, Hospital, Station, School, Factory, Industry	-	27
5	Vapi	Pardi	Valsad	28-Jan-11	173.012	179.94	7	3	E/W	Road	-	15
6	Orvad	Pardi	Valsad	28-Jan-11	179.94	181.692	2, 5	3	E/W	Temple, Drain, Market	-	24
7	Rentlav	Pardi	Valsad	28-Jan-11	181.692	182.362	2	3	E/W	None	-	3
8	Motivada	Pardi	Valsad	28-Jan-11	182.362	184.962	2, 7	3	E/W	Gram Panchayat	-	27
9	Umarsadi	Pardi	Valsad	28-Jan-11	184.962	188.671	3, 5	3	E/W	Railway Bridge, Par River	-	32
10	Haria	Valsad	Valsad	28-Jan-11	188.671	190.58	3	3	E/W	Temple	-	29
11	Atul	Valsad	Valsad	28-Jan-11	190.58	191.727	2	3	E/W	None	-	54
12	Dived	Valsad	Valsad	28-Jan-11	191.727	191.962	2	3	E/W	None	-	65
13	Maghod	Valsad	Valsad	29-Jan-11	191.962	193.191	3	3	E/W	None	-	78
14	Pardi Parnera	Valsad	Valsad	29-Jan-11	193.191	194.767	2, 3	3	E/W	None	-	23
15	Vasiyer	Valsad	Valsad	29-Jan-11	194.767	195.9	2, 5, 7	3	E/W	Wanki Khadi	-	42
16	Abrama	Valsad	Valsad	29-Jan-11	195.9	197.901	2	3	E/W	Over bridge	-	96
17	Mograwadi	Valsad	Valsad	29-Jan-11	197.901	198.872	2	4	E/W	School	-	40
18	Pardi Sadpur	Valsad	Valsad	29-Jan-11	198.872	200.432	2, 5	3	E/W	Auranga Bridge, River Bed	-	75
19	Vejalpur	Valsad	Valsad	29-Jan-11	200.432	200.862	2	3	E/W	None	-	80
20	Lilapur	Valsad	Valsad	29-Jan-11	200.862	202.142	2, 3	3	E/W	Temple	-	28
21	Sarodhi	Valsad	Valsad	29-Jan-11	202.142	203.689	3, 5	3	E/W	Kaloi Drain	-	28
22	Chikhala	Valsad	Valsad	29-Jan-11	203.689	205.176	1, 2	3	E/W	None,	-	27
23	Sankar Talav	Valsad	Valsad	29-Jan-11	205.176	205.926	3, 6	1	E/W	Waffer Industry	-	23
24	Dungri	Valsad	Valsad	29-Jan-11	205.926	208.508	7	3	E/W	Mosque, Temple, School	-	18
25	Rolla	Valsad	Valsad	29-Jan-11	208.508	209.486	2, 7	3	E/W	None	-	18
26	Jespore	Valsad	Valsad	29-Jan-11	209.486	210.147	1	3	E/W	None	-	24
27	Olgaon	Valsad	Valsad	29-Jan-11	210.147	211.443	1, 2	3	E/W	None	-	24
28	Jora Vasan	Valsad	Valsad	29-Jan-11	211.443	213.476	1, 7	3	E/W	High Tension Line	-	22
29	Khaparwada	Gandevi	Navsari	29-Jan-11	213.476	214.133	2, 7	3	E/W	None	-	30
30	Desra	Gandevi	Navsari	29-Jan-11	214.133	216.136	2, 7	4	E/W	School, Temple, Dargah, Aanganwadi, Mosque	-	30
31	Billimora	Gandevi	Navsari	29-Jan-11	216.136	218.236	2, 7	3	E/W	Temple, Mosque, Dargah	-	13
32	Bhatha	Gandevi	Navsari	29-Jan-11	218.236	219.36	2, 5	3	E/W	Ambika River	-	28
33	Devdha	Gandevi	Navsari	29-Jan-11	219.36	220.915	2	3	E/W	Temple	-	41
34	Sari Khurad	Gandevi	Navsari	29-Jan-11	219.543	220.136	2, 4	3	E/W	None	-	28
35	Sari Bujranj	Gandevi	Navsari	29-Jan-11	220.91	222.615	5, 7	3	E/W	Temple, Station	-	28
36	Amalsad	Gandevi	Navsari	27-Jan-11	222.615	224.803	1,2,7	3	E/W	Temple, Bridge	-	18
37	Ancheli	Gandevi	Navsari	27-Jan-11	224.803	226.261	1,2	4	E/W	Bridge, Canal, Mosque, School, Temple	-	15
38	Mohanpur	Gandevi	Navsari	27-Jan-11	226.261	227.307	1,7	3	E/W	Temple, Level Crossing	-	17
39	Vedchha	Jalalpore	Navsari	27-Jan-11	227.307	229.457	2,7	3	E/W	Bridge, Temple	-	20

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
40	Mandir	Jalalpore	Navsari	27-Jan-11	229.457	232.022	1,2	3	E/W	DFCC Bridge Under Construction	-	28
41	Hansapore	Jalalpore	Navsari	27-Jan-11	232.293	234.56	1,3,11	3	E/W	Bridge, wetland, Temple	-	16
42	Vejalpur	Jalalpore	Navsari	27-Jan-11	234.56	236.626	7,4,2	3	E/W	Bridge, Temple	-	23
43	Navsari	Navsari (Rural)	Navsari	26-Jan-11	236.626	238.517	1, 3, 4, 5, 6, 7	2	E/W	Bridge, Temple, Cinema Hall, School	-	42
44	Tavdi	Jalalpore	Navsari	26-Jan-11	236.836	241.07	1, 3, 5, 9	3	E/W	Bridge, Temple, Tank	-	23
45	Sagra	Jalalpore	Navsari	26-Jan-11	241.07	242.842	1, 3, 7	3	E/W	Bridge, Temple, Level Crossing	-	28
46	Chhinam	Jalalpore	Navsari	26-Jan-11	242.842	242.94	1	3	E/W	None	-	28
47	Kadoli	Jalalpore	Navsari	26-Jan-11	242.92	245.596	1, 2, 3, 5	4	E/W	Bridge, Canal, Pond, Temple, Vegetation	-	22
48	Mahuwar	Jalalpore	Navsari	26-Jan-11	245.596	246.594	1,7	3	E/W	Bridge, Drain, Level crossing, Temple, Mosque	-	15
49	Ponsra	Jalalpore	Navsari	26-Jan-11	246.594	248.544	1, 7	3	E/W	Bridge, High Tension line, Level crossing	-	25
50	Maroli	Jalalpore	Navsari	26-Jan-11	248.426	249.407	1, 2, 3, 5, 7, 9	4	E/W	Mosque, School, Hospital, Market, Level crossing Railway Station	-	25
51	Kansad	Choryasi	Surat	26-Jan-11			1	3	E/W	None	-	25
52	Sachin	Choryasi	Surat	26-Jan-11			4, 5, 7, 11	4	E/W	Hospital, Market, Temple, Railway Station	-	20
SECTION 4												
53	Unn	Surat City	Surat	30-Jan-11			1	3	E/W for LU	Shrub vegetation	-	28
54	Bhestan	Surat City	Surat	30-Jan-11			1	3	E/W for LU	Shrub vegetation	-	28
55	Bhedwad	Surat City	Surat	30-Jan-11			1	3	E/W for LU	Shrub vegetation	-	28
56	Dindoli	Choryasi	Surat	30-Jan-11			1	3	E/W for LU	Sugarcane crope	22	30
57	Godadra	Choryasi	Surat	30-Jan-11			1	3	E/W for LU	Sugarcane, Sapota, Vegetable crop	30	32
58	Dakhanwada	Choryasi	Surat	30-Jan-11			1	3	E/W for LU	Sugarcane crop	35	35
59	Devach	Choryasi	Surat	30-Jan-11			1	3	E/W for LU	Vegetable crop, sugarcane	30	40
60	Sedhav	Palsana	Surat	30-Jan-11			1	3	E/W for LU	Agricultural (Sugarcane) Impomiya, climber	32	35
61	Niyol	Palsana	Surat	30-Jan-11			1	3	E/W for LU	Sugarcane, Cabbage, Banana, Mango, Orchard	26	37
62	Vedchha	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Agricultural crop, Sapota orchard, sugarcane	25	30
63	Chhedchha	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Sugarcane, Sapota orchard	22	32
64	Kosmada	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Sugarcane crop in Agricultural, vegetable	20	31
65	Khadsad	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Vegetable crop, sugarcane	20	30
66	Pasodra	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Agricultural crop, Sapota orchard, vegetable	22	30

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
67	Laskana	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Sugarcane, Sapota orchard mango orchard	30	38
68	Valak	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Vegetable crop, sugarcane	26	34
69	Bhada	Kamrej	Surat	30-Jan-11			1	3	E/W for LU	Vegetable, sapota, orchard, sugarcane	28	36
70	Abrama	Kamrej	Surat	18-Jan-11			1, 5	3	E/W	Tube Well, High Voltage Tower, Canal, Road	27	27
71	Bharthana	Choryasi	Surat	18-Jan-11			1, 5	3	E/W	Canal, Gaosala	10	5
72	Gothan	Olpad	Surat	18-Jan-11			1, 7, 5	3	E/W	Temple, Road, Well, Drain	27	27
73	Bharthana Kosad	Choryasi	Surat	18-Jan-11			1, 5	3	E/W	Canal, Gaosala	10	5
74	Kosad	Surat City	Surat	18-Jan-11			1	3	E/W	Temple	10	5
75	Variyav	Surat City	Surat	18-Jan-11			1	3	E/W	IFFCO Track	10	5
76	Umra	Olpad	Surat	18-Jan-11			1, 5	3	E/W	Well, Electric Pole	10	5
77	Sayan	Olpad	Surat	19-Jan-11			3, 7	3	E/W	Temple, Market, Road, Railway crossing	22	
78	Shekhpur	Kamrej	Surat	19-Jan-11			2	3	E/W	Highway Toll Tax		
79	kareli	Olpad	Surat	19-Jan-11			1, 3, 5	3	E/W	Canal	10	
80	Kudsad	Olpad	Surat	19-Jan-11			1, 5	3	E/W	Water Body, Railway crossing	10	5
81	Kim	Olpad	Surat	19-Jan-11			3, 7	4	E/W	School, College, Hospital, Temple	10	5
82	Kathodara	Kamrej	Surat	19-Jan-11			7	4	E/W	Temple, Mosque, School, Dargah	10	5
83	Siyalaj	Mangrol	Surat	19-Jan-11			1, 5	3	E/W	River	80	12
84	Kunwarda	Mangrol	Surat	19-Jan-11			3	3	E/W	Bridge	15	5
85	Kosamba	Mangrol	Surat	19-Jan-11			7	3	E/W	Temple	15	5
86	Hathuran	Mangrol	Surat	19-Jan-11			7	4	E/W	School, Mosque	10	5
87	Panoli	Ankleshwar	Surat	20-Jan-11			3, 7	3	E/W	Station	10	5
88	Sanjali	Ankleshwar	Surat	20-Jan-11			6, 5	3	E/W	Water body	10	5
SECTION 5												
89	Umarwada	Ankleshwar	Bharuch	20-Jan-11			1, 3, 6	1	E/W	GIDC Land	40	-
90	Kapodara	Ankleshwar	Bharuch	20-Jan-11			1, 3	3	E/W	None	56	56
91	Bhatkodra	Ankleshwar	Bharuch	20-Jan-11			1	3	E/W	Dargah	40	40
92	Piraman	Ankleshwar	Bharuch	20-Jan-11			1	3	E/W	Road	40	40
93	Ankleshwar	Ankleshwar	Bharuch	20-Jan-11			1	3	E/W	Electric Pole, Road	75	75
94	Deeva	Ankleshwar	Bharuch	20-Jan-11			3	3	E/W	Road	18	18
95	Safruddin	Ankleshwar	Bharuch	20-Jan-11			1, 5, 7	3	E/W	River Belt, Temple	120	120
96	Sakkarpura	Ankleshwar	Bharuch	20-Jan-11			1, 7	3	E/W	Temple	70	70
97	Kukarwada	Bharuch	Bharuch	21-Jan-11			1	3	E/W	None	27	27
98	Dahegam	Bharuch	Bharuch	21-Jan-11			1	3	E/W	Highway, Mosque	27	27
99	Manubar	Bharuch	Bharuch	21-Jan-11			1	3	E/W	Road	27	27
100	Khanthariya	Bharuch	Bharuch	21-Jan-11			1, 5	3	E/W	Canal, Road, Under Construction Track	27	27
101	Tham	Bharuch	Bharuch	21-Jan-11			1	3	E/W	Dargah	2	27
102	Mahudhala	Bharuch	Bharuch	21-Jan-11			1	3	E/W	None	27	27
103	Derol	Bharuch	Bharuch	21-Jan-11			1	3	E/W	None	27	27
104	Tralsi	Bharuch	Bharuch	21-Jan-11			1	3	E/W	None	27	27
105	Tralsa	Bharuch	Bharuch	21-Jan-11			1	3	E/W	Road	27	27
106	Pariyej	Bharuch	Bharuch	22-Jan-11			1	3	E/W	Electric Pole	27	27
107	Pipaliya	Bharuch	Bharuch	22-Jan-11			1	3	E/W	None	27	27
108	Parkhet	Bharuch	Bharuch	22-Jan-11			1	3	E/W	Road	60	60
109	Padariya	Bharuch	Bharuch	22-Jan-11			1	3	E/W	Road	27	27
110	Tankaria	Bharuch	Bharuch	22-Jan-11			1, 5	3	E/W	Drain, Madarsa	27	27
111	Wantarsha	Amod	Bharuch	22-Jan-11			1	3	E/W	Dargah, Road	27	27

SL No.	Village	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	ROW width (m)	
					From	To					Left *2	Right *2
112	Dhora	Amod	Bharuch	22-Jan-11			1	3	E/W	None	27	27
113	Mesrad	Karjan	Vadodara	22-Jan-11			1	3	E/W	None	35	35
114	Ikhar	Amod	Bharuch	23-Jan-11			1	3	E/W	Road	27	27
115	Telod	Amod	Bharuch	23-Jan-11			1, 5	3	E/W	Canal	27	27
116	Ochhan	Amod	Bharuch	23-Jan-11			1	3	E/W	Road	27	27
117	Mangrol	Karjan	Bharuch	23-Jan-11			1	3	E/W	Road	35	35
118	Kambola	Karjan	Vadodara	23-Jan-11			1, 5	3	E/W	Tubewell	35	55
119	Bodka	Karjan	Vadodara	23-Jan-11			1	3	E/W	None	35	55
120	Handod	Karjan	Vadodara	23-Jan-11			1, 7	3	E/W	Guava Plantation	35	35
121	Khanda	Karjan	Vadodara	23-Jan-11			1, 7	3	E/W	Road crossing, temple, Low land area	55	55
122	Kurai	Karjan	Vadodara	23-Jan-11			1	3	E/W	High Tension Line	35	35
123	Pingalwada	Karjan	Vadodara	23-Jan-11			1, 7	3	E/W	Road	35	35
124	Untiya Medad	Vadodara	Vadodara	23-Jan-11			1	3	E/W	None	35	35
125	Gosindra	Vadodara	Vadodara	23-Jan-11			1	3	E/W	None	35	35

***Type of Land use Code**: Agriculture = 1, Vegetation Cover = 2, Barren land = 3, Low Land = 4, Water Body = 5, Industrial Area =6, Human Settlement =7, Forest Land =8, River Bed =9, and Waste Dumping Land = 10, Wet land=11

**** Area category Code**: Industrial Area= 1, Commercial Area= 2, Residential Area=3, Silence Zone= 4

***Direction: The direction for Railway line is taken as "To" where the DFC Chainage is increasing. For example, the direction for DFC Line in Rewari-Dadri is from "Rewari" to "Dadri" as start chainage is at Rewari and end chainage is at Dadri.

*2 IMPORTANT: For distance from Right of way, left and right side would mean person looking at the chainage as it increases. The area falling on his/ her right would be written in right column and left area would be written in left column

Photo 1: Market near Station in Bhilad

Photo 2: Barren Land in Karambeli

Photo 3: Residential area in Valvad

Photo 4: Railway Station in Vapi T2

Photo 5: Residential area in Vapi

Photo 6: Red Stone in Agricultural field of Orvad

Photo 7: Barren Land in Rentlav

Photo 8: Level Crossing in Motivada

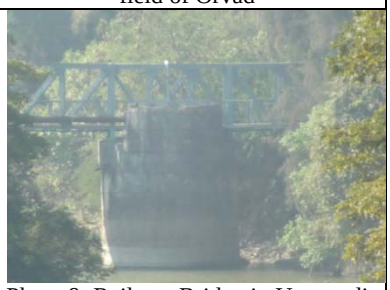


Photo 9: Railway Bridge in Umarsadi

Photo 10: Red Stone near Road in Haria

Photo 11: Level Crossing in Atul

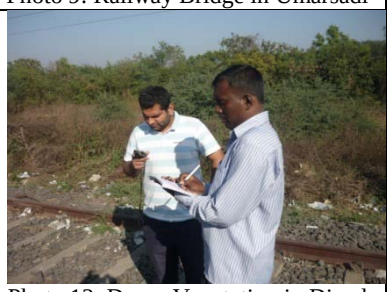


Photo 12: Dense Vegetation in Dived

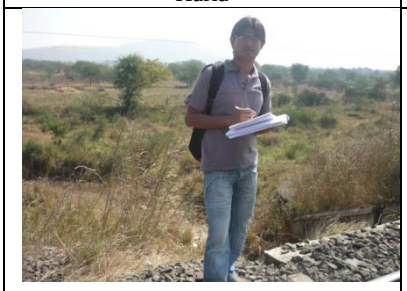


Photo 13: Barren Land in Magodh

Photo 14: Barren Land in Pardi Pernera

Photo 15: Residential area and small water body in Vasiyer

Photo 16: Over Bridge in Abhrama 2

Photo 17: Railway School in Mograwadi

Photo 18: Auranga Bridge in Vardi Shadpur1

Photo 19: Vegetation in Vejalpur

Photo 20:Valsad Railway Station in Lilapur

Photo 21: Barren Land in Lilapur

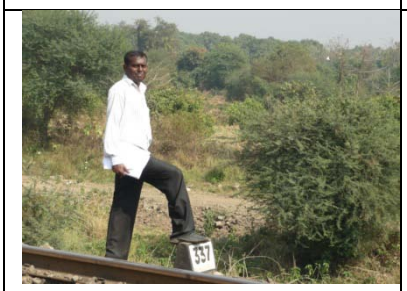


Photo 22: Dense Vegetation in Sarodhi

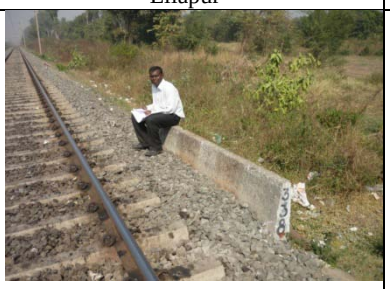


Photo 23: Plantation along existing Track in Chikhla

Photo 24: Barren Land in Shankartalav

Photo 25: Residential area in Dungri

Photo 26: Dense Vegetation in Rolla

Photo 27: Agricultural Land in Jespore

Photo 28: Red Stone in Barren Land in Olgaon

Photo 29: Agricultural Land in Jora Vasan

Photo 30: Vegetation near Level Crossing in Deshra

Photo 31: Residential area in Billimora

Photo 32: Vegetation in Bhatha

Photo 33: Water Bodies in Barren Land in Devdha

Photo 34: Vegetation in Sari Khurasd

Photo 35: Agricultural land in Sari Bhujrang

Photo 36: Dense Vegetation in Amalsad

Photo 37: Bridge in Anchheli Village

Photo 38: Level Crossing in Mohanpur

Photo 39: Bridge in Vedccha Village

Photo 40: Under Construction DFCC bridge in Mandir

Photo 41: Level Crossing in Hansapore

Photo 42: Bridge in Vejalpore Village

Photo 43: Bridge in Barren Land in Navsari

Photo 44: Bridge crossing Canal in Tavdi

Photo 45: Bridge crossing Canal in Sagra

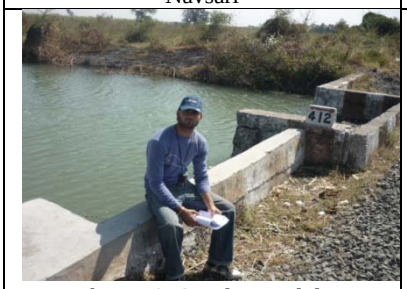


Photo 46: Canal in Kadoli

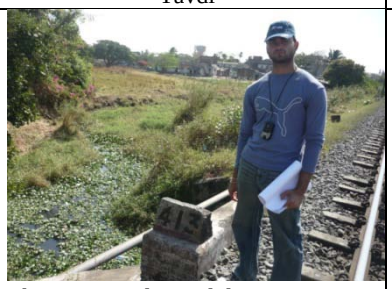


Photo 47: Bridge and drain in Barren land in Mahubar

Photo 48: High Tension pole in barren land in Ponsra

Photo 49: Railway Phatak in Maroli

Photo 50: Water Canal and barren land in Sachin

Photo 51: Bhestan Railway Station in Unn

Photo 52: Canal in Dindoli

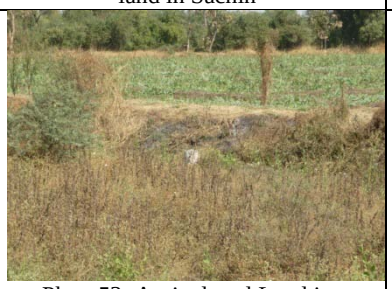


Photo53: Agricultural Land in Dhakanwada

Photo 54: Agricultural Land in Sedav

Photo 55: Agricultural land in Devach

Photo 56: Agricultural land in Miyol

Photo 57: Water Bbody among barren land in Vedcha

Photo 58: Agricultural land in Kosmada

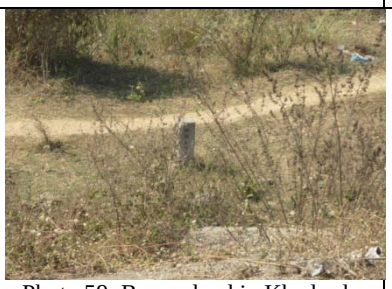


Photo 59: Barren land in Khadsad

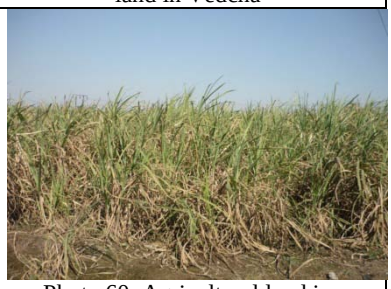


Photo 60: Agricultural land in Pasodra

Photo 61: Plantation in Valak

Photo 62: Plantation in Bhada

Photo 63: High voltage tower and tube well in agricultural land near proposed line in Abhrama

Photo 64: Red stone in agricultural land in Barthana

Photo 65: Red stone in agricultural land near existing railway line in Gothan

Photo 66: Red stone in agricultural land in Barthana

Photo 67: Red stone in Agricultural land in Kosad

Photo 68: Red stone near IFFCO Track and agricultural land in Variyav

Photo 69: Agricultural land near railway phatak in Umra

Photo 70: Red stone in barren land near a canal and market area in Sayan

Photo 71: Residential area and small water body in Seikhpur

Photo 72: Red stone in barren land near canal in Kareli

Photo 73: Agricultural land near existing railway track in Khursad

Photo 74: Boundary of pharmacy college comes under ROW in Kim

Photo 75: Temple among residential area in Kathodara

Photo 76: Agricultural land in Sialaj

Photo 77: Red stone in barren land under a bridge in Kuverda

Photo 78: Red stone near residential area in Kosamba

Photo 79: Red stone near residential area near existing railway track in Hathuran

Photo 80: Red stone in barren land near railway residential area in Panoli

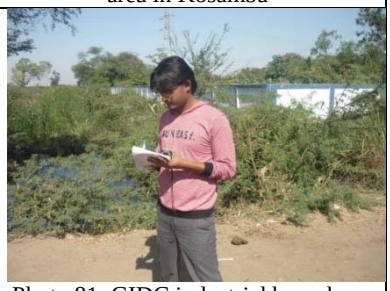


Photo 81: GIDC industrial boundary near proposed line in Sanjali

Photo 82: Red stone in agricultural land in Umarwada

Photo 83:Red stone in barren land in Kapodra

Photo 84: Flag circled showing place of worship under this tree in Bhatkodra

Photo 85: Red stone in agricultural land in Safruddin

Photo 86: Agricultural land with trees in Sakkarpur

Photo 87: Red stone in barren land in Deeva

Photo 88: Agricultural land with electric pole in Ankleshwar

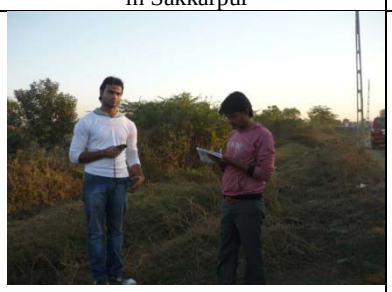


Photo 89: Agricultural land in Piraman

Photo 90: Agricultural land in Kukarwada

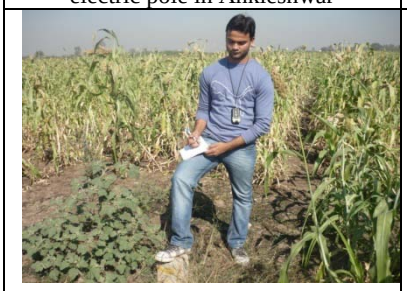


Photo 91: Agricultural land in Dahegam

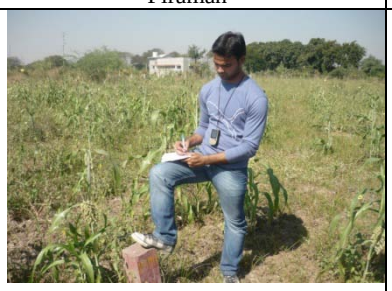


Photo 92: Agricultural land in Mahubar

Photo 93: Agricultural land in Khantaria

Photo 94: Agricultural land in Tham

Photo 95: Agricultural Land in Derol

Photo 96: Agricultural land in Mahudla

Photo 97: Agricultural land in Tralsi

Photo 98: Kachha road crossing through agricultural land in Tralsa

Photo 99: Yellow stone in the agricultural field of Pariyaj

Photo 100: Agricultural land in Pipaliya Village

Photo 101: Red stone in agricultural field of Parketh

Photo 102: Agricultural land and road in Pardriya

Photo 103: Agricultural land in Tankaria Village

Photo104: Red stone in agricultural land in Wantarsha

Photo 105: Agricultural land in Dhora

Photo 106: Agricultural land behind red stone in Mesrad

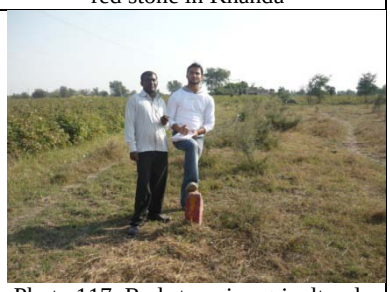
Photo 107 Red stone in agricultural land in Ikhar

Photo 108: Red stone in agricultural land along Road side in Ochhan

Photo 109: Agricultural land and caanal in Telod

Photo110: Red stone in agricultural land in Mangrol

Photo 111: Agricultural land behind red stone in Kambola

Photo 112: Red stone in agricultural land in Bodka	Photo 113: Guava plantation behind red stone in Handod	Photo 114: Agricultural land behind red stone in Khanda
Photo 115: Agricultural land in Kurai	Photo 116: Red stone on road side, agricultural land along road side in Pingalwada	 Photo 117: Red stone in agricultural land in Untiya Medad
Photo 118: Red stone in agricultural land in Gosindra		

3. Vadodara-JNPT section: Maharashtra

SL No.	Village Name	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	RoW width (m)	
					From	To					Left *2	Right *2
SECTION 1												
1	Jaskhar-3	Uran	Raigad	17-Dec-10	0	1.6	3	3	E/W	Pipeline crossing	60	-
2	Jashkar-1	Uran	Raigad	17-Dec-10	1.6	2.4	3	3	E/W	No	30	-
3	Sonari-1	Uran	Raigad	17-Dec-10	1.6	2.4	3	3	E/W	No	30	-
4	Karal	Uran	Raigad	17-Dec-10	2.4	3.3	3	3	E/W	No	30	-
5	Pagote	Uran	Raigad	17-Dec-10	3.3	4.1	3	3	N/S	No	30	-
6	Karal/Pagote	Uran	Raigad	17-Dec-10	4.1	4.8	3	3	N/S	No	30	-
7	Sonari/Karal	Uran	Raigad	17-Dec-10	4.8	5.2	3	3	N/S	No	30	-
8	Sonari/Sawarkar	Uran	Raigad	17-Dec-10	5.2	5.7	3	3	N/S	No	30	-
9	Shemtekar/Jasai	Uran	Raigad	17-Dec-10	5.7	6.6	3	3	N/S	No	30	-
10	Jasai	Uran	Raigad	17-Dec-10	5.7	6.6	3	3	N/S	No	45	-
11	Chirlie/Paundhkar	Uran	Raigad	17-Dec-10	6.6	7.3	3	3	E/W	No	40	-
12	Paundhkar/Khatkar	Uran	Raigad	17-Dec-10	7.3	7.5	3	3	E/W	No	45	-
13	Bandhkar	Uran	Raigad	17-Dec-10	7.5	7.9	3	3	E/W	No	70	-
14	Jasai	Uran	Raigad	17-Dec-10	7.9	10.1	3	3	E/W	No	30	-
15	Vahal	Panvel	Raigad	17-Dec-10	10.1	11.6	3	3	E/W	No	11	-
16	Pandeghar	Panvel	Raigad	17-Dec-10	11.6	12	3	3	N/S	No	35	-
17	Bambavi Pada	Panvel	Raigad	17-Dec-10	12.1	13.5	3	4	N/S	School, Temple, Anganwadi	35	-
18	Kundevahal	Panvel	Raigad	17-Dec-10	13.5	14.8	3,7	3	E/W	Temple	30	25
19	Ovale	Panvel	Raigad	17-Dec-10	13.7	14.8	7	3	E/W	Temple	30	25
20	Dapoli	Panvel	Raigad	17-Dec-10	14.8	16.3	7	4	E/W	School	30	25
21	Pargaon Inam	Panvel	Raigad	17-Dec-10	16.3	17.1	7	3	N/S	Temple	30	25
22	Kopar	Panvel	Raigad	17-Dec-10	17.1	17.5	7	3	N/S	Temple	30	25
23	Vadghar	Panvel	Raigad	17-Dec-10	17.5	18.5	7	4	N/S	College	30	25
24	Karanjade	Panvel	Raigad	5-Dec-10	18.5	21	1,10,11	3	N/S	Railway track, trees, agriculture land	50	-
25	Kalundre	Panvel	Raigad	5-Dec-10	21	23	2,3,5,7,8,11	3	N/S	Electric line, railway track, Bridge, Water bodies, forest, houses	-	30
26	Vichumbe	Panvel	Raigad	5-Dec-10	23	23.5	2,3,5,7,8,11	3	N/S	Electric line, railway track, Bridge, Water bodies, forest, houses	-	30
27	Panvel	Panvel	Raigad	5-Dec-10	23.5	26	3,5,9	2	E/W	Temple, Mosque, Electric line, Bridge, Railway track, river	-	30
28	Asud Gaon	Panvel	Raigad	5-Dec-10	26	27.5	3,10,7	3	E/W	Pipeline, houses, Bridge	-	30
29	Tembhode	Panvel	Raigad	6-Dec-10	27.5	28.3	3	3	E/W	Electric Line, Railway track	-	30
30	Valavali	Panvel	Raigad	6-Dec-10	28.3	29.4	3	2	E/W	Railway station	-	30
31	Ambetkhar	Panvel	Raigad	6-Dec-10	28.3	28.7	3	3	E/W	Eletric Line	-	30
32	Rodpali	Panvel	Raigad	6-Dec-10	28.7	30.6	11	2	E/W	Railway track	-	30
33	Valvali	Panvel	Raigad	6-Dec-10	30.6	32.5	12	8	E/W	Trees	-	30
34	Pendhar	Panvel	Raigad	6-Dec-10	32.5	33.3	12	8	E/W	Trees	-	30
35	Taloja	Panvel	Raigad	6-Dec-10	33.3	35.4	3	2	E/W	Railway track	-	30
36	Rohinjan/Pisarve	Panvel	Raigad	6-Dec-10	35.4	37	3	2	E/W	Railway track	-	30
37	Dhansar	Panvel	Raigad	6-Dec-10	37	38.7	3	2	E/W	Railway track	-	30
38	Nighu/Valkan	Panvel	Raigad	6-Dec-10	38.7	40	3	2	E/W	Railway track	-	30
39	Narivali	Thane	Thane	7-Dec-10	40	41.6	3	3	E/W	No	-	90
40	Wadavali	Thane	Thane	7-Dec-10	41.6	42	3, 5	3	E/W	Mutali River Bridge	-	90
41	Gheser/Nilaje	Kalyan	Thane	7-Dec-10	42	44.8	2,3 and 7	3	E/W	House within 50	-	60
42	Katai	Kalyan	Thane	7-Dec-10	44.8	45.4	3 and 5	3	E/W	Pond	-	60
43	Katai Naka (Diva Detour)	Kalyan	Thane	13-Jan-11	45.15	45.75	3	3	N/S	Fly over	30	30
44	Usarghar	Kalyan	Thane	13-Jan-11	45.75	47.05	3	3	N/S	No	30	30
45	Betwade	Kalyan	Thane	13-Jan-11	47.05	47.5	3 and 6	2	N/S	PAL Abandoned	30	30

SL No.	Village Name	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	RoW width (m)	
					From	To					Left*2	Right*2
46	Bhopar	Kalyan	Thane	13-Jan-11	47.5	48	4, 5 and 7	3	N/S	Road and habitation	30	30
47	Nandivali	Kalyan	Thane	13-Jan-11	48.8	49.7	4, 5 and 7	3	N/S	Road and habitation	30	30
48	Aayre	Kalyan	Thane	13-Jan-11	49.7	51.4	4, 5 and 7	3	N/S	Road and habitation	30	30
49	Kopar	Kalyan	Thane	7-Dec-10	51.4	51.8	3 and 7	3	E/W	Hut Area	-	65
50	Dombivali	Kalyan	Thane	7-Dec-10	51.8	52.5	2, 7 and 8	3	E/W	Forest Area (Dense Vegetation)	-	60
51	Navagaon/Thakurli	Kalyan	Thane	7-Dec-10	52.5	53.2	2, 5 and 7	2	E/W	Shops and pond	-	90
52	Gaodevi	Kalyan	Thane	7-Dec-10	53.2	54.3	1, 2, 7 and 8	3	E/W	Residential Area, Forest Land	-	90
53	Pimplaner	Bhiwandi	Thane	7-Dec-10	54.3	56.8	1 and 5	3	E/W	Ulhas River Bridge and High Tension Power	-	55
54	Pimplas	Bhiwandi	Thane	7-Dec-10	56.8	56.8	1, 5, 7 and 8	3	E/W	Temple, Pond and forest area	-	48
55	Pimplas2	Bhiwandi	Thane	7-Dec-10	56.8	57.7	1 and 7	3	E/W	Water Pipeline, Gas Pipeline, Small Houses	-	32
56	Ovali	Bhiwandi	Thane	7-Dec-10	57.7	58.1	2 and 8	3	N/S	Level Crossing	-	29
57	Kamatghar	Bhiwandi	Thane	7-Dec-10	58.1	59.7	3 and 7	3	E/W	Bhivandi Railway Station, Railway quaters	-	85
58	Rahnal	Bhiwandi	Thane	7-Dec-10	59.7	61.3	2, 3, 7 and 8	2	E/W	Market, School and temple	-	83
59	Kalwar	Bhiwandi	Thane	7-Dec-10	61.3	63.1	2, 5, 7 and 8	3	E/W	Pond and Under Construction Site	-	31.5
60	Vadghar	Bhiwandi	Thane	7-Dec-10	63.1	63.6	5	3	N/S	Kamvari river, bridge	-	13
61	Dunge	Bhiwandi	Thane	7-Dec-10	63.6	63.9	1 and 7	3	N/S	Kamvari river, bridge	-	54
62	Vadunavghar	Bhiwandi	Thane	7-Dec-10	63.9	65.9	1 and 7	3	N/S	Road, Trees	-	54
63	Kharbao	Bhiwandi	Thane	7-Dec-10	65.9	67	1, 2,3 and 5	3	W/E	Level Crossing and Kharbao Station	-	18
64	Malodhi	Bhiwandi	Thane	7-Dec-10	67	69	3	3	N/S	Power Grid and Station	-	51
65	PayeGaon	Bhiwandi	Thane	7-Dec-10	69	69.7	2, 5 and 7	3	N/S	Kacha Road, Canal and Bridge	-	30
66	Paye	Bhiwandi	Thane	7-Dec-10	69.7	72.2	2, 3 and 5	3	N/S	Pond, Bridge, high tension wire and Water Drainage	-	30
67	Nagle	Vasai	Thane	7-Dec-10	72.2	74	3	3	N/S	Kacha Road and Level crossing	-	30
68	Shilottar	Vasai	Thane	7-Dec-10	74	74.6	3, 5 and 7	3	N/S	Well and water drainage	-	30
69	Sasunavghar	Vasai	Thane	7-Dec-10	74.6	75	3, 5 and 7	3	N/S	Kacha Road	-	30
70	Mori	Vasai	Thane	7-Dec-10	75	76.2	3, 5 and 7	3	N/S	Kacha Road	-	30
71	Sarjamori	Vasai	Thane	7-Dec-10	76.2	77.6	3, 5 and 7	3	N/S	Kacha Road	-	30
72	Kaman	Vasai	Thane	7-Dec-10	77.6	78	8	3	N/S	Station	-	30
73	Bapane	Vasai	Thane	7-Dec-10	78	79.4	3, 5 and 8	3	W/E	Kaman River Bridge	-	30
74	Juchandra	Vasai	Thane	7-Dec-10	79.4	81.6	1 and 3	3	N/S	Station	-	30
75	Teveri (Vasai Detour)	Vasai	Thane	28-Dec-10	81.6	83.6	3	4	E/W	School, Temple	60	60
76	Rajavali	Vasai	Thane	28-Dec-10	83.6	85.7	3,5,2	3	E/W	Temple	30	25
77	Gokhivare	Vasai	Thane	28-Dec-10	85.7	88.6	7	2	E/W	Market	30	25
78	Bilalpada	Vasai	Thane	28-Dec-10	88.6	90.6	7, 3	4	E/W	School	30	25
79	Dhaniv	Vasai	Thane	28-Dec-10	90.6	92.6	7, 5	3	N/S	Temple	30	25
80	Bhatpadi	Vasai	Thane	28-Dec-10	92.6	94.5	Hill	3	N/S	----	30	25
81	Shirgaon	Vasai	Thane	28-Dec-10	94.5	100	7	3	N/S	-----	30	25
82	Dahisar	Vasai	Thane	28-Dec-10	100	100.4	7	3	N/S	-----	30	25
83	Kasarali	Vasai	Thane	28-Dec-10	100.4	101.9	7	3	N/S	-----	30	25

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46	Bhopar	Kalyan	Thane	13-Jan-11	47.5	48	4, 5 and 7	3	N/S	Road and habitation	30	30
47	Nandivali	Kalyan	Thane	13-Jan-11	48.8	49.7	4, 5 and 7	3	N/S	Road and habitation	30	30
48	Aayre	Kalyan	Thane	13-Jan-11	49.7	51.4	4, 5 and 7	3	N/S	Road and habitation	30	30
49	Kopar	Kalyan	Thane	7-Dec-10	51.4	51.8	3 and 7	3	E/W	Hut Area	-	65
50	Dombivali	Kalyan	Thane	7-Dec-10	51.8	52.5	2, 7 and 8	3	E/W	Forest Area (Dense Vegetation)	-	60
51	Navagaon/Thakurli	Kalyan	Thane	7-Dec-10	52.5	53.2	2, 5 and 7	2	E/W	Shops and pond	-	90
52	Gaodevi	Kalyan	Thane	7-Dec-10	53.2	54.3	1, 2, 7 and 8	3	E/W	Residential Area, Forest Land	-	90
53	Pimplaner	Bhiwandi	Thane	7-Dec-10	54.3	56.8	1 and 5	3	E/W	Ulhas River Bridge and High Tension Power	-	55
54	Pimplas	Bhiwandi	Thane	7-Dec-10	56.8	56.8	1, 5, 7 and 8	3	E/W	Temple, Pond and forest area	-	48
55	Pimplas2	Bhiwandi	Thane	7-Dec-10	56.8	57.7	1 and 7	3	E/W	Water Pipeline, Gas Pipeline, Small Houses	-	32
56	Ovali	Bhiwandi	Thane	7-Dec-10	57.7	58.1	2 and 8	3	N/S	Level Crossing	-	29
57	Kamatghar	Bhiwandi	Thane	7-Dec-10	58.1	59.7	3 and 7	3	E/W	Bhivandi Railway Station, Railway quaters	-	85
58	Rahnal	Bhiwandi	Thane	7-Dec-10	59.7	61.3	2, 3, 7 and 8	2	E/W	Market, School and temple	-	83
59	Kalwar	Bhiwandi	Thane	7-Dec-10	61.3	63.1	2, 5, 7 and 8	3	E/W	Pond and Under Construction Site	-	31.5
60	Vadghar	Bhiwandi	Thane	7-Dec-10	63.1	63.6	5	3	N/S	Kamvari river, bridge	-	13
61	Dunge	Bhiwandi	Thane	7-Dec-10	63.6	63.9	1 and 7	3	N/S	Kamvari river, bridge	-	54
62	Vadunavghar	Bhiwandi	Thane	7-Dec-10	63.9	65.9	1 and 7	3	N/S	Road, Trees	-	54
63	Kharbao	Bhiwandi	Thane	7-Dec-10	65.9	67	1, 2,3 and 5	3	W/E	Level Crossing and Kharbao Station	-	18
64	Malodhi	Bhiwandi	Thane	7-Dec-10	67	69	3	3	N/S	Power Grid and Station	-	51
65	PayeGaon	Bhiwandi	Thane	7-Dec-10	69	69.7	2, 5 and 7	3	N/S	Kacha Road, Canal and Bridge	-	30
66	Paye	Bhiwandi	Thane	7-Dec-10	69.7	72.2	2, 3 and 5	3	N/S	Pond, Bridge, high tension wire and Water Drainage	-	30
67	Nagle	Vasai	Thane	7-Dec-10	72.2	74	3	3	N/S	Kacha Road and Level crossing	-	30
68	Shilottar	Vasai	Thane	7-Dec-10	74	74.6	3, 5 and 7	3	N/S	Well and water drainage	-	30
69	Sasunavghar	Vasai	Thane	7-Dec-10	74.6	75	3, 5 and 7	3	N/S	Kacha Road	-	30
70	Mori	Vasai	Thane	7-Dec-10	75	76.2	3, 5 and 7	3	N/S	Kacha Road	-	30
71	Sarjamori	Vasai	Thane	7-Dec-10	76.2	77.6	3, 5 and 7	3	N/S	Kacha Road	-	30
72	Kaman	Vasai	Thane	7-Dec-10	77.6	78	8	3	N/S	Station	-	30
73	Bapane	Vasai	Thane	7-Dec-10	78	79.4	3, 5 and 8	3	W/E	Kaman River Bridge	-	30
74	Juchandra	Vasai	Thane	7-Dec-10	79.4	81.6	1 and 3	3	N/S	Station	-	30
75	Teveri (Vasai Detour)	Vasai	Thane	28-Dec-10	81.6	83.6	3	4	E/W	School, Temple	60	60
76	Rajavali	Vasai	Thane	28-Dec-10	83.6	85.7	3,5,2	3	E/W	Temple	30	25
77	Gokhivare	Vasai	Thane	28-Dec-10	85.7	88.6	7	2	E/W	Market	30	25
78	Bilalpada	Vasai	Thane	28-Dec-10	88.6	90.6	7, 3	4	E/W	School	30	25
79	Dhaniv	Vasai	Thane	28-Dec-10	90.6	92.6	7, 5	3	N/S	Temple	30	25
80	Bhatpadi	Vasai	Thane	28-Dec-10	92.6	94.5	Hill	3	N/S	----	30	25
81	Shirgaon	Vasai	Thane	28-Dec-10	94.5	100	7	3	N/S	-----	30	25
82	Dahisar	Vasai	Thane	28-Dec-10	100	100.4	7	3	N/S	-----	30	25
83	Kasarali	Vasai	Thane	28-Dec-10	100.4	101.9	7	3	N/S	-----	30	25

SL No.	Village Name	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	RoW width (m)	
					From	To					Left*2	Right*2
SECTION 2												
94	Wadhiv	Palghar	Thane	22-Dec-10	0	1.6	3,5,9	3	N/S	Temple, pond, Tree clusters, Transformer, Railway bridge under construction	-	37.58
93	Kandanvan	Palghar	Thane	22-Dec-10	1.6	2.6	3,5,9	3	N/S	Railway bridge, Tree, Pond	-	37.58
94	Karwala	Palghar	Thane	22-Dec-10	2.6	4.9	3,5	3	N/S	Bridge, Tree cluster	-	38.83
95	Sartodi	Palghar	Thane	22-Dec-10	4.9	6.1	3,5	3	N/S	Pond, Bridge	-	32.14
96	Safale	Palghar	Thane	22-Dec-10	6.1	6.7	3	3	N/S	SSP power, Level crossing, pond, station	-	30.66
97	Umarpada	Palghar	Thane	22-Dec-10	6.7	7.7	3	3	N/S	Pond, Bridge	-	30.66
98	Maknekapas	Palghar	Thane	22-Dec-10	7.7	9.7	3,9	3	N/S	Electrical house, Tree cluster, ROB	-	30.93
99	Makunsar	Palghar	Thane	22-Dec-10	9.7	11.4	6	3	N/S	Bridge, Primary school, Tree cluster	-	36.2
100	Rothe	Palghar	Thane	22-Dec-10	11.4	12.6	3	3	N/S	Temple, Bridge, Level crossing, Tree cluster	-	39.96
101	Kelve	Palghar	Thane	22-Dec-10	12.6	13.7	3	3	N/S	Bridge, Tree, Abandoned house	-	39.62
102	Kelve Road	Palghar	Thane	22-Dec-10	13.7	16.7	3	3	N/S	Bridge, Level crossing	-	40.42
103	Kasbe Mahim	Palghar	Thane	22-Dec-10	16.7	20.5	1,3	3	N/S	Level crossing, Bridge	-	64.25
104	Navali	Palghar	Thane	22-Dec-10	20.5	21.7	3	3	N/S	Level crossing, Bridge	-	44.77
105	Palghar	Palghar	Thane	22-Dec-10	21.7	23.3	3	3	N/S	Bridge	-	36.66
106	Gothanpur	Palghar	Thane	22-Dec-10	23.3	24.8	1,3,8	3	N/S	Bridge, Level crossing	-	40.5
107	Kolgaon	Palghar	Thane	22-Dec-10	24.8	27.2	3	3	N/S	Bridge, Level crossing	-	43.29
108	Umroli	Palghar	Thane	22-Dec-10	27.2	28.9	3	3	N/S	Bridge, station, Level crossing	-	39.22
109	Birvadi	Palghar	Thane	22-Dec-10	28.9	29.8	3	3	N/S	No	-	39.95
110	Panchali	Palghar	Thane	22-Dec-10	29.8	30.7	3,8	3	N/S	Bridge, Electric tower, Level crossing	-	42.22
111	Kambalgaon	Palghar	Thane	22-Dec-10	30.7	31.4	3,8	3	N/S	Bridge, Electric tower, Level crossing	-	42.22
112	Saravali	Palghar	Thane	22-Dec-10	31.4	32.2	3,8	3	N/S	Bridge, Electric tower, Level crossing	-	42.22
113	Boisar	Palghar	Thane	22-Dec-10	32.2	35.6	1,3,5	3	N/S	Level crossing, Bridge, Tree	-	31.71
114	Dandipada and Katkar	Palghar	Thane	22-Dec-10	33	35.6	1,3,5	3	N/S	Level crossing, Bridge, Tree	-	31.71
115	Shirgaon	Palghar	Thane	22-Dec-10	35.6	38.1	1,3	3	N/S	Level crossing, Tree	-	41.98
116	Navali	Palghar	Thane	22-Dec-10	38.1	40.2	1,3,5	3	N/S	Bridge, Rocky Terrain, Level crossing	-	31.5
117	Kolavali	Palghar	Thane	22-Dec-10	40.2	40.8	3	3	N/S	Bridge	-	44.92
118	Vangaon	Dahanu	Thane	22-Dec-10	40.8	43.1	2,8	4	N/S	Temple(within 100m),School(within 50m),Level crossing	-	30.01
119	Kapshi	Dahanu	Thane	22-Dec-10	43.1	44	3,5	3	N/S	Bridge, Signal indicator, Trees	-	61.69
120	Aasangaon	Dahanu	Thane	22-Dec-10	44	45.6	1,3	3	N/S	Trees	-	62.13
121	Dehane	Dahanu	Thane	22-Dec-10	45.6	45.8	1,3	3	N/S	Trees	-	62.13
122	Pale	Dahanu	Thane	22-Dec-10	45.8	49.3	3,5	3	N/S	Bridge, Power grid, electric poll	-	63.12
123	Agwan	Dahanu	Thane	22-Dec-10	49.3	51.5	3	3	N/S	Bridge	-	45.37
124	Saravali	Dahanu(Detour)	Thane	27-Dec-10	51.5	53.8	2 and 7	3	N/S	Hand Pump and housing	30	30

SL No.	Village Name	Tehsil / Taluka	District	Date	DFC Chainage (km)		*Type of Land Use Pattern	**Area category	Direction from the Railway Line i.e. towards N/S or E/W for LU***	Any Noticeable Feature	RoW width (m)	
					From	To					Left *2	Right *2
125	Patilpada	Dahanu(Detour)	Thane	27-Dec-10	53.8	55.5	2, 5 and 7	3	N/S	Cricket Ground, Stream and Pukka Road	30	30
126	Manford	Dahanu(Detour)	Thane	27-Dec-10	55.5	55.9	1 and 7	3	N/S	Chicken Farm and Electric line	30	30
127	Junnarpada	Dahanu(Detour)	Thane	27-Dec-10	55.9	57.1	1, 3, 6 and 7	3	N/S	2 houses, Chicken farm and Hut Area	30	30
128	Nandore	Dahanu(Detour)	Thane	27-Dec-10	57.1	58	1, 3 and 7	3	N/S	Kutcha Road and Hut Area	30	30
129	Dahanu	Dahanu(Detour)	Thane	27-Dec-10	58	58.7	1, 3 and 7	3	N/S	Kutcha Road and Hut Area	30	30
130	Kasara	Dhanu(Detour)	Thane	27-Dec-10	58.7	60	2, 3, and 7	3	N/S	Ganesh Temple and Electricity Line	30	30
131	Waki	Dhanu(Detour)	Thane	27-Dec-10	60	61.4	1 and 8	3	N/S	Forest	30	30
132	Ambewadi	Dahanu(Detour)	Thane	27-Dec-10	61.4	62.3	1 and 8	3	N/S	Forest	30	30
133	Chikhale	Dahanu(Detour)	Thane	27-Dec-10	62.3	65.9	1 and 8	3	N/S	Forest	30	30
134	Gholvad	Dhanu	Thane	22-Dec-10	65.9	68.9	1,3,8	3	N/S	Bridge, Huts	-	30
135	Bordi	Dhanu	Thane	22-Dec-10	68.9	72.3	3	3	N/S	Station	-	30
136	Zai	Dhanu	Thane	22-Dec-10	72.3	73.4	2	3	N/S	Station, Bridge	-	30
137	Borigaon	Dhanu	Thane	22-Dec-10	73.4	74	1,2,3	3	N/S	Bridge, Level crossing	-	30
138	Govada	Umargaon	Valsad	27-Dec-10	74	75.2	3,5,8	3	N/S	Temple, Bridge, Level crossing, station	-	30
139	Dahad	Umargaon	Valsad	27-Dec-10	75.2	76.5	1,3	3	N/S	Temple, Bridge, Kachha road	-	30
140	Solsumba	Umargaon	Valsad	27-Dec-10	76.5	80.3	2	3	N/S	Rocky Terrain	-	30
141	Humbran	Umargaon	Valsad	27-Dec-10	80.3	81.2	2	3	N/S	Bridge, Rocky terrain, Level crossing	-	30
142	Sanjan	Umargaon	Valsad	27-Dec-10	81.2	83.3	2,3,5	3	N/S	Bridge, Rocky terrain, pakka road	-	30
143	Gumse Kankaria	Umargaon	Valsad	27-Dec-10	83.3	85.4	2,3,5	3	N/S	Rocky terrain, pakka road	-	30
144	Tumb	Umargaon	Valsad	27-Dec-10	85.4	87.7	3	3	N/S	Bridge, Level crossing	-	30
145	Malav	Umargaon	Valsad	27-Dec-10	87.7	90.7	3	3	N/S	Bridge, Level crossing	-	30
146	Dehli	Umargaon	Valsad	27-Dec-10	90.7	94	3	3	N/S	Level crossing	-	30

***Type of Land use Code**: Agriculture = 1, Vegetation Cover = 2, Barren land = 3, Low Land = 4, Water Body = 5, Industrial Area =6, Human Settlement =7, Forest Land =8, River Bed =9, and Waste Dumping Land = 10, Wet land=11

**** Area category Code**: Industrial Area= 1, Commercial Area= 2, Residential Area=3, Silence Zone= 4

*****Direction**: The direction for Railway line is taken as "To" where the DFC Chainage is increasing. For example, the direction for DFC Line in Rewari-Dadri is from "Rewari" to "Dadri" as start chainage is at Rewari and end chainage is at Dadri.

***2 IMPORTANT**: For distance from Right of way, left and right side would mean person looking at the chainage as it increases. The area falling on his/ her right would be written in right column and left area would be written in left column

Photo 1: Barren land in Jashkar 3

Photo 2: Barren land in Jashkar 1

Photo 3: Barren land in Sonari 1

Photo 4: Barren land in Karal

Photo 5: Barren land in Pagote

Photo 6: Water logging in Barren land in Karal/Pagote

Photo 7: Barren land in Sonari/Karal

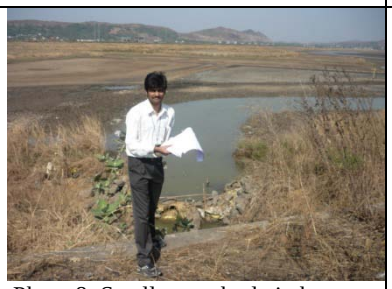


Photo 8: Small water body in barren land in Sonari/ Sawarkar

Photo 9: A tree in Shemtekar/Jasai

Photo 10: A road in Jasai

Photo 11: Canal in Chirlie/Paundhkar

Photo 12: Road in Paundhkar/Khatkar

Photo 13: Barren land in Bandkar

Photo 14: Electric tower in Jasai

Photo 15: Road crossing through barren land in Vahal

Photo 16: Barren land in Pandheghar

Photo 17: Temple in Bombavipada Village

Photo18: Houses beside track in Bombavipada Village

Photo 19: Temple in Bombavipada Agricultural Village

Photo 20: Barren Land in Kundevahal Village

Photo 21: Temple in Kundevahal Village

Photo 22: Temple in Ovale Village

Photo 23: School in Dapoli Village

Photo 24: Temple in Pargaon Inam Village

Photo 25: Goods train passing in Karanjade

Photo 26: Lake and forest in Kalundre

Photo 27: Temple in Kalundre

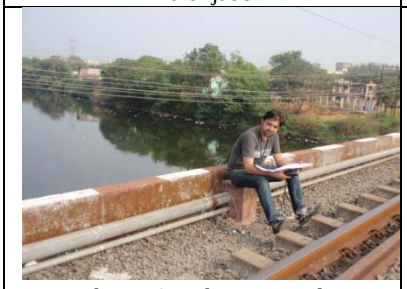


Photo 28: Lake in Panvel

Photo 29: Pipeline passing through barren land in Asud Gaon

Photo 30: Baren land in Tembhode

Photo 31: Railway bridge in Valavali

Photo 32: Trees in Rodpali

Photo 33: Bridge in Taloja

Photo 34: Electric Pole in Dhansar

Photo 35: Electric Barrier in Nighu Vaklan

Photo 36: Level Crossing in Narivali

Photo 37: Mutali River Bridge in Wadavali

Photo 38: Trees and Barren Land in Gheser/Nilaje

Photo 39: Katai Bridge

Photo 40: Barren land in Katai Naka

Photo 41: Barren land in Usharghar Village

Photo 42: Abandoned factory in Betwade Village

Photo 43: Residential area in Bhopar

Photo 44: Near Kopar Station

Photo 45: Dombivali hut area

Photo 46: Thakurli crossing and shops

Photo 47: Gaodevi hut area

Photo 48: Pimplaner, Ulas River Bridge

Photo 49: Pimplas Temple

Photo 50: Pimplas 2, Flyover

Photo 51: Ovali Level Crossing

Photo 52: Kamatghar, Pipeline

Photo 53: Rahnal housing area

Photo 54: Kalwar pond

Photo 55: Vadghar Kamvari River

Photo 56: Dunge Houses

Photo 57: Kharbao Level Crossing

Photo 58: Power Grid Station in Malodhi

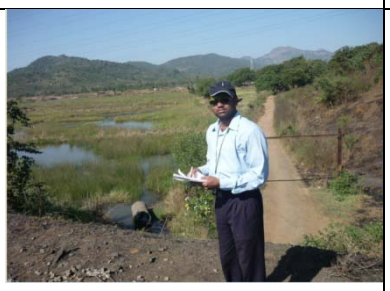


Photo 59: Kachha Road in Payegaon

Photo 60: Paye

Photo 61: Nagla Crossing

Photo 62: Abandoned land in Shilottar

Photo 63: Forest Area-Kaman

Photo 64: Bridge in Bapane

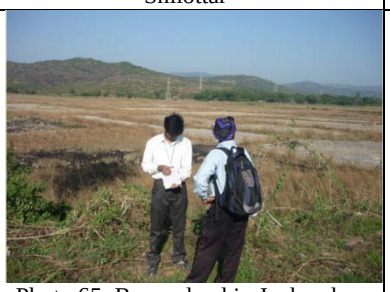


Photo 65: Barren land in Juchandra

Photo 66: School at Teveri Village

Photo 67: Temple in Teveri Village

Photo 68: Temple beside pond in Rajavali Village

Photo 69: Highway, Market at Gokhivare Village

Photo 70: Residence, Kucha Road at Bilalpada Village

Photo 71: School in Bilalpada Village

Photo 72: Pond and Kucha road in Dhaniv Village

Photo 73: Temple in Dhaniv Village

Photo 74: Temple in Dhaniv Village

Photo 75: Hilly area of Bhatpadi Village

Photo 76: Hilly area of Bhatpadi Village

Photo 77: Highway near Shirgaon Village

Photo 78: Sai Temple within 100-m range, Wadhiv Village

Photo 79: Karwala Village

Photo 80: Sartodi Village

Photo 81: Near SSP Power Grid, Safale Village

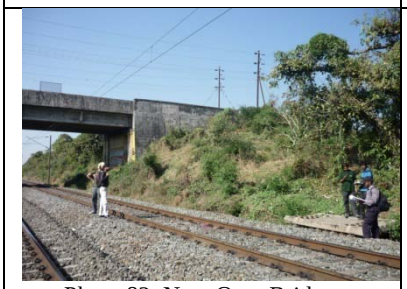


Photo 82: Near Over Bridge, Maknekapas Village

Photo 83: School within 100-m range, Makunsar Village

Photo 84: Temple within 100-m range, Rothe Village

Photo 85: Temple coming in RoW, Rothe Village

Photo 86: Near abandoned house Kelve Village

Photo 87: Barren Land in Kelve Road Village

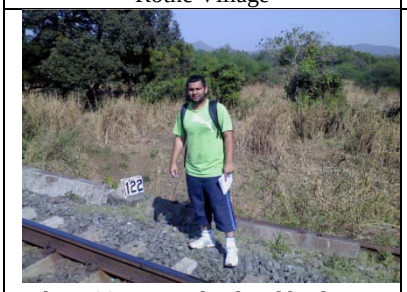


Photo 88: Barren land and bridge in Kasbe Mahim Village

Photo 89: Resedential area in Navali Village

Photo 90: House in Palghar Village

Photo 91: Bridge and water body in Gothanpur

Photo 92: Bridge and barren land in Kolgaon

Photo 93: Umroli Station

Photo 94: Barren land in Birvadi

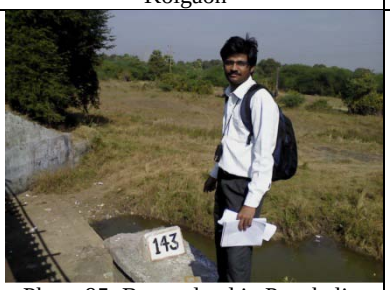


Photo 95: Barren land in Panchali

Photo 96: Residential area in Boisar

Photo 97: Trees in Shirgaon

Photo 98: Barren land in Navali

Photo 99: Agricultural land in Kolavali

Photo 100: Forest land in Vangaon

Photo 101: Near railway bridge in Kapshi Village

Photo 102: Barrenland near RoW in Aasangaon Village

Photo 103: Near Railway trackin, Pale Village

Photo 104: Dandi Bridge in Agwan Village

Photo 105: Saravali, Housing area

Photo 106: Patilpada Cricket Ground

Photo 107: Manford, agricultural land

Photo 108: Junnarpada, School

Photo 109: Nandore, Red Stone

Photo 110: Kasara, Red stone

Photo 111: Waki, White Stone, bushy area

Photo 112: Forest Area in Gholvad

Photo 113: Forest Area/Vegetation in Bordi Village

Photo 114: Near Level crossing, Bordi Village

Photo 115: Small Houses in Sanjan

Photo 116: Bridge and Barren Land in Tumb

Photo 117: Level Crossing/ Tree in Malav

Photo 118: Barren land in Dehli

Appendix-6b
Land Use Map

Appendix-6b

LAND USE MAP

1. Rewari-Dadri SR Map

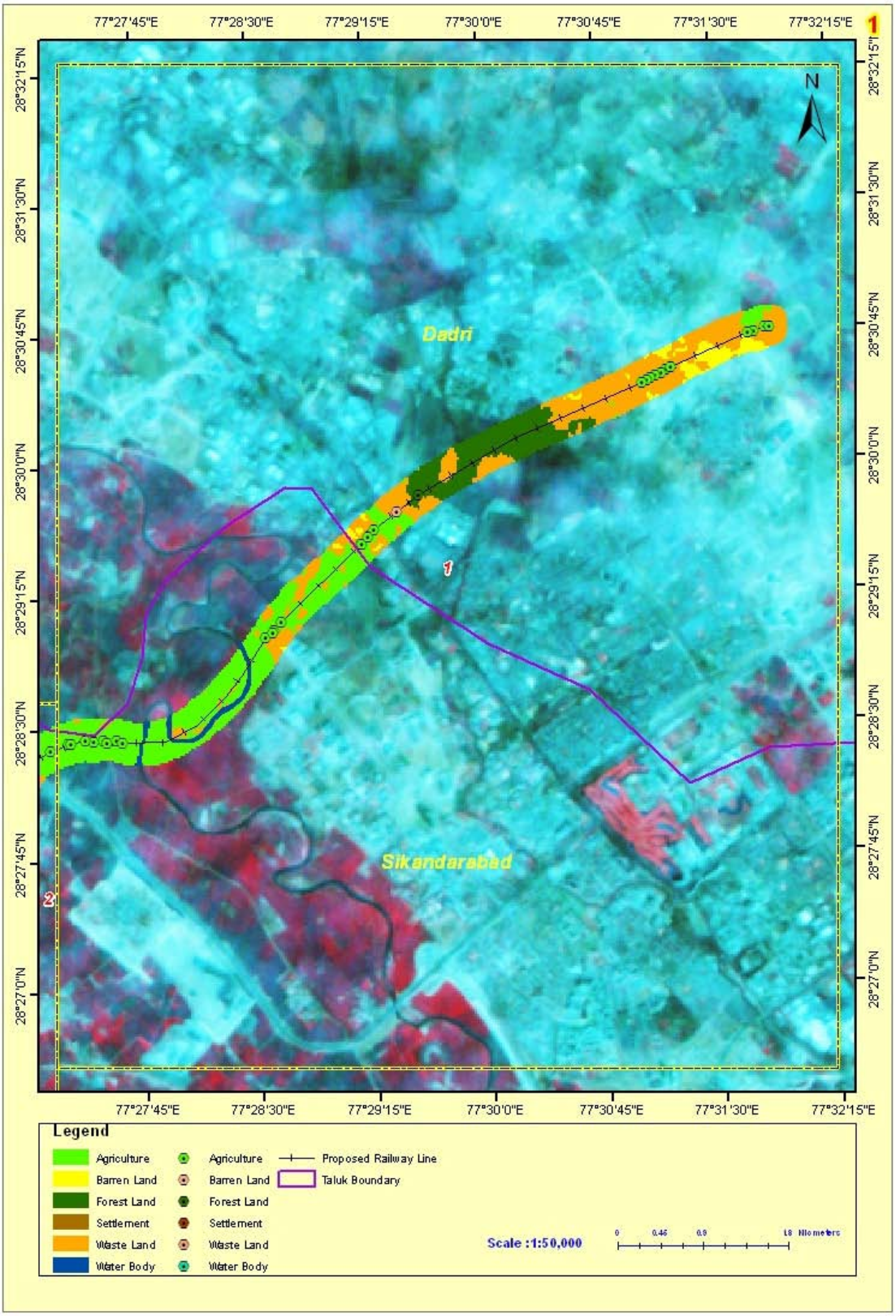


Figure 6b.1 Land use classification for Rewari-Dadri section from 0.0 to 8.6 km

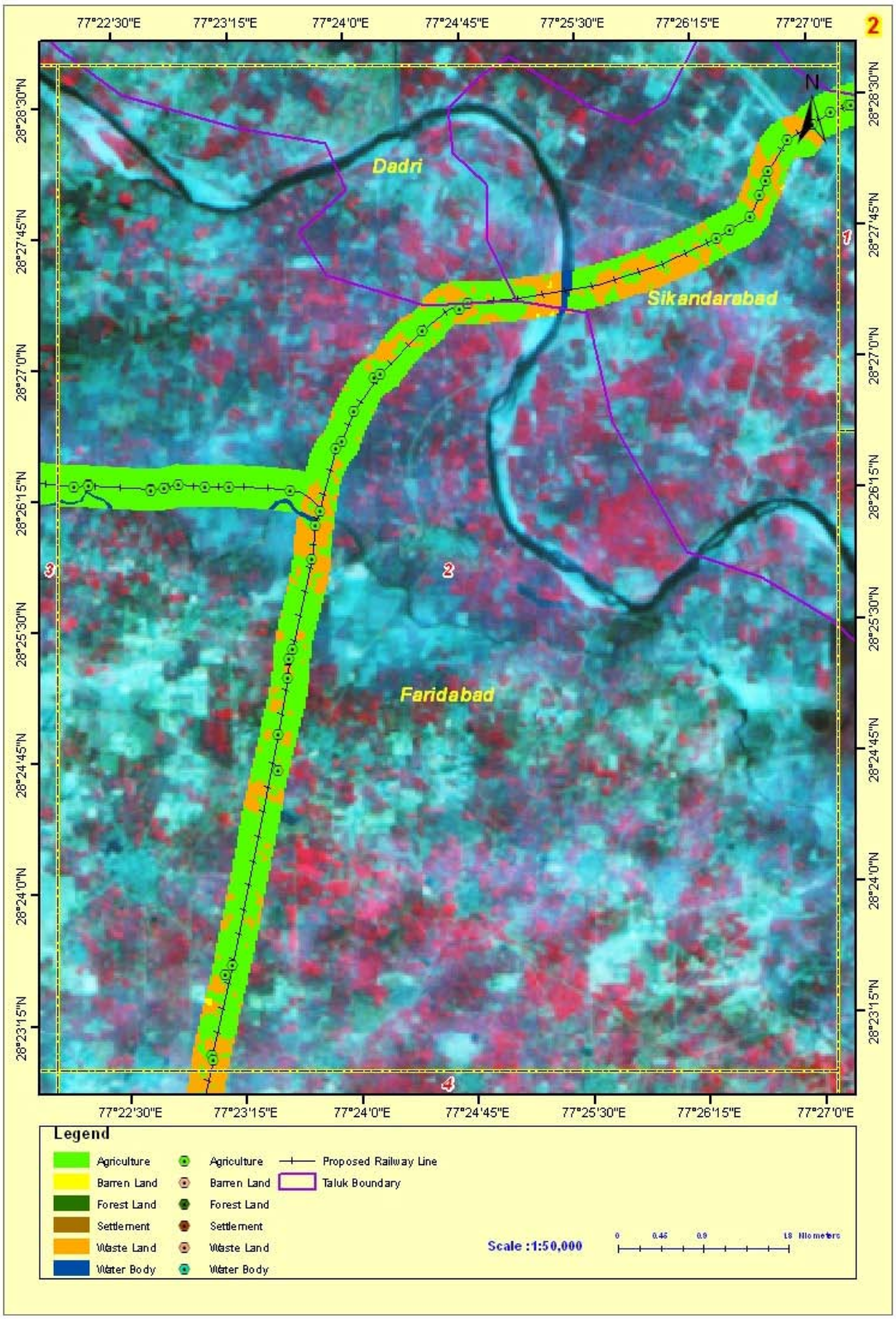


Figure 6b.2 Land use classification for Rewari-Dadri section from 8.6 to 22.85 km

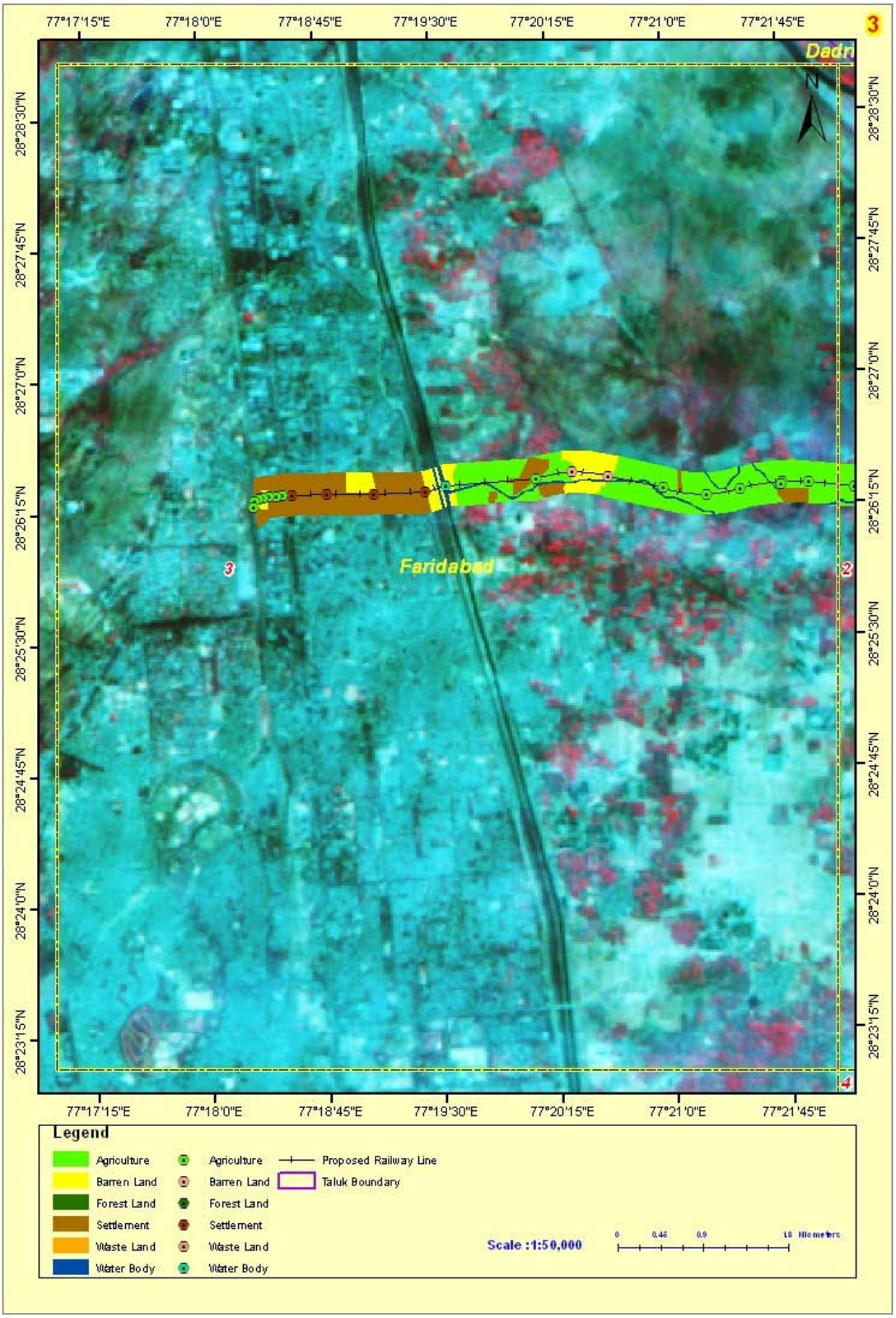


Figure 6b.3 Land use classification for Rewari-Dadri section from 22.85 to 28.97 km

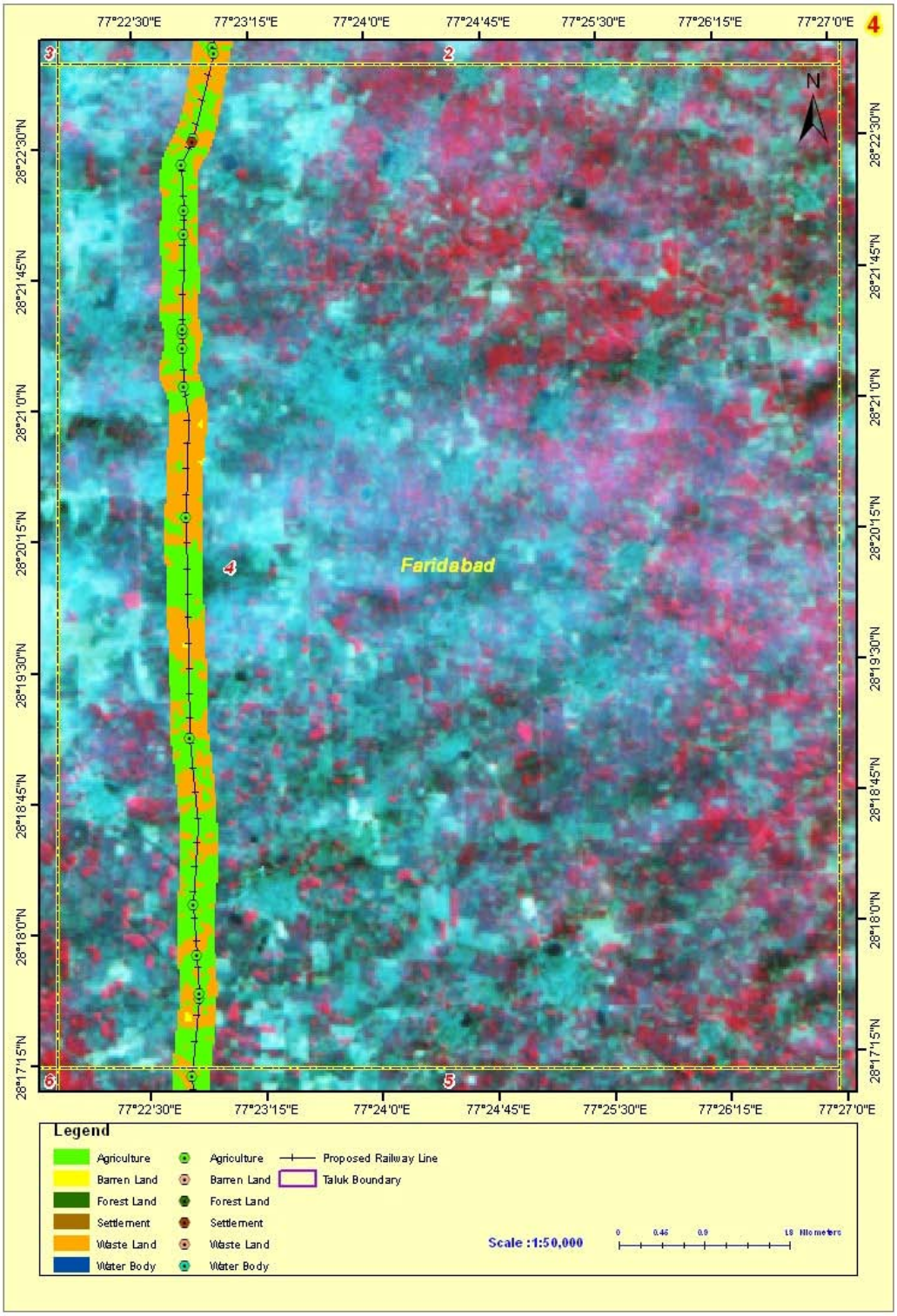


Figure 6b.4 Land use classification for Rewari-Dadri section from 28.97 to 38.21 km

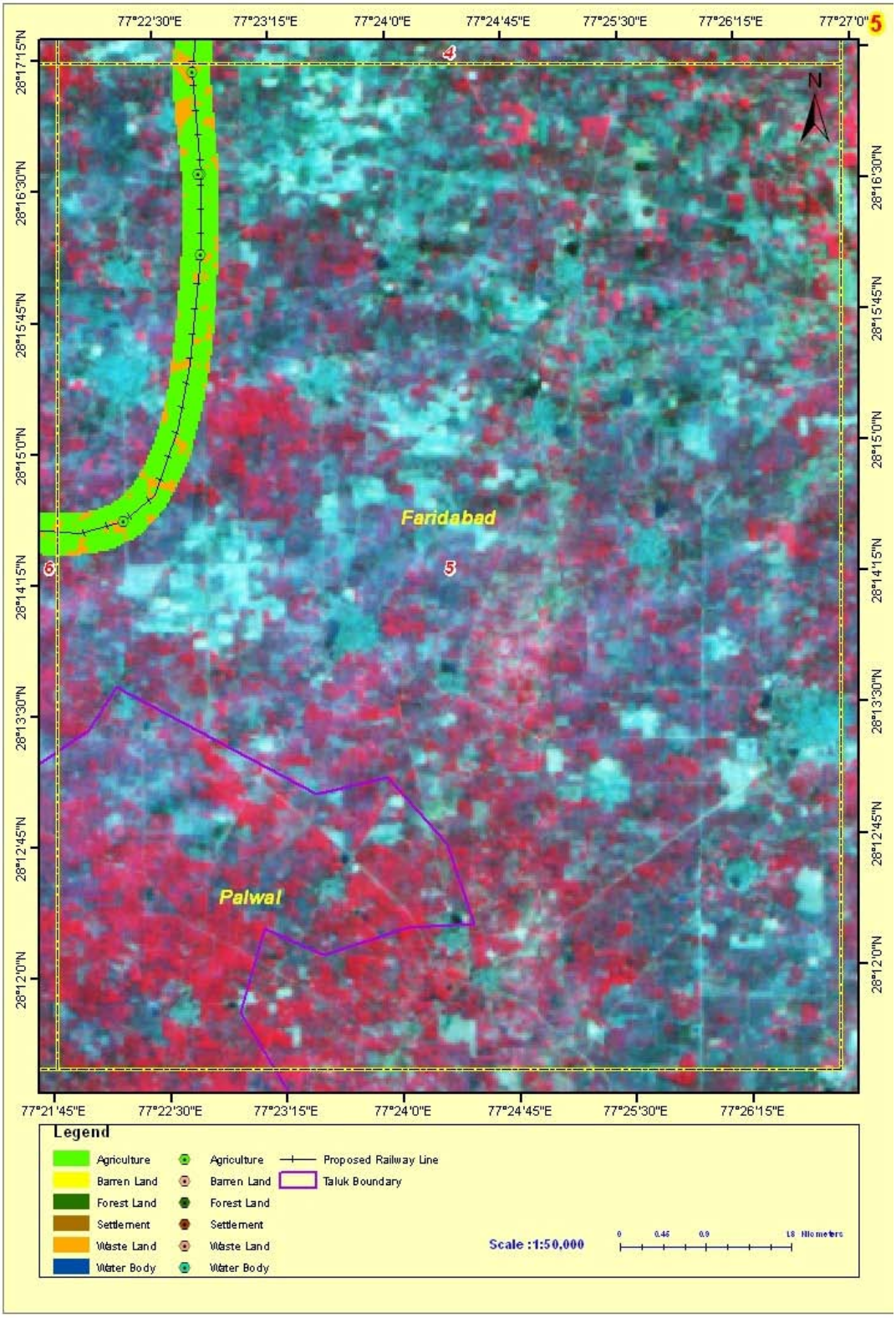


Figure 6b.5 Land use classification for Rewari-Dadri section from 38.21 to 43.97 km

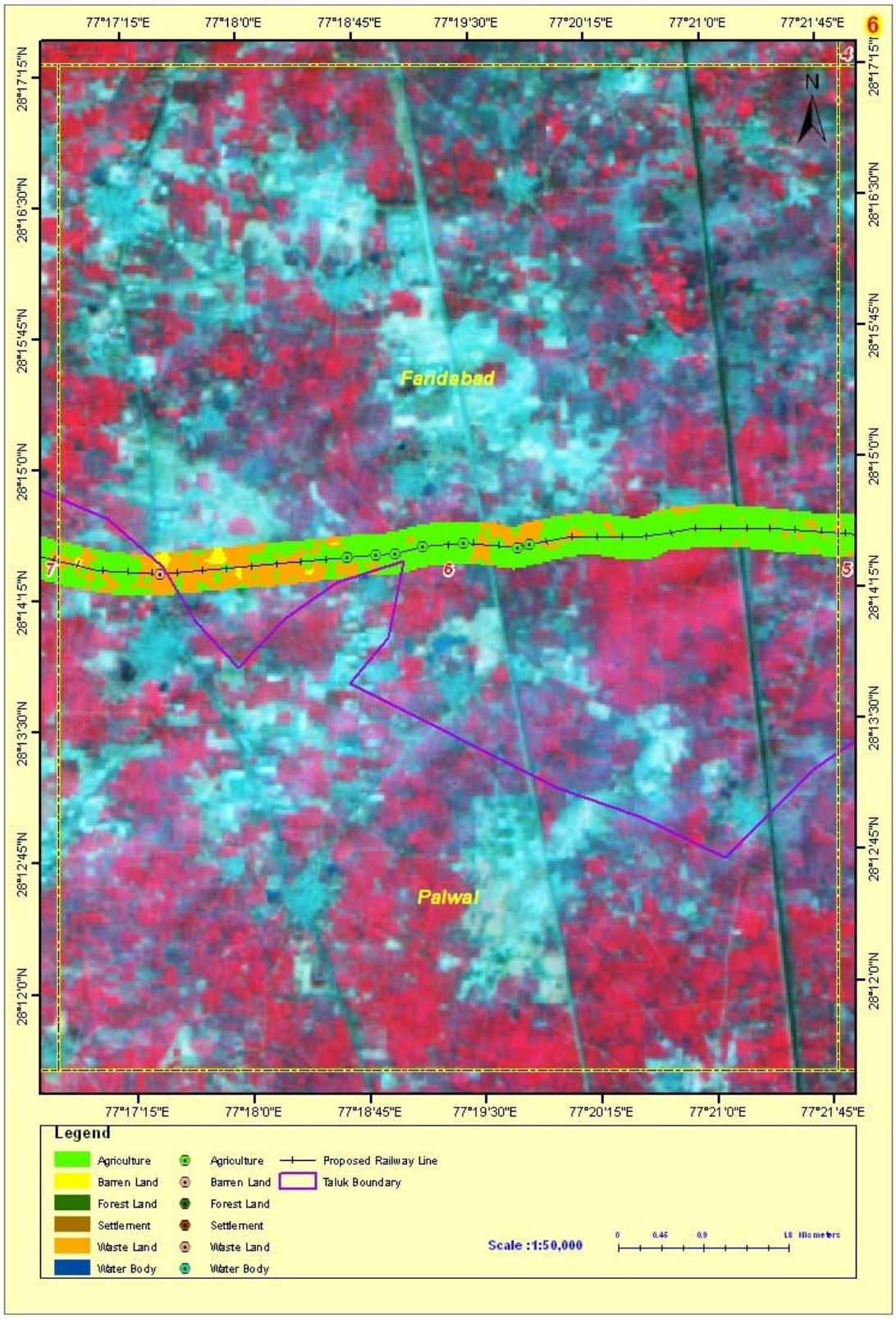


Figure 6b.6 Land use classification for Rewari-Dadri section from 43.97 to 52.3 km

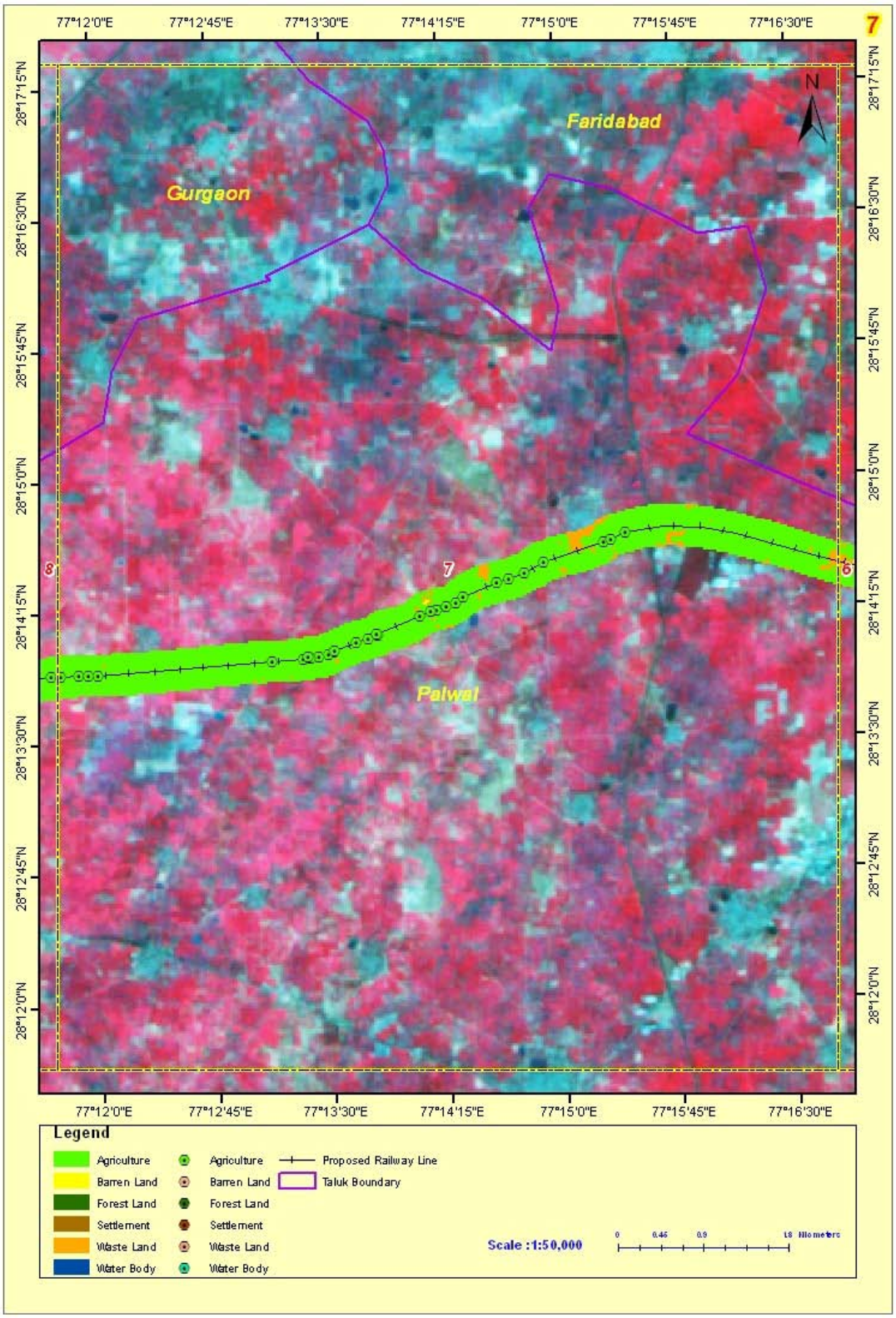


Figure 6b.7 Land use classification for Rewari-Dadri section from 52.3 to 60.85 km

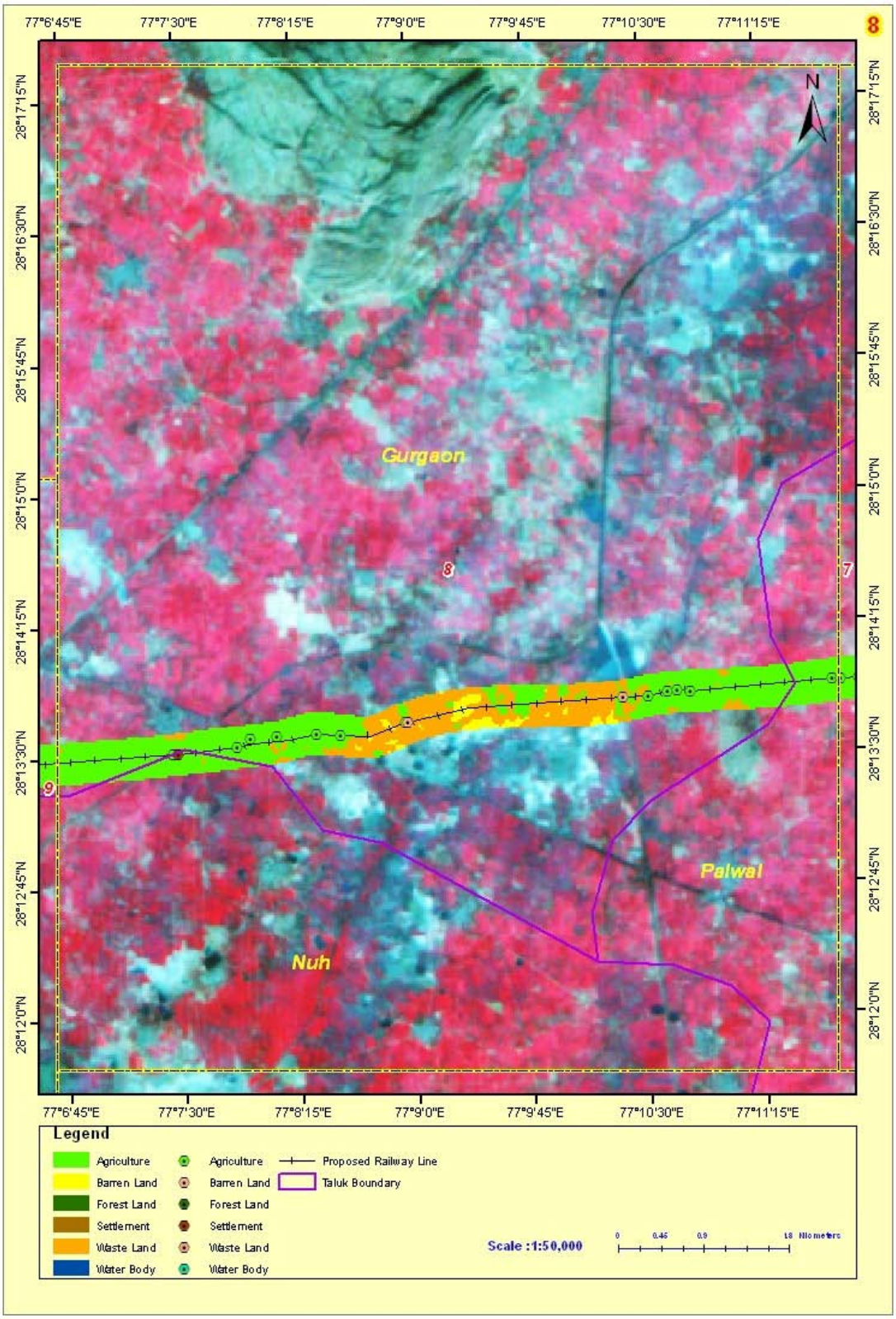


Figure 6b.8 Land use classification for Rewari-Dadri section from 60.85to 69.12 km

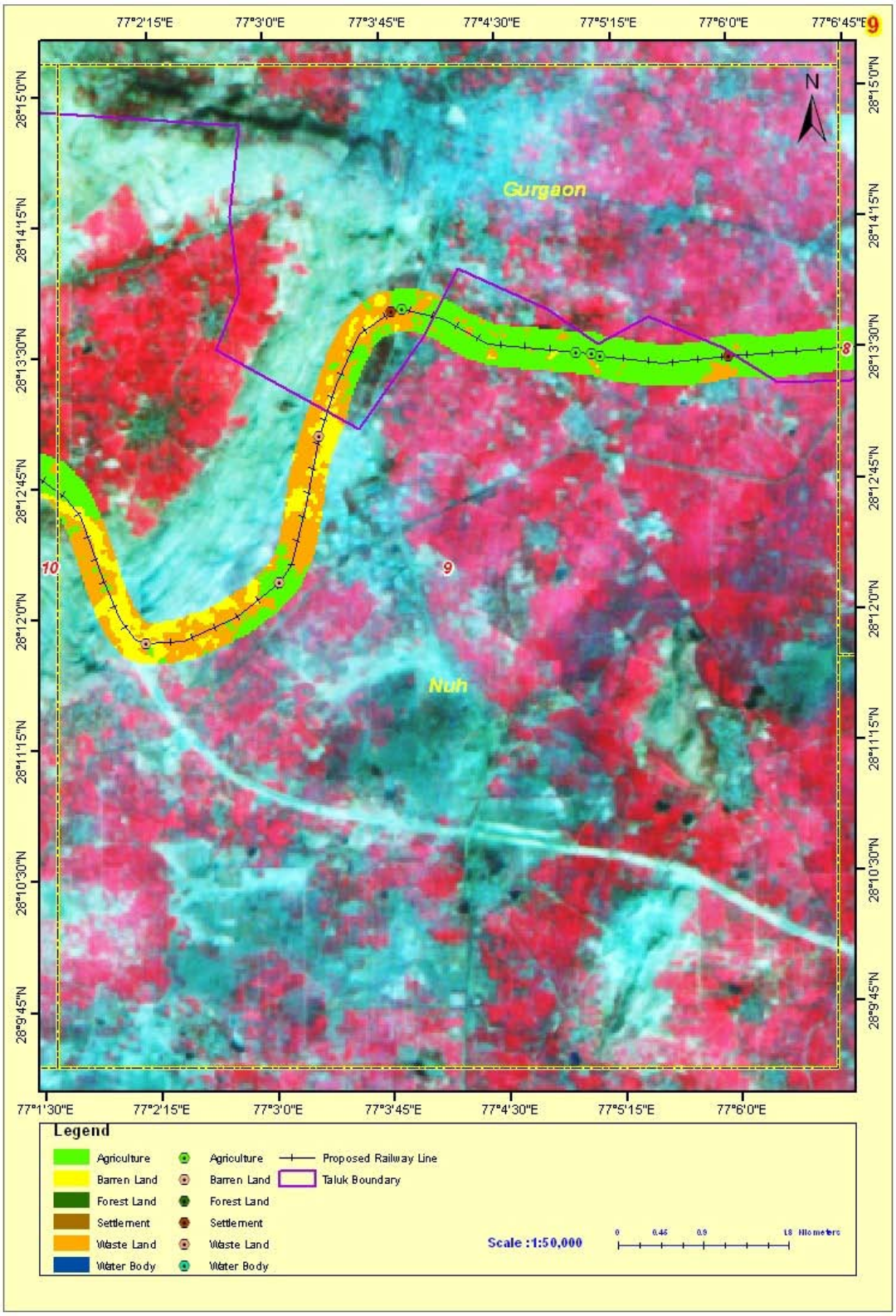


Figure 6b.9 Land use classification for Rewari-Dadri section from 69.12 to 79.08 km

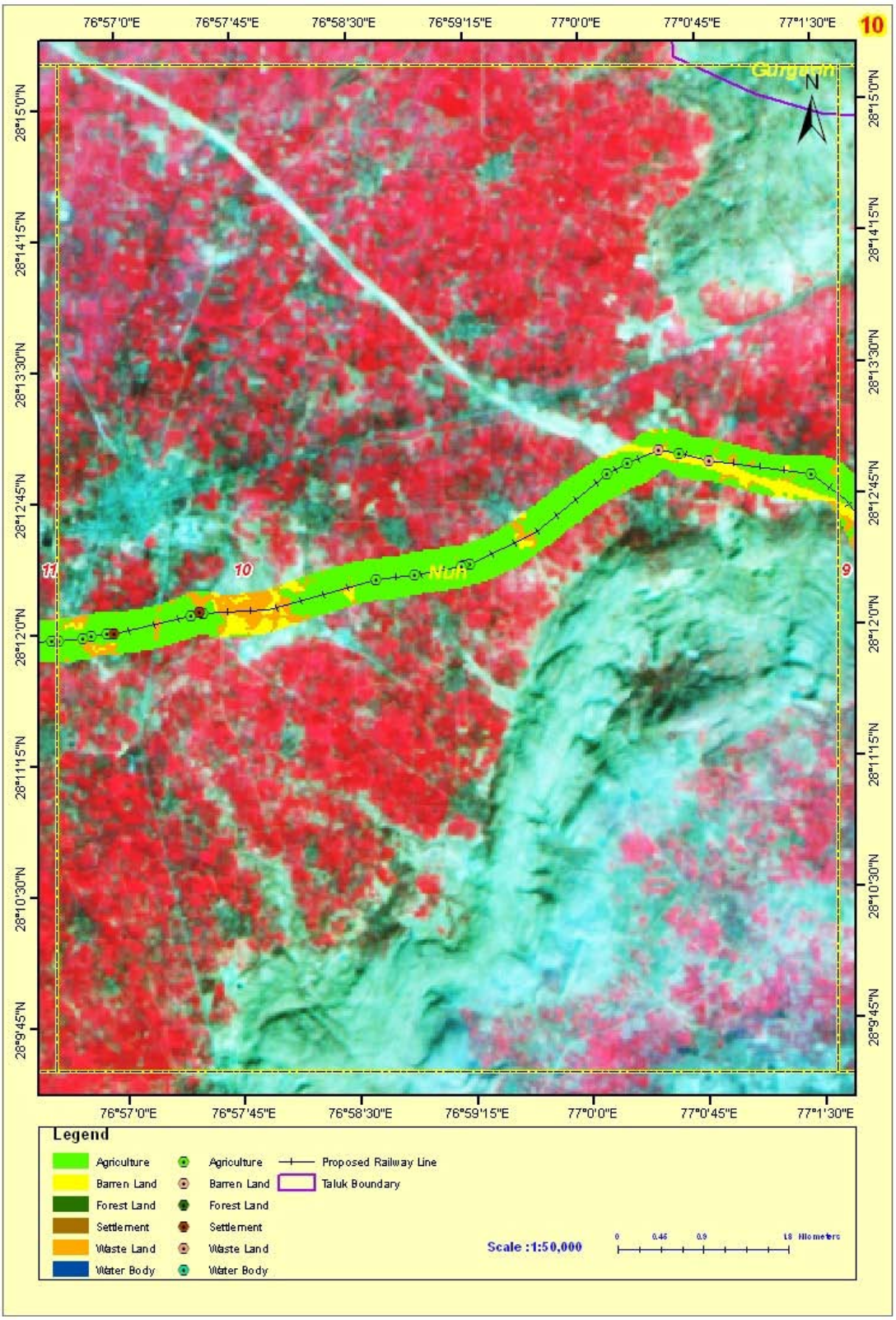


Figure 6b.10 Land use classification for Rewari-Dadri section from 79.08 to 87.23 km

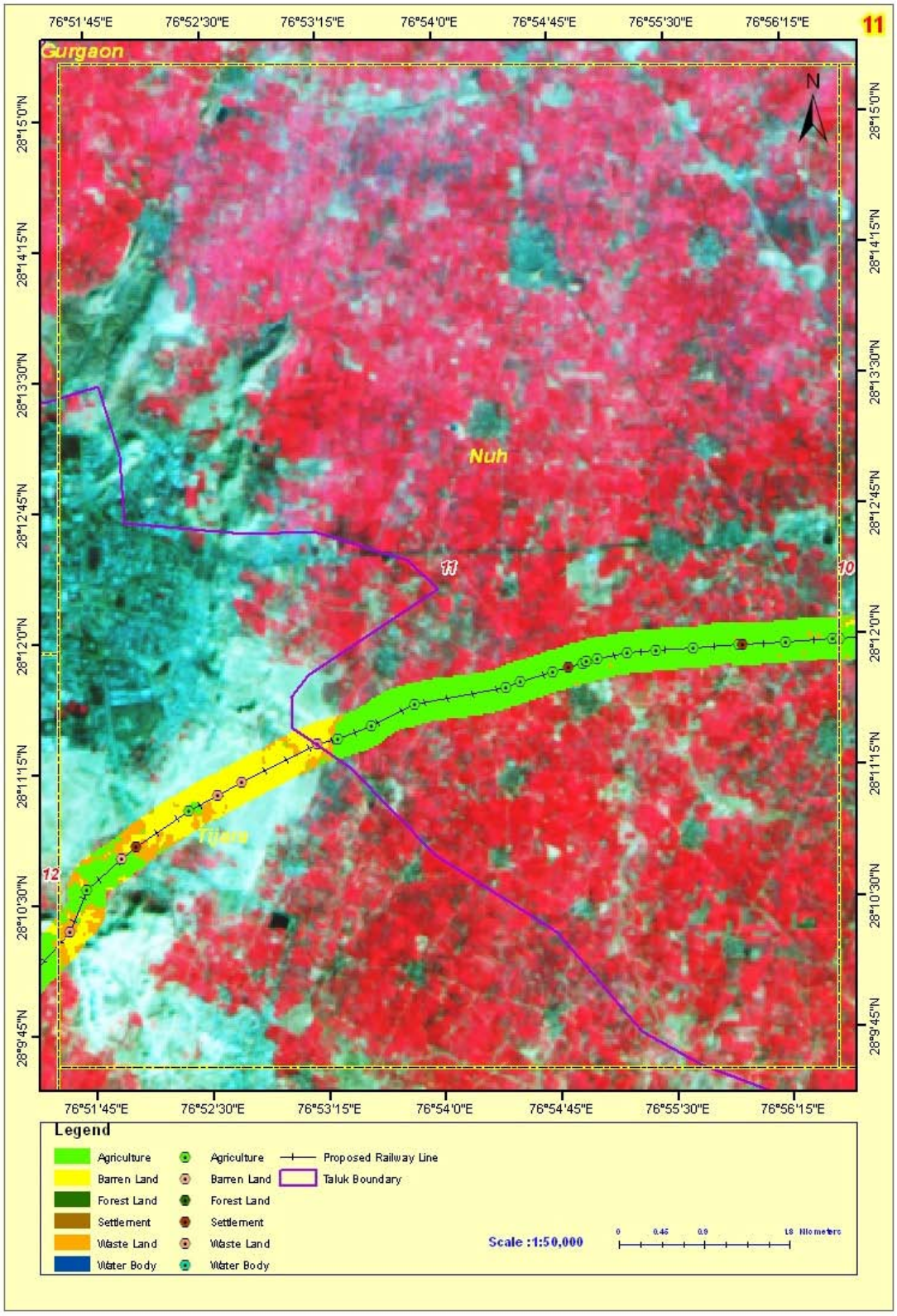


Figure 6b.11 Land use classification for Rewari-Dadri section from 87.23 to 96.41 km

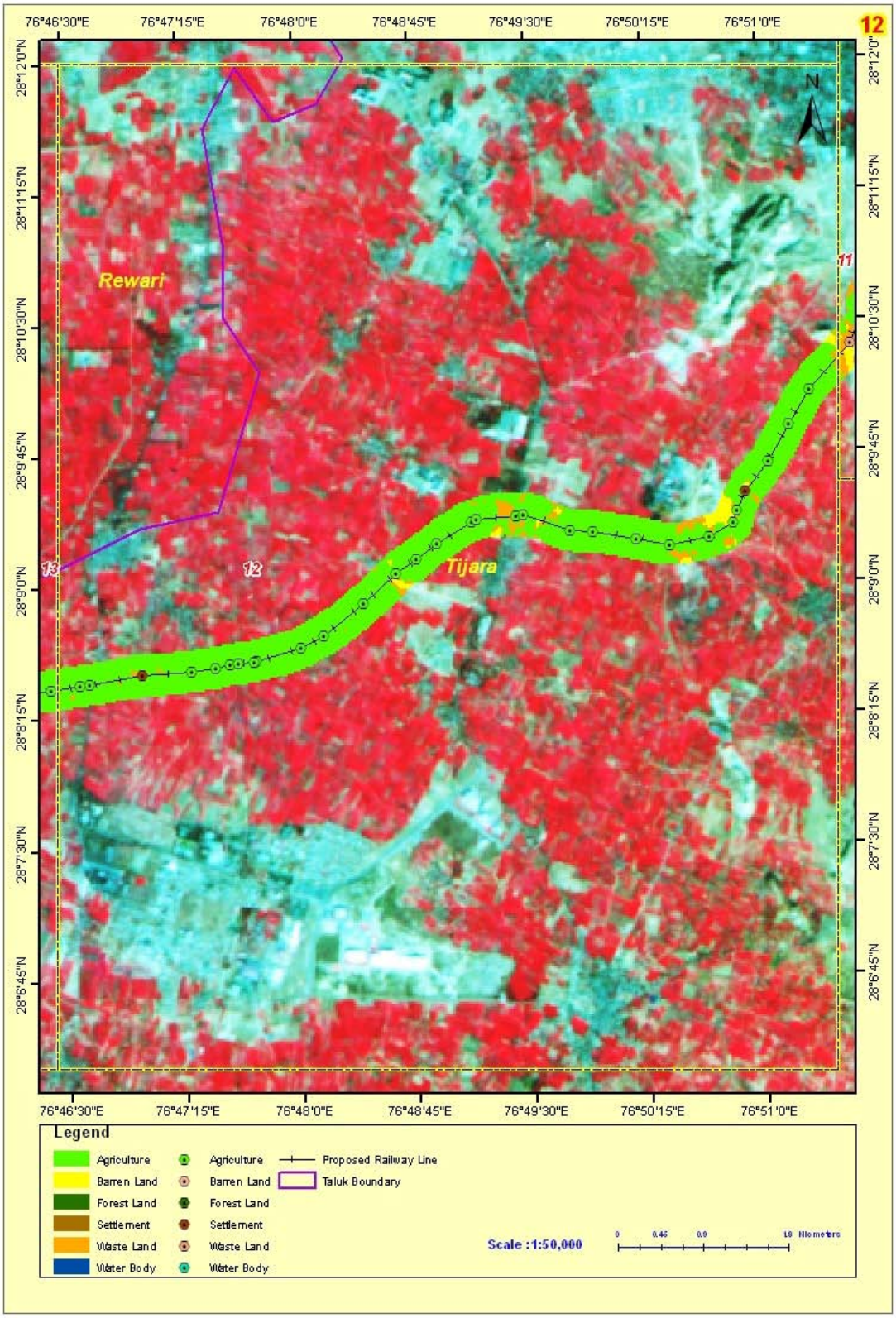


Figure 6b.12 Land use classification for Rewari-Dadri section from 96.41to 105.53 km

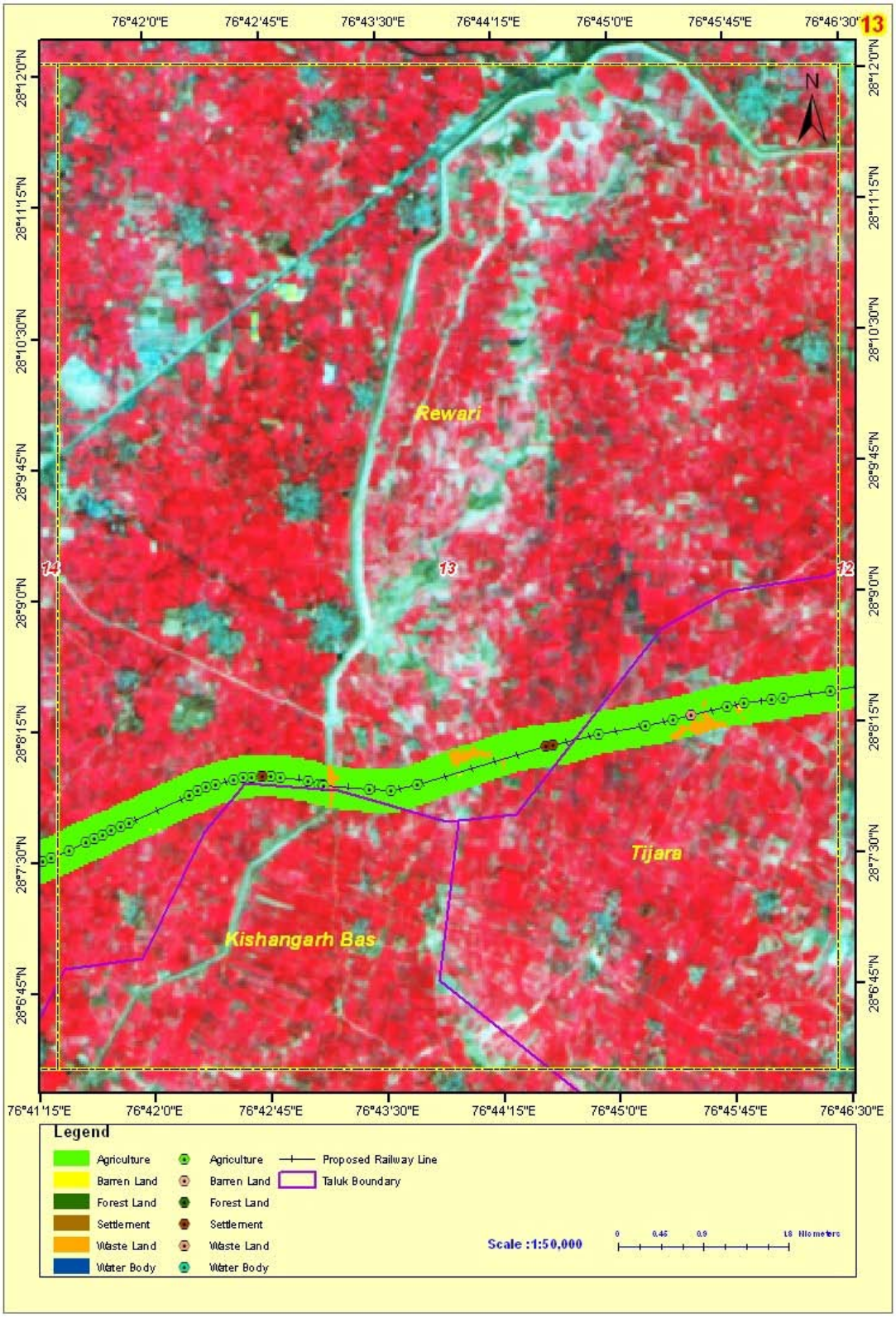


Figure 6b.13 Land use classification for Rewari-Dadri section from 105.53 to 114.11 km

Figure 6b.14 Land use classification for Rewari-Dadri section from 114.11 to 123.12 km

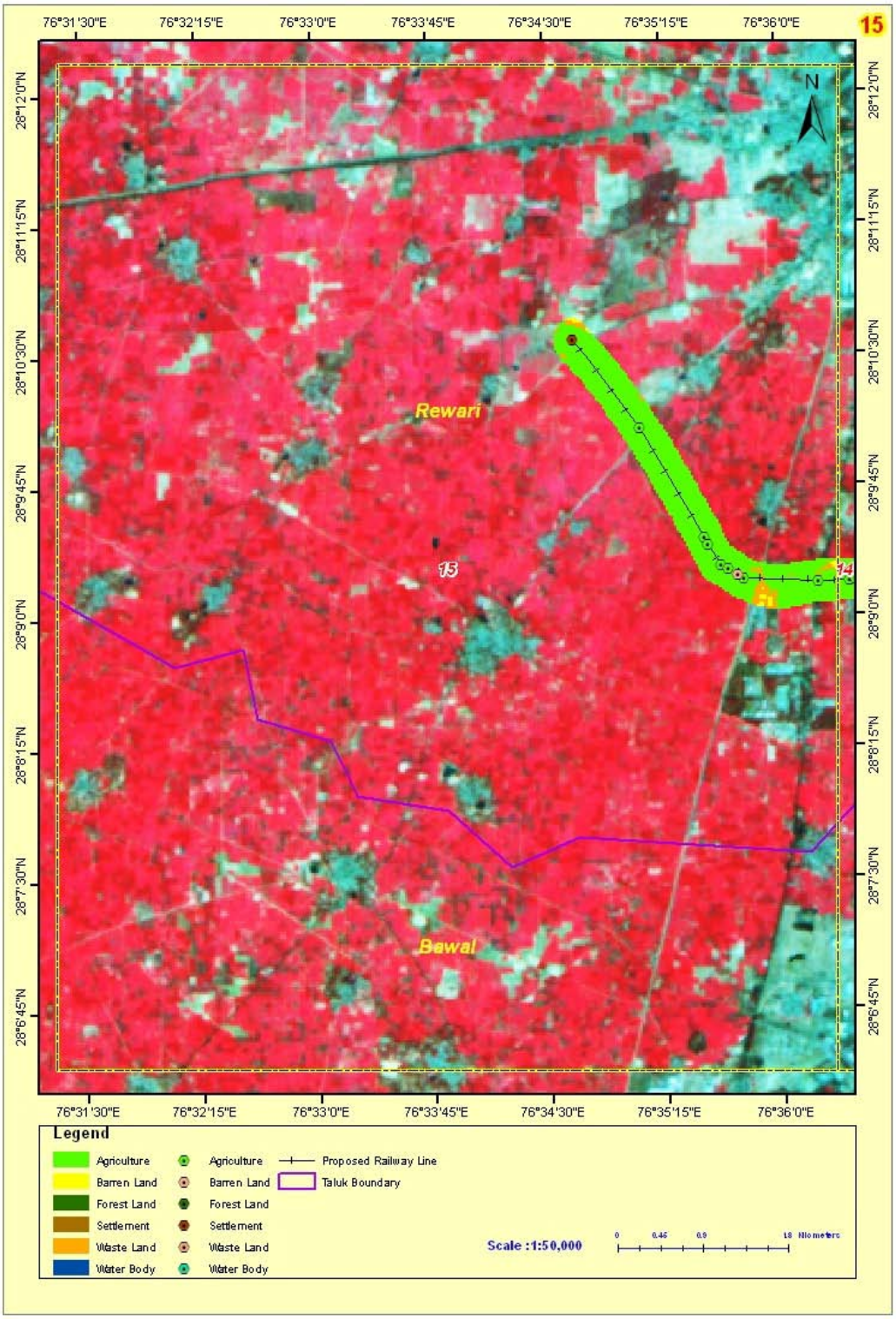


Figure 6b.15 Land use classification for Rewari-Dadri section from km 123.12 to 127.27 km

2. Vadodara to JNPT

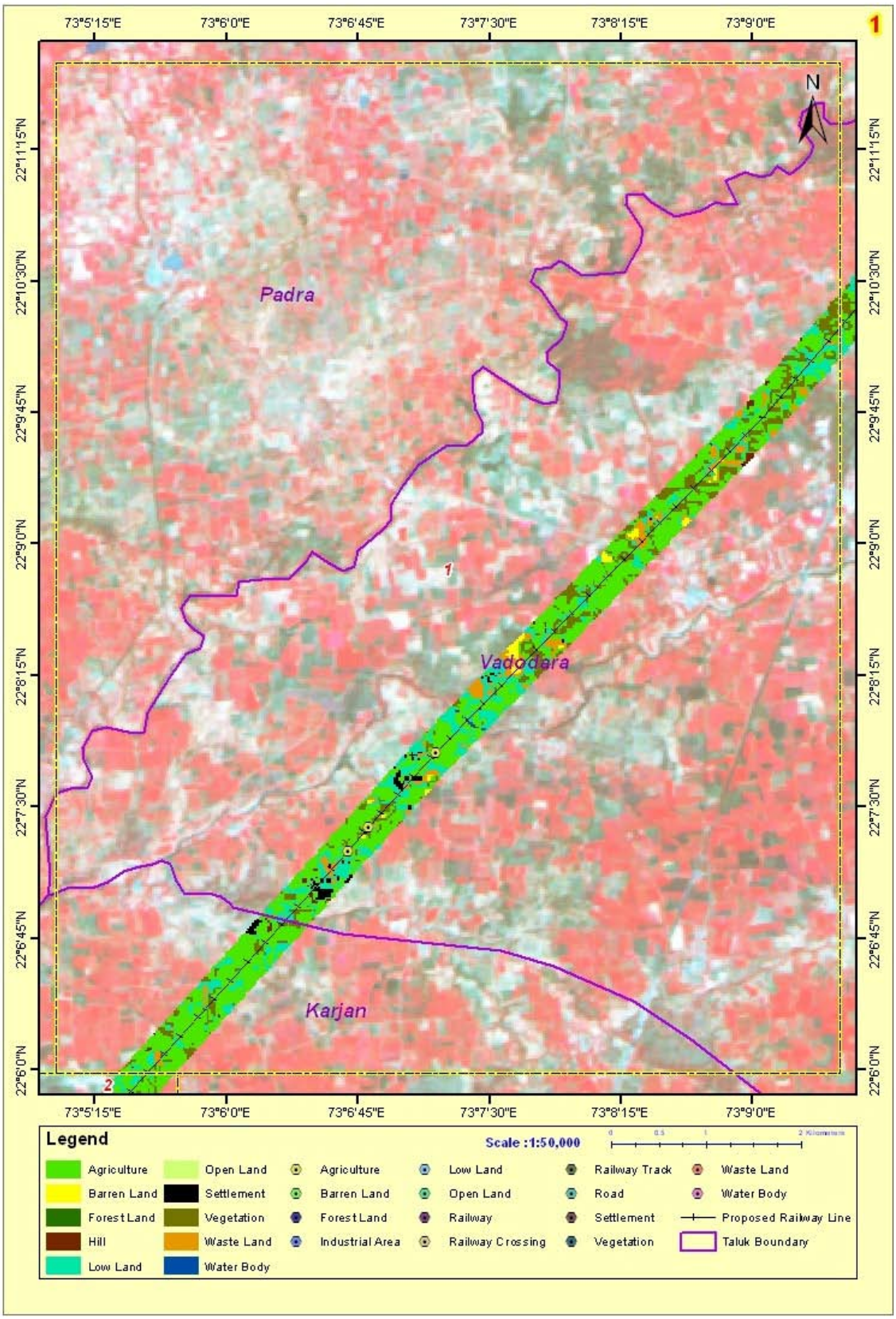


Figure 6b.16 Land use classification for Vadodara-JNPT section from 0.0 to 10.31 km

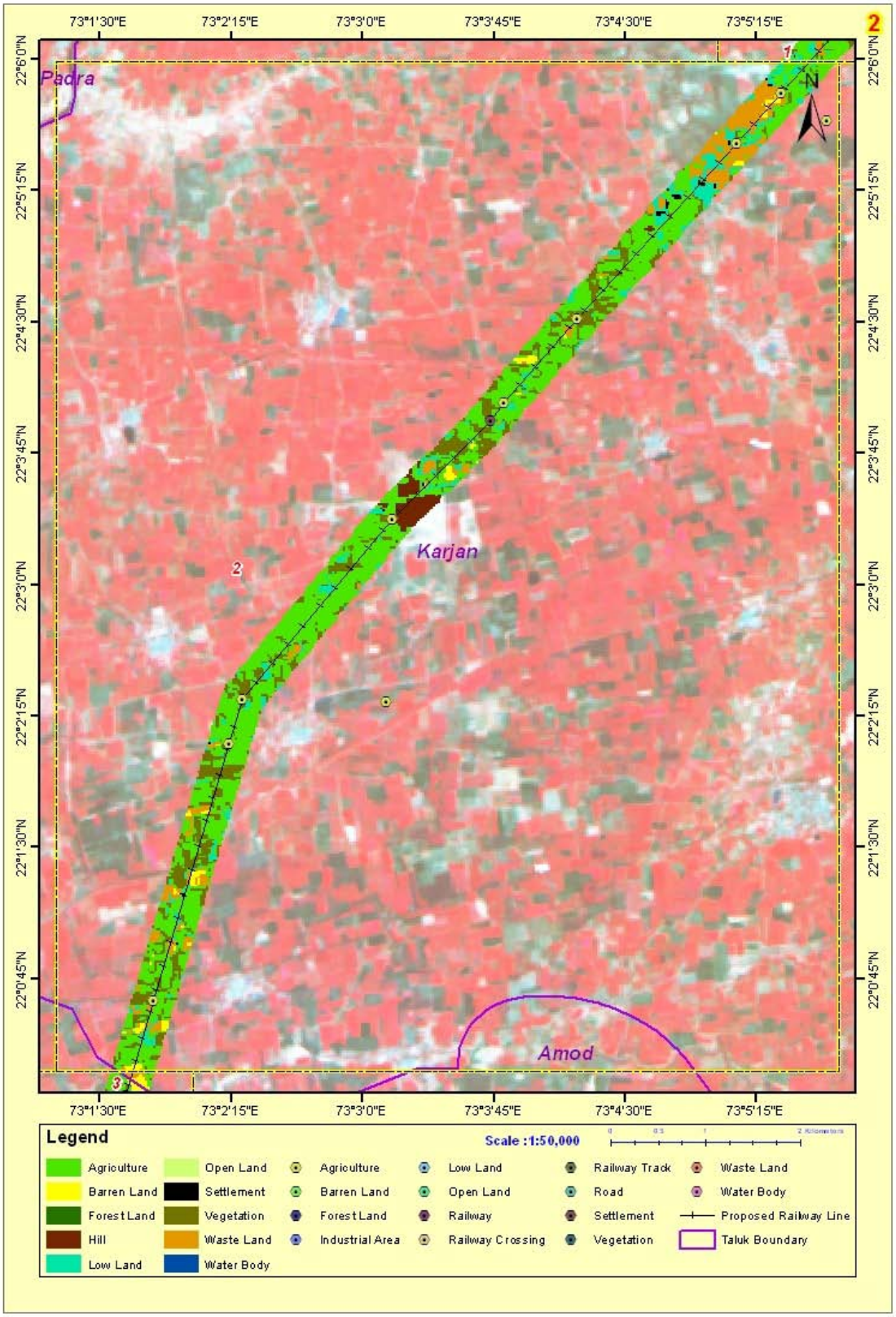


Figure 6b.17 Land use classification for Vadodara-JNPT section from 10.31 to 23.05 km

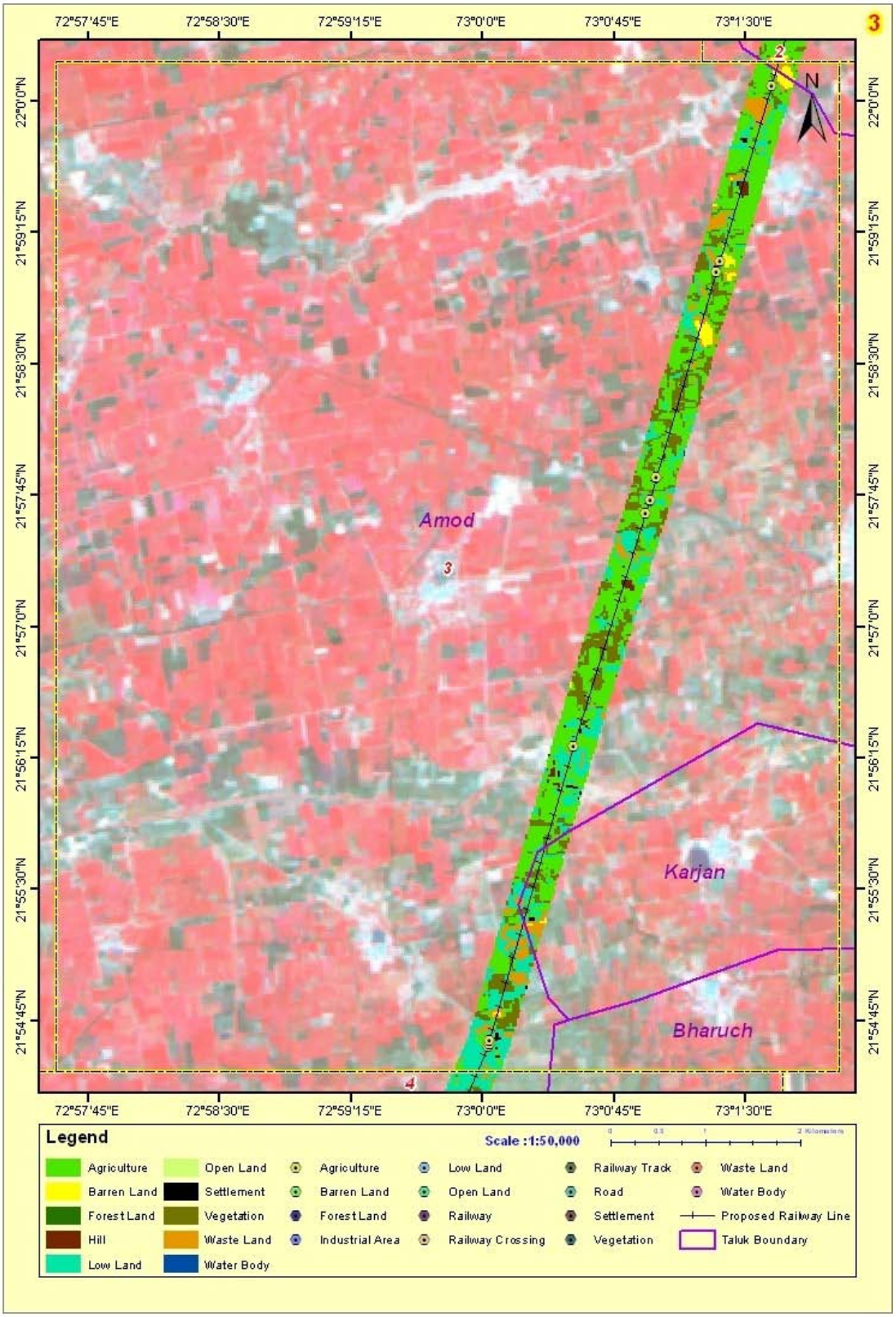


Figure 6b.18 Land use classification for Vadodara-JNPT section from 23.05 to 34 km

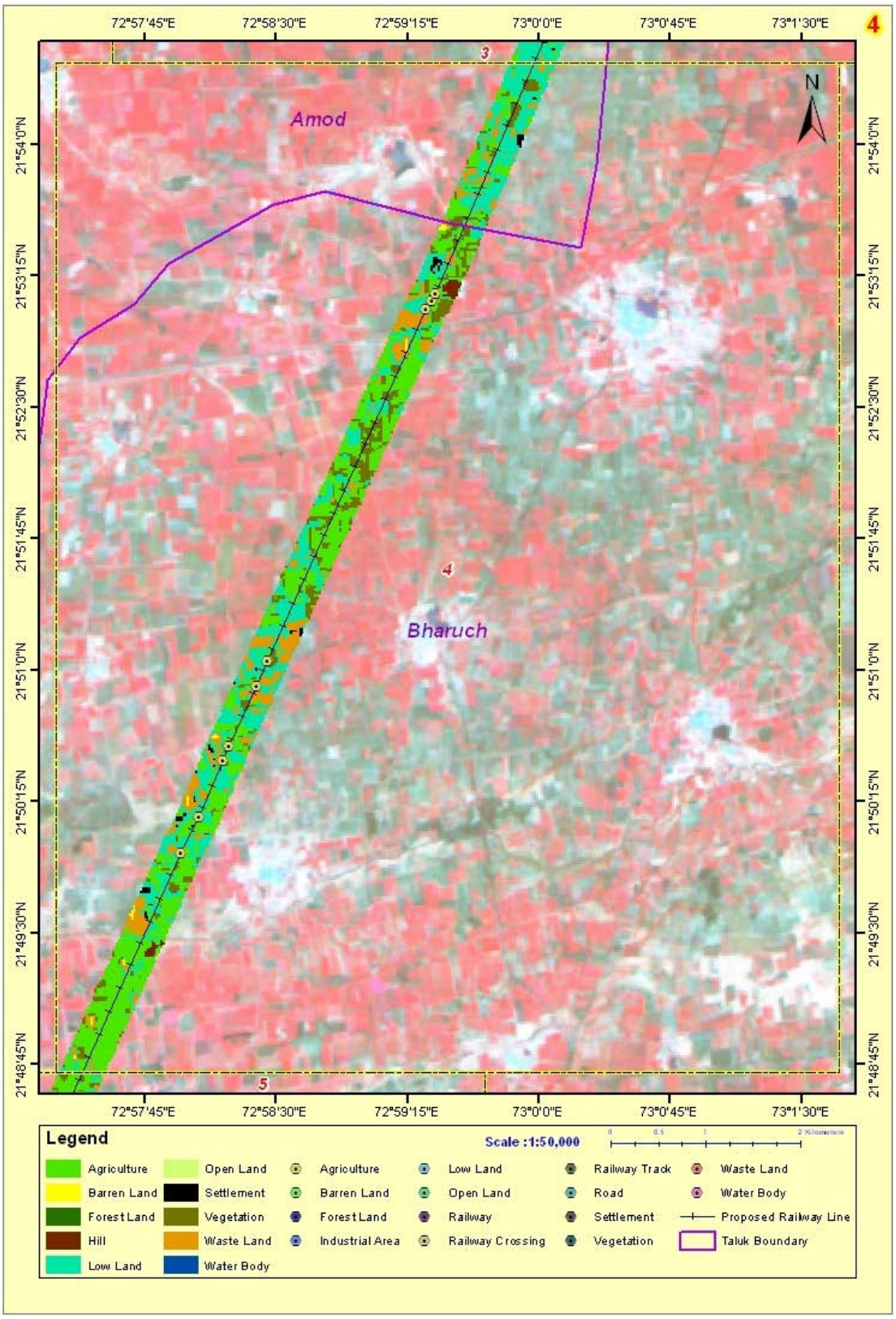


Figure 6b.19 Land use classification for Vadodara-JNPT section from 34.0 to 45.57 km

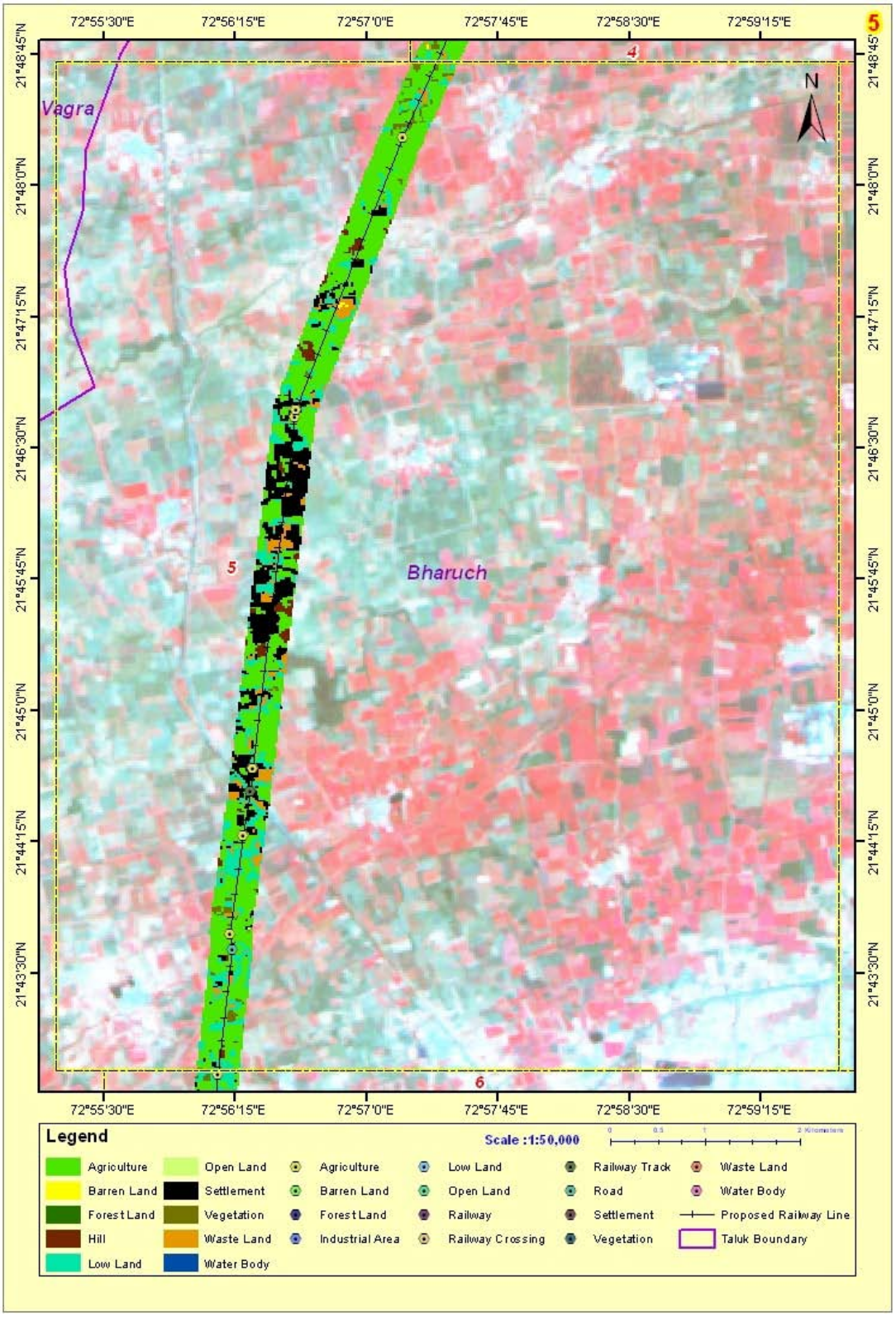


Figure 6b.20 Land use classification for Vadodara-JNPT section from 45.57 to 56.47 km

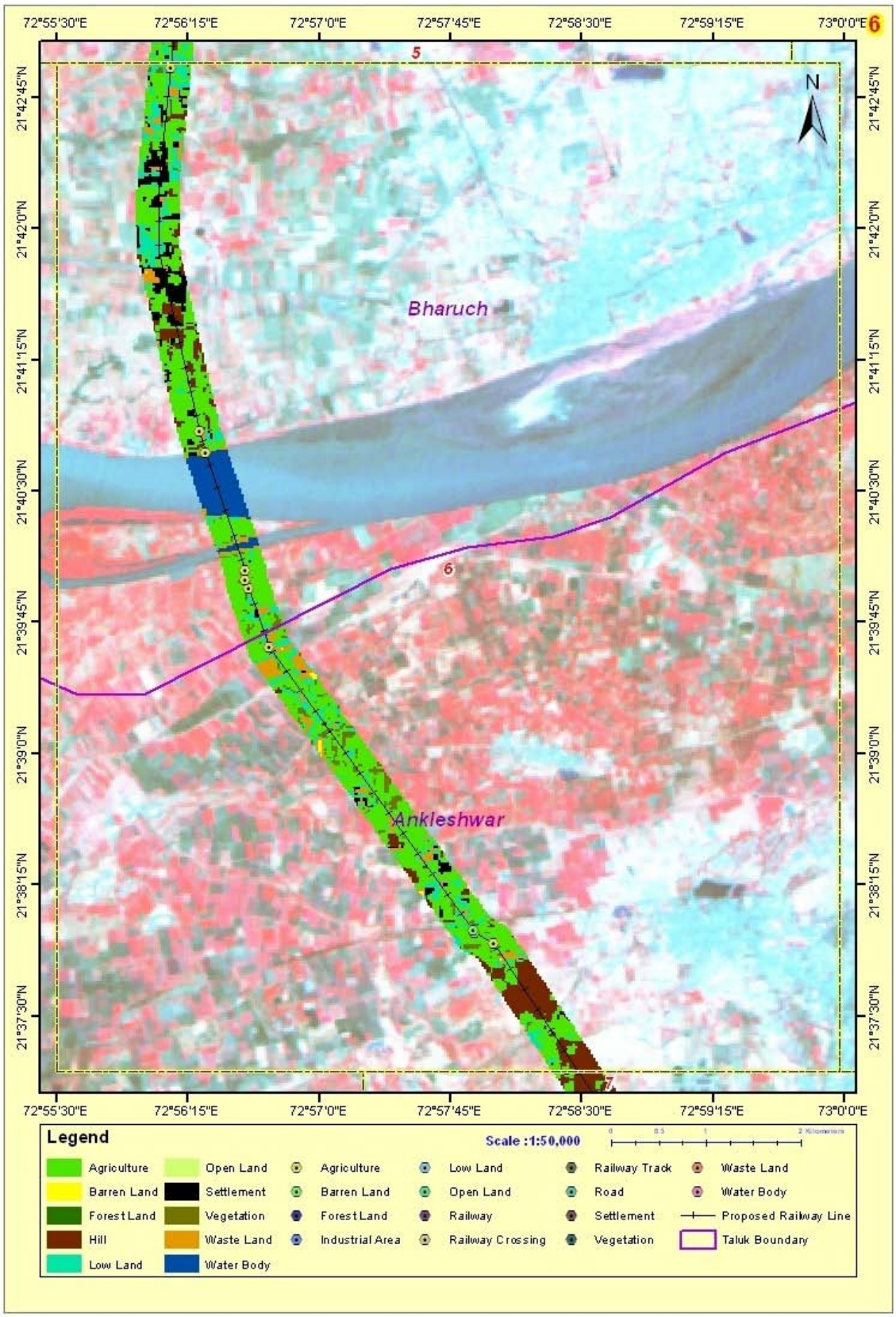


Figure 6b.21 Land use classification for Vadodara-JNPT section from 56.47 to 68.22 km

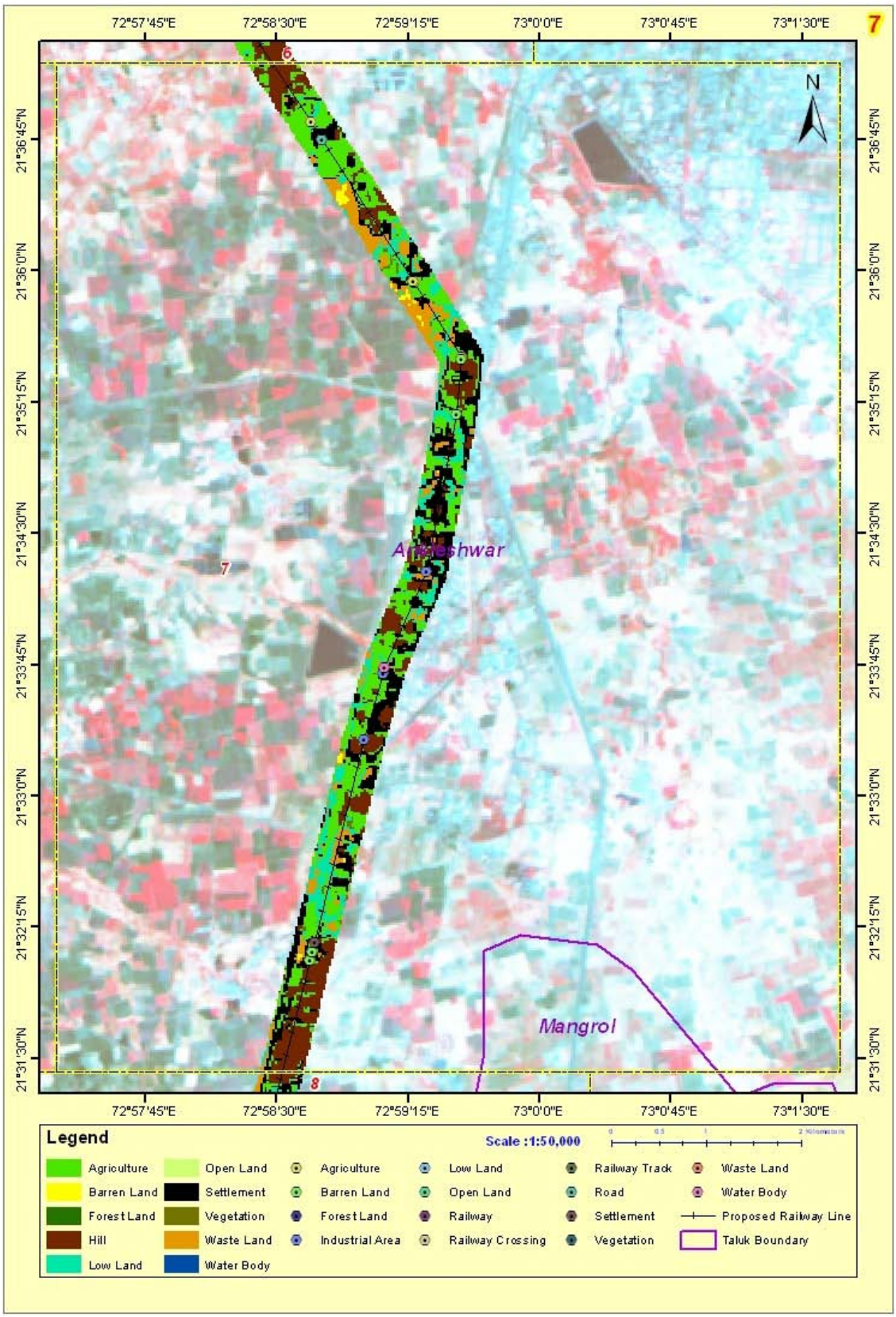


Figure 6b.22 Land use classification for Vadodara-JNPT section from 68.22 to 79.89 km

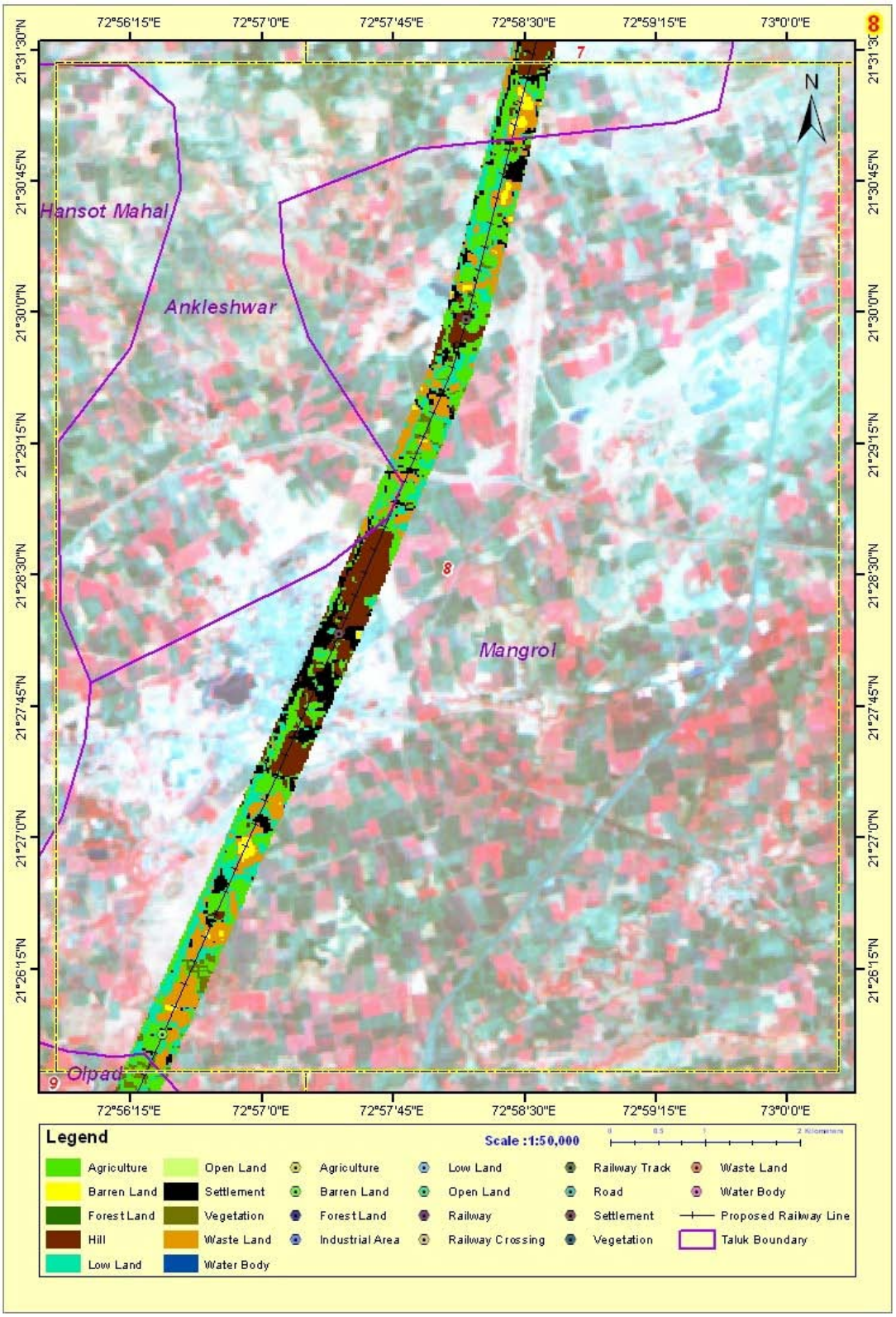


Figure 6b.23 Land use classification for Vadodara-JNPT section from 79.89 to 91.52 km

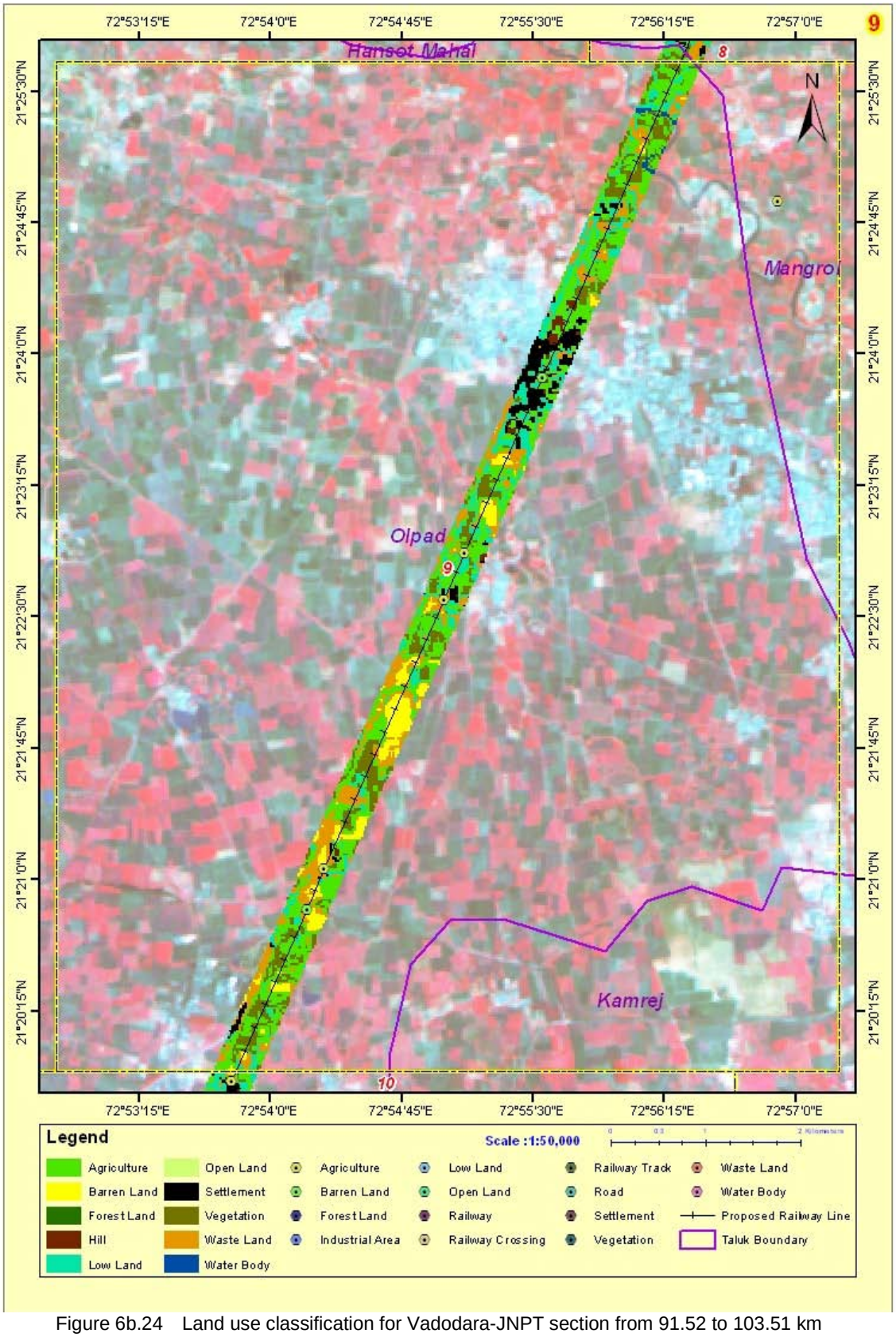


Figure 6b.24 Land use classification for Vadodara-JNPT section from 91.52 to 103.51 km

Figure 6b.25 Land use classification for Vadodara-JNPT section from 103.51 to 116.81 km

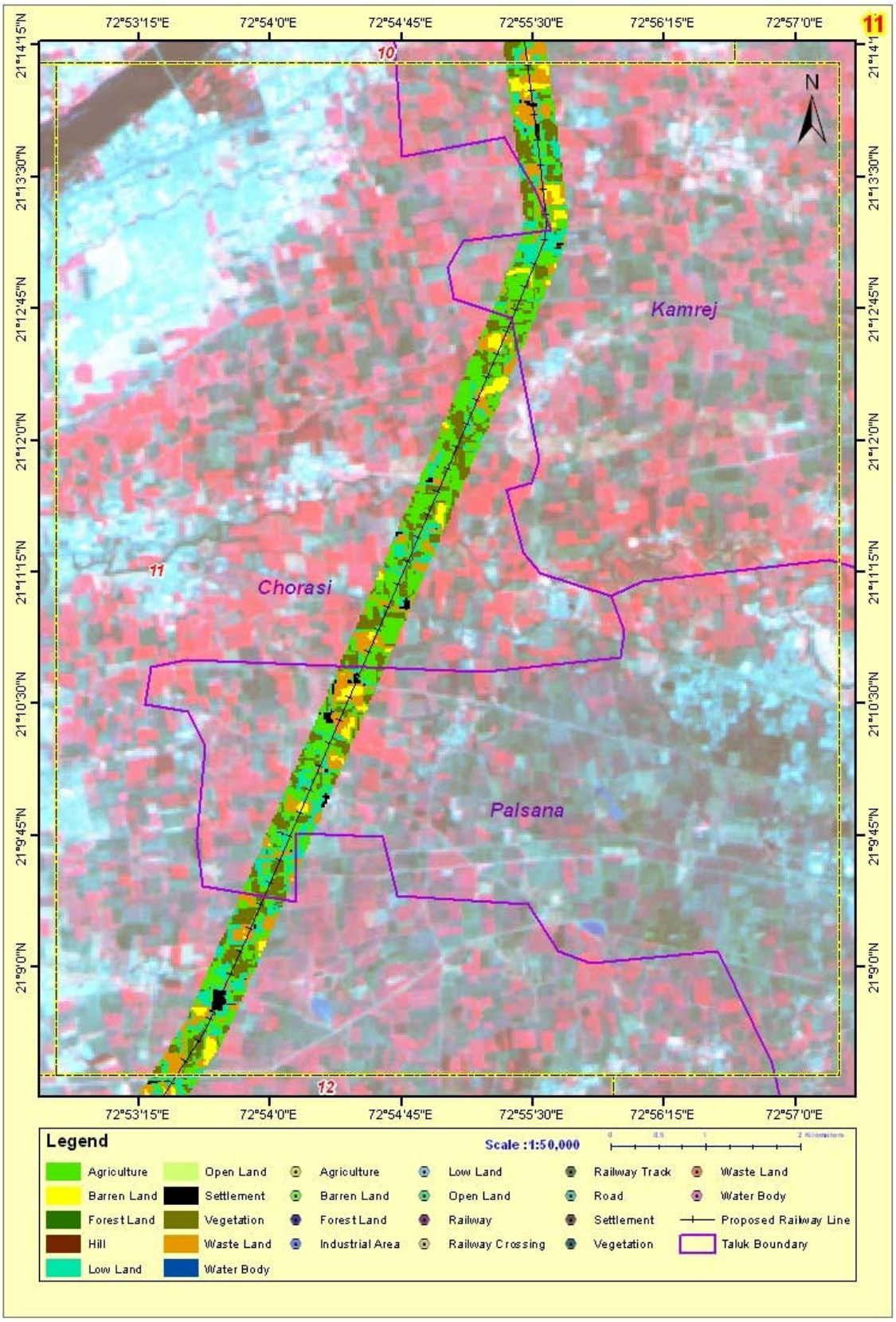


Figure 6b.26 Land use classification for Vadodara-JNPT section from 116.81to 128.56 km

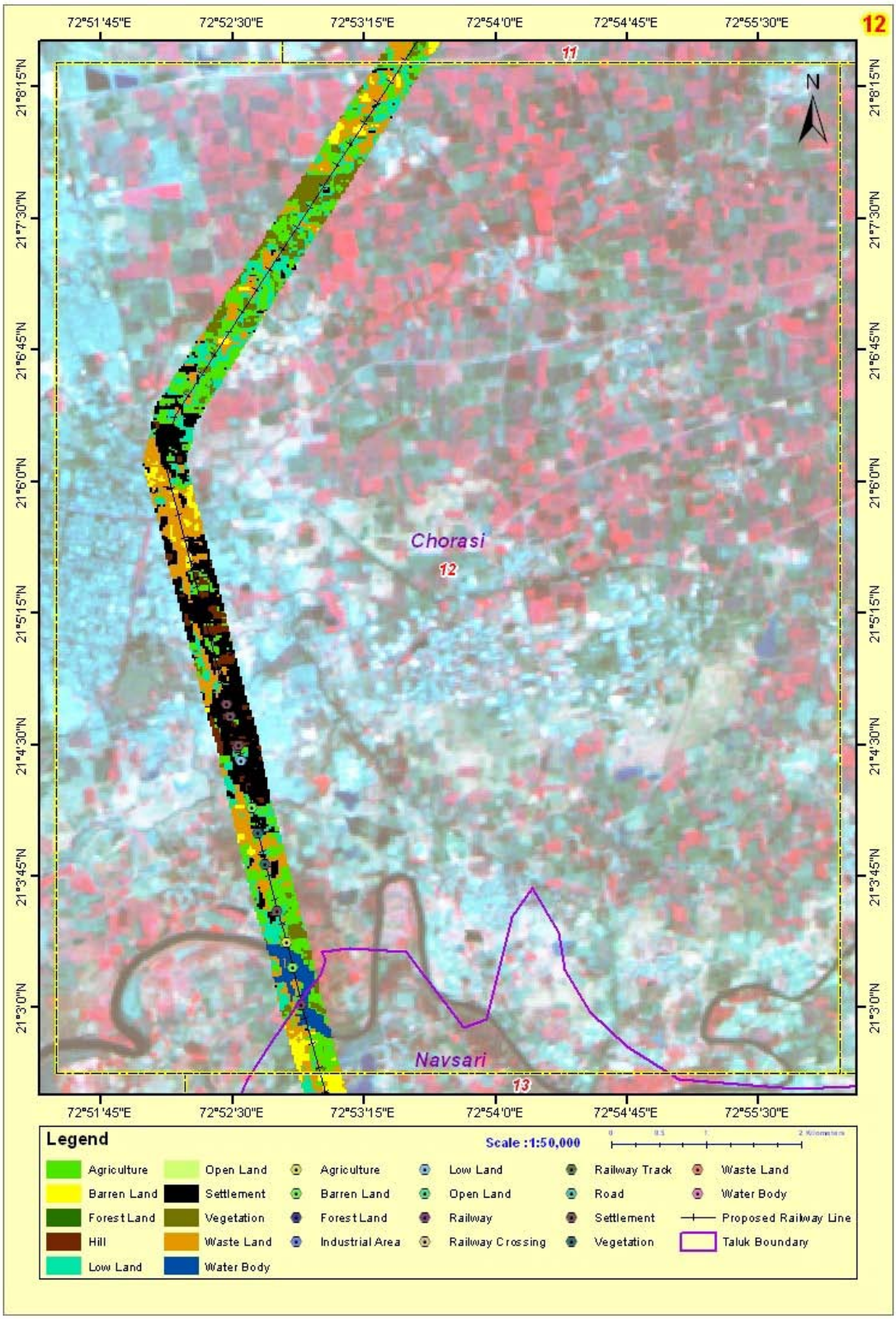


Figure 6b.27 Land use classification for Vadodara-JNPT section from 128.56 to 140.01 km

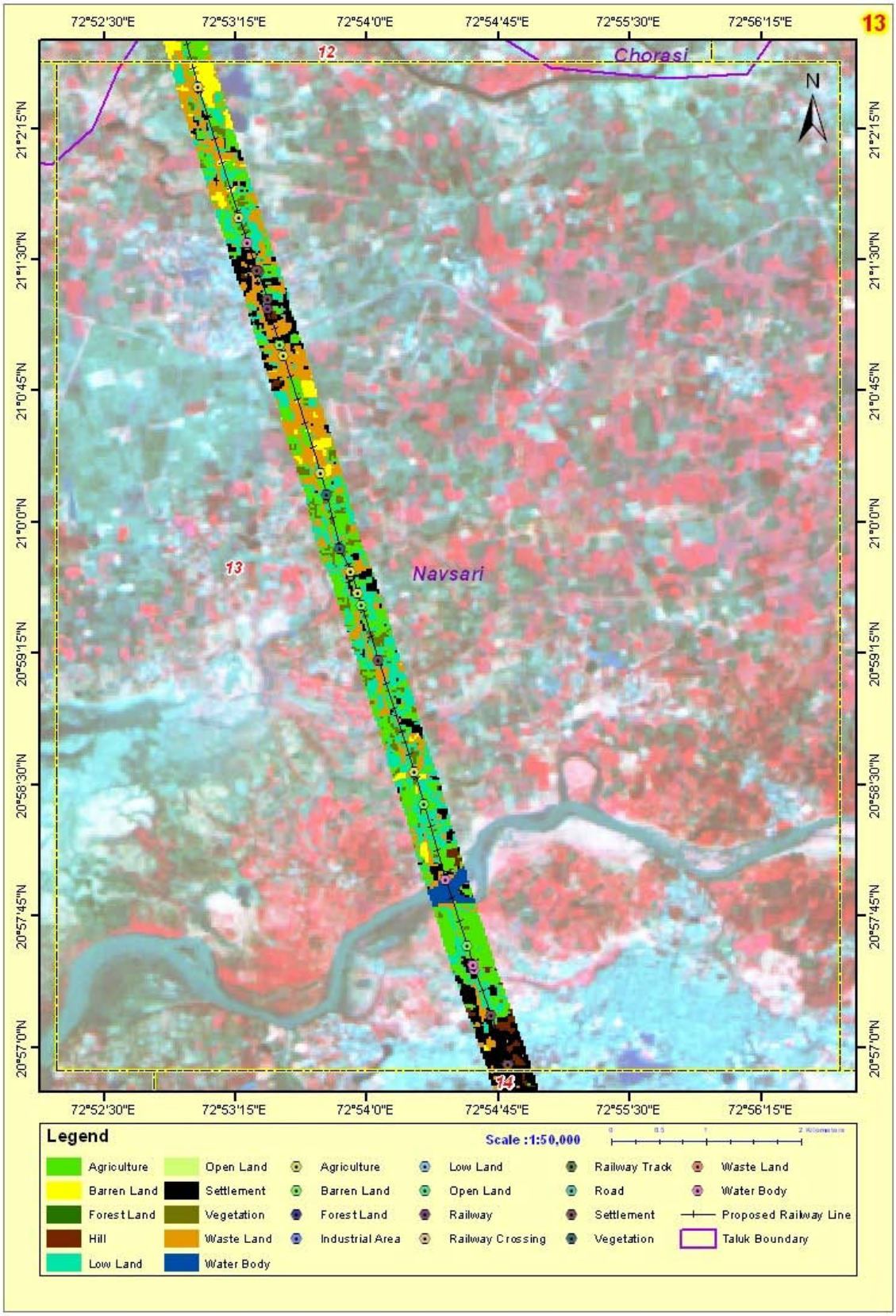


Figure 6b.28 Land use classification for Vadodara-JNPT section from 140.01 to 151.08 km

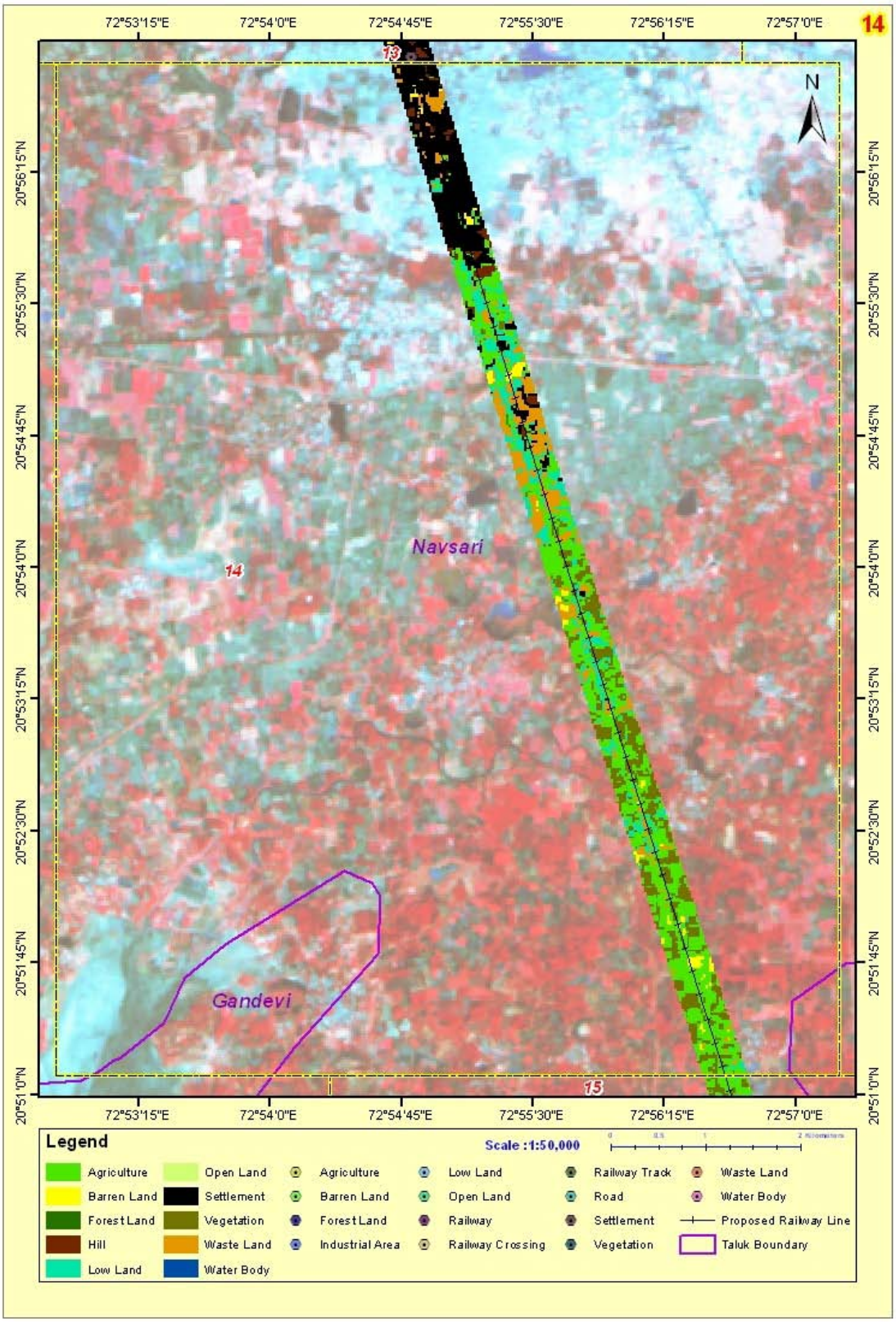


Figure 6b.29 Land use classification for Vadodara-JNPT section from 151.08 to 162.17 km

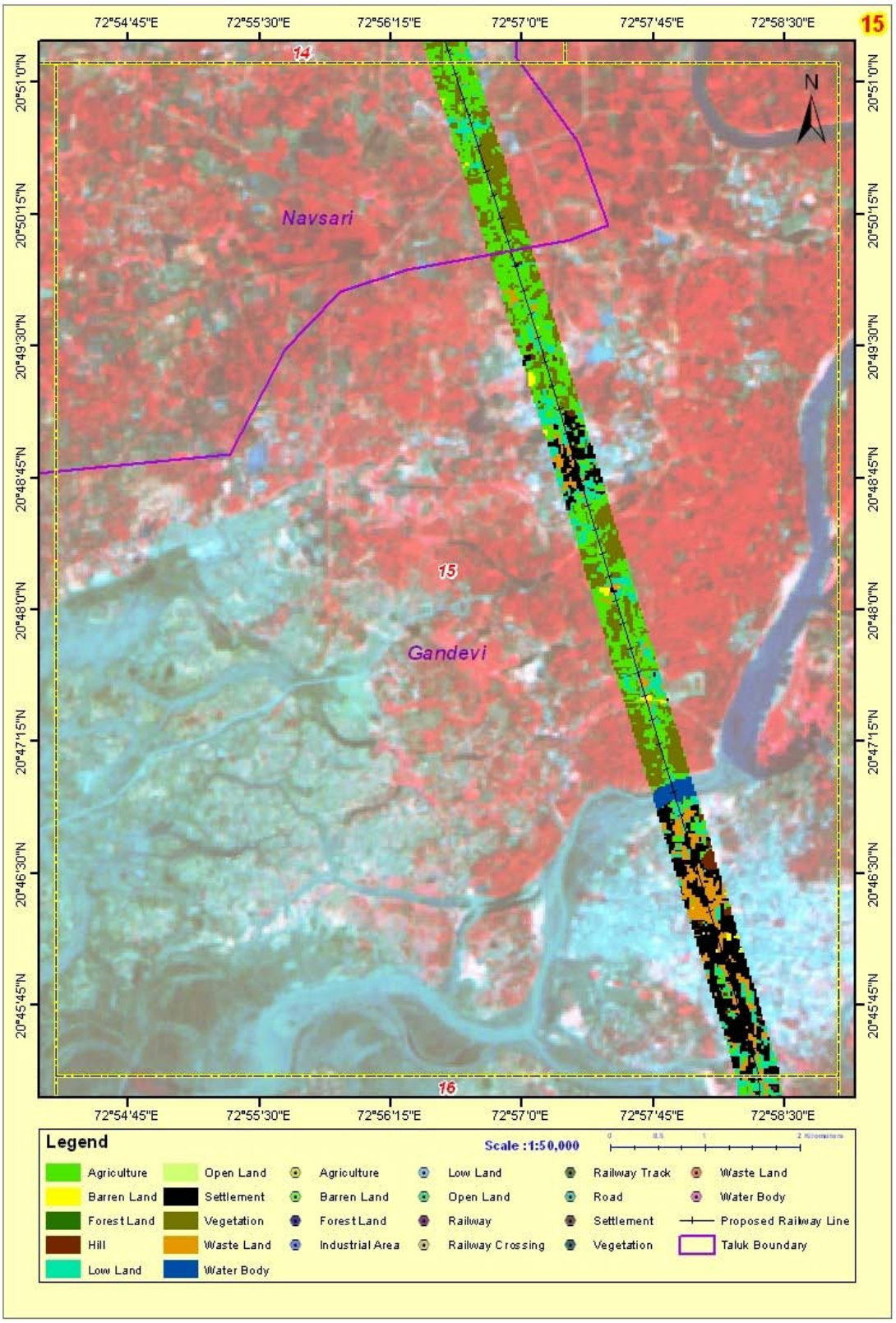


Figure 6b.30 Land use classification for Vadodara-JNPT section from 162.17 to 173.18 km

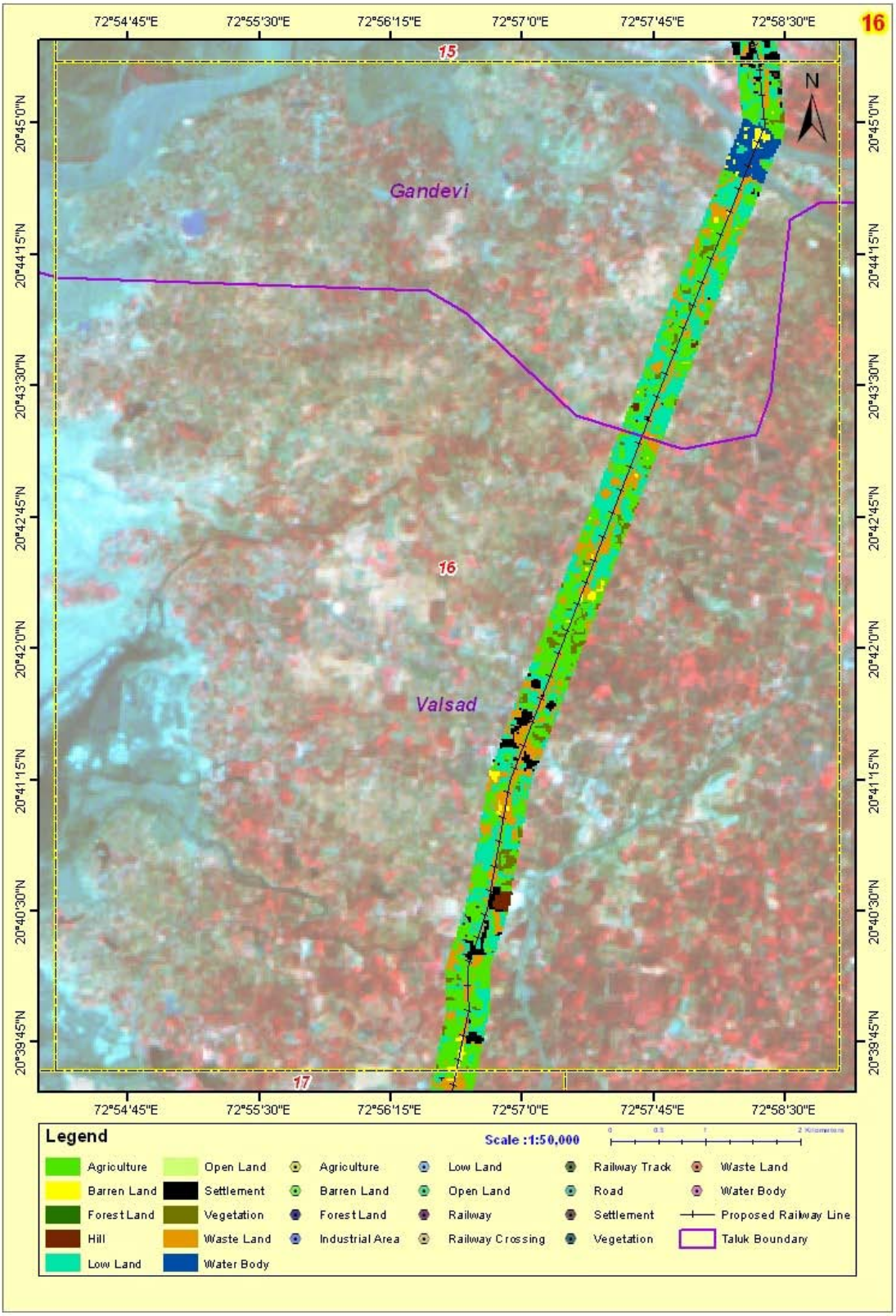


Figure 6b.31 Land use classification for Vadodara-JNPT section from 173.18 to 184.27 km

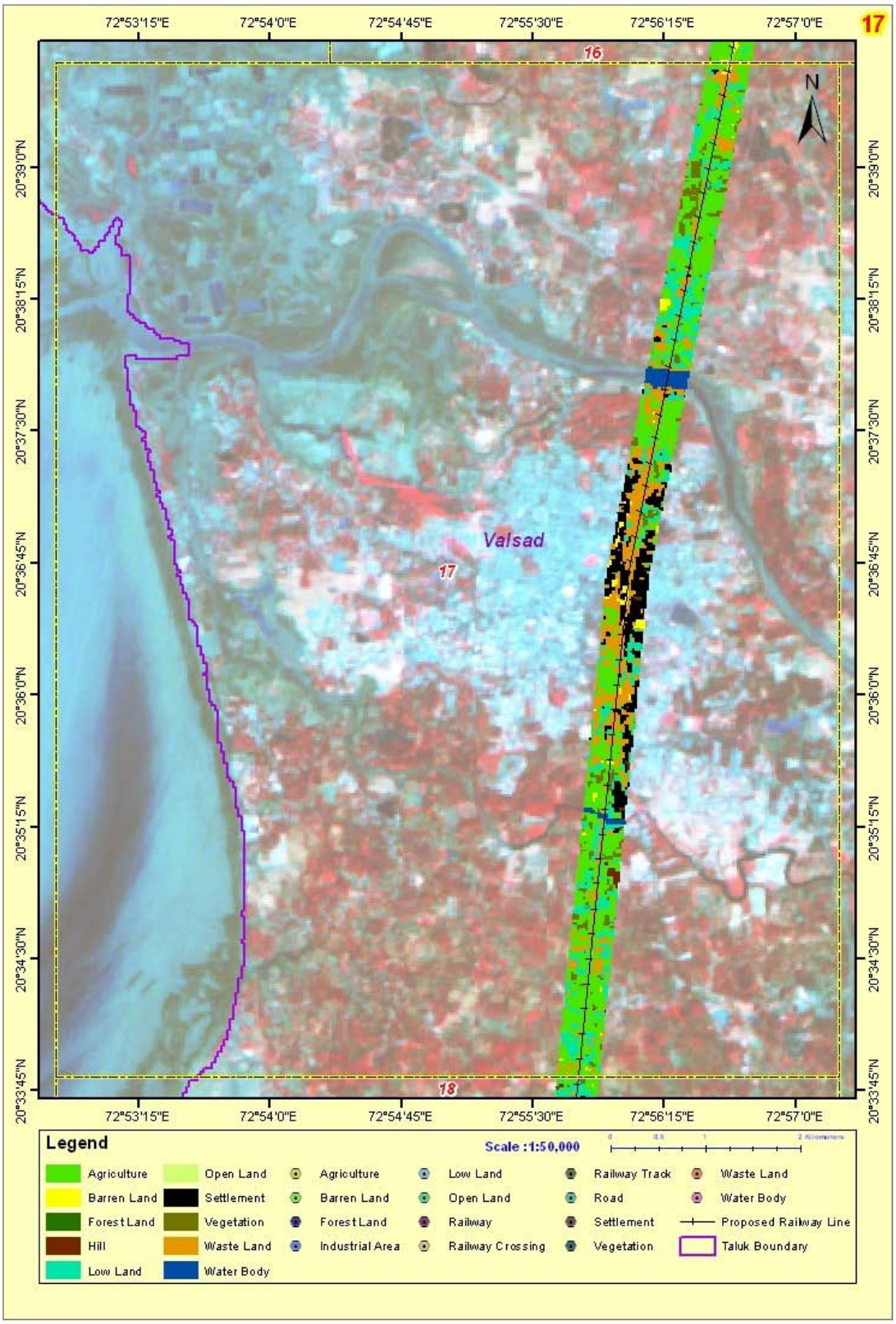


Figure 6b.32 Land use classification for Vadodara-JNPT section from 184.27 to 194.99 km

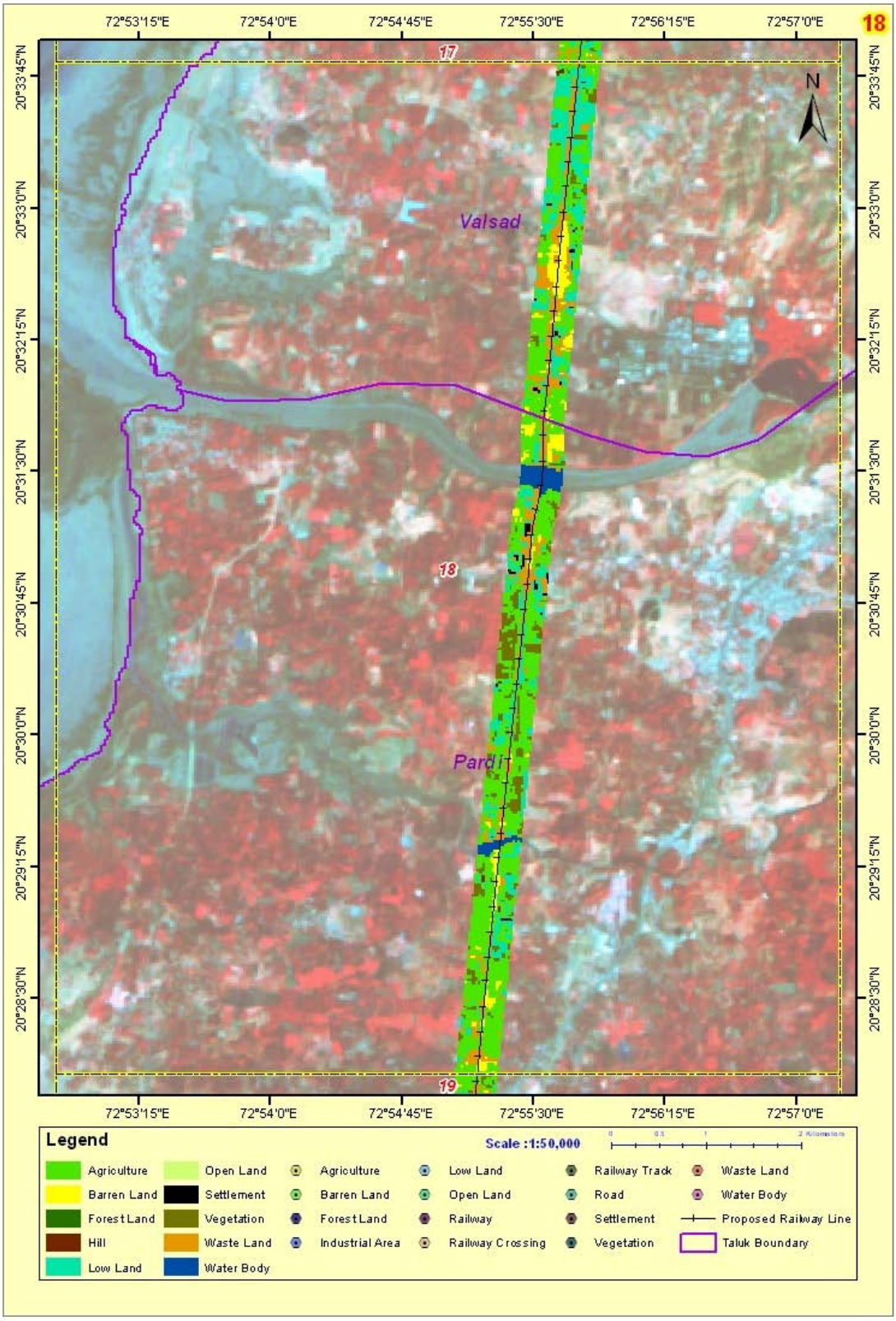


Figure 6b.33 Land use classification for Vadodara-JNPT section from 194.99 to 205.59 km

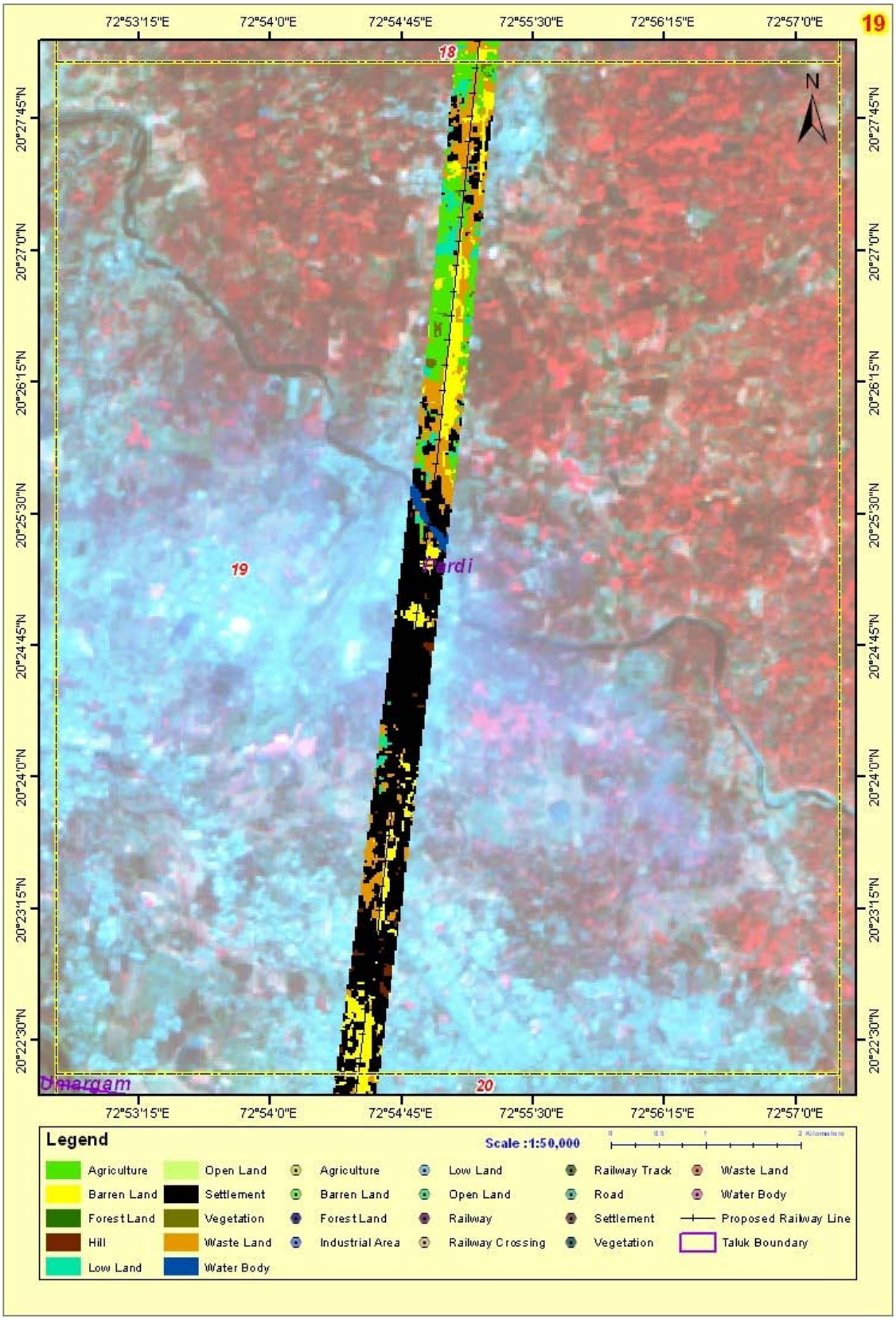


Figure 6b.34 Land use classification for Vadodara-JNPT section from 205.59 to216.22 km

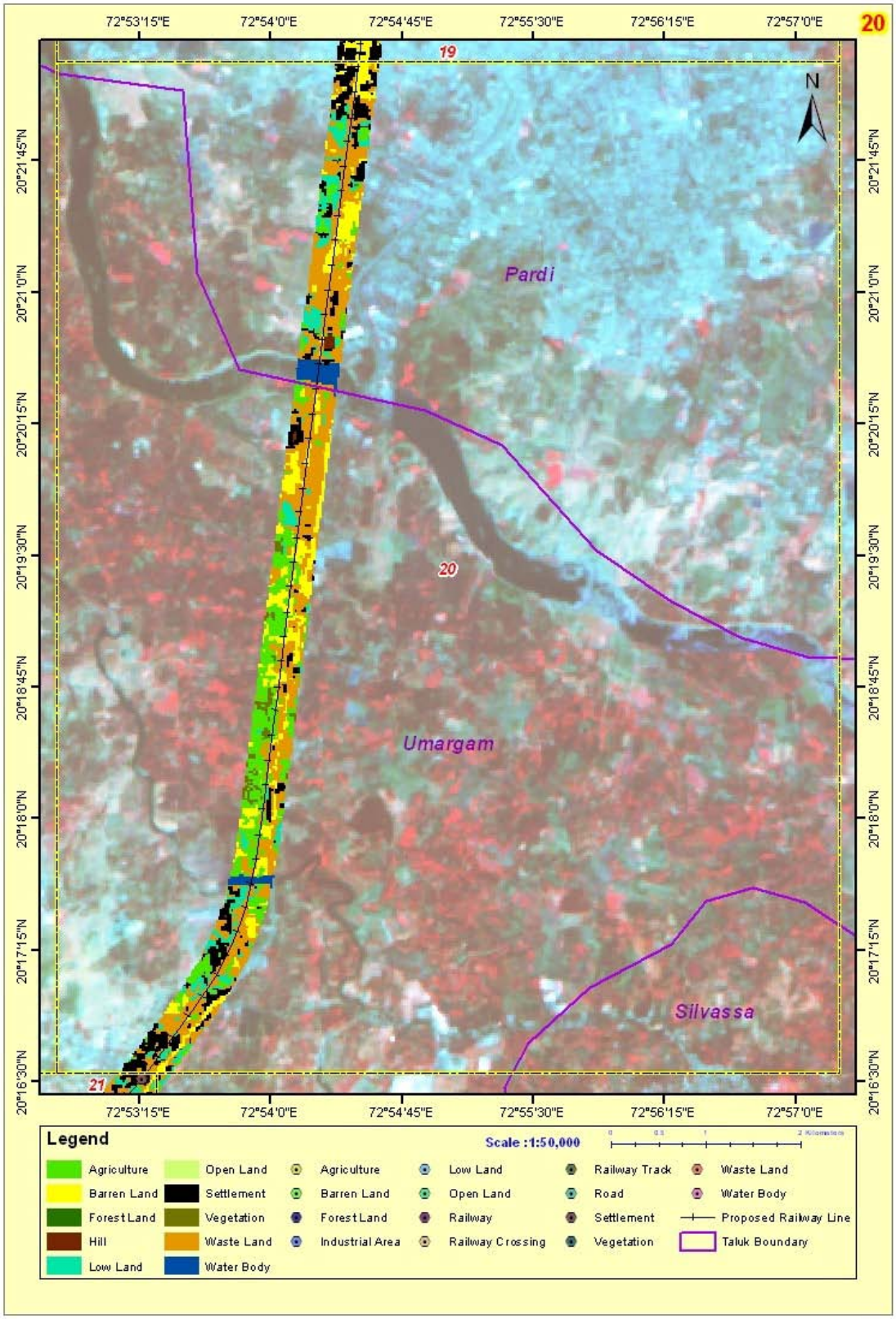


Figure 6b.35 Land use classification for Vadodara-JNPT section from 216.22 to 227.21km

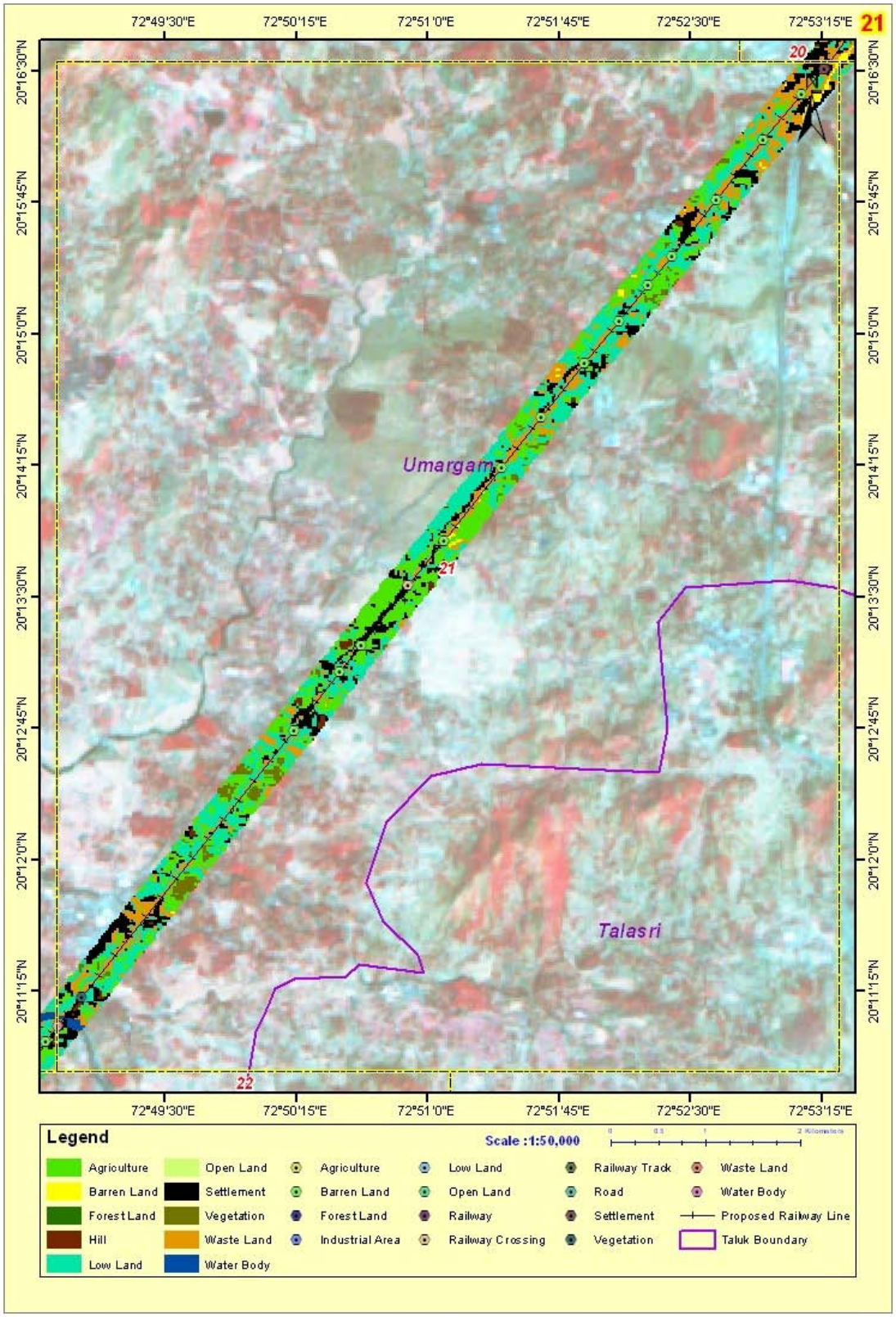


Figure 6b.36 Land use classification for Vadodara-JNPT section from 227.21 to 239.9 km

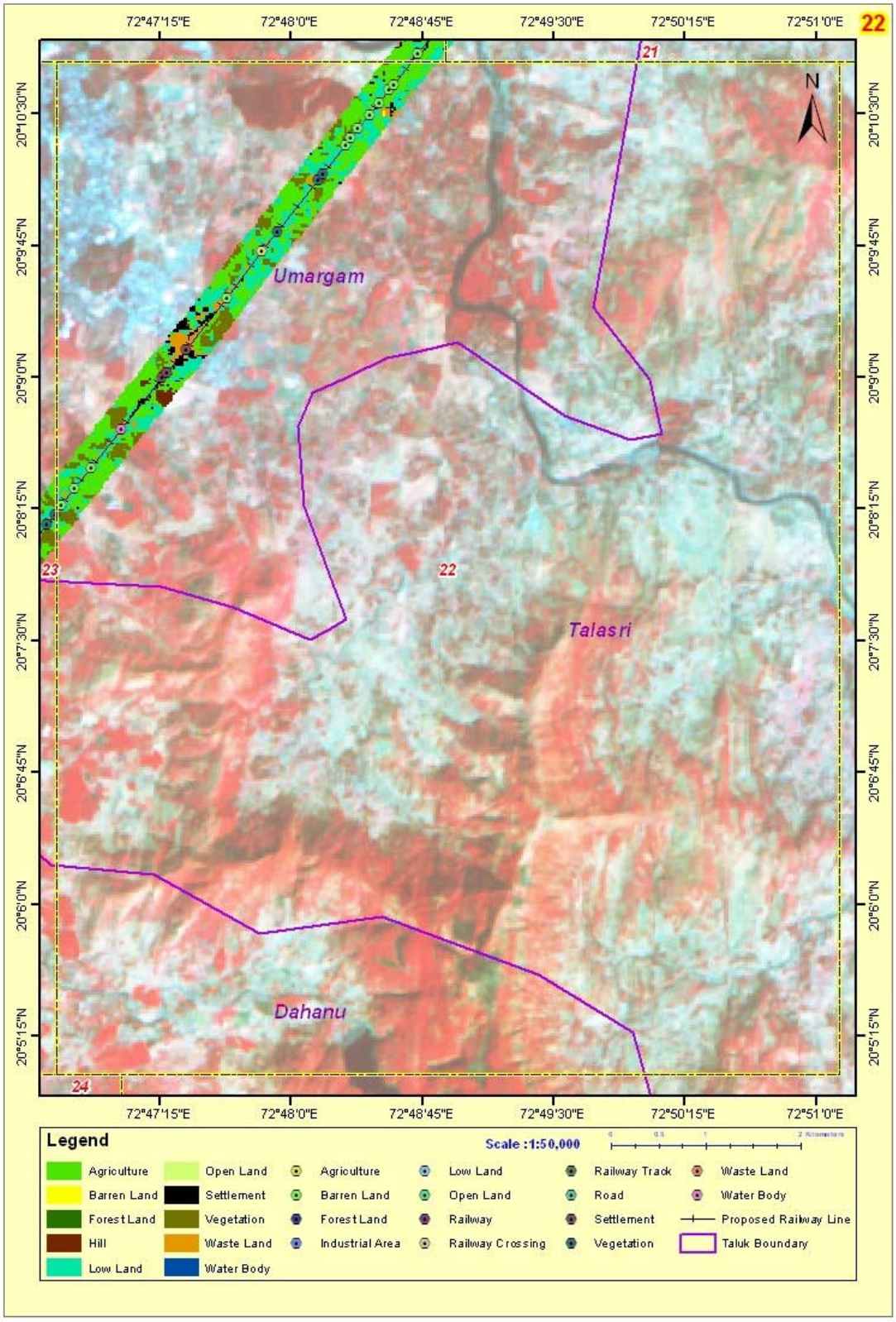


Figure 6b.37 Land use classification for Vadodara-JNPT section from 239.9 to 245.77 km

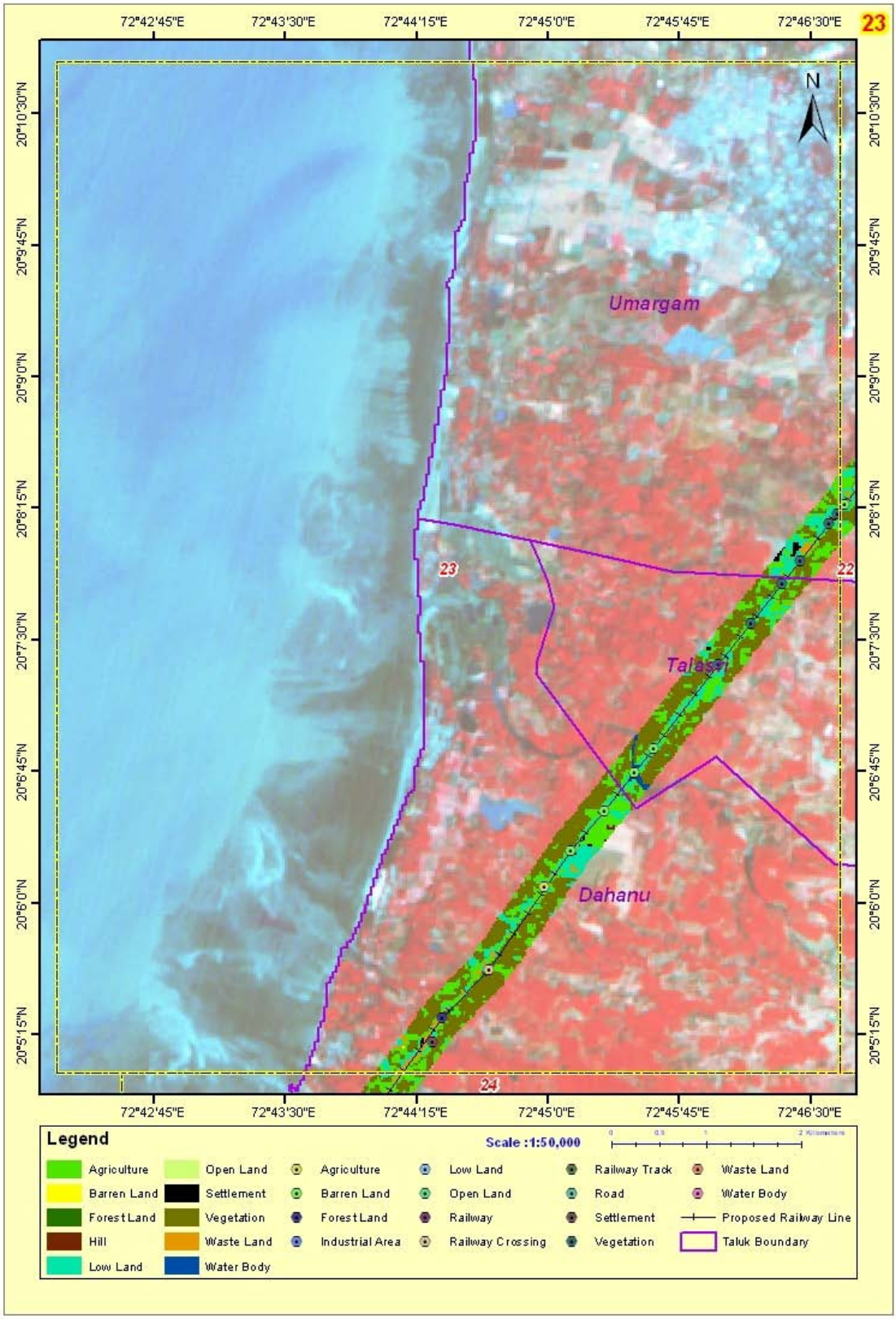


Figure 6b.38 Land use classification for Vadodara-JNPT section from 245.77 to 253.13 km

Figure 6b.39 Land use classification for Vadodara-JNPT section from 253.13 to266.23 km

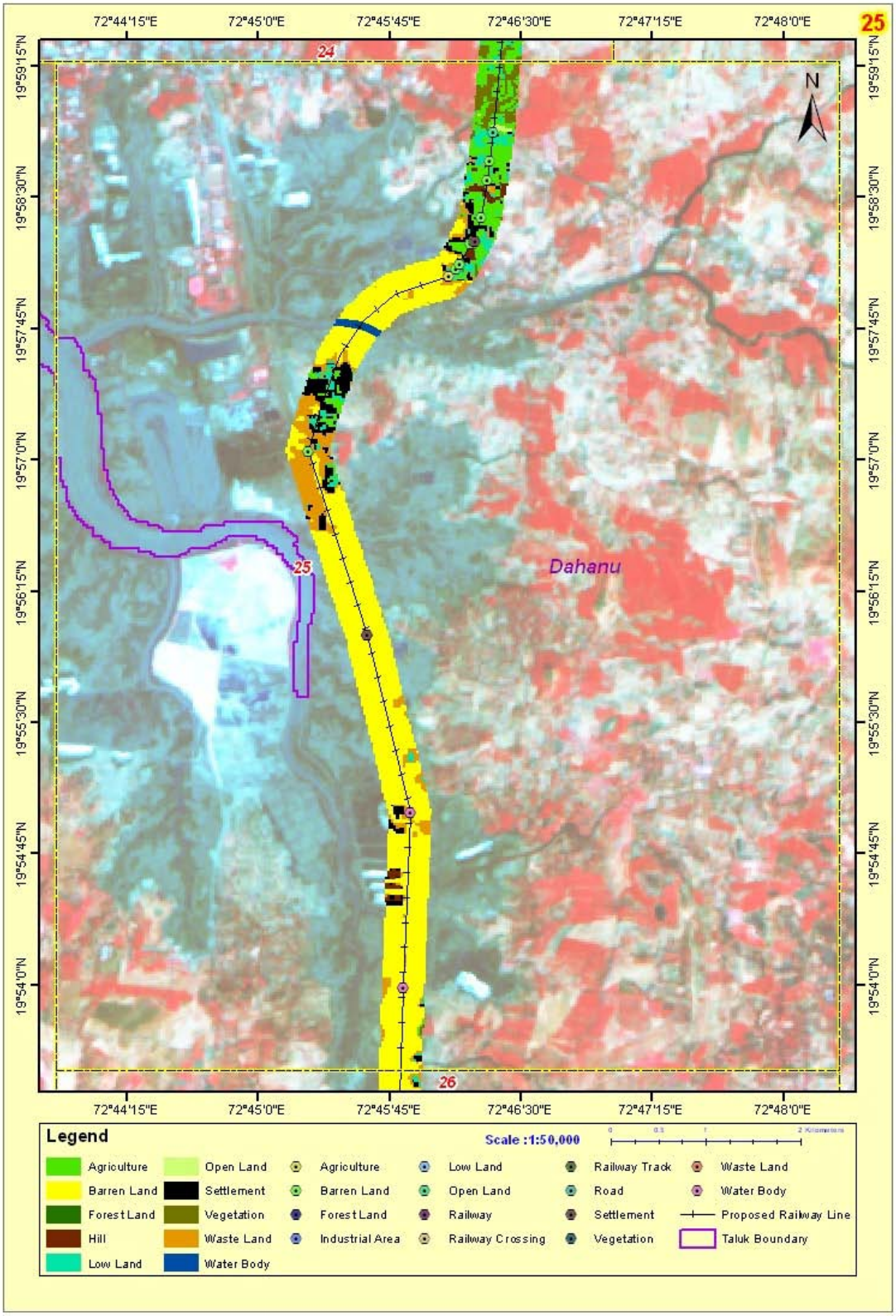


Figure 6b.40 Land use classification for Vadodara-JNPT section from 266.23 to 277.63 km

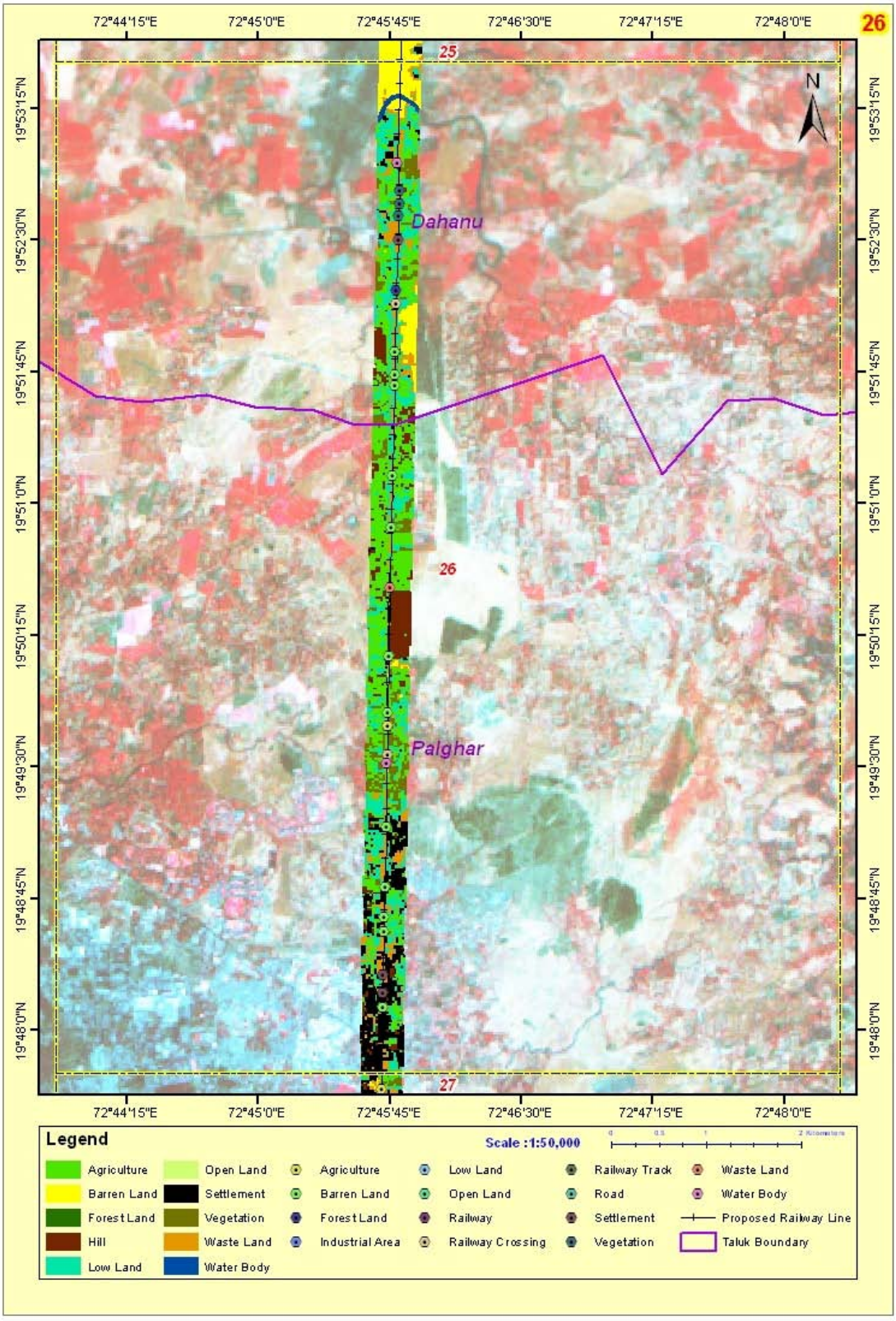


Figure 6b.41 Land use classification for Vadodara-JNPT section from 277.63 to 288.23 km

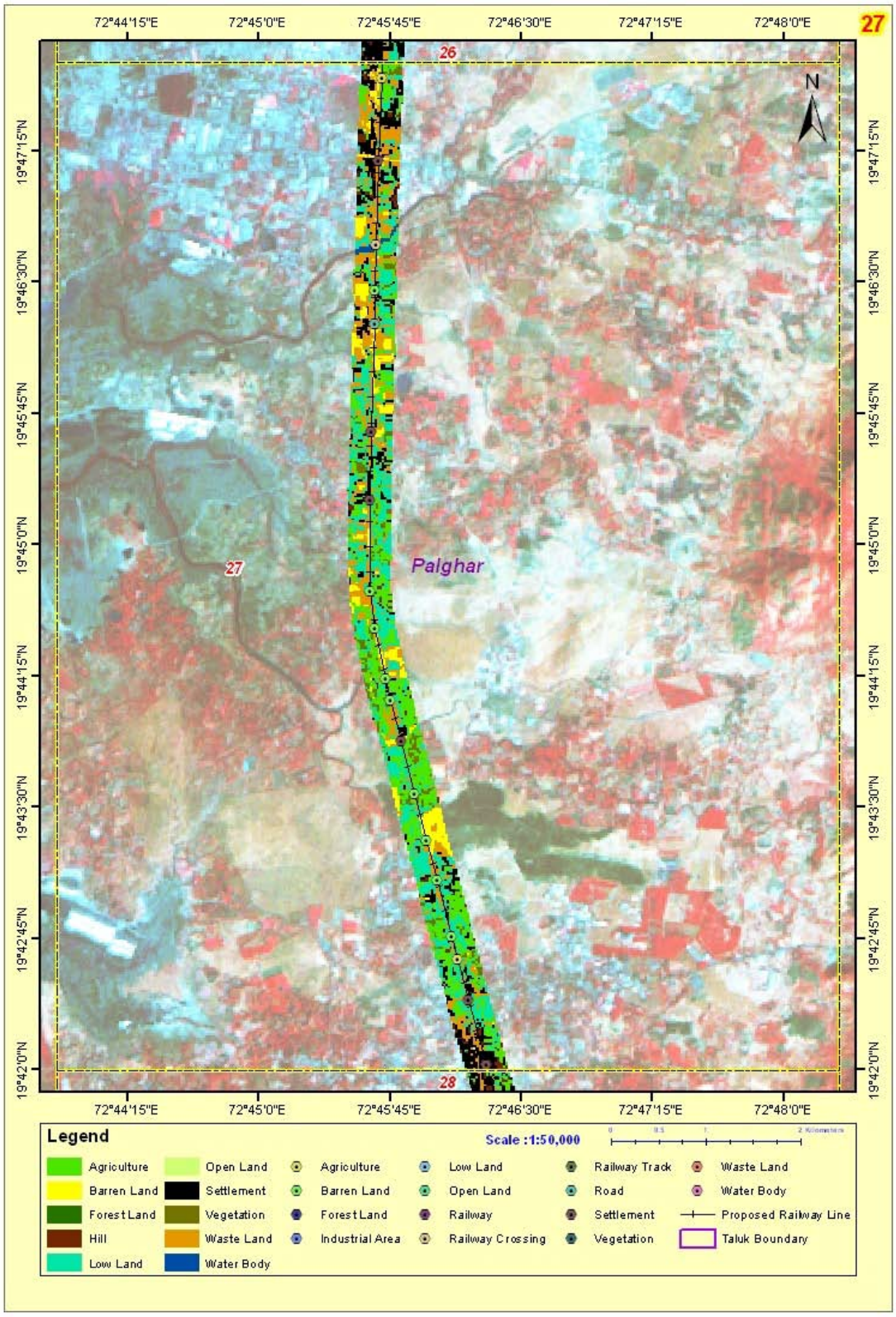


Figure 6b.42 Land use classification for Vadodara-JNPT section from 288.23 to298.98 km

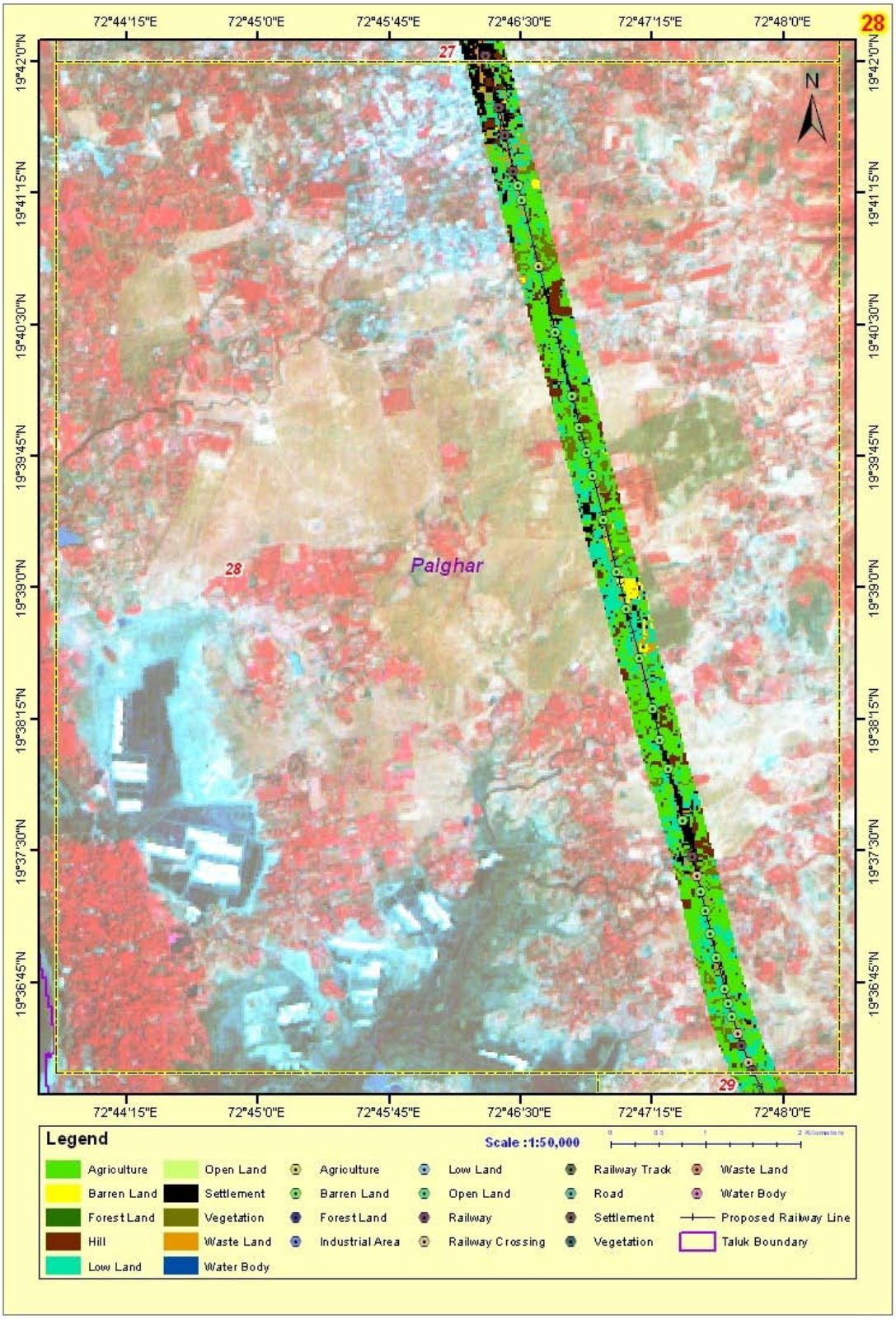


Figure 6b.43 Land use classification for Vadodara-JNPT section from 298.98 to 309.75 km

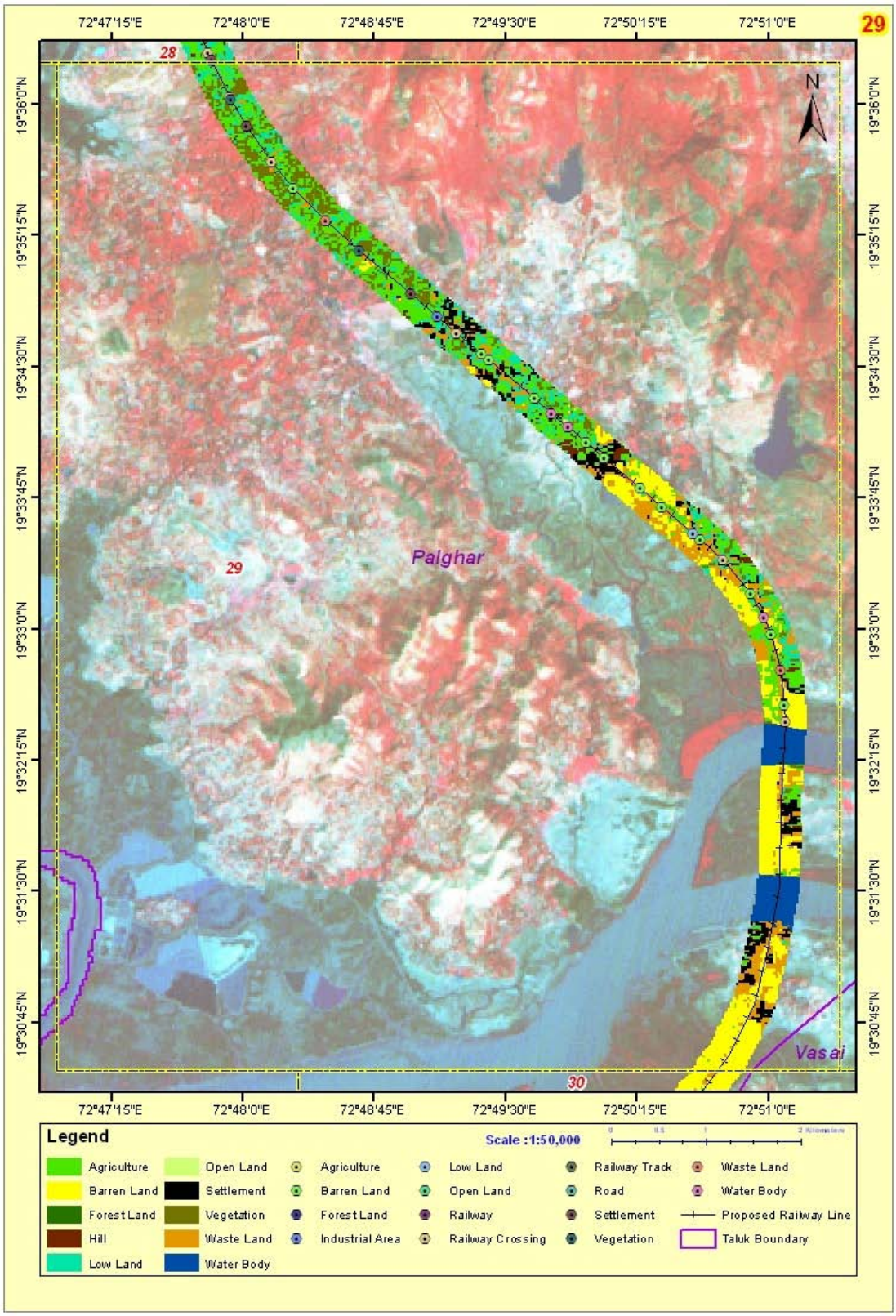


Figure 6b.44 Land use classification for Vadodara-JNPT section from 309.75 to 322.71 km

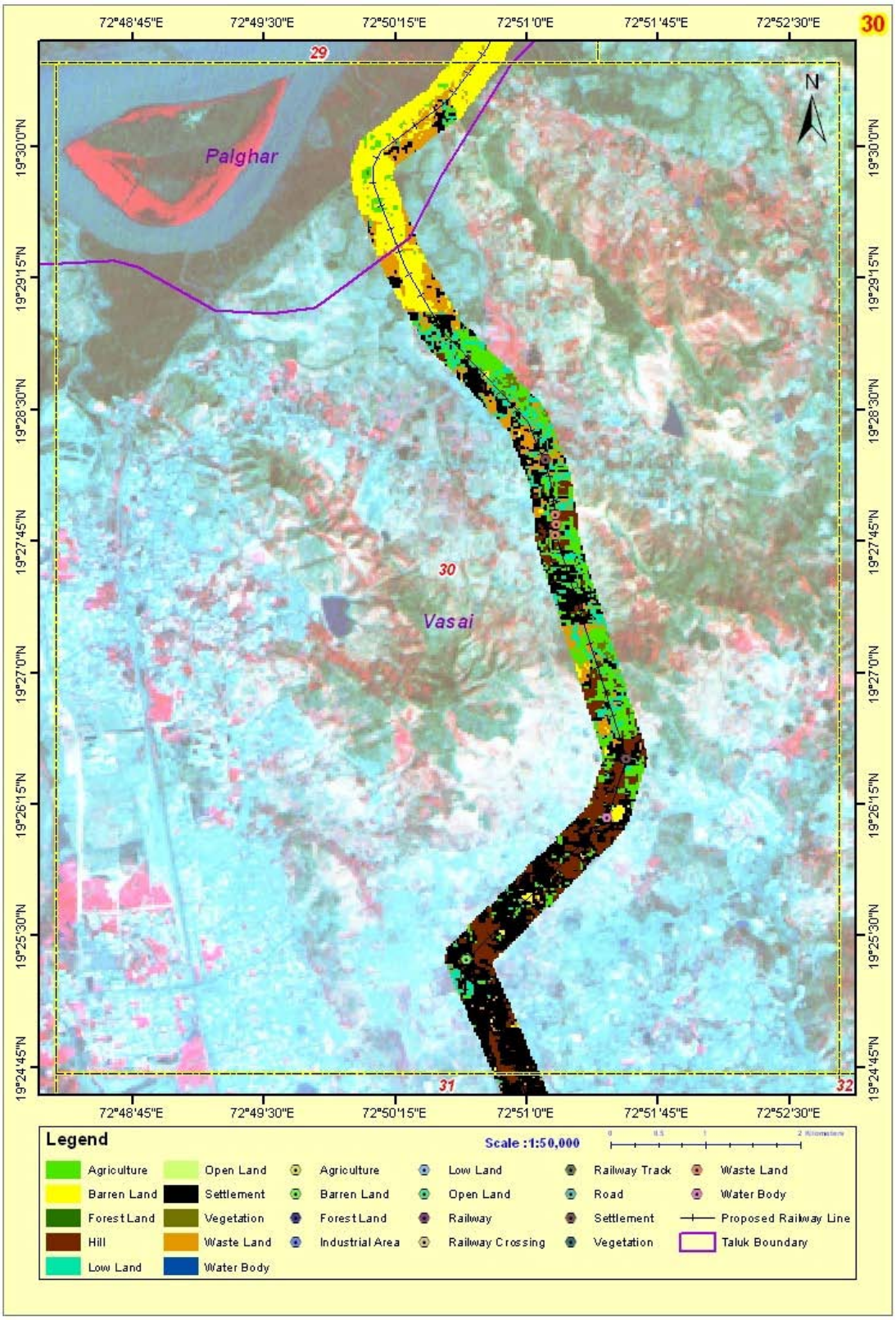


Figure 6b.45 Land use classification for Vadodara-JNPT section from 322.71 to 335.09 km

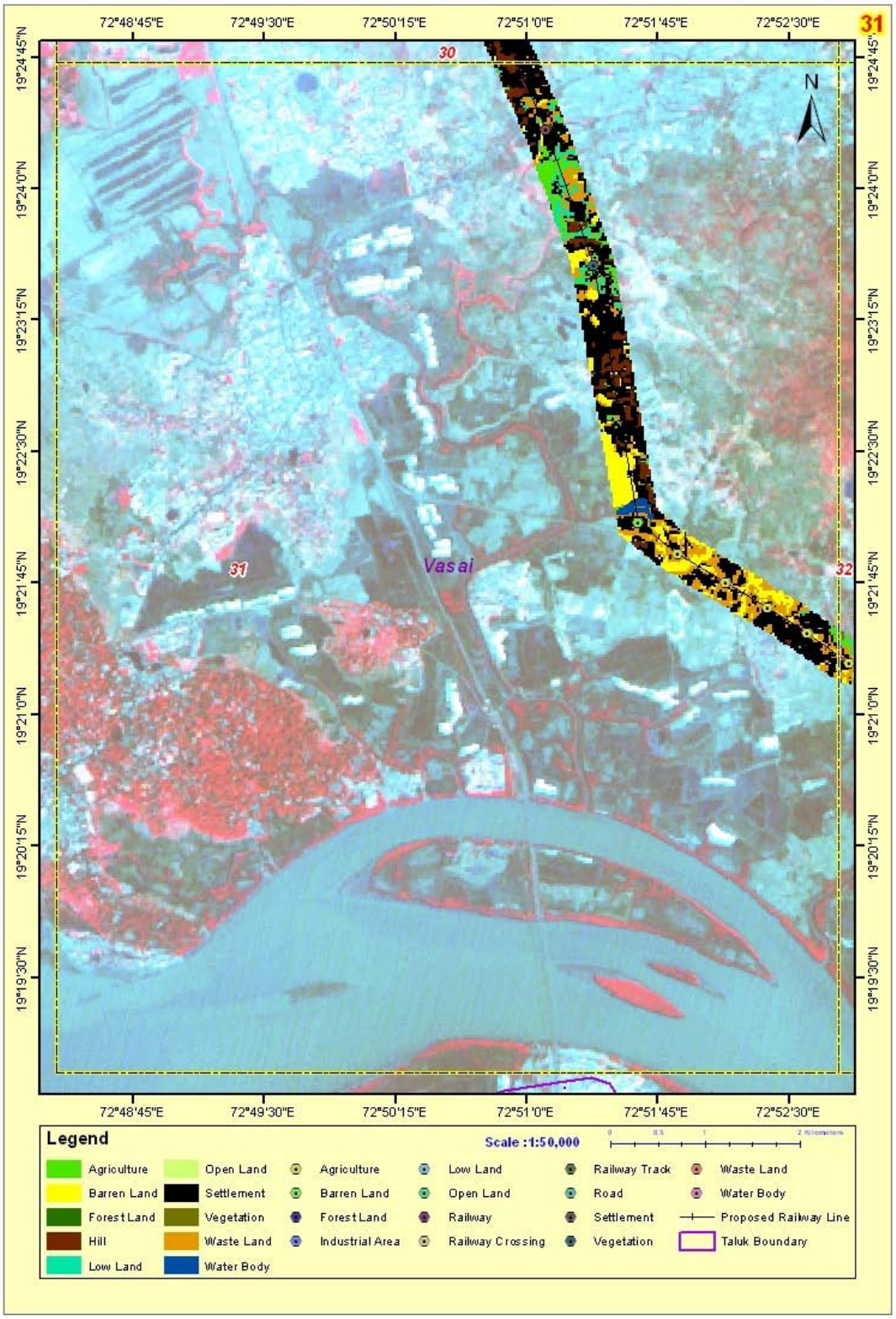


Figure 6b.46 Land use classification for Vadodara-JNPT section from 335.09 to 342.53 km

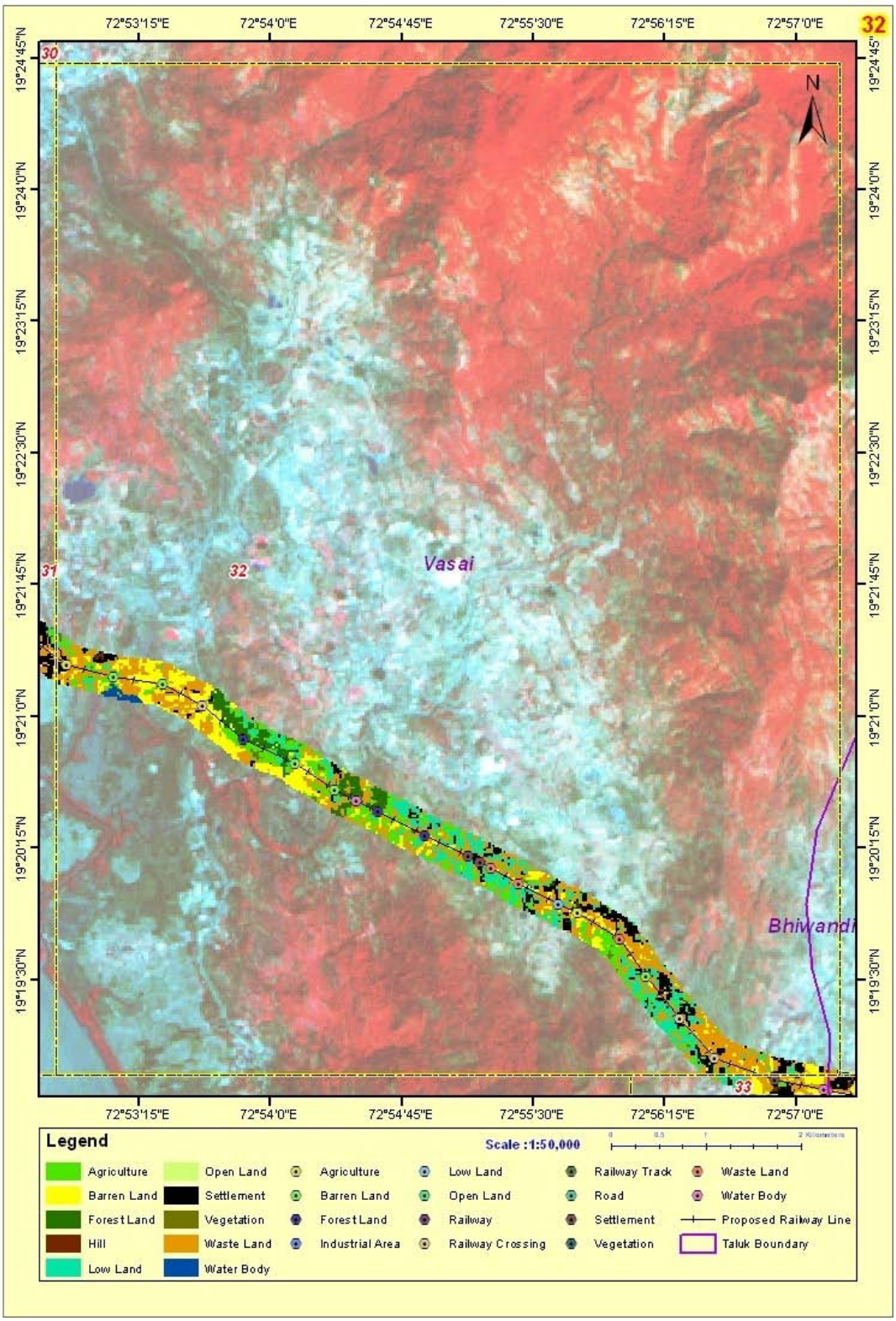


Figure 6b.47 Land use classification for Vadodara-JNPT section from 342.53 to 351.0 km

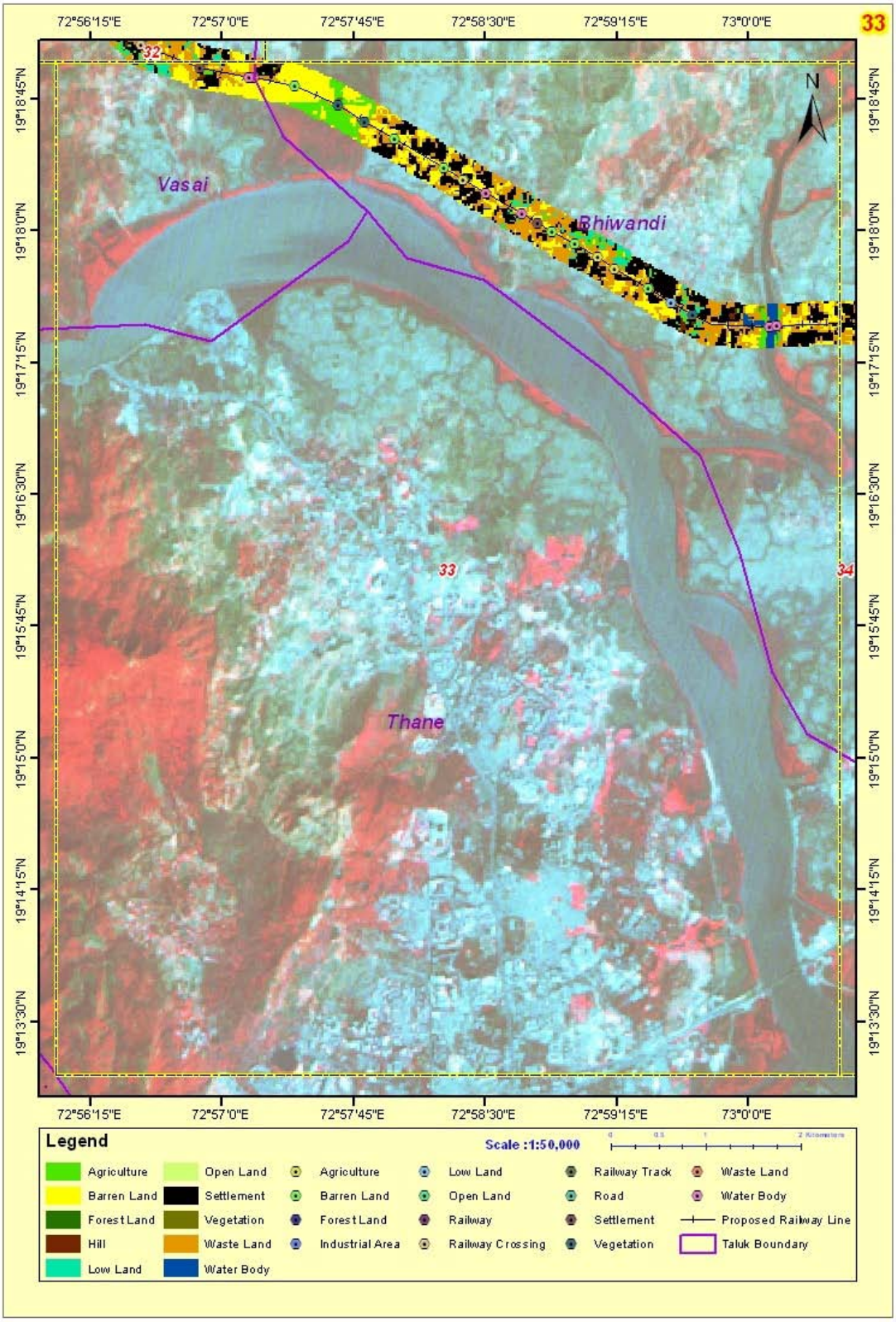


Figure 6b.48 Land use classification for Vadodara-JNPT section from 351.0 to 358.26 km

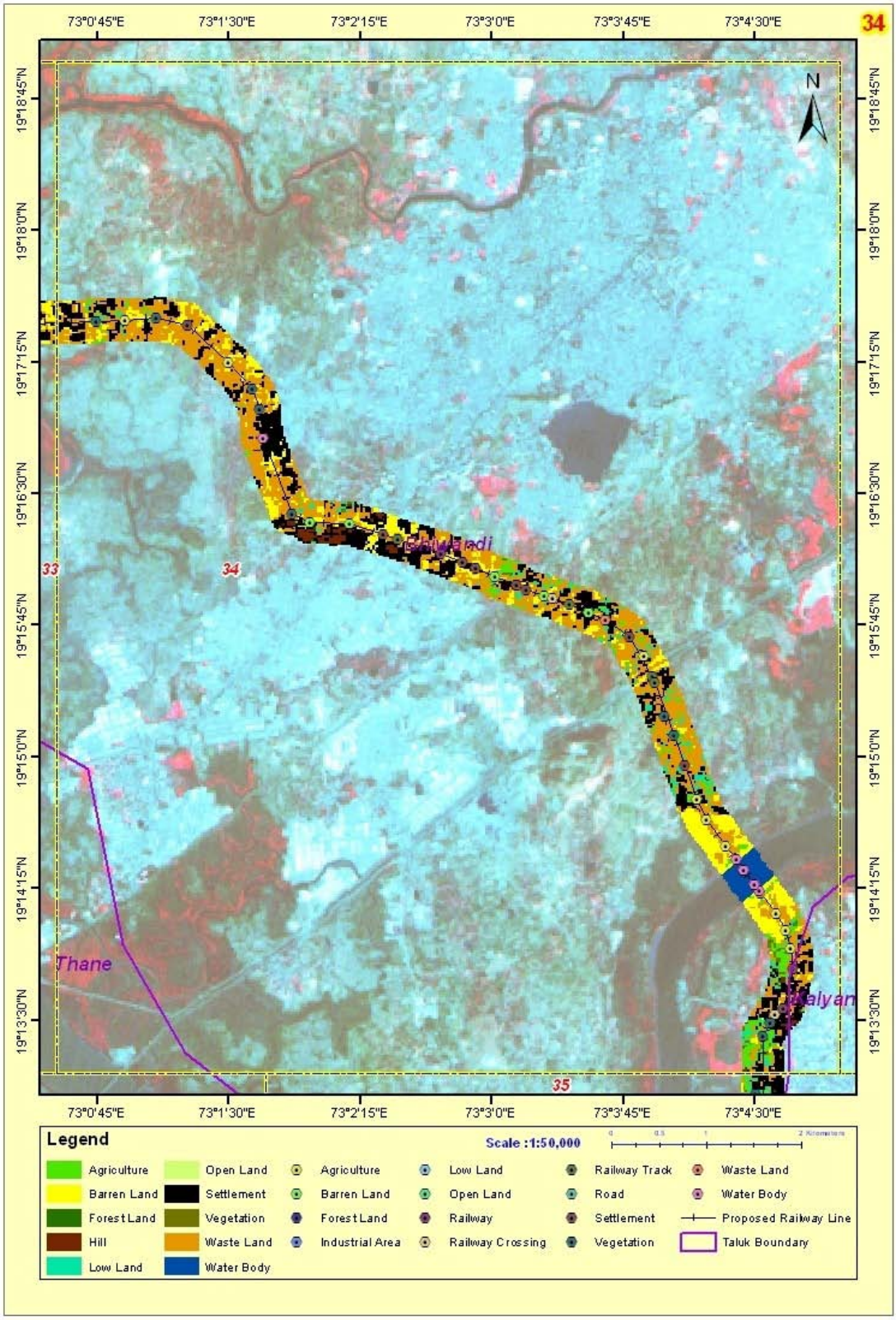


Figure 6b.49 Land use classification for Vadodara-JNPT section from 358.26 to 370.47 km

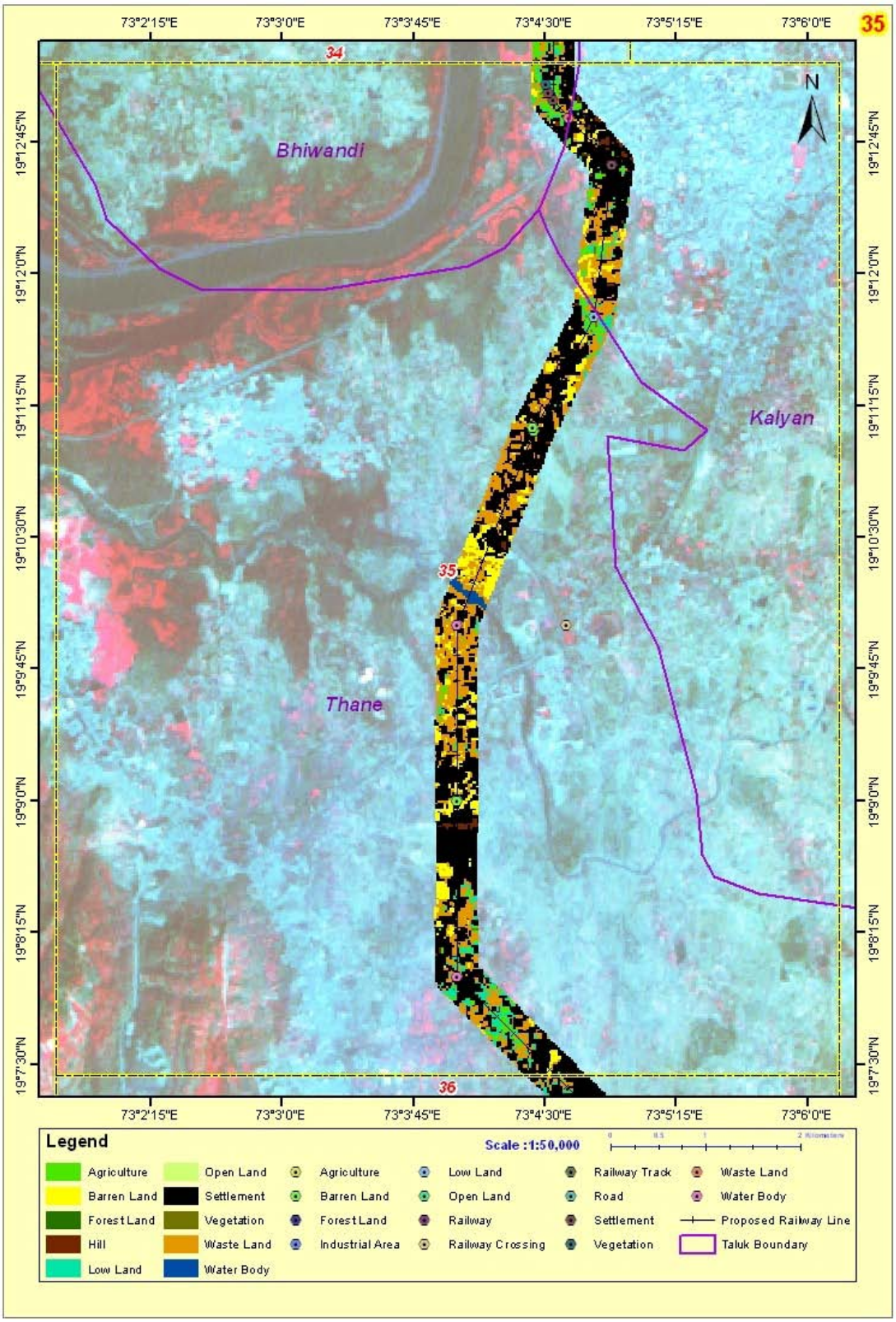


Figure 6b.50 Land use classification for Vadodara-JNPT section from 370.47 to 382.09 km

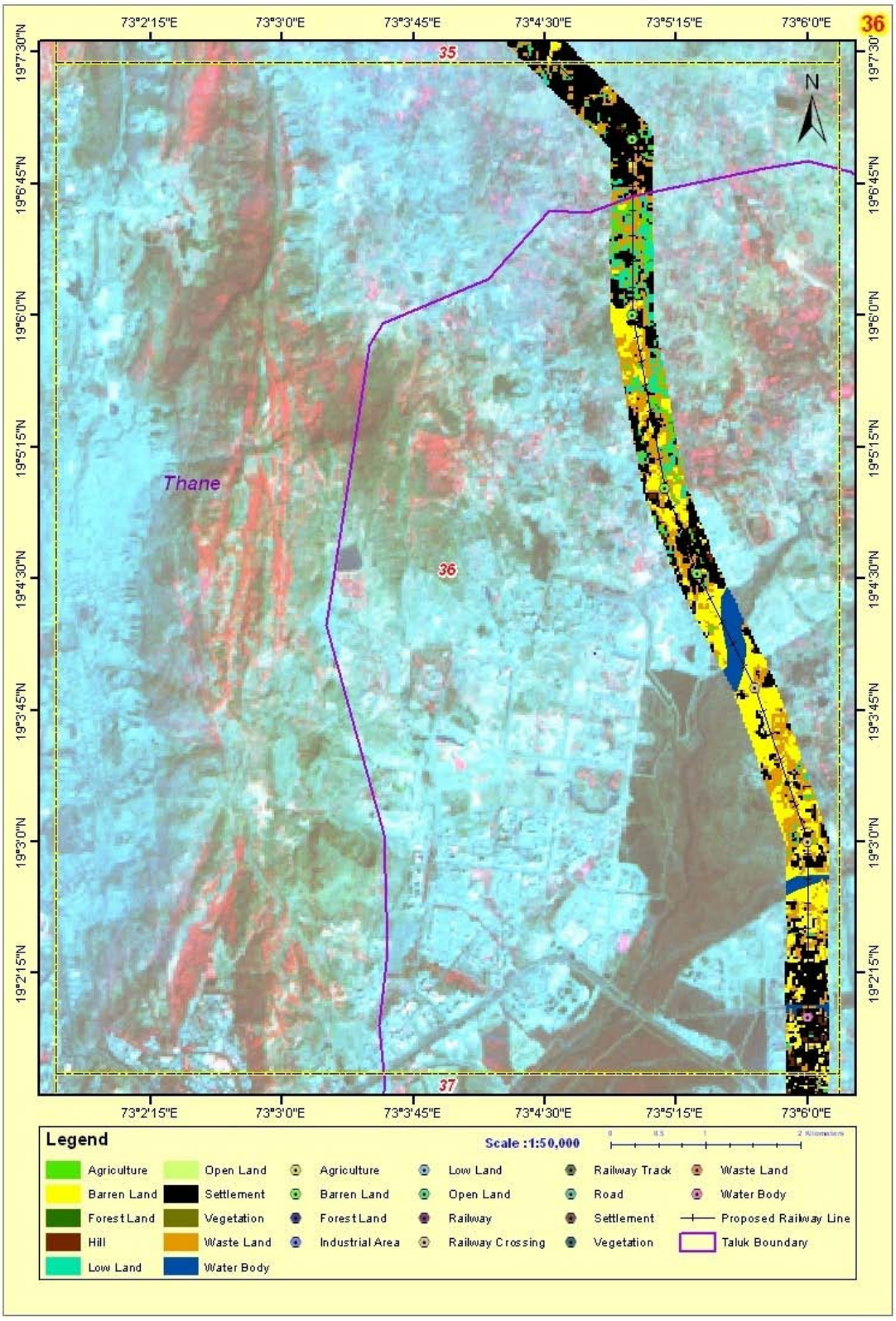


Figure 6b.51 Land use classification for Vadodara-JNPT section from 382.09 to 393.33 km

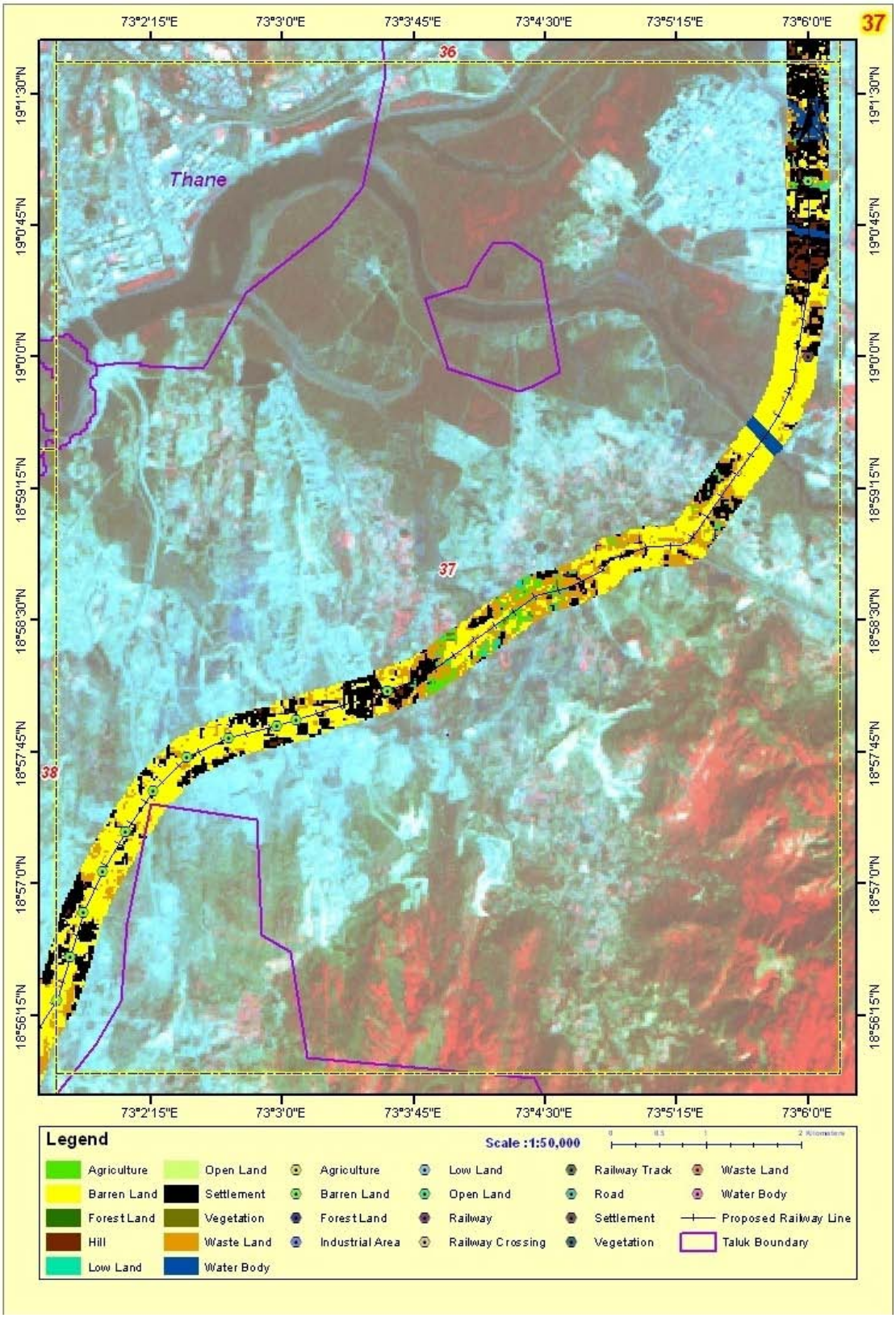


Figure 6b.52 Land use classification for Vadodara-JNPT section from 393.33 to 407.17 km

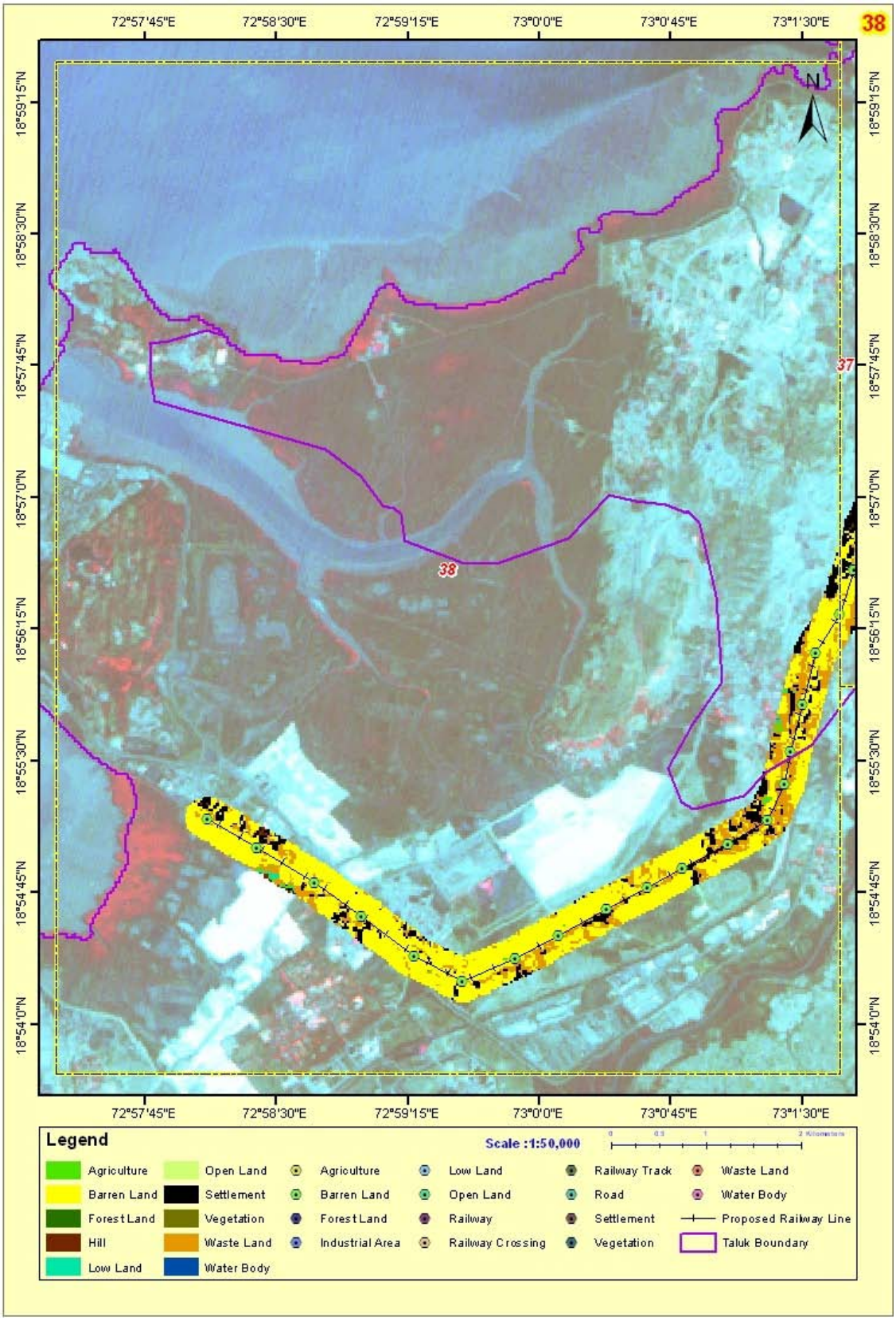


Figure 6b.53 Land use classification for Vadodara-JNPT section from 407.17 to 416.14 km

Appendix-7 Result of Natural Environmental Survey

Appendix-7a
Result of Field Survey (Flora)

Appendix-7a
Results of Field Survey (Flora)

Table 7a-1(1-1) Basic Information of Field Survey Result of Ovali forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Abelmoschus manihot*		jangali Bhindi	6		
	2	*Kirganelia reticulata*		Panjuli	3		
	3	*Maytenus emarginata*		Kankera	2		
	4	*Vitex negundo*		Nagod	2		
	5	*Zizyphus nimmularia*	Bor	Ber	5		
Herb and Grass	1	*Ipomea aquatica*		Beshram bel	2		
	2	*Alysicarpus monilifer*		Juhi ghas	4		
	3	*Apluda mutica*		Poleda ghas	7		
	4	*Celosia argentea*		Sitivara, Lal murga	3		
	5	*Desmodium sp.*		Salvan	1		
	6	*Dicanthium annulatum*		Sheda grass	4		
	7	*Hygrophila auriculata*		Marsh Barbel	5		
	8	*Ludwgia octalvis*		Ban long	2		
	9	*Nothosaerva brachiata*		Solobheda	7		
	10	*Rhynchosia minima*		Kinamwasi	2		
	11	*Spheranthus indicus*		Mundi	4		
	12	*Tephrosia purpuria*	Wild indigo	Sarponk	4		
	13	*Themeda quadrivalvis*		Musli	4		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Carissa carandas*	Karamda	Karamda	3		
	2	*Ipomea aquatica*	Besharam Vel	Besharam Vel	3		
	3	*Kirganelia reticulata*	Kamboi	Kamboi	3		
	4	*Maytenus emarginata*	Vikalo	Vikalo	2		
	5	*Vitex negundo*	Nagod	Nagod	2		
	6	*Zizyphus nimmularia*	Bor	Bor	4		
Herb and Grass	1	*Abelmoschus manihot*	Jangali Bhindo	Jangali Bhindo	4		
	2	*Spheranthus indicus*		mundi	2		

Table 7a-1(1-2) Basic Information of Field Survey Result of Ovali forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Abelmoschus manihot*	1.00	13.04	0.02	8.96	2.00	3.64	25.64	
	2	*Kirganelia reticulata*	0.33	4.35	0.01	4.48	3.00	5.45	14.28	
	3	*Maytenus emarginata*	0.33	4.35	0.01	2.99	2.00	3.64	10.97	
	4	*Vitex negundo*	0.33	4.35	0.01	2.99	2.00	3.64	10.97	
	5	*Zizyphus nimmularia*	0.67	8.70	0.02	7.46	2.50	4.55	20.70	
Herb and Grass	1	*Ipomea aquatica*	0.33	4.35	0.01	2.99	2.00	3.64	10.97	
	2	*Alysicarpus monilifer*	0.33	4.35	0.01	5.97	4.00	7.27	17.59	
	3	*Apluda mutica*	0.67	8.70	0.02	10.45	3.50	6.36	25.51	
	4	*Celosia argentea*	0.33	4.35	0.01	4.48	3.00	5.45	14.28	
	5	*Desmodium sp.*	0.33	4.35	0.00	1.49	1.00	1.82	7.66	
	6	*Dicanthium annulatum*	0.67	8.70	0.01	5.97	2.00	3.64	18.30	
	7	*Hygrophila auriculata*	0.33	4.35	0.02	7.46	5.00	9.09	20.90	
	8	*Ludwgia octalvis*	0.33	4.35	0.01	2.99	2.00	3.64	10.97	
	9	*Nothosaerva brachiata*	0.33	4.35	0.02	10.45	7.00	12.73	27.52	
	10	*Rhynchosia minima*	0.33	4.35	0.01	2.99	2.00	3.64	10.97	
	11	*Spheranthus indicus*	0.33	4.35	0.01	5.97	4.00	7.27	17.59	
	12	*Tephrosia purpuria*	0.33	4.35	0.01	5.97	4.00	7.27	17.59	
	13	*Themeda quadrivalvis*	0.33	4.35	0.01	5.97	4.00	7.27	17.59	

(Second Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)%	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Carissa carandas*	20	9.1	0.6	13.0	3.0	16.4	38.5	
	2	*Ipomea aquatica*	20	9.1	0.6	13.0	3.0	16.4	38.5	
	3	*Kirganelia reticulata*	20	9.1	0.6	13.0	3.0	16.4	38.5	
	4	*Maytenus emarginata*	20	9.1	0.4	8.7	2.0	10.9	28.7	
	5	*Vitex negundo*	20	9.1	0.4	8.7	2.0	10.9	28.7	
	6	*Zizyphus nimmularia*	40	18.2	0.8	17.4	2.0	10.9	46.5	
Herb and Grass	1	*Abelmoschus manihot*	60	27.3	0.8	17.4	1.3	7.3	52.0	
	2	*Spheranthus indicus*	20	9.1	0.4	8.7	2.0	10.9	28.7	

Table 7a-1(2-1) Basic Information of Field Survey Result of Nagle forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Bombax cieba*	Semal	Sawar	5		Mangrove
	2	*Holarrhena antidysenterica (sap)*	Kudo	Kudo	6		
	3	*Tectona grandis*	Sag	Sag	3		
Shrub	1	*Zizyphus mauritiana*	Bor	Ber	7		
	2	*Calotropis procera*	Akado	Akado	1		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Bombax cieba*	Shimlo	Shimlo	5		National Park is nearby
	2	*Holarrhena antidysenterica (sap)*	Kudo	Kudo	6		
	3	*Tectona grandis*	Sag	Sag	3		
Shrub	1	*Calotropis procera*	Akado	Akado	1		
Herb	1	*Combratum sp.*			7		

Table 7a-1(2-2) Basic Information of Field Survey Result of Nagle forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Bombax cieba*	0.66	30.80	0.80	22.70	1.30	14.30	67.80	
	2	*Holarrhena antidysenterica (sap)*	0.66	30.80	1.00	27.30	1.50	17.10	75.20	
	3	*Tectona grandis*	0.33	15.40	0.50	13.60	1.50	17.10	46.20	
Shrub	1	*Zizyphus mauritiana*	0.33	15.40	1.20	31.80	3.50	40.00	87.20	
	2	*Calotropis procera*	0.17	7.70	0.20	4.50	1.00	11.40	23.70	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Bombax cieba*	66.7	30.8	0.8	22.7	1.3	14.3	67.8	
	2	*Holarrhena antidysenterica (sap)*	66.7	30.8	1.0	27.3	1.5	17.1	75.2	
	3	*Tectona grandis*	33.3	15.4	0.5	13.6	1.5	17.1	46.2	
Shrub	1	*Calotropis procera*	16.7	7.7	0.2	4.5	1.0	11.4	23.7	
Herbs	1	*Combratum sp.*	33.3	15.4	1.2	31.8	3.5	40.0	87.2	

Table 7a-1(3-1) Basic Information of Field Survey Result of Sarjamori forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia catechu*	Khair	Khair	5		
	2	*Bombax ceiba*	Semal	Sawar	4		
	3	*Bridelia retusa (sap)*		Kumkoi	7		
	4	*Dalbergia sissoo*	Sissoo	Shisham	1		
	5	*Gemelina arborea (sap)*	gambhri	shivan	1		
	6	*Holarrhena antidysenterica*		Kuda	6		
	7	*Sterculia urens*	Kadaya	Kandol	2	Endangered	
	8	*Syzyium cumini*	Jamun	Jambul	4		
	9	*Tectona grandis*	Sag	Sag	29		
Shrub	1	*Abelmoschus manihot*		jangali Bhindi	5		
	2	*Abelmoschus moschatus*		jangali Bhindi	25		
	3	*Grewia Sp.*		Dhanmar	11		
	4	*Helicteres isora*		Bhendi	13		
	5	*Zizyphus xylopyra (sap)*		Kath ber	1		
Herb and Grass	1	*Achyranthes aspera*		Chitchita	3		
	2	*Alysicarpus monilifer*		Chatta ki ghas	5		
	3	*Apluda mutica*		Poleda ghas	8		
	4	*Cissampelos pareira*		Patha	3		
	5	*Corchorus capsularis*		white Jute	2		
	6	*Cynadon dactylon*		Doob	6		
	7	*Dioscorea bulbifera*		Ratalu	4		
	8	*Hemidesmus indicus*		Anantmul	25		
	9	*Ipomea clumoclit*		Naphatbel	10		
	10	*Sida acuta*		Bala	3		
	11	*Themeda quadrivalvis*		Musli	23		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia catechu*	Khair	Khair	4		National Park is nearby
	2	*Bombax ceiba*	Shimlo	Shimlo	4		
	3	*Dalbergia sissoo*	Sisu	Sisu	1		
	4	*Holarrhena antidysenterica*	Kudo	Kudo	16		
	5	*Sterculia urens*	Kadayo	Kadayo	2	Endangered	
	6	*Syzyium cumini*	Jambu	Jambu	1		
	7	*Tectona grandis*	Sag	Sag	26		
Shrub	1	*Helicteres isora*	Marda Shing	Marda Shing	7		
	2	*Zizyphus xylopyra (sap)*	Bor	Bor	1		
Herbs	1	*Abelmoschus manihot*	Jangali Bhindo	Jangali Bhindo	2		
	2	*Abelmoschus moschatus*	Jangali Bhindi	Jangali Bhindi	2		
	3	*Combratum sp.*			5		

Table 7a-1(3-2) Basic Information of Field Survey Result of Sarjamori forest village
(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia catechu*	0.25	2.63	0.01	2.43	5.00	4.06	9.12	
	2	*Bombax ceiba*	0.50	5.26	0.01	1.94	2.00	1.62	8.83	
	3	*Bridelia retusa (sap)*	0.25	2.63	0.02	3.40	7.00	5.68	11.71	
	4	*Dalbergia sissoo*	0.25	2.63	0.00	0.49	1.00	0.81	3.93	
	5	*Gemelina arborea (sap)*	0.25	2.63	0.00	0.49	1.00	0.81	3.93	
	6	*Holarrhena antidysenterica*	0.25	2.63	0.02	2.91	6.00	4.87	10.41	
	7	*Sterculia urens*	0.50	5.26	0.01	0.97	1.00	0.81	7.05	
	8	*Syzyium cumini*	0.25	2.63	0.01	1.94	4.00	3.25	7.82	
	9	*Tectona grandis*	1.00	10.53	0.07	14.08	7.25	5.88	30.49	
Shrub	1	*Abelmoschus manihot*	0.50	5.26	0.01	2.43	2.50	2.03	9.72	
	2	*Abelmoschus moschatus*	0.50	5.26	0.06	12.14	12.50	10.14	27.54	
	3	*Grewia Sp.*	0.50	5.26	0.03	5.34	5.50	4.46	15.07	
	4	*Helicteres isora*	0.50	5.26	0.03	6.31	6.50	5.27	16.85	
	5	*Zizyphus xylopyra (sap)*	0.25	2.63	0.00	0.49	1.00	0.81	3.93	
Herb and Grass	1	*Achyranthes aspera*	0.25	2.63	0.01	1.46	3.00	2.43	6.52	
	2	*Alysicarpus monilifer*	0.25	2.63	0.01	2.43	5.00	4.06	9.12	
	3	*Apluda mutica*	0.50	5.26	0.02	3.88	4.00	3.25	12.39	
	4	*Cissampelos pareira*	0.25	2.63	0.01	1.46	3.00	2.43	6.52	
	5	*Corchorus capsularis*	0.25	2.63	0.01	0.97	2.00	1.62	5.23	
	6	*Cynadon dactylon*	0.50	5.26	0.02	2.91	3.00	2.43	10.61	
	7	*Dioscorea bulbifera*	0.25	2.63	0.01	1.94	4.00	3.25	7.82	
	8	*Hemidesmus indicus*	0.50	5.26	0.06	12.14	12.50	10.14	27.54	
	9	*Ipomea clumoclit*	0.25	2.63	0.03	4.85	10.00	8.11	15.60	
	10	*Sida acuta*	0.25	2.63	0.01	1.46	3.00	2.43	6.52	
	11	*Themeda quadrivalvis*	0.50	5.26	0.06	11.17	11.50	9.33	25.76	

(Second Season –April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia catechu*	16.7	4.3	0.7	5.6	4.0	13.4	23.4	
	2	*Bombax ceiba*	50.0	13.0	0.7	5.6	1.3	4.5	23.1	
	3	*Dalbergia sissoo*	16.7	4.3	0.2	1.4	1.0	3.3	9.1	
	4	*Holarrhena antidysenterica*	50.0	13.0	2.7	22.5	5.3	17.9	53.4	
	5	*Sterculia urens*	33.3	8.7	0.3	2.8	1.0	3.3	14.9	
	6	*Syzyium cumini*	16.7	4.3	0.2	1.4	1.0	3.3	9.1	
	7	*Tectona grandis*	83.3	21.7	4.3	36.6	5.2	17.4	75.8	
	1	*Helicteres isora*	33.3	8.7	1.2	9.9	3.5	11.7	30.3	
	2	*Zizyphus xylopyra (sap)*	16.7	4.3	0.2	1.4	1.0	3.3	9.1	
Shrub	1	*Abelmoschus manihot*	16.7	4.3	0.3	2.8	2.0	6.7	13.9	
	2	*Abelmoschus moschatus*	16.7	4.3	0.3	2.8	2.0	6.7	13.9	
	3	*Combratum sp.*	33.3	8.7	0.8	7.0	2.5	8.4	24.1	

Table 7a-1(4-1) Basic Information of Field Survey Result of Shilottar forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Azadirechta indica (sap)*	Neem	Neem	7		Mangrove
	2	*Bauhinia racemosa (Sap)*		Sirhatta, apta	1		
	3	*Butea monosperma*	Palash	Khakhra	6		
	4	*Wrightia tinctoria*		Jangali dudhi	6		
Shrub	1	*Abelmoschus manihot*		jangali Bhindi	1		
	2	*Ficus hispida*		Kala umber	35		
Herb and Grass	1	*Celosia argentea*		Sitivara	9		
	2	*Themeda quadrivalvis*		Musli	23		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Azadirechta indica (sap)*	Limdo	Limdo	8		National Park is nearby
	2	*Bauhinia racemosa (Sap)*	Asitro	Asitro	2		
	3	*Wrightia tintoria*	Jangali Dhudhi	Jangali Dhudhi	1		
	4	*Acacia nilotica (Sap)*	Deshi Baval	Deshi Baval	1		
	5	*Butea monosperma*	Khakharo	Khakharo	2		
Shrub	1	*Ficus hispida*	Hairy Fig	Kathumbar	5		

Table 7a-1(4-2) Basic Information of Field Survey Result of Shilottar forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Azadirechta indica (sap)*	0.67	13.33	0.02	7.95	3.50	8.79	30.07	
	2	*Bauhinia racemosa (Sap)*	0.33	6.67	0.00	1.14	1.00	2.51	10.31	
	3	*Butea monosperma*	0.33	6.67	0.02	6.82	6.00	15.06	28.55	
	4	*Wrightia tinctoria*	0.33	6.67	0.02	6.82	6.00	15.06	28.55	
Shrub	1	*Abelmoschus manihot*	0.33	6.67	0.00	1.14	1.00	2.51	10.31	
	2	*Ficus hispida*	1.00	20.00	0.12	39.77	11.67	29.29	89.06	
Herb and Grass	3	*Celosia argentea*	1.00	20.00	0.03	10.23	3.00	7.53	37.76	
	4	*Themeda quadrivalvis*	1.00	20.00	0.08	26.14	7.67	19.25	65.38	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Azadirechta indica (sap)*	75	30	2	42.1	2.7	22.9	95.0	
	2	*Bauhinia racemosa (Sap)*	50	20	0.5	10.5	1.0	8.6	39.1	
	3	*Wrightia tintoria*	25	10	0.25	5.3	1.0	8.6	23.8	
	4	*Acacia nilotica (Sap)*	25	10	0.25	5.3	1.0	8.6	23.8	
	5	*Butea monosperma*	50	20	0.5	10.5	1.0	8.6	39.1	
Shrub	1	*Ficus hispida*	25.0	10.0	1.3	26.3	5.0	42.9	79.2	

Table 7a-1 (5-1) Basic Information of Field Survey Result of Dhaniv forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Tectona grandis (sap)*	Sag	Sag	2		
	2	*Wrightia tinctoria*		Jangali Didhi	1		
	3	*Eucalyptus globus*	Eucalyptus	Nilgiri	5		
	4	*Diospyros melanoxylon*	Tendu	Tembhurrni	11		
Shrub	1	*Carissa carandas*		Karamda	2		
	2	*Abelmoschus manihot*		Jungali dudhi	1		
	3	*Ficus hispida*		Kala umber	15		
Herb and Grass	1	*Spheranthus indicus*		Mundi	3		
	2	*Bambusa bamboo*		Bans	4		
	3	*Apluda mutica*		Poleda ghas	2		
	4	*Celosia argentea*		Survali	7		
	5	*Desmodium sp.*		Salvan	1		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Wrightia tinctoria*	Jangali Dhudhi	Jangali Dhudhi	1		No
	2	*Tectona grandis*	Sag	Sag	2		
	3	*Eucalyptus globulus*	nilgiri	nilgiri	1		
	4	*Diospyros melanoxylon (sap)*	Timru	Timru	2		
Shrub	1	*Abelmoschus manihot*	Jangali Bhindo	Jangali Bhindo	2		
	2	*Ficus hispida*			1		
Herb and Grass	1	*Celosia argentea*	cockscomb	Survali	2		
	2	*Spheranthus indicus*		mundi	2		
	3	*Tephrosia purpurea*	Wild Indig	Sarphonk	2		

Table 7a-1 (5-2) Basic Information of Field Survey Result of Dhaniv forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Tectona grandis (sap)*	0.33	8.33	0.01	3.70	2.00	3.70	15.74	
	2	*Wrightia tinctoria*	0.33	8.33	0.00	1.85	1.00	1.85	12.04	
	3	*Eucalyptus globus*	0.33	8.33	0.02	9.26	5.00	9.26	26.85	
	4	*Diospyros melanoxylon*	0.33	8.33	0.04	20.37	11.00	20.37	49.07	
Shrub	1	*Carissa carandas*	0.33	8.33	0.01	3.70	2.00	3.70	15.74	
	2	*Abelmoschus manihot*	0.33	8.33	0.00	1.85	1.00	1.85	12.04	
	3	*Ficus hispida*	0.33	8.33	0.05	27.78	15.00	27.78	63.89	
Herb and Grass	1	*Spheranthus indicus*	0.33	8.33	0.01	5.56	3.00	5.56	19.44	
	2	*Bambusa bamboo*	0.33	8.33	0.01	7.41	4.00	7.41	23.15	
	3	*Apluda mutica*	0.33	8.33	0.01	3.70	2.00	3.70	15.74	
	4	*Celosia argentea*	0.33	8.33	0.02	12.96	7.00	12.96	34.26	
	5	*Desmodium sp.*	0.33	8.33	0.00	1.85	1.00	1.85	12.04	

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Wrightia tinctoria*	25.0	7.1	0.3	6.7	1.0	10.0	23.8	
	2	*Tectona grandis*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
	3	*Eucalyptus globules*	25.0	7.1	0.3	6.7	1.0	10.0	23.8	
	4	*Diospyros melanoxylon (sap)*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
Shrub	1	*Abelmoschus manihot*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
	2	*Ficus hispida*	25.0	7.1	0.3	6.7	1.0	10.0	23.8	
Herb and Grass	1	*Celosia argentea*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
	2	*Spheranthus indicus*	25.0	7.1	0.5	13.3	2.0	20.0	40.5	
	3	*Tephrosia purpurea*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	

Table 7a-1(6-1) Basic Information of Field Survey Result of Bhatpada Dandipada forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Diospyros melanoxylon (sap)*	*t imru*	*Tambhurni*	1		
	2	*Eucalyptus globulus*	*Eucaluptus*	*Neelgiri*	6		
	3	*Miliusa tomentosa (sap)*		*Hoom*	1		
	4	*Tectona grandis*		*Sag*	6		
	5	*Wrightia tinctoria*		*Jungali dudhi*	1		
Shrub	1	*Abelmoschus moschatus*	*Jangali bhindi*	*Jangali bhindi*	2		
	2	*Ficus hispida*		*Kala umbar*	4		
Herb and Grass	1	*Bothriochloa pertusa*	*Indian counch grass*		6		
	2	*Celosia argentea*		*Sitivara*	2		
	3	*Nothosaerva brachiata*		*Solobheda*	8		
	4	*Oryza sativa*		*Chokha*	5		
	5	*Spheranthus indicus*		*Mundi*	4		
	6	*Desmodium sp.*		*Salvan*	5		
	7	*Tephrosia purpurea*	*Wild indigo*	*Sarphonk*	4		
	8	*Themeda quadrivalvis*		*Musli*	15		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Diospyros melanoxylon (sap)*	Timru	Timru	2		No
	2	*Eucalyptus globulus*	Nilgiri	Nilgiri	5		
	3	*Tectona grandis*	Sag	Sag	6		
	4	*Wrightia tinctoria*	Jangali Dhudhi	Jangali Dhudhi	1		
Shrub	1	*Ficus hispida*	Hairy Fig	Kathumbar	4		
Herb	1	*Spheranthus indicus*		mundi	3		

Table 7a-1(6-2) Basic Information of Field Survey Result of Bhatpada Dandipada forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Diospyros melanoxylon (sap)*	0.33	5.26	0.00	1.43	1.00	1.79	8.48	
	2	*Eucalyptus globulus*	0.33	5.26	0.02	8.57	6.00	10.71	24.55	
	3	*Miliusa tomentosa (sap)*	0.33	5.26	0.00	1.43	1.00	1.79	8.48	
	4	*Tectona grandis*	1.00	15.79	0.02	8.57	2.00	3.57	27.93	
	5	*Wrightia tinctoria*	0.33	5.26	0.00	1.43	1.00	1.79	8.48	
Shrub	1	*Abelmoschus moschatus*	0.33	5.26	0.01	2.86	2.00	3.57	11.69	
	2	*Ficus hispida*	0.33	5.26	0.01	5.71	4.00	7.14	18.12	
Herb and Grass	1	*Bothriochloa pertusa*	0.33	5.26	0.02	8.57	6.00	10.71	24.55	
	2	*Celosia argentea*	0.33	5.26	0.01	2.86	2.00	3.57	11.69	
	3	*Nothosaerva brachiata*	0.33	5.26	0.03	11.43	8.00	14.29	30.98	
	4	*Oryza sativa*	0.33	5.26	0.02	7.14	5.00	8.93	21.33	
	5	*Spheranthus indicus*	0.33	5.26	0.01	5.71	4.00	7.14	18.12	
	6	*Desmodium sp.*	0.33	5.26	0.02	7.14	5.00	8.93	21.33	
	7	*Tephrosia purpurea*	0.33	5.26	0.01	5.71	4.00	7.14	18.12	
	8	*Themeda quadrivalvis*	1.00	15.79	0.05	21.43	5.00	8.93	46.15	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Diospyros melanoxylon (sap)*	25.0	9.1	0.5	0.1	2.0	18.2	27.4	
	2	*Eucalyptus globulus*	50.0	18.2	1.3	0.2	2.5	22.7	41.1	
	3	*Tectona grandis*	75.0	27.3	1.5	0.3	2.0	18.2	45.7	
	4	*Wrightia tinctoria*	25.0	9.1	0.3	0.0	1.0	9.1	18.2	
Shrub	1	*Ficus hispida*	50.0	18.2	1.0	0.2	2.0	18.2	36.6	
Herb	1	*Spheranthus indicus*	50.0	18.2	0.8	0.1	1.5	13.6	32.0	

Table 7a-1(7-1) Basic Information of Field Survey Result of Bilalpada forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Tectona grandis*	Sag	Sag	2		
	2	*Eucalyptus globulus*	nilgiri	Nilgiri	1		
	3	*Diospyros melanoxylon (sap)*	Tendu	Tembhurrni	2		
Shrub	1	*Abelmoschus manihot*	Jangali Bhindo	Jangali Bhindo	2		
	2	*Ziziphus xyloplora*	Ber	Ghat Bor	1		
	3	*Ficus hispida*		Kala umber	2		
Herb and Grass	1	*Celosia argentea*	Cocks comb	Survali	1		
	2	*Spheranthus indicus*		Mundi	2		
	3	*Tephrosia purpurea*	Wild Indig	Sarphonk	2		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Wrightia tinctoria*	Jangali Dhudhi	Jangali Dhudhi	1		No
	2	*Tectona grandis*	Sag	Sag	2		
	3	*Eucalyptus globulus*	nilgiri	nilgiri	1		
	4	*Diospyros melanoxylon (sap)*	Timru	Timru	2		
Shrub	1	*Abelmoschus manihot*	Jangali Bhindo	Jangali Bhindo	2		
	2	*Ficus hispida*			1		
Herb and Grass	1	*Celosia argentea*	cockscomb	Survali	2		
	2	*Spheranthus indicus*		mundi	2		
	3	*Tephrosia purpurea*	Wild Indig	Sarphonk	2		

Table 7a-1(7-2) Basic Information of Field Survey Result of Bilalpada forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Tectona grandis*	0.50	14.30	0.50	13.30	1.00	10.00	37.60	
	2	*Eucalyptus globulus*	0.25	7.10	0.30	6.70	1.00	10.00	23.80	
	3	*Diospyros melanoxylon (sap)*	0.50	14.30	0.50	13.30	1.00	10.00	37.60	
Shrub	1	*Abelmoschus manihot*	0.50	14.30	0.50	13.30	1.00	10.00	37.60	
	2	*Z.xyloplora*	0.25	7.10	0.30	6.70	1.00	10.00	23.80	
	3	*Ficus hispida*	0.50	14.30	0.50	13.30	1.00	10.00	37.60	
Herb and Grass	1	*Celosia argentea*	0.25	7.10	0.30	6.70	1.00	10.00	23.80	
	2	*Spheranthus indicus*	0.25	7.10	0.50	13.30	2.00	20.00	40.50	
	3	*Tephrosia purpurea*	0.50	14.30	0.50	13.30	1.00	10.00	37.60	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Wrightia tinctoria*	25.0	7.1	0.3	6.7	1.0	10.0	23.8	
	2	*Tectona grandis*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
	3	*Eucalyptus globulus*	25.0	7.1	0.3	6.7	1.0	10.0	23.8	
	4	*Diospyros melanoxylon (sap)*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
Shrub	1	*Abelmoschus manihot*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
	2	*Ficus hispida*	25.0	7.1	0.3	6.7	1.0	10.0	23.8	
Herb and Grass	1	*Celosia argentea*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	
	2	*Spheranthus indicus*	25.0	7.1	0.5	13.3	2.0	20.0	40.5	
	3	*Tephrosia purpurea*	50.0	14.3	0.5	13.3	1.0	10.0	37.6	

Table 7a-1(8-1) Basic Information of Field Survey Result of Kasarali forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Salvadora persica*		Khakan	13		Mangrove
	2	*Avicinia marirna*		Tivar	5		
	3	*Ficus hispida*		Kala umber	4		
	4	*Lantana camara*		Rai munia	5		
	5	*Abelmoschus manihot*		Jungali bhindi	6		
Herb and Grass	1	*Mucuna pruriens*		Konch	4		
	2	*Sida alba*		Bala	4		
	3	*Sida cordata*		Bala	12		
	4	*Desmodium sp.*		Salvan	5		

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Avicinia sp.*	Tivar	Tivar	10		Mangrove habitat
	2	*Ficus hispida*	Hairy Fig	Kathumbar	3		
	3	*Lantana camara*	Indradhanu	Indradhanu	7		
	4	*Salvadora persica*	Piludi	Piludi	2		
Herb and Grass	1	*Abelmoschus manihot*	Jangali Bhindo	Jangali Bhindo	4		
	2	*Desmodium sp.*			2		
	3	*Sida alba*	Bala	Bala	2		
	4	*Sida cordata*	Bhoin Bala	Bhoin Bala	2		

Table 7a-1(8-2) Basic Information of Field Survey Result of Kasarali forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Salvadora persica*	0.40	10.53	0.03	22.41	6.50	22.16	55.10	
	2	*Avicinia marirna*	0.40	10.53	0.01	8.62	2.50	8.52	27.67	
	3	*Ficus hispida*	0.20	5.26	0.01	6.90	4.00	13.64	25.80	
	4	*Lantana camara*	0.60	15.79	0.01	8.62	1.67	5.68	30.09	
	5	*Abelmoschus manihot*	0.40	10.53	0.01	10.34	3.00	10.23	31.10	
Herb and Grass	1	*Mucuna pruriens*	0.40	10.53	0.01	6.90	2.00	6.82	24.24	
	2	*Sida alba*	0.20	5.26	0.01	6.90	4.00	13.64	25.80	
	3	*Sida cordata*	0.60	15.79	0.02	20.69	4.00	13.64	50.12	
	4	*Desmodium sp.*	0.60	15.79	0.01	8.62	1.67	5.68	30.09	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Shurb	1	*Avicinia sp.*	42.9	16.7	1.4	31.3	3.3	22.2	70.1	
	2	*Ficus hispida*	28.6	11.1	0.4	9.4	1.5	10.0	30.5	
	3	*Lantana camara*	85.7	33.3	1.0	21.9	1.2	7.8	63.0	
	4	*Salvadora persica*	14.3	5.6	0.3	6.3	2.0	13.3	25.1	
Herb and Grass	1	*Abelmoschus manihot*	28.6	11.1	0.6	12.5	2.0	13.3	36.9	
	2	*Desmodium sp.*	14.3	5.6	0.3	6.3	2.0	13.3	25.1	
	3	*Sida alba*	14.3	5.6	0.3	6.3	2.0	13.3	25.1	
	4	*Sida cordata*	28.6	11.1	0.3	6.3	1.0	6.7	24.0	

Table 7a-1(9-1) Basic Information of Field Survey Result of Kelwe road forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	Acacia nilotica (sp)	Baval	Babool	1		
	2	*Bauhinia racemosa*	Asitro	apta	9		
	3	*Beuta monosperma (sap)*	Palas	khakhro	16		
Shrub	1	*Zizyphys oinoplia*	Ber	Ber	18		
Herb and Grass	1	*Hygrophila auriculata*		Marsh barbel	14		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica (Sap)*	Deshi baval	Deshi baval	4		
	2	*Azadirechta indica (sap)*	Limdo	Limdo	2		
	3	*Bauhinia racemosa*	Asitro	Asitro	3		
	4	*Butea monosperma*	Khakharo	Khakharo	1		
Herb and Grass	1	*Hygrophila auriculata*	Kanta Sheliyo	Kanta Sheliyo	3		
	2	*Zizyphus oinoplia*	Bor	Bor	3		

Table 7a-1(9-2) Basic Information of Field Survey Result of Kelwe road forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica (sp)*	0.33	12.50	0.00	1.72	1.00	2.52	16.75	
	2	*Bauhinia racemosa*	0.33	12.50	0.03	15.52	9.00	22.69	50.71	
	1	*Beuta monosperma (sap)*	0.33	12.50	0.05	27.59	16.00	40.34	80.42	
Shrub	1	*Zizyphys oinoplia*	0.67	25.00	0.06	31.03	9.00	22.69	78.72	
Herb and Grass	1	*Hygrophila auriculata*	1.00	37.50	0.05	24.14	4.67	11.76	73.40	

(Second Season –April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica (Sap)*	50.0	25	0.7	25.0	1.3	15.1	65.1	
	2	*Azadirechta indica (sap)*	33.3	16.7	0.3	12.5	1.0	11.3	40.5	
	1	*Bauhinia racemosa*	33.3	16.7	0.5	18.8	1.5	17.0	52.4	
	1	*Butea monosperma*	16.7	8.3	0.2	6.3	1.0	11.3	25.9	
Herb and Grass	1	*Hygrophila auriculata*	16.7	8.3	0.5	18.8	3.0	34.0	61.0	
	1	*Zizyphus oinoplia*	50.0	25.0	0.5	18.8	1.0	11.3	55.1	

Table 7a-1(10-1) Basic Information of Field Survey Result of Kasbe Mahim forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica (sp)*	Kikar	Babool	13		
	2	*Tamarindus indicus (sp)*	imli	chinch	12		
Shrub	1	*Calotropis procera*		Akra	4		
	2	*Lantana camara*		Rai munia	5		
	3	*Abelmoschus manihot*		Jungali bhendi	6		
	4	*Zizyphus xylopora*	Ber	Bor	5		
Herb and Grass	1	*Mucuna pruriens*		Konch	4		
	2	*Sida alba*		Bala	4		
	3	*Apluda mutica*		Poledo ghas	5		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica*	Deshi Baval	Deshi Baval	5		No
	2	*Tamerindus indicus*	Amli	Amli	1		
	3	*Zizyphus xylopyra (sap)*	Gat bor	Gat bor	2		
Shrub	2	*Calotropis procera*	Akado	Akado	2		

Table 7a-1(10-2) Basic Information of Field Survey Result of Kasbe Mahim forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	0.40	10.53	0.03	22.41	6.50	22.16	55.10	
	2	*Tamarindus indicus*	0.60	15.79	0.02	20.69	4.00	13.64	50.12	
Shrub	1	*Calotropis procera*	0.20	5.26	0.01	6.90	4.00	13.64	25.80	
	2	*Lantana camara*	0.60	15.79	0.01	8.62	1.67	5.68	30.09	
	3	*Abelmoschus manihot*	0.40	10.53	0.01	10.34	3.00	10.23	31.10	
	4	*Z. xylopora*	0.60	15.79	0.01	8.62	1.67	5.68	30.09	
Herb and Grass	1	*Mucuna pruriens*	0.40	10.53	0.01	6.90	2.00	6.82	24.24	
	2	*Sida alba*	0.20	5.26	0.01	6.90	4.00	13.64	25.80	
	3	*Apluda mutica*	0.40	10.53	0.01	8.62	2.50	8.52	27.67	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)%	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	75.0	42.9	1.3	50.0	1.7	29.4	122.3	
	2	*Tamerindus indicus*	25.0	14.3	0.3	10.0	1.0	17.6	41.9	
	3	*Zizyphus xylopyra (sap)*	50.0	28.6	0.5	20.0	1.0	17.6	66.2	
Shrub	1	*Calotropis procera*	25.0	14.3	0.5	20.0	2.0	35.3	69.6	

Table 7a-1(11-1) Basic Information of Field Survey Result of Dandipada forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica*	Kikar, Babool	Babool	9		
	2	*Pongamia pinnata*	Karanj	Kanji	16		
Shrub	1	*Hygrophila auriculata*		Marsh barbel	18		
	2	*Solanum xanthocarpum*		Bhoin ringani	14		
	3	*Xanthium strumarium*		Gadariyu	1		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica*	Deshi Baval	Deshi Baval	2		
	2	*Pongomia pinnata*	Kanji	Kanji	1		
	3	*Thispesia populina*	Paras Pipalo	Paras Pipalo	1		
Shrub	1	*Prosopis juliflora*	Gando Baval	Gando Baval	2		
Herb	1	*Argemone maxicana*	Darudi	Darudi	3		
	2	*Hygrophila auriculata*	Kaata sheliyo	Kaata sheliyo	6		
	3	*Ipomea aquatica*	Besharam vel	Besharam vel	2		
	4	*Nothoserava*			3		
	5	*Solanum xanthocarpum*	Bhoyn Ringani	Bhoyn Ringani	4		
	6	*Woodfordia fruticosa*			2		

Table 7a-1(11-2) Basic Information of Field Survey Result of Dandapada forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	0.33	12.50	0.03	15.52	9.00	22.69	50.71	
	2	*Pongamia pinnata*	0.33	12.50	0.05	27.59	16.00	40.34	80.42	
Shrub	1	*Hygrophila auriculata*	0.67	25.00	0.06	31.03	9.00	22.69	78.72	
	2	*Solanum xanthocarpum*	1.00	37.50	0.05	24.14	4.67	11.76	73.40	
	2	*Xanthium strumarium*	0.33	12.50	0.00	1.72	1.00	2.52	16.75	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	33.3	13.3	0.3	7.8	1.0	5.6	26.6	
	2	*Pongomia pinnata*	16.7	6.7	0.2	3.9	1.0	5.6	16.1	
	3	*Thispesia populina*	16.7	6.7	0.2	3.9	1.0	5.6	16.1	
Shrub	1	*Prosopis juliflora*	33.3	13.3	0.3	7.8	1.0	5.6	26.6	
Herb	1	*Argemono maxicana*	16.7	6.7	0.5	11.6	3.0	16.7	35.0	
	2	*Hygrophila auriculata*	33.3	13.3	1.0	23.3	3.0	16.7	53.3	
	3	*Ipomea aquatica*	16.7	6.7	0.3	7.8	2.0	11.1	25.5	
	4	*Nothoserava*	16.7	6.7	0.5	11.6	3.0	16.7	35.0	
	5	*Solanum xanthocarpum*	33.3	13.3	0.7	15.5	2.0	11.1	39.9	
	6	*Woodfordia fruticosa*	33.3	13.3	0.3	7.8	1.0	5.6	26.6	

Table 7a-1(12-1) Basic Information of Field Survey Result of Boisar forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Azadirechta indica (sap)*	Neem	Limdo neem	2		
	2	*Butea monosperma*	Palash	Dhak	2		
	3	*Phoenix sylvestris (sap)*	Khajur	shindi	11		
Shrub	1	*Carissa carandas*	Karonda	Karmda	1		
	2	*Eurphobia neifolia*		Thor	2		
Herb and Grass	1	*Mollugo pentaphylla*			7		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Azadirechta indica (sap)*	Limdo	Limdo	3		
	2	*Bombax cieba*	Shimlo	Shimlo	1		
	3	*Butea monosperma*	Khakharo	Khakharo	3		
	4	*Phoenix sylvestris (sap)*	Khajuri	Khajuri	1		
	5	*Strablus asper (sap)*	Harero	Harero	3		
Shrub	1	*Carissa carandas*	Karmda	Karmda	4		
	2	*Euphorbia nerifolia*	Thor	Thor	5		
Herb and Grass	1	*Cyperus sp.*	Chiyo	Chiyo	5		

Table 7a-1(12-2) Basic Information of Field Survey Result of Boisar forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Azadirechta indica (sap)*	0.50	15.35	0.50	7.87	1.00	9.76	32.98	
	2	*Butea monosperma*	0.50	15.35	0.50	7.87	1.00	9.76	32.98	
	3	*Phoenix sylvestris (sap)*	1.00	30.69	2.75	43.31	2.75	26.83	100.83	
Shrub	1	*Carissa carandas*	0.25	7.67	0.30	4.72	1.00	9.76	22.15	
	2	*Eurphobia neifolia*	0.50	15.35	0.50	7.87	1.00	9.76	32.98	
Herb and Grass	1	*Mollugo pentaphylla*	0.50	15.35	1.80	28.35	3.50	34.15	77.84	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F) %	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Phoenix sylvestris (sap)*	33.3	0.1	0.5	0.1	1.5	0.1	0.4	
	2	*Strablus asper (sap)*	16.7	0.1	0.2	0.0	1.0	0.1	0.2	
	3	*Azadirechta indica (sap)*	50.0	0.2	0.5	0.1	1.0	0.1	0.4	
	4	*Bombax cieba*	16.7	0.1	0.2	0.0	1.0	0.1	0.2	
	5	*Butea monosperma*	50.0	0.2	0.5	0.1	1.0	0.1	0.4	
Shrub	1	*Euphorbia nerifolia*	50.0	0.2	0.7	0.2	1.3	0.1	0.4	
	2	*Carissa carandas*	50.0	0.2	0.8	0.2	1.7	0.2	0.5	
Herb and Grass	1	*Cyperus sp.*	50.0	0.2	0.8	0.2	1.7	0.2	0.5	

Table 7a-1(13-1) Basic Information of Field Survey Result of RaniShirgaon forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Azadirechta indica (sap)*	Neem	Neem, Limdo	1		
	2	*Butea monosperma*	palas	Khakhra	1		
	3	*Phoenix sylvestris (sap)*	Khajur	shindi	10		
Shrub	1	*Carissa carandas*	karaonda	Karamda	1		
	2	*Maytenus emarginata*		Vikalo	1		
	3	*Zizyphus nimmularia*	Ber	Bor	1		
Herb and Grass	1	*Cynadon dactylon*		Durva	3		
	2	*Dicanthium annulatum*		Marvel grass	12		
	3	*Echinochloa colonum*		Shama	3		
	4	*Eragrostis sp.*			17		
	5	*Hygrophila auriculata*		Marsh barbel	1		
	6	*Mollugo pentaphylla*		Mohri	5		
	7	*Solanum xanthocarpum*		Bhoin ringani	1		
	8	*Spheranthus indicus*		Mundi	6		
	9	*Xanthium strumarium*		Gadariyu	4		

(Second Season –April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Azadirechta indica (sap)*	Deshi Baval	Deshi Baval	2		
	2	*Butea monosperma*	Khakharo	Khakharo	2		
	3	*Phoenix sylvestris (sap)*	Khajuri	Khajuri	11		
Shrub	1	*Carissa carandas*	karmda	karmda	1		
	2	*Maytenus emarginata*	Vikalo	Vikalo	2		
Herb	1	*Mollugo pentaphylla*			7		

Table 7a-1(13-2) Basic Information of Field Survey Result of Rani Shirgaon forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Azadirechta indica (sap)*	0.33	5.56	0.00	1.49	1.00	1.74	8.79	
	2	*Butea monosperma*	0.33	5.56	0.00	1.49	1.00	1.74	8.79	
	3	*Phoenix sylvestris (sap)*	1.00	16.67	0.03	14.93	3.33	5.81	37.41	
Shrub	1	*Carissa carandas*	0.33	5.56	0.00	1.49	1.00	1.74	8.79	
	2	*Maytenus emarginata*	0.33	5.56	0.00	1.49	1.00	1.74	8.79	
	3	*Zizyphus nimmularia*	0.33	5.56	0.00	1.49	1.00	1.74	8.79	
Herb and Grass	1	*Cynadon dactylon*	0.33	5.56	0.01	4.48	3.00	5.23	15.27	
	2	*Dicanthium annulatum*	0.33	5.56	0.04	17.91	12.00	20.93	44.40	
	3	*Echinochloa colonum*	0.33	5.56	0.01	4.48	3.00	5.23	15.27	
	4	*Eragrostis sp.*	0.33	5.56	0.06	25.37	17.00	29.65	60.58	
	5	*Hygrophila auriculata*	0.33	5.56	0.00	1.49	1.00	1.74	8.79	
	6	*Mollugo pentaphylla*	0.33	5.56	0.02	7.46	5.00	8.72	21.74	
	7	*Solanum xanthocarpum*	0.33	5.56	0.00	1.49	1.00	1.74	8.79	
	8	*Spheranthus indicus*	0.67	11.11	0.02	8.96	3.00	5.23	25.30	
	9	*Xanthium strumarium*	0.33	5.56	0.01	5.97	4.00	6.98	18.50	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)%	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Azadirechta indica (sap)*	50	15.4	0.5	8	1	9.8	60.3	
	2	*Butea monosperma*	50	15.4	0.5	8	1	9.8	60.3	
	3	*Phoenix sylvestris (sap)*	100	30.8	2.75	44	2.75	26.8	129.6	
Shrub	1	*Carissa carandas*	25	7.7	0.3	4	1	9.8	35.0	
	2	*Maytenus emarginata*	50	15.4	0.5	8	1	9.8	60.3	
Herb	1	Mollugo pentaphylla	50	15.4	1.8	28	3.5	34.1	85.9	

Table 7a-1(14-1) Basic Information of Field Survey Result of Kolavali forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Bauhinia racemosa (sap)*	Sirhatta , Apta	Sirhatta , Apta	2		
	2	*Casuarina equisetifolia*	Saru	Saru	9		
	3	*Eucalyptus globulus*	Safeda	Neelgiri	8		
	4	*Holarrhena antidysenterica*	Kutaja	Kutaja	2		
	5	*Phoenix sylvestris (sap)*	khajuri	Shindig	1		
	6	*Terminalia crenulata*	sadad	ain	4		
Shrub	1	*Carissa carandas*	Karonda	Karamda	10		
Herb and Grass	1	*Apluda mutica*		Poleda ghas	7		
	2	*Desmostachya bipinnata*		Darbh, Kush	5		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Bauhinia racemosa (sap)*	Asitro	Asitro	3		
	2	*Casuarina equisetifolia*	Saru	Saru	11		
	3	*Eucalyptus globulus*	Nilgiri	Nilgiri	9		
	4	*Phoenix sylvestris (sap)*	Khajuri	Khajuri	2		
	5	*Terminalia crenulata*	Sadad	Sadad	4		
Shrub	1	*Carissa carandas*	Karmda	Karmda	11		

Table 7a-1(14-2) Basic Information of Field Survey Result of Kolavali forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Bauhinia racemosa (sap)*	0.33	7.75	0.01	4.17	2.00	6.09	18.01	
	2	*Casuarina equisetifolia*	0.67	15.50	0.03	18.75	4.50	13.71	47.96	
	3	*Eucalyptus globulus*	0.67	15.50	0.03	16.67	4.00	12.18	44.35	
	4	*Holarrhena antidysenterica*	0.33	7.75	0.01	4.17	2.00	6.09	18.01	
	5	*Phoenix sylvestris (sap)*	0.33	7.75	0.00	2.08	1.00	3.05	12.88	
Shrub	1	*Desmostachya bipinnata*	0.33	5.56	0.04	11.61	13.00	15.23	32.40	
Herb and Grass	1	*Hemidesmas indicus*	0.33	5.56	0.02	4.46	5.00	5.86	15.88	
	2	*Cynadon dactylon*	0.33	5.56	0.04	10.71	12.00	14.06	30.33	
	3	*Neuranthus sphaerostachyus*	0.33	5.56	0.02	4.46	5.00	5.86	15.88	
	4	*Nothosaerva brachiata*	1.00	16.67	0.08	20.54	7.67	8.98	46.19	
	5	*Achyranthes aspera*	0.33	5.56	0.01	2.68	3.00	3.52	11.75	
	6	*Agave americana*	0.33	5.56	0.00	0.89	1.00	1.17	7.62	
	7	*Carissa congesta*	0.33	5.56	0.02	4.46	5.00	5.86	15.88	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)%	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Bauhinia racemosa (sap)*	50	13.3	0.75	7.5	1.5	9.4	30.3	
	2	*Casuarina equisetifolia*	75	20.0	2.75	27.5	3.7	23.0	70.5	
	3	*Eucalyptus globulus*	75	20.0	2.25	22.5	3	18.8	61.3	
	4	*Phoenix sylvestris (sap)*	50	13.3	0.5	5	1	6.3	24.6	
	5	*Terminalia crenulata*	25	6.7	1	10	4	25.1	41.8	
Shrub	1	*Carissa carandas*	100	26.7	2.8	27.5	2.75	17.3	71.4	

Table 7a-1(15-1) Basic Information of Field Survey Result of Vangaon forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Butea monosperma*	Palash	Khakharo	1		
Shrub	1	*Acacia nilotica*	Babool	Babool	1		
	2	*Phoenix sylvestris*	Khajur	Shindig	7		
	3	*Carissa congesta*	Karonda	Karmda	6		
Herb and Grass	1	*Cocculus hirsutus*	Ink berry	Jal jamny	3		
	2	*Desmostachya bipinnata*		Kush Kan	13		
	3	*Hemidesmas indicus*	Anantmul	Anantmul	5		
	4	*Cynadon dactylon*	Doob	Durva	12		
	5	*Neuranthus sphaerostachyus*			5		
	6	*Nothosaerva brachiata*		Solobheda	23		
	7	*Achyranthes aspera*		Chitchita	3		
	8	*Agave americana*		Ram Ban	1		
	9	*Carissa congesta*	Karonda	Karmda	5		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia auriculiformis*	Australian Baval	Australian Baval	17		
Shrub	1	*Agave americana*	Ramban	Ramban	2		
	2	*Carissa congesta*	Karamda	Karamda	6		
	3	*Carissa congesta*	Karamda	Karamda	3		
	4	*Lantana camara*	Indradhanu	Indradhanu	10		
Herb and Grass	1	*Hemidesmas indicus*	Anantmuli	Anantmuli	3		
	2	*Nothosaerva brachiata*			3		
	3	*Zizyphus oinoplia*	Bor	Bor	6		

Table 7a-1(15-2) Basic Information of Field Survey Result of Vangaon forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia auriculiformis*	1.00	16.67	0.06	15.18	5.67	6.64	38.49	
Shrub	1	*Abelmoschus moschatus*	0.33	5.56	0.01	2.68	3.00	3.52	11.75	
	2	*Lantana camara*	0.33	5.56	0.01	2.68	3.00	3.52	11.75	
	3	*Zizyphus oinoplia*	0.33	5.56	0.02	5.36	6.00	7.03	17.94	
Herb and Grass	1	*Cocculus hirsutus*	0.33	5.56	0.01	2.68	3.00	3.52	11.75	
	2	*Desmostachya bipinnata*	0.33	5.56	0.04	11.61	13.00	15.23	32.40	
	3	*Hemidesmas indicus*	0.33	5.56	0.02	4.46	5.00	5.86	15.88	
	4	*Cynadon dactylon*	0.33	5.56	0.04	10.71	12.00	14.06	30.33	
	5	*Neuranthus sphaerostachyus*	0.33	5.56	0.02	4.46	5.00	5.86	15.88	
	6	*Nothosaerva brachiata*	1.00	16.67	0.08	20.54	7.67	8.98	46.19	
	7	*Achyranthes aspera*	0.33	5.56	0.01	2.68	3.00	3.52	11.75	
	8	*Agave americana*	0.33	5.56	0.00	0.89	1.00	1.17	7.62	
	9	*Carissa congesta*	0.33	5.56	0.02	4.46	5.00	5.86	15.88	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F) %	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia auriculiformis*	75	17.6	4.25	34	5.7	23.1	102.4	
Shrub	1	*Agave americana*	50	11.8	0.5	4	1.0	4.1	54.6	
	2	*Carissa congesta*	50	11.8	1.5	12	3.0	12.2	63.7	
	3	*Carissa congesta*	75	17.6	0.75	6	1.0	4.1	79.8	
	4	*Lantana camara*	75	17.6	2.5	20	3.3	13.6	91.1	
Herb and Grass	1	*Hemidesmas indicus*	25	5.9	0.75	6	3.0	12.2	38.0	
	2	*Nothosaerva brachiata*	50	11.8	0.75	6	1.5	6.1	56.9	
	3	*Zizyphus oinoplia*	25	5.9	1.5	12	6.0	24.5	51.0	

Table 7a-1(16-1) Basic Information of Field Survey Result of Pade forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Avicennia marina*		Tivar	3	Mangrove	
	1	*Salvadora persica*		Khakan	4		
Shrub	1	*Sueda sp.*		Mota Karmal	2		
	2	*Alueropus lagopiodes*		Kodu	18		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Shrub	1	*Salvadora persica*	*Piludi*	*Piludi*	2		
Herb	1	*Sueda sp.*	*Luni*	*Luni*	7		
	2	*Alueropus lagopoides*			26		

Table 7a-1(16-2) Basic Information of Field Survey Result of Pade forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Avicennia marina*	0.50	20.00	0.01	11.11	1.50	15.25	46.37	
	2	*Salvadora persica*	0.75	30.00	0.01	14.81	1.33	13.56	58.37	
Shrub	1	*Sueda sp.*	0.50	20.00	0.01	7.41	1.00	10.17	37.58	
	2	*Alueropus lagopiodes*	0.75	30.00	0.05	66.67	6.00	61.02	157.68	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)%	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Salvadora persica*	25	16.7	0.5	5.7	2.0	14.1	36.5	
	2	*Sueda sp.*	50	33.3	1.75	20	3.5	24.7	78.0	
Shrub	1	*Alueropus lagopoides*	75	50.0	6.5	74.3	8.7	61.2	185.5	
	2	*Salvadora persica*	25	16.7	0.5	5.7	2.0	14.1	36.5	

Table 7a-1(17-1) Basic Information of Field Survey Result of Ambewadi forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Butea monosperma*	Palash	Khakharo	1		
	2	*Acacia nilotica*	Babool	Babool	1		
	3	*Phoenix sylvestris*	Khajur	Shindig	7		
Shrub	1	*Carissa congesta*	Karonda	Karmda	6		
	2	*Zizyphus xylopyra*	Ber	Ghat Bor	2		
Herb and Grass	1	*Cynadon dactylon*		Durva	25		
	2	*Dicanthium annulatum*		Marvel	4		
	3	*Desmostachya bipinnata*		Dahbhado	4		
	4	*Solanum xanthocarpum*		Bhoin ringani	2		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica (sap)*	Deshi Baval	Deshi Baval	3		
	2	*Beuta monosperma (sap)*	Khakharo	Khakharo	1		
	3	*Phoenix sylvestris(sap)*	Khajuri	Khajuri	39		
Shrub	1	*Carissa congesta*	Karmda	Karmda	2		
	2	*Zizyphus xylopyra (sap)*	Bor	Bor	11		
Herb and Grass	1	*Desmostachya bipinnata*	Dahbhado	Dahbhado	3		
	2	*Neuranthus sphaerostachyus*			2		
	3	*Solanum xanthocarpum*	Bhoin Ringani	Bhoin Ringani	5		
	4	*Vernonia cinerea*			3		

Table7a-1(17-2) Basic Information of Field Survey Result of Ambewadi forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Azadirechta indica (sap)*	0.50	8.33	0.01	1.92	1.00	2.94	13.20	
	2	*Diospyros melanoxylon (sap)*	0.50	8.33	0.01	1.92	1.00	2.94	13.20	
	3	*Prosopis juliflora*	1.00	16.67	0.04	13.46	3.50	10.29	40.42	
Shrub	1	*Carissa congesta*	0.50	8.33	0.03	11.54	6.00	17.65	37.52	
	2	*Z. xylopyra*	0.50	8.33	0.01	3.85	2.00	5.88	18.06	
Herb and Grass	1	*Cynadon dactylon*	1.00	16.67	0.13	48.08	12.50	36.76	101.51	
	2	*Dicanthium annulatum*	1.00	16.67	0.02	7.69	2.00	5.88	30.24	
	3	*Desmostachya bipinnata*	0.50	8.33	0.02	7.69	4.00	11.76	27.79	
	4	*Solanum xanthocarpum*	0.50	8.33	0.01	3.85	2.00	5.88	18.06	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F) %	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica (sap)*	25	7.7	0.8	4.3	3.0	6.6	18.6	
	2	*Beuta monosperma (sap)*	25	7.7	0.3	1.4	1.0	2.2	11.3	
	3	*Phoenix sylvestris(sap)*	50	15.4	9.8	56.5	19.5	42.9	114.8	
Shrub	1	*Carissa congesta*	25.0	7.7	0.5	2.9	2.0	4.4	15.0	
	2	*Zizyphus xylopyra (sap)*	25.0	7.7	2.8	15.9	11.0	24.2	47.8	
Herb and Grass	1	*Desmostachya bipinnata*	50.0	15.4	0.8	4.3	1.5	3.3	23.0	
	2	*Neuranthus sphaerostachyus*	50.0	15.4	0.5	2.9	1.0	2.2	20.5	
	3	*Solanum xanthocarpum*	25.0	7.7	1.3	7.2	5.0	11.0	25.9	
	4	*Vernonia cinerea*	50.0	15.4	0.8	4.3	1.5	3.3	23.0	

Table 7a-1(18-1) Basic Information of Field Survey Result of Gholvad forest village

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia leucociphela (sap)*	Subabul	Subaval	3		
	2	*Phoenix sylvestris(sap)*	Khajur	shindi	14		
	3	*Terminalia arjuna (sap)*	Arjun	Arjun Sadad	2		
	4	*Mangifera indica*	Mango	Ambo	1		
Shrub	1	*Maytenus emarginata*	Vikalo	Vikalo	3		
	2	*Zizyphus xylopyra (sap)*	Bor	Ghat Bor	1		
Herb and Grass	1	*Cynadon dactylon*		Durva	12		
	2	*Desmostachya bipinnata*			23		
	3	*Dicanthium anulatum*		Marvel	28		
	4	*Enicostema hyssopifolium*		Mamejo	22		
	5	*Hemidesmas indicus*	Anantmul	Anantmul	1		
	6	*Heteropogon contortus*		Kusali	15		
	7	*Solanum xanphocarpum*		Bhoi Ringani	1		
	8	*Themeda quadrivalvis*	Musli	Musli	1		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia lucocephela (sap)*	Subaval	Subaval	3		
	2	*Mangifera indica*	Ambo	Ambo	2		
	3	*Phoenix sylvestris(sap)*	Khajuri	Khajuri	14		
	4	*Pongomia pinnata*	Kanji	Kanji	1		
	5	*Terminalia arjuna (sap)*	Arjun sadad	Arjun sadad	2	Near threatened (MoEF)	
Shrub	1	*Carissa congesta*	karmda	karmda	1.0		
	2	*Maytenus emarginata*	Vikalo	Vikalo	3.0		
	3	*Zizyphus xylopyra (sap)*	Bor	Bor	1.0		
Herb and Grass	1	*Enicostema hyssopifolium*	Mamejo	Mamejo	8.0		
	2	*Hemidesmas indicus*	Anantmuli	Anantmuli	1.0		
	3	*Neuranthus sphaerostachyus*			1.0		
	4	*Solanum xanphocarpum*	Bhoin Ringani	Bhoin Ringani	1.0		
	5	*Vernonia cinerea*			1.0		

Table 7a-1(18-2) Basic Information of Field Survey Result of Gholvad forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	1.00	15.87	0.01	2.36	1.00	0.95	19.19	
	2	*Acacia chundra*	0.67	10.58	0.05	11.02	7.00	6.67	28.27	
	3	*Phoenix sylvestris(sap)*	0.33	5.29	0.01	1.57	2.00	1.90	8.77	
	4	*P.juliflora*	0.33	5.29	0.00	0.79	1.00	0.95	7.03	
Shrub	1	*Alysicarpus monilifer*	0.5	9.09	0.02	5.88	4	8.33	23.31	
	2	*Cynadon dactylon*	1	18.18	0.16	47.06	16	33.33	98.57	
Herb and Grass	1	*Cynadon dactylon*	0.33	5.29	0.04	9.45	12.00	11.43	26.17	
	2	*Desmostachya bipinnata*	0.33	5.29	0.08	18.11	23.00	21.90	45.31	
	3	*Dicanthium anulatum*	0.33	5.29	0.09	22.05	28.00	26.67	54.01	
	4	*Enicostema hyssopifolium*	0.67	10.58	0.07	17.32	11.00	10.48	38.38	
	5	*Hemidesmas indicus*	0.33	5.29	0.00	0.79	1.00	0.95	7.03	
	6	*Heteropogon contortus*	0.33	5.29	0.05	11.81	15.00	14.29	31.39	
	7	*Solanum xanphocarpum*	0.33	5.29	0.00	0.79	1.00	0.95	7.03	
	8	*Themeda quadrivalvis*	0.33	5.29	0.00	0.79	1.00	0.95	7.03	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	1.00	15.87	0.01	2.36	1.00	0.95	19.19	
	2	*Acacia chundra*	0.67	10.58	0.05	11.02	7.00	6.67	28.27	
	3	*Phoenix sylvestris(sap)*	0.33	5.29	0.01	1.57	2.00	1.90	8.77	
	4	*P.juliflora*	0.33	5.29	0.00	0.79	1.00	0.95	7.03	
	5	*Alysicarpus monilifer*	0.5	9.09	0.02	5.88	4	8.33	23.31	
Shrub	1	*Cynadon dactylon*	1	18.18	0.16	47.06	16	33.33	98.57	
	2	*Cynadon dactylon*	0.33	5.29	0.04	9.45	12.00	11.43	26.17	
	3	*Desmostachya bipinnata*	0.33	5.29	0.08	18.11	23.00	21.90	45.31	
Herb and Grass	1	*Dicanthium anulatum*	0.33	5.29	0.09	22.05	28.00	26.67	54.01	
	2	*Enicostema hyssopifolium*	0.67	10.58	0.07	17.32	11.00	10.48	38.38	
	3	*Hemidesmas indicus*	0.33	5.29	0.00	0.79	1.00	0.95	7.03	
	4	*Heteropogon contortus*	0.33	5.29	0.05	11.81	15.00	14.29	31.39	
	5	*Solanum xanphocarpum*	0.33	5.29	0.00	0.79	1.00	0.95	7.03	

Table 7a-1(19-1) Basic Information of Field Survey Result of *Bordee* Forest

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica*	Babool, Kikar	Deshi Baval	2		
	2	*Acacia chundra*	Khair	Khair	8		
	3	*Phoenix sylvestris(sap)*	Khajur	tad	5		
	4	*Prosopis juliflora*	Vilayati Babool	Vilayati babool	2		
Herb and Grass	1	*Alysicarpus monilifer*		Chatta ki ghas	4		
	2	*Cynadon dactylon*		durva	32		
	3	*Dicanthium annulatum*		marvel	4		
	4	*Eragrostis tenela*		Shada fulka	4		
	5	*Ipomea aquatica*		Beshram bel	7		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica*	Babul		2		
	2	*Phoenix sylvestris*	Khajur		39		
	3	*Prosopis juliflora*	Kikar		2		
Shrubs	1	*Woodfordia fruticosa*			4		
Herbs	1	*Desmostachya bipinnata*	Dhrab		4		

Table 7a-1(19-2) -B: Basic Information of Field Survey Result of Bordi Forest

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	0.5	9.09	0.01	2.94	2	4.17	16.2	
	2	*Acacia chundra*	1	18.18	0.04	11.76	4	8.33	38.28	
	3	*Phoenix sylvestris(sap)*	0.5	9.09	0.03	7.35	5	10.42	26.86	
	4	*P.juliflora*	0.5	9.09	0.01	2.94	2	4.17	16.2	
Herb and Grass	1	*Alysicarpus monilifer*	0.5	9.09	0.02	5.88	4	8.33	23.31	
	2	*Cynadon dactylon*	1	18.18	0.16	47.06	16	33.33	98.57	
	3	*Dicanthium annulatum*	0.5	9.09	0.02	5.88	4	8.33	23.31	
	4	*Eragrostis tenela*	0.5	9.09	0.02	5.88	4	8.33	23.31	
	5	*Ipomea aquatica*	0.5	9.09	0.04	10.29	7	14.58	33.97	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	50	18.2	0.5	3.9	1.0	5.3	27.4	
	2	*Phoenix sylvestris*	75	27.3	9.8	76.5	13.0	68.4	172.2	
	3	*Prosopis juliflora*	50	18.2	0.5	3.9	1.0	5.3	27.4	
Shrub	1	*Woodfordia fruticosa*	50	18.2	1.0	7.8	2.0	10.5	36.6	
Herb and	1	*Desmostachya bipinnata*	50	18.2	1.0	7.8	2.0	10.5	36.6	

Table 7a-1(20-1) Basic Information of Field Survey Result of Gulistanpur Reserved Forest

(First Season – January 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica*	Kikar	babool	56		
	2	*Prosopis juliflora*	Vilayati bvall	gando Babool	180		
	3	*Butea monosperma*	Palash	Dhak	54		
	4	*Dalbergia sissoo(sap)*	Shisham	Sisoo	99		
	5	*Pongamia pinnata (sap)*	Karanj	Kanji	11		
Shrub	1	*Acacia arabica*	kikar	babool	280		
	2	*Calotropis procera*	Akra	Akado	41		
Herb and Grass	1	*Abutilon megapotamicum*	India mallow		113		
	2	*Achyranthes aspera linn*		Chitchita	195		
	3	*Euphorbia hirta*		Dudhia	121		
	4	*Desmostachya bipinnata*		Darbh	121		
	5	*Zephyranthes carinata*	Rainy lily		132		

(Second Season – April 2011)

Type	No.	Name of Species			Total No. of Species recorded during the field Survey*	Status of threatened species (Rare / Vulnerable / Endangered / Indeterminate)	Any critical habitat of particular species within ROW on both sides of project alignment
		Scientific Name	Common Name	Local/Vernacular Name (if any)			
Tree	1	*Acacia nilotica*	Babool		21		No
	2	*Dalbergia sissoo*	Shisham		2		
	3	*Holoptelia integrifolia*	Papri		2		
	4	*P.juliflora*	Vilayati babool		76		
	5	*Pongemia pinnata*	kanji		5		
	6	*Butea monosperma*	Dhak		1		
Shrub	1	*Acacia arabica*			11		
	2	*Lantana camara*	Kuri		4		
	3	*Zizuphus mauritiana*	Beri		6		
Herb and Grass	1	*Acharynthus aspera*	Chitchata		32		
	2	*Argemone maxicana*	Khatkhatiya		14		
	3	*Calotropis propera*	akra		6		
	4	*Cannabis*	Bhang		18		
	5	*Cenchrus ciliaris*	anjan		5		
	6	*Cynodon dactylon*	doob		68		
	7	*Datura*	datura		2		
	8	*Desmostachya bipinnata*	Daab		60		
	9	*Echinops echinatus*	Gokhru		4		
	10	*Euphorbia hirta*			27		
	11	*Oxalis latifolia*	weed		144		
	12	*Tridax procumbans*	Ghamra-weed		11		

T able 7a-1(20-2) Basic Information of Field Survey Result of Gulistanpur forest village

(First Season – January 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	0.42	4.90	0.05	3.99	11.20	6.92	15.81	
	2	*Prosopis juliflora*	1.00	11.76	0.15	12.83	15.00	9.27	33.86	
	3	*Butea monosperma*	0.83	9.80	0.05	3.85	5.40	3.34	16.99	
	4	*Dalbergia sissoo*	0.83	9.80	0.08	7.06	9.90	6.12	22.98	
	5	*Pongamia pinnata*	0.08	0.98	0.01	0.78	11.00	6.80	8.56	
Shrub	1	*Acacia arabica*	1.00	11.76	0.23	19.96	23.33	14.42	46.14	
	2	*Calotropis procera*	0.25	2.94	0.03	2.92	13.67	8.44	14.31	
Herb and Grass	1	*Abutilon megapotamicum*	0.83	9.80	0.09	8.05	11.30	6.98	24.84	
	2	*Achyranthes aspera linn*	0.75	8.82	0.16	13.90	21.67	13.39	36.11	
	3	*Euphorbia hirta*	0.58	6.86	0.10	8.62	17.29	10.68	26.17	
	4	*Desmostachya bipinnata*	1.00	11.76	0.10	8.62	10.08	6.23	26.62	
	5	*Zephyranthes carinata*	0.92	10.78	0.11	9.41	12.00	7.41	27.61	

(Second Season – April 2011)

Type	No.	Name of Species (SP)	Frequency (F)	Relative Frequency (RF)	Density (D)	Relative Density (RD)	Abundance (AB)	Relative Dominance (RDO)	Importance Value Index	Any Remark
Tree	1	*Acacia nilotica*	14.29	5.17	3.0	4.0	7.0	3.85	13.07	
	2	*Dalbergia sissoo*	28.57	3.45	0.3	0.4	1.0	0.55	4.38	
	3	*Holoptelia integrifolia*	42.86	3.45	0.3	0.4	1.0	0.55	4.38	
	4	*P.juliflora*	57.14	12.07	10.9	14.7	10.9	5.98	32.70	
	5	*Pongemia pinnata*	71.43	3.45	0.7	1.0	2.5	1.38	5.79	
	6	*Butea monosperma*	85.71	1.72	0.1	0.2	1.0	0.55	2.47	
Shrub	1	*Acacia arabica*	42.86	5.17	0.02	2.12	3.67	2.02	9.31	
	2	*Lantana camara*	42.86	5.17	0.01	0.77	1.33	0.73	6.68	
	3	*Zizuphus mauritiana*	42.86	5.17	0.01	1.16	2.00	1.10	7.43	
Herb and Grass	1	*Acharynthus aspera*	71.43	5.17	0.05	6.17	6.40	3.52	18.31	
	2	*Argemone maxicana*	28.57	8.62	0.02	2.70	7.00	3.85	10.00	
	3	*Calotropis propera*	28.57	3.45	0.01	1.16	3.00	1.65	6.26	
	4	*Cannabis*	28.57	3.45	0.03	3.47	9.00	4.95	11.87	
	5	*Cenchrus ciliaris*	28.57	3.45	0.01	0.96	2.50	1.38	5.79	
	6	*Cynodon dactylon*	57.14	3.45	0.10	13.11	17.00	9.36	29.36	
	7	*Datura*	14.29	6.90	0.00	0.39	2.00	1.10	3.21	
	8	*Desmostachya bipinnata*	42.86	1.72	0.09	11.57	20.00	11.01	27.75	
	9	*Echinops echinatus*	28.57	5.17	0.01	0.77	2.00	1.10	5.32	
	10	*Euphorbia hirta*	57.14	3.45	0.04	5.21	6.75	3.72	15.82	
	11	*Oxalis latifolia*	28.57	3.45	0.21	27.76	72.00	39.63	70.84	
	12	*Tridax procumbans*	42.86	5.17	0.02	2.12	3.67	2.02	9.31	

Appendix-7b
Result of Tree census

Appendix-7b
Results of Tree Census

<JNPT-Vadodara Section>

District Vadodara

S.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Mesrad	Mangifera indica (Mango-Ambo)	624	90.12	6 to12 mt.
			436	120.15	
			1060		
2	Mongrol	Prosophis cineraia (Khijado-samadi)	1	30.6	6 to 10 mt.
			5	60.9	
			6	90.12	
			2	120.15	
			2	150.18	
			16		
		Acacia nilotica (Babul)	**2**	60.9	8 to 12 mt.
		Azadirachta indica (Neem-Limada)	1	60.9	6 to 10 mt.
			1	90.12	
			1	120.15	
			3		
		Grand Total :	**21**		
3	Kambola	Prosophis cineraia (Khijado-samadi)	1	60.9	6 to 8 mt.
			1	90.12	
			2		
		Azadirachta indica (Neem-Limada)	2	90.12	6 to 10 mt.
			1	120.15	
			3		
		Tamarindus indica (Amali)	**1**	60.9	12 mt.
		Grand Total :	**6**		
4	Bodka	Mengifera indica (Mango-Ambo)	9	60.9	6 to 12 mt.
			1	90.12	
			10		
		Prosophis cineraia (Khijado-samadi)	**4**	90.12	8 to 10 mt.
		Azadirachta indica (Neem-Limada)	**8**	90.12	8 to 10 mt.
		Tectona grandis (Teak-sag)	**16**	60.9	6 mt.
		Grand Total :	**38**		
5	Handod	Mengifera indica (Mango-Ambo)	6	30.6	8 to 10 mt.
			54	60.9	
			60		
		Prosophis cineraia (Khijado-samadi)	3	60.9	8 to 10 mt.
			1	90.12	
			4		
		Tectona grandis (Teak-sag)	**22**	60.9	8 to 10 mt.
		Gmeline arbonic (Seven)	**1**	60.9	6 mt.
		Grand Total :	**87**		
6	Khandha	Mengifera indica (Mango-Ambo)	25	30.6	6 to 12 mt.
			150	60.9	
			175		
		Acacia nilptica (Babul)	15	30.6	8 to 12 mt.
			300	60.9	
			315		
		Grand Total :	**490**		
7	Kurai	--	--	--	--

S.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
8	Pingalwada	--	--	--	--
9	Untiya inedad	Mengifera indica (Mango-Ambo)	10	30.6	8 to 10 mt.
			50	60.9	
			60		
		Prosophis cineraia (Khijado-samadi)	**4**	30.6	8 to 10 mt.
		Grand Total :	**64**		
10	Gosindra	Mengifera indica (Mango-Ambo)	1	30.6	6 to 12 mt.
			41	60.9	
			125	90.12	
			167		
		Prosophis cineraia (Khijado-samadi)	135	60.9	6 to 10 mt.
			127	90.12	
			262		
		Azadirachta indica (Neem-Limada)	**7**	60.9	8 to 10 mt.
		Acacia nilptica (Babul)	37	60.9	8 to 12 mt.
			137	90.12	
			174		
		Grand Total :	**610**		
Total			**2,376**		

District Surat

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Sachin	Azadirachta indica (Neem)	1	60.9	10 to 12 mt.
			1	120.15	
			1	180 >	
			3		
		Ficus religiosa (Pipal)	2	180 >	15 to 18 mt.
		Temerindus indica (Amali)	2	180 >	12 to 15 mt.
		Cordia dichotma (Gundo)	1	60.9	8 to 10 mt.
			1	180 >	
			2		
		Delonix regia (Gulmahor)	1	60.9	8 mt.
		Bombax ceiba (Shimalo)	2	150.18	8 to 10 mt.
			1	180 >	
			3		
		Kigelia pinnata	2	60.9	8 mt.
		Mangifera indica (Mango-Ambo)	1	60.9	6 to 8 mt.
		Albizia lebbeck (Kalo sires)	1	60.9	8 mt.
		Tectona grandis (Teak - sag)	1	30.6	6 mt.
		Grand Total :	**18**		
2	Unn	Prosophis cinereria (Khijado-Samadi)	1	30.6	8 to 10 mt.
			3	60.9	
			4		
		Ehcalyptus teriticornis (Nilgiri)	2	30.6	6 mt.
			1	60.9	
			3		
		Cassia Simea (Rain tree)	1	30.6	6 to 8 mt.
			3	90.12	
			4		
		Albizia lebbeck (Kalo sires)	1	60.9	6 mt.
		Mangifera indica (Mango-Ambo)	1	60.9	5 mt.
		Ficus religiosa (Pipal)	1	90.12	8 to 10 mt.
			1	180 >	
			2		
		Delonix regia (Gulmahor)	1	60.9	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Casuarina eqisetifolia (Sheru)	1	30.6	6 mt.
		Manilkara hexandra (Rayan)	1	30.6	10 to 12 mt.
		Grand Total :	**18**		
3	Bhanodura	Ficus benghalensis (Vad)	1	120.15	12 to 15 mt.
			3	180 >	
			4		
		Pithecellobium dulce (Mithi amali)	1	90.12	8 to 10 mt.
			1	120.15	
			1	180 >	
			3		
		Ehcalyptus teriticornis (Nilgiri)	1	30.6	6 to 8 mt.
			3	90.12	
			4		
		Acacia nilotica (Babul)	1	60.9	6 mt.
		Gmelina crborea (Seven)	1	60.9	6 mt.
		Moringa oleifera (Saragavo)	3	90.12	5 mt.
		Polyalthia longifolia (Asopalav)	3	90.12	6 mt.
		Grand Total :	**19**		
4	Eklera	Acacia nilotica (Babul)	3	30.6	6 to 8 mt.
			3	60.9	
			6		
		Prosophis cinereria (Khijado-Samadi)	3	90.12	8 to 10 mt.
			2	120.15	
			1	180 >	
			6		
		Afadirecuta indica (Neem)	1	30.6	6 to 8 mt.
			3	90.12	
			4		
		Cordia dichotma (Gundo)	1	60.9	6 mt.
		Melia azadirechte (Bakan limado)	1	60.9	6 mt.
		Moringa oleifera (Saragavo)	3	90.12	5 mt.
		Grand Total :	**21**		
5	Saniya kande	Afadirecuta indica (Neem)	2	90.12	8 to 10 mt.
			2	120.15	
			4		
		Pithecellobium dulce (Mithi amali)	1	30.6	5 to 6 mt.
			2	60.9	
			1	180 >	
			4		
		Ficus religiosa (Pipal)	1	180 >	6 to 8 mt.
		Melia azadirechte (Bakan limado)	1	30.6	5 mt.
		Gmelina crborea (Seven)	1	30.6	6 mt.
		Leucaena leucocephala (Subabul)	2	180 >	15 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	60.9	6 to 10 mt.
			5	90.12	
			5	120.15	
			11		
		Temerindus indica (Amali)	1	180 >	15 mt.
		Moringa oleifera (Saragavo)	1	120.15	6 to 8 mt.
			3	180 >	
			4		
		Acacia auriculifornis (Bengali baval)	1	60.9	4 to 5 mt.
			6	90.12	
			7		
		Casuarina eqisetifolia (Sheru)	1	30.6	6 to 8 mt.
			2	60.9	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3		
		Syzygium cumini (Jamun)	2	90.12	6 to 7 mt.
		Tectona garndis (Teak-sag)	3	90.12	8 to 10 mt.
			1	120.15	
			4		
		Mangifera indica (Mango-Ambo)	2	90.12	8 to 10 mt.
			1	120.15	
			3		
		Cassia Simea (Rain tree)	2	60.9	8 to 10 mt.
			2	90.12	
			4		
		Grand Total :	**52**		
6	Deladva	Leucaena leucocephala (Subabul)	1	60.9	5 mt.
		Casuarina eqisetifolia (Sheru)	4	120.15	6 to 8 mt.
		Zizyphus mauritiana (Boradi)	2	90.12	4 mt.
			1	120.15	
			3		
		Ficus benghalensis (Vad)	3	180 >	8 to 12 mt.
		Cocoas nucifera (Coconut)	1	30.6	10 mt.
			2	60.9	
			3		
		Prosophis cinereria (Khijado-Samadi)	1	90.12	8 to 10 mt.
			1	180 >	
			2		
		Acacia catechu (Khair)	1	60.9	5 to 8 mt.
		Ficus religiosa (Pipal)	1	90.12	8 to 10 mt.
			1	180 >	
			2		
		Mangifera indica (Mango-Ambo)	2	90.12	6 to 8 mt.
			1	120.15	
			1	150.18	
			1	180 >	
			5		
		Pithecellobium dulce (Mithi amali)	1	180 >	8 mt.
		Cassia Simea (Rain tree)	1	60.9	6 to 8 mt.
			1	90.12	
			2		
		Grand Total :	**27**		
7	Dakhan-wada	Delonix regia (Gulmahor)	1	150.18	6 mt.
		Acacia nilotica (Babul)	1	120.15	8 mt.
		Tectona grandis (Teak - sag)	2	90.12	8 to 10 mt.
			4	120.15	
			1	150.18	
			7		
		Grand Total :	**9**		
8	Sedav	Afadirecuta indica (Neem)	3	60.9	6 to 8 mt.
			2	90.12	
			5		
		Syzygium cumini (Jamun)	1	60.9	8 to 10 mt.
			1	90.12	
			1	120.15	
			1	180 >	
			4		
		Ehcalyptus teriticornis (Nilgiri)	1	90.12	6 mt.
			1	120.15	
			2		
		Cordia dichotma (Gundo)	1	60.9	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Ficus religiosa (Pipal)	1	120.15	8 mt.
		Mangifera indica (Mango-Ambo)	2	150.18	6 to 8 mt.
			3	180 >	
			5		
		Acacia auriculifornis (Bengali baval)	2	30.6	4 to 5 mt.
			2	60.9	
			4		
		Cocoas nucifera (Coconut)	1	30.6	6 to 8 mt.
			6	60.9	
			7		
		Pithecellobium dulce (Mithi amali)	1	180 >	8 mt.
		Prosophis cinereria (Khijado-Samadi)	1	180 >	6 mt.
		Grand Total :	**31**		
9	Devach	Terminalia cattspa (Badam)	1	60.9	6 mt.
		Prosophis julifora (Gando baval)	2	60.9	6 to 8 mt.
			2	90.12	
			4		
		Mangifera indica (Mango-Ambo)	2	150.18	6 to 8 mt.
			2	180 >	
			4		
		Acacia auriculifornis (Bengali baval)	3	60.9	6 mt.
			12		
10	Niyol	Delonix regia (Gulmahor)	1	30.6	6 to 7 mt.
			4	60.9	
			5		
		Cocoas nucifera (Coconut)	2	60.9	6 to 8 mt.
			6	90.12	
			1	120.15	
			9		
		Bombax ceiba (Shimalo)	1	120.15	8 mt.
		Cordia dichotma (Gundo)	1	180 >	6 mt.
		Acacia nilotica (Babul)	1	90.12	8 to 10 mt.
			3	120.15	
			1	150.18	
			5		
		Azadirachta indica (Neem)	1	90.12	6 to 8 mt.
			1	120.15	
			2		
		Grand Total :	**23**		
11	Vedcha	Azadirachta indica (Neem)	1	90.12	6 mt.
		Cocoas nucifera (Coconut)	1	120.15	6 mt.
		Zizyphus mauritiana (Boradi)	1	30.6	4 mt.
		Ailenthus excelsa (Araduso)	1	30.6	6 to 8 mt.
			3	60.9	
			4		
		Aegle marmelos (Bili)	1	120.15	8 mt.
		Ficus religiosa (Pipal)	1	120.15	8 mt.
		Polyalthia longifolia (Asopalav)	7	90.12	5 mt.
			3	120.15	
			1	150.18	
			11		
		Grand Total :	**20**		
12	Chhedchha	Azadirachta indica (Neem)	1	90.12	8 mt.
		Leucaena leucocephala (Subabul)	2	30.6	6 mt.
			1	120.15	
			3		
		Tectona grandis (Teak - sag)	1	90.12	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Ficus religiosa (Pipal)	1	90.12	8 to 10 mt.
			1	120.15	
			1	180 >	
			3		
		Ficus benghalensis (Vad)	1	180 >	8 to 10 mt.
		Anthrocephelus kaoamba (Kadam)	1	90.12	6 mt.
		Terminalia cattspa (Badam)	2	60.9	5 mt.
			2	90.12	
			4		
		Cocoas nucifera (Coconut)	1	60.9	6 mt.
		Melia azadirechte (Bakan limado)	2	30.6	5 mt.
		Grand Total :	**17**		
13	Kosamada	Peltophorum ferrugenium (Sonkanor)	1	90.12	6 to 8 mt.
			3	150.18	
			4		
		Prosophis cinereria (Khijado-Samadi)	1	90.12	5 mt.
		Acacia nilotica (Babul)	1	30.6	4 mt.
		Pithecellobium dulce (Mithi amali)	1	60.9	4 mt.
		Afadirecuta indica (Neem)	1	60.9	5 mt.
			8		
14	Khadsad	Prosophis julifora (Gando baval)	1	30.6	3 mt.
		Afadirecuta indica (Neem)	1	30.6	6 to 8 mt.
			1	90.12	
			1	120.15	
			3		
		Cocoas nucifera (Coconut)	1	60.9	6 mt.
		Phenolix decifera	1	30.6	6 mt.
		Grand Total :	**6**		
15	Pasodra	----	--	--	--
16	Lakwana	Moringa oleifera (Saragavo)	1	120.15	5 mt.
		Mangifera indica (Mango-Ambo)	4	120.15	6 to 8 mt.
			1	150.18	
			5		
		Cassia Simea (Rain tree)	1	90.12	6 mt.
		Zizyphus mauritiana (Boradi)	1	120.15	5 mt.
		Afadirecuta indica (Neem)	1	30.6	6 to 8 mt.
			1	60.9	
			1	120.15	
			1	150.18	
			4		
		Grand Total :	**12**		
17	Valak	----	--	--	--
18	Bhada	----	--	--	--
19	Tapi river - Ending Abrama	Mangifera indica (Mango-Ambo)	40	60.9	5 to 10 mt.
		Afadirecuta indica (Neem)	1	30.6	6 to 10 mt.
			8	60.9	
			2	90.12	
			19	120.15	
			30		
		Tectona grandis (Teak - sag)	15	90.12	6 to 8 mt.
			6	120.15	
			21		
		Acacia nilotica (Babul)	1	90.12	8 to 12 mt.
			2	120.15	
			3		
		Ficus religiosa (Pipal)	1	120.15	10 to 12 mt.
		Prosophis cinereria (Khijado-Samadi)	1	120.15	10 mt.
		Grand Total :	**96**		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
20	Bharthana Kosad	Mangifera indica (Mango-Ambo)	430	30.6	5 to 10 mt.
			12	60.9	
			442		
		Afadirecuta indica (Neem)	10	60.9	6 to 10 mt.
			8	90.12	
			18		
		Tectona grandis (Teak - sag)	10	60.9	8 to 10 mt.
		Gmelina crborea (Seven)	10	60.9	6 to 8 mt.
		Acacia nilotica (Babul)	6	60.9	8 to 10 mt.
			2	90.12	
			8		
		Polyatthia longifolia (Asopalav)	3	60.9	5 to 6 mt.
		Prosophis cinereria (Khijado-Samadi)	4	60.9	5 to 8 mt.
			1	90.12	
			5		
		Temerindus indica (Amali)	2	60.9	10 to 12 mt.
		Grand Total :	**498**		
21	Gothan	Acacia nilotica (Babul)	81	60.9	8 to 12 mt.
		Tectona grandis (Teak - sag)	9	90.12	8 to 10 mt.
			37	120.15	
			46		
		Afadirecuta indica (Neem)	13	60.9	6 to 8 mt.
		Temerindus indica (Amali)	12	60.9	8 to 10 mt.
		Prosophis cinereria (Khijado-Samadi)	1	30.6	8 to 10 mt.
			4	60.9	
			5		
		Mangifera indica (Mango-Ambo)	3	60.9	8 to 10 mt.
		Delonix regia (Gulmahor)	3	60.9	8 to 10 mt.
			1	120.15	
			4		
		Cordia dicotoma (Gunda)	1	30.6	8 mt.
		Zifyphus mauritiane (Boradi)	3	30.6	4.5 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	60.9	6 mt.
		Ficus religiosa (Pipal)	1	60.9	8 mt.
		Grand Total :	**170**		
22	Kosad	Acacia nilotica (Babul)	1	60.9	6 to 8 mt.
			1	90.12	
			2		
		Cassia Simea (Rain tree)	1	90.12	6 mt.
		Leucaena leucocephala (Subabul)	1	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	1	120.15	6 mt.
		Bombax ceiba (Shimalo)	2	90.12	6.8 mt.
		Ficus benghalensis (Vad)	1	180 >	10 mt.
		Grand Total :	**8**		
23	Variav	Afadirecuta indica (Neem)	2	120.15	8 to 10 mt.
24	Umra	----	--	--	--
25	Sayan	----	--	--	--
26	Seikhpur	Citrus Limon (Lemon)	1188	Below 30	2.00 mt.
27	Kareli	Citrus Limon (Lemon)	1843	Below 30	2.00 mt.
28	Kusad (Safet Pura)	Afadirecuta indica (Neem)	6	30.6	6 to 8 mt.
		Ehcalyptus teriticornis (Nilgiri)	4	30.6	6 to 8 mt.
		Grand Total :	**10**		
29	Kathodara	----	--	--	--
30	Sialaj	Citrus Limon (Lemon)	1382	Below 30	2.00 mt.
31	Kuverda	----	--	--	--

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
32	Kosamba	----	--	--	--
33	Hathurum	----	--	--	--
Total number of target trees for compensation			**5,490**		

District Bharuch

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Panoli	--	--	--	--
2	Sanjali	--	--	--	--
3	Umarwada	Citrus Limon (Lemon)	27	below 30 cm	2 mt.
4	Kapodara	Citrus Limon (Lemon)	571	below 30 cm	2 mt.
5	Bhatkodra	--	--	--	--
6	Safruddin	--	--	--	--
7	Narmada river (Sakkarpur)	--	--	--	--
8	Deeva	Citrus Limon (Lemon)	748	below 30 cm	2 mt.
		Psidium guajava (Guaca-Jamphal)	1354	below 30 cm	2.5 mt.
			2102		
9	Ankleswar	Citrus Limon (Lemon)	772	below 30 cm	1 mt.
		Psidium guajava (Guaca-Jamphal)	5826	below 30 cm	2.5 mt.
			6598		
10	Piraman	Citrus Limon (Lemon)	283	below 30 cm	1 mt.
11	Kukrwada	Mangifera indica (Mango-Ambo)	24	60 to 90	3.5 to 4.00
12	Dehgam	Citrus Limon (Lemon)	1926	below 30 cm	1 mt.
13	Mahabar	Citrus Limon (Lemon)	1147	below 30 cm	1.10 mt.
		Psidium guajava (Guaca-Jamphal)	990	below 30 cm	2.50 mt.
			2137		
14	Kanthaiya	--	--	--	--
15	Tham	Citrus Limon (Lemon)	1568	below 30 cm	1 mt.
16	Derol	Citrus Limon (Lemon)	732	below 30 cm	1.00 mt.
		Moringa oleifera (Sargava)	1093	below 30 cm	2.50 mt.
			1825		
17	Mahudhala	--	--	--	--
18	Tralsi	--	--	--	--
19	Tralsa	Citrus Limon (Lemon)	2121	below 30 cm	1.00 mt.
		Moringa oleifera (Sargava)	3441	below 30 cm	2.50 mt.
		Mangifera indica (Mango-Ambo)	930	below 30 cm	2.50 mt.
		Emblica olficinaris (Amala)	303	below 30 cm	2.50 mt.
		Psidium guajava (Guaca-Jamphal)	117	below 30 cm	2.50 mt.
		Malinkura zapota (Chiku)	336	below 30 cm	2.50 mt.
			7248		
20	Pariyaj	--	--	--	--
21	Pipaliya	--	--	--	--
22	Parkhet	--	--	--	--
23	Padariya	--	--	--	--
24	Tankariya	--	--	--	--
25	Wantarsa	--	--	--	--
26	Dhora	--	--	--	--
27	Ikhar	--	--	--	--
28	Ochhan	Mangifera indica (Mango-Ambo)	481	30.6	2.50 mt.
		Prosophis cinereria (Khijado-Samadi)	56	30.6	3.00 mt.
		Malinkura zapota (Chiku)	50	below 30 cm	2.50 mt.
		Zifyphus mauritiane (Boradi)	26	below 30 cm	1.50 mt.
		Citrus Limon (Lemon)	15	below 30 cm	1.00 mt.
		Emblica olficinaris	10	below 30 cm	1.25 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		(Amala)			
		Cordia dicotoma (Gunda)	3	below 30 cm	2.50 mt.
			641		
29	Telod	Mangifera indica (Mango-Ambo)	775	60.9	2.50 mt.
Total number of target trees for compensation					

District Navsari

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Khaparwada	Cassia Siemea (rain tree)	2	120.15	8 to 10 mt.
			2	180 >	
			4		
		Delonix regia (Gulmahor)	1	60.9	8 mt.
			1	180 >	
			2		
		Afadirecuta indica (Neem)	1	120.15	8 to 10 mt.
			1	150.18	
			1	180 >	
			3		
		Ehcalyptus teriticornis (Nilgiri)	6	120.15	10 to 12 mt.
			5	150.18	
			2	180 >	
			13		
		Ficus religiosa (Pipal)	**1**	180 >	12 mt.
		Acacia nilotica (Babul)	1	60.9	6 to 8 mt.
			3	90.12	
			4		
		Bombax Ceiba (Shimalo)	1	30.6	6 to 7 mt.
			2	60.9	
			1	90.12	
			4		
		Casuarina eqisetifolia (Sheru)	1	90.12	8 to 10 mt.
			2	120.15	
			3		
			34		
2	Desra	Leucaena leucocephala (Subabul)	3	60.9	6 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	150.18	8 to 10 mt.
			2	180 >	
			3		
		Acacia auticuliformis (Bengali baval)	2	120.15	5 mt.
			2	150.18	
			4		
		Prosophis cinereria (Khijado-Samadi)	2	90.12	6 mt.
		Ficus religiosa (Pipal)	3	180 >	8 mt.
		Afadirecuta indica (Neem)	1	120.15	8 mt.
		Cassia Siemea (rain tree)	1	120.15	6 mt.
			17		
3	Billimora	Cassia Siemea (rain tree)	4	30.6	8 to 10 mt.
			1	90.12	
			2	120.15	
			3	180 >	
			10		
		Delonix regia (Gulmahor)	3	30.6	6 to 8 mt.
			1	150.18	
			4		
		Moringa oleifera (Sargavo)	5	30.6	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			6	60.9	
			11		
		Thuspesia pupulia (Paper piplo)	1	60.9	4 mt.
		Afadirecuta indica (Neem)	1	30.6	8 to 10 mt.
			1	60.9	
			1	90.12	
			1	120.15	
			1	180 >	
			5		
		Pwltohorum preugenium (Sonmanor)	1	90.12	4 mt.
		Zifyphus mauritiane (Boradi)	1	60.9	3 mt.
		Pongamia pinnata (karanj)	1	30.6	3 mt.
		Ficus religiosa (Pipal)	3	180 >	12 mt.
		Ficus benghalensis (vad)	2	30.6	12 to 15 mt.
			1	90.12	
			1	120.15	
			2	180 >	
			6		
		Tectona garndis (Teak-sag)	1	90.12	8 to 10 mt.
			1	120.15	
			2		
		Temerindus indica (Amali)	1	150.18	8 mt.
		Polyanthia longifera	5	30.6	4 mt.
		Cordia dichotma (Gundo)	2	60.9	5 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	30.6	8 to 10 mt.
			1	60.9	
			3	120.15	
			7	150.18	
			12	180 >	
		Mangifera indica (Mango-Ambo)	1	180 >	8 mt.
			66		
4	Bhata	Ehcalyptus teriticornis (Nilgiri)	1	60.9	8 to 10 mt.
			3	90.12	
			11	120.15	
			4	150.18	
			1	180 >	
			20		
5	Devdha	Bombax Ceiba (Shimalo)	1	60.9	4 mt.
		Ficus benghalensis (vad)	1	120.15	6 mt.
		Afadirecuta indica (Neem)	1	90.12	6 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	150.18	8 mt.
			4		
6	Sari Bujrang	Ficus religiosa (Pipal)	1	30.6	4 mt.
		Bombax Ceiba (Shimalo)	1	30.6	4 mt.
			1	90.12	
			1	120.15	
			3		
		Afadirecuta indica (Neem)	3	30.6	6 to 8 mt.
			2	60.9	
			2	150.18	
			7		
		Ficus religiosa (Pipal)	1	90.12	6 mt.
		Cassia Siemea (rain tree)	1	60.9	8 to 10 mt.
			1	90.12	
			2	150.18	
			1	180 >	
			5		
		Acacia nilotica (Babul)	2	60.9	8 to 10 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			5	90.12	
			3	120.15	
			4	150.18	
			3	180 >	
			17		
		Ficus benghalensis (vad)	1	90.12	6 mt.
		Casuarina eqisetifolia (Sheru)	2	60.9	4 mt.
		Bombax Ceiba (Shimalo)	1	30.6	8 mt.
			1	90.12	
			2		
		Peltohorum fweeugenium (Sonmanor)	1	90.12	4 mt.
		Daribergia sissoo (Shisoo)	1	150.18	8 mt.
		Ficus racemosa (Umero)	2	30.6	4 mt.
		Tectona garndis (Teak-sag)	1	60.9	5 mt.
		Albizia lebbeck (Kalo sires)	2	30.6	4 mt.
			1	60.9	
			1	150.18	
			4	180 >	
		Ficus benghalensis (vad)	1	180 >	6 mt.
			49		
7	Amalsad	Acacia nilotica (Babul)	2	90.12	6 to 8 mt.
			1	120.15	
			1	150.18	
			4		
		Prosophis cinereria (Khijado-Samadi)	1	60.9	4 mt.
		Acacia auticuliformis (Bengali baval)	1	60.9	4 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	30.6	8 to 10 mt.
			1	60.9	
			5	90.12	
			4	120.15	
			11		
		Cassia Siemea (Rain tree)	1	120.15	6 mt.
		Tectona garndis (Teak-sag)	2	30.6	4 mt.
		Afadirecuta indica (Neem)	1	120.15	6 mt.
		Leucaena leucocephala (Subabul)	1	120.15	6 mt.
			1	120.15	
			2		
		Bombax Ceiba (Shimalo)	1	90.12	6 mt.
			1	120.15	
			2		
		Emblica officinalis (Amala)	1	30.6	3 mt.
		Ficus religiosa (Pipal)	1	60.9	6 mt.
			3	90.12	
			1	120.15	
			5		
		Ficus benghalensis (vad)	2	90.12	6 mt.
		Thuspesia pupulia (Paper piplo)	1	150.18	5 mt.
		Peltohorum preugenium (Sonmanor)	3	90.12	6 mt.
			37		
8	Anchheli	Acacia nilotica (Babul)	9	60.9	8 to 10 mt.
			13	90.12	
			8	120.15	
			1	150.18	
			31		
		Tectona garndis (Teak-sag)	3	30.6	5 mt.
		Ehcalyptus teriticornis (Nilgiri)	3	30.6	8 to 10 mt.
			3	60.9	
			4	90.12	
			1	120.15	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	150.18	
			12		
		Bombax Ceiba (Shimalo)	1	30.6	6 mt.
			1	120.15	
			2		
		Leucaena leucocephala (Subabul)	6	30.6	3 mt.
		Albizia lebbeck (Kalo sires)	1	90.12	4 mt.
		Phenolix delcifera (Khajuri)	1	30.6	3 mt.
			56		
9	Mohanpur	Ehcalyptus teriticornis (Nilgiri)	2	30.6	8 to 10 mt.
			15	90.12	
			11	120.15	
			28		
		Bombax Ceiba (Shimalo)	3	30.6	4 to 6 mt.
			1	90.12	
			4		
		Azadirectifa indica (Neem-Kamado)	1	30.6	8 to 10 mt.
			4	60.9	
			6	90.12	
			5	120.15	
			1	150.18	
			1	180 >	
			18		
		Cassia Siemea (Rain tree)	1	30.6	8 to 10 mt.
			1	60.9	
			1	90.12	
			7	180 >	
			10		
		Acacia nilotica (Babul)	5	30.6	8 to 10 mt.
			5	60.9	
			1	90.12	
			2	120.15	
			2	180 >	
			15		
		Delonix regia (Gulmahor)	1	90.12	6 to 8 mt.
			3	120.15	
			2	150.18	
			2	180 >	
			8		
		Peltophorum ferrugenium (Sonmanor)	2	180 >	12 mt.
		Thespsia populnea (Paper pipalo)	2	180 >	6 to 7 mt.
		Mangifera indica (Mango-Ambo)	1	30.6	6 to 8 mt.
			1	60.9	
			2	120.15	
			1	120.15	
			3	180 >	
			8		
		Butea monosperma (Khakharo)	1	30.6	4 mt.
		Daribergia sissoo (Shisoo)	3	60.9	4 mt.
		Temerindus indica (Amali)	2	180 >	
		Polyanthia longifera (Asopalav)	1	30.6	
			1	60.9	
			2		
		Cassia fisthla (Garmalo)	2	60.9	
		Zifyphus mauritiane (Boradi)	2	30.6	
			1	60.9	
			3		
		Ficus benghalensis (vad)	1	180 >	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Prosophis cinereria (Khijado-Samadi)	1	60.9	
			110		
10	Vedchha	Acacia nilotica (Babul)	4	30.6	8 to 10 mt.
			17	60.9	
			26	90.12	
			13	120.15	
			6	150.18	
			9	180 >	
			75		
		Casuarina eqisetifolia (Sheru)	3	60.9	8 to 10 mt.
			12	90.12	
			25	120.15	
			6	150.18	
			1	180 >	
			47		
		Afadirecuta indica (Neem)	2	30.6	8 to 10 mt.
			8	60.9	
			5	90.12	
			1	120.15	
			16		
		Prosophis cinereria (Khijado-Samadi)	1	60.9	6 to 8 mt.
			1	90.12	
			2		
		Acacia auticuliformis (Bengali baval)	1	60.9	4 mt.
		Derris indica	1	60.9	5 mt.
			1	90.12	
			2		
		Bombax Ceiba (Shimalo)	1	60.9	4 mt.
		Mangifera indica (Mango-Ambo)	4	60.9	6 to 8 mt.
			1	90.12	
			1	180 >	
			6		
		Betue monosperma (Khakharo)	2	60.9	4 mt.
		Ficus benghalensis (vad)	1	150.18	12 mt.
			1	180 >	
			2		
		Ehcalyptus teriticornis (Nilgiri)	3	30.6	10 to 12 mt.
			4	60.9	
			15	90.12	
			5	120.15	
			27		
		Tectona garndis (Teak-sag)	7	30.6	8 to 10 mt.
			1	60.9	
			2	90.12	
			10		
		Delonix regia (Gulmahor)	1	30.6	4 to 6 mt.
			1	60.9	
			2		
		Phenolix delcifera (Khajuri)	2	30.6	4 mt.
		Cassia Siemea (Rain tree)	1	60.9	6 mt.
			1	90.12	
			1	120.15	
			3		
		Ficus religiosa (Pipal)	2	30.6	3 mt.
		Ficus benghalensis (vad)	1	30.6	5 mt.
			201		
11	Mandir	Ehcalyptus teriticornis (Nilgiri)	1	30.6	8 to 10 mt.
			3	60.9	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			10	90.12	
			13	120.15	
			2	150.18	
			1	180 >	
			30		
		Acacia nilotica (Babul)	7	30.6	8 to 10 mt.
			26	60.9	
			37	90.12	
			14	120.15	
			6	150.18	
			4	180 >	
			94		
		Casuarina eqisetifolia (Sheru)	6	90.12	8 to 10 mt.
			19	120.15	
			1	150.18	
			26		
		Prosophis cinereria (Khijado-Samadi)	5	30.6	6 to 8 mt.
			1	60.9	
			1	90.12	
			7		
		Phenolix delcifera (Khajuri)	1	60.9	6 mt.
		Tectona garndis (Teak-sag)	1	90.12	5 mt.
		Afadirecuta indica (Neem)	3	30.6	8 to 10 mt.
			10	60.9	
			1	90.12	
			2	120.15	
			16		
		Mangifera indica (Mango-Ambo)	1	90.12	6 to 8 mt.
			4	120.15	
			11	180 >	
			16		
		Acacia auticuliformis (Bengali baval)	2	90.12	4 to 6 mt.
			1	120.15	
			3		
		Bombax Ceiba (Shimalo)	4	30.6	8 to 10 mt.
			8	60.9	
			3	90.12	
			6	120.15	
			1	180 >	
			22		
		Acacia catechue (Khair)	1	30.6	6 to 8 mt.
			5	90.12	
			1	120.15	
			7		
		Grewia tiliaefolia (Dhaman)	1	60.9	4 mt.
		Cordia dichotma (Gundo)	1	60.9	5 mt.
			1	90.12	
			2		
		Peltophorum ferrugenium (Sonmanor)	1	120.15	10 mt.
			1	180 >	
			2		
		Daribergia sissoo (Shisoo)	3	30.6	3 mt.
		Terminalia arjuna (Arjun sadad)	3	180 >	8 mt.
		Ficus hispida (Dhedh Umaro)	1	60.9	4 mt.
		Kigelia pinnata (Nani padar)	1	90.12	4 mt.
		Terminalia kadappa (Badam)	1	30.6	3 mt.
		Leucaena leucocephala (Subabul)	1	30.6	3 mt.
		Bauhinea racemosh (Ashidro)	1	30.6	3 mt.
		Delonix regia (Gulmahor)	1	30.6	6 to 8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	90.12	
			2		
			241		
12	Hansapor	Acacia nilotica (Babul)	2	30.6	8 to 10 mt.
			8	60.9	
			9	90.12	
			12	120.15	
			6	180 >	
			37		
		Azadirectifa indica (Neem-Kamado)	1	30.6	8 to 10 mt.
			2	60.9	
			1	90.12	
			2	150.18	
			6		
		Mangifera indica (Mango-Ambo)	2	60.9	6 to 8 mt.
			1	150.18	
			2	180 >	
			5		
		Madhuka indica (Mahudo)	1	90.12	6 to 7 mt.
			1	120.15	
			2		
		Prosophis cinereria (Khijado-Samadi)	1	90.12	5 mt.
		Borassus fiabeilifer (Tad)	2	60.9	8 to 10 mt.
			1	120.15	
			3		
		Peltophorum ferrugenium (Sonmanor)	1	150.18	8 mt.
		Polyanthia longifera (Asopalav)	1	30.6	4 mt.
		Temerindus indica (Amali)	1	180 >	8 mt.
		Pithecellobium dulce (Mithi Amali)	3	30.6	6 mt.
			2	90.12	
			5		
		Zifyphus mauritiane (Boradi)	2	30.6	3 mt.
		Bombax Ceiba (Shimalo)	1	30.6	8 to 10 mt.
			1	60.9	
			1	90.12	
			2	120.15	
			5		
		Ficus religiosa (Pipal)	1	180 >	8 mt.
		Tectona garndis (Teak-sag)	2	60.9	6 to 8 mt.
			2	90.12	
			4		
		Albizia lebbeck (Kalo sires)	1	90.12	8 to 10 mt.
			1	120.15	
			2		
		Ehcalyptus teriticornis (Nilgiri)	1	60.9	6 to 8 mt.
			1	120.15	
			2		
		Termenalia arjuna (Arjun sadad)	5	180 >	12 mt.
		Acacia catechue (Khair)	1	60.9	4 mt.
		Ficus racemosa (Umero)	1	120.15	5 mt.
			85		
13	Vejalpur	Cassia Siemea (Rain tree)	1	30.6	4 mt.
			1	90.12	
			2		
		Derris indica	1	30.6	4 mt.
			1	60.9	
			2		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Ficus religiosa (Pipal)	3	30.6	6 to 8 mt.
			2	60.9	
			2	120.15	
			2	180 >	
			9		
		Azadirectifa indica (Neem-Kamado)	1	30.6	6 mt.
			1	90.12	
			2		
		Moringa oleifera (Sargavo)	1	60.9	6 mt.
			1	120.15	
			2		
		Ficus benghalensis (vad)	4	180 >	10 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	60.9	8 to 10 mt.
			1	90.12	
			19	120.15	
			26	150.18	
			11	180 >	
			58		
		Acacia auticuliformis (Bengali baval)	1	150.18	6 mt.
		Albizia lebbeck (Kalo sires)	1	30.6	4 mt.
			81		
14	Navsari	Pithecellobium dulce (Mithi Amali)	1	30.6	4 mt.
		Thespsia populnea (Paper pipalo)	1	90.12	5 mt.
		Delonix regia (Gulmahor)	1	60.9	6 to 8 mt.
			1	90.12	
			1	120.15	
			1	180 >	
			4		
		Termenalia arjuna (Arjun sadad)	1	30.6	3 mt.
		Peltophorum ferrugenium (Sonmanor)	1	90.12	4 to 6 mt.
			2	180 >	
			3		
		Albizia lebbeck (Kalo sires)	1	30.6	4 mt.
			1	60.9	
			2		
		Ficus benghalensis (vad)	1	180 >	10 mt.
		Acacia auticuliformis (Bengali baval)	2	60.9	4 mt.
		Ehcalyptus teriticornis (Nilgiri)	1	120.15	4 mt.
		Cassia Siemea (Rain tree)	1	30.6	4 mt.
			2	90.12	
			3		
		Acacia nilotica (Babul)	5	30.6	8 to 10 mt.
			19	60.9	
			15	90.12	
			5	120.15	
			44		
			63		
15	Veravan	Cassia Siemea (Rain tree)	1	180 >	10 mt.
		Cordia dichotma (Gundo)	2	90.12	8 to 10 mt.
			1	150.18	
			1	180 >	
			4		
		Ficus benghalensis (Vad)	2	180 >	10 mt.
		Acacia nilotica (Babul)	3	60.9	6 to 8 mt.
			1	90.12	
			4		
		Acacia auticuliformis (Bengali baval)	1	90.12	4 mt.
		Prosophis cinereria (Khijado-Samadi)	2	30.6	4 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Afadirecuta indica (Neem)	1	60.9	4 mt.
			15		
16	Tavdi	Bombax Ceiba (Shimalo)	1	30.6	8 to 10 mt.
			1	60.9	
			13	90.12	
			8	120.15	
			23		
		Acacia nilotica (Babul)	1	30.6	4 to 6 mt.
			1	60.9	
			4	90.12	
			6		
		Ficus benghalensis (Vad)	1	150.18	10 mt.
			1	180 >	
			2		
		Mangifera indica (Mango-Ambo)	2	60.9	6 to 8 mt.
			1	90.12	
			1	120.15	
			4		
		Delonix regia (Gulmahor)	1	150.18	6 mt.
		Afadirecuta indica (Neem)	2	30.6	5 mt.
			1	60.9	
			3		
		Zifyphus mauritiane (Boradi)	1	30.6	4 mt.
			40		
17	Maroli	Afadirecuta indica (Neem)	4	30.6	8 to 10 mt.
			1	60.9	
			2	150.18	
			1	180 >	
			8		
		Bombax Ceiba (Shimalo)	9	30.6	8 to 10 mt.
			8	60.9	
			1	90.12	
			18		
		Ehcalyptus teriticornis (Nilgiri)	1	30.6	10 to 12 mt.
			1	60.9	
			4	120.15	
			1	150.18	
			1	180 >	
			8		
		Acacia nilotica (Babul)	4	30.6	10 to 12 mt.
			8	60.9	
			1	90.12	
			1	150.18	
			14		
		Ficus religiosa (Pipal)	1	60.9	6 mt.
		Prosophis cinereria (Khijado-Samadi)	1	30.6	6 mt.
			1	60.9	
			2		
		Peltophorum ferrugenium (Sonmanor)	1	60.9	8 mt.
			1	180 >	
			2		
		Cassia Siemea (Rain tree)	1	180 >	8 mt.
		Thespsia populnea (Paper pipalo)	1	30.6	4 mt.
		Kigelia pinnata (Nani padar)	1	150.18	6 mt.
		Kigelia pinnata (Nani padar)	7	30.6	4 mt.
			1	60.9	
			8		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Moringa oleifera (Sargavo)	1	30.6	4 mt.
		Ficus benghalensis (Vad)	1	60.9	3 mt.
		Mangifera indica (Mango-Ambo)	1	30.6	4 mt.
			2	60.9	
			3		
		Temerindus indica (Amali)	2	90.12	6 mt.
		Cordia dichotma (Gundo)	1	180 >	10 mt.
		Delonix regia (Gulmahor)	1	30.6	4 mt.
		Acacia auticuliformis (Bengali baval)	1	30.6	4 mt.
			74		
Total number of target trees for compensation					

District Valsad

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Govada	Cocos nucifera (Nariyeli)	9	60.9	12 to 15 mt.
			23	90.12	
			3	120.15	
			2	150.18	
			1	180 >	
			38		
		Mangifera indica (Mango-Ambo)	4	30.6	8 to 10 mt.
			11	60.9	
			5	90.12	
			20		
		Tectona grandis (Teak - sag)	4	30.6	10 to 11 mt.
			4	60.9	
			5	90.12	
			13		
		Phoenix xylvestris (Khajuri)	2	60.9	8 to 10 mt.
			1	90.12	
			1	120.15	
			4		
		Leucaena leucocephala (Subabul)	1	30.6	5 mt.
			3	60.9	
			4		
		Mudhuca indica (Mahudo)	1	90.12	8 mt.
			2	180 >	
			3		
		Pithecellobium dulce (Mithi Amali)	1	60.9	6 mt.
			2	90.12	
			3		
		Ficus racemosa (Umero)	2	90.12	7 mt.
			1	180 >	
			3		
		Azadirachta indica (Neem-Limado)	1	30.6	10 to 12 mt.
			1	90.12	
			2	180 >	
			4		
		Manilkara zapota (Chiku)	7	30.6	5 mt.
			2	60.9	
			9		
		Moringa oleifera (Saragavo)	2	60.9	4 mt.
			1	90.12	
			3		
		Bombex ceiba (Shimalo)	1	30.6	4 mt.
		Albizia procera (Safed sires)	1	90.12	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	150.18	
			2		
		Cordia dicotoma (Gunda)	1	60.9	4 mt.
		Thespsia populnea (Paper pipalo)	1	60.9	4 mt.
		Darlbergia sissoo (Shisoo)	2	60.9	5 mt.
		Prosophis juliflora (Gando baval)	1	60.9	3 mt.
		Zizyphus mauritiane (Boradi)	2	90.12	4 mt.
		Grewia tiliaefolia (Dhaman)	1	60.9	6 mt.
			1	150.18	
			2		
		Terminalia balfirica (Behdo)	1	90.12	6 mt.
		Artocarpus heterophyllas (Phanas)	1	30.6	5 mt.
		Bauhinia racemosa (Ashitro)	1	60.9	4 mt.
		Cordia gharaf (Gundi)	1	90.12	4 mt.
		Total :	**120**		
2	Dahud	Tectona grandis (Teak - sag)	40	30.6	10 to 12 mt.
			53	60.9	
			17	90.12	
			2	150.18	
			1	180 >	
			113		
		Manilkara zapota (Chiku)	26	30.6	6 mt.
			35	60.9	
			21	90.12	
			82		
		Cocos nucifera (Nariyeli)	6	30.6	12 to 15 mt.
			17	90.12	
			3	120.15	
			1	150.18	
			27		
		Tamaindus indica (Amali)	1	60.9	6 mt.
		Acacia auriculiformis (Bengoli baval)	2	60.9	4 mt.
			1	90.12	
			1	180 >	
			4		
		Ficus benghalensis (Vad)	1	120.15	15 mt.
			1	150.18	
			9	180 >	
			11		
		Leucaena leucocephala (Subabul)	1	60.9	4 mt.
		Azadirachta indica (Neem-Limado)	1	90.12	5 mt.
		Careya arborea (Kumbhi)	1	90.12	6 mt.
			1	180 >	
			2		
		Butea monosperma (Khakharo)	1	60.9	4 mt.
		Casuarina eqisetifolia (Sharu)	3	30.6	8 mt.
			3	60.9	
			2	90.12	
			8		
		Ficus racemosa (Umero)	1	90.12	10 mt.
			1	180 >	
			2		
		Grewia tiliaefolia (Dhaman)	1	60.9	6 mt.
			1	90.12	
			2		
		Bombex ceiba (Shimalo)	1	90.12	6 mt.
			1	180 >	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2		
		Madhuca indica (Mahudo)	1	150.18	12 mt.
			1	180 >	
			2		
		Moringa oleifera (Saragavo)	1		
		Phoenix xylvstris (Khajuri)	1	90.12	12 mt.
			1	150.18	
			2		
		Pithecellobium dulce (Mithi Amali)	1	150.18	6mt.
			1	180 >	
			2		
		Acacia nilotica (Babul)	1	180 >	6 mt.
		Mangifera indica (Mango-Ambo)	1	30.6	8 mt.
			2	60.9	
			3	150.18	
			6		
		Gmelina arborea (Sivan)	1	30.6	4 mt.
		Total :	**272**		
3	Humaran	Phoenix xylvstris (Khajuri)	13	60.9	15 to 16 mt.
			19	150.18	
			32		
		Cocos nucifera (Nariyeli)	13	60.9	16 to 18 mt.
			48	90.12	
			1	120.15	
			62		
		Manilkara zapota (Chiku)	7	60.9	6 to 8 mt.
			20	90.12	
			27		
		Azadirachta indica (Neem-Limado)	1	30.6	8 to 10 mt.
			1	90.12	
			1	180 >	
			3		
		Pithecellobium dulce (Mithi Amali)	1	120.15	6 mt.
		Zizyphus mauritiana (Boradi)	1	90.12	4 mt.
		Thespsia populnea (Paper pipalo)	5	60.9	5 mt.
			1	90.12	
			6		
		Bombex ceiba (Shimalo)	1	60.9	6 mt.
			1	90.12	
			2		
		Tamarindus indica (Amali)	1	90.12	4 mt.
		Tectona grandis (Teak - sag)	3	30.6	10 mt.
			12	60.9	
			2	90.12	
			17		
		Ficus racemosa (Umero)	1	60.9	5 mt.
		Acacia auriculiformis (Bengoli baval)	1	30.6	3 mt.
		Adanspnia digitata (Chormalo-Rukhado)	2	180 >	8 mt.
		Grewia tiliaefolia (Dhaman)	1	30.6	4 mt.
		(Marveli)	1	60.9	8 mt.
			1	150.18	
			2		
		Acacia nilotica (Babul)	1	60.9	6 mt.
		Ehcalyptus tereticornis (Nilgiri)	6	60.9	12 mt.
			13	90.12	
			4	120.15	
			1	150.18	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			4	180 >	
			28		
		Ficus religiosa (Pipalo)	1	150.18	8 mt.
		Total :	**189**		
4	Solsumbe	Grewia tiliaefolia (Dhaman)	6	30.6	8 mt.
			3	60.9	
			1	90.12	
			10		
		Azadirachta indica (Neem-Limado)	2	30.6	6 mt.
			3	90.12	
			5		
		Gmelina arborea (Sivan)	1	30.6	4 mt.
		Acacia nilotica (Babul)	3	30.6	10 mt.
			3	60.9	
			2	90.12	
			8		
		Acacia auriculiformis (Bengoli baval)	5	30.6	6 mt.
			7	90.12	
			12		
		Mangifera indica (Mango-Ambo)	1	30.6	10 mt.
			1	60.9	
			4	90.12	
			2	120.15	
			1	150.18	
			12	180 >	
			21		
		Tamarindus indica (Amali)	1	120.15	12 mt.
			1	180 >	
			2		
		Cordia dicotoma (Gunda)	1	30.6	5 mt.
		Ficus benghalensis (Vad)	1	60.9	10 mt.
			1	90.12	
			1	180 >	
			3		
		Pongamia pinnata (Karanj)	2	30.6	8 mt.
			1	60.9	
			1	90.12	
			1	150.18	
			5		
		Bombex ceiba (Shimalo)	1	30.6	5 mt.
		Albizia lebbeck (Sires)	2	60.9	6 mt.
			1	90.12	
			1	180 >	
			4		
		Zizyphus mauritiana (Boradi)	1	60.9	5 mt.
		Cocos nucifera (Nariyeli)	2	60.9	10 mt.
		Artocarpus heterophyllas (Phanas)	1	60.9	6 mt.
		Delonix regia (Gulmahor)	1	60.9	5 mt.
		Phoenix xylvestris (Khajuri)	7	60.9	12 mt.
			4	90.12	
			11		
		Ficus racemosa (Umero)	1	180 >	10 mt.
		Tectona grandis (Teak - sag)	2	30.6	6 mt.
		Albizia procera (Safed sires)	1	60.9	6 mt.
		Pithecellobium dulce (Mithi Amali)	1	150.18	6 mt.
		Erythrina variegata (Pongaro)	2	90.12	6 mt.
		Total :	**96**		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
5	Sanjan	Tectona grandis (Teak - sag)	7	30.6	6 mt.
			17	60.9	
			24		
		Cocos nucifera (Nariyeli)	3	60.9	6 mt.
			31	90.12	
			1	120.15	
			35		
		Manilkara zapota (Chiku)	5	30.6	6 mt.
			1	60.9	
			3	90.12	
			9		
		Azadirachta indica (Neem-Limado)	1	60.9	8 mt.
			1	90.12	
			1	150.18	
			2	180 >	
			5		
		Ficus benghalensis (Vad)	1	150.18	10 mt.
		Tamaindus indica (Amali)	1	30.6	12 mt.
			3	60.9	
			1	90.12	
			1	150.18	
			3	180 >	
			9		
		Mangifera indica (Mango-Ambo)	3	60.9	10 mt.
			5	90.12	
			1	120.15	
			2	150.18	
			6	180 >	
			17		
		Casuarina eqisetifolia (Sharu)	1	90.12	8 mt.
			1	120.15	
			2		
		Phoenix xylvestris (Khajuri)	1	30.6	10 mt.
			2	60.9	
			2	90.12	
			5		
		Pithecellobium dulce (Mithi Amali)	1	30.6	6 mt.
			1	60.9	
			2	90.12	
			4		
		Bombex ceiba (Shimalo)	1	60.9	8 mt.
			2	180 >	
			3		
		Ehcalyptus tereticornis (Nilgiri)	3	30.6	10 mt.
			1	60.9	
			1	90.12	
			5		
		Grewia tiliaefolia (Dhaman)	1	30.6	6 mt.
			2	60.9	
			3		
		Aillanthus excelsa (Saragavo)	2	30.6	5 mt.
			1	60.9	
			1	90.12	
			4		
		Zizyphus mauritiana (Boradi)	1	30.6	4 mt.
			2	60.9	
			3		
		Albizia lebbeck (Sires)	2	60.9	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2	180 >	
			4		
		(Marveni)	1	90.12	6 mt.
		Artocarpus heterophyllas (Phanas)	1	180 >	10 mt.
		Terminalia digitata (Badam)	2	60.9	6 mt.
			1	90.12	
			3		
		Adansonia digitata (Chormalo-Rukhado)	1	180 >	10 mt.
		Ficus racemosa (Umero)	1	120.15	9 mt.
		Polyalthia longifolia (Asopalav)	1	60.9	5 mt.
		Acacia nilotica (Babul)	1	30.6	10 mt.
			1	60.9	
			2		
		Borassus flabellifer (Tad)	1	150.18	12 mt.
		Leucaena leucocephala (Subabul)	3	30.6	6 mt.
			1	60.9	
			4		
		Arayceria columnaris (X'mas tree)	1	60.9	8 mt.
		Acacia auriculiformis (Bengali baval)	1	60.9	5 mt.
		Total :	**150**		
6	Tumb	Ehcalyptus tereticornis (Nilgiri)	67	30.6	10 to 12 mt.
			23	60.9	
			10	90.12	
			2	120.15	
			2	150.18	
			104		
		Cocos nucifera (Nariyeli)	14	60.9	12 mt.
			17	90.12	
			31		
		Terminalia arjuna (Sadad)	10	30.6	10 mt.
			2	60.9	
			12		
		Leucaena leucocephala (Subabul)	3	30.6	6 mt.
		Casuarina eqisetifolia (Sharu)	193	30.6	12 to 13 mt.
			3	60.9	
			2	90.12	
			198		
		Azadirachta indica (Neem-Limado)	1	30.6	10 mt.
			1	60.9	
			1	90.12	
			1	150.18	
			2	180 >	
			6		
		Pongamia pinnata (Karanj)	1	30.6	5 mt.
		Manilkara zapota (Chiku)	4	60.9	6 mt.
			4	90.12	
			1	180 >	
			9		
		Tamarindus indica (Amali)	2	60.9	6 mt.
		Acacia auriculiformis (Bengoli baval)	5	30.6	6 mt.
			2	60.9	
			7		
		Syzygium cumini (Jamun)	2	30.6	8 mt.
			4	60.9	
			4	90.12	
			10		
		Bauhinia racemosa (Ashitro)	1	60.9	5 mt.
		Phoenix xylvestris (Khajuri)	4	30.6	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Anogeissus latifolia (Dhavado)	1	60.9	6 mt.
			1	180 >	
			2		
		Terminalia bellirica (Behado)	2	30.6	8 mt.
			2	60.9	
			1	150.18	
			5		
		Pithecellobium dulce (Mithi Amali)	1	30.6	5 mt.
		Butea monosperma (Khakharo)	3	30.6	6 mt.
			1	60.9	
			4		
		Steaulia urens (Kadayo)	1	60.9	6 mt.
		Anacardium occidentale (Kaju)	1	90.12	6 mt.
		Casuarina eqisetifolia (Sharu)	2	30.6	6 mt.
		Leucaena leucocephala (Subabul)	1	30.6	5 mt.
		Delonix regia (Gulmahor)	1	60.9	8 mt.
			1	90.12	
			1	120.15	
			3		
		Tectona grandis (Teak - sag)	4	30.6	6 mt.
		Madhuca indica (Mahudo)	1	150.18	10 mt.
		Ficus benghalensis (Vad)	1	90.12	12 mt.
			1	150.18	
			4	180 >	
			6		
		Mangifera indica (Mango-Ambo)	9	60.9	10 mt.
			10	90.12	
			1	120.15	
			2	150.18	
			4	180 >	
			26		
		Bombex ceiba (Shimalo)	1	30.6	8 mt.
			1	150.18	
			2		
		Albizia lebbeck (Sires)	1	150.18	10 mt.
			1	180 >	
			2		
		Peltophonam ferrugenium (Peltophoram)	1	120.15	12 mt.
			1	150.18	
			3	180 >	
			5		
		Darlbergia sissoo (Shisoo)	1	30.6	8 mt.
			1	60.9	
			1	150.18	
			3		
		Albizia procera (Safed sires)	1	90.12	6 mt.
		Grewia tiliaefolia (Dhaman)	1	90.12	7 mt.
		Phoenix xylvestris (Khajuri)	1	30.6	12 mt.
			8	60.9	
			3	90.12	
			12		
		Manilkara hexandra (Rayan)	1	90.12	8 mt.
		Acacia catechu (Khair)	1	30.6	6 mt.
		Total :	**473**		
7	Malav	Casuarina eqisetifolia (Sharu)	182	30.6	6 mt.
		Acacia auriculiformis (Bengoli baval)	2	30.6	5 mt.
		Erythrina variegata (Pongaro)	1	30.6	6 mt.
		Manilkara hexandra (Rayan)	2	30.6	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Acacia catechu (Khair)	1	90.12	6 mt.
		Careya arborea (Kumbhi)	1	90.12	10 mt.
			1	120.15	
			2		
		Adansonia digitata (Chormalo-Rukhado)	1	180 >	12 mt.
		Tamaindus indica (Amali)	1	180 >	12 mt.
		Azadirachta indica (Neem-Limado)	1	150.18	15 mt.
			3	180 >	
			4		
		Mangifera indica (Mango-Ambo)	1	150.18	8 mt.
		Leucaena leucocephala (Subabul)	1	30.6	6 mt.
		Syzygium cumini (Jamun)	1	60.9	7 mt.
		Ficus benghalensis (Vad)	1	180 >	15 mt.
		Tectona grandis (Teak - sag)	2	30.6	6 mt.
		Pithecellobium dulce (Mithi Amali)	1	60.9	5 mt.
		Sterulia urens (Kadayo)	1	90.12	8 mt.
		Total :	**204**		
8	Dehali	Acacia auriculiformis (Bengoli baval)	23	30.6	8 mt.
			2	60.9	
			3	150.18	
			28		
		Phoenix xylvstris (Khajuri)	8	60.9	12 mt.
			2	90.12	
			10		
		Tectona grandis (Teak - sag)	7	30.6	8 mt.
			1	60.9	
			8		
		Cocos nucifera (Nariyeli)	1	60.9	8 mt.
		Ailenthus excelsa (Araduso)	2	30.6	6 mt.
			1	60.9	
			3		
		Pithecellobium dulce (Mithi Amali)	2	30.6	10 mt.
			2	60.9	
			2	90.12	
			6		
		Grewia tiliaefolia (Dhaman)	2	30.6	6 mt.
		Syzygium cumini (Jamun)	1	60.9	7 mt.
			1	180 >	
			2		
		Ficus racemosa (Umero)	1	120.15	8 mt.
			1	180 >	
			2		
		Madhuca indica (Mahudo)	1	90.12	8 mt.
		Gremeline arborea (Seven)	1	60.9	8 mt.
			1	90.12	
			2		
		Tamaindus indica (Amali)	1	30.6	12 mt.
			1	150.18	
			3	180 >	
			5		
		Garuge pinnata (Kakad)	1	60.9	8 mt.
			1	150.18	
			2		
		Mangifera indica (Mango-Ambo)	1	30.6	10 mt.
			2	90.12	
			1	120.15	
			1	180 >	
			5		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Ficus benghalensis (Vad)	2	180 >	15 mt.
		Azadirechta indica (Neem-Limado)	1	30.6	10 mt.
			1	60.9	
			1	90.12	
			3		
		Bombex ceiba (Shimalo)	1	60.9	10 mt.
			2	90.12	
			3		
		Ehcalyptus tereticornis (Nilgiri)	1	60.9	10 mt.
		Cassia siamea (Kashid)	1	30.6	6 mt.
		Delonix regia (Gulmahor)	1	30.6	5 mt.
		Acacia nilotica (Babul)	1	60.9	6 mt.
		Albizia lebbeck (Sires)	1	180 >	12 mt.
		Leucaena leucocephala (Subabul)	1	90.12	10 mt.
		Thespsia populnea (Paper pipalo)	1	60.9	6 mt.
		Erythrina variegata (Pongaro)	1	30.6	6 mt.
		Total :	**90**		
Total number of target trees for compensation					

District Valsad

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Bhilad	Pithecellobium dulce (Mithi Amali)	1	30.6	6 to 7 mt.
			1	60.9	
			5	120.15	
			7		
		Mangifera indica (Mango-Ambo)	4	90.12	6 to 10 mt.
			4	120.15	
			2	150.18	
			2	180 >	
			12		
		Leucaena leucocephala (Subabul)	4	60.9	6 to 7 mt.
			1	120.15	
			5		
		Grewia tiliaefolia (Dhaman)	1	30.6	5 to 6 mt.
			3	60.9	
			4		
		Ficus religiosa (Pipal)	1	90.12	8 to 10 mt.
			1	180 >	
			2		
		Bombax ceiba (Shimalo)	6	30.6	8 to 10 mt.
			2	60.9	
			1	90.12	
			9		
		Thespsia populnea (Paper pipalo)	**1**	30.6	5 mt.
		Tectona grandis (Teak - sag)	4	30.6	6 to 8 mt.
			1	30.9	
			5		
		Ehcalyptus teriticornis (Nilgiri)	1	60.9	8 to 10 mt.
			1	90.12	
			1	120.15	
			3		
		Darlbergia sissoo (Shisoo)	1	60.9	5 to 7 mt.
			1	90.12	
			2	120.15	
			4		
		Ficus racemosa (Umero)	**1**	120.15	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Afadirecuta indica (Neem)	**2**	120.15	10 mt.
		Temerindus indica (Amali)	2	120.15	10 mt.
			2	180 >	
			4		
		Terminalia arjuna (Arjun Sadad)	**1**	180 >	12 mt.
		Dulbergia latifolia (Shisham)	**1**	30.6	4 mt.
		Zifyphus mauritiane (Boradi)	2	60.9	5 to 6 mt.
			1	90.12	
			3		
		Phenolix delcifera (Khajuri)	2	60.9	5 mt.
		Ficus hispida (Dhedh umaro)	1	30.6	3 mt.
			67		
2	Karambeli	Leucaena leucocephala (Subabul)	1	30.6	6 to 7 mt.
			3	90.12	
			1	120.15	
			5		
		Darlbergia sissoo (Shisoo)	2	30.6	5 to 6 mt.
			1	60.9	
			3		
		Butea monosperma (Khakharo)	1	180 >	5 mt.
		Albizia lebbeck (Kalo sires)	3	30.6	5 to 6 mt.
			1	60.9	
			4		
		Grewia tiliaefolia (Dhaman)	1	30.6	5 to 6 mt.
			2	60.9	
			1	90.12	
			4		
		Phenolix delcifera (Khajuri)	3	30.6	5 to 6 mt.
			5	60.9	
			8		
		Mangifera indica (Mango-Ambo)	3	90.12	4 to 6 mt.
			1	120.15	
			2	150.18	
			7	180 >	
			13		
		Acacia catechu (Khair)	2	120.15	6 to 8 mt.
			1	150.18	
			3		
		Afadirecuta indica (Neem)	1	60.9	6 to 8 mt.
			1	180 >	
			2		
		Temerindus indica (Amali)	1	150.18	8 mt.
		Pithecellobium dulce (Mithi Amali)	1	60.9	5 to 6 mt.
			1	90.12	
			1	120.15	
			3		
		Ficus religiosa (Pipal)	1	30.6	6 to 8 mt.
			2	180 >	
			3		
		Cocoas nucifera (Coconut)	1	60.9	8 to 10 mt.
		Bombax ceiba (Shimalo)	1	30.6	8 to 10 mt.
			5	60.9	
			2	120.15	
			8		
		Polyatthia longifolia (Asopalav)	1	30.6	5 to 6 mt.
			1	120.15	
			2		
		Tectona grandis (Teak - sag)	1	90.12	8 to 10 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	120.15	
			2	180 >	
			4		
		Acacia nilotica (Babul)	1	60.9	4 mt.
		Zifyphus mauritiane (Boradi)	1	60.9	4 mt.
		Miringa oleifwera (Saragavo)	1	60.9	5 mt.
		Cassia siamea (Rain tree)	6	60.9	6 to 8 mt.
			74		
3	Valvad	Cassia siamea (Rain tree)	1	120.15	6 to 8 mt.
			1	180 >	
			2		
		Mangifera indica (Mango-Ambo)	2	30.6	5 to 6 mt.
			4		
			7		
			2		
			1	120.15	
			16		
		Moringa oleifera (Saragavo)	1	60.9	5 mt.
		Cordia dictoma (Gundo)	1	180 >	8 mt.
		Acacia nilotica (Babul)	3	60.9	8 to 10 mt.
		Ficus benghalensis (Vad)	5	180 >	10 to 12 mt.
		Bombax ceiba (Shimalo)	2	30.6	6 to 8 mt.
			21	60.9	
			1	90.12	
			1	120.15	
			25		
		Ehcalyptus teriticornis (Nilgiri)	1	60.9	6 to 7 mt.
			3	150.18	
			10	180 >	
			14		
		Leucaena leucocephala (Subabul)	1	120.15	10 mt.
		Casuarina eqisetifolia (Sheru)	1	90.12	6 mt.
		Sterulia urens (Kadayo)	1	60.9	6 to 8 mt.
			1	180 >	
			2		
			71		
4	Vapi	Ficus benghalensis (Vad)	1	60.9	10 to 12 mt.
			2	180 >	
			3		
		Acacia auriculifolia (Bengoli baval)	1	60.9	4 mt.
		Bombax ceiba (Shimalo)	6	60.9	8 to 10 mt.
			2	90.12	
			2	120.15	
			2	150.18	
			12		
		Ehcalyptus teriticornis (Nilgiri)	10	60.9	6 to 8 mt.
			7	90.12	
			1	180 >	
			18		
		Prosophis juliflora (Gando baval)	2	60.9	6 mt.
		Leucaena leucocephala (Subabul)	1	30.6	5 to 6 mt.
			2	60.9	
			2	90.12	
			5		
		Peltophorum ferrugenium (Sonmanor)	1	60.9	6 to 8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	90.12	
			2		
		Pithecellobium dulce (Mithi Amali)	1	90.12	6 mt.
		Casuarina eqisetifolia (Sheru)	3	30.6	6 to 8 mt.
			6	60.9	
			1	90.12	
			10		
		Acacia nilotica (Babul)	1	90.12	6 to 8 mt.
			2	120.15	
			1	150.18	
			4		
		Mangifera indica (Mango-Ambo)	1	60.9	6 mt.
		Temerindus indica (Amali)	1	180 >	8 mt.
			60		
5	Orvad	Ceiba pentex	1	90.12	6 to 8 mt.
			1	120.15	
			2		
		Acacia nilotica (Babul)	1	90.12	6 mt.
		Bombax ceiba (Shimalo)	1	60.9	5 mt.
		Ehcalyptus teriticornis (Nilgiri)	2	180 >	8 to 10 mt.
			6		
6	Rentlav	Ehcalyptus teriticornis (Nilgiri)	11	60.9	8 to 10 mt.
			10	90.12	
			3	120.15	
			8	150.18	
			6	180 >	
			38		
		Bombax ceiba (Shimalo)	1	60.9	4 mt.
		Casuarina eqisetifolia (Sheru)	2	30.6	6 to 8 mt.
			21	60.9	
			7	90.12	
			2	150.18	
			32		
		Peltophorum ferrugenium (Sonmanor)	2	180 >	8 mt.
		Pithecellobium dulce (Mithi Amali)	1	60.9	4 mt.
		Mangifera indica (Mango-Ambo)	1	120.15	6 to 7 mt.
			2	150.18	
			6	180 >	
			9		
		Afadirecuta indica (Neem)	2	120.15	8 mt.
		Cassia siamea (Rain tree)	2	180 >	6 mt.
		Acacia nilotica (Babul)	2	90.12	
			1	120.15	
			3		
		Acacia auriculifolia (Bengoli baval)	3	30.6	4 to 6 mt.
			60	60.9	
			13	90.12	
			3	120.15	
			1	150.18	
			80		
		Ficus religiosa (Pipal)	1	150.18	10 mt.
			171		
7	Motiwada	Acacia auriculifolia (Bengoli baval)	4	30.6	4 to 6 mt.
			5	60.9	
			8	90.12	
			3	120.15	
			20		
		Cassia siamea (Rain tree)	1	30.6	6 to 8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	60.9	
			1	90.12	
			1	120.15	
			1	150.18	
			5		
		Terminelia kudappa (Badam)	1	120.15	8 to 10 mt.
			1	180 >	
			2		
		Delonix regia (Gulmahor)	1	60.9	6 to 8 mt.
			1	90.12	
			2	120.15	
			4		
		Peltophorum ferrugenium (Sonmanor)	1	120.15	8 mt.
		Mangifera indica (Mango-Ambo)	2	90.12	6 mt.
		Bombax ceiba (Shimalo)	1	30.6	8 mt.
			1	120.15	
			2		
		Adansonia digitata (Ragat rohido)	2	180 >	6 mt.
		Ehcalyptus teriticornis (Nilgiri)	5	60.9	8 to 10 mt.
			18	90.12	
			15	120.15	
			6	150.18	
			1	180 >	
			45		
		Casuarina eqisetifolia (Sheru)	5	30.6	8 to 10 mt.
			60	60.9	
			12	90.12	
			1	120.15	
			2	150.18	
			80		
		Manilkara zapota (Chiku)	1	30.6	
			164		
8	Umarsadi	Ficus benghalensis (Vad)	1	120.15	10 mt.
		Afadirecuta indica (Neem)	1	30.6	6 mt.
			1	90.12	
			2		
		Acacia nilotica (Babul)	4	90.12	8 mt.
		Mangifera indica (Mango-Ambo)	1	90.12	6 mt.
			2	120.15	
			3		
		Syzygium cumini (Jamun)	1	90.12	8 mt.
			2	150.18	
			3		
		Casuarina eqisetifolia (Sheru)	3	90.12	6 mt.
		Bombax ceiba (Shimalo)	1	30.6	4 mt.
		Gmelina arborea (Seven)	1	30.6	4 mt.
		Albizia procera (Safed sires)	1	30.6	6 mt.
			19		
9	Pardi	Acacia nilotica (Babul)	1	90.12	6 mt.
			1	150.18	
			1	180 >	
			3		
		Ehcalyptus teriticornis (Nilgiri)	1	120.15	8 mt.
			1	150.18	
			2		
		Bombax ceiba (Shimalo)	3	30.6	6 mt.
			1	90.12	
			4		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Delberfia latifolia (Shisham)	1	60.9	8 mt.
			1	90.12	
			1	120.15	
			3		
		Ficus benghalensis (Vad)	1	180 >	12 mt.
		Prosophis cineraia (Khijado)	3	90.12	8 mt.
			16		
10	Hariya	Ehcalyptus teriticornis (Nilgiri)	2	90.12	8 to 10 mt.
			3	120.15	
			4	150.18	
			1	180 >	
			10		
		Acacia nilotica (Babul)	1	60.9	5 mt.
			11		
11	Atul	Ficus benghalensis (Vad)	1	150.18	12 mt.
			2	180 >	
			3		
		Leucaena leucocephala (Subabul)	5	30.6	6 mt.
			1	60.9	
			6		
		Bombax ceiba (Shimalo)	1	30.6	6 mt.
			1	60.9	
			2		
		Prosophis cineraia (Khijado)	1	120.15	8 mt.
			1	150.18	
			2		
		Acacia nilotica (Babul)	1	90.6	4 mt.
			14		
12	Dived	Ficus benghalensis (Vad)	2	150.18	10 mt.
			2	180 >	
			4		
		Leucaena leucocephala (Subabul)	2	30.6	6 mt.
			6	60.9	
			8		
		Cordia dictoma (Gundo)	1	30.6	4 mt.
		Afadirecuta indica (Neem)	2	30.6	4 mt.
		Temerindus indica (Amali)	1	180 >	12 mt.
			16		
13	Maghod	Leucaena leucocephala (Subabul)	4	30.6	4 mt.
		Afadirecuta indica (Neem)	1	60.9	4 mt.
		Cordia dictoma (Gundo)	1	60.9	6 mt.
			1	90.12	
			2		
			7		
14	Pardi parnera	Polyatthia longifolia (Asopalav)	2	30.6	4 mt.
		Bombax ceiba (Shimalo)	2	30.6	4 mt.
			1	60.9	
			3		
		Ficus benghalensis (Vad)	2	30.6	8 to 12 mt.
			1	60.9	
			1	180 >	
			4		
		Casuarina eqisetifolia (Sheru)	14	30.6	4 to 6 mt.
			6	60.9	
			20		
		Acacia nilotica (Babul)	1	30.6	4 mt.
		Afadirecuta indica (Neem)	3	60.9	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Acacia auriculifolia (Bengoli baval)	5	60.9	4 mt.
			2	90.12	
			7		
		Ehcalyptus teriticornis (Nilgiri)	4	30.6	6 to 8 mt.
			3	60.9	
			7		
			47		
15	Vashiyer	Ehcalyptus teriticornis (Nilgiri)	40	30.6	6 to 8 mt.
			22	60.9	
			62		
		Ficus benghalensis (Vad)	2	60.9	8 mt.
			1	90.12	
			3		
		Ficus religiosa (Pipal)	1	60.9	5 mt.
		Bombax ceiba (Shimalo)	2	30.6	6 mt.
			1	60.9	
			3		
		Moringa oleifera (Saragavo)	2	30.6	4 mt.
		Temerindus indica (Amali)	1	180 >	10 to 12 mt.
		Ficus racemosa (Umero)	1	150.18	8mt.
		Pithecellobium dulce (Mithi Amali)	1	30.6	4 mt.
			74		
16	Abhrama 2	Mangifera indica (Mango-Ambo)	3	60.9	6 mt.
			2	90.12	
			5		
		Leucaena leucocephala (Subabul)	1	60.9	6 mt.
			1	120.15	
			2		
		Ficus religiosa (Pipal)	1	60.9	8 mt.
			2	90.12	
			1	120.15	
			2	180 >	
			6		
		Ehcalyptus teriticornis (Nilgiri)	1	30.6	6 to 8 mt.
			1	60.9	
			2		
		Acacia nilotica (Babul)	1	60.9	4 mt.
		Syzygium cumini (Jamun)	1	60.9	4 mt.
		Cassia siamea (Rain tree)	2	90.12	4 to 6 mt.
			1	120.15	
			1	150.18	
			4		
		Afadirecuta indica (Neem)	1	60.9	4 mt.
		Bombax ceiba (Shimalo)	1	60.9	4 mt.
		Pithecellobium dulce (Mithi Amali)	1	60.9	4 mt.
		Ficus racemosa (Umero)	1	90.12	6 mt.
			25		
17	Mograwadi	Acacia nilotica (Babul)	6	30.6	4 mt.
		Casuarina eqisetifolia (Sheru)	1	30.6	3 mt.
		Afadirecuta indica (Neem)	2	30.6	6 to 8 mt.
			5	60.9	
			1	90.12	
			1	120.15	
			9		
			16		
18	Pardi shadpur	Afadirecuta indica (Neem)	3	30.6	6 mt.
			1	60.9	
			3	90.12	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			7		
		Prosophis cineraia (Khijado)	1	30.6	4 mt.
		Bombax ceiba (Shimalo)	2	30.6	8 to 10 mt.
			1	60.9	
			1	150.18	
			1	180 >	
			5		
		Acacia nilotica (Babul)	1	60.9	4 mt.
		Albizia procera (Safed sires)	1	30.6	4 mt.
		Ficus benghalensis (Vad)	1	150.18	8 mt.
		Peltophorum ferrugenium (Sonmanor)	1	60.9	4 mt.
			17		
19	Vejalpur	Thespsia populnea (Paper pipalo)	2	60.9	4 to 5 mt.
			3	90.12	
			5		
		Tectona grandis (Teak - sag)	1	30.6	4 mt.
		Terminelia kudappa (Badam)	1	30.6	3 mt.
		Afadirecuta indica (Neem)	1	30.6	4 mt.
			1	60.9	
			2		
		Cassia siamea (Rain tree)	1	90.12	8 mt.
			1	180 >	
			2		
		Acacia nilotica (Babul)	2	30.6	4 mt.
			13		
20	Lilapur	Afadirecuta indica (Neem)	9	30.6	6 to 8 mt.
			1	60.9	
			1	90.12	
			11		
		Acacia nilotica (Babul)	4	30.6	4 mt.
		Bombax ceiba (Shimalo)	1	60.9	4 mt.
		Prosophis cineraia (Khijado)	1	30.6	3 mt.
		Peltophorum ferrugenium (Sonmanor)	1	30.6	3 mt.
		Cassia siamea (Rain tree)	2	60.9	4 mt.
		Ehcalyptus teriticornis (Nilgiri)	2	30.6	6 mt.
			18	60.9	
			20		
			40		
21	Sarodhi	Ehcalyptus teriticornis (Nilgiri)	8	30.6	6 to 8 mt.
			14	60.9	
			22		
22	Chikhla	Afadirecuta indica (Neem)	2	30.6	
			1	180 >	
			3		
		Leucaena leucocephala (Subabul)	1	30.6	
		Bombax ceiba (Shimalo)	5	30.6	
			1	60.9	
			6		
		Ehcalyptus teriticornis (Nilgiri)	6	30.6	
			26	60.9	
			32		
		Acacia nilotica (Babul)	1	30.6	
			1	60.9	
			2		
		Cassia siamea (Rain tree)	1	150.18	
			45		
23	Shankar	Casuarina eqisetifolia (Sheru)	3	30.6	4 to 5

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
	talav		6	60.9	mt.
			9		
		Prosophis cineraia (Khijado)	2	30.6	4 mt.
			2	60.9	
			4		
		Acacia nilotica (Babul)	9	30.6	5 mt.
			18	60.9	
			27		
		Bombax ceiba (Shimalo)	7	30.6	5 to 6 mt.
			11	60.9	
			1	90.12	
			19		
		Ficus benghalensis (Vad)	3	180 >	10 mt.
		Afadirecuta indica (Neem)	1	30.6	8 to 10 mt.
			2	90.12	
			3		
		Acacia catechu (Khair)	3	60.9	4 mt.
		Leucaena leucocephala (Subabul)	2	60.9	4 mt.
		Cordia dictoma (Gundo)	2	60.9	4 mt.
		Borassus flabellifer (Tad)	2	30.6	6 mt.
		Tectona grandis (Teak - sag)	16	30.6	4 mt.
		Terminelia arjuna (Arjun Sadad)	1	30.6	4 mt.
			1	60.9	
			2		
		Zifyphus mauritiane (Boradi)	1	60.9	4 mt.
		Mathilkara hexandra (Rayan)	1	30.6	6 mt.
		Syzygium cumini (Jamun)	1	60.9	4 mt.
		Cassia siamea (Rain tree)	1	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	1	60.9	4 mt.
			97		
24	Dungari	Afadirecuta indica (Neem)	2	30.6	4 to 6 mt.
			1	60.9	
			1	90.12	
			1	150.18	
			5		
		Leucaena leucocephala (Subabul)	1	30.6	4 to 5 mt.
			1	90.12	
			1	150.18	
			3		
		Cassia siamea (Rain tree)	1	90.12	8 mt.
			1	180 >	
			2		
		Ficus benghalensis (Vad)	3	90.12	8 to 10 mt.
			1	120.15	
			1	180 >	
			5		
		Bombax ceiba (Shimalo)	12	30.6	6 to 8 mt.
			11	60.9	
			1	90.12	
			24		
		Prosophis cineraia (Khijado)	3	30.6	4 to 6 mt.
			1	60.9	
			4		
		Pithecellobium dulce (Mithi Amali)	1	60.9	4 mt.
		Delonix regia (Gulmahor)	1	90.12	5 mt.
		Zifyphus mauritiane (Boradi)	2	30.6	4 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Tectona grandis (Teak - sag)	3	30.6	4 mt.
		Ehcalyptus teriticornis (Nilgiri)	14	60.9	6 to 8 mt.
			5	90.12	
			19		
		Ficus religiosa (Pipal)	1	60.9	8 to 10 mt.
			3	90.12	
			1	120.15	
			1	180 >	
			6		
		Thespsia populnea (Paper pipalo)	1	90.12	4 to 6 mt.
		Manilkara zapota (Chiku)	1	30.6	4 mt.
		Terminelia kudappa (Badam)	1	30.6	4 mt.
		Ficus racemosa (Umero)	1	90.12	6 mt.
		Acacia nilotica (Babul)	7	30.9	4 mt.
		Acacia auriculifolia (Bengoli baval)	1	30.6	4 mt.
			87		
25	Rolla	Mangifera indica (Mango-Ambo)	2	30.6	4 to 6 mt.
			3	60.9	
			5		
		Acacia auriculifolia (Bengoli baval)	17	30.6	4 mt.
			1	60.9	
			18		
		Acacia nilotica (Babul)	4	30.6	4 mt.
			8	60.9	
			12		
		Afadirecuta indica (Neem)	8	30.6	4 mt.
			2	60.9	
			10		
		Prosophis cineraia (Khijado)	1	30.6	4 mt.
			2	60.9	
			3		
		Tamerindus indica (Amali)	1	90.12	5 mt.
		Leucaena leucocephala (Subabul)	5	30.6	5 mt.
			2	60.9	
			7		
		Ficus religiosa (Pipal)	2	30.6	8 mt.
			1	180 >	
			3		
		Ehcalyptus teriticornis (Nilgiri)	2	60.9	6 mt.
		Casuarina eqisetifolia (Sheru)	4	30.6	6 mt.
			6	60.9	
			10		
		Ficus benghalensis (Vad)	2	30.6	8 to 10 mt.
			1	60.9	
			2	90.12	
			1	120.15	
			6		
		Bombax ceiba (Shimalo)	1	30.6	4 mt.
			78		
26	Jeshpor	Casuarina eqisetifolia (Sheru)	4	30.6	6 to 8 mt.
			5	60.9	
			9		
		Polyatthia longifolia (Asopalav)	1	30.6	4 mt.
		Ficus benghalensis (Vad)	1	60.9	6 mt.
		Ficus religiosa (Pipal)	1	60.9	5 mt.
		Ehcalyptus teriticornis (Nilgiri)	3	60.9	6 mt.
		Kigelia pinnata (Nani padar)	2	30.6	4 mt.
		Acacia nilotica (Babul)	2	60.9	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Prosophis cineraia (Khijado)	2	30.6	6 mt.
			3	60.9	
			5		
		Leucaena leucocephala (Subabul)	4	30.6	4 mt.
			28		
27	Olgaon	Prosophis cineraia (Khijado)	2	30.6	4 mt.
		Dalbergin sissoo (Shishoo)	2	30.6	4 mt.
		Ehcalyptus teriticornis (Nilgiri)	19	30.6	6 mt.
			17	60.9	
			36		
			40		
28	Jora vasan	Ehcalyptus teriticornis (Nilgiri)	1	30.6	6 mt.
			6	60.9	
			7		
		Ficus benghalensis (Vad)	1	180 >	10 mt.
		Cassia siamea (Rain tree)	1	90.12	6 mt.
		Ficus religiosa (Pipal)	3	30.6	8 mt.
			1	90.12	
			4		
		Peltophorum ferrugenium (Sonmanor)	2	60.9	6 mt.
		Cassia siamea (Rain tree)	1	30.6	6 mt.
			2	60.9	
			3		
		Afadirecuta indica (Neem)	2	30.6	8 mt.
			1	60.9	
			3		
			21		
Total number of target trees for compensation					

District Thane

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Nighu (36600 - 40000)	Zizyphus mauritiana (Bor)	2	30.6	4 mt.
		Pongamia pinnata (Karanj)	1	30.6	7 mt.
		Azadirachta indica (Neem-Limado)	1	30.6	8 mt.
		Total :	**4**		
2	Narivali	Azadirachta indica (Neem-Limado)	2	30.6	3 mt.
		Ficus religiosa (Pipal)	4	30.6	2.5 mt.
		Morinda tinctoria (Ashi)	5	30.6	4 mt.
		Zizyphus mauritiana (Bor)	10	30.6	3 mt.
		Pongamia pinnata (Karanj)	2	30.6	2 mt.
		Mangifera indica (Mango-Ambo)	5	30.6	5 mt.
		Aillanthus excelsa (Saragavo)	1	30.6	4 mt.
		Tectona grandis (Teak-sag)	1	30.6	2 mt.
		Polyalthia longifolia (Asopalav)	1	30.6	2.5 mt.
		Ficus benghalensis (Vad)	1	30.6	12 mt.
		Total :	**32**		
3	Wadavali	Phoenix sylvestris (Shindi)	1	30.6	4 mt.
		Zizyphus mauritiana (Bor)	2	30.6	2 mt.
			3		
4	Gnesar	Azadirachta indica (Neem-Limado)	1	30.6	2 mt.
		Zizyphus mauritiana (Bor)	12	30.6	2 mt.
		Total :	**13**		
5	Nilje	Azadirachta indica (Neem-Limado)	18	30.6	5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Zizyphus mauritiana (Bor)	35	30.6	3 mt.
		Leucaena leucocephala (Subabul)	61	30.6	4 mt.
		Brideli aretusa (Asana)	11	30.6	2.5 mt.
		Pterocarpus marsupium (Bibla)	2	30.6	5 mt.
		Pongamia pinnata (Karanj)	17	30.6	6 mt.
		Bombax ceiba (Sawar)	4	30.6	6 mt.
		Trewia nudiflora (Petari)	2	30.6	4 mt.
		Ficus racemosa (Umaro)	3	30.6	3.5 mt.
		Morinda tinctoria (Ashi)	13	30.6	5 mt.
		Madhuca latifolia (Moha)	3	30.6	7 mt.
		Syzygium cumini (Jamun)	2	30.6	5.5 mt.
		Aillanthus excelsa (Saragavo)	8	30.6	3 mt.
		(Karmada)	1	30.6	2.5 mt.
		Tamarindus indica (Chinch)	2	30.6	3 mt.
		Tectona grandis (Teak-sag)	1	30.6	3.5 mt.
		Acacia nilotica (Babul)	2	30.6	3 mt.
		Ehcalyptus tereticornis (Nilgiri)	3	30.6	7 mt.
		Pithecelloium dulce (Vilayati chinch)	3	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	7	30.6	5 mt.
		Ficus religiosa (Pipal)	1	30.6	4.5 mt.
		(Karvel)	1	30.6	6 mt.
		Borassus flabellifer (Tad)	1	30.6	4 mt.
		Butea monosperma (Palas)	2	30.6	4 mt.
		Ficus benghalensis (Vad)	1	30.6	4 mt.
		Total :	**204**		
6	Katai	Mangifera indica (Mango-Ambo)	1	30.6	3 mt.
		Phonix sylvestris (Khajuri)	5	30.6	2 mt.
		Deloniz regia (Gulmahor)	1	30.6	5 mt.
		Pithecellobium dulce (Mithi Amali)	1	30.6	4.5 mt.
		Cordia dichotma (Gundo)	1	30.6	2.5 mt.
		Diospyros melanoxylon (Tiluru)	1	30.6	4.5 mt.
		Total :	10		
7	Mandivali	Borassus flabellifer (Tad)	4	30.6	6.5 mt.
			1	60.9	
			5		
		Mangifera indica (Mango-Ambo)	2	30.6	4.5 mt.
		Pongamia pinnata (Karanj)	7	30.6	5 mt.
			1	60.9	
			8		
		Total :	**15**		
8	Aayre	Borassus flabellifer (Tad)	3	30.6	6 mt.
		Zizyphus mauritiana (Bor)	3	30.6	1.5 mt.
		Avicennia marina (Mangrove)	7	30.6	2 mt.
		Total :	**13**		
9	Kopar	Cocos nulifera (Nariyeli)	20	30.6	4 mt.
		Pongamia pinnata (Karanj)	3	30.6	4.5 mt.
		Pithecellobium dulce (Mithi Amali)	5	30.6	4 mt.
		Azadirachta indica (Neem-Limado)	3	30.6	3.5 mt.
		Murraya koengii (Kadulimb)	1	30.6	2.5 mt.
		Leucaena leucocephala (Subabul)	2	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	4	30.6	3 mt.
		Ficus religiosa (Pipal)	2	30.6	4.5 mt.
		Aillanthus excelsa (Saragavo)	1	30.6	3.5 mt.
		Tamarindus indica (Chinch)	1	30.6	4.5 mt.
		Ficus racemosa (Umaro)	1	30.6	4 mt.
		Polyalthia longifolia (Asopalav)	3	30.6	4.5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Total :	**46**		
10	Dombivali	Cocos nulifera (Nariyeli)	1	30.6	9 mt.
		Aillanthus excelsa (Saragavo)	1	30.6	4 mt.
		Ficus religiosa (Pipal)	1	30.6	4.5 mt.
		Terminalia kaddapa (Badam)	1	30.6	2.5 mt.
		Mangifera indica (Mango-Ambo)	2	30.6	2.5 mt.
		Azadirachta indica (Neem-Limado)	2	30.6	6 mt.
		Ficus benghalensis (Vad)	1	30.6	6 mt.
		Polyalthia longifolia (Asopalav)	1	30.6	4.5 mt.
		Leucaena leucocephala (Subabul)	1	30.6	4 mt.
		Total :	**11**		
11	Thakurli	Leucaena leucocephala (Subabul)	9	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	1	30.6	3.5 mt.
		Ficus religiosa (Pipal)	1	30.6	4.5 mt.
		Ehcalyptus tereticornis (Nilgiri)	1	30.6	6 mt.
		Total :	**11**		
12	Navagaon	Cocos nulifera (Nariyeli)	3	30.6	6 mt.
		Terminalia kaddapa (Badam)	2	30.6	4.5 mt.
		Ficus benghalensis (Vad)	1	30.6	4.5 mt.
		Total :	**6**		
13	Gaodeli	Zizyphus mauritiana (Bor)	12	30.6	2 mt.
		Pithecellobium dulce (Mithi Amali)	3	30.6	3 mt.
		Mangifera indica (Mango-Ambo)	4	30.6	4 mt.
		Pongamia pinnata (Karanj)	6	30.6	5 mt.
		Total :	**25**		

Taluk Bhivandi, District Thane

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Pimplaner	Zizyphus mauritiana (Boradi)	44	30.6	2.5 mt.
		Acacia catechue (Khair)	18	30.6	3 mt.
		Pongamia pinnata (Karanj)	10	30.6	6 mt.
			2	60.9	
			12		
		Azadirachta indica (Neem-Limado)	5	30.6	4 mt.
		Leucaena leucocephala (Subabul)	7	30.6	3 mt.
		Pithecellobium dulce (Mithi Amali)	5	30.6	4 mt.
		Borassus flabellifer (Tad)	12	30.6	6 mt.
			3	60.9	
			15		
		Brideli aretusa (Asana)	5	60.9	4 mt.
		Ficus religiosa (Pipal)	1	30.6	8 mt.
		Cordia dicotoma (Gundo)	1	60.9	6 mt.
		Bombax ceiba (Sawar)	3	30.6	3 mt.
		(Awal)	2	30.6	5 mt.
		Mangifera indica (Mango-Ambo)	2	30.6	6 mt.
			4	60.9	
			6		
		Dalbergia shisoo (Shisoo)	1	60.9	6.5 mt.
		Total :	**125**		
2	Pimplas	Butea monosperma (Palas)	8	30.6	5 mt.
			1	60.9	
			9		
		Zizyphus mauritiana (Bor)	10	30.6	3.5 mt.
		Acacia catechue (Khair)	3	30.6	3 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Leucaena leucocephala (Subabul)	4	30.6	2.5 mt.
		Dalbergia shisoo (Shisoo)	3	30.6	4.5 mt.
		Pongamia pinnata (Karanj)	4	60.9	3.5 mt.
		Azadirachta indica (Neem-Limado)	3	30.6	4.5 mt.
		Bombax ceiba (Sawar)	3	30.6	4 mt.
		Total :	**39**		
3	Ovali	Phonix Sylvestris (Khajuri)	5	30.6	4.5 mt.
			1	60.9	
			6		
		Zizyphus mauritiana (Bor)	8	30.6	2.5 mt.
		Bombax ceiba (Sawar)	4	30.6	3 mt.
		Pithecellobium dulce (Mithi Amali)	6	30.6	4 mt.
		Borassus flabellifer (Tad)	2	60.9	4 mt.
			1	90.12	
			3		
		Total :	**27**		
4	Kamatghar	Pithecellobium dulce (Mithi Amali)	15	30.6	3 mt.
		Polyalthia longifolia (Ashopalav)	4	30.6	4 mt.
		Leucaena leucocephala (Subabul)	4	30.6	3.5 mt.
		Pongamia pinnata (Karanj)	4	30.6	3.5 mt.
		Bombax ceiba (Sawar)	5	30.6	6 mt.
		Total :	**32**		
5	Rahnal	Phonix Sylvestris (Khajuri)	11	30.6	3 mt.
			1	60.9	
			12		
		Borassus flabellifer (Tad)	3	60.9	7 mt.
			3	90.12	
			6		
		Bombax ceiba (Sawar)	5	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	1	90.12	5.5 mt.
		Pongamia pinnata (Karanj)	2	30.6	5 mt.
		Syzygium cumini (Jamun)	1	60.9	5.5 mt.
		Total :	**27**		
6	Kalwar	Bombax ceiba (Sawar)	3	60.9	6.5 mt.
		Borassus flabellifer (Tad)	2	60.9	7 mt.
			2	90.12	
			4		
		Pongamia pinnata (Karanj)	3	30.6	7 mt.
			1	60.9	
			4		
		Moringa oleifera (Saragava)	4	30.6	5.5 mt.
		Acacia nilotica (Babul)	6	60.9	5.5 mt.
		Cordia dicotoma (Gundo)	3	60.9	5.5 mt.
		Total :	**24**		
7	Wadghar	Bombax ceiba (Sawar)	11	30.6	6 mt.
		Acacia nilotica (Babul)	4	30.6	5 mt.
		Pongamia pinnata (Karanj)	6	30.6	4 mt.
			1	60.9	
			7		
		Total :	**22**		
8	Dunge	Bombax ceiba (Sawar)	3	30.6	3 mt.
		Mangifera indica (Mango-Ambo)	4	30.6	2.5 mt.
		Thespesia populnea (Bhindi)	14	30.6	4 mt.
		Moringa oleifera (Saragawa)	6	30.6	5.5 mt.
		Total :	**27**		

Talka Thane, District Thane

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Kharbao	Mangifera indica (Mango-Ambo)	5	30.6	3 mt.
		Ficus racemosa (Umero)	3	60.9	5 mt.
			2	180 >	
			5		
		Ficus religiosa (Pipal)	1	30.6	3.5 mt.
		Phonix sylvestris (Khajuri)	1	60.9	7 mt.
		Zizyphus mauritiana (Bor)	1	30.6	1.5 mt.
		Bauhinia racemosa (Apta)	2	30.6	3.5 mt.
		(Jamphal - Peru)	1	30.6	3 mt.
		Thespesia populnea (Bhindi)	1	30.6	3.5 mt.
		Leucaena leucocephala (Subabul)	1	30.6	3 mt.
		Pongamia pinnata (Karanj)	6	30.6	3.5 mt.
		Total :	**24**		
2	Marodhi	Avicennia marina (Mangrove-cher)	21	30.6	3 mt.
		Ficus racemosa (Umero)	2	60.9	3 mt.
			1	180 >	
			3		
		Bombax ceiba (Sawar)	3	30.6	3.5 mt.
		Total :	**27**		
3	Payegaon	Ficus racemosa (Umero)	1	180 >	3.5 mt.
		Zizyphus mauritiana (Bor)	3	30.6	2 mt.
		Total :	**4**		
4	Paye-I	Tecton grandis (Teak-sag)	84	30.6	2.5 mt.
		Bombax ceiba (Sawar)	28	30.6	3 mt.
		Pongamia pinnata (Karanj)	18	30.6	4 mt.
			3	60.9	
			21		
		Ficus racemosa (Umero)	6	30.6	3.5 mt.
		Azadirachta indica (Neem-Limado)	8	30.6	3.5 mt.
		Bauhinia racemosa (Apta)	7	30.6	4 mt.
		Butea monosperma (Khakharo)	5	30.6	2.8 mt.
		Ehcalyptus tereticornis (Nilgiri)	8	30.6	4.5 mt.
		Leucaena leucocephala (Subabul)	1	30.6	3.5 mt.
		Lagerstroemia parviflora (Bondara)	2	30.6	3.5 mt.
		Total :	**170**		
5	Nagle	Pongamia pinnata (Karanj)	1	30.6	3.5 mt.
		Zizyphus mauritiana (Bor)	2	30.6	2 mt.
		Bombax ceiba (Sawar)	15	30.6	3 mt.
		Azadirachta indica (Neem-Limado)	1	30.6	3 mt.
		Total :	**19**		
6	Silotar	Bombax ceiba (Sawar)	10	30.6	3 mt.
		Pongamia pinnata (Karanj)	12	30.6	3.5 mt.
		Acacia catechue (Khair)	8	30.6	3.5 mt.
		Ficus racemosa (Umero)	2	30.6	4 mt.
		Phonix sylvestris (Khajuri)	1	30.6	4.5 mt.
		Total :	**33**		
7	Sasunavghar	Tecton grandis (Teak-sag)	19	30.6	3 mt.
		Bombax ceiba (Sawar)	4	30.6	3.5 mt.
		Zizyphus mauritiana (Bor)	19	30.6	2 mt.
		Ficus racemosa (Umero)	11	30.6	4 mt.
			3	60.9	
			14		
		Acacia catechue (Khair)	1	30.6	3 mt.
		Bauhinia racemosa (Apta)	2	30.6	3.5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Pongamia pinnata (Karanj)	1	30.6	4 mt.
		Ficus benghalensis (Vad)	1	30.6	2.5 mt.
		Avicennia marina (Mangrove-cher)	21	30.6	3 mt.
		Azadirachta indica (Neem-Limado)	1	30.6	2.5 mt.
		Leucaena leucocephala (Subabul)	2	30.6	3.5 mt.
		Total :	**86**		
8	Kaman	Bombax ceiba (Sawar)	6	30.6	3.5 mt.
		Acacia catechue (Khair)	4	30.6	3 mt.
		Total :	**10**		
9	Saijanovi	Acacia catechue (Khair)	6	30.6	3.5 mt.
		Bombax ceiba (Sawar)	3	30.6	4 mt.
		Bamboa clump no.8			
		Total :	**9**		
10	Bapane	Zizyphus mauritiana (Bor)	11	30.6	2 mt.
		Bombax ceiba (Sawar)	1	30.6	3.5 mt.
		Ficus racemosa (Umero)	4	30.6	4 mt.
		Total :	**16**		
11	Juchandra	Zizyphus mauritiana (Bor)	127	30.6	2.5 mt.
		Leucaena leucocephala (Subabul)	6	30.6	4 mt.
		Acacia catechue (Khair)	3	30.6	3.5 mt.
		Ficus racemosa (Umero)	1	30.6	3.5 mt.
		Ficus benghalensis (Vad)	4	30.6	2 mt.
		Prosophis juliflora (Vilayati baval)	3	30.6	3.5 mt.
		Pithecelloium dulce (Vilayati chinch)	1	90.12	3.5 mt.
		Moringa oleifera (Saragavo)	1	30.6	2.5 mt.
		Borassus flabellifer (Tad)	1	30.6	5 mt.
			1	60.9	
			2		
		Total :	**148**		

District Thane

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Wadhiv	Avicennia marina (Mangrove)	5	30.6	3 mt.
			1	60.9	
			6		
		Bombax ceiba (Sawar)	8	30.6	5 mt.
			2	60.9	
			10		
		Tamarindus indica (Chinch)	1	30.6	8 mt.
			2	90.12	
			2	180 >	
			5		
		Thespesia populnea (Bhindi)	2	30.6	5 mt.
			2	60.9	
			4		
		Acacia nilotica (Babul)	1	30.6	6 mt.
			3	60.9	
			2	180 >	
			6		
		Pithecelloium dulce (Vilayati chinch)	1	120.15	5 mt.
		Phonix sylvestris (Khajuri)	3	90.12	8 mt.
		Borassus flabellifer (Tad)	2	90.12	10 mt.
		Tectona grandis (Teak)	1	30.6	6 mt.
		Ficus racemosa (Umaro)	1	30.6	6 mt.
			1	90.12	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	180 >	
			3		
		Bauhinia racemosa (Apta)	2	30.6	5 mt.
		Phonix sylvestris (Khajuri)	1	180 >	5 mt.
		Total :	**44**		
2	Karwala	Avicennia marina (Mangrove)	62	30.6	3 mt.
			3	60.9	
			5	90.12	
			5	120.15	
			2	180 >	
			77		
		Tamarindus indica (Chinch)	4	30.6	8 mt.
			1	60.9	
			3	90.12	
			1	120.15	
			2	150.18	
			11		
		Acacia nilotica (Babul)	5	30.6	6 mt.
			2	60.9	
			7		
		Bauhinia racemosa (Apta)	10	30.6	5 mt.
			4	60.9	
			2	90.12	
			16		
		Lagerstroemia parviflora (Bondara)	1	60.9	4 mt.
		Zizyphus mauritiana (Bor)	7	30.6	3 mt.
			2	60.9	
			1	90.12	
			1	180 >	
			11		
		Erythrina veriegata (Pongara)	2	60.9	6 mt.
		Ficus racemosa (Umaro)	1	30.6	6 mt.
			2	60.9	
			4	90.12	
			1	120.15	
			3	180 >	
			11		
		Syzygium cumini (Jamun)	3	30.6	5 mt.
			1	60.9	
			6	90.12	
			10		
		Acacia catechue (Khair)	7	30.6	6 mt.
			2	60.9	
			1	90.12	
			10		
		Ficus benghalensis (Vad)	1	90.12	8 mt.
			2	180 >	
			3		
		Thespesia populnea (Bhindi)	1	60.9	4 mt.
			1	90.12	
			1	120.15	
			3		
		Lannea gromondelica (Shepat)	7	30.6	5 mt.
			2	60.9	
			9		
		Bombax ceiba (Sawar)	10	30.6	6 mt.
			3	60.9	
			3	90.12	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	150.18	
			17		
		Tectona grandis (Teak)	3	30.6	4 mt.
		Azadirachta indica (Neem-Limado)	5	30.6	5 mt.
			1	60.9	
			6		
		Holarrhen aantidysentrica (Kuda)	1	30.6	5 mt.
			1	90.12	
			2		
		(Mahaduk)	3	30.6	5 mt.
			1	90.12	
			4		
		Anogeissus latifolia (Dhavada)	1	30.6	4 mt.
		(Chilar)	1	30.6	3 mt.
		Madhuca indica (Mahudo)	1	30.6	3 mt.
		Morinda tinctoria (Ashi)	3	30.6	4 mt.
		Terminalia arjuna (Sadad)	1	30.6	5 mt.
		(Galodiya)	1	90.12	4 mt.
			1	120.15	
			2		
		Pongamia pinnata (Karanj)	3	30.6	5 mt.
			1	60.9	
			4		
		Gmelina arborea (Sevan)	1	30.6	3 mt.
		Pithecelloium dulce (Vilayati chinch)	7	30.6	3 mt.
		Phonix sylvestris (Khajuri)	1	60.9	6 mt.
			1	90.12	
			2		
		Cordia dichotoma (Bhoker)	1	30.6	3 mt.
		Total :	**227**		
3	Sartodi	Bombax ceiba (Sawar)	12	30.6	6 mt.
			5	60.9	
			2	90.12	
			19		
		Lannea coromondelica (Shepat)	1	30.6	4 mt.
		Thespesia populnea (Bhindi)	5	30.6	5 mt.
			10	60.9	
			5	90.12	
			1	150.18	
			2	180 >	
			23		
		(Akashi)	9	30.6	4 mt.
			1	60.9	
			10		
		Pongamia pinnata (Karanj)	10	30.6	5 mt.
			4	60.9	
			1	90.12	
			15		
		Borassus flabellifer (Tad)	2	180 >	8 mt.
		Acacia catechue (Khair)	11	30.6	5 mt.
			2	60.9	
			13		
		Mangifera indica (Mango-Ambo)	3	30.6	6 mt.
			1	60.9	
			1	90.12	
			1	120.15	
			6		
		Leucaena leucocephala (Subabul)	3	30.6	5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3	60.9	
			1	90.12	
			7		
		Tectona grandis (Teak)	1	30.6	4 mt.
			1	60.9	
			2		
		Cocos nulifera (Nariyeli)	2	30.6	10 mt.
			4	60.9	
			1	90.12	
			1	120.15	
			8		
		Terminalia tomentosa (Ain)	3	60.9	5 mt.
		Zizyphus mauritiana (Bor)	4	30.6	3 mt.
			2	60.9	
			6		
		Moringa oleifera (Shegawa)	2	30.6	6 mt.
			2	60.9	
			4	90.12	
			8		
		Albizia lebbeck (Sires)	2	30.6	5 mt.
			3	60.9	
			5		
		Tamarindus indica (Chinch)	4	30.6	8 mt.
			1	60.9	
			2	90.12	
			2	150.18	
			9		
		Pithecelloium dulce (Vilayati chinch)	6	30.6	6 mt.
			1	60.9	
			1	90.12	
			8		
		Ficus benghalensis (Vad)	1	90.12	8 mt.
		Azadirachta indica (Neem-Limado)	1	30.6	6 mt.
			2	60.9	
			3		
		Ficus religiosa (Pipal)	1	90.12	6 mt.
		Butea monosperma (Palas)	1	90.12	5 mt.
		Ficus racemosa (Umaro)	1	90.12	4 mt.
		(Akaran)	1	60.9	5 mt.
		Artocarpus heterophyllas (Phanas)	1	60.9	6 mt.
		Brideli aretusa (Asana)	1	30.6	4 mt.
		Bauhinia racemosa (Apta)	1	60.9	5 mt.
		Syzygium cumini (Jamun)	1	90.12	6 mt.
		Total :	**157**		
4	Saphala	Mangifera indica (Mango-Ambo)	9	30.6	6 mt.
			3	60.9	
			3	90.12	
			6	180 >	
			21		
		Azadirachta indica (Neem-Limado)	2	30.6	5 mt.
			2	60.9	
			1	120.15	
			5		
		Albizia lebbeck (Sires)	1	30.6	6 mt.
			2	60.9	
			2	90.12	
			1	150.18	
			4	180 >	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			10		
		Ficus racemosa (Umaro)	7	30.6	6 mt.
			2	60.9	
			5	90.12	
			2	120.15	
			7	180 >	
			23		
		Ficus benghalensis (Vad)	1	60.9	8 mt.
			3	90.12	
			7	180 >	
			11		
		Zizyphus mauritiana (Bor)	16	30.6	3 mt.
			2	60.9	
			18		
		Annona squamosa (Sitaphal)	2	30.6	3 mt.
		Tectona grandis (Teak)	2	30.6	4 mt.
			1	60.9	
			3		
		Moringa oleifera (Shegawa)	2	30.6	5 mt.
			2	60.9	
			1	150.18	
			1	180 >	
			6		
		Artocarpus heterophyllas (Phanas)	3	30.6	3 mt.
		Borassus flabellifer (Tad)	2	60.9	8 mt.
			2	180 >	
			4		
		Ficus religiosa (Pipal)	2	60.9	6 mt.
		Acacia nilotica (Babul)	2	30.6	5 mt.
			3	60.9	
			1	90.12	
			6		
		Terminalia kaddapa (Badam)	2	30.6	4 mt.
		(Mahaduk)	2	30.6	3 mt.
		Pongamia pinnata (Karanj)	3	30.6	4 mt.
			3	60.9	
			6		
		Bauhinia racemosa (Apta)	9	30.6	3 mt.
			3	60.9	
			12		
		Bombax ceiba (Sawar)	14	30.6	6 mt.
			3	60.9	
			1	180 >	
			18		
		Cocos nulifera (Nariyeli)	6	30.6	6 mt.
			5	60.9	
			11		
		Syzygium cumini (Jamun)	2	60.9	8 mt.
			1	90.12	
			1	120.15	
			1	150.18	
			2	180 >	
			7		
		(Par)	1	30.6	4 mt.
			1	150.18	
			2		
		Tamarindus indica (Chinch)	2	30.6	6 mt.
			1	180 >	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3		
		Ehcalyptus tereticornis (Nilgiri)	1	30.6	5 mt.
			1	60.9	
			1	180 >	
			3		
		Madhuca indica (Mahudo)	1	90.12	4 mt.
			1	120.15	
			2		
		Acacia catechue (Khair)	20	30.6	5 mt.
			7	60.9	
			1	90.12	
			28		
		Pithecelloium dulce (Vilayati chinch)	3	30.6	6 mt.
		(Vaghoti)	1	30.6	6 mt.
		Mitragyna partifolia (Kalam)	1	60.9	5 mt.
			1	180 >	
			2		
		Cardia dicotoma (Bhokar)	1	30.6	4 mt.
			1	60.9	
			2		
		Leucaena leucocephala (Subabul)	8	30.6	4 mt.
			2	60.9	
			10		
		Syzygium cumini (Jamun)	1	90.12	4 mt.
		Trewia nudiflora (Petari)	1	30.6	3 mt.
		Careya arborea (Kumbhi)	1	90.12	4 mt.
		Phonix sylvestris (Khajuri)	2	30.6	6 mt.
			2	60.9	
			4		
		Brideli aretusa (Asana)	3	30.6	46 mt.
		Terminalia tomentosa (Ain)	5	30.6	5 mt.
			2	60.9	
			1	90.12	
			8		
		Heterophragma roxburghii (Varas)	3	30.6	4 mt.
			1	60.9	
			4		
		Muliusa tomentosa (Humb)	1	90.12	6 mt.
		Holoptelic innegrifolia (Vehala)	1	90.12	5 mt.
			1	120.15	
			2		
		(Rolati)	2	30.6	3 mt.
		Erythrina veriegata (Pongara)	3	30.6	3 mt.
		Albzzia procera (Kinai)	2	30.6	4 mt.
			1	90.12	
			3		
		Total :	**261**		
5	Maknekapas	Cocos nulifera (Nariyeli)	10	30.6	6 mt.
			5	60.9	
			15		
		Ficus benghalensis (Vad)	4	90.12	8 mt.
			2	120.15	
			2	150.18	
			8	180 >	
			16		
		Moringa oleifera (Shegawa)	4	30.6	4 mt.
			2	60.9	
			6		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Acacia catechue (Khair)	23	30.6	5 mt.
			2	60.9	
			25		
		Heterophragma roxburghii (Varas)	2	30.6	4 mt.
		Pithecelloium dulce (Vilayati chinch)	2	30.6	3 mt.
		Tamarindus indica (Chinch)	10	30.6	8 mt.
			5	60.9	
			6	90.12	
			2	120.15	
			1	150.18	
			24		
		Zizyphus mauritiana (Bor)	17	30.6	4 mt.
			1	60.9	
			18		
		Brideli aretusa (Asana)	1	30.6	3 mt.
		Terminalia tomentosa (Ain)	10	30.6	4 mt.
			6	60.9	
			16		
		Bauhinia racemosa (Apta)	4	30.6	4 mt.
			1	60.9	
			5		
		Bombax ceiba (Sawar)	36	30.6	5 mt.
			7	60.9	
			43		
		Borassus flabellifer (Tad)	1	30.6	10 mt.
			5	60.9	
			1	90.12	
			1	120.15	
			8		
		Acacia nilotica (Babul)	10	30.6	4 mt.
			2	60.9	
			12		
		Leucaena leucocephala (Subabul)	6	30.6	4 mt.
		Madhuca indica (Mahudo)	1	30.6	3 mt.
		Albizzia procera (Kinai)	5	30.6	4 mt.
			1	60.9	
			6		
		(Kahedo)	1	30.6	3 mt.
		Tectona grandis (Teak)	4	30.6	3 mt.
		Ficus racemosa (Umaro)	3	30.6	5 mt.
			4	60.9	
			2	90.12	
			1	120.15	
			10		
		Syzygium cumini (Jamun)	1	90.12	4 mt.
		Grewia tiliaefolia (Dhaman)	3	30.6	6 mt.
		(Akashi)	1	30.6	4 mt.
		Pongamia pinnata (Karanj)	7	30.6	5 mt.
			1	60.9	
			8		
		Azadirachta indica (Neem-Limado)	3	30.6	4 mt.
			1	60.9	
			4		
		(Par)	1	90.12	4 mt.
		Mangifera indica (Mango-Ambo)	7	30.6	5 mt.
			2	60.9	
			1	90.12	
			10		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Manilkara zapota (Chiku)	2	30.6	3 mt.
		Cordia dichotoma (Bhoker)	1	60.9	4 mt.
		Lannea coromondelica (Shepat)	7	30.6	3 mt.
		Erythrina veriegata (Pongara)	1	30.6	3 mt.
		Total :	**260**		
6	Makansar	Bombax ceiba (Sawar)	1	30.6	5 mt.
			1	60.9	
			2		
		Acacia nilotica (Babul)	2	30.6	4 mt.
			3	60.9	
			5		
		Leucaena leucocephala (Subabul)	1	60.9	3 mt.
		Ficus racemosa (Umaro)	1	30.6	4 mt.
			3	90.12	
			4		
		Terminalia tomentosa (Ain)	1	30.6	4 mt.
			2	60.9	
			3		
		Phonix sylvestris (Khajuri)	2	30.6	4 mt.
			1	60.9	
			3		
		Mangifera indica (Mango-Ambo)	1	180 >	6 mt.
		Thespesia populnea (Bhindi)	1	30.6	4 mt.
		Zizyphus mauritiana (Bor)	1	30.6	3 mt.
		Acacia catechue (Khair)	1	60.9	4 mt.
		Total :	**22**		
7	Rothe	Ficus racemosa (Umaro)	1	120.15	5 mt.
			1	150.18	
			1	180 >	
			3		
		Ficus benghalensis (Vad)	1	150.18	6 mt.
			6	180 >	
			7		
		Azadirachta indica (Neem-Limado)	4	30.6	4 mt.
		Acacia spp	6	30.6	3 mt.
		Terminalia tomentosa (Ain)	11	30.6	6 mt.
			2	60.9	
			3	90.12	
			2	120.15	
			18		
		Bauhinia racemosa (Apta)	2	30.6	4 mt.
		Acacia nilotica (Babul)	11	30.6	5 mt.
			3	60.9	
			14		
		Thespesia populnea (Bhindi)	3	30.6	4 mt.
		Lannea coromondelica (Shepat)	3	30.6	3 mt.
		Cocos nulifera (Nariyeli)	1	30.6	3 mt.
		Acacia catechue (Khair)	26	30.6	4 mt.
			1	60.9	
			27		
		Zizyphus mauritiana (Bor)	9	30.6	3 mt.
		Bombax ceiba (Sawar)	9	30.6	4 mt.
			3	60.9	
			12		
		Terminalia belerica (Behada)	1	90.12	5 mt.
			1	150.18	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2		
		Cassia siamea (Kashid)	8	30.6	5 mt.
			4	60.9	
			1	180 >	
			13		
		Siamea saman (Rain tree)	1	90.12	6 mt.
			1	120.15	
			3	180 >	
			5		
		Albizzia procera (Kinai)	1	30.6	4 mt.
		Phonix sylvestris (Khajuri)	1	60.9	3 mt.
		Dalbergia shisoo (Shisoo)	1	90.12	5 mt.
		Mangifera indica (Mango-Ambo)	2	180 >	6 mt.
		Sapindus emerginata (Ritha)	1	30.6	4 mt.
		Ehcalyptus tereticornis (Nilgiri)	1	120.15	6 mt.
		Syzygium cumini (Jamun)	1	60.9	5 mt.
		Total :	**137**		
8	Kalve	Acacia nilotica (Babul)	4	30.6	4 mt.
			2	60.9	
			6		
		Mangifera indica (Mango-Ambo)	4	30.6	6 mt.
			2	90.12	
			1	150.18	
			3	180 >	
			10		
		Phonix sylvestris (Khajuri)	1	60.9	6 mt.
		Tamarindus indica (Chinch)	4	30.6	8 mt.
			5	60.9	
			8	90.12	
			2	120.15	
			1	150.18	
			1	180 >	
			21		
		Grewia tiliaefolia (Dhaman)	1	60.9	4 mt.
		Brideli aretusa (Asana)	7	30.6	4 mt.
		Azadirachta indica (Neem-Limado)	1	30.6	5 mt.
			1	60.9	
			1	120.15	
			1	180 >	
			4		
		(Mad)	1	90.12	6 mt.
			2	120.15	
			1	150.18	
			4		
		Bauhinia racemosa (Apta)	1	30.6	4 mt.
		Lannea coromondelica (Shepat)	1	30.6	5 mt.
			3	60.9	
			1	90.12	
			5		
		Pongamia pinnata (Karanj)	1	30.6	4 mt.
			1	90.12	
			2		
		Acacia catechue (Khair)	6	30.6	5 mt.
			1	60.9	
			7		
		Thespesia populnea (Bhindi)	1	30.6	4 mt.
			1	60.9	
			1	150.18	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3		
		Albizzia procera (Kinai)	1	60.9	3 mt.
		Garuga pinnata (Kakad)	1	60.9	3 mt.
		Sterculia urens (Kondal)	2	30.6	4 mt.
			1	60.9	
			3		
		Tectona grandis (Teak)	2	30.6	4 mt.
		Ficus racemosa (Umaro)	1	60.9	6 mt.
			2	90.12	
			1	120.15	
			4		
		Cordia dictoma (Bhoker)	1	60.9	4 mt.
		Syzygium cumini (Jamun)	1	60.9	5 mt.
			1	150.18	
			2		
		Zizyphus mauritiana (Bor)	1	30.6	4 mt.
			2	60.9	
			1	120.15	
			4		
		Brideli aretusa (Asana)	4	30.6	4 mt.
		Acacia spp	1	30.6	4 mt.
		(Vantiaka)	1	60.9	5 mt.
		Holarrhen aantidysentrica (Kuda)	1	30.6	4 mt.
		Bombax ceiba (Sawar)	1	60.9	5 mt.
		Manilkala zapota (Chiku)	1	60.9	5 mt.
		Total :	**99**		
9	Kalve road	Cocos nulifera (Nariyeli)	3	30.6	8 mt.
			6	60.9	
			1	120.15	
			10		
		Areca catechue (Supari)	2	30.6	5 mt.
		Mangifera indica (Mango-Ambo)	8	30.6	6 mt.
			2	60.9	
			2	90.12	
			1	120.15	
			13		
		Terminalia tomentosa (Ain)	2	30.6	4 mt.
		Ficus racemosa (Umaro)	1	30.6	3 mt.
		(Poponas)	2	30.6	3 mt.
		Zizyphus mauritiana (Bor)	3	30.6	4 mt.
		Bombax ceiba (Sawar)	1	90.12	5 mt.
		Phoenix sylvestris (Shindi)	3	60.9	4 mt.
		Acacia nilotica (Babul)	4	30.6	6 mt.
			1	120.15	
			5		
		Casuarina equesetifolia (Sharu)	1	90.12	6 mt.
		Syzygium cumini (Jamun)	1	150.18	5 mt.
		(Vehaka)	1	60.9	6 mt.
			1	90.12	
			1	120.15	
			3		
		Azadirachta indica (Neem-Limado)	1	30.6	4 mt.
		Total :	**48**		
10	Kasabe Mahim	Zizyphus mauritiana (Bor)	39	60.9	46 mt.
			1	90.12	
			2	120.15	
			42		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Acacia nilotica (Babul)	201	30.6	6 mt.
			41	60.9	
			5	90.12	
			3	120.15	
			250		
		Acacia catechue (Khair)	42	30.6	5 mt.
			2	60.9	
			1	90.12	
			45		
		Tamarindus indica (Chinch)	3	30.6	8 mt.
			3	60.9	
			4	90.12	
			5	120.15	
			2	150.18	
			3	180 >	
			20		
		Ficus racemosa (Umaro)	5	30.6	6 mt.
			3	60.9	
			8	90.12	
			1	120.15	
			1	150.18	
			3	180 >	
			21		
		Mangifera indica (Mango-Ambo)	19	30.6	6 mt.
			20	60.9	
			10	90.12	
			2	120.15	
			3	150.18	
			1	180 >	
			55		
		Ficus benghalensis (Vad)	3	60.9	8 mt.
			3	90.12	
			1	150.18	
			5	180 >	
			12		
		Bombax ceiba (Sawar)	32	30.6	6 mt.
			9	60.9	
			3	90.12	
			2	120.15	
			46		
		Lannea coromondelica (Shepat)	25	30.6	5 mt.
			18	60.9	
			2	90.12	
			45		
		Brideli aretusa (Asana)	23	30.6	4 mt.
			2	60.9	
			25		
		Azadirachta indica (Neem-Limado)	44	30.6	6 mt.
			13	60.9	
			4	90.12	
			61		
		Cordia dictoma (Bhoker)	1	90.12	5 mt.
		Manilkala zapota (Chiku)	91	30.6	4 mt.
			4	60.9	
			1	90.12	
			96		
		Ehcalyptus tereticornis (Nilgiri)	1	90.12	6 mt.
			4	120.15	
			1	150.18	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			6		
		Careya arborea (Kumbhi)	1	120.15	6 mt.
			1	180 >	
			2		
		Terminalia tomentosa (Ain)	6	30.6	8 mt.
			8	60.9	
			1	90.12	
			2	120.15	
			1	150.18	
			18		
		Bauhinia racemosa (Apta)	25	30.6	4 mt.
			5	60.9	
			30		
		Syzygium cumini (Jamun)	4	30.6	8 mt.
			4	60.9	
			3	90.12	
			2	120.15	
			6	150.18	
			2	180 >	
			21		
		(Kunha)	1	30.6	4 mt.
		Thespesia populnea (Bhindi)	5	30.6	5 mt.
			3	60.9	
			1	90.12	
			3	180 >	
			12		
		Delonix regia (Gulmahor)	1	60.9	4 mt.
		Pongamia pinnata (Karanj)	3	30.6	4 mt.
			2	60.9	
			5		
		Pithecelloium dulce (Vilayati chinch)	62	30.6	6 mt.
			29	60.9	
			6	120.15	
			1	150.18	
			98		
		Tectona grandis (Teak)	29	30.6	4 mt.
			5	60.9	
			34		
		Gmelina arborea (Sevan)	3	30.6	5 mt.
			1	60.9	
			4		
		Artocarpus heterophyllas (Phanas)	1	30.6	4 mt.
			3	60.9	
			4		
		Flacarrtia indica (Anuran)	2	30.6	6 mt.
			1	120.15	
			3		
		Thespesia populnea (Bhindi)	1	30.6	4 mt.
			1	60.9	
			1	90.12	
			2	120.15	
			5		
		Cassia siamea (Kashid)	1	30.6	3 mt.
			1	90.12	
			2		
		Acacia spp	2	30.6	3 mt.
		(Kadamb)	2	60.9	4 mt.
		Grewia tiliaefolia (Dhaman)	1	30.6	4 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Siamea saman (Rain tree)	1	90.12	6 mt.
			1	150.18	
			7	180 >	
			9		
		(Vehaka)	1	90.12	4 mt.
			3	120.15	
			4		
		(Par)	1	180 >	5 mt.
		Saraca asoca (Ashok)	1	30.6	4 mt.
		(Rajani)	1	30.6	5 mt.
		Leucaena leucocephala (Subabul)	38	30.6	4 mt.
			1	60.9	
			39		
		Morinda tinctoria (Ashi)	1	60.9	4 mt.
		Anacardium occidentale (Kaju)	2	30.6	4 mt.
		Albizzia procera (Kinai)	1	60.9	5 mt.
		(Mad)	12	60.9	6 mt.
			4	90.12	
			16		
		Cocos nulifera (Nariyeli)	16	30.6	10 mt.
			1	60.9	
			17		
		Psidium guajava (Peru/Jamphal)	1	30.6	4 mt.
		Phoenix sylvestris (Shindi)	1	30.6	6 mt.
		Madhuca indica (Mahudo)	1	30.6	5 mt.
		Total :	**1065**		
11	Boisar Dendapada	Bombax ceiba (Sawar)	1	30.6	8 mt.
			2	120.15	
			2	150.18	
			5		
		Emblica officinalis (Amala)	1	180 >	8 mt.
		Morinda tinctoria (Ashi)	1	90.12	6 mt.
			1	150.18	
			2		
		Zizyphus mauritiana (Bor)	1	90.12	4 mt.
		Pongamia pinnata (Karanj)	1	30.6	5 mt.
			1	60.9	
			2		
		Murraya koenigii (Kadulimb)	1	180 >	4 mt.
		Tamarindus indica (Chinch)	1	90.12	5 mt.
		Saraca asoca (Ashok)	2	30.6	5 mt.
		Ficus racemosa (Umero)	1	30.6	5 mt.
			2	60.9	
			3		
		Total :	**18**		
12	Navale (Chainge 38000 to 39000)	Acacia catechue (Khair)	13	30.6	8 mt.
			1	60.9	
			1	90.12	
			1	120.15	
			16		
		Leucaena leucocephala (Subabul)	8	30.6	6 mt.
			3	60.9	
			1	90.12	
			12		
		Terminalia tomentosa (Ain)	2	30.6	6 mt.
			2	60.9	
			4		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Tectona grandis (Teak-sag)	1	30.6	5 mt.
		Thespesia populnea (Bhindi)	1	60.9	5 mt.
		Ficus racemosa (Umero)	1	120.15	6 mt.
		Bombax ceiba (Sawar)	6	30.6	7 mt.
			2	60.9	
			3	90.12	
			1	120.15	
			12		
		Acacia nilotica (Babul)	4	90.12	8 mt.
			3	120.15	
			2	150.18	
			9		
		(Lajaru)	3	30.6	4 mt.
			1	60.9	
			4		
		Bauhinia racemosa (Apta)	1	30.6	5 mt.
		Grewia tiliaefolia (Dhaman)	1	60.9	4 mt.
		Ficus religiosa (Pipal)	1	120.15	6 mt.
		Pithecellobium dulce (Mithi Amali)	5	30.6	5 mt.
			11	60.9	
			4	90.12	
			20		
		(Vinal)	2	150.18	6 mt.
		Total :	**85**		
13	Kolawali (Forest land)	Bombax ceiba (Sawar)	9	30.6	8 mt.
			1	150.18	
			1	180 >	
			11		
		Steralia urens (Kadaya)	1	90.12	6 mt.
		Ficus racemosa (Umero)	1	120.15	5 mt.
			1	150.18	
			2		
		Total :	**14**		
14	Vangav (Chainge 41000 to 42000) (Forest Land)	Acacia spps	3	30.6	8 mt.
			9	60.9	
			6	90.12	
			4	120.15	
			1	150.18	
			23		
		Pongamia pinnata (Karanj)	2	30.6	6 mt.
			5	60.9	
			2	90.12	
			5	120.15	
			3	150.18	
			17		
		Murraya koenigii (Kadulimb)	2	30.6	4 mt.
			2	60.9	
			2	90.12	
			6		
		Albizia lebbeck (Sires)	1	60.9	6 mt.
		(Lajaru)	1	30.6	5 mt.
			1	150.18	
			2		
		Total :	**49**		
14B	Vangav (Chainge 42000 to 43000)	Ehcalyptus tereticornis (Nilgiri)	8	30.6	8 mt.
			6	60.9	
			4	90.12	
			3	120.15	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	150.18	
			1	180 >	
			23		
		(Lajaru)	1	30.6	6 mt.
			1	60.9	
			1	90.12	
			8	180 >	
			11		
		Murraya koenigii (Kadulimb)	1	60.9	6 mt.
			1	90.12	
			2		
		Thespesia populnea (Bhindi)	1	60.9	4 mt.
			1	120.15	
			2		
		Grewia tiliaefolia (Dhaman)	2	60.9	5 mt.
		Leucaena leucocephala (Subabul)	5	30.6	6 mt.
			6	60.9	
			11		
		Butea monosperma (Palas)	1	30.6	6 mt.
			1	60.9	
			2		
		Ficus racemosa (Umero)	1	180 >	8 mt.
		Pongamia pinnata (Karanj)	1	30.6	6 mt.
			3	60.9	
			4		
		Erythrina veriegata (Pongara)	1	150.18	8 mt.
		Acacia spps	2	60.9	6 mt.
		Tectona grandis (Teak-sag)	1	120.15	8 mt.
			1	150.18	
			2		
		Brideli aretusa (Asana)	1	60.9	6 mt.
		Pithecellobium dulce (Mithi Amali)	1	60.9	5 mt.
		Terminalia tomentosa (Ain)	1	30.6	6 mt.
		Total :	**66**		
15	Kapashil (Chainge 42000 to 43000)	Syzygium cumini (Jamun)	1	60.9	5 mt.
		Acacia spps	2	30.6	5 mt.
			1	60.9	
			3		
		Total :	**4**		
16	Agavan	Acacia catechue (Khair)	131	30.6	5 mt.
			47	60.9	
			1	90.12	
			179		
		Tectona grandis (Teak-sag)	6	30.6	6 mt.
		Terminalia tomentosa (Ain)	18	30.6	5 mt.
			5	60.9	
			23		
		Phonix sylvestris (Khajuri)	39	30.6	10 mt.
			6	60.9	
			6	90.12	
			51		
		Cocos nucifera (Nariyeli)	19	30.6	12 mt.
			6	90.12	
			1	120.15	
			26		
		Manilkara zapota (Chiku)	43	30.6	4 mt.
		Anacardium occidentale (Kaju)	3	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	15	30.6	5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2	60.9	
			3	90.12	
			3	120.15	
			1	150.18	
			24		
		Tamarindus indica (Chinch)	5	30.6	10 mt.
			7	60.9	
			2	90.12	
			2	120.15	
			3	150.18	
			19		
		Darlbergia sissoo (Shisoo)	25	30.6	6 mt.
			2	60.9	
			1	90.12	
			28		
		Pithecellobium dulce (Mithi Amali)	1	60.9	4 mt.
		Grewia tiliaefolia (Dhaman)	21	30.6	6 mt.
			1	60.9	
			22		
		Zizyphus mauritiana (Bor)	11	30.6	4 mt.
			2	60.9	
			13		
		Bauhinia racemosa (Ashitro)	4	30.6	5 mt.
			1	60.9	
			5		
		Borassus flabellifer (Tad)	8	60.9	8 mt.
			15	90.12	
			15	120.15	
			10	150.18	
			13	180 >	
			61		
		Pongamia pinnata (Karanj)	1	120.15	6 mt.
		Annona squamosa (Sitaphal)	1	30.6	3 mt.
		Murraya koenigii (Kadilimb)	6	30.6	3 mt.
		Bombax ceiba (Sawar)	2	30.6	6 mt.
			1	60.9	
			1	180 >	
			4		
		Moringa oleifra (Shegawa)	1	60.9	5 mt.
		Leucaena leucocephala (Subabul)	1	60.9	4 mt.
		Acacia arabica (Babul)	1	90.12	5 mt.
		Total :	**519**		

Dahanu Taluk, District Thane

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Saravali I	Tamarindus indica (Chinch)	2	30.6	8 mt.
			4	60.9	
			1	90.12	
			4	120.15	
			5	150.18	
			4	180 >	
			20		
		Acacia catechue (Khair)	128	30.6	8 mt.
			21	60.9	
			2	90.12	
			151		
		Syzygium cumini (Jamun)	1	60.9	5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Borassus flabellifer (Tad)	11	30.6	10 mt.
			10	60.9	
			8	90.12	
			29		
		Zizyphus mauritiana (Bor)	121	30.6	4 mt.
		Siamea saman (Raintree)	13	30.6	6 mt.
			1	90.12	
			14		
		Bombax ceiba (Sawar)	3	60.9	7 mt.
			1	90.12	
			4		
		Anacardium occidentale (Kaju)	1	30.6	6 mt.
			1	60.9	
			2		
		Leucaena leucocephala (Subabul)	74	30.6	6 mt.
			6	60.9	
			80		
		Thespesia populnea (Bhindi)	8	30.6	5 mt.
			1	60.9	
			3	90.12	
			4	120.15	
			1	150.18	
			17		
		Casuarine equisetifolia (Sharu)	1	30.6	6 mt.
		Pongamia pinnata (Karanj)	1	60.9	5 mt.
		Ficus bengnalensis (Vad)	1	120.15	8 mt.
			2	180 >	
			3		
		Acacia nilotica (Babul)	8	30.6	7 mt.
			2	60.9	
			1	90.12	
			11		
		Saraca asoca (Ashok)	1	30.6	5 mt.
		Psidioni guajava (Peru)	3	30.6	3 mt.
		Grewia tiliaefolia (Dhaman)	1	30.6	4 mt.
			1	60.9	
			2		
		(Kateri babul)	25	30.6	6 mt.
		Careya arborea (Kumbhi)	1	150.18	6 mt.
		(Kajara)	1	120.15	6 mt.
		Total :	**488**		
1A	Saravali II Chainge 30400 to 34000	Acacia nilotica (Babul)	9	30.6	6 mt.
			6	60.9	
			6	90.12	
			21		
		Tamarindus indica (Chinch)	9	30.6	8 mt.
			6	60.9	
			1	90.12	
			1	120.15	
			3	180 >	
			20		
		Bombax ceiba (Sawar)	12	30.6	6 mt.
			2	60.9	
			1	90.12	
			1	180 >	
			16		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Pithecellobium dulce (Mithi Amali)	2	30.6	7 mt.
			6	60.9	
			4	90.12	
			2	120.15	
			14		
		Lannea Coromandelica (Shemat)	1	90.12	5 mt.
		Mangifera indica (Mango-Ambo)	3	30.6	8 mt.
			7	60.9	
			17	90.12	
			12	120.15	
			3	150.18	
			6	180 >	
			48		
		Zizyphus mauritiana (Bor)	1	30.6	4 mt.
			3	60.9	
			1	90.12	
			5		
		Bauhinia racemosa (Apta)	2	30.6	4 mt.
		Thespesia populnea (Bhindi)	1	120.15	5 mt.
		Ficus religiosa (Pipal)	1	150.18	6 mt.
		Phonix sylvestris (Khajuri)	2	60.9	10 mt.
			1	90.12	
			3		
		Tectona grandis (Teak-sag)	1	60.9	8 mt.
			1	120.15	
			2		
		Murraya koenigii (Kadulimb)	3	30.6	5 mt.
			4	60.9	
			1	90.12	
			2	120.15	
			10		
		Grewia tiliaefolia (Dhaman)	6	30.6	4 mt.
			1	60.9	
			7		
		Brideli aretusa (Asana)	6	30.6	4 mt.
		Leucaena leucocephala (Subabul)	3	30.6	5 mt.
			6	60.9	
			9		
		Artocarpus heterophyllas (Phanas)	1	30.6	5 mt.
			2	60.9	
			3		
		Delomix regia (Gulmahor)	1	60.9	6 mt.
		Cocos nucifera (Nariyeli)	1	60.9	10 mt.
			2	90.12	
			3		
		Siamea saman (Raintree)	1	30.6	4 mt.
		Ficus bengnalensis (Vad)	1	60.9	10 mt.
			1	120.15	
			1	180 >	
			3		
		Ehcalyptus tereticornis (Nilgiri)	1	120.15	8 mt.
		Annona reticulata (Ramphal)	1	30.6	4 mt.
		Syzygium cumini (Jamun)	4	30.6	8 mt.
			1	60.9	
			1	90.12	
			1	180 >	
			7		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Ficus arnottina (Pair)	1	180 >	8 mt.
		Ficus racemosa (Umero)	1	90.12	6 mt.
			1	150.18	
			1	180 >	
			3		
		Manilkara zapota (Chiku)	7	30.6	5 mt.
			2	60.9	
			1	90.12	
			10		
		Borassus flabellifer (Tad)	1	150.18	12 mt.
		Psidioni guajava (Peru)	9	30.6	5 mt.
			1	60.9	
			10		
		Emblica officinalis (Amala)	3	30.6	5 mt.
		Trewia nudiflora (Petari)	1	120.15	6 mt.
		Total :	**215**		
2	Patilpada	Tectona grandis (Teak-sag)	168	30.6	6 mt.
			20	60.9	
			188		
		Acacia catechue (Khair)	1	30.6	3 mt.
		Phonix sylvestris (Khajuri)	9	30.6	8 mt.
			8	60.9	
			17		
		Cocos nucifera (Nariyeli)	7	30.6	10 mt.
			14	60.9	
			15	90.12	
			36		
		Manilkara zapota (Chiku)	199	30.6	5 mt.
			182	60.9	
			381		
		Mangifera indica (Mango-Ambo)	9	30.6	5 mt.
			3	60.9	
			4	90.12	
			1	120.15	
			17		
		Tamarindus indica (Chinch)	1	30.6	4 mt.
			4	60.9	
			1	180 >	
			6		
		Ficus racemosa (Umero)	1	30.6	5 mt.
			2	60.9	
			3		
		Darlbergia sissoo (Shisoo)	1	30.6	4 mt.
			1	90.12	
			2		
		Bombax ceiba (Sawar)	1	90.12	6 mt.
			1	120.15	
			2	180 >	
			4		
		Cordia dicotoma (Bokhar)	1	120.15	7 mt.
		Syzygium cumini (Jamun)	1	120.15	6 mt.
			1	180 >	
			2		
		Murraya koenigii (Kadilimb)	1	120.15	4 mt.
		Moringa oleifra (Shegawa)	5	30.6	3 mt.
		Siamea saman (Raintree)	1	180 >	6 mt.
		Zizyphus mauritiana	28	30.6	3 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		(Bor)			
		Annona squamosa (Sitaphal)	272	30.6	3 mt.
		Pongamia pinnata (Karanj)	1	30.6	4 mt.
		Muliusa tomentosa (Humb)	1	60.9	5 mt.
		Leucaena leucocephala (Subabul)	1	60.9	4 mt.
		Diospyros melonoxydon (Temberun)	1	30.6	4 mt.
		Bauhinia racemosa (Ashitro)	2	60.9	5 mt.
		Grewia tiliaefolia (Dhaman)	1	120.15	6 mt.
		Total :	**972**		
3	Junnerpada	Mangifera indica (Mango-Ambo)	7	30.6	6 mt.
			7	60.9	
			14	90.12	
			46	120.15	
			10	150.18	
			84		
		Manilkara zapota (Chiku)	48	30.6	5 mt.
			95	60.9	
			2	120.15	
			145		
		Tamarindus indica (Chinch)	16	30.6	6 mt.
			4	60.9	
			9	90.12	
			6	120.15	
			11	150.18	
			8	180 >	
			54		
		Tectona grandis (Teak-sag)	54	30.6	5 mt.
			12	60.9	
			1	90.12	
			67		
		Terminalia tomentosa (Ain)	9	30.6	8 mt.
			14	60.9	
			11	90.12	
			1	120.15	
			35		
		Syzygium cumini (Jamun)	1	30.6	6 mt.
			2	60.9	
			1	150.18	
			1	180 >	
			5		
		Zizyphus mauritiana (Bor)	8	30.6	4 mt.
			3	60.9	
			2	90.12	
			1	120.15	
			14		
		Brideli aretusa (Asana)	3	30.6	6 mt.
			3	60.9	
			3	90.12	
			9		
		Cocos nucifera (Nariyeli)	16	30.6	10 mt.
			4	60.9	
			6	180 >	
			26		
		Grewia tiliaefolia (Dhaman)	4	30.6	6 mt.
			3	60.9	
			1	90.12	
			8		
		Moringa oleifra (Shegawa)	7	30.6	5 mt.
			1	60.9	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			8		
		Phonix sylvestris (Khajuri)	9	30.6	10 mt.
			35	60.9	
			44		
		Borassus flabellifer (Tad)	2	30.6	12 mt.
			8	60.9	
			9	90.12	
			19		
		Ficus bengnalensis (Vad)	1	90.12	8 mt.
			1	180 >	
			2		
		Ficus racemosa (Umero)	2	30.6	6 mt.
			2	60.9	
			1	90.12	
			5		
		Trewia nudiflora (Petari)	1	60.9	6 mt.
		Erythrina veriegata (Pongara)	1	90.12	6 mt.
		(Mad)	1	30.6	8 mt.
			1	90.12	
			3	180 >	
			5		
		Thespesia populnea (Bhindi)	4	30.6	5 mt.
			7	60.9	
			3	90.12	
			2	150.18	
			16		
		Bombax ceiba (Sawar)	3	30.6	6 mt.
			4	60.9	
			4	120.15	
			1	150.18	
			12		
		(Tamson)	1	90.12	5 mt.
			1	150.18	
			2		
		Annona squamosa (Sitaphal)	4	30.6	4 mt.
		Bauhinia racemosa (Apta)	3	90.12	6 mt.
			3	150.18	
			6		
		Butea monosperma (Paper)	2	90.12	6 mt.
			1		
			2	150.18	
			5		
		Leucaena leucocephala (Subabul)	7	30.6	6 mt.
			1	90.12	
			1	180 >	
			9		
		Siamea saman (Raintree)	2	30.6	5 mt.
		Acacia catechue (Khair)	3	30.6	5 mt.
			2	90.12	
			1	180 >	
			6		
		Anacardium occidentale (Kaju)	2	30.6	4 mt.
		Artocarpus heterophyllas (Phanas)	2	90.12	6 mt.
			2	150.18	
			4		
		Acacia nilotica (Babul)	1	60.9	5 mt.
		Garuga pinnata (Kakad)	1	30.6	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	90.12	
			2		
		Total :	**603**		
4	Kasera	Mangifera indica (Mango-Ambo)	6	30.6	6 mt.
			13	60.9	
			1	90.12	
			20		
		Manilkara zapota (Chiku)	24	30.6	5 mt.
			36	60.9	
			17	90.12	
			77		
		Cocos nucifera (Nariyeli)	1	30.6	10 mt.
			2	60.9	
			17	90.12	
			20		
		Anacardium occidentale (Kaju)	2	30.6	5 mt.
		Total :	**119**		
5	Vakhi	Tectona grandis (Teak-sag)	5	30.6	5 mt.
		Acacia catechue (Khair)	32	30.6	6 mt.
			35	60.9	
			6	90.12	
			73		
		Phonix sylvestris (Khajuri)	26	60.9	10 mt.
			3	90.12	
			29		
		Cocos nucifera (Nariyeli)	3	30.6	5 mt.
			22	60.9	
			13	90.12	
			38		
		Anacardium occidentale (Kaju)	4	30.6	5 mt.
		Malinkara zapota (Chiku)	208	30.6	4 mt.
			8	60.9	
			216		
		Mangifera indica (Mango-Ambo)	14	30.6	5 mt.
			15	60.9	
			7	90.12	
			5	120.15	
			1	150.18	
			42		
		Tamarindus indica (Chinch)	4	90.12	8 mt.
			6	120.15	
			8	180 >	
			18		
		(Mad)	1	60.9	4 mt.
			2	90.12	
			3		
		Psidioni guajava (Peru)	63	30.6	3 mt.
		Syzygium cumini (Jamun)	4	30.6	6 mt.
			1	60.9	
			3	90.12	
			8		
		Terminalia tomentosa (Ain)	23	30.6	7 mt.
			32	60.9	
			3	90.12	
			1	120.15	
			59		
		Borassus flabellifer (Tad)	28	60.9	10 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			5	90.12	
			12	120.15	
			45		
		Sapindus emarginata (Rithi)	1	30.6	3 mt.
		Moringa oleifra (Shegawa)	10	30.6	3 mt.
		Thespesia populnea (Bhindi)	2	30.6	4 mt.
		Zizyphus mauritiana (Bor)	5	30.6	3 mt.
			6	60.9	
			2	90.12	
			13		
		Bombax ceiba (Sawar)	1	60.9	6 mt.
			2	90.12	
			2	150.18	
			5		
		Diospyros melonoxydon (Temberun)	1	180 >	6 mt.
		Brideli aretusa (Asana)	1	30.6	6 mt.
			6	60.9	
			3	90.12	
			1	150.18	
			11		
		Butea monosperma (Paper)	4	30.6	5 mt.
		Garuga pinnata (Kakad)	1	90.12	4 mt.
		Zizyphus mauritiana (Bor)	4	30.6	3 mt.
		Annona squamosa (Sitaphal)	4	30.6	4 mt.
		Adina cordifolia (Hed)	1	60.9	6 mt.
		Ficus religiosa (Pipal)	1	60.9	5 mt.
		Bauhinia racemosa (Apta)	1	60.9	5 mt.
		Total :	**662**		
6	Manderi	Tectona grandis (Teak-sag)	52	30.6	5 mt.
		Phonix sylvestris (Khajuri)	80	60.9	10 mt.
			38	90.12	
			118		
		Borassus flabellifer (Tad)	1	90.12	11 mt.
			3	180 >	
			4		
		Terminalia tomentosa (Ain)	1	30.6	6 mt.
			6	60.9	
			23	90.12	
			30		
		Bombax ceiba (Sawar)	1	60.9	6 mt.
			1	90.12	
			2	150.18	
			4		
		Casuarine equisetifolia (Sharu)	1	120.15	8 mt.
		Zizyphus mauritiana (Bor)	1	60.9	4 mt.
		Mangifera indica (Mango-Ambo)	5	30.6	8 mt.
			2	60.9	
			3	90.12	
			14	120.15	
			5	150.18	
			12	180 >	
			41		
		Acacia catechue (Khair)	7	30.6	6 mt.
			5	60.9	
			1	90.12	
			1	120.15	
			14		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Manilkara zapota (Chiku)	4	60.9	4 mt.
			90	90.12	
			20	120.15	
			114		
		Cocos nucifera (Nariyeli)	25	60.9	10 mt.
			14	90.12	
			39		
		Annona squamosa (Sitaphal)	7	30.6	4 mt.
		Artocarpus heterophyllas (Phanas)	3	90.12	6 mt.
		Siamea saman (Raintree)	1	150.18	6 mt.
			1	180 >	
			2		
		Tamarindus indica (Chinch)	1	30.6	5 mt.
			3	90.12	
			7	180 >	
			11		
		Moringa oleifra (Shegawa)	1	60.9	10 mt.
			7	90.12	
			8		
		Grewia tiliaefolia (Dhaman)	1	60.9	5 mt.
		Lannea Coromandelica (Shemat)	1	150.18	6 mt.
		Acecia nilotica (Babul)	1	120.15	5 mt.
		Careya arborea (Kumbhi)	2	60.9	6 mt.
		Ficus racemosa (Umero)	1	150.18	5 mt.
		Total :	**455**		
7	Ambewadi	Cocos nucifera (Nariyeli)	74	60.9	10 mt.
			59	90.12	
			4	120.15	
			137		
		Manilkara zapota (Chiku)	48	30.6	6 mt.
			68	60.9	
			72	90.12	
			7	120.15	
			195		
		Mangifera indica (Mango-Ambo)	1	30.6	8 mt.
			6	90.12	
			4	120.15	
			5	150.18	
			2	180 >	
			18		
		Psidioni guajava (Peru)	2	30.6	4 mt.
		Thespesia populnea (Bhindi)	1	30.6	5 mt.
			1	60.9	
			2		
		Areca catechu (Supari)	1	30.6	6 mt.
		Anacardium occidentale (Kaju)	2	30.6	5 mt.
			2	60.9	
			4		
		Syzygium cumini (Jamun)	1	30.6	5 mt.
		Artocarpus heterophyllas (Phanas)	2	90.12	6 mt.
		Citrus lemon (Nimbu)	2	30.6	2 mt.
		Total :	**364**		
8	Dahanu	Mangifera indica (Mango-Ambo)	2	30.6	6 mt.
			3	90.12	
			1	120.15	
			1	180 >	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			7		
		Malinkara zapota (Chiku)	2	90.12	6 mt.
		Artocarpus heterophyllas (Phanas)	3	60.9	6 mt.
		Phonix sylvestris (Khajuri)	21	60.9	8 mt.
		Tectona grandis (Teak-sag)	1	30.6	6 mt.
			13	60.9	
			14		
		Garuga pinnata (Kakad)	1	90.12	8 mt.
		Terminalia tomentosa (Ain)	1	60.9	8 mt.
			10	90.12	
			2	120.15	
			13		
		Bauhinia racemosa (Apta)	1	60.9	5 mt.
		(Bevata)	1	60.9	5 mt.
		Anacardium occidentale (Kaju)	1	180 >	6 mt.
		Borassus flabellifer (Tad)	1	180 >	10 mt.
		(Kajara)	1	180 >	8 mt.
		Total :	**66**		
9	Kotkurwack (Chainge 34000 to 35000)	Acacia nilotica (Babul)	1	60.9	5 mt.
		Tectona grandis (Teak-sag)	2	30.6	6 mt.
		Morinda tinctoria (Ashi)	1	30.6	4 mt.
		Acacia spps	2	30.6	4 mt.
		Anacardium occidentale (Kaju)	1	60.9	4 mt.
		Murraya koenigii (Kadulimb)	2	30.6	5 mt.
			2	60.9	
			5	90.12	
			9		
		Madhuca latifolia (Mahudo)	1	90.12	5 mt.
		Bombax ceiba (Sawar)	3	30.6	6 mt.
			2	60.9	
			5		
		Tamarindus indica (Chinch)	1	120.15	8 mt.
			1	150.18	
			2		
		Ficus bengnalensis (Vad)	2	180 >	10 mt.
		Leucaena leucocephala (Subabul)	2	30.6	5 mt.
		Zizyphus mauritiana (Bor)	1	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	3	60.9	5 mt.
		Ficus religiosa (Pipal)	1	180 >	8 mt.
		Emblica officinalis (Amala)	1	60.9	4 mt.
		Total :	**34**		
10	Ranishingav (Chainge 35560 to 38000)	Acacia catechue (Khair)	2	30.6	6 mt.
			3	60.9	
			1	90.12	
			6		
		Tectona grandis (Teak-sag)	22	30.6	6 mt.
			2	60.9	
			24		
		Terminalia tomentosa (Ain)	5	30.6	8 mt.
			5	60.9	
			4	120.15	
			1	150.18	
			15		
		Darlbergia sissoo (Shisoo)	3	60.9	5 mt.
		Murraya koenigii (Kadulimb)	9	30.6	4 mt.
			5	60.9	
			3	90.12	
			1	120.15	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3	150.18	
			21		
		Leucaena leucocephala (Subabul)	11	30.6	6 mt.
			2	60.9	
			1	90.12	
			1	120.15	
			15		
		Thespesia populnea (Bhindi)	4	30.6	4 mt.
			5	60.9	
			2	90.12	
			11		
		Acacia nilotica (Babul)	4	60.9	6 mt.
			1	90.12	
			1	120.15	
			6		
		Lannea Coromandelica (Shemat)	3	60.9	4 mt.
		Acacia spps	14	30.6	6 mt.
			12	60.9	
			13	90.12	
			5	120.15	
			2	150.18	
			46		
		Brideli aretusa (Asana)	4	30.6	5 mt.
			1	60.9	
			5		
		Casuarine equisetifolia (Sharu)	1	30.6	8 mt.
		(Gurada)	1	60.9	4 mt.
		Grewia tiliaefolia (Dhaman)	1	30.6	5 mt.
			3	60.9	
			4		
		Pongamia pinnata (Karanj)	4	30.6	8 mt.
		Zizyphus mauritiana (Bor)	1	30.6	5 mt.
			1	90.12	
			2		
		Bombax ceiba (Sawar)	4	30.6	8 mt.
			2	60.9	
			1	150.18	
			1	180 >	
			8		
		Dalbergia lanceolaria (Dandoshi)	4	30.6	6 mt.
			1	120.15	
			5		
		Ficus religiosa (Pipal)	1	60.9	6 mt.
		Prosophis cineraia (Khijado)	1	180 >	8 mt.
		Bauhinia racemosa (Apta)	1	60.9	5 mt.
		Ficus racemosa (Umero)	1	60.9	6 mt.
			1	90.12	
			1	180 >	
			3		
		Careya arborea (Kumbhi)	1	120.15	6 mt.
		Butea monosperma (Palas)	1	30.6	5 mt.
			1	60.9	
			2		
		Total :	**189**		

District Thane

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Chikhala Taluk .Dahanu	Cocos nucifera (Nariyeli)	1	30.6	12 mt.
			8	60.9	
			9	90.12	
			18		
		Phonix sylvestris (Khajuri)	14	30.6	10 mt.
			83	60.9	
			10	90.12	
			107		
		Mangifera indica (Mango-Ambo)	38	30.6	8 mt.
			1	60.9	
			3	90.12	
			1	120.15	
			43		
		Bauhinia racemose (Apta)	1	60.9	6 mt.
			1	90.12	
			2		
		Tamarindus indica (Chinch)	12	30.6	8 mt.
			14	60.9	
			1	90.12	
			1	120.15	
			28		
		Terminalia tomentosa (Ain)	45	30.6	6 mt.
			5	60.9	
			50		
		Acacia nilotica (Babul)	10	30.6	5 mt.
			5	60.9	
			15		
		Brideli aretusa (Asana)	5	30.6	6 mt.
		Murraya koenigii (Kadilimb)	3	30.6	6 mt.
			2	60.9	
			1	90.12	
			6		
		Acacia catechue (Khair)	1	30.6	5 mt.
			1	60.9	
			2		
		Thespesia populnea (Bhindi)	5	30.6	6 mt.
			9	60.9	
			3	90.12	
			17		
		Pongamia pinnata (Karanj)	5	30.6	4 mt.
		Zizyphus mauritiana (Bor)	27	30.6	4 mt.
			2	60.9	
			29		
		Leucaena leucocephala (Subabul)	21	30.6	4 mt.
		Acacia spp	22	30.6	5 mt.
			6	60.9	
			28		
		(Mad)	1	30.6	6 mt.
			7	60.9	
			8		
		Manilkara zapota (Chiku)	12	30.6	4 mt.
		Erythrina veriegata (Pongara)	3	30.6	6 mt.
			2	60.9	
			5		
		Pithecelloium dulce (Vilayati chinch)	2	30.6	7 mt.
			1	60.9	
			3		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Bombax ceiba (Sawar)	3	30.6	6 mt.
			2	60.9	
			5		
		Moringa oleifera (Shewaga)	2	30.6	4 mt.
		Albizzia procera (Kinhai)	7	60.9	5 mt.
		Tectona grandis (Teak-sag)	2	30.6	6 mt.
		Lannea coromandelica (Shemat)	1	30.6	4 mt.
		Borassus flabellifer (Tad)	16	90.12	10 mt.
		Anogeissus latifolia (Dhavada)	1	30.6	5 mt.
		Total :	**438**		
2	Gholwad Ta.Dahanu	Acacia catechue (Khair)	1	30.6	4 mt.
		Bombax ceiba (Sawar)	1	30.6	6 mt.
			2	60.9	
			3		
		Butea monosperma (Palas)	2	60.9	6 mt.
		Phonix sylvestris (Khajuri)	2	30.6	12 mt.
			45	60.9	
			15	90.12	
			62		
		Murraya koenigii (Kadilimb)	1	30.6	6 mt.
			2	60.9	
			2	90.12	
			1	120.15	
			6		
		Brideli aretusa (Asana)	1	30.6	5 mt.
		Anogeissus latifolia (Dhavada)	1	30.6	6 mt.
			1	90.12	
			2		
		Zizyphus mauritiana (Bor)	1	30.6	4 mt.
		Pongamia pinnata (Karanj)	3	60.9	6 mt.
			1	120.15	
			4		
		Thespesia populnea (Bhindi)	8	30.6	5 mt.
			1	60.9	
			9		
		Cocos nucifera (Nariyeli)	12	60.9	10 mt.
			48	90.12	
			60		
		Acacia nilotica (Babul)	6	30.6	8 mt.
			20	60.9	
			3	90.12	
			29		
		Manilkara zapota (Chiku)	66	30.6	6 mt.
			17	60.9	
			83		
		Mangifera indica (Mango-Ambo)	7	30.6	6 mt.
			9	60.9	
			2	90.12	
			18		
		Psidium guajava (Peru)	2	60.9	3 mt.
		Tamarindus indica (Chinch)	2	30.6	8 mt.
			1	60.9	
			2	90.12	
			5		
		Acacia spp	3	60.9	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2	90.12	
			5		
		Leucaena leucocephala (Subabul)	2	30.6	7 mt.
			1	60.9	
			1	90.12	
			4		
		Ficus racemosa (Umaro)	2	90.12	6 mt.
		(Mad)	1	60.9	5 mt.
			6	90.12	
			7		
		Terminalia tomentosa (Ain)	1	30.6	4 mt.
		Tectona grandis (Teak-sag)	2	30.6	4 mt.
		Terminalia kaddapa (Badam)	2	60.9	6 mt.
		(Koknis)	10	30.6	5 mt.
		Saraca asoca (Ashok)	3	30.6	4 mt.
		Total :	**324**		
3	Bordee Ta.Dahanu	Cocos nucifera (Nariyeli)	57	90.12	10 mt.
		Manilkara zapota (Chiku)	36	30.6	5 mt.
			19	60.9	
			55		
		Acacia spp	5	30.6	5 mt.
			8	60.9	
			13		
		Mangifera indica (Mango-Ambo)	1	30.6	6 mt.
			4	60.9	
			1	120.15	
			6		
		Leucaena leucocephala (Subabul)	33	30.6	4 mt.
		Zizyphus mauritiana (Bor)	1	30.6	4 mt.
			1	60.9	
			2		
		Anogeissus latifolia (Dhavada)	2	30.6	4 mt.
		Tamarindus indica (Chinch)	1	30.6	5 mt.
			1	60.9	
			2		
		Murraya koenigii (Kadilimb)	4	60.9	4 mt.
		Pongamia pinnata (Karanj)	1	60.9	5 mt.
		Phonix sylvestris (Khajuri)	9	60.9	8 mt.
		Thespesia populnea (Bhindi)	1	30.6	5 mt.
		Acacia nilotica (Babul)	1	30.6	4 mt.
		Total :	**186**		
4	Saiborigav Ta.Dahanu	Manilkara zapota (Chiku)	100	30.6	4 mt.
		Mangifera indica (Mango-Ambo)	20	30.6	6 mt.
			28	60.9	
			8	90.12	
			56		
		Ficus racemosa (Umaro)	2	90.12	6 mt.
		Anogeissus latifolia (Dhavada)	1	60.9	5 mt.
		Cocos nucifera (Nariyeli)	47	90.12	12 mt.
		Moringa oleifera (Sewaga)	18	30.6	5 mt.
			3	60.9	
			21		
		Syzygium cumini (Jamun)	6	60.9	5 mt.
		(Keki)	8	30.6	6 mt.
			20	60.9	
			28		
		Psidium guajava (Peru)	5	30.6	4 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Annona squamosa (Sitaphal)	6	30.6	5 mt.
		Cordia dichotoma (Bhokar)	7	30.6	4 mt.
		Pterocarpus marsupium (Biyo)	2	30.6	6 mt.
		Artocarpus heterophyllas (Phanas)	2	60.9	5 mt.
		Tectona grandis (Teak-sag)	2	30.6	8 mt.
			143	60.9	
			145		
		Bauhinia racemose (Apta)	1	30.6	4 mt.
		Careya arborea (Kumbhi)	1	60.9	4 mt.
		Thespesia populnea (Bhindi)	8	30.6	4 mt.
		Leucaena leucocephala (Subabul)	1	60.9	5 mt.
		Zizyphus mauritiana (Bor)	1	60.9	4 mt.
		Phonix sylvestris (Khajuri)	2	90.12	8 mt.
		Tamarindus indica (Chinch)	1	60.9	4 mt.
		Moringa oleifera (Sewaga)	2	30.6	5 mt.
			2	60.9	
			4		
		Total :	**447**		
5	Vevaji Ta.Dahanu	Phonix sylvestris (Khajuri)	2	60.9	10 mt.
			3	90.12	
			5		
		Acacia spp	1	60.9	4 mt.
		Murraya koenigii (Kadilimb)	1	30.6	5 mt.
			1	60.9	
			2		
		Bombax ceiba (Sawar)	1	60.9	5 mt.
		Thespesia populnea (Bhindi)	1	60.9	4 mt.
		Ehcalyptus tereticornis (Nilgiri)	5	90.12	8 mt.
		Ficus religiosa (Pipal)	1	120.15	8 mt.
		Total :	**16**		

District Raigad

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Jaskhar	Bombax ceiba (Sawar)	10	30.6	3 mt.
		Leucaena leucocephala (Subabul)	3	30.6	3.5 mt.
		Pithecelloium dulce (Vilayati chinch)	16	30.6	3 mt.
		Acacia spp	4	30.6	4 mt.
			2	60.9	
			6		
		Ficus benghalensis (Vad)	1	60.9	3 mt.
		Total :	**36**		
2	Sonari	Bombax ceiba (Sawar)	5	30.6	3 mt.
		Kydia calycina (Warang)	1	30.6	3 mt.
		Total :	**6**		
3	Karal	Bombax ceiba (Sawar)	5	30.6	3 mt.
4	Pagote	Bombax ceiba (Sawar)	8	30.6	3 mt.
5	Sawarkar	---	8	30.6	3 mt.
6	Shemtekar	---	8	30.6	3 mt.
7	Jasai	---	8	30.6	3 mt.
8	Poundkhar	---	8	30.6	3 mt.
9	Khatkhar	Bombax ceiba (Sawar)	3	30.6	3 mt.
10	Bandkhar	Bombax ceiba (Sawar)	2	30.6	2 mt.
		Kydia calycina (Warang)	1	60.9	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Total :	**3**		
11	Vahul Dumale	Bombax ceiba (Sawar)	14	30.6	
			1	60.9	
			15		
		Mangifera indica (Mango-Ambo)	1	30.6	
		Acacia spp	1	30.6	
		Total :	**17**		
12	Pandegher	Bombax ceiba (Sawar)	**13**	30.6	3 mt.
13	Bambavi	Erythrina indica (Pangara)	2	30.6	3 mt.
		Bombax ceiba (Sawar)	14	30.6	3 mt.
			1	90.12	
			15		
		Mangifera indica (Mango-Ambo)	1	30.6	3 mt.
			1	60.9	
			3	90.12	
			1	120.15	
			1	180 >	
			7		
		Ficus racemosa (Umaro)	2	30.6	3 mt.
		Syzygium cumini (Jamun)	7	30.6	3 mt.
			1	60.9	
			1	90.12	
			9		
		(Saldhol)	1	60.9	4 mt.
			2	90.12	
			3		
		Pongamia pinnata (Karanj)	2	30.6	3 mt.
		Ficus benghalensis (Vad)	1	30.6	3 mt.
			1	60.9	
			2		
		(Ranbhed)	1	30.6	3 mt.
		Total :	**43**		
14	Kundevahal	Casuarina eqisetifolia (Sheru)	11	30.6	5 mt.
		Bombax ceiba (Sawar)	19	30.6	3 mt.
		(Saldhol)	1	60.9	3 mt.
		Pongamia pinnata (Karanj)	4	30.6	3 mt.
			1	90.12	
			5		
		Erythrina indica (Pangara)	9	30.6	3 mt.
		Artocarpus heterophyllas (Phanas)	2	30.6	3 mt.
		Mangifera indica (Mango-Ambo)	11	30.6	3 mt.
			1	60.9	
			1	180 >	
			13		
		Moringa oleifera (Segawa)	3	30.6	3 mt.
		Leucaena leucocephala (Subabul)	4	30.6	3 mt.
		(Ranbhed)	5	30.6	3 mt.
			2	90.12	
			7		
		Bauhinia racemosa (Apta)	1	30.6	3 mt.
		Phoenix sylvestris (Shindi)	1	90.12	4 mt.
		Ficus racemosa (Umaro)	1	30.6	3 mt.
		Borassus flabellifer (Tad)	1	180 >	4 mt.
		Total :	**78**		
15	Ovale	Leucaena leucocephala (Subabul)	9	30.6	3 mt.
			1	60.9	
			10		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Ficus racemosa (Umaro)	5	30.6	3 mt.
		Syzygium cumini (Jamun)	3	30.6	3 mt.
			2	60.9	
			1	180 >	
			6		
		Terminalia kaddapa (Badam)	2	30.6	3 mt.
		(Ranbhed)	2	30.6	4 mt.
			2	90.12	
			4		
		Pongamia pinnata (Karanj)	8	30.6	3 mt.
			11	60.9	
			1	180 >	
			20		
		Stereospermum helonioides (Padal)	2	30.6	2 mt.
		Delonix regia (Gulmahor)	3	30.6	3 mt.
		Moringa oleifera (Segawa)	2	30.6	3 mt.
			3	60.9	
			5		
		Ficus benghalensis (Vad)	1	90.12	3 mt.
			1	180 >	
			2		
		Ficus religiosa (Pipal)	1	60.9	3 mt.
		(Chafa)	2	60.9	2 mt.
		Bauhinia racemosa (Apta)	1	60.9	3 mt.
		Mangifera indica (Mango-Ambo)	4	30.6	3 mt.
			1	60.9	
			5		
		Casuarina eqisetifolia (Sheru)	8	30.6	5 mt.
		Ehcalyptus tereticornis (Nilgiri)	1	30.6	4 mt.
		Bombax ceiba (Sawar)	2	30.6	3 mt.
			4	60.9	
			6		
		Pithecelloium dulce (Vilayati chinch)	1	120.15	4 mt.
		Zizyphus mauritiana (Boradi)	1	30.6	3 mt.
		Total :	**85**		
16	Dapoli pargaon	Terminalia kaddapa (Badam)	1	30.6	3 mt.
		Pongamia pinnata (Karanj)	1	60.9	3 mt.
			2	90.12	
			3		
		(Peru)	1	30.6	3 mt.
		Tamarindus indica (Chinch)	2	30.6	2 mt.
		Acacia spp	1	60.9	6 mt.
		Leucaena leucocephala (Subabul)	1	30.6	3 mt.
		Mangifera indica (Mango-Ambo)	4	90.12	3 mt.
			2	120.15	
			3	180 >	
			9		
		Borassus flabellifer (Tad)	1	60.9	4 mt.
			5	90.12	
			1	180 >	
			7		
		(Bhed)	1	30.6	3 mt.
		Brideli aretusa (Asana)	3	30.6	4 mt.
			1	60.9	
			4		
		Bombax ceiba (Sawar)	6	30.6	2 mt.
			2	60.9	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2	90.12	
			10		
		Ficus racemosa (Umaro)	1	30.6	3 mt.
			1	60.9	
			1	90.12	
			3		
		Ficus religiosa (Pipal)	1	90.12	4 mt.
		Lannea Coromandelica (Shemat)	1	30.6	3 mt.
		Murraya koenigii (Kadulimb)	1	30.6	2 mt.
		Erythrina indica (Pangara)	1	30.6	8 mt.
			3	60.9	
			1	90.12	
			5		
		Pongamia pinnata (Karanj)	3	30.6	4 mt.
		Ficus arnottina (Pair)	1	30.6	2 mt.
		Total :	**55**		
17	Pargaon ¥dungi	Mangifera indica (Mango-Ambo)	3	30.6	3 mt.
			1	120.15	
			4		
		Leucaena leucocephala (Subabul)	12	30.6	3 mt.
			2	60.9	
			14		
		Albizzia procera (Kinai)	7	30.6	3 mt.
			1	60.9	
			1	90.12	
			9		
		Dalbergia lanceolaria (Dandoshi)	1	30.6	2 mt.
		Syzygium cumini (Jamun)	1	60.9	3 mt.
		Acacia spp	1	30.6	2 mt.
		Bombax ceiba (Sawar)	1	60.9	3 mt.
		Pongamia pinnata (Karanj)	3	30.6	3 mt.
			3	60.9	
			2	90.12	
			8		
		Ficus arnottina (Pair)	1	30.6	2 mt.
		Erythrina indica (Pangara)	1	30.6	2 mt.
		Ficus racemosa (Umaro)	2	30.6	3 mt.
			1	90.12	
			3		
		Total :	**44**		
18	Karanjade	Bombax ceiba (Sawar)	3	30.6	3 mt.
		Leucaena leucocephala (Subabul)	6	30.6	3 mt.
		Terminalia kaddapa (Badam)	1	30.6	3 mt.
		(Bhed)	1	60.9	2 mt.
		Mongifera indica (Mango-Ambo)	4	30.6	2 mt.
		Ficus racemosa (Umaro)	1	30.6	2 mt.
		Ficus benghalensis (Vad)	1	60.9	3 mt.
		Tamarindus indica (Chinch)	1	30.6	4 mt.
		Zizyphus mauritiana (Boradi)	2	30.6	3 mt.
		Pithecelloium dulce (Vilayati chinch)	1	30.6	3 mt.
		Tectona grandis (Teak-sag)	2	30.6	2 mt.
		(Peru)	1	30.6	3 mt.
		Leucaena leucocephala (Subabul)	2	30.6	3 mt.
			1	60.9	
			3		
		Cordia dichotoma (Bhoker)	1	30.6	3 mt.
		Delonix regia (Gulmahor)	1	30.6	3 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Total :	**29**		
19	Kopar	Mangifera indica (Mango-Ambo)	4	30.6	4 mt.
			3	60.9	
			5	90.12	
			1	150.18	
			13		
		Syzygium cumini (Jamun)	1	60.9	4 mt.
		Borassus flabellifer (Tad)	3	90.12	9 mt.
		Ficus religiosa (Pipal)	1	30.6	3 mt.
		Ficus benghalensis (Vad)	1	60.9	3 mt.
			1	90.12	
			2		
		Pongamia pinnata (Karanj)	3	90.12	3 mt.
		Lannea Coromandelica (Shemat)	5	30.6	3 mt.
		Kydia calycina (Warang)	1	30.6	2 mt.
		Total :	**29**		
20	Vadghar	Leucaena leucocephala (Subabul)	2	30.6	4 mt.
		Ficus religiosa (Pipal)	1	90.12	3 mt.
		Total :	**3**		
21	Kalundre	Cordia dichotoma (Bhoker)	1	60.9	3 mt.
		Borassus flabellifer (Tad)	1	60.9	4 mt.
			1	90.12	
			2		
		Brideli aretusa (Asana)	2	30.6	3 mt.
		Acacia spp	2	30.6	3 mt.
		Gmelina arborea (Shivan)	1	30.6	3 mt.
		Pongamia pinnata (Karanj)	1	30.6	4 mt.
			1	60.9	
			2		
		Leucaena leucocephala (Subabul)	7	30.6	5 mt.
		Annona squamosa (Sitaphal)	1	30.6	3 mt.
		Mangifera indica (Mango-Ambo)	3	30.6	3 mt.
			1	90.12	
			4		
		Ehcalyptus tereticornis (Nilgiri)	1	60.9	5 mt.
		Schleichera oleosa (Kusumb)	2	30.6	4 mt.
		Acacia spp	2	30.6	4 mt.
		Syzygium cumini (Jamun)	1	30.6	3 mt.
		Delonix regia (Gulmahor)	1	30.6	6 mt.
		(Rakaka)	1	30.6	3 mt.
		Terminalia tomentosa (Ain)	1	30.6	3 mt.
		Murraya koenigii (Kadulimb)	1	30.6	4 mt.
		Artocarpus heterophyllas (Phanas)	1	30.6	3 mt.
		Total :	**33**		
22	Vichumbe	Zizyphus mauritiana (Boradi)	16	30.6	2 mt.
		Lannea Coromandelica (Shemat)	6	30.6	2 mt.
			1	60.9	
			7		
		Morinda tinctoria (Ashi)	1	30.6	3 mt.
		Leucaena leucocephala (Subabul)	1	30.6	3 mt.
		Murraya koenigii (Kadulimb)	1	30.6	4 mt.
		(Bhed)	1	60.9	3 mt.
		Syzygium cumini (Jamun)	1	60.9	6 mt.
		Brideli aretusa (Asana)	1	30.6	3 mt.
		Total :	**29**		
23	Panvel	Zizyphus mauritiana (Boradi)	2	30.6	3 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Pithecelloium dulce (Vilayati chinch)	2	60.9	3 mt.
		Syzygium cumini (Jamun)	2	60.9	4 mt.
			2	90.12	
			4		
		(Bhed)	1	60.9	4 mt.
		Mangifera indica (Mango-Ambo)	2	90.12	4 mt.
			1	120.15	
			3		
		Casuarina eqisetifolia (Sheru)	4	30.6	7 mt.
			3	60.9	
			7		
		Delonix regia (Gulmahor)	1	30.6	7 mt.
			1	60.9	
			1	120.15	
			3		
		Ficus religiosa (Pipal)	1	30.6	5 mt.
			2	90.12	
			3		
		Areca catechue (Sopari)	2	30.6	8 mt.
		Cocos nucifera (Nariyel)	1	60.9	7 mt.
		Acacia spp	6	30.6	5 mt.
		Ficus racemosa (Umaro)	2	30.6	3.5 mt.
		Murraya koenigii (Kadulimb)	1	180 >	6 mt.
		Total :	**37**		
24	Asud gaon	Bombax ceiba (Sawar)	1	30.6	4 mt.
		Zizyphus mauritiana (Boradi)	6	30.6	3.5 mt.
			1	60.9	
			7		
		Ijayali	1	30.6	3 mt.
		Leucaena leucocephala (Subabul)	7	30.6	4 mt.
		Pithecelloium dulce (Vilayati chinch)	1	30.6	6 mt.
			2	60.9	
			3		
		Delonix regia (Gulmahor)	8	30.6	6 mt.
		Acacia spp	4	30.6	5 mt.
			1	60.9	
			5		
		Lannea Coromandelica (Shemat)	2	60.9	3 mt.
		Mangifera indica (Mango-Ambo)	1	30.6	4 mt.
		Erythrina indica (Pangara)	1	30.6	7 mt.
		Ehcalyptus tereticornis (Nilgiri)	1	30.6	8 mt.
			2	60.9	
			2	90.12	
			5		
		(Uapala)	2	90.12	6 mt.
		Total :	**43**		
25	Tembhode	Pithecelloium dulce (Vilayati chinch)	6	30.6	4 mt.
		Ehcalyptus tereticornis (Nilgiri)	4	30.6	8 mt.
			8	60.9	
			3	90.12	
			15		
		Delonix regia (Gulmahor)	5	60.9	7 mt.
			2	90.12	
			7		
		Tamarindus indica (Chinch)	1	60.9	5 mt.
		Gmelina arborea (Shivan)	1	60.9	6 mt.
			1	90.12	
			2		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Acacia spp	5	30.6	6 mt.
			2	60.9	
			7		
		Acacia nilotica (Babul)	1	30.6	3 mt.
		Leucaena leucocephala (Subabul)	1	30.6	7 mt.
		Ijayali	1	90.12	6 mt.
		Borassus flabellifer (Tad)	1	90.12	6 mt.
		Total :	**42**		
26	Valavali -I	Mangifera indica (Mango-Ambo)	6	60.9	4 mt.
			6	90.12	
			3	150.18	
			15		
		Bombax ceiba (Sawar)	3	30.6	5 mt.
		Cordia dichotoma (Bhoker)	1	30.6	5 mt.
			1	60.9	
			2		
		Borassus flabellifer (Tad)	1	90.12	6 mt.
			1	150.18	
			2		
		Murraya koenigii (Kadulimb)	1	30.6	4 mt.
			1	90.12	
			2		
		Pongamia pinnata (Karanj)	9	30.6	4 mt.
			11	60.9	
			1	90.12	
			1	150.18	
			22		
		Ficus benghalensis (Vad)	1	90.12	5 mt.
			1	150.18	
			2		
		Ficus racemosa (Umaro)	1	30.6	4 mt.
			1	60.9	
			2	90.12	
			4		
		Tamarindus indica (Chinch)	1	90.12	5 mt.
		Syzygium cumini (Jamun)	1	60.9	6 mt.
			4	90.12	
			5		
		(Moh)	1	60.9	6 mt.
		Total :	**59**		
27	Valavali -II	---	-	-	-
28	Rodpali	Ficus benghalensis (Vad)	1	60.9	4 mt.
		Pongamia pinnata (Karanj)	1	30.6	4 mt.
		Total :	**2**		
29	Taloja	---	-	-	-
30	Navde	Borassus flabellifer (Tad)	2	90.12	6 mt.
			1	180 >	
			3		
31	Pendhar	Mangifera indica (Mango-Ambo)	1	90.12	5 mt.
		Bombax ceiba (Sawar)	3	30.6	4 mt.
		Cordia dichotoma (Bhoker)	1	30.6	3 mt.
			1	60.9	
			2		
		Borassus flabellifer (Tad)	1	90.12	9 mt.
		Murraya koenigii (Kadulimb)	1	30.6	3 mt.
		Pongamia pinnata (Karanj)	1	60.9	4 mt.
		Ficus racemosa (Umaro)	1	60.9	4 mt.
			2	90.12	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3		
		Total :	**12**		
32	Rohinjan	(Bhed)	3	30.6	3 mt.
			1	60.9	
			4		
		Leucaena leucocephala (Subabul)	18	30.6	4 mt.
		Borassus flabellifer (Tad)	3	90.12	4 mt.
		Terminalia tomentosa (Ain)	1	30.6	5 mt.
		Brideli aretusa (Asana)	5	30.6	6 mt.
		Mangifera indica (Mango-Ambo)	1	30.6	5 mt.
			1	60.9	
			2		
		Zizyphus mauritiana (Boradi)	1	30.6	4 mt.
		Pongamia pinnata (Karanj)	1	30.6	3 mt.
			2	60.9	
			3		
		Acacia spp	1	60.9	5 mt.
		Pithecelloium dulce (Vilayati chinch)	1	30.6	4 mt.
		Ficus religiosa (Pipal)	1	90.12	5 mt.
		Ficus racemosa (Umaro)	1	30.6	4 mt.
		Syzygium cumini (Jamun)	1	60.9	4 mt.
			1	60.9	
			2		
		Total :	**43**		
33	Pisarve	(Bhed)	2	30.6	4 mt.
		Pongamia pinnata (Karanj)	7	30.6	5.5 mt.
			1	60.9	
			8		
		Mangifera indica (Mango-Ambo)	1	30.6	4 mt.
			1	60.9	
			2	90.12	
			4		
		Acacia spp	2	30.6	7 mt.
			1	60.9	
			1	90.12	
			4		
		Holoptelia integrifolia (Wawali)	1	60.9	4 mt.
		Terminalia tomentosa (Ain)	1	30.6	5 mt.
		Leucaena leucocephala (Subabul)	3	30.6	4 mt.
		Borassus flabellifer (Tad)	1	90.12	6 mt.
			1	150.18	
			2		
		Lagerstroemia microcarpa (Nana)	1	60.9	6 mt.
		Ficus benghalensis (Vad)	2	90.12	6 mt.
		Total :	**28**		
34	Dhansar	Mangifera indica (Mango-Ambo)	14	60.9	5 mt.
			24	90.12	
			10	120.15	
			8	150.18	
			1	180 >	
			57		
		Pithecelloium dulce (Vilayati chinch)	1	60.9	4 mt.
		Tamarindus indica (Chinch)	2	30.6	4 mt.
			3	60.9	
			2	90.12	
			7		
		Bombax ceiba (Sawar)	1	30.6	5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3	60.9	
			4		
		Ficus racemosa (Umaro)	1	30.6	4 mt.
			1	60.9	
			1	90.12	
			3		
		Murraya koenigii (Kadulimb)	1	90.12	5 mt.
		Pongamia pinnata (Karanj)	12	30.6	5 mt.
			17	60.9	
			1	90.12	
			1	150.18	
			31		
		Ficus benghalensis (Vad)	1	60.9	4 mt.
			2	90.12	
			3		
		Borassus flabellifer (Tad)	1	90.12	4 mt.
			2	150.18	
			3	180 >	
			6		
		(Moh)	1	60.9	6 mt.
			1	90.12	
			2		
		Syzygium cumini (Jamun)	4	60.9	6 mt.
			4	90.12	
			1	180 >	
			9		
		Acacia spp	2	60.9	6 mt.
		(Bhed)	1	90.12	5 mt.
		Zizyphus mauritiana (Boradi)	2	30.6	4 mt.
		Leucaena leucocephala (Subabul)	1	60.9	5 mt.
			1	90.12	
			2		
		Total :	**131**		

<Rewari-Dadori Section>

District Rewari

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Daliaki	*Prosopis cineraria (Khezri)*	1	150.18	14 mt.
			1	150.18	15 mt.
			2		
		Acacia nilotica (Babul)	3	60.9	12 mt.
		Azadirachta indica (Neem)	1	120-150	10 mt.
		Total:	**6**		
2	Jatuwas	*Acacia nilotica (Babul)*	1	30.6	5 mt.
			1	150.18	6 mt.
			2		
		Prosofis cinereria (Khezri)	4	60.9	4 mt.
			3	90.12	8 mt.
			3	120-150	13 mt.
			10		
		Rhonj	1	120-150	10 mt.
		Dalbergia sissoo (Shisham)	1	30.6	10 mt.
		Total:	**14**		
3	Bhadawas	*Acacia nilotica (Babul)*	1	90.12	8 mt.
		Dalbergia sissoo (Shisham)	1	60.9	8 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Azadirachta indica (Neem)	3	90.12	10 mt.
		Prosofis Cineria (Khezri)	1	90.12	10 mt.
			1	90.12	10 mt.
			1	150.18	14 mt.
			3		
		Total:	**8**		
4	Bithwana	*Acacia nilotica (Babul)*	1	90.12	14 mt.
		Farash	1	60.9	14 mt.
		Prosofis Cineria (Khezri)	1	30.6	4 mt.
			1	60.9	8 mt.
			1	90.12	10 mt.
			3	150.18	10 mt.
			2	150.18	13 mt.
			8		
		Azadirachta indica (Neem)	1	30.6	4 mt.
			4	60.9	8 mt.
			1	90.12	13 mt.
			6		
		Morus Alba (Sehtoot)	**1**	60.9	5 mt.
		Dalbergia sissoo (Shisham)	3	30.6	4 mt.
		Total:	**20**		
5	Bhadawas	*Acacia nilotica (Babul)*	2	30.6	5 mt.
			1	30.6	10 mt.
			1	60.9	13 mt.
			4		
		Zizyphus mauritiana (Ber)	1	90.12	5 mt.
		Prosofis Cineria (Khezri)	2	30.6	4 mt.
			1	30.6	10 mt.
			2	60.9	4 mt.
			1	60.9	7 mt.
			2	120-150	8 mt.
			3	120-150	10 mt.
			11		
		Dalbergia sissoo (Shisham)	1	30.6	3 mt.
		Total:	**17**		
6	Bhambari	*Ailanthus Excelba (Ardu)*	7	30.6	3 mt.
			6	60.9	3 mt.
			1	90.12	10 mt.
			14		
		Acacia nilotica (Babul)	7	90.12	10 mt.
		Jamun	2	30.6	8 mt.
		Prosofis Cineria (Khezri)	3	60.9	6 mt.
			4	90.12	6 mt.
			7		
		Azadirachta indica (Neem)	1	30.6	4 mt.
			1	90.12	8 mt.
			2		
		Morus Alba (Sehtoot)	3	90.12	8 mt.
		Dalbergia sissoo (Shisham)	2	30.6	4 mt.
			3	30.6	9 mt.
			6	60.9	9 mt.
			1	120-150	10 mt.
			12		
		Thejari	1	90.12	5 mt.
		Total:	**48**		
7	Kamalpur	Srirash	1	30.6	5 mt.
			1	30.6	9 mt.
			1	60.9	10 mt.
			3		
		Morus Alba (Sehtoot)	2	90.12	9 mt.
		Total:	**5**		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
8	DEVLAWAS	*Morus Alba (Sehtoot)*	2	30.6	9 mt.
		Srirash	5	90.12	10 mt.
		Acacia nilotica (Babul)	2	90.12	9 mt.
		Azadirachta indica (Neem)	1	30.6	5 mt.
		Total:	**10**		
9	Dhamlaka	*Acacia nilotica (Babul)*	2	90.12	9 mt.
		Bakan	1	90.12	4 mt.
		Ber	2	60.9	3 mt.
		Frash	4	150.18	5 mt.
		Prosofis Cineria (Khezri)	3	60.9	5 mt.
			2	90.12	10 mt.
			5		
		Azadirachta indica (Neem)	2	60.9	10 mt.
			3	120-150	14 mt.
			5		
		Morus Alba (Sehtoot)	1	60.9	4 mt.
			1	90.12	4 mt.
			1	120-150	6 mt.
			3		
		Dalbergia sissoo (Shisham)	2	60.9	6 mt.
			2	90.12	9 mt.
			4		
		Total:	**26**		
10	Dawana	ARDO	1	90.12	10 mt.
		Acacia nilotica (Babul)	8	60.9	8 mt.
			5	90.12	12 mt.
			4	120-150	12 mt.
			4	150.18	15 mt.
			21		
		Frash	6	90.12	15 mt.
		Prosofis Cineria (Khezri)	5	90.12	4 mt.
			10	90.12	5 mt.
			11	90.12	8 mt.
			26		
		Dalbergia sissoo (Shisham)	6	90.12	10 mt.
		Total:	**60**		
11	Lal pur	Frash	2	90.12	14 mt.
		Prosofis Cineria (Khezri)	2	90.12	5 mt.
		Acacia nilotica (Babul)	5	90.12	10 mt.
		Azadirachta indica (Neem)	1	60.9	6 mt.
		Total:	**10**		
12	Kasola	*Acacia nilotica (Babul)*	6	60.9	12 mt.
			2	90.12	20 mt.
			8		
		Frash	3	60.9	16 mt.
			4	90.12	15 mt.
			7		
		Prosofis Cineria (Khezri)	15	60.9	13 mt.
			4	90.12	18 mt.
			4	120-150	20 mt.
			1	150.18	25 mt.
			24		
		Azadirachta indica (Neem)	2	60.9	12 mt.
		Dalbergia sissoo (Shisham)	2	90.12	30 mt.
		Total:	**43**		
13	Lodhana	*Morus Alba (Sehtoot)*	2	30.6	9 mt.
		Srirash	5	90.12	10 mt.
		Acacia nilotica (Babul)	2	90.12	9 mt.
		Azadirachta indica (Neem)	7	30.6	5 mt.
		Total:	**16**		
14	Pithanwas	*Prosofis Cineria (Khezri)*	4	90.12	18 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Acacia nilotica (Babul)	2	90.12	9 mt.
		Azadirachta indica (Neem)	1	30.6	5 mt.
		Total:	**7**		
15	Mukandapur-basi	*Acacia nilotica (Babul)*	2	90.12	15 mt.
		Bakan	1	30.6	15 mt.
		Kanang	1	30.6	20 mt.
		Prosofis Cineria (Khezri)	6	60.9	13 mt.
			4	90.12	18 mt.
			4	120-150	20 mt.
			1	150.18	25 mt.
			15		
		Lasuwa	2	90.12	9 mt.
		Azadirachta indica (Neem)	3	30.6	9 mt.
		Dalbergia sissoo (Shisham)	2	30.6	15 mt.
			26		
16	Asiaki tappa	*Acacia nilotica (Babul)*	12	60.9	15 mt.
			14	90.12	20 mt.
			8	120-150	20 mt.
			34		
		Frash	4	60.9	16 mt.
			7	90.12	15 mt.
			11		
		Prosofis Cineria (Khezri)	9	30.6	16 mt.
			9	60.9	15 mt.
			14	90.12	15 mt.
			19	120-150	30 mt.
			96		
17	NandRam Pur Bas	*Acacia nilotica (Babul)*	1	90.12	15 mt.
			1	120-150	30 mt.
			2		
		Safoda	1	120-150	30 mt.
			3		
		Total:	**415**		

District Alwar

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Rabarka	P.julliflora	1	30.6	2 mt.
			3	30.6	3 mt.
			4		
2	Salar-pur	P.julliflora	1	30.6	6 mt.
		Ronj	1	30.6	8 mt.
			1	> 180	25 mt.
			2		
		Morus Alba (Sehtoot)	1	90.12	10 mt.
			1	60 .90	11 mt.
			3	> 180	18 mt.
			4		
3	Shah -pur	*Acacia nilotica (Babul)*	1	90.12	12 mt.
		Prosofis Cineria (Khezri)	1	60 .90	10 mt.
			1	120.15	12 mt.
			2		
		Azadirachta indica (Neem)	1	30.6	6 mt.
			1	60 .90	9 m
			1	90.12	17 m
			3		
		Ficus Religiosa (Peepal)	1	120.15	8 mt.
		Ronj	1	90.12	8 mt.
			1	90.12	10 mt.
			2	90.12	12 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			4		
		Eucalyptus (Safeda)	2	90.12	8 mt.
		Morus Alba (Sehtoot)	3	60 .90	6 mt.
			2	90.12	8 mt.
			1	120.15	18 mt.
			6		
		Total:	**19**		
4	Kalka	*Prosofis Cineria (Khezri)*	1	30.6	4 mt.
		Azadirachta indica (Neem)	1	30.6	4 mt.
		Eucalyptus (Safeda)	1	30.6	4 mt.
		Morus Alba (Sehtoot)	1	30.6	7 mt.
		Total:	**4**		
5	TatarPur	*Acacia nilotica (Babul)*	2	30.6	5 mt.
			1	60 .90	6 mt.
			3		
		Melia aradarch (Bakayan)	1	60 .90	5 mt.
			3	60 .90	10 mt.
			2	60 .90	13 mt.
			1	90.12	9 mt.
			1	90.12	15 mt.
			8		
		Prosofis Cineria (Khezri)	2	30.6	6 mt.
			1	120.15	8 mt.
			3		
		Azadirachta indica (Neem)	1	90.12	10 mt.
			1	90.12	14 mt.
			2		
		Morus Alba (Sehtoot)	1	30.6	2 mt.
			1	90.12	5 mt.
			1	90.12	6 mt.
			1	> 180	8 mt.
			4		
		Dalbergia sissoo (Shisham)	1	90.12	8 mt.
		Total:	**21**		
6	Jihwana	*Morus Alba (Sehtoot)*	1	60 .90	6 mt.
		Prosofis Cineria (Khezri)	2	90.12	6 mt.
			1	120.15	7 mt.
			3		
		Acacia nilotica (Babul)	1	60 .90	9 mt.
			1	60 .90	10 mt.
			2		
		Total:	**6**		
7	Banban	*Acacia nilotica (Babul)*	1	90.12	5 mt.
			1	90.12	10 mt.
			2		
		Ailanthus Excelba (Ardu)	1	30.6	4 mt.
		Morus Alba (Sehtoot)	1	30.6	8 mt.
		Chord	2	60 .90	10 mt.
		Total:	**6**		
8	Godhan	*Ailanthus Excelba (Ardu)*	**1**	60 .90	12 mt.
			1	90.12	15 mt.
			2		
		Acacia nilotica (Babul)	2	90.12	12 mt.
			1	90.12	15 mt.
			3		
		Chord	1	60 .90	7 mt.
			3	60 .90	8 mt.
			1	60 .90	9 mt.
			2	90.12	10 mt.
			7		
		Hingoli	3	90.12	15 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Prosofis Cineria (Khezri)	2	90.12	6 mt.
			1	120.15	9 mt.
			3		
		Azadirachta indica (Neem)	2	60 .90	8 mt.
			1	60 .90	10 mt.
			1	60 .90	15 mt.
			1	90.12	8 mt.
			1	90.12	12 mt.
			6		
		Total:	**24**		
9	Kahreni	*Ailanthus Excelba (Ardu)*	1	90.12	15 mt.
			2	150.18	25 mt.
			3		
		Acacia nilotica (Babul)	7	30.6	15 mt.
			5	60 .90	15 mt.
			1	> 180	15 mt.
			13		
		Azadirachta indica (Neem)	3	60 .90	12 mt.
		Morus Alba (Sehtoot)	4	30.6	15 mt.
		Dalbergia sissoo (Shisham)	2	30.6	18 mt.
			1	90.12	15 mt.
			3		
		Total:	**26**		
10	Mundana	*Ailanthus Excelba (Ardu)*	1	30.6	15 mt.
		Acacia nilotica (Babul)	3	90.12	15 mt.
		Melia aradarch (Bakayan)	2	150.18	15 mt.
		Azadirachta indica (Neem)	3	90.12	10 mt.
		Morus Alba (Sehtoot)	3	90.12	12 mt.
		Dalbergia sissoo (Shisham)	2	90.12	12 mt.
		Sraherjana	1	120.15	17 mt.
		Total:	**15**		
11	Emlaki	*Ailanthus Excelba (Ardu)*	3	90.12	15 mt.
			1	90.12	18 mt.
			4	90.12	20 mt.
			1	90.12	21 mt.
			9		
12	Sador	*Acacia nilotica (Babul)*	2	90.12	15 mt.
		Dalbergia sissoo (Shisham)	1	90.12	20 mt.
		Acacia nilotica (Babul)	1	90.12	16 mt.
		Ronj	1	90.12	16 mt.
		Total:	**5**		
		Total:	**146**		

District Mewat

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Sewaka	*Dalbergia sissoo (Shisham)*	1	90.12	9 mt.
			1	120.15	11 mt.
			2		
2	Raniyaki	*Zizyphus mauritiana (Ber)*	2	30.6	4 mt.
		Acacia nilotica (Babul)	1	90.12	11 mt.
			3		
3	Gurnawat	*Ailanthus Excelba (Ardu)*	1	30.6	5 mt.
			1	30.6	10 mt.
			1	120.15	10 mt.
			1	120.15	12 mt.
			4		
		Acacia nilotica (Babul)	1	30.6	10 mt.
			2	60.9	9 mt.
			1	60.9	17 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			4		
		Melia aradarch (Bakayan)	3	30.6	5 mt.
			3	60.9	8 mt.
			1	120.15	8 mt.
			7		
		Zizyphus mauritiana (Ber)	1	60.9	3 mt.
		Azadirachta indica (Neem)	1	60.9	7 mt.
			1	60.9	8 mt.
			2		
		Ficus Religiosa (Peepal)	1	120.15	13 mt.
		Morus Alba (Sehtoot)	6	30.6	6 mt.
			1	30.6	10 mt.
			1	60.9	4 mt.
			1	60.9	5 mt.
			1	60.9	7 mt.
			4	60.9	8 mt.
			3	90.12	8 mt.
			1	90.12	14 mt.
			1	120.15	12 mt.
			19		
		Dalbergia sissoo (Shisham)	1	60.9	3 mt.
			1	60.9	13 mt.
			1	90.12	14 mt.
			3		
		Albizzia Leabeak (Siris)	2	30.6	8 mt.
			1	120.15	14 mt.
			3		
		Total :	**44**		
4	Dhidara	*Ailanthus excelsa (Ardu)*	1	30.6	4 mt.
		Acacia nilotica (Babul)	1	60.9	8 mt.
			1	90.12	6 mt.
			2		
		Melia aradarch (Bakayan)	1	30.6	5 mt.
			1	60.9	7 mt.
			1	90.12	8 mt.
			3		
		Holoptelia Inltrgrifolia (Churel)	1	30.6	8 mt.
		Prosofis Cineria (Khezri)	1	150.18	4 mt.
		Azadirachta indica (Neem)	2	30.6	6 mt.
		Morus Alba (Sehtoot)	1	30.6	2 mt.
			4	30.6	5 mt.
			3	30.6	6 mt.
			1	60.9	6 mt.
			3	90.12	7 mt.
			12		
		Dalbergia sissoo (Shisham)	1	30.6	8 mt.
		Total :	**23**		
5	Bharangpur	*Ailanthus Excelba (Ardu)*	2	30.6	6 mt.
			2	30.6	13 mt.
			4		
		Acacia nilotica (Babul)	2	30.6	6 mt.
			2	30.6	8 mt.
			1	30.6	10 mt.
			2	60.9	8 mt.
			1	90.12	6 mt.
			8		
		Melia aradarch (Bakayan)	8	30.6	6 mt.
			1	90.12	9 mt.
			9		
		Prosofis Cineria (Khezri)	2	30.6	6 mt.
			1	60.9	7 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3		
		Azadirachta indica (Neem)	4	60.9	8 mt.
			2	90.12	10 mt.
			1	90.12	15 mt.
			7		
		Dalbergia sissoo (Shisham)	1	60.9	8 mt.
		Albizzia Leabeak (Siris)	1	60.9	4 mt.
		Total :	**33**		
6	Taoru	*Ailanthus Excelba (Ardu)*	2	30.6	6 mt.
			1	120.15	4 mt.
			3		
		Acacia nilotica (Babul)	2	30.6	5 mt.
		Melia aradarch (Bakayan)	1	90.12	8 mt.
		Azadirachta indica (Neem)	12	30.6	6 mt.
		Morus Alba (Sehtoot)	2	60.9	8 mt.
		Dalbergia sissoo (Shisham)	10	30.6	5 mt.
		Total :	**30**		
7	Rahadi	*Acacia nilotica (Babul)*	2	30.6	10 mt.
			2	60.9	10 mt.
			2	90.12	13 mt.
			6		
		Melia aradarch (Bakayan)	1	30.6	6 mt.
			1	30.6	8 mt.
			3	30.6	10 mt.
			5		
		Zizyphus mauritiana (Ber)	1	30.6	6 mt.
			1	30.6	15 mt.
			2		
		Prosofis Cineria (Khezri)	1	90.12	10 mt.
		Colbillea Dichotama	1	30.6	12 mt.
		Azadirachta indica (Neem)	2	30.6	7 mt.
			1	60.9	7 mt.
			1	90.12	12 mt.
			4		
		Morus Alba (Sehtoot)	2	30.6	4 mt.
			1	30.6	5 mt.
			1	30.6	7 mt.
			2	30.6	8 mt.
			1	30.6	10 mt.
			1	30.6	15 mt.
			1	120.15	6 mt.
			9		
		Moringa Pterygosperme	1	30.6	4 mt.
		Dalbergia sissoo (Shisham)	2	60.9	6 mt.
			1	60.9	8 mt.
			1	60.9	10 mt.
			1	60.9	12 mt.
			1	90.12	8 mt.
			1	120.15	12 mt.
			1	120.15	15 mt.
			8		
		Albizzia Leabeak (Siris)	1	30.6	9 mt.
		Acacia Tortilis	2	30.6	4 mt.
			1	30.6	9 mt.
			3		
		Total :	**37**		
8	Malaka	*Dalbergia sissoo (Shisham)*	2	30.6	5 mt.
			1	30.6	6 mt.
			3		
9	Dalaka	*Dalbergia sissoo (Shisham)*	1	30.6	7 mt.
		Ailanthus Excelba (Ardu)	1	60.9	7 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	60.9	9 mt.
			2		
10	Khar Karih	*Ailanthus Excelba (Ardu)*	1	30.6	3 mt.
			3	30.6	8 mt.
			4		
		Melia aradarch (Bakayan)	1	30.6	2 mt.
			1	30.6	4 mt.
			1	30.6	5 mt.
			1	30.6	6 mt.
			1	30.6	7 mt.
			1	30.6	8 mt.
			6		
		Prlofris Juliflora	1	30.6	4 mt.
		Azadirachta indica (Neem)	1	30.6	8 mt.
			1	30.6	10 mt.
			2		
		Morus Alba (Sehtoot)	2	30.6	7 mt.
			1	60.9	11 mt.
			3		
		Dalbergia sissoo (Shisham)	1	30.6	2 mt.
			1	30.6	6 mt.
			2		
		Total :	**18**		
11	Dhulawat	*Ailanthus Excelba (Ardu)*	1	30.6	3 mt.
			1	> 180	14 mt.
			2		
		Acacia nilotica (Babul)	2	90.12	8 mt.
			10	30.6	3 mt.
			10	30.6	4 mt.
			5	30.6	5 mt.
			2	30.6	8 mt.
			2	60.9	5 mt.
			2	60.9	7 mt.
			2	120.15	9 mt.
			2	150.18	11 mt.
			4	> 180	7 mt.
			1	> 180	11 mt.
			2	> 180	15 mt.
			44		
		Zizyphus mauritiana (Ber)	1	30.6	7 mt.
		Holsptelia Inlegriblia (Churel)	1	150.18	11 mt.
		Azadirachta indica (Neem)	1	30.6	5 mt.
			1	120.15	7 mt.
			1	150.18	6 mt.
			3		
		Prosofis Fulliflore	5	90.12	10 mt.
			1	150.18	12 mt.
			6		
		Ficus Religiosa (Peepal)	1	30.6	5 mt.
			1	> 180	11 mt.
			2	> 180	15 mt.
			4		
		Morus Alba (Sehtoot)	2	30.6	3 mt.
			6	30.6	4 mt.
			1	30.6	6 mt.
			1	30.6	8 mt.
			1	90.12	5 mt.
			2	90.12	8 mt.
			2	150.18	10 mt.
			15		
		Dalbergia sissoo (Shisham)	1	30.6	5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	60.9	7 mt.
			2	90.12	6 mt.
			4	90.12	7 mt.
			1	90.12	8 mt.
			2	> 180	11 mt.
			1	> 180	13 mt.
			12		
		Total :	**88**		
12	Mendla	*Prosofis Fulliflore*	1	60.9	4 mt.
		Zizyphus mauritiana (Ber)	1	60.9	6 mt.
		Acacia nilotica (Babul)	2	90.12	9 mt.
		Azadirachta indica (Neem)	2	120.15	11 mt.
		Dalbergia sissoo (Shisham)	2	90.12	9 mt.
			2	90.12	12 mt.
			4		
		Total :	**10**		
13	Sashol Fauka	*Ailanthus Excelba (Ardu)*	1	60.9	5 mt.
		Acacia nilotica (Babul)	1	90.12	7 mt.
		Melia aradarch (Bakayan)	**1**	90.12	13 mt.
		Ficus Bengalensis	1	> 180	16 mt.
		Zizyphus mauritiana (Ber)	1	90.12	9 mt.
		Azadirachta indica (Neem)	2	90.12	9 mt.
			1	90.12	11 mt.
			1	120.15	12 mt.
			1	120.15	13 mt.
			5		
		Prosopis Julliflora	1	60.9	5 mt.
			3	60.9	6 mt.
			2	60.9	7 mt.
			6		
		Ficus Religiosa (Peepal)	1	90.12	9 mt.
		Morus Alba (Sehtoot)	3	90.12	7 mt.
		Dalbergia sissoo (Shisham)	3	90.12	7 mt.
			2	90.12	8 mt.
			5		
		Total :	**25**		
14	Khor	*Phoneix Dactylifero (Khazur)*	2	30.6	13 mt.
			1	60.9	11 mt.
			1	60.9	12 mt.
			1	60.9	13 mt.
			1	60.9	14 mt.
			1	60.9	16 mt.
			1	60.9	17 mt.
			8		
15	Marola	*Ailanthus Excelba (Ardu)*	1	30.6	7 mt.
			1	90.12	10 mt.
			1	90.12	12 mt.
			3		
		Ficus Bengalensis	1	> 180	16 mt.
		Hlopetelia Integrifolia	1	60.9	6 mt.
		Colbillea Dicatoma	1	60.9	5 mt.
		Azadirachta indica (Neem)	2	90.12	8 mt.
			1	90.12	10 mt.
			1	150.18	8 mt.
			4		
		Prosofis Juiiflora	2	90.12	7 mt.
		Acacia Lecreophloca	1	60.9	7 mt.
		Dalbergia sissoo (Shisham)	1	60.9	9 mt.
			1	90.12	11 mt.
			2		
		Total :	**15**		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
16	Rolka	*Acacia nilotica (Babul)*	1	90.12	3 mt.
			2	90.12	5 mt.
			2	90.12	6 mt.
			1	90.12	7 mt.
			2	90.12	8 mt.
			8		
		Total :	**350**		

District Gurgaon

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Raipur	Dalbergia shisoo (Shisoo)	1	120.15	7 mt.
			1	120.15	8 mt.
			1	120.15	15 mt.
			1	150.18	7 mt.
			1	150.18	9 mt.
			1	150.18	11 mt.
			6		
2	Sohna	*P.Embbca (Aaonla)*	1	60.9	4 mt.
			1	90.12	8 mt.
			2		
		Psydium Guava (Amrud)	1	60.9	9 mt.
			1	> 180	9 mt.
			2		
		Ailanthus Excelba	3	90.12	8 mt.
		Acacia nilotica (Babul)	1	90.12	16 mt.
			1	120.15	9 mt.
			1	>180	9 mt.
			1	>180	13 mt.
			4		
		Zizyphus mauritiana (Ber)	3	60.9	7 mt.
			2	90.12	9 mt.
			5		
		Holsptelia Inlegriblia (Churel)	2	> 180	9 mt.
		Syzygium Cumini (Jamun)	1	90.12	7 mt.
			1	90.12	8 mt.
			1	150.18	8 mt.
			1	150.18	9 mt.
			4		
		Bauhinia Variegata (Kachnar)	1	120.15	8 mt.
			1	120.15	11 mt.
			2		
		Colbillea Dichotama (Lasoda)	2	150.18	8 mt.
		Mangifera Indica (Mango)	1	> 180	14 mt.
		Azadirachta indica (Neem)	2	90.12	6.5 mt.
			3	120.15	7 mt.
			2	120.15	11 mt.
			2	> 180	11 mt.
			2	> 180	13mt.
			1	> 180	15 mt.
			12		
		Morus Alba (Sehtoot)	2	90.12	10 mt.
		Dalbergia sissoo (Shisham)	3	120.15	7 mt.
			1	> 180	11mt.
			4		
		Albizzia Leabeak	1	120.15	6.5 mt.
		Total:	**46**		
3	Aota	*Ailanthus Excelba (Ardu)*	1	60.9	5.5 mt.
			1	90.12	6 mt.
			1	90.12	7 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	90.12	9 mt.
			1	120.15	10 mt.
			5		
		Acacia nilotica (Babul)	1	90.12	6 mt.
			1	90.12	11 mt.
			2		
		Melia aradarch (Bakayan)	1	> 180	14 mt.
		Holsptelia Inlegriblia (Churel)	1	30.6	7 mt.
		Azadirachta indica (Neem)	1	90.12	6 mt.
			1	90.12	9 mt.
			1	120.15	13 mt.
			3		
		Dalbergia sissoo (Shisham)	1	120.15	7 mt.
			1	120.15	8 mt.
			1	120.15	9 mt.
			1	120.15	11 mt.
			2	> 180	14 mt.
			6		
		Albizzia Leabeak (Siris)	1	90.12	6 mt.
			1	90.12	7 mt.
			1	90.12	9 mt.
			1	90.12	11 mt.
			4		
		Acacia Tortilis	1	60.9	6 mt.
			1	60.9	7 mt.
			2		
		Total:	**24**		
4	Rampur	*Ailanthus Excelba (Ardu)*	2	30.6	5 mt.
		Phoneix Dactylifero (Khazur)	1	120.15	7 mt.
		Azadirachta indica (Neem)	1	90.12	6.5 mt.
			1	120.15	12 mt.
			2		
		Dalbergia sissoo (Shisham)	2	60.9	6 mt.
		Albizzia Leabeak (Siris)	1	30.6	5 mt.
		Acacia Tortilis	1	30.6	5 mt.
		Total:	**9**		
5	Lakhuwas	*Phoneix Dactylifero (Khazur)*	3	90.12	12 mt.
		Zizyphus mauritiana (Ber)	3	60.9	6 mt.
		Prosofis Cineria (Kahzur)	1	30.6	6 mt.
		Azadirachta indica (Neem)	2	30.6	7 mt.
			2	90.12	6 mt.
			2	120.15	12 mt.
			6		
		Morus Alba (Sehtoot)	2	120.15	8 mt.
		Dalbergia sissoo (Shisham)	1	90.12	10 mt.
			1	120.15	7 mt.
			2		
		Total:	**17**		
6	Uddaka	*Acacia nilotica (Babul)*	1	30.6	4 mt.
			1	60.9	12 mt.
			1	150.18	13 mt.
			3		
		Zizyphus mauritiana (Ber)	2	60.9	9 mt.
		Azadirachta indica (Neem)	3	30.6	5 mt.
			1	150.18	8 mt.
			1	> 180	15 mt.
			5		
		Ficus Religiosa (Peepal)	3	60.9	7 mt.
			1	60.9	12 mt.
			4		
		Morus Alba (Sehtoot)	3	30.6	5 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Teetona Granees	1	150.18	15 mt.
		Acacia Tortilis	2	> 180	17 mt.
		Total:	**20**		
7	Sancholi	*Acacia nilotica (Babul)*	3	30.6	5 mt.
			2	90.12	6 mt.
			5		
		Zizyphus mauritiana (Ber)	1	30.6	5 mt.
		Holsptelia Inlegriblia (Churel)	2	120.15	13 mt.
		Syzygium Cumini (Jamun)	1	60.9	8 mt.
		Phoneix Dactylifero (Khazur)	2	60.9	5 mt.
			1	60.9	8 mt.
			2	60.9	12 mt.
			5		
		Prosofis Cineria (Kahzur)	2	60.9	6 mt.
			2	60.9	8 mt.
			4		
		Azadirachta indica (Neem)	2	30.6	4 mt.
			1	30.6	5 mt.
			1	30.6	6 mt.
			1	30.6	8 mt.
			5		
		Eucalyptus Hybrid (Safeda)	3	30.6	10 mt.
		Bombex Ceiba (Samal)	1	30.6	7 mt.
		Morus Alba (Sehtoot)	2	60.9	8 mt.
		Dalbergia sissoo (Shisham)	4	30.6	6 mt.
			2	150.18	14 mt.
			1	> 180	6 mt.
			7		
		Albizzia Leabeak (Siris)	1	90.12	8 mt.
		Acacia Tortilis	4	30.6	5 mt.
		Total:	**41**		
8	Karanki	*Ailanthus Excelba (Ardu)*	1	30.6	8 mt.
			4	30.6	7 mt.
			1	60.9	10 mt.
			4	90.12	10 mt.
			10		
		Acacia nilotica (Babul)	2	60.9	16 mt.
		Melia aradarch (Bakayan)	2	30.6	6 mt.
		Zizyphus mauritiana (Ber)	1	30.6	5 mt.
		Ficus Bengalenses	1	90.12	8 mt.
		Phoneix Dactylifero (Khazur)	3	30.6	6 mt.
		Azadirachta indica (Neem)	1	30.6	4 mt.
			1	60.9	16 mt.
			2		
		Ficus Religiosa (Peepal)	1	60.9	10 mt.
			1	> 180	20 mt.
			1	> 180	25 mt.
			3		
		Eucalyptus Hybrid (Safeda)	2	60.9	10 mt.
			1	60.9	15 mt.
			1	60.9	20 mt.
			1	60.9	25 mt.
			5		
		Morus Alba (Sehtoot)	3	30.6	4 mt.
		Dalbergia sissoo (Shisham)	1	60.9	4 mt.
		Acacia Tortilis	3	60.9	7 mt.
			5	90.12	8 mt.
			8		
		Total:	**40**		
9	Silani	*Melia aradarch (Bakayan)*	1	60.9	6 mt.
		Zizyphus mauritiana (Ber)	1	60.9	4 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Syzygium Cumini (Jamun)	1	30.6	6 mt.
		Phoneix Dactylifero (Khazur)	5	30.6	4 mt.
			2	60.9	6 mt.
			7		
		Dalbergia sissoo (Shisham)	1	30.6	7 mt.
			1	90.12	10 mt.
			2		
		Albizzia Leabeak (Siris)	1	60.9	10 mt.
		Total:	**13**		
10	Kunlpuri	*Acacia nilotica (Babul)*	1	30.6	6 mt.
		Zizyphus mauritiana (Ber)	1	60.9	5 mt.
		Melia aradarch (Bakayan)	1	> 180	13 mt.
		Holsptelia Inlegriblia (Churel)	1	60.9	4 mt.
			1	60.9	7 mt.
			1	60.9	8 mt.
			1	60.9	12 mt.
			4		
		Ficus Glomerete	1	90.12	9 mt.
		Ficus Bengalenses	2	> 180	20 mt.
		Phoneix Dactylifero (Khazur)	1	90.12	6 mt.
		Prosofis Cineria (Kahzur)	2	60.9	8 mt.
			1	90.12	9 mt.
			3		
		Azadirachta indica (Neem)	4	30.6	6 mt.
			3	60.9	9 mt.
			7		
		Morus Alba (Sehtoot)	2	30.6	5 mt.
			1	120.15	7 mt.
			3		
		Dalbergia sissoo (Shisham)	3	30.6	5 mt.
		Total:	**26**		
11	Barkhera	*Ailanthus Excelba (Ardu)*	1	60.9	6 mt.
		Holsptelia Inlegriblia (Churel)	1	120.15	9 mt.
		Prosofis Cineria (Kahzur)	1	60.9	7 mt.
			1	60.9	9 mt.
			1	120.15	8 mt.
			3		
		Azadirachta indica (Neem)	1	30.6	6 mt.
		Dalbergia sissoo (Shisham)	1	120.15	10 mt.
		Total:	**6**		
		Total:	**253**		

District Palwal

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Parauli	Azadirachta indica (Neem)	3	30.6	3 mt.
			3	30.6	4 mt.
			1	30.6	7 mt.
			1	60.9	5 mt.
			2	60.9	6 mt.
			1	60.9	7 mt.
			1	90.12	6 mt.
			1	90.12	7 mt.
			13		
		Ficus Religiosa (Peepal)	1	60.9	7 mt.
			1	90.12	7 mt.
			2		
		Morus alba (Sehtoot)	1	90.12	6 mt.
		Acacia tortilis	1	90.12	8 mt.
		Eucalyptus (Safeda)	7	Bushes	--

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2	120.15	14 mt.
			9		
		Muscat	1	> 180	12 mt.
		Shiri	1	30.6	4 mt.
			1	60.9	4 mt.
			2		
		Jand	1	30.6	3 mt.
		Dalbergia sissoo (Shisham)	1	30.6	3 mt.
			1	60.9	5 mt.
			1	90.12	6 mt.
			3		
		Total :	**33**		
2	Dahlka	Morus alba (Sehtoot)	2	60.9	5 mt.
			1	90.12	4 mt.
			3		
		Azadirachta indica (Neem)	1	30.6	4 mt.
			1	60.9	8 mt.
			2		
		Dalbergia sissoo (Shisham)	2	30.6	4 mt.
			1	60.9	4 mt.
			3		6 mt.
		Shiri	1	60.9	5 mt.
		Eucalyptus (Safeda)	2	90.12	20 mt.
		Total :	**9**		
3	Mandpuri	Muscat	1	> 180	9 mt.
		Annar		Bush	9 mt.
		Azadirachta indica (Neem)	1	30.6	3 mt.
		Alnayas	2	60.9	7 mt.
			1	90.12	7 mt.
			1	90.12	8 mt.
			1	90.12	9 mt.
			1	90.12	11 mt.
			1	150.18	12 mt.
			2	> 180 mt.	17 mt.
			9		
		Khajoor	1	60.9	9 mt.
		Khajoor		Bush	
		Desi Kikat	1	150.18	15 mt
		Eucalyptus (Safeda)	1	60.9	15 mt
		Total :	**14**		
4	Chhaprauli	Khajoor	1	60.9	3 mt.
			2	60.9	5 mt.
			1	90.12	7 mt.
				Bushes	
			4		
		Jand	1	30.6	3 mt.
			3	60.9	4 mt.
			1	60.9	5 mt.
			1	60.9	6 mt.
			6		
		Azadirachta indica (Neem)	1	30.6	3 mt.
			1	60.9	4 mt.
			1	60.9	5 mt.
			5	60.9	6 mt.
			1	90.12	7 mt.
			1	90.12	10 mt.
			1	90.12	12 mt.
			3	90.12	15 mt.
			1	> 180 mt.	11 mt.
			1	> 180 mt.	12 mt.
			1	> 180 mt.	14 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			17		
		Ficus Religiosa (Peepal)	2	> 180 mt.	12 mt.
			2	> 180 mt.	15 mt.
			4		
		Shiri	1	60.9	4 mt.
		Morus alba (Sehtoot)	1	60.9	3 mt.
			1	60.9	4 mt.
			1	120-150	9 mt.
			3		
		Eucalyptus (Safeda)	**1**	30.6	4 mt.
			2	60.9	10 mt.
			2	> 180 mt.	24 mt.
			2	> 180 mt.	25 mt.
			6	> 180 mt.	26 mt.
			1	> 180 mt.	27 mt.
			13		
		paapdi	1	60.9	5 mt.
			1	90.12	6 mt.
			2		
		Muscat	1	60.9	4 mt.
			1	60.9	7 mt.
				Bushes	
			2		
		Berry	1	> 180 mt.	15 mt.
				Bushes	
			1		
		Dalbergia sissoo (Shisham)	2	30.6	3 mt.
			2	30.6	6mt.
			1	30.6	7 mt.
			1	60.9	4 mt.
			1	60.9	6 mt.
			1	60.9	7 mt.
			1	60.9	8 mt.
			1	60.9	9 mt.
			1	90.12	9 mt.
			3	150.18	12 mt.
			1	150.18	13 mt.
			15		
		Banayan	1	30.6	5 mt.
		Total :	**69**		
5	Pirthala	Azadirachta indica (Neem)	2	30.6	3 mt.
			4	30.6	4 mt.
			1	30.6	5 mt.
			3	60.9	4 mt.
			3	60.9	5 mt.
			3	90.12	6 mt.
			1	90.12	7 mt.
			1	120.15	7 mt.
			1	120.15	10 mt.
				Bushes	
			19		
		Dalbergia sissoo (Shisham)	1	30.6	2 mt.
			1	60.9	3 mt.
			1	60.9	4 mt.
			1	90.12	7 mt.
			4		
		Ficus Religiosa (Peepal)	1	120.15	10 mt.
		Eucalyptus (Safeda)	1	60.9	20 mt.
		Berry	1	30.6	3 mt.
		Alnayas	1	120.15	7 mt.
				Bushes	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1		
		Papadi/Badaam	1	60.9	5 mt.
		Khindiyar	1	> 180 mt.	5 mt.
		Kikar Desi	1	30.6	4 mt.
			1	90.12	6 mt.
				Bushes	
			2		
		Jand	1	90.12	5 mt.
			1	90.12	6 mt.
			2		
		Total :	**33**		
6	Jhataula	Kikar Desi	2	60.9	5 mt.
			1	90.12	6 mt.
			1	120.15	4 mt.
			4		
		Muscat	5	60.9	4 mt.
			1	120.15	2.5 mt.
			1	120.15	4 mt.
			1	120.15	5 mt.
			1	120.15	9 mt.
				Bushes	
			9		
		Azadirachta indica (Neem)	1	30.6	3 mt.
			4	60.9	4 mt.
			1	60.9	7 mt.
			3	90.12	9 mt.
			1	120.15	10 mt.
				Bushes	
			10		
		Morus alba (Sehtoot)	1	30.6	2 mt.
			3	30.6	3 mt.
			1	60.9	2 mt.
			5		
		Bakayan	1	60.9	2 mt.
			1	60.9	6 mt.
			2		
		Jamun	1	60.9	5 mt.
		Total :	**31**		
7	Asawati	Dalbergia sissoo (Shisham)	1	30.6	3 mt.
			1	60.9	4 mt.
			1	60.9	5 mt.
			1	60.9	7 mt.
			1	90.12	4 mt.
			1	90.12	5 mt.
			3	90.12	8 mt.
				Bushes	
			9		
		Amrood	1	30.6	3 mt.
			2	60.9	3 mt.
			3		
		Azadirachta indica (Neem)	2	60.9	5 mt.
			1	150.18	10 mt.
			3		
		Morus alba (Sehtoot)	1	30.6	5 mt.
			2	60.9	4 mt.
			1	60.9	5 mt.
			2	60.9	6 mt.
			1	90.12	4 mt.
			1	90.12	5 mt.
			8		
		Mangifera indica (Mango-Ambo)	1	150.18	7 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Kikar	1	90.12	4 mt.
		Gulair	1	90.12	5 mt.
			1	90.12	6 mt.
			2	30.6	5 mt.
		Total :	**27**		
8	Laadpur				
		Total :	**216**		

Distict Faridabad

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Khedi Kala	Azadirachta indica (Neem)	1	30.6	2.3 mt.
			2	30.6	3 mt.
			4	30.6	4 mt.
			4	30.6	5 mt.
			1	60.9	5 mt.
			4	60.9	6mt.
			2	90.12	7 mt.
			2	90.12	8 mt.
			3	90.12	9 mt.
			2	90.12	10 mt.
			2	120.15	10 mt.
			1	150.18	12 mt.
			28		
		Beri	1	30.6	4 mt.
			1	30.6	5 mt.
			1	30.6	6 mt.
			1	60.9	6 mt.
			1	90.12	9 mt.
			5		
		kata	3	30.6	2 mt.
			3	30.6	3 mt.
			14	30.6	4 mt.
			4	30.6	5 mt.
			3	30.6	6 mt.
			4	60.9	5 mt.
			6	60.9	6 mt.
			3	60.9	7 mt.
			1	60.9	8 mt.
			2	90.12	6 mt.
			2	90.12	8 mt.
			1	90.12	9 mt.
			1	120.15	6 mt.
			1	120.15	8 mt.
			1	150.18	10 mt.
			49		
		Papdi	1	30.6	2 mt.
		Kiker	2	60.9	7 mt.
		Alganthus	61	120.15	8 mt.
			60	120.15	9 mt.
			62	120.15	10 mt.
			183		
		Amrud	1	30.6	2 mt.
		Baas	**1**	30.6	4 mt.
		Banan	1	90.12	9 mt.
			1	120.15	10 mt.
			2		
		Belpather	1	30.6	4 mt.
		Choker	1	60.9	6 mt.
			1	60.9	7 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2		
		Sojna	2	30.6	5 mt.
		Dalbergia sissoo (Shisham)	1	30.6	4 mt.
			1	60.9	5 mt.
			2		
		Siras	1	30.6	5 mt.
		Popular	2	60.9	6 mt.
		Pipal	1	30.6	2.3 mt.
			1	60.9	7 mt.
			1	120.15	12 mt.
			1	> 180	15 mt.
			4		
		Total:	**283**		
2	Nachauli	Amla	1	30.6	2-3 mt.
		Amrud	12	30.6	2-3 mt.
		Arjun Sagwan Papdi trees	32	30.6	2-3 mt.
		Bakan	3	60.9	7 mt.
			1	60.9	8 mt.
			4		
		Bass 90	90	30.6	7 mt.
		Choker	1	30.6	2-3 mt.
		Gular	1	60.9	7 mt.
			1	60.9	8 mt.
			2		
		Jamun	4	30.6	2-3 mt.
			4	60.9	7 mt.
			3	60.9	8 mt.
			1	90.12	8 mt.
			1	90.12	9 mt.
			13		
		Kata	4	30.6	5 mt.
			6	30.6	6 mt.
			1	60.9	5 mt.
			4	60.9	6 mt.
			8	60.9	7 mt.
			1	60.9	8 mt.
			3	90.12	6 mt.
			6	90.12	7 mt.
			1	120.15	7 mt.
			6		2-3 mt.
			40		
		Kathal	1	60.9	6 mt.
		Keshitha	1	60.9	7 mt.
		Kikker	1	30.6	7 mt.
			3	30.6	8 mt.
			1	60.9	6 mt.
			6	60.9	7 mt.
			6	60.9	8 mt.
			4	60.9	9 mt.
			21		
		Muskat	1	30.6	2-3 mt.
			1	30.6	7 mt.
			2	60.9	8 mt.
			1	90.12	8 mt.
			5		
		Azadirachta indica (Neem)	53	30.6	2-3 mt.
			1	30.6	5 mt.
			6	30.6	6 mt.
			1	30.6	7 mt.
			1	60.9	5 mt.
			7	60.9	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			8	60.9	7 mt.
			1	60.9	8 mt.
			3	90.12	8 mt.
			1	90.12	9 mt.
			82		
		Nibu	1	30.6	2-3 mt.
		Papdi	17	30.6	2-3 mt.
			1	30.6	4 mt.
			18		
		Pipal	1	> 180 mt.	15 mt.
		Eucalyptus (Safeda)	2	30.6	7 mt.
			1	30.6	8 mt.
			2	60.9	9 mt.
			1	90.12	10 mt.
			6		
		Sagwan	1	60.9	6 mt.
		Dalbergia sissoo (Shisham)	18	30.6	2-3 mt.
			4	30.6	5 mt.
			5	30.6	6 mt.
			1	30.6	7 mt.
			1	60.9	5 mt.
			1	60.9	6 mt.
			5	60.9	7 mt.
			1	60.9	8 mt.
			1	90.12	7 mt.
			1	120.15	9 mt.
			38		
		Sibal	1	60.9	9 mt.
		Sohjna	1	30.6	6 mt.
			1	60.9	7 mt.
			2		
		Teek	2	30.6	6 mt.
		Papdi Sagwan Arjun Trees	30	30.6	2-3 mt.
		Papdi,Kikker trees	25	30.6	2-3 mt.
		Papdi,Neem,Kikker trees	30	30.6	2-3 mt.
		Total:	**429**		
3	**Bhupani**	Choker	1	60.9	8 mt.
		Kata	1	30.6	6 mt.
			1	30.6	7 mt.
			2	60.9	6 mt.
			2	90.12	7 mt.
			6		
		Khajur	1	60.9	8 mt.
			3	60.9	9 mt.
			4		
		Kikker	58	30.6	2-3 mt.
			1	30.6	6 mt.
			1	60.9	7 mt.
			2	90.12	7 mt.
			2	90.12	8 mt.
			3	90.12	9 mt.
			3	90.12	10 mt.
			70		
		Muskat	3	60.9	6 mt.
			3	60.9	7 mt.
			2	60.9	8 mt.
			1	90.12	8 mt.
			1	90.12	10 mt.
			10		
		Azadirachta indica (Neem)	4	30.6	6 mt.
			1	60.9	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			6	60.9	7 mt.
			1	60.9	8 mt.
			12		
		Pipal	1	60.9	8 mt.
			1	90.12	8 mt.
			1	90.12	10 mt.
			1	120.15	9 mt.
			1	>180	12 mt.
			5		
		Popular	1	30.6	6 mt.
			1	60.9	5 mt.
			3	60.9	6 mt.
			4	60.9	7 mt.
			2	60.9	8 mt.
			2	90.12	8 mt.
			13		
		Dalbergia sissoo (Shisham)	1	30.6	2-3 mt.
			1	60.9	6 mt.
			2		
		Total:	**123**		
4	**Mahabatpur**	Beri Bekan Trees	10	30.6	2-3 mt.
		Jamun	1	60.9	8 mt.
		kata Trees	5	30.6	2-3 mt.
		Kikker	18	30.6	2-3 mt.
			2	90.12	8 mt.
			3	90.12	9 mt.
			1	90.12	10 mt.
			24		
		Kikke,Neem	25	30.6	2-3 mt.
		Azadirachta indica (Neem)	1	90.12	7 mt.
		Papdi Bekan	1	30.6	2-3 mt.
		Pipal	1	60.9	7 mt.
			1	60.9	8 mt.
			2		
		Eucalyptus (Safeda)	2	90.12	10 mt.
			2	120.15	14 mt.
			1	120.15	15 mt.
			1	150.18	15 mt.
			1	> 180 mt.	18 mt.
			7		
		Dalbergia sissoo (Shisham)	1	90.12	12 mt.
		Sibal	1	90.12	7 mt.
		Total:	**78**		
5	**Dhandhar**	Kikker	2	60.9	7 mt.
		Kata	8	30.6	2-3 mt.
		Eucalyptus (Safeda)	2	30.6	2-3 mt.
			1	90.12	10 mt.
			1	120.15	15 mt.
			4		
		Awla	5	30.6	2-3 mt.
		Keshiya	1	30.6	5 mt.
			1	30.6	6 mt.
			2	60.9	7 mt.
		Total:	**21**		
6	**Lalpur**	Amrud Trees	2	30.6	2-3 mt.
		Beri	1	30.6	2-3 mt.
			1	30.6	5 mt.
			2		
		Jamun	1	60.9	7 mt.
			1	120.15	15 mt.
			1	> 180	16 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3		
		Kata	22	30.6	2-3 mt.
			1	30.6	6 mt.
			1	90.12	7 mt.
			24		
		Pipal	1	30.6	2-3 mt.
		Popular	1	60.9	7 mt.
			3	60.9	8 mt.
			4		
		Dalbergia sissoo (Shisham)	1	120.15	15 mt.
		Total:	**37**		
7	**Dalerpur**	Amrud	2	30.6	2-3 mt.
			1	90.12	9 mt.
			3		
		Gular	1	90.12	9 mt.
			1	120.15	15 mt.
			1	120.15	18 mt.
			3		
		Kata	1	60.9	6 mt.
		Jamun	1	90.12	12 mt.
		Dalbergia sissoo (Shisham)	2	120.15	12 mt.
		Azadirachta indica (Neem)	5	30.6	6 mt.
		Anar,Ber ,kata	1	30.6	2-3 mt.
		Neem,Kikker Trees	20	30.6	2-3 mt.
		Neem,Kikker,Band, Shisham	45	30.6	2-3 mt.
		Kikker	1	90.12	9 mt.
			1	90.12	12 mt.
			2		
		Shisham,Neem	12	30.6	2-3 mt.
		Total:	**95**		
			1066		

District Faridabad (Additional)

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Mahabatpur/ Dhandhar	Jamun	1	60.9	6 mt.
			1	90.12	2 mt.
			2		
2	Bhopani/Riwazpur	Pakar	1	60.9	5 mt.
			1	90.12	
			1	120.15	
			1	150.18	5 mt.
			1	> 180	
			5		
		Azadirachta indica (Neem)	1	60.9	5 mt.
		Total:	**6**		
3	Tikawali/Badshahpur	Azadirachta indica (Neem)	1	30.6	4 mt.
			1	60.9	5 mt.
			2		
		Shagon	1	30.6	3 mt.
		Morus alba (Sehtoot)	2	30.6	4 mt.
		Amrud	1	30.6	3 mt.
		Acacia nilotica (Babul)	1	60.9	3 mt.
		Total:	**7**		
4	Palwali	*Acacia nilotica (Babul)*	2	90.12	5 mt.
		Acacia nilotica (Babul)		Bushes (40 in no.)	
		Azadirachta indica (Neem)	2	30.6	6 mt.
			1	90.12	8 mt.
				Bushes	

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			3		
		Morus alba (Sehtoot)	5	60.9	4 mt.
			1	90.12	7 mt.
			1	120.15	
			7		
		Shagwan	1	30.6	4 mt.
		Shrish	3	30.6	5 mt.
			2	60.9	4 mt.
			1	90.12	6 mt.
				Bushes	
			6		
		Dalbergia sissoo (Shisham)	1	90.12	6 mt.
		Total:	**20**		
5	Wazirpur	Amra	4	30.6	5 mt.
		Amrud	1	30.6	4 mt.
		Ber	4	30.6	6 mt.
		Acacia nilotica (Babul)	2	30.6	7 mt.
			2	30.6	4 mt.
				Bushes	
			4		
		Azadirachta indica (Neem)	17	30.6	4 mt.
			6	60.9	5 mt.
			3	90.12	6 mt.
				Bushes	
			26		
		Morus alba (Sehtoot)	1	60.9	6 mt.
		Shagwan	2	30.6	5 mt.
			1	60.9	5 mt.
			1	90.12	8 mt.
			4		
		Dalbergia sissoo (Shisham)	2	30.6	12 mt.
		Khazoor	15	90.12	6 mt.
				Bushes (approx 30)	
		Mangifera indica (mango)	1	120.15	12 mt.
		Total:	**62**		
6	Mawai	Eucalyptus (Safeda)	3	30.6	15 mt.
		Azadirachta indica (Neem)	1	30.6	5 mt.
			2	90.12	6 mt.
			2	120.15	8 mt.
			5		
		Ulluneem	1	90.12	15 mt.
			3	120.15	18 mt.
			1	150.18	20 mt.
			1	> 180	20 mt.
			6		
		Acacia nilotica (Babul)	1	30.6	6 mt.
			1	30.6	7 mt.
				Bushes	
			2		
		Ber	1	30.6	8 mt.
		Morus alba (Sehtoot)	2	30.6	6 mt.
		Ramashal	20	30.6	6 mt.
		A	2	60.9	8 mt.
		Total:	**41**		
7	Mawai 2 (After Agra canal)	Ashok	3	30.6	10 mt.
		Acacia nilotica (Babul)	4	30.6	4 mt.
			5	30.6	4 mt.
			1	60.9	5 mt.
			2	90.12	8 mt.
			12		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Balamkhira	2	30.6	8 mt.
			4	30.6	10 mt.
			2	60.9	6 mt.
			2	60.9	9 mt.
			9	90.12	9 mt.
			19		
		Bergad	1	30.6	10 mt.
			1	120-150	12 mt.
			2		
		Eucalyptus (Safeda)	13	60.9	9 mt.
			14	60.9	15 mt.
			11	90.12	12 mt.
			20	90.12	15 mt.
			35	90.12	18 mt.
			18	120-150	18 mt.
			111		
		Simbaldode	6	90.12	8 mt.
			5	90.12	12 mt.
			4	120-150	6 mt.
			4	120-150	10 mt.
			5	> 180	12 mt.
			24		
		Gulmohar	8	60.9	10 mt.
			2	90.12	12 mt.
			1	> 180	12 mt.
			11		
		Imli	1	30.6	4 mt.
		Jamun	1	60.9	7 mt.
			1	90.12	12 mt.
			2		
		Mangifera indica (mango)	**1**	60.9	8 mt.
		Azadirachta indica (Neem)	4	30.6	10 mt.
			10	60.9	10 mt.
			9	60.9	12 mt.
			1	60.9	14 mt.
			1	90.12	12 mt.
			25		
		Paka Neem	3	30.6	8 mt.
			5	30.6	10 mt.
			6	60.9	10 mt.
			6	60.9	12 mt.
			20		
		Papri	9	30.6	6 mt.
			12	30.6	8 mt.
			7	30.6	10 mt.
			3	60.9	12 mt.
			3	90.12	6 mt.
			6	90.12	10 mt.
			4	90.12	15 mt.
			3	90.12	18 mt.
			47		
		Ficus Religiosa (Peepal)	1	60.9	
			1	> 180	12 mt.
			2		
		Morus alba (Sehtoot)	3	60.9	8 mt.
			3	90.12	12 mt.
			6		
		Silsa	14	30.6	6 mt.
			35	30.6	8 mt.
			34	30.6	10 mt.
			6	60.9	12 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			2	90.12	6 mt.
			2	90.12	10 mt.
			2	90.12	12 mt.
			2	90.12	18 mt.
			97		
		Pakar	2	30.6	8 mt.
		Butea Monosperma	1	30.6	10 mt.
			3	90.12	12 mt.
			4		
		Total:	**382**		
			520		

District G.B. Nagar

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Pali	Mangifera indica (Mango)	1	> 180	6 mt.
		Dalbergia sissoo (Shisham)	1	30.6	2 mt.
			1	60.9	2.5 mt.
			2	60.9	5 mt.
			4		
		Azadirachta indica (Neem)	1	30.6	5 mt.
		Total :	**6**		
2	Sakipur	Azadirachta indica (Neem)	1	30.6	5 mt.
			1	30.6	6 mt.
			1	30.6	4 mt.
			1	60.9	6 mt.
			2	60.9	5 mt.
			1	60.9	4 mt.
		Total :	**7**		
3	Gulistanpur	Dalbergia sissoo (Shisham)	2	30.6	4 mt.
			1	30.6	5 mt.
			3	30.6	6 mt.
			1	60.9	5 mt.
			1	60.9	6 mt.
			1	90.12	6 mt.
			9		
		Katha Sahtoot	1	60.9	6 mt.
			1	90 .120	6 mt.
			2		
		Azadirachta indica (Neem)	1	60.9	5 mt.
		Chhokar	1	60.9	5 mt.
		Total :	**13**		
4	Greater Noida	Balam Kheera	1	30.6	5 mt.
			1	60.9	5 mt.
			2		
		Anwala	1	30.6	6 mt.
		Kat Sagon	2	30.6	5 mt.
		Kanath	1	30.6	3 mt.
			1	30.6	5 mt.
			1	30.6	6 mt.
			3		
		Chitwan	2	30.6	3 mt.
			3	60.9	3.5 mt.
			5		
		Amaltas	1	30.6	6 mt.
			1	60.9	3.5 mt.
			1	60.9	6 mt.
			3		
		Casurina	1	60.9	5 mt.
		kachnar	1	30.6	6 mt.

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
			1	60.9	5.5 mt.
			1	60.9	6 mt.
			3		
		Bottle Brush	1	30.6	2 mt.
			1	30.6	3 mt.
			1	30.6	3.5 mt.
			1	30.6	4 mt.
			2	30.6	5 mt.
			1	30.6	5.5 mt.
			3	30.6	6 mt.
			1	60.9	5 mt.
			1	60.9	6 mt.
			12		
		Papri (Kang)	1	30.6	5 mt.
		Dhak	1	30.6	5 mt.
		Jamun	2	60.9	3 mt.
			5	60.9	6 mt.
			7		
		Arjuna	1	30.6	5 mt.
			2	30.6	5.5 mt.
			1	60.9	5 mt.
			1	60.9	6 mt.
			1	60.9	6.5 mt.
			6		
		Gulmohar	1	60.9	5 mt.
		Beri	1	30.6	4 mt.
		Azadirachta indica (Neem)	1	90.12	5 mt.
			1	90.12	6 mt.
			2		
		Total:	**51**		
5	Namoli	Katha Sahtoot	1	60.9	5 mt.
			1	60.9	6 mt.
			2		
		Azadirachta indica (Neem)	1	60.9	3 mt.
			1	60.9	5 mt.
			1	90.12	6 mt.
			3		
		Ficus Religiosa (Peepal)	1	120.15	6 mt.
		Pilkhar	1	60.9	5 mt.
		Bakayan	1	30.6	3 mt.
			1	30.6	4 mt.
			2		
		Jamun	1	30.6	5 mt.
			1	60.9	6 mt.
			1	90.12	6 mt.
			3		
		Ashoka	1	30.6	5 mt.
			1	30.6	6 mt.
			2	60.9	5 mt.
			4	60.9	6 mt.
			1	60.9	8 mt.
			1	90.12	6 mt.
			10		
		Dalbergia sissoo (Shisham)	1	30.6	6 mt.
			2	60.9	6 mt.
			1	90.12	9 mt.
			4		
		Kabuli Keeker	3	30.6	3 mt.
			2	30.6	4 mt.
			1	30.6	5 mt.
			6		

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
		Total:	**32**		
6	MubarikPur	keeker	1	30.6	4 mt.
			5	30.6	5 mt.
			1	30.6	6 mt.
			7		
		Katha sahtoot	2	60.9	6 mt.
		Azadirachta indica (Neem)	1	30.6	2 mt.
			3	30.6	2.5 mt.
			3	30.6	3 mt.
			1	30.6	6 mt.
			1	60.9	5 mt.
			9		
		Ficus Religiosa (Peepal)	1	30.6	3 mt.
		Total:	**19**		
7	Jhantra	Jamun	1	90.12	8 mt.
		Peepal	1	60.9	6 mt.
		Gular	1	90.12	7 mt.
		Beri	1	30.6	3 mt.
			1	30.6	5 mt.
			1	30.6	6 mt.
			3		
		Total:	**6**		
8	Gulaali	Jamun	1	90.12	6 mt.
		Total:	**134**		

Gulistanpur Reserved Forest area

Sr.No.	Village	Botonical name (Vernaculer name)	Number of Tree	Girth (cm)	Height (m)
1	Gulistapur	Prosopis juliflora	22	30.6	2 mt.
			216	30.6	3 mt.
			60	30.6	4 mt.
			6	30.6	5 mt.
			6	> 180	5 mt.
			310		
		Butea monosperma	9	30.6	2 mt.
			38	30.6	3 mt.
			4	30.6	4 mt.
			51		
		Dalbergia sissoo	2	30.6	2 mt.
			49	30.6	3 mt.
			49	30.6	4 mt.
			15	30.6	5 mt.
			115		
		Acacia arabica	388	Bushes	> 1.5 m
		Calotropis procera	57	Bushes	> 1.5 m
		Euphorbia hirta	123	Bushes	> 1.5 m
		Zephyranthes carinata	153	Bushes	> 1.5 m
		Argemone maxicana	34	Bushes	> 1.5 m
		Abutilon megapotamicum	108	Bushes	> 1.5 m
		Achyranthes aspera linn (Latjeera)	255	Bushes	> 1.5 m
		Total			

Appendix-7c
Result of Field Survey (Fauna)

Table 7c-1(1) Important Wildlife Recorded in Ovali village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
3	*Sus scrofa*	Wild Boar	*Suvar*	Abundant	III	Least Concern	×	×
Reptiles								
1	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
2	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
3	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened	×	×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Ardeola grayii*	Indian pond heron		Common	IV	Least Concern	×	×
4	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
5	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
6	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
7	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
8	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
9	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
10	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
11	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
12	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
13	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
14	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
15	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
16	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
17	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
18	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
19	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
20	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
21	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
22	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
23	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
24	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
25	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
26	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(2) Important Wildlife Recorded in Nagla village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Felis chaus*	Jungle cat	*Manjar*	Uncommon	II	Least Concern		
3	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
4	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
5	*Hystrix indica*	Indian porcupine	*Seval*	Common	IV	Least Concern		
6	*Sus scrofa*	Wild Boar	*Suvar*	Abundant	III	Least Concern	×	×
Reptiles								
1	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
2	*Eryx conicus*	Common Sand Boa	Bhamphodi	Common	IV	Least Concern		
3	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern		×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
4	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
5	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
6	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
7	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
8	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
9	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
10	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
11	*Halcyon smyrnensis*	White throated kingfisher		Common	IV	Least Concern	×	×
12	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
13	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
14	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
15	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
16	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
17	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
18	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
19	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
20	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
21	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
22	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
23	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
24	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(3) Important Wildlife Recorded in Sarjamori village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
3	*Felis chaus*	Jungle cat	*Manjar*	Uncommon	II	Least Concern		
4	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
5	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
6	*Hystrix indica*	Indian porcupine	*Seval*	Common	IV	Least Concern		
7	*Sus scrofa*	Wild Boar	*Suvar*	Abundant	III	Least Concern		×
Reptiles								
1	*Agama minor*	Short tailed Agama	Kachindo	Common	IV	Least Concern	×	×
2	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
3	*Champacuon zeylanicus*	Indian Chameleon	Girgit	Common	IV	Least Concern	×	×
4	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
5	*Eryx johni*	John Sand Boa	Andhli chakal	Common	IV	Least Concern		
6	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern	×	×
7	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
8	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened	×	×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Ammomanes phoenicurus*	Rufus tailed lark		Common	IV	Least Concern	×	×
4	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
5	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
6	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
7	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
8	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
9	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
10	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
11	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
12	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
13	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
14	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern	×	×
15	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
16	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
17	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
18	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
19	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
20	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
21	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
22	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
23	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
24	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
25	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(4) Important Wildlife Recorded in Shilottar village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
3	*Felis chaus*	Jungle cat	*Manjar*	Uncommon	II	Least Concern		
4	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
5	*Hystrix indica*	Indian porcupine	*Seval*	Common	IV	Least Concern		
6	*Sus scrofa*	Wild Boar	*Suvar*	Abundant	III	Least Concern	×	×
Reptiles								
1	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
2	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
3	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
4	*Natrix piscator*	Cheakered Keelback	Dendu	Common	IV	Least Concern	×	×
5	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened	×	×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Ammomanes phoenicurus*	Rufus tailed lark		Common	IV	Least Concern	×	×
3	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
4	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
5	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
6	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
7	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
8	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
9	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
10	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
11	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern	×	×
12	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
13	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
14	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
15	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
16	*Passer domesticus*	House sparrow		Common	IV	Least Concern	×	×
17	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
18	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
19	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
20	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
21	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
22	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
23	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
24	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
25	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
26	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
27	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(5) Important Wildlife Recorded in Dhaniv village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
Reptiles								
1	*Agama minor*	Short tailed Agama	Kachindo	Common	IV	Least Concern	×	×
2	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
3	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
4	*Eryx conicus*	Common Sand Boa	Bhamphodi	Common	IV	Least Concern		
5	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern		×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Ardeola grayii*	Indian pond heron		Common	IV	Least Concern	×	×
4	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
5	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
6	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
7	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
8	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
9	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
10	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
11	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
12	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
13	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
14	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
15	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
16	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
17	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
18	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
19	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
20	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
21	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
22	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
23	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
24	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
25	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
26	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(6) Important Wildlife Recorded in Bhatpada Dandipada village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
3	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
4	*Hystrix indica*	Indian porcupine	*Seval*	Common	IV	Least Concern		
Reptiles								
1	*Agama minor*	Short tailed Agama	Kachindo	Common	IV	Least Concern	×	×
2	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
3	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
4	*Eryx johni*	John Sand Boa	Andhli chakal	Common	IV	Least Concern		
5	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern		×
6	*Natrix piscator*	Cheakered Keelback	Dendu	Common	IV	Least Concern	×	×
7	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened		×
Birds								
1	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
2	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern	×	×
3	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
4	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
5	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern	×	×
6	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
7	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
8	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
9	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
10	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
11	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
12	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
13	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
14	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
15	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
16	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
17	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
18	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
19	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
20	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×

Table 7c-1(7) Important Wildlife Recorded in Bilalpada village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammal								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
3	*Cyanopterus sphynx*	Fruit Bat	*Chimgadad*	Common	IV	Least Concern		
4	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
5	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
6	*Hystrix indica*	Indian porcupine	*Seval*	Common	IV	Least Concern		
Reptiles								
1	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
2	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
3	*Eryx conicus*	Common Sand Boa	Bhamphodi	Common	IV	Least Concern		
4	*Eryx johni*	John Sand Boa	Andhli chakal	Common	IV	Least Concern		
5	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern		×
6	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
7	*Natrix piscator*	Cheakered Keelback	Dendu	Common	IV	Least Concern		×
8	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened		×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Ardeola grayii*	Indian pond heron		Common	IV	Least Concern	×	×
4	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
5	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
6	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
7	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
8	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
9	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
10	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
11	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern	×	×
12	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
13	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
14	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
15	*Passer domesticus*	House sparrow		Common	IV	Least Concern	×	×
16	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
17	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
18	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
19	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
20	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
21	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
22	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
23	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
24	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(8) Important Wildlife Recorded in Kasarali village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
3	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
4	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
5	*Lepus nigricollis*	Indian hare	*Sassa*	Common	IV	Least Concern	×	×
6	*Rattus rattus*	House rat	*Chuha*	Common	unscheduled	Least Concern		
Reptiles								
1	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
2	*Champacuon zeylanicus*	Indian Chameleon	Girgit	Common	IV	Least Concern	×	×
3	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
4	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
5	*Natrix piscator*	Cheakered Keelback	Dendu	Common	IV	Least Concern	×	×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Ardea cinerea*	Grey heron		Common	IV	Least Concern	×	×
4	*Ardeola grayii*	Indian pond heron		Common	IV	Least Concern	×	×
5	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
6	*Casmerodius albus*	Great egret		Common	IV	Least Concern	×	×
7	*Columba livia*	Blue rock pigeon	Kabootar	Common	IV	Least Concern	×	×
8	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
9	*Corvus splendens*	House crow	Kauya	Common	V	Least Concern	×	×
10	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
11	*Egretta garzetta*	Little egret		Common	IV	Least Concern	×	×
12	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
13	*Halcyon smyrnensis*	White throated kingfisher		Common	IV	Least Concern	×	×
14	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
15	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
16	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
17	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
18	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
19	*Passer domesticus*	House sparrow	Gauraiya	Common	IV	Least Concern	×	×
20	*Phalacrocorax niger*	Little cormorant		Common	IV	Least Concern	×	×
21	*Pycnonotus cafer*	Red vented bulbul	Bulbul	Common	IV	Least Concern	×	×
22	*Streptopelia decaocto*	Eurasian collared dove	Fakhta	Common	IV	Least Concern	×	×
23	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
24	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
25	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
26	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(9) Important Wildlife Recorded in Kelve road village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Cyanopterus sphynx*	Fruit Bat	*Chimgadad*	Common	IV	Least Concern		
2	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
3	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
Reptiles								
1	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
2	*Eryx johni*	John Sand Boa	Andhli chakal	Common	IV	Least Concern		
3	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened		×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
3	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
4	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
5	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
6	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern		×
7	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
8	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
9	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern	×	×
10	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
11	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern		×
12	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
13	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
14	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
15	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
16	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
17	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
18	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern		×

Table 7c-1(10) Important Wildlife Recorded in Kasbe Mahim village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Cyanopterus sphynx*	Fruit Bat	*Chimgadad*	Common	IV	Least Concern		
2	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
3	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
Reptiles								
1	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
2	*Eryx conicus*	Common Sand Boa	Bhamphodi	Common	IV	Least Concern		
3	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern	×	×
4	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
Birds								
1	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
2	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
3	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
4	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern		×
5	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
6	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
7	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
8	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
9	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
10	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
11	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
12	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
13	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
14	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
15	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
16	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
17	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
18	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
19	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
20	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
21	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
22	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
23	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
24	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(11) Important Wildlife Recorded in Dandipada village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
3	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
Reptiles								
1	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
2	*Natrix piscator*	Cheakered Keelback	Dendu	Common	IV	Least Concern		×
3	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened		×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Athere brama*	Spotted owlet		Common	IV	Least Concern		×
4	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
5	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
6	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern		×
7	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
8	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
9	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
10	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern		×
11	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
12	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
13	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
14	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
15	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
16	*Passer domesticus*	House sparrow		Common	IV	Least Concern	×	×
17	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
18	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
19	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
20	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
21	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
22	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
23	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
24	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
25	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
26	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
27	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern		×

Table 7c-1(12) Important Wildlife Recorded in Boisar village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Cyanopterus sphynx*	Fruit Bat	Chimgadad	Common	IV	Least Concern		
2	*Funambulus pennanti*	Palm squirrel	Gilhari	Common	IV	Least Concern	×	×
Reptiles								
1	*Agama minor*	Short tailed Agama	Kachindo	Common	IV	Least Concern	×	×
2	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
3	*Champacuon zeylanicus*	Indian Chameleon	Girgit	Common	IV	Least Concern		×
4	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
5	*Eryx conicus*	Common Sand Boa	Bhamphodi	Common	IV	Least Concern		
6	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern		×
7	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
Birds								
1	*Athere brama*	Spotted owlet		Common	IV	Least Concern		×
2	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
3	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
4	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern		×
5	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern		×
6	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
7	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern		×
8	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
9	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
10	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
11	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
12	*Passer domesticus*	House sparrow		Common	IV	Least Concern	×	×
13	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern		×
14	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern		×
15	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
16	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
17	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
18	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern		×
19	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(13) Important Wildlife Recorded in Rani Shirgaon village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
Reptiles								
1	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern		×
2	*Champacuon zeylanicus*	Indian Chameleon	Girgit	Common	IV	Least Concern		×
3	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
4	*Eryx conicus*	Common Sand Boa	Bhamphodi	Common	IV	Least Concern		
5	*Eryx johni*	John Sand Boa	Andhli chakal	Common	IV	Least Concern		
6	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern		×
7	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened		×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Ammomanes phoenicurus*	Rufus tailed lark		Common	IV	Least Concern	×	×
4	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
5	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
6	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
7	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
8	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
9	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
10	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
11	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern		×
12	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
13	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
14	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
15	*Passer domesticus*	House sparrow		Common	IV	Least Concern	×	×
16	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
17	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
18	*Pycnonotus leucotis*	White-eared Bulbul		Common	IV	Least Concern	×	×
19	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
20	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
21	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
22	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
23	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
24	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern		×

Table 7c-1(14) Important Wildlife Recorded in Kolavali village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
3	*Cyanopterus sphynx*	Fruit Bat	*Chimgadad*	Common	IV	Least Concern		
4	*Felis chaus*	Jungle cat	*Manjar*	Uncommon	II	Least Concern		
5	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
6	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
7	*Rattus rattus*	House rat	*Chuha*	Common	unscheduled	Least Concern		
8	*Sus scrofa*	Wild Boar	*Suvar*	Abundant	III	Least Concern		×
Reptiles								
1	*Agama minor*	Short tailed Agama	Kachindo	Common	IV	Least Concern		×
2	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
3	*Champacuon zeylanicus*	Indian Chameleon	Girgit	Common	IV	Least Concern		×
4	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
5	*Eryx johni*	John Sand Boa	Andhli chakal	Common	IV	Least Concern		
6	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern		×
7	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
8	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Near Threatened		×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
4	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern		×
5	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
6	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
7	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
8	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
9	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
10	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
11	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
12	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern	×	×
13	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
14	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
15	*Passer domesticus*	House sparrow		Common	IV	Least Concern	×	×
16	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
17	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
18	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
19	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
20	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(15) Important Wildlife Recorded in Vangaon village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Cyanopterus sphynx*	Fruit Bat	*Chimgadad*	Common	IV	Least Concern		
2	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern		×
3	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
4	*Rattus rattus*	House rat	*Chuha*	Common	unscheduled	Least Concern		
Reptiles								
1	*Calotes versicolor*	Garden Lizard	Kachindo	Abundant	IV	Least Concern	×	×
2	*Echis carinatus*	Saw scaled Viper	Padku	Abundant	IV	Near Threatened		
3	*Ptyas mucosus*	Rat Snake	Dhaman	Abundant	IV	Near Threatened		×
Birds								
1	*Alcedo atthis*	Common Kingfisher		Resident Breeding	IV	Least Concern	×	×
2	*Copsychus saularis*	Oriental magpie robin		Resident Breeding	IV	Least Concern	×	×
3	*Dendrocitta vagabunda*	Rufous treepie		Resident Breeding	IV	Least Concern	×	×
4	*Dicrurus macrocercus*	Black drongo		Resident Breeding	IV	Least Concern	×	×
5	*Elanus caeruleus*	Black shoulder kite		Resident Breeding	IV	Least Concern	×	×
6	*Himantopus himantopus*	Black winged stilt		Resident Breeding	IV	Least Concern		
7	*Lanius schach*	Long tailed shrike		Resident Breeding	IV	Least Concern		
8	*Lonchura malabarica*	Indian silverbill		Resident Breeding	IV	Least Concern		
9	*Megalaima haemacephala*	Coppersmith Barbet		Resident Breeding	IV	Least Concern	×	×
10	*Merops orientalis*	Green bee eater		Resident Breeding	IV	Least Concern	×	×
11	*Orthotomus sutorius*	Common tailor bird		Resident Breeding	IV	Least Concern	×	×
12	*Psittacula krameri*	Rose ringed parakeet		Resident Breeding	IV	Least Concern	×	×
13	*Pycnonotus cafer*	Red vented bulbul		Resident Breeding	IV	Least Concern	×	×
14	*Streptopelia senegalensis*	Laughing dove		Resident Breeding	IV	Least Concern	×	×
15	*Streptopelia tranquebarica*	Red Collared Dove		Resident Breeding	IV	Least Concern	×	×
16	*Turdoides caudatus*	Common babbler		Resident Breeding	IV	Least Concern	×	×
17	*Turdoides striatus*	Jungle babbler		Resident Breeding	IV	Least Concern	×	×
18	*Vanellus indicus*	Red wattled lapwing		Resident Breeding	IV	Least Concern	×	×
19	*Vanellus malarbaricus*	Yellow wattled lapwing		Resident Breeding	IV	Least Concern	×	×

Table 7c-1(16) Important Wildlife Recorded in Pade village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
2	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern		×
Reptiles								
1	*Mubuya carinata*	Common Skink		Common	IV	Least Concern		×
2	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
3	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Near Threatened		
Birds								
1	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
2	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
3	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
4	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern		×
5	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
6	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
7	*Casmerodius albus*	Great egret		Common	IV	Least Concern	×	×
8	*Ardea cinerea*	Grey heron		Common	IV	Least Concern	×	×
9	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
10	*Ardeola grayii*	Indian pond heron		Common	IV	Least Concern	×	×
11	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
12	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
13	*Phalacrocorax niger*	Little cormorant		Common	IV	Least Concern	×	×
14	*Egretta garzetta*	Little egret		Common	IV	Least Concern	×	×
15	*Ceryle rudis*	Pied kingfisher		Common	IV	Least Concern	×	×
16	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
17	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
18	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
19	*Halcyon smyrnensis*	White throated kingfisher		Common	IV	Least Concern	×	×

Table 7c-1(17) Important Wildlife Recorded in Ambewadi village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
2	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
3	*Presbytis entellus*	Common langur	*Langur*	Common	II	Least Concern	×	×
4	*Rattus rattus*	House rat	*Chuha*	Common	unscheduled	Least Concern	×	×
Reptiles								
1	*Echis carinatus*	Saw scaled Viper	Padku	Abundant	IV	Near Threatened		
2	*Natrix piscator*	Cheakered Keelback	Dendu	Abundant	IV	Least Concern	×	×
3	*Ptyas mucosus*	Rat Snake	Dhaman	Abundant	IV	Near Threatened	×	×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
4	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
5	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
6	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
7	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
8	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
9	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
10	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
11	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern		
12	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern		
13	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
14	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
15	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
16	*Psittacula krameri*	Rose ringed parakeet		Common	IV	Least Concern	×	×
17	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
18	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
19	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
20	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
21	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
22	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
23	*Vanellus malarbaricus*	Yellow wattled lapwing		Common	IV	Least Concern	×	×

Table 7c-1(18) Important Wildlife Recorded in Gholvad village forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern	×	×
2	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
3	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
4	*Rattus rattus*	House rat	*Chuha*	Common	unscheduled	Least Concern	×	
Reptiles								
1	*Agama minor*	Short tailed Agama	*Kachindo*	Common	IV	Least Concern	×	×
2	*Calotes versicolor*	Garden Lizard	*Kachindo*	Common	IV	Least Concern	×	×
3	*Champacuon zeylanicus*	Indian Chameleon	*Girgit*	Common	IV	Least Concern	×	×
4	*Echis carinatus*	Saw scaled Viper	*Padku*	Common	IV	Near Threatened		
5	*Eryx conicus*	Common Sand Boa	*Bhamphodi*	Common	IV	Least Concern		
6	*Lissemus punctatea*	Flap shell Turtle	*Kachua*	Common	IV	Least Concern		×
7	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
8	*Ptyas mucosus*	Rat Snake	*Dhaman*	Common	IV	Near Threatened	×	×
Birds								
1	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
2	*Elanus caeruleus*	Black shoulder kite		Common	IV	Least Concern	×	×
3	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
4	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
5	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
6	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
7	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
8	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
9	*Streptopelia decaocto*	Eurasian collared dove		Common	IV	Least Concern	×	×
10	*Casmerodius albus*	Great egret		Common	IV	Least Concern	×	×
11	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
12	*Ardea cinerea*	Grey heron		Common	IV	Least Concern	×	×
13	*Ardeola grayii*	Indian pond heron		Common	IV	Least Concern	×	×
14	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
15	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
16	*Phalacrocorax niger*	Little cormorant		Common	IV	Least Concern	×	×
17	*Egretta garzetta*	Little egret		Common	IV	Least Concern	×	×
18	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
19	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
20	*Halcyon smyrnensis*	kingfisher		Common	IV	Least Concern	×	×

Table 7c-1(19) Important Wildlife Recorded in Bordee village Forest

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April,2011)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Presbytis entellus*	Common langur	*Langur*	Common	II	Least Concern	×	×
3	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern		×
4	*Cyanopterus sphynx*	Fruit Bat	*Chimgadad*	Common	IV	Least Concern		
5	*Rattus rattus*	House rat	*Chuha*	Common	unscheduled	Least Concern		
6	*Lepus nigricollis*	Indian hare	*Sassa*	Common	IV	Least Concern	×	×
7	*Hystrix indica*	Indian porcupine	*Seval*	Common	IV	Least Concern		
8	*Canis aureus*	Jackal	*Gidar*	Common	II	Least Concern		×
9	*Felis chaus*	Jungle cat	*Manjar*	Uncommon	II	Least Concern		
10	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
11	*Sus scrofa*	Wild Boar	*Suvar*	Abundant	III	Least Concern		×
Reptiles								
1	*Echis carinatus*	Saw scaled Viper	*Padku*	Common	IV	Near Threatened		
2	*Eryx johni*	John Sand Boa	*Andhli chakal*	Common	IV	Least Concern		
3	*Ptyas mucosus*	Rat Snake	*Dhaman*	Common	IV	Near Threatened		×
4	*Natrix piscator*	Cheakered Keelback	*Dendu*	Common	IV	Least Concern	×	×
5	*Champacuon zeylanicus*	Indian Chameleon	*Girgit*	Common	IV	Least Concern		×
6	*Calotes versicolor*	Garden Lizard	*Kachindo*	Common	IV	Least Concern	×	×
7	*Lissemus punctatea*	Flap shell Turtle	*Kachua*	Common	IV	Least Concern		×
Birds								
1	*Lanius vittatus*	Bay backed shrike		Common	IV	Least Concern	×	×
2	*Dicrurus macrocercus*	Black drongo		Common	IV	Least Concern	×	×
3	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
4	*Bulbulcus ibis*	Cattle egret		Common	IV	Least Concern	×	×
5	*Turdoides caudatus*	Common babbler		Common	IV	Least Concern	×	×
6	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
7	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
8	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
9	*Casmerodius albus*	Great egret		Common	IV	Least Concern	×	×
10	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
11	*Merops orientalis*	Green bee eater		Common	IV	Least Concern	×	×
12	*Corvus splendens*	House crow		Common	IV	Least Concern	×	×
13	*Passer domesticus*	House sparrow		Common	IV	Least Concern	×	×
14	*Saxicoloides fulicata*	Indian robin		Common	IV	Least Concern	×	×
15	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
16	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
17	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
18	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April,2011)
19	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
20	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
21	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×
22	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
23	*Ammomanes phoenicurus*	Rufus tailed lark		Common	IV	Least Concern	×	×

Table 7c-1(20) Important Wildlife Recorded in Gulistanpur Reserved Forest (Gautam Buddha Nagar)

S. No.	Name of Species Recorded			Abundance Status (Common, Uncommon, Abundant, Rare)	Conservation Status as per IWPA-1972 (Schedule I to VI)	Conservation Status as per IUCN	Confirmed species by field survey	
	Scientific Name	Common Name	Local/Vernacular Name				First Season-Winter (January, 2011)	Second Season-Summer (April)
Mammals								
1	*Boselaphus tragocamelus*	Blue bull	*Nilgai*	Abundant	III	Least Concern		
2	*Canis aureus*	Jackal	*Gidar*	Common	III	Least Concern		×
3	*Felis chaus*	Jungle cat	*Manjar*	Common	III	Least Concern		
4	*Funambulus pennanti*	Palm squirrel	*Gilhari*	Common	IV	Least Concern	×	×
5	*Herpestes edwardsi*	Common mongoose	*Nevla*	Common	II	Least Concern	×	×
6	*Hystrix indica*	Indian porcupine	*Seval*	Common	IV	Least Concern		
7	*Sus scrofa*	Wild Boar	*Suvar*	Common	III	Least Concern		×
Reptiles								
1	*Agama minor*	Short tailed Agama	Kachindo	Common	IV	Least Concern	×	×
2	*Calotes versicolor*	Garden Lizard	Kachindo	Common	IV	Least Concern	×	×
3	*Champacuon zeylanicus*	Indian Chameleon	Girgit	Common	IV	Least Concern	×	×
4	*Echis carinatus*	Saw scaled Viper	Padku	Common	IV	Least Concern		
5	*Lissemus punctatea*	Flap shell Turtle	Kachua	Common	IV	Least Concern	×	×
6	*Mubuya carinata*	Common Skink		Common	IV	Least Concern	×	×
7	*Ptyas mucosus*	Rat Snake	Dhaman	Common	IV	Least Concern	×	×
Birds								
1	*Acridotheres tristis*	Common myna		Common	IV	Least Concern	×	×
2	*Alcedo atthis*	Common Kingfisher		Common	IV	Least Concern	×	×
3	*Ammomanes phoenicurus*	Rufus tailed lark		Common	IV	Least Concern	×	×
4	*Athere brama*	Spotted owlet		Common	IV	Least Concern	×	×
5	*Centropus sinensis*	Greater couckal		Common	IV	Least Concern	×	×
6	*Columba livia*	Blue rock pigeon		Common	IV	Least Concern	×	×
7	*Copsychus saularis*	Oriental magpie robin		Common	IV	Least Concern	×	×
8	*Corvus splendens*	House crow		Common	V	Least Concern	×	×
9	*Dendrocitta vagabunda*	Rufous treepie		Common	IV	Least Concern	×	×
10	*Francolinus pondicerianus*	Grey francolin		Common	IV	Least Concern	×	×
11	*Himantopus himantopus*	Black winged stilt		Common	IV	Least Concern	×	×
12	*Lanius schach*	Long tailed shrike		Common	IV	Least Concern	×	×
13	*Lonchura malabarica*	Indian silverbill		Common	IV	Least Concern	×	×
14	*Megalaima haemacephala*	Coppersmith Barbet		Common	IV	Least Concern	×	×
15	*Nectarinia asiatica*	Purple sunbird		Common	IV	Least Concern	×	×
16	*Orthotomus sutorius*	Common tailor bird		Common	IV	Least Concern	×	×
17	*Pycnonotus cafer*	Red vented bulbul		Common	IV	Least Concern	×	×
18	*Streptopelia senegalensis*	Laughing dove		Common	IV	Least Concern	×	×
19	*Streptopelia tranquebarica*	Red Collared Dove		Common	IV	Least Concern	×	×
20	*Tephrodornis pondicerianus*	Common Woodshrike		Common	IV	Least Concern	×	×
21	*Turdoides striatus*	Jungle babbler		Common	IV	Least Concern	×	×
22	*Vanellus indicus*	Red wattled lapwing		Common	IV	Least Concern	×	×

Appendix-7d
Result of Supplemental (Monsoon) Field Survey (Flora)

Appendix-7d
Result of Supplemental (Monsoon) Field Survey (Flora)

1. Section 1 and 2 (Thane District)

(1) Methodology of Floral/Vegetation Survey

Vegetation refers to the plants or plant communities covering the land surface of a particular place. Vegetation is not equivalent to flora. It is important to know the plant habits (e.g., trees, shrubs, herbs and epiphytes), but not absolutely necessary to know the plant names. Common vegetation types found in the proposed DFCC alignment recorded forest areas include grasslands, scrublands, woodlands, and coastal vegetation at the estuaries. Vegetation has certain characteristics such as succession, density, and coverage.

Vegetation is affected by interacting factors such as climate, relief, parent material, time, organisms (including humans), and disturbance (e.g. natural: fire, landslides, floods; anthropogenic: forest cutting and clearing).Historically the vegetation of thane district has been studied and floristic accounts have been provided. However due to very human interference and urbanization the forest types or vegetation types are not typical with elements described earlier. The present vegetation is the result of last few decades overexploitation of the land, degradation and continuous indiscriminate use of plants by human beings. Therefore it is important to study the vegetation to see the present pattern across the section I & II in Thane district, find out the presence of any plant species that are important and are listed in IUCN red list or scheduled species according to Indian Wild Life Protection Act. Following sampling methods have been used for vegetation studies. Data collected through such studies further analyzed to understand the frequency and abundance as well as IVI of various plant species recorded from the study area.

(2) Sampling Design

The sampling design adopted for conducting the inventory in the study area was systematic random sampling. In this method, the starting point of the first transect was selected randomly, GPS locations of each transect was recorded. Quadrats were laid along both the sides of transect with 50m distance between 2 quadrats on opposite sites.

(3) Determination of Species Area Curve

In order to arrive at the minimum size of the quadrat required for sampling the tree layer, shrub layer and herb layer, species area curves Misra (1968) were drawn.

Minimal area of quadrat is defined as the smallest area in which species composition of the vegetation under study is adequately represented. In the present study minimal area was determined by laying out small quadrat, which was subsequently enlarged to two, four, eight, sixteen times or more in the size. All species were recorded in smaller and enlarged quadrats. Occurring species were listed separately for each enlarged area. The quadrat size was increased until the species added to the list became constant. The species number was then plotted against area of quadrats. Thus species area curve was drawn. The minimal size was determined at which the curve becomes almost parallel to x-axis. Thus minimum size of the quadrats selected for trees, shrubs and herbs was found to be 10 x 10m, 5 x 5m and 1 x 1m respectively.

(4) Determination of Optimum Quadrat Numbers

The number of species was plotted against the number of quadrats to estimate minimum

number of quadrats to be laid in which species composition of the vegetation under study is adequately represented. The minimum number was determined at which the curve becomes almost horizontal.

In each quadrate, with more than 5 cm DBH (Diameter at Breast Height) were classed as trees and those with DBH less than 5 cm were recorded as shrubs and sapling and individuals having less than 30 cm height were recorded as herbs and seedling.

Vegetation survey was carried out by adopting nested quadrat method. All individuals of each tree species present in a plot (10mx10m) were counted and then DBH of all trees was recorded at breast height (1.37m). All individuals of each shrub species and tree saplings (5mx5m) were counted and collar diameter of all the individuals were recorded. Similarly all individuals of herbs and seedling of shrubs and trees were counted and Collar Diameter of all the individuals was recorded.

(5) Vegetation Analysis

The vegetation data was quantitatively analysed for frequency, density and abundance Curtis and McIntosh (1950). The relative values of frequency, density and abundance were also determined Phillps (1959). The importance value index for each plant species was determined as the sun of relative frequency, relative density and relative dominance. The ratio of Abundance to frequency (A/F) has been used to analyse the distribution of species within each of the site studied.

$$\textbf{Density (D)} = \frac{\text{Total number of individual in all quadrats}}{\text{Total number of quadrats studied}}$$

$$\textbf{Frequency } (\%) = \frac{\text{Total number of quadrats in which species occurred}}{\text{Total number of quadrats studied}} \text{X } 100$$

$$\textbf{Abundance (A)} = \frac{\text{Total number of individuals of a species in all quadrats}}{\text{Total number of quadrats in which the species occured}}$$

$$\textbf{Relative Frequency} = \frac{\text{Number of occurance of the species}}{\text{Number of occurrence of all species}} \text{ X } 100$$

$$\textbf{Relative Density} = \frac{\text{Number of individuals}}{\text{Number of occurrence of all individuals}} \text{ X } 100$$

$$\textbf{Relative Dominance} = \frac{\text{Total basal area of the species in all quadrats}}{\text{Total basal area of all species in all the quadrats}} \text{ X } 100$$

Importance Value Index (IVI) = R. Freq. + R. Den. + R. Dom.

Sampled Area in Thane district - Recorded forest areas: total 24 sites

Total number of quadrats for trees: 183

Total number of quadrats for shrubs: 366

Total number of quadrats for herbs: 732

Detailed analysis of vegetation has been provided in a separate section.

Photo 7d-1: Survey team at Shillotar Site Section 1

Table 7d-1 Vegetation analysis at a Glance

Sr. No.	Sampling Station/ Village	Land use of surrounding	Area in Ha	Length of alignment in m	No of quadrats for			% area sampled	% length Surveyed
					Trees	Shrubs	Herbs		
1	Ovali	Seasonal wetland and private forest	0.1288	350	5	10	20	59.78	14.29
2	Nagle (SGNP)	Grassland with few trees and thickets	0.1871	95	3	6	12	24.69	31.58
3	Shilothar (SGNP)	Grassland with few trees and thickets	0.3569	108	3	6	12	12.94	27.78
4	Sarjamori (SGNP)	Hill, undulating topography with trees	0.61	410	7	14	28	17.67	17.07
5	Mori (SGNP)	Hill, undulating topography with trees	0.6696	470	8	16	32	18.40	17.02
6	Sasunavghar (SGNP)	Herbs dominating , trees with <10 cm GBH	0.974	1083	12	24	48	18.97	11.08
7	Dhaniv	Trees are scattered at foothills, dwarf patchy vegetation on top	4.9164	1030	12	24	48	3.76	11.65
8	Bhatpada	Agriculture , with trees on the top	6.793	1550	15	30	60	3.40	9.68
9	Bilalpada	Encroachment /urbanization	0.8225	107	5	10	20	9.36	46.73
10	Shirgaon	Shrubs and herbs, with recent plantation by forest department	4.0053	435	7	14	28	2.69	16.09
11	Kasarali	Seasonal wetland	0.138	65	4	8	16	44.64	61.54
12	RaniShirgaon	Grassland with tree species	0.046	268	4	8	16	40	14.93
13	Ranishirgaon	Grassland with few tree species	0.387	240	4	8	16	40	16.67
14	Kelve Road	Low lying area, filled with water, marshy habitat dominated by large grasses	0.1	142	2	4	8	20	14.08
15	Kelve Road	Low lying area, filled with water, marshy	0.401	255	3	6	12	30	11.76

Sr. No.	Sampling Station/ Village	Land use of surrounding	Area in Ha	Length of alignment in m	No of quadrats for			% area sampled	% length Surveyed
					Trees	Shrubs	Herbs		
		habitat, few trees							
16	Kelve Road	Low lying area, trees, marshy habitat	0.634	330	4	8	16	40	12.12
17	Kelve Road	Low lying area, with few trees	0.22	148	2	4	8	20	13.51
18	Kelve Road	Open pasture land , trees sparsely distributed	1.12	850	9	18	36	90	10.59
19	Kelve Road	Small area, covered with grasses	0.049	27	1	2	4	10	37.04
20	Kelve Road	Low lying area, trees with species of marshy habitat	0.791	615	7	14	28	70	11.38
21	Boisar	Pasture land dominated by shrubs intermixed with herbs	0.8713	428	6	12	24	60	14.02
22	Kasbe Mahim	Typical pasture land with very few trees and shrubs	4.197	1000	11	22	44	110	11.00
23	Bordee	Seasonal wetland area, pasture land	0.303	1300	14	28	56	140	10.77
24	Vangaon-PF	Dominated by thorny bushes with few herbs and trees	1.862	1673	12	24	48	120	7.17
25	Chikhale	Pasture land dominated with few herbaceous species	0.29	230	4	8	16	40	17.39
26	Gulistanpur RF	Trees in patches forming canopy, grassland, with many shrub species	10.083	1600	19	38	76	190	11.88
Total			**40.956**	**14809**	**183**	**366**	**732**	**------**	**478.82**

Table 7d-2 Detailed description of each site of section 1

Level of Significance: Low, least concerned, medium importance, high importance.

Site	Topography, Soil type & Slope	Overall vegetation	Status of threatened species	Remarks	Significance of the site
Ovali	Almost plain area with a small hillock; seasonal ponds and stream; red alluvial soil.	Dominance of pasture land vegetation; seasonal wetland showed few aquatic and marshy habitat plants; Impatiens sp. were in patches along the existing railway line; most of the tree species are in stunted form and near to railway line	No threatened category species	It's a good seasonal wet land functioning as a pasture land. Stunted growth of the tree species indicating various edaphic as well as anthropogenic pressures acting upon them.	Least Concerned
Nagale (SGNP)	It is a small hill in continuation of Shilottar.	Area is with dense impenetrable vegetation due to patches of shrubby species.	*Erinocarpus nimmonii* is only threatened category species located in this region. This species locally well distributed.	Its shrubby vegetation area mixed with grasses and became isolated due to a road on one side and railway track on other. Although it's a part of SGNP, it is on the border of it and has no role in habitat for wildlife.	Least Concerned
Shilottar (SGNP)	It's a small hill along the existing railway track having steep escarpment towards the railway track. Soil is reddish brown.	The area is dominated with grasses and intermixed with shrubs and trees. At few places shrubs are forming dense impenetrable patches due to extensive mixing of climbers and shrubs	*Erinocarpus nimmonii* is only threatened category species located in this region. This species locally well distributed.	Its shrubby vegetation area mixed with grasses and became isolated due to a road on one side and railway track on other. Although it's a part of SGNP, it is on the border of it and has no role in habitat for wildlife.	Least Concerned
Sarjamori	Small hill with Deep escarpment towards railway track. Soil red alluvial. Soil digging activities noted around the hill	Area is with dense forest on the top but all peripheral vegetation is dominated with the scrub vegetation, overall vegetation in semi to impenetrable.	No threatened species noted in this region	The open slope areas are covered with mainly tall grasses which are the existing pasture land, few economically important tree species are noted in the forest area. It's a good habitat for birds and other small animals but surely not for the wildlife. Development of scrub forest clearly indicating the anthropogenic pressure in this area.	Low Importance
Mori	Small hill towards railway track. Soil red alluvial. Soil digging activities noted around the hill	Area is with dense vegetation on the top, peripheral vegetation is dominated tall grasses . Lopping pressure high.	No threatened species noted in this region	The open slope areas are covered with mainly tall grasses which are the existing pasture land, few economically important tree species are noted in the forest area. It's a good habitat for birds and other small animals but surely not for the wildlife. Development of scrub forest clearly	Low Importance

Site	Topography, Soil type & Slope	Overall vegetation	Status of threatened species	Remarks	Significance of the site
				indicating the anthropogenic pressure in this area.	
Sasunavghar	It is plain + small hilly area with gentle slope	This area is dominated with shrub species. At some places it is dense and mixed with few thorny species making it impenetrable. Canopy is open but few tree species are present along the edge of hill.	No threatened species	This is waste land area and some of its part is pasture land.	Least concerned
Dhaniv	The hilly region in continuation with Bhatpada hill. Hill with high degree of slope and paddy fields in low lying area.	Area and surroundings are dominated with plantation of *Tectona grandis*. In survey no. 120, bushy vegetation is dominated along the slope. Species like *Wrightia tinctoria*, *Hollarrhena antidysenterica* and,*Tectona grandis* and intermixed in association with climbers like *Calycopteris floribunda* and *Dioscorea bulbifera* to form impenetrable thickets of shrubs.	No threatened species	Vegetation is patches only and without canopy cover. Overall it is a degraded ecosystem and some of the species are maintained by local people only for commercial purpose	Least concerned
Bhatpada	Hilly + plain area with paddy fields in between; steep slope on the hilly side; seasonal stream in plain areas	It is the large area and two hills on either ends of it. The open slope areas are densely covered with the grasses. In the plains, dominance of economically important tree *Tectona grandis* was mainly noted; it is planted at some places; Vegetation on hill southeast from Shirgaon hill is dense and canopy cover is also more than 50%. At some places canopy is completely closed hence ground flora was almost absent in such locations. Forest is partially disturbed and is exhibiting three storyed structure. It is typical moist deciduous type of forest.	Except *Erinocarpus* nimmonii, no other threatened species found in this region	Overall southeast hill having good diversity of the species and also the forest. It's a good habitat for wildlife and also supporting ecosystem services like water for agricultural purposes. Many economically and medicinally important plants are available in this forest. Dominance of commercially important species *Tectona grandis* is one of the important characteristic of this vegetation.	Medium importance
Bilalpada	It is a small hill with steep slope	Presently this area in encroached by the local people hence its impact can be detect by observing the species composition. Most of the species are planted and on the top of the hill, a small plateau is present which is presently using for cultivation of crop of	No threatened species	Semi-agricultural area, no natural vegetation	Least concerned

Site	Topography, Soil type & Slope	Overall vegetation	Status of threatened species	Remarks	Significance of the site
		lady's finger.			
Shirgaon	Hilly area with high to medium slope	Mainly pasture land dominated mainly with grasses; shrubs and few tree species sparsely distributed in patches mainly in lower part of the hill and in valley region, plantation of some economically important tree species has been done by the forest department on the slope	No threatened species noted in this region	Open slopes are covered by grasses and overall habitat is of disturbed nature. Presently this area is important for grazing of the cattle only.	Least concerned
Kasarali	It is a small stretch of plain area having seasonal ponds and wetland	The area near to bridge having distribution of various mangrove species. Although this area is very close to Kasarali private forest area (survey no 77/2), it is not a part of survey no 77/2. Hence not a single mangrove is reported from survey no. 77/2. Other species in the vegetation are mainly grasses and marshy habitat species.	No threatened species	Area is with completely open canopy and dominated by only grasses. Due to seasonal ponds, herbaceous diversity present in this area.	Least concerned

For understanding the vegetation and trhough ecological studies, large number of quadrats were laid, mainly to overcome the degradedness. Similarly, there is no uniformity. In all the sites there were different types of temporary habitats like seasonal ponds, plantations, thickets formed due to recent cutting, degraded mangroves etc . Herbacesous species were scattered and to consider them in the analysis more quadrats were taken .

Table 7d-3 Summary of vegetation at Sites in Section 1

Sr. No.	Area	Tree	Shrub	Liana	Climber	Herb	Total
1	Ovali	22	14	0	14	44	**94**
2	Nagle (SGNP)	18	13	0	10	29	**70**
3	Shilothar (SGNP)	13	13	0	8	22	**56**
4	Sarjamori (SGNP)	22	13	0	9	9	**53**
5	Mori (SGNP)	30	19	1	15	25	**90**
6	Sasunavghar (SGNP)	18	13	0	10	29	**70**
7	Dhaniv	13	13	0	10	36	**72**
8	Bhatpada	45	11	0	14	45	**115**
9	Bilalpada	45	11	0	15	45	**116**
10	Shirgaon	10	9	0	10	20	**49**
11	Kasarali	8	11	0	4	43	**66**

Lists of plants recorded from various sites of section I are provided below.

Table 7d-4 List of plant species recorded at Ovali (94 species)

Botanical name	Family	Habit
Abelmoschus manihot (L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Alysicarpus heyneanus Wight & Arn. var.heyneanus	Fabaceae	Herb
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Alysicarpus tetragonolobus Edgew. var. tetragonolobus	Fabaceae	Herb
Amaranthus spinosus L.	Amaranthaceae	Herb
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Carissa congesta Wight	Apocynaceae	Shrub
Cassia absus L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Celastrus paniculatus Willd.	Celastraceae	Climber
Celosia argentea L.	Amaranthaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Cleome rutidosperma DC.	Capparaceae	Herb
Commelina benghalensis L.	Commelinaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Costus speciosus Sm.	Liliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Cryptolepis buchanani Roem. & Schult.	Periplocaceae	Climber
Cynadon dactylon L.	Poaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Dalbergia sissoo Roxb.	Fabaceae	Tree
Dioscorea bulifera L.	Dioscoraceae	Climber
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Erythrina variegata L.	Fabaceae	Tree
Eupatorium adenophorum Spreng.	Asteraceae	Shrub

Botanical name	Family	Habit
Euphorbia hirta L.	Euphorbiaceae	Herb
Flacourtia indica (Burm. f.) Merr.	Flacourtiaceae	Tree
Gloriosa superba L.	Liliaceae	Climber
Gmelina arborea Roxb.	Verbenaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Holostemma annulare (Roxb.) K. Schum.	Asclepiadaceae	Climber
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Impatiens pulcherrima Dalz.	Balsaminaceae	Herb
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	Convolvulaceae	Shrub
Jatropha curcas L.	Euphorbiaceae	Tree
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Linum mysurense Heyne ex Bth.	Linaceae	Herb
Malachra capitata (L.) L.	Malvaceae	Shrub
Melanocynchrus jacquemontii Jaub. & Spach.	Poaceae	Herb
Momordica dioica Roxb. ex Willd.	Cucurbitaceae	Climber
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Mukia maderaspatana (L.) Roem.	Cucurbitaceae	Climber
Murdania wightii Rolla & Kammathy	Commelinaceae	Herb
Neolamarckia cadamba (Roxb.) Bosser	Rubiaceae	Tree
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Phyllanthus virgatus Forst. f.	Euphorbiaceae	Herb
Pointsettia sp.	Euphorbiaceae	Herb
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Porana racemosa Roxb.	Convolvulaceae	Climber
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Scirpus affinis Roth.	Cyperaceae	Herb
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Securinega virosa (Roxb. ex Willd.) Baill.	Euphorbiaceae	Shrub
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb

Botanical name	Family	Habit
Smithia bigemina Dalz.	Fabaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Stylosanthes fruticosa (Retz.) Alst.	Polygalaceae	Herb
Syzygium cumini (L.) Skeels	Rutaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Terminalia elliptica Willd.	Combretaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Trichosanthes anguina L.	Cucurbitaceae	Climber
Tridax procumbens L.	Asteraceae	Herb
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vernonia cinerea (L.) Less.	Asteraceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Vitex negundo L. var. negundo	Verbenaceae	Shrub
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Wrightia tinctoria R. Br. ssp. Tinctoria	Apocynaceae	Tree
Ziziphus mauritiana Lam.	Rhamnaceae	Tree

Photo 7d-2: *Holostemma annulare* (Roxb.) K. Schum

Table 7d-5 List of plant species recorded at Shillotar (56 species)

Botanical name	Family	Habit
Abelmoschus moschatus Medik.	Malvaceae	Shrub
Adiantum sp	Pretidaceae	Herb
Alternanthera sessilis (L.) R. Br. Ex DC.	Amaranthaceae	Herb
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Arisaema murrayi Hook.	Liliaceae	Herb
Azadirachta indica A. Juss.	Meliaceae	Tree
Bombax ceiba L.	Bombacaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calotropis 13igantean (L.) Ait.	Asclepiadaceae	Shrub
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Cassia absus L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Celosia argentea L.	Amaranthaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Cissus woodrowii (Stapf ex T. Cooke) Sant.	Vitaceae	Shrub
Clitoria biflora Dalz.	Fabaceae	Climber
Costus speciosus Sm.	Liliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dioscorea bulifera L.	Dioscoraceae	Climber
Erinocarpus nimmonii Grah. Ex Dalz.	Tiliaceae	Tree
Eupatorium adenophorum Spreng.	Asteraceae	Shrub
Euphorbia parviflora L.	Euphorbiaceae	Herb
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Holarrhena pubescens (Buch.–Ham.) Wall. Ex G. Don	Apocynaceae	Shrub
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb

Botanical name	Family	Habit
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Leea macrophylla Roxb. Ex Horn.	Leeaceae	Shrub
Malachra capitata (L.) L.	Malvaceae	Shrub
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Pointsettia sp.	Euphorbiaceae	Herb
Pterocarpus marsupium Roxb. Var. marsupium	Fabaceae	Tree
Rotala indica (Willd.) Koehne	Lythraceae	Herb
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Sida acuta Burm. F.	Malvaceae	Herb
Sida rhombifolia L. ssp. Rhombifolia	Malvaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Tinospora cordifolia (Willd.) Miers ex Hook. F. & Thoms.	Menispermaceae	Climber
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Ziziphus nummularia (Burm. F.) Wight & Arn.	Rhamnaceae	Tree

Photo 7d-3: *Tephrosia purpurea* (L.) Pers.

Table 7d-6 List of plant species recorded at Nagale (70 species)

Name of species	Family	Habit
Abelmoschus moschatus Medik.	Malvaceae	Shrub
Adiantum sp	Pretidaceae	Herb
Alternanthera sessilis (L.) R. Br. Ex DC.	Amaranthaceae	Herb
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Arisaema murrayi Hook.	Liliaceae	Herb
Azadirachta indica A. Juss.	Meliaceae	Tree
Bombax ceiba L.	Bombacaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calotropis 15igantean (L.) Ait.	Asclepiadaceae	Shrub
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Cassia absus L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Celosia argentea L.	Amaranthaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Cissus woodrowii (Stapf ex T. Cooke) Sant.	Vitaceae	Shrub
Cleome rutidosperma DC.	Capparaceae	Herb
Clitoria biflora Dalz.	Fabaceae	Climber
Commelina diffusa Burm. F.	Commelinaceae	Herb
Commelina hasskarlii C.B.Cl.	Commelinaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Costus speciosus Sm.	Liliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dioscorea bulifera L.	Dioscoraceae	Climber
Ensete superbum (Roxb.) Cheesm.	Musaceae	Herb
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Erinocarpus nimmonii Grah. Ex Dalz.	Tiliaceae	Tree
Eupatorium adenophorum Spreng.	Asteraceae	Shrub
Euphorbia hirta L.	Euphorbiaceae	Herb
Euphorbia parviflora L.	Euphorbiaceae	Herb
Ficus hispida L.	Moreaceae	Shrub

Name of species	Family	Habit
Ficus racemosa L.	Moreaceae	Tree
Gmelina arborea Roxb.	Verbenaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Holarrhena pubescens (Buch.–Ham.) Wall. Ex G. Don	Apocynaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Leea macrophylla Roxb. Ex Horn.	Leeaceae	Shrub
Malachra capitata (L.) L.	Malvaceae	Shrub
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Pointsettia sp.	Euphorbiaceae	Herb
Pterocarpus marsupium Roxb. Var. marsupium	Fabaceae	Tree
Ricinus communis L.	Euphorbiaceae	Tree
Rotala indica (Willd.) Koehne	Lythraceae	Herb
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Sida acuta Burm. F.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Tinospora cordifolia (Willd.) Miers ex Hook. f. & Thoms.	Menispermaceae	Climber
Trema orientalis (L.) Bl.	Ulmaceae	Tree
Trichosanthes anguina L.	Cucurbitaceae	Climber
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree
Ziziphus nummularia (Burm. f.) Wight & Arn.	Rhamnaceae	Tree

Table 7d-7 List of plant species recorded at Sasunavghar (70 species)

Botanical Name	Family	Habit
Abelmoschus moschatus Medik.	Malvaceae	Shrub
Adiantum sp	Pretidaceae	Herb
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Arisaema murrayi Hook.	Liliaceae	Herb
Azadirachta indica A. Juss.	Meliaceae	Tree
Bombax ceiba L.	Bombacaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Cassia absus L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Celosia argentea L.	Amaranthaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Cissus woodrowii (Stapf ex T. Cooke) Sant.	Vitaceae	Shrub
Cleome rutidosperma DC.	Capparaceae	Herb
Clitoria biflora Dalz.	Fabaceae	Climber
Commelina diffusa Burm. f.	Commelinaceae	Herb
Commelina hasskarlii C.B.Cl.	Commelinaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Costus speciosus Sm.	Liliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dioscorea bulifera L.	Dioscoraceae	Climber
Ensete superbum (Roxb.) Cheesm.	Musaceae	Herb
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Erinocarpus nimmonii Grah. ex Dalz.	Tiliaceae	Tree
Eupatorium adenophorum Spreng.	Asteraceae	Shrub
Euphorbia hirta L.	Euphorbiaceae	Herb
Euphorbia parviflora L.	Euphorbiaceae	Herb

Botanical Name	Family	Habit
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Gmelina arborea Roxb.	Verbenaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Leea macrophylla Roxb. ex Horn.	Leeaceae	Shrub
Malachra capitata (L.) L.	Malvaceae	Shrub
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Pointsettia sp.	Euphorbiaceae	Herb
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Ricinus communis L.	Euphorbiaceae	Tree
Rotala indica (Willd.) Koehne	Lythraceae	Herb
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Tinospora cordifolia (Willd.) Miers ex Hook. f. & Thoms.	Menispermaceae	Climber
Trema orientalis (L.) Bl.	Ulmaceae	Tree
Trichosanthes anguina L.	Cucurbitaceae	Climber
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree
Ziziphus nummularia (Burm. f.) Wight & Arn.	Rhamnaceae	Tree

Table 7d-8 List of plants recorded at Mori site (90 species)

Botanical Name	Family	Habit
Abelmoschus ficulneus (L.) Wight & Arn.ex Wight	Malvaceae	Shrub
Abelmoschus manihot (L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Abrus precatorius L.	Fabaceae	Climber
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Aeschynomene indica L.	Fabaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Albizia sp.	Mimosaceae	Tree
Alysicarpus tetragonolobus Edgew. var. tetragonolobus	Fabaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Anacardium occidentale L.	Anacardiaceae	Tree
Asystasia chelonoides Nees	Acanthaceae	Herb
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Butea superba Roxb. ex. Willd.	Fabaceae	Liana
Caesalpinia decapetala (Roth) Alst.	Caesalpiniaceae	Shrub
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Casearia graveolens Dalz.	Flacourtiaceae	Shrub
Cassia absus L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Celosia argentea L.	Amaranthaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Combretum albidum G. Don	Combretaceae	Climber
Corchorus fascicularis Lam.	Tiliaceae	Herb
Costus speciosus Sm.	Liliaceae	Herb
Crotalaria hebecarpa (DC.) Rudd	Fabaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Crotalaria retusa L.	Fabaceae	Herb
Curcuma pseudomontana L.	Zingiberaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Dalbergia sissoo Roxb.	Fabaceae	Tree
Dendrophthoe falcata (L.f) Etting var. falcata.	Loranthaceae	Shrub
Dioscorea bulifera L.	Dioscoraceae	Climber
Diospyros melanoxylon Roxb.	Ebenaceae	Tree

Botanical Name	Family	Habit
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Erinocarpus nimmonii Grah. ex Dalz.	Tiliaceae	Tree
Erythrina variegata L.	Fabaceae	Tree
Eupatorium adenophorum Spreng.	Asteraceae	Shrub
Euphorbia ligularia Roxb.	Euphorbiaceae	Shrub
Euphorbia sp.	Euphorbiaceae	Herb
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Firmiana colorata (Roxb.) R. Br.	Sterculiaceae	Tree
Flacourtia indica (Burm. f.) Merr.	Flacourtiaceae	Tree
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	Flacourtiaceae	Shrub
Flemingia tuberosa Dalz	Fabaceae	Shrub
Gmelina arborea Roxb.	Verbenaceae	Tree
Haldina cordifolia (Roxb.) Ridsd.	Rubiaceae	Tree
Helicteres isora L.	Sterculiaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Jatropha glandulifera Roxb.	Euphorbiaceae	Shrub
Lagerstroemia microcarpa Wight	Lythraceae	Tree
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leea macrophylla Roxb. ex Horn.	Leeaceae	Shrub
Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	Sapotaceae	Tree
Melanocynchrus jacquemontii Jaub. & Spach.	Poaceae	Herb
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Mukia maderaspatana (L.) Roem.	Cucurbitaceae	Climber
Oroxylum indicum (L.) Vent.	Bignoniaceae	Tree
Pogostemon heyneanus Bth.	Acanthaceae	Shrub
Porana racemosa Roxb.	Convolvulaceae	Climber
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb

Botanical Name	Family	Habit
Spermacoce pusilla Wall.	Rubiaceae	Herb
Spondias pinnata (L.f.) Kurz	Anacardiaceae	Tree
Sterculia urens Roxb.	Sterculiaceae	Tree
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Terminalia elliptica Willd.	Combretaceae	Tree
Terminalia paniculata Roth	Combretaceae	Tree
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Tylophora indica (Burm. f.) Merr.	Asclepiadaceae	Climber
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree
Ziziphus mauritiana Lam.	Rhamnaceae	Tree
Ziziphus rugosa Lam. Var. rugosa	Rhamnaceae	Climber

Photo 7d-4: *Malachra capitata* (L.) L

Table 7d-9 List of Plants recorded at Sarjamori site (53 species)

Botanical name	Family	Habit
Abelmoschus ficulneus (L.) Wight & Arn.ex Wight	Malvaceae	Shrub
Abrus precatorius L.	Fabaceae	Climber
Adiantum sp	Pretidaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Anacardium occidentale L.	Anacardiaceae	Tree
Apluda mutica L.	Poaceae	Herb
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Bombax ceiba L.	Bombacaceae	Tree
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Capparis spinosa L.	Capparaceae	Tree
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Casearia graveolens Dalz.	Flacourtiaceae	Shrub
Catunaregam spinosa (Thunb.) Tirveng.	Rubiaceae	Tree
Celastrus paniculatus Willd.	Celastraceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Costus speciosus Sm.	Liliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Curcuma pseudomontana L.	Zingiberaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Ficus hispida L.	Moreaceae	Shrub
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	Flacourtiaceae	Shrub
Flemingia tuberosa Dalz	Fabaceae	Shrub
Gloriosa superba L.	Liliaceae	Climber
Gmelina arborea Roxb.	Verbenaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Helicteres isora L.	Sterculiaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Jasminum multiflorum (Burm. f.) Andr.	Oleaceae	Shrub
Jatropha glandulifera Roxb.	Euphorbiaceae	Shrub

Botanical name	Family	Habit
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Mallotus philippensis (Lam.) Muell.–Arg.	Euphorbiaceae	Tree
Manilkara hexandra (Roxb.) Dub.	Sapotaceae	Tree
Mitragyna parvifolia (Roxb.) Korth.	Rubiaceae	Tree
Oroxylum indicum (L.) Vent.	Bignoniaceae	Tree
Pleocaulus ritchiei (C.B.Cl.) Bremek.	Acanthaceae	Shrub
Porana racemosa Roxb.	Convolvulaceae	Climber
Rhus mysorensis G. Don	Anacardiaceae	Shrub
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Sterculia urens Roxb.	Sterculiaceae	Tree
Syzygium cumini (L.) Skeels	Rutaceae	Tree
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree
Ziziphus nummularia (Burm. f.) Wight & Arn.	Rhamnaceae	Tree

Table 7d-10 List of Plants recorded at Shirgaon site (49 species)

Botanical name	Family	Habit
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Alysicarpus tetragonolobus Edgew. var. tetragonolobus	Fabaceae	Herb
Amaranthus spinosus L.	Amaranthaceae	Herb
Anacardium occidentale L.	Anacardiaceae	Tree
Borassus flabellifer L.	Arecaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Carissa congesta Wight	Apocynaceae	Shrub
Casearia graveolens Dalz.	Flacourtiaceae	Shrub
Cassia fistula L.	Fabaceae	Tree
Celastrus paniculatus Willd.	Celastraceae	Climber
Celosia argentea L.	Amaranthaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Cissus woodrowii (Stapf ex T. Cooke)	Vitaceae	Shrub
Clematis gouriana Roxb. ex DC.	Ranunculaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Cryptolepis buchanani Roem. & Schult.	Periplocaceae	Climber
Cynadon dactylon L.	Poaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Dalbergia sissoo Roxb.	Fabaceae	Tree
Dioscorea bulifera L.	Dioscoraceae	Climber
Emblica officinalis Gaertn.	Euphorbiaceae	Tree
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Eucalyptus sp.	Myrtaceae	Tree
Euphorbia ligularia Roxb.	Euphorbiaceae	Shrub
Euphorbia parviflora L.	Euphorbiaceae	Herb
Ficus hispida L.	Moreaceae	Shrub
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb
Flacourtia latifolia (Hook. f. & Thoms.) Cook	Flacourtiaceae	Shrub
Gloriosa superba L.	Liliaceae	Climber
Holostemma annulare (Roxb.) K. Schum.	Asclepiadaceae	Climber

Botanical name	Family	Habit
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	Con volvulaceae	Shrub
Kylinga nemoralis (J.R. & G. Forst.) Dandy ex Hutch. & Dalzial	Cyperaceae	Herb
Meyna laxiflora Robyns	Rubiaceae	Tree
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Trichodesma inaequale Edgew.	Boraginaceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Woodfordia fruticosa (L.) Kurz	Lythraceae	Shrub
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree

Table 7d-11 List of Plants recorded at Bhatpada site (115 species)

Botanical name	Family	Habit
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Abelmoschus moschatus Medik.	Malvaceae	Shrub
Abrus precatorius L.	Fabaceae	Climber
Acacia auriculiformis A. Cunn. ex. Bth.	Mimosaceae	Tree
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia pennata (L.) Willd	Mimosaceae	Shrub
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Adiantum sp	Pretidaceae	Herb
Aeginetia indica L.	Orobanchaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Albizia sp.	Mimosaceae	Tree
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Apluda mutica L.	Poaceae	Herb
Argyreia elliptica (Roth) Choisy	Convolvulaceae	Climber
Argyreia sericea Dalz. & Gibs.	Convolvulaceae	Climber
Arisaema murrayi Hook.	Liliaceae	Herb
Arisaema tortuosum (Wall.) Schott.	Araceae	Herb
Arundinella metzi Hochst. Ex Miq.	Poaceae	Herb
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Blainvillea acmella (L.) Philipson	Asteraceae	Herb
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Borassus flabellifer L.	Arecaceae	Tree
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Cassia fistula L.	Fabaceae	Tree
Cassia tora L.	Caesalpiniaceae	Herb
Catunaregam spinosa (Thunb.) Tirveng.	Rubiaceae	Tree

Botanical name	Family	Habit
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Celastrus paniculatus Willd.	Celastraceae	Climber
Celosia argentea L.	Amaranthaceae	Herb
Chloris virgata Swartz.	Poaceae	Herb
Combretum albidum G. Don	Combretaceae	Climber
Commelina diffusa Burm. f.	Commelinaceae	Herb
Commelina forsskalaei Vahl.	Commelinaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Cordia dichotoma Forst. f.	Boraginaceae	Tree
Crotalaria linifolia L. f.	Fabaceae	Herb
Crotalaria retusa L.	Fabaceae	Herb
Curculigo orchioides Gaertn.	Hypoxidaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Dichanthium annulatum (Forssk.) Stapf.	Poaceae	Herb
Dimeria ornithopoda Trin.	Poaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Diospyros montana Roxb.	Ebenaceae	Tree
Emblica officinalis Gaertn.	Euphorbiaceae	Tree
Erinocarpus nimmonii Grah. ex Dalz.	Tiliaceae	Tree
Eucalyptus sp.	Myrtaceae	Tree
Eupatorium adenophorum Spreng.	Asteraceae	Shrub
Euphorbia hirta L.	Euphorbiaceae	Herb
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Garuga pinnata Roxb.	Burseraceae	Tree
Gloriosa superba L.	Liliaceae	Climber
Gmelina arborea Roxb.	Verbenaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Haldina cordifolia (Roxb.) Ridsd.	Rubiaceae	Tree
Helicteres isora L.	Sterculiaceae	Shrub
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Holostemma annulare (Roxb.) K. Schum.	Asclepiadaceae	Climber
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Impatiens pulcherrima Dalz.	Balsaminaceae	Herb

Botanical name	Family	Habit
Lagerstroemia microcarpa Wight	Lythraceae	Tree
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Lolium sp.	Poaceae	Herb
Mallotus philippensis (Lam.) Muell.–Arg.	Euphorbiaceae	Tree
Meyna laxiflora Robyns	Rubiaceae	Tree
Miliusa tomentosa (Roxb.) Sinclair	Annonaceae	Tree
Mitragyna parvifolia (Roxb.) Korth.	Rubiaceae	Tree
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Oroxylum indicum (L.) Vent.	Bignoniaceae	Tree
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Rivea hypocrateriformis (Desr.) Choisy	Convolvulaceae	Climber
Rungia elegans Dalz.	Acanthaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Sporobolus indicus (L.) Br.	Poaceae	Herb
Sterculia urens Roxb.	Sterculiaceae	Tree
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Tree
Terminalia elliptica Willd.	Combretaceae	Tree
Terminalia paniculata Roth	Combretaceae	Tree
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Tylophora indica (Burm. f.) Merr.	Asclepiadaceae	Climber
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vernonia cinerea (L.) Less.	Asteraceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber

Botanical name	Family	Habit
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree
Ziziphus mauritiana Lam.	Rhamnaceae	Tree
Ziziphus nummularia (Burm. f.) Wight & Arn.	Rhamnaceae	Tree
Ziziphus oenoplia (L.) Mill.	Rhamnaceae	Tree
Ziziphus rugosa Lam. Var. rugosa	Rhamnaceae	Climber

Table 7d-12 List of plants recorded at Bilalpada (116 species)

Botanical name	Family	Habit
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Abelmoschus moschatus Medik.	Malvaceae	Shrub
Abrus precatorius L.	Fabaceae	Climber
Acacia auriculiformis A. Cunn. ex. Bth.	Mimosaceae	Tree
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia pennata (L.) Willd	Mimosaceae	Shrub
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Adiantum sp	Pretidaceae	Herb
Aeginetia indica L.	Orobanchaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Albizia sp.	Mimosaceae	Tree
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Apluda mutica L.	Poaceae	Herb
Argyreia elliptica (Roth) Choisy	Convolvulaceae	Climber
Argyreia sericea Dalz. & Gibs.	Convolvulaceae	Climber
Arisaema murrayi Hook.	Liliaceae	Herb
Arisaema tortuosum (Wall.) Schott.	Araceae	Herb
Arundinella metzi Hochst. Ex Miq.	Poaceae	Herb
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Blainvillea acmella (L.) Philipson	Asteraceae	Herb
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Borassus flabellifer L.	Arecaceae	Tree
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Cassia fistula L.	Fabaceae	Tree

Botanical name	Family	Habit
Cassia tora L.	Caesalpiniaceae	Herb
Catunaregam spinosa (Thunb.) Tirveng.	Rubiaceae	Tree
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Celastrus paniculatus Willd.	Celastraceae	Climber
Celosia argentea L.	Amaranthaceae	Herb
Chloris virgata Swartz.	Poaceae	Herb
Combretum albidum G. Don	Combretaceae	Climber
Commelina diffusa Burm. f.	Commelinaceae	Herb
Commelina forsskalaei Vahl.	Commelinaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Cordia dichotoma Forst. f.	Boraginaceae	Tree
Crotalaria linifolia L. f.	Fabaceae	Herb
Crotalaria retusa L.	Fabaceae	Herb
Curculigo orchioides Gaertn.	Hypoxidaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Dichanthium annulatum (Forssk.) Stapf.	Poaceae	Herb
Dimeria ornithopoda Trin.	Poaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Diospyros montana Roxb.	Ebenaceae	Tree
Emblica officinalis Gaertn.	Euphorbiaceae	Tree
Erinocarpus nimmonii Grah. ex Dalz.	Tiliaceae	Tree
Eucalyptus sp.	Myrtaceae	Tree
Eupatorium adenophorum Spreng.	Asteraceae	Shrub
Euphorbia hirta L.	Euphorbiaceae	Herb
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Garuga pinnata Roxb.	Burseraceae	Tree
Gloriosa superba L.	Liliaceae	Climber
Gmelina arborea Roxb.	Verbenaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Haldina cordifolia (Roxb.) Ridsd.	Rubiaceae	Tree
Helicteres isora L.	Sterculiaceae	Shrub
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree

Botanical name	Family	Habit
Holostemma annulare (Roxb.) K. Schum.	Asclepiadaceae	Climber
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Impatiens pulcherrima Dalz.	Balsaminaceae	Herb
Lagerstroemia microcarpa Wight	Lythraceae	Tree
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Lolium sp.	Poaceae	Herb
Mallotus philippensis (Lam.) Muell.–Arg.	Euphorbiaceae	Tree
Meyna laxiflora Robyns	Rubiaceae	Tree
Miliusa tomentosa (Roxb.) Sinclair	Annonaceae	Tree
Mitragyna parvifolia (Roxb.) Korth.	Rubiaceae	Tree
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Oroxylum indicum (L.) Vent.	Bignoniaceae	Tree
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Rivea hypocrateriformis (Desr.) Choisy	Convolvulaceae	Climber
Rungia elegans Dalz.	Acanthaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Sporobolus indicus (L.) Br.	Poaceae	Herb
Sterculia urens Roxb.	Sterculiaceae	Tree
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Tree
Terminalia elliptica Willd.	Combretaceae	Tree
Terminalia paniculata Roth	Combretaceae	Tree
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Tylophora indica (Burm. f.) Merr.	Asclepiadaceae	Climber
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vernonia cinerea (L.) Less.	Asteraceae	Herb

Botanical name	Family	Habit
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree
Ziziphus mauritiana Lam.	Rhamnaceae	Tree
Ziziphus nummularia (Burm. f.) Wight & Arn.	Rhamnaceae	Tree
Ziziphus oenoplia (L.) Mill.	Rhamnaceae	Tree
Ziziphus rugosa Lam. Var. rugosa	Rhamnaceae	Climber

Photo 7d-5: *Commelina diffusa* Burm. f.

Table 7d-13 List of plants recorded at Kasrali (66 species)

Botanical name	Family	Habit
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acanthus ilicifolius L.	Acanthaceae	Shrub
Aegiceras corniculatum (L.) Blanco	Rhizophoraceae	Shrub
Aeschynomene indica L.	Fabaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Alysicarpus tetragonolobus Edgew. var. tetragonolobus	Fabaceae	Herb
Amaranthus cruentus L.	Amaranthaceae	Herb
Amaranthus spinosus L.	Amaranthaceae	Herb
Apluda mutica L.	Poaceae	Herb
Arundinella metzi Hochst. Ex Miq.	Poaceae	Herb
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Blainvillea acmella (L.) Philipson	Asteraceae	Herb
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Caesalpinia crista L.	Caesalpiniaceae	Shrub
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Celosia argentea L.	Amaranthaceae	Herb
Clerodendrum inerme (L.) Gaertn.	Verbenaceae	Shrub
Commelina diffusa Burm. f.	Commelinaceae	Herb
Commelina forsskalaei Vahl.	Commelinaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Crotalaria retusa L.	Fabaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dichanthium annulatum (Forssk.) Stapf.	Poaceae	Herb
Dimeria ornithopoda Trin.	Poaceae	Herb
Euphorbia hirta L.	Euphorbiaceae	Herb
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb

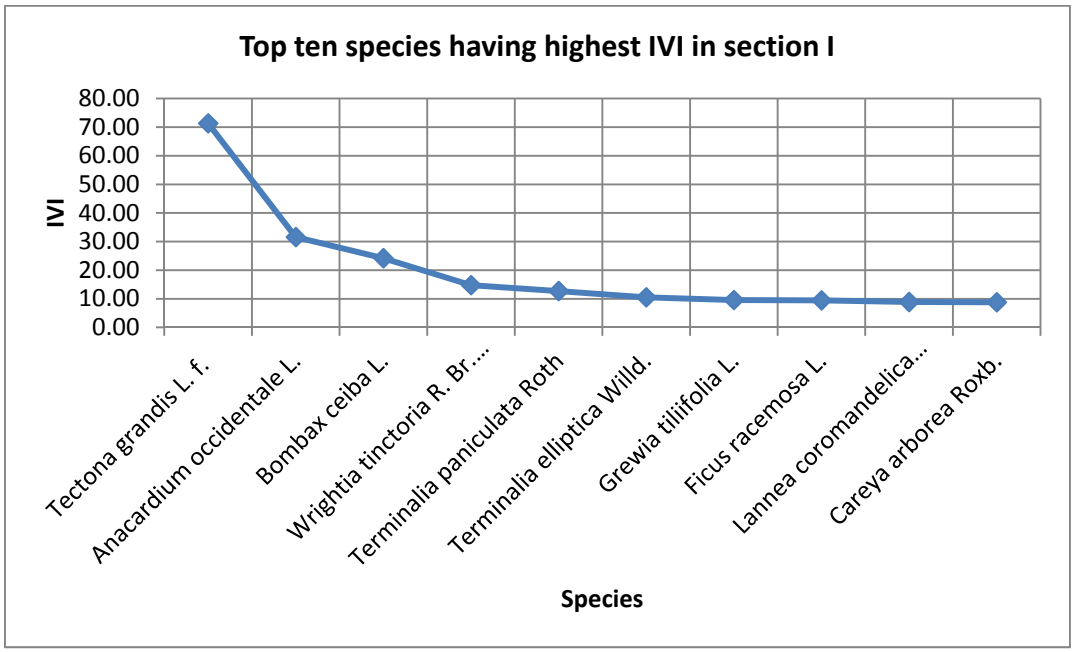
Botanical name	Family	Habit
Gloriosa superba L.	Liliaceae	Climber
Gmelina arborea Roxb.	Verbenaceae	Tree
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	Convolvulaceae	Shrub
Melanocynchrus jacquemontii Jaub. & Spach.	Poaceae	Herb
Panicum antidotale Retz.	Poaceae	Herb
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Rhizophora mucronata Poir.	Rhizophoraceae	Tree
Rungia elegans Dalz.	Acanthaceae	Herb
Salvadora persica L. var. wightiana (Planch. ex. Thw.) Verdc.	Salvadoraceae	Shrub
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Sesuvium portulacastrum(L.) L.	Aizoaceae	Shrub
Setaria intermedia R. & S.	Poaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Sopubia trifida Buch.–Ham. ex D. Don	Scrophulariaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Sporobolus indicus (L.) Br.	Poaceae	Herb
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Themeda triandra Forssk.	Poaceae	Herb
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Tridax procumbens L.	Asteraceae	Herb
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Wrightia tinctoria R. Br. ssp. tinctoria	Apocynaceae	Tree
Ziziphus mauritiana Lam.	Rhamnaceae	Tree

Table 7d-14 List of plants recorded at Dhaniv site (72 species)

Botanical name	Family	Habit
Abelmoschus ficulneus (L.) Wight & Arn.ex Wight	Malvaceae	Shrub
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Adiantum sp	Pretidaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Amaranthus spinosus L.	Amaranthaceae	Herb
Apluda mutica L.	Poaceae	Herb
Argyreia sericea Dalz. & Gibs.	Convolvulaceae	Climber
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Casearia graveolens Dalz.	Flacourtiaceae	Shrub
Cassia absus L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Celastrus paniculatus Willd.	Celastraceae	Climber
Celosia argentea L.	Amaranthaceae	Herb
Cissus woodrowii (Stapf ex T. Cooke) Sant.	Vitaceae	Shrub
Citrullus colocynthis (L.) Schrad.	Cucurbitaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Commelina forsskalaei Vahl.	Commelinaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Crotalaria retusa L.	Fabaceae	Herb
Curculigo orchioides Gaertn.	Hypoxidaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cynarospermum asperrimum (Nees) Vollesen	Acanthaceae	Herb
Cynotis fasciculata	Commelinaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Dalbergia sissoo Roxb.	Fabaceae	Tree
Dioscorea bulifera L.	Dioscoraceae	Climber
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Elephantopus scaber L.	Asteraceae	Herb

Botanical name	Family	Habit
Emblica officinalis Gaertn.	Euphorbiaceae	Tree
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Erinocarpus nimmonii Grah. ex Dalz.	Tiliaceae	Tree
Erythrina variegata L.	Fabaceae	Tree
Eucalyptus sp.	Myrtaceae	Tree
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb
Grewia tiliifolia L.	Tiliaceae	Tree
Helicteres isora L.	Sterculiaceae	Shrub
Hemidesmus indicus (L.) Schult.	Periplocaceae	Climber
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Neuracanthus sphaerostachyus (Nees) Dalz.	Acanthaceae	Herb
Panicum antidotale Retz.	Poaceae	Herb
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Pleocaulus ritchiei (C.B.Cl.) Bremek.	Acanthaceae	Shrub
Pogostemon heyneanus Bth.	Acanthaceae	Shrub
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Rungia elegans Dalz.	Acanthaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Sopubia trifida Buch.–Ham. ex D. Don	Scrophulariaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Sporobolus indicus (L.) Br.	Poaceae	Herb
Tectona grandis L. f.	Verbenaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Trichosanthes anguina L.	Cucurbitaceae	Climber
Tridax procumbens L.	Asteraceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber

Figure 7d-1: Top ten species having highest IVI in Section 1



The tree species distribution indicates that *Tectona grandis is the key species followed by Anacardium occidentale*. Other species like *Bombax ceiba, Wrightia tinctoria, Terminalia paniculata and T. elliptica* are the main species of the forest community. Rest all species occur rarely in the habitat.

Table 7d-15 Quadrat analysis for trees in section 1

Sr. No.	Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Relative Basal Area	IVI	Absolute Density inHa
1	Acacia auriculiformis A. Cunn. ex. Bth.	0.01	1.23	1.00	0.36	0.66	0.921	1.94	1.23
2	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	0.01	1.23	1.00	0.36	0.66	0.000	1.02	1.23
3	Albizia lebbeck (L.) Bth. var lebbeck.	0.02	1.23	2.00	0.72	0.66	0.062	1.44	2.47
4	Anacardium occidentale L.	0.14	7.41	1.83	3.96	3.97	23.636	31.57	13.58
5	Bauhinia racemosa Lam.	0.04	3.70	1.00	1.08	1.99	3.807	6.87	3.70
6	Bombax ceiba L.	0.26	20.99	1.24	7.55	11.26	5.372	24.18	25.93
7	Borassus flabellifer L.	0.01	1.23	1.00	0.36	0.66	0.026	1.05	1.23
8	Bridelia retusa (L.) Spreng.	0.10	7.41	1.33	2.88	3.97	0.715	7.57	9.88
9	Careya arborea Roxb.	0.06	6.17	1.00	1.80	3.31	3.664	8.77	6.17
10	Casearia graveolens Dalz.	0.01	1.23	1.00	0.36	0.66	0.058	1.08	1.23
11	Catunaregam spinosa (Thunb.) Tirveng.	0.01	1.23	1.00	0.36	0.66	1.253	2.28	1.23
12	Cissus woodrowii (Stapf ex T. Cooke) Sant.	0.01	1.23	1.00	0.36	0.66	0.640	1.66	1.23
13	Cordia dichotoma Forst. f.	0.02	2.47	1.00	0.72	1.32	0.748	2.79	2.47
14	Dalbergia sissoo Roxb.	0.04	1.23	3.00	1.08	0.66	0.230	1.97	3.70
15	Diospyros melanoxylon Roxb.	0.11	6.17	1.80	3.24	3.31	0.848	7.40	11.11
16	Diospyros montana Roxb.	0.02	1.23	2.00	0.72	0.66	0.412	1.79	2.47
17	Erinocarpus nimmonii Grah. ex Dalz.	0.06	3.70	1.67	1.80	1.99	0.309	4.09	6.17
18	Erythrina variegata L.	0.06	6.17	1.00	1.80	3.31	0.102	5.21	6.17
19	Eucalyptus sp	0.01	1.23	1.00	0.36	0.66	3.095	4.12	1.23
20	Ficus racemosa L.	0.06	6.17	1.00	1.80	3.31	4.349	9.46	6.17
21	Firmiana colorata (Roxb.) R. Br.	0.04	2.47	1.50	1.08	1.32	0.610	3.01	3.70
22	Garuga pinnata Roxb.	0.04	1.23	3.00	1.08	0.66	0.991	2.73	3.70
23	Gmelina arborea Roxb.	0.02	2.47	1.00	0.72	1.32	0.544	2.59	2.47
24	Grewia tiliifolia L.	0.12	8.64	1.43	3.60	4.64	1.331	9.56	12.35
25	Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	0.06	3.70	1.67	1.80	1.99	0.151	3.94	6.17

Sr. No.	Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Relative Basal Area	IVI	Absolute Density inHa
26	Holoptelea integrifolia (Roxb.) Planch.	0.01	1.23	1.00	0.36	0.66	1.637	2.66	1.23
27	Lannea coromandelica (Houtt.) Merr.	0.11	9.88	1.13	3.24	5.30	0.345	8.88	11.11
28	Leucaena latisiliqua (L.) Gillis	0.01	1.23	1.00	0.36	0.66	0.000	1.02	1.23
29	Mallotus philippensis (Lam.) Muell.–Arg.	0.04	3.70	1.00	1.08	1.99	0.252	3.32	3.70
30	Manilkara hexandra (Roxb.) Dub.	0.01	1.23	1.00	0.36	0.66	2.072	3.09	1.23
31	Miliusa tomentosa (Roxb.) Sinclair	0.01	1.23	1.00	0.36	0.66	0.037	1.06	1.23
32	Morinda pubescens J. E. Sm.	0.05	3.70	1.33	1.44	1.99	0.140	3.57	4.94
33	Oroxylum indicum (L.) Vent.	0.04	1.23	3.00	1.08	0.66	0.309	2.05	3.70
34	Pongamia pinnata (L.) Pierre	0.01	1.23	1.00	0.36	0.66	0.000	1.02	1.23
35	Pterocarpus marsupium Roxb. Var. marsupium	0.01	1.23	1.00	0.36	0.66	0.000	1.02	1.23
36	Schleichera oleosa (Lour.) Oken	0.02	1.23	2.00	0.72	0.66	0.000	1.38	2.47
37	Semecarpus anacardium L. f.	0.01	1.23	1.00	0.36	0.66	0.000	1.02	1.23
38	Spondias pinnata (L.f.) Kurz	0.01	1.23	1.00	0.36	0.66	0.083	1.10	1.23
39	Syzygium cumini (L.) Skeels	0.05	3.70	1.33	1.44	1.99	3.829	7.25	4.94
40	Tectona grandis L. f.	1.11	27.16	4.09	32.37	14.57	24.380	71.32	111.11
41	Terminalia elliptica Willd.	0.09	7.41	1.17	2.52	3.97	4.016	10.51	8.64
42	Terminalia paniculata Roth	0.16	4.94	3.25	4.68	2.65	5.392	12.72	16.05
43	Wrightia tinctoria R. Br. ssp. tinctoria	0.25	7.41	3.33	7.19	3.97	3.607	14.77	24.69
44	Ziziphus mauritiana Lam.	0.04	3.70	1.00	1.08	1.99	0.026	3.09	3.70
45	Ziziphus nummularia (Burm. f.) Wight & Arn.	0.01	1.23	1.00	0.36	0.66	0.000	1.02	1.23

Table 7d-16 Quadrat analysis for shrubs in Section 1

Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Absolute Density	Absolute Frequency
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	0.22	0.01	17.50	2.58	0.51	2160.49	123.46
Amorphophallus sp.	0.02	0.02	1.00	0.30	1.03	246.91	246.91
Asystasia chelonoides Nees	0.03	0.01	5.00	0.37	0.26	308.64	61.73
Bauhinia racemosa Lam.	0.03	0.03	1.00	0.37	1.29	308.64	308.64
Calotropis gigantea (L.) Ait.	0.06	0.05	1.13	0.66	2.06	555.56	493.83
Calycopteris floribunda (Roxb.) Poir.	1.96	0.52	3.74	23.49	21.85	19629.63	5246.91
Carissa congesta Wight	0.25	0.10	2.41	3.03	4.37	2530.86	1049.38
Casearia graveolens Dalz.	0.23	0.13	1.81	2.81	5.40	2345.68	1296.30
Cayratia trifolia (L.) Domin	0.02	0.01	3.00	0.22	0.26	185.19	61.73
Croton sp.	0.48	0.12	4.05	5.69	4.88	4753.09	1172.84
Diospyros melanoxylon Roxb.	0.14	0.07	1.83	1.62	3.08	1358.02	740.74
Eupatorium adenophorum Spreng.	1.02	0.20	5.00	12.19	8.48	10185.19	2037.04
Ficus hispida L.	0.36	0.12	2.95	4.36	5.14	3641.98	1234.57
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	0.07	0.04	1.83	0.81	1.54	679.01	370.37
Helicteres isora L.	0.20	0.07	2.91	2.36	2.83	1975.31	679.01
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	1.27	0.23	5.39	15.14	9.77	12654.32	2345.68
Hyptis suaveolens (L.) Poit.	1.06	0.15	6.88	12.70	6.43	10617.28	1543.21
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	0.03	0.01	2.50	0.37	0.51	308.64	123.46
Lantana camara L. var. aculeata (L.) Moldenke	0.08	0.06	1.30	0.96	2.57	802.47	617.28
Leea macrophylla Roxb. ex Horn.	0.04	0.02	1.50	0.44	1.03	370.37	246.91
Pogostemon heyneanus Bth.	0.24	0.02	9.75	2.88	1.03	2407.41	246.91
Pongamia pinnata (L.) Pierre	0.01	0.02	0.33	0.07	0.77	61.73	185.19
Securinega leucopyrus (Willd.) Muell.–Arg.	0.02	0.03	0.80	0.30	1.29	246.91	308.64
Securinega virosa	0.01	0.02	0.33	0.07	0.77	61.73	185.19

Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Absolute Density	Absolute Frequency
(Roxb. ex Willd.) Baill.							
Urena lobata L. ssp.lobata	0.10	0.04	2.29	1.18	1.80	987.65	432.10
Ziziphus mauritiana Lam.	0.11	0.09	1.20	1.33	3.86	1111.11	925.93
Erinocarpus nimmonii Grah. ex Dalz.	0.05	0.01	4.00	0.59	0.51	493.83	123.46
Wrightia tinctoria R. Br. ssp. Tinctoria	0.14	0.07	2.00	1.62	2.83	1358.02	679.01
Tectona grandis L. f.	0.07	0.06	1.33	0.89	2.31	740.74	555.56
Leea indica (Burm. f.) Merr.	0.05	0.04	1.33	0.59	1.54	493.83	370.37

The density indicates the density of particular species in quadrat i.e. in 10X10 m area. Where as absolute density indicates the number of trees per ha. It is clear in case of trees that number of most of the trees per ha is very low where it is high these are plantation species like teak and cashew.

Importance Value Index (IVI) = R. Freq. + R. Den. + R. Dom.

Relative dominanace is calculated as

$$\textbf{Relative Dominance} = \frac{\text{Total basal area of the species in all quadrats}}{\text{Total basal area of all species in all the quadrats}} \text{ X } 100$$

Basal area has to be calculated that is dependent on GBH. Therefore IVI has been calculated only for tree species.

Table 7d-17 Quadrat analysis for herbs in Section 1

Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Absolute Density
Abelmoschus manihot(L.) Medik.	0.12	0.06	2.17	0.17	0.85	1203.70
Achyranthes aspera L. var. aspera	0.11	0.02	4.50	0.16	0.38	1111.11
Adiantum sp.	0.21	0.04	5.58	0.30	0.57	2067.90
Aeginetia indica L.	0.07	0.01	7.67	0.10	0.14	709.88
Aeschynomene indica L.	2.02	0.25	8.06	2.90	3.82	20154.32
Ageratum conyzoides L.	0.33	0.09	3.66	0.47	1.37	3271.60
Alternanthera sessilis (L.) R. Br. ex DC.	0.06	0.01	4.75	0.08	0.19	586.42
Alysicarpus heyneanus Wight & Arn.	0.34	0.02	13.63	0.48	0.38	3364.20
Alysicarpus monilifer (L.) DC.	1.10	0.12	9.13	1.58	1.84	10987.65
Alysicarpus tetragonolobus Edgew. var. tetragonolobus	0.16	0.02	7.43	0.23	0.33	1604.94
Amaranthus spinosus L.	0.35	0.06	5.43	0.51	0.99	3518.52
Amorphophallus sp.	0.04	0.02	1.71	0.05	0.33	370.37
Apluda mutica	0.35	0.04	8.07	0.50	0.66	3487.65
Arisaema murrayi	0.02	0.01	1.67	0.02	0.14	154.32
Arisaema tortuosum (Wall.) Schott.	0.04	0.02	2.00	0.06	0.33	432.10
Arundinella metzi Hochst. Ex Miq.	0.28	0.04	6.57	0.41	0.66	2839.51
Asystasia chelonoides Nees	0.07	0.03	2.67	0.11	0.42	740.74
Boerhavia erecta L.	0.08	0.01	8.67	0.12	0.14	802.47
Cassia absus L.	1.87	0.21	8.78	2.69	3.26	18703.70
Cassia tora L.	1.98	0.30	6.68	2.85	4.53	19783.95
Celosia argentea L.	2.59	0.34	7.69	3.72	5.15	25864.20
Chloris virgata Swartz.	0.04	0.02	1.86	0.06	0.33	401.23
Cissus repens Lam.	0.07	0.03	2.40	0.11	0.47	740.74
Clitoria biflora Dalz.	0.28	0.09	3.07	0.41	1.42	2839.51
Corchorus fascicularis Lam.	0.70	0.09	7.57	1.01	1.42	7006.17
Costus speciosus Sm.	0.03	0.01	2.25	0.04	0.19	277.78
Crotalaria hebecarpa (DC.) Rudd	0.39	0.05	8.47	0.56	0.71	3919.75
Crotalaria linifolia L. f.	4.43	0.23	19.41	6.37	3.49	44320.99
Curculigo orchioides Gaertn.	0.39	0.06	7.00	0.56	0.85	3888.89
Curcuma pseudomontana	0.13	0.06	2.28	0.18	0.85	1265.43
Cynadon dactylon (10 x 10)	0.69	0.06	12.44	0.99	0.85	6913.58
Cynotis fasciculata	0.10	0.02	4.71	0.15	0.33	1018.52
Cyperus exaltatus Retz.	0.68	0.11	5.95	0.98	1.75	6790.12

Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Absolute Density
Cyperus digitatus Roxb.	0.44	0.06	7.10	0.63	0.94	4382.72
Dactyloctenium aegypticum (L.) Willd.	0.18	0.03	5.18	0.25	0.52	1759.26
Desmodium triflorum (L.) DC.	0.02	0.01	3.50	0.03	0.09	216.05
Dichanthium annulatum (Forssk.) Stapf.	0.08	0.03	2.60	0.12	0.47	802.47
Dimeria ornithopoda Trin.	0.12	0.02	4.75	0.17	0.38	1172.84
Elephantopus scaber L.	0.17	0.03	5.40	0.24	0.47	1666.67
Eragrostis gangetica (Roxb.) Steud.	1.37	0.08	16.44	1.97	1.27	13703.70
Fimbristylis dichotoma (L.) Vahl.	0.37	0.04	8.64	0.54	0.66	3734.57
Flemingia tuberosa Dalz	0.01	0.00	3.00	0.01	0.05	92.59
General grasses (10 x 10 cm)	14.62	0.55	26.77	21.03	8.36	146234.57
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	0.49	0.03	17.78	0.71	0.42	4938.27
Hyptis suaveolens (L.) Poit.	2.22	0.28	7.89	3.19	4.30	22160.49
Impatiens balsamina L. var. balsamina	2.16	0.30	7.29	3.11	4.53	21604.94
Ipomoea mauritiana Jacq.	0.01	0.01	1.50	0.01	0.09	92.59
Linum mysurense Heyne ex Bth.	0.12	0.03	4.00	0.18	0.47	1234.57
Malachra capitata (L.) L.	0.06	0.01	5.00	0.09	0.19	617.28
Melanocynchrus jacquemontii Jaub. & Spach.	0.61	0.03	19.80	0.88	0.47	6111.11
Melochia corchorifolia L.	0.53	0.05	10.12	0.76	0.80	5308.64
Mukia maderaspatana (L.) Roem.	0.10	0.06	1.89	0.15	0.85	1049.38
Panicum antidotale Retz.	0.19	0.02	7.75	0.28	0.38	1913.58
Paspalum canarae (Steud.) Veldk. (10 x 10)	2.81	0.16	17.19	4.04	2.50	28117.28
Porana racemosa Roxb.	0.06	0.03	2.22	0.09	0.42	617.28
Rungia elegans Dalz.	0.16	0.02	8.67	0.23	0.28	1604.94
Sesamum laciniatum Klein ex Willd.	1.39	0.23	5.93	2.00	3.59	13919.75
Setaria intermedia R. & S.	1.07	0.09	11.53	1.54	1.42	10679.01
Sida rhombifolia L. ssp. rhombifolia	0.34	0.10	3.21	0.48	1.61	3364.20
Smithia bigemina Dalz.	0.82	0.08	10.64	1.18	1.18	8209.88
Smithia conferta J. E. Sm.	4.12	0.17	24.29	5.93	2.60	41234.57
Smithia racemosa Heyne ex Wight & Arn.	2.93	0.13	23.12	4.21	1.94	29259.26
Sopubia trifida Buch.–Ham. ex D. Don	0.19	0.02	7.63	0.27	0.38	1882.72

Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Absolute Density
Spermacoce pusilla Wall.	3.85	0.21	18.09	5.54	3.26	38518.52
Sporobolus indicus (L.) Br.	0.03	0.01	2.50	0.04	0.19	308.64
Pleocaulus ritchiei (C.B.Cl.) Bremek.	0.10	0.04	2.83	0.15	0.57	1049.38
Stylosanthes fruticosa (Retz.) Alst.	0.33	0.02	21.40	0.48	0.24	3302.47
Tephrosia purpurea (L.) Pers.	0.73	0.18	4.18	1.06	2.69	7345.68
Themeda triandra Forssk.	0.80	0.04	21.50	1.15	0.57	7962.96
Trichodesma inaequale Edgew.	0.01	0.00	2.00	0.01	0.05	61.73
Trichodesma indicum (L.) Lehm.	1.92	0.18	10.93	2.77	2.69	19228.40
Tridax procumbens L.	0.23	0.04	5.43	0.34	0.66	2345.68
Triumfetta pentandra A. Rich.	0.95	0.10	9.36	1.37	1.56	9537.04
Urena lobata L. ssp.lobata	1.81	0.23	8.01	2.60	3.45	18055.56
Vigna sublobata (Roxb.) Babu & Sharma	0.67	0.15	4.50	0.96	2.27	6666.67
Vigna vexillata (L.) A. Rich.	0.18	0.05	3.56	0.25	0.76	1759.26
Wattakaka volubilis (L. f.) Stapf	0.01	0.01	1.00	0.01	0.14	92.59
Xanthium indicum Koen.	0.02	0.01	2.00	0.03	0.14	185.19

Photo 7d-6: *Melochia corchorifolia* L.

Table 7d-18 Tree species with measurable girth in Section 1

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
1	Ovali	Bombax ceiba L.	12	7
2	Ovali	Dalbergia sissoo Roxb.	10	7
3	Ovali	Morinda pubescens J. E. Sm.	10	5
4	Ovali	Syzygium cumini (L.) Skeels	11	5
5	Shilottar	Holoptelea integrifolia (Roxb.) Planch.	80	10
6	Shilottar	Bombax ceiba L.	30	6
7	Shilottar	Erinocarpus nimmonii Grah. ex Dalz.	10	8
8	Shilottar	Lannea coromandelica (Houtt.) Merr.	15	5
9	Nagale	Ficus racemosa L.	110	13
10	Nagale	Gmelina arborea Roxb.	30	14
11	Nagale	Cissus woodrowii (Stapf ex T. Cooke) Sant.	50	8
12	Nagale	Tectona grandis L. f.	50	8
13	Mori	Erythrina variegata L.	20	17
14	Mori	Careya arborea Roxb.	110	17
15	Mori	Bombax ceiba L.	30	11
16	Mori	Bauhinia racemosa Lam.	120	12
17	Mori	Terminalia elliptica Willd.	110	15
18	Mori	Terminalia elliptica Willd.	60	11
19	Mori	Tectona grandis L. f.	40	15
20	Mori	Tectona grandis L. f.	30	14
21	Mori	Tectona grandis L. f.	35	12
22	Mori	Tectona grandis L. f.	25	13
23	Mori	Tectona grandis L. f.	10	5
24	Mori	Tectona grandis L. f.	10	5
25	Mori	Ficus racemosa L.	70	15
26	Mori	Bridelia retusa (L.) Spreng.	20	6
27	Mori	Spondias pinnata (L.f.) Kurz	18	7
28	Mori	Bombax ceiba L.	35	12
29	Mori	Mallotus philippensis (Lam.) Muell.–Arg.	20	10
30	Mori	Mallotus philippensis (Lam.) Muell.–Arg.	15	10
31	Mori	Mallotus philippensis (Lam.) Muell.–Arg.	19	11
32	Mori	Lannea coromandelica (Houtt.) Merr.	30	9
33	Sarjamori	Ziziphus mauritiana Lam.	10	6
34	Sarjamori	Anacardium occidentale L.	110	13
35	Sarjamori	Anacardium occidentale L.	120	15
36	Sarjamori	Lannea coromandelica (Houtt.) Merr.	15	4
37	Sarjamori	Catunaregam spinosa (Thunb.) Tirveng.	70	8
38	Sarjamori	Manilkara hexandra (Roxb.) Dub.	90	12
39	Sarjamori	Anacardium occidentale L.	150	18
40	Sarjamori	Syzygium cumini (L.) Skeels	103	17
41	Sarjamori	Syzygium cumini (L.) Skeels	56	18

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
42	Sirgaon	Borassus flabellifer L.	10	10
43	Bhatpada	Acacia auriculiformis A. Cunn. ex. Bth.	60	15
44	Bhatpada	Tectona grandis L. f.	30	20
45	Bhatpada	Tectona grandis L. f.	40	25
46	Bhatpada	Tectona grandis L. f.	40	25
47	Bhatpada	Tectona grandis L. f.	25	20
48	Bhatpada	Tectona grandis L. f.	35	15
49	Bhatpada	Tectona grandis L. f.	45	20
50	Bhatpada	Tectona grandis L. f.	55	25
51	Bhatpada	Tectona grandis L. f.	40	15
52	Bhatpada	Tectona grandis L. f.	45	17
53	Bhatpada	Tectona grandis L. f.	55	20
54	Bhatpada	Tectona grandis L. f.	47	20
55	Bhatpada	Tectona grandis L. f.	30	18
56	Bhatpada	Tectona grandis L. f.	38	19
57	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	10	10
58	Bhatpada	Terminalia paniculata Roth	60	20
59	Bhatpada	Terminalia paniculata Roth	25	18
60	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	15	12
61	Bhatpada	Diospyros montana Roxb.	30	15
62	Bhatpada	Cordia dichotoma Forst. f.	45	19
63	Bhatpada	Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	10	
64	Bhatpada	Diospyros melanoxylon Roxb.	32	15
65	Bhatpada	Diospyros melanoxylon Roxb.	20	14
66	Bhatpada	Diospyros melanoxylon Roxb.	25	16
67	Bhatpada	Diospyros melanoxylon Roxb.	10	12
68	Bhatpada	Bombax ceiba L.	40	17
69	Bhatpada	Careya arborea Roxb.	40	18
70	Bhatpada	Tectona grandis L. f.	25	18
71	Bhatpada	Tectona grandis L. f.	20	15
72	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	20	16
73	Bhatpada	Tectona grandis L. f.	50	30
74	Bhatpada	Tectona grandis L. f.	25	25
75	Bhatpada	Tectona grandis L. f.	35	20
76	Bhatpada	Tectona grandis L. f.	35	22
77	Bhatpada	Tectona grandis L. f.	28	30
78	Bhatpada	Tectona grandis L. f.	45	30
79	Bhatpada	Tectona grandis L. f.	15	12
80	Bhatpada	Tectona grandis L. f.	50	38
81	Bhatpada	Tectona grandis L. f.	52	30
82	Bhatpada	Tectona grandis L. f.	31	20
83	Bhatpada	Tectona grandis L. f.	28	25
84	Bhatpada	Tectona grandis L. f.	40	26

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
85	Bhatpada	Tectona grandis L. f.	10	9
86	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	20	15
87	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	15	12
88	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	18	12
89	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	15	13
90	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	18	15
91	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	15	12
92	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	10	10
93	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	14	12
94	Bhatpada	Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	10	12
95	Bhatpada	Tectona grandis L. f.	35	15
96	Bhatpada	Tectona grandis L. f.	38	18
97	Bhatpada	Tectona grandis L. f.	28	13
98	Bhatpada	Tectona grandis L. f.	32	19
99	Bhatpada	Tectona grandis L. f.	30	17
100	Bhatpada	Tectona grandis L. f.	20	12
101	Bhatpada	Tectona grandis L. f.	15	12
102	Bhatpada	Tectona grandis L. f.	10	8
103	Bhatpada	Tectona grandis L. f.	14	12
104	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	17	9
105	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	18	10
106	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	16	9
107	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	14	8
108	Bhatpada	Terminalia paniculata Roth	13	10
109	Bhatpada	Terminalia paniculata Roth	17	12
110	Bhatpada	Terminalia paniculata Roth	15	11
111	Bhatpada	Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	10	8
112	Bhatpada	Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	11	8
113	Bhatpada	Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	13	8
114	Bhatpada	Bombax ceiba L.	65	19
115	Bhatpada	Bombax ceiba L.	55	18
116	Bhatpada	Diospyros melanoxylon Roxb.	15	15
117	Bhatpada	Gmelina arborea Roxb.	35	12
118	Bhatpada	Morinda pubescens J. E. Sm.	15	10
119	Bhatpada	Albizia lebbeck (L.) Bth. var lebbeck.	10	8
120	Bhatpada	Albizia lebbeck (L.) Bth. var lebbeck.	12	7
121	Bhatpada	Bridelia retusa (L.) Spreng.	35	17
122	Bhatpada	Bridelia retusa (L.) Spreng.	15	12
123	Bhatpada	Grewia tiliifolia L.	30	10
124	Bhatpada	Grewia tiliifolia L.	10	8
125	Bhatpada	Terminalia paniculata Roth	22	15
126	Bhatpada	Terminalia paniculata Roth	45	17
127	Bhatpada	Terminalia paniculata Roth	48	19

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
128	Bhatpada	Terminalia paniculata Roth	12	12
129	Bhatpada	Terminalia paniculata Roth	28	15
130	Bhatpada	Tectona grandis L. f.	25	17
131	Bhatpada	Tectona grandis L. f.	38	20
132	Bhatpada	Tectona grandis L. f.	55	22
133	Bhatpada	Tectona grandis L. f.	15	12
134	Bhatpada	Tectona grandis L. f.	25	17
135	Bhatpada	Tectona grandis L. f.	20	12
136	Bhatpada	Tectona grandis L. f.	35	19
137	Bhatpada	Tectona grandis L. f.	32	18
138	Bhatpada	Tectona grandis L. f.	35	19
139	Bhatpada	Tectona grandis L. f.	10	9
140	Bhatpada	Tectona grandis L. f.	25	12
141	Bhatpada	Tectona grandis L. f.	28	15
142	Bhatpada	Bauhinia racemosa Lam.	22	10
143	Bhatpada	Careya arborea Roxb.	25	12
144	Bhatpada	Bombax ceiba L.	55	17
145	Bhatpada	Bombax ceiba L.	60	18
146	Bhatpada	Diospyros melanoxylon Roxb.	15	10
147	Bhatpada	Diospyros melanoxylon Roxb.	18	11
148	Bhatpada	Bridelia retusa (L.) Spreng.	16	14
149	Bhatpada	Bridelia retusa (L.) Spreng.	17	12
150	Bhatpada	Grewia tiliifolia L.	41	18
151	Bhatpada	Grewia tiliifolia L.	35	19
152	Bhatpada	Grewia tiliifolia L.	36	15
153	Bhatpada	Terminalia paniculata Roth	55	19
154	Bhatpada	Terminalia paniculata Roth	54	18
155	Bhatpada	Terminalia paniculata Roth	67	17
156	Bhatpada	Tectona grandis L. f.	55	18
157	Bhatpada	Tectona grandis L. f.	47	19
158	Bhatpada	Tectona grandis L. f.	35	14
159	Bhatpada	Tectona grandis L. f.	24	15
160	Bhatpada	Tectona grandis L. f.	58	19
161	Bhatpada	Tectona grandis L. f.	41	20
162	Bhatpada	Tectona grandis L. f.	12	9
163	Bhatpada	Tectona grandis L. f.	17	10
164	Bhatpada	Tectona grandis L. f.	19	12
165	Bhatpada	Tectona grandis L. f.	18	10
166	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	35	11
167	Bhatpada	Wrightia tinctoria R. Br. ssp. tinctoria	29	14
168	Bhatpada	Diospyros montana Roxb.	22	12
169	Bhatpada	Diospyros montana Roxb.	15	10
170	Bhatpada	Garuga pinnata Roxb.	45	20

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
171	Bhatpada	Garuga pinnata Roxb.	25	21
172	Bhatpada	Garuga pinnata Roxb.	35	20
173	Bhatpada	Miliusa tomentosa (Roxb.) Sinclair	12	9
174	Bhatpada	Oroxylum indicum (L.) Vent.	22	12
175	Bhatpada	Oroxylum indicum (L.) Vent.	18	14
176	Bhatpada	Oroxylum indicum (L.) Vent.	20	15
177	Bhatpada	Bridelia retusa (L.) Spreng.	20	13
178	Bhatpada	Cordia dichotoma Forst. f.	30	16
179	Bhatpada	Firmiana colorata (Roxb.) R. Br.	40	18
180	Bhatpada	Firmiana colorata (Roxb.) R. Br.	28	22
181	Bhatpada	Diospyros melanoxylon Roxb.	15	14
182	Bhatpada	Diospyros melanoxylon Roxb.	13	13
183	Bhatpada	Casearia graveolens Dalz.	15	14
184	Dhaniv	Tectona grandis L. f.	90	25
185	Dhaniv	Wrightia tinctoria R. Br. ssp. tinctoria	60	15
186	Dhaniv	Erinocarpus nimmonii Grah. ex Dalz.	20	12
187	Dhaniv	Eucalyptus sp	110	40
188	Dhaniv	Erinocarpus nimmonii Grah. ex Dalz.	15	12
189	Dhaniv	Erinocarpus nimmonii Grah. ex Dalz.	22	15
190	Dhaniv	Tectona grandis L. f.	35	15
191	Dhaniv	Tectona grandis L. f.	35	17
192	Dhaniv	Tectona grandis L. f.	80	20
193	Dhaniv	Wrightia tinctoria R. Br. ssp. tinctoria	68	15
194	Bilalpada	Anacardium occidentale L.	100	15
195	Bilalpada	Anacardium occidentale L.	90	17
196	Bilalpada	Anacardium occidentale L.	120	22
197	Bilalpada	Anacardium occidentale L.	100	17
198	Bilalpada	Anacardium occidentale L.	30	10

Data analysis of Section 2 of DFCC

Table 7d-19 Summary of Vegetation at Sites in Section 2

Sr. No.	Area	Survey No.	Tree	Shrub	Climber	Herb	Total
1	Rahi Shirgaon	27	4	11	7	14	36
2	Rahi Shirgaon	45	11	15	11	17	54
3	Kelve Road	655	7	11	6	14	38
4	Kelve Road	1304	8	8	7	48	71
5	Kelve Road	1287	12	24	14	39	89
6	Kelve Road	524	9	14	11	31	65
7	Kelve Road	523	9	22	13	37	81
8	Kelve Road	1316	7	7	6	41	61
9	Kelve Road	1315	6	8	9	32	55
10	Boisar	35	11	18	12	22	63
11	Kasbe Mahim	808	12	34	13	35	94
12	Bordee	515	8	23	5	39	75
13	Vangaon-PF	92/33	17	32	8	19	76
14	Chikhale	183/11	7	21	3	24	55

Figure 7d-2: Plant species diversity of section 2

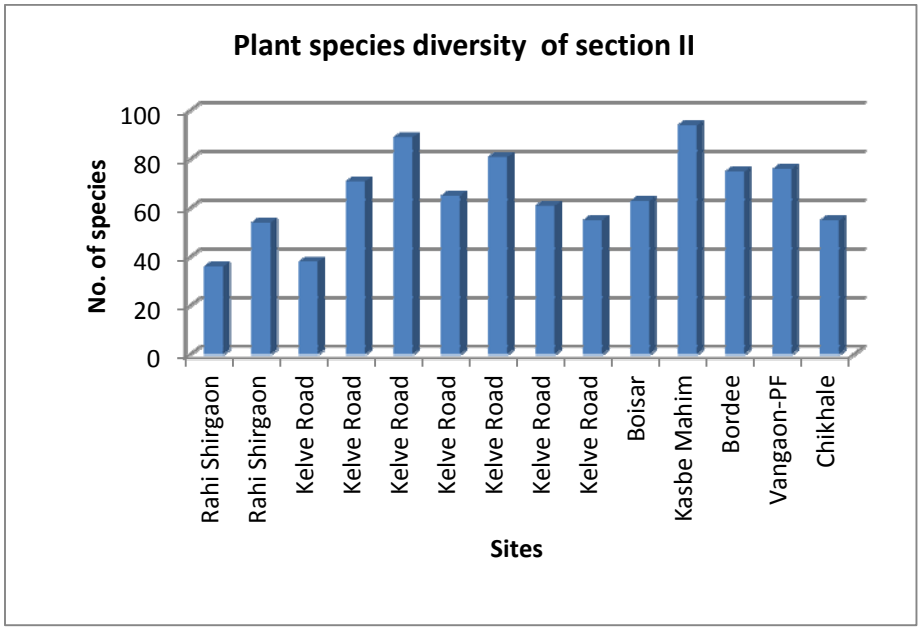


Figure 7d-3: Tree species in section 2

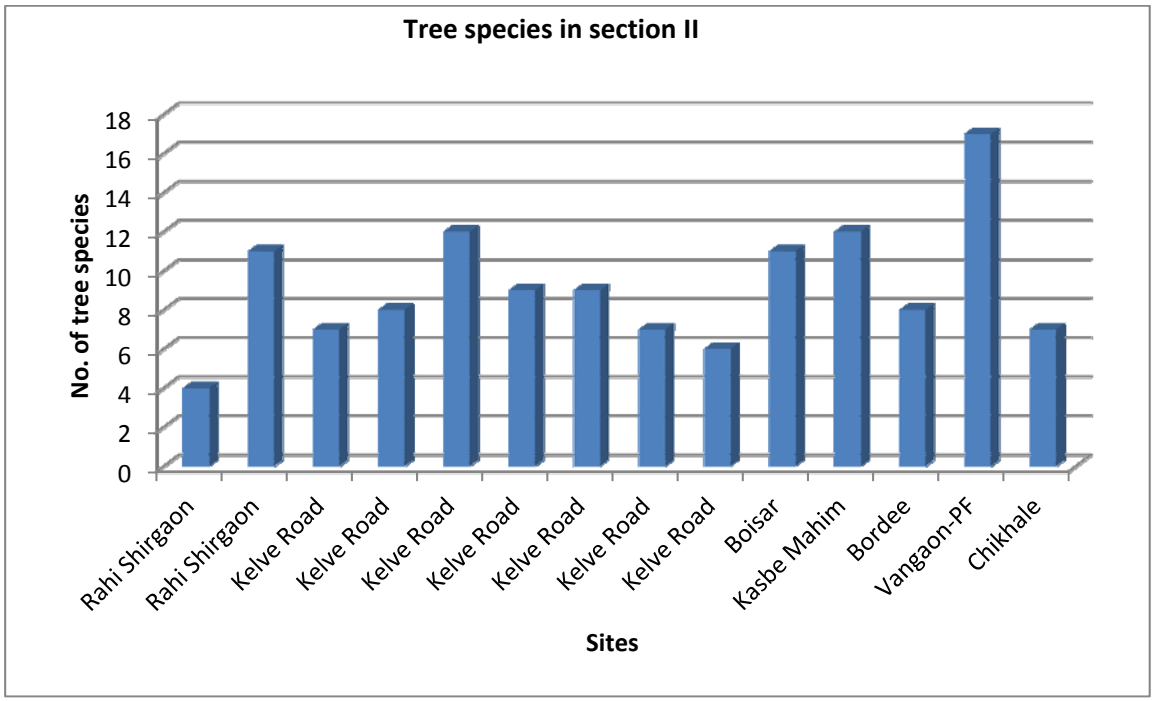


Figure 7d-4: Shrub species in section 2

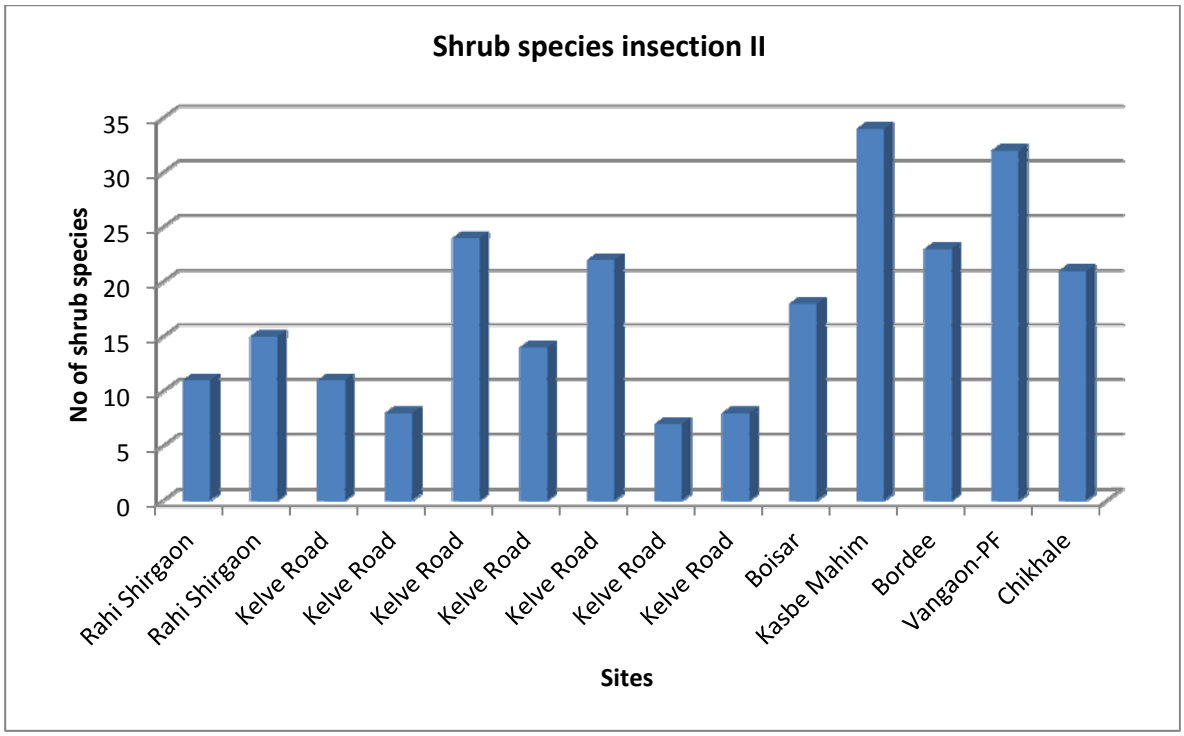


Figure 7d-5: Climbers in section 2

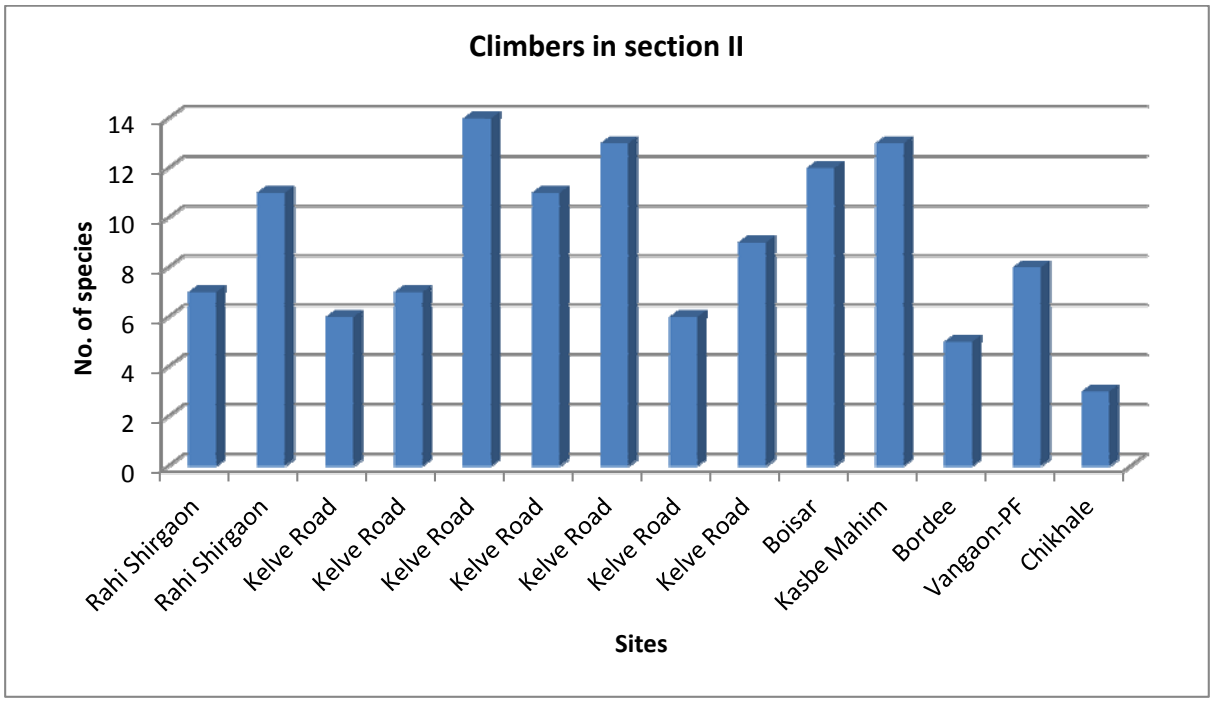
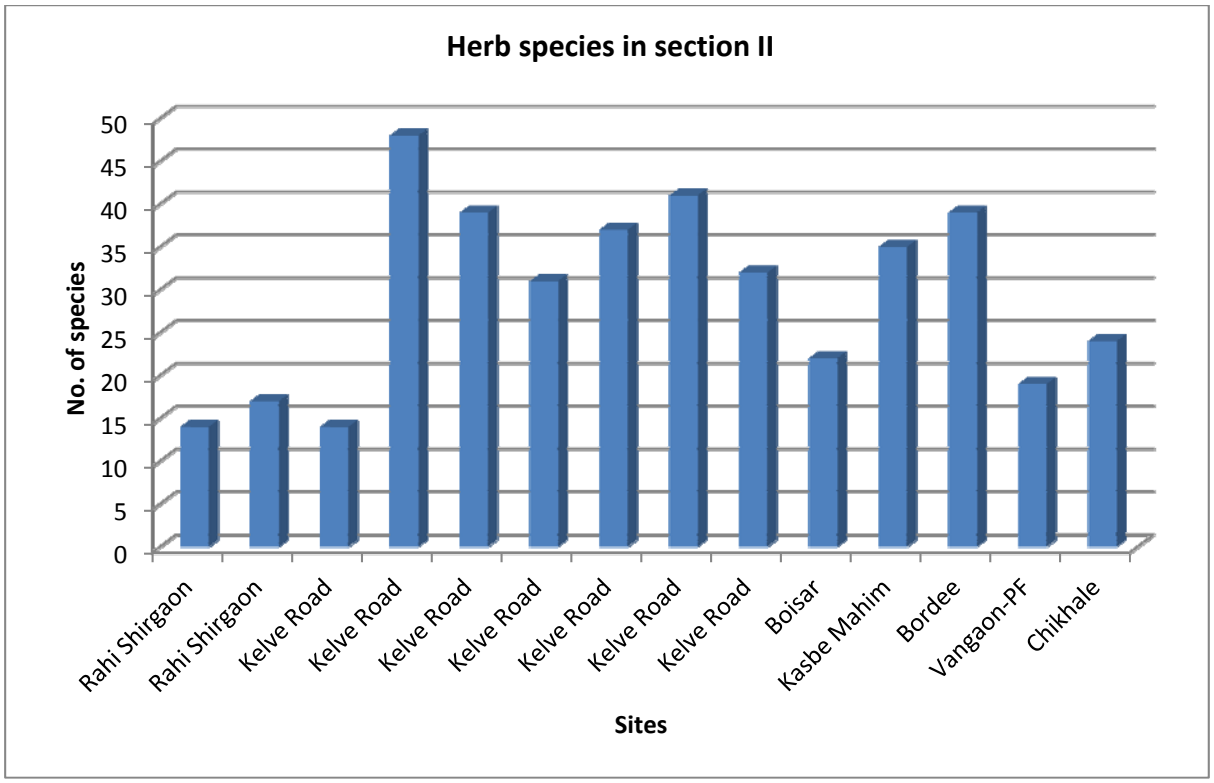


Figure 7d-6: Herb species in section 2



List of plants recorded at each site of Section 2 are provided below:

Table 7d-20 Plants recorded at Rani Shirgaon (36 species)

Botanical Name	Family	Habit
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Ailanthus excelsa Roxb.	Simaroubaceae	Tree
Amaranthus spinosus L.	Amaranthaceae	Herb
Anisomeles indica (L.) O. Ktze.	Lamiaceae	Shrub
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Borassus flabellifer L.	Arecaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Cassia absus L.	Caesalpiniaceae	Herb
Cassia mimosoides L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Cissus repens Lam.	Vitaceae	Climber
Cocculus hirsutus (L.) Theob.	Menispermaceae	Climber
Corchorus fascicularis Lam.	Tiliaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Heteropogon sp.	Poaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Maytenus rothiana (Walp.) Lobreau–Collen	Celastraceae	Shrub
Momordica dioica Roxb. ex Willd.	Cucurbitaceae	Climber
Phoenix sylvestris L.	Araceae	Tree
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Rhynchosia minima (L.) DC.	Fabaceae	Herb
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Tectona grandis L. f.	Verbenaceae	Tree
Terminalia elliptica Willd.	Combretaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Trichodesma inaequale Edgew.	Boraginaceae	Herb
Triumfetta rhomboidea Jacq.	Tiliaceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber

Table 7d-21 Plant Species recorded at Kelve Rd. 1 (38 Species)

Botanical Name	Family	Habit
Abelmoschus ficulneus (L.) Wight & Arn.ex Wight	Malvaceae	Shrub
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Anisomeles indica (L.) O. Ktze.	Lamiaceae	Shrub
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Bombax ceiba L.	Bombacaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Carissa congesta Wight	Apocynaceae	Shrub
Cassia tora L.	Caesalpiniaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Coccinia grandis (L.) Voigt	Cucurbitaceae	Climber
Coix lacryma-jobi L.	Poaceae	Herb
Combretum albidum G. Don	Combretaceae	Climber
Cyanotis fasciculata J. A. & J.H. Schults	Commelinaceae	Herb
Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Ficus racemosa L.	Moreaceae	Tree
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Impatiens pulcherrima Dalz.	Balsaminaceae	Herb
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Momordica dioica Roxb. ex Willd.	Cucurbitaceae	Climber
Monochoria vaginalis (Burm. F.) K. B. Presl.	Pontederiaceae	Herb
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Panicum maximum Jacq.	Poaceae	Herb
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Setaria intermedia R. & S.	Poaceae	Herb
Tonningia axillaris Ktze.	Commelinaceae	Herb
Triumfetta rhomboidea Jacq.	Tiliaceae	Herb
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Ziziphus mauritiana Lam.	Rhamnaceae	Tree

Table 7d-22 Plant species reorded at Kelve Rd.2 (71 Species)

Botanical Name	Family	Habit
Abelmoschus ficulneus (L.) Wight & Arn.ex Wight	Malvaceae	Shrub
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Anisomeles indica (L.) O. Ktze.	Lamiaceae	Shrub
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Bombax ceiba L.	Bombacaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Carissa congesta Wight	Apocynaceae	Shrub
Cassia tora L.	Caesalpiniaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Coccinia grandis (L.) Voigt	Cucurbitaceae	Climber
Coix lacryma-jobi L.	Poaceae	Herb
Combretum albidum G. Don	Combretaceae	Climber
Cyanotis fasciculata J. A. & J.H. Schults	Commelinaceae	Herb
Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Ficus racemosa L.	Moreaceae	Tree
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Impatiens pulcherrima Dalz.	Balsaminaceae	Herb
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Momordica dioica Roxb. ex Willd.	Cucurbitaceae	Climber
Monochoria vaginalis (Burm. F.) K. B. Presl.	Pontederiaceae	Herb
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Panicum maximum Jacq.	Poaceae	Herb
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Setaria intermedia R. & S.	Poaceae	Herb
Tonningia axillaris Ktze.	Commelinaceae	Herb
Triumfetta rhomboidea Jacq.	Tiliaceae	Herb
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Ziziphus mauritiana Lam.	Rhamnaceae	Tree

Table 7d-23 Plant species reorded at Kelve Rd.3 (89 Species)

Botanical Name	Family	Habit
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Abelmoschus moschatus Medik.	Malvaceae	Shrub
Acacia auriculiformis A. Cunn. ex. Bth.	Mimosaceae	Tree
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia concinna (Willd.) DC.	Mimosaceae	Shrub
Acacia leucophloea (Roxb.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Apluda mutica L.	Poaceae	Herb
Argyreia elliptica (Roth) Choisy	Convolvulaceae	Climber
Argyreia sericea Dalz. & Gibs.	Convolvulaceae	Climber
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Carissa congesta Wight	Apocynaceae	Shrub
Cassia fistula L.	Fabaceae	Tree
Cassia mimosoides L.	Caesalpiniaceae	Herb
Cassia tora L.	Caesalpiniaceae	Herb
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Celosia argentea L.	Amaranthaceae	Herb
Chloris virgata Swartz.	Poaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Coix lacryma-jobi L.	Poaceae	Herb
Commelina benghalensis L.	Commelinaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Crotalaria notonii Wight & Arn.	Fabaceae	Herb
Crotalaria retusa L.	Fabaceae	Herb
Curcuma pseudomontana L.	Zingiberaceae	Herb
Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Dinebra retroflexa Panz.	Poaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber

Botanical Name	Family	Habit
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Ficus benghalensis L.	Moraceae	Tree
Ficus racemosa L.	Moreaceae	Tree
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	Flacourtiaceae	Shrub
Grewia tiliifolia L.	Tiliaceae	Tree
Hemidesmus indicus (L.) Schult.	Periplocaceae	Climber
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Ipomoea obscura (L.) Ker-–Gawl. forma obscura	Convolvulaceae	Climber
Kyllinga tenuifolia Steud.	Cyperaceae	Herb
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leea macrophylla Roxb. ex Horn.	Leeaceae	Shrub
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Ludwigia perennis L.	Onagraceae	Herb
Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	Sapotaceae	Tree
Malachra capitata (L.) L.	Malvaceae	Shrub
Maytenus rothiana (Walp.) Lobreau–Collen	Celastraceae	Shrub
Melochia corchorifolia L.	Sterculiaceae	Herb
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Mukia maderaspatana (L.) Roem.	Cucurbitaceae	Climber
Neuracanthus sphaerostachyus (Nees) Dalz.	Acanthaceae	Herb
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Oplismenus burmannii (Retz.) P. Beauv.	Poaceae	Herb
Panicum maximum Jacq.	Poaceae	Herb
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phoenix sylvestris L.	Araceae	Tree
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Rungia repens (L.) Nees	Acanthaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida cordata (Burm. f.) Borss.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Tectona grandis L. f.	Verbenaceae	Tree
Teramnus labialis (L. f.) Spreng.	Fabaceae	Climber
Terminalia elliptica Willd.	Combretaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Trichosanthes anguina L.	Cucurbitaceae	Climber

Botanical Name	Family	Habit
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vernonia cinerea (L.) Less.	Asteraceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Ziziphus xylopyra (Retz.) Willd.	Rhamnaceae	Tree

Table 7d-24 Plants recordedat Kelve Rd. 4 (65 species)

Species Name	Family	Habit
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Acacia pennata (L.) Willd	Mimosaceae	Shrub
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Anisomeles indica (L.) O. Ktze.	Lamiaceae	Shrub
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Cassia tora L.	Caesalpiniaceae	Herb
Chloris virgata Swartz.	Poaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Coix lacryma-jobi L.	Poaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Costus speciosus Sm.	Liliaceae	Herb
Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Desmodium gangeticum (L.) DC.	Fabaceae	Herb
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dinebra retroflexa Panz.	Poaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Eclipta prostrata (L.) L.	Asteraceae	Herb
Eucalyptus sp.	Myrtaceae	Tree
Ficus racemosa L.	Moreaceae	Tree
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	Flacourtiaceae	Shrub
Gloriosa superba L.	Liliaceae	Climber
Grewia tiliifolia L.	Tiliaceae	Tree
Hedyotis corymbosa (L.) Lam.	Rubiaceae	Herb
Helicteres isora L.	Sterculiaceae	Shrub
Hemidesmus indicus (L.) Schult.	Periplocaceae	Climber
Heteropogon sp.	Poaceae	Herb
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb

Species Name	Family	Habit
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Malachra capitata (L.) L.	Malvaceae	Shrub
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Passiflora edulis	Passifloraceae	Climber
Peristrophe paniculata (Forssk.) Brummitt	Acanthaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Polygonum sp.	Polygonaceae	Herb
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Synedrella nodiflora (L.) Gaertn.	Asteraceae	Herb
Terminalia elliptica Willd.	Combretaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Ziziphus mauritiana Lam.	Rhamnaceae	Tree
Ziziphus xylopyra (Retz.) Willd.	Rhamnaceae	Tree

Table 7d-25 Plants reorded at Kelve Rd. 5 (81 species)

Botanical Name	Family	Habit
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia leucophloea (Roxb.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Acacia pennata (L.) Willd	Mimosaceae	Shrub
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Alysicarpus heyneanus Wight & Arn. var. heyneanus	Fabaceae	Herb
Alysicarpus monilifer (L.) DC.	Fabaceae	Herb
Alysicarpus tetragonolobus Edgew. var. tetragonolobus	Fabaceae	Herb
Anisomeles indica (L.) O. Ktze.	Lamiaceae	Shrub
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Boerhavia erecta L.	Nyctaginaceae	Herb
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Cassia tora L.	Caesalpiniaceae	Herb
Chloris virgata Swartz.	Poaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Coix lacryma-jobi L.	Poaceae	Herb
Corchorus fascicularis Lam.	Tiliaceae	Herb
Costus speciosus Sm.	Liliaceae	Herb
Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Desmodium gangeticum (L.) DC.	Fabaceae	Herb
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dinebra retroflexa Panz.	Poaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Eclipta prostrata (L.) L.	Asteraceae	Herb
Emblica officinalis Gaertn.	Euphorbiaceae	Tree
Eucalyptus sp.	Myrtaceae	Tree
Ficus racemosa L.	Moreaceae	Tree
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	Flacourtiaceae	Shrub

Botanical Name	Family	Habit
Gloriosa superba L.	Liliaceae	Climber
Grewia tiliifolia L.	Tiliaceae	Tree
Hedyotis corymbosa (L.) Lam.	Rubiaceae	Herb
Helicteres isora L.	Sterculiaceae	Shrub
Hemidesmus indicus (L.) Schult.	Periplocaceae	Climber
Heteropogon sp.	Poaceae	Herb
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	Sapotaceae	Tree
Malachra capitata (L.) L.	Malvaceae	Shrub
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Oroxylum indicum (L.) Vent.	Bignoniaceae	Tree
Passiflora edulis	Passifloraceae	Climber
Peristrophe paniculata (Forssk.) Brummitt	Acanthaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Polygonum sp.	Polygonaceae	Herb
Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Synedrella nodiflora (L.) Gaertn.	Asteraceae	Herb
Syzygium cumini (L.) Skeels	Rutaceae	Tree
Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Tree
Terminalia elliptica Willd.	Combretaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Ziziphus mauritiana Lam.	Rhamnaceae	Tree
Ziziphus xylopyra (Retz.) Willd.	Rhamnaceae	Tree

Table 7d-26 Plants Recordedat kelve Rd. 6 (61 species)

Botanical Name	Family	Habit
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia concinna (Willd.) DC.	Mimosaceae	Shrub
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Ageratum conyzoides L.	Asteraceae	Herb
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Apluda mutica L.	Poaceae	Herb
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Bidens biternata (Lour.) Merr. & Sherff.	Asteraceae	Herb
Biophytum sensitivum (L.) DC.	Oxalidaceae	Herb
Boerhavia erecta L.	Nyctaginaceae	Herb
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Cassia fistula L.	Fabaceae	Tree
Cassia tora L.	Caesalpiniaceae	Herb
Celosia argentea L.	Amaranthaceae	Herb
Chloris virgata Swartz.	Poaceae	Herb
Clitoria biflora Dalz.	Fabaceae	Climber
Coix lacryma-jobi L.	Poaceae	Herb
Commelina benghalensis L.	Commelinaceae	Herb
Commelina forsskalaei Vahl.	Commelinaceae	Herb
Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Dinebra retroflexa Panz.	Poaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Echinochloa sp	Poaceae	Herb
Eclipta prostrata (L.) L.	Asteraceae	Herb
Elephantopus scaber L.	Asteraceae	Herb
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Euphorbia hirta L.	Euphorbiaceae	Herb
Hemidesmus indicus (L.) Schult.	Periplocaceae	Climber
Heteropogon sp.	Poaceae	Herb
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Impatiens pulcherrima Dalz.	Balsaminaceae	Herb
Indigofera prostrata Willd.	Fabaceae	Herb
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber

Botanical Name	Family	Habit
Ipomoea obscura (L.) Ker–Gawl. forma obscura	Convolvulaceae	Climber
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Lindernia parviflora (Roxb.) Haines	Scrophulariaceae	Herb
Ludwigia perennis L.	Onagraceae	Herb
Malachra capitata (L.) L.	Malvaceae	Shrub
Melochia corchorifolia L.	Sterculiaceae	Herb
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Oplismenus burmannii (Retz.) P. Beauv.	Poaceae	Herb
Panicum maximum Jacq.	Poaceae	Herb
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Sida cordata (Burm. f.) Borss.	Malvaceae	Herb
Tamarindus indica L.	Caesalpiniaceae	Tree
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Tridax procumbens L.	Asteraceae	Herb
Triumfetta rhomboidea Jacq.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vernonia cinerea (L.) Less.	Asteraceae	Herb
Xanthium indicum Koen.	Asteraceae	Shrub
Ziziphus mauritiana Lam.	Rhamnaceae	Tree

Table 7d-27 Plant Species recorded at Kelve Rd. 7 (55 species)

Botanical Name	Family	Habit
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Aeschynomene indica L.	Fabaceae	Herb
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Amaranthus spinosus L.	Amaranthaceae	Herb
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Biophytum sensitivum (L.) DC.	Oxalidaceae	Herb
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Cassia mimosoides L.	Caesalpiniaceae	Herb
Celosia argentea L.	Amaranthaceae	Herb
Centella asiatica (L.) Urban	Apiaceae	Herb
Chlorophytum glaucoides Blatt.	Liliaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Corchorus fascicularis Lam.	Tiliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Desmodium heterocarpon (L.) DC.	Fabaceae	Shrub
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dioscorea bulifera L.	Dioscoraceae	Climber
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Echinochloa sp	Poaceae	Herb
Emblica officinalis Gaertn.	Euphorbiaceae	Tree
Euphorbia hirta L.	Euphorbiaceae	Herb
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	Flacourtiaceae	Shrub
Heteropogon sp.	Poaceae	Herb
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Malachra capitata (L.) L.	Malvaceae	Shrub
Maytenus rothiana (Walp.) Lobreau–Collen	Celastraceae	Shrub
Melochia corchorifolia L.	Sterculiaceae	Herb
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber
Oplismenus burmannii (Retz.) P. Beauv.	Poaceae	Herb
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phyllanthus fraternus Webster	Euphorbiaceae	Herb
Phyllanthus virgatus Forst. f.	Euphorbiaceae	Herb
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb

Botanical Name	Family	Habit
Sida acuta Burm. f.	Malvaceae	Herb
Sida cordata (Burm. f.) Borss.	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Teramnus labialis (L. f.) Spreng.	Fabaceae	Climber
Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Tylophora indica (Burm. f.) Merr.	Asclepiadaceae	Climber
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber

Table 7d-28 Plants Recorded at Boisar (63 species)

Botanical Name	Family	Habit
Abelmoschus manihot (L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia leucophloea (Roxb.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Argyreia elliptica (Roth) Choisy	Convolvulaceae	Climber
Argyreia sericea Dalz. & Gibs.	Convolvulaceae	Climber
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Bridelia retusa (L.) Spreng.	Euphorbiaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Capparis spinosa L.	Capparaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Casearia graveolens Dalz.	Flacourtiaceae	Shrub
Cassia fistula L.	Fabaceae	Tree
Cassia tora L.	Caesalpiniaceae	Herb
Celosia argentea L.	Amaranthaceae	Herb
Cissus repens Lam.	Vitaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Cocculus hirsutus (L.) Theob.	Menispermaceae	Climber
Corchorus fascicularis Lam.	Tiliaceae	Herb
Crotalaria notonii Wight & Arn.	Fabaceae	Herb
Cucurbita maxima Duch. ex Lam.'	Cucurbitaceae	Climber
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Ficus benghalensis L.	Moraceae	Tree
Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	Flacourtiaceae	Shrub
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Ipomoea obscura (L.) Ker-–Gawl. forma obscura	Convolvulaceae	Climber
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Malachra capitata (L.) L.	Malvaceae	Shrub
Maytenus rothiana (Walp.) Lobreau–Collen	Celastraceae	Shrub
Melanocynchrus jacquemontii Jaub. & Spach.	Poaceae	Herb
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Operculina turpethum (L.) S. Manso	Convolvulaceae	Climber

Botanical Name	Family	Habit
Phoenix sylvestris L.	Araceae	Tree
Pterocarpus marsupium Roxb. var. marsupium	Fabaceae	Tree
Scirpus affinis Roth.	Cyperaceae	Herb
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida cordata (Burm. f.) Borss.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Synedrella nodiflora (L.) Gaertn.	Asteraceae	Herb
Tacca leontopetaloides (L.) O. Ktze.	Taccaceae	Herb
Tamarindus indica L.	Caesalpiniaceae	Tree
Tectona grandis L. f.	Verbenaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Teramnus labialis (L. f.) Spreng.	Fabaceae	Climber
Terminalia elliptica Willd.	Combretaceae	Tree
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Triumfetta rhomboidea Jacq.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vernonia cinerea (L.) Less.	Asteraceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Woodfordia fruticosa (L.) Kurz	Lythraceae	Shrub
Xanthium indicum Koen.	Asteraceae	Shrub

Table 7d-29 Plants Recorded at Kasabe Mahim (94 Species)

Botanical Name	Family	Habit
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia concinna (Willd.) DC.	Mimosaceae	Shrub
Acacia leucophloea (Roxb.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia pennata (L.) Willd	Mimosaceae	Shrub
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Aeschynomene indica L.	Fabaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Anisomeles indica (L.) O. Ktze.	Lamiaceae	Shrub
Apluda mutica L.	Poaceae	Herb
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Boehmeria macrophylla Hornem.	Urticaceae	Herb
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Calycopteris floribunda (Roxb.) Poir.	Combretaceae	Shrub
Careya arborea Roxb.	Lecythidaceae	Tree
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Cissus repens Lam.	Vitaceae	Climber
Coix lacryma-jobi L.	Poaceae	Herb
Commelina benghalensis L.	Commelinaceae	Herb
Commelina diffusa Burm. f.	Commelinaceae	Herb
Cordia dichotoma Forst. f.	Boraginaceae	Tree
Costus speciosus Sm.	Liliaceae	Herb
Crotalaria linifolia L. f.	Fabaceae	Herb
Crotalaria notonii Wight & Arn.	Fabaceae	Herb
Crotalaria retusa L.	Fabaceae	Herb
Cryptolepis buchanani Roem. & Schult.	Periplocaceae	Climber
Cyanotis fasciculata J. A. & J.H. Schults	Commelinaceae	Herb
Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
Cyperus digitatus Roxb.	Cyperaceae	Herb
Cyperus exaltatus Retz.	Cyperaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Derris scandens (Roxb.) Bth.	Fabaceae	Climber
Desmodium heterocarpon (L.) DC.	Fabaceae	Shrub
Desmodium triflorum (L.) DC.	Fabaceae	Climber
Dioscorea bulifera L.	Dioscoraceae	Climber
Echinochloa sp	Poaceae	Herb

Botanical Name	Family	Habit
Euphorbia ligularia Roxb.	Euphorbiaceae	Shrub
Ficus hispida L.	Moreaceae	Shrub
Ficus racemosa L.	Moreaceae	Tree
Flacourtia indica (Burm. f.) Merr.	Flacourtiaceae	Tree
Gliricidia sepium (Jacq.) Kunth ex Walp.	Fabaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don	Apocynaceae	Shrub
Holoptelea integrifolia (Roxb.) Planch.	Ulmaceae	Tree
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	Convolvulaceae	Shrub
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Ipomoea mauritiana Jacq.	Convolvulaceae	Climber
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Ludwigia perennis L.	Onagraceae	Herb
Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	Sapotaceae	Tree
Mangifera indica L.	Anacardiaceae	Tree
Manilkara hexandra (Roxb.) Dub.	Sapotaceae	Tree
Meyna laxiflora Robyns	Rubiaceae	Tree
Moringa oleifera Lam.	Moringacae	Tree
Oplismenus burmannii (Retz.) P. Beauv.	Poaceae	Herb
Panicum maximum Jacq.	Poaceae	Herb
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Passiflora edulis	Passifloraceae	Climber
Peristrophe paniculata (Forssk.) Brummitt	Acanthaceae	Herb
Phoenix sylvestris L.	Araceae	Tree
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Polygonum sp.	Polygonaceae	Herb
Sesamum laciniatum Klein ex Willd.	Pedaliaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida acuta Burm. f.	Malvaceae	Herb
Sida cordata (Burm. f.) Borss.	Malvaceae	Herb
Sida rhombifolia L. ssp. rhombifolia	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Spondias pinnata (L.f.) Kurz	Anacardiaceae	Tree
Sterculia urens Roxb.	Sterculiaceae	Tree
Syzygium cumini (L.) Skeels	Rutaceae	Tree
Tamarindus indica L.	Caesalpiniaceae	Tree

Botanical Name	Family	Habit
Tectona grandis L. f.	Verbenaceae	Tree
Teramnus labialis (L. f.) Spreng.	Fabaceae	Climber
Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Tree
Terminalia elliptica Willd.	Combretaceae	Tree
Themeda triandra Forssk.	Poaceae	Herb
Thespesia populnea (L.) Soland. ex Corr.	Malvaceae	Tree
Trema orientalis (L.) Bl.	Ulmaceae	Tree
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Vigna vexillata (L.) A. Rich.	Fabaceae	Climber
Ziziphus mauritiana Lam.	Rhamnaceae	Tree

Table 7d-30 Plant Species recorded at Bordee (75 species)

Species Name	Family	Habit
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia leucophloea (Roxb.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia pennata (L.) Willd	Mimosaceae	Shrub
Acalypha sp.	Euphorbiaceae	Herb
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Alysicarpus heyneanus Wight & Arn. var. heyneanus	Fabaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Anonna squamosa L.	Annonaceae	Tree
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Biophytum sensitivum (L.) DC.	Oxalidaceae	Herb
Boerhavia erecta L.	Nyctaginaceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Borassus flabellifer L.	Arecaceae	Tree
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Cassia fistula L.	Fabaceae	Tree
Cassia tora L.	Caesalpiniaceae	Herb
Cassytha filiformis L.	Lauraceae	Climber
Centella asiatica (L.) Urban	Apiaceae	Herb
Chlorophytum glaucoides Blatt.	Liliaceae	Herb
Commelina benghalensis L.	Commelinaceae	Herb
Curcuma pseudomontana L.	Zingiberaceae	Herb
Cuscuta reflexa Roxb.	Cuscutaceae	Climber
Cynarospermum asperrimum (Nees) Vollesen	Acanthaceae	Herb
Desmodium gangeticum (L.) DC.	Fabaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Eclipta prostrata (L.) L.	Asteraceae	Herb
Elephantopus scaber L.	Asteraceae	Herb
Euphorbia hirta L.	Euphorbiaceae	Herb
Fimbristylis dichotoma (L.) Vahl.	Cyperaceae	Herb
Gmelina arborea Roxb.	Verbenaceae	Tree
Grewia tiliifolia L.	Tiliaceae	Tree
Haldina cordifolia (Roxb.) Ridsd.	Rubiaceae	Tree
Hedyotis corymbosa (L.) Lam.	Rubiaceae	Herb
Hybanthus enneaspermus (L.) F. v. Muell.	Violaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub

Species Name	Family	Habit
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Indigofera glandulosa Wendl. var. glandulosa	Fabaceae	Herb
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	Convolvulaceae	Shrub
Jatropha curcas L.	Euphorbiaceae	Tree
Jatropha gossipifolia L.	Euphorbiaceae	Shrub
Kyllinga tenuifolia Steud.	Cyperaceae	Herb
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leea indica (Burm. f.) Merr.	Leeaceae	Herb
Lindernia anagallis (Burm. f.) Penn.	Scrophulariaceae	Herb
Lindernia parviflora (Roxb.) Haines	Scrophulariaceae	Herb
Maytenus rothiana (Walp.) Lobreau–Collen	Celastraceae	Shrub
Melochia corchorifolia L.	Sterculiaceae	Herb
Meyna laxiflora Robyns	Rubiaceae	Tree
Mitragyna parvifolia (Roxb.) Korth.	Rubiaceae	Tree
Morinda pubescens J. E. Sm.	Rubiaceae	Tree
Moringa oleifera Lam.	Moringacae	Tree
Neuracanthus sphaerostachyus (Nees) Dalz.	Acanthaceae	Herb
Oplismenus burmannii (Retz.) P. Beauv.	Poaceae	Herb
Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
Phoenix sylvestris L.	Araceae	Tree
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Scirpus affinis Roth.	Cyperaceae	Herb
Setaria intermedia R. & S.	Poaceae	Herb
Sida cordata (Burm. f.) Borss.	Malvaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Sopubia trifida Buch.–Ham. ex D. Don	Scrophulariaceae	Herb
Spermacoce pusilla Wall.	Rubiaceae	Herb
Teramnus labialis (L. f.) Spreng.	Fabaceae	Climber
Terminalia elliptica Willd.	Combretaceae	Tree
Trichodesma indicum (L.) Lehm.	Boraginaceae	Herb
Tridax procumbens L.	Asteraceae	Herb
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Triumfetta rhomboidea Jacq.	Tiliaceae	Herb
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Woodfordia fruticosa (L.) Kurz	Lythraceae	Shrub

Table 7d-31 Plant Species recorded at Vangaon (76 species)

Botanical Name	Family	Habit
Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	Malvaceae	Shrub
Abelmoschus moschatus Medik.	Malvaceae	Shrub
Acacia auriculiformis A. Cunn. ex. Bth.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Achyranthes aspera L. var. aspera	Amaranthaceae	Herb
Albizia lebbeck (L.) Bth. var lebbeck.	Mimosaceae	Tree
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Amaranthus spinosus L.	Amaranthaceae	Herb
Anisomeles indica (L.) O. Ktze.	Lamiaceae	Shrub
Anonna squamosa L.	Annonaceae	Tree
Artocarpus heterophyllus Lam.	Moraceae	Tree
Azadirachta indica A. Juss.	Meliaceae	Tree
Bauhinia racemosa Lam.	Caesalpiniaceae	Tree
Bidens biternata (Lour.) Merr. & Sherff.	Asteraceae	Herb
Bombax ceiba L.	Bombacaceae	Tree
Borassus flabellifer L.	Arecaceae	Tree
Caesalpinia bonduc (L.) Roxb.	Caesalpiniaceae	Shrub
Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
Carissa congesta Wight	Apocynaceae	Shrub
Cassia senna L	Fabaceae	Shrub
Cassia tora L.	Caesalpiniaceae	Herb
Cayratia trifolia (L.) Domin	Vitaceae	Climber
Clitoria biflora Dalz.	Fabaceae	Climber
Cocculus hirsutus (L.) Theob.	Menispermaceae	Climber
Corchorus fascicularis Lam.	Tiliaceae	Herb
Costus speciosus Sm.	Liliaceae	Herb
Cyanotis fasciculata J. A. & J.H. Schults	Commelinaceae	Herb
Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
Dioscorea bulifera L.	Dioscoraceae	Climber
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Erythrina variegata L.	Fabaceae	Tree
Eucalyptus sp.	Myrtaceae	Tree
Euphorbia ligularia Roxb.	Euphorbiaceae	Shrub
Grewia tiliifolia L.	Tiliaceae	Tree
Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	Acanthaceae	Herb
Hyptis suaveolens (L.) Poit.	Lamiaceae	Shrub
Impatiens balsamina L. var. balsamina	Balsaminaceae	Herb
Impatiens pulcherrima Dalz.	Balsaminaceae	Herb
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	Convolvulaceae	Shrub

Botanical Name	Family	Habit
Ixora brachiata Roxb.	Rubiaceae	Tree
Jatropha gossipifolia L.	Euphorbiaceae	Shrub
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Lindernia anagallis (Burm. f.) Penn.	Scrophulariaceae	Herb
Ludwigia perennis L.	Onagraceae	Herb
Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	Sapotaceae	Tree
Malachra capitata (L.) L.	Malvaceae	Shrub
Mammea suriga (Buch.–Ham. ex Roxb.) Kosterm.	Clusiaceae	Tree
Mangifera indica L.	Anacardiaceae	Tree
Martynia annua L.	Martyniaceae	Shrub
Melochia corchorifolia L.	Sterculiaceae	Herb
Meyna laxiflora Robyns	Rubiaceae	Tree
Moringa oleifera Lam.	Moringacae	Tree
Oroxylum indicum (L.) Vent.	Bignoniaceae	Tree
Phoenix sylvestris L.	Araceae	Tree
Pithecellobium dulce (Roxb.) Bth.	Mimosaceae	Tree
Polyalthia longifolia (Sonn.) Thw.	Annonaceae	Tree
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Rhus mysorensis G. Don	Anacardiaceae	Shrub
Ricinus communis L.	Euphorbiaceae	Tree
Sida acuta Burm. f.	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Tamarindus indica L.	Caesalpiniaceae	Tree
Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Tree
Terminalia elliptica Willd.	Combretaceae	Tree
Trichosanthes anguina L.	Cucurbitaceae	Climber
Triumfetta pentandra A. Rich.	Tiliaceae	Herb
Urena lobata L. ssp.lobata	Malvaceae	Shrub
Vigna sublobata (Roxb.) Babu & Sharma	Fabaceae	Climber
Vigna trilobata (L.) Verdc.	Fabaceae	Climber
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Xanthium indicum Koen.	Asteraceae	Shrub
Ziziphus mauritiana Lam.	Rhamnaceae	Tree
Ziziphus nummularia (Burm. f.) Wight & Arn.	Rhamnaceae	Tree

Table 7d-32 Plant Species recorded at Chikhale (55 species)

Botanical Name	Family	Habit
Acacia auriculiformis A. Cunn. ex. Bth.	Mimosaceae	Tree
Acacia catechu (L. f.) Willd.	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	Mimosaceae	Tree
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	Mimosaceae	Tree
Alternanthera sessilis (L.) R. Br. ex DC.	Amaranthaceae	Herb
Amorphophallus bulbifer (Roxb.) Bl.	Areceae	Herb
Anonna squamosa L.	Annonaceae	Tree
Azadirachta indica A. Juss.	Meliaceae	Tree
Biophytum sensitivum (L.) DC.	Oxalidaceae	Herb
Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
Carissa congesta Wight	Apocynaceae	Shrub
Cassia tora L.	Caesalpiniaceae	Herb
Celastrus paniculatus Willd.	Celastraceae	Climber
Centella asiatica (L.) Urban	Apiaceae	Herb
Commelina benghalensis L.	Commelinaceae	Herb
Commelina forsskalaei Vahl.	Commelinaceae	Herb
Curculigo orchioides Gaertn.	Hypoxidaceae	Herb
Cyanotis fasciculata J. A. & J.H. Schults	Commelinaceae	Herb
Cynadon dactylon L.	Poaceae	Herb
Dinebra retroflexa Panz.	Poaceae	Herb
Diospyros melanoxylon Roxb.	Ebenaceae	Tree
Eclipta prostrata (L.) L.	Asteraceae	Herb
Eragrostis gangetica (Roxb.) Steud.	Poaceae	Herb
Euphorbia ligularia Roxb.	Euphorbiaceae	Shrub
Euphorbia sp.	Euphorbiaceae	Herb
Gmelina arborea Roxb.	Verbenaceae	Tree
Hemidesmus indicus (L.) Schult.	Periplocaceae	Climber
Indigofera glandulosa Wendl. var. glandulosa	Fabaceae	Herb
Ipomoea carnea Jacq. subsp. fistulosa (Mart. ex Choisy) Austin	Convolvulaceae	Shrub
Ixora brachiata Roxb.	Rubiaceae	Tree
Jatropha gossipifolia L.	Euphorbiaceae	Shrub
Kyllinga tenuifolia Steud.	Cyperaceae	Herb
Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	Tree
Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
Leucaena latisiliqua (L.) Gillis	Mimosaceae	Tree
Lindernia parviflora (Roxb.) Haines	Scrophulariaceae	Herb
Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	Sapotaceae	Tree
Maytenus rothiana (Walp.) Lobreau–Collen	Celastraceae	Shrub
Ocimum americanum L.	Lamiaceae	Herb

Botanical Name	Family	Habit
Pandanus furcatus Roxb.	Pandanaceae	Tree
Phoenix sylvestris L.	Araceae	Tree
Pongamia pinnata (L.) Pierre	Fabaceae	Tree
Rungia repens (L.) Nees	Acanthaceae	Herb
Scoparia dulcis L.	Scrophulariaceae	Herb
Sida cordata (Burm. f.) Borss.	Malvaceae	Herb
Smithia conferta J. E. Sm.	Fabaceae	Herb
Smithia racemosa Heyne ex Wight & Arn.	Fabaceae	Herb
Tamarindus indica L.	Caesalpiniaceae	Tree
Tephrosia purpurea (L.) Pers.	Fabaceae	Herb
Terminalia elliptica Willd.	Combretaceae	Tree
Thespesia populnea (L.) Soland. ex Corr.	Malvaceae	Tree
Wattakaka volubilis (L. f.) Stapf	Asclepiadaceae	Climber
Xanthium indicum Koen.	Asteraceae	Shrub
Ziziphus mauritiana Lam.	Rhamnaceae	Tree
Ziziphus nummularia (Burm. f.) Wight & Arn.	Rhamnaceae	Tree

Table 7d-33 Quadrat Aanalysis for trees in section 2

Species Name	Density	Frequency	Abundance	Relative Density	Relative Frequency	Relative Basal Area	IVI	Absolute Density inHa
Acacia leucophloea (Roxb.) Willd.	0.06	4.62	1.33	3.28	4.55	0.461	8.28	6.15
Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	0.17	12.31	1.38	9.02	12.12	1.537	22.67	16.92
Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	0.09	3.08	3.00	4.92	3.03	1.166	9.11	9.23
Albizia lebbeck (L.) Bth. var lebbeck.	0.02	1.54	1.00	0.82	1.52	29.932	32.27	1.54
Azadirachta indica A. Juss.	0.03	3.08	1.00	1.64	3.03	0.107	4.78	3.08
Bauhinia racemosa Lam.	0.08	7.69	1.00	4.10	7.58	0.295	11.97	7.69
Bombax ceiba L.	0.05	4.62	1.00	2.46	4.55	8.758	15.76	4.62
Borassus flabellifer L.	0.25	6.15	4.00	13.11	6.06	0.000	19.18	24.62
Butea monosperma (Lam.) Taub. Var. monosperma	0.09	3.08	3.00	4.92	3.03	0.000	7.95	9.23
Careya arborea Roxb.	0.03	3.08	1.00	1.64	3.03	1.548	6.22	3.08
Cassia fistula L.	0.05	1.54	3.00	2.46	1.52	0.000	3.97	4.62
Cordia dichotoma Forst. f.	0.02	1.54	1.00	0.82	1.52	0.210	2.54	0.08
Diospyros melanoxylon Roxb.	0.03	1.54	2.00	1.64	1.52	0.000	3.15	3.08
Erythrina variegata L.	0.02	1.54	1.00	0.82	1.52	0.186	2.52	1.54
Ficus benghalensis L.	0.02	1.54	1.00	0.82	1.52	0.617	2.95	1.54
Ficus racemosa L.	0.03	3.08	1.00	1.64	3.03	0.000	4.67	3.08
Lannea coromandelica (Houtt.) Merr.	0.12	7.69	1.60	6.56	7.58	2.754	16.89	12.31
Oroxylum indicum (L.) Vent.	0.02	1.54	1.00	0.82	1.52	0.000	2.33	1.54
Pithecellobium dulce (Roxb.) Bth.	0.05	3.08	1.50	2.46	3.03	0.895	6.38	4.62
Syzygium cumini (L.) Skeels	0.02	1.54	1.00	0.82	1.52	8.491	10.83	1.54
Tamarindus indica L.	0.08	4.62	1.67	4.10	4.55	18.281	26.92	7.69
Tectona grandis L. f.	0.37	6.15	6.00	19.67	6.06	0.000	25.73	36.92
Terminalia bellirica (Gaertn.) Roxb.	0.06	6.15	1.00	3.28	6.06	4.514	13.85	6.15
Terminalia elliptica Willd.	0.08	4.62	1.67	4.10	4.55	4.519	13.16	7.69
Ziziphus mauritiana Lam.	0.08	6.15	1.25	4.10	6.06	0.142	10.30	7.69
	1.88	**101.54**	**43.39**	**100.00**	**100.00**			

Figure 7d-7: Importance value index for top 10 species in Section 2

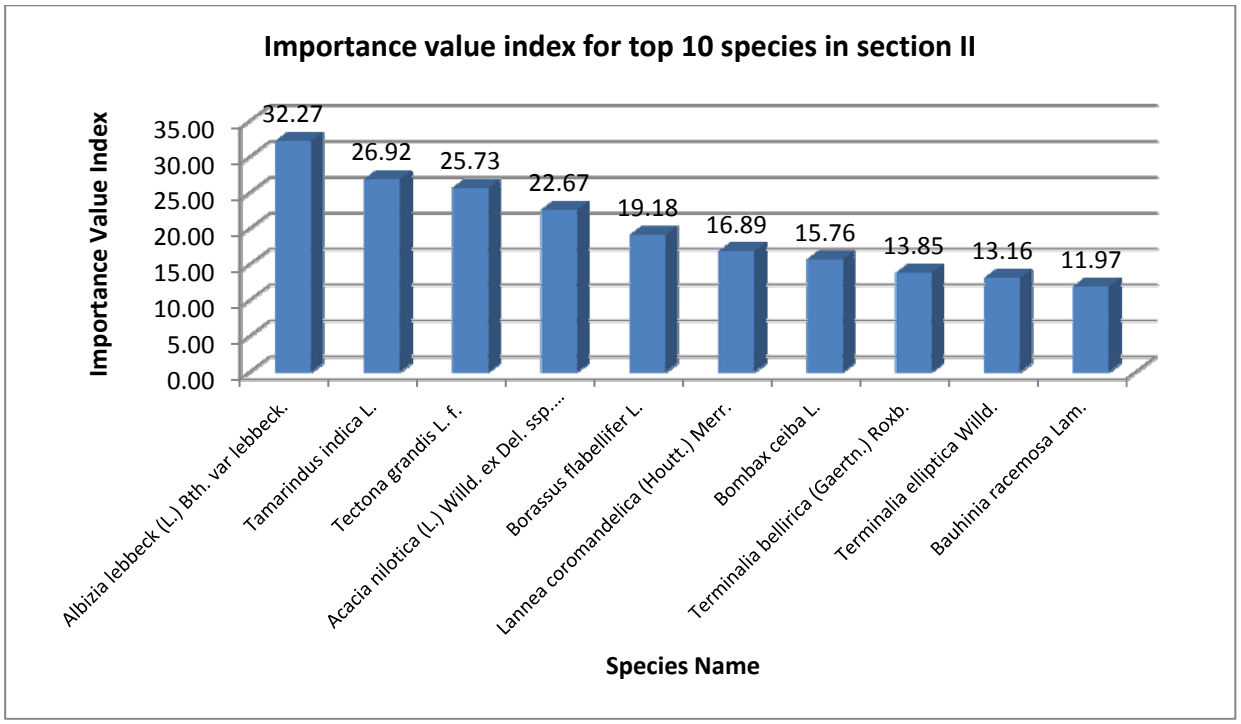


Table 7d-34 List of tree species with measurable GBH in section 2

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
1	Vangaon	Albizia lebbeck (L.) Bth. var lebbeck.	250	30
2	Vangaon	Albizia lebbeck (L.) Bth. var lebbeck.	210	28
3	Vangaon	Albizia lebbeck (L.) Bth. var lebbeck.	225	29
4	Vangaon	Albizia lebbeck (L.) Bth. var lebbeck.	280	30
5	Vangaon	Albizia lebbeck (L.) Bth. var lebbeck.	185	22
6	Vangaon	Albizia lebbeck (L.) Bth. var lebbeck.	230	28
7	Vangaon	Albizia lebbeck (L.) Bth. var lebbeck.	280	25
8	Vangaon	Ziziphus mauritiana Lam.	15	8
9	Vangaon	Ziziphus mauritiana Lam.	22	7
10	Boisar	Tamarindus indica L.	250	22
11	Boisar	Tamarindus indica L.	115	20
12	Boisar	Tamarindus indica L.	180	22
13	Boisar	Tamarindus indica L.	200	28
14	Boisar	Tamarindus indica L.	170	20
15	Boisar	Tamarindus indica L.	180	15
16	Boisar	Tamarindus indica L.	190	15
17	Boisar	Ficus benghalensis L.	120	15
18	Boisar	Tamarindus indica L.	270	20
19	Kelve road1	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	36	12
20	Kelve road1	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	35	12
21	Kelve road1	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	40	13
22	Kelve road1	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	38	12
23	Kelve road1	Ficus racemosa L.	80	25
24	Kelve road1	Lannea coromandelica (Houtt.) Merr.	20	8
25	Kelve road1	Ficus racemosa L.	52	14
26	Kelve road1	Ficus racemosa L.	95	25
27	Kelve road1	Ficus racemosa L.	40	22
28	Kelve road7	Terminalia bellirica (Gaertn.) Roxb.	120	35
29	Kelve road3	Bombax ceiba	95	24
30	Kelve road3	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	30	18
31	Kelve road3	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	65	20
32	Kelve road3	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	30	18
33	Kelve road3	Bombax ceiba	18	10
34	Kelve road3	Bombax ceiba	22	12

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
35	Kelve road3	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	35	13
36	Kelve Road4	Bauhinia racemosa Lam.	40	15
37	Kelve Road4	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	80	20
38	Kelve Road4	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	50	22
39	Kelve Road 5	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	15	10
40	Kelve Road 5	Lannea coromandelica (Houtt.) Merr.	40	18
41	Kelve Road 5	Terminalia bellirica (Gaertn.) Roxb.	130	30
42	Kelve Road 5	Careya arborea Roxb.	190	35
43	Kelve Road 5	Pterocarpus marsupium Roxb. var. marsupium	130	30
44	Kelve Road 5	Tamarindus indica L.	180	25
45	Kelve Road 5	Bombax ceiba	40	10
46	Kelve Road 5	Bombax ceiba	35	10
47	Kelve Road 5	Acacia leucophloea (Roxb.) Willd.	40	15
48	Kelve Road 5	Bombax ceiba	18	10
49	Kelve Road 5	Tamarindus indica L.	190	30
50	Kelve Road 5	Tamarindus indica L.	145	30
51	Kelve Road 5	Erythrina variegata L.	25	8
52	Kelve Road 5	Erythrina variegata L.	30	7
53	Kelve Road 5	Erythrina variegata L.	20	7
54	Kelve Road 5	Erythrina variegata L.	25	8
55	Kelve Road 5	Erythrina variegata L.	30	9
56	Kelve Road 5	Erythrina variegata L.	30	8
57	Kelve Road 5	Ziziphus mauritiana Lam.	10	8
58	Kelve Road 5	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	70	35
59	Kelve Road 5	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	60	25
60	Kelve Road 5	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	55	20
61	Kelve Road 5	Emblica officinalis Gaertn.	30	10
62	Kelve Road 5	Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	60	15
63	Kelve Road 5	Syzygium cumini (L.) Skeels	34	11
64	Kelve Road 5	Terminalia bellirica (Gaertn.) Roxb.	200	28
65	Kelve Road 5	Bauhinia racemosa Lam.	15	8
66	Kelve Road 5	Bombax ceiba	370	25
67	Kelve Road 5	Bombax ceiba	90	20
68	Kelve Road 5	Bombax ceiba	105	25
69	Kelve Road 5	Bombax ceiba	110	25
70	Kelve Road 5	Terminalia elliptica Willd.	110	35
71	Kelve Road 5	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	35	15

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
72	Kasbe Mahim	Bombax ceiba	45	15
73	Kasbe Mahim	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	50	12
74	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	70	15
75	Kasbe Mahim	Terminalia elliptica Willd.	80	15
76	Kasbe Mahim	Bombax ceiba	145	30
77	Kasbe Mahim	Terminalia elliptica Willd.	70	20
78	Kasbe Mahim	Terminalia elliptica Willd.	60	22
79	Kasbe Mahim	Terminalia elliptica Willd.	55	23
80	Kasbe Mahim	Bauhinia racemosa Lam.	60	10
81	Kasbe Mahim	Bombax ceiba	12	8
82	Kasbe Mahim	Terminalia elliptica Willd.	110	30
83	Kasbe Mahim	Terminalia elliptica Willd.	70	15
84	Kasbe Mahim	Ficus amplissima J.E. Sm.	270	40
85	Kasbe Mahim	Ficus racemosa L.	90	20
86	Kasbe Mahim	Ficus racemosa L.	120	22
87	Kasbe Mahim	Terminalia elliptica Willd.	220	30
88	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	90	20
89	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	50	20
90	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	70	25
91	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	85	15
92	Kasbe Mahim	Syzygium cumini (L.) Skeels	240	40
93	Kasbe Mahim	Syzygium cumini (L.) Skeels	190	30
94	Kasbe Mahim	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	70	19
95	Kasbe Mahim	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	80	18
96	Kasbe Mahim	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	60	17
97	Kasbe Mahim	Acacia nilotica (L.) Willd. ssp. astringens (Schum. & Thonn.) Roberty	65	18
98	Kasbe Mahim	Terminalia elliptica Willd.	80	20
99	Kasbe Mahim	Terminalia elliptica Willd.	60	15
100	Kasbe Mahim	Terminalia bellirica (Gaertn.) Roxb.	180	35
101	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	90	10
102	Kasbe Mahim	Mangifera indica L.	120	35
103	Kasbe Mahim	Mangifera indica L.	140	40
104	Kasbe Mahim	Terminalia bellirica (Gaertn.) Roxb.	40	10
105	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	30	15
106	Kasbe Mahim	Azadirachta indica A. Juss.	30	15
107	Kasbe Mahim	Grewia tiliifolia L.	45	15

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
108	Kasbe Mahim	Syzygium cumini (L.) Skeels	120	28
109	Kasbe Mahim	Syzygium cumini (L.) Skeels	135	40
110	Kasbe Mahim	Albizia lebbeck (L.) Bth. var lebbeck.	290	40
111	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	120	25
112	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	120	15
113	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	50	20
114	Kasbe Mahim	Tamarindus indica L.	130	25
115	Kasbe Mahim	Albizia lebbeck (L.) Bth. var lebbeck.	180	35
116	Kasbe Mahim	Gliricidia sepium (Jacq.) Kunth ex Walp.	35	8
117	Kasbe Mahim	Acacia leucophloea (Roxb.) Willd.	40	10
118	Kasbe Mahim	Acacia leucophloea (Roxb.) Willd.	45	8
119	Kasbe Mahim	Acacia leucophloea (Roxb.) Willd.	50	12
120	Kasbe Mahim	Acacia leucophloea (Roxb.) Willd.	55	15
121	Kasbe Mahim	Albizia lebbeck (L.) Bth. var lebbeck.	240	35
122	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	140	35
123	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	80	20
124	Kasbe Mahim	Cordia dichotoma Forst. f.	70	15
125	Kasbe Mahim	Syzygium cumini (L.) Skeels	90	30
126	Kasbe Mahim	Ficus amplissima J.E. Sm.	70	35
127	Kasbe Mahim	Tamarindus indica L.	40	20
128	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	80	15
129	Kasbe Mahim	Bauhinia racemosa Lam.	10	8
130	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	70	20
131	Kasbe Mahim	Ziziphus mauritiana Lam.	50	20
132	Kasbe Mahim	Leucaena latisiliqua (L.) Gillis	30	15
133	Kasbe Mahim	Leucaena latisiliqua (L.) Gillis	35	17
134	Kasbe Mahim	Leucaena latisiliqua (L.) Gillis	40	20
135	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	45	19
136	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	120	17
137	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	210	35
138	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	60	15
139	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	25	10
140	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	50	17
141	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	40	15
142	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	35	15
143	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	30	16
144	Kasbe Mahim	Albizia lebbeck (L.) Bth. var lebbeck.	120	35
145	Kasbe Mahim	Albizia lebbeck (L.) Bth. var lebbeck.	110	30

Sr. No.	Area	Name of the species	GBH in cm	Height in ft
146	Kasbe Mahim	Albizia lebbeck (L.) Bth. var lebbeck.	170	28
147	Kasbe Mahim	Bauhinia racemosa Lam.	15	8
148	Kasbe Mahim	Bauhinia racemosa Lam.	10	10
149	Kasbe Mahim	Bauhinia racemosa Lam.	20	10
150	Kasbe Mahim	Bauhinia racemosa Lam.	25	12
151	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	40	20
152	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	55	19
153	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	10	15
154	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	15	12
155	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	20	14
156	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	120	30
157	Kasbe Mahim	Thespesia populnea (L.) Soland. ex Corr.	110	28
158	Kasbe Mahim	Lannea coromandelica (Houtt.) Merr.	10	8
159	Kasbe Mahim	Albizia lebbeck (L.) Bth. var lebbeck.	260	30
160	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	30	20
161	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	40	21
162	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	60	22
163	Kasbe Mahim	Pithecellobium dulce (Roxb.) Bth.	55	20
164	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	10	12
165	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	12	12
166	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	15	12
167	Kasbe Mahim	Ficus racemosa L.	220	22
168	Kasbe Mahim	Syzygium cumini (L.) Skeels	250	20
169	Kasbe Mahim	Azadirachta indica A. Juss.	40	25
170	Kasbe Mahim	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	70	15

Table 7d-35 Quadrat analysis for shrubs in Section 2

Sr. No.	Name of the Species	Density	Frequency	Abundance	Relative Density	Relative Frequency
1	Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	0.04	0.76	5.00	1.20	0.83
2	Acacia catechu (L. f.) Willd.	0.05	3.03	1.50	1.44	3.31
3	Acacia concinna (Willd.) DC.	0.08	6.06	1.38	2.64	6.61
4	Acacia nilotica (L.) Willd. ex Del. ssp. indica (Bth) Brenan	0.04	3.03	1.25	1.20	3.31
5	Bauhinia racemosa Lam.	0.21	8.33	2.55	6.73	9.09
6	Butea monosperma (Lam.) Taub. Var. monosperma	0.14	3.79	3.60	4.33	4.13
7	Carissa congesta Wight	0.05	3.03	1.50	1.44	3.31
8	Cassia senna L	0.05	1.52	3.50	1.68	1.65
9	Diospyros melanoxylon Roxb.	0.03	1.52	2.00	0.96	1.65
10	Flacourtia latifolia (Hook. f. & Thoms.) T. Cooke	0.12	7.58	1.60	3.85	8.26
11	Hyptis suaveolens (L.) Poit.	1.30	11.36	11.40	41.11	12.40
12	Jatropha gossipifolia L.	0.05	3.03	1.50	1.44	3.31
13	Lannea coromandelica (Houtt.) Merr.	0.02	0.76	2.00	0.48	0.83
14	Lantana camara L. var. aculeata (L.) Moldenke	0.17	6.06	2.75	5.29	6.61
15	Leea indica (Burm. f.) Merr.	0.20	5.30	3.71	6.25	5.79
16	Leucaena latisiliqua (L.) Gillis	0.01	0.76	1.00	0.24	0.83
17	Maytenus rothiana (Walp.) Lobreau–Collen	0.09	2.27	4.00	2.88	2.48
18	Phoenix sylvestris L.	0.14	7.58	1.80	4.33	8.26
19	Tectona grandis L. f.	0.18	5.30	3.43	5.77	5.79
20	Woodfordia fruticosa (L.) Kurz	0.13	5.30	2.43	4.09	5.79
21	Ziziphus mauritiana Lam.	0.06	4.55	1.33	1.92	4.96
22	Ziziphus xylopyra (Retz.) Willd.	0.02	0.76	3.00	0.72	0.83

Table 7d-36 Quadrat analysis for herbs in Section 2

Sr. No.	Name of the Species	Density	Frequency %	Abundance	Relative Density	Relative Frequency
1	Abelmoschus manihot(L.) Medik. Ssp. tetraphyllus	0.08	1.17	6.67	0.16	0.30
2	Achyranthes aspera L. var. aspera	1.08	8.98	12.00	2.16	2.32
3	Aeschynomene indica L.	0.04	1.56	2.50	0.08	0.40
4	Alternanthera sessilis (L.) R. Br. ex DC.	0.78	10.94	7.14	1.56	2.82
5	Alysicarpus heyneanus Wight & Arn. var. heyneanus	0.02	0.39	4.00	0.03	0.10
6	Amaranthus spinosus L.	0.03	0.78	3.50	0.05	0.20
7	Amorphophallus bulbifer (Roxb.) Bl.	0.01	0.78	1.50	0.02	0.20
8	Bidens biternata (Lour.) Merr. & Sherff.	0.34	1.17	29.00	0.68	0.30
9	Boerhavia erecta L.	0.07	3.13	2.38	0.15	0.81
10	Cassia absus L.	0.12	2.34	5.00	0.23	0.60
11	Cassia tora L.	4.07	42.19	9.66	8.16	10.89
12	Celosia argentea L.	0.09	3.91	2.30	0.18	1.01
13	Cissus repens Lam.	0.01	0.78	1.50	0.02	0.20
14	Clitoria biflora Dalz.	0.05	2.34	2.00	0.09	0.60
15	Coix lacryma-jobi L.	9.43	31.25	30.18	18.88	8.06
16	Costus speciosus Sm.	0.03	1.56	1.75	0.05	0.40
17	Crotalaria linifolia L. f.	0.30	4.30	6.91	0.59	1.11
18	Curcuma pseudomontana L.	0.18	1.17	15.00	0.35	0.30
19	Cynadon dactylon L.	0.31	1.56	20.00	0.63	0.40
20	Cynotis fasciculata	0.09	2.34	4.00	0.19	0.60
21	Cyperus digitatus Roxb.	0.26	3.52	7.44	0.52	0.91
22	Desmodium gangeticum (L.) DC.	0.21	3.13	6.63	0.41	0.81
23	Desmodium triflorum (L.) DC.	0.51	6.64	7.65	1.02	1.71
24	Eragrostis sp	0.92	1.95	47.00	1.84	0.50
25	Fimbristylis dichotoma (L.) Vahl.	0.19	5.86	3.27	0.38	1.51
26	Flemingia tuberosa Dalz	0.07	1.56	4.75	0.15	0.40
27	General Grasses	9.75	34.77	28.06	19.52	8.97
28	Heteropogon sp.	0.65	5.86	11.07	1.30	1.51
29	Hygrophila schulli (Buch.–Ham.) M.R. & S.M. Almeida	0.86	8.59	9.95	1.71	2.22
30	Hyptis suaveolens (L.) Poit.	3.73	28.91	12.91	7.47	7.46
31	Impatiens balsamina L. var. balsamina	0.31	6.64	4.65	0.62	1.71
32	Indigofera glandulosa Wendl. var. glandulosa	0.11	2.34	4.50	0.21	0.60
33	Indigofera prostrata Willd.	0.01	0.78	1.50	0.02	0.20
34	Jatropha gossipifolia L.	0.04	1.95	2.20	0.09	0.50
35	Kyllinga tenuifolia Steud.	0.52	2.73	19.00	1.04	0.71
36	Malachra capitata (L.) L.	2.88	25.39	11.32	5.75	6.55
37	Maytenus rothiana (Walp.) Lobreau–Collen	0.07	2.34	3.17	0.15	0.60
38	Melochia corchorifolia L.	0.24	4.30	5.64	0.48	1.11
39	Neuracanthus sphaerostachyus (Nees) Dalz.	0.08	1.95	4.20	0.16	0.50

Sr. No.	Name of the Species	Density	Frequency %	Abundance	Relative Density	Relative Frequency
40	Panicum maximum Jacq.	2.51	21.09	11.91	5.03	5.44
41	Polygonum sp.	0.09	1.56	6.00	0.19	0.40
42	Ricinus communis L.	0.03	0.78	4.00	0.06	0.20
43	Rungia repens (L.) Nees	0.07	1.17	6.00	0.14	0.30
44	Scirpus affinis Roth.	0.21	3.91	5.50	0.43	1.01
45	Sesamum laciniatum Klein ex Willd.	0.28	6.64	4.18	0.56	1.71
46	Setaria intermedia R. & S.	0.46	3.52	13.00	0.91	0.91
47	Sida acuta Burm. f.	0.19	5.08	3.77	0.38	1.31
48	Sida cordata (Burm. f.) Borss.	0.06	1.56	4.00	0.13	0.40
49	Smithia conferta J. E. Sm.	2.31	11.72	19.70	4.62	3.02
50	Smithia racemosa Heyne ex Wight & Arn.	0.83	8.20	10.14	1.67	2.12
51	Spermacoce pusilla Wall.	0.20	3.52	5.67	0.40	0.91
52	Synedrella nodiflora (L.) Gaertn.	0.09	1.17	7.33	0.17	0.30
53	Themeda triandra Forssk.	2.90	12.11	23.97	5.81	3.13
54	Toningia sp.	0.05	1.17	4.67	0.11	0.30
55	Tridax procumbens L.	0.07	4.30	1.55	0.13	1.11
56	Triumfetta rhomboidea Jacq.	0.05	1.56	3.50	0.11	0.40
57	Urena lobata L. ssp.lobata	0.49	8.98	5.48	0.99	2.32
58	Vigna sublobata (Roxb.) Babu & Sharma	0.38	14.45	2.62	0.76	3.73
59	Xanthium indicum Koen.	0.14	3.13	4.50	0.28	0.81

2. Section 16 (G. B. Nagar District)

(1) Vegetation of G. B. Nagar

The vegetation in Gautam Buddha Nagar, recorded forest section was accessed in the last week of the September 2011. The entire stretch of 1600 m was sampled opportunistically as well as by quadrat method.

The G.B. Nagar forest is separated in to two parts due to a west water canal flowing through it. Peripheral area and core region, both are dominated with tall grasses. In Peripheral area vegetation is highly degraded and patchy distribution of Arundodonax, Saccharun spontaneum, Vetiverea zinzanioides, Dichanthium sp., Cynadondactylon has been observed, along with intermixing of Calotropis procera, C. gigantean, Cassia sophera, Sida spinosa, S. ovata, Achyranthes aspera like species. Trees like Prosopis and Acacia are sparsely distributed. Ground is covered by various species of grasses. Overall canopy is almost open and presently it is open degraded grassland for the local people. Due to good density of grasses, high amount of water is still retained in the soil. Hence species like Muradannia, Volvulopsis nimmularia, Commelina sp., Tonningia sp. were observed in the peripheral area. In some part of the peripheral area, plantation of species like Pterocarpus acerifolium, Toona hexandra, Terminalia cuneata, Ficus benghalensis, Dalbergia sissoo, Oroxylum indicum has been carried out in the past.

The core region of the G. B. Nagar recorded forest area within the DFCC alignment is with dry deciduous forest. The vertical profile of the forest shows ground stratum covered with high density of grasses (except at few places under closed canopy) and top stratum is formed due to trees like Prosopis cinerea and Dalbergia sissoo. Grasses like Paspalum canarae, Setaria intermedia, Dichanthium sp., Dactyloctenium aegyptica and Oplismenus burmanniimostly noted under the closed canopy of Prosopis whereas open areas are dominated with species like Saccharum spontaneum, Phragmites sp., Centotheca sp., Dichanthium sp. and Cenchrus ciliaris. All the grasses are distributed in dense patches intermixed with other herbaceous and shrub species. The average height of forest area is about 15 feet whereas the open areas with grasses it is about 4 feet. Overall canopy is less than 50%. Due to canopy cover and dense grasses, soil moisture is well maintained. Although core region is dominated with grasses

Plantation of Prosopis, Azadirachta indica, Dalbergi sissoo, Pongamia pinnata, Tamarindus indica, Syzygium cumini is wide spread in the core area. Some observation are:

- This is isolated mixed plantation tree habitat with grasses and is surrounded by Industrial area and development from all sides.
- Although it is the last refuse for existing avifauna, herpatofauna and minor herbivores, it cannot increased and its connectivity cannot be established with any other nearby good patch of forests or protected area.
- It is considerably large area sustaining good moisture and ideal habitat for herpatofauna, avifauna, and minor herbivore species.

Table 7d-37 List of Plant species observed in G. B. Nagar

Sr. No.	Botanical Name	Family	Habit
1	Abutilon indicum (L.) Sweet ssp. Indicum	Malvaceae	Tree
2	Acacia auriculiformis A. Cunn. ex. Bth.	Mimosaceae	Tree
3	Acacia nilotica L.	Mimosaceae	Tree
4	Achyranthes aspera L. var. porphyristachya (Wall. ex Moq.) Hook. f.	Amaranthaceae	Herb
5	Alstonia scholaris (L.) R. Br. Mem.	Apocynaceae	Tree
6	Amaranthus viridis L.	Amaranthaceae	Herb
7	Anisomelesindica (L.) O. Ktze.	Lamiaceae	Shrub
8	Apluda mutica L.	Poaceae	Herb
9	Artemisia sp	Asteraceae	Herb
10	Arundo donax L.	Poaceae	Herb
11	Asparagus racemosusWilld	Liliaceae	Herb
12	Azadirachta indica A. Juss.	Meliaceae	Tree
13	Bauhinia purpurea L.	Caesalpiniaceae	Tree
14	Boerhavia repens L. var. diffusa (L.) Hook. f.	Nyctaginaceae	Herb
15	Bombax ceiba L.	Bombacaceae	Tree
16	Butea monosperma (Lam.) Taub. Var. monosperma	Fabaceae	Tree
17	Callistemon citrinus (Curtis) Skeels	Myrtaceae	Tree
18	Calotropis gigantea (L.) Ait.	Asclepiadaceae	Shrub
19	Calotropis procera (Ait.) R. Br.	Asclepiadaceae	Shrub
20	Cascabella thevetia (L.) Lippold	Apocynaceae	Tree
21	Cassia fistula L.	Fabaceae	Tree
22	Cassia sophera L.	Caesalpiniaceae	Shrub
23	Cassia tora L.	Caesalpiniaceae	Herb
24	Casuarinaequisetifolia L.	Casuarinaceae	Tree
25	Cayratiatrifolia (L.) Domin	Vitaceae	Climber
26	Cenchrusciliaris L.	Poaceae	Herb
27	Centotheca sp.	Poaceae	Herb
28	Chlorisvirgata Swartz.	Poaceae	Herb
29	Cleome viscosa L.	Capparaceae	Herb
30	Clerodendru minerme (L.) Gaertn.	Verbenaceae	Shrub
31	Commelin abenghalensis L.	Commelinaceae	Herb
32	Commelina forsskalaeiVahl.	Commelinaceae	Herb
33	Corchoru solitorius L.	Tiliaceae	Herb
34	Crotalaria medicaginea Lam. var. neglecta (Wight. &Arn.) Baker	Fabaceae	Herb
35	Croton bonplandianusBaill.	Euphorbiaceae	Herb
36	Cyanotis tuberosa J. A. & J.H. Schults	Commelinaceae	Herb
37	Cynadon dactylon L.	Poaceae	Herb
38	Dactyloctenium aegypticum (L.) Willd.	Poaceae	Herb
39	Dalbergia sissooRoxb.	Fabaceae	Tree
40	Datura stramonium L.	Solanaceae	Shrub
41	Delonix regia (Boj. ex Hook.) Raf.	Caesalpiniaceae	Tree

Sr. No.	Botanical Name	Family	Habit
42	Dichanthium sp.	Poaceae	Herb
43	Digera muricata (L.) Mart.	Amaranthaceae	Herb
44	Eichhornia crassipesSolms	Pontederiaceae	Herb
45	Elephantopuss caber L.	Asteraceae	Herb
46	Euphorbia hirta L.	Euphorbiaceae	Herb
47	Ficusbenghalensis L.	Moraceae	Tree
48	Ficus religiosa L.	Moraceae	Tree
49	Gomphrena serrata L.	Amaranthaceae	Herb
50	Imperata cylindrica (L.) Raeuschel.	Poaceae	Herb
51	Indigoferadalzellii T. Cooke	Fabaceae	Herb
52	Ipomoea obscura (L.) Ker-–Gawl. forma obscura	Convolvulaceae	Climber
53	Kigelia africana (Lam.) Bth.	Bignoniaceae	Tree
54	Lagerstroemia microcarpa Wight	Lythraceae	Tree
55	Lantana camara L. var. aculeata (L.) Moldenke	Verbenaceae	Shrub
56	Lavandula bipinnata O. Ktze.	Lamiaceae	Herb
57	Leptochloa panicea (Retz.) Ohwi	Poaceae	Herb
58	Leucas ciliataBth.	Lamiaceae	Herb
59	Lindernia parviflora (Roxb.) Haines	Scrophulariaceae	Herb
60	Madhuca longifolia (Koen.) Mac Bride var. latifolia (Roxb.) Chev.	Sapotaceae	Tree
61	Melochia corchorifolia L.	Sterculiaceae	Herb
62	Mollugo pentaphylla L.	Molluginaceae	Herb
63	Mukia maderaspatana (L.) Roem.	Cucurbitaceae	Climber
64	Murdania sp.	Commelinaceae	Herb
65	Oplismenus burmannii (Retz.) P. Beauv.	Poaceae	Herb
66	Oroxylum indicum (L.) Vent.	Bignoniaceae	Tree
67	Parthenium hysterophorus L.	Asteraceae	Herb
68	Paspalum canarae (Steud.) Veldk.	Poaceae	Herb
69	Peristrophe paniculata (Forssk.) Brummitt	Acanthaceae	Herb
70	Phoenix sylvestris L.	Araceae	Tree
71	Phragmitesv allatoria (Pluk. Ex L.) Veldk.	Poaceae	Herb
72	Phyllanthus fraternus Webster	Euphorbiaceae	Herb
73	Physalis minima L.	Solanaceae	Herb
74	Pongamia pinnata (L.) Pierre	Fabaceae	Tree
75	Prosopis juliflora (Swartz) DC.	Mimosaceae	Tree
76	Pterospermum acerifolium (L.) Willd.	Sterculiaceae	Tree
77	Saccharum spontaneumL.f.	Poaceae	Herb
78	Scoparia dulcis L.	Scrophulariaceae	Herb
79	Securinega leucopyrus (Willd.) Muell.–Arg.	Euphorbiaceae	Shrub
80	Setaria intermedia R. & S.	Poaceae	Herb
81	Sida acutaBurm. f.	Malvaceae	Herb
82	Sidac ordifolia L.	Malvaceae	Herb
83	Sida ovataForssk	Malvaceae	Herb
84	Sida spinosa Linn.	Malvaceae	Herb

Sr. No.	Botanical Name	Family	Habit
85	Strigadensiflora (Bth.) Bth.	Scrophulariaceae	Herb
86	Syzygium cumini (L.) Skeels	Myrtaceae	Tree
87	Tamarindus indica L.	Caesalpiniaceae	Tree
88	Terminalia cuneata Roth	Combretaceae	Tree
89	ThemedatriandraForssk.	Poaceae	Herb
90	Tonningia axillarisKtze.	Commelinaceae	Herb
91	Toona hexandra var. griffithiana (Pierre) Almeida	Meliaceae	Tree
92	Trichosanthes anguina L.	Cucurbitaceae	Climber
93	Tridax procumbens L.	Asteraceae	Herb
94	Triumfetta rhomboideaJacq.	Tiliaceae	Herb
95	Urena lobata L. ssp.lobata	Malvaceae	Shrub
96	Vernonia cinerea (L.) Less.	Asteraceae	Herb
97	Vetiveria zinzanioides Nash	Poaceae	Herb
98	Volvulopsis nummularia (L.) Roberty	Convolvulaceae	Herb
99	Xanthium indicumKoen.	Asteraceae	Shrub
100	Ziziphus mauritiana Lam.	Rhamnaceae	Tree

Figure 7d-8: Plant species in G. B. Nagar recroded forest

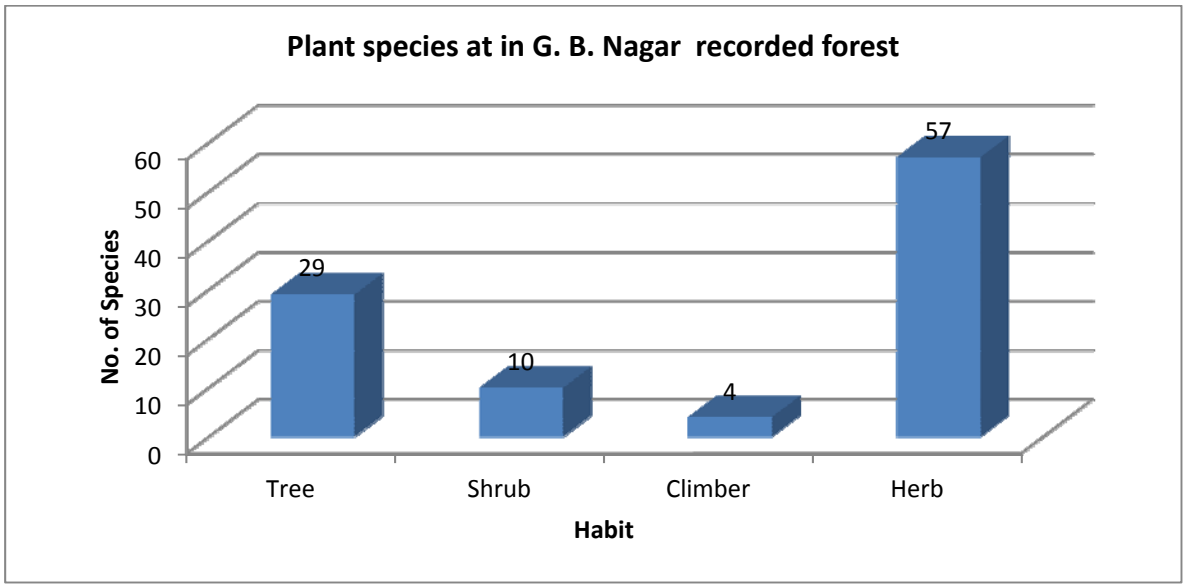


Table 7d-38 Importance Value Index for Trees

Species Name	No of Individuals	Total no. of Quadrats taken	No. of quadrats In which species occurs	Den.	Freq.	Abun.	Rela Den.	Rela Freq.	Rela BA	IVI	Abs. Density in Ha
DalbergiasissooRoxb.	11.00	17.00	2.00	0.65	11.76	5.50	7.53	10.53	1.54	19.60	64.71
Phoenix sylvestris L.	3.00	17.00	1.00	0.18	5.88	3.00	2.05	5.26	0.00	7.32	17.65
Pongamiapinnata (L.) Pierre	5.00	17.00	1.00	0.29	5.88	5.00	3.42	5.26	0.00	8.69	29.41
Prosopisjuliflora (Swartz) DC.	125.00	17.00	13.00	7.35	76.47	9.62	85.62	68.42	95.53	249.57	735.29
Syzygiumcumini (L.) Skeels	1.00	17.00	1.00	0.06	5.88	1.00	0.68	5.26	1.69	7.64	5.88
Terminaliacuneata Roth	1.00	17.00	1.00	0.06	5.88	1.00	0.68	5.26	1.23	7.18	5.88

Where Den. = Density; Freq.= Frequency; Abun.: Abundance; Rela.= Relative; BA= Basal Area; IVI = Importance Value Index; Abs.= Absolute; Ha= Hectare

Figure 7d-9: Importance Value Index for G. B. Nagar

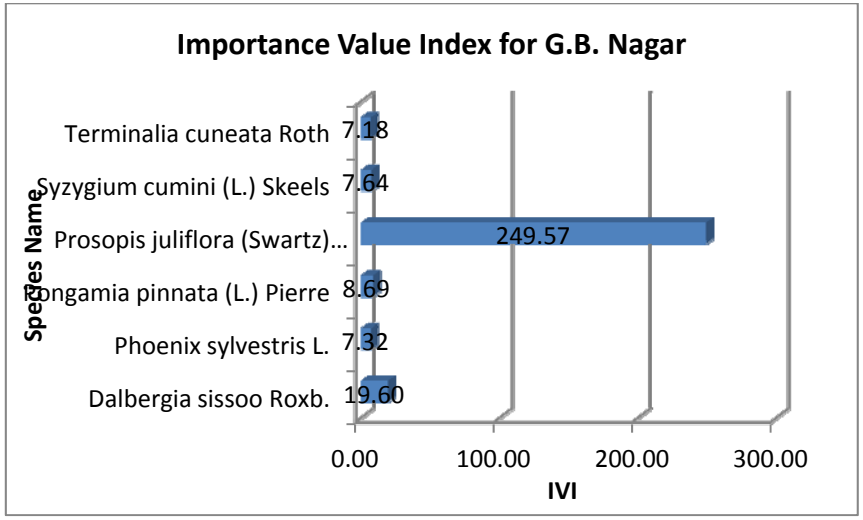


Table 7d-39 Quadrat data analysis for shrubs in G. B. Nagar area

Species Name	No of Individuals	Total no. of Quadrats taken	No. of quadrats In which species occurs	Den.	Freq.	Abun.	Rela Den.	Rela Freq.	Abs. Density in Ha
Abutilon indicum (L.) Sweet ssp. Indicum	8.00	34.00	4.00	0.24	11.76	2.00	9.09	18.18	94.12
Calotropisgigantea (L.) Ait.	3.00	34.00	3.00	0.09	8.82	1.00	3.41	13.64	35.29
Calotropisprocera (Ait.) R. Br.	13.00	34.00	3.00	0.38	8.82	4.33	14.77	13.64	152.94
Cassia sophera L.	2.00	34.00	1.00	0.06	2.94	2.00	2.27	4.55	23.53
Lantana camara L. var. aculeata (L.) Moldenke	5.00	34.00	1.00	0.15	2.94	5.00	5.68	4.55	58.82
Prosopisjuliflora (Swartz) DC.	54.00	34.00	8.00	1.59	23.53	6.75	61.36	36.36	635.29
Securinegaleucopyrus (Willd.) Muell.–Arg.	2.00	34.00	1.00	0.06	2.94	2.00	2.27	4.55	23.53
Ziziphusmauritiana Lam.	1.00	34.00	1.00	0.03	2.94	1.00	1.14	4.55	11.76
				2.59	64.71	24.08			

Where Den. = Density; Freq.= Frequency; Abun.: Abundance; Rela.= Relative; BA= Basal Area; IVI = Importance Value Index; Abs.= Absolute; Ha= Hectare

Figure 7d-10: Relative density indicating dominance of Prosopis patches in GB agar area

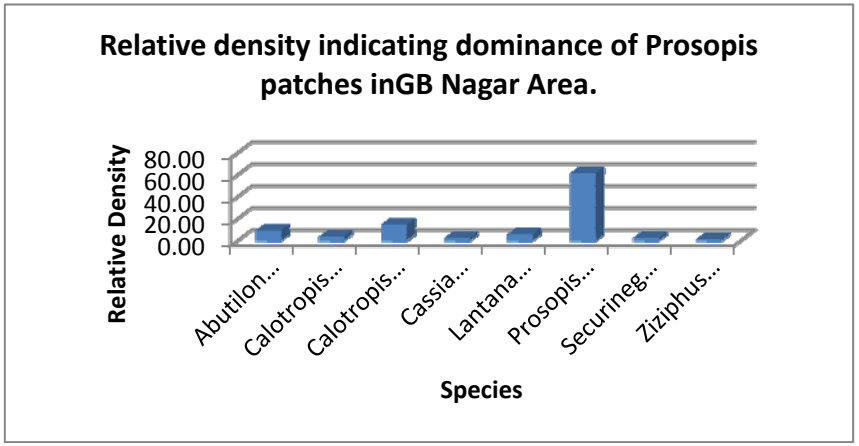
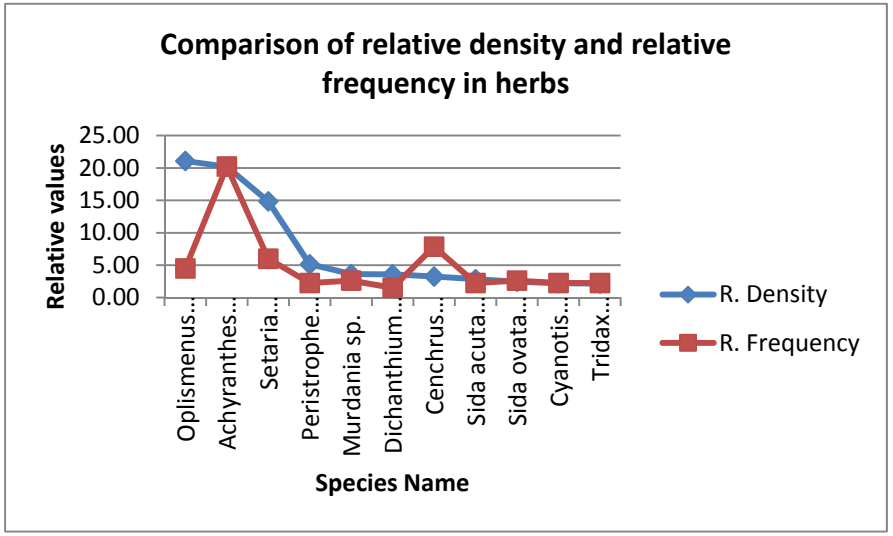


Table 7d-40 Quadrat data analysis for herbs in G. B. Nagar area

Sr. No.	Species Name	No of Individuals	Total no. of Quadrats taken	No. of quadrats In which species occurs	Den.	Freq.	Abun.	Rela Den.	Rela Freq
1	Achyranthesaspera L. var. porphyristachya (Wall. ex Moq.) Hook. f.	752.00	68.00	54.00	11.06	79.41	13.93	20.19	20.22
2	Anisomelesindica (L.) O. Ktze.	33.00	68.00	7.00	0.49	10.29	4.71	0.89	2.62
3	Artemisia sp	5.00	68.00	1.00	0.07	1.47	5.00	0.13	0.37
4	Arundodonax L.	76.00	68.00	17.00	1.12	25.00	4.47	2.04	6.37
5	Asparagus racemosusWilld	1.00	68.00	1.00	0.01	1.47	1.00	0.03	0.37
6	Cenchrusciliaris L.	121.00	68.00	21.00	1.78	30.88	5.76	3.25	7.87
7	Corchorusolitorius L.	35.00	68.00	3.00	0.51	4.41	11.67	0.94	1.12
8	Croton bonplandianusBaill.	23.00	68.00	3.00	0.34	4.41	7.67	0.62	1.12
9	Cyanotistuberosa J. A. & J.H. Schults	83.00	68.00	6.00	1.22	8.82	13.83	2.23	2.25
10	Dactylocteniumaegypticum (L.) Willd.	70.00	68.00	3.00	1.03	4.41	23.33	1.88	1.12
11	Dichanthiumsp	133.00	68.00	4.00	1.96	5.88	33.25	3.57	1.50
12	Euphorbia hirta L.	23.00	68.00	3.00	0.34	4.41	7.67	0.62	1.12
13	General Grasses (10 x 10 cm)	45.00	68.00	4.00	0.66	5.88	11.25	1.21	1.50
14	Linderniaparviflora (Roxb.) Haines	35.00	68.00	2.00	0.51	2.94	17.50	0.94	0.75
15	Melochiacorchorifolia L.	21.00	68.00	4.00	0.31	5.88	5.25	0.56	1.50
16	Murdania sp.	135.00	68.00	7.00	1.99	10.29	19.29	3.63	2.62
17	Oplismenusburmannii (Retz.) P. Beauv.	785.00	68.00	12.00	11.54	17.65	65.42	21.08	4.49
18	Paspalumcanarae (Steud.) Veldk.	50.00	68.00	4.00	0.74	5.88	12.50	1.34	1.50
19	Peristrophepaniculata (Forssk.) Brummitt	191.00	68.00	6.00	2.81	8.82	31.83	5.13	2.25
20	SaccharumspontaneumL.f.	51.00	68.00	18.00	0.75	26.47	2.83	1.37	6.74
21	Scopariadulcis L.	10.00	68.00	3.00	0.15	4.41	3.33	0.27	1.12
22	Setariaintermedia R. & S.	553.00	68.00	16.00	8.13	23.53	34.56	14.85	5.99
23	SidaacutaBurm. f.	106.00	68.00	6.00	1.56	8.82	17.67	2.85	2.25
24	Sidacordifolia L.	24.00	68.00	2.00	0.35	2.94	12.00	0.64	0.75
25	SidaovataForssk	91.00	68.00	7.00	1.34	10.29	13.00	2.44	2.62
26	Sidaspinosa Linn.	48.00	68.00	10.00	0.71	14.71	4.80	1.29	3.75
27	Tridaxprocumbens L.	80.00	68.00	6.00	1.18	8.82	13.33	2.15	2.25

Sr. No.	Species Name	No of Individuals	Total no. of Quadrats taken	No. of quadrats In which species occurs	Den.	Freq.	Abun.	Rela Den.	Rela Freq
28	TriumfettarhomboideaJacq.	48.00	68.00	8.00	0.71	11.76	6.00	1.29	3.00
29	Urenalobata L. ssp.lobata	7.00	68.00	2.00	0.10	2.94	3.50	0.19	0.75
30	Vernoniacinerea (L.) Less.	40.00	68.00	5.00	0.59	7.35	8.00	1.07	1.87
31	Vetiveriazinzanioides Nash	49.00	68.00	22.00	0.72	32.35	2.23	1.32	8.24
					54.76	392.65	416.58		

Figure 7d-11: Comparison of relative density and relative frequency in herbs



The species distribution trend in the graph clearly indicates the random and even distribution of Achyranthes, Setaria. In case of Oplismenus, relative frequency is low indicating patchy and uneven distribution of the species similarly in case of Cenchrus species is sparsely but evenly distributed.

3. Site Photographs of Section 1 (Thane District)

General views of habitats and vegetation of various sampling locations

General view of the Ovali site

Seasonal wetland at Ovali covered with *Ipomoea sp.*

Dense impenetrable vegetation at Shilothar

Climbers like Calycopteris floribunda, Dioscorea bulbifera, Cissus sp. Etc. mixed to form dense patches at Shilothar

Dominance of grasses at Nagle site

General view of landscape at Sasunavghar site

General view of vegetation at Sarjamori site

Patches of *Calycopteris floribunda* on slope region at Shirgaon

View of Bhatpada site showing agricultural area with trees distributed in patches

View of Bhatpada site showing dense forest at foothills

Dominance of grasses at Dhaniv

Plantation of *Tectona grandis* in the valley at Dhaniv

Patchy distribution of shrubs at Dhaniv site along the slope

Dominance of *Wrightia arborea*, *Holarrhena antidysenterica* and *Calycopteris floribunda* at Dhaniv

Formation of impenetrable patches along the slope due to intermixing of shrubs at Dhaniv

General view of landscape at Dhaniv

General view of vegetation at Bilalpada showing *Anacardium occidentale* and *Borassus flabellifer*

Dense seasonal undergrowth at Bilalpad

Mangrove vegetation near Kasarali below Dahisar Railway Bridge

General view of Kasarali sampling area showing seasonal wetland and dominance of grasses

4. Site Photographs of Section 2 (Thane District)

General view of Bordi site showing seasonal stream in the plot

Herbaceous diversity around the seasonal plot at Bordi

General view of Bordi site showing seasonal wetland

View of plantation adjoining to DFCC plot at Bordi

***Agave sp.* on the edge of Bordi area**

Dense patch of *Ipomoea carnea* mixed with species like *Hyptis sauveolens* and *Cassia tora*

Pastureland with patchy distribution of species like Hyptis near Kelve Railway station

Herbaceous species dominated area near Kelve Railway station

Formation of seasonal wet land at Kelve Road with few aquatic species

Low lying area filled up with water at Kelve Road

Muddy open area without tree species in DFCC area at Kelve Road

Muddy open area at Kelve Road

5. Site Photographs of Section 16 (G. B. Nagar District)

Dominance of tall grasses like Saccharum, Phragmites, Arundo intermixed

Open area covered with culms of the grasses

Inner area is covered with trees like Prosopis and Dalbergia

Dense vegetation of Prosopis and ground is covered with Setaria like grasses

Patch of Phoenix trees with grasses like Dichanthium sp., CenchrusabdCentotheca

Dense cover of grasses among the distribution of Prosopis

Appendix-7e
Result of Supplemental (Monsoon) Field Survey (Fauna)

Appendix-7e
Result of Supplemental (Monsoon) Field Survey (Fauna)

1. Section 1 and 2 (Thane District)

(1) Methodology of Faunal Survey

Survey conducted within all the recorded forest areas. Linear trekking survey method used for faunal survey; min. 0.2Km to max. 0.7Km line has been surveyed with respect to length of DFC alignment crossing through the recorded forest area. Date, Start time, end time of the survey and latitude, longitude of the same recorded for the respective area. Slope and information about land use of the surrounding area has also been recorded. For mammals and birds data collected from both side of the survey line, up to visible distance; for amphibians and reptiles we randomly walked on the both side of the line and surveyed the ponds, shrubs and burrows to maximize the probabilities. Each target species which encountered during survey period identified and recorded individually. In the tables for each site provided below only the species encountered during the survey are provided. The list of species recorded from Thane district is available and exhaustive. However it is for the large area (whole district with various types of habitat) and therefore comparison is not appropriate for such a small degraded area/habitats under study.

(2) Results

Since it is human dominated landscape disturbance activities are high especially in the areas of existing railway line. We did not found any critical (rare/endangered/endemic) species in all the 20 sites. We found 37 bird species which are common , most of them are protected under Indian Wildlife Protection Act 1972(IWPA 1972) and also least concern as per IUCN 2011 bird list, 2 amphibian species (common), 2 reptile species (very common) and 2 mammalian species which are protected under IWPA 1972 and least concern as per IUCN 2011. (See site wise tables below) Since it is monsoon season we couldn't get any other relevant information such as foot prints, droppings or nests except at one site i.e. Bhatpada from section I. Site wise data sheets and records of fauna are provided below.

Photo 7e-1: Team at work at Sarjamori site section I

Table 7e-1(1) Summary of Faunal Survey at Ovali Site, Section 1

Date - 24-Aug-11	Start time - 10:35	End time- 12:10	
Name of DFC area - Ovali gate	Length of DFC in side forest (m) 350		Survey area(ha) 0.1288
General condition of the area – Average elevation 38 m			
Length of the transect in survey area (m) 250			
Start point Latitude - 19˚15'49.7"	Start point Longitude - 073˚03'33.5" (from JNPT side)		
End point Latitude - 19˚15'53.9"	End point Longitude - 073˚03'22.4" (from JNPT side)		
Land use of the surrounding area: Area surrounded with fallow lands and small seasonal ponds, peoples from adjoined villages use it for livestock grazing.			

Table 7e-1(2) Fauna Recorded at Ovali Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammals		———	———	———	———	———
Birds	1	Laughing Dove	*Streptopelia senegalensis*	Common	Schedule IV	———
	2	Ashy prinia	*Prinia socialis*	Common		Least Concern
	3	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Red rumped swallow	*Hirundo daurica*	Common		———
	6	Dusky crag martin	*Hirundo concolor*	Common		Least concern
	7	Little cormorant	*Phalacrocorax niger*	Common	Schedule IV	Least concern
	8	Wire- tailed swallow	*Hirundo smithii*	Common		Least Concern
	9	Black kite	*Milvus migrans*	Common		———
	10	Red vented bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
Amphibians		———	———	———	———	———
Reptiles	1	Brook's gecko	Hemidactylus brokii	Common		

Table 7e-2(1) Summary of Faunal Survey at Shilottar Site, Section 1

Date - 24-Aug-11	Start time - 14:15	End time- 14:40	
Name of DFC area - Shilottar	Length of DFC in side forest (m) 108		Survey area(ha) 0.3569
General condition of the area — Average elevation is 25 m			
Length of the transect in survey area (m)160			
Start point Latitude - 19˚19’52.1"	Start point Longitude -072˚55’47.7" (from JNPT side)		
End point Latitude - 19˚19’52.5”	End point Longitude - 072˚55’46.5" (from JNPT side)		
Land use of the surrounding area: Existing railway line crossing the forest boundary of SGNP (plot no 23) with a small patch of forest on the west side which is heavily degraded, it is very close to Bhivandi — Vasai highway.			

Table 7e-2(2) Fauna Recorded at Shilottar Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	2	Red Whiskered bulbul	*Pycnonotus jocosus*	Common	Schedule IV	Least concern
Amphibians		———	———	———	———	———
Reptiles	1	Garden lizard	*Calotes versicolor*	Common	———	———

Photo 7e-2: Red Whiskered Bulbul

Photo 7e-3: Little egret

Table 7e-3(1) Summary of Faunal Survey at Nagale Site, Section 1

Date - 24-Aug-11	Start time - 15:00	End time- 15:15	
Name of DFC area - Nagale	Length of DFC in side forest (m) 95		Survey area(ha) 0.1871
General condition of the area —Average elevation is 30 m			
Length of the transect in survey area (m) 105			
Start point Latitude - 19˚19’50.6"	Start point Longitude -072˚55’51.1" (from JNPT side)		
End point Latitude - 19˚19’51.9”	End point Longitude - 072˚55’48.2" (from JNPT side)		
Land use of the surrounding area: Existing railway line crossing the forest boundary of SGNP (plot no 23) with a small patch of forest on the west side which is heavily degraded, it is very close to Bhivandi — Vasai highway.			

Table 7e-3(2) Fauna Recorded at Nagale Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		_____	_____	_____	_____	_____
Birds						
	1	Bay backed shrike	*Lanius vittatus*	Common		_____
	2	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	3	Red Whiskered bulbul	*Pycnonotus jocosus*	Common	Schedule IV	Least Concern
	4	Oriental white-eye	*Zosterops palpebrosus*	common	Schedule IV	Least Concern
Amphibians		_____	_____	_____	_____	_____
Reptiles		_____	_____	_____	_____	_____

Photo 7e-4: Skipper frog

Table 7e-4(1) Summary of Faunal survey at Sasunavghar Site, Section 1

Date - 24-Aug-11	Start time - 16:16	End time- 16:45	
Name of DFC area - Sasunavghar	Length of DFC in side forest (m) 1083		Survey area(ha) 0.974
General condition of the area—Average elevation is 25 m			
Length of the transect in survey area (m) 500			
Start point Latitude - 19˚20’00.5”	Start point Longitude - 072˚55’29.9" (from JNPT side)		
End point Latitude - 19˚20’08.9"	End point Longitude - 072˚55’17.8" (from JNPT side)		
Land use of the surrounding area: Secondary vegetation with open scrub forest surrounded with rice fields and small human settlements to the east.			

Table 7e-4(2) Fauna recorded at Sasunavghar Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		_____	_____	_____	_____	_____
Birds	1	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	2	Oriental white-eye	*Zosterops palpebrosus*	common	Schedule IV	Least concern
	3	Brahmini kite	*Haliastur indus*	Common		Least Concern
	4	Jungle bush quail	*Perdicula argoondah*		Schedule IV	Least Concern
	5	Red rumped swallow	*Hirundo daurica*	Common		_____
	6	Oriental Magpie robin	*Copsychus saularis*	Common	Schedule IV	Least Concern
Amphibians	1	Skipper frog	*Euphlyctis cyanophlyctis*	Common	_____	_____
	2	Indian Bull frog	*Hoplobatrachus tigerinus*	Common	_____	_____
Reptiles		_____	_____	_____	_____	_____

Photo 7e-5: White throated Kingfisher

Table 7e-5(1) Summary of Faunal Survey at Mori Site, Section 1

Date - 25-Aug-11	Start time - 10:54	End time- 11:37	
Name of DFC area - Mori	Length of DFC in side forest (m) 470		Survey area(ha) 0.6696
General condition of the area—Average elevation is 27 m			
Length of the transect in survey area (m) 500			
Start point Latitude - 19˚20’19.7”	Start point Longitude - 072˚54’52.6" (from JNPT side)		
End point Latitude - 19˚20’26.3"	End point Longitude - 072˚54’46.0" (from JNPT side)		
Land use of the surrounding area: Small patch of open scrub forest surrounded with rice field and fallow lands			

Table 7e-5(2) Fauna Recorded at Mori Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		_____	_____	_____	_____	_____
Birds	1	Little Egret	*Egretta garzetta*	Common	Schedule IV	Least Concern
	2	Ashy prinia	*Prinia socialis*	Common		
	3	Coppersmith Barbet	*Megalaima heamacephala*	Common	Schedule IV	Least Concern
	4	Rose ringed parakeet	*Psittacula krameri*	Common	Schedule IV	Least Concern
	5	Red Whiskered bulbul	*Pycnonotus jocosus*	Common	Schedule IV	Least Concern
	6	Oriental white-eye	*Zosterops palpebrosus*	common	Schedule IV	Least Concern
	7	White throated Kingfisher	*Halcyon smyrnensis*	Common	Schedule IV	Least Concern
Amphibians		_____	_____	_____	_____	_____
Reptiles		_____	_____	_____	_____	_____

Photo 7e-6: Oriental Magpie Robin

Table 7e-6(1) Summary of Faunal Survey at Sarjamori Site, Section 1

Date - 25-Aug-11	Start time - 13:06	End time- 13:28	
Name of DFC area - Sarjamori	Length of DFC in side forest (m) 410		Survey area(ha) 0.61
General condition of the area—Average elevation is 20 m			
Length of the transect in survey area (m) 310			
Start point Latitude - 19˚20’46.3"	Start point Longitude - 072˚54’12.0" (from JNPT side)		
End point Latitude - 19˚20’47.1”	End point Longitude - 072˚54’05.9" (from JNPT side)		
Land use of the surrounding area: Open scrub forest with teak plantation surrounded with rice fields, fallow land and small human settlements.			

Table 7e-6(2) Fauna Recorded at Sarjamori Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Cattle Egret	*Bubulcus ibis Egretta garzetta*	Common	Schedule IV	Least Concern
	2	Ashy prinia	*Prinia socialis*	Common	———	———
	3	Asian Openbill stork	*Anastomus oscitans*	Common	Schedule IV	———
	4	Little cormorant	*Phalacrocorax niger*	Common	Schedule IV	Least Concern
	5	Red Whiskered bulbul	*Pycnonotus jocosus*	Common	Schedule IV	Least Concern
	6	Indian Robin	*Saxicoloides fulicata*	common	———	Least Concern
	7	Red vented bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Photo 7e-7: Coppersmith barbet

Table 7e-7(1) Summary of Faunal Survey at Shirgaon Site, Section 1

Date - 25-Aug-11	Start time - 16:45	End time- 17:25	
Name of DFC area - Shirgaon	Length of DFC in side forest (m) 435		Survey area(ha) 4.0053
General condition of the area—Average elevation is 49 m.—max elevation 64 m			
Length of the transect in survey area (m) 425			
Start point Latitude - 19˚28'00.1"	Start point Longitude - 072˚51'14.9" (from JNPT side)		
End point Latitude - 19˚28'11.0"	End point Longitude - 072˚51'11.0" (from JNPT side)		
Land use of the surrounding area: Open scrub forest on the slopes with recently planted teak, cashew and other plants. Forest patch is undisturbed but surrounded with active mines on private lands.			

Table 7e-7(2) Fauna Recorded at Shirgoan Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Laughing Dove	*Streptopelia senegalensis*	Common	Schedule IV	———
	2	Ashy prinia	*Prinia socialis*	Common		———
	3	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Red rumped swallow	*Hirundo daurica*	Common	———	———
	6	Dusky crag martin	*Hirundo concolor*	Common	———	———
	7	Asian Openbill stork	*Anastomus oscitans*	Common	Schedule IV	
	8	Bay backed shrike	*Lanius vittatus*	Common	———	———
	9	Black shouldered kite	*Elanus caeruleus*	Common	———	Least Concern
	10	Red vented bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	11	Scaly breasted Munia	*Lonchura punctulata*		Schedule IV	Least Concern
	12	White throated Kingfisher	*Halcyon smyrnensis*	Common	Schedule IV	Least Concern
Amphibians		———	———	———	———	———
Reptiles						

Table 7e-8(1) Summary of Faunal Survey at Kasrali Site (A), Section 1

Date - 26-Aug-11	Start time - 08:20	End time- 08:32	
Name of DFC area – Kasrali (not under forest area)	Length of DFC in side forest (ms) 75		Survey area (ha)
General condition of the area—Average elevation is 11 m			
Length of the transect in survey area (m)72			
Start point Latitude - 19˚30’20.9”	Start point Longitude - 072˚50’36.2" (from JNPT side)		
End point Latitude - 19˚30’22.4"	End point Longitude - 072˚50’38.1" (from JNPT side)		
Land use of the surrounding area: Fallow lands with degraded mangroves			

Table 7e-8(2) Fauna Recorded at Kasrali (A) Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		_____	_____	_____	_____	_____
Birds	1	Ashy prinia	*Prinia socialis*	Common	_____	_____
	2	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	3	Little cormorant	*Phalacrocorax niger*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Red rumped swallow	*Hirundo daurica*	Common	_____	_____
	6	Great Egret	*Casmerodius albus*	Common	Schedule IV	Least Concern
Amphibians		_____	_____	_____	_____	_____
Reptiles		_____	_____	_____	_____	_____

Photo 7e-8: Bay backed shrike

Photo 7e-9: Black Drongo

Table 7e-9(1) Summary of Faunal Survey at Kasarli site (B), Section 1

Date - 26-Aug-11	Start time - 08:38	End time- 08:50	
Name of DFC area – Kasrali	Length of DFC in side forest (m) 65		Survey area (ha) 0.1380
General condition of the area—Average elevation is 9 m			
Length of the transect in survey area (m) 102			
Start point Latitude - 19˚30’18.0"	Start point Longitude - 072˚50’35.5" (from JNPT side)		
End point Latitude - 19˚30’20.4”	End point Longitude - 072˚50’35.5" (from JNPT side)		
Land use of the surrounding area: Fallow land, small hill with scrub forest on north east			

Table 7e-9(2) Fauna Recorded at Kasrali (B) Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		_____	_____	_____	_____	_____
Birds	1	White throated Kingfisher	*Halcyon smyrnensis*	Common	Schedule IV	Least Concern
	2	Dusky crag martin	*Hirundo concolor*	Common	_____	_____
	3	Red rumped swallow	*Hirundo daurica*	Common	_____	_____
	4	Great Egret	*Casmerodius albus*	Common	Schedule IV	Least Concern
Amphibians	1	Skipper frog	*Euphlyctis cyanophlyctis*	Common	_____	_____
Reptiles		_____	_____	_____	_____	_____

Photo 7e-10: Scaly Breasted Munia

Table 7e-10(1) Summary of Faunal Survey at Bhatpada site, Section 1

Date - 26-Aug-11	Start time - 11:06	End time- 11:50	
Name of DFC area – Bhatpada	Length of DFC in side forest (m) 1550		Survey area (ha) 6.793
General condition of the area—Average elevation is 64 m			
Length of the transect in survey area (m) 500			
Start point Latitude - 19˚27’23.4”	Start point Longitude - 072˚51’37.4" (from JNPT side)		
End point Latitude - 19˚27’28.7"	End point Longitude - 072˚51’27.1" (from JNPT side)		
Land use of the surrounding area: Hillocks with scrub forest and recent teak plantation. Rice fields at the foothills.			

Table 7e-10(2) Fauna recorded at Bhatpada Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal	1	Jungle Cat	*Felis chaus*	Common	Schedule II- Part II	Least Concern
	2	Wild boar	*Sus scrofa*	Common	Schedule III	Least Concern
Birds	1	Red vented bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	2	Oriental white-eye	*Zosterops palpebrosus*	common	Schedule IV	Least Concern
	3	Red rumped swallow	*Hirundo daurica*	Common	———	———
	4	Ashy prinia	*Prinia socialis*	Common	———	———
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Photo 7e-11: Bay back Shrike

Table 7e-11(1) Summary of Faunal Survey at Dhaniv Site, Section 1

Date - 26-Aug-11	Start time - 13:45	End time- 14:35	
Name of DFC area – Dhaniv	Length of DFC in side forest (m) 1030		Survey area (ha) 4.9164
General condition of the area—Average elevation is 60 m			
Length of the transect in survey area (m) 445			
Start point Latitude - 19˚26’49.0”	Start point Longitude - 072˚51’23.0" (from JNPT side)		
End point Latitude - 19˚26’54.2"	End point Longitude - 072˚51’21.6" (from JNPT side)		
Land use of the surrounding area: Teak plantation on the slopes, mixed with secondary vegetation. Rice fields at the foothills. Local villagers using this patch for livestock grazing and fuel wood collection.			

Table 7e-11(2) Fauna Recorded at Dhaniv Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status if available
Mammal		———	———	———	———	———
Birds	1	Oriental white-eye	*Zosterops palpebrosus*	common	Schedule IV	Least Concern
	2	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	3	Red rumped swallow	*Hirundo daurica*	Common	———	———
	4	Purple Sun bird	*Nectarinia asiatica*	Common	Schedule IV	———
Amphibians		———	———	———	———	———
Reptiles	1	Garden lizard		Common	———	———

Photo 7e-12: Wire- tailed Swallow

Table 7e-12(1) Summary of Faunal Survey at Bordee Site, Section 2

Date - 13-Sept-11	Start time - 11:25	End time- 13:00	
Name of DFC area - Bordee	Length of DFC in side forest (m) 308		Survey area (ha) 0.3030
General condition of the area – Average elevation 38 m			
Length of the transect in survey area (m) 1200			
Start point Latitude - 20˚06'13.4"	Start point Longitude - 072˚45'06.5" (from JNPT side)		
End point Latitude - 20˚06'32.3"	End point Longitude - 072˚45'21.9" (from JNPT side)		
Land use of the surrounding area: The area surrounded with grasslands, plantation of *Acacia mangium* and small seasonal ponds, peoples from adjoining villages use it for grazing.			

Table 7e-12(2) Fauna Recorded at Bordee site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Spotted Dove	*Streptopelia chinensis*	Common	Schedule IV	Least Concern
	2	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
	3	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Red rumped swallow	*Hirundo daurica*	Common	———	———
	6	Rose ringed parakeet	*Psittacula krameri*	Common	Schedule IV	Least Concern
	7	Asian Openbill stork	*Anastomus oscitans*	Common	Schedule IV	———
	8	Black Drongo	*Dicrurus macrocerus*	Common	Schedule IV	———
	9	Indian Robin	*Saxicoloides fulicata*	common	———	Least Concern
	10	Grey Francolin	*Francolinus pondicerianus*	Common	Schedule IV	Least Concern
	11	Indian bush lark	*Mirafra erythroptera*	Common	Schedule IV	Least concern
Amphibians	1	Indian bull Frog	*Hoplobatrahcus tigerinus*	Common	———	Least concern
	2	Skipper frog	*Euphlyctis cyanophlyctis*	Common	———	Least concern
Reptiles		———	———	———	———	———

Table 7e-13(1) Summary of Faunal Survey at Chikhale Site, Section 2

Date - 13-Sept-11	Start time - 17:00	End time- 17:45	
Name of DFC area – Chikhale	Length of DFC in side forest (m) 230		Survey area (ha) 0.2900
General condition of the area – Average elevation 38 m			
Length of the transect in survey area (m) 250			
Start point Latitude - 20˚02'31.3"	Start point Longitude - 072˚43'45.2" (from JNPT side)		
End point Latitude - 20˚02'25.3"	End point Longitude - 072˚43'47.9" (from JNPT side)		
Land use of the surrounding area: The area surrounded with open grass lands and paddy fields.			

Table 7e-13(2) Fauna Recorded at Chikhale Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Spotted Dove	*Streptopelia chinensis*	Common	Schedule IV	Least Concern
	2	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
	3	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	4	Coppersmith Barbet	*Megalaima heamacephala*	Common	Schedule IV	Least Concern
	5	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	6	Red Whiskered bulbul	*Pycnonotus jocosus*	Common	Schedule IV	Least Concern
	7	Rose ringed parakeet	*Psittacula krameri*	Common	Schedule IV	Least Concern
	8	House Sparow	*Passer domesticus*		———	Least Concern
	9	Indian silver billed muniya	*Lonchura malabarica*	Common	Schedule IV	Least concern
	10	Indian Robin	*Saxicoloides fulicata*	common	———	Least Concern
	11	Grey Francolin	*Francolinus pondicerianus*	Common	Schedule IV	Least Concern
	12	Bay backed shrike	*Lanius vittatus*	Common	———	Least Concern
Amphibians	1	Indian bull Frog	*Hoplobatrahcus tigerinus*	Common	———	Least concern
Reptiles		———	———	———	———	———

Table 7e-14(1) Summary of Faunal Survey at Vangaon Site, Section 2

Date - 14-Sept-11	Start time - 08:38	End time- 09:00	
Name of DFC area – Vangaon	Length of DFC in side forest (m) 1673		Survey area (ha) 1.862
General condition of the area – Average elevation 20 m			
Length of the transect in survey area (m) 750			
Start point Latitude - 19˚52'53.4"	Start point Longitude - 072˚45'49.4" (from JNPT side)		
End point Latitude - 19˚52'29.8"	End point Longitude - 072˚45'48.4" (from JNPT side)		
Land use of the surrounding area: Human dominated landscape, the area surrounded with small shops, buildings and human settlements.			

Table 7e-14(2) Fauna Recorded at Vangaon Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	2	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	3	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	4	Asian Koel	*Eudynamys scolopacea*	Common	Schedule IV	Least Concern
Amphibians	1	Skipper frog	*Euphlyctis cyanophlyctis*	Common	———	Least concern
Reptiles		———	———	———	———	———

Photo 7e-13: Indian Pond heron

Table 7e-15(1) Summary of Faunal Survey at Ranishirgaon Site (A), Section 2

Date - 14-Sept-11	Start time - 12:20	End time- 12:45	
Name of DFC area – Ranishirgaon - 27	Length of DFC in side forest (m) 268		Survey area (ha) 0.046
General condition of the area – Average elevation 17 m			
Length of the transect in survey area (m) 250			
Start point Latitude - 19˚50'23.2"	Start point Longitude - 072˚45'46.0" (from JNPT side)		
End point Latitude - 19˚50'30.4"	End point Longitude - 072˚45'46.4" (from JNPT side)		
Land use of the surrounding area: The area surrounded with open grass lands and fallow lands			

Table 7e-15(2) Fauna Recorded at Ranishirgaon Site (A)

Species	**Sr. No.**	**Common name**	**Scientific name**	**Status**	**Protection status as per IWPA 1972**	**IUCN Status**
Mammal		———	———	———	———	———
Birds	1	Grey Francolin	*Francolinus pondicerianus*	Common	Schedule IV	Least Concern
	2	Red rumped swallow	*Hirundo daurica*	Common		———
	3	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Indian bush lark	*Mirafra erythroptera*	Common	Schedule IV	Least concern
	6	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	7	Black shouldered kite	*Elanus caeruleus*	Common	———	Least Concern
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Table 7e-16(1) Summary of Faunal Survey at Ranishirgan Site (B), Section 2

Date - 14-Sept-11	Start time - 13:49	End time- 14:00	
Name of DFC area – Ranishirgaon - 45	Length of DFC in side forest (m) 240		Survey area (ha) 0.387
General condition of the area – Average elevation 24 m			
Length of the transect in survey area (m) 250			
Start point Latitude - 19˚49'06.7"	Start point Longitude - 072˚45'44.2" (from JNPT side)		
End point Latitude - 19˚49'14.5"	End point Longitude - 072˚45'44.5" (from JNPT side)		
Land use of the surrounding area — The area surrounded with open scrub forest and fallow lands.			

Table 7e-16(2) Fauna Recorded at Rani shirgaon Site (B)

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Laughing Dove	*Streptopelia senegalensis*	Common	Schedule IV	———
	2	Red rumped swallow	*Hirundo daurica*	Common	———	———
	3	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Bay backed shrike	*Lanius vittatus*	Common	———	———
	6	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Table 7e-17(1) Summary of Faunal Survey at Boisar site, Section 2

Date - 14-Sept-11	Start time - 16:00	End time- 16:45	
Name of DFC area – Boisar - 35	Length of DFC in side forest (m) 428		Survey area (ha) 0.8713
General condition of the area – Average elevation 30 m			
Length of the transect in survey area (m) 456			
Start point Latitude - 19˚48'52.7"	Start point Longitude - 072˚45'43.9" (from JNPT side)		
End point Latitude - 19˚49'06.3"	End point Longitude - 072˚45'44.5" (from JNPT side)		
Land use of the surrounding area: The area surrounded with fallow lands, slum settlements			

Table 7e-17(2) Fauna Recorded at Boisar Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Laughing Dove	*Streptopelia senegalensis*	Common	Schedule IV	———
	2	Red rumped swallow	*Hirundo daurica*	Common	———	———
	3	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Ashy prinia	*Prinia socialis*	Common		Least Concern
	6	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	7	Indian Robin	*Saxicoloides fulicata*	common	———	Least Concern
Amphibians	1	Indian bull Frog	*Hoplobatrahcus tigerinus*	Common	———	Least concern
Reptiles		———	———	———	———	———

Table 7e-18(1) Summary of Faunal Survey at Kelve Site, Section 2

Date - 15-Sept-11	Start time - 11:40	End time- 12:00	
Name of DFC area – Kelave- 655	Length of DFC in side forest (m) 142		Survey area (ha) 0.1
General condition of the area – Average elevation 14 m			
Length of the transect in survey area (m) 145			
Start point Latitude - 19˚37'16.5"	Start point Longitude - 072˚47'31.4" (from JNPT side)		
End point Latitude - 19˚37'21.2"	End point Longitude - 072˚47'30.1" (from JNPT side)		
Land use of the surrounding area– The area surrounded with fallow lands and impenetrable thickets.			

Table 7e-18(2) Fauna Recorded at Kelve Site

Species	**Sr. no.**	**Common name**	**Scientific name**	**Status**	**Protection status as per IWPA 1972**	**IUCN Status**
Mammal		———	———	———	———	———
Birds	1	Woolly necked stork	*Ciconia episcopus*	Common	Schedule IV	Least Concern
	2	Asian Openbill stork	*Anastomus oscitans*	Common	Schedule IV	Least Concern
	3	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
	6	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Table 7e-19(1) Summary of Faunal survey at Kelve Site (B), Section 2

Date - 15-Sept-11	Start time - 12:20	End time- 12:35	
Name of DFC area – Kelave- 1304	Length of DFC in side forest (m) 196		Survey area(ha) 0.401
General condition of the area – Average elevation 15 m			
Length of the transect in survey area (m) 156			
Start point Latitude - 19˚37'27.2"	Start point Longitude - 072˚47'29.2" (from JNPT side)		
End point Latitude - 19˚37'31.9"	End point Longitude - 072˚47'28.8" (from JNPT side)		
Land use of the surrounding area: The area is surrounded by impenetrable thickets and fallow land.			

Table 7e-19(2) Fauna Recorded at Kelve Site (B)

Species	**Sr. no.**	**Common name**	**Scientific name**	**Status**	**Protection status as per IWPA 1972**	**IUCN Status**
Mammal		———	———	———	———	———
Birds	1	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	2	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Photo 7e-14: Indian Bull Frog

Table 7e-20(1) Summary of Faunal survey at Kelve Site (C), Section 2

Date - 15-Sept-11	Start time - 13:02	End time- 13:34	
Name of DFC area – Kelave- 1315	Length of DFC in side forest (m) 615		Survey area (ha) 0.7910
General condition of the area – Average elevation 13 m			
Length of the transect in survey area (m) 600			
Start point Latitude - 19˚37'34.2"	Start point Longitude - 072˚47'27.9" (from JNPT side)		
End point Latitude - 19˚37'51.3"	End point Longitude - 072˚47'23.8" (from JNPT side)		
Land use of the surrounding area: The area is surrounded by impenetrable thickets and fallow land.			

Table 7e-20(2) Fauna Recorded at Kelve Site (C)

Species	**Sr. no.**	**Common name**	**Scientific name**	**Status**	**Protection status as per IWPA 1972**	**IUCN Status**
Mammal		———	———	———	———	———
Birds	1	Black shouldered kite	*Elanus caeruleus*	Common		Least Concern
	2	Asian Openbill stork	*Anastomus oscitans*	Common	Schedule IV	Least Concern
	3	Red rumped swallow	*Hirundo daurica*	Common	———	———
	4	Indian bush lark	*Mirafra erythroptera*	Common	Schedule IV	Least Concern
	5	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
Amphibians		———	———	———	———	———
Reptiles	1	Garden lizard	*Calotes versicolor*	Common	———	———

Table 7e-21(1) Summary of Faunal Survey at Kelve Site (D), Section 2

Date - 15-Sept-11	Start time - 14:25	End time- 14:45	
Name of DFC area – Kelave - 1287	Length of DFC in side forest (m) 330		Survey area (ha) 0.634
General condition of the area – Average elevation 09 m			
Length of the transect in survey area (m) 330			
Start point Latitude - 19˚38'01.7"	Start point Longitude - 072˚47'20.0" (from JNPT side)		
End point Latitude - 19˚38'10.8"	End point Longitude - 072˚47'18.0" (from JNPT side)		
Land use of the surrounding area: The area is surrounded by impenetrable thickets and fallow land			

Table 7e-21(2) Fauna Recorded at Kelve Site (D)

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status if available
Mammal		———	———	———	———	———
Birds	1	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
	2	Jungle Bush quail	*Perdicula asiatica*	Common	Schedule IV	Least Concern
	3	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Indian bush lark	*Mirafra erythroptera*	Common	Schedule IV	Least concern
	6	Laughing Dove	*Streptopelia senegalensis*	Common	Schedule IV	———
	7	Purple Sunbird	*Nectarrinia asiatica*	Common	Schedule IV	Least concern
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Table 7e-22(1) Summary of Faunal Survey at Kelve (E) Site

Date - 15-Sept-11	Start time - 14:25	End time- 14:45	
Name of DFC area – Kelave - 524	Length of DFC in side forest (m) 148		Survey area (ha) 0.22
General condition of the area – Average elevation 020 m			
Length of the transect in survey area (m) 148			
Start point Latitude - 19˚38'35.1"	Start point Longitude - 072˚47'10.6" (from JNPT side)		
End point Latitude - 19˚38'41.0"	End point Longitude - 072˚47'09.9" (from JNPT side)		
Land use of the surrounding area: The area surrounded with fallow lands and impenetrable thickets			

Table 7e-22(2) Fauna Recorded at Kelve Site (E)

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Little cormorant	*Phalacrocorax niger*	Common	Schedule IV	Least concern
	2	Grey Francolin	*Francolinus pondicerianus*	Common	Schedule IV	Least Concern
	3	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	4	Red rumped swallow	*Hirundo daurica*	Common	———	———
	5	Asian Open bill stork	*Anastomus oscitans*	Common	Schedule IV	Least concern
	6	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
Amphibians	1	Indian bull Frog	*Hoplobatrahcus tigerinus*	Common	———	Least concern
Reptiles		———	———	———	———	———

Photo 7e-15: Spotted Dove

Table 7e-23(1) Summary of Faunal Survey at Kelve (F) Site, Section 2

Date - 16-Sept-11	Start time - 17:00	End time- 17:45	
Name of DFC area –Kelave - 523	Length of DFC in side forest (m) 850		Survey area (ha) 1.12
General condition of the area – Average elevation 17 m			
Length of the transect in survey area (m) 850			
Start point Latitude - 19˚38'35.1"	Start point Longitude - 072˚47'03.2" (from JNPT side)		
End point Latitude - 19˚39'33.8"	End point Longitude - 072˚46'55.8" (from JNPT side)		
Land use of the surrounding area: Low lying area, trees are well distributed along with species of marshy habitat			

Table 7e-23(2) Fauna Recorded at Kelve Site (F)

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal		———	———	———	———	———
Birds	1	Laughing Dove	*Streptopelia senegalensis*	Common	Schedule IV	———
	2	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
	3	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	4	Greater Coucal	*Centropus sinensis*	Common	Schedule IV	Least Concern
	5	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	6	Red Whiskered bulbul	*Pycnonotus jocosus*	Common	Schedule IV	Least Concern
	7	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	8	Indian bush lark	*Mirafra erythroptera*	Common	Schedule IV	Least concern
	9	Red rumped swallow	*Hirundo daurica*	Common	———	———
	10	Indian Robin	*Saxicoloides fulicata*	common	———	Least Concern
	11	Grey Francolin	*Francolinus pondicerianus*	Common	Schedule IV	Least Concern
	12	Bay backed shrike	*Lanius vittatus*	Common	———	———
	13	Black Drongo	*Dicrurus macrocerus*	Common	Schedule IV	———
Amphibians	1	Indian bull Frog	*Hoplobatrahcus tigerinus*	Common	———	Least Concern
Reptiles		———	———	———	———	———

Table 7e-24(1) Summary of Faunal Survey at Kasbe Mahim Site, Section 2

Date - 16-Sept-11	Start time - 10:00	End time- 12:45	
Name of DFC area –Kasabe –Mahim 808	Length of DFC in side forest (m) 800		Survey area (ha) 4.1970
General condition of the area – Average elevation 13 m			
Length of the transect in survey area (m) 852			
Start point Latitude - 19˚39'07.8"	Start point Longitude - 072˚43'45.2" (from JNPT side)		
End point Latitude - 19˚38'41.0"	End point Longitude - 072˚47'09.9" (from JNPT side)		
Land use of the surrounding area: Area surrounded with forest patch but under growth is too entangled and impenetrable.			

Table 7e-24(2) Fauna Recorded at Kasbe Mahim Site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status if available
Mammal		———	———	———	———	———
Birds	1	Laughing Dove	*Streptopelia senegalensis*	Common	Schedule IV	———
	2	Ashy prinia	*Prinia socialis*	Common	———	Least Concern
	3	Red vented Bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	4	Rose ringed parakeet	*Psittacula krameri*	Common	Schedule IV	Least Concern
	5	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	6	Black shouldered kite	*Elanus caeruleus*	Common	———	Least Concern
	7	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	8	Asian Open bill stork	*Anastomus oscitans*	Common	Schedule IV	Least Concern
	9	Asian Koel	*Eudynamys scolopacea*	Common	Schedule IV	Least Concern
	10	Oriental white-eye	*Zosterops palpebrosus*	common	Schedule IV	Least Concern
	11	Grey Francolin	*Francolinus pondicerianus*	Common	Schedule IV	Least Concern
	12	Indian Pond Heron	*Ardeolagrayii*	Common	Schedule IV	———
	13	Black Drongo	*Dicrurus macrocerus*	Common	Schedule IV	———
	14	Yellow footed green pigeon	*Treron phoenicoptera*		Schedule IV	Least concern
	15	Red rumped swallow	*Hirundo daurica*	Common	———	———
	16	Asian Koel	*Eudynamys scolopacea*	Common	Schedule IV	Least Concern
Amphibians	1	Indian bull Frog	*Hoplobatrahcus tigerinus*	Common	———	Least concern
Reptiles		———	———	———	———	———

2. Section 16 (G. B. Nagar District)

(1) Methodology of Faunal Survey

Survey conducted in the recorded forest area in G. B. Nagar area. Linear trekking survey method used for faunal survey; min. 0.2Km to max. 1.1Km line has been surveyed with respect to length of DFC alignment crossing through the forest area. Since one stream flowing through the survey area and we could not cross it we divided the area in to two parts for logistical convenience as shown in photo 7e-16. Date, Start time, end time of the survey and latitude, longitude of the same recorded for the respective area. Slope and information about land use of the surrounding area also been recorded. For mammals and birds data collected from both side of the survey line up to visible distance; for amphibians and reptiles we randomly walked on the both side of the line and surveyed the ponds, shrubs and burrows to maximize the probabilities. Each target species which encountered during survey period identified and recorded individually.

Photo 7e-16: Showing survey area divided in to two parts

Photo 7e-17: Eurasian collared Dove

Photo 7e-18: Indian Silverbilled Muniya

Table 7e-25(1) Summary of Faunal survey at G.B. Nagar, Part 1

Date - 24-Sept-11	Start time - 09:55	End time- 12:10	
Name of DFC area – G.B.Nagar,Noida	Length of DFC in side forest (m) 1600		Survey area (ha) 10.08
General condition of the area – Average elevation 187 m			
Length of the transect in survey area (m) 1100			
Start point Latitude - 28˚29'39.1"	Start point Longitude - 077˚29'21.1"		
End point Latitude - 28˚30'05.9"	End point Longitude - 077˚30'15.3"		
Land use of the surrounding area - Area surrounded with industries and mix vegetation of grass land, plantation and natural growth of *Acacia nelotica* trees.			

Table 7e-25(2) Fauna recorded from the site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal	1	Black naped hare	*Lepus nigricollis nigricollis*	Common	Schedule IV	———
Birds	1	Eurasian collared Dove	*Streptopelia decaocto*	Common	Schedule IV	Least Concern
	2	Plain prinia	*Prinia inornata*	Common	———	Least Concern
	3	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	4	Common Myna	*Acridotheres tristis*	Common	Schedule IV	Least Concern
	5	Red rumped swallow	*Hirundo daurica*	Common	———	———
	6	Indian silver billed muniya	*Lonchura malabarica*	Common	Schedule IV	Least concern
	7	Purple Sunbird	*Nectarrinia asiatica*	Common	Schedule IV	Least concern
	8	Woolly necked stork	*Ciconia episcopus*	Common	Schedule IV	Least Concern
	9	Black kite	*Milvus migrans*	Common	———	———
	10	Red vented bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	11	Shikra	*Accipiter badius*	Common	Schedule IV	Least concern
	12	Spotted Owlet	*Athne brama*	Common	———	———
	13	Black shouldered kite	*Elanus caeruleus*	Common	———	Least Concern
	14	Black Drongo	*Dicrurus macrocerus*	Common	Schedule IV	———
	15	Indian Roller	*Coracias benghalensis*	Common	Schedule IV	———
	16	Red wattled Lapwing	*Vanellus indicus*	Common	———	———
	17	Chestnut bellied sandgrouse	*Pterocles exustus*	Common	Schedule IV	Least Concern
	18	Green bee eater	*Merops orientalis*	Common	———	Least Concern
Amphibians		———	———	———	———	———
Reptiles	1	Indian Cobra	*Naja naja*	Common	Schedule II, Part II	

Table 7e-26(1) Summary of Faunal survey at G.B. Nagar, Part 2

Date - 25-Sept-11	Start time - 09:55	End time- 11:30	
Name of DFC area – G.B.Nagar,Noida	Length of DFC in side forest (m) 1600		Survey area (ha) 10.08
General condition of the area – Average elevation 190 m			
Length of the transect in survey area (m) 650 (In Part 2 in the image)			
Start point Latitude - 28˚30'08.8"	Start point Longitude - 077˚30'23.0"		
End point Latitude - 28˚30'01.5"	End point Longitude - 077˚30'04.9"		
Land use of the surrounding area — Area surrounded with industries and mix vegetation of grass land, plantation and natural growth of *Acacia nelotica* trees.			

Table 7e-26(2) List of Fauna recorded from the site

Species	Sr. no.	Common name	Scientific name	Status	Protection status as per IWPA 1972	IUCN Status
Mammal	1	Sambar	*Cervus unicolar*	———	Schedule III	Vulnerable
	2	Indian Porcupine	*Hystrix indica*	Common	Schedule IV	Least Concern
Birds	1	Cattle Egret	*Bubulcus ibis*	Common	Schedule IV	Least Concern
	2	Common Babler	*Turdoides caudatus*	Common	Schedule IV	Least Concern
	3	White throated Kingfisher	*Halcyon smyrnensis*	Common	Schedule IV	Least Concern
	4	Indian silver billed muniya	*Lonchura malabarica*	Common	Schedule IV	Least concern
	5	Black kite	*Milvus migrans*	Common	———	———
	6	Red vented bulbul	*Pycnonotus cafer*	Common	Schedule IV	Least Concern
	7	Black shouldered kite	*Elanus caeruleus*	Common	———	Least Concern
	8	Black Drongo	*Dicrurus macrocerus*	Common	Schedule IV	Least Concern
	9	Red wattled Lapwing	*Vanellus indicus*	———	———	Least Concern
	10	Green bee eater	*Merops orientalis*	———	———	Least Concern
Amphibians		———	———	———	———	———
Reptiles		———	———	———	———	———

Photo 7e-19: Red Vented Bulbull

Photo 7e-20: Shikra

Photo 7e-21: Indian roller

Photo 7e-22: Sambar pellets

(2) Observations & Conclusion

The survey area surrounded by various industries, warehouses and thus making it a small isolated forest patch, which consist mix vegetation of grassland, plantation and natural forest of acacia. 20 bird species have been recorded, which are common spread; 3 mammal species. Only one species of mammal i.e. sambar is vulnerable as per IUCN status and protected under schedule III, IWPA 1972. Only one reptile species (Indian Cobra) which is protected under schedule II – Part II, IWPA 1972. (See table 1 & 2). However it is very difficult to say that there is some permanent population of Sambar in the area.

The survey has been carried out for three days and followed the defined methodology and the lists presented here show presence of faunal species encountered during the survey. The survey area may have some more species because activity period changes according to the animal and season, one cannot encounter all the species during one season.

There will be no impact on the biodiversity due to proposed railway line as the area is heavily disturbed and there is no way to protect this isolated patch of vegetation which is situated in the midst of industries.

Photo 7e-23: Spotted owlet

Photo 7e-24: Indian Cobra

Photo 7e-25: Cattle egret

Photo 7e-26: Plain prinia

Photo 7e-27: Black shouldered kite

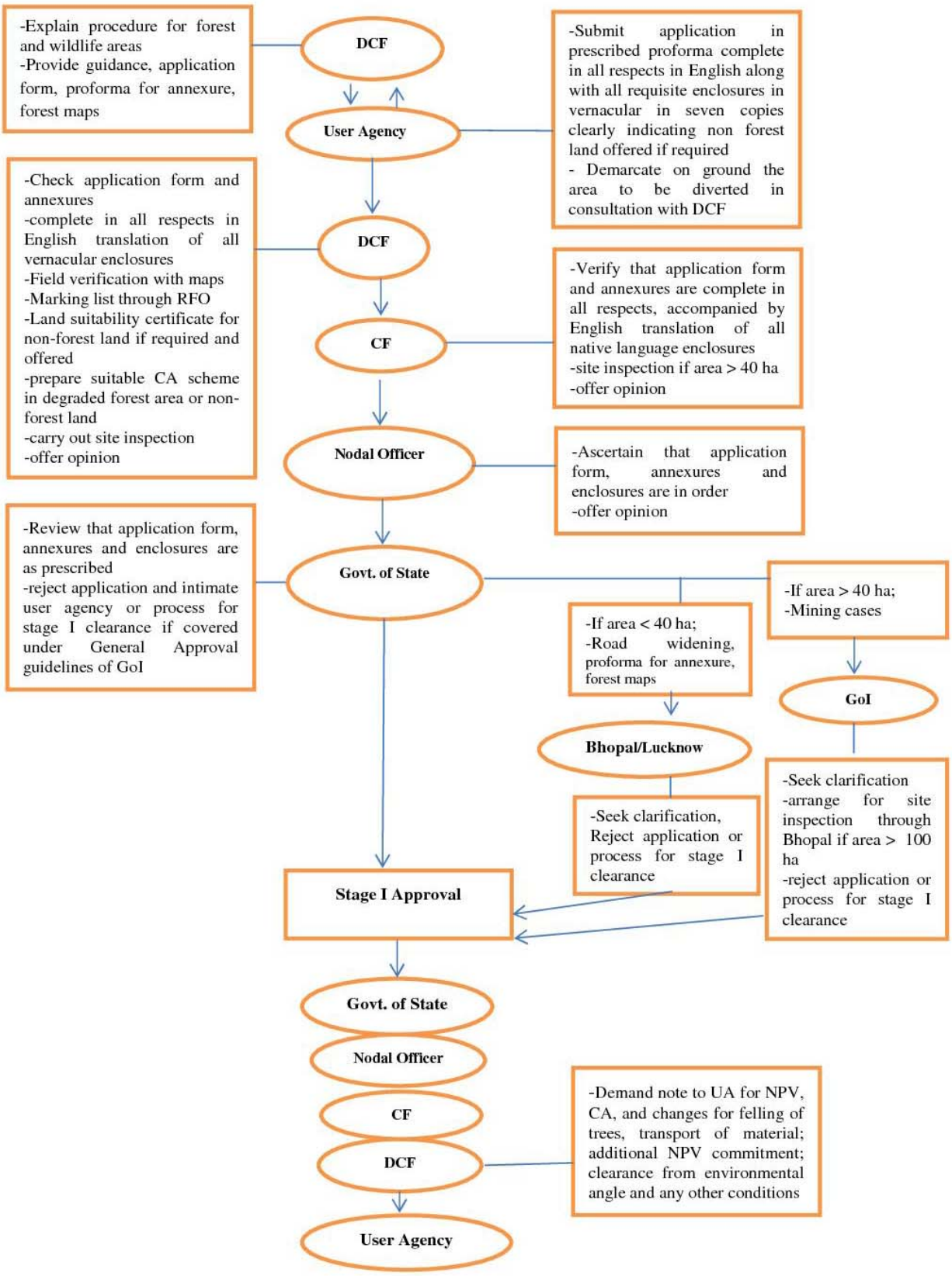
Photo 7e-28: Industry in part I G.B Nagar site

Appendix-8
Clearance Procedure

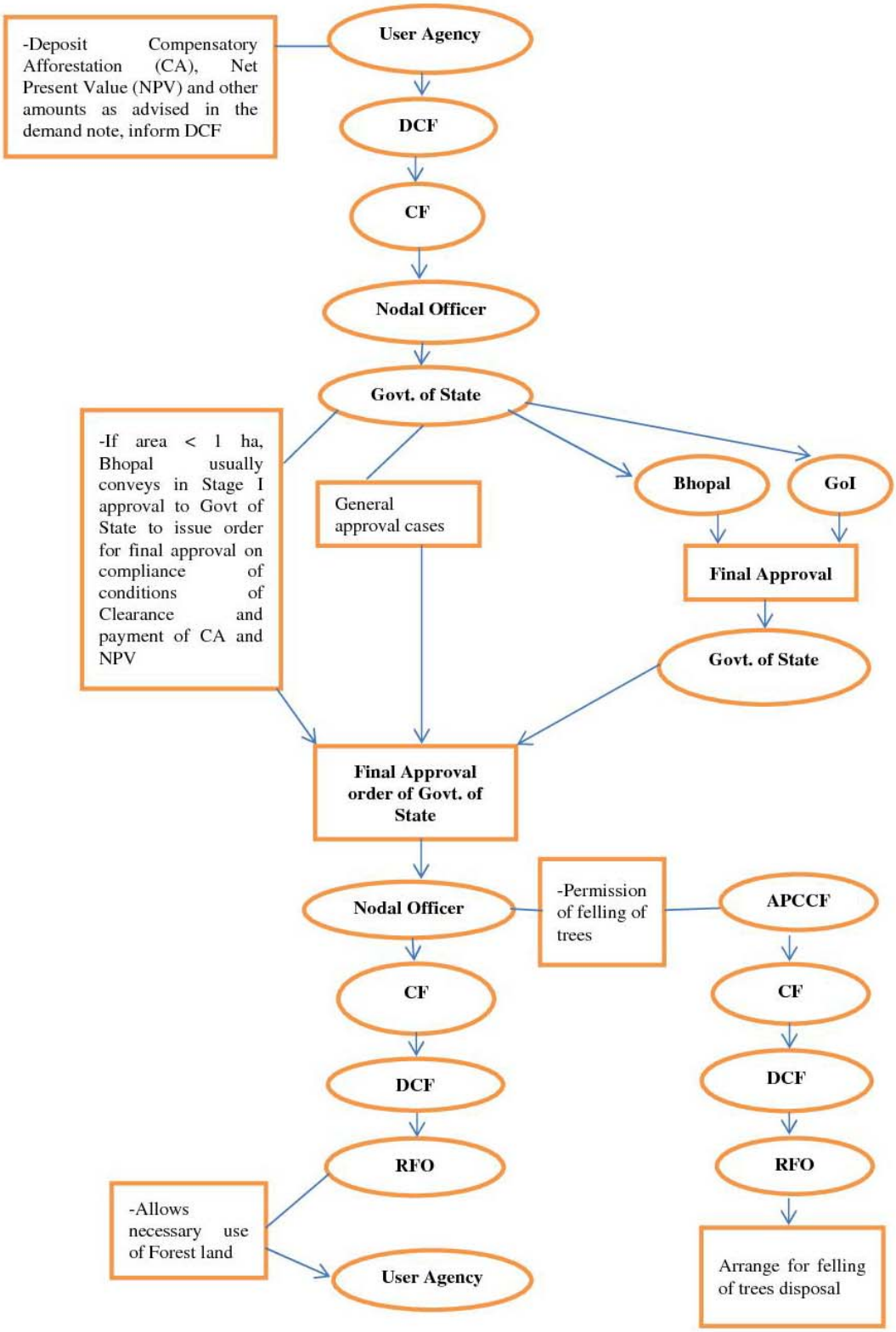
Appendix-8

CLEARANCE PROCEDURE

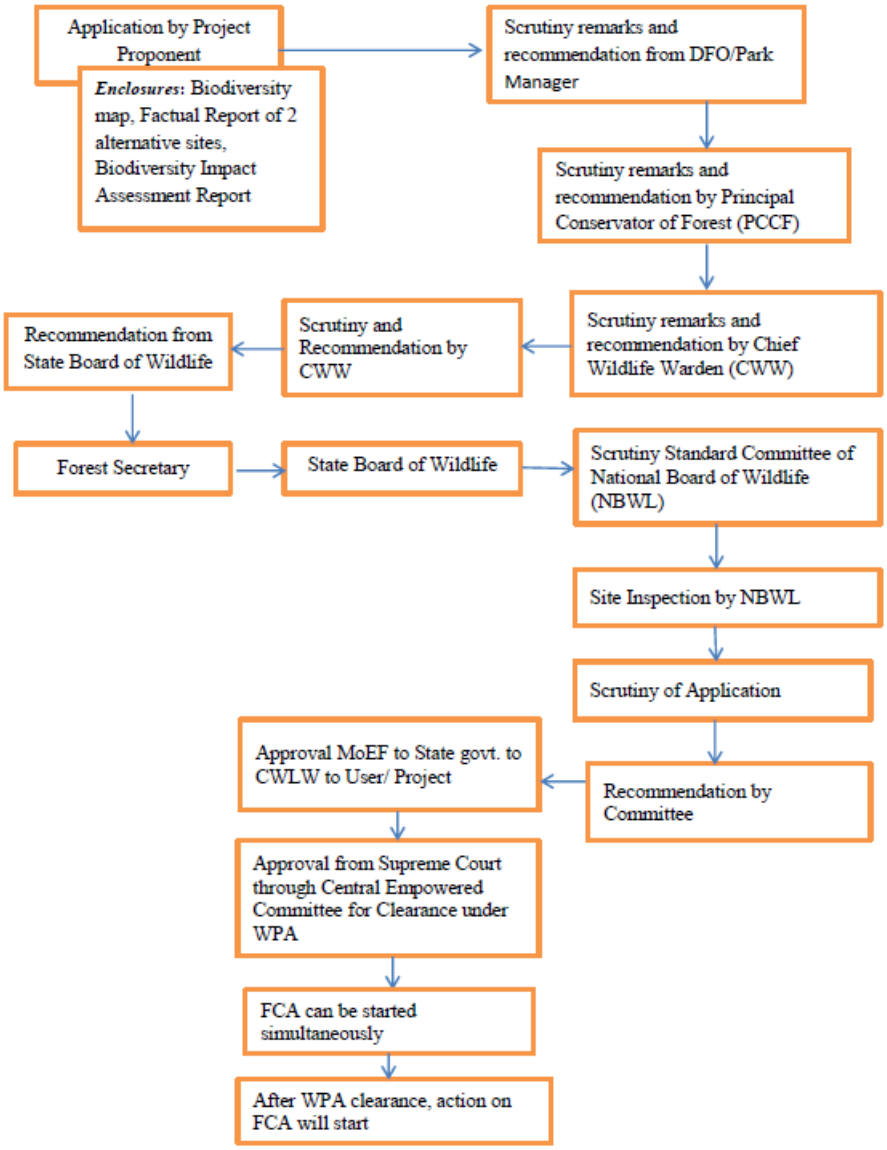
Clearance under Forest Conservation Act-1



Clearance under Forest Conservation Act-2



WILDLIFE CLEARANCE PROCEDURE
(It applies to project passing through Pas or within 10 Kms. GoI has issued guidelines; it even applies for biodiversity survey)



Appendix-9 Public Consultation Meeting (PCM)

Appendix-9a
PCM Contents for ESIA Scoping Stage

Appendix-09a
PCM Contents for ESIA Scoping Stage

(1) Invitation letters (English, Hindi, Gujarati, Marathi)

【Invitation Letter English】

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि.
(भारत सरकार का उपक्रम)
Dedicated Freight Corridor Corporation of India Ltd.
(A Government of India Enterprise)

Date

To,
The Sarpanch

Sub: Public Consultation Meeting for Environmental Scoping for Development of Dedicated Freight Corridor Project (Phase 2)

Dear Sir / Madam,

Dedicated Freight Corridor Corporation of India Limited (DFCCIL) is implementing the Dedicated Freight Corridor (DFC) Project, which involves development of Multiple High Axle Load Freight Corridor with Computerized Control on the Western Industrial Corridor connecting from Rewari in Haryana to Dadri in Uttar Pradesh and from Vadodara in Gujarat to JNPT in Maharashtra. Ministry of Railways aims to implement the project in a participative manner with a people centric approach.

……. is one of the 14 districts through which the proposed freight corridor will pass. A public consultation meetings is being organized in ……. to seek your opinion and suggestions on environmental and social issues that may arise during the project implementation. Keeping this in mind we would like to invite you to attend the public consultation to elicit your views, comments, suggestions and opinions, on the project implementation. We request you to participate in the above mentioned public consultation meeting which will be held on …….. at ……..

Thanking you.

Yours sincerely,

Authorized Signatory

Encl:
1 Details of the venue and a brief note on the project
2. Letter of Ministry of Railways, Government of India to all relevant departments of the Government of India

For further Information, please contact,

1. ……
Phone No.

2……
Phone No.

Corporate Office : 5th Floor, Pragati Maidan, Metro Station Building Complex, New Delhi-110001, Telefax : 91-11-23454701
Registered Office : 101 A, Rail Bhawan, New Delhi-110 001, Web : www.dfccil.org

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि.
(भारत सरकार का उपक्रम)
Dedicated Freight Corridor Corporation of India Ltd.
(A Government of India Enterprise)

To

Date

Sub: Public Consultation Meeting (PCM) for Social and Environmental Scope for Development of Dedicated Freight Corridor Project (Phase 2)

Dear Sir/Madam:

The Ministry of Railways (MoR), Government of India has given top priority to strengthen rail infrastructure in the country for faster and safer transportation of bulk goods for economic advancement and in line with the same, development of Dedicated Freight Corridor Project has been conceived to facilitate faster and safer transportation of goods in bulk which will help in faster distribution of goods and services. The project aims to create tremendous high quality job opportunities, higher profits and growth of household income and will serve in the interests of the public at large. The project is currently in the planning stage.

…….. district is among one of the 14 districts through which the proposed railway corridor will pass. In order to disseminate information about the project to the general public and other stakeholders and to seek their opinion and suggestions on expected environmental and social impact of the project, DFCCIL is organizing a Public Consultation Meeting in the district. The second stage Public Consultation Meetings will be held some times in December to inform the public on the outcome of environmental and social study on the project and to take valuable opinion in the final planning stage.

In this context, we would like to sincerely request you to attend the meeting and share your opinion and suggestions for planning of the project as per following:

Date of Meeting:
Time of Meeting:
Venue:

Looking forward to your participation.

Thanking you.

Yours faithfully,

Authorized Signatory
(DFCCIL)

Corporate Office : 5th Floor, Pragati Maidan, Metro Station Building Complex, New Delhi-110001, Telefax : 91-11-23454701
Registered Office : 101 A, Rail Bhawan, New Delhi-110 001, Web : www.dfccil.org

【Invitation Letter_Hindi.】

DFCC
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि.
(भारत सरकार का उपक्रम)
Dedicated Freight Corridor Corporation of India Ltd.
(A Government of India Enterprise)

सेवा में,
श्री सरपंच महोदय,
रामपुर

दिनांक : 11-11-2010

विषय : 'डेडिकेटेड फ्रेट कॉरिडोर (समर्पित माल परिवहन गलियारा परियोजना) फेज़–2 के विकास हेतु पर्यावरण सीमावलोकन (एनवाएरमेन्टल स्कोपिंगद्ध) के संदर्भ में जन–संवाद सभा का आयोजन।

आदरणीय महोदय / महोदया,

भारतीय डेडिकेटेड फ्रेंट कूरिडोर निगम लिमिटेड ;क्थ्ब्स्द्ध द्वारा डेडिकेटेड फ्रेंट कॉरिडोर परियोजन का क्रियान्वयन किया जा रहा है, जिसके अन्तर्गत हरियाणा के रेवाड़ी को उत्तर प्रदेश के दादरी से ओर गुजरात के बड़ौदा को महाराष्ट्र के जवाहरलाल नेहरू पोर्ट ट्रस्ट (JNPT) से जोड़ने वाले 'पश्चिम औद्योगिक कॉरिडोर' पर कम्प्यूटर–नियंत्रित 'हाई एक्सल लोड फ्रेंट कॉरिडोर' का विकास किया जाना है। रेल मंत्रालय इस परियोजना का क्रियान्वयन जन–भागीदारी के आधर पर करना चाहता है।

.....गुड़गाँव.....उन चौदह (14) जिलों में से एक है जिनसे होकर ये प्रस्तावित माल–परिवहन ;फ्रेंटद्ध कॉरिडोर गुजरेगा। इस परियोजना के क्रियान्वयन की अवधि में उत्पन्न होने वाले पर्यावरण एवं सामाजिक मुद्दों पर आपके विचार एवं सलाह अर्जित करने हेतु में एक जन–संवाद सभा का आयोजन किया जा रहा है। अतः परियोजना के क्रियान्वयन पर आपके विचार, सलाह एवं मत प्राप्त करने हेतु हम आपको इस जन–संवाद सभा में सम्मिलित होने का आमन्त्रण देते हैं। हमारा आपसे निवेदन है कि आप इस जन–संवाद सभा, जिसका आयोजन दिनांक 20-11-2010 को 1.0AM to 3.PM बजे में किया जा रहा है, अतः भाग ले कर हमें कृतार्थ करें।

सधन्यवाद।

Recieved by
पूरी

आपका शुभाकांक्षी

(अधिकृत हस्ताक्षरकर्ता)
DFCCIL

संलग्नक :
1 सभा–स्थल का ब्यौरा एवं परियोजना पर एक संक्षिप्त लेख

अन्य जानकारी हेतु इन्हें सम्पर्क करें :–

फोन नं.0 9896269325
* मीटिंग स्थान - पंजाबी धर्मशाला निकट बस स्टैंड सोहना (गुड़गाँव)

【Invitation Letter_Gujarati】

DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LTD.
(A Government of India Undertaking)
4th Floor, Aruns-1, Dummas Road, Near ISCON Mall, Piplod-Surat-395 007.
Phone No. (O) 0261-2254495. Fax No.0261-2254496.

તારીખ: ૧૫/૧૧/૨૦૧૦

પ્રતિ
સરપંચ શ્રી, મોતીવાડા

વિષય : સમર્પિત માલવહન કોરિડોર પ્રોજેક્ટ (દ્વિતીય ચરણ)ના વિકાસ હેતુ પર્યાવરણ ક્ષેત્રાવલોકનના સંદર્ભમાં લોકસંવાદ બેઠકનું આયોજન

આદરણીય શ્રી,

ભારતીય ડેડિકેટેડ ફ્રેટ કોરિડોર નિગમ લિમિટેડ (DFCCIL) દ્વારા સમર્પિત માલવહન પ્રોજેક્ટનું અમલીકરણ થવા જઈ રહ્યું છે, જેની અંતર્ગત હરિયાણાના રેવાડીને ઉત્તરપ્રદેશના દાદરી સાથે તથા ગુજરાતના વડોદરાને મહારાષ્ટ્રના જવાહરલાલ નહેરુ પોર્ટ ટ્રસ્ટ (JNPT) સાથે જોડતા પશ્ચિમ ઔદ્યોગિકી કોરિડોર પર કમ્પ્યુટર-નિયંત્રિત 'હાઈ એક્ષેલ લોડ ફ્રેટ કોરિડોર' નો વિકાસ થવા જઇ રહ્યો છે. રેલ્વે મંત્રાલય આ પ્રોજેક્ટનું અમલીકરણ લોક-ભાગીદારીના આધારે કરવા માંગે છે.

વલસાડ એ ચૌદ (૧૪) જિલ્લાઓમાંથી એક છે કે જ્યાંથી આ પ્રસ્તાવિત માલ પરિવહન કોરિડોર પસાર થશે. આ પ્રોજેક્ટના અમલીકરણ દરમિયાન ઊભા થતા પર્યાવરણ અને સામાજિક મુદ્દાઓ પર આપના સલાહ સૂચનો પ્રાપ્ત કરવા હેતુ એક લોકસંવાદ બેઠકનું ~~નવસારી~~ વલસાડ માં આયોજન કરવામાં આવ્યું છે. આથી પ્રોજેક્ટના અમલીકરણ પર આપના મંતવ્યો તથા સલાહ સૂચનો પ્રાપ્ત કરવા અમે આપને આ લોકસંવાદ બેઠકમાં સામેલ થવા આમંત્રણ આપીએ છીએ. અમારું નમ્ર નિવેદન છે કે ૨૨/૧૧/૨૦૧૦ તારીખે વલસાડમાં યોજનારી લોકસંવાદ બેઠકમાં અચૂક હાજર રહી અમને કૃતાર્થ કરશો. સમય: સવારે 10 કલાકે

આભાર સહ.
આપનો શુભેચ્છક,

(વતી ચીફ પ્રોજેક્ટ મેનેજર)
ડી.એફ.સી.સી.-સુરત

સંલગ્ન :
૧. સભા-સ્થળનું વિવરણ તથા પ્રોજેક્ટ પરનો સંક્ષિપ્ત લેખ
૨. રેલ્વે મંત્રાલય, ભારત સરકાર દ્વારા ભારત સરકારના તમામ સંબંધિત વિભાગોને લખાયેલ પત્ર

વધુ જાણકારી માટે સંપર્કસૂત્રો-
૧. Devendarbhai
ફોન નં. 9925252047
૨. Jasheder
ફોન નં. 9099131691

- બેઠકની તારીખ: ૨૨/૧૧/૨૦૧૦
- બેઠકનો સમય: સવારે ૧૦ કલાકે
- બેઠકનું સ્થળ: કરી ગણેશ હોલ, કસ્તુરબા હોસ્પિટલ પાસે મોતીવાડા વલસાડ

【Invitation Letter_Marathi】

DFCC
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि.
(भारत सरकार का उपक्रम)
Dedicated Freight Corridor Corporation Of India Ltd.
(A Govt. Of India Undertaking)

(7th Floor, C.Rly., New Admn. Bldg, D.N.Road, Mumbai – 400001, Tel/Fax- 022 - 2634184)

दिनांक 23/11/2010

आपल्या सेवेत,
मा. सरपंच महोदय, — मानफोड नं. ५

विषय – 'विशेष रेल्वे प्रकल्प डेडिकेटेड फ्रेट कॉरिडोर (समर्पित मालवाहतुक जोडमार्ग प्रकल्पाच्या) (फेज -२ च्या)' विकासासाठी पर्यावरणीय कार्यक्षेत्र मर्यादेच्या अंतर्गत लोक-संवाद सभेचे आयोजन.

आदरणीय महोदय/महोदया,

'भारतीय समर्पित मालवाहतुक जोडमार्ग प्रकल्प मर्यादित' (DFCCIL - डेडिकेटेड फ्रेट कॉरिडोर कॉर्पोरेशन ऑफ इंडिया लिमिटेड) द्वारा समर्पित मालवाहतुक जोडमार्ग प्रकल्पाची अंमलबजावणी करण्यात येणार आहे, ज्याच्या अंतर्गत हरियाणातील 'रेवाडी' ला उत्तर प्रदेशातील 'दादरी'शी व गुजरातमधील बडोद्याला महाराष्ट्रातील 'जवाहलाल नेहरू पोर्ट ट्रस्ट' शी (JNPT) जोडणारे 'पश्चिमी औद्योगिक कॉरिडोर' वर संगणकीय नियंत्रित हाय एक्सेल लोड फ्रेट कॉरिडोर चा विकास करण्यात येणार आहे. रेल्वे मंत्रालय या प्रकल्पाची कार्यवाही लोक सहभागातून करण्यास इच्छुक आहे.

१४ जिल्ह्यांमध्ये ..ठाणे..... हा एक जिल्हा आहे, ज्यामधून हा प्रस्तावित मालवाहतुक जोडमार्ग जाणार आहे. हया प्रकल्पाच्या अंमलबजावणीच्या काळात निर्माण होणाऱ्या पर्यावरणीय व सामाजिक मुद्यांवर आपले विचार व सल्ले प्राप्त करण्यासाठी ..ठाणे..... मध्ये एका लोक संवाद सभेचे आयोजन करण्यात येणार आहे. आणि म्हणून हया प्रकल्पाच्या कार्यवाहीविषयी आपले विचार, आपले सल्ले, आपली मते समजून घेण्यासाठी आम्ही आपल्याला हया लोक संवाद सभेमध्ये, जिचे आयोजन 24/11/2010 या दिवशी सकाळी ठिक १० वाजता..... येथे करण्यात आले आहे, तरी आपण सर्वांनी जास्तीत जास्त सहभाग घेऊन आम्हाला कृतकृत्य करावे.

धन्यवाद.

सभेचे स्थळ: श्री गोहीलवाड दशा श्रीमती सेवा संघ, के. टी. वाडी, रोली पॅराडाईस शाळा, वसई (पश्चिम) - ४०१२०२
फोन नं. (०२५०) २३३१९२८
२३४२३६३

आपला विश्वासू,

मुख्य परियोजना प्रबंधक
डीएफसीसीआयएल मुंबई

संलग्न

१. सभा स्थानाचे तपशील व प्रकल्पाविषयी एक संक्षिप्त लेख.
२. रेल्वे मंत्रालय, भारत सरकारद्वारा भारत सरकारच्या सर्व विभागांना लिहिलेले पत्र.

अन्य माहितीसाठी कृपया खालील व्यक्तींशी संपर्क साधावा :-

दूरध्वनी क्र. ०९३२००९९७८८
दीपक घोपट

दूरध्वनी क्र. ०७८२८४८०९४४
विजयसींग

लिपिक
डहाणू नगरपरिषद
दि. 23/11/10

3

(2) Handouts (English, Hindi, Gujarati, Marathi)

【English】

Brief Objectives of ESIA Study

To make the project successful from environmental as well as social perspective, MoR is currently conducting an Environmental Social Impact Assessment along with the corridor. Key objectives of the ESIA Study are :

- To collect environmental and social baseline information in order to identify and assess potential impact on social / natural environment caused by the project;
- To prepare the Environmental and Social Management and Monitoring Plan (ESMMP) for the necessary actions to the potential environmental and social impacts as well as to proposed mitigation measures; and
- To prepare Resettlement and Rehabilitation Plan (RRP) for identification and documentation of necessary legal resettlement and rehabilitation measures to Project Affected Persons

Potential environmental and social impact

The project is likely to cause some low level environmental impact in parts of the alignment and the DFCCIL/MOR is keen to minimize the impact and to mitigate the unavoidable impacts. The alignment passes through small patches of forest at a few places; besides, trees on the ROW will have to be felled. The ecology of the rivers along the alignment could be affected during the construction phase due to low level pollution and stream diversion for bridge construction. Noise and vibration is another environmental concern. The project is committed to plan appropriate mitigation measures and implement the same. Adequate compensatory afforestation, using local species, is one example.

As for the social impacts, the land acquisition for the ROW would entail the loss of land to farmers along the alignment and displacement of families whose houses fall in the alignment, though the design is seeking to keep the displacements at the least minimum possible. Adequate compensation, in line with the laws, will be provided to those who lose land, houses or other structures.

For any further information please contact;

AGM-Rewari-Dadri Project Office : 4th Floor, Metro Station Building, Pragati Maidan, New Delhi –110001
Chief Project Manager– Vadodara :13-14, 17-18, Panorama Complex, 3rd Floor, Alkapuri-Vadodara-7
Chief Project Manager-Mumbai : 7th Floor, New Administrative Building, Central Railway-DN Road, Mumabai 400001
Chief Project Manager-Surat : 4th Floor, Aruns-1, Near Iscon Mall, Dumas Road, Piplod, Surat—395007

MINISTRY OF RAILWAYS, GOVERNMENT OF INDIA AND DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED

PUBLIC CONSULTATION MEETING
FOR DEVELOPMENT OF
DEDICATED FREIGHT CORRIDOR PROJECT
(PHASE-2)
INFORMATION BOOKLET

DFCC
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

About DFC Project and its Objectives

Dedicated Freight Corridor Corporation of India (DFCCIL) is a Special Purpose Vehicle set up under the administrative control of Ministry of Railways to undertake planning & development, mobilization of financial resources and construction, maintenance and operation of the Dedicated Freight Corridors.

The plan to construct dedicated freight corridors across the country marks a strategic inflexion point in the history of Indian Railways that has essentially run mixed traffic across its network. Once completed, the dedicated freight corridors will enable Indian Railways to improve its customer orientation and meet market needs more effectively. Creation of rail infrastructure on such a scale - unprecedented in independent India – is also expected to drive the establishment of industrial corridors and logistic parks along its alignment. In the first phase, DFCCIL will be constructing two corridors – the Western DFC and Eastern DFC- spanning a total length of about 3300 route km.

The DFC corridor is envisaged as a major infrastructure support in furthering the fast growing economic trend in the country. The fast and efficient transport of cargo is expected to bring about remarkable changes in the national economy, in terms of trade, employment and livelihood improvement. It is expected to benefit a wide range of sectors, from agriculture to heavy industry.

DFC project in the Western corridor runs from Dadri (U.P.) to JNPT (Mumbai). However, the ESIA study for Rewari-Vadodara Phase-I Section has already been completed. It is now proposed to conduct the Study for Phase-II of the Section i.e. Rewari to Dadri and Vadodara to Mumbai (JNPT). A major task under the study is to seek public opinion and suggestions on social and environmental impact of the project through organizing public consultation meetings.

Purpose of Conducting PCM

The objective of this public consultation meeting is to incorporate the opinion and suggestions of the public and all other stakeholders at the project planning stage to ensure wider acceptability of the project.

Key objectives :

- Dissemination of information on the project in respect to the alignment, schedules and plans;
- To offer opportunities to voice the concerns of the stakeholders regarding the project during the planning stage and obtain opinions during public consultation meeting and feedback to the planning process of the Project.
- Provide information on environmental and social benefits of the project.

Proposed DFC Alignment (Phase 2)

Total length of the DFC Project form Rewari (Harayana) to Dadri (Uttar Pradesh) section is of a total length of 159 km and Vadodra (Gujarat) to JNPT (Mumbai) section is of a total length of 425 km. These sections induce some environmental and social impacts in the districts of:

Vadodara, Bharuch, Surat,Navasari, Valsad –in Gujarat state, Thane, Raigarh in Maharashtra state, Alwar in Rajasthan state, Faridabad, Gurgaon, Rewari, Palwal, Mewat in Haryana state, Tughlakabad in Delhi NCR and Gautam Buddh Nagar in Uttar Pradesh

Proposed facilities: 2 Terminal Stations, 3 Junction Stations, 10 Crossing Stations, 184 Major and Important Bridges and 21 ROBs.

The Future PCM Activities

A second stage Public Consultation Meeting will be held in December to inform the public on the progress of environmental and social study on the project and to take their valuable opinions in the final planning stage. The third stage PCM will be organised later to discuss the rehabilitation and resettlement plan with the project affected families.

Salient Features of the Project

- The total distance of 1483 kilometers of Western DFC to be double line and electrified.
- Detour of DFC Project railway line avoiding urban centers alongside the existing railway lines - average width of ROW 60 m;
- Junctions and crossing stations of approximately 60 m wide and 1600 m long each;
- Major bridges crossing over important rivers as well as minor bridges;
- Breath of the parallel alignment -average 30 meters
- Logistics Parks at Mumbai or in Navi Mumbai, Vapi, Ahmadabad, Gandhidham , Jaipur and NCR of Delhi.

【Hindi】

ई. एस. आई. ए. अध्ययन का उद्देश्य : एक संक्षिप्त लेख

पर्यावरण एवं सामाजिक परिपेक्ष्य से इस परियोजना को सफल बनाने हेतु रेल मंत्रालय इस समर्पित गलियारा (डेडिकेटेड फ्रेट कॉरिडोर) के दायरे में पर्यावरण व समाज पर पड़ने वाले प्रभाव/असर का आंकलन कर रहा है। इस इ. एस. आई. ए. अध्ययन के कुछ महत्वपूर्ण उद्देश्य निम्नलिखित हैं.-

क)पर्यावरण एवं सामाजिक आधारभूत सूचनाएँ/जानकारी एकत्र करना,जिससे कि परियोजना द्वारा पर्यावरण व समाज पर पड़ने वाले सम्भावित प्रभावों की पहचान व उसका आंकलन किया जा सके।

ख) पर्यावरण व समाज पर पड़ने वाले प्रभाव को सीमित करने हेतु आवश्यक कदम उठाने के लिए एक 'पर्यावरण एवं सामाजिक प्रबन्धन व निगरानी योजना' तैयार करना।

ग) पुनर्वास व पुनर्स्थापन योजना तैयार करना, जिसके द्वारा परियोजना संबन्धी प्रभावित व्यक्तियों के लिए किए गए/जाने वाले आवश्यक कानूनी पुनर्वास व पुनर्स्थापन संबन्धी कार्यों को चिन्हित कर एकत्र किया जा सके।

सम्भावित पर्यावरण एवं सामाजिक प्रभाव / असर

संभव है कि यह परियोजना समर्पित गलियारे की पंक्ति के कुछ हिस्सों पर साधारण पर्यावरण संबन्धी प्रभाव डाले और इस कारण व्यवसाय एवं रेल मंत्रालय उन प्रभावों को सीमित करने को उत्सुक है जिन्हें नज़रअंदाज़ नहीं किया जा सकता। इस गलियारे की पंक्ति कुछ स्थानों पर जंगल के छोटे हिस्सों से भी गुज़रती है। इसके अतिरिक्त, मार्ग में पड़ने वाले कुछ वृक्षों को भी काटना पड़ेगा। निर्माण कार्य के दौरान होने वाले सीमित प्रदूषण एवं पुल-निर्माण हेतु नदियों की धारा-परिवर्तन का असर नदियों के जैविक स्वास्थ पर पड़ सकता है। शोर एवं कम्पन्न भी एक महत्वपूर्ण पर्यावरण संबन्धी विषय हैं। यह परियोजना पर्यावरण संबन्धी प्रभाव को न्यून करने की योजना के प्रति समर्पित है। सामाजिक प्रभाव के संबन्ध में, गलियारा पंक्ति हेतु जमीन अधिग्रहण के कारण उन किसानो को जमीन व मकान का नुकसान होगा जिनकी जमीन व मकान गलियारे की पंक्ति में पड़ती है। अपितु, गलियारे का खाका / योजना इस प्रकार तैयार की जा रही है, जिससे कि विस्थापन को न्यूनतम स्तर पर सीमित रखा जा सके। जमीन, मकान व अन्य ढाँचा खोने वाले व्यक्तियों को कानून-सम्मत् उचित मुआवज़ा दिया जाएगा।

अतिरिक्त जानकारी के लिए संपर्क करें :-

क) ए.जी.एम, रेवाड़ी-दादरी परियोजना कार्यालय :
पाँचवी मंज़िल, मेट्रो स्टेशन भवन, प्रगति मैदान, नई दिल्ली-110001

ख) मुख्य परियोजना प्रबन्धक, बड़ोदा मुख्य परियोजना प्रबन्धाक वड़ोदरा 13.14ए 17.18ए पनोरमा कॉम्पलेक्स, तीसरी मंज़िल, आर.सी.दत्त रोड, अलकापुरी, वड़ोदरा-7, गुजरात

ग) मुख्य परियोजना प्रबन्धक, मुम्बई मुख्य परियोजना प्रबन्धाक मुम्बई , 7वीं मंज़िल नई इमारत पण्यानिक, मध्य रेलवे, डी.एन.रोड,मुम्बई - 400 001

घ) मुख्य परियोजना प्रबन्धक, सूरत मुख्य परियोजना प्रबन्धाक , सुरत चौथी मंज़िल, अरूणल.ए नजदीक इस्कॉन मॉल, पुमस रोड, पीपलोद, सुरत.395007 गुजरात

परियोजना की मुख्य उद्देश्य

डेडिकेटेड फ्रेट कॉरिडोर निगम लिमिटेड (DFCCIL) की स्थापना रेल मंत्रालय के प्रशासनिक नियंत्रण के अंतर्गत एक विशेष उद्देश्य हेतु बनाए जाने वाले निगम के रूप में की गई है। इसका उद्देश्य योजना बनाना व विकास करना, वित्तीय संसाधन को सक्रिय / उपयोग करना तथा समर्पित माल-परिवहन गलियारा (डेडिकेटेड फ्रेट कॉरिडोर) का संचालन व रखरखाव करना है। देश के विभिन्न हिस्सों को जोड़ने वाली इस समर्पित माल-परिवहन गलियारे की योजना भारतीय रेल के इतिहास में सामरिक दृष्टि से एक अति-महत्वपूर्ण बिन्दु है, क्योंकि भारतीय रेल अब तक देश के सभी रेल-मार्गों पर मिश्रित यातायात परिवहन ही करता रहा है। इस परियोजना के पूर्ण होने पर यह 'समर्पित माल-परिवहन गलियारा' भारतीय रेल को प्रभावशाली तरीके से ग्राहक-सेवा प्रदान करने तथा बाज़ार की ज़रूरतों को पूरा करने की क्षमता प्रदान करेगा। अति-वृहत पैमाने पर इस रेल-संबंधी आधारभूत ढाँचे का निर्माण - जो आज़ाद भारत के इतिहास में अद्वितीय है - इस गलियारे के साहचर्य में कई 'औद्योगिक गलियारे (इन्डस्ट्रियल कॉरिडोर)' एवं 'सहायक उद्यानों' (लॉजिस्टिक पार्क) की स्थापना में भी सहायक सिद्ध होगा। प्रथम चरण में DFCCIL दो गलियारों - 'पश्चिमी समर्पित माल-परिवहन गलियारा (Western DFC)' तथा 'पूर्वी समर्पित माल-परिवहन गलियारा (Eastern DFC)' का निर्माण करेगा, जिसका मार्ग-विस्तार 3300 कि0 मी0 होगा।

इस 'समर्पित माल-परिवहन गलियारे' की परिकल्पना देश की तीव्र आर्थिक वृद्धि के सहायक के रूप में की गई है। ऐसी उम्मीद है कि माल के तीव्र व फलसाधक परिवहन देश की अर्थ-व्यवस्था - व्यापार, रोज़गार एवं जीविका के संदर्भ में - एक अद्भुत परिवर्तन को जन्म देगा। इसका लाभ कृषि से लेकर 'भारती उद्योग' तक कई क्षेत्रों को मिलने की उम्मीद है

डी.एफ.सी. का पश्चिमी गलियारा दादरी (उत्तर प्रदेश) से जे. एन. पी. टी. (मुम्बई) तक दौड़ेगा। वस्तुतः, 'रेवाड़ी-बड़ोदा प्रथम चरण' के पर्यावरण व सामाजिक प्रभाव का आकलन संबन्धी अध्ययन का कार्य पूर्ण हो चुका है। द्वितीय चरण के रेवाड़ी से दादरी एवं बड़ोदा से मुम्बई (जे. एन. पी. टी.) तक के खण्ड का अध्ययन वर्तमान में प्रस्तावित है। इस अध्ययन के अंतर्गत 'जन-संवाद सभा' के आयोजन द्वारा परियोजना के पर्यावरण एवं सामाजिक प्रभाव पर प्रभावित जन-मानस के विचार, मत व सलाह प्राप्त करना एक प्रमुख कार्य है।

जन-संवाद सभा के आयोजन का उद्देश्य

परियोजना की विस्तृत स्वीकार्यता हेतु जन-मानस एवं अन्य भागीदारों के विचारों एवं सलाहों को परियोजना के संरचनात्मक चरण में सलिप्त करना ही इस 'जन-संवाद सभा' का उद्देश्य है।

मुख्य उद्देश्य :

(क) परियोजना संबन्धी (गलियारा-पंक्ति, कार्य समय-सूचि व योजना संबन्धी) जानकारी वितरित करना।

(ख) योजना-संरचना के वक्त भागीदारों को परियोजना-संबन्धी आशंकाओं/चिंताओं को व्यक्त करने का सुअवसर प्रदान करना, तथा 'जन-संवाद सभा' के दौरान उनके विचार हासिल करना।

(ग) परियोजना द्वारा पर्यावरण एवं सामाजिक लाभ संबन्धी जानकारी लोगों तक पहुँचाना।

रेल मंत्रालय,
भारत सरकार
और
डेडिकेटेड फ्रेट कॉरीडोर निगम लिमिटेड

जन-संवाद सभा
डेडिकेटेड फ्रेट कॉरीडोर परियोजना (द्वितीय चरण)

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

प्रस्तावित डी.एफ.सी. पंक्ति (द्वितीय चरण)

डेडिकेटेड फ्रेट कॉरिडोर (डी.एफ.सी.) परियोजना के अंतर्गत रेवाड़ी (हरियाणा) से दादरी (उत्तर प्रदेश) तक के खण्ड की कुल लम्बाई 159 कि. मी. तथा बड़ोदा (गुजरात) से जे.एन.पी. टी. (मुम्बई) तक के खण्ड की कुल लम्बाई 425 कि.मी. है। इन दो खण्डो में पड़ने वाले निम्नलिखित जिलों में कुछ पर्यावरण व सामाजिक प्रभाव उत्पन्न होंगे :-

गुजरात में - बड़ोदा, भारूच, सूरत, नवसारी; महाराष्ट्र में - थाने, रायगढ़; राजस्थान में - अलवर; हरियाणा में - फरीदाबाद, गुड़गाँव, रेवाड़ी, पलवल, मेवात; दिल्ली राष्ट्रीय राजधानी क्षेत्र (एनसी.आर.) में - तुगलकाबाद; तथा उत्तर प्रदेश में गौतम बुद्ध नगर।

प्रस्तावित सुविधाएँ :- दो (2) टर्मिनल स्टेशन, तीन (3) जंक्शन स्टेशन, दस (10) क्रॉसिंग स्टेशन, एक सौ चौरासी (184) प्रमुख व महत्वपूर्ण पुल तथा इक्कीस (21) आर. ओ. बी।

भविष्य की 'जन-संवाद सभा' से संबन्धित गतिविधियाँ

परियोजना संबन्धी पर्यावरण एवं सामाजिक अध्ययन की प्रगति पर लोगों को जानकारी प्रदान करने तथा उनके कीमती विचारों व सलाहों को योजना-संरचना के अन्तिम चरण में सम्मिलित करने हेतु जन-संवाद सभा (पी.सी.एम.) का द्वितीय चरण दिसम्बर में आयोजित किया जाएगा। परियोजना द्वारा प्रभावित परिवारों के साथ पुनर्वास एवं पुनर्स्थापन संबन्धी वाद-संवाद करने हेतु 'जन-संवाद सभा' का वितीय चरण का आयोजन बाद में किया जाएगा।

परियोजना के कुछ प्रमुख रूप-रेखाएँ :-

(क) 1483 कि. मी. की कुल लम्बाई वाला पश्चिमी डी.एफ.सी. सम्पूर्णतः द्विमार्गीय एवं विद्युतिकृत होगा।

(ख) गैर-शहरी क्षेत्रों में बिछाए जाने वाले डी.एफ.सी. परियोजना की रेलवे-लाइनें वर्तमान रेलवे लाइनों के समानान्तर दौड़ेगी।आर ओ डब्ल्यू (ROW) की औसत चौड़ाई 70 मी0 होगी।

(ग) प्रत्येक जंक्शन एवं क्रासिंग स्टेशन तकरीबन 60 मी0 चौड़ा व 1600 मी0 लम्बा होगा।

(घ) महत्वपूर्ण नदियों पर बड़े एवं छोटे पुलों का निर्माण।

(ङ) समानान्तर गलियारा-पंक्ति की औसत चौड़ाई 45 मी. होगी।

(च) मुम्बई या नवी मुम्बई, वापी, अहमदाबाद, गाँधीधाम, जयपुर तथा दिल्ली के राष्ट्रीय राजधानी क्षेत्र (एन.सी. आर.) में संभार-तंत्र संबन्धी उद्यानों (लॉजिस्टिकल पार्क) का निर्माण।

【Gujarathi】

ઈ.એસ.આઈ.એ. અભ્યાસનો હેતુ - એક સંક્ષિપ્ત લેખ:

પર્યાવરણીય અને સામાજિક પરિપ્રેક્ષ્યમાં આ પ્રોજેક્ટને સફળ બનાવવા માટે રેલ્વે મંત્રાલય આ સમર્પિત કોરિડોરના નેજા હેઠળ પર્યાવરણ તથા સમાજ પર પડનારી અસરોનું આકલન કરી રહ્યું છે. આ ઈ.એસ.આઈ.એ. અભ્યાસના કેટલાક મહત્વપૂર્ણ હેતુઓ નીચે મુજબ છે:

ક) પર્યાવરણીય તથા સામાજિક આધારભૂત જાણકારી એકત્રિત કરવી જેનાથી પ્રોજેક્ટ દ્વારા પર્યાવરણ તથા સમાજ પર પડનારી સંભવિત અસરોની ઓળખ થઇ શકે તથા તેનું આકલન કરી શકાય.

ખ) પર્યાવરણ તથા સામાજ પર પડનારી અસરોને મર્યાદિત કરવા માટે જરૂરી પગલાં લેવા એક 'પર્યાવરણ તથા સામાજિક પ્રબંધ તથા દેખરેખ યોજના' તૈયાર કરવી.

ગ) પુનર્વસન તથા પુન:સ્થાપન યોજના તૈયાર કરવી જેના દ્વારા પ્રોજેક્ટ સંબંધી અસરગ્રસ્ત વ્યક્તિઓ માટે થયેલ તથા કરવામાં આવનાર જરૂરી કાયદાકીય પુનર્વસન તથા પુન:સ્થાપન સંબંધિત કાર્યોનું દસ્તાવેજીકરણ કરવું.

સંબંધિત પર્યાવરણીય તથા સામાજિક અસરો:

શક્ય છે કે આ પ્રોજેક્ટ સમર્પિત કોરિડોરની પંક્તિના કેટલાક ભાગો પર સામાન્ય પર્યાવરણ સંબંધી પ્રભાવ પાડે છે, જે રેલ્વે મંત્રાલય ઓછો કરવા માટે ઉત્સુક છે જેને નજરઅંદાજ કરી શકાય નહી. આ કોરિડોરની પંક્તિ કેટલાંક માર્ગો પર જંગલના નાના ભાગોમાંથી પણ પસાર થાય છે. તદ્ઉપસંત, માર્ગમાં આવતાં કેટલાક વૃક્ષોને પણ કાપવા પડશે. નિર્માણકાર્ય દરમિયાન થનાર પ્રદૂષણ તથા પુલ નિર્માણ માટે નદીઓના પ્રવાહ-પરિવર્તનની અસર નદીઓના જૈવિક સ્વાસ્થ્ય પર પણ પડી શકશે. ઘોંઘાટ તથા ધ્રુજારી પણ એક મહત્વપૂર્ણ પર્યાવરણ સંબંધી વિષય છે. આ પ્રોજેક્ટ પર્યાવરણ સંબંધી પ્રભાવને ઓછું કરવાની યોજના પ્રત્યે સમર્પિત છે. સામાજિક પ્રભાવના સંદર્ભમાં, કોરિડોર પંક્તિ માટે જમીન અધિકરણને કારણે જે ખેડૂતોની જમીન તથા મકાન કોરિડોરની પંક્તિમાં પડે છે તેમને નુકસાનનો સામનો કરવો પડશે. પરંતુ, કોરિડોરનું માળખું એવી રીતે તૈયાર જેનાથી વિસ્થાપનને ન્યૂનતમ સ્તરે મર્યાદિત રાખી શકાય. જમીન, મકાન તથા અન્ય મિલકતના નુકસાન પેટે સરકાર યોગ્ય વળતર આપશે.

વધુ જાણકારી માટે સંપર્ક કરો-

ક) એ.જી.એમ., રેવાડી- દાદરી પરિયોજના કાર્યાલય:
પાંચમો માળ, મેટ્રો સ્ટેશન ભવન, પ્રગતિ મેદાન, નવી દિલ્હી - ૧૧૦૦૦૧

ખ) મુખ્ય પરિયોજના પ્રબંધક, વડોદરા

ગ) મુખ્ય પરિયોજના પ્રબંધક, મુંબઈ

ઘ) મુખ્ય પરિયોજના પ્રબંધક, સુરત

રેલ્વે મંત્રાલય,
ભારત સરકાર અને
ડેડિકટેડ ફ્રેટ કોરિડોર કોર્પોરેશન ઓફ ઇન્ડિયા લિમિટેડ

સમર્પિત માલવહન પ્રોજેક્ટ (બીજું ચરણ) ના વિકાસ હેતુ
લોકસંવાદ બેઠક
માહિતી પુસ્તિકા

ડેડીકેટેડ ફ્રેટ કોરીડોર કૉર્પોરેશન

પ્રોજેક્ટનો મુખ્ય ઉદ્દેશ:

ડેડિકેટેડ ફ્રેટ કોરિડોર નિગમ લિમિટેડ (DFCCIL) ની સ્થાપના રેલ્વે મંત્રાલયના પ્રશાસન નિયંત્રણ હેઠળ એક ખાસ હેતુ માટેના નિગમ રૂપે કરવામાં આવી છે. એનો ઉદ્દેશ યોજના ઘડવી અને વિકાસ કરવો, નાણાંકીય સંસાધનોનો સક્રિય ઉપયોગ કરવો તથા સમર્પિત માલવહન કોરિડોરનું સંચાલન તેમજ નિભાવ કરવાનો છે.

દેશના વિભિન્ન સ્થળોને જોડનારી આ સમર્પિત માલવહન કોરિડોર યોજના ભારતીય રેલ્વેના ઇતિહાસમાં વ્યૂહાત્મક દ્રષ્ટિથી એક અતિ મહત્વપૂર્ણ મુદ્દો છે કારણ કે, ભારતીય રેલ્વે હજુ સુધી દેશના દરેક રેલ માર્ગો પર મિશ્રિત આવનજાવન પરિવહન કરતું રહ્યું છે. આ પ્રોજેક્ટ પૂર્ણ થતા આ 'સમર્પિત મલવહન કોરિડોર' ભારતીય રેલ્વેને પ્રભાવશાળી રીતે ગ્રાહક સેવા તથા બજારની જરૂરિયાતોને પૂરી પાડવા સક્ષમ બનાશે. મોટા પાયા પર આ રેલ્વે સંબંધિત આધારભૂત માળખાનું નિર્માણ - જે સ્વતંત્ર ભારતના ઇતિહાસમાં અદ્વિતીય છે - આ કોરિડોરના સાનિધ્યમાં કેટલાંક 'ઔદ્યોગિક (ઇન્ડસ્ટ્રિયલ) કોરિડોર' તેમજ 'સહાયક ઉદ્યાનો' (લોજિસ્ટિક પાર્ક) ની સ્થાપનામાં પણ સહાયરૂપ બનશે. પ્રથમ ચરણમાં DFCCIL બે કોરિડોર 'પશ્ચિમી સમર્પિત માલવહન કોરિડોર (Western DFC)' તથા 'પૂર્વીય સમર્પિત માલવહન કોરિડોર (Eastern DFC)' નું નિર્માણ કરશે. જેનો માર્ગ વિસ્તાર 3300 કિ.મી. રહેશે.

આ 'સમર્પિત માલવહન કોરિડોર' ની પરિકલ્પના દેશની તીવ્ર આર્થિક વૃદ્ધિના સહાયરૂપે કરવામાં આવી છે. એવી આશા છે કે માલનું તીવ્ર તેમજ કુશળ પરિવહન દેશની અર્થ વ્યવસ્થા – વેપાર, રોજગારી તથા આજીવિકાના સંદર્ભમાં - એક અદ્ભુત પરિવર્તન લાવશે. જેનો લાભ કૃષિથી લઇને 'ભારતી ઉદ્યોગ' સુધી ઘણાં ક્ષેત્રોને મળવાની આશા છે.

ડી.એફ.સી.નું પશ્ચિમી કોરિડોર દાદરી (ઉત્તર પ્રદેશ) થી જે.એન.પી.ટી. (મુંબઈ) સુધી દોડશે. જો કે રેવાડી-વડોદરા પ્રથમ ચરણના પર્યાવરણીય તથા સામાજિક પ્રભાવના આકલન સંબંધિત અભ્યાસનું કાર્ય પૂર્ણ થઈ ગયું છે. બીજા ચરણનારેવાડીથી દાદરી તથા વડોદરા થી મુંબઈ સુધીના ભાગ નો અભ્યાસ વર્તમાનમાં પ્રસ્તાવિત છે. આ અભ્યાસ હેઠળ 'લોકસંવાદ બેઠક'ના આયોજન દ્વારા પ્રોજેક્ટના પર્યાવરણીય તથા સામાજિક પ્રભાવ પર અસર કરતા લોક-માનસના વિચાર, મંતવ્ય તથા સલાહ સ્વીકારવાનું કાર્ય મુખ્ય છે.

લોકસંવાદ બેઠકના આયોજનનો હેતુ:

પ્રોજેક્ટની વિસ્તૃત સ્વીકાર્યતા માટે લોક-માનસ તથા અન્ય ભાગીદારોના વિચારો તેમજ સલાહસૂચનને પ્રોજેક્ટના રચનાત્મક ચરણમાં સામેલ કરવા તે જ આ લોકસંવાદ બેઠકનો હેતુ છે.

<u>મુખ્ય હેતુઓ:</u>

ક) પ્રોજેક્ટ સંબંધિત (કોરિડોર-પંક્તિ, કાર્ય સમયપત્રક તથા યોજના સંબંધિત) જાણકારીનું વિતરણ કરવું.

ખ) યોજના-સંરચના સમયે ભાગીદારોને પ્રોજેક્ટ સંબંધિત શંકા - આશંકાઓ વ્યક્ત કરવાનો અવસર પ્રદાન કરવો તથા લોકસંવાદ બેઠક દરમિયાન તેમના વિચારો જાણવા.

ગ) પ્રોજેક્ટ દ્વારા પર્યાવરણીય તથા સામાજિક લાભ સંબંધિત જાણકારી લોકો સુધી પહોંચાડવી.

પ્રસ્તાવિત ડી.એફ.સી. પંક્તિ (બીજું ચરણ):

ડેડિકેટેડ ફ્રેટ કોરિડોર (ડી.એફ.સી.) પ્રોજેક્ટ હેઠળ રેવાડી (હરિયાણા)થી દાદરી કુલ અંતર ૧૫૯ કિ.મી. તથા વડોદરા (ગુજરાત) થી જે.એન.પી.ટી. (મુંબઈ) સુધીના વિસ્તારનું કુલ અંતર ૪૨૫ કિ.મી. છે. આ બે વિસ્તારોને આવરી લેતા નીચેના જિલ્લાઓમાં કેટલીક પર્યાવરણીય તથા સામાજિક અસરો ઊભી થશે: ગુજરાતમાં - વડોદરા, ભરૂચ, સુરત, નવસારી; મહારાષ્ટ્રમાં—થાણે, રાયગઢ; રાજસ્થાનમાં - અલવર; હરિયાણામાં - ફરિદાબાદ, ગુડગાંવ, રેવાડી, પલવલ, મેવાત; દિલ્લી રાષ્ટ્રીય રાજધાની ક્ષેત્ર (એન.સી.આર.)માં તુગલકાબાદ; તથા ઉત્તર પ્રદેશમાં ગૌતમ બુદ્ધ નગર.

પ્રસ્તાવિત સગવડો:

બે (૨) ટર્મિનલ સ્ટેશન, ત્રણ (૩) જંક્શન સ્ટેશન, દસ (૧૦) ક્રોસિંગ સ્ટેશન, એકસો ચોર્યાસી (૧૮૪) મુખ્ય તથા મહત્વપૂર્ણ પુલ તેમજ એકવીસ (૨૧) આર.ઓ.બી.

ભવિષ્યની લોકસંવાદ બેઠક સંબંધિત પ્રવૃત્તિઓ:

પ્રોજેક્ટ સંબંધિત પર્યાવરણીય તથા સામાજિક અભ્યાસના વિકાસ વિશે લોકોને જાણકારી પૂરી પાડવી તથા તેમના કિમતી વિચારો તથા સલાહસૂચનોનો યોજના-સંરચનાના આખરી ચરણમાં સમાવેશ કરવા માટે લોકસંવાદ બેઠકનું બીજું ચરણ ડિસેમ્બર માસમાં આયોજિત કરવામાં આવશે. પ્રોજેક્ટ દ્વારા અસરગ્રસ્ત કુટુંબો સાથે પુનર્વસન તથા પુન:સ્થાપન સંબંધિત વાદ-સંવાદ કરવા માટે લોકસંવાદ બેઠકના ત્રીજા ચરણનું આયોજન પછીથી કરવામાં આવશે.

પ્રોજેક્ટની કેટલીક મુખ્ય લાક્ષણિકતાઓ:

ક) ૧૪૮૩ કિ.મી.ના અંતરવાળા પશ્ચિમી ડી.એફ.સી. પૂર્ણપણે દ્વિમાર્ગીય તેમજ વિદ્યુતીકૃત રહેશે.

ખ) બિનશહેરી વિસ્તારોમાં નાખવામાં આવનાર ડી.એફ.સી. પ્રોજેક્ટની રેલ્વે લાઇનો વર્તમાન રેલ્વે લાઇનની સમાનાન્તર દોડશે. આર.ઓ.ડબલ્યૂ. (ROW) ની સરેસાશ પહોળાઈ ૬૦મી. રહેશે.

ગ) દરેક જંક્શન તથા ક્રોસિંગ સ્ટેશન લગભગ ૬૦મી. પહોળો તથા ૧૬૦૦મી. લાંબો રહેશે.

ઘ) મુખ્ય નદીઓ પર મોટા તેમજ નાના પુલોનું બાંધકામ.

ચ) સમાનાન્તર કોરિડોર-પંક્તિની સરેશશ પહોળાઈ ૩૦મી. રહેશે.

છ) મુંબઈ અથવા નવી મુંબઈ, વાપી, અમદાવાદ, ગાંધીધામ, જયપુર તથા દિલ્લીના રાષ્ટ્રીય રાજધાની વિસ્તાર (એન.સી.આર.)માં સમારકામ તંત્ર સંબંધિત ઉદ્યાનો (લોજિસ્ટિક પાર્ક)નું નિર્માણ.

【Marathi】

ई.एस .आय.ए. अध्ययनाचा उद्देश : एक संक्षिप्त लेख:

पर्यावरणीय व सामाजिक दृष्टीकोनातून ह्या प्रकल्पाला यशस्वी बनविण्यासाठी रेल्वे मंत्रालय ह्या समर्पित जोडमार्गाच्या (डेडिकेटेड फ्रेट कॉरिडोर) कार्यक्षेत्रामध्ये पर्यावरण व सामाजिक विषयांवर उद्भवणार्या परिणामांचे सर्वेक्षण करीत आहे. ह्या ई. एस. आय. ए. अध्ययनाची काही महत्वपूर्ण उद्दिष्टे खालीलप्रमाणे:

(क) पर्यावरणीय व सामाजिक सूचना / माहिती एकत्रित करणे, जेणेकरून प्रकल्पामुळे पर्यावरणावर व समाजावर होणार्या संभावित परिणामांची ओळख होईल व अंदाज बांधता येतील.

(ख) पर्यावरण व समाजावर होणारे (दुष्) परिणाम मर्यादित करण्याच्या हेतूने आवश्यक त्या उपाययोजना करण्यासाठी 'पर्यावरण व सामाजिक व्यवस्थापन व पर्यवेक्षण योजना' बनविणे.

(ग) पुनर्वास व पुनर्स्थापन योजना बनविणे, ज्याद्वारा प्रकल्पासंबंधित बाधित व्यक्तींसाठी केलेले / केले जाणारे आवश्यक त्या कायदेशीर पुनर्वास व पुनर्स्थापने संबंधी सूचित कार्यांचे एकत्रीकरण केले जाऊ शकते.

संभावित पर्यावरणीय व सामाजिक परिणाम:

अशी शक्यता आहे की ह्या प्रकल्पामुळे समर्पित जोडमार्गाच्या काही प्रदेशांवर पर्यावरणासंबंधी साधारण परिणाम होतील आणि ह्यामुळेच रेल्वे मंत्रालय, त्या परिणामांना की जे दुर्लक्षित केले जाऊ शकत नाही, मर्यादित करण्यास उत्सुक आहे.ह्या जोडमार्गाचा काही भाग हा काही ठिकाणी जंगलाच्या छोट्या प्रदेशातून पण जातो. ह्याव्यतिरिक्त, मार्गामध्ये येणारी काही झाडे तोडावी लागतील. बांधकामादरम्यान मर्यादित प्रदूषण होईल व पूलाच्या बांधकामामुळे होणार्या नदी-प्रवाह परिवर्तनामुळे नद्यांच्या जैविक स्वास्थ्यावर परिणाम होऊ शकतो. आवाज व कंपने ही पण एक महत्वपूर्ण पर्यावरणीय समस्या आहे. हा प्रकल्प, पर्यावरणीय परिणामांना कमी करणार्या योजने प्रति समर्पित आहे. सामाजिक परिणामांच्या संदर्भात, जोडमार्गासाठी करण्यात येणार्या जमीन-अधिग्रहणामुळे ज्या शेतकर्यांची जमिनी व घरे जोडमार्गामध्ये येतील त्यांच्या जमिनी व घरांचे नुकसान होणार आहे. तरीसुद्धा जोडमार्गाची योजना अशाप्रकारे तयार करण्यात येत आहे , ज्यामुळे विस्थापन मर्यादित प्रमाणावर होईल. जमीन, घर व अन्य प्रकारे बाधित व्यक्तींना कायद्यानुसार उचित परतफेड दिली जाईल.

अधिक माहितीसाठी संपर्क करा:

क) ए.जी .एम , रेवाडी -दादरी प्रकल्प कार्यालय :
पाचवा मजला ,मेट्रो स्टेशन भवन , प्रगती मैदान , नवी दिल्ली - ११०००१

ख) मुख्य प्रकल्प व्यवस्थापक , बडोदा - १३.१४ ए पनोरमा कॉम्पलेक्स, तिसरा मजला, आर.सी.दत्त रस्ता, अलकापुरी ,बडोदा-७ , गुजरात.

ग) मुख्य प्रकल्प व्यवस्थापक , मुंबई सातवा मजला नवी इमारत प्रणासनिक , मध्य रेल्वे , डी.एन.रस्ता, मुंबई - ४०० ००१

घ) मुख्य प्रकल्प व्यवस्थापक , सूरत ४ मजला अरुणस.ए जवळ इस्कॉन मॉल, डुमस रस्ता , पीपलोड , सूरत - ३९५ ००७ , गुजरात.

रेल्वे मंत्रालय,
भारत सरकार
व
डेडिकेटेड फ्रेट कॉरिडोर निगम लिमिटेड

लोक-संवाद सभा
डेडिकेटेड फ्रेट कॉरिडोर प्रकल्प
(दुसरा टप्पा)

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

प्रकल्पाची मुख्य उद्दिष्टे:

डेडिकेटेड फ्रेट कॉरिडोर निगम लिमिटेड (DFCCIL) ची स्थापना रेल्वे मंत्रालयाच्या प्रशासकीय नियंत्रणा अंतर्गत एका विशिष्ट उद्देशासाठी स्थापन केलेल्या प्रशासकीय मंडळाच्या स्वरूपामध्ये करण्यात आली आहे. ह्या मंडळाचा उद्देश आहे - योजना बनविणे व विकास करणे, वित्तीय संसाधनांचा सक्रियपणे उपयोग करणे तसेच समर्पित मालवाहतुक जोडमार्ग (डेडिकेटेड फ्रेट कॉरिडोर) कार्यान्वित करणे. देशाच्या विभिन्न भागांना जोडणार्या समर्पित मालवाहतुक जोडमार्गाचा प्रकल्प हा भारतीय रेल्वेच्या इतिहासात परिणामक्षम दृष्ट्या एक अतिशय महत्वपूर्ण क्षण आहे, त्याचे कारण असे की भारतीय रेल्वे संस्थे द्वारा आजपर्यंत देशाच्या सर्व रेल्वे मार्गावर मिश्रित वाहतुक व्यवस्था करण्यात आली होती. हा प्रकल्प पूर्ण झाल्यावर 'समर्पित मालवाहतुक जोडमार्गा' मुळे भारतीय रेल्वेला परिपूर्ण व प्रभावशाली पद्धतीने ग्राहक-सेवा पुरविण्याची व बाजाराच्या गरजा पूर्ण करण्याची क्षमता प्राप्त होईल. अतिमोठ्या प्रमाणावर होणार्या रेल्वे संबंधी मांडणीची निर्मिती ही, जी स्वतंत्र भारतात अद्वितीय आहे, ह्या जोडमार्गाबरोबरच 'औद्योगिक जोडमार्ग' (Industrial corridor) व 'व्यूहरचनात्मक उद्यानाच्या '(logistics park) स्थापनेमध्ये एक सहाय्यक म्हणून सिद्ध होईल. पहिल्या टप्प्यात DFFCIL दोन जोडमार्ग– 'पश्चिम मालवाहतुक जोडमार्ग (Western DFC)' व 'पूर्व मालवाहतुक जोडमार्ग (Eastern DFC)' निर्माण करेल, ज्याचा मार्ग विस्तार ३३०० कि. मी. असेल.

ह्या 'समर्पित मालवाहतुक जोडमार्गांची' कल्पना देशाच्या शीघ्र आर्थिक वृद्धीला आधारभूत म्हणून करण्यात आली आहे. अशी आशा ठेवता येईल की मालाची शीघ्र व फायदेशीर वाहतुक ही देशाची अर्थव्यवस्था,व्यापार , रोजगार व उपजीविकेच्या संदर्भामध्ये एक अद्भुत परिवर्तन घडवेल. कृषी क्षेत्रापासून भारतीय उद्योग क्षेत्रापर्यंत अशा अनेक क्षेत्रांना ह्याचा लाभ मिळण्याची आशा आहे.

'डी.एफ.सी' चा पश्चिम जोडमार्ग दादरी (उत्तर प्रदेश) पासून जे.एन.पी.टी (मुंबई) पर्यंत असेल. वस्तुत: 'रेवाडी - बडोदा पहिल्या टप्प्याच्या' पर्यावरणीय व सामाजिक परिणामांच्या अंदाजासंबंधी अध्ययनाचे कार्य पूर्ण झाले आहे. वर्तमानकालीन दुसरा टप्पा, रेवाडी ते दादरी व बडोदा ते मुंबई (JNPT) पर्यंतच्या भागाचे काम प्रस्तावपथात आहे. ह्या अध्ययनाच्या अंतर्गत 'लोक-संवाद सभेच्या' आयोजनाद्वारा पर्यावरणीय व सामाजिक परिणामांमुळे प्रभावित आशा जन-मानसांचे विचार, मतं, सल्ले मिळविणे हे महत्वाचे कार्य आहे.

लोक-संवाद सभेच्या आयोजनाची उद्दिष्टे:

प्रकल्पाच्या सर्वसमावेशक स्वीकार्हतेसाठी जन-मानस व अन्य भागीदारांच्या विचारांना व सल्ल्यांना प्रकल्पाच्या रचनात्मक टप्प्यामध्ये समाविष्ट करणे हाच 'लोक-संवाद' सभेचा उद्देश आहे.

मुख्य उद्दिष्टे:

(क) प्रकल्पासंबंधी (जोडमार्ग, कार्यवेळ- सूची व योजनेसंबंधी) माहिती सांगणे.

(ख) प्रकल्प रचने समयी भागधारकांना प्रकल्पासंबंधी असणार्या शंका / चिंता व्यक्त करण्याची संधी देणे व 'लोक-संवाद सभेदरम्यान' त्यांचे विचार जाणून घेणे.

(ग) प्रकल्पाद्वारा पर्यावरणीय व सामाजिक फायद्यासंबंधीची माहिती लोकांपर्यंत पोचविणे.

प्रस्तावित डी.एफ.सी. मार्ग (दुसरा टप्पा):

डेडिकेटेड फ्रेट कॉरिडोर (डी.एफ.सी.) प्रकल्पा अंतर्गत रेवाडी (हरियाणा) पासून दादरी (उत्तर प्रदेश) पर्यंतच्या मार्गाची एकूण लांबी १५९ कि.मी. ,तसेच बडोदा (गुजरात) पासून जे.एन.पी.टी (मुंबई) पर्यंतच्या मार्गाची लांबी ४२५ कि.मी . आहे .ह्या दोन टप्प्यांमध्ये येणारे व काही प्रमाणात पर्यावरणीय व सामाजिक परिणामग्रस्त जिल्हे खालिलप्रकारे आहेत:

गुजरात मध्ये - बड़ोदा, भारूच, सूरत, नवसारी, वलसाड; महाराष्ट्रामध्ये - ठाणे, रायगड; राजस्थानमध्ये - अलवर; हरियाणामध्ये - फरीदाबाद , गुडगाव , रेवाडी ,पलवल ,मेवात ; दिल्ली राष्ट्रीय राजधानी क्षेत्रामध्ये (एन.सी.आर.) - तुगलकाबाद ; तसेच उत्तर प्रदेश मध्ये गौतम बुद्ध नगर.

प्रस्तावित सुविधा : - दोन (२) टर्मिनल स्टेशन , तीन (३) जंक्शन स्टेशन , दहा (१०) क्रॉसिंग स्टेशन , एक शे चौर्याशी (१८४) प्रमुख व महत्वपूर्ण पूल तसेच एकवीस (२१) आर.ओ.बी.

भविष्यकालीन ' लोक-संवाद सभे ' संबंधीच्या हालचाली:

प्रकल्पासंबंधी पर्यावरणीय व सामाजिक अध्ययनाच्या विकासाविषयी लोकांना माहिती देणे तसेच त्यांचे मौलिक विचार व सल्ले योजना-रचनेच्या अंतिम टप्प्यामध्ये समाविष्ट करण्याच्या हेतूने लोक-संवाद सभेचा (पी.सी.एम.) दुसरा टप्पा डिसेंबर मध्ये आयोजित करण्यात येईल. प्रकल्पामुळे बाधित कुटुंबांबरोबर पुनर्वास व पुनर्स्थापने संबंधी ऊहापोह करण्याच्या उद्देशाने 'लोक-संवाद सभेच्या' तिसर्या टप्प्याचे आयोजन नंतर करण्यात येईल.

प्रकल्पाची काही प्रमुख वैशिष्ट्ये:

(क) एकूण १४८३ कि.मी. लांबी असलेला पश्चिम डी.एफ.सी. संपूर्णपणे द्विमार्गीय व विद्युतीकरण झालेला असेल.

(ख) बिगर-शहरी प्रदेशांमध्ये स्थापले जाणारे डी.एफ.सी. प्रकल्पाचे रेल्वे मार्ग वर्तमान रेल्वे मार्गाला समांतर असतील. आर.ओ.डब्ल्यू. (ROW) ची सरासरी रुंदी ६० मी. असेल.

(ग) प्रत्येक जंक्शन व क्रॉसिंग स्टेशन अंदाजे ६० मी. रुंद व १६०० मी. लांब असेल.

(घ) महत्वपूर्ण नद्यांवर छोट्या व मोठ्या पूलांची निर्मिती केली जाईल.

(ङ) समांतर जोडमार्गाची सरासरी रुंदी ३० मी.असेल.

(च) मुंबई किंवा नवी मुंबई, वापी, अहमदाबाद, गांधीधाम, जयपूर तसेच दिल्ली राष्ट्रीय राजधानी क्षेत्रामध्ये (एन.सी.आर.) व्यूहरचने संबंधीच्या उद्यानांची (logistical park) निर्मिती होईल.

(3) Presentation materials (English, Hindi, Gujarati, Marathi)

【English】

DEVELOPMENT OF DEDICATED FREIGHT CORRIDOR PROJECT: PHASE-II

ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT STUDY

PUBLIC CONSULTATION MEETING (PCM)

REWARI DISTRICT

DD/MM/YYYY

ABOUT THE OVERALL PROJECT (1)

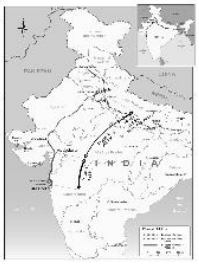
Project Proponent
MINISTRY OF RAILWAYS, GOVT. OF INDIA

Project Implementing Agency
DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LTD. (DFCCIL)

Dedicated Freight Corridor Corporation of India (DFCCIL) is a Special Purpose Vehicle set up under the administrative control of Ministry of Railways to undertake planning & development, mobilization of financial resources and construction, maintenance and operation of the Dedicated Freight Corridors.

ABOUT THE OVERALL PROJECT (2)

- Dedicated Freight Corridors are proposed to adopt world class and state-of-the-art technology. Significant improvement is proposed to be made in the existing carrying capacity by modifying basic design features. The permanent way will be constructed with significantly higher design features that will enable it to withstand heavier loads at higher speeds. These improvements will allow longer and heavier trains to ply on the Dedicated Freight Corridors.
- In the first phase, DFCCIL will be constructing two corridors – the Western DFC and Eastern DFC- spanning a total length of about 3300 route km. The Western Corridor (Phase 1 & 2) will traverse the distance from Dadri to Mumbai, passing through the states of Delhi, Haryana, Rajasthan, Gujarat and Maharashtra.



LONG TERM OBJECTIVE OF THE PROJECT

- Development of Multiple High Axle Load Freight Corridor has been conceived to facilitate **faster and safer transportation of goods in bulk**
- It is **designed to carry a total freight line is an average of 37.7 million tonnes** of cargo in a year .
- To help in **sustaining and boosting the present trends of growth of economy**
- Create **job opportunities, higher revenues and enhanced household income** and serve public interest

PROJECT SCOPE OF PHASE 2 WESTERN CORRDIOR

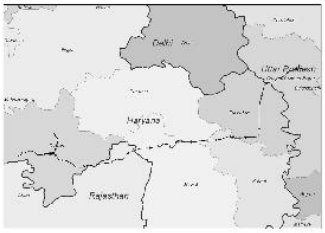
Project Area:
- Thane, Raigarh- Maharashtra
- Vadodra, Bharuch, Surat, Navasari, Valsad – Gujarat
- Alwar- Rajasthan
- Faridabad, Gurgaon, Rewari, Palwal, Mewat – Haryana
- Gautam Buddh Nagar - Uttar Pradesh
- Tughlakabad – Delhi

Proposed Facilities:
2 Terminal Stations, 3 Junction Stations, 10 Crossing Stations, 184 Major and Important Bridges and 21 ROBs

Planned Project Schedules:
ESIA & Resettlement and Rehabilitation Plan (RRP) Studies: Sept 2010 - Feb 2011

Construction of civil works: July 2012 - Sept 2015

ALIGNMENT OF PHASE-2 WESTERN CORRDIOR



159 km between **Rewari (Haryana) – Dadri (Uttar Pradesh)**
including 32km between Pirthala-Tuglakabad Section

425 km between Jawaharlal Nehru Port (Maharashtra) – Vadodara (Gujarat)

OBJECTIVES OF THE PUBLIC CONSULTATION MEETINGS

This Public Consultation Meetings (PCMs) are being conducted during project planning stage to incorporate the views and opinion of the public with regard to expected environmental and social impacts and the mitigation measures of the project

Key objectives :

- Dissemination of information on the project in respect to the alignment, schedules and plans.
- To offer opportunities to stakeholders to voice their concerns on the project during the planning stage.
- To obtain opinion during public consultation meeting and feed-back to the planning process of the Project.
- Provide information on environmental and social impacts/benefits of the project.

OBJECTIVE OF THE ESIA STUDY & OTHER RELATED ACTIVITES

- To collect environmental & social baseline information in order to identify and assess potential impacts on social / natural environment caused by the project.
- To prepare the mitigation measures, namely the Environmental & Social Management and Monitoring Plan (ESMMP) for necessary actions to address the potential environmental and social impacts.
- Land acquisition, resettlement & rehabilitation will be studied separately in RRP.

POTENTIAL KEY ENV. & SOCIAL BENEFITS

Major Positive Impacts	Remarks
Economic Development	Enhancing economic integration of regions in the country with improved links among major economic and trade centre
Job Opportunities	Creation of employment and giving a boost to livelihoods during construction and operation directly and indirectly
Compensatory Plantation	Plantation of native species as compensation for the trees felled
Global Warming	Likely to be improved by mass transportation and electrification
Proper Drainage	Provision for proper drainage of rainwater along the railway alignment
Pollution monitoring	Periodical pollution level monitoring during implementation stages

POTENTIAL KEY ENV. & SOCIAL CHALLENGES

Major Negative Impacts	Remarks
Noise and vibration pollution	During construction (due to movement of heavy vehicles and machineries) and operations.
Flora & Fauna	During construction and operation phases.
Tree Felling	During construction
Ground water	Likely to occur during construction & operation by tunnels and seepage and runoff from construction site.
Water bodies	During construction phase
Air pollution (dust)	During construction
Soil erosion	Cleared land and borrow areas
Community severance	Likely occur in the detour alignment during construction and operation
Security sanitation & infectious diseases	During construction due to workers' camps and inflow of construction workers
Land Acquisition	Required ROW leading to loss of farmlands, houses or some structures in some cases.

These impacts will be mitigated by designing appropriate measures in ESIA and implementing them during construction and operation as per ESIA.

SCOPE OF ESIA STUDY & OTHER RELATED ACTIVITES

Major Study Item	Remarks
Noise and vibration pollution	Measurement along the proposed alignment.
Fauna & Flora	Field surveys along the alignment and the recorded forests.
Ground water	To be examined in the Aravalli Range planned tunnel sections.
Water bodies	Water quality analysis at major rivers where the alignment pass through
Social Impacts	To be studied under the Baseline Survey and Census of the Resettlement & Rehabilitation Plan (RRP) Study
Public Consultation Meetings (PCMs)	PCMs on ESIA will be organised at the district level when starting and finalising the study. The next stage of PCMs will be planned in Jan. or Feb. 2011.

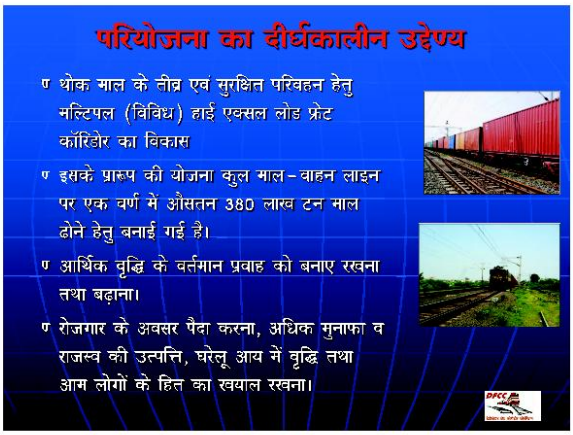
Note: Land acquisition, resettlement & rehabilitation will be studied under RRP and PCMs separately.

THANK YOU

【Hindi】

सम्पूर्ण परियोजना का संक्षिप्त विवरण
परियोजना का प्रस्तावक
रेल मंत्रालय, भारत सरकार
परियोजना क्रियान्वयन संस्था
भारतीय डेडिकेटेड फ्रेट कॉरिडोर निगम लिमिटेड (डी.एफ.सी.सी. आई.एल.)
डी.एफ.सी.सी.आई.एल. की स्थापना रेल मंत्रालय के प्रशासनिक नियंत्रण के अधीनस्थ एक 'विशेष-उद्देश्य-पूर्ति हेतु संस्था' के रूप में की गई है, जो डेडिकेटेड फ्रेट कॉरिडोर (समर्पित माल-परिवहन गलियारा) की योजना बनाने, आर्थिक संसाधन का उपार्जन व उपयोग करने तथा निर्माण, संचालन एवं रख-रखाव करने का कार्य करेगा।

DFCC
समर्पित 'माल-परिवहन गलियारा' विकास परियोजना : द्वितीय चरण
'पर्यावरण एवं सामाजिक प्रभाव आकलन' संबन्धी अध्ययन
'जन-संवाद सभा'
जिला-रेवाड़ी
10 नवम्बर, 2010


परियोजना का दीर्घकालीन उद्देश्य
थोक माल के तीव्र एवं सुरक्षित परिवहन हेतु मल्टिपल (बिविध) हाई एक्सल लोड फ्रेट कॉरिडोर का विकास
इसके प्रारूप की योजना कुल माल-वाहन लाइन पर एक वर्ष में औसतन 380 लाख टन माल ढोने हेतु बनाई गई है।
आर्थिक वृद्धि के वर्तमान प्रवाह को बनाए रखना तथा बढ़ाना।
रोजगार के अवसर पैदा करना, अधिक मुनाफा व राजस्व की उत्पत्ति, घरेलू आय में वृद्धि तथा आम लोगों के हित का खयाल रखना।

सम्पूर्ण परियोजना का संक्षिप्त विवरण
समर्पित माल-परिवहन गलियारों (डी.एफ.सी.) का प्रस्ताव विश्व-स्तरीय आधुनिक तकनीक को अङ्गीकार करने हेतु किया गया है। कुशियारी प्रारूप व रूप-रेखा में उल्लेखनीय सुधार के द्वारा वर्तमान माल-वाहन क्षमता में अर्थपूर्ण वृद्धि करने का लक्ष्य है।
उल्लेखनीय एवं उच्च-स्तरीय प्रारूप (डिज़ाइन) युक्त एक स्थायी मार्ग का निर्माण किया जाएगा, जो अधिक भार के साथ तीव्र गति के यातायात का वहन कर सके। यह सुधार (उन्नति) लम्बी दूरी की भारी रेलगाड़ियों को 'डेडिकेटेड फ्रेट कॉरिडोर' (समर्पित माल-परिवहन गलियारा) पर सफर करने की आज्ञादी प्रदान करेगा।
प्रथम चरण में, डी.एफ.सी.सी.आई.एल. (DFCCIL) दो गलियारों - पश्चिमी डी.एफ.सी. एवं पूर्वी डी.एफ.सी. - का निर्माण करेगा, जिसकी कुल लम्बाई का विस्तार 3300 कि.मी. होगा। पश्चिमी गलियारा (वेस्टर्न कॉरिडोर) का प्रवाह एवं द्वितीय चरण दादरी से दिल्ली, हरियाणा, राजस्थान, गुजरात एवं महाराष्ट्र राज्यों से गुज़रते हुए, मुम्बई तक की दूरी तय करेगा।
INDIA

द्वितीय चरण के पश्चिमी गलियारे की पंक्तिबद्धता
Gujarat
Daman and Diu
Dadra and Nagar Haveli
Maharashtra
Delhi
Uttar Pradesh
Haryana
Rajasthan
रेवाड़ी (हरियाणा) से दादरी (उत्तर प्रदेश) के बीच 159 कि0 मी0 (इसमें पीरथला से तुगलकाबाद के बीच 32 कि0 मी0 का खण्ड सम्मिलित है)
जवाहरलाल नेहरू पोर्ट / बंदरगाह (महाराष्ट्र) से बड़ोदा (गुजरात) के बीच 425 कि0 मी0

द्वितीय चरण के पश्चिमी गलियारे (वेस्टर्न कॉरिडोर) का परियोजना विस्तार
परियोजना क्षेत्र :
थाने, रायगढ़ - महाराष्ट्र
बड़ोदा, भरूच, सूरत, नवसारी, वलसाद - गुजरात
अलवर - राजस्थान
फरीदाबाद, गुड़गाँव, रेवाड़ी, पलवल, मेवात - हरियाणा
गौतम बुद्ध नगर - उत्तर प्रदेश
तुगलकाबाद - दिल्ली
प्रस्तावित सुविधाएँ :
दो (2) टर्मिनल स्टेशन तीन (3) जंक्शन स्टेशन, दस (10) क्रॉसिंग स्टेशन, एक सौ चौरासी (184) मुख्य एवं महत्त्वपूर्ण पुल तथा इक्कीस (21) आर.ओ.बी (ROB)
परियोजना का नियोजित समय-सारणी :
इ.एस.आई.ए. (पर्यावरण एवं सामाजिक प्रभाव आंकलन) तथा पुनर्वास एवं पुनर्स्थापन (R&R) योजना संबन्धी अध्ययन : सितम्बर, 2010 से फरवरी, 2011
सिविल कार्य का निर्माण : जुलाई 2012 से सितम्बर, 2015

ई. सी. आई. ए. अध्ययन एवं अन्य सम्बन्धित गतिविधियों का उद्देश्य

- सामाजिक व प्राकृतिक वातावरण व परियोजना द्वारा सम्भावित प्रभावों का निर्धारण एवं आकलन करने हेतु पर्यावरण व सामाजिक आधारभूत जानकारियों को एकत्र करना।
- संभावित पर्यावरण व सामाजिक प्रभावों से निपटने के लिए आवश्यक कदम उठाने हेतु एक शमन (निष्क्रिय/असरहीन करने वाला) योजना तैयार करना, जैसे कि - 'पर्यावरण व सामाजिक प्रबन्धन एवं संरक्षण योजना (इ.एस.एम.एन.पी.)'।
- जमीन अधिग्रहण, पुनर्वास एवं पुनर्स्थापन का अध्ययन स्वतंत्र रूप से 'पुनर्वास व पुनर्स्थापन योजना' (RRP) में किया जाएगा।

जन-संवाद सभाओं (पी. सी. एम.) का उद्देश्य

इन जन-संवाद सभाओं का आयोजन परियोजना-नियोजन चरण के दौरान, अदेशित पर्यावरण एवं सामाजिक प्रभाव तथा उनको न्यून/असरहीन करने के उपाय से संबन्धित, आम लोगों के विचार व मत को समाविष्ट करने हेतु किया जा रहा है।

मुख्य उद्देश्य :-

- परियोजना की पंक्तिबद्धता, समय-सारणी तथा योजना संबन्धित जानकारी का जन-मानस में वितरण।
- परियोजना पर भागीदारों की चिंताओं को नियोजन के चरण में ही व्यक्त करने का उनको अवसर प्रदान करना।
- जन-संवाद सभाओं के दौरान भागीदारों के मतों को प्राप्त कर उन्हें परियोजना के नियोजन प्रक्रिया तक पहुँचाना।
- परियोजना के पर्यावरण व सामाजिक प्रभावों एवं लाभों से संबन्धित जानकारी प्रदान करना।

संभावित प्रमुख पर्यावरण व सामाजिक चुनौतियाँ

प्रमुख नकारात्मक प्रभाव	टिप्पणियाँ
ध्वनि एवं कंपन प्रदूषण	निर्माण के दौरान भारी वाहनों व मशीनों की गतिविधियों के कारण तथा यातायात संचालन के दौरान।
वनस्पति एवं जीव-जन्तु	निर्माण एवं संचालन के दौरान।
वृक्ष कटाई	निर्माण के दौरान।
जल भूमिगत	सुरंगों एवं निर्माण-स्थलों से रिसाव व बहाव के कारण निर्माण व संचालन के चरण में उत्पन्न होने की संभावना।
जलाशय	निर्माण चरण के दौरान।

ई.एम.आई. ए. से संबन्धित समुचित कार्यक्रमों की प्रारूप-रचना एवं निर्माण व संचालन के दौरान उनका अचूक क्रियान्वयन द्वारा इन नकारात्मक प्रभावों का शमन (असरहीन) किया जाएगा।

संभावित प्रमुख पर्यावरण एवं सामाजिक लाभ

प्रमुख नकारात्मक प्रभाव	टिप्पणियाँ
आर्थिक प्रगति	मुख्य आर्थिक एवं व्यापारिक केन्द्रों के बीच एक उन्नत सम्पर्क-साधन द्वारा देश के विभिन्न क्षेत्रों के आर्थिक-एकीकरण को बढ़ाना।
रोजगार अवसर	निर्माण एवं संचालन के दौरान प्रत्यक्ष या परोक्ष रूप से रोजगार की उत्पत्ति करना एवं जीविका-साधन में वृद्धि करना।
मुआवजा-रूपी वृक्षारोपण	वृक्षों की कटाई पर मुआवजों के रूप में देशी प्रजातियों के वृक्षों का रोपण।
भूमण्डलीय तापक्रम वृद्धि	सामूहिक परिवहन एवं विद्युतिकरण के कारण भूमण्डलीय वातावरण में सुधार की संभावना।
समुचित जल-निकास	रेलवे गलियारा पंक्ति के बराबर में वर्षा-जल का समुचित निकास का प्रावधान।
प्रदूषण निगरानी	परियोजना क्रियान्वयन के चरणों के दौरान सामयिक प्रदूषण-स्तर की निगरानी।

ई.एस.आई.ए. अध्ययन व अन्य संबन्धित गतिविधियों का कार्य क्षेत्र

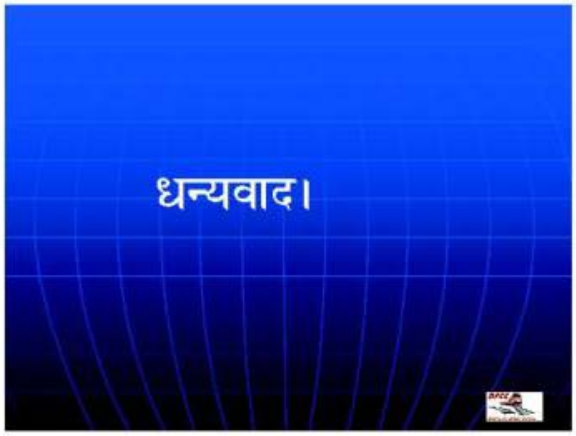
मुख्य अध्ययन मुद्दा	टिप्पणियाँ
ध्वनि एवं कंपन प्रदूषण	प्रस्तावित गलियारा मार्ग-पंक्ति के समकक्ष इनका आकलन।
वनस्पति एवं जीव-जन्तु	गलियारा मार्ग पंक्ति एवं अभिलिखित वनों के समकक्ष जमीनी सर्वेक्षण।
भूमिगत जल	अरावली पर्वत श्रृंखला के सुरंग वाले खण्ड में परीक्षण।
जलाशय	गलियारा पंक्ति के मार्ग में पड़ने वाले प्रमुख नदियों का 'जल गुणवत्ता विश्लेषण'।
सामाजिक प्रभाव	'वेसलाइन सर्वे एण्ड सेन्सस ऑफ द रीसेटलमेन्ट एण्ड रीहेबिलिटेशन प्लान (आर.आर.पी.) स्टडी' के अंतर्गत अध्ययन।
जन-संवाद सभाएँ (पी.सी.एम)	अध्ययन के प्रारम्भिक एवं अंतिम चरण में जिला स्तर पर इ.एस.आई.ए. से संबन्धित पी.सी.एम आयोजित किए जाएँगे। पी.सी.एम. के अगले चरण की योजना जनवरी या फरवरी 2011 में बनाई जाएगी।

नोट:- भू-अधिग्रहण, पुनर्वास एवं पुनर्स्थापन का अध्ययन पृथक रूप से आर.आर.पी. तथा पी.सी.एम. के अन्तर्गत किया जाएगा।

संभावित प्रमुख पर्यावरण व सामाजिक चुनौतियाँ

प्रमुख नकारात्मक प्रभाव	टिप्पणियाँ
वायु प्रदूषण (धूल-कण)	निर्माण के दौरान।
मृदा क्षरण (सिट्टी का कटाव)	साफ की हुई जमीन एवं खुदाई के क्षेत्रों में।
सामुदायिक	निर्माण एवं संचालन चरण में अध्यापन-मार्ग की पंक्तिबद्धता के दौरान उत्पन्न होने की संभावना।
सुरक्षा, स्वच्छता एवं संवेदनशील बीमारियाँ	श्रमिकों के शिविरों एवं मजदूरों के अनर्वाह के कारण निर्माण के दौरान प्रकट होने की संभावना।
जमीन अधिग्रहण	अपेक्षित (आवश्यक) आर. ओ. डब्ल्यू. (ROW) के कारण खेती-युक्त जमीनों, मकानों अथवा कुछ दाँचों का नुकसान।

ई.एम.आई. ए. से संबन्धित समुचित कार्यक्रमों की प्रारूप-रचना एवं निर्माण व संचालन के दौरान उनका अचूक क्रियान्वयन द्वारा इन नकारात्मक प्रभावों का शमन (असरहीन) किया जाएगा।


धन्यवाद।

【Gujarathi】

DFCC

સમર્પિત 'માલવહન કોરિડોર' વિકાસ પ્રોજેક્ટ: બીજું ચરણ
'પર્યાવરણીય તથા સામાજિક પ્રભાવ આકલન' સંબંધી અભ્યાસ'

'લોકસંવાદ બેઠક'

જિલ્લો-વડોદરા

૧૫ નવેમ્બર, ૨૦૧૦

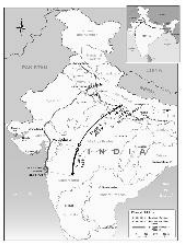
સંપૂર્ણ પ્રોજેક્ટનું સંક્ષિપ્તમાં વિવરણ

- પ્રોજેક્ટના પ્રસ્તુતકર્તા:
  રેલ્વે મંત્રાલય, ભારત સરકાર
- પ્રોજેક્ટનું અમલીકરણ કરનાર સંસ્થા:
  ડેડિકેટેડ ફ્રેટ કોરિડોર નિગમ લિમિટેડ
  (ડી.એફ.સી.સી.આઈ.એલ.)

- ડેડિકેટેડ ફ્રેટ કોરિડોર નિગમ લિમિટેડ (DFCCIL) ની સ્થાપના રેલ્વે મંત્રાલયના પ્રશાસન નિયંત્રણ હેઠળ એક ખાસ હેતુ માટેના નિગમ રૂપે કરવામાં આવી છે.
- એનો ઉદ્દેશ યોજના ઘડવી અને વિકાસ કરવો, નાણાંકીય સંસાધનોનો સક્રિય ઉપયોગ કરવો તથા સમર્પિત માલવહન કોરિડોરનું સંચાલન તેમજ નિભાવ કરવાનો છે.

સંપૂર્ણ પ્રોજેક્ટનું સંક્ષિપ્તમાં વિવરણ

- સમર્પિત માલવહન કોરિડોર (ડી.એફ.સી.)નો પ્રસ્તાવ વિશ્વ-સ્તરીય આધુનિક ટેક્નોલોજીના અંગીકરણ હેતુ કરવામાં આવ્યો છે. મૂળભૂત ડિઝાઇન તથા રૂપરેખામાં નોંધપાત્ર સુધારા થકી વર્તમાન માલવહન ક્ષમતામાં અર્થસભર વૃદ્ધિ કરવાનું લક્ષ્ય છે.
- નોંધપાત્ર તેમજ ઉચ્ચ- સ્તરીય પ્રયોજનાયુક્ત એક સ્થાયી માર્ગનું નિર્માણ કરવામાંઆવશે, જે અધિક ભાર સાથે ઝડપી આવનજાવન કરી શકે.આ સુધાર લાંબા અંતરની ભારે રેલ ગાડીઓને સમર્પિત માલવહન કોરિડોર પર દોડવાની સ્વતંત્રતા પૂરી પાડશે.
- પહેલા ચરણમાં ડી.એફ.સી.સી.આઈ.એલ. (DFCCIL) બે કોરિડોર - પશ્ચિમી ડી.એફ.સી. તેમજ પૂર્વીય ડી.એફ.સી.નું નિર્માણ કરશે, જેનું કુલ અંતર ૩૩૦૦કિ.મી. રહેશે. પશ્ચિમી કોરિડોરનુ પહેલું તથા બીજું ચરણ દાદરી થી દિલ્હી, હરિયાણા, રાજસ્થાન, ગુજરાત અને મહારાષ્ટ્ર રાજ્યોથી પસાર થતા મુંબઈ સુધીનું અંતર કાપશે.



પ્રોજેક્ટના લાંબાગાળાના ઉદ્દેશ

- જથ્થાબંધ માલના ઝડપી તથા સુરક્ષિત પરિવહન હેતુ મલ્ટિપલ(વિવિધ) હાઈ એક્ષેલ લોડ ફ્રેટ કોરિડોર નો વિકાસ
- આનો હેતુ કુલ માલવહન લાઇન પર એક વર્ષમાં લગભગ ૩૮૦ લાખ ટન માલનું પરિવહન કરવાનો છે.
- આર્થિક વૃદ્ધિના વર્તમાન પ્રવાહને ચાલુ રાખવો તથા વેગ આપવો.
- રોજગારીની તકો ઊભી કરવી, વધુ નફો અને રાજ્ય ની આવક વધારવી, કૌટુંબિક આવકમાં વૃદ્ધિ તથા સામાન્ય લોકોના હિતનું ધ્યાન રાખવું.

બીજા ચરણમાં પશ્ચિમી કોરિડોરનો પ્રોજેક્ટ વિસ્તાર

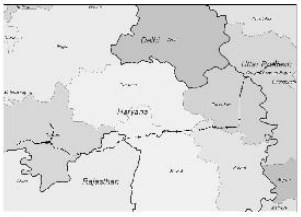
વિસ્તાર
ગુજરાત- વડોદરા, ભરૂચ, સુરત, નવસારી
મહારાષ્ટ્ર- થાણે, રાયગઢ
રાજસ્થાનમાં- અલવર
હરિયાણા-ફરિદાબાદ, ગુડગાંવ, રેવાડી, પલવલ, મેવાત
દિલ્લી- તુગલકાબાદ
ઉત્તર પ્રદેશ- ગૌતમ બુદ્ધ નગર

પ્રસ્તાવિત સગવડો:
બે (૨) ટર્મિનલ સ્ટેશન, ત્રણ (૩) જંકશન સ્ટેશન, દસ (૧૦) ક્રોસિંગ સ્ટેશન, એકસો ચોર્યાસી (૧૮૪) મુખ્ય તથા મહત્વપૂર્ણ પુલ તેમજ એકવીસ (૨૧) આર.ઓ.બી.

પ્રોજેક્ટનું નિયોજિત સમયપત્રક:
ઈ.એસ.આઈ.એ.(પર્યાવરણીય તથા સામાજિક અસર આકલન) તેમજ પુનર્વસન અને પુન:સ્થાપન યોજના સંબંધી અભ્યાસ: સપ્ટેમ્બર ૨૦૧૦ થી ફેબ્રુઆરી ૨૦૧૧

સિવિલ કાર્યનું નિર્માણ: જુલાઈ ૨૦૧૨ થી સપ્ટેમ્બર ૨૦૧૫

બીજા ચરણનામાં પશ્ચિમી કોરિડોરની પંક્તિ



રેવાડી (હરિયાણા) થી દાદરી(ઉત્તર પ્રદેશ) વચ્ચે ૧૫૯ કિ.મી. (આમાં પીરથલા થી તુગલકાબાદ વચ્ચે ૩૨ કિ.મી.ના વિસ્તારનો સમાવેશ થાય છે.)

જવાહરલાલ નેહરુ પોર્ટ (મહારાષ્ટ્ર)થી વડોદરા (ગુજરાત) વચ્ચે ૪૨૫ કિ.મી.

લોકસંવાદ બેઠકના હેતુઓ

આ લોકસંવાદ બેઠકોનું આયોજન પ્રોજેક્ટ નિયોજન ચરણ દરમિયાન, અનુમાનિત પર્યાવરણીય તથા સામાજિક અસરો તેમજ તેમને ઓછી/અસરહીન કરવા, સામાન્ય લોકોના વિચારો તથા મંતવ્યોના સમાવેશ હેતુ કરવામાં આવી રહ્યું છે.

મુખ્ય હેતુઓ :

- **પ્રોજેક્ટની પંક્તિબદ્ધતા, સમયપત્રક તથા યોજના સંબંધી જાણકારીનું લોક-માનસમાં વિતરણ**
- **પ્રોજેક્ટ પર ભાગીદારીઓની ચિંતાઓને નિયોજન ચરણ દરમિયાન જ વ્યક્ત કરવાની તક પૂરી પાડવી**
- **લોકસંવાદ બેઠકો દરમિયાન પ્રાપ્ત થયેલ ભાગીદારોના મંતવ્યોને પ્રોજેક્ટની નિયોજન પ્રક્રિયા સુધી પહોંચાડવા**
- **પ્રોજેક્ટની પર્યાવરણીય તથા સામાજિક અસર અને લાભ સંબંધિત જાણકારી પૂરી પાડવી**

ઈ.સી.આઈ.એ. તથા અન્ય સંબંધિત પ્રવૃત્તિઓનો ઉદ્દેશ

- **સામાજિક તથા પ્રાકૃતિક વાતાવરણ તેમજ પ્રોજેક્ટ દ્વારા સંભવિત અસરોની ઓળખ અને આકલન કરવા હેતુ પર્યાવરણીય તથા સામાજિક આધારભૂત જાણકારી એકત્ર કરવી.**
- **સંભવિત પર્યાવરણીય તથા સામાજિક અસરોથી પાર પડવા માટે આવશ્યક પગલાં લેવા હેતુ એક શમન (નિષ્ક્રિય/અસરગણ કરનારૂં) યોજના ઘડવી, જેમ કે "પર્યાવરણીય તથા સામાજિક પ્રબંધ તથા સંરક્ષણ યોજના (ઈ.એસ.એમ.એમ.પી.)"**
- **જમીન અધિકરણ, પુનર્વસન તથા પુન:સ્થાપનનો અભ્યાસ સ્વતંત્રપણે "પુનર્વસન તથા પુન:સ્થાપન યોજના (આર.આર.પી.)" માં કરવામાં આવશે.**

સંભવિત મુખ્ય પર્યાવરણીય તથા સામાજિક લાભ

મુખ્ય સકારાત્મક અસરો	ટિપ્પણી
આર્થિક પ્રગતિ	મુખ્ય આર્થિક અને ધંધાકીય કેન્દ્રો વચ્ચે ઉન્નત સંપર્ક-સાધન દ્વારા દેશના વિભિન્ન ભાગોના આર્થિક એકાકીકરણને વધારવા
રોજગાર તકો	નિર્માણ તથા સંચાલન દરમિયાન પ્રત્યક્ષ અતવા પરોક્ષ રૂપે રોજગારની તકો ઊભી કરવી તથા આજીવિકાના સાધનોમાં વૃદ્ધિ કરવી
વળતરરૂપી વૃક્ષારોપણ	વૃક્ષો કાપવાના વળતર પેટે દેશી પ્રજાતિના વૃક્ષોનું રોપણ
વિશ્વવ્યાપી તાપમાનમાં વૃદ્ધિ	સામૂહિક પરિવહન તથા વિદ્યુતીકરણ ને કારણે વિશ્વવ્યાપી વાતાવરણમાં સુધારાની શક્યતા
યોગ્ય જળનિકાલ	રેલ્વે કોરિડોર પંકતિની સમાનાન્તર વરસાદના પાણીના નિકાલની ઉપલબ્ધિ
પ્રદૂષણ દેખરેખ	પ્રોજેક્ટ અમલીકરણના ચરણ દરમિયાન સમયાંતરે પ્રદૂષણ સ્તરની દેખરેખ

સંભવિત મુખ્ય પર્યાવરણીય તથા સામાજિક પડકાર

મુખ્ય નકારાત્મક અસરો	ટિપ્પણી
ધ્વનિ તથા કંપન પ્રદૂષણ	બાંધકામ તેમજ સંચાલન દરમિયાન ભારે વાહનો તથા યંત્રોને કારણે
વનસ્પતિ તથા પ્રાણીઓ	બાંધકામ તેમજ સંચાલન દરમિયાન
વૃક્ષ કાપણી	બાંધકામ દરમિયાન
પાણી ભૂમિગત	બાંધકામ તેમજ સંચાલન દરમિયાન ભૂગર્ભી રસ્તાઓ દ્વારા પાણી વહી જવાના કારણે
જળાશયો	બાંધકામ દરમિયાન
વાયુ પ્રદૂષણ (ધૂળ)	બાંધકામ દરમિયાન
જમીનનું ધોવાણ	સાફ થયેલી જમીન તથા ખોદેલા વિસ્તારોમાં
સામુદાયિક વિચ્છેદ	બાંધકામ તેમજ સંચાલન દરમિયાન આવનજાવન દરમિયાન ઊભી થવાની સંભાવના
સલામતી, સ્વચ્છતા અને ચેપી રોગો	બાંધકામ તેમજ સંચાલન દરમિયાન બાંધકામ દરમિયાન મજૂરોની શિબિર અને ધસારાને કારણે
જમીન અધિકરણ	અપેક્ષિત આર.ઓ.ડબલ્યૂ. (ROW) ને કારણે ખેતીલાયક જમીન, મકાન તથા કેટલાક માળખાંને નુકસાન

ઈ.એસ.આઈ.એ. સંબંધિત તમામ કાર્યક્રમોના નિર્માણ અને સંચાલન દરમિયાન આ અસરોને નાબૂદ કરવા યોગ્ય પગલા લેવામાં આવશે.

ઈ.એસ.આઈ.એ. અભ્યાસ તથા અન્ય સંબંધિત પ્રવૃત્તિઓનું કાર્યક્ષેત્ર

મુખ્ય અભ્યાસ મુદ્દાઓ	ટિપ્પણી
ધ્વનિ તથા કંપન પ્રદૂષણ	પ્રસ્તાવિત કોરિડોર માર્ગ-પંક્તિને સમકક્ષ આકલન
વનસ્પતિ તથા પ્રાણીઓ	કોરિડોર માર્ગ-પંક્તિ તથા નોંધાયેલ જંકલોને સમકક્ષ જમીનનું આકલન
પાણી ભૂમિગત	અરાવલી પર્વતમાળાના ભૂગર્ભી માર્ગવાળા વિસ્તારનું પરીક્ષણ
જળાશયો	કોરિડોર પંક્તિમાથી પસાર થતી નદીઓનું 'જળ ગુણવત્તા વિશ્લેષણ'
સામાજિક અસરો	'બેસલાઇન સર્વે એન્ડ સેન્સસ ઓફ ધ રિસેટલમેન્ટ એન્ડ રિહેબિલિટેશનપ્લાન (આર.આર.પી.) સ્ટડી' અંતર્ગત અભ્યાસ
લોકસંવાદ બેઠકો (પી.સી.એમ.)	અભ્યાસના શરૂઆતી તેમજ આખરી ચરણમાં જિલ્લા સ્તરે ઇ.એસ.આઈ.એ. સંબંધિત પી.સી.એમ.નું આયોજન કરવામાં આવશે. પી.સી.એમ.ના આગલા ચરણની યોજના જાન્યુઆરી અથવા ફેબ્રુઆરી ૨૦૧૧માં કરવામાં આવશે.

નોંધ: જમીન અધિકરણ, પુનર્વસન તેમજ પુન:વસવાટ ના અભ્યાસ પૃથક રીતે આર.આર.પી. તથા પી.સી.એમ. અંતર્ગત કરવામાં આવશે

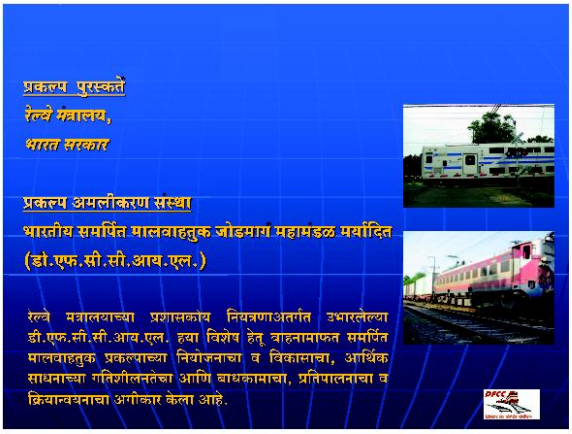
આભાર

【Marathi】

प्रकल्पाची दीर्घकालीन उद्दिष्टे
मोठ्या परिसरातील मालाची शीघ्र व सुरक्षित वाहतुक सुलभ करण्यासाठी मल्टिपल हाय एक्सेल मालवाहतुक जोडमार्गाच्या विकासाची कल्पना करण्यात आली आहे.
आराखड्यानुसार वर्षाला सरासरी ३७.७ मिलियन टन माल वाहून नेण्याची या मार्गाची क्षमता आहे.
अर्थव्यवस्था वृद्धीचे सध्यकालीन कल चालू ठेवण्यास व गतिवर्धक करण्यास मदत.
रोजगाराच्या संधी निर्माण करणे, अत्याधिक महसूल मिळविणे व घसगुती उत्पन्नामध्ये वाढ करणे आणि सार्वजनिक हित जोपासणे

DFCC
समर्पित मालवाहतुक जोडमार्गाचा विकास (टप्पा २)
पर्यावरणीय व सामाजिक परिणामाच्या मूल्यमापनाचा अभ्यास
लोकसवाद सभा
(पी.सी.एम.)
रेवाडी जिल्हा
दिनाक / महिना / वर्ष

पश्चिम माग - टप्पा २ प्रकल्पाची व्याप्ती
प्रकल्प क्षेत्र :
महाराष्ट्रमधील ठाणे व रायगड
गुजरातमधील वलसाड, वडोदा, भारूच, सूरत, नवसारी
राजस्थानमधील अलवर
हरियाणामधील फरीदाबाद, गुडगाव, रेवाडी, पलवल व मेवात.
उत्तरप्रदेशमधील गौतमबुद्धनगर
दिल्लीमधील तुगलकाबाद
प्रस्तावित सुविधा :
दोन (२) टर्मिनल स्टेशन, तीन (३) जक्शन स्टेशन, दहा (१०) क्रासिंग स्टेशन, एकशे चौऱ्यांशी (१८४) प्रमुख व महत्त्वपूर्ण पूल तसेच एकवीस (२१) आर.ओ.बी.
नियोजित प्रकल्प वेळापत्रक :
ई.एस.आय.ए. आणि पुनर्वसाहत व पुनर्वसन नियोजन (आर.आर.पी) अभ्यासाचा कालावधी : सप्टेंबर २०१० - फेब्रुवारी २०११
सामाजिक सुधारणेसाठीचे बाधकाम : जुलै २०१२ - सप्टेंबर २०१५


प्रकल्प पुरस्कर्ते
रेल्वे मंत्रालय,
भारत सरकार
प्रकल्प अमलीकरण संस्था
भारतीय समर्पित मालवाहतुक जोडमार्ग महामंडळ मर्यादित
(डी.एफ.सी.सी.आय.एल.)
रेल्वे मंत्रालयाच्या प्रशासकीय नियंत्रणाअंतर्गत उभारलेल्या डी.एफ.सी.सी.आय.एल. हया विशेष हेतू वाहनामाफत समर्पित मालवाहतुक प्रकल्पाच्या नियोजनाचा व विकासाचा, आर्थिक साधनाच्या गतिशीलनतेचा आणि बाधकामाचा, प्रतिपालनाचा व क्रियान्वयनाचा अंगीकार केला आहे.

पश्चिम मार्ग - दुसऱ्या टप्प्याची मांडणी
Gujarat
Daman and Diu
Dadra and Nagar Haveli
Maharashtra
Delhi
Uttar Pradesh
Haryana
Rajasthan
जे.एन.पी.टी. ते वडोदरा
दरम्यान ४२५ कि.मी.
रेवाडी (हरियाणा) ते दादरी (उत्तरप्रदेश) दरम्यान
१५९ कि.मी. यामध्ये पीरथल ते तुगलकाबाद दरम्यानच्या
३२ कि.मी. चा अतर्भाव

प्रकल्पासंबंधित एकूण(२)
जागतिक दर्जाचा व अत्याधुनिक तंत्रज्ञानाचा स्वीकार करण्यास समर्पित मालवाहतुक जोडमार्ग प्रकल्प विचाराधीन आहे. मूलभूत आराखड्यात वैशिष्ट्यांच्या नूतनीकरणाद्वारा वर्तमान वहनक्षमतेमध्ये महत्वपूर्ण बदल करण्याचे प्रयोजन आहे. महत्त्वाच्या व उच्च दर्जाच्या आराखड्यात वैशिष्ट्यांच्या सहाय्याने कायमस्वरुपी मार्गाचे बाधकाम होणार आहे, त्यामुळे जास्त वजनाच्या मालाची वाहतुक शीघ्रगतीने होईल. हा बदलामुळे लाब व वजनदार रेल्वेगाड्या समर्पित मालवाहतुक जोडमार्गावर धाव लागतील.
पहिल्या टप्प्यात, DFCCIL दोन जोडमार्गाची बाधणी करणार आहे. पश्चिम डी.एफ.सी. आणि पूर्व डी.एफ.सी. - विस्तारची एकूण लाबी साधारणत: ३३०० कि.मी. दिल्ली, हरियाणा, राजस्थान, गुजरात आणि महाराष्ट्र हा राज्यामधून जाणारा पश्चिम जोडमार्ग (टप्पा १ व २) हा दादरी ते मुबई अतर पार करेल.
INDIA

मुख्य संभवनीय पर्यावरणीय व सामाजिक आव्हाने

मुख्य अपेक्षित परिणाम	बाबी
आवाज व कंपन	वाहनांची (जड वाहनांच्या व वक्रमार्गीच्या घर्षणामुळे) अधिक आवाजाची शक्यता
विशिष्ट प्रदेशातील वनस्पती व प्राणिजात	वाहनांची व कार्यवाही दरम्यान शक्यता.
पृष्ठजल	वाहनांची शक्यता
भूजल	वाहनांची व कार्यवाही दरम्यान वाहिनीमुळे व झिरपण्यामुळे आणि बांधकाम जसेतून वाहण्यामुळे भूजलाची शक्यता.
जलभाग	वाहनांची शक्यता शक्यता
हवाप्रदूषण (धूळ)	वाहनांची शक्यता
माती धूप	जमिनीची व उकरा जागेची साफसफाई.
सामुदायिक विभाजन	वाहनांची व कार्यवाही दरम्यान आडमार्ग - वाहतुकीचे मर्यादेमुळे शक्यता.
अस्तित्व सुविधांची वाहतूकीची व सामाजिक रोग	वाहनांची शक्यता वाहतूक वाढण्यामुळे व बांधकामाच्या वाढीमुळे
जमीन अधिग्रहण	प्रोजेक्टनिर्मितेस्थान, घरांच्या व काही बांधकाम कामी स्थापनेच्या वृक्षतोडीसाठी आर.ओ.डब्लू. सह सुरुवातीची आवश्यकता.

ई.एस.आय.ए. मध्ये सुयोग्य उपायांची आखणी करून व ई.एस.आय.ए. अनुसार होणाऱ्या बाधणी व कार्यवाही दरम्यान ते (उपाय) अमलात आणून वरील परिणाम कमी केले जातील.

* लोकसंवाद सभेची उद्दिष्टे *

प्रकल्पास संबंधित पर्यावरणीय व सामाजिक परिणाम व ते मर्यादित करण्याचे उपाय या संबंधित लोकांची मते व अभिप्राय सनाविष्ट करण्यासाठी प्रकल्पाच्या नियोजन अवस्थेदरम्यान लोकसंवाद सभा (पी.सी.एस.) आयोजित करण्यात आली आहे.

मुख्य उद्दिष्टे :

- प्रकल्पासंबंधित माहिती, नियोजन व वेळापत्रक या विषयाच्या माहितीचा प्रसार करणे.
- नियोजन अवस्थेदरम्यान प्रकल्पामध्ये इच्छुक असणाऱ्यांना प्रकल्पाविषयीची मते अभिव्यक्त करण्याची संधी देणे.
- प्रकल्पाच्या नियोजिन प्रक्रियेसाठी लोकसंवाद सभेदरम्यान अभिप्राय व प्रतिसाद मिळविणे.
- प्रकल्पाच्या पर्यावरणीय व सामाजिक परिणाम / फायद्याविषयी माहिती पुरविणे.

ई.एस.आय.ए. अध्ययनाची व संबंधित इतर उपक्रमांची व्याप्ती

अभ्यासाचे मुख्य मुद्दे	बाबी
ध्वनी प्रदूषण व कंपन	प्रस्तावित प्रकल्प माहितीच्या लगत मोजणी.
विशिष्ट प्रदेशीय वनस्पती व प्राणिजात	प्रकल्प माहिती व नोंद केलेल्या वनाच्या लगतचे क्षेत्र सर्वेक्षण.
भूजल	असावली पर्यंत शासनाकडील नियोजित वाळवंट विभागामध्ये परिक्षण करणे.
जलभाग	लेखूर रेल्वेमार्ग जातो तेथील प्रमुख नद्यांच्या पाण्याच्या दर्जेचा अभ्यास करणे.
सामाजिक परिणाम	पुनर्वसाहत व पुनर्वसन नियोजन (आर.आर.पी.) अभ्यासाच्या आधारभूत सर्वेक्षण व जनगणना अंतर्गत अभ्यास केला जाईल.
लोकसंवाद सभा (पी.सी.एस.)	अभ्यासाचा आरंभ व निश्चितीकरण करताना किंवा स्तरावर ई.एस.आय.ए. आयोजित केली जाईल. पी.सी.एस. च्या पुढील टप्प्याचे नियोजन जानेवारी / फेब्रुवारी २०११ मध्ये केले जाईल.

टीप : जमीन अधिग्रहण, पुनर्वसाहत व पुनर्वसन चे अध्ययन आर.आर.पी. आणि पी.सी.एस. च्या अंतर्गत स्वतंत्रपणे केले जाईल.

ई.एस.आय.ए. व त्या संबंधित इतर उपक्रमांची उद्दिष्टे

- प्रकल्पामुळे होणाऱ्या संभवनीय सामाजिक / नैसर्गिक पर्यावरणाच्या परिणामाचे मूल्यमापन व ओळख करण्यासाठी आधारभूत माहिती गोळा करणे.
- संभवनीय पर्यावरणीय व सामाजिक परिणामाना उद्देशून आवश्यक त्या कृती करण्यासाठी उपशमनासाठीचे उपाय तयार करणे. जसे की, पर्यावरणीय व सामाजिक व्यवस्थापन आणि नियंत्रक नियोजन (ई.एस.एम.एम.पी)

- जमीन अधिग्रहण, पुनर्वसाहत पुनर्वसन याचा आर.आर.पी. मध्ये स्वतंत्रपणे अभ्यास केला जाईल.

धन्यवाद.

मुख्य संभवनीय पर्यावरणीय व सामाजिक फायदे

मुख्य अपेक्षित परिणाम	बाबी
आर्थिक विकास	प्रमुख आर्थिक व व्यापारी केंद्रांमधून सुधारित पोहोचमार्गाद्वारा राज्यातील प्रदेशामध्ये आर्थिक एकात्मता वाढविणे.
रोजगाराच्या संधी	रोजगार निर्माण करणे आणि बांधणी व कार्यवाही दरम्यान प्रत्यक्ष व अप्रत्यक्षपणे उद्यमिकांसाठी प्रोत्साहन देणे.
पर्यायी सुरक्षितता	झाड तोडल्याबद्दल क्षतिपूर्तीसाठी तद्देशीय जातींची लागवड करणे.
जागतिक तापमानवाढ	मोठ्या प्रमाणावर होणाऱ्या वाहतुकीमुळे व विद्युतीकरणामुळे घट होण्याची शक्यता.
पाण्याचा योग्य निचरा	रेल्वे प्रकल्प बांधणीचा संभाव असो, पावसाच्या पाण्याचा योग्य निचरा करण्यासाठी, तरतूद करणे.
प्रदूषण तपासणी	अमलात आणण्याच्या अवस्थेदरम्यान नियंत्रितपणे प्रदूषणाची तपासणी करणे.

Appendix-9b
Result of PCMs for ESIA Scoping Stage

Appendix-9b
Result of PCMs for ESIA Scoping Stage

Summary of PCM

	District	Venue	Date	Language	No.PAPs
JNPT-Vadodara Section					
1	Bharuch	Sevasharam Rajput Chhatralay	Nov. 18, 2010	Gujarati	80
2	Surat	Manibhai Marrigat Hall	Nov. 19, 2010	Gujarati	104
3	Navsari	Shri Maharaja Agrasen Sanskritik Hall	Nov. 20, 2010	Gujarati	73
4	Valsad	Shri Ganesh Hall	Nov. 22, 2010	Gujarati	167
5	Vadodara	Kheri Wadi Utpan Samiti Meeting Hall	Nov. 24, 2010	Gujarati	105
6	Thane	K.T Wadi Hall	Nov. 25, 2010	Marathi	170
7	Thane (Kalyan and Bhiwandi): re-holding	Geeta Hall	Feb. 24, 2011	Marathi	56
8	Thane (Palghar): re-holding	Lions Club of Palghar	Feb. 28, 2011	Marathi	201
9	Raigad	Asirvad Mangaal Karyalaya	Nov. 25, 2010	Marathi	133
10	Raigad: re-holding	Agri Samai Hall	Feb. 25, 2011	Marathi	64
Rewari-Dadri Section					
11	Rewari District	Yadav Samaroh Sthal	Nov. 10, 2010	Hindi	174
12	Alwar District	Hotel Rajasthan Heritage	Nov. 11, 2010	Hindi	154
13	Mewat District	Agarwal Dharamshala	Nov. 13, 2010	Hindi	195
14	Palwal District	Abhinandan Banquet Hall	Nov. 16, 2010	Hindi	86
15	Faridabad District	Jaat Bhawan	Nov. 18, 2010	Hindi	119
16	Faridabad District (9 additional villages)	Primary School, Badshahpur Village, Faridabad Tehsil	Feb. 17, 2011	Hindi	86
17	Gautam Buddh Nagar	Shree Vatika	Nov. 19, 2010	Hindi	39
18	Gurgaon District	Punjabi Dharamshala	Nov. 20, 2010	Hindi	125

Details of each PCM

【JNPT-Vadodara Section】

1. PCM in Bharuch

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- Villagers required the information on when and whose land will be acquired and how much compensation will be given.
- Participants also explained that if the MoR does not want to discuss their interest (compensation), they would like to leave the meeting.
- Railway officer explained them that this meeting was organized to discuss social and environment issues, the rehabilitation and resettlement issues will be discussed in another meeting. He asked them to stick to the theme of the meeting. But the participants were not ready to agree with him.

[Environmental Issues]

- Afforestation should be carried out as compensation for tree-cutting and environmental damages.

(2) List of Participants:

80 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1-1 PCM in Bharuch

Source: JICA Survey Team

Photo 1-2 PCM in Bharuch

(4) Analysis of the Feedback Form:

Not available. People did not give back the feedback forms in terms of expressing dissatisfaction of the meeting.

2. PCM in Surat

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- Land compensation was the major issue raised by the villagers and their main concern was how to save their land or get maximum compensation.
- Villagers explained that they are small and marginal farmers and do not have any other source of income.
- Most of the participants concerned whether the railway will provide employment for at least one person from each affected family.
- Villagers demand feeder roads should be constructed for transporting their goods to the railway station.

[Environmental Issues]

- Villagers demanded trees and environment should be conserved during implementation of DFC project.
- Villagers requested on preparing a proper drainage of the rain water.

(2) List of Participants:

89 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 2-1 PCM in Surat

Source: JICA Survey Team

Photo 2-2 PCM in Surat

(4) Analysis of the Feedback Form:

Out of 89 persons who attended the meeting, 50 (55%) filled up the feedback form. Person, who filled up the feedback form, did not reply all the questions. Especially they did not give relevant answers for questions related to environment and social issues. In most of the forms answers for environment and social issues were not given.

[Suggestions for Environmental Issues]

Under this section out of 50 filled of forms only 33 (68%) responded, while 17 (32%) did not. A total of Only 25 (76%) said that trees and environment should be conserved during implementation of DFC project, 5 (15%) said that they should be paid good compensation and job in railways and 3 (9%) said water and electricity should be supplied properly in the project affected area. Overall it is observed that it was difficult for the participants to stick to environment related topics while they were worried about the land compensation issues.

Table 2-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses Environment	No. of Responses	Percentage
1	The land gives us food and water. It also provides fodder for our animals.	0	0%
2	We need a house for a house	0	0%
3	The road to the village is getting damaged	0	0%
4	We want a good compensation and a job.	5	15%
6	Water and electricity should be properly supplied to affected area.	3	9%
7	We should get appropriate compensation for trees.	0	0%

Sl. No.	Type of Responses Environment	No. of Responses	Percentage
8	We want a land for land	0	0%
9	Trees and environment should be conserved.	25	76%
10	Noise pollution	0	0%
Total		33	100%

Source: JICA Survey Team

[Suggestions for Social Issues]
Under this section out of 50 filled in forms only 20 (40%) responded and 30 (60%) did not. A total of 14 (70%) people said that they should get good amount of money and job in railway, while 3 (15%) said that good feeder road should be constructed for transporting their goods to the railway station, 2(10%) said that system should be developed for proper drainage of the rain water, and 1(5%) said that land should be given in exchange of land. Idea of feeder road seems relevant social issue, as this will provide benefit to the local people for transporting their goods by DFC goods trains.

Table 2-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	We should a good amount of money and job.	14	70%
2	We demand a house for house in the same village.	0	0%
3	We expect sufficient money in compensation for trees	0	0%
4	We want a land for land.	1	5%
5	Plan to make a good road.	0	0%
6	Water should be properly drained out.	2	10%
7	Good quality roads for transporting their good to the Rly station	3	15%
Total		20	100%

Source: JICA Survey Team

[Suggestions for Other Issues]
Under this section out of 50 filled of forms only 32 (64%) responded and 18 (36%) did not. All 32 (100%) said that “we want same quality land, as acquired under DFC project.

Table 2-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses (other issues)	No. of Responses	Percentage
1	We need land of the same quality we have	32	100%
2	We want a land for land	0	0%
3	We want job and good amount of money.	0	0%
4	There should be no tax on the compensation money	0	0%
5	Good road for transporting our goods to the Rly. Station	0	0%
6	Platform at the railway station	0	0%
7	We need a house for a house.	0	0%
8	Over bridge at the railway crossings.	0	0%
9	Proper water and electricity supply to the affected area	0	0%
Total		32	100%

Source: JICA Survey Team

3. PCM in Navsari

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- Villagers wanted to present their views first about the compensation only. Participants wanted to leave if land issues were not discussed.
  They demanded a house for house in the same village and land for land as compensation.

[Environmental Issues]

- Villagers demanded trees and environment should be conserved during implementation of DFC project.
- Villagers requested on preparing a proper drainage of the rain water.

(2) List of Participants:

73 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 3-1 PCM in Navsari

Source: JICA Survey Team

Photo 3-2 PCM in Navsari

(4) Analysis of the Feedback Form:

Out of 73 persons who attended the meeting, 63 (86%) filled up the feedback form. Person, who filled up the feedback form, did not reply all the questions. Especially they did not give relevant answers for questions related to environment and social issues. In most of the forms answers for environment and social issues were not given.

[Suggestions for Environmental Issues]

Under this section out of 63 filled of forms only 44 (69%) gave the answer and 19 (31%) did not. Out of 63, only 36 (82%) talked about the environment. 29(66%) said that trees and environment should be saved and 7 (16%) said that noise pollution should be reduced. Other answers were: we want good compensation and a job in exchange of our land, we want land for land, village road should not be damaged and should be repaired to unable village people to the railway station.

Table 3-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	The land gives us food and water. It also provides fodder for our animals.	0	0%
2	We need a house for a house	0	0%
3	The road to the village is getting damaged	2	5%
4	We want a handsome amount and a job.	6	14%
5	Trees should be saved.	0	0%
6	Water and electricity should be properly supplied.	0	0%
7	We should get appropriate compensation for trees.	0	0%
8	We want a land for land	0	0%

Sl. No.	Type of Responses	No. of Responses	Percentage
9	Trees and environment should be conserved	29	66%
10	Noise pollution.	7	16%
11	Railway tracks should be far from locality	0	0%
Total		44	100%

Source: JICA Survey Team

[Suggestions for Social Issues]
Under this section out of 63 filled in forms only 36 (57%) gave reply and 63% did not. A total of 21 (58%) people said that they should get good amount of money and job in railway, while 4 (11%) said that community places should be saved and another 4(11%) said that water should be drained properly from the village site avoid water logging, 5(14%) said that good quality road should be constructed for good transportation to the railway station. Remaining 6% said that they want land in exchange of land as compensation.

Table 3-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	We should get a good amount of money and job.	21	58%
2	We demand a house for house in the same village.	0	0%
3	We expect sufficient money in compensation for trees	0	0%
4	We want a land for land.	2	6%
5	Plan to make a good road.	0	0%
6	Water should be properly drained out.	4	11%
7	Good quality roads for transportation.	5	14%
8	Community places should be conserved	4	11%
Total		36	100%

Source: JICA Survey Team

[Suggestions for Other Issues]
Under this section out of 73 filled of forms only 51 (70%) gave reply and 22 (30%) did not. A total of 37(73%) they want a job in railways and good compensation for their land, 5(10%) said they want good road, another 5(10%) said that community places should be saved and remaining 4 (8%) said that an over bridge on the railway crossing should be build.

Table 3-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need land of the same quality we have	0	0%
2	We want a land for land	0	0%
3	We want a job and good amount of compensation.	37	73%
4	There should be no tax on the compensation money	0	0%
5	Good road for transporting our goods to the Rly. Station	5	10%
6	Platform at the railway station	0	0%
7	We need a house for a house.	0	0%
8	Over bridge at the railway crossings.	4	8%
9	Proper water and electricity supply to the affected area	0	0%
10	Community places should be conserved	5	10%
Total		51	100%

Source: JICA Survey Team

4. PCM in Valsad

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- Major issue was when and whose land will be acquired and compensation rate.
- Villagers explained that they are small and marginal farmers and do not have any other source of income. In addition, they demands higher compensation rate to be given to the agriculture land in Valsad because it is very fertile.
- Whether the railway will provide employment for at least one person from each affected family? Who is eligible for the job? Even if we have small piece of land being acquired, can we get the job?
- At present there are pot holes near the railway crossing, during rainy season they cause accidents, for DFC all these aspects should be taken into account.
- They want land in exchange for land.
- Villagers were also concerned about proper infrastructure in the village.

[Environmental Issues]

- Major concern was tree conservation

(2) List of Participants:

167 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 4-1 PCM in Valsad

Source: JICA Survey Team

Photo 4-2 PCM in Valsad

(4) Analysis of the Feedback Form:

Out of 167 persons who attended the meeting, 162 (97%) filled up the feedback form. The persons who filled up the feedback form, did not reply all the questions. Especially, they did not give relevant answers for questions related to environment and social issues. In most of the forms answers for environment and social issues were not given.

[Suggestions for Environmental Issues]

Under this section out of 162 filled of forms only 61 (37%) gave the answer. Out of 61, only 36 (59%) talked about the environment. Their major concern was to save trees.

Table 4-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	The land gives us food and water. It also provides fodder for our animals.	1	2%
2	We need a house for a house	35	57%
3	The road to the village is getting damaged	1	2%
4	We want a handsome amount and a job.	21	34%
5	Trees should be saved.	2	3%
6	Water and electricity should be properly supplied.	5	8%

Sl. No.	Type of Responses	No. of Responses	Percentage
7	We should get appropriate compensation for trees.	4	7%
8	We want a land for land	1	2%
9	Trees and environment should be conserved.	31	51%
	Total	61	100%

Source: JICA Survey Team

[Suggestions for Social Issues]
Under this section out of 162 filled in forms only 91 (56%) gave reply. A total of 54 (59%) people said that they should get good amount of money and job in railway, while 19 (21%) said that they want house in the same village, if their house comes under the acquisition and 10 (11%) said that they want land in exchange of land. Remaining 8 (9%) were concerned about proper infrastructure in the village.

Table 4-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	We should get a good amount of money and job.	54	59%
2	We demand a house for house in the same village.	19	21%
3	We expect sufficient money in compensation for trees	2	2%
4	We want a land for land.	10	11%
5	Plan to make a good road.	1	1%
6	Water should be properly drained out.	3	3%
7	Good quality roads for transportation.	2	2%
	Total	91	100%

Source: JICA Survey Team

[Suggestions for Other Issues]
Under this section out of 162 filled of forms only 87 (54%) gave reply. A total of 60(69%) they want a job in railways and good compensation for their land, 18% people said that they want land for land, and house for house. Remaining 18% insisted for good infrastructure development by DLCCL.

Table 4-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need land of the same quality we have	2	2%
2	We want a land for land	8	9%
3	We want a job and good amount of compensation.	60	69%
4	There should be no tax on the compensation money	1	1%
5	Good road for transporting our goods to the Rly. Station	2	2%
6	Platform at the railway station	2	2%
7	We need a house for a house.	8	9%
8	Over bridge at the railway crossings.	3	3%
9	Proper water and electricity supply to the affected area	1	1%
	Total	87	100%

Source: JICA Survey Team

5. PCM in Vadodara

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- The slope of their fields is from north to south while the railway line goes from east to west, it will block the natural drains and will create problems of water logging and irrigation in fields. They also said that we know physiography of our village better than any government official. It is important that while doing survey or carrying out any technical work village people should be consulted.
- Overall the questions were asked regarding when and whose land will be acquired and how much compensation will be given.
- Job assurance was another important issue raised by the villagers.
- DFCCIL officers assured the participants that their concerns will be communicated to the higher authorities, who will try to accommodate their issues in the planning and implementation.

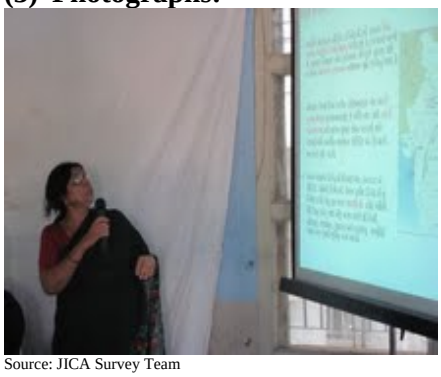
[Environmental Issues]

- Major concern was to save trees.

(2) List of Participants:

105 participants attended the PCM.

(3) Photographs:



Source: JICA Survey Team

Photo 5-1 PCM in Vadodara

Source: JICA Survey Team

Photo 5-2 PCM in Vadodara

(4) Analysis of the Feedback Form:

Out of 105 persons who attended the meeting, 83 (79%) filled up the feedback form. Person, who filled up the feedback form, did not reply all the questions. Especially they did not give relevant answers for questions related to environment and social issues. In most of the forms answers for environment and social issues were not given.

[Suggestions for Environmental Issues]

Under this section out of 83 filled of forms only 61 (73%) gave the answer, remaining 22 (27%) did not answer this question.

Out of 61, only 28 (46%) talked about the environment, of which 31% said trees should be conserved and 15% said that noise pollution should be controlled. Other answers were: “we want good compensation and job, water and electricity should be properly supplied even after construction of DFC. Table 5-1 gives all details of responses.

Table 5-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses Environment	No. of Responses	Percentage
1	The land gives us food and water. It also provides fodder for our animals.	1	2%
2	We need a house for a house	0	0%
3	The road to the village is getting damaged	0	0%
4	We want a good compensation and a job.	18	30%
5	Trees should be saved.	0	0%

Sl. No.	Type of Responses Environment	No. of Responses	Percentage
6	Water and electricity should be properly supplied.	12	20%
7	We should get appropriate compensation for trees.	0	0%
8	We want a land for land	2	3%
9	Trees and environment should be conserved.	19	31%
10	Noise pollution	9	15%
Total		61	100%

Source: JICA Survey Team

[Suggestions for Social Issues]
Under this section out of 83 filled in forms only 67 (81%) responded while 16 (19%) did not.
A total of 61 (01%) people said that they should get good amount of money as compensation and job in railway, while 5 (7%) said that arrangement should be made for proper drainage of rain water while constructing DFC. It is observed that the people did not give much option under this section.

Table 5-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	We should a good amount of money and job.	61	91%
2	We demand a house for house in the same village.	0	0%
3	We expect sufficient money in compensation for trees	0	0%
4	We want a land for land.	1	1%
5	Plan to make a good road.	0	0%
6	Rain Water should be properly drained out.	5	7%
7	Good quality roads for transportation.	0	0%
Total		67	100%

Source: JICA Survey Team

[Suggestions for Other Issues]
Under this section out of 83 filled of forms only 57 (69%) responded whild 26 (31%) did not. A total of 44(77%) said that they want a job in railways and good compensation for their land, 5% people said that good roads should be contracted to bring their goods to the railway station, 9% said they want over bridge at the railway crossing and another 9% said that proper water and electricity should be supplied in the affected area. .

Table 5-3 Classification of Responses for the Other Issues

SL. No.	Type of Responses (other issues)	No. of Responses	Percentage
1	We need land of the same quality we have	0	0%
2	We want a land for land	0	0%
3	We want job and good compensation for the land.	44	77%
4	There should be no tax on the compensation money	0	0%
5	Good road for transporting our goods to the Rly. Station	3	5%
6	Platform at the railway station	0	0%
7	We need a house for a house.	0	0%
8	Over bridge at the railway crossings.	5	9%
9	Proper water and electricity supply to the affected area	5	9%
Total		57	100%

Source: JICA Survey Team

6. PCM in Thane

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;
[Socio-Economic Issues]
Participants were been agitated and left the place due to not to be given the explanation on compesation issues by DFCCIL officials.

(2) List of Participants:
Not available. It was taken away by participants.

(3) Photographs:

Source: JICA Survey Team
Photo 6-1 PCM in Thane

Source: JICA Survey Team
Photo 6-2 PCM in Thane

(4) Analysis of the Feedback Form:
Not available. People left the place without fuilling up any feedback forms.

7. PCM in Kalyan and Bhiwandi Sub-District, Thane (Re-Holding)

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- Participants wanted to know how much land and how many villages will be affected by this project.
- Employment should be given to members of those families whose land will be acquired for the project
- Proper compensation at the prevailing rate of market should be given.
- At the prevailing rates farmers can get Rs. 4500 per sq metre as market value for the land. However, government will pay only at the rate of Rs 2700/- that will not be accepted? With those rates PAPs will not be able to buy new land and they also won't be able to get a loan.
- Farmers who will become landless after acquisition of their land are concerned about what they will do in the future.
- Those farmers who will be affected by this project should get proper & timely compensation obviously as per the current market rates.

[Environmental Issues]

- Concerns on noise pollution and vibration were addressed.
- Request to prepare counster-measures against accident was made.
- Request for enhancing tree plantation was made.

(2) List of Participants:

56 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 7-1 PCM in Thane

Source: JICA Survey Team

Photo 7-2 PCM in Thane

(4) Analysis of the Feedback Form:

Out of 56 persons who attended the meeting, 41 (73%) filled up the feedback form.

[Suggestions for Environmental Issues]

- Measure shoud be provided for environemtnal protection.
- Tree plantation should be encouraged
- Counter-measure should be prepared against noise pollution
- Counter-measure such as constructing bridge over the alighment should be prepared in order to avoind accident

[Suggestions for Social Issues]

- Approproated Compensation rate should be prepared.
- Job opportunity should be given to the affected people.

8. PCM in Palghar Sub-District, Thane (Re-Holding)

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- In one of the particular case where a farmer holds 50 coconut trees, he wanted to know how he is going to be compensated.
- Farmers whose names appear but they are not officially on record or registered with panchayat 7x 12 should be done first to complete the formality so as to avoid further complications and to make them eligible for the compensation.
- In Palghar there is a big slum namely Gandhi Nagar situated along the existing railway track. This slum would be removed. What will happen to those who have been living in the slum for a long time? How will they be compensated? In case they are asked to shift to a remote place they will oppose the project.
- Before implementing the project, the responsible officials from the ministry concerned should be invited in such meetings.
- Alternate roads should be constructed.
  Organise the meetings at the Taluka level, not at one place where PAPs cannot come due to inconvenience.

[Environmental Issues]

- Concerns on noise pollution and vibration were addressed.
- Request to prepare counter-measures against accident was made.
- Request for enhancing tree plantation was made.

(2) List of Participants:

201 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 8-1 PCM in Thane

Source: JICA Survey Team

Photo 8-2 PCM in Thane

(4) Analysis of the Feedback Form:

Out of 201 persons who attended the meeting, 43 (21%) filled up the feedback form.

[Suggestions for Environmental Issues]

- Measure shoud be provided for environemtnal protection.
- Tree plantation should be encouraged
- Counter-measure should be prepared against noise pollution
- Counter-measure such as constructing bridge over the alighment should be prepared in order to avoid accident

[Suggestions for Social Issues]

- Approproated Compensation rate should be prepared.
- Strong concern on resettlement resulted from the land acquisition was addressed
- Request for land-for-land and building-for-building compensation was made.
- Job opportunity should be given to the affected people.

9. PCM in Raigad

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- Participants raised the issue of DIVA-ROHA railway line construction from 1965 to 1970, for which still they have not got the full compensation. They do not want to repeat the same history for DFCCIL.
- Participants strongly requested for M.P and M.L.A to attend the meeting and they insisted not to corporate to have the PCM without the presence of M.P and M.L.A.
- The meeting was terminated due to the strong public resentment

(2) List of Participants:

Not Available. The registration sheet was torn up by one of the participants.

(3) Photographs:

Source: JICA Survey Team

Photo 9-1 PCM in Raigad

Source: JICA Survey Team

Photo9-2 PCM in Raigad

(4) Analysis of the Feedback Form:

Not available. Participants left the place without filling out the feedback form.

10. PCM in Raigad (Re-Holding)

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- Participants raised the issue of DIVA-ROHA railway line construction from 1965 to 1970, for which still they have not got the full compensation. They do not want to repeat the same history for DFCCIL.
- Temples which are part of the land being acquired should also be considered for the payment of compensation.
- Local names of that particular village shall be given to the stations.
- Give a report of the job given to those whose land is to be acquired by railway.
- Take public poll and don't use weapons like police lathies (cane) to force the farmers to leave their land.
- We have suffered a lot and have lost land in the last railway project. Some had to bear losses of up to 80% of their land in Dapoli village. Railways have provided meagre compensation.
- Due to this project, infrastructure of the roads in the area shouldn't worsen.
- As compensation, farmers should get shares of the DFCCIL.
- It has happened earlier that farmers whose land was used for making ONGC pipeline installation were not paid the compensation. How can we believe government and its agency if behave like this?
- Proper discussion and interaction should be made between farmers and leaders before proceeding for land acquisition or deciding about the compensation.
- Farmers in Raigarh are poor and many are in debt. Therefore even the loss of small pieces of land can have a significant impact on their lives.
- Like CIDCO had to agree upon giving shares to farmers whose lands were affected by the airport -they should get the same compensation.
- As of today one guntha costs Rs. 1500000/- where as Govt. Pays Rs. 480000/- this difference should be adjusted.
- The land which is not actually in the project area but passing through it should also be acquired.
- Only local people should be accommodated in railway jobs.
- Farmers should be given a certificate of gratitude.

[Environmental Issues]

- During this project, local tenants will have to suffer pollution problems. To maintain a balanced environment, tree cutting should not be done.
- As the banyan tree is considered to be holy as per Hindu mythology and science as it plays an important role for keeping balance of nature, where there is a perfect permutation and combination of carbon dioxide and oxygen so as far as possible we should avoid cutting them.
- There should be awareness on the environmental impact of the project among the people.
- DFCCIL should publish an elaborate report on pollution damage and its control measures in relation to this project.
- Drainage of rain water is also an important issue.
- Increases in levels of noise pollution were raised as a concern.

(2) List of Participants

64 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo2-1 PCM in Raigad

Source: JICA Survey Team

Photo2-2 PCM in Raigad

(4) Analysis of the Feedback Form:

Out of 64 persons who attended the meeting, 46 (72%) filled up the feedback form.

[Suggestions for Environmental Issues]

- Measure shoud be provided for environemtnal protection.
- Tree plantation should be encouraged
- Counter-measure should be prepared against noise pollution
- Counter-measure should be prepared against inundation.

[Suggestions for Social Issues]

- Compensation rate should be higher than present offering rate.
- Job opportunity should be given to the affected people

【Rewari-Dadri Section】

11. PCM in Rewari

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- There is a big gap between land market rates in Rewari district and official rate and the PAPs complained because the estimation basis of the proposed compensation package of MoR is the official rate.
- Most of the PAPs wanted immediate disbursal of compensation money.
- PAPs said that the alignment of the DFC should be at a suitable distance (about 1000 feet) from village.
- In Bithwana village there is a cremation ground in Khasra No 37 and Khasra No 40. Therefore, a change in alignment is requested.
- Fencing of the DFC must be done so that accidents involving domesticated animals and human beings do not take place.
- Most of the PAPs wanted guaranteed employment in DFCCIL/MoR as part of the compensation package for those who have lost land. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project.
- There were many PAPs who complained that the DFCCIL is not acquiring the entire land but only acquire the land within the proposed right of way. In some cases this remaining small piece of the land which is not in the proposed right of way (ROW) of the alignment become useless for the owner. PAPs demanded that such small patches of land should also be acquired by DFCCIL.
- Some people also mentioned that compensation must include land for land, enhanced compensation packages, and employment for one member of the family that has lost substantial land to the DFC.
- Some villagers complained that bore wells laid on their patch of land will be damaged. They wanted compensation of Rs 1 lakh for drilling a new bore well.

[Environmental Issues]

- PAPs addressed that flora and fauna should be preserved and protected.
- PAPs demand that existing roads should not be closed. Wherever such an eventuality arises, manned road crossings or underpasses should be constructed so as to facilitate commuting and transportation within and between villages.
- PAPs demanded construction of a green belt on both sides to reduce noise and vibration pollution.

(2) List of Participants:

174 participants attended the PCM.

(3) Photographs

Source: JICA Survey Team

Photo 11-1 PCM in Rewari

Source: JICA Survey Team

Photo 11-2 PCM in Rewari

(4) Analysis of the Feedback Form:

Out of 175 participants, 128 filled up the feedback form. Most participants did not give responses to all the questions in the feedback form. Most people spoke largely about issues related to compensation.

[Suggestions for Environmental Issues]

Table 11-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Green belt all along the alignment to minimise noise and vibration pollution	10	9%
2	Compensatory afforestation must be carried out.	20	16%
3	Alignment should not pass through the forest.	3	2%
4	The corridor ahould be built at least one km away from the village to minimize noise pollution.	34	28%
5	Care should be taken to ensure that we save as much trees as possible.	26	20%
6	There must be adequate compensation for the trees that will be felled for building the corridor.	12	9%

Source: JICA Survey Team

[Suggestions for Social Issues]

Table 11-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	There will be a disintegration of society and family ties.	2	1%
2	Community ponds where milch animals and other cattle use as drinking water should be preserved.	3	2%
3	Community tubewells should be preserved to prevent drudgery of women.	27	23%
4	There must be adequate fencing and boundary walls to prevent accidents of humans and domesticated animals as this is a high speed track.	6	4%
5	Provision for adequate waste management during construction. No waste to be dumped in our villages.	3	2%
6	Electricity poles that are uprooted must be restored immediately.	2	1%
7	Existing roads should not be closed and to and fro movement to villages must be smooth.	30	23%
8	Rail overbridges, underpasses and manned crossings near population centres must be built.	27	21%

Source: JICA Survey Team

[Suggestions for Other Issues]

Table 11-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need adequate and market linked compensation	95	77%
2	Land bank must be created and we want land for land	8	5%
3	We want a permanent job for one member of every land oustee	92	75%
4	Residual land on either side of the alignment must also be acquired by DFC	34	26%
5	Market rates are going up and compensation must be paid immediately.	8	5%
6	Compensation should be market linked and should match what private parties are paying.	70	27%
7	Compensation must be disbursed quickly as we have taken high interest loans.	13	10%

Source: JICA Survey Team

12. PCM in Alwar

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- There is a big gap between land market rates in Alwar district and official rate and the PAPs complained because the estimation basis of the proposed compensation package of MoR is the official rate.
- Most of the Project affected persons (PAPs) want immediate disbursal of compensation money.
- In Banban village the proposed DFC is aligned through residential areas. Some villagers from the village have demanded a detour in the alignment. The representative of DFCCIL explained that while all attempts were being made to avoid population centers, it was not always possible to make changes in the alignment.
- Some villagers complained that bore wells laid on their patch of land would be destroyed. They wanted compensation of Rs 1 lakh for drilling a new bore well.
- To minimize the noise and vibration effects of the DFC a green belt along the track has been proposed by the DFC. The villagers wanted DFC to provide for preparation of the green belt in addition to the compensatory afforestation drive.
- Many villagers wanted employment in DFCCIL/MoR as part of the compensation package to those who will lose land. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project.
- Land of a factory called EMCO India Ltd which had 300 full time employees wanted DFCCIL to avoid the factory land patch.
- There were many PAPs who complained that the DFCCIL is not acquiring the entire land but only acquire the land within the proposed right of way. In some cases this remaining small piece of the land which is not in the proposed right of way (ROW) of the alignment become useless for the owner. PAPs demanded that such small patches of land should also be acquired by DFCCIL.
- Some people also mentioned that compensation must include land for land, enhanced compensation packages, and employment for one member of the family that has lost substantial land to the DFC.
- There was some concern amongst the administration that RIICO and RHB were paying 130 % at present and if MoR were to pay enhanced compensation (160%), land acquisitions for RIICO and RHB could hit a road block.
- PAPs should be informed about the time frame of completion of proposed DFC well in time so that they can make arrangements for a smooth transition.
- PAPs must be provided with basic facilities like colleges, roads, hospitals by the DFCCIL.

[Environmental Issues]

- Villagers suggested for plantation of trees for environmental conservation in the project affected area.

(2) List of Participants:

154 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 12-1 PCM in Alwar

Source: JICA Survey Team

Photo 12-2 PCM in Alwar

(4) Analysis of the Feedback Form:

Out of 154 participants, 60 filled up the feedback form. Most participants did not give responses to all

the questions in the feedback form. Most people spoke largely about issues related to compensation.

[Suggestions for Environmental Issues]

Table 12-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Green belt all along the alignment to minimise noise and vibration pollution	30	50%
2	Compensatory afforestation must be carried out.	39	65%
3	Alignment should not pass through the forest.	2	3%
4	The corridor ahould be built at least one km away from the village to minimize noise pollution.	45	75%
5	Care should be taken to ensure that we save as much trees as possible.	32	53%
6	There must be adequate compensation for the trees that will be felled for building the corridor.	10	16%

Source: JICA Survey Team

[Suggestions for Social Issues]

Table 12-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	There will be a disintegration of society and family ties.	4	7%
2	Community ponds where milch animals and other cattle use as drinking water should be preserved.	3	5%
3	Community tubewells should be preserved to prevent drudgery of women.	28	46%
4	There must be adequate fencing and boundary walls to prevent accidents of humans and domesticated animals as this is a high speed track.	8	13%
5	Provision for adequate waste management during construction. No waste to be dumped in our villages.	4	7%
6	Electricity poles that are uprooted must be restored immediately.	2	3%
7	Existing roads should not be closed and to and fro movement to villages must be smooth.	30	50%

Source: JICA Survey Team

[Suggestions for other issues]

Table 12-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need adequate and market linked compensation	59	100%
2	Land bank must be created and we want land for land	1	4%
3	We want a permanent job for one member of every land oustee	55	93%
4	Residual land on either side of the alignment must also be acquired by DFC	45	75%
5	Market rates are going up and compensation must be paid immediately.	15	25%
6	Compensation should be market linked and should match what private parties are paying.	18	30%
7	Compensation must be disbursed quickly as we have taken high interest loans.	8	13%

Source: JICA Survey Team

13. PCM in Mewat

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- There is a big gap between land market rates in Mewat district and official rate and the PAPs complained because the estimation basis of the proposed compensation package of MoR is the official rate.Most of the Project affected persons (PAPs) want immediate disbursal of compensation money.
- Fencing of the DFC must be done so that accidents involving domesticated animals and human beings do not take placMany villagers wanted employment in DFCCIL/MoR as part of the compensation package to those who will lose land. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project.
- Land of a factory called EMCO India Ltd which had 300 full time employees wanted DFCCIL to avoid the factory land patch.
- Some villagers complained that bore wells laid on their patch of land will be destroyed.
- Most of the PAPs wanted employment in DFCCIL/MoR as part of the compensation package to land ouster. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project.
- There were many PAPs who complained that the DFCCIL is not acquiring the entire land but only acquire the land within the proposed right of way. In some cases this remaining small piece of the land which is not in the proposed right of way (ROW) of the alignment become useless for the owner. PAPs demanded that such small patches of land should also be acquired by DFCCIL.
- Some people also mentioned that compensation must include land for land, enhanced compensation packages, and employment for one member of the family that has lost substantial land to the DFC.
- Adequate provisions must be made to ensure that there are no accidents (both villagers and cattle)
- The agricultural land would be divided into two pieces due to the rail track passing inbetween and farmers concerned inconvenience to be occur on transporting water, equipments, tractors, cattle and so on.

[Environmental Issues]

- Compensatory afforestation in areas where flora would be destroyed is required.

(2) List of Participants:

195 participants attended the PCM.

(3) Photographs

Source: JICA Survey Team

Figure 13-1 PCM in Mewat

Source: JICA Survey Team

Figure 13-2 PCM in Mewat

(4) Analysis of the Feedback Form:

Out of 86 participants, 56 filled up the feedback form. Most participants did not give responses to all the questions in the feedback form. Most people spoke largely about issues related to compensation.

[Suggestions for Environmental Issues]

Table 13-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Green belt all along the alignment to minimise noise and vibration pollution	10	18%
2	Compensatory afforestation must be carried out.	30	54%
3	Alignment should not pass through the forest.	6	11%
4	The corridor ahould be built at least one km away from the village to minimize noise pollution.	24	43%
5	Care should be taken to ensure that we save as much trees as possible.	34	61%
6	There must be adequate compensation for the trees that will be felled for building the corridor.	8	14%

Source: JICA Survey Team

[Suggestions for Social Issues]

Table 13-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	There will be a disintegration of society and family ties.	4	7%
2	Community ponds where milch animals and other cattle use as drinking water should be preserved.	20	36%
3	Community tubewells should be preserved to prevent drudgery of women.	2	4%
4	There must be adequate fencing and boundary walls to prevent accidents of humans and domesticated animals as this is a high speed track.	10	18%
5	Provision for adequate waste management during construction. No waste to be dumped in our villages.	4	7%
6	Electricity poles that are uprooted must be restored immediately.	2	4%
7	Existing roads should not be closed and to and fro movement to villages must be smooth.	30	54%
8	Rail overbridges, underpasses and manned crossings near population centres must be built.	24	43%

Source: JICA Survey Team

[Suggestions for Other Issues]

Table 13-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need adequate and market linked compensation	55	98%
2	Land bank must be created and we want land for land	8	14%
3	We want a permanent job for one member of every land oustee	48	86%
4	Residual land on either side of the alignment must also be acquired by DFC	34	61%
5	Market rates are going up and compensation must be paid immediately.	15	27%
6	Compensation should be market linked and should match what private parties like ADANI are paying.	18	32%
7	Compensation must be disbursed quickly as we have taken high interest loans.	13	23%

Source: JICA Survey Team

14. PCM in Palwal

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- There is a big gap between land market rates in Palwal district and official rate and the PAPs complained because the estimation basis of the proposed compensation package of MoR is the official rate.Most of the Project affected persons (PAPs) want immediate disbursal of compensation money.
- Fencing of the DFC must be done so that accidents involving domesticated animals and human beings do not take place.
- Some villagers complained that bore wells laid on their patch of land will be damaged/ destroyed.
- Most of the PAPs wanted employment in DFCCIL/MoR as part of the compensation package to land ousters. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project.
- There were many PAPs who complained that the MoR is not acquiring the entire land. In some cases an insignificant amount of land is not acquired and it becomes useless to the owner. PAPs demanded that such small patches of land should also be acquired by MoR.
- Some people also mentioned that compensation must include land for land, enhanced compensation packages, and employment for one member of the family that has lost substantial land to the DFC.

[Environmental Issues]

- Green belt all along the alignment to minimize noise and vibration pollution
- Compensatory afforestation must be carried out.
- There must be adequate compensation for the trees that will be felled for building the corridor.

(2) List of Participants:

86 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 14-1 PCM in Palwal

Source: JICA Survey Team

Photo 14-2 PCM in Palwal

(4) Analysis of the Feedback Form:

Out of 86 participants, 56 filled up the feedback form. Most participants did not give responses to all the questions in the feedback form. Most people spoke largely about issues related to compensation.

[Suggestions for Environmental Issues]

Table 14-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Green belt all along the alignment to minimise noise and vibration pollution	10	16%
2	Compensatory afforestation must be carried out.	30	53%
3	Alignment should not pass through the forest.	6	11%
4	The corridor ahould be built at least one km away from the village to minimize noise pollution.	24	43%
5	Care should be taken to ensure that we save as much trees as possible.	34	61%
6	There must be adequate compensation for the trees that will be felled for building the corridor.	8	14%

Source: JICA Survey Team

[Suggestions for Social Issues]

Table 14-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	There will be a disintegration of society and family ties.	4	7%
2	Community ponds where milch animals and other cattle use as drinking water should be preserved.	20	36%
3	Community tubewells should be preserved to prevent drudgery of women.	2	4%
4	There must be adequate fencing and boundary walls to prevent accidents of humans and domesticated animals as this is a high speed track.	10	18%
5	Provision for adequate waste management during construction. No waste to be dumped in our villages.	4	7%
6	Electricity poles that are uprooted must be restored immediately.	2	4%
7	Existing roads should not be closed and to and fro movement to villages must be smooth.	30	54%
8	Rail overbridges, underpasses and manned crossings near population centres must be built.	24	43%

Source: JICA Survey Team

[Suggestions for Other Issues]

Table 14-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need adequate and market linked compensation	55	98%
2	Land bank must be created and we want land for land	8	14%
3	We want a permanent job for one member of every land oustee	48	86%
4	Residual land on either side of the alignment must also be acquired by DFC	34	61%
5	Market rates are going up and compensation must be paid immediately.	15	27%
6	Compensation should be market linked and should match what private parties like ADANI are paying.	18	32%
7	Compensation must be disbursed quickly as we have taken high interest loans.	13	23%

Source: JICA Survey Team

15. PCM in Faridabad

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- There is a big gap between land market rates in Faididabad district and official rate and the PAPs complained because the estimation basis of the proposed compensation package of MoR is the official rate.
- Most of the Project affected persons (PAPs) want immediate disbursal of compensation money.
- Many of the PAPs demanded compensation as was being paid in other parts of the National Capital Region (NCR).
- Fencing of the DFC must be done so that accidents involving domesticated animals and human beings do not take place.
- Some villagers complained that bore wells laid on their patch of land will be destroyed.
- Most of the PAPs wanted employment in DFCCIL/MoR as part of the compensation package to those who will lose land. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project. They also wanted appropriate employment opportunities for their children according to their educational levels.
- There was a demand for a ROB (Road Over Bridge) at village Nawada. Also there was a demand for more manned railway crossings and underpasses to be built especially near population centres to reduce walking long distances in daily life.
- There was also some apprehension about repeated surveys being done and many people felt that anomalies regarding exact *khasra* number (plot details) and details of PAPs in these plots needs to be revisited.
- PAPs feel that the land is not being acquired to serve public purpose, instead it is serving the commercial interests of big business.
- There were many PAPs who complained that the DFCCIL is not acquiring the entire land but only acquire the land within the proposed right of way. In some cases this remaining small piece of the land which is not in the proposed right of way (ROW) of the alignment become useless for the owner. PAPs demanded that such small patches of land should also be acquired by DFCCIL.
- Some people also mentioned that compensation must include land for land, enhanced compensation packages, and employment for one member of the family that has lost substantial land to the DFC.
- Villagers of Mawai informed that the railway line is passing very close to habitation. They are also concerned about the adverse effects on the education of their children.
- Villagers required for preparing adequate provision for ensuring that there are no accidents (both villagers and cattle) because of the high speed railway line.
- Participants wanted to know the exact alignment as there were confusion about the proposed route of the DFC.
- Villagers concerned in case of their land into two pieces due to the land acquisition which would create inconvenience of transportation as well as negative impact on irrigation system.
- Participants from the Mawai village suggested that the alignment should be strait rather than taking a detour around as there is vast land available for the project. It will also save a big patch of forest that would be destroyed if the alignment is designated as per the existing proposal.
- Some of the participants suggested that the alignment should be designated from the Bopan Road to avoid large scale acquisition.
- People were really worried about the flooding of the villages due to Yamuna River. They stated that vast areas of land are flooded by the Yamuna after rainy seasons. There is natural drainage line of the villages at present however, after construction of the DFC, drainage systems could becoome blocked and water will remain in agricultural fields for long time.

[Environmental Issues]

- Adequate provisioning must be made in the project to reduce the adverse impacts of sound, vibration and dust pollution.
- Need of green belt all along the alignment.

(2) List of Participants:

119 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 15-1 PCM in Faridabad

Source: JICA Survey Team

Photo 15-2 PCM in Faridabad

(4) Analysis of the Feedback Form:

Out of 119 participants, 109 filled up the feedback form. Most participants did not give responses to all the questions in the feedback form. Most people spoke largely about issues related to compensation.

[Suggestions for Environmental Issues]

Table 15-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Green belt all along the alignment to minimise noise and vibration pollution	45	41%
2	Compensatory afforestation must be carried out.	48	44%
3	Alignment should not pass through the forest.	2	2%
4	The corridor ahould be built at least one km away from the village to minimize noise pollution.	55	50%
5	Care should be taken to ensure that we save as much trees as possible.	42	39%
6	There must be adequate compensation for the trees that will be felled for building the corridor.	18	17%

Source: JICA Survey Team

[Suggestions for Social Issues]

Table 15-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	There will be a disintegration of society and family ties.	4	3%
2	Community ponds where milch animals and other cattle use as drinking water should be preserved.	12	9%
3	Community tubewells should be preserved to prevent drudgery of women.	28	24%
4	There must be adequate fencing and boundary walls to prevent accidents of humans and domesticated animals as this is a high speed track.	8	6%
5	Provision for adequate waste management during construction. No waste to be dumped in our villages.	2	1%
6	Electricity poles that are uprooted must be restored immediately.	2	1%
7	Existing roads should not be closed and to and fro movement to villages must be smooth.	40	38%
8	Rail overbridges, underpasses and manned crossings near population centres must be built.	44	40%

Source: JICA Survey Team

[Suggestions for Other Issues]

Table 15-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need adequate and market linked compensation	108	99%
2	Land bank must be created and we want land for land	1	1%
3	We want a permanent job for one member of every land oustee	103	94%
4	Residual land on either side of the alignment must also be acquired by DFC	87	80%
5	Market rates are going up and compensation must be paid immediately.	10	9%
6	Compensation should be market linked and should match what private parties are paying.	102	94%
7	Compensation must be disbursed quickly as we have taken high interest loans.	32	29%

Source: JICA Survey Team

16. PCM in Gautam Budha Nagar

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- There is a big gap between land market rates in Gautam Buddha Nagar district and official rate and the PAPs complained because the estimation basis of the proposed compensation package of MoR is the official rate.
- Most of the Project affected persons (PAPs) want immediate disbursal of compensation money.
- The Sarpanch of Nawali village said that the Greater Noida Authority is allotting plots in lieu of land acquired. The DFCCIL/ MoR was also requested to adopt a similar land-for-land policy. Also he demanded that the allotted land should be in developed areas and not be in remote areas.
- Villagers were happy that one of the terminal stations was in Dadri and wanted to know what benefits would accrue to the local populace from this development.
- Most of the PAPs wanted employment in DFCCIL/MoR as part of the compensation package to those who will lose land. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project.
- Many PAPs who complained that the DFCCIL is not acquiring the entire land but only acquire the land within the proposed right of way. In some cases this remaining small piece of the land which is not in the proposed right of way (ROW) of the alignment become useless for the owner. PAPs demanded that such small patches of land should also be acquired by DFCCIL.
- Some people also mentioned that compensation must include land for land, enhanced compensation packages, and employment for one member of the family that has lost substantial land to the DFC.

[Environmental Issues]

- Villagers requested that steps should be taken to ensure mitigation of the noise and vibration arising during construction phase of DFC and also when freight trains will pass through affected villages.
- Villagers demanded that fencing of the DFC must be done so that accidents involving domesticated animals and human beings do not take place.
- Some villagers complained that bore wells laid on their patch of land will be destroyed.

(2) List of Participants:

39 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 16-1 PCM in G.B. Nagar

Source: JICA Survey Team

Photo 16-2 PCM in G.B. Nagar

(4) Analysis of the Feedback Form:

Out of 39 participants, 24 filled up the feedback form. Most participants did not give responses to all the questions in the feedback form. Most people spoke largely about issues related to compensation.

[Suggestions for Environmental Issues]

Table 16-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Green belt all along the alignment to minimise noise and vibration pollution	5	21%
2	Compensatory afforestation must be carried out.	12	50%
3	Alignment should not pass through the forest.	0	0%
4	The corridor ahould be built at least one km away from the village to minimize noise pollution.	12	50%
5	Care should be taken to ensure that we save as much trees as possible.	14	58%
6	There must be adequate compensation for the trees that will be felled for building the corridor.	3	13%

Source: JICA Survey Team

[Suggestions for Social Issues]

Table 16-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	There will be a disintegration of society and family ties.	4	17%
2	Community ponds where milch animals and other cattle use as drinking water should be preserved.	2	8%
3	Community tubewells should be preserved to prevent drudgery of women.	2	8%
4	There must be adequate fencing and boundary walls to prevent accidents of humans and domesticated animals as this is a high speed track.	6	25%
5	Provision for adequate waste management during construction. No waste to be dumped in our villages.	2	8%
6	Electricity poles that are uprooted must be restored immediately.	2	8%
7	Existing roads should not be closed and to and fro movement to villages must be smooth.	16	67%
8	Rail overbridges, underpasses and manned crossings near population centres must be built.	16	67%

Source: JICA Survey Team

[Suggestions for Other Issues]

Table 16-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need adequate and market linked compensation	24	100%
2	Land bank must be created and we want land for land	4	16%
3	We want a permanent job for one member of every land oustee	20	83%
4	Residual land on either side of the alignment must also be acquired by DFC	21	90%
5	Market rates are going up and compensation must be paid immediately.	16	66%
6	Compensation should be market linked and should match what private parties/GB Nagar Authority are paying.	18	75%
7	Compensation must be disbursed quickly as we have taken high interest loans.	12	50%

Source: JICA Survey Team

17. PCM in Gurgaon

(1) Minutes: Queries asked by the participants during the question / answer session are as follows;

[Socio-Economic Issues]

- There is a big gap between land market rates in Gurgaon district and official rate and the PAPs complained because the estimation basis of the proposed compensation package of MoR is the official rate.
- Most of the Project affected persons (PAPs) want immediate disbursal of compensation money.
- In Raipur village the proposed DFC is passing through a land belonging to a Kabristaan (graveyard) and an *Idgah* (kind of mosque) where regular *namaaz* (prayers) is performed five times a day. Affected people have demanded that survey be done again taking religious sensitivities in mind.
- Some villagers from Uddaka village have demanded a detour in the alignment as it passes through the village. They also addressed that a popular temple where regular prayers are being held also falls on the alignment route. Thus they demanded that an *in situ* survey be done again taking religious sensitivities in mind. Also they complained that in Uddaka village it is passing through the middle of the village and homestead properties are affected. The representative of DFCCIL explained that while all attempts were being made to avoid population centres, it is not always possible to make changes in the alignment.
- The sarpanch of Silani village mentioned that the *chakbandi* (Land Consolidation) in the village took place way back in 1940. There was an apprehension that common roads built would be sealed off and commuting would be a problem.
- Villagers demanded that fencing of the DFC must be done so that accidents involving domesticated animals and human beings do not take place.
- Representatives from Lakhuwas village demanded that the alignment should be along the highway as there is excess land available with government/ revenue department.
- In Sohna ward no. 8, a gas line, a petrol pump, homestead land and a market are in the line of the alignment.
- Some villagers complained that bore wells laid on their patch of land will be destroyed.
- Most of the PAPs wanted employment in DFCCIL/MoR as part of the compensation package to those who will lose land. This demand was very vociferous from those people whose only source of livelihoods was the land that would be acquired for the proposed project.
- Many PAPs who complained that the DFCCIL is not acquiring the entire land but only acquire the land within the proposed right of way. In some cases this remaining small piece of the land which is not in the proposed right of way (ROW) of the alignment become useless for the owner. PAPs demanded that such small patches of land should also be acquired by DFCCIL.
- Some people also mentioned that compensation must include land for land, enhanced compensation packages, and employment for one member of the family that has lost substantial land to the DFC.

[Environmental Issues]

- Afforestation should be carried out for environment protection and conservation purposes.

(2) List of Participants:

125 participants attended the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 17-1 PCM in Gurugaon

Source: JICA Survey Team

Photo 17-2 PCM in Gurugaon

(4) Analysis of the Feedback Form:

Out of 125 participants, 110 filled up the feedback form. Most participants did not give responses to all the questions in the feedback form. Most people spoke largely about issues related to compensation.

[Suggestions for Environmental Issues]

Table 17-1 Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Green belt all along the alignment to minimise noise and vibration pollution	40	36%
2	Compensatory afforestation must be carried out.	70	64%
3	Alignment should not pass through the forest.	2	1%
4	The corridor ahould be built at least one km away from the village to minimize noise pollution.	34	32%
5	Care should be taken to ensure that we save as much trees as possible.	54	49%
6	There must be adequate compensation for the trees that will be felled for building the corridor.	12	11%

Source: JICA Survey Team

[Suggestions for Social Issues]

Table 17-2 Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	There will be a disintegration of society and family ties.	4	4%
2	Community ponds where milch animals and other cattle use as drinking water should be preserved.	4	4%
3	Community tubewells should be preserved to prevent drudgery of women.	12	11%
4	There must be adequate fencing and boundary walls to prevent accidents of humans and domesticated animals as this is a high speed track.	34	31%
5	Provision for adequate waste management during construction. No waste to be dumped in our villages.	1	1%
6	Electricity poles that are uprooted must be restored immediately.	1	1%
7	Existing roads should not be closed and to and fro movement to villages must be smooth.	44	4o%
8	Rail overbridges, underpasses and manned crossings near population centres must be built.	52	47%

Source: JICA Survey Team

[Suggestions for Other Issues]

Table 17-3 Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	We need adequate and market linked compensation	107	99%
2	Land bank must be created and we want land for land	8	7%
3	We want a permanent job for one member of every land oustee	103	96%
4	Residual land on either side of the alignment must also be acquired by DFC	101	95%
5	Market rates are going up and compensation must be paid immediately.	75	72%
6	Compensation should be market linked and should match what private parties are paying.	34	31%
7	Compensation must be disbursed quickly as we have taken high interest loans.	43	40%

Source: JICA Survey Team

Appendix-9c
PCM Contents for Draft ESIA Stage

Appendix-09c
PCM Contents for Draft ESIA Stage

(1) Invitation letters (English, Hindi, Gujarati, Marathi)

【Invitation Letter to Govt. Officials_English】

DFCC

डेडिकेटेड फ्रेट कॉरीडोर कॉर्पोरेशन

DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LTD.
(A Government of India Undertaking)
4th Floor, Aruns-1, Dumas Road, Near ISCON Mall, Piplod-Surat-395 007.
Phone No. (O) 0261-2254495. Fax No.0261-2254496.

No. ST/EN/JICA/VOL.1/62

To, Date :-23.08.2011
Smt. Dr. Sandhya Bhullar
District Collector,
Govt. of India,
Navsari.

Sub: Public Consultation Meeting (PCM) on the outcome of environment and social study for Development of Dedicated Freight Corridor Project (Phase 2)

Dear Madam:

The Ministry of Railways (MoR), Government of India has given top priority to strengthen rail infrastructure in the country for faster and safer transportation of bulk goods for economic advancement and in line with the same, development of Dedicated Freight Corridor Project has been conceived to facilitate faster and safer transportation of goods in bulk which will help in faster distribution of goods and services. The project aims to create tremendous high quality job opportunities, higher profits and growth of household income and will serve in the interests of the public at large. The project is currently in the planning stage.

Navsari district is among one of the 14 districts through which the proposed railway corridor will pass. In order to disseminate information on outcome of environmental and social study on the Project to the general public and other stakeholders and to seek their opinion and suggestions in the final planning stage, DFCCIL is organizing a Public Consultation Meeting in this district

In this context, we would like to sincerely request you to attend the meeting and share your opinion and suggestions for planning of the project as per following:

Date of Meeting: 09.09.2011
Time of Meeting: 11:00 AM
Venue: Shri Maharaj Agrasen Sanskratik Bhawan, Shanta Devi Road,
Near Railway Station, Navsari.

Looking forward to your participation.

Thanking you.

Yours faithfully,

CPM – DFCC - Surat

【Invitation Letter to Village Sarpanch_English】

Date

To,
The Sarpanch

Sub: Public Consultation Meeting on the Outcome of Environmental and Social Study for Development of Dedicated Freight Corridor Project (Phase 2)

Dear Sir / Madam,

Dedicated Freight Corridor Corporation of India Limited (DFCCIL) is implementing the Dedicated Freight Corridor (DFC) Project, which involves development of Multiple High Axle Load Freight Corridor with Computerized Control on the Western Industrial Corridor connecting from Rewari in Haryana to Dadri in Uttar Pradesh and from Vadodara in Gujarat to JNPT in Maharashtra. The project aims to crate tremendous high quality job opportunities, higher profits and growth of household income and will serve in the interests of the public at large. The project is currently in the planning stage.

……. is one of the 14 districts through which the proposed freight corridor will pass. A public consultation meeting is being organized in ……. in order to disseminate information on outcome of environmental and social study on the Project and to seek opinion and suggestions from public. Keeping this in mind we would like to invite you to attend the public consultation to elicit your views, comments, suggestions and opinions, on the project implementation. We request you to participate in the above mentioned public consultation meeting which will be held on …….. at ……..

Thanking you.

Yours sincerely,

Authorized Signatory

For further Information, please contact,

CPM Office in ……
Phone No.

【Invitation Letter to Village Sarpanch_Hindi】

DFCC
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन नोएडा इकाई
(भारत सरकार का उपक्रम)
Dedicated Freight Corridor Corporation Noida Unit
(A Government of India Enterprise)

सेवा में,
सरपंच महोदय
श्री महेन्द्रसिंहजी- 9671453823
सेवका

दिनांक – 01/09/2011

विषयः– समर्पित माल परिवहन गलियारा; डेडिकेटेड फ्रेट कोरिडोर के विकास सम्बन्धित परियोजना के संदर्भ में पर्यावरण एवं सामाजिक प्रभाव अध्ययन के निष्कर्ष पर चर्चा हेतु जन संवाद सभा का आयोजन।

आदणीय महोदय/महोदया,

समर्पित माल–परिवहन गलियारा परियोजना का कियान्वयन 'भारतीय डेडिकेटेड फ्रेट कॉरिडोर निगम लिमिटेड' द्वारा किया जा रहा है, जिसके अर्न्तगत हरियाणा के रेवाडी को उत्तर प्रदेष के दादरी से और गुजरात के बड़ौदा को महाराष्ट्र के जवाहर लाल नेहरू पोर्ट से जोड़ने वाले पष्चिम औद्योगिक कॉरीडोर पर कम्प्यूटर नियंत्रित हाई एक्सल लोड फ्रेट कॉरिडोर का विकास किया जाना हैं । इस परियोजना का उद्देष्य अधिक मात्रा में उच्च–स्तरीय रोजगार के अवसर उत्पन्न करना, घरेलू आमदनी व लाभ में बढ़ोतरी तथा आम लोगों के हित की पूर्ति करना है। यह परियोजना वर्तमान में नियोजन की प्रकिया मे है ।

..... जिला उन चौदह जिलों में से एक है जिनसे होकर यह प्रस्तवित माल–परिवहन गलियारा गुजरेगा। इस परियोजना के अर्न्तगत किये गये 'पर्यावरण एवं सामाजिक प्रभाव अध्ययन' के निष्कर्ष को प्रभावित जन–समुदाय तक पहुँचाने तथा आम लागों से उनके विचार व मत प्राप्त करने हेतु एक जन–संवाद सभा का आयोजन ....तावड़.... में किया जा रहा है। तद्अर्न्तगत, हम आपको इस जन–संवाद सभा में सादर आमंत्रित कर परियोजना के कियान्वयन पर आपके विचार, सुझाव, मत एवं टिप्पणियाँ प्राप्त करना चाहते है। अतः हमारा आपसे निवेदन है कि आप उपरोक्त जनसंवाद सभा, जो दिनांक 12/09/2011 को आशा महाविद्यालय ओह आवास पर, मोही तावड़ (मेवाड़) आयोजित की जाएगी, जन–संवाद सभा में भाग लेकर /षरीक होकर अपना बहुमूल्य योगदान देने की कृपा करे।

धन्यवाद।

आपका षुभाकांक्षी

अधिकृत हस्ताक्षरकर्ता

अन्य जानकारी प्राप्त करने हेतु फोनं नं. 9728259281 सें सम्पर्क करे।

महेन्द्र सिंह
सरपंच
ग्राम पंचायत सेवका
जिला तावड़ (मेवाड़)

【Invitation Letter to Village Sarpanch_Gujarati】

ડેડીકેટેડ ફ્રેટ કોરીડોર કોર્પોરેશન

DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LTD.
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No. ST/EN/Jaica/Vol.I/62 તારીખ : ૧૫/૦૯/૨૦૧૧

પ્રતિ,
સરપંચ શ્રી,

જિલ્લા વલસાડ.

વિષય : સમર્પિત માલવહન કોરિડોર પ્રોજેક્ટ (દ્વિતીય ચરણ)ના વિકાસ હેતુ પર્યાવરણ ક્ષેત્રાવલોકનના સંદર્ભમાં લોકસંવાદ બેઠકનું આયોજન

આદરણીય સરપંચ શ્રી,

ભારતીય ડેડિકેટેડ ફ્રેટ કોરિડોર નિગમ લિમિટેડ (DFCCIL) દ્વારા સમર્પિત માલવહન પ્રોજેક્ટનું અમલીકરણ થવા જઇ રહ્યું છે, જેની અંતર્ગત હરિયાણાના રેવાડીને ઉત્તર પ્રદેશના દાદરી સાથે તથા ગુજરાતના વડોદરાને મહારાષ્ટ્રના જવાહરલાલ નહેરુ પોર્ટ ટ્રસ્ટ (JNPT) સાથે જોડતા પશ્ચિમ ઔદ્યોગિકી કોરિડોર પર કૉમ્પ્યુટર - નિયંત્રિત 'હાઇ એક્ષેલ લોડ ફ્રેટ કોરિડોર'નો વિકાસ થવા જઇ રહ્યો છે.રેલ્વે મંત્રાલય આ પ્રોજેક્ટનું અમલીકરણ લોક-ભાગીદારીના આધારે કરવા માંગે છે.

વલસાડ જિલ્લો એ, ચૌદ (૧૪) જિલ્લાઓમાંથી એક છે કે જ્યાંથી આ પ્રસ્તાવિત માલ પરિવહન કોરિડોર પસાર થશે.આ પ્રોજેક્ટના અમલીકરણ દરમિયાન ઉભા થતા પર્યાવરણ અને સામાજિક મુદ્દાઓ પર આપના સલાહ, સૂચનો પ્રાપ્ત કરવા હેતુ એક લોકસંવાદ બેઠકનું "શ્રી ગણેશ હોલ, કસ્તુરબા હોસ્પીટલની નજીક, મેહતાવાડ, વલસાડ" – સ્થળે આયોજન કરવામાં આવ્યું છે. આથી પ્રોજેક્ટના અમલીકરણ પર આપના મંતવ્યો તથા સલાહ સૂચનો પ્રાપ્ત કરવા અમે આપને આ લોકસંવાદ બેઠકમાં સામેલ થવા આમંત્રણ આપીએ છીએ. અમારું નમ્ર નિવેદન છે કે ૨૬/૦૯/૨૦૧૧ તારીખે ૧૧:૦૦ વાગ્યે વલસાડ માં યોજનારી લોકસંવાદ બેઠકમાં અચૂક હાજર રહી અમને કૃતાર્થ કરશો.

આભાર સહ,

આપનો શુભેચ્છક,

ચીફ પ્રોજેક્ટ મેનેજરશ્રી
ડેડીકેટેડ ફ્રેટ કોરીડોર કોર્પોરેશન
સૂરત

સરપંચશ્રી
ગ્રામ પંચાયત
તા. ઉમરગામ જી. વલસાડ

વધુ માહિતી માટે, સંપર્ક કરો,
સીપીએમની ઓફિસ – ૪થા માળે, અરૂણ – ૧, ઈસ્કોનમૉલ પાસે, ડુમસ રોડ, પીપલોદ, સુરત – ૩૯૫ ૦૦૭.
ફોન નંબર : +૯૧ – ૨૬૧ – ૨૨૫૪૪૯૫, ફેક્સ : +૯૧ – ૨૬૧ – ૨૨૫૪૪૯૬.

【Invitation Letter to Village Sarpanch_Marathi】

DFCC
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

डी.एफ.सी.सी.(इं.) लि., कार्यालय मुंबई MUMBAI
FIRST OF THE D.F.C.C.(I) LTD.

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि.
(भारत सरकार का उपक्रम)
Dedicated Freight Corridor Corporation Of India Ltd.
(A Govt. Of India Undertaking)

(7th Floor, C.Rly., New Admn. Bldg, D.N.Road, Mumbai – 400001, Tel/Fax- 022 - 2634184)

दिंनाक : 22/9/2011

प्रति,

मा. सरपंच ग्रामपंचायत, झाई-बोरीगांव (ग्रुप ग्राम पंचायत)

विषय : समर्पित मालभाडे वाहतूक प्रकल्प डी.एफ.सी.सी (टप्पा–२) च्या विकासाकरिता पर्यावरण व समाजिक प्रभावाच्या दृष्टीने करण्यात आलेल्या अभ्यासा विषयी जन संवाद सभा.

श्री/श्रीमती,

भारत सरकार रेल्वे मंत्रालयाने जड मालाचे जलद व सुरक्षित वाहतूकीचे दृष्टीने व देशाच्या आर्थिक विकासाच्या दृष्टीने रेल्वेचे जाळे मजबूत करण्यास उच्च प्राधान्य दिलेले आहे. समर्पित माल भाडे वाहतूक प्रकल्प डी.एफ.सी.सी हे या दृष्टीने उचललेले एक पाउल आहे. उच्च दर्जाच्या सेवा संधी भरघोस फायदा व दरडोई उत्पन्न वाढवून सार्वजनिक हित साधणे हे या प्रकल्पाचे उद्धिष्ट आहे. प्रकल्प सध्या योजनावस्थेत आहे.

प्रस्तावित माल भाडे वाहतूक प्रकल्प हा देशातील १४ जिल्हातून जातो त्यात ठाणे जिल्हा सुध्दा अंर्तभूत आहे. या प्रकल्पा विषयी सामाजिक व पर्यावरणीय परिणामाच्या दृष्टिकोणातून करण्यात आलेल्या अभ्यासातील मुख्य मुद्दे सामान्य जनता व इतर हित संबधीतां पर्यंत पोहचविण्याचा व त्यांची या बाबत मत मतांतरे जाणून घेण्याच्या उद्येश्याने तसेच महाराष्ट राज्यामध्ये डेडीकेटेड फ्रट कॉरीडोर कॉर्पोशन ऑफ इंडिया लि. करिता प्रस्तावित भूसंपादनाबाबत नुकसान भरपाई दर ठरविण्यासाठी समितीची नियुक्ती शासना तर्फे जी.आर. काढून करण्यात आलेली आहे. या करिता डी.एफ. सी.सी, जिल्हयामधे एक जन संवाद सभा आयोजित करीत आहे.

या अनुषंगाने सभेला उपस्थित राहून या प्रकल्पाच्या योजनेसाठी आपले विचार व सूचना माडण्याची आपणास नम्र विनंती करण्यात येत आहे.

सभेची तारीख : २०–०९–२०११
सभेची वेळ : सकाळी ११.०० वाजता
सभा स्थळ : लायन्स क्लब कमिटी हॉल, कांग्रेस भवन जवळ, पालघर

भूसंपादनातील गांव – ब्राम्हणपाडा, व बोरीगांव –

सभेस आपली उपस्थिती प्रार्थनीय आहे.

धन्यवाद

आपला विश्वासू

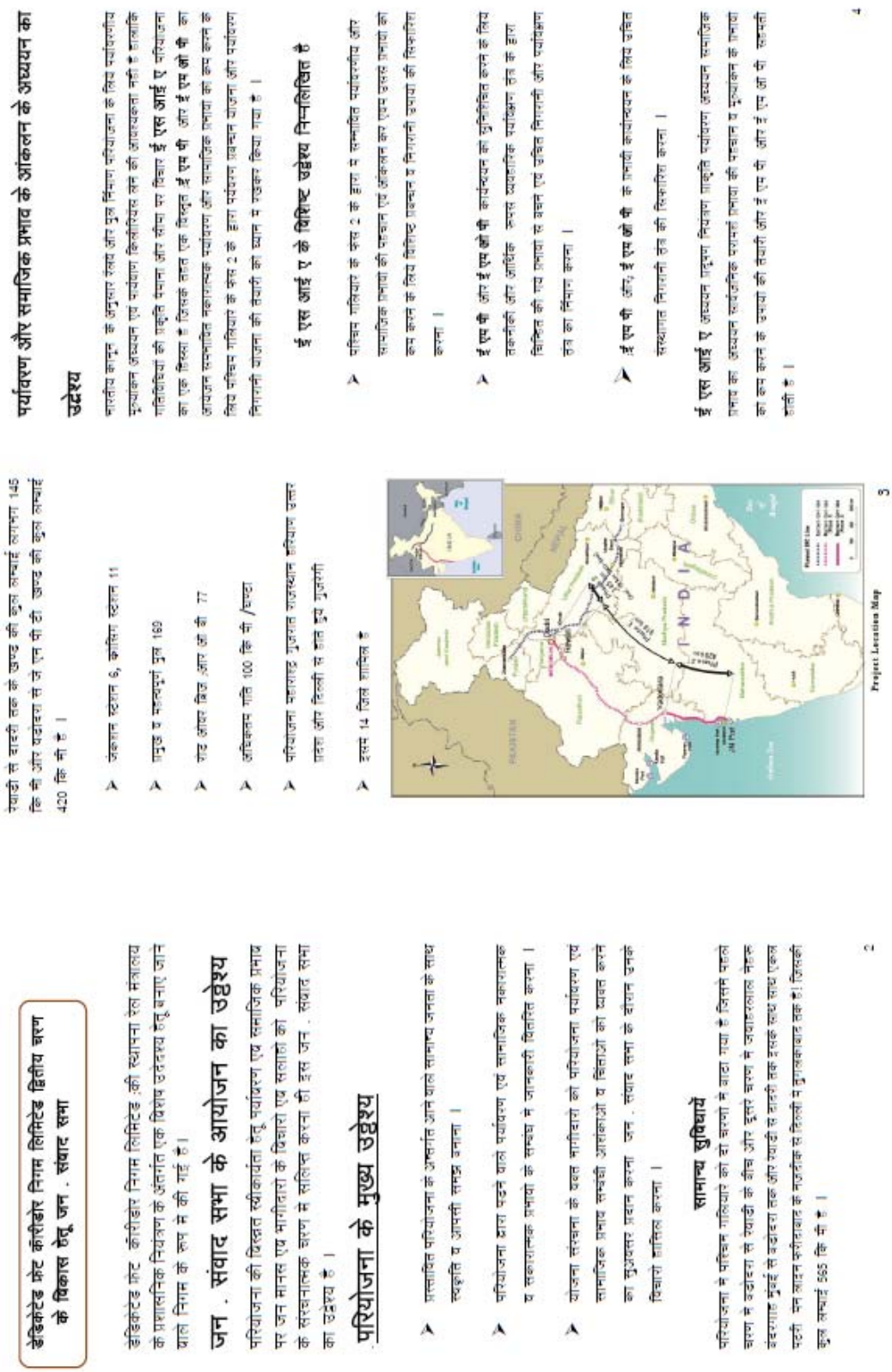
मुख्य प्रकल्प व्यवस्थापक
डी.एफ.सी.सी.आय.एल/मुबई
Chief Project Manager
Dedicated Freight Corridor Corporation (I) Ltd.
Mumbai

ग्रुप ग्राम पंचायत झाई-बोरीगांव
ता. तलासरी
जि. ठाणे.

सत मिळाली
12/9/011

(2) Handouts (English, Hindi, Gujarati, Marathi)

【Handout_Hindi】



डेडिकेटेड फ्रेट कॉरीडोर निगम लिमिटेड द्वितीय चरण के विकास हेतु जन . संवाद सभा

डेडिकेटेड फ्रेट कॉरीडोर निगम लिमिटेड की स्थापना रेल मंत्रालय के प्रशासनिक नियंत्रण के अंतर्गत एक विशेष उद्देश्य हेतु बनाए जाने वाले निगम के रूप में की गई है।

जन . संवाद सभा के आयोजन का उद्देश्य

परियोजना की विस्तृत स्वीकार्यता हेतु पर्यावरण एवं सामाजिक प्रभाव पर जन मानस एवं भागीदारों के विचारों एवं सलाहों को परियोजना के संरचनात्मक चरण में सम्मिलित करना ही इस जन . संवाद सभा का उद्देश्य है।

परियोजना के मुख्य उद्देश्य

- प्रस्तावित परियोजना के अन्तर्गत आने वाले सामान्य जनता के साथ स्वकृति व आपसी सम्पर्क बनाना।
- परियोजना द्वारा पड़ने वाले पर्यावरण एवं सामाजिक नकारात्मक व सकारात्मक प्रभावों के सम्बन्ध में जानकारी वितरित करना।
- योजना संरचना के अलग भागीदारों का परियोजना पर्यावरण एवं सामाजिक प्रभाव सम्बन्धी आशंकाओं व चिंताओं को व्यक्त करने का सुअवसर प्रदान करना जन . संवाद सभा के दौरान उनके विचारों शामिल करना।

सामान्य सुविधायें

परियोजना में पश्चिम गलियारे को दो चरणों में बांटा गया है जिसमें पहले चरण में वढ़ावन से रेवाड़ी के बीच और दूसरे चरण में जवाहरलाल नेहरू बंदरगाह मुंबई से वढ़ावन तक और रेवाड़ी से दादरी तक इसके साथ साथ एकल पटरी मल्टीमोडल कॉरीडोर के मार्ग से दिल्ली में गुरुग्राम तक है। जिसकी कुल लम्बाई 565 कि मी है।

2

रेवाड़ी से वादरी तक के खण्ड की कुल लम्बाई लगभग 145 कि मी और वढ़ावन से जे एन पी टी खण्ड की कुल लम्बाई 420 कि मी है।

- जंक्शन स्टेशन 6, क्रॉसिंग स्टेशन 11
- गमुख व मल्टीयूनिट कुल 169
- गेट आवर क्रिट आर जी बी 77
- अधिकतम गति 100 कि मी /घण्टा
- परियोजना महाराष्ट्र गुजरात राजस्थान हरियाणा उत्तर प्रदेश और दिल्ली से होते हुए गुजरेगी
- इसमें 14 जिले शामिल है

Project Location Map

3

पर्यावरण और समाजिक प्रभाव के आंकलन के अध्ययन का उद्देश्य

भारतीय कानून के अनुसार रेलवे और पुल निर्माण परियोजना के लिए पर्यावरणीय मूल्यांकन अध्ययन एवं पर्यावरण क्लियरेंस लेने की आवश्यकता नहीं है क्योंकि गतिविधियों की प्रकृति वैसाना और सीमा पर विचार ई एस आई ए परियोजना का एक हिस्सा है जिसके तहत एक विस्तृत ई एम पी और ई एस आई ए का आयोजन सम्भावित नकारात्मक पर्यावरण और सामाजिक प्रभावों को कम करने के लिए पश्चिम गलियारे के फेस 2 के द्वारा पर्यावरण प्रबन्धन योजना और पर्यावरण निगरानी योजना की तैयारी को ध्यान में रखकर किया गया है।

ई एस आई ए के विशिष्ट उद्देश्य निम्नलिखित है

- पश्चिम गलियारे के फेस 2 के द्वारा में सम्भावित पर्यावरणीय और सामाजिक प्रभावों की पहचान एवं आंकलन कर एवम उनके प्रभावों को कम करने के लिए विशिष्ट प्रावधान व निगरानी योजना की सिफारिश करना।
- ई एम पी और ई एस आई ए की कार्यान्वयन को सुनिश्चित करने के लिए तकनीकी और आर्थिक रूपसे व्यवहारिक पर्यावरण तंत्र के द्वारा विशिष्ट की गए प्रभावों व बहस एवं संबित निगरानी और पर्यावेक्षण तंत्र का निर्माण करना।
- ई एम पी और; ई एस आई ए के प्रभावी कार्यान्वयन के लिए उचित संस्थागत निगरानी तंत्र की सिफारिश करना।

ई एस आई ए अध्ययन गतुरूण निर्माण गाकृति पर्यावरण अध्ययन सामाजिक प्रभाव का अध्ययन सर्वांगीणिक नकारात्मक प्रभावों की पहचान व मूल्यांकन के लिया का कम करने के उपायों की तैयारी और ई एम पी और ई एस आई पी सम्मिलित करती है।

4

सम्भावित पर्यावरणीय और सामाजिक प्रभाव

परियोजना संरेखण के दौरान कुछ पर्यावरण और समाजिक बदलाव होने की सम्भावना है । डी एफ सी एल उन प्रभावों को समाप्त या कम करने के लिये उत्सुक है :

- कुछ संवेदनशील रिसेप्टर्स और संरेखण के पास है जिन पर शोर और कंपन का प्रभाव पड़ेगा इसलिये उन क्षेत्रो मे उन प्रभावो को कम करने के लिये निवारक उपायो का प्रयोग किया जाना चाहिये ।
- निर्माण फेस 2 मे संरेखण के नज़दीक पड़ने वाले पुलो के निर्माण के दौरान नदी के जल की गुणवत्ता कम प्रदूषण स्तर के कारण प्रभावित होगी । निर्माण के दौरान निकलने वाले पानी का उचित संशोधन किया जायेगा।
- यदापि संरेखण कुछ स्थानो पर जंगल के छोटे पैच के मध्य से गुज़रता है उन स्थानो के वृक्षो को हटाना पड़ेगा कम से कम पेड़ो की सम्भावना की तालाश किया जायेगा इसके अतिरिक्त पंक्ति के साथ बागान ठीक से बनाये रखे जाने चाहिये ।
- संरेखण संजय गाँधी नेशनल पार्क के बाहरी हिस्से एंव तुलेश्वर वन्य जीव अभयारण्य से गुज़रती है इसलिये परियोजना कार्यन्वयन के दौरान जंगली जानवर और प्रवासी पथ की अवरुद्ध नही किया जाना चाहिये ।
- भूमि अधिग्रहण से किसानो और परिवारो को विस्थापन के कारण भूमि का नुकसान उठाना पड़ेगा ! हालांकि संरेखण और रो का डिज़ाइन कम से कम विस्थापन होने के लिये की गयी है । चक्र संरेखण की डिज़ाइन भी बड़े पैमाने पर अनैच्छिक पुर्नवास से बचने के लिये बनायी गयी है और साथ ही साथ एक समांतर संरेखण कुछ गैर भूमि मालिको को स्थानांतरण के लिये प्रभावित करेगी जो अपनी भूमि घर या अन्य सम्पति खो चुके है उन्हे कानून के अनुसार मुआवज़ा दिया जायेगा ।

पर्यावरण प्रबंधन योजना और पर्यावरण निगरानी योजना

- ई एम पी के लिये मुख्य रूप से निम्नलिखित की आवश्यकता है
- निवारक उपायो का क्रियान्वन
- निवारक उपायो के क्रियान्वन की निगरानी
- नमित संस्थाओ के लिये रिपोर्टिंग
- निवारक उपायो के लिये बजट का आवंटन
- निवारक उपायो के क्रियान्वन के लिये संगठनात्मक संरचनाओ का निर्माण
- ई एम पी मे मुख्य रूप से परिवेश शोर के स्रोत , कंपन का स्तर ,पानी की गुणवत्ता एवम प्राकृति वातावरण शामिल है । निर्माण चरण की सम्भावित परियोजना क्षेत्र के महत्वपूर्ण स्थानो जैसे की निर्माण क्षेत्र गाँव मे की जायेगी ।

अधिक जानकारी हेतु निम्न पतों पर सम्पर्क करें :

- DFCCIL, पाचवी मंज़िल प्रगति मैदान मेट्रो स्टेशन बिल्डिंग कॉम्पलेक्स, नई दिल्ली–110001
- CPM कार्यालय मुम्बई : 7वीं मंज़िल, न्यू प्रशासनिक भवन, सेन्ट्रल रेलवे, डी.एन. रोड, मुम्बई–400 001, महाराष्ट्र
- CPM कार्यालय सूरत : चौथी मंज़िल, अरुण–1, इस्कॉन मॉल के पास, पीपलोद, सूरत–395 007, गुजरात
- CPM कार्यालय वडोदरा: 13–14,17–18, पैनोरमा, कॉम्पलेक्स, तीसरी मंज़िल, आर सी दत्त रोड, अलकापुरी, वडोदरा–395007 गुजरात
- AGM कार्यालय रेवाड़ी से दादरी : स्टार हाऊस, प्रथम मंज़िल, ए–102, सेक्टर–4, नोएडा, उत्तर प्रदेश

डेडिकेटेड फ्रेट कॉरीडोर निगम लिमिटेड

(द्वितीय चरण)

के विकास हेतु जन . संवाद सभा

DFCC
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

रेल मंत्रालय

भारत सरकार

और

डेडिकेटेड फ्रेट कॉरीडोर कॉरपोरेशन

ऑफ इंडिया लिमिटेड

【Handout_Gujarati】

માલવહન સમર્પિત રેલ્વે માર્ગ યોજના
ફેઝ-૨ ના વિકાસ માટે
લોક સંવાદ બેઠક

લોક સંવાદ બેઠકનો હેતુ:

આ લોક સંવાદ બેઠકનો હેતુ ડી.એફ.સી. પ્રોજેક્ટ માટે હાથ ધરવામાં આવેલ 'પર્યાવરણ અને સામાજિક અસરોના અંદાજ અભ્યાસ' અંગે લોકો અને અન્ય હિતધારકોના અભિપ્રાય અને સૂચનો મેળવવી તેનો સમાવેશ કરવાનો છે.

મુખ્ય હેતુઓ:

* સૂચિત એલાઈનમેન્ટની આસપાસ વસતાં લોકોની પ્રોજેક્ટ અંગેની સમજ અને સ્વિકૃતિ.
* પ્રોજેક્ટ દ્વારા થનાર સંભવિત નકારાત્મક કે હકારાત્મક પર્યાવરણીય તથા સામાજીક અસરો અંગેની જાણકારી આપવી.
* યોજનાના આયોજન તબક્કે જ હિતધારકોને ઈ.એસ.આઈ.એ. અંગે પોતાની ચિંતાઓ વ્યક્ત કરવા તક આપી અભિપ્રાય મેળવવા લોક સંવાદ બેઠક રાખવી અને યોજનાની આયોજન પ્રક્રિયા અંગે પ્રતિભાવ મેળવવા.

સામાન્ય લક્ષણો:

પશ્ચિમ વિભાગની ડી.એફ.સી. યોજના બે ભાગ માં વહેચાયેલી છે જેમાં ભાગ ૧ વડોદરાથી રેવાડી અને ભાગ-૨ જવાહરલાલ નહેરુ પોર્ટ (JNPT) મુંબઈથી વડોદરા અને રેવાડી-દાદરી ઉપરાંત ફરીદાબાદથી તુગલકબાદ-દિલ્હી સુધીની એકમાર્ગી લાઈનનો સમાવેશ થાય છે. ડી.એફ.સી. યોજનાની કુલ લંબાઈ ૫૬૫ કિલોમીટર છે.

રેવાડીથી દાદરી વિભાગ કુલ ૧૪૫ કિલોમીટર અને વડોદરા થી જે.એન.પી.ટી. વિભાગ ૪૨૦ કિલોમીટરની લંબાઈ ધરાવે છે.

* જંક્શન સ્ટેશનઃ ૬ ક્રોસિંગ સ્ટેશન : ૧૧
* મહત્વના અને મોટા પૂલોઃ ૧૬૫
* રસ્તા ઉપરના પૂલો(ROBs): ૭૭
* મહત્મ ગતિઃ ૧૦૦ કિ.મી./કલાક
* એલાઈનમેન્ટ પસાર થાય છેઃ
  મહારાષ્ટ્ર,ગુજરાત,રાજસ્થાન, હરિયાણા, ઉત્તર પ્રદેશ તથા દિલ્હી.
* જિલ્લાઓનો સમાવેશ : ૧૪

Project Location Map

પર્યાવરણ અને સામાજિક અસરોના અંદાજઃ

ભારતના કાયદા મુજબ રેલ્વે અને પુલોની બાંધકામ યોજનાઓ માટે પર્યાવરણીય અસરોનો અભ્યાસ (EIA) કે પર્યાવરણીય મંજૂરી (EC) મેળવવાની આવશ્યકતા નથી, તેમ છતાં ડી. એફ.સી. યોજનાનું કદ, સ્વભાવ અને પ્રવૃત્તિઓનો વ્યાપ જોતાં પશ્ચિમ માર્ગના ફેઝ-૨ માટે સંભવિત નકારાત્મક પર્યાવરણીય અસરો નીવારવા પર્યાવરણ વ્યવસ્થાપન યોજના (EMP) તથા પર્યાવરણીય દેખરેખ યોજના (EMoP) સાથે વિગતપૂર્વક ઈ.એસ. આઈ. એ. હાથ ધરાયેલ છે.

<u>ઈ.એસ.આઈ.એ. અભ્યાસના ચોક્કસ હેતુઓ છે:</u>

★પશ્ચિમ માર્ગના ફેઝ-૨ના લીધે થનાર પર્યાવરણીય અને સામાજીક અસરોને ઓળખવી અને અંદાજવી તથા તેના નિવારણ, સંચાલન અને નિયમન માટે ચોક્કસ પગલાં લેવા જેથી તે અસરોને લઘુત્તમ કે દુર કરી શકાય.

★ઓળખાયેલી અસરોને નિવારવા અને યોગ્ય સંચાલન અને દેખરેખ વ્યવસ્થાપન ગોઠવી અસરકારક અમલીકરણ કરવા, તાંત્રિક તથા આર્થિક રીતે સંભાવના સાથે ઈ.એમ. પી. તથા ઈ. એમ.ઓ.પી.ની રચના તથા અમલવારી કરવી.

★ઈ.એમપી.EMP તથા ઈ.એમ.ઓ.પી. EMoP ના અસરકારક દેખરેખ, નિગરાની અને અમલીકરણ માટે યોગ્ય વ્યવસ્થાતંત્ર સૂચવવું.

ઈ.એસ.આઈ.એ. અભ્યાસમાં પ્રદુષણ નિયંત્રણ અભ્યાસ, કુદરતી પર્યાવરણીય અભ્યાસ, સામાજીક અસર અધ્યયન, લોક સંવાદ, અસર ઓળખ તથા અંદાજ, નિવારક પગલાંઓની તૈયારી તથા ઈ.એમ.પી. અને ઈ.એમ.ઓ.પી.નો સમાવેશ થાય છે.

સંભવિત પર્યાવરણીય અને સામાજિક અસરોઃ

આ પરિયોજનાના કારણે રેલમાર્ગની આસપાસ કેટલીક પર્યાવરણીય અને સામાજિક અસરો થાય તેવી છે અને DFCCIL/MOR અનિવાર્ય અસરોને ઘટાડવા અને નિવારવામાં કટિબદ્ધ છે.

* કેટલાક રહેણાંક વિસ્તાર અને સંવેદનશીલ ગ્રાહકો રેલવે માર્ગની નજીક હશે જેને ઘોંઘાટ અને કંપનની અસર થશે. તે માટે જે તે વિસ્તારમાં તેને નિવારવાના યોગ્ય પગલાં હાથ ધરવામાં આવશે.
* રેલ માર્ગમાં વચ્ચે આવતી નદીઓ ઉપર પુલ બાંધવાના હોવાથી બાંધકામના તબક્કા દરમ્યાન નદીઓના પાણીને અંશતઃ અસર થશે. બાંધકામ દરમ્યાનના ગંદાપાણીની યથાયોગ્ય વ્યવસ્થા કરવામાં આવશે.
* કેટલીક જગ્યાએ જંગલના કેટલાક ખૂબ નાના વિસ્તારમાંથી રેલ માર્ગ પસાર થાય છે, ઉપરાંત ROW ની આસપાસ વૃક્ષારોપણની વ્યવસ્થા કરવામાં આવશે.
* આ રેલ માર્ગ માર્ગ સંજય ગાંધી નેશનલ પાર્ક અને તુંગારેશ્વર અભ્યારણ્યના બહારના વિસ્તારમાંથી પસાર થાય છે. તેથી જંગલી પ્રાણીઓનો સ્થળાંતરનો રસ્તો આ પરિયોજનાના અમલીકરણથી રોકાઈ જવો ન જોઈએ.
* જમીન સંપાદનના કારણે ખેડૂતાએ તેમની જમીન ગુમાવવી પડશે. આમ છતાં રેલમાર્ગ અને ROW એવી રીતે ડીઝાઈન કરવામાં આવશે કે જેથી શક્ય તેટલું ઓછું વિસ્થાપન કરવું પડે. માટા પાયા પર અનૈચ્છિક પુનર્વાસ ન કરવો પડે તે માટે જ ડીટુર રેલમાર્ગની રચના કરવામાં આવી છે. બીજી તરફ કેટલાક માલિકીહક્ક ન ધરાવતા હોય તેવા લોકો જે રેલમાર્ગની સમાંતર રહે છે તેમની સાથે પણ જ્યાં સમાંતર રેલ લાઈન થશે ત્યાં ઘર્ષણમાં ઉતરવાનું થશે. જે લોકો આના કારણે જમીન, ઘર, કે કેટલાક માળખાઓ ગુમાવશે તેઓને કાયદાની મર્યાદામાં રહીને પુરતું વળતર ચૂકવવામાં આવશે.

પર્યાવરણીય વ્યવસ્થાપન આયોજન (EMP) અને પર્યાવરણીય દેખરેખ આયોજન(EMoP)

ઈ.એમ.પી.માં મુખ્યત્વે નીચેની જરૂરિયાત છે
* નિવારણના પગલાંનું અમલીકરણ
* નિવારણના પગલાંના અમલીકરણની દેખરેખ
* નિર્દિષ્ટ સંસ્થાઓને રિપોર્ટ
* નિવારણના પગલાં માટે અંદાજપત્રમાં ફાળવણી
* નિવારણના પગલાંના અમલીકરણ માટે સંસ્થાકીય માળખું.

પર્યાવરણીય દેખરેખ આયોજનમાં મુખ્યત્વે નમૂનાના વિસ્તારના ધ્વનિ સ્રોતો, કંપન સ્તર, પાણીની ગુણવત્તા અને કુદરતી પર્યાવરણનો સમાવેશ થાય છે. પરિયોજનામાં આવતા મહત્ત્વના સ્થળો જેવા કે બાંધકામની સાઈટ, ગ્રામ્ય વિસ્તાર વગેરેના બાંધકામ દરમ્યાન અને કાર્યન્વયન દરમ્યાન નમૂનાઓ એકત્રિત કરવામાં આવશે.

વધુ માહિતી માટે સંપર્ક કરોઃ
*AGM-રેવાડી-દાદરી પ્રોજેક્ટ ઑફિસ-૪થો માળ, મેટ્રો સ્ટેશન બિલ્ડીંગ, પ્રગતિ મેદાન. નવી દિલ્હી-૧૧૦૦૦૧
* ચીફ પ્રોજેક્ટ મેનેજર-વડોદરા. ૧૩-૧૪ ૧૭-૧૮ પનોરમા કોમ્પલેક્ષ ૩ જે માળે અલકાપુરી-વડોદરા-૭
* ચીફ પ્રોજેક્ટ મેનેજરઃ- મુંબઈ ૭મો માળ, ન્યુ એડમીનીસ્ટ્રેટીવ બિલ્ડીંગ, સેન્ટ્રલ રેલ્વે ડી.એન રોડ. મુંબઈ-૪૦૦૦૦૧
* ચીફ પ્રોજેક્ટ મેનેજર-સુરત ૪ થો માળ, અરણ-૧ ઈસ્કોન મોલ નજીક. ડુમસ રોડ. પીપલોદ સુરત. ૩૯૫૦૦૭

Email Address. dfc.phase2@ gmail.com

માલવહન સમર્પિત રેલ્વે માર્ગ યોજના

ફેઝ-૨ ના વિકાસ માટે

લોક સંવાદ બેઠક

DFCC

ડેડીકેટેડ ફ્રેટ કોરીડોર કૉર્પોરેશન

રેલ્વે મંત્રાલય, ભારત સરકાર
તથા
ડેડીકેટેડ ફ્રેઈટ કોરીડોર કોર્પોરેશન
ઓફ ઈન્ડિયા લીમીટેડ

【Handout_Marathi】

समर्पित मालवाहतूक जोडमार्ग प्रकल्प (फेज-२) विकासासाठी जनसभेचे आयोजन.

रेल्वे मंत्रालयाच्या प्रशासकिय नियंत्रणातर्गत विशेष रेल्वे प्रकल्प भारतीय समर्पित मालवाहतूक जोडमार्ग निगम मर्या. (DFCCIL) सूरु करण्यात आला आहे.

जनसभेचा उद्देश :-

या जनसभेमध्ये समर्पित मालवाहतूक कार्यक्षेत्र प्रकल्पाच्या बाबतचा आढावा घेण्या येणार असून त्याबाबत प्रकल्पाच्या विकासासाठी पर्यावरणीय कार्यक्षेत्राच्या मर्यादेच्या अंतर्गत जनतेकडून सल्ला व विचार जाणून घेण्यासाठी जनसभेचे आयोजन करण्यात आले आहे.

मुख्य उद्देश :-

* सर्वसामान्य जनतेच्या जीवनावर होणारे परिणाम समजून त्यांचा स्विकार करणे.
* प्रकल्पामुळे सामाजिक आणि पर्यावरणीय बन्या / वाईट परिणामांची माहिती करून घेणे.
* प्रकल्पामुळे सामाजिक आणि पर्यावरणीय समस्यांबाबतच्या भागधारकांच्या प्रश्नांना जनसभेच्या माध्यमातून सल्ला व विचार एकत्रित करून प्रकल्प कार्यान्वित करणे.

सर्वसाधारण सुविधा :-

पश्चिमी कार्यक्षेत्रामध्ये समर्पित मालवाहतूक जोडमार्ग प्रकल्प दोन टप्प्यात वर्गीकृत करण्यात आला आहे. पहिल्या टप्प्यात बडोदा ते रेवाडी आणि दूसऱ्या टप्प्यात मुंबईच्या जवाहरलाल नेहरू पोर्ट (JNPT) ते बडोदा आणि रेवाडी ते दादरी जोडण्यात येणार आहे; तसेच फरीदाबाद ते दिल्लीतील तुगलकाबाद पर्यंत एकेरी मार्गाचेही काम करण्यात येणार असून संपूर्ण प्रकल्पामध्ये 565 कि. मी. च्या जोडमार्गाचे काम करण्यात येणार आहे. रेवाडी ते दादरी दरम्यान 145 किमी आणि बडोदा ते JNPT दरम्यान 420 कि.मी. चा समावेश आहे.

* जंक्शन स्टेशन्स - 6
* क्रॉसिंग स्टेशन्स - 11
* महत्वाचे आणि मोठे पूल - 169
* रोड ओव्हर पूल (RoBs) - 77
* वेग मर्यादा - 100 कि. मी. प्रति तास
* राज्य - सदर प्रकल्पाच्या माध्यमातून महाराष्ट्र, गुजरात, राजस्थान, हरियाणा, उत्तर प्रदेश आणि दिल्ली जोडण्यात येणार आहे.
* जिल्हे - 5 राज्यातील 14 जिल्ह्यांचा समावेश

Project Location Map

पर्यावरणीय आणि सामाजिक परिणामांचा (ESIA) आढावा :-

भारतीय कायदयाच्या अनुसार रेल्वे आणि उड्डाणपूल उभारणी प्रकल्पासाठी कोणत्याही प्रकारच्या पर्यावरणात्मक परिणामांचे आकलन (EIA) आणि प्रभावाची गरज नाही. तरीही समर्पित मालवाहतूक जोडमार्ग (DFC) प्रकल्पाच्या आखणी, नैसर्गिक आणि इतर परिणामाची गरज लक्षात घेऊन पर्यावरण व्यवस्थापन योजना (EMP) आणि पर्यावरण देखभाल योजना (EMoP) राबविण्यात आल्या आहेत. त्यांच्या माध्यातून पश्चिम कार्यक्षेत्राच्या दुसऱ्या टप्प्यातील कामांचे अध्ययन करण्यात येणार आहे.

ESIA अध्ययनाचे महत्वाचे मुद्दे : -

* पश्चिमी कार्यक्षेत्राच्या दुसऱ्या टप्प्यातील कामांबाबत पर्यावरणीय आणि सामाजिक परिणांमाचा आढावा घेऊन त्याचे दुष्परिणाम कमी करणे किंवा घेऊ न देणे.

* EMP आणि EMoP अमलीकरणासाठी तांत्रीक आणि आर्थिक बाबीचा अभ्यास करून त्यायेसंभाव्य दुष्परिणाम होऊ नयेत या साठी देखरेख व व्यवस्थापन करणे.

* EMP आणि EMoP च्या प्रभावी अमलीकरणासाठी देखरेख व व्यवस्थापन यंत्रणा सुचविणे / व उभारणे.

पर्यावरणात्मक आणि सामाजिक परिणामां मध्ये प्रदूषण नियंत्रण, नैसर्गीक पर्यावरण, सामाजिक प्रभाव, जनसभा,प्रभावी ओळख व मुल्यांकन, उपाययोजना, EMP आणि EMoP तयार करणे यांसारखा मुद्यावर अध्ययन करण्यात येणार आहे.

संभाव्य पर्यावरणात्क आणि सामाजिक परिणाम :

समर्पित मालवाहतूक जोडमार्ग प्रकल्प कार्यान्वीत करताना DFCCIL / MoR यांना काही संभाव्य पर्यावरणात्मक आणि सामाजिक परिणाम आढळले असून त्यांचा प्रभाव कमी करणे.

✱जोडमार्ग उभारणीच्या मार्गाच्या शेजारी काही रहिवासी विभाग तसेच संवेदनशील बाबी येत असून प्रकल्प उभारणीच्या वेळी होणाऱ्या आवाजाची तिव्रता कमी करण्याचा प्रयत्न करणे.

✱जोडमार्ग उभारणी दरम्यान येणाऱ्या नदयांमधील पाणी दुषीत होण्याची शक्यता असल्याने पूलाच्या बांधकामाच्या वेळी संबंधीत भागातील पाणी काढून घेण्याची सुनियोजीत प्रक्रिया राबविणे.

✱जोडमार्ग उभारणीच्या कामातील काही भाग हा जंगलांमधून जात असून (ROW) सदर मार्गातील झाडांची गरजेनुसार पूर्णतः किंवा अंशतः छाटणी करणे.

✱प्रकल्प उभारणी दरम्यानचा काही मार्ग हा संजय गांधी राष्ट्रिय उदयान आणि तुंगारेश्वर उभारण्याच्या बाजूले जात असून जोडमार्ग उभारणीच्या वेळी वन्यजीव आणि झुडपांना त्यांचा त्रास होणार नाही याची काळजी घेणे.

✱प्रकल्प उभारणी दरम्यान जोडमार्गाचा काही भाग संबंधीत शेतकऱ्यांच्या शेतीमधून जात असून भूमि अधिग्रहण कायदयानुसार संबंधीत शेतकऱ्यांना तसेच प्रभावित कुटुंबांना स्थलांतरीत करणे किंवा संबंधीत व्यक्तीला योग्य ती नुकसानभरपाई देणे.

पर्यावरण व्यवस्थापन योजना (EMP) आणि पर्यावरण देखरेख योजना (EMoP)

✱EMP साठी खालील मुद्दे आवश्यक आहेत :

- उपाययोजना कार्यान्वित करणे.
- उपाययोजनेच्या कार्यान्वयनावर देखरेख ठेवणे.
- संबंधित नियुक्त संस्थेला अहवाल सादर करणे
- उपाययोजनेसाठी लागणारी आर्थिक तरतूद करणे
- उपाययोजनेसाठी संपदनात्मक संरचनेची आखणी करणे.

✱EMoP मध्ये मुख्यत्वे करून आवाजाची तीव्रता, कंपनस्तर, वाण्याची गुणवत्ता, नैसर्गिक पर्यावरण यांचा समावेश आहे. काही महत्वाच्या जागा जसे गाव, बांधकामाच्या जागा, इत्यादी सारख्या ठिकाणी कार्य सुरु असताना वरील सर्व बाबींचे नमुने घेण्यात येतील.

अधिक माहितीसाठी :

AGM - रेवाडी - दादरी प्रकल्प कार्यालय : ५ वा माळा, मेट्रो स्टेशन बिल्डिंग, प्रगती मैदान, नवी दिल्ली - ११०००१

मुख्य प्रकल्प प्रबंधक - बडोदा : १३-१५, १७-१८, पॅनोरमा कॉम्प्लेक्स, ३ रा माळा, अलकापुरी, बडोदा - ७

मुख्य प्रकल्प प्रबंधक - मुंबई : ७ वा माळा, नवीन प्रशासकीय भवन, मध्य रेल्वे सी एस रोड, मुंबई - ४००००१

मुख्य प्रकल्प प्रबंधक - सुरतः ५ वा माळा, अर्नेस्ट - १, इस्कॉन मॉलजवळ, दुमास रोड, पिपलोद,सुरत - ३९५००७

इमेल : dfc.phase2@gmail.com

समर्पित मालवाहतूक जोडमार्ग (DFC)

प्रकल्प भाग - २

विकासासाठी जनसभा

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

भारतीय रेल्वे मंत्रालय

आणि

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इंडिया

【Handout_English】

PUBLIC CONSULTATION MEETING DEVELOPMENT OF DEDICATED FREIGHT CORRIDOR (DFC) PROJECT PHASE-2

Dedicated Freight Corridor Corporation of India (DFCCIL) is a Special Purpose Vehicle set up under the administrative control of Ministry of Railways.

Objective of Public Consultation Meeting:

The objective of this public consultation meeting is to incorporate the opinion and suggestions of the public and all other stakeholders into the Environment and Social Impact Assessment (ESIA) Study for the DFC project (the Project).

Key objectives:

- Understanding and acceptance of the Project among the general public living alongside the proposed alignment;
- Dissemination of information in respect of the likely environmental and social positive/ negative impacts induced by the Project;
- To offer opportunities to voice the concerns of the stakeholders regarding ESIA of the Project during the planning stage and obtain opinions during public consultation meeting and feedback to the planning process of the Project.

General Features:

DFC Project in the Western Corridor has been divided into 2 phases, in which Phase 1 covers corridor between Vadodara and Rewari and Phase 2 includes Jawaharlal Nehru Port (JNPT) in Mumbai - Vadodara and Rewari - Dadri as well as a single line from DFC mainline near Faridabad to Tuglakabad in Delhi. Total length of the DFC Project is of about 565 km.

1

Rewari to Dadri section is of a total length of about 145 km and Vadodra to JNPT section is of a total length of about 420 km.

- Junction Stations: 6, Crossing Stations: 11
- Important & Major Bridges: 169
- Road Over Bridges (ROBs): 77
- Maximum Speed: 100 km/hr
- Alignment Passes through: Maharashtra, Gujarat, Rajasthan, Haryana, Uttar Pradesh and Delhi
- District involved: 14

Project Location Map

2

Objective of Environment and Social Impact Assessment (ESIA) Study:

According to the Indian law, railway and bridge construction projects do not require conducting Environmental Impact Assessment (EIA) study and obtaining Environmental Clearance (EC). However, considering the scale, nature and extent of activities envisaged as part of the DFC Project, a detailed ESIA, including preparation of an Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP), is conducted in order to mitigate potential negative environmental and social impacts by the Phase 2 of the Western Corridor.

The specific objectives of the ESIA study are to:

- Identify and assess potential environmental and social impacts to be considered in the Phase 2 of the Western Corridor and recommend specific mitigation, management, and monitoring measures to avoid, offset or minimize the impacts.
- Formulate an implementable EMP and EMoP integrating the technically and economically feasible measures to avoid the identified impacts and an appropriate monitoring and supervision mechanism to ensure its implementation.
- Recommend suitable institutional mechanisms to monitor and supervise effective implementation of EMP and EMoP.

The ESIA study consists of pollution control study, natural environmental study, social impact study, public consultation, impact identification and assessment, preparation of mitigation measures, preparation of EMP and EMoP.

3

Potential environmental and social impacts

The project is likely to cause some environmental and social impacts in parts of the alignment and the DFCCIL/MOR is keen to minimize and mitigate the unavoidable impacts.

- Some sensitive receptors and residential areas are falling near the alignment and will have impact due to noise and vibration. Therefore, appropriate mitigation measures will be taken in such areas.
- The water quality of the rivers along the alignment would be affected during the construction phase due to low level pollution for bridge construction. Discharged water from construction activity will be treated appropriately.
- Though the alignment passes through small patches of forest at a few places; besides, trees on the ROW will have to be felled, cutting tree will be minimized to the maximum extent as possible. In addition, plantation along the ROW should be maintained properly.
- The alignment passes in the outer part of Sanjay Gandhi National Park and Tungareshwar Wildlife Sanctuary, therefore, wild animal and migratory paths should not be blocked while executing the project.
- The land acquisition would entail the loss of land to farmers and displacement of families, though the alignment and ROW is designed to keep the displacements at the least minimum possible. The detour alignment is also designed in order to avoid large-scale involuntary resettlement. On the other hand, the parallel alignment will be confronted with relocation of some non-title holders,. Adequate compensation, in line with the laws, will be provided to those who lose land, houses or other structures.

4

Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)

- The EMP mainly requires the following:
  - Implementation of the mitigation measures.
  - Monitoring of the implementation of the mitigation measures.
  - Reporting to the designated institutions.
  - Allocation of budget for the mitigation measures.
  - Organizational structures for the implementation of the mitigation measures.
- The EMoP mainly comprises of sampling ambient and source noise and vibration level, water quality, and natural environment. Sampling will be carried out at important locations in the project areas such as the construction sites and village areas during construction/operation phase.

For any further information please contact;

- **DFCCIL, Fifth Floor, Pragati Maidan, Metro Station Building Complex, New Delhi – 110 001**
- **CPM Office Mumbai; 7th Floor, New Administrative Building, Central Railway, D.N. Road, Mumbai – 400 001,**
- **CPM Office Surat: 4th Floor, Aruns-1, Near Iscon Mall, Dumas Road, Piplod, Surat – 395 007, Gujarat**
- **CPM Office Vadodara: 13-14, 17-18, Panorama Complex, 3rd Floor, R. C. Dutt Road, Alkapuri, Vadodara – 395 007, Gujarat**
- **AGM Office Rewari-Dadri; "Star House", First Floor, A-102, Sector-4, Noida, Uttar Pradesh**

5

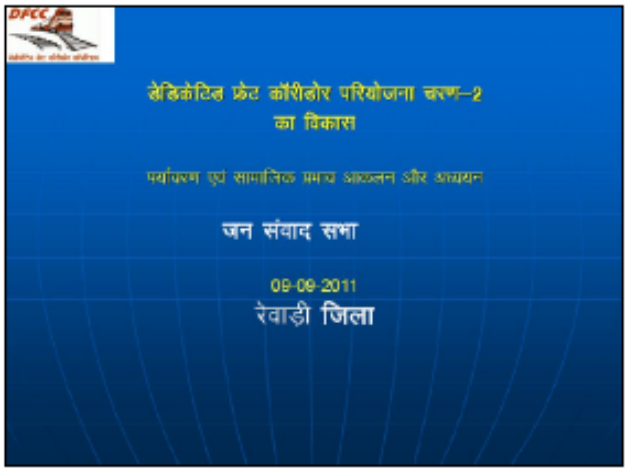
PUBLIC CONSULTATION MEETING FOR DEVELOPMENT OF DEDICATED FREIGHT CORRIDOR (DFC) PROJECT PHASE-2

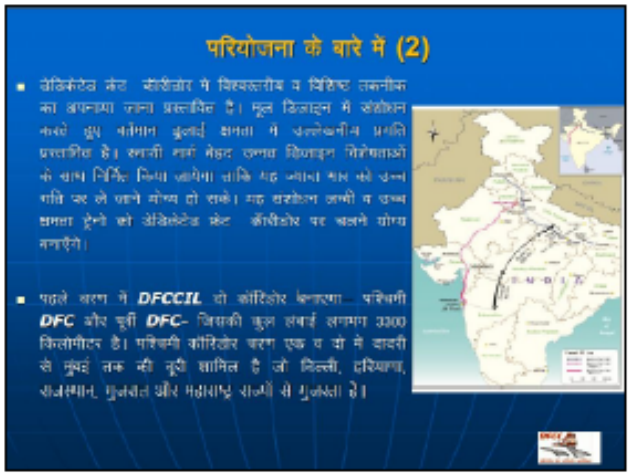
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

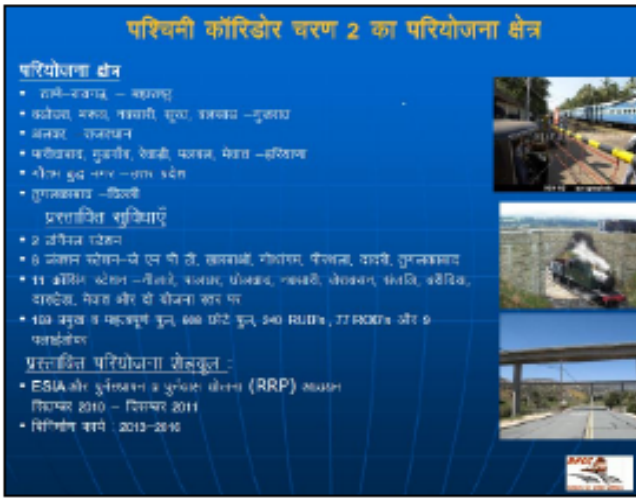
**MINISTRY OF RAILWAYS,
GOVERNMENT OF INDIA
AND
DEDICATED FREIGHT CORRIDOR
CORPORATION OF INDIA LIMITED**

(3) Presentation materials (English, Hindi, Gujarati, Marathi)

【Presentation_Hindi】

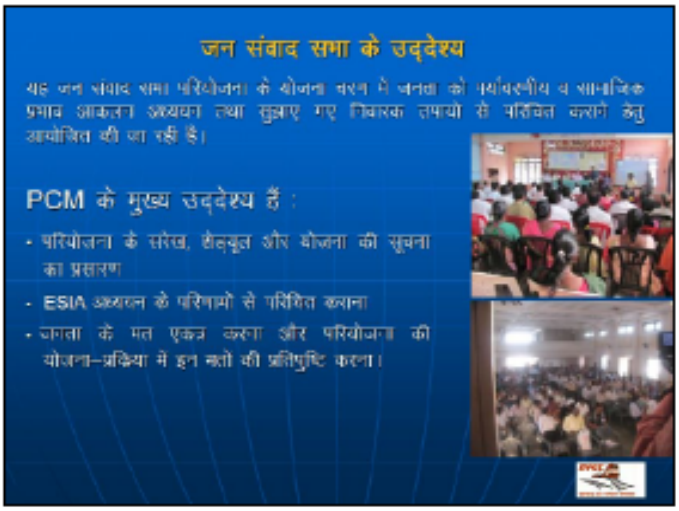





पश्चिमी कॉरिडोर चरण 2 का परियोजना क्षेत्र
परियोजना क्षेत्र
प्रस्तावित सुविधाएँ
प्रस्तावित परियोजना शेड्यूल :
(RRP)

REWARI TO DADRI
HARYANA
DELHI
UTTAR PRADESH
RAJASTHAN

चरण दो पश्चिमी कॉरिडोर का सर्वेक्षण
VADODARA TO JNPT
VADODARA
GUJARAT
MAHARASHTRA
JNPT


जन संवाद सभा के उद्देश्य
PCM के मुख्य उद्देश्य हैं :
• परियोजना के सर्वेक्षण, शेड्यूल और योजना की सूचना का प्रसारण
• ESIA अध्ययन के परिणामों से परिचित कराना
• जनता के मत एकत्र करना और परियोजना की योजना–प्रक्रिया में इन मतों की प्रतिपुष्टि करना।

ESIA अध्ययन और अन्य संबंधित गतिविधियों का उद्देश्य

- पर्यावरणीय व सामाजिक आधार रेखा सूचना एकत्र करना ताकि परियोजना से होने वाले संभावित सामाजिक / प्राकृतिक–पर्यावरणीय प्रभावों को चिह्नित व आकलित किया जा सके।
- संभावित पर्यावरणीय व सामाजिक प्रभावों से निपटने के लिए पर्यावरणीय प्रबंधन योजना (EMP) और पर्यावरणीय निरीक्षण योजना (EMoP) तैयार करना।
- भूमि अधिग्रहण, पुनर्स्थापन और पुनर्वास का अध्ययन RRP में अलग से किया जाएगा।

पर्यावरणीय प्रभाव और निवारक उपाय (प्रदूषण नियंत्रण)

प्रकार	अपेक्षित	ESIA परिणाम	निवारक उपाय
शोर	आवासीय क्षेत्रों व संवेदी ग्राहकों (Sensitive receptor) के निकट गाड़ी प्रभाव	विनिर्माण के दौरान शोर का स्तर बढ़ेगा। ट्रेन के परिचालन के दौरान शोर का स्तर ROW में 55 से 71 डेसीबल रहेगा।	•यंत्रों पर (विनिर्माण के दौरान) मफलर (Mufflers) का प्रयोग तथा उपयुक्त ढंग से ल्यूब्रिकेटेड (Lubricated) विनिर्माण यार्ड का वनस्पतीय अवरोधकों से लैस होना •ट्रैक के दोनों ओर पौधारोपण •शोर स्तर का नियमित अंतराल पर निरीक्षण
कंपन	कंपन स्तर 70 डेसीबल की सीमा में रहेगा।	87 से 70 डेसीबल (Zaxis) 38 मीटर तक और 55 से 69 डेसीबल 50 मीटर दूरी तक	•ट्रैक व्यामिती का उच्चतम स्तर
भू–जल	कोई प्रभाव नहीं	विनिर्माण हेतु जल की आवश्यकता होगी।	संबंधित राज्य अधिकारियों से आवश्यक अनुमति ली जाएगी।
गुदा	कोई प्रभाव नहीं	----	------

पर्यावरणीय प्रभाव और निवारक उपाय (प्रदूषण नियंत्रण)

प्रकार	अपेक्षित	ESIA परिणाम	निवारक उपाय
वायु प्रदूषण	विनिर्माण चरण में गौण प्रभाव	•रोड द्वारा माल ढुलाई में कमी से वायु गुणवत्ता सुधरेगी। •कण–रूपी पदार्थ विनिर्माण क्षेत्र के आस–पास वायु गुणवत्ता को प्रभावित करने वाला मुख्य प्रदूषक होगा।	•DFC लाइन के साथ पौधारोपण •विनिर्माण सामग्री का उपयुक्त भंडारण •सामग्री ढोने वाले ट्रकों को ढक कर रखा जाएगा। •पानी का छिड़काव •कम ऊर्जा वाले विनिर्माण यंत्र और वाहन •वायु गुणवत्ता का नियमित निरीक्षण
जल प्रदूषण	विनिर्माण के दौरान पानी की गुणवत्ता प्रभावित होगी।	विनिर्माण के दौरान सिल्ट का बह जाना और जल की गुणवत्ता में गिरावट तथा जल–जमाव की संभावना में वृद्धि	•जल मार्गों को न्यूनतम हानि के अनुसार डिजाइन •नदी के सीधे संक्रमण से बचाव •रसायनों, तेल आदि का विशेष भंडारण •जल क्षेत्रों के निकट टीटार बनाना और सिल्ट ट्रैप (Silt trap) लगाना

पर्यावरणीय प्रभाव और निवारक उपाय (प्राकृतिक पर्यावरण)

प्रकार	अपेक्षित	ESIA परिणाम	निवारक उपाय
वनस्पति व जीवजंतु	RoW में पड़ने वाले सभी पेड़ काटे जाएंगे।		•क्षतिपूर्ति पौधारोपण •हरित पट्टी का विकास •स्थानिय प्रजातियों का चयन
	वन क्षेत्र का अतिक्रमण	महाराष्ट्र और गोतम बुद्ध नगर के कुछ हिस्सों में वन क्षेत्र प्रभावित होगा।	•प्रभावित क्षेत्र में गति हेतु पथ उपलब्ध कराया जाएगा। •सुन्दर वन को हानि से बचाए जाएगा।
जैव विविधता	विनिर्माण चरण में मामूली प्रभाव	प्रस्तावित कॉरिडोर किसी घने वन क्षेत्र या खतरे में पड़ी प्रजातियों के आवास क्षेत्र से नहीं गुजरता है	-

सामाजिक प्रभाव व निवारक उपाय

प्रकार	अपेक्षित	ESIA परिणाम	निवारक उपाय
भूमि	कृषि भूमि का कुछ भाग वो हिस्सों में बँट जाएगा और PAP के लिए पूर्णतया अनुपयोगी हो सकता है।	कई स्थानों पर सरेल के गुजरने से कारण भूमि दो टुकड़ों में बँट जाएगी।	यदि अधिग्रहण न किया जा रहा हो तो भी संपूर्ण भूमि के लिए प्रर्याप्त मुआवजा दिया जाएगा।
संपर्क साधन	अभिगम सड़कें (Approach Roads) बन हो जाएँगी।	गाँवों व बाजारों से मध्य में और आर-पार आवाजाही प्रभावित होगी।	फ्लाई ओवर : 9 ROB : 77 (समानांतर सेक्शन में होने वाला पुर्ननिर्माण शामिल) RUB : 240 कुल : 777
आजीविका	थोड़ी भूमि के मालिकों और अन्य आमदनी से रहित PAP प्रभावित होंगे।	अपनी संपूर्ण भूमि खो देने वाले PAP नियमित आय का साधन खो देंगे।	RRP के द्वारा उपयुक्त मुआवजा दिया जाएगा।

आपके जिले में सामाजिक व पर्यावरणीय प्रभाव

जिले का नाम	प्रभावित गाँवों की संख्या	प्रभावित प्लॉटों की संख्या	परिवार का संख्या
रायगढ़	41	248	976
ठाणे	95	1745	13,112
बलसाद	37	443	3,003
नवसारी	22	416	1,460
सूरत	35	655	2,773
भरुच	29	705	2,918
वडोदरा	10	315	815
रेवाड़ी	17	703	5,751
अलवर	13	512	3,710
मेवात	19	891	3,050
गुड़गाँव	9	294	1,630
मलवल	8	706	3141
फरीदाबाद	28	1,421	6,911
गौतम बुद्ध नगर	11	110	361
कुल	**374**	**9,209**	**49,619**

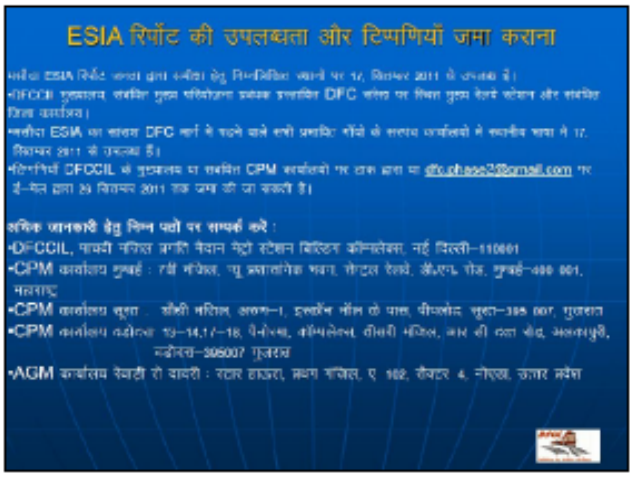
सामाजिक प्रभाव व निवारक उपाय

प्रकार	अपेक्षित	ESIA परिणाम	निवारक उपाय
कृषि भूमि व संपत्ति की हानि	भूमि अधिग्रहण से बड़ी संख्या में प्लॉट व निर्माण प्रभावित होंगे।	374 गाँव प्रभावित हैं और 9,209 प्लॉट अधिग्रहित होंगे। (20E और JM सूची के अनुसार)	भूमि व संपत्ति अधिग्रहण को न्यूनतम आवश्यक स्तर तक सीमित किया जाएगा।
पुर्नवास व पुर्नस्थापन	PAP आजीविका के स्रोत व आवास से वंचित हो जाएगी।	लगभग 49,619 परिवार प्रभावित होंगे (20E और JM सूची के अनुसार)।	आजीविका की पुर्नस्थापना सुनिश्चित करने हेतु उपयुक्त R&R नीति बनाई जाएगी।
संवेदी ग्राहक (Sensitive Receptors)	विद्यालय, अस्पताल और धार्मिक स्थानों जैसी जन सुविधाएँ प्रभावित हो सकती है।	लगभग 132 SR प्रभावित होंगे।	सभी संवेदनशील स्थानों पर शोर अवरोधक उपलब्ध कराए जाएंगे।

पर्यावरण प्रबंधन योजना

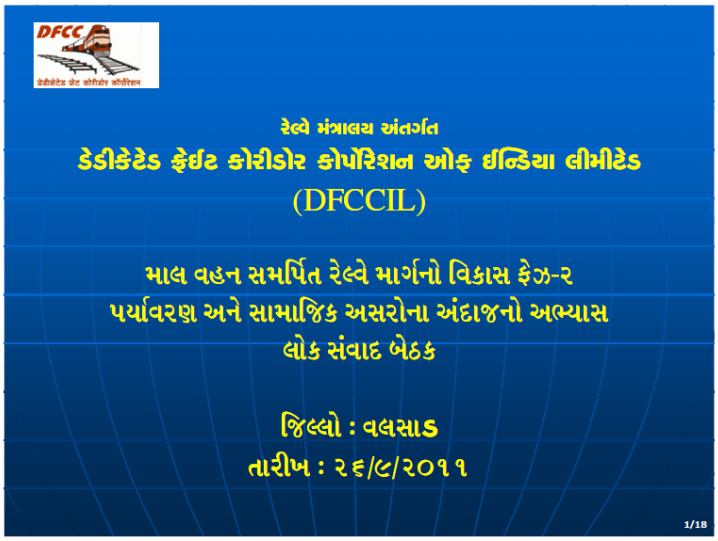
- ई एम पी के लिये मुख्य रूप से निम्नलिखित की आवश्यकता है
  - निवारक उपायों का क्रियान्वयन
  - निवारक उपायों के क्रियान्वयन की निगरानी
  - नमित संस्थाओं के लिये रिपोर्टिंग
  - निवारक उपायों के लिये बजट का आवंटन
  - निवारक उपायों के क्रियान्वयन के लिये संगठनात्मक संरचनाओं का निर्माण
- ई एम पी में मुख्य रूप से परिवेश, शोर एवं कंपन का स्तर, पानी की गुणवत्ता एवं प्राकृतिक वातावरण शामिल है । विनिर्माण/परिचालन चरण में परियोजना क्षेत्र के महत्वपूर्ण स्थानों जैसे विनिर्माण साइट्स व गाँवों में सैम्पलिंग की जाएगी !

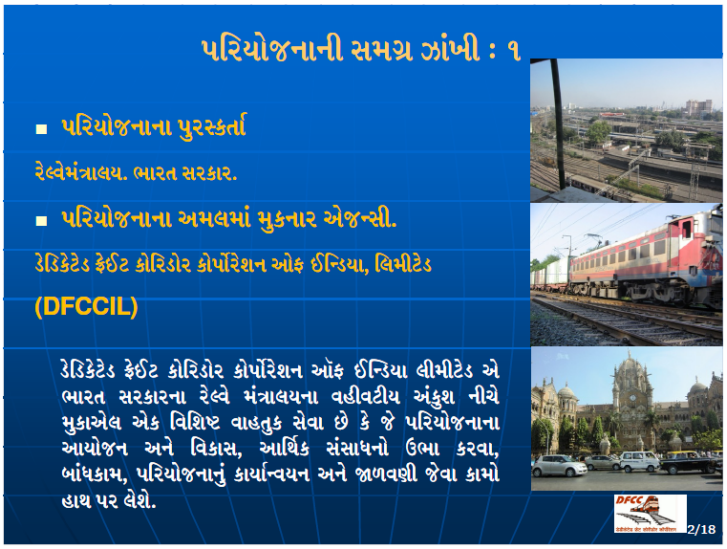
EMP और EMP कार्यान्वयन के संस्थागत ढांचे
GM-SEMU (WC)
ADM-SEMU (WC)
मुख्य परियोजना प्रबंधक
APM सामाजिक व पर्यावरणीय
तकनीकी स्टॉफ
सामाजिक विशेषज्ञ : पर्यावरण विशेषज्ञ

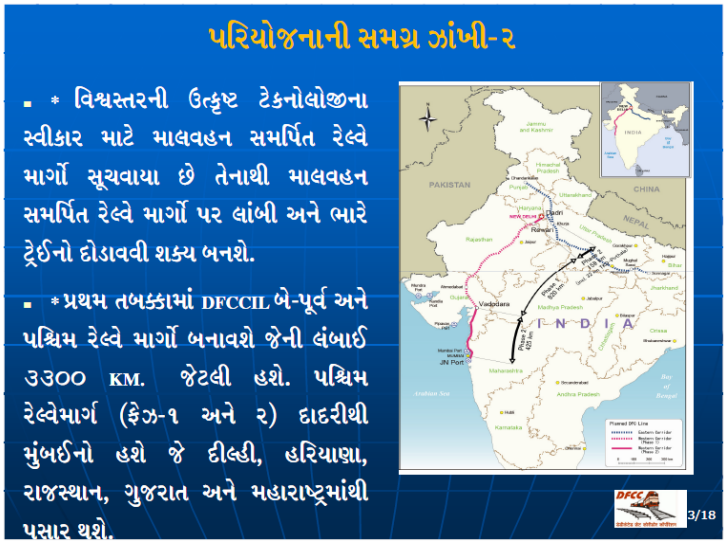

ESIA रिपोर्ट की उपलब्धता और टिप्पणियाँ जमा कराना
अधिक जानकारी हेतु निम्न पतों पर सम्पर्क करें :
•DFCCIL,
•CPM
•CPM
•CPM
•AGM

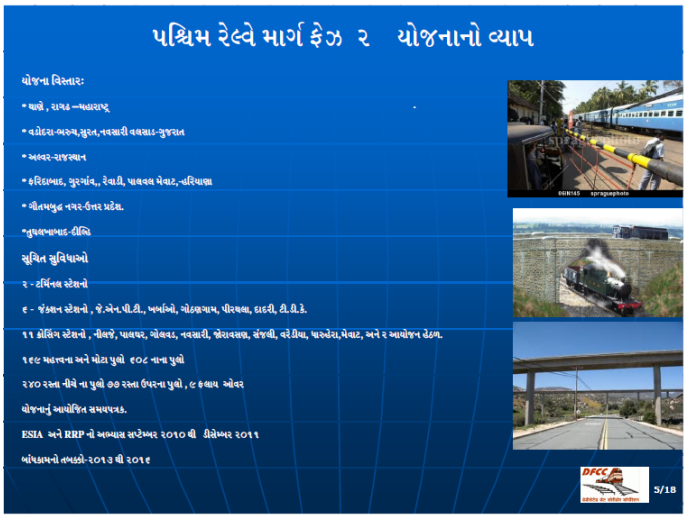
धन्यवाद

【Presentation_Gujarati】

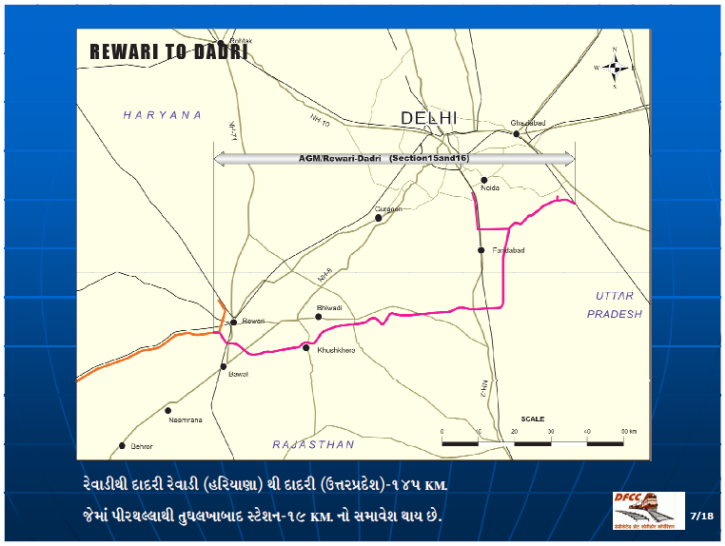


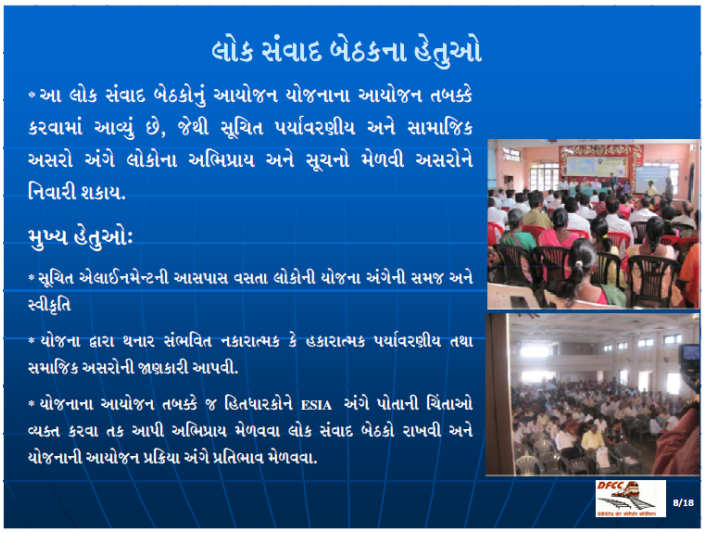





પશ્ચિમ રેલ્વે માર્ગ ફેઝ ૨ યોજનાનો વ્યાપ
યોજના વિસ્તારઃ
* થાણે , રાગડ –મહારાષ્ટ્ર
* વડોદરા-બરુચ,સુરત,નવસારી વલસાડ-ગુજરાત
* અલ્વર-રાજસ્થાન
* હરિદાબાદ, ગુરગાંવ,, રેવાડી, પાલવલ મેવાટ,-હરિયાણા
* ગીતમબુદ્ધ નગર-ઉત્તર પ્રદેશ.
*તુઘલખાબાદ-દીલ્હિ
સૂચિત સુવિધાઓ
૨ - ટર્મિનલ સ્ટેશનો
૬ - જંક્શન સ્ટેશનો , જે.એન.પી.ટી., ખર્ખાઓ, ગોઠણગામ, પીરથલા, દાદરી, ટી.ડી.કે.
૧૧ ક્રોસિંગ સ્ટેશનો , નીલજે, પાલઘર, ગોલવડ, નવસારી, જોરાવસણ, સંજલી, વરેડીયા, ધારુહેરા,મેવાટ, અને ૨ આયોજન હેઠળ.
૧૬૯ મહત્વના અને મોટા પુલો ૬૦૮ નાના પુલો
૨૪૦ રસ્તા નીચે ના પુલો ૭૭ રસ્તા ઉપરના પુલો , ૯ ફલાય ઓવર
યોજનાનું આયોજિત સમયપત્રક.
ESIA અને RRP નો અભ્યાસ સપ્ટેમ્બર ૨૦૧૦ થી ડીસેમ્બર ૨૦૧૧
બાંધકામનો તબક્કો-૨૦૧૩ થી ૨૦૧૬
5/18

પશ્ચિમ રેલ્વે માર્ગ ફેઝ-૨ નું એલાઈનમેન્ટ
VADODARA TO JNPT
AHMADABAD
VADODARA
MADHYA PRADESH
GUJARAT
Arabian Sea
MAHARASHTRA
MUMBAI
JNPT
LEGEND
SCALE
જવાહરલાલનહેરુ પોર્ટ (મહારાષ્ટ્ર) થી વડોદરા-૪૨૦ KM.
6/18


REWARI TO DADRI
HARYANA
DELHI
AGM/Rewari-Dadri (Section15and16)
UTTAR PRADESH
RAJASTHAN
SCALE
રેવાડીથી દાદરી રેવાડી (હરિયાણા) થી દાદરી (ઉત્તરપ્રદેશ)-૧૪૫ KM.
જેમાં પીરથલ્લાથી તુઘલખાબાદ સ્ટેશન-૧૯ KM. નો સમાવેશ થાય છે.
7/18


લોક સંવાદ બેઠકના હેતુઓ
* આ લોક સંવાદ બેઠકોનું આયોજન યોજનાના આયોજન તબક્કે કરવામાં આવ્યું છે, જેથી સૂચિત પર્યાવરણીય અને સામાજિક અસરો અંગે લોકોના અભિપ્રાય અને સૂચનો મેળવી અસરોને નિવારી શકાય.
મુખ્ય હેતુઓઃ
* સૂચિત એલાઈનમેન્ટની આસપાસ વસતા લોકોની યોજના અંગેની સમજ અને સ્વીકૃતિ
* યોજના દ્વારા થનાર સંભવિત નકારાત્મક કે હકારાત્મક પર્યાવરણીય તથા સમાજિક અસરોની જાણકારી આપવી.
* યોજનાના આયોજન તબક્કે જ હિતધારકોને ESIA અંગે પોતાની ચિંતાઓ વ્યક્ત કરવા તક આપી અભિપ્રાય મેળવવા લોક સંવાદ બેઠકો રાખવી અને યોજનાની આયોજન પ્રક્રિયા અંગે પ્રતિભાવ મેળવવા.
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ESIA અભ્યાસ તથા અન્ય સંબંધિત પ્રવૃત્તિના હેતુઓ.

- ★ પશ્ચિમ માર્ગના ફેઝ-૨ના લીધે થનાર પર્યાવરણીય અને સામાજીક અસરોને ઓળખવી અને અંદાજવી તથા તેના નિવારણ, સંચાલન અને નિયમન માટે ચોક્કસ પગલાં લેવા જેથી તે અસરોને લઘુત્તમ કે દુર કરી શકાય.
- ★ ઓળખાયેલી અસરોને નિવારવા અને યોગ્ય સંચાલન અને દેખરેખ વ્યવસ્થાપન ગોઠવી અસરકારક અમલીકરણ કરવા, તાંત્રિક તથા આર્થિક રીતે સંભાવના સાથે ઈ.એમ. પી. તથા ઈ. એમ.ઓ.પી.ની રચના તથા અમલવારી કરવી.
- ★ ઈ.એમપી.EMP તથા ઈ.એમ.ઓ.પી. EMoP ના અસરકારક દેખરેખ, નિગરાની અને અમલીકરણ માટે યોગ્ય વ્યવસ્થાતંત્ર સૂચવવું.
- ઈ.એસ.આઈ.એ. અભ્યાસમાં પ્રદુષણ નિયંત્રણ અભ્યાસ, કુદરતી પર્યાવરણીય અભ્યાસ, સામાજીક અસર અધ્યયન, લોક સંવાદ, અસર ઓળખ તથા અંદાજ, નિવારક પગલાંઓની તૈયારી તથા ઈ.એમ.પી. અને ઈ.એમ.ઓ.પી.નો સમાવેશ થાય છે.

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પ્રાતિનિધિ પર્યાવરણ અસરો અને નિવારણ પગલાં (પ્રદૂષણ નિયંત્રણ)

અસર	સ્થિતિ	તારણો	નિવારણ પગલાં
હવા પ્રદૂષણ	માત્ર બાંધકામ તબક્કે સામાન્ય અસર	હવાની ગુણવત્તા રસ્તા પરનો માલવહન ટ્રાફીક ઘટતાં સુધરશે. બાંધકામ સ્થળે મુખ્યત્વે ધૂળ હવાના પ્રદૂષણનું મુખ્ય કારણ હશે.	ડી.એફ.સી. લાઈન પાસે વૃક્ષોરોપણ. બાંધકામ સામગ્રી લઈ જતાં ટ્રકોને ઢાંકવામાં આવશે. પાણીનો છટકાવ. ઓછું ઉત્સર્જન કરતા બાંધકામ યંત્રો/મશીનો/વાહનો . હવાની ગુણવત્તાની નિયમિત દેખરેખ.
જળ પ્રદૂષણ	નિર્માણતબક્કે સામાન્ય અસર	બાંધકામના તબક્કે તથા સંભવિત જળભરાવાના કારણે કાદવનો જમાવ થવાથી પાણીની ગુણવત્તા બગડશે.	નુકશાન કરે તેવા વહેણને ઘટાડવાની ડિઝાઈન. નદીમાં સીધો કાદવ જતાં બગાડ ન થાય તે માટે અટકાવ. રસાયણો, ઓઈલના સ્ટોરેજ માટે વિશિષ્ટ સગવડ. પાણીના સ્રોતો પાસે વાડ તથા કાદવ-કિચડને રોકવાની વ્યવસ્થા.

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પ્રાતિનિધિક પર્યાવરણ અસરો અને નિવારણ પગલાં (પ્રદૂષણ નિયંત્રણ)

અસર	સ્થિતિ	તારણો	નિવારણ પગલાં
ઘોંઘાટ	નિર્માણ તબક્કે રહેઠાણ વિસ્તાર અને સંવેદનશીલ ગ્રાહકો પર વધુ અસર.	અવાજનું પ્રમાણ બાંધકામ તબક્કામાં વધુ. ટ્રેનના આવાગમન વખતે અવાજનું પ્રમાણ ૫૫ થી ૭૧ ડેસીબલ વચ્ચે (આર.ઓ. ડબલ્યૂમાં રહેશે.)	બાંધકામ વખતે ધ્વનિ નિયંત્રકો વપરાશે અને યંત્ર-સામગ્રીને ઉંજણ કરાશે. બાંધકામ વાડાઓની બંને બાજુ વૃક્ષારોપણ થશે.
કંપન	કંપનનું ધોરણ ૭૦ ડેસીબલની મર્યાદામાં રહેશે.	૫૭ થી ૭૦ ડેસીબલ (ઝેટ એક્સિસ) ૩૦ મીટરના અંતરે અને ૫૫ થી ૬૯ ડેસીબલ ૫૦ મીટરના અંતરે.	ઉચ્ચ ધોરણ ધરાવતી ટ્રેક જોમેટ્રી
ભૂગર્ભ જળ	કોઈ અસર નહીં થાય.	બાંધકામ વખતે પાણીની જરુર પડશે.	સત્તાવાળાઓ પાસેથી યોગ્ય મંજૂરી મેળવાશે.
જમીન	અસર થશે નહીં .		

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પ્રાતિનિધિ પર્યાવરણ અસરો અને નિવારણ પગલાં (પ્રદૂષણ નિયંત્રણ)

અસર	સ્થિતિ	તારણો	નિવારણ પગલાં
વનસ્પતિ તથા પ્રાણી સૃષ્ટિ	રસ્તા ઉપરના પુલોના બધા વૃક્ષો કપાશે.		સ્થાનિક જાતોની પસંદગી થશે. હરિયાળો પટ્ટો વિકસાવાશે.
		મહારાષ્ટ અને ગૌતમબુદ્ધ નગરના કેટલાક વિસ્તારોમાં વન વિસ્તારનો કેટલોક ભાગ અસર પામશે.	
	વનવિસ્તાર પર અતિક્રમણ થશે.	વનીકરણ દ્વારા કપાયેલા વૃક્ષોનું પ્રમાણ ઘટાડી શકાશે. વનીકરણ માટે સ્થાનિક જાતિના રોપાઓની પસંદગી અતિક્રમણને મર્યાદિત કરવું.	અસરગ્રસ્ત વિસ્તારમાં રસ્તો બદલવામાં આવશે. મેન્ગ્રૂઝનું નુકશાન અટકાવાશે.
જૈવિક વિવિધતા	અલ્પ અસર	સૂચિત રેલ્વે માર્ગ ગાઢ જંગલ વિસ્તાર કે જોખમી જાતિની વસાહત ને અસર કર્તા નથી	

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પ્રાતિનિધિ પર્યાવરણ અસરો અને નિવારણ પગલાં (પ્રદૂષણ નિયંત્રણ)

અસર	સ્થિતિ	તારણો	નિવારણ પગલાં
જમીન સંપાદન	કેટલીક જમીનના ટુકડા થઈ જશે જે અસરગ્રસ્ત માટે નકામા થશે	ઘણાં કિસ્સાઓમાં અલાઈનમેન્ટ વચ્ચેથી પસાર થતાં જમીનના બે ટુકડા થઈ જશે.	જમીન સંપાદન નહીં કરવામાં આવે તેવા કિસ્સાઓમાં પૂરી જમીન માટે યોગ્ય વળતર આપવામાં આવશે.
યાતાયાત	એપ્રોચ રોડને અવરોધ થશે.	ગામોમાં અને બજારોમાં જવા માટેની આવજા પર અસર થશે	બંધાશેઃ ૯ ફ્લાય ઓવર . ૭૭ - રસ્તા ઉપરના પૂલો. (સમાંતર જ વિભાગના પૂનનિર્માણ સાથે) રસ્તા નીચેના પૂલો-૨૪૦ પૂલો ૭૭૭
રોજગારી	ઓછી જમીન ધરાવતા અને અન્ય આવક ન ધરાવતા અસરગ્રસ્તોને અસર થશે.	પોતાની બધી જ જમીન ગુમાવતા લોકો નિયમિત આવકનું સાધન ગુમાવશે.	આર.આર.પી. દ્વારા યોગ્ય વળતર આપવામાં આવશે.

નોંધઃ જમીન સંપાદન પુનર્વાસ અને પુનઃ સ્થાપનેનો અલગ અભ્યાસ અને લોક સંવાદ બેઠકો થયેલ છે.
૧૫ પ્રતિ નિધિક પર્યાવરમ અસરો અને નિવારણ પગલાં (સામાજિક પર્યાવરણ)

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પ્રાતિનિધિ પર્યાવરણ અસરો અને નિવારણ પગલાં (પ્રદૂષણ નિયંત્રણ)

અસર	સ્થિતિ	તારણો	નિવારણ પગલાં
ખેતીની જમીન અને મિલકતને નુકસાન	જમીન સંપાદન પ્રક્રિયાને કારણે મોટા પ્રમાણમાં પ્લોટ અને બાંધકામ અસર પામશે.	૩૭૪ ગામોને અસર થશે. ૯,૨૦૯ પ્લોટ સંપાદિત કરવામાં આપશે (૨૦ E તથા જે.એમ. યાદી પ્રમાણે) કરાશે.	જમીન અને મિલકતનું સંપાદન બને તેટલું ઓછું કરવું.
પુનર્વાસ અને પુનઃ સ્થાપન	યોજના અસરગ્રસ્તો વસાહતો અને આવકનું સાધન ગુમાવશે.	૪૯,૬૧૯ જેટલા ટાઈટલ હોલ્ડર્સ (૨૦ E અને જે એમ-યાદી પ્રમાણે) અસર પામશે.	પૂનઃસ્થાપન તથા આજીવિકા માટે યોગ્ય પૂનર્વાસ તથા પુનઃસ્થાપન નીતિ ઘડાશે.
સંવેદનશીલ ગ્રાહક	શાળા હોસ્પિટલ અને ધાર્મિક સ્થળો જેવી જન સુવિધાઓ પર મોટી અસર.	લગભગ ૧૩૨ સંવેદનશીલ ગ્રાહક અસર પામશે.	જોખમી સ્થળોએ ધ્વનિ નિયંત્રકો પુરા પાડવામાં આવશે.

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તમારા જીલ્લામાં થતી સામાજીક તથા પર્યાવરણીય અસર

જીલ્લાનું નામ	અસરગ્રસ્ત ગામો	અસરગ્રસ્ત પ્લોટ	અસરગ્રસ્ત પરિવારો
રાયગઢ	૪૧	૨૪૮	૯૭૬
થાણે	૯૫	૧૭૪૫	૧૩,૧૧૨
વલસાડ	૩૭	૪૪૩	૩,૦૦૩
નવસારી	૨૨	૪૧૬	૧,૪૬૮
સુરત	૩૫	૬૫૫	૨,૭૭૩
ભરુચ	૨૯	૭૦૫	૨,૯૧૮
વડોદરા	૧૦	૩૧૫	૮૧૫
રેવાડી	૧૭	૭૦૩	૫,૭૫૧
અલવર	૧૩	૫૧૨	૩,૭૧૦
મેવાળ	૧૯	૮૯૧	૩,૦૫૦
ગુરગાંવ	૯	૨૯૪	૧,૬૩૦
પલવલ	૮	૭૦૬	૩૧૪૧
ફરિદાબાદ	૨૮	૧,૪૨૧	૬,૯૧૧
ગૌતમબુદ્ધ નગર	૧૧	૧૧૦	૩૬૧
કુલ	૩૭૪	૯,૨૦૯	૪૯,૬૧૯

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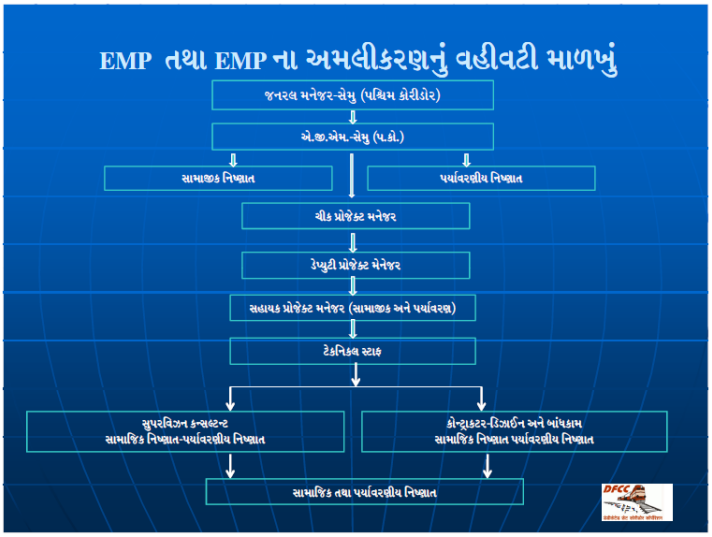
પર્યાવરણ વ્યવસ્થાપન યોજના અને પર્યાવરણ દેખરેખ યોજના

★ પર્યાવરણ વ્યવસ્થાપન યોજના મુખ્યત્વે નીચેની આવશ્યકતા ધરાવે છે.
- નિવારક પગલાંઓનું અમલીકરણ.
- નિવારક કાર્યક્રમના અમલીકરણની દેખરેખ.
- યોગ્ય દર્શાવેલ સંસ્થાઓને અહેવાલ.
- નિવારક પગલાંઓ માટે નાણાંની ફાળવણી.
- નિવારક પગલાંઓના અમલીકરણ માટે સંસ્થાકીય માળખું.

•પર્યાવરણ દેખરેખ યોજનામાં મુખ્યત્વે સ્થાનિક હવાના નમૂનાઓ, ઘોંઘાટ અને કંપનનું પ્રમાણ, પાણીની ગુણવત્તા તથા કુદરતી વાતાવરણનો સમાવેશ થાય છે.
•યોજના વિસ્તારમાં મહત્ત્વના સ્થળો એ નમૂનાઓ લેવામાં આવશે જેમકે બાંધકામ સમય દરમ્યાન બાંધકામ સ્થળો તથા ગામ વિસ્તાર .

16/18



સૂચિત ESIA રિપોર્ટની પ્રાપ્યતા અને સૂચનોની રજૂઆત

સૂચિત ESIA રિપોર્ટ જાહેર જનતાના અવલોકન માટે નીચે જણાવેલ સ્થળોએ મળી શકશે.

DFCCIL મુખ્ય ઑફિસ સંબધિત મુખ્ય પરિયોજના મેનેજર (CPM) સૂચિત રેલ્વે માર્ગ (એલાઈનમેન્ટ) પરના મોટા સ્ટેશનો અને સંબધિત જિલ્લા કાર્યાલયો (તા. ૧૭ મી સપ્ટેમ્બર પછી) .

૧૭મી સપ્ટેમ્બર ૨૦૧૧ પછી પરિયોજના અસરગ્રસ્ત ગામોની પચાંયતની ઓફિસમાંથી સૂચિત ESIA ના રિપોર્ટના તારણો સ્થાનિક ભાષામાં મેળવી શકાશે. ૨૬મી સપ્ટેમ્બરથી સૂચનો, અભિપ્રાયો DFCCILની ઓફિસે પત્ર દ્વારા તથા ઈમેઈલ દ્વારા મોકલી શકાશે.

Email: dfc. phase2@gmail. com

- **DFCCIL, Head Office,**
  પ્રગતિ મેદાન, ૪થો માળ, મેટ્રો સ્ટેશન બિલ્ડીંગ, નવી દિલ્હી-૧૧૦૦૦૧ (Tel: 91-11-23454700; Fax: 91-11-23454701)
- **CPM કાર્યલય મુંબઈ:**
  ૭મા માળે, નવું વહીવટી મકાન, સેન્ટ્રલ રેલ્વે, ડી.એન.રોડ, મુંબઈ-૪૦૦૦૦ (Tel: 91-22-22634184; Fax: 91-22-22634184)
- **CPM કાર્યલય સુરત:**
  ૪ થે માળ અરુંશ-૧, ઈસ્કોન મોલ પાસે,ડુમસ રોડ,પીપલોદ, સુરત-૩૯૫૦૦૭ (Tel: 91-261-2633250; Fax: 91-261-2633250)
- **ચીફ પ્રોજેક્ટ મેનેજર-વડોદરા.**
  ૧૩-૧૪ ૧૭-૧૮ પનોરમા કોમ્પલેક્ષ ૩ જે માળે અલકાપુરી-વડોદરા-૭ (Tel: 91-265-2326024; Fax: 91-265-2326027)
- **AGM-રેવાડી-દાદરી પ્રોજેક્ટ ઑફિસ:**
  સ્ટારહાઉસ, ૧લો માળ, એ-૧૦૨, સેક્ટર ૪,નોઈડા, ઉત્તરપ્રદેશ (Tel: 91-120-4309720; Fax: 91-120-4134554)

【Presentation_Marathi】

डेव्हलपमेंट ऑफ डेडिकेटेड फ्रेट कॉरीडॉर प्रोजेक्ट – फेज २
पर्यावरणात्मक आणि सामाजिक प्रभाव मुल्यांकन अध्ययन

जन संवाद बैठक **(PCM)**

रायगड जिल्हा

21/09/2011

परियोजने संबंधी (१)

प्रकल्प प्रस्तावक

रेल्वे मंत्रालय

भारत सरकार

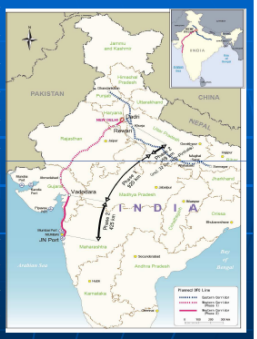
प्रकल्प कार्यान्वयन संस्था

डेडीकेटेड फ्रेट कॉरिडॉर कॉर्पोरेशन ऑफ इंडिया लिमिटेड **(DFCCIL)**

रेल्वे मंत्रालयाच्या प्रशासकिय नियंत्रणाखाली डेडिकेटेड फ्रेट कॉरिडॉर ऑफ इंडिया **(DFCCIL)** ची स्थापना करण्यात आली असून त्याच्या माध्यमातून नियोजन व विकास, आर्थिक स्त्रोत वृध्दी , देखरेख आणि दळणवळण इत्यादी मुद्दे समर्पित मालवाहतूक जोडमार्ग (DFC) साठी राबविले जाणार आहेत.

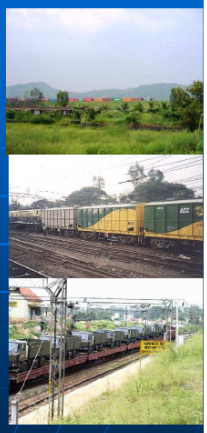
परियोजने संबंधी (२)

- डेडिकेटेड फ्रेट कॉरीडॉर मध्ये जागतिक दर्जाच्या आणि आधुनिक तंत्रज्ञानाचा वापर करण्यात येणार आहे. मूळ संरचनेमध्ये संशोधन करतानाच सध्याच्या दळणवळण क्षमतेमध्ये वाढ करण्यात येणार आहे. मुख्य मार्ग उच्च संरेखन विशेषांतांसह निर्माण करण्यात येणार आहे. जेणेकरुन जास्त क्षमतेचे वजन अधिक वेगाने वाहता येऊ शकेल. या सुधारणांमुळे लांब पल्ल्याच्या आणि जास्त वजन क्षमतेच्या गाड्यांच्या दळणवळणासाठी डेडिकेटेड फ्रेट कॉरीडॉर बनविण्यात येणार आहे.



DFCCILच्या पहिल्या टप्प्यात पश्चिम DFC व पूर्व DFC असे दोन कॉरीडॉर बनविण्यात येतील. ज्यांची एकूण लांबी सुमारे ३३०० किलोमीटर असेल. पश्चिमी कॉरीडॉर च्या पहिल्या व दुसऱ्या टप्प्यांत दादरी ते मुंबई पर्यंतचा मार्ग प्रस्तावित असून तो दिल्ली, हरीयाणा, राजस्थान , गुजरात आणि महाराष्ट्र राज्यांमधून जातो.

प्रकल्पाचे दिर्घकालीन उद्देश



- अवजड वस्तू जलद गतीने आणि सुरक्षितरित्या वाहून नेण्यासाठी मल्टीपल हाय एक्सेल लोड फ्रेट कॉरीडॉरची संरचना करण्यात आली आहे.
- २०१३-१४ वर्षापर्यंत वार्षिक ३७.७ मिलीयन टन वाहून नेण्याचे उद्दीष्ट बाळगण्यात आले असून ही मर्यादा २०३३-३४ पर्यंत १४०.४ मिलीयन टनांपर्यंत वाढविण्यात येणार आहे.
- विदयमान अर्थ व्यवस्था वाढवून तिला स्थायी आणि सतत वाढविण्याचे उद्दीष्ट बाळगण्यात आले आहे.
- रोजगाराच्या संधी, महसूल वाढविणे आणि परिवारांसाठी उत्पन्नाचे साधन तयार करणे असे जनहिताचे उपक्रम राबविण्यात येणार आहेत.

पश्चिमी कॉरीडॉर टप्पा – २ चे प्रकल्प क्षेत्र

प्रकल्प क्षेत्र :

- ठाणे, रायगड - महाराष्ट्र
- बडोदा, भरुच, नवसारी, सूरत, बलसाड. गुजरात
- अलवर – राजस्थान
- फरीदाबाद, गुरगाव, रेवाडी, पलवल, मेवात-हरियाणा
- गौतम बुध्द नगर – उत्तर प्रदेश
- तुघलकाबाद – दिल्ली.

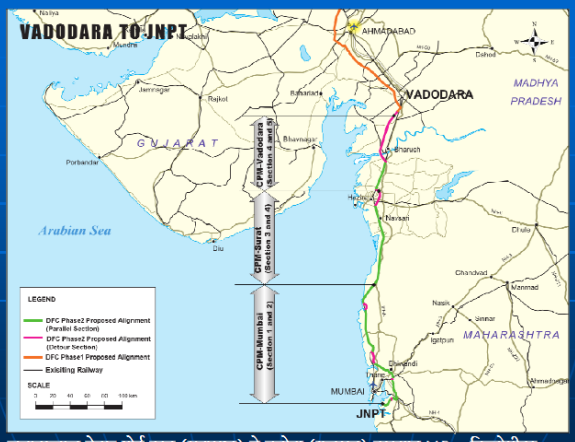
प्रस्तावित सुविधा :

- २ टार्मेनल स्टेशन्स
- ६ जंक्शन स्टेशन्स – जे एन पी टी, खारबाव, गोठणगाव, पीरथला, दादरी, तुघलकाबाद
- ११ कॉर्सींग स्टेशन्स – नीळजे, पालघर, घोलवड, नवसारी, जोरावसन, संजाली, वरेदिया, दारुहेडा, मेवात आणि अन्य दोन योजनास्तरावरील दोन स्थानके
- १६९ 'प्रमुख व महत्त्वपूर्ण पूल, ६०८ छोटे पूल, २४० RuBs, आणि RoBs ९ उड्डाणपूल

प्रस्तावित प्रकल्पाचा कार्यकाळ :

ESIA पुनर्स्थापना आणि पुनर्वसन योजना (RRP) अध्ययन
सप्टेंबर २०१० – डिसेंबर २०११
बांधकाम कार्य - २०१३ - २०१६

पश्चिमी कॉरीडॉर टप्पा २ संरेखन



जवाहरलाल नेहरू पोर्ट ट्रस्ट (महाराष्ट्र) ते बडोदा (गुजरात) दरम्यान ४२० किलोमीटर

रेवाडी (हरीयाणा) ते दादरी (उत्तर प्रदेश) दरम्यान १४५ किलोमीटर ज्यामध्ये पिरथला ते तुघलकाबाद दरम्यानच्या १९ कि. मी. चा ही समावेश

जन संवाद सभेचे उद्देश

जन संवाद सभेचे आयोजन प्रकल्पाच्या नियोजनाच्या टप्प्यात जनतेला पर्यावरणात्मक आणि सामाजिक प्रभाव मुल्यांकन अध्ययन तसेच जनतेद्वारे सुचविण्यात आलेल्या उपाययोजनांबाबत माहिती देण्यासाठी करण्यात येत आहे.

PCM चे प्रमुख उद्देश :

- प्रकल्पाच्या संरेखन, कार्यकाल व योजना इ. माहितीचा प्रसार
- ESIA अध्ययनाच्या परिणामांची माहिती देणे.
- सुचविण्यात आलेल्या वर्तमान उपाययोजनांची जनतेला माहिती देणे.
- प्रकल्पाबाबत जनतेकडून सल्ले व विचार मागविणे आणि प्रकल्पाच्या नियोतन प्रक्रियेत अंतर्भूत करणे.

ESIA अध्ययन आणि इतर संबंधीत उपक्रमांचा उद्देश

- पर्यावरणात्मक आणि सामाजिक आधार रेषेच्या सुचना एकत्रित करणे जेणेकरुन संभाव्य सामाजिक, नैसर्गिक आणि पर्यावरणात्मक प्रभावांचे आकलन होऊ शकेल.
- संभाव्य पर्यावरणात्मक आणि सामाजिक प्रभाव कमी करण्यासाठी पर्यावरण व्यवस्थापन योजना (EMP) पर्यावरण निरिक्षण योजना (EMoP) तयार करणे.
- भूमि अधिग्रहण पुनर्स्थापन आणि पुनर्वसनचा अभ्यास करुन RRP मध्ये त्याचा वापर वेगवेगळा करणे.

पर्यावरणात्मक प्रभाव आणि उपाययोजना (प्रदूषण नियंत्रण)

प्रकार	अपेक्षित	ESIA परिणाम	उपाययोजना
वायु प्रदूषण	बांधकाम टप्प्यात अत्यल्प प्रभाव	रस्त्यांच्या माध्यमातून दळणवळण केल्याने हवेची गुणवत्ता वाढेल. कणरुपातील पदार्थ बांधकाम क्षेत्राजवळील हवा प्रदूषीत करणारा मुख्य घटक असेल.	• DFC जोडमार्गाजवळ वृक्षारोपण. • बांधकाम साहित्याचे योग्य रितीने भंडारण • साहित्य वाहून आणणाऱ्या ट्रक्सना झाकून ठेवणे • पाण्याची फवारणी • कमी उत्सर्जन करणारी यंत्रसामग्री व वाहने. • हवेच्या गुणवत्तेचे योग्य व नियमीत निरीक्षण.
जल प्रदूषण	बांधकामा दरम्यान पाण्याची गुणवत्ता प्रभावित होईल.	बांधकामा दरम्यान सिल्टच्या वाहून जाण्याने पाण्याची गुणवत्ता घटेल तसेच सांडपाणी जमा होण्याची शक्यता वाढेल.	• जलमार्ग कमीत कमी प्रभावित होईल अशाप्रकारे आरेखन • नदीचे प्रत्यक्ष संसर्गापासून संरक्षण • रसायने, तेल, इत्यादी बाबीचे विशिष्ट भंडारण. • जल क्षेत्राच्या नजीक संरक्षक भिंत उभारणे आणि सिल्ट ट्रॅप बसविणे.

पर्यावरणात्मक प्रभाव आणि उपाययोजना (प्रदूषण नियंत्रण)

प्रकार	अपेक्षित	ESIA परिणाम	उपाययोजना
आवाज	रहिवासी क्षेत्र व संवेदनशील रिसेप्टर्स व जास्त प्रभाव	बांधकामा दरम्यान आवाजाची तिव्रता वाढेल. ट्रेनच्या दळणवळणा दरम्यान आवाजाची तिव्रता RoW मध्ये ५५ ते ७१ डेसीबल असेल.	• बांधकाम यार्ड वनस्पतीय अवरोधकांनी युक्त असेल तसेच बांधकाम यंत्र व सामग्री योग्य रितीने ल्युब्रिकेटेड आणि मफलर ने झाकलेली असावी. • ट्रॅकच्या दोन्ही बाजूला वृक्षारोपण • आवाजाची तिव्रतच नियमीत अंतराने निरीक्षण.
कंपन	कंपन स्तर ७० डेसीबल पर्यंतच्या मर्यादित राहिल.	(Z ॲक्सीस) मध्ये आवाजाची तिव्रता ५७ ते ७० डेसीबल ३० मीटर पर्यंत आणि ५५ ते ६९ डेसीबल ५० मीटर दूर पर्यंत असेल.	रेल्वे मार्गाच्या स्तराची भूमिती अतिउच्च परिमाणांची असेल.
भू - जल	कोणताही प्रभाव नाही.	बांधकामासाठी पाण्याची गरज भासेल.	संबधीत राज्य सरकारी अधिकाऱ्यांकडून आवश्यक त्या परवानगी घेण्यात येतील.
माती	प्रभाव नाही	------	----------

पर्यावरणात्मक प्रभाव आणि उपाययोजना (नैसर्गिक पर्यावरण)

प्रकार	अपेक्षित	ESIA परिणाम	उपाययोजना
वनस्पती आणि जिवजंतू	RoW मध्ये येणारी सर्व झाडे कापण्यात येतील.		• पुनर्वसनात्मक वृक्षारोपण • हरीत पट्ट्याचा विकास •स्थानिक वृक्षांच्या जातीचे रोपण
	वनजमीनीवरील अतिक्रमण	महाराष्ट्र आणि गौतमबुध्द नगरातील काही वनजमीन प्रभावित होईल.	• प्रभावित क्षेत्रामध्ये दळणवळणासाठी मार्ग उपलब्ध करण्यात येईल. • खारफूटी पट्ट्याला संभाव्य हानी पासून वाचविण्यात येईल.
जैविक विविधता	बांधकाम टप्प्यात अत्यल्प प्रभाव	प्रस्तावित मालवाहतूक जोडमार्ग कोणत्याही घनदाट जंगल क्षेत्र किंवा धोकादायक जनावरांच्या वास्तव्य स्थळाजवळून जात नाही .	-

सामाजिक प्रभाव आणि उपाययोजना

प्रकार	अपेक्षित	ESIA परिणाम	उपाययोजना
भूधारण	शेत जमीनीचा काही भाग दोन तुकड्यात विभागला जाईल आणि PAP साठी तो पूर्णपणे निरुपयोगी होऊ शकतो.	अनेक ठिकाणी आरेखना नंतर जोडमार्गामुळे जमीन दोन भागात विभागले जाईल.	अधिग्रहण जरी झाले नाही तरी संपूर्ण जमीनीसाठी नुकसानभरपाई देण्यात येईल.
संपर्काचे साधन	छोटे /कच्चे रस्ते/ पायवाट बंद होतील.	गाव आणि बाजारपेठांच्या मधील आणि येण्या-जाण्याची वि'ज्या प्रभावित होईल.	उड्डाणपूल : ९ RoB : ७७ (समांतर सेक्शनमधील पुनर्निर्माण सुध्दा सामील आहे) RuB : २४० पुल : ७७७
जिवनमान	अल्प भूधारक आणि इतर उत्पन्नाचा मार्ग नसलेले PAP प्रभावित होईल.	संपूर्ण जमीन प्रकल्पबाधीत झालेले PAP आपले नियमित उत्पन्नाचे साधन गमावून बसतील.	RRP कडून योग्य तो मोबदला नुकसान भरपाई देण्यात येईल.

सामाजिक प्रभाव आणि उपाययोजना

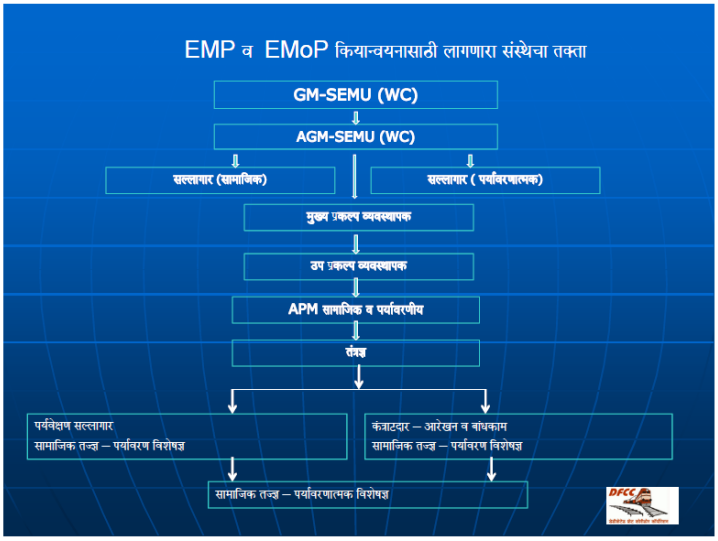
प्रकार	अपेक्षित	ESIA परिणाम	उपाययोजना
शेतजमीन व संपत्तीचे नुकसान	भूमी अधिग्रहणामुळे मोठ्या प्रमाणावर प्लॉट व घरे प्रभावित होतील	२०E आणि JM सुचीनुसार ३७४ गावे व ९२०९प्लॉट अधिग्रहित होतील	भूमि व संपत्ती अधिग्रहण. कमीत कमी प्रमाणात करण्यात येईल.
पुनर्वसन आणि पुनस्थापना	PAP मुळे जनजीवन आणि राहण्याच्या जागांपासून वंचित होतील.	सुमारे ४९, ६१९ खातेधारक प्रभावित होतील (२०E आणि JM सुचीनुसार)	पुनस्थापना सुनिश्चीत करण्यासाठी R&R निती बनविण्यात येईल.
संवेदनशील रिसप्टर्स	शाळा, दवाखाने आणि धार्मिक स्थळे, इ. सारख्या जनसुविधा प्रभावित होतील.	सुमारे १३२ SR प्रभावित होतील.	सर्व संवेदनशील स्थळांवर आवाज अवरोधक उपलब्ध करुन देण्यात येतील.

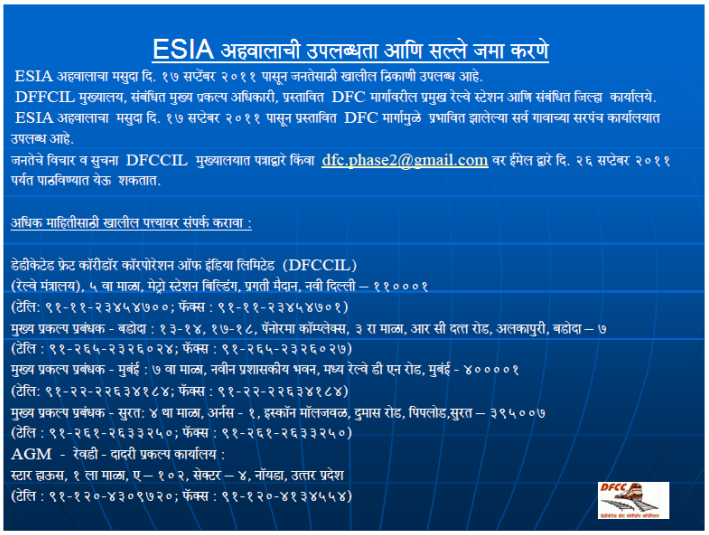
सामाजिक आणि पर्यावरणात्मकदृष्टया प्रभावित जिल्हे

जिल्ह्याचे नाव	प्रभावित गावे	प्रभावित प्लॉटस्	एकूण खातेधारक
रायगड	41	248	976
ठाणे	95	1745	13,112
वलसाड	37	443	3,003
नवसारी	22	416	1,468
सुरत	35	655	2,773
भरुच	29	705	2,918
बडोदा	10	315	815
रेवाडी	17	703	5,751
अलवर	13	512	3,710
मेवट	19	891	3,050
गुरगाव	9	294	1,630
पलवल	8	706	3141
फरिदाबाद	28	1,421	6,911
जी. बी. नगर	11	110	361
एकूण	**374**	**9,209**	**49,619**

पर्यावरण व्यवस्थापन योजना (EMP)

- EMP साठी खालील गोष्टींची मुख्यत्वेकरुन गरज आहे.
  - उपाययोजनांचे कियान्वयन
  - उपाययोजनांच्या कियान्वयनावर देखरेख.
  - नियुक्त केलेल्या संस्थाना अहवाल सादर करणे.
  - प्रशिक्षण आणि कार्यक्षमता वाढविणे.
  - उपायोजनासाठी आर्थिक तरतूद करणे.
  - उपाययोजनांच्या कियान्वयनासाठी संघटनात्मक संरचना तयार करणे.
- मध्ये मुख्यत्वेकरुन आवाजाची तिव्र'ता, कंपन स्तर, पाण्याची गुणवत्ता आणि नैसर्गिक वातावरण, मातीची गुवत्ता आणि वृक्षारोपण यांचा समावेश आहे. बांधकाम / दळणवळण ठप्यात प्रकल्प क्षेत्रातील बांधकामाची जागा आणि गावे यांसारख्या जागेवर सॅम्पलींग करण्यात येईल.


EMP व EMoP कियान्वयनासाठी लागणारा संस्थेचा तक्ता
GM-SEMU (WC)
AGM-SEMU (WC)
सल्लागार (सामाजिक)
सल्लागार (पर्यावरणात्मक)
मुख्य प्रकल्प व्यवस्थापक
उप प्रकल्प व्यवस्थापक
APM सामाजिक व पर्यावरणीय
तंत्रज्ञ
पर्यवेक्षण सल्लागार
सामाजिक तज्ज्ञ – पर्यावरण विशेषज्ञ
कंत्राटदार – आरेखन व बांधकाम
सामाजिक तज्ज्ञ – पर्यावरण विशेषज्ञ
सामाजिक तज्ज्ञ – पर्यावरणात्मक विशेषज्ञ


ESIA अहवालाची उपलब्धता आणि सल्ले जमा करणे
ESIA अहवालाचा मसुदा दि. १७ सप्टेंबर २०११ पासून जनतेसाठी खालील ठिकाणी उपलब्ध आहे.
DFFCIL मुख्यालय, संबंधित मुख्य प्रकल्प अधिकारी, प्रस्तावित DFC मार्गावरील प्रमुख रेल्वे स्टेशन आणि संबंधित जिल्हा कार्यालये.
ESIA अहवालाचा मसुदा दि. १७ सप्टेंबर २०११ पासून प्रस्तावित DFC मार्गामुळे प्रभावित झालेल्या सर्व गावाच्या सरपंच कार्यालयात उपलब्ध आहे.
जनतेचे विचार व सुचना DFCCIL मुख्यालयात पत्राद्वारे किंवा dfc.phase2@gmail.com वर ईमेल द्वारे दि. २६ सप्टेंबर २०११ पर्यंत पाठविण्यात येऊ शकतात.
अधिक माहितीसाठी खालील पत्त्यावर संपर्क करावा :
डेडीकेटेड फ्रेट कॉरीडॉर कॉरपोरेशन ऑफ इंडिया लिमिटेड (DFCCIL)
(रेल्वे मंत्रालय), ५ वा माळा, मेट्रो स्टेशन बिल्डिंग, प्रगती मैदान, नवी दिल्ली – ११०००१
(टेलि: ९१-११-२३४५४७००; फॅक्स : ९१-११-२३४५४७०१)
मुख्य प्रकल्प प्रबंधक - बडोदा : १३-१४, १७-१८, पॅनोरमा कॉम्प्लेक्स, ३ रा माळा, आर सी दत्त रोड, अलकापुरी, बडोदा – ७
(टेलि : ९१-२६५-२३२६०२४; फॅक्स : ९१-२६५-२३२६०२७)
मुख्य प्रकल्प प्रबंधक - मुबंई : ७ वा माळा, नवीन प्रशासकीय भवन, मध्य रेल्वे डी एन रोड, मुबंई - ४००००१
(टेलि: ९१-२२-२२६३४१८४; फॅक्स : ९१-२२-२२६३४१८४)
मुख्य प्रकल्प प्रबंधक - सुरत: ४ था माळा, अर्नस - १, इस्कॉन मॉलजवळ, दुमास रोड, पिपलोड,सुरत – ३९५००७
(टेलि : ९१-२६१-२६३३२५०; फॅक्स : ९१-२६१-२६३३२५०)
AGM - रेवडी - दादरी प्रकल्प कार्यालय :
स्टार हाऊस, १ ला माळा, ए – १०२, सेक्टर – ४, नॉयडा, उत्तर प्रदेश
(टेलि : ९१-१२०-४३०९७२०; फॅक्स : ९१-१२०-४१३४५५४)

धन्यवाद

【Presentation_English】

DEVELOPMENT OF DEDICATED FREIGHT CORRIDOR PROJECT: PHASE 2

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY

PUBLIC CONSULTATION MEETING (PCM)

RAIGAD DISTRICT

21/09/2011

ABOUT THE OVERALL PROJECT (2)

- Dedicated Freight Corridors are proposed to adopt world class and state-of-the-art technology. Significant improvement is proposed to be made in the existing carrying capacity by modifying basic design features. The permanent way will be constructed with significantly higher design features that will enable it to withstand heavier loads at higher speeds. These improvements will allow longer and heavier trains to ply on the Dedicated Freight Corridors.
- In the first phase, DFCCIL will be constructing two corridors – the Western DFC and Eastern DFC- spanning a total length of about 3300 route km. The Western Corridor (Phase 1 & 2) will traverse the distance from Dadri to Mumbai, passing through the states of Delhi, Haryana, Rajasthan, Gujarat and Maharashtra.

ABOUT THE OVERALL PROJECT (1)

Project Proponent
MINISTRY OF RAILWAYS, GOVT. OF INDIA

Project Implementing Agency
DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LTD. (DFCCIL)

Dedicated Freight Corridor Corporation of India (DFCCIL) is a Special Purpose Vehicle set up under the administrative control of Ministry of Railways to undertake planning & development, mobilization of financial resources and construction, maintenance and operation of the Dedicated Freight Corridors.

LONG TERM OBJECTIVE OF THE PROJECT

- Development of Multiple High Axle Load Freight Corridor has been conceived to facilitate **faster and safer transportation of goods in bulk**
- It is **designed to carry a total freight line in an average of 37.7 million tonnes** of cargo in a year 2013-14 which will increase to **140.4 million tonnes in 2033-34.**
- To help in **sustaining and boosting the present trends of growth of economy**
- Create **job opportunities, higher revenues and enhanced household income** and serve public interest

PROJECT SCOPE OF PHASE 2 WESTERN CORRDIOR

Project Area:
- Thane, Raigad - Maharashtra
- Vadodra, Bharuch, Surat, Navasari, Valsad – Gujarat
- Alwar- Rajasthan
- Faridabad, Gurgaon, Rewari, Palwal, Mewat – Haryana
- Gautam Buddh Nagar - Uttar Pradesh
- Tughlakabad (TKD) – Delhi

Proposed Facilities:
- 2 Terminal Stations
- 6 Junction Stations - JNPT, Kharbao, Gothangam, Pirthala, Dadari, TKD
- 11 Crossing Stations – Nilje, Palghar, Gholvad, Navsari, Joravasan, Sanjali, Varediya, Dharuhera, Mewat and 2 under planning
- 169 Major and Important Bridges; 608 Minor Bridges; 240 RUBs; 77 ROBs and 9 Flyovers

Planned Project Schedules:
ESIA & Resettlement and Rehabilitation Plan (RRP) Studies: Sept 2010 - Dec 2011
Construction of civil works: 2013 - 2016

145 km between Rewari (Haryana) – Dadri (Uttar Pradesh)
including 19km single line between Faridabad-Tuglakabad Section

ALIGNMENT OF PHASE-2 WESTERN CORRDIOR

420 km between Jawaharlal Nehru Port (Maharashtra) – Vadodara (Gujarat)

OBJECTIVES OF THE PUBLIC CONSULTATION MEETING

This Public Consultation Meeting (PCM) is being conducted during project planning stage to disclose the results of the Environment and Social Impact Assessment and suggested Mitigation Measures to the public.

Key objectives of the PCM are :
- Dissemination of information on the project in respect to the alignment, schedules and plans.
- To disclose results of the ESIA study.
- To present suggested mitigation measures to the public
- To obtain opinion of the public and to feed-back the same to the planning process of the Project.

OBJECTIVE OF THE ESIA STUDY & OTHER RELATED ACTIVITES

- To collect environmental & social baseline information in order to identify and assess potential impacts on social / natural environment caused by the project.
- To prepare the Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) for necessary actions to address the potential environmental and social impacts.
- Land acquisition, resettlement & rehabilitation will be studied separately in RRP.

ENVIRONMENTAL IMPACT AND MITIGATION MEASURES (POLLUTION CONTROL)

Type	Expected	ESIA Result	Mitigation Measures
Noise	Major Impact near residential areas and sensitive receptors	During construction noise level will increase During the operations of the train the noise level will be between 55 to 71 decibel within ROW	Instruments (during construction) to have mufflers and properly lubricated Construction yard to have vegetative barriers Plantation of trees along both sides of the track Monitoring of noise level at regular intervals
Vibration	The vibration standards will be within the limit of 70 dB	57 to 70 dB (Z axis) at 30 mt and 55 to 69 dB at 50 mt away	Highest standards of track geometry.
Ground Water	No Impact	Water for construction will be required	Necessary permission would be obtained from the respective state authorities
Soil	No impact	------	---------

ENVIRONMENTAL IMPACT AND MITIGATION MEASURES (POLLUTION CONTROL)

Type	Expected	ESIA Results	Mitigation Measures
Air Pollution	Minor impact during construction phase	Air quality will improve due to reduction in road freight traffic Particulate matter would be pre-dominant pollutant affecting air quality in vicinity of construction sites	•Plantation along the DFC line •Proper storage of construction materials •Trucks carrying materials would be covered to prevent spillage •Sprinkling of water •Low emission construction equipment and vehicles •Regular air quality monitoring
Water Pollution	The water quality could be affected during construction	Runoff of silt and deterioration of water quality during construction and increase in the possibility of water logging	•Design to have minimum destruction of flows. •Prevention of contamination directly to river. •Special storage for chemicals, oil, etc. •Site fencing and silt traps near water bodies

ENVIRONMENTAL IMPACT AND MITIGATION MEASURES (NATURAL ENVIRONMENT)

Type	Expected	ESIA Results	Mitigation Measures
Flora and Fauna	All trees falling within the ROW will be cut.	-	•Compensatory Plantations •Green Belt development •Local species to be planted
	Forest area encroachment	Forest area will be affected in some parts of Maharashtra and G.B. Nagar	•Path to move in the affected areas to be provided •Damage to mangrove will be avoided
Biodiversity	Minor impact during construction phase	The proposed corridor is not affecting any dense forest area or habitat of endangered species.	-

SOCIAL IMPACT AND MITIGATION MEASURES

Type	Expected	ESIA Results	Mitigation Measures
Land acquisition	Some part of agricultural land will be bifurcated and may not be of any use for the PAP.	In many instances, the land will divided into two due to passing the alignment through it	Adequate compensation will be provided for the entire piece of land as well, if in case it is not being acquired.
Connectivity	The approach roads will be blocked	Movement will be affected within and across villages and markets	Construction of : •Flyovers: 9 •ROB: 77 (including reconstruction during parallel section) •RUB : 240 •Bridge : 777
Livelihood	PAPs having small land holdings and no other source of income will be affected.	PAPs loosing entire land will loose source of regular income	Appropriate compensation would be awarded through RRP

SOCIAL AND ENVIRONMENTAL IMPACT IN YOUR DISTRICT

Name of the District	No. of Villages Affected	No of Plots Affected	No of Titleholders
Raigad	41	248	976
Thane	95	1745	13,112
Valsad	37	443	3,003
Navsari	22	416	1,468
Surat	35	655	2,773
Bharuch	29	705	2,918
Vadodra	10	315	815
Rewari	17	703	5,751
Alwar	13	512	3,710
Mewat	19	891	3,050
Gurgaon	9	294	1,630
Palwal	8	706	3141
Faridabad	28	1,421	6,911
G B Nagar	11	110	361
Total	**374**	**9,209**	**49,619**

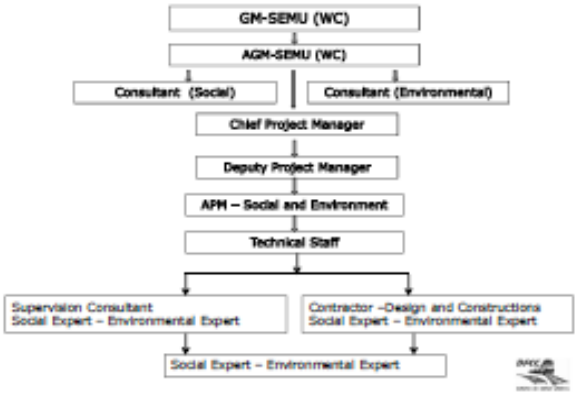
SOCIAL IMPACT AND MITIGATION MEASURES

Type	Expected	ESIA Result	Mitigation Measures
Loss of agricultural land and properties	Due to land acquisition process substantial number of plots and structures will be affected	374 villages are affected and 9,209 plots will be acquired (As per 20E and JM List)	The land and property acquisition would be restricted to bare minimum required
Rehabilitation and Resettlement	PAPs will loose source of livelihood and settlements	About 49,619 title holders will be affected (As per 20 E and JM List)	Appropriate R&R Policy will be made to ensure rehabilitation of livelihood
Sensitive Receptor	Public facilities such as school, hospital and religious places may be affected	About 132 SR will be affected	Noise barriers to be provided at all critical locations

ENVIRONMENT MANAGEMENT PLAN

- The EMP mainly requires the following;
  - Implementation of the mitigation measures
  - Monitoring the implementation of the program.
  - Reporting to the designated institutions
  - Training and capacity building
  - Allocation of budget for the mitigation measures
  - Organizational structures for the implementation of the mitigation measures
- The EMoP mainly comprises of sampling ambient air quality, ambient and source noise and vibration level, water quality, soil quality and vegetation cover. Sampling will be carried out at all important locations in the project area such as the construction sites and village areas during construction/operation phase.

INSTITUTIONAL FRAMEWORK OF IMPLEMENTATION OF EMP AND EMoP



AVAILABILITY OF ESIA REPORT AND SUBMISSION OF COMMENTS

Draft ESIA Report is available for review by the public in the following disclosed locations:

- DFCCIL Head Office, respective Chief Project Manager (CPM), major stations along the proposed DFC alignment, and respective District Offices from September 17, 2011 onwards.
- Summary of Draft ESIA in local languages is also available in Sarpanch offices of all the project affected villages along the DFC route from September 17, 2011 onwards.
- Comments can be submitted to the DFCCIL Head Office or respective CPM offices either by post or through email at dfc.phase2@gmail.com by September 26, 2011.

  - Dedicated Freight Corridor Corporation of India Limited (DFCCIL) (Under Ministry of Railways), Fifth Floor, Pragati Maidan, Metro Station Building Complex, New Delhi – 110 001
  - CPM Office Mumbai; 7th Floor, New Administrative Building, Central Railway, D.N. Road, Mumbai – 400 001, Maharashtra
  - CPM Office Surat: 4th Floor, Aruns-1, Near Iscon Mall, Dumas Road, Piplod, Surat – 395 007, Gujarat
  - CPM Office Vadodara: 13-14, 17-18, Panorama Complex, 3rd Floor, R. C. Dutt Road, Alkapuri, Vadodara – 395 007, Gujarat
  - AGM Office Rewari-Dadri; "Star House", First Floor, A-102, Sector-4, Noida, Uttar Pradesh

Appendix-9d
Result of PCMs for Draft ESIA Stage

Appendix-9d
Result of PCMs for Draft ESIA Stage

Summary of PCM

	District	Venue	Date	Language	No.PAPs
JNPT-Vadodara Section					
1	Bharuch	Panchbati Rajput Chhatralaya	Sep. 30, 2011	Gujarati	56
2	Surat	Sri Kutch Kadva Patidar Samaj Bhawan	Sep. 12, 2011	Gujarati	72
3	Navsari	Shri Maharaja Agrasen Sanskritik Hall	Sep. 9, 2011	Gujarati	86
4	Valsad	Shri Ganesh Hall	Sep. 26, 2011	Gujarati	210
5	Vadodara	Khetivadi Utpann Bazar	Sep. 14, 2011	Gujarati	56
6	Thane (Kalyan, Bhiwandi and Vasai)	Geeta Hall	Sep. 21, 2011	Marathi	94
7	Thane (Palghar, Dahanu)	Lions Club Community Hall	Sep. 20, 2011	Marathi	115
8	Raigad	Gokhale Sabhagrih & Mangal Karyalaya	Sep. 22, 2011	Marathi	135
Rewari-Dadri Section					
9	Rewari District	Yadav Samaroh Sthal	Sep. 9, 2011	Hindi	152
10	Alwar District	Hotel Rajasthan Heritage	Sep. 10, 2011	Hindi	140
11	Mewat District	Agarwal Dharamshala	Sep. 12, 2011	Hindi	187
12	Palwal District	Abhinandan Banquet Hall	Sep. 14, 2011	Hindi	91
13	Faridabad District	Jaat Bhawan	Sep. 15, 2011	Hindi	108
14	Gurgaon District	Punjabi Dharamshala	Sep. 16, 2011	Hindi	51
15	Gautam Budh Nagar	Barat Ghar, Gulaoli	Sep. 17, 2011	Hindi	70

Details of each PCM

【JNPT-Vadodara Secrion】

1. PCM in Bharuch

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Why is there so low rate for land compensation?
- Will 77 ROBs be sufficient to cross the track without any difficulty?
- Due to DFC line, many farmers will lose their land. Since, they don't have any other source of livelihood, they are really worried.
- If any revision is made in the compensation policy, they should get the difference.
- The compensation amount should be in total at once and not in parts.
- Suggestions of participants in feedback forms should be duly considered by the appropriate authority.

(2) No. of Participants:

55 men and 1 woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Bharuth

Source: JICA Survey Team

Photo 2 PCM in Bharuth

(4) Analysis of Feedback Forms:

Out of 56 participants, 53 (95%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	There should be no unsanitary situation near the village due to the Project.	15	29%
2	There should be no impact to the environment of the area.	0	0%
3	Health of people should not be affected by the project	7	14%
4	Compensation amount should be appropriate and realistic	2	4%
5	Such techniques should be used that minimize noise pollution.	2	4%
6	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	5	10%
7	We should get permanent job in railway	12	23%
8	Affected tube wells and bore wells should be restored by the railway department.	8	16%

Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Land should also be given in lieu of acquired land.	1	3%
2	Person whose land is being acquired should get job in the railway department.	11	32%
3	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	0	0%
4	A person who will be responsible should be appointed.	0	0%
5	Compensation rate should be proper.	1	3%
6	No conflict among workers from different areas or regions.	11	32%
7	Appropriate compensation should be given for any kind of destruction to any government or public buildings	0	0%
8	Since Railway will get profit from the track but villagers whose land is taken will only receive a small amount once. These people should get royalty from the department of railway	8	24%
9	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	1	3%
10	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	0	0%
11	In every village, there should be facilities like banks.	1	3%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Land given to the villagers should be easily approachable.	12	46%
2	If house comes in between the project, villagers should get proper compensation for that also.	0	0%
3	Land owners should get jobs.	5	19%
4	Rate of compensation should be equal.	0	0%
5	Track should be away from habitation.	1	4%
6	There should be proper protection barriers along the track.	2	8%
7	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	0	0%
8	Environment should not be harmed and more tree plantation should be done.	2	8%
9	Proper roads should be provided to the villagers and no road shall be closed.	4	15%

Source: JICA Survey Team

2. PCM in Surat

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Why is there no confirmation of money to be given as compensation to farmers since the project is going on for the last two years?
- Will the rate of compensation be equal for all areas?
- The farmers should be given compensation prior to start of construction work.
- Compensation should be four times the market rate.
- There should be no effect to water resources of the village.

(2) No. of Participants:

70 men and 2 women participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Surat

Source: JICA Survey Team

Photo 2 PCM in Surat

(4) Analysis of Feedback Forms:

Out of 72 participants, 43 (60%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	There should be no unsanitary situation near the village due to the Project.	1	3%
2	There should be no impact to the environment of the area.	4	12%
3	Health of people should not be affected by the project.	0	0%
4	Compensation amount should be appropriate and realistic.	3	9%
5	Such techniques should be used that minimize noise pollution.	12	35%
6	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	2	6%
7	We should get permanent job in railway.	9	26%
8	Affected tube wells and bore wells should be restored by the railway department.	3	9%

Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Land should also be given in lieu of acquired land.	0	0%
2	Person whose land is being acquired should get job in the railway department.	15	38%
3	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	0	0%
4	A person who will be responsible should be appointed.	3	7%
5	Compensation rate should be proper.	7	18%
6	No conlict among workers from different areas or regions.	1	2%
7	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	2	5%
8	Since Railway will get profit from the track but villagers whose land is taken will only receive a small amount once. These people should get royalty from the department of railway.	4	10%
9	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	8	20%
10	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	0	0%
11	In every village, there should be facilities like banks.	0	%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Land given to the villagers should be easily approachable.	9	53%
2	If house comes in between the project, villagers shall get proper compensation for that also.	0	0%
3	Land owners should get jobs.	3	17%
4	Rate of compensation should be equal.	0	0%
5	Track should be away from habitation.	0	0%
6	There should be proper protection barriers along the track.	1	6%
7	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	1	6%
8	Environment should not be harmed and more tree plantation should be done.	1	6%
9	Proper roads should be provided to the villagers and no road shall be closed.	2	12%

Source: JICA Survey Team

3. PCM in Navsari

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Will the final measurement be taken in presence of the titleholder?
- What mitigation mesures will be taken if project affect seriously to local environment and social aspect?
- Will the rate of compensation be equal for all areas?
- The farmers should be given compensation prior to start of construction work.
- Farmers should be given permanent jobs.
- If the new bill passes in the environment, the difference in the amount of paid compensation should be given to the farmers.

(2) No. of Participants:

80 men and 6 women participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Navsari

Source: JICA Survey Team

Photo 2 PCM in Navsari

(4) Analysis of Feedback Forms:

Out of 86 participants, 57 (60%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	There should be no unsanitary situation near the village due to the Project.	5	7%
2	There should be no impact to the environment of the area.	23	34%
3	Health of people should not be affected by the project.	14	20%
4	Compensation amount should be appropriate and realistic.	17	25%
5	Such techniques should be used that minimize noise pollution.	2	3%
6	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	3	4%
7	We should get permanent job in railway.	1	1%
8	Affected tube wells and bore wells should be restored by the railway department.	4	6%

Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Land should also be given in lieu of acquired land.	2	5%
2	Person whose land is being acquired should get job in the railway department.	1	2%
3	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	1	2%
4	A person who will be responsible should be appointed.	14	33%
5	Compensation rate should be proper.	5	12%
6	No conlict among workers from different areas or regions.	0	0%
7	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	19	44%
8	Since Railway will get profit from the track but villagers whose land is taken will only receive a small amount once. These people should get royalty from the department of railway.	1	2%
9	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	0	0%
10	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	0	0%
11	In every village, there should be facilities like banks.	0	0%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Land given to the villagers should be easily approachable.	32	91%
2	If house comes in between the project, villagers should get proper compensation for that also.	0	0%
3	Land owners should get jobs.	1	3%
4	Rate of compensation should be equal.	0	0%
5	Track should be away from habitation.	0	0%
6	There should be proper protection barriers along the track.	0	0%
7	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	0	0%
8	Environment should not be harmed and more tree plantation should be done.	0	0%
9	Proper roads should be provided to the villagers and no road shall be closed.	2	6%

Source: JICA Survey Team

4. PCM in Valsad

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Why farmers are getting less compensation even for a highly fertile land?
- We have a land near Amul from our forefathers and cost of land is very high. We are losing our land but will you give actual market rate as compensation?
- The farmers should be given compensation prior to start of construction work.
- The DFC line should be away from the habitation.
- Rate of compensation should be according to the new bill.

(2) No. of Participants:

165 men and 45 women participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Valsad

Source: JICA Survey Team

Photo 2 PCM in Valsad

(4) Analysis of Feedback Forms:

Out of 210 participants, 200 (95%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	There should be no unsanitary situation near the village due to the Project.	44	35%
2	There should be no impact to the environment of the area.	29	23%
3	Health of people should not be affected by the project.	5	4%
4	Compensation amount should be appropriate and realistic.	13	10%
5	Such techniques should be used that minimize noise pollution.	1	1%
6	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	25	20%
7	We should get permanent job in railway.	3	3%
8	Affected tube wells and bore wells should be restored by the railway department.	5	4%

Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Land should also be given in lieu of acquired land.	35	28%
2	Person whose land is being acquired should get job in the railway department.	43	34%
3	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	2	2%
4	A person who will be responsible should be appointed.	5	4%
5	Compensation rate should be proper.	3	2%
6	No conlict among workers from different areas or regions.	6	5%
7	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	4	3%
8	Since Railway will get profit from the track but villagers whose land is taken will only receive a small amount once. These people should get royalty from the department of railway.	14	11%
9	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	6	5%
10	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	7	6%
11	In every village, there should be facilities like banks.	0	0%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Land given to the villagers should be easily approachable.	60	57%
2	If house comes in between the project, villagers should get proper compensation for that also.	3	3%
3	Land owners should get jobs.	11	10%
4	Rate of compensation should be equal.	1	1%
5	Track should be away from habitation.	23	22%
6	There should be proper protection barriers along the track.	4	4%
7	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	1	1%
8	Environment should not be harmed and more tree plantation should be done.	2	2%
9	Proper roads should be provided to the villagers and no road shall be closed.	0	0%

Source: JICA Survey Team

5. PCM in Vadodara

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Will the farmers get any extra benefit beside compensation for land?
- What happened to the issues raised and suggestions made during our previous meetings?
- Will there be any industrial development in the area?
- The farmers should be given compensation prior to start of construction work.
- Compensation should be four times the market rate.
- Rate of compensation should be according to the new bill.

(2) No. of Participants:

54 men and 2 women participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Vadodara

Source: JICA Survey Team

Photo 2 PCM in Vadodara

(4) Analysis of Feedback Forms:

Out of 56 participants, 40 (71%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table1-1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	There should be no unsanitary situation near the village due to the Project.	0	0%
2	There should be no impact to the environment of the area.	11	20%
3	Health of people should not be affected by the project.	0	0%
4	Compensation amount should be appropriate and realistic.	18	32%
5	Such techniques should be used that minimize noise pollution.	9	16%
6	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	5	9%
7	We should get permanent job in railway.	12	21%
8	Affected tube wells and bore wells should be restored by the railway department.	1	2%

Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Land should also be given in lieu of acquired land.	8	14%
2	Person whose land is being acquired should get job in the railway department.	20	35%
3	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	0	0%
4	A person who will be responsible should be appointed.	0	0%
5	Compensation rate should be proper.	12	21%
6	No conlict among workers from different areas or regions.	0	0%
7	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	1	2%
8	Since Railway will get profit from the track but villagers whose land is taken will only receive a small amount once. These people should get royalty from the department of railway.	1	2%
9	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	5	9%
10	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	10	17%
11	In every village, there should be facilities like banks.	0	0%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	Land given to the villagers should be easily approachable.	2	6%
2	If house comes in between the project, villagers shall get proper compensation for that also.	1	3%
3	Land owners should get jobs.	15	45%
4	Rate of compensation should be equal.	4	12%
5	Track should be away from habitation.	0	0%
6	There should be proper protection barriers along the track.	0	0%
7	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	4	12%
8	Environment should not be harmed and more tree plantation should be done.	0	0%
9	Proper roads should be provided to the villagers and no road shall be closed.	7	22%

Source: JICA Survey Team

6. PCM in Palghar, Dahanu and Talasari, District Thane

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Why is there so much delay in deciding the rate of compensation?
- What is the update in the Dahanu-Vaitarna Bypass?
- Why Kruti Samiti Mahasangh was not included and invited for the meeting?
- Extra compensation should be provided for last 2 years to farmers for not able to cultivate their land due to land acquisition process.
- The rate of compensation should be 4 times the market rate.
- The track should be away from the population and no cracks and damage should be there due to vibration.
- Detailed project report along with map should be provided to each PAP.

(2) No. of Participants:

95 men and 20 women participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Thane-1

Source: JICA Survey Team

Photo 2 PCM in Thane-1

(4) Analysis of Feedback Forms:

Not available. Though many people filled up feedback forms but they decided not to submit them.

7. PCM in Thane, Kalyan, Bhiwandi and Vasai, District Thane

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Why in the list only 23 ft land is listed where as more than 100 ft of land is acquired?
- Will the farmers get double of Rs 3000 i.e. Rs 6000 as mentioned in the GR copy of RRP?
- When will the affected people get job and proper reselltement?
- The villagers should get job and proper resettlement prior to start of construction.
- Job offered by the Govt. should be permanent and acoording to the qualification.
- The track should be away from the population.
- Some development and progress work should be done in the affected area and some help should be given to women so that they could stand on their feet.
- Compensation should be given soon with 3 years interest where cultivation could not be carried out.

(2) No. of Participants:

85 men and 9 women participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Thane-2

Source: JICA Survey Team

Photo 2 PCM in Thane-2

(4) Analysis of Feedback Forms:

Not available. Though many people filled up feedback forms but they decided not to submit them.

8. PCM in Uran and Panvel, District Raigad

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- When will the project complete?
- Will passenger trains also pass from the village?
- What is the rate of compensation? When will we get it?
- Govt. jobs should be provided to the people who are affected from the project.
- Passenger trains should also go from their village.
- The rate of compensation should be same for all areas.
- During measurement, authorized government persons should be there so that this time there no confusion and problem.

(2) No. of Participants:

126 men and 9 women participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Raigad

Source: JICA Survey Team

Photo 2 PCM in Raigad

(4) Analysis of Feedback Forms:

Not available. Though many people filled up feedback forms but they decided not to submit them.

【Rewari-Dadri Section】

9. PCM in Rewari

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- How electricity and underwater supply affected by the project be restored?
- What will be the width of the track?
- Will metro run from their village?
- When will the villagers get the job promised by the Government?
- Land should be given to those whose land is to be acquired.

(2) No. of Participants:

152 men and no woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Rewari

Source: JICA Survey Team

Photo 2 PCM in Rewari

(4) Analysis of Feedback Forms:

Out of 152 participants, 115 (76%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses*	Percentage
1	There should be no impact to the environment of the area.	11	17%
2	Health of people should not be affected by the project.	8	12%
3	Compensation amount should be appropriate and realistic.	7	11%
4	Such techniques should be used that minimize noise pollution.	4	6%
5	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	30	48%
6	We should get permanent job in railway.	2	3%
7	Affected tube wells and bore wells should be restored by the railway department.	2	3%

Note: *Nearly 40% of feedback forms were blank
Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Person whose land is being acquired should get job in the railway department.	22	38%
2	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	4	7%
3	A person who will be responsible should be appointed.	6	10%
4	Compensation rate should be proper, like the rates in Noida.	13	23%
5	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	5	9%
6	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	1	2%
7	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	3	5%
8	The alignment of the track should be little away from the village.	2	3%
9	The rate of compensation should be same for all.	2	3%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	If house comes in between the project, villagers should get proper compensation for that also.	3	3%
2	Land owners should get jobs.	26	29%
3	Rate of compensation should be equal.	32	36%
4	Track should be away from habitation.	3	3%
5	There should be proper protection barriers along the track.	1	1%
6	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	14	15%
7	Environment should not be harmed and more tree plantation should be done.	5	5%
8	Proper roads should be provided to the villagers and no road shall be closed.	1	1%
9	Every villager whose land is being acquired should get an alignment map showing the details of the land to be acquired.	7	7%

Source: JICA Survey Team

10. PCM in Alwar

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Our village is very fertile and we should get the compensation according to that and the Govt. should make progress work in the villagers from where this project is passing through.
- I have 20 acres of land and in this project 5 acre is to be acquired by the Govt. What will happen to my rest of 15 acres of land? Will there be any damage to the water resource of the area and when will we get the final detail about the railway job?
- What will happen of the new bill is not passed in the Parliament or their children don't get the job?
- The land does not belong to the government, so why should they decide the rates?
- What kind of arrangement will be done for the maintenance of the trees which is to be planted along the track?
- People who are affected due to this project should get job in the railway and the job should be permanent.
- Every villagers whose land are being acquired should get an alignment map showing the details of the land to be acquired.

(2) No. of Participants:

140 men and no woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Alwar

Source: JICA Survey Team

Photo 2 PCM in Alwar

(4) Analysis of Feedback Forms:

Out of 140 participants, 105 (75%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table1 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses*	Percentage
1	There should be no impact to the environment of the area.	30	33%
2	Health of people should not be affected by the project.	8	9%
3	Compensation amount should be appropriate and realistic.	4	5%
4	Such techniques should be used that minimize noise pollution.	6	7%
5	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	32	35%
6	We should get permanent job in railway.	4	5%
7	Affected tube wells and bore wells should be restored by the railway department.	5	6%

Note: *Nearly 15% of feedback forms were blank
Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Person whose land is being acquired should get job in the railway department.	23	32%
2	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	15	21%
3	A person who will be responsible should be appointed.	9	12%
4	Compensation rate should be proper, like the rates in Noida.	9	12%
5	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	4	5%
6	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	6	9%
7	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	4	5%
8	The alignment of the track should be little away from the village.	2	3%
9	The rate of compensation should be same for all.	1	1%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	If house comes in between the project, villagers should get proper compensation for that also.	7	8%
2	Land owners should get jobs.	28	31%
3	Rate of compensation should be equal.	36	40%
4	Track should be away from habitation.	4	4%
5	There should be proper protection barriers along the track.	1	1%
6	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	3	3%
7	Environment should not be harmed and more tree plantation should be done.	3	3%
8	Proper roads should be provided to the villagers and no road shall be closed.	1	1%
9	Every villager whose land is being acquired should get an alignment map showing the details of the land to be acquired .	8	9%

Source: JICA Survey Team

11. PCM in Mewat

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- What rate has been given to the farmers of the other villagers?
- If 5 acre out of 8 acre is acquired in the project, then will they also get the compensation for the rest?
- Private companies have purchased land in this area at rates such as 1 crore per acre. Will the famers get the same rate?
- Minimum trees should be cut down for the project. More tress should be planted near the track and proper maintenance of those should be taken.
- They should use such techniques that there will be minimal noise pollution due to the track.

(2) No. of Participants:

187 men and no woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Mewat

Source: JICA Survey Team

Photo 2 PCM in Mewat

(4) Analysis of Feedback Forms:

Out of 187 participants, 75 (40%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses*	Percentage
1	There should be no impact to the environment of the area.	10	31%
2	Health of people should not be affected by the project.	0	0%
3	Compensation amount should be appropriate and realistic.	4	12%
4	Such techniques should be used that minimize noise pollution.	13	39%
5	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	4	12%
6	We should get permanent job in railway.	1	3%
7	Affected tube wells and bore wells should be restored by the railway department.	1	3%

Note: *Nearly 55% of feedback forms were blank
Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Person whose land is being acquired should get job in the railway department.	5	12%
2	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	5	12%
3	A person who will be responsible should be appointed.	0	0%
4	Compensation rate should be proper, like the rates in Noida.	19	45%
5	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	6	14%
6	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	0	0%
7	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	2	5%
8	The alignment of the track should be little away from the village.	1	2%
9	The rate of compensation should be same for all.	4	10%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	If house comes in between the project, villagers should get proper compensation for that also.	3	4%
2	Land owners should get jobs.	17	25%
3	Rate of compensation should be equal.	29	42%
4	Track should be away from habitation.	4	6%
5	There should be proper protection barriers along the track.	0	0%
6	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	0	0%
7	Environment should not be harmed and more tree plantation should be done.	3	4%
8	Proper roads should be provided to the villagers and no road shall be closed.	2	3%
9	Every villager whose land is being acquired should get an alignment map showing the details of the land to be acquired.	11	16%

Source: JICA Survey Team

12. PCM in Palwal

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- How will the farmers cross the raiway track as it will be above the ground level?
- Can the alignment of the track be changed?
- What will happen to the water resources of the area?
- In the material some Japanese Company name is written. Is this a Govt. project or some private company?
- Minimum trees should be cut down for the project. More tress should be planted near the track and proper maintenance of those should be taken.
- They should use such techniques that there will be minimal noise pollution due to the track.

(2) No. of Participants:

91 men and no woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Palwal

Source: JICA Survey Team

Photo 2 PCM in Palwal

(4) Analysis of Feedback Forms:

Out of 91 participants, 47 (52%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses*	Percentage
1	There should be no impact to the environment of the area.	5	24%
2	Health of people should not be affected by the project.	1	5%
3	Compensation amount should be appropriate and realistic.	2	10%
4	Such techniques should be used that minimize noise pollution.	1	5%
5	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	9	42%
6	We should get permanent job in railway.	3	14%
7	Affected tube wells and bore wells should be restored by the railway department.	0	0%

Note: *Nearly 55% of feedback forms were blank
Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Person whose land is being acquired should get job in the railway department.	3	19%
2	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	1	6%
3	A person who will be responsible should be appointed.	1	6%
4	Compensation rate should be proper, like the rates in Noida.	5	32%
5	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	1	6%
6	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	0	0%
7	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	3	19%
8	The alignment of the track should be little away from the village.	2	12%
9	The rate of compensation should be same for all.	0	0%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	If house comes in between the project, villagers should get proper compensation for that also.	2	4%
2	Land owners should get jobs.	25	48%
3	Rate of compensation should be equal.	19	36%
4	Track should be away from habitation.	1	2%
5	There should be proper protection barreirs along the track.	0	0%
6	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	2	4%
7	Environment should not be harmed and more tree plantation should be done.	0	0%
8	Proper roads should be provided to the villagers and no road shall be closed.	2	4%
9	Every villager whose land is being acquired should get an alignment map showing the details of the land to be acquired .	1	2%

Source: JICA Survey Team

13. PCM in Faridabad

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Will the villagers affected by the project receive 60% more compensation?
- Will the rate of compensation be based on market rate?
- Will the Govt. provide in writing that they will provide road along the track and local famers will be allowed to use the road?
- Will the villagers get job prior to the start of the construction?
- There should be proper provision of crossings, underpasses and over bridges. None of the roads leading in and out of the village should be blocked due to the project.
- The project should be suspended till the new bill is passed in the Lok Sabha and the compensation rate should be ten times of the collector's rate.
- There is a possibility that vibration due to trains can cause cracks and damages to the houses and other buildings of the village so the alignment of the track should be away from the village. Otherwise appropriate precautionary measures should be taken.
- In no case, water should stagnate near the tracks and lead to health related issues.
- The DFC line should be constructed along with the KMP Expressway which will benefit both rail and road.
- There should be proper fencing on both sides of the new track so as not to affect livestock.
- The project should go through the area which is of no use and minimum agricultural or cultivable land could be affected.
- The government should give the rate of compensation in writing.

(2) No. of Participants:

108 men and no woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Faridabad

Source: JICA Survey Team

Photo 2 PCM in Faridabad

(4) Analysis of Feedback Forms:

Out of 108 participants, 5 (5%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	There should be no impact to the environment of the area.	0	0%
2	Health of people should not be affected by the project.	0	0%
3	Compensation amount should be appropriate and realistic.	0	0%
4	Such techniques should be used that minimize noise pollution.	1	20%
5	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	4	80%
6	We should get permanent job in railway.	0	0%
7	Affected tube wells and bore wells should be restored by the railway department.	0	0%

Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Person whose land is being acquired should get job in the railway department.	1	25%
2	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	0	0%
3	A person who will be responsible should be appointed.	2	50%
4	Compensation rate should be proper, like the rates in Noida.	1	25%
5	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	0	0%
6	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	0	0%
7	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	0	0%
8	The alignment of the track should be little away from the village.	0	0%
9	The rate of compensation should be same for all.	0	0%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	If house comes in between the project, villagers should get proper compensation for that also.	0	0%
2	Land owners should get jobs.	2	29%
3	Rate of compensation should be equal.	4	57%
4	Track should be away from habitation.	0	0%
5	There should be proper protection barriers along the track.	0	0%
6	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	1	14%
7	Environment should not be harmed and more tree plantation should be done.	0	0%
8	Proper roads should be provided to the villagers and no road shall be closed.	0	0%
9	Every villager whose land is being acquired should get an alignment map showing the details of the land to be acquired .	0	0%

Source: JICA Survey Team

14. PCM in Gautam Buddha Nagar

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- I have 30 acres of land which is to be acquired by the railway for this project at two places i.e. in Gurgaon and Faridabad, will all the members of my family get job in the railway?
- Will the villagers get the detailed map of the project?
- The job to be offered by the railway should be according to the capability and qualification of the candidate.
- There should be a proper execution plan for the protectionof the environment of village.
- Will the villagers get job prior to the start of the construction?
- The project should go through the area which is of no use and minimum agricultural or cultivable land could be affected.
- The government should give the rate of compensation in writing.

(2) No. of Participants:

70 men and no woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in G. B. Nagar

Source: JICA Survey Team

Photo 2 PCM in G. B. Nagar

(4) Analysis of Feedback Forms:

Out of 70 participants, 39 (56%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses*	Percentage
1	There should be no impact to the environment of the area.	6	30%
2	Health of people should not beaffected by the project.	7	35%
3	Compensation amount should be appropriate and realistic.	1	5%
4	Such techniques should be used that minimize noise pollution.	0	0%
5	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	4	20%
6	We should get permanent job in railway.	1	5%
7	Affected tube wells and bore wells should be restored by the railway department.	1	5%

Note: *Nearly 45% of feedback forms were blank
Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Person whose land is being acquired should get job in the railway department.	0	0%
2	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	2	10%
3	A person who will be responsible should be appointed.	4	20%
4	Compensation rate should be proper, like the rates in Noida.	7	35%
5	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	5	25%
6	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	1	5%
7	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	0	0%
8	The alignment of the track should be little away from the village.	1	5%
9	The rate of compensation should be same for all.	0	0%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	If house comes in between the project, villagers should get proper compensation for that also.	0	0%
2	Land owners should get jobs.	2	5%
3	Rate of compensation should be equal.	18	45%
4	Track should be away from habitation.	14	35%
5	There should be proper protection barriers along the track.	0	0%
6	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	0	0%
7	Environment should not be harmed and more tree plantation should be done.	1	3%
8	Proper roads should be provided to the villagers and no road shall be closed.	0	0%
9	Every villager whose land is being acquired should get an alignment map showing the details of the land to be acquired.	5	12%

Source: JICA Survey Team

15. PCM in Gurgaon

(1) Queries and Suggestions:

Major queries and suggestions made by the participants during the Q&A session are as follows-

[Environment & Socio-Economic Issues]

- Will the villagers get the detailed map of the project?
- The job to be offered by the railway should be according to the capability and qualification of the candidate.
- There should be a proper execution plan for the protectionof the environment of village.
- Will the villagers get job prior to the start of the construction?
- The project should go through the area which is of no use and minimum agricultural or cultivable land could be affected.
- There should be proper road on both sides of the track so that villages do not suffer.
- The government should give the rate of compensation in writing.

(2) No. of Participants:

51 men and no woman participated in the PCM.

(3) Photographs:

Source: JICA Survey Team

Photo 1 PCM in Gurgaon

Source: JICA Survey Team

Photo 2 PCM in Gurgaon

(4) Analysis of Feedback Forms:

Out of 51 participants, 27 (53%) filled up the feedback form. Most participants did not give response to all the questions in the feedback form. Most people mentioned largely about issues related to compensation.

[Suggestions for environmental issues]

Table 1: Classification of Responses for the Environmental Issues

Sl. No.	Type of Responses	No. of Responses*	Percentage
1	There should be no impact to the environment of the area.	6	40%
2	Health of people should not be affected by the project.	2	13%
3	Compensation amount should be appropriate and realistic.	0	0%
4	Such techniques should be used that minimize noise pollution.	1	7%
5	Minimum trees should be cut for the project. More and more tress should be planted near the track and proper care should be taken.	6	40%
6	We should get permanent job in railway.	0	5%
7	Affected tube wells and bore wells should be restored by the railway department.	0	5%

Note: *Nearly 45% of feedback forms were blank
Source: JICA Survey Team

[Suggestions for social issues]

Table 2: Classification of Responses for the Social Issues

Sl. No.	Type of Responses for Social Issues	No. of Responses	Percentage
1	Person whose land is being acquired should get job in the railway department.	3	20%
2	There should be no harm to the environment, health issues must be taken into consideration, and there should be no littering due to the project.	0	0%
3	A person who will be responsible should be appointed.	6	40%
4	Compensation rate should be proper, like the rates in Noida.	4	26%
5	Appropriate compensation should be given for any kind of destruction to any government or public buildings.	0	0%
6	All residual land which is of no use to the farmers should be acquired at the same rate of compensation.	0	0%
7	Villagers should get some kind of aid from the govt. such as job etc, so that they could earn some livelihood.	0	0%
8	The alignment of the track should be little away from the village.	1	7%
9	The rate of compensation should be same for all.	1	7%

Source: JICA Survey Team

[Suggestions for other issues]

Table 3: Classification of Responses for the Other Issues

Sl. No.	Type of Responses	No. of Responses	Percentage
1	If house comes in between the project, villagers should get proper compensation for that also.	0	0%
2	Land owners should get jobs.	4	20%
3	Rate of compensation should be equal.	7	35%
4	Track should be away from habitation.	2	10%
5	There should be proper protection barreirs along the track.	1	5%
6	Government should try to save the water resources such as tube wells and bore wells, if they can't then alternative solution for the problem.	0	0%
7	Environment should not be harmed and more tree plantation should be done.	2	10%
8	Proper roads should be provided to the villagers and no road shall be closed.	4	20%
9	Every villager whose land is being acquired should get an alignment map showing the details of the land to be acquired.	0	0%

Source: JICA Survey Team

Appendix-10 Public Information Dissemination Process

Appendix-10a
Summaries of the Draft ESIA Report

MINISTRY OF RAILWAYS
DFCC of India Ltd. (DFCCIL)

Western Corridor of the DFC Project (phase2)

JNPT to Vadodara and Rewari to Dadri

Summary of the Environmental and Social Impact Assessment (ESIA) Study

September 2011

This summary explains main features of the draft final environmental and social impact assessment (ESIA) study carried out for the Western Corridor of the Dedicated Freight Corridor (DFC) Project Phase 2 between JNPT – Vadodara and Rewari – Dadri. This summary for Draft ESIA is distributed to the public as an information dissemination process under the project by the Dedicated Freight Corridor Corporation of India Limited (DFCCIL) as project implementing agency.

The Project Brief

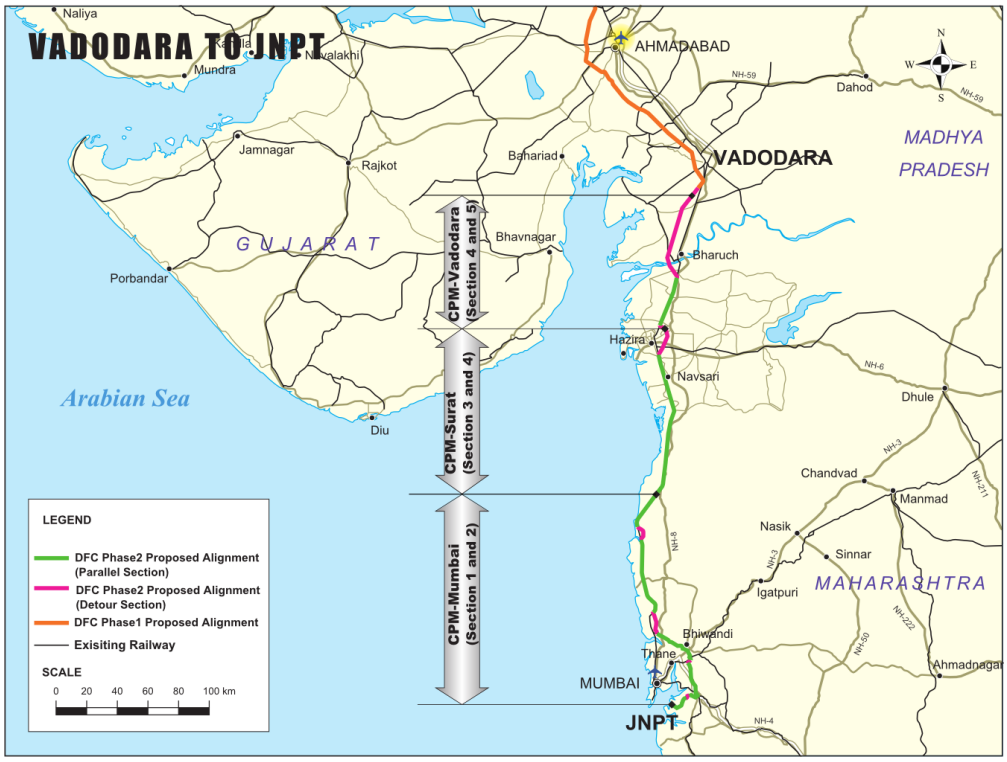
The Ministry of Railways (MoR) through the Dedicated Freight Corridor Corporation of India Limited (DFCCIL), a Special Purpose Vehicle (SPV), is implementing Computerized Multi Modal High Axle Load Dedicated Freight Corridor (DFC) Project between Delhi-Mumbai under the Western DFC Corridor. Considering the ever increasing freight traffic movement between the metros and their respective hinterlands, the DFC Project through adoption of improved technologies will result in a paradigm shift of freight transportation from road to the low carbon intensive mode rail transport and inherent improvement in energy efficiency of freight rail for transportation of bulk goods.

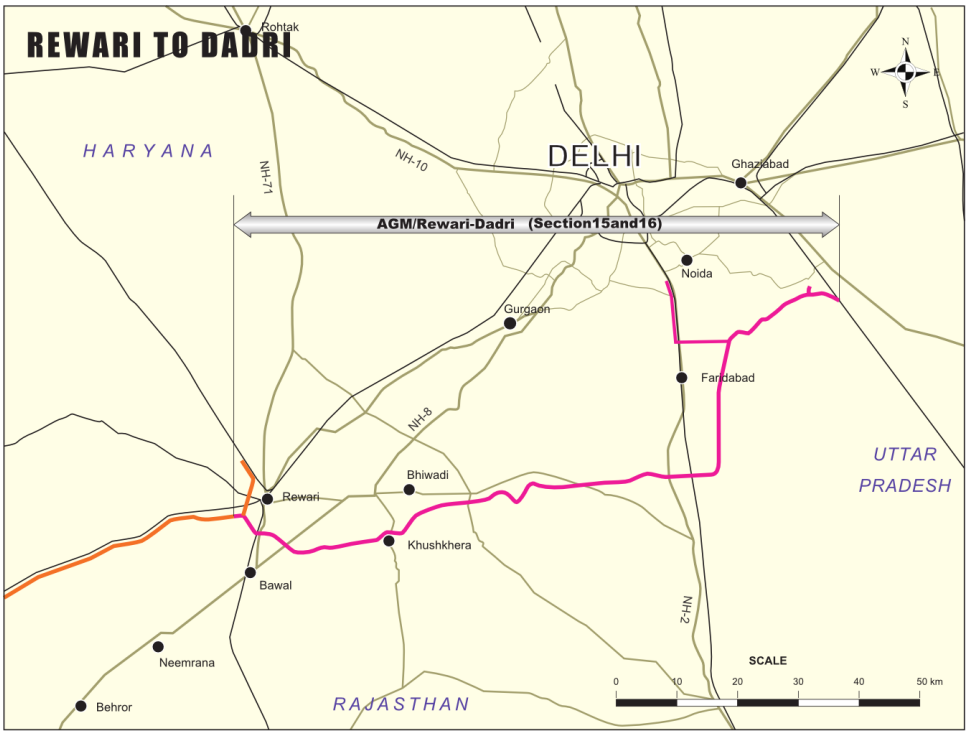
The Western DFC is designed to carry a total freight line of 37.7 million tonnes in fiscal year 2013-2014, which would increase to 140.4 million tonnes in 2033-34. Creation of rail infrastructure on such a scale, unprecedented in independent India, is also expected to drive the establishment of industrial corridors, logistic parks and other economic and trade centres along its alignment and will support India's growing economy which is at present levelled as the second fastest in the world.

The Western DFC has two broad streams of traffic, one, between the terminal nodes at either end, Jawaharlal Nehru Port Trust (JNPT) in Mumbai and Dadri in Uttar Pradesh including Tuglakabad (TKD) in Delhi, and the other, the traffic entering from branch line feeder routes at the various junction points en route. Implementation of the DFC Project will result in reducing the carbon intensity of India's transport sector.

The Project Area

The Western Corridor has been divided into 2 phases, in which Phase 1 covers corridor between Vadodara and Rewari and Phase 2 includes JNPT in Mumbai to Vadodara and Rewari to Dadri as well as a single line from DFC mainline near Faridabad to Tuglakabad (see Figure). This study pertains to Phase 2 part of the DFC Project. The affected project area along with no. of villages and the length of alignment is shown in Table.





Nearly 70 percent of the alignment length in JNPT-Vadodara section has been kept parallel to the existing Indian Railways (IR) lines. However, it is entirely on a new alignment route from Rewari to Dadri. For providing connection to Tuglakabad ICD, a single TKD line is partly on detour route and partly parallel to the existing Delhi-Mathura line. The project is now under planning stage. Detailed design is expected to start by the end of 2011. The Project implementation / construction work is scheduled to be completed in 4-5 years between 2012 and 2016.

Section	State	Districts	No. of Villages	Length of Alignment
JNPT-Vadodara	Maharashtra	Thane, Raigad	133	420 km
	Gujarat	Vadodara, Bharuch, Surat, Navasari, Valsad	133	
Rewari-Dadri (including TKD line)	Rajasthan	Alwar	13	145 km Including TKD:19 km
	Haryana	Faridabad, Gurgaon, Rewari, Palwal, Mewat	83	
	Uttar Pradesh	Gautam Buddh Nagar	11	
	Delhi	Tuglakabad	-	

Salient Features of Alignment & Relevant Facilities

The project is planned as double line corridor (except single line in Faridabad-TKD) with electrification and advanced signalling system to allow freight trains with an axle load of 25 tonnes and speed up to 100 km/h. The Road over Bridges (ROBs) and Road under Bridges (RUBs) are planned at all existing road crossings and will not lead to any detention to either road or rail traffic. The major part of the alignment will have well landscaped out embankments.

The detour route has been designed to avoid large settlement, heavy built-up area, metal quarry site, topography constraint, design criteria constraint, eco-sensitive zone, existing utilities relocation, etc. to minimize environmental and social impacts as possible. The planned detour routes are shown in table:

Name of Detour	Between IR Stations	Approx. Length (km)
Kundevahal Detour	Jasai and Panvel	3
Panvel Loop	Dapoli and Kalamboli	3
Dativali (Diva) Detour	Nilje and Kopar Road	5
Vasai Detour	Juchandra and Vaitarna	18
Dahanu Detour	Dahanu Road	12
Surat detour	Sachin and Gothangam	21
Sanjali –Nadiad detour	Varediya and Makarpura	60
Rewari-Dadri (Mainline)	Rewari to Pirthala and Pirthala to Dadri	126
Rewari-Dadri (TKD line)	Faridabad and Tuglakabad	11
Total		258

The average Right-of-Way (ROW) width for detour alignment is 60 m and for parallel alignment is 35 m. JNPT-Vadodara section will have a total of three junction stations, nine crossing stations and 13 important bridges whereas Rewari-Dadri section will have a total of three junction stations, two crossing stations and two important bridges.

Environmental and Social Impact Assessment (ESIA) Study for the Project

Considering the scale, nature and extent of activities envisaged as part of the DFC Project, a detailed Environmental and Social Impact Assessment (ESIA) Study has been conducted on the finalized alignment in order to ensure that all potential environmental and social issues or concerns associated with various project components are addressed and integrated into the project's planning and design at an early stage in order to formulate the DFC Project in a more sustainable and effective manner.

As a result, MOR/DFCCIL has prepared ESIA for the DFC Phase 2 Project of the Western Corridor under technical support by the Japan International Cooperation Agency (JICA) and following '*JICA Guidelines for Environmental and Social Considerations, April 2010*'. The ESIA study is consisted of pollution control study, natural environmental study, social environmental study, public consultation, impacts identification and assessment, preparation of mitigation measures, preparation of environmental and social management plan (EMP), and monitoring plan (EMoP).

River Monitoring at Bridge Alignment

Various environmental and social parameters are studied along the proposed corridor route during 2010-11 with the relevant primary data generated on the river water quality, natural environment, land use, sensitive receptors, noise and vibration, hydrogeological and social baseline surveys along with the secondary information collected from various statutory agencies of the State Governments to identify, assess and predict potential impacts due to various activities of the project. The public consultation meetings were conducted in various districts of the six states at the beginning of the study and the affected population's responses were recorded.

Noise measurement survey near parallel route and surrounding land use

Key Survey Parameters for ESIA Study

Some of the key survey parameters for ESIA study are mentioned in the table. The results of relevant environmental and social parameters in these areas along with detailed analysis are given in Draft ESIA Report.

Section	Key Survey Parameters
JNPT-Vadodara Section	1. South Vaitarna, North Vaitarna and Ulhas Rivers in Thane District, Maharashtra 2. Daman Ganga, Par River and Auranga Rivers in Valsad District, Gujarat 3. South Kaveri, North Kaveri, Ambika, N. Poorna and Mindhola Rivers in Navsari District, Gujarat 4. Tapi River in Surat District, Gujarat 5. Narmada River in Bharuch District, Gujarat 6. Nearly 20 small forest patches in Bhiwandi, Vasai, Palghar and Dahanu Taluka in Thane District with acquired forest land of ~32 ha 7. Two mangrove areas in Thane District 8. Reserved forest area between Sanjay Gandhi National Park (SGNP) and Tungareshwar Wildlife Sanctuary in Thane District 9. Legally Protected ecologically fragile Dahanu area of Thane District in Maharashtra 10. Panvel, Palghar, Boisar, Vapi, Valsad, Amalsad and Kim Stations for Noise and Vibration Survey 11. Tunnel Section in Vasai Detour 12. Land Use distribution and Sensitive Receptor sites within 60-100 m from the centerline of the proposed DFC alignment 13. 266 affected villages along the alignment for socio-economic survey and Public Consultation Meetings
Rewari-Dadri Section	1. Yamuna and Hindon Rivers in Gautam Buddh Nagar District, Uttar Pradesh 2. Gulistanpur reserved forest in Gautam Budh Nagar District with acquired forest land of ~10 ha 3. Legally Protected Geo-physical sensitive area near Aravalli Hill Range in Alwar District in Rajasthan and Mewat District in Haryana 4. Asaoti Station for Noise and Vibration Survey 5. Land Use distribution and Sensitive Receptor sites within 60-100 m from the centerline of the proposed DFC alignment 6. 107 affected villages along the alignment for socio-economic survey and Public Consultation Meetings

Potential Impacts and Mitigation Measures

Based on the ESIA survey results and subsequent analysis, various potential environmental and social impacts likely to result from the DFC project activities have been identified. Specific mitigation measures are proposed to minimize all such impacts to the level of no significance and are at planning/design phase, construction phase and operation phase. Such measures for major items of the environmental and social impacts are mentioned below.

Main List of Potential Impacts and Mitigation Measures

Potential Impacts	Mitigation Measures
1. Noise and Vibration	
< Construction phase >	
• Noise and vibration due to movement of vehicles, and operation of light and heavy construction machineries	❖ Major construction equipment and machineries shall be fitted with acoustic control measures ❖ Construction activities only during daytime near residential areas ❖ Provision of protective gears such as ear muffs etc. to construction personnel exposed to high decibel levels
< Operation phase >	
• Noise and vibration due to movement of trains and related facilities	❖ Use of long welded rails ❖ New technologies incorporated to lower noise and vibration generation with respect to structures and rolling stocks ❖ Appropriate maintenance of locomotives, tracks and structures
2. Water Pollution	
< Construction phase >	
• Wastewater from construction activities with suspended impurities • Wastewater disposal from the workers camp and sludge generated from construction sites	❖ Control of quality of construction wastewater emanating from the construction site through suitable drainage system with sediment traps ❖ Provision of silt fencing near water bodies ❖ Provision of proper sanitation facilities at the construction site to prevent health related problems due to water contamination
3. Air Pollution	
< Construction phase >	
• Deterioration of ambient air quality due to particulate matter such as dust, especially during dry conditions and gaseous emissions from construction equipment and vehicular traffic • Some locations along the alignment route are notified as critically polluted areas	❖ Storage of construction materials in covered go-downs or enclosed spaces ❖ Adequate dust suppression measures such as regular water sprinkling on unpaved haul roads and vulnerable areas of the construction sites ❖ All major construction machineries shall be inbuilt with appropriate dust reduction measures ❖ Necessary permission shall be taken for critically polluted areas and all conditions of permission shall be complied with
4. Flora	
< Planning/Design phase >	
• Alignment passes through several forest patches of Recorded Forest Areas in Thane District and one forest patch in Gautam Buddh Nagar District	❖ Assess alternatives and review design to reduce loss of forest land to the minimum ❖ Procedure for obtaining clearance under the Forest Conservation Act, 1980 being followed after due consultation with the Forest Department (FD) ❖ Comply with all stipulated conditions of Forest Clearance when granted
< Construction phase >	
• Loss of flora due to felling of trees within ROW linearly along alignment • Deposition of fugitive dust on pubescent leaves of nearby vegetation could lead to temporary reduction of photosynthesis	❖ Joint field verification with the respective State FD to avoid uncontrolled and indiscriminate tree felling ❖ Appropriate compensatory plantation using native species with rate of replacement as per the State FD. For example, for Dahanu eco-sensitive area, ten trees for each tree cut ❖ Compensation for trees in private land based on fruit yield, timber and other economic values ❖ Regular and proper water sprinkling near the site to minimize dust deposition on vegetation

Potential Impacts	Mitigation Measures
< Operation stage >	
• Improper post-plantation care/maintenance as well as illegal felling of plantation	❖ Plantation along the ROW shall be maintained properly as well as protected from illegal felling
5. Fauna	
< Construction phase >	
• Both terrestrial and avifauna affected by noise and vibration due to construction equipment and machinery • Destruction of habitats such as bird nests, breeding sites along the new alignment route	❖ All major noise producing construction equipment and machinery shall be fitted with acoustic control measures ❖ No construction yard in the forest areas ❖ Construction schedule in such a manner to avoid heavy construction near forest areas during winter season when migratory birds inhabit the area
< Operation phase >	
• Impact on aquatic fauna in case of accidental oil spill and toxic chemicals release find its way into the water bodies	❖ Immediate action shall be taken for speedy cleaning up of oil spills, fuel and toxic chemicals in the event of accidents
6. Biodiversity	
< Planning/Design phase >	
• Alignment passes through reserved forest area between SGNP and Tungareshwar Wildlife Sanctuary along parallel section • Some mangrove areas in Thane District along parallel section	❖ Design review, adjustments to ROW or loop length to reduce loss of reserved forest land to the minimum ❖ Procedure for obtaining clearance under the Wildlife Protection Act, 1972 after due consultation with the State's Chief Wildlife Warden and other key officials ❖ Procedure for obtaining clearance under the Forest Conservation Act, 1980 for mangrove areas ❖ Comply with all stipulated conditions
< Construction phase >	
• Mangrove areas with species having conservation concern affected by the construction activities • Felling of some endangered flora species in the ROW near SGNP • Impact on some water holes and habitats such as bird nests, breeding sites etc.	❖ Compensate loss of mangrove vegetation by replanting at other mangrove sites after due consultation with the FD and paying compensation fees ❖ Compensatory plantation for endangered species in the degraded forest land near protected area in consultation with the FD ❖ Develop lost waster holes inside the forest areas to encourage wildlife movement inside in consultation with the SGNP authority
< Operation phase >	
• Potential direct impact of DFC trains hitting wildlife near protected area	❖ Incorporate some appropriate structures into the design such as underpasses, pipe culverts and/or other structures as needed to allow wildlife to cross line safely
7. Topography and Geology	
< Construction phase >	
• Impact on overall relief of the region due to DFC alignment passing through plain, rolling and hilly terrain • Disfiguring of topography and disturbance to geological setting due to indiscriminate digging of borrow pits • Enhancement of rock-joint rupture hazard due to deep cutting and rock excavation work in hilly blocks along the alignment	❖ Use of only identified borrow pits and quarry sites to avoid any disfiguring of topography ❖ Procurement of construction materials from the existing approved and licensed quarry sites only ❖ Involvement of specialized engineering geologist to study rock-rupture hazards and bed rock geology along with characterization of weak zones in critical hill blocks during detailed engineering stage
8. Soil Erosion	
< Construction phase >	
• Loose soil for embankment preparation could result in silt run-off • Uncontrolled opening up of borrow pits could result in loss of productive soil • Loosening of top soil and loss of vegetative cover within ROW due to excavation, land cut and back filling could increase soil erosion	❖ Avoid cut and fill operation in the monsoon season ❖ Protect embankment slopes and exposed hill surfaces from low cost bio-engineering products ❖ Reuse of top soil from the construction sites in construction of embankment ❖ Top soils of the borrow pit sites shall be conserved and restored after excavation work is over ❖ Use of fly ash as a substitute to top soil n construction of embankment shall be done only after careful analysis of site conditions
9. Groundwater	
< Construction phase >	
• Uncontrolled use of ground water for construction use could put further stress on ground water resource in the area	❖ Prepare a comprehensive plan to conserve water along with recharging mechanism ❖ Use of only identified ground water sources by the CGWA based on estimated quantity and expected quality for construction use

Potential Impacts	Mitigation Measures
10. Hydrological Situation	
< Construction phase >	
• Natural drainage and recharge conditions near project sites affected due to blockage of drainage channels, deep rock cutting, earth filling, land levelling and other construction activities	❖ No dumping of material into natural drains and hence would not block or impede flow in drainage channels ❖ Consideration of provision of DFC track through via duct (elevated) instead of filled-in (embankment) in valley regions in detailed engineering so that the existing surface and ground water flow is not altered ❖ Provision of suitable drainage at each construction site and labour camps to avoid water logging or formation of stagnant pool of water
< Operation phase >	
• Local drainage likely to be affected due to formation of embankment along DFC alignment	❖ Provision of longitudinal drains of sufficient capacity on both sides of the DFC track to accommodate increased run-off with an outfall in the nearby drainage carrying system ❖ Duly augmentation of the capacity of existing drainage works and cross drainage structures in parallel section
11. Land Acquisition and Resettlement	
< Planning/Design phase >	
• Loss of livelihood and properties	❖ Compensation and assistance package shall be planned in the Rehabilitation and Resettlement Plan (RRP), separately from the ESIA
< Construction phase >	
• Disturbance of vehicle traffic and pedestrian (farmers) passage	❖ Provision of detour with adequate sign board and instruction
12. Public Safety and Severance	
< Operation phase >	
• Risks of accidents and fatalities in the early stages of DFC operations • Road and rail crossings on DFC line as well as embankment structures could disrupt people's movements	❖ Incorporate proper warning signals, alarm system and modern railway safety measures in the design ❖ Provision of RUB, ROB, pedestrian sub ways, rail flyovers and level crossings etc. on all existing road crossings and major footpaths

Note: Detailed explanation to above impacts and mitigation measures in addition to some more issues are given in Draft ESIA Report.

Environmental Management Plan (EMP)

Environmental Management Plan (EMP) envisages the plans for the proper implementation of mitigation measures to reduce the adverse impacts resulting from various project activities during planning/design, construction and operation phases. An effective EMP ensures that proper expected results are obtained from the implementation of environmental mitigation measures. EMP has been prepared addressing the following issues:

1. The following specific Environment Management Plans (EMP) is proposed in the Draft ESIA Report:
   - Greenbelt Development Plan
   - Management and Rehabilitation Plan for Quarry / Borrow Areas
   - Noise and Vibration Management and Control
   - Solid Waste Management Plan
   - Plan for Storage, Handling & Emergency Response for Hazardous Chemicals
   - Drainage Management Plan
   - Management for Land Acquisition and Resettlement (only outline but details in RRP Report)
   - Plan for Sanitation and Housekeeping at the Construction Labour Camps
   - Occupational Health and Safety Management

2. Phase-wise Environmental Management Measures are proposed for the following environmental and social issues:
   a) Planning/Design Phase
      - Land acquisition, diversion of forest land, preservation of trees, borrow areas, quarry areas, construction water, sites for other construction materials, site identification for placement of construction machineries and disposal of unsuitable materials, construction camp, arrangement for temporary yard, orientation of implementation agency and contractors

   b) Construction Phase
      - Site clearance, procurement of construction materials, construction work (drainage, siltation, slope protection, etc.), water pollution, air pollution, noise, safety, labour camp management, contractor's demobilization (clean-up operation, restoration and rehabilitation)

   c) Operation Phase
      - Monitoring of operation performance of various mitigation measures, pollution monitoring

Environmental Monitoring Plan (EMoP)

The purpose of the Environmental Monitoring Plan (EMoP) is to ensure the effective implementation of EMP in order to achieve overall objective of the project in a more sustainable and effective manner. The EMoP monitors the results of effective implementation of mitigation measures and suggest additional measures, if any, to enhance the project benefits to the target population. The environmental monitoring plan consists of performance indicators and environmental monitoring programme and are mentioned below:

1. *Performance Indicators*

- Planning/Design Phase: land acquisition, dumping locations, construction workers' camps, borrow areas, quarry sites
- Construction Phase: ambient air quality, noise & vibration levels, water quality (ground water, river water, drinking water), waste water quality, vegetation cover, soil quality
- Operation Phase: survival rate of trees, rehabilitation of borrow areas, utility of noise barriers for sensitive receptors

2. *Environmental Monitoring Programme*

This includes parameters to be monitored; monitoring methods; location of the monitoring sites; frequency and duration of monitoring; institutional responsibilities for implementation and supervision; and estimated cost. Some specific parameters that will be used for monitoring environmental items are:

- Ambient air quality, Noise levels, Water quality, Loss of trees and vegetation

Public Consultation Meetings (PCMs)

The Public Consultation Meetings primarily aim at providing a platform for the project affected persons and different stakeholders to express their views on possible impact of the proposed intervention. The PCMs for ESIA are held at two different stages in order to collect opinions and feedback of the public and to disseminate information on the project and ESIA study. The PCMs are conducted district-wise in all fourteen districts.

Public Consultation Meeting

- The first stage of the PCM for ESIA was conducted in the month of Nov 2010 (and supplemental PCM in Maharashtra in Feb 2011) at the time of environmental scoping in the initial stage of the ESIA study. Information on the Project and scope of the ESIA study was disseminated to the public, and comments and opinion were collected to incorporate in the ESIA study.
- The second stage of the PCM for ESIA is to be conducted in September 2011 to disseminate information about findings of draft environmental and social impact assessment (ESIA) study and probable mitigation measures to the general public that are directly or indirectly affected by the DFC project and to obtain their feedback and opinions and incorporate their comments and request on the environment and social mitigation measures and management and monitoring plans.

Some opinion and issues raised in the first stage PCM were – compensation and employment opportunities; displacement and land acquisition, environment and health, drainage, access to resources and community facilities; and socio-cultural aspects. The first stage PCM was attended by project affected persons (PAPs), representative from gram panchayat, district administration, revenue department, forest officers, local important persons (MPs, MLAs), NGOs and other senior citizens.

Information Dissemination in ESIA Process

The ESIA study findings are disseminated to the project affected persons, stakeholders and the implementation authorities so that preventative measure can be taken for the successful completion of the project. The information disclosure is implemented at two stages for the ESIA.

- The first stage of information dissemination is conducted when the draft ESIA is prepared. The full draft ESIA in English is delivered and placed at each DFCCIL office, major existing railway stations and district authorities along the DFC route. Additionally, the summary of the draft ESIA is prepared in local languages, such as Hindi, Gujarati and Marathi and is delivered to all the project affected villages along the DFC route.
- The second stage of information dissemination is implemented when the ESIA is finalized. The full final ESIA in English is delivered and placed at each DFCCIL office, major existing railway stations and district authorities along the DFC route. Additionally, the summary of the final ESIA is prepared in local languages, such as Hindi, Gujarati and Marathi and is delivered to all the project affected villages along the DFC route.

Availability of Draft ESIA Report and Submission of Comments

- Draft ESIA Report is available for review by the public in the following disclosed locations: DFCCIL Head Office, respective Chief Project Manager (CPM), major stations along the proposed DFC alignment, and respective District Offices from September 17, 2011 onwards.
- Summary of Draft ESIA in local languages is also available in Sarpanch offices of all the project affected villages along the DFC route from September 17, 2011 onwards.
- Comments can be submitted to the DFCCIL Head Office or respective CPM offices either by post or through email at dfc.phase2@gmail.com by September 26, 2011.

Address of the CPM Offices of the DFCCIL

- Dedicated Freight Corridor Corporation of India Limited (DFCCIL)
  (Under Ministry of Railways), Fifth Floor, Pragati Maidan, Metro Station Building Complex, New Delhi – 110 001
  (Tel: 91-11-23454700; Fax: 91-11-23454701)
- CPM Office Mumbai
  7th Floor, New Administrative Building, Central Railway, D.N. Road, Mumbai – 400 001, Maharashtra
  (Tel: 91-22-22634184; Fax: 91-22-22634184)
- CPM Office Surat:
  4th Floor, Aruns-1, Near Iscon Mall, Dumas Road, Piplod, Surat – 395 007, Gujarat
  (Tel: 91-261-2633250; Fax: 91-261-2633250)
- CPM Office Vadodara:
  13-14, 17-18, Panorama Complex, 3rd Floor, R. C. Dutt Road, Alkapuri, Vadodara – 395 007, Gujarat
  (Tel: 91-265-2326024; Fax: 91-265-2326027)
- AGM Office Rewari-Dadri:
  "Star House", First Floor, A-102, Sector-4, Noida, Uttar Pradesh
  (Tel: 91-120-4309720; Fax: 91-120-4134554)

Major Stations where the Draft ESIA Report is available

- Maharashtra
  Panvel (Jn), Kalyan (Jn), Vaitarna, Kelve Road, Palghar, Dahanu Road
- Gujarat
  Sanjan, Vapi, Valsad, Bilimora (Jn), Navsari, Sachin, Kosamba (Jn), Bharuch
- Haryana, Rajasthan, UP, Delhi
  Rewari (Jn), Faridabad, Dadri

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन

रेल मंत्रालय
डी. एफ. सी. सी. आई. एल.

डेडिकेटिड फ्रेट कॉरीडोर परियोजना चरण–2

जेएनपीटी से वड़ोदरा और रेवाड़ी से दादरी

के विकास पर

पर्यावरण एवं समाजिक प्रभाव आकलन और अध्ययन

का सारांश

सिंतम्बर 2011

यह सारांश डेडिकेटिड फ्रेट कॉरीडोर परियोजना चरण–2 के पश्चिमी कॉरीडोर (जे एन पीटी से वडोदरा एवं रेवाड़ी से दादरी) के पर्यावरण एवं सामाजिक प्रभाव आकलन (ESIA) हेतु किए गए अध्ययन के मुख्य बिन्दुओं की व्याख्या करता है। ड्राफ्ट ESIA का यह सारांश परियोजना कार्यान्वयन एजेंसी के तौर पर डेडिकेटिड फ्रेट कॉरीडोर कॉरपोरेशन ऑफ इंडिया लिमिटेड (DFCCIL) द्वारा परियोजना के अन्तर्गत सूचना प्रसारण प्रक्रिया हेतु जनता में वितरित किया जा रहा है।

परियोजना संक्षेप

डेडिकेटिड फ्रेट कॉरीडोर कारपोरेशन ऑफ इंडिया लिमिटेड (DFCCIL), रेल मंत्रालय की एक विषेश उद्देश्य संस्था है जो के द्वारा पश्चिमी DFC के तहत दिल्ली – मुम्बई के मध्य कम्प्यूटरीकृत मल्टी मोडल हाई स्क्सल लोड डेडिकेटिड फ्रेट कॉरीडोर परियोजना कार्यान्वित कर रही है। दोनों मेट्रो नगरों और इनके बीच पड़ने वाले नगरों के मध्य निरंतर बढ़ते माल परिवाहन के मद्दे नजर DFC परियोजना उन्नत तकनीक अपनाते हुए माल परिवहन को सड़क यातायात से कम कार्बन उत्सर्जित करने वाले रेल परिवहन की ओर तेजी से स्थानांतरित कर देगा तथा भारी वस्तुओं की ढुलाई की रेल परिवहन की उर्जा कार्यकुशलता को उन्नत करेगा।

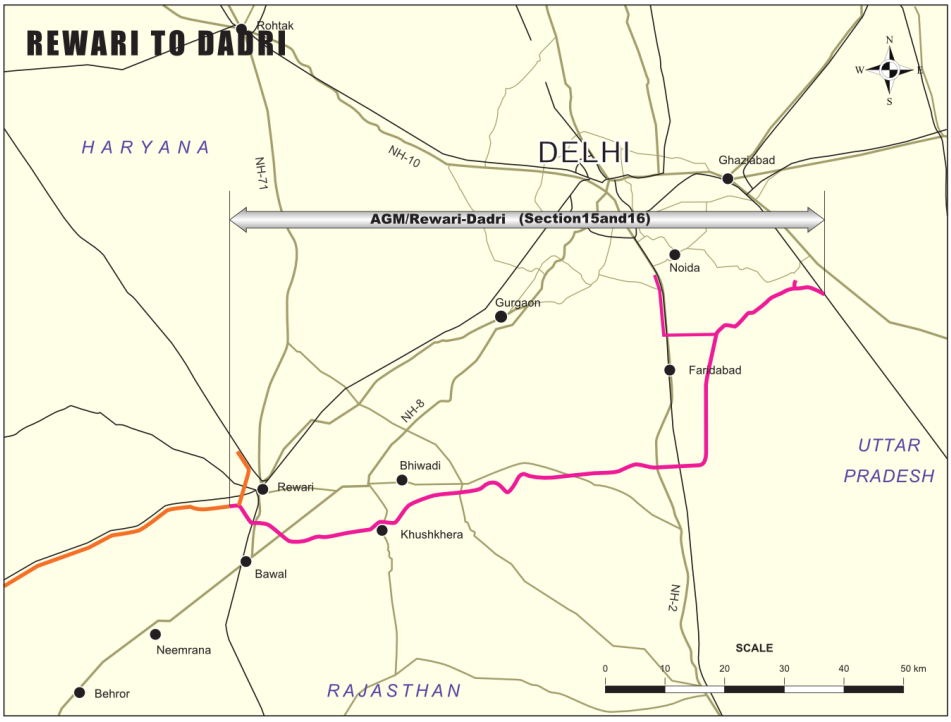
पश्चिमी DFC को वित्त वर्ष 2013–2014 में कुल 37.7 मिलियन टन माल ढुलाई हेतु डिजाइन किया गया है जो 2033–34 तक बढ़कर 140.4 विलियन टन हो जायेगा। ऐसा अपेक्षित है कि इस स्तर पर मूलभूत रेल ढांचे का निर्माण जो कि स्वतंत्र भारत में अभूतपूर्व है, अपने साथ–साथ औद्योगिक क्षेत्रों, लॉजिस्टिक पार्कों एवं अन्य आर्थिक व वाणिज्कि केन्द्रों की स्थापना को भी प्रोत्साहित करेगा तथा भारत की विकसित होती अर्थव्यवस्था को भी मदद करेगा जिसे विश्व की दूसरी सबसे तेजी से बढ़ती अर्थव्यवस्था माना जाता है।

पश्चिमी DFC में परिवाहन की दो मुख्य धाराएँ हैं, एक दोनों छोरों पर स्थित समापन बिन्दुओं मुम्बई में जवाहर लाल नेहरू पोर्ट ट्रस्ट और दिल्ली में तुगलकाबाद को शामिल करते हुए उत्तर प्रदेश के दादरी के मध्य तथा दूसरी धारा में विभिन्न जंक्शनों पर फीडर मार्गों से आता परिवहन DFC परियोजना के कार्यान्वियन का परिणाम होगा भारत के परिवहन सेक्टर की कार्बन खपत में कमी।

परियोजना क्षेत्र

पश्चिमी कॉरिडोर को दो चरणों में विभाजित किया गया है जिसमें पहले चरण में वडोदरा और रेवाड़ी के मध्य कॉरिडोर शामिल है और दूसरे चरणों मे शामिल है मुम्बई में जे. एन. पी. टी. से वडोदरा तथा रेवाड़ी से दादरी तक का कॉरिडोर एवं फरीदाबाद के पास से DFC मेनलाइन से तुगलकाबाद तक एक सिंगल लाइन।

यह अध्ययन DFC परियोजना के दूसरे चरण से संबंधित है। गाँवों की संख्या एवं मार्ग की लम्बाई सहित प्रभावित परियोजना क्षेत्र तालिका में प्रदर्शित है।



जे. एन. पी. टी. वडोदरा सेक्शन की मार्ग दूरी Alignment Length का लगभग 70% वर्तमान भारतीय रेलवे के समानांतर रखा गया है। हांलाकि रेवाड़ी से दिल्ली तक यह पूर्णतया एक नए मार्ग पथ (Alignment Root) पर है। तुगलकाबाद ICD को संपर्क उपलब्ध कराने हेतु एक एकल तुगलकाबाद लाइन अंशतः आवर्तित (Detour) पथ पर है और अंशतः वर्तमान दिल्ली मथुरा लाइन के समानांतर है। परियोजना अभी योजना स्तर (Planing Stage) पर है। विस्तृत योजना (Design) 2011 के अन्त तक आरंभ होने की संभावना है। परियोजना कार्यान्वयन निर्माण कार्य 2012 से 2016 के मध्य 4–5 वर्षों में पूरा होना निर्धारित है।

सेक्शन	राज्य	जिला	गाँवों की संख्या	संरेखा की लम्बाई
जे. एन. पी. टी.-वडोदरा	महाराष्ट	ठाणे–रायगड़	133	420 किमी॰
	गुजरात	वडोदरा,भरूच, नवसारी,सूरत, वलसाड	133	
रेवाड़ी दादरी टी.के.डी. लाइन सहित	राजस्थान	अलवर	13	145 किमी॰ टी..के. डी. 19 किमी॰ सहित
	हरियाणा	फरीदाबाद,गुड़गाँव, पलवल, मेवात	83	
	उत्तर प्रदेश	गौतम बुद्ध नगर	11	
	दिल्ली	तुगलकाबाद	-	

मार्ग की मुख्य विशेषताएँ एवं सम्बन्धित सुविधाएँ

परियोजना में डबल लाइन कॉरीडोर { फरीदाबाद–तुगलकाबाद की एकल लाइन को छोड़कर} की योजना है जो विद्युतीकृत होगी और उन्नत सिग्नलिंग प्रणाली से लैस होगी ताकि मालगाड़ी 25 टन के धुरी भार (Axle Load) और 100 कि.मी./घण्टा की चाल प्राप्त कर सके। सभी वर्तमान सड़क क्रॉसिंग पर रोड ओवर ब्रिज्स (RoB's) और रोड अन्डर ब्रिज्स (RuB's) बनाने की योजना है और यह सड़क या रेल परिवहन में कोई रूकावट नहीं डालेगा।

आवर्तित मार्ग (Detour route) का नक्शा इस प्रकार तैयार किया गया है कि विशाल आवासीय क्षेत्रों, सघन विनिर्मित क्षेत्रों धातु खनन केन्द्रों, स्थानीय भौगोलिक बाधाओं, नक्शा (Design) आधारित बाधाओं, पर्यावरण संवेदी जोन, वर्तमान युटिलीटीज रिलोकेशन आदि से बचा जा सके और जहाँ तक संभव हो पर्यावरणीय व सामाजिक प्रभावों को न्यूनतम किया जा सके। प्रस्तावित आवर्तित (detour) मार्ग तालिका में प्रदशित है।

आवर्तित मार्ग का नाम	मध्यवर्ती IR स्टेशन	अनुमानित दूरी
कुंदेवहल	जसई और पनवल	3
पनवल लूप	दपोली और कलमबोली	3
दपोली और कलमबोली	नीलजे और कोपार रोड	5
वसई	जुचन्द्रा और वैतरणा	18
दहानु	दहानु रोड	12
सूरत	सचिन और गोठान गाँव	21
संजीव–नडियाड	वरीदिया और मकरपुरा	60
रेवाड़ी दादरी (मेनलाइन)	रेवाड़ी से पीरथला और पीरथला से दादरी	126
रेवाड़ी दादरी TKD लाइन	फरीदाबाद और तुगलकाबाद	11
कुल		258

राइट ऑफ वे (ROW) की औसत चौड़ाई आवर्तित मार्ग (Detour alignment) के लिए 60 मीटर और संमानांतर मार्ग के लिए 35 मीटर है। जे. एन. पी. टी. - वडोदरा सेक्शन में कुल तीन जंक्शन स्टेशन, नौ क्रॉसिंग स्टेशन और 13 महत्वपूर्ण पुल हैं।

परियोजना का पर्यावरणीय एवंम सामाजिक प्रभाव आकलन अध्ययन

DFC परियोजना में सामने आने वाले क्रियाकलापों के स्तर, प्रकृति और व्यापकता को ध्यान में रखते हुए अन्तिम निर्धारित मार्ग पर एक विस्तृत पर्यावरणीय एवं सामाजिक प्रभाव आकलनअध्ययन किया गया है ताकि यह सुनिश्चित किया जा सके कि परियोजना के विभिन्न हिस्सों से सम्बद्ध सभी गंभीर पर्यावरणीय एवं सामाजिक मुद्दों या सरोकारों को सुलझा लिया गया है, और प्रोजेक्ट की योजना व डिजाइन में प्रारंभिक स्तर पर स्वीकृत कर लिया गया है ताकि DFC परियोजना को और ज्यादा दीर्घस्थायी व प्रभावकारी ढंग से सूत्रबद्ध किया जा सके।

परिणामतः MOR/DFCCIL ने जापान इंटरनेशनल कॉरपोरेशन एजेंसी (JICA) और अनुगामी (JICA) गाइड लाइन्स फॉर एनवायरमेन्टल एण्ड सोशल कंसिडरेशन के तकनीकी सहयोग के अन्तर्गत DFC के पश्चिमी कॉरिडोर की दूसरी परियोजना हेतु एक ESIA तैयार किया है। ESIA अध्ययन में प्रदूषण नियंत्रण अध्ययन, प्राकृतिक पर्यावरणीय अध्ययन, सामाजिक पर्यावरणिय अध्ययन, जन सुझाव, प्रभाव अन्वेषण व आकलननिवारक उपायों का निर्धारण, पर्यावरणीय एवं सामाजिक प्रबंधन योजना का निर्माण (EMP) और निरीक्षण योजना (EMOP) शामिल हैं।

River Monitoring at Bridge Alignment

Noise measurement survey near parallel route and surrounding land use

नदी–जल गुणवता, प्राकृतिक पर्यावरण, भू–प्रदेश, संवेदी ग्राहकों (Sensetive Receptors), शोर एवं कंपन हाइड्रो जियोलॉजिकल भूमि, सामाजिक आधार, सर्वे, और राज्य सरकारों की विभिन्न वैधानिक एजेंसियों के माध्यम से प्राप्त सूचनाओं के आधार पर 2010–11 से प्रस्तावित कॉरिडोर मार्ग पर विभिन्न पर्यावरणीय व सामाजिक संवेदकों का अध्ययन किया गया हैं ताकि परियोजना के विभिन्न कार्याकलापों के गंभीर प्रभावों को पहचानना, आकलनतथा पूर्वानुमान लगाया जा सके। अध्ययन के आरंभ में छः राज्यों के विभिन्न जिलों में जन परामर्श बैठक आयोजित की गई तथा प्रभावित जनता की प्रतिक्रियाएँ दर्ज की गईं।

ESIA अध्ययन के मुख्य सर्वे पैरामीटर

ESIA अध्ययन के कुछ मुख्य सर्वे पैरामीटर तालिका में दिए गए हैं। इन क्षेत्रों में सम्बन्धित पर्यावरणीय तथा सामाजिक पैरामीटर के परिणाम विस्तृत विश्लेषण सहित ड्राफ्ट **ESIA** रिपोर्ट में दिए गए हैं।

सेक्शन	मुख्य सर्वे पैरामीटर
जे.एन.पी.टी.–वड़ोदरा सेक्शन	1 – जिला ठाणे, महाराष्ट्र में दक्षिण वैतरणा, उत्तरी वैतरणा और उल्हास नदियां। 2 – जिला वलसाद, गुजरात में , दमन गंगा, पार नदी और औरंगा नदी। 3 – जिला नवसारी गुजरात में दक्षिण कावेरी, उत्तर कावेरी, अम्बिका अन्नपूर्णा और मिधौला नदियाँ। 4– जिला सूरत, गुजरात में तापी नदी। 5 – जिला भरूच, गुजरात में नर्मदा नदी। 6 – जिला ठाणे में भिवंडी, वसाई पालधार और दहानु तालुका में लगभग 20 वन क्षेत्र जिनका क्षेत्रफल लगभग 32 हेक्टेयर है। 7 – जिला ठाणे में दो मैंग्रोव क्षेत्र। 8 – संजय गाँधी नेशनल पार्क और जिला ठाणे के तुंगारेश्वर वाइल्ड लाइफ सेक्चुरी के मध्य संरक्षित वन क्षेत्र। 9 – जिला ठाणे, महाराष्ट्र में वैधानिक रूप से रक्षित इकॉलॉजिकली भंगुर दहानु क्षेत्र। 10 – शोर एवं कंपन सर्वे हेतु पनवेल, पालधर, बोईसार, वापी वलसाल, अमलसाद और किम स्टेशन। 11 – वसई आवर्तित मार्ग में टनल सेक्शन। 12 – प्रस्तावित DFC मार्ग की केन्द्र लाइन के 60–100 मीटर के दायरे में भू–उपयोग वितरण तथा सेंसटिव रिसेप्टर साइट्स। 13. मार्ग में पड़ने वाले 266 प्रभावित गाँवों का सामाजिक आर्थिक सर्वे और जन परामर्श बैठक
रेवाड़ी – दादरी सेक्शन	1 – जिला गौतम बुद्ध नगर, उत्तर प्रदेश में यमुना और हिंडन नदियाँ। 2 – जिला गौतम बुद्ध नगर, उत्तर प्रदेश में लगभग 10 हेक्टेयर क्षेत्र में फैला गुलिस्तानपुर संरक्षित वन। 3 – जिला अलवर, राजस्थान और जिला मेवात, हरियाणा में अरावली पर्वत माला के निकट वैधानिक रूप से रक्षित जियो–फिजीकली संवेदनशील क्षेत्र। 4 – **असावती स्टेशन पर ध्वनि/शोर तथा कम्पन हेतु सर्वे** 5 – प्रस्तावित DFC मार्ग की केन्द्र लाइन के 60–100M के दायरे में भू–उपयोग वितरण तथा सेंसटिव रिशेप्टर साइट्स। 6 – मार्ग में पड़ने वाले 107 प्रभावित गाँवों का सामाजिक आर्थिक सर्वे और जन परामर्श बैठक।

सम्भावित प्रभाव और निवारक उपाय

ESIA सर्वे के परिणामों और तदनन्तर विश्लेषण के आधार पर विभिन्न गंभीर पर्यावरणीय व सामाजिक प्रभावों की पहचान की गई है जो DFC परियोजना के क्रियाकलापों से उत्पन्न हो सकते हैं। इन सभी प्रभावों को 'No significance' स्तर तक न्यूनतम करने हेतु विशेष निवारक उपाय प्रस्तावित हैं। ये उपाय योजना–डिजाइन चरण, विनिर्माण चरण और परिचालन चरण पर प्रस्तावित हैं। पर्यावरणीय व सामाजिक चरण पर प्रस्तावित प्रभावों से जुड़े महत्वपूर्ण मामलों पर सुझाए गए उपाय निम्नलिखित हैं:–

संभावित प्रभावों व निवारक उपायों की मुख्य सूची

संभावित प्रभाव	निवारक उपाय
1 शोर एवं कंपन	
विनिर्माण चरण	
• वाहनों की गतिविधि और हल्की एवं भारी विनिर्माण मशीनरी के कारण उत्पन्न शोर व कंपन।	• मुख्य विनिर्माण यंत्रों और मशीनरी को श्रवण नियंत्रण उपायों से लैस किया जाएगा • आवासीय क्षेत्र के पास निर्माण कार्य केवल दिन में होगा। • उच्च डेसिबल स्तर के बीच काम करने वाले विनिर्माण कर्मियों को इयर मफ्स • (EAR MUFFS) जैसे सुरक्षा उपकरण उपलब्ध कराना।
परिचालन चरण	
• ट्रेन चलने व संबंधित गतिविधियों के कारण उत्पन्न शोर व कंपन।	• लम्बी वेलडेड रेल का उपयोग। • ढाँचे व रॉलिंग स्टाक से उत्पन्न शोर व कंपन कम करने हेतु नई तकनीक का इस्तेमाल। • लोकोमोटिव, ट्रेक व ढाँचे का पर्याप्त रख रखाव।
2 जल-प्रदूषण	
विनिर्माण चरण	
• विनिर्माण गतिविधियों से उत्पन्न निलंबित अशुद्धियों वाला अपशिष्ट जल। मजदूर कैंपों से निकले अपशिष्ट जल का निपटारा तथा विनिर्माण से उत्पन्न कीचड़।	• सेडीमेन्ट ट्रैप वाले उपयुक्त ड्रैनेज सिस्टम द्वारा विनिर्माण क्षेत्र से अपशिष्ट जल की निकासी की गुणवत्ता का नियंत्रण। • जल क्षेत्रों के निकट सिल्ट फेंसिंग • विनिर्माण क्षेत्र में जल संक्रमण से होने वाली स्वास्थ्यजनित समस्याओं को रोकने के लिए व्यवस्थित सैनिटेंशन सुविधा उपलब्ध कराना।
3 वायु-प्रदूषण	
विनिर्माण चरण	
• निकटवर्ती वायु की गुणवता में कणों जैसे धूल के कारण गिरावट विशेषकर शुष्क परिस्थितियों में और विनिर्माण उपकरणों तथा वाहनों से निकलने वाली गैसों का उत्सर्जन। • मार्ग–पथ पर पड़ने वाली कुछ जगहें अत्यधिक प्रदूषित क्षेत्रों के तौर पर चिह्नित हैं।	• विनिर्माण सामग्री की ढँके हुए गोदामों या घिरे हुए क्षेत्रों में रखना। • धूल दबाने के पर्याप्त उपाय करना जैसे कच्ची सड़कों और विनिर्माण क्षेत्र की कच्ची जगहों पर पानी का छिड़काव। • सभी विनिर्माण मशीनरी में उपयुक्त धूल नियंत्रण उपायों को लगाया जाना। • अत्यधिक प्रदूषित क्षेत्रों में आवश्यक अनुमति लेना तथा अनुमति की सभी शर्तों का पालन करना।
4 वनस्पति	
योजना–डिजाइन चरण	
• मार्ग–पथ का जिला ठाणे में कई वन क्षेत्रों और जिला गौतम बुद्ध नगर में एक वन क्षेत्र से गुजरना।	• वैकल्पिक आकलनऔर डिजाईन पर पुनः विचार ताकि वन क्षेत्र के नुकसान को न्यूनतम किया जा सके। • फॉरेस्ट कंजर्वेशन एक्ट 1980 के तहत Clearance प्राप्त करना और फारेस्ट डिपार्टमेन्ट के परामर्श प्रमाण का पालन करना। • फॉरेस्ट डिपार्टमेंट से Clearance प्राप्त करते समय निर्धारित
विनिर्माण चरण	
• ROW के रास्ते में आने वाले पेड़ों की कटाई से होने वाला वनस्पति का नुकसान • आसपास की वनस्पति की पत्तियों पर धूल जमने के कारण प्रकाश संशलेषण में अस्थायी कमी	• सम्बन्धित राज्य के FD के साथ संयुक्त क्षेत्र जांच ताकि पेड़ों की अनियंत्रित व अव्यहारिक कटाई से बचा जा सके। • सम्बन्धित FD द्वारा सुझायी गयी दर के अनुसार पर्याप्त क्षतिर्पूर्ति हेतु स्थानीय पौधे लगाना, उदाहरण के लिए दहानू क्षेत्रा में काटे गये हर पेड़ के पीछे 10 पौधे • फलों की प्राप्ति, इमारती लकड़ी और अन्य आर्थिक मूल्यों के आधार पर निजी भूमि के पेड़ों हेतु क्षति पूर्ति

संभावित प्रभाव	निवारक उपाय
परिचालन चरण	
• अपर्याप्त पौधारोपण उत्तरोत्तर रखरखाव व पौधों की अवैध कटाई	• ROW के क्षेत्र में पौधा का उपयुक्त रखरखाव होगा तथा साथ ही साथ अवैध कटाई से रक्षा भी की जाएगी।
5 जीव–जंतु	
विनिर्माण चरण	
• जमीन पर रहने वाले व आकाशीय दोनों प्रकार के जीवों पर विनिर्माण यंत्रों व मशीनरी से उत्पन्न शोर व कंपन का असर। • मार्ग–पथ में पड़ने वाले आवास स्थानों (Habitits) जैसे पक्षियों के घोंसलों, प्रजनन केन्द्रों का विनाश।	• सभी प्रमुख शोर उत्पन्न करने वालों विनिर्माण मशीनरी व यंत्रों में श्रवण नियंत्रण उपाय किए जाएँगे। • वन क्षेत्रों में कंसट्रक्शन यार्ड नहीं होंगे। • विनिर्माण शेड्यूल इस प्रकार निर्धारित होगा कि शीत ऋतु में जब प्रवासी पक्षी क्षेत्र में आते हैं, तब भारी निर्माण कार्य न हो।
परिचालन चरण	
• यदि बहता तेल और विषैले रसायन दुर्घटनावश जलक्षेत्र में चले जाते हैं तो जलीय जंतुओं पर पड़ने वाला प्रभाव।	• दुर्घटना की स्थिति में तेल, ईंधन व विषैले रसायनों की तुरंत सफाई हेतु कार्रवाई तत्काल की जाएगी।
6 जैवविविधता	
योजना–डिजाइन चरण	
• मार्ग–पथ SGNP और तुंगारेश्वर वन्यजीव अभ्यारण्य के मध्य समानांतर सेक्शन में संरक्षित वन क्षेत्र से गुजरता है। • जिला ठाणे में समानांतर सेक्शन के साथ–साथ कुछ सुन्दर वन क्षेत्र	• ROW या लूप लेंथ (Look Length) के नक्शे में पुनर्विचार व समायोजन किया जाएगा ताकि संरक्षित वन क्षेत्र को होने वाली हानि न्यूनतम की जा सके। • राज्य के मुख्य वन्य जीवन वार्डन व अन्य मुख्य अधिकारियों से परामर्श के बाद वाइल्ड लाईफ प्रोटेक्शन ऐक्ट 1972 के तहत Clearance प्राप्त करना
विनिर्माण चरण	
• विनिर्माण गतिविधियों से कुछ संरक्षित प्रजातियों वाले सुन्दर वनों का प्रभावित होना। • SGNP के पास ROW में खतरे में पड़ी कुछ वनस्पति प्रजातियों की कटाई। • कुछ जल क्षेत्रों और आवासों जैसे पक्षियों के घोंसलों और प्रजनन केन्द्रों पर प्रभाव।	• FB से परामर्श करते हुए सुन्दर वन वनस्पति के नुकसान की क्षतिपूर्ति अन्य सुन्दर वन क्षेत्रों में पौधारोपण करके करना व क्षतिपूर्ति फीस का भुगतान। • FD से परामर्श करते हुए संरक्षित क्षेत्र के पास के वनों में क्षतिपूर्ति के रूप में खतरे में पड़ी प्रजातियों का पौधारोपण करना। • SGNP अधिकारियों से परामर्श करते हुए अन्दरूनी हिस्सों में वन्यजीवन को प्रोत्साहित करने हेतु वन क्षेत्र में जलाशयों का विकास करना।
परिचालन चरण	
• संरक्षित क्षेत्र में DFC ट्रेन के वन्य जीवों से सीधे–सीधे टकराने संबंधी प्रभाव।	• डिजाइन में कुछ आवश्यक निर्माण शामिल करना जैसे अंडरपास, पाइप कलवर्टस् (Pipe Culverts) और अन्य निर्माण जिससे वन्य जीवन सुरक्षित रूप से लइन पार कर सकें।
7 टोपोग्राफी एवं भू–विज्ञान	
विनिर्माण चरण	
• मैदान, पठारी व पर्वतीय क्षेत्रों से DFC मार्ग के गुजरने पर क्षेत्र के आद्योपोत (Overall) संतुलन पर पड़ने वाला प्रभाव। • चारागाह क्षेत्रों के अविवेकपूर्ण खुदाई के कारण भौगोलिक और भू–स्थैतिक असंतुलन। • मार्ग में आने वाले पहाड़ी क्षेत्रों में चट्टानों की गहरी खुदाई एवं कटाई के कारण चट्टान संधि के टूटने का खतरा बढ़ जाना।	• भौगोलिक विकृतीकरण से बचने के लिए केवल चिह्नित चारागाहों और खनन केन्द्रों का उपयोग करना। • केवल मान्य और अधिकृत्य वर्तमान खनन केन्द्रों से ही विनिर्माण सामग्री हासिल करना। • विस्तृती इंजीनियरिंग चरण में विशे ज्ञ इंजीनियरिंग जियोलाजिस्ट की सहायता से चट्टान संधि खतरों आदि का अध्ययन करना और साथ ही संवेदनशील पहाड़ी क्षेत्रों में कमजोर जोन्स की पहचान करना।
8 मृदा अपरदन	
विनिर्माण चरण	
• बॉध निर्माण में प्रयुक्त ढीली मिट्टी का बह जाना। • ROW के क्षेत्र में खुदाई भू–कटाव व भराव के कारण ऊपरी मृदा व वनस्पतीय परत के नष्ट होने से मृदा अपरदन बढ़ सकता है।	• मानसून के दिनों में खनन व भराव न करना। • बँध के ढलानों और अरक्षित पर्वतीय सतह को निम्न–लागत वाले बायो इंजिनियरिंग उत्पादों से रक्षित करना। • विनिर्माण क्षेत्र की उपरि मृदा का बाँध बनाने में पुनर्प्रयोग करना। • क्षेत्र की परिस्थितियों के ध्यानपूर्वक अध्ययन के बाद ही बाँध की उपरि मृदा में फ्लाई ऐश (Fly Ash) का उपयोग करना।
9 भूजल	
विनिर्माण चरण	
• भूजल के अनियमित प्रयोग से भूजल संसाधन की उप्लब्धलाता पर संकट गहरा सकता है।	• भूजल रेचार्जे को बढ़ावा देने हेतु कोम्प्रेहेंसिवे योजना बनाना • CGWA द्वारा निर्धारित भूजल स्त्रोत का उसकी उपलब्ध मात्रा तथा गुणवत्ता के अनुरूप विनिर्माण हेतु प्रयोग

संभावित प्रभाव	निवारक उपाय
10 हाइड्रोलिक परिस्थिति	
विनिर्माण चरण	
• निकास रास्तों के अवरुद्ध होने, गहरी खुदाई, भराव, भूमि समतल किए जाने व अन्य विनिर्माण गतिविधियों के कारण प्राकृतिक निकास और रिचार्ज परिस्थितियों का परियोजना क्षेत्र के पास प्रभावित होना।	• किसी सामग्री का प्राकृतिक निकास में डंप न किया जाना और इस प्रकार निकासी रास्तों में प्रवाह अवरुद्ध न करना। हर विनिर्माण स्थान व श्रमिक कैम्प में उपयुक्त निकासी का प्रबंध ताकि जल–जमाव या पानी के ठहरे हुए तालाबों से बचा जा सके।
परिचालन चरण	
• DFC मार्ग के साथ–साथ बनने वाले बाँध से स्थानीय निवासी का प्रभावित होना।	• DFC ट्रैक के दोनों ओर पर्याप्त क्षमता वाले नालों की व्यवस्था ताकि आवर्धित मल (run-off) की भी निकासी हो सके और इसे निकटवर्ती निकासी चैनल में छोड़ना। • समानांतर सेक्शन में वर्तमान निकास चैनल की क्षमता में वृद्धि करना।
11 भूमि अधिग्रहण और पुनर्स्थापन	
योजना–डिजाइन चरण	
• रोजगार व सम्पत्ति की हानि।	• ESIA के अतिरिक्त पुनर्वास एवं पुनर्स्थापना योजना (RRP) में। • क्षतिपूर्ति व सहायता पैकेज की योजना।
विनिर्माण चरण	
• वाहन परिवहन व पैदल (किसान) रास्तों का बाधित होना।	• वैकल्पिक मार्गों की पर्याप्त संकेतकों व निर्देशों सहित व्यवस्था।
12 जनसुरक्षा और विच्छेदन	
परिचालन चरण	
• DFC परिचालन के प्रारंभिक दौर में दुर्घटनाओं और गंभीर चोटों का खतरा। • DFC लाइन पर शेड रेल क्रॉसिंग तथा बंध (embankments) जनता की आवाजाही को बाधित कर सकते हैं।	• डिजाइन में पर्याप्त चेतावनी चिह्नो, अलार्म प्रणाली और आधुनिक रेलवे सुरक्षा उपायों को शामिल करना। • सभी वर्तमान रोड क्रॉसिंग और फुटपाथों पर RUB, ROB, पैदल यात्रियों हेतु सब–वे, रेल फ्लाइओवर और लेवल क्रॉसिंग की व्यवस्था।

नोट- विस्तृत ब्यौरा ड्राफ्ट ESIA रिपोर्ट में प्रस्तुस है

पर्यावरण प्रबंधन योजना

पर्यावरण प्रबंधन योजना (EMP) निवारक उपायों के उपयुक्त क्रियान्वयन हेतु योजना प्रस्तुत करती है ताकि योजना / डिजाइन, विनिर्माण और परिचालन चरणों के दौरान होने वाली विभिन्न परियोजना गतिविधियों के परिणामस्वरूप होने वाले प्रतिकूल प्रभावों को कम किया जा सके।

1. ड्राफ्ट ESIA रिपोर्ट में निम्नलिखित विशेष पर्यावरण प्रबंधन योजनाएँ प्रस्तावित हैं :

- हरित क्षेत्र विकास योजना।
- खनन क्षेत्रों के लिए प्रबंधन व पुनर्वास योजना।
- शोर एवं कंपन प्रबंधन योजना।
- ठोस अपशिष्ट प्रबंधन योजना।
- खतरनाक रसायनों के भंडारण, रख–रखाव एवं आपातकालीन अनुक्रिया हेतु योजना।
- निकासी प्रबन्धन योजना।
- विनिर्माण कैम्प में स्वस्थता–स्वच्छता व हाऊसकीपिंग हेतु योजना।
- व्यवसायिक स्वास्थ्य व सुरक्षा योजना।

2. निम्नलिखित पर्यावरणीय व सामाजिक मुद्दों पर चरणबद्ध पर्यावरणीय उपाय प्रस्तावित हैः

(क) योजना/डिजाइन चरण

- भूमि अधिग्रहण, वन क्षेत्र का विस्थापन, पेड़ों का संरक्षण, बॉरो (borrow) क्षेत्र, खनन क्षेत्र, विनिर्माण जल, अन्य विनिर्माण सामग्री हेतु स्थान, विनिर्माण मशीनरी रखने हेतु स्थान चिह्नित करना और और अनुपयुक्त सामग्री का निपटारा, विनिर्माण कैम्प, अस्थायी यार्ड का प्रबन्ध, क्रियान्वयन एजेंसी और ठेकेदारों हेतु दिशा–निर्धारण

(ख) विनिर्माण चरण

- स्थान खाली करना, विनिर्माण सामग्री उपलब्ध कराना, निर्माण कार्य (निकासी, सिल्टेशन (siltation), ढलान संरक्षण), जल प्रदूषण, वायु प्रदूषण, शोर, सुरक्षा, श्रमिक कैम्प।

(ग) परिचालन चरण

- विभिन्न निवारण उपायों के कार्यान्वयन गुणवत्ता (Operation Performance) व प्रदूषण का निरीक्षण।

पर्यावरणीय निरीक्षण योजना (EMoP)

पर्यावरणीय निरीक्षण योजना का उद्देश्य EMP के कारगर ढंग से क्रियान्वयन को सुनिश्चित करना है ताकि परियोजना के आद्योपांत (Overall) उद्देश्यों को अधिक दीर्घस्थायी और प्रभावकारी तौर पर हासिल किया जा सके। EMoP निवारण उपायों के प्रभावकारी क्रियान्वयन के परिणामों का निरीक्षण करता है और लक्षित जनता तक परियोजना के लाभों में वृद्धि हेतु अतिरिक्त सुझाव, यदि कोई हो तो, देता है। पर्यावरण निरीक्षण योजना में प्रदर्शन संकेतक (Performance indicators) और पर्यावरणीय निरीक्षण कार्यक्रम शामिल जो कि निम्नलिखित हैः

1. प्रदर्शन संकेतक (Performance Indicators)

- **योजना / डिजाइन चरण :** भूमि अधिग्रहण, डम्पिंग क्षेत्र, विनिर्माण श्रमिक कैम्प, बॉरो (Borrow) क्षेत्र, खनन केन्द्र।

- विनिर्माण चरण : वायु गुणवत्ता, शोर एवं कंपन स्तर, पानी की गुणवत्ता (भू–जल, नदी–जल, पेय–जल), अपशिष्ट पानी गुणवत्ता, वनस्पति परत, मृदा गुणवत्ता

- **परिचालन चरण :** पेड़ों की उत्तरजीविता–दर, बॉरो क्षेत्रों का पुनर्वास, संवेदी ग्राहकों (Sensetive Receptors) के लिए शोर अवरोधकों की उपयोगिता।

2 पर्यावरणीय निरीक्षण कार्यक्रम

इसमें शामिल है निरीक्षण किए जाने वाले मानदंड, निरीक्षण प्रणाली, निरीक्षण केन्द्रों की स्थिति, निरीक्षण की बारम्बारता और अवधि, क्रियान्वयन और परिवीक्षण का संस्थागत उत्तरदायित्व और अनुमानित लागत। कुछ पर्यावरणीय निरीक्षण हेतु प्रयोग किये जाने वाले कुछ विशेष मानदंड है।

- वायु गुणवत्ता, शोर का स्तर, जल उपयोगिता, पेड़ों व वनस्पति की हानि।

जनसंवाद बैठक (PCM's)

जन संवाद बैठकों का मुख्य उद्देश्य परियोजना प्रभावित लोगों और विभिन्न भागीदारों को प्रस्तावित हस्तक्षेप के संभावित परिणामों पर अपने विचार व्यक्त करने हेतु मंच उपलब्ध कराना है। ESIA के लिए PCM's दो चरणों में आयोजित की गई ताकि जनता के विचार व फीडबैक एकत्र किये जा सके और परियोजना व ESIA अध्ययन से जुड़ी सूचना प्रसारित की जा सके। PCM's सभी चौदह जिलों में जिलावार ढंग से आयोजित किए गए।

- PCM का प्रथम चरण नवम्बर 2010 में (महाराष्ट्र में फरवरी 2011 में अनुपूरक PCM) ESIA अध्ययन के प्रारंभिक दौर में पर्यावरणीय विषय क्षेत्र निर्धारण के समय आयोजित किया गया। परियोजना व ESIA अध्ययन के विषय क्षेत्र से जुड़ी सूचना जनता को प्रसारित की गई तथा टिप्पणीयाँ व मत ESIA अध्ययन में शामिल करने हेतु एकत्र किए गए।

- PCM का दूसरा चरण सितम्बर 2011 में DFC परियोजना से प्रत्यक्ष या परोक्ष रूप से प्रभावित होने वाले लोगों को मसौदा ESIA अध्ययन की खोजों और संभव निवारक उपायों के बारे में सूचना प्रसारित करने हेतु किया जाना है। इस चरण में जनता का फीडबैक और मत प्राप्त किए जाएंगे और उनकी टिप्पणीयों व प्रार्थनाओं को पर्यावरण व सामाजिक निवारक उपायों व प्रबंधन एवं निरीक्षण योजना में शामिल किया जाना है।

Public Consultation Meeting

PCM के प्रथम चरण में सामने आए कुछ मत व मुद्दे इस प्रकार हैः–

मुआवजा व रोज़गार अवसर विस्थापन व भूमि अधिग्रहण, पर्यावरण व स्वास्थ्य, निकासी, स्रोतों व सामुदायिक सुविधाओं तक पहुँच और सामाजिक–सांस्कृतिक पहलू / PCM के प्रथम चरण में परियोजना प्रभावित जनता, ग्राम पंचायतों के प्रतिनिधियों, जिला प्रशासन, राजस्व विभाग, वन अधिकारियों, स्थानीय महत्वपूर्ण व्यक्तियों (MPs, MLAs), NGO's और अन्य वरिष्ठ नागरिकों ने भाग लिया।

ESIA प्रक्रिया में सूचना प्रसारण

ESIA अध्ययन की खोज परियोजना प्रभावित जनता, भागीदारों और क्रियान्वयन प्राधिकारियों को प्रसारित की गई है ताकि परियोजना के सफलतापूर्वक पूरे होने हेतु रक्षात्मक उपाय किये जा सकें। सूचना प्रदान ESIA के दो चरणों में क्रियान्वित किया गया।

- सूचना प्रसारण का प्रथम चरण मसौदा ESIA तैयार करते समय आयोजित किया गया। अंग्रेजी भाषा में संपूर्ण मसौदा ESIA सभी DFCCIL कार्यालयों, DPC मार्ग में पड़ने वाले बड़े वर्तमान रेलवे स्टेशनों व जिला प्राधिकारियों तक पहुँचा और रख दिया गया है। इसके अतिरिक्त मसौदा ESIA का सारांश स्थानीय भाषाओं जैसे हिन्दी, गुजराती व मराठी में तैयार करके DFC मार्ग में पड़ने वाले परियोजना प्रभावित गाँवों में पहुँचा दिया गया है।
- सूचना प्रसारण का दूसरा चरण ESIA के फाइनल होते समय आयोजित किया गया। अंग्रेजी भाषा में संपूर्ण फाइनल ESIA सभी DFCCIL कार्यालयों, DPC मार्ग में पड़ने वाले बड़े वर्तमान रेलवे स्टेशनों व जिला प्राधिकारियों तक पहुँचा और रख दिया गया है। इसके अतिरिक्त फाइनल ESIA का सारांश स्थानीय भाषाओं जैसे हिन्दी, गुजराती व मराठी में तैयार करने DFC मार्ग में पड़ने वाले परियोजना प्रभावित गाँवों में पहुँचा दिया गया है।

ESIA मसौदा रिर्पोट की उपलब्धता और टिप्पणीयाँ जमा कराना

- मसौदा ESIA रिर्पाट जनता द्वारा समीक्षा हेतु निम्नलिखित स्थानों पर 17, सितम्बर 2011 से उपलब्ध है। DFCCIL मुख्यालय, संबंधित मुख्य परियोजना प्रबंधक प्रस्तानत DFC संरेख पर स्थित मुख्य रेलवे स्टेशन और संबंधति जिला कार्यालय।
- मसौदा ESIA का सांराक्ष DFC मार्ग में पड़ने वाले सभी प्रभावित गाँवों के सरपंच कार्शलयों स्थानीय भाषा में 17, सितम्बर 2011 से उपलब्ध है।
- टिप्पणीयाँ DFCCIL के मुख्यालय या संबंधित CPM कार्यालयों पर डाक द्वारा या dfc.phase2@gmail.com पर ई–मेल द्वारा 26 सितम्बर 2011 तक जमा की जा सकती है।

DFCCIL CPM कार्यालयों के पते

- डेडिकेटिड फ्रेट कॉरीडोर कारपोरेशन ऑफ इंडिया लिमिटेड (DFCCIL)
  (रेल मंत्रालय के अन्तर्गत) पाचवी मंजिल प्रगति मैदान मेट्रों स्टेशन बिल्डिंग कॉम्पलेक्स, नई दिल्ली–110001
  (Tel: 91-11-23454700; Fax: 91-11-23454701)
- CPM कार्यालय मुम्बई
  7वीं मंजिल, न्यू प्रशासनिक भवन, सेन्ट्रल रेलवे, डी॰एन॰ रोड, मुम्बई–400 001, महाराष्ट्र
  (Tel: 91-22-22634184; Fax: 91-22-22634184)
- CPM कार्यालय सूरत
  चौथी मंजिल, अरुण–1, इस्कॉन मॉल के पास, पीपलोड, सूरत–395 007, गुजरात
  (Tel: 91-261-2633250; Fax: 91-261-2633250)
- CPM कार्यालय वडोदरा
  13–14,17–18, पैनोरमा, कॉम्पलेक्स, तीसरी मंजिल, आर सी दत्त रोड, अलकापुरी, वडोदरा–395007 गुजरात
  (Tel: 91-265-2326024; Fax: 91-265-2326027)
- AGM कार्यालय रेवाड़ी से दादरी
  स्टार हाऊस, प्रथम मंजिल, ए–102, सैक्टर–4, नोएडा, उत्तर प्रदेश
  (Tel: 91-120-4309720; Fax: 91-120-4134554)

प्रमुख स्टेशन जहाँ ESIA मसौदा रिर्पोट की उपलब्ध है

- महाराष्ट्र
  पनवेल (जंक्शन), कल्याण (जंक्शन), वैतरणा (जंक्शन), केतवे रोड (जंक्शन), पालधर (जंक्शन), दहानू रोड (जंक्शन)
- गुजरात
  संजन (जंक्शन), वापी (जंक्शन), बलसाद (जंक्शन), बिलीमोड़ा (जंक्शन), नवसारी, सचिन (जंक्शन), कोसाम्बा (जंक्शन), भरूच (जंक्शन)
- हरियाणा, राजस्थान, उत्तर प्रदेश, दिल्ली
  रेवाड़ी (जंक्शन), फरीदाबाद, दादरी

રેલ્વેમંત્રાલય
ડી.એફ.સી.સી. ઓફ ઈન્ડિયા લીમીટેડ. **DFCCIL**

પશ્ચિમ માલવહન સમર્પિત રેલ્વે યોજના (ફેઝ-૨)
જવાહરલાલ નેહરુ પોર્ટ ટ્રસ્ટથી વડોદરા અને રેવાડી થી દાદરી

પર્યાવરણીય તથા સામાજિક અસરોના અંદાજનો અભ્યાસનો સાર. (ESIA Study)

સપ્ટેમ્બર ૨૦૧૧

આ તારણો પશ્ચિમ માલ વહન સમર્પિત રેલ્વેમાર્ગ (**DFC**) ફેઝ-૨ જે જે. એન.પી.ટી-વડોદરા અને રેવાડી-દિલ્હી વચ્ચે આવેલ છે તેના માટે કરવામાં આવેલ પર્યાવરણ તથા સામાજિક અસરોના અંદાજના અભ્યાસની મહત્વની બાબતો સમજાવે છે.
અમલકર્તા સંસ્થા તરીકે આ ઈ.એસ. આઈ.એ. ના સૂચિત તારણો ડી.એફ.સી.સી. આઈ.એલ. દ્વારા માલવહન સમર્પિત રેલ્વે માર્ગ યોજના અંતર્ગત માહિતી પ્રસારની દૃષ્ટિએ લોકોને આપવામાં આવે છે.

પરિયોજનાનો સાર

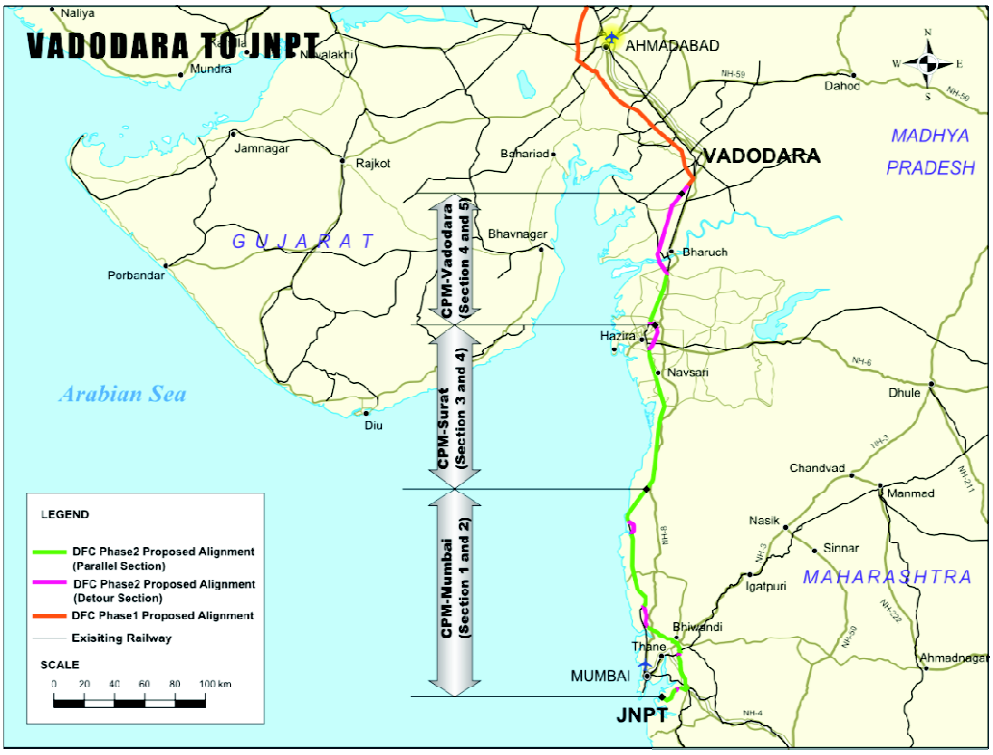
ડેડીકેટેડ ફ્રેઈટ કોરીડોર કોર્પોરેશન ઓફ ઈન્ડિયા (DFCCIL) એ ભારત સરકારના રેલ્વે મંત્રાલયના વહીવટી અંકુશ નીચે મુકાયેલ વિશિષ્ટ સેવા વ્યવસ્થા છે. રેલ્વે મંત્રાલય ડેડિકેટેડ, ફ્રેઈટ કોરીડોર કોર્પોરેશન ઓફ ઈન્ડિયા લિમીટેડ (DFCCIL) દ્વારા એક ચોક્કસ હેતુઓ માટેના વાહતુક(SPV), કોમ્પ્યૂટર સંચાલિત મલ્ટી મોડલ હાઈ એક્ષલ માલ વહન સમર્પિત રેલ્વે માર્ગ પરિયોજન પશ્ચિમ DFC ના ઉપક્રમે દીલ્હી અને મુંબઈ વચ્ચે અમલમાં મુકાશે. મુખ્ય શહેરો અને તેની આસપાસના પ્રદેશો વચ્ચે વધતાં જતાં માલ સામાનની હેરફેર ને જોતાં સુવિકસીત ટેકનોલોજી યુક્ત DFC પરિયોજનાના પરિણામે રસ્તા પરના માલવહન ટ્રાન્સપોર્ટની જગ્યાએ ઓછી કાર્બનતીવ્રતા ધરાવતા રેલ્વે ટ્રાન્સપોર્ટ દ્વારા આ ક્ષેત્રમાં એક મોટું પરિવર્તન આવશે અને તેમાં રેલ્વે દ્વારા થતા જત્થાબંધ માલસામાનની હેરફેરમાં પણ સ્વાભાવિક રીતે ઊર્જા કાર્યક્ષમતા વધશે.

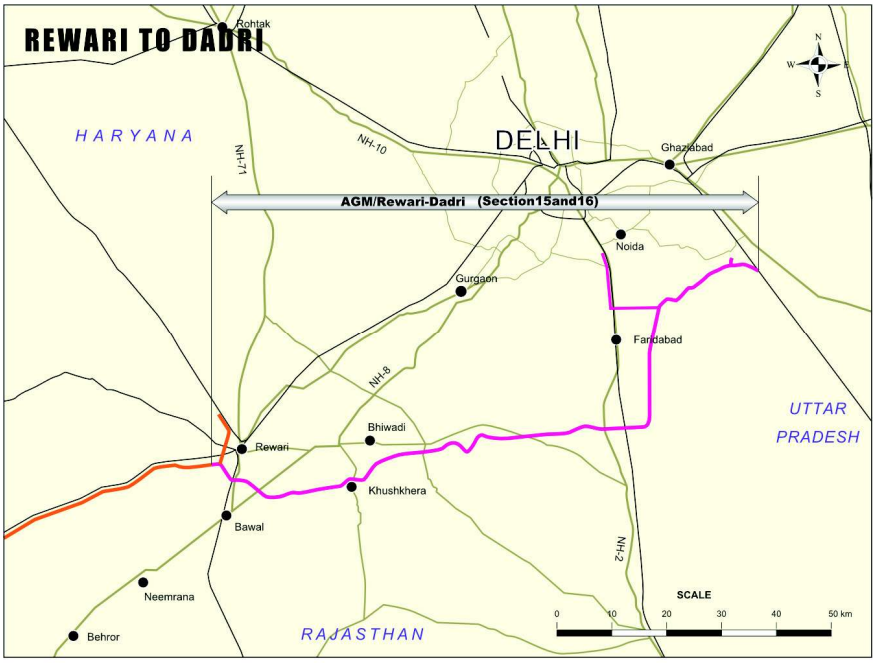
પશ્ચિમ DFC ની ૨૦૧૩-૧૪ ના નાણાંકીય વર્ષમાં ૩૭૭ લાખ ટન માલ સામાનની હેરફેર કરી શકે તે રીતે ડીઝાઈન કરવામાં આવી છે. જે ૨૦૩૩-૩૫ સુધીમાં ૧૪૦૪ લાખ ટન સુધી પહોંચશે. આટલો-મોટા રેલ માળખાની રચના સ્વતંત્ર ભારતમાં અપૂર્વ કહી શકાય તેવી છે. ઔદ્યોગિક વસાહતો,લોજિસ્ટીક પાર્ક, અન્ય આર્થિક વેપારી મથકો રેલ લાઈનની બંને તરફ વિકસાવવામાં આવશે જે દુનિયાના અત્યારના વિકસતા દેશોમાં બીજું સ્થાન ધરાવે છે,તેને આર્થિક ટેકો પૂરો પાડશે.

પશ્ચિમ DFC ના ટ્રાફિકનો બે તરફી પ્રવાહ હશે-એક બંને ટર્મિનલ ની વચ્ચે મુંબઈના જવાહરલાલ નહેરુ પોર્ટટ્રસ્ટ (JNPT) થી ઉત્તર પ્રદેશના તુઘલખાબાદથી લઈને દીલ્હીના (TKD) દાદરી સુધી. અને બીજો જે તે જંક્શન સ્ટેશનોએથી તેની આસપાસનો વિસ્તાર.DFC પરિયોજનાના અમલીકરણથી ભારતના વાહન વ્યવહાર ક્ષેત્રથી જે કાર્બનનો ફેલાવો થાય છે તેની તીવ્રતામાં ઘટાડો થશે.

પરિયોજનાનો વિસ્તાર

પશ્ચિમ માર્ગને બે તબક્કામાં વહેંચવામાં આવ્યો છે. પહેલો તબક્કો વડોદરા અને રેવાડી વચ્ચેના માર્ગને અને બીજો તબક્કો મુંબઈના JNPT થી વડોદરા અને રેવાડીથી દાદરી તેમજ ફરીદાબાદથી તુદાલખાબાદની નજીક DFC એક માર્ગી લાઈનને આવરી લે છે. આ અભ્યાસ DFC પરિયોજનાના બીજા તબક્કાને લગતો છે. પરિયોજના અસરગ્રસ્ત વિસ્તાર, અસર પામતા ગામોની સંખ્યા અને રેલ્વે માર્ગની લંબાઈ કોઠામાં દર્શાવેલી છે.





એલાઈનમેન્ટ લાઈનના લગભગ ૭૦% જે. એન. પી. ટી થી વડોદરા વચ્ચેની લંબાઈમાં વર્તમાન ભારતીય રેલ્વેને સમાંતર રાખવામાં આવેલ છે. તેમ છતાં, રેવાડી થી દાદરી વિસ્તારમાં નવું જ એલાઈનમેન્ટ છે. તુઘલકાબાદ આઈ.સી.ડી. ને જોડવા માટે, એકમાર્ગી ટી.કે.ડી. લાઈન અંશતઃ ડીટુર અને અંશતઃ દિલ્હી-મથુરાની હાલની લાઈનને સમાંતર રાખેલ છે. યોજના હાલ આયોજનના તબક્કે છે. ૨૦૧૧ના અંત સુધીમાં વિગતે ડિઝાઈન થશે. ૨૦૧૨ થી ૨૦૧૬ના ૪-૫ વર્ષના ગાળામાં યોજનાના અમલીકરણ-બાંધકામનું કામ ગોઠવાશે.

વિભાગ	રાજ્ય	જીલ્લાઓ	ગામો	એલાઈનમેન્ટની લંબાઈ
જે.એન.પી.ટી-વડોદરા	મહારાષ્ટ્ર	થાણે,રાયગઢ	133	420 કિ.મી.
રેવાડી દાદરા (ટીકેડી લાઈન સાથે)	ગુજરાત	વડોદરા,ભરુચ, સૂરત નવસારી, વલસાડ	133	
	રાજસ્થાન	અલવર	13	145 કિ.મી. 19 કિ.મી.ની ટીકેડી લાઈન સાથે
	હરિયાણા	ફરીદાબાદ, ગુરગાંવ, રેવાડી, પલવાલ,મેવાટ	83	
	ઉમરપ્રદેશ	ગૌતમબુદ્ધ નગર	11	
	દિલ્હી	તુગલકાબાદ	-	

એલાઈનમેન્ટ અને અન્ય સંબંધિત સગવડોના મહત્ત્વના મુદ્દા

ફરીદાબાદ-ટીકેડી લાઈન બાદ કરતાં સમગ્ર પ્રોજેક્ટમાં ડબલ રેલ્વેમાર્ગ થશે જેમાં આધુનિક સિગ્નલ સીસ્ટમ સાથે વિદ્યુતિકરણ હશે જે ૨૫ ટન જેટલા એક્ષલ લોડથી ૧૦૦ કિલોમીટર કલાકની ઝડપે માલવહન ટ્રેનો અવર-જવર કરશે. રેલ્વે પર પૂલ અને રેલ્વે નીચેના રસ્તા તમામ વર્તમાન રેલ્વે રોડ ક્રોસિંગ પાસે વિચારાયા છે જેથી ટ્રાફિકમાં કોઈ વિલંબ થશે નહીં. એલાઈનમેન્ટનો મોટો ભાગ સુંદર લેન્ડસ્કેપ તથા એમ્બેકમેન્ટ ધરાવશે.
મોટી વસાહતો, ભારે ડિપ્ડ-બિલ્ટ-અપ એરિયા, ધાતુખાણક્ષેત્ર, ભૂપૃષ્ટ સંરચનાની મર્યાદા, ડિઝાઈન વગેરે જોતાં ડીટુર માર્ગ રખાયો છે. જેથી વર્તમાન સુવિધા તથા પર્યાવરણની દૃષ્ટિએ સંવેદનશીલ ક્ષેત્રોને અસર ન થાય અને ઓછામાં ઓછી પર્યાવરણીય કે સામાજીક અસર થાય. આયોજન થયેલ ડીટુર કોઠામાં બતાવેલ છે.

ડીટુર નું નામ	*ક્યાં રેલ્વે સ્ટેશ્ન વચ્ચે*	*અંદાજિત લંબાઈ કિ.મી*
કુંડેવાહલ ડીટુર.	જસાઈ અને પનવેલ	૩
પનવેલ લુપ	દાપોલી અને કાલમબોલી	૩
દાતીવલી (દિવા) ડીટુર.	તીલજે અને કોપર રોડ.	૫
વસાઈ ડીટુર.	જૂચંદ્રા અને વૈતરણા.	૧૮
દહાણું ડીટુર.	દહાણું રોડ.	૧૨
સુરત ડીટુર.	સચીન અને ગોઠાણગામ.	૨૧
સાંજલી-નડિયાદ ડીટુર.	વરેડિયા અને મકરપુરા.	૬૦
રેવાડી-દાદરી (મુખ્યલાઈન)	રેવાડીથી પીરથલા અને પીરથલાથી દાદરી	૧૨૬
રેવાડી-દાદરી (TKD લાઈન)	ફરીદાબાદ અને તુઘલખાબાદ	૧૧
	કુલ	૨૫૮

સરેરાશ રાઈટ ઓફ વે (ROW) માટે ની પહોળાઈ ડીટુર રેલ્વે માર્ગ માટે ૬૦ મીટર તથા સમાંતર રેલ્વેમાર્ગ માટે ૩૫ મી. જોઈએ. વડોદરા વિભાગને કુલ ત્રણ જંક્શન સ્ટેશનો, નવ ક્રોસિંગ સ્ટેશનો અને ૧૩ અગત્યના બ્રીજ હશે જ્યારે રેવાડી-દાદરી વિભાગને ત્રણ જંક્શન સ્ટેશન બે ક્રોસિંગ સ્ટેશન અને બે અગત્યના બ્રીજ હશે.

પરિયોજનાની પર્યાવરણીય અને સામાજિક અસરોની ચકાસણીના અભ્યાસનો અહેવાલ.

DFC પરિયોજનાના વિસ્તાર, સ્વભાવ અને પ્રવૃત્તિના વ્યાપને ધ્યાનમાં લેતાં વિસ્તૃત અંતિમ-છેવટના એલાઈનમેન્ટ પર પર્યાવરણીય અને સામાજિક અસરોની ચકાસણીનો અભ્યાસ હાથ ધરવામાં આવ્યો કે જેથી કરીને પરિયોજનાના પ્લાનિંગ અને ડિઝાઈનના પ્રાથમિક તબક્કામાં જ પરિયોજનાને લગતા વિવિધ ઘટકોમાં પર્યાવરણીય અને સામાજિક મુદ્દાઓ અને મહત્ત્વની બાબતોનો સમાવેશ કરી શકાય. .

River Monitoring at Bridge Alignment

પરિણામે MOR/DFCCIL એ "JICA ના પર્યાવરણીય અને સામાજિક વિચારણા-૨૦૧૦" ના માર્ગ દર્શન અનુસાર DFC ના બીજા તબક્કાની વેસ્ટર્ન કોરિડોરની પરિયોજના માટે ESIA રિપોર્ટ તૈયાર કર્યો. ESIA અભ્યાસમાં પદૂષણ નિયંત્રણ અભ્યાસ, કુદરતી પર્યાવરણ અભ્યાસ, સામાજિક પર્યાવરણ અભ્યાસ, લોક સંવાદો, અસરોની ઓળખ અને મૂલવણી, નિવારણનાં પગલાં, પર્યાવરણીય અને સામાજિક વ્યવસ્થાપનનું આયોજન (EMP) તથા દેખરેખ યોજનાનો (EMOP) સમાવેશ કરવામાં આવ્યો.

૨૦૧૦-૧૧ ની સાલમાં સૂચિત રલ્વે માર્ગ આસપાસ વિવિધ પર્યાવરણીય અને સામાજિક માપદંડોના આધારે અભ્યાસ કરવામાં આવેલો જેમાં નદીનો જળ પ્રવાહ, કુદરતી વાતાવરણ, જમીન વપરાશ, સંવેદનશીલ ગ્રાહકો, ઘોંઘાટ અને કંપન, ભૂભૌગોલિક વિસ્તાર, પાયાની સામાજિક સ્થિતિ વગેરે સત્તાવાળાઓ પાસેથી તથા વિભાગો દ્વારા મેળવાયેલી માહિતીના આધારે પરિયોજનાની વિવિધ પ્રદ્ધતિઓના કારણે થનારી સંભવિત અસર અંગે ઓળખ, માપન અને નિવારણના પગલાનો અંદાજ કરવામાં આવ્યો. અભ્યાસના પ્રારંભે છ રાજ્યોના જુદા જુદા જિલ્લાઓમાં અસરગ્રસ્ત વસ્તીના અભિપ્રાયો નોંધવા માટે લોકસંવાદ બેઠકોનું આયોજન કરવામાં આવ્યું હતું.

Noise measurement survey near parallel route and surrounding land use

પર્યાવરણીય અને સામાજીક અસરોના અંદાજના અભ્યાસના સર્વેક્ષણ માટેના મુખ્ય માપદંડો

DFC પરિયોજનાને ટકાઉ અને અસરકારક રીતે અમલી બનાવવા માટે નીચેના કોઠામાં ઉપરોક્ત અભ્યાસના મુખ્ય માપદંડો આપેલા છે. સંબંધિત પર્યાવરણીય અને સામાજીક માપદંડોના પરિણામોનું વિગતવાર પૃથ્થકરણ સૂચિત ઈ. એસ.આઈ.એ. અહેવાલમાં આપેલ છે.

વિભાગ	મુખ્ય સર્વક્ષણ માપદંડો
જવાહરલાલ નહેરુ પોર્ટ ટ્રસ્ટથી વડોદરા	૧. મહારાષ્ટ્રના થાણે જીલ્લાની ઉત્તર વૈતરણા,દક્ષિણ વૈતરણા અને ઉલ્હાસ નદીઓ. ૨. દમણ ગંગા, પાર નદી અને ઔરંગા નદી- વલસાડ જીલ્લો ગુજરાત. ૩. દક્ષિણ કાવેરી, ઉત્તર કાવેરી, અંબિકા, ઉત્તર પૂર્ણા અને મીંઢોલા નદી-નવસારી, ગુજરાત ૪. તાપી-સૂરત-ગુજરાત. ૫. નર્મદા-ભરુચ-ગુજરાત ૬. અંદાજે ૨૦ જેટલા જંગલ લઘુક્ષેત્રો, ભીવંડી, વસઈ, પાલઘર અને દહાણુ તાલુકા, થાણે જીલ્લો, સંપાદિત ૩૨ હેક્ટર જમીનમાં, ૭. થાણે જીલ્લાના બે મેન્ગ્રૂવ્સ વિસ્તાર ૮. સંજય ગાંધી રાષ્ટ્રીય ઉદ્યાન (**SGNP**)અને તુંગરેશ્વર વન્ય જીવન અભયારણ વચ્ચેનો આરક્ષિત વન વિસ્તાર. જીલ્લા થાણે. ૯. મહારાષ્ટ્રના થાણે જીલ્લાનો કાયદા દ્વારા આરક્ષિત પર્યાવરણીય દૃષ્ટિએ સંવેદનશીલ દહાણુ વિસ્તાર. ૧૦. ધ્વનિ અને કંપની દૃષ્ટિએ પનવેલ, પાલઘર, બોઈસર, વાપી, વલસાડ, અમલસાડ અને કીમ સ્ટેશનો ૧૧. વસઈ ડીટુરનું બોગદું ૧૨. ડી.એફ.સી. એલાઈનમેન્ટની મધ્યરેખાથી ૬૦ થી ૧૦૦ મીટર અંતરે આવેલ સંવેદનશીલ સ્થાનો તથા જમીન વપરાશ ૧૩. સમાજિક-આર્થિક સર્વેક્ષણ અને લોક સંવાદ બેઠકો માટે એલાઈનમેન્ટની આસપાસ આવેલા ૨૬૬ ગામો.
રેવાડી દાદરી વિભાગ	૧.યમુના અને હિંડોન નદીઓ-ગૌતમબુદ્ધ નગર, ઉત્તર પ્રદેશ. ૨. ગૌતમબુદ્ધ નગર જીલ્લાનો ગુલેસ્તાનપુર આરક્ષિત વનનો ૧૦ હેક્ટર જેટલો સંપાદિત વનવિસ્તાર. ૩. અરવલ્લીની પર્વતમાળાનો ભૂ-ભૌગોલિકરીતે કાયદાકીય દૃષ્ટિએ આરક્ષિત રાજસ્થાનના અલ્વર જીલ્લાનો તથા હરિયાણાના મેવાટ જીલ્લાનો વિસ્તાર. ૪. ધ્વનિ અને કંપન અધ્યયન માટે અસાઓટી સ્ટેશન ૫. ડી.એફ.સી. એલાઈનમેન્ટની મધ્યરેખાથી ૬૦ થી ૧૦૦ મીટર અંતરે આવેલ સંવેદનશીલ સ્થાનો તથા જમીન વપરાશ. ૬. સામાજિક-આર્થિક સર્વેક્ષણ અને લોકસંવાદ બેઠકો માટે એલાઈનમેન્ટની આસપાસ આવેલાં ૧૦૭ ગામો.

સંભવિત અસરો અને નિવારક પગલાઓ

ઈ.એસ.આઈ. એ સર્વક્ષણના પરિણામો અને સંબંધિત વિશ્લેષણ, વિવિધ સંભવિત પર્યાવરણીય અને સામાજિક અસરો જે ડી. એફ. સી. પ્રોજેક્ટ સંબંધિત પ્રવૃત્તિઓને પરિણામે થનાર છે તે ઓળખી કાઢેલ છે. આ સામજિક અને પર્યાવરણીય અસરોને ઘટાડવા માટે કે લગભગ નિવારવા માટે જે ચોક્કસ પગલા સૂચવાયેલા છે તે નીચે પ્રમાણે દર્શાવેલા છે.

સંભવિત અસરો અને નિવારક પગલાની મુખ્ય યાદી

સંભવિત અસર	નિવારક પગલાંઓ
૧ ઘોંઘાટ અને કંપન	
બાંધકામ તબક્કે	
હળવી તેમ જ ભારે બાંધકામ મશીનરી તથા વાહનોની ગતિવિધીને કારણે થતો ઘોંઘાટ અને કંપન	મહત્વના બાંધકામ ઉપકરણો અને મશીનોમાં ધ્વનિ નિયંત્રકો લગાડાશે. રહેઠાણ વિસ્તાર નજીક માત્ર દિવસે બાંધકામ પ્રવૃત્તિ થશે. વધુ ઘોંઘાટથી અસર પામનાર સંભવિત બાંધકામ કર્મચારીઓને કાનમાં પૂમડાં વગેરે રક્ષણાત્મક સાધનો અપાશે.
કાર્યાન્વયન તબક્કે	
ટ્રેનની આવજા તથા અન્ય પ્રવૃત્તિને કારણે થતા ઘોંઘાટ અને કંપન	લાંબા વેલ્ડેડ પાટાઓનો ઉપયોગ ઘોંઘાટ અને કંપન ઉત્પાદન ઘટાડનાર નવી ટેકનોલોજીનો ઉપયોગ માળાખાઓ તથા સંચલનમાં થશે
૨ જળ-પ્રદૂષણ	
બાંધકામ તબક્કે	
બાંધકામ પ્રવૃત્તિ દરમિયાન તરતી અશુદ્ધિઓ સાથેનું નકામું પાણી મજૂર વસાહત સ્થળેથી અને બાંધકામ સ્થળેથી નીકળતું ગંદુપાણી તથા કદડો.	
૩ હવા-પ્રદૂષણ	
બાંધકામ તબક્કે વાહનોની અવર જવર તથા બાંધકામ ઉપકરણો દ્વારા ઉત્સર્જીત ધૂમાડો તથા ધૂળને કારણે મુખ્યત્વે હવાની ગુણવત્તામાં થતો બગાડ. એલાઈનમેન્ટના માર્ગ પરના કેટલાક સ્થળો તીવ્ર પ્રદૂષિત વિસ્તાર તરીકે જાહેર થયેલા છે	યોગ્ય ગટર વ્યવસ્થા તથા ઠારણકૂંડી દ્વારા ગંદાપાણીની ગુણવત્તા પર નિયંત્રણ રખાશે. જળાશયો પાસે કાંપ રોધકની વ્યવસ્થા થશે. પાણીના પ્રદૂષણથી થતા આરોગ્ય વિષયક પ્રશ્નો નિવારવા બાંધકામ સ્થળે ઉચિત શોચાલય વ્યવસ્થા થશે.
૪ વનસ્પતિ સૃષ્ટિ	
આયોજન ડિઝાઈન તબક્કે	
એલાઈનમેન્ટ કેટલાક થાણે જીલ્લાના લઘુ વનક્ષેત્રો અને ગૌતમબુદ્ધ નગર જીલ્લાના એક લઘુવન ક્ષેત્રમાંથી પસાર થાય છે.	વિકલ્પોની ખોજ તથા વનવિભાગની જમીનનો લઘુત્તમ ઉપયોગ થાય તેની ડિઝાઈનમાં કાળજી વનવિભાગ સાથે પરામર્શ કર્યા બાદ વનસંરક્ષણ અધિનિયમ ૧૯૮૦ હેઠળ મંજુરી મેળવવાની કાર્યવાહી કરાઈ છે. મંજૂરી મળતાં વન વિભાગની જરૂરી તમામ શરતોનું પાલન કરાશે.
બાંધકામ તબક્કે	
એલાઈનમેન્ટને સમાંતર તથા પૂલોના નિર્માણ માટે કપાતાં વૃક્ષોને કારણે થતું નુકશાન. ઉડતી ધૂળના જમાવના કારણે આસપાસની વનસ્પતિના પાંદડાઓ થી થતાં પ્રકાશસંશ્લેષણમાં હંગામી ઘટાડો થઈ શકે.	અમર્યાદ અને વિવેકહિન વૃક્ષવિચ્છેદને ટાળવા માટે સંબંધિત વનવિભાગના પ્રતિનિધિઓ સાથે રહી સંયુક્ત જાતો પસંદ કરીને યોગ્ય વળતરરુપ વૃક્ષોરોપણ દા.ત. દહાણુના સંવેદનશીલ વિસ્તાર માટે પ્રત્યેક કપાયેલ વૃક્ષ દીઠ ૧૦ વૃક્ષ ફળ ઉત્પાદન, લાકડુ અને અન્ય કિમતના પ્રમાણમાં ખાનગી જમીન પરના વૃક્ષોનું વળતર નિયમિત અને યોગ્ય જળ-છંટકાવ દ્વારા ધૂળ નિયંત્રણ
કાર્યાન્વયન તબક્કે	
વૃક્ષોરોપણ પછીની કાળજીનો અભાવ તથા ગેરકાયદે વૃક્ષ-છેદન	રસ્તા ઉપરના પૂલોની રોપાઓની યોગ્ય કાળજી લેવાશે તથા ગેરકાયદે વૃક્ષો કપાવા નહીં દેવાય.

૫ પ્રાણીસૃષ્ટિ	
બાંધકામ તબક્કે	
સ્થાળચર તથા વિહંગ બંને પ્રકારના જીવો બાંધકામ મશીનો તથા ઉપકરણોથી થતા ઘોંઘાટ અને કંપનથી અસર પામશે. પંખીમાળાઓ, સંવનન ક્ષેત્રો નવા એલાઈનમેન્ટ માર્ગે નાશ પામશે.	બધા મુખ્ય બાંધકામ ઉપકરણો તથા પશીનો પર ધ્વનિ નિયંત્રણે લગાવવામાં આવશે. વન વિસ્તારમાં બાંધકામ વાડો નહીં રખાય. સ્થળાંતરિત પક્ષીઓ વસતાં હોય તેવા શિયાળાના સમયે ભારે બાંધકામ પ્રવૃત્તિ વન વિભાગ નજીક ન કરવી પડે તે રીતે બાંધકામ સમયપત્રક તૈયાર કરાશે.
કાર્યાન્વયન તબક્કે.	
અકસ્માતથી ઝેરી રસાયણો કે ખનિજ તેલ ઢોળાઈ જવાથી જળચર સૃષ્ટિ પર તથા જળારાયો પર અસર.	અકસ્માતના કિસ્સામાં ઝેરી રસાયણો, બળતણ કે ખનિજ તેલોને તાત્કાલિક સાફ કરવા માટેની કાર્યવાહી કરવામાં આવશે.
૬ જૈવિક વિવિધતા	
આયોજન ડિઝાઈન તબક્કે	
એલાઈનમેન્ટ સંગાંનેપા તથા તુંગરેશ્વર વન્ય જીવન અભયારણ વચ્ચે આરક્ષિત વનવિસ્તારમાંથી પસાર થાય છે. થાણે જીલ્લામાં કેટલાક મેન્ગ્રૂવ વિસ્તારને સમાંતર છે	આરક્ષિત વન વિસ્તારની જમીનનું નુકશાન ઘટાડવા માટે ડિઝાઈન પૂનર્વિચાર, પૂલ ઉપરના રસ્તાઓમાં ફેરફાર કે લૂપ લેન્થ કરાયેલ છે. વન્યજીવન રક્ષણ અધિનિયમ ૧૯૭૨ હેઠળ વનવિભાગના ચીફ વાઈલ્ડલાઈફ વોર્ડન તથા અન્ય મુખ્ય અધિકારીઓ સાથે યોગ્ય પરામશે કર્યા બાદ મંજુરી કાર્યવાહી થઈ રહી છે. મેન્ગ્રૂવ વિસ્તાર માટે વન સંરક્ષણ અધિનિયમ ૧૯૮૦ હેઠળ મંજૂરી પ્રક્રિયા તમામ જરૂરી શરતોનું પાલન
બાંધકામ તબક્કે	
સંરક્ષણ માટે ચિંતા કરવા યોગ્ય જાતો ધરાવતા મેન્ગ્રૂવ વિસ્તારને બાંધકામ પ્રવૃત્તિથી અસર. એસ.જી.એન.પી. પાસેના પૂલ રસ્તાના કારણે જોખમમાં મુકાયેલ વનસ્પતિ કપાશે પક્ષીઓના માળાઓ, સંવનન ક્ષેત્રો તથા કેટલાક જળાશયોને અસર	વનવિભાગ સાથે વિનિમય કર્યા બાદ વળતરની રકમ ચુકવીને વળતરરૂપ વૃક્ષરોપણ અન્ય મેન્ગ્રૂવ સ્થળોએ કરાશે. વનવિભાગ સાથે ચર્ચા કર્યા બાદ નજીકના પાંખા થયેલ વનવિસ્તારમાં જોખમી સ્થિતિમાં મુકાયેલ જાતોનું વળતરરૂપ પ્લાન્ટેશન કરાશે. એસ.જી. એન. પી. સત્તાવાળાઓ સાથે પરામર્શ કરીને વન્ય જીવનની ગતિવિધિને પ્રોત્સાહન આપવા જળાશયોનો વિકાસ.
કાર્યન્વયન તબક્કે	
અરક્ષિત વિસ્તારની પાસે ડી.એફ.સી ટ્રેઈનોની વન્યસૃષ્ટિ સાથેની અથડામણથી થતી સીધી અસર	વન્યસૃષ્ટિ એક બાજુથી બીજી તરફ સલામત રીતે જઈ શકે તે માટે યોગ્ય નીચેથી પસાર થવાના રસ્તા, પાઈપ કે અન્ય યોગ્ય ડિઝાઈન ધરાવતી સંરચનાઓ કરવી.
૭. ભૂપૃષ્ઠ રચના અને ભૂસ્તર	
બાંધકામ તબક્કે	
મેદાનો, ઢોળાવ તથા પર્વતિય વિસ્તાર પરથી પસાર થતા ડી.એફ.સી. એલાઈનમેન્ટને લીધે વિસ્તારના ભૃપૃષ્ઠ પર થતી અસર અમર્યાદ ઊંડા ખાડાઓ કરવાના લીધે વિખેરાઈ જતી ભૂપૃષ્ઠ સંરચના તથા ભૂસ્તર રચનામાં વિક્ષેપ એલાઈનમેન્ટ વિસ્તારમાં ખડકો કાપવા તથા તોડવાના લીધે ખડકોના સાંધામાં તિરાડો થવાના કારણે અકસ્માન સંભાવના	ભૂપૃષ્ઠ રચનામાં મોટી તોડફોડ ન થાય તે માટે માત્ર યોગ્ય સ્થળે જ ઊંડા ખાડાઓ વર્તમાનમાં અસ્તિત્વ ધરાવતી માન્ય-લાઈસન્સ ધારક ખાણોમાંથી જ બાંધકામ સામગ્રીની આયાત ખડકોની તિરાડોથી થતા અકસ્માતો અંગેની સંભાવનાનો અભ્યાસ કરવા માટે ઈજનેરી ભૂસ્તરશાસ્ત્રીઓની સેવા લેવાશે અને વિગતે ઈજનેરી કામના અમલીકરણ વખતે નબળા દર્શાવાયેલ વિસ્તારોના ભૂપૃષ્ઠ ખડકોની કાળજી લેવાશે.

૮ જમીન ક્ષરણ - બાંધકામ તબક્કે	
એમ્બેકમેન્ટના બાંધકામ વખતે થયેલ છુટ્ટી જમીન કાંપ ધોવાણમાં પરિણામે અમર્યાદ ખુલ્લા ખાડોઓને કારણે જમીનની ફળદ્રુપતાને નુકશાન થશે રસ્તા પરના પૂલ બનાવતી વખતે થયેલ ખનન, જમીન કાંપ, પૂરણ વગેરે પ્રવૃત્તિને કારણે ઉપરની જમીન તથા હરિતઆચ્છાદનને નુકશાન.	ચોમાસાના સમયમાં ખોદકામ-પૂરણીની પ્રવૃત્તિ ટાળવામાં આવશે. ઓછી ખર્ચાળ જૈવિક-ઈજનેરી વનસ્પતિ દ્વારા એમ્બેકમેન્ટના ઢાળ અને ખુલ્લી પડેલ ટેકરી વિસ્તારનું રક્ષણ બાંધકામ ક્ષેત્રની છુટી પડેલી જમીનનો એમ્બેકમેન્ટ બનાવવાના કાર્યમાં પુનઃ ઉપયોગ ઊંડા ખાડાના ખોદકામ વખતે છુટી પડેલી ઉપરની ફળદ્રુપ માટીને કામ પુરું થયે ફરી યથાસ્થાને મુકાશે. સ્થળ પરની પરિસ્થિતિનો કાળજીપૂર્વક અભ્યાસ કર્યા બાદ ઉપરની ફળદ્રુપ માટીના સ્થાને ફલાય એશના એમ્બેકમેન્ટ માટે ઉપયોગની સંભાવના વિચારાશે.
૯ ભૂગર્ભ જળ	
બાંધકામ તબક્કો	
વિસ્તારના ભૂગર્ભ જળ પર બાંધકામ તબક્કા દરમિયાન થનાર ભૂગર્ભજળના વપરાશને લીધે વધુ દબાણ સર્જાશે.	પુનઃ સ્થાપન વ્યવસ્થા દ્વારા જળ સંચય કરવા માટે સર્વગ્રાહી આયોજન થશે . સી-જી ડબલ્યુએ દ્વારા નિશ્ચિત કરાયેલા ભૂગર્ભ સ્રોતનો જ ઉપયોગ બાંધકામ વખતે યોગ્ય માત્રા તથા ગુણવત્તાને ધ્યાનમાં લઈ કરાશે.
૧૦ ભૂ-ભૌગોલિક સ્થિતિ	
બાંધકામ તબક્કો	
પ્રોજેક્ટ વિસ્તાર નજીકના કુદરતી જળનિકાલ તથા જળપુનર્ભરણ વ્યવસ્થાને બાંધકામ દરમિયાન થતી ખોદકામ, પૂરણી, સમતોલન, ખડક કપાત વગેરે ૧ પ્રવૃત્તિઓને કારણે થતી અસર.	કુદરતી જળનિકાલ માર્ગોને અવરોધ પહોંચે તેવી રીતે કોઈપણ બાંધકામ સામગ્રીનો સંગ્રહ નિકાલ નહીં થાય. ખીણવિસ્તારમાં ભરણી કરીને બનાવેલ એમ્લેકમેન્ટને સ્થાને ડી.એફસી. ટ્રેકને ઊંચી ધારેથી લઈ જવાના વિકલ્પ પર વિચારણા જેથી હયાત ભૂગર્ભ કે સપાટીના જળપ્રવાહને અસર ન થાય. દરેક બાંધકામ ક્ષેત્ર અને મજૂર વસાહત પાસે જળ-જમાવ કે જળબંધીયારપણું સર્જાય તેવી પરિસ્થિતિ ટાળવા યોગ્ય જળનિકાલ વ્યવસ્થા.
કાર્યાન્વયન તબક્કે	
ડી.એફ.સી. એલાઈનમેન્ટના એમ્બેકમેન્ટને લીધે સ્થાનિક કાંસ વ્યવસ્થાને અસર	ડી.એફ.સી. ટ્રેકની બંને તરફ સમાંતરપણે ઝડપી જળનિકાલ થાય અને વધારાના જળવેગને નજીકની કાંસ વ્યવસ્થામાંથી જવા દેવા યોગ્ય વ્યવસ્થા કરાશે . સમાંતર જળનિકાલ વ્યવસ્થાની સાથે કાટખૂણેથી જળનિકાલ ક્ષમતામાં જરુરી વધારો કરવો.
૧૧ જમીન સંપાદન અને પૂનઃસ્થાપન	
આયોજન- ડિઝાઈન તબક્કે	
આજીવિકા તથા મિલકતને નુકશાન	ઈ. એસ આઈ. એ. થી અલગ પૂનઃસ્થાપન થતા પૂનઃર્વસવાટ યોજનામાં વળતર તથા સહાયના યોગ્ય પેકેજનું આયોજન થશે.
બાંધકામ તબક્કે	
વાહન-વ્યવહાર તથા ખેડૂતોના પગ રસ્તાઓને વિક્ષેપ	યોગ્ય ડાઈવર્ઝન- ડિટુર અપાશે જેમાં યોગ્ય દિશાસૂચનો પણ હશે
૧૨ જાહેર સલામતી અને સુવિધાઓ	
કાર્યાન્વયન તબક્કે	
ડી. એફ.સી. ની ગતિવિધીના પ્રારંભિક તબક્કે અકસ્માત તથા મૃત્યુનું જોખમ રસ્તા અને રેલ્વેમાર્ગના ક્રોસિંગ તથા ડી. એફ સી. લાઈનના એમ્બેકમેન્ટને લીધે લોકોની અવર-જવાર અવરોધાઈ શકે	યોગ્ય જોખમ-ભય અંગેના દિશાસૂચન, એલારામ વ્યવસ્થા અને આધુનિક રેલ્વે સલામતી વ્યવસ્થા થશે. પૂલ નીચેના રસ્તા, રેલ્વેમાર્ગ ઉપરના રસ્તા, બાજુઓ પરના પગ રસ્તા, ફલાયઓવર્સ, લેવલ મેચિંગ જેવી સુવિધા તમામ વર્તમાન રસ્તા ક્રોસિંગ તથા પગરસ્તાઓને અપાશે

નોંધઃ ઉપરની તમામ સંભવિત અસરો કે તેના નિવારણ સંબંધિત પગલાંઓની વિગતે સમજૂતિ આપવા ઉપરાંત કેટલાક અન્ય મુદ્દાઓ સૂચિત ઈ. એસ આઈ. આર. રીપોર્ટમાં આપેલા છે.

પર્યાવરણીય વહીવટ આયોજન (EMP)

પર્યાવરણીય વહીવટી આયોજન પરિયોજનાની વિવિધ પ્રવૃત્તિઓ જેવી કે આયોજન, ડીઝાઈન, બાંધકામ અને સંચાલનના તબક્કા દરમ્યાન જે વિપરીત અસરો ઊભી થતી હોય છે તેને નિવારવા માટેના જે પગલાં લેવાના થાય તેનું સમગ્ર ચિત્ર રજૂ કરે છે. અસરકારક પર્યાવરણીય અસરોના નિવારણ માટે લેવાનાં પગલાં જો વ્યવસ્થિત રીતે અમલમાં મૂકવામાં આવે તો યોગ્ય અંદાજિત પરિણામો મેળવી શકાય તેવી પર્યાવરણીય વહીવટી આયોજન ખાતરી આપે છે.

નીચેના મુદ્દાઓને ધ્યાનમાં રાખીને (EMP) ની રચના કરવામાં આવી છે.

૧.સૂચિત ESIA રીપોર્ટમાં નીચે પ્રમાણેના ચોક્કસ EMP સૂચવવામાં આવ્યા છે.

* હરિયાળાપટ્ટાના વિકાસનું આયોજન
* ખાણ તથા ભાડાપટ્ટે રાખેલ વિસ્તાર માટે વ્યવસ્થાપન તથા પુનર્વાસ યોજના
* અવાજ અને ધુજારીનું નિયંત્રણ અને વ્યવસ્થાપન
* ઘન કચરાની વ્યવસ્થાપન યોજના
* જોખમી કેમિકલ્સ માટે સંગ્રહ, સંચલન તથા આપત્તિ પ્રતિસાદ ની વ્યવસ્થા
* ડ્રેનેજ વ્યવસ્થાપન
* જમીન સંપાદન અને પુનઃ સ્થાપન માટેનું વ્યવસ્થાપન (માત્ર રૂપરેખા પણ RRP માં સમગ્ર રીપોર્ટ)
* બાંધકામ ના પડાવ પર શૌચાલય અને સ્વચ્છતાનું આયોજન,
* વ્યાવસાયિક આરોગ્ય અને સલામતી વ્યવસ્થા.

૨. નીચેના પર્યાવરણીય અને સામાજિક મુદ્દાઓ માટે તબક્કાવાર પર્યાવરણીય વ્યવસ્થાપન ના પગલાં સૂચવવામાં આવ્યા છે.

a) આયોજન અને ડિઝાઈનનો તબક્કો

જમીન સંપાદન, જંગલની જમીનમાંથી અગલ ફાંટો, વૃક્ષોની જાળવણી, ભાડાપટ્ટે રાખેલો વિસ્તાર, ખાણનો વિસ્તાર, બાંધકામનું પાણી, બાંધકામના માલ સામાન માટેની જગ્યા, બાંધકામની મશીનરી તથા પ્રતિકૂળ માલ સામાનના નિકાલ માટેની જગ્યાની ઓળખ-શોધ,-બાંધકામના કેમ્પ, કામચલાઉ યાર્ડની વ્યવસ્થા, અમલમાં મૂકનારી એજન્સીઓની તથા કોન્ટ્રાક્ટરોની તાલિમ.

b) બાંધકામનો તબક્કો.

સાઈટની સફાઈ, બાંધકામના માલ સામાનનું સંપાદન, બાંધકામ, ગંદાપાણીની નિકાલ વ્યવસ્થા, કાંપ જમાવ, ઢાળની જાળવણી વગેરે) પાણીનું પ્રદૂષણ, હવાનું પ્રદૂષણ, અવાજ, સલામતી, મજૂરોના કેમ્પનું વ્યવસ્થાપન, કોન્ટ્રાક્ટરની સ્થિરતા (સફાઈ વ્યવસ્થા અને પ્રસ્થાપના તથા પુનઃવાસ)

c) કાર્યાન્વય નો તબક્કો

આપત્તિ નિવારણના વિવિધ પગલાં ના અમલીકરણ પર દેખરેખ અને પદૂષણની દેખરેખ.

પર્યાવરણીય દેખરેખ આયોજન (EMOP)

અસરકારક તથા વધુ ટકાઉ રીતે પરિયોજનાના બધા જ હેતુઓ સિદ્ધ કરવાની ખાતરી કરાવવા, EMP નું અસરકારક અમલી કરણ થાય તે માટે (EMOP) પર્યાવરણીય દેખરેખ આયોજનની રચના કરવામાં આવી છે. EMOP નિવારણના પગલાં ના અસરકારક અમલીકરણથી મળતાં રિણામો પર દેખરેખ રાખશે તથા વધારાના લેવા જેવાં પગલા નું સૂચન કરશે, કે જે લક્ષિત વસ્તીને મળનારા પરિયોજના ફાયદાને વેગ આપશે. કાર્યક્ષમતાના પર્યાવરણીય દેખરેખ આયોજનમાં માપદંડો તથા પર્યાવરણીય દેખરેખ કાર્યક્રમનો સમાવેશ કરવામાં આવ્યો છે જે નીચે મુજબ છે.

૧.કાર્યક્ષમતાના માપદંડો

* આયોજન-ડીઝાઈન તબક્કો :

જમીન સંપાદન, હંગામી ભંગાર, બાંધકામ મજૂર વસાહતો, ઉછીની-ભાડાપટ્ટે લીધેલ વિસ્તાર, ખાણ વિસ્તાર

* બાંધકામ તબક્કો

પરિસરની હવાની ગુણવત્તા, ઘોંઘાટ અને કંપન સ્તરો, પાણીની ગુણવત્તા, ભૂગર્ભ જળ, નદી, પીવાનું પાણી, ગંદા પાણીની ગુણવત્તા, હરિત આરછાદન, જમીન ગુણવત્તા

* કાર્યન્વયન તબક્કો.

વૃક્ષોના જીવીત દર, ભાડે લીધેલ જગ્યાનું પુનઃ સ્થાપન, સંવેદન શીલ ગ્રાહકો માટે ઘોંઘાટ મર્યાદાઓનો ઊપયોગ

૨. પર્યાવરણીય દેખરેખ કાર્યક્રમ

આમાં દેખરેખ રાખવાના માપદંડો, દેખરેખ રાખવાની પધ્ધતિઓ, દેખરેખ રાખવાના સ્થળો, દેખરેખ રાખવાનો સમયગાળો અને આવર્તન, અને અંદાજિત રકમનો સમાવેશ કરવામાં આવ્યો છે. કેટલાક ચોક્કસ માપદંડો કે જે પર્યાવરણીય બાબતો અંગે છે તે નીચે પ્રમાણે છે.

વિસ્તારની હવાની ગુણવત્તા, ઘોંઘાટનું પ્રમાણ, પાણીની ગુણવત્તા, વૃક્ષો અને હરિતઆવરણની હાનિ

લોક સંવાદ બેઠકો (PCMs)

લોક સંવાદ બેઠકોનો પ્રાથમિક હેતુ સૂચિત હસ્તક્ષેપથી પરિયોજનાના અસરગ્રસ્તોને અને ભાગીદારોને થનારી અસર પર તેમના અભિપ્રાયો દર્શાવ્વા એક પ્લેટફાર્મ પૂરું પાડવાનો છે. પર્યાવરણીય અને સામાજિક અસરોને દર્શાવવા, લોકોના અભિપ્રાયો અને સૂચનો મેળવવા માટે તથા પરિયોજના અને ESIA ના અભ્યાસની જાણકારી આપવા માટે બે તબક્કામાં લોકસંવાદ બેઠકો કરવામાં આવી. જિલ્લાવાર PCM નું આયોજન બધાજ -૧૪ જિલ્લાઓમાં થયું.

Public Consultation Meeting

ESIA અભ્યાસના પ્રારંભિક તબક્કામાં પર્યાવરણીય અવકાશના સમયે ESIA અંગે પહેલા તબક્કાની લોક સંવાદ બેઠકો ૨૦૧૦ના નવેમ્બર મહિનામાં કરવામાં આવી. (અને પૂરક PCM મહારાષ્ટ્રમાં ફેબ્રુ-૨૦૧૧માં) પરિયોજનાની તથા ESIA અભ્યાસની જાણકારીનો અહેવાલ લોકો સમક્ષ રજૂ કરવામાં આવ્યો તથા લોકોના અભિપ્રાયો તથા ટિપ્પણીઓ મેળવવામાં આવી કે જેથી કરીને તેનો ESIA અભ્યાસમાં સમાવેશ કરી શકાય.

ESIA અભ્યાસ અંગેની બીજા તકબક્કાની લોકસંવાદ બેઠક સપ્ટેમબર ૨૦૧૧ માં થશે જેમાં સૂચિત પર્યાવરણીય અને સામાજિક અસરોના અભ્યાસ ના તારણોની અને સંભવિત નિવારણના પગલાની જાણકારી સમાન્ય પ્રજા કે જે સીધી કે આડકતરી રીતે DFC પરિયોજનાથી અસર પામવાની છે તેમને કરવામાં આવશે. આ બેઠકનો હેતુ સામાન્ય પ્રજાએ કરેલ સૂચનો, અભિપ્રાયો, પર્યાવરણીય અને સામાજિક અસર નિવારણ પગલાંઓ, વ્યવસ્થાપન અને દેખરેખ યોજનાઓનો સમાવેશ કરવાનો છે.

કેટલાક અભિપ્રાયો અને મુદ્દાઓ જે પહેલા તબક્કાના PCM માં ઉઠાવવામાં આવ્યા હતા એ વળતર અને રોજગારી તકો, જે તે સ્થળેથી ખસવું અને જમીન સંપાદન, પર્યાવરણ અને આરોગ્ય, ગંદા પાણીનો નિકાલ, કુદરતી સ્રોતો અને સામુદાયિક સુવિધાઓની ઉપલબ્ધિ, અને સામાજિક સાંસ્કૃતિક દિશા. પહેલા તબક્કાની PCM માં પરિયોજના અસરગ્રસ્ત લોકો, ગ્રામપંચાયતના પ્રતિનિધિઓ, જિલ્લા અધિકારી, રેવન્યુ વિભાગ, વન અધિકારીઓ, સ્થાનિક આગેવાનો, સંસદ સભ્યો, ધારા સભ્યો, સ્વૈચ્છિક સંસ્થાઓ તથા પરિષ્ઠ નાગરિકો હાજર રહ્યા હતા.

ESIA પ્રક્રિયામાં માહિતીનો પ્રસાર

ESIA અભ્યાસના તારણોની જાણકારી પરિયોજના અસરગ્રસ્ત લોકો, હિતધારકો અને અમલીકરણની સતાઓને આપવામાં આવી કે જેથી કરીને પરિયોજનાના સફળ અમલીકરણ માટે સુરક્ષાત્મક પગલાંઓ લઈ શકાયા.

ESIA માટે માહિતીની જહેરાત બે તબક્કે કરવામાં આવી-

જ્યારે સૂચિત **ESIA** તૈયાર થયો ત્યારે પહેલા તબક્કાની માહિતીનું પ્રસારણ કરવામાં આવ્યું. **ESIA** નો સમગ્ર અંગ્રેજી ડ્રાફટ **DFCCIL** ની પ્રત્યેક ઑફિસે, હાલના **DFC** માર્ગ પરના જિલ્લા સત્તાવાળાસમક્ષ મૂકવામાં આવ્યું છે. ઉદ્ઉપરાંત **ESIA** ના અંતિમ રિપોર્ટના તારણો સ્થાનિક ભાષાઓ જેવી કે હિંદી, ગુજરાતી તથા મરાઠીમાં તૈયાર કરવામાં આવ્યા તથા **DFC** માર્ગ પરના બધાજ અસરગ્રસ્ત ગામોને આપવામાં આવ્યા.

સૂચિત ESIA રિર્પોર્ટની પ્રાપ્યતા અને સૂચનોની રજૂઆતઃ

સૂચિત **ESIA** રિપોર્ટ જાહેર જનતાના અવલોકન માટે નીચે જણાવેલ સ્થળોએ મળી શકશે.

DFCCIL મુખ્ય ઑફિસ સંબધિત મુખ્ય પરિયોજના મેનેજર (**CPM**) સૂચિત રેલ્વે માર્ગ (એલાઈનમેન્ટ) પરના મોટા સ્ટેશનો અને સંબધિત જિલ્લા કાર્યાલયો (તા. ૧૭ મી સપ્ટેમ્બર પછી) .

૧૭મી સપ્ટેમ્બર ૨૦૧૧ પછી પરિયોજના અસરગ્રસ્ત ગામોની પચાંયતની ઓફિસમાંથી સૂચિત **ESIA** ના રિપોર્ટના તારણો સ્થાનિક ભાષામાં મેળવી શકાશે. ૨૬મી સપ્ટેમ્બરથી સૂચનો, અભિપ્રાયો **DFCCIL** ની ઓફિસે પત્ર દ્વારા તથા ઈમેઈલ દ્વારા મોકલી શકાશે.

Email: dfc. phase2@gmail. om

વધુ માહિતી માટે સંપર્ક કરોઃ

- **DFCCIL, Head Office,**
  પ્રગતિ મેદાન, ૪થો માળ, મેટ્રો સ્ટેશન બિલ્ડીંગ, નવી દિલ્હી-૧૧૦૦૦૧ (Tel: 91-11-23454700; Fax: 91-11-23454701)
- **CPM** કાર્યલય મુંબઈઃ
  ૭મા માળે, નવું વહીવટી મકાન, સેન્ટ્રલ રેલ્વે, ડી.એન.રોડ, મુંબઈ-૪૦૦૦૦ (Tel: 91-22-22634184; Fax: 91-22-22634184)
- **CPM** કાર્યલય સુરતઃ
  ૪ થે માળ અરુંશ-૧, ઈસ્કોન મોલ પાસે,ડુમસ રોડ,પીપલોદ, સુરત-૩૯૫૦૦૭ (Tel: 91-261-2633250; Fax: 91-261-2633250)
- ચીફ પ્રોજેક્ટ મેનેજર-વડોદરા.
  ૧૩-૧૪ ૧૭-૧૮ પનોરમા કોમ્પલેક્ષ ૩ જે માળે અલકાપુરી-વડોદરા-૭ (Tel: 91-265-2326024; Fax: 91-265-2326027)
- **AGM**-રેવાડી-દાદરી પ્રોજેક્ટ ઑફિસઃ
  સ્ટારહાઉસ, ૧લો માળ, એ-૧૦૨, સેક્ટર ૪,નોઈડા, ઉત્તરપ્રદેશ (Tel: 91-120-4309720; Fax: 91-120-4134554)

સૂચિત ઈ.એસ.આઈ.એ. અહેવાલ નીચેના મહત્ત્વના સ્ટેશને ઉપલબ્ધ છે

મહારાષ્ટ્રઃ પનવેલ(જં),કલ્યાણ(જં),વૈતરણ,કેલ્વે રોડ,પાલઘર,દહાણું રોડ

ગુજરાતઃ સંજાણ,વાપી,વલસાડ,બિલીમોરા(જં),નવસારી,સચીન,કોસંબા(જં),ભરુચ

હરિયાણા,રાજસ્થાન,યુ.પી.,દિલ્હીઃ રેવાડી(જં),ફરીદાબાદ,દાદરી.

रेल्वे मंत्रालय

Dedicated Freight Corridor Corporation of India Ltd (DFCCIL)

पर्यावरण आणि सामाजिक प्रभाव मुल्यांकन (ESIA) अध्ययनाचा सारांश
समर्पित मालवाहतूक जोडमार्ग प्रकल्प (भाग – २)
JNPT ते बडोदा आणि रेवाडी ते दादरी

सप्टेंबर २०११

JNPT ते बडोदा आणि रेवाडी ते दादरी दरम्यानचा पश्चिम परिक्षेत्रातील समर्पित मालवाहतूक जोडमार्ग (DFC) प्रकल्पाच्या पर्यावरण आणि सामाजिक प्रभावांच्या मुल्यांकन (ESIA) च्या अध्ययानाचा अंतिम मसूदा आहे. हा प्रकल्प भारतीय समर्पित मालवाहतूक जोडमार्ग निगम तर्फे राबविण्यात येणार असून याबाबतचा ESIA मसूदयाचा सारांश प्रकल्प उभारणी दरम्यान जनतेत वितरीत करण्यात येईल.

संक्षिप्त परियोजना

रेल्वे मंत्रालय भारतीय समर्पित मालवाहतूक जोडमार्ग निगम मर्यादेच्या माध्यमातून विशेष रेल्वे प्रकल्प राबवित आहे. ज्यामध्ये संगणकीकृत मल्टी मॉडेल हाय एक्सेल समर्पित मालवाहतूक जोडमार्ग (DFC) चा समावेश आहे. या प्रकल्पाच्या पश्चिम DFC परिक्षेत्रमध्ये दिल्ली ते मुबंई चा समावेश असून ज्यामध्ये घाऊक मालाच्या वाहतुकीला शीघ्रता व सुरक्षितता देण्यात येणार आहे. सदर प्रकल्प सुरु होण्याने प्रगत तंत्रज्ञानाच्या सहाय्याने मालवाहतूक तत्परतेने करण्यास सहाय्य होईल तसेच घाऊक मालाच्या जलद वाहतूकीमुळे इंधनाची बचत होईल.

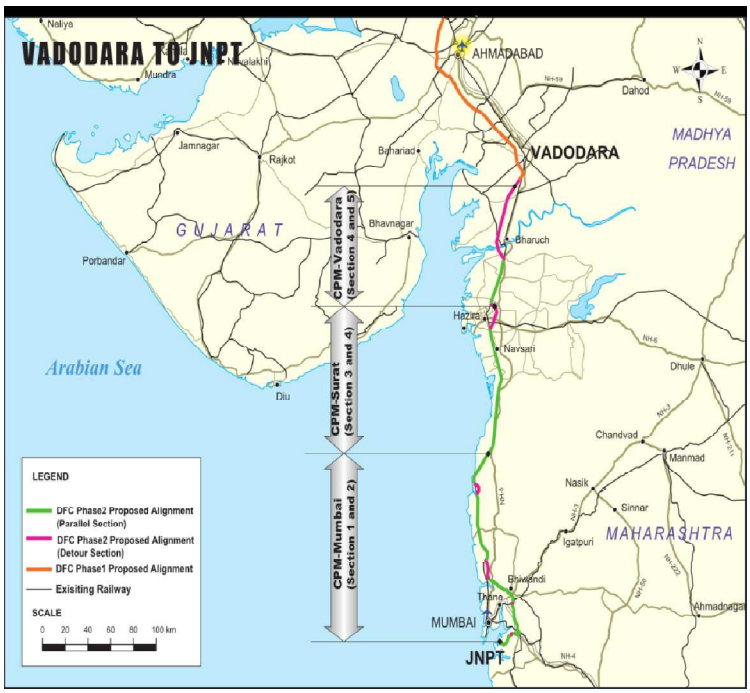
पश्चिम DFC प्रकल्पाच्या माध्यमातून २०१३-१४ च्या आर्थिक वर्षात ३७.७ मिलीयन टन मालाची वाहतूक करण्यात येणार असून ही क्षमता २०३३-३४ च्या वर्षापर्यत १४०.४ लाख टन पर्यत वाढविण्याचे उद्दीष्ट बाळगण्यात आले आहे. भारतीय अर्थव्यवस्था ही जगातली दुसऱ्या क्रमांकाची वाढती अर्थव्यवस्था असून स्वतंत्र भारतामध्ये रेल्वे संरचना निर्माण करण्याबरोबरच औद्योगिक कॉरीडॉर, रसद पार्क, इतर आर्थिक आणि व्यापारी केंद्राच्या निर्मितीचे उद्दीष्ट ही बाळगले असून त्याचा फायदा अर्थव्यवस्था मजबूत करण्यास होईल.

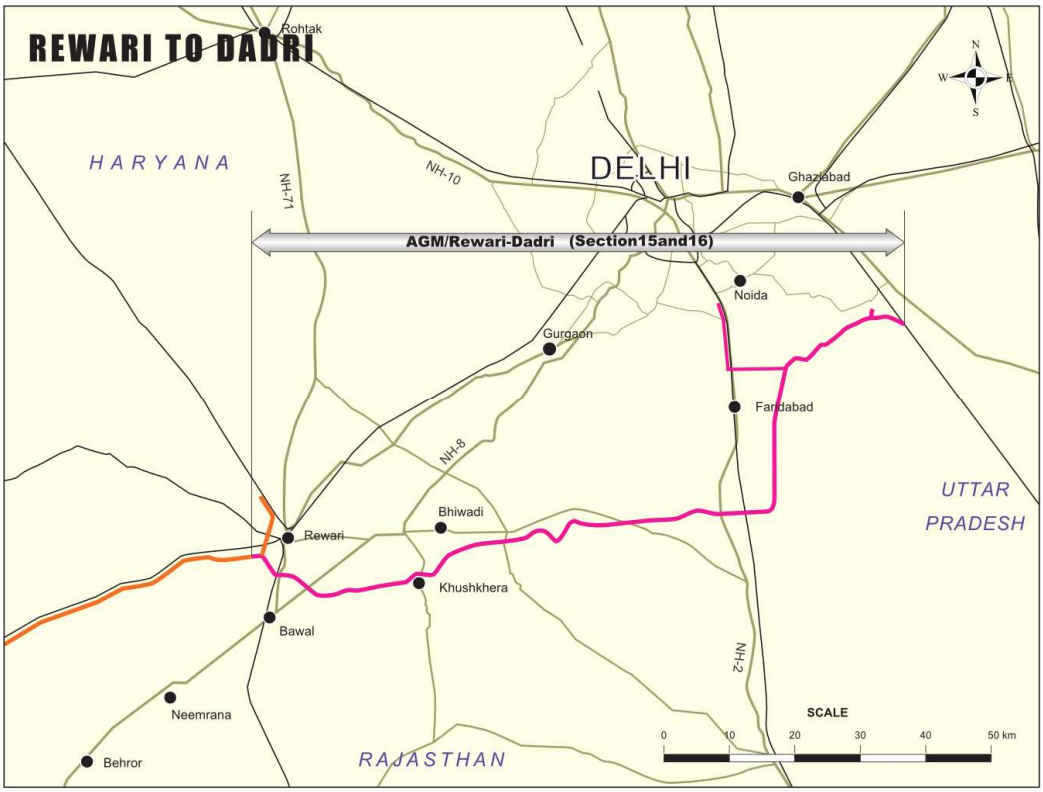
पश्चिम DFC परिवहनाच्या दोन व्यापक चरणांमध्ये विभागले असून पहिल्या चरणात मुबंईतील JNPT आणि उत्तर प्रदेशातील दादरी तसेच दिल्ली मधील तुघलकाबाद (TKD) जोडण्यात येणार असून दुसऱ्या चरणात अन्य मार्गावरील विविध जक्शंन मार्गावरील वाहतूक जोडण्यात येणार आहे. ज्यामुळे भारतीय परीवहन क्षेत्रातील कार्बन तिव्रता कमी व्हावी हेच उद्दीष्ट DFC प्रकल्पाच्या माध्यमातून बाळगले आहे.

परियोजनेचे कार्यक्षेत्र

पश्चिम परिक्षेत्र दोन टप्प्यात विभागले असून पहिल्या टप्प्यात बडोदा ते रेवाडी आणि दुसऱ्या टप्प्यात मुबंईतील JNPT ते बडोदा आणि रेवाडी ते दादरी सह फरिदाबाद ते तुघलकाबाद दरम्यान (नकाशात दर्शविल्याप्रमाणे) एकेरी मार्ग यांचा समावेश आहे.

या DFC प्रकल्पांतर्गत येणाऱ्या विविध गावांची यादी व जोडमार्गाची यादी खालील तक्त्यात दिली आहे.





JNPT ते बडोदा दरम्यानचा सुमारे ७०% जोडमार्ग भारतीय रेल्वेमार्गाच्या सदयमार्गाच्या लगत टाकण्यात येणार आहे. रेवाडी ते दादरी दरम्यानचा जोडमार्ग नव्या मार्गावर टाकण्यात येणार असून पुढे तो तुघलकाबाद TKD पर्यंत एकेरी मार्ग अंशतः दिल्ली– मथुरा मार्गाच्या जोडीने जाणार आहे. सध्या हा प्रकल्प नियोजन स्थिती मध्ये असून त्याचे विस्तृत डिझाईन नुसार २०११ च्या शेवटपर्यंत कार्यान्वीत करण्यात येईल तसेच २०१२ ते २०१६ पर्यत ४ ते ५ वर्षाच्या नियोजित वेळेनुसार त्याचे बांधकाम पूर्ण होइल.

सेक्शन	राज्य	जिल्हे	गावे	जोडमार्गाचे अंतर
JNPT ते बडोदा	महाराष्ट्र	ठाणे, रायगड	१३३	४२०कि. मी.
	गुजरात	बडोदा, भरुच, सुरत,नवसारी, बलसाड	१३३	
रेवाडी ते दादरी (तुघलकाबाद सहीत)	राजस्थान	अलवर	१३	१४५ कि. मी. TKD च्या १९ कि. मी सह
	हरियाणा	फरिदाबाद, गुरगाव, रेवाडी, पलवल, मेवट	८३	
	उत्तर प्रदेश	गौतम बुध्द नगर	11	
	दिल्ली	तुघलकाबाद	-	

संरचना व संबंधीत सुविधांची मुख्य वैशिष्टये

प्रकल्पामध्ये दुहेरी जोडमार्ग (फरिदाबाद ते तुघलकाबाद दरम्यानचा एकेरी मार्ग वगळता) विदयुतीकरण आणि आधुनिक सिग्नल यंत्रणे सह नियोजीत केला आहे. ज्यामध्ये ताशी १०० किलोमीटर वेगाने २५ टन वजनाच्या मालवाहतुकीची परवानगी देण्यात आली आहे. उड्डाणपूल (RoBs) आणि

भूयारी मार्ग (RuB's) हे विद्यमान वाहतुक नियमाप्रमाणे नियोजीत असून त्यामुळे कोणत्याही प्रकारात रस्ते आणि रेल्वे वाहतुकीस अडथळा होणार नाही. संबंधीत मार्गाची संरसचना ही सुनियोजीत रितीने करण्यात आलेली आहे.

पर्यावरण आणि सामाजिक परिणामांची तिव्रता कमी करण्याच्या दृष्टीने तसेच अवजड उद्योगधंदे, धातु खाणी, संवेदनरशील क्षेत्र, इत्यादी पासून कोणतीही हानी पोहचू नये यासाठी योग्यती काळजी घेण्यात आली असून त्या मापदंडाच्या आधाराने मार्ग आखला आहे. जो खालील तक्त्यात दिला आहे.

मार्गीकिचे नाव	रेल्वे स्थानका दरम्यान	अंदाजीत लांबी (कि. मी.)
कुंदेवहाळ मार्ग	झांसी व पनवेल	३
पनवेल मार्ग	दापोली व कळंबोली	३
दातीवली (दिवा) मार्ग	निळजे व कोपर रोड	५
वसई मार्ग	ज्युचंद्र आणि वैतरणा	१८
डहाणू मार्ग	डहाणू रोड	१२
सुरत मार्ग	सचीन आणि गोठणगाव	२१
संजाली – नडीयाद मार्ग	वरेदिया आणि मकरपुरा	६०
रेवाडी – दादरी (मुख्य मार्ग)	रेवाडी ते पिरथला व पिरथला ते दादरी	१२६
रेवाडी – दादरी (TKD मार्ग)	फरीदाबाद आणि तुघलकाबाद	११
एकूण		२५८

सर्वसाधारणपणे राईट ऑफ वे (Row) मार्गाची रुंदी ६० मी. आणि समांतर मार्गाची ३५ मी. आहे. JNPT ते बडोदा परिक्षेत्रात एकूण तीन जंक्शन स्थानके, नऊ कॉसींग स्टेशन आणि १३ प्रमुख पूल आहेत, तसेच रेवाडी-दादरी परिक्षेत्रात एकूण तीन जंक्शन स्थानके, दोन कॉसींग स्टेशन्स व दोन प्रमुख पूल आहेत.

प्रकल्पाबाबतचे पर्यावरण व सामाजिक प्रभाव परिणाम आकलन व अध्ययन

समर्पित मालवाहतूक जोडमार्ग प्रकल्पा (DFC) साठी त्याचे पर्यावरणात्मक आणि सामाजिक प्रभावाच्या स्वरुपाबाबत (ESIA) सखोल अध्ययन, आकलन करण्यात आले आहे. सदर प्रभावाची तिव्रता कमी करणे तसेच सदर बाबी उद्धभवू नये यासाठी प्रकल्पाच्या विविध टप्प्यां दरम्यान त्याच्या स्थायी आणि प्रभावी उपाययोजना योजल्या आहेत.

River Monitoring at Bridge Alignment

यांच्या परिणामस्वरुप पश्चिम परिक्षेत्रातील DFC प्रकल्प भाग–२ च्या सक्षम ESIA साठी जपान इंटरनॅशनल कोऑपरेशन एजन्सी (JICA) च्या पर्यावरण आणि सामाजिक प्रश्न मार्गदर्शीका, एप्रिल २०१० च्या माध्यमातून तांत्रिक सहाय्य घेण्यात आले आहे. ESIA अध्ययनामध्ये प्रदूषण नियंत्रण, नैसर्गिक पर्यावरण अध्ययन, सामाजिक पर्यावरण, जनसभा, प्रभावाची ओळख व मुल्यांकन, उपाययोजना, पर्यावरण व सामाजिक व्यवस्थापन योजना (EMP) आणि देखरेख योजना (EMoP) यांचा विचार करण्यात आला आहे.

Noise measurement survey near parallel route and surrounding land use

२०१०-११ मध्ये प्रस्तावित करण्यात आलेल्या मालवाहतूक जोडमार्गासाठी विविध पर्यावरणात्मक व सामाजिक मुद्यांवर सखोल अध्ययन केले असून नदीच्या पाण्याची गुणवत्ता, नैसर्गिक वातावरण, जमिनीचा वापर,आवाजाची तिव्रता, कंपनस्तर, इ. बाबींची प्राथमिक आकडेवारी जमविण्यात आली आहे तसेच संबंधित बाबींवर काम करणाऱ्या शासकीय यंत्रणांची ही यादी तयार करण्यात आली आहे. सदर बाबत सहा राज्यातील अनेक जिल्हयात प्रभावित गावांच्या,व्यक्तींच्या नुकसान भरपाईसाठी तसेच अन्य उपाययोजनांसाठी जनसभा आयोजीत करण्यात येणार आहेत.

ESIA अध्ययन सर्वेक्षणातील महत्त्वाचे मुद्दे

ESIA सर्वेक्षणातील काही महत्त्वाचे मुद्दे खालील तक्यात मांडण्यात आले आहेत. तसेच त्याच्या पर्यावरणात्मक व सामाजिक बाबींचा सविस्तर अभ्यास ESIA ड्राफ्ट मध्ये करण्यात आला आहे.

सेक्शन	मुख्य सर्वेक्षण मुद्दे
JNPT ते बडोदा परिक्षेत्र	1. ठाणे जिल्हा, महाराष्ट्र मधील द. वैतरणा, उ. वैतरणा व उल्हास नदया 2. बलसाड जिल्हा, गुजरात मधील दमणगंगा, पार, आणि औरंगा नदया. 3. नवसारी जिल्हा, गुजरात मधील द. कावेरी, उ. कावेरी, अंबिका, उ. पूर्णा व मिंढोळा नदया. 4. सुरत जिल्हा, गुजरात मधील तापी नदी. 5. भरुच जिल्हा, गुजरात मधील नर्मदा नदी. 6. ठाणे जिल्हयाच्या भिवंडी, वसई, पालघर आणि डहाणू तालुक्यात येणारे सुमारे २० जंगल पट्टे एकूण जागा ~ ३२ हेक्टर 7. ठाणे जिल्हयातील दोन खारफुटी (mangrove) क्षेत्र. 8. ठाणे जिल्हयातील संजय गांधी राष्ट्रिय उदयान (SGNP) व तुंगारेश्वर उभारण्यातील संरक्षीत जंगल क्षेत्र. 9. ठाणे जिल्हयातील डहाणू तालुक्यातील कायदेशीर-रित्या इकोलॉजीकल संरक्षीत क्षेत्र. 10. पनवेल, पालघर, बोईसर, वापी, बलसाड, अमलसाड आणि किम स्थानकावरील आवाजाचे आणि कंपनाचे सर्वेक्षण 11. वसई पट्टयातील सुरंग पट्टा 12. DFCजोडमार्ग संरचनेमध्ये प्रस्तावित मध्यरेषेपासून ६०-१०० मी जागेतील संवेदनशील रिसेप्टर आणि भूमि वापर वितरण १३. पर्यावरणात्मक आणि सामाजिक प्रभावाखालील तसेच जनसभेच्या माध्यमातून आलेली २६६ प्रभावित गावे.
रेवाडी ते दादरी परिक्षेत्र	1. उत्तर प्रदेशच्या गौतम बुध्द नगर जिल्हयातील यमुना आणि हिंडन नदया. 2. गौतम बुध्द नगर जिल्हयातील गुलिस्तानपूर येथील सुमारे ~ १० हेक्टर संरक्षीत वन पट्टा 3. हरियाणाच्या मेवट आणि राजस्थानच्या अलवर जिल्हयातील अरावली डोंगर रांगातील भूगर्भ शास्त्रीयदृष्टया कायदेशीर संरक्षीत पट्टा 4. असोटा स्थानकातील आवाज आणि कंपन सर्वेक्षण 5. DFC जोडमार्गाच्या मध्यरेषेपासून ६०-१०० मी. जागेचे आणि संवेदनशिल रिसेप्टर्सचे वितरण 6. जनसभा आणि पर्यावरणात्मक आणि सामाजिक प्रभावा खालील ठरविण्यात आलेली १०७ प्रभावित गावे.

संभाव्य प्रभाव आणि उपाययोजना

DFC प्रकल्पा दरम्यान येणाऱ्या संभाव्य पर्यावाणात्मक आणि सामाजिक प्रभावांची निश्चिती करण्यात आली असून त्याबाबतचे सर्वेक्षण करण्यात येणार आहे. नियोजन आणि निर्मिती स्तरावरील पर्यावरणात्मक आणि सामाजिक प्रभावासाठी प्रभावी उपाययोजना खालील तक्त्यात दिल्या आहेत.

संभाव्य प्रभाव आणि उपाययोजना

संभाव्य प्रभाव	उपाययोजना
१. आवाजाची तिव्रता व कंपन स्तर	
(बांधकाम टप्पा)	
• जड वाहनांच्या वर्दळी मुळे आणि बांधकाम यंत्रसामुग्री (जड व हलक्या) मुळे होणारे आवाज व कंपन	• ध्वनी रोधक यंत्रणेसह वहुसंख्य बांधकाम साहित्य बसवले जाईल. • रहिवासी विभागाच्या ठिकाणी फक्त दिवसा बांधकाम करण्यात येईल. • अति उच्च दाबाचा आवाज तिव्रता कमी करण्यासाठी कान टोपी सारख्या उपाययोजना करण्यात येतील.
(दळणवळण टप्पा)	
•रेल्वे आणि इतर दळणवळणामुळे होणारे आवाज व कंपन	• लांब वेल्डेड रेल्वेचा वापर • आवाजाची आणि कंपनाची तिव्रता कमी करण्यासाठी आधुनिक तंत्रज्ञानाचा वापर • लोकोमोटीव, रूळ आणि बांधकामाची व्यवस्थित रखरखान
२.पाणी प्रदुषण	
(बांधकाम टप्पा)	
• बांधकाम कामातील उरलेले दुषीत पाणी • बांधकाम कामादरम्यान उरलेले आणि कामगारांच्या कॅम्प मधील दुषीत पाण्याची विल्हेवाट	•बांधकाम कामातील खराब व दुषीत पाणी वाहून जाण्यासाठी योग्य ती गटार व्यवस्था करणे. • जलसाठ्या जवळ सांडपाणी वाहून जाण्याची व्यवस्था •जल प्रदुषणाच्या समस्यांमुळे उद्भवणाऱ्या समस्या रोखण्यासाठी बांधकामाच्या ठिकाणी शौचालये उभारणे.
३.वायू प्रदुषण	
(बांधकाम टप्पा)	
• जुन्या पुराण्या वाहनांच्या दळणवळणामुळे उत्सर्जीत होणाऱ्या वायूमुळे आणि बांधकाम प्रक्रियेत उन्हाळी काळात उडणाऱ्या धुळीमुळे होणारे वायू प्रदुषण • जोडमार्ग संरचनेचे काही मार्ग अति प्रदुषीत क्षेत्रातून जातात.	• बांधकाम साहित्य सुरक्षीत गोदाम किंवा सुरक्षीत जागेवर ठेवणे. • बांधकामाच्या स्थळी उन्हाळयाच्या दिवसात धुळी पासून संरक्षण मिळण्यासाठी काम सुरु करण्यापूर्वी पाण्याची फवारणी करणे. • सर्व बांधकाम साहित्य धूळ प्रदुषण नियंत्रण प्रणालीनी युक्त असावीत. • अति प्रदुषित क्षेत्रात सर्व गरजेच्या उपाययोजना परवानगीसह येणे व अंमलात आणणे.
४. वनस्पती / झाडे	
(नियोजन / संरचना टप्पा)	
• संरेखण जोडमार्ग ठाणे जिल्हयातील काही संरक्षीत जंगल पट्टयातून आणि गौतम बुध्द नगर जिल्हयातील एका जंगल पट्टयातून जातो.	• संरेखण जोडमार्ग जंगल भागाचे कमीत कमी नुकसान व्हावे या हेतूने आखला आहे. • वन खात्याशी चर्चा करून वन संवर्धन कायदा, १९८० मधील तरतूदी नुसार तसेच वन खात्याकडून मंजूर करून घेतला आहे. • अनुपालना बाबतच्या वन खात्याकडून सर्व अटींची मुजुरी घेतली आहे.
(बांधकाम टप्पा)	
संरेखण जोडमार्गाच्या उभारणी दरम्यान मार्गात येणाऱ्या वृक्षांची कापणी. • संरेखणाच्या वेळी उडणाऱ्या धुळीकणांमुळे बांधकाम स्थळा जवळील वनस्पतींना अपुरा प्रकाश मिळाल्याने हानी. • संरेखणाच्या वेळी उडणाऱ्या धुळीकणांमुळे बांधकाम स्थळा जवळील वनस्पतींना अपुरा प्रकाश मिळाल्याने हानी.	• अनियंत्रीत वृक्षातोड टाळण्यासाठी संबंधीत राज्यांच्या वनखात्यांकडून संयुक्त सत्यापन करण्यात येईल. • संबंधीत राज्यांच्या वनखात्याच्या सुचनेनुसार कापण्यात आलेल्या झाडांच्या संख्ये इतकीच इतर स्थानिक वृक्षांची लागवड करण्यात येईल. उदाः डहाणू मधील इको सेन्सीटीव क्षेत्रात एका झाडाच्या मोबदल्यात दहा झाडे लावण्यात येतील. • वैयक्तीक जागेतील फळ झाडे, बांधकामाचे लाकूड व त्यांच्या आर्थिक हानी बाबत नुकसान भरपाई देण्यात येईल. • फळझाडे व भाज्यांवर बांधकामातून उडणाऱ्या धुळीमुळे विपरीत परिणाम होऊ नये यासाठी नियमीत पाण्याची फवारणी करण्यात येईल.

संभाव्य प्रभाव	उपाययोजना
(दळणवळण टप्पा)	
• अवैध वृक्षतोड तसेच अयोग्य रितीने झाडांची देखभाल	• जोडमार्गाच्या बाजूच्या किंवा मार्गात येणाऱ्या झाडांच्या अवैध वृक्षतोडीला आळा घालणे तसेच त्यांची देखरेख करणे.
५.पशू पक्षी / प्राणी	
(बांधकाम टप्पा)	
• बांधकाम साहित्याच्या आवाज आणि कंपनामुळे परिसरातील पशुपक्षी बाधीत होणे. • संरेखण क्षेत्रातील पक्ष्यांची घरटी व प्रजनन स्थळे नष्ट करणे.	• ध्वनी अवरोध प्रणाली सह सर्व महत्वाची बांधकाम साहित्य वापरात आणणे. • जंगल क्षेत्रात यार्ड उभारने जाणार नाही. • हिवाळी मोसमात जंगल क्षेत्रात पक्ष्यांचा वायू असल्याने कोणतेही मोठे बांधकाम करण्यात येणार नाही.
(दळणवळण टप्पा)	
• अनवधानाने पाणथळ क्षेत्रात तेल गळती किंवा घातक रसायने मिसळण्याने जलचरांना होणारा त्रास	❖ अपघाताने पाण्यात तेल गळती, इंधन किंवा रसायने मिसळल्यास तातडीने पाणी शुध्द करण्यात येईल.
६.जैव विविधता	
(नियोजन / डिझाईन टप्पा)	
• संरेखण मार्ग SNGP आणि तुंगारेश्वर उभारण्याचा संरक्षीत जंगलांना समांतर जाणे. • ठाणे जिल्हयातील खारफुटीच्या क्षेत्राला समांतर मार्ग.	• संरेखण मार्ग अशा रितीने आरेखीन करण्यात आला आहे ज्यामुळे प्रकल्पा दरम्यान संरक्षीत जंगलांचे कमीत कमी नुकसान होईल. • वन्यजीव संरक्षण अधिनियम, १९७२ कायदयांतर्गत सर्व बाबींवर राज्याच्या मुख्य वन क्षेत्ररक्षक व अन्य अधिकाऱ्यांची चर्चा करुन प्रक्रिया. • खारफुटीच्या जंगलांबाबत वन संवर्धन कायदा,१९८० अंतर्गत योग्य त्या प्रक्रिया. • सर्व अटी- नियमांचे पालन करणे.
(बांधकाम टप्पा)	
• खारफूटीचे क्षेत्र व तेथे राहणाऱ या जैविक प्रजातीचे बांधकाम दरम्यान संवर्धन करणे. • SNGP लगतच्यस क्षेत्रातील दूर्मिळ वनस्पतींचे नुकसान • पक्ष्यांची घरटी व निवासाच्या जागा तसेच पाण्याच्या जागा प्रभावित होणे.	• वन खात्याची चर्चा करुन संरेखणा दरम्यान प्रभावित झालेल्या खारफुटी क्षेत्राचे पूनर्वसन करणे किंवा नुकसान भरपाई देणे. • वन खात्याची चर्चा करुन दूर्मिळ वनस्पतींची संरक्षीत जंगलात पुर्नलागवड करणे • SNGP अधिकाऱ्यांशी चर्चा करून प्रभावित पाण्याचे साठे दुसऱ्या सुरक्षीत स्थळी पुन्हा निर्माण करणे.
(दळणवळण टप्पा)	
DFC रेल्वे वाहतूकी दरम्यान संरक्षीत क्षेत्रातील वन्य जीवांवर प्रत्यक्ष प्रभाव.	• संरक्षीत वन्य क्षेत्रातील प्राण्यांना तसेच इतरांना वाहतूकी दरम्यान रेल्वे मार्ग ओलांडण्यासाठी भूमिगत रस्ते, पाईप व अन्य मार्गाची सोय करणे.
७.स्थळकृती आणि भूविज्ञान	
(बांधकाम टप्पा)	
• DFC संरेखणाच्या मार्गातील उंच, सखल, डोंगराळ भागावरील प्रभाव आणि मदत. • संरेखणा दरम्यान करण्यात आलेल्या आंदाधुंदपणे खोदण्यात आलेल्या खड्ड्यांमुळे स्थळकृती व भूवैज्ञानिक विद्रूषता. • संरेखण मार्गातील डोंगराळ, खडकाळ भागातील कामा दरम्यान उत्पन्न होणारे धोके.	• आरेखीत जागेवरच खड्डे खोदणे तसेच खाणी निर्माण जेणे करून स्थळकृती विद्रूप होणार नाही. • परवाना धारक खाणी मधूनच बांधकामाचे साहित्य खरेदी करणे. • डोंगराळ भागात खोदकाम करताना भूविज्ञान खात्यातील अभियंत्यांच्या मार्गदर्शनानुसार धोकादायक भागात उत्पन्न करणे.
8. माती उत्खन्न	
(बांधकाम टप्पा)	
• पोकळ मातीच्या वापराने बांधकाम वाहून जाऊ शकते. • अर्णिबंध खड्डे खोदल्याने चांगल्या मातीची हानी • संरेखण मार्गासाठी केलेल्या खोदकामामुळे उत्पादन जन्य जमिनीच्या जागा पोकळ मातीचा भराव.	• पावसाळयाच्या मोसमात कोणत्याही प्रकारचे खोदकाम टाळण्यात येईल. • तटबंध आणि छोटया टेकडयांना छोटया जैव तंत्रज्ञान उत्पादनांपासून वाचविण्यात येईल. • तटबंधाच्या बांधकामासाठी बांधकाम स्थळाच्या वरच्या मातीच्या स्तराचा वापर करण्यात येईल. • खड्डयांच्या वरच्या स्तरावरील मातीला संरक्षीत करुन खोदकाम पूर्ण झाल्यावर पुन्हा टाकण्यात येईल. • तटबंधाच्या उभारणीसाठी वरच्या स्तरावरील माती ऐवजी राखेचा वापर करण्याबाबतचा निर्णय घटनास्थळाच्या विश्लेषणा नंतर घेण्यात येईल.
9. भ्रमीगत पाणी	
(बांधकाम टप्पा)	
• जमिनीखालील पाण्याचा बांधकामासाठी अनिर्बंध वापर केल्याने पुढच्या काळात पाण्याच्या साठयावर ताण पडू शकतो.	• जमिनीखालील जल साठा स्त्रोत संरक्षीत करुन त्यांचा सुयोग्य वापर करण्यात येईल. • CGWA कडून निर्धारित केलेल्या निकबांच्या आधारे बांधकामासाठी जमिनीखालील पाण्याचा वापर करण्यात येईल.

संभाव्य प्रभाव	उपाययोजना
10. हायड्रॉलॉजीकल परिस्थिती	
(बांधकाम टप्पा)	
•नैसर्गिक सांडपाणी आणि पुनर्भरण स्थळांतर बांधकामा दरम्यान अवरोध, खोदकाम तसेच डोंगर फोडण्याच्या कामामुळे प्रभावित	• कोणत्याही वस्तुंचे/ सामानाला नैसर्गिक सांडपाण्याच्या प्रणालीमध्ये टाकण्यात येणार नसल्याने पाणी तुंबणे वा अडथळा होणार नाही. • डोंगराळ भागातील DFC मार्गाच्या स्थितीत सांडपाणी नलिका (duet) मार्गाने काढण्यात येईल जेणेकरून भुपृष्ठावरील किंवा भूमिगत पाण्याचा मार्ग बदलण्यात येणार नाही. • सांडपाणी तुंबु नये यासाठी बांधकाम स्थळ आणि कामगार वसाहतींच्या ठिकाणी सुनियोजीत सांडपाणी वहन प्रणाली तयार करण्यात येईल.
(दळणवळण टप्पा)	
• DFC जोडमार्गाच्या बांधकामामुळे स्थानिक सांडपाणी व्यवस्थेला अडथळा.	• DFC जोडमार्गाच्या दोन्ही बाजूला पर्याप्त क्षमतेच्या सांडपाणी वाहून जाण्याची सोय करण्यात येईल.
11. भूमि अधिग्रहण व पूनर्वसन	
(नियोजन / आरेखन टप्पा)	
• उपजिविका आणि मालमत्तेचे नुकसान	• पर्यावरणात्मक आणि सामाजिक प्रभावा व्यतिरिक्त संबंधितांच्या उपजिविकेचे आणि मालमत्तेचे नुकसान झाल्यास नुकसानभरपाई व इतर सहाय्य योजना तयारकरण्यात येईल.
(बांधकाम टप्पा)	
• बांधकामा दरम्यान होणाऱ्या वाहनांच्या वाहतूकीमुळे पादचारी (शेतकरी) यांना अडथळा	• पादचाऱ्यांसाठी बनविलेल्या मार्गावर सुचना फलक व निर्देष लावण्यात येतील.
12. सार्वजनिक सूरक्षा व विश्लेषण	
(दळणवळण टप्पा)	
•DFC परियोजनेच्या सुरवातीच्या टप्प्यात जिवितहानीचा धोका •DFC परियोजनेतील तटबंध, रस्ते व रेल्वे क्रॉसींगमुळे जनजीवन विस्कळीत.	• आधुनिक रेल्वे सुरक्षा यंत्रणेच्या नियमानुसार आरेखनावेळी वॉर्निंग सिग्नल, आलार्म प्रणाली सुनियोजित रितीने बसविण्यात येईल. • सर्व भूयारी मार्ग, रेल्वे उड्डाणपूल व लेव्हल कॉसींग जवळ RuB व RoB बांधण्यात येतील.

सुचना : वरील संभाव्य प्रभाव आणि त्याच्या उपाययोजनांची समग्र माहिती ESIA अहवालात देण्यात आली आहे.

पर्यावरण व्यवस्थापन योजना (EMP)

प्रकल्प उभारणी, नियोजन, बांधकाम आणि दळणवळण टप्पा दरम्यान उद्भवणाऱ्या समस्या कमी करणे किंवा टाळणे तसेच पर्यावरणाला कोणत्याही प्रकारचा धोका होू नये. यासाठी पर्यावरण व्यवस्थापन योजना (EMP) तयार करण्यात आली आहे. ज्यामध्ये पर्यावरणाला होणाऱ्या धोक्याची तिव्रता कमी करण्यासाठी योजण्यात आलेल्या उपाययोजना खालीलप्रमाणे आहेतः

1.ESIA अहवालात खालील पर्यावरण व्यवस्थापन योजना EMP चा समावेश करण्यात आला आहे.

- हरितपट्टा विकास योजना.
- खाण क्षेत्रासाठी पुनवर्सन आणि व्यवस्थापन योजना.
- ध्वनी आणि कंपन व्यवस्थापन आणि नियंत्रण.
- घनकचरा व्यवस्थापन योजना.
- हानीकारक रसायनांसाठी साठवणूक, हाताळणी आणि त्वरीत उपाययोजना
- सांडपाणी व्यवस्थापन
- भूधारण आणि पुनर्वसन व्यवस्थापन (RRP अहवालात निर्धारित केलेल्या अटीनुसार)
- कर्मचारी वसाहती मध्ये सांडपाणी आणि ग्रह व्यवस्था योजना.
- आरोग्य आणि सुरक्षा व्यवस्थापन.

१. पर्यावरणात्मक आणि सामाजीक मुद्यांबाबत खालील उपाययोजना टप्पा निहाय सुचविल्या आहेत.

अ) नियोजन / आरेखन टप्पा

- जमीन धारण, जंगल जमीनीचे परीवलन, वृक्ष संवर्धन, खाण क्षेत्र, बांधकामासाठी चे पाणी, बांधकामासाठी जागा निर्धारित करणे, बांधकाम सामुग्री उभारणीसाठी जागा निर्धारण आणि अनावश्यक वस्तूंची विल्हेवाट, बांधकाम शिबीर, तात्पुरत्या स्वरुपाचे यार्ड, बांधकामासाठी कंत्राटद्वार नियुक्त करणे.

ब) बांधकाम टप्पाः

- जागा साफ सफाई, बांधकाम साहित्य जमा करणे, सांडपाणी, गटार, उतार संरक्षण, इत्यादी बांधकाम कार्य, जल प्रदूषण, वायू प्रदूषण, ध्वनी, सुरक्षा, कर्मचारी वसाहत व्यवस्थापन, स्वच्छता कार्य, देखरेख आणि पुनर्वसन साठी कंत्राटदार विनियोजन.

क) दळणवळण टप्पाः

- दळणवळण कार्यादरम्यान होणाऱ्या प्रदूषणावर देखरेख तसेच विविध उपाययोजनांच्या कार्यक्षमतेवर देखरेख.

पर्यावरण देखरेख योजना (EMoP)

EMP चे प्रभाविपणे कार्यान्वयन करण्यासाठी तसेच प्रकल्प अधिक स्थायी आणि प्रभाविपणे करण्याच्या उद्देशाने पर्यावरण देखरेख योजना (EMoP) EMoP च्या माध्यमातून उपाययोजनांच्या देखरेखीवर प्रभावीपणे लक्ष ठेवण्यात येईल तसेच अतिरिक्त योजना सुचविता येतील, जेणेकरून संबंधीतांना त्यांचा अधिक चांगल्याप्रकारे फायदा होईल. ज्या खालील प्रमाणे आहेतः

1. कार्यक्षमता संकेतांक

- आरेखन/ नियोजन टप्पाः भूधारणा, उम्पींग स्थळ, बांधकाम कर्मचारी शिबीरे, खाणी.
  - बांधकाम टप्पा : हवेची गुणवत्ता, ध्वनी आणि कंपन स्तर, पाण्याची गुणवत्ता (भूजल, नदीचे पाणी, पिण्याचे पाणी), सांडपाण्याची गुणवत्ता, माती परिक्षण.
  - दळणवळण टप्पा : संवेदनशील रिसेप्टर्सच्या आवाजावर नियंत्रण, खाण क्षेत्राचे पुर्नवसन आणि वृक्ष संवर्धन.

2. पर्यावरण देखरेख कार्यक्रम

यामध्ये देखरेख पध्दती, देखरेखीच्या जागांची निश्चिती, देखरेखीचा कालावधी, देखरेखीच्या अंमलबजावणीची संघटनात्मक जबाबदारी, अंदाजीत खर्च यांचा यामध्ये समावेश आहे. पर्यावरणात्मक घटकांच्या देखरेखीसाठी योजण्यात आलेल्या विशिष्ट चाचण्या खालीलप्रमाणेः

- ध्वनी स्तर, पाण्याची गुणवत्ता, शुध्द हवेची गुणवत्ता, फळभाज्या व वृक्षांची हानी इत्यादी.

जनसंवाद बैठक (PCMs)

पहिल्या टप्प्यातील जनसंवाद बैठकीमध्ये – नुकसान भरपाई आणि रोजगार स्पर्धा, भूधारण, आणि पुनर्वसन, पर्यावरण व आरोग्य, सांडपाणी, सामाजीक आणि सांस्कृतीक परिणाम यांच्याबाबत मुद्दे उपस्थित करण्यात आले होते. पहिल्या जनसंवाद बैठकीस प्रकल्पबाधीत व्यक्ती (PAPs), ग्रामपंचायती सदस्य, जिल्हा प्रशासन, महसूल विभाग, वन खाते, स्थानिक महत्त्वाच्या व्यक्ती (खासदार, आमदार) NGO व वरिष्ठ नागरिक यांचा समावेश होता.

जनसंवाद सभेचे आयोजन मुख्याचे करून प्रकल्पामुळे बाधीत व्यक्ती व अन्य लाभार्थी यांना त्यांचे विचार, सल्ले देऊन संभाव्य ढवळाढवळ टाळण्यासाठी एक मंच असावा या हेतूने करण्यात आले आहे. ESIA संदर्भातील जनसंवाद सभा दोन वेगळया टप्प्यात आयोजीत करण्यात येणार असून ज्यामध्ये प्रकल्पाबाबत मते, सल्ले व जनतेकडून विचार मागविण्यात येणार असून ESIA प्रकल्पाच्या अभ्यासादरम्यान या माहितीचा अंतर्भाव करण्यात येईल. १४ जिल्हयांमध्ये जिल्हानिहाय जनसंवाद सभेचे आयोजन करण्यात येणार आहे.

- ESIA च्या पहिल्या टप्प्यातील जनसभा नोव्हें. २०१० (आणि महाराष्ट्रामध्ये फेब्रु. २०११ मध्ये) आयोजीत करण्यात आली होती. ज्यामध्ये आरंभीच्या टप्प्यातील कामांचा पर्यावरणावरील प्रभाव अभ्यासण्यात आला होता तसेच त्याबाबत जनतेकडून विचार व सल्ले मागवून त्यांचा ESIA अभ्यासात समावेश केला होता.

- ESIA च्या दुसऱ्या टप्प्यातील जनसभा सप्टें. २०११ मध्ये आयोजीत करण्यात येणार असून DFC ज्यामध्ये प्रकल्पामुळे ESIA वर होणारे संभाव्य परिणाम व त्यावरील उपाययोजना यांबाबत चर्चा समाविष्ट करण्यात आली असून जनतेचे प्रकल्पाबाबत विचार, सल्ले त्यांचा पर्यावरण आणि सामाजिक क्षेत्रावरील प्रभाव आणि उपाययोजना यांचा समावेश असेल.

ESIA प्रक्रियेत सुचना प्रसार

ESIA प्रकल्प प्रक्रिया समाधानकारकरित्या आणि सुनियोजीत रितीने पार पडावा यासाठी प्रकल्पबाधीत व्यक्ती, भागधारक आणि इतर अधिकारी यांच्यामार्फत सुचना प्रसारित करण्यात येत आहे. ESIA प्रक्रिया दोन टप्प्यात राबविण्यात येणार आहे.

- पहिल्या टप्प्यात ESIA अहवाल तयार झाल्यानंतर सुचना प्रसार करण्यात येणार आहे. DFCCIL च्या प्रत्येक कार्यालयात ESIA चा इंग्रजी भाषेतील अहवाल वितरीत करण्यात येईल त्याप्रमाणे DFC मार्गावरील महत्त्वाची रेल्वे स्थानके आणि जिल्हा अधिकारी यांच्याकडे स्थानिक भाषेतील हिंदी, मराठी आणि गुजराती भाषेतील अनुवादीत प्रती ठेवण्यात येतील तसेच प्रकल्पबाधीत व्यक्ती व गावांमध्ये वितरीत करण्यात येतील.
- ESIA प्रक्रियेच्या पूर्णत्वाच्या वेळी दुसऱ्या टप्प्यातील सुचना प्रसारित करण्यात येतील. DFCCIL च्या प्रत्येक कार्यालयात ESIA चा इंग्रजी भाषेतील अहवाल वितरीत करण्यात येईल त्याप्रमाणे DFC मार्गावरील महत्त्वाची रेल्वे स्थानके आणि जिल्हा अधिकारी यांच्याकडे स्थानिक भाषेतील हिंदी, मराठी आणि गुजराती भाषेतील अनुवादीत प्रती ठेवण्यात येतील तसेच प्रकल्पबाधीत व्यक्ती व गावांमध्ये वितरीत करण्यात येतील.

ESIA अहवालामध्ये निर्देषीत सुचना

- DFCCIL मुख्य कार्यालय, संबंधीत मुख्य प्रकल्प अधिकारी (CPM), प्रमुख स्टेशन्स त्यासचप्रमाणे प्रस्तावित DFC संरेखण आणि संबंधीत जिल्हा कार्यालये येथे ESIA अहवाल १७ सप्टें. २०११ पासून उपलब्ध होईल.
- प्रकल्पबाधीत गावांच्या सरपंच कार्यालयात ESIA अहवाल स्थानिक भाषेत १७ सप्टें. २०११ पासून उपलब्ध होईल.
- आपले विचार व सल्ले आपण इमेल dfc.phase2@gmail.com वर DFCCIL च्या मुख्य कार्यालय किंवा मुख्य प्रकल्प अधिकारी (CPM) I कार्यालयात २६ सप्टें. २०११ पर्यंत पाठवू शकतो.

अधिक माहितीसाठी :

AGM - रेवडी - दादरी प्रकल्प कार्यालयः ४ था माळा, मेट्रो स्टेशन बिल्डिंग, प्रगती मैदान, नवी दिल्ली - ११०००१
मुख्य प्रकल्प प्रबंधक - बडोदा : १३-१४, १७-१८, पॅनोरमा कॉम्प्लेक्स, ३ रा माळा, अलकापुरी, बडोदा - ७
मुख्य प्रकल्प प्रबंधक - मुबंई : ७ वा माळा, नवीन प्रशासकीय भवन, मध्य रेल्वे डी एन रोड, मुबंई - ४००००१
मुख्य प्रकल्प प्रबंधक - सुरतः ४ था माळा, अर्नस - १, इस्कॉन मॉलजवळ, दुमास रोड, पिपलोड,सुरत - ३९५००७
इमेल : dfc.phase2@gmail.com

ESIA अहवाल उपलब्ध असलेली महत्त्वाची स्थानके

- **महाराष्ट्र**
  पनवेल, कल्याण-वैतरणा, सफाळे, डहाणू रोड, केळवे रोड, पालघर.
- **गुजरात**
  संजाण, वापी, बलसाड, नवसारी, सचिन, कोसंबा (जं), भरुच
- **हरियाणा, राजस्थान, उ. प्रदेश, दिल्ली**
  रेवाडी, फरीदाबाद, दादरी.

Appendix-10b
Public Notices and Letters on Information Dissemination of Draft ESIA Report and Summary

Appendix-10b
Public Notices and Letters on Information Dissemination of Draft ESIA Report and Summary

[Public Notice_Gujarati]

જાહેર નોટિસ

ભારત સરકારના રેલ્વે મંત્રાલય અંતર્ગત ડેડીકેટેડ ફ્રેઈટ કોરીડોર કોર્પોરેશન ઓફ ઈન્ડિયા (DFCCIL) આથી જણાવે છે કે, જવાહરલાલ નહેરુ પોર્ટ ટ્રસ્ટ થી વડોદરા તથા રેવાડી થી દાદરી વચ્ચેના સૂચિત માલવહન સમર્પિત રેલ્વે માર્ગ (DFC) માટે કરવામાં આવેલ પર્યાવરણ તથા સામાજિક અસરોના અભ્યાસની ઘોષણા ૧૩, સપ્ટેમ્બર ૨૦૧૧ થી શરુ થશે અને ૨૬ સપ્ટેમ્બર ૨૦૧૧ના રોજ પુરી થશે.

સૂચિત ઈ.એસ. આઈ.એ. અહેવાલનો સાર સ્થાનિક ભાષામાં અને અંગ્રેજીમાં જે.એન.પી.ટી. થી વડોદરા તથા રેવાડી થી દાદરી વચ્ચેના અસરગ્રસ્ત ગામોની ગ્રામપંચાયતમાં વહેંચાશે. સૂચિત ઈ.એસ.આઈ.એ. અહેવાલ તેના પૂર્ણ સ્વરુપે ડેડીકેટેડ ફ્રેઈટ કોરીડોર કોર્પોરેશન ઓફ ઈન્ડિયાના સી.પી.એમ. કાર્યાલય, ડી.એફ.સી. એલાઈનમેન્ટ પર આવતા મુખ્ય સ્ટેશનો અને નીચે દર્શાવેલ જિલ્લા કાર્યાલય ખાતે ઉપલબ્ધ હશે.

લોકો પાસેથી માત્ર સી.પી.એમ. કાર્યાલય ખાતે રુબરૂ, ટપાલ કે ફેક્ષ દ્વારા સૂચનો અભિપ્રાયો સ્વીકારવામાં આવશે. રસ ધરાવતા લોકો પોતાના અભિપ્રાયો નીચેના ઈ.મેઈલ સરનામે પણ મોકલી શકે છે. dfc. phase2@gmail. com

અભિપ્રાયા તથા સૂચનો ૨૬ સપ્ટેમ્બર ૨૦૧૧ સુધી સ્વીકારવામાં આવશે

DFCCILના સી.પી.એમ. કાર્યાલયોએ :

- **DFCCIL, Head Office,**
  પ્રગતિ મેદાન, ૫મો માળ, મેટ્રો સ્ટેશન બિલ્ડીંગ, નવી દિલ્હી-૧૧૦૦૦૧ (Tel: 91-11-23454700; Fax: 91-11-23454701)
- **CPM કાર્યાલય મુંબઈ:**
  ૭મા માળે, નવું વહીવટી મકાન, સેન્ટ્રલ રેલ્વે, ડી.એન.રોડ, મુંબઈ-૪૦૦૦૦ (Tel: 91-22-22634184; Fax: 91-22-22634184)
- **CPM કાર્યલય સુરત:**
  ૪ થે માળ અરુંશ-૧, ઈસ્કોન મોલ પાસે,ડુમસ રોડ,પીપલોદ, સુરત-૩૯૫૦૦૭ (Tel: 91-261-2633250; Fax: 91-261-2633250)
- **ચીફ પ્રોજેક્ટ મેનેજર-વડોદરા.**
  ૧૩-૧૪ ૧૭-૧૮ પનોરમા કોમ્પ્લેક્ષ ૩ જે માળે અલકાપુરી-વડોદરા-૭ (Tel: 91-265-2326024; Fax: 91-265-2326027)
- **AGM-રેવાડી-દાદરી પ્રોજેક્ટ ઑફિસ:**
  સ્ટારહાઉસ, ૧લો માળ, એ-૧૦૨, સેક્ટર ૪,નોઈડા, ઉત્તરપ્રદેશ (Tel: 91-120-4309720; Fax: 91-120-4134554)

સૂચિત ઈ.એસ.આઈ.એ. અહેવાલ ઉપલબ્ધ છે:

નીચેના મહત્ત્વના સ્ટેશનોએ:

મહારાષ્ટ્ર:
પનવેલ(જં),કલ્યાણ(જં),વૈતરણ,કેલ્વે રોડ,પાલઘર,દહાણું રોડ
ગુજરાત:
સંજાણ,વાપી,વલસાડ,બિલીમોરા(જં),નવસારી,સચીન,કોસંબા(જં),ભરુચ(જં)
હરિયાણા,રાજસ્થાન,યુ.પી.,દિલ્હી:
રેવાડી(જં),ફરીદાબાદ, દાદરી.

નીચેના જીલ્લા કલેક્ટર કાર્યાલયોએ:

મહારાષ્ટ્ર:રાયગઢ ,થાણે
ગુજરાત: વલસાડ, નવસારી, સુરત, ભરુચ, વડોદરા
હરિયાણા,રાજસ્થાન,યુ.પી.,દિલ્હી: રેવાડી(જં), મેવાત, ગુરગાંવ, પલવલ,ફરીદાબાદ,અલવર,ગૌતમબુધ્ધનગર.

સહી DFCCIL વતી

[Public Notice_Hindi]

पब्लिक नोटिस

डेडिकेटेड फ्रेट कॉरिडोर कॉरपोरेशन ऑफ इंडिया एतद् द्वारा सूचित करता है, कि जे. एन. पी. टी. से वडोदरा तथा रेवाड़ी से दादरी के मध्य प्रस्तावित डेडिकेटेड फ्रेट कॉरिडोर परियोजना चरण –2 पर मसौदा ESIA रिर्पोट का प्रकटीकरण 17 सितम्बर, 2011 से आरंभ होगा और 26 सितम्बर 2011 तक पूरा कर लिया जाएगा।

मसौदा ESIA रिर्पोट का सारांश अंग्रेजी और स्थानीय भाषाओं में जे. एन. पी. टी. से वड़ोदरा और रेवाड़ी से दादरी के मध्य पड़ने वाले सभी प्रभावित गाँवों में भी वितरित किया जाएगा और मसौदा ESIA रिर्पोट का एक संपूर्ण सेट DFCCIL के CPM कार्यालयों, प्रस्वावित DFC संरेख पर पड़ने वाले प्रमुख स्टेशनों और निम्नलिखित जिला कार्यालयों में उपलब्ध होगा।

जनता की टिप्पणियाँ DFCCIL के CPM कार्यालयों में प्रत्यक्ष रूप से या फैक्स या डाक द्वारा 26 सितम्बर 2011तक स्वीकार की जाएँगी। इच्छुक वयक्ति अपनी टिप्पणियाँ निम्नलिखित ई–मेल पते पर भी भेज सकते हैः dfc.phase2@gmail.com

टिप्पणियाँ /राय 26 सितम्बर 2011 तक स्वीकार किए जाएँगे।

DFCCIL के निम्नलिखित ***CPM*** कार्यालयों पर मसौदा ESIA रिर्पोट उपलब्ध हैं, और टिप्पणियाँ स्वीकार की जाएँगी।

- डेडिकेटिड फ्रेट कॉरीडोर कारपोरेशन ऑफ इंडिया लिमिटेड (DFCCIL)
  (रेल मंत्रालय के अन्तर्गत) पाचवी मंजिल प्रगति मैदान मेट्रों स्टेशन बिल्डिंग कॉम्पलेक्स, नई दिल्ली–110001
  (Tel: 91-11-23454700; Fax: 91-11-23454701)
- CPM कार्यालय मुम्बई
  7वीं मंजिल, न्यू प्रशासनिक भवन, सेन्ट्रल रेलवे, डी॰एन॰ रोड, मुम्बई–400 001, महाराष्ट्र
  (Tel: 91-22-22634184; Fax: 91-22-22634184)
- CPM कार्यालय सूरत
  चौथी मंजिल, अरुण–1, इस्कॉन मॉल के पास, पीपलोड, सूरत–395 007, गुजरात
  (Tel: 91-261-2633250; Fax: 91-261-2633250)
- CPM कार्यालय वडोदरा
  13–14,17–18, पैनोरमा, कॉम्पलेक्स, तीसरी मंजिल, आर सी दत्त रोड, अलकापुरी, वडोदरा–395007 गुजरात
  (Tel: 91-265-2326024; Fax: 91-265-2326027)
- AGM कार्यालय रेवाड़ी से दादरी
  स्टार हाऊस, प्रथम मंजिल, ए–102, सैक्टर–4, नोएडा, उत्तर प्रदेश
  (Tel: 91-120-4309720; Fax: 91-120-4134554)

मसौदा ESIA रिर्पोट निम्नलिखित मुख्य स्टेशनों पर उपलब्ध हैः

- महाराष्ट्र
  पनवेल (जंक्शन), कल्याण (जंक्शन), वैतरणा (जंक्शन), केतवे रोड (जंक्शन), पालधर (जंक्शन), दहानू रोड (जंक्शन)
- गुजरात
  संजन , वापी, वलसाद, बिलीमोड़ा (जंक्शन), नवसारी, सचिन, कोसाम्बा (जंक्शन), भरुच (जंक्शन)
- हरियाणा, राजस्थान, उत्तर प्रदेश, दिल्लीरेवाड़ी (जंक्शन), फरीदाबाद, दादरी

मसौदा ESIA रिर्पोट निम्नलिखित जिला कार्यालयों पर उपलब्ध हैः

- महाराष्ट्र
  राजगढ़, ठाणे
- गुजरात
  वलसाद, नवसारी, सूरत, भरुच, वडोदरा
- हरियाणा, राजस्थान, उत्तर प्रदेश, दिल्ली
  रेवाड़ी, मेवात, गुड़गाँव, पलवल, फरीदाबाद, अलवर, गौतम बुद्ध नगर

DFCCIL द्वारा हस्ताक्षरित

[Public Notice_Marathi]

जाहिर सुचना

रेल्वे मंत्रालयाच्या अधिन असलेल्या "भारतीय समर्पित मालवाहतुक जोडमार्ग महामंडल (DFFCCIL)"द्वारा सुचित करण्यात येते की, जे. एन. पी. टी. ते वडोदरा आणि रेवाडी ते दादरी दरम्यानच्या प्रस्तावित समर्पित मालवाहतुक जोडमार्गामुळे (DFC) होनारया संभाव्य पर्यावरनात्मक आणि सामाजिक प्रभावांच्या मुल्यांकन अहवालांचे (ESIA) अध्यन दि. १७ सप्टेम्बर २०११ रोजी सुरु करण्यात येणार असुन, मुल्यांकन अध्यन दि. २६ सप्टेम्बर २०११ रोजी पुर्ण करण्यात येईल.

जे एनपीटी ते बडोदा आणि रेवाडी ते दादरी दरम्यानच्या प्रकल्पबाधीत गावांच्या ग्रामपंचायतीमध्ये ESIA अहवालाचा मसूदा इंग्रजी आणि स्थानिक भाषेत ठेवण्यात येईल. ESIA चा समग्र अहवाल DFCCIC चे CPM कार्यालय, प्रमुख रेल्वे स्टेशन्स, जिल्हा कार्यालये येथे ठेवण्यात येईल. कार्यालये खालीलप्रमाणे आहेत.

जनतेच्या सुचना फॅक्स, पत्रव्यवहार, इमेलच्या माध्यमातून फक्त DFCCIC चे CPM कार्यालयातच स्विकारण्यात येतील. सुचना dfc.phase2@gmail.com या इमेल वर पाठवाव्यात.

सुचना / सल्ले दि. २६सप्टेंबर २०११ पर्यंतच स्विकारण्यात येतील

अधिक माहितीसाठी :
डेडीकेटेड फ्रेट कॉरीडॉर कॉरपोरेशन ऑफ इंडिया लिमिटेड (DFCCIL)
(रेल्वे मंत्रालय), ५ वा माळा, मेट्रो स्टेशन बिल्डिंग, प्रगती मैदान, नवी दिल्ली – ११०००१
(टेलि: ९१-११-२३४५४७००; फॅक्स : ९१-११-२३४५४७०१)
मुख्य प्रकल्प प्रबंधक - बडोदा : १३-१४, १७-१८, पॅनोरमा कॉम्प्लेक्स, ३ रा माळा, आर सी दत्त रोड, अलकापुरी, बडोदा – ७
(टेलि : ९१-२६५-२३२६०२४; फॅक्स : ९१-२६५-२३२६०२७)
मुख्य प्रकल्प प्रबंधक - मुबंई : ७ वा माळा, नवीन प्रशासकीय भवन, मध्य रेल्वे डी एन रोड, मुबंई - ४००००१
(टेलि: ९१-२२-२२६३४१८४; फॅक्स : ९१-२२-२२६३४१८४)
मुख्य प्रकल्प प्रबंधक - सुरत: ४ था माळा, अर्नस - १, ड्रस्कॉन मॉलजवळ, दुमास रोड, पिपलोड,सुरत – ३१५००७
(टेलि : ९१-२६१-२६३३२५०; फॅक्स : ९१-२६१-२६३३२५०)
AGM - रेवडी - दादरी प्रकल्प कार्यालय :
स्टार हाऊस, १ ला माळा, ए – १०२, सेक्टर – ४, नॉयडा, उत्तर प्रदेश
(टेलि : ९१-१२०-४३०१७२०; फॅक्स : ९१-१२०-४१३४५५४)

ESIA अहवाल उपलब्ध असलेली महत्त्वाची स्थानके

<u>महाराष्ट्र</u>
पनवेल (जं), कल्याण (जं), वैतरणा, केळवे रोड, पालघर, डहाणू रोड,.
<u>गुजरात</u>
सनजन, वापी, वलसाड, बिलीमारो (जं), नवसारी, सचिन, कोसंबा (जं), भरुच (जं),
<u>हरियाणा, राजस्थान, उ. प्रदेश, दिल्ली</u>
रेवाडी (जं), फरीदाबाद, दादरी.

ESIA अहवाल उपलब्ध असलेली जिल्हाधिकारी कार्यालये

<u>महाराष्ट्र</u>
रायगड, ठाणे
<u>गुजरात</u>
वलसाड, नवसारी, सुरत, भरुच, बडोदा
<u>हरियाणा, राजस्थान, उ. प्रदेश, दिल्ली</u>
रेवाडी, मेवट, गोरेगाव, पनवेल, फरिदाबाद, अलवर, गौतम बुध्द नगर.

Signature by DFCCIL

[Public Notice_English]

PUBLIC NOTICE

DFCCIL (Dedicated Freight Corridor Corporation of India) under Ministry of Railway hereby inform that disclosure of draft ESIA (Environmental and Social Impact Assessment) reports of proposed DFC (Dedicated Freight Corridor) Project between JNPT and Vadodara and between Rewari and Dadri will start from 17th September, 2011 and will be completed by 26th September, 2011.

Summary of the draft ESIA reports in vernacular language and in English will be distributed to all the affected village offices between JNPT and Vadodara and between Rewari and Dadri. A full set of the draft ESIA reports will be available in the CPM offices of DFCCIL, major stations along the proposed DFC alignment and districts offices as mentioned below.
Comments from the public will be accepted only at CPM offices of DFCCIL through direct delivery, fax or post. Interested persons can also send comments to the following email address: dfc.phase2@gmail.com.

Comments/opinions will be received up to 26th September, 2011.

Draft ESIA report is available and Comments are received

At the Following CPM Offices of the DFCCIL

- Dedicated Freight Corridor Corporation of India Limited (DFCCIL)
  (Under Ministry of Railways), Fifth Floor, Pragati Maidan, Metro Station Building Complex, New Delhi – 110 001
  (Tel: 91-11-23454700; Fax: 91-11-23454701)
- CPM Office Mumbai:
  7th Floor, New Administrative Building, Central Railway, D.N. Road, Mumbai – 400 001, Maharashtra
  (Tel: 91-22-22634184; Fax: 91-22-22634184)
- CPM Office Surat:
  4th Floor, Aruns-1, Near Iscon Mall, Dumas Road, Piplod, Surat – 395 007, Gujarat
  (Tel: 91-261-2633250; Fax: 91-261-2633250)
- CPM Office Vadodara:
  13-14, 17-18, Panorama Complex, 3rd Floor, R. C. Dutt Road, Alkapuri, Vadodara – 395 007, Gujarat
  (Tel: 91-265-2326024; Fax: 91-265-2326027)
- AGM Office Rewari-Dadri:
  "Star House", First Floor, A-102, Sector-4, Noida, Uttar Pradesh
  (Tel: 91-120-4309720; Fax: 91-120-4134554)

Draft EIA report is available

At the Following Major Stations

- Maharashtra
  Panvel (Jn), Kalyan (Jn), Vaitarna, Kelve Road, Palghar, Dahanu Road
- Gujarat
  Sanjan, Vapi, Valsad, Bilimora (Jn), Navsari, Sachin, Kosamba (Jn), Bharuch(Jn)
- Haryana, Rajasthan, UP, Delhi
  Rewari (Jn), Faridabad, Dadri

At the Following District Collectorate Offices

- Maharashtra
  Raigarh, Thane
- Gujarat
  Valsad, Navsari, Surat, Bharuch, Vadodara
- Haryana, Rajasthan, UP, Delhi
  Rewari, Mewat, Gurgaon, Palwal, Faridabad, Alwar, Gautam Budha Nagar

Signature by DFCCIL

[Letter to District Collector_English]

FOR DISTRIBUTION OF DRAFT ESIA AND SUMMARY REPORT for DISTRICT COLLECTORATE OFFICE

District Collector
Vadodara District
District Administration Office
Vadodara, Gujarat

New Delhi, dated 06.09.2011

Sub: Distribution of the draft Environment and Social Impact Assessment (ESIA) Report and Summary of ESIA for Development of Dedicated Freight Corridor (DFC) Project between JNPT and Vadodara and between Rewari and Dadri

Based on the request of the Government of India, the Government of Japan has assigned a team of Consultants to conduct a Preparatory Survey on Dedicated Freight Corridor Project (Phase 2) between JNPT and Vadodara and between Rewari and Dadri. The study is funded by the Japan International Cooperation Agency (JICA). It is a study to the Environment and Social Impact Assessment (ESIA) carried out by the JICA survey team. The JICA team has completed the study and prepared a draft ESIA report and its summary.

The study has been carried out as per "JICA Guidelines for Environmental and Social Considerations", whose requirements include disclosure of draft ESIA report. The objectives of disclosure are as follows:

1) Disseminate information on DFC Project in terms of the environmental and social impacts induced by DFC Project as well as general plan on the management, monitoring and mitigation measures of the environment of the study area.
2) Collection of comments and opinions from the public on environment and social issues on DFC project and further, it will be reflected in final ESIA report.

The distribution of draft ESIA reports and the summary will be started from 17th September, 2011 and completed by 26th September, 2011.

The Summary of the draft ESIA report in vernacular languages as well as English version will also be distributed to all affected village offices between JNPT and Vadodara and between Rewari and Dadri and a full set of draft ESIA reports will be available in CPM offices of DFCCIL, major stations along the proposed DFC alignment, and concerned districts offices. The list of CPM offices, district offices, major stations and project affected villages is enclosed in the Appendix A.

The JICA Survey Team has engaged DHI (India) Pvt. Ltd, Delhi for preparation of 'ESIA and RRP Study' and DHI team will help for distribution of reports and collection of

comments. Comments from people will be accepted only at CPM offices of DFCCIL through direct delivery, fax or post upto 26th September, 2011. Draft ESIA reports will be collected back by DHI by end of September, 2011.

In order to smooth implementation for disclosure of draft ESIA reports, all concerned district collectorate offices are requested to accept these reports, and take necessary action for public viewing.

The representative of the above local consulting firm would contact to your office shortly for distribution of reports.

Considering the high priority assigned to this project by Govt. of India and urgent need to complete the study in time, all necessary assistance may be rendered to the JICA Survey Team and the above local consulting firm in order to facilitate disclosure of reports without any delay including receipt of draft ESIA reports by your office and making arrangement for public view.

Suitable action in this regard may please be taken.

Signed by (DFCCIL)

Attachment:

- List of Places for the Information Dissemination of the Draft ESIA Report and its Summary

[Letter to Station Master_English]

FOR DISTRIBUTION OF DRAFT EIA AND SUMMARY REPORT for MAJOR RAIL STATIONS

The Divisional Railway Manager,
Western Railway
Church Gate, Mumbai

New Delhi, dated 06.09.2011

Sub: Distribution of the draft Environment and Social Impact Assessment (ESIA) Report and Summary of ESIA for Development of Dedicated Freight Corridor (DFC) Project between JNPT and Vadodara and between Rewari and Dadri

Based on the request of the Government of India, the Government of Japan has assigned a team of Consultants to conduct a Preparatory Survey on Dedicated Freight Corridor Project (Phase 2) between JNPT and Vadodara and between Rewari and Dadri. The study is funded by the Japan International Cooperation Agency (JICA). It is a study to the Environment and Social Impact Assessment (ESIA) carried out by the JICA survey team. The JICA team has completed the study and prepared a draft ESIA report and its summary.

The study has been carried out as per "JICA Guidelines for Environmental and Social Considerations", whose requirements include disclosure of draft ESIA report. The objectives of disclosure are as follows:

1) Disseminate information on DFC Project in terms of the environmental and social impacts induced by DFC Project as well as general plan on the management, monitoring and mitigation measures of the environment of the study area.
2) Collection of comments and opinions from the public on environment and social issues on DFC project and further, it will be reflected in final ESIA report.

The distribution of draft ESIA reports and the summary will be started from 17th September, 2011 and completed by 26th September, 2011.

The Summary of the draft ESIA report in vernacular languages as well as English version will also be distributed to all affected village offices between JNPT and Vadodara and between Rewari and Dadri and a full set of draft ESIA reports will be available in CPM offices of DFCCIL, major stations along the proposed DFC alignment, and concerned districts offices. The list of CPM offices, district offices, major stations and project affected villages is enclosed in the Appendix A.

The JICA Survey Team has engaged DHI (India) Pvt. Ltd, Delhi for preparation of 'ESIA and RRP Study' and DHI team will help for distribution of reports and collection of comments. Comments from people will be accepted only at CPM offices of DFCCIL

through direct delivery, fax or post upto 26th September, 2011. Draft ESIA reports will be collected back by DHI by end of September, 2011.

In order to smooth implementation for disclosure of draft ESIA reports, all concerned major stations are requested to accept these reports, and take necessary action for public viewing.

The representative of the above local consulting firm would contact to your office shortly for distribution of reports.

Considering the high priority assigned to this project by Govt. of India and urgent need to complete the study in time, all necessary assistance may be rendered to the JICA Survey Team and the above local consulting firm in order to facilitate disclosure of reports without any delay including receipt of draft ESIA reports by your office and making arrangement for public view.

Suitable action in this regard may please be taken.

Signed by (DFCCIL)

Attachment:

- List of Places for the Information Dissemination of the Draft ESIA Report and its Summary

[Letter to Sarpanch_Gujarati]

સૂચિત પર્યાવરણ અને સામાજિક અસરોનો અભ્યાસ અને સાર-અહેવાલ

ગ્રામ પંચાયત કાર્યાલયને વિતરીત કરવા માટે

સરપંચશ્રી, **નવી દિલ્હી, ૬-૯-૨૦૧૧**

ગ્રામ પંચાયત,

વિષયઃ જવાહરલાલ નહેરુ પોર્ટ ટ્રસ્ટ થી વડોદરી તથા રેવાડીથી દાદરી વચ્ચેના માલવહન સમર્પિત રેલ્વે માર્ગના વિકાસ માટે થયેલ સૂચિત- પર્યાવરણ અને સામાજિક અસરોનો અભ્યાસ અને સાર-અહેવાલ વિતરીત કરવા માટે

ભારત સરકારની વિનંતિ ધ્યાનમાં લઈને જાપાન સરકારે જવાહરલાલ નહેરુ પોર્ટ ટ્રસ્ટ થી વડોદરા તથા રેવાડી થી દાદરી વચ્ચેના માલ-વહન સમર્પિત રેલ્વે માર્ગ ફેઝ-૨ માટે, પ્રારંભિક સર્વેક્ષણ કરવાનું કામ નિષ્ણાતોની ટુકડીને સોંપેલું છે. આ અભ્યાસ કરવા માટે જાપાન ઈન્ટરનેશનલ કોઓપરેશન એજન્સી (JICA) ની આર્થીક મદદ મળી છે. જાયકા સર્વે ટુકડી દ્વારા પર્યાવરણ અને સામાજિક અસરોનો અભ્યાસ હાથ ધરાયો હતો. જાયકા ટુકડી દ્વારા આ અભ્યાસ પુરો થયો છે અને તેનો સૂચિત ઈ.એસ.આઈ.એ. અહેવાલ તથા તેનો સાર તૈયાર કરાયો છે.

આ અભ્યાસ જાયકાની પર્યાવરણ તથા સામાજીક માપદંડોની માર્ગદર્શિકા મુજબ હાથ ધરાયો છે અને તેની જરૂરિયાતોમાં આ સૂચિત આહેવાલની જાણકારી સંબંધિત લોકોને આપવાનો સમાવેશ પણ છે. આ ઘોષણા કરવાના હેતુઓ નીચે પ્રમાણે છેઃ

(૧) ડી.એફ.સી. પ્રાયોજનાની પર્યાવરણીય અને સામાજિક અસરોની જાણકારી પહોંચાડવી જેમાં અભ્યાસ વિસ્તારના પર્યાવરણ વ્યવસ્થાપન, દેખરેખ તથા અસર નિવારણ પગલાંનો પણ સમાવેશ થાય છે.

(૨) લોકો પાસેથી DFC પ્રોજેક્ટ સંબંધિત પર્યાવરણ અને સામાજિક મુદ્દાઓ અંગે અભિપ્રાય તથા સૂચનો મેળવવા અને વધુમાં તેનો અંતિમ ઈ.એસ.આઈ.એ. અહેવાલમાં સમાવેશ કરવો.

૧૭ સપ્ટેમ્બર ૨૦૧૧થી સૂચિત ઈ.એસ. આઈ.એ. અહેવાલ તથા તેના સારનું વિતરણ કરવામાં આવશે અને ૨૬ સપ્ટેમ્બર ૨૦૧૧ સુધીમાં તે કામ પુરું કરવામાં આવશે.

જવાહરલાલ નહેરુ પોર્ટ ટ્રસ્ટથી વડોદરા અને રેવાડીથી દાદરી વચ્ચેના તમામ અસરગ્રસ્ત ગામોના કાર્યાલયે અંગ્રેજી અને સ્થાનિક ભાષામાં સૂચિત ઈ.એસ.આઈ. એ. અહેવાલનો સાર વહેચવામાં આવશે જ્યારે આ અહેવાલ તેના સંપૂર્ણ સ્વરૂપમાં DFCCILના CPM કાર્યાલયે, ડી.એફ.સી. એલાઈનમેન્ટના મુખ્ય સ્ટેશનોએ તથા સંબંધિત જીલ્લા કલેક્ટરશ્રીઓ પાસે ઉપલબ્ધ હશે. CPM કાર્યાલયો, જિલ્લા કાર્યાલયો, મહત્વના સ્ટેશનો અને પ્રોજેક્ટથી અસર પામનાર ગામોની યાદી આ સાથે પૂરવણી A માં આપેલ છે.

જાયકા સર્વે ટુકડીએ દીલ્હીની DHI (India) પ્રાઈવેટ લીમિટેડ ને ઈ.એસ. આઈ. એ. તથા આર આર.પી. અભ્યાસ તૈયાર કરવા રાખેલ છે અને DHI ની ટીમ અહેવાલનું વિતરણ કરવામાં અને અભિપ્રાયો ભેગા કરવામાં મદદરૂપ થશે. લોકોના સૂચનો માત્ર DFCCIL - CPMના કાર્યાલયો ખાતે રૂબરુ, ફેક્ષ કે ટપાલ દ્વારા ૨૬ સપ્ટેમ્બર ૨૦૧૧ સુધી સ્વિકારાશે. સપ્ટેમ્બરના અંત સુધીમાં ડી.એચ.આઈ. દ્વારા સૂચિત ઈ.એસ.આઈએ. અહેવાલ પરત ભેગા કરવામાં આવશે.

સૂચિત ESIA અહેવાલની જાણકારી સરળતાથી સૌને મળે તે માટે દરેક પંચાયત કાર્યાલયોને વિનંતિ કરવામાં આવે છે કે તેઓ આ અહેવાલ સ્વિકારે અને લોકો જોઈ શકે તે માટે જરુરી પગલાં લે.

ઉપરોક્ત નિષ્ણાત સેવા પુરી પાડનાર સંસ્થાના પ્રતિનિધિઓ ટુંક સમયમાં અહેવાલના વિતરણ સંબંધે તમારો સંપર્ક કરશે.

ભારત સરકાર દ્વારા આ યોજનાને ઉચ્ચ અગ્રિમતા અપાયેલ છે તે ધ્યાનમાં લઈને આ અભ્યાસ તાત્કાલિક પુરો થવા જરૂરી છે, આ માટે જાયકા સર્વે ટીમ તથા સ્થાનિક નિષ્ણાત સેવા પુરી પાડતી સંસ્થા પાસેથી કોઈપણ પ્રકારના વિલંબ વગર સૂચિત ઈ.એસ.આઈ.એ. અહેવાલ મેળવી લોકો જોઈ શકે તે પ્રકારે આ દિશામાં યોગ્ય પગલાં લેશોજી.

સહી

DFCCIL દ્વારા

[Letter to Sarpanch_Hindi]

ग्राम प्रशासनिक कार्यालयों को मसौदा ESIA और सारांश रिर्पोट के वितरण हेतु

ग्राम प्रमुख **नई दिल्ली 06.09.2011**
ग्राम प्रशासनिक कार्यालय

विषय : जे.एन. पी.टी. एवं वडोदरा तथा रेवाड़ी व दावरी के मध्य डेडिकेटेड फ्रेट परियोजना के विकास हेतु मसौदा पर्यावरणीय व सामाजिक आकलन (ESIA) रिर्पोट और ESIA के सारांश का वितरण।

भारत सरकार के अनुरोध पर जापान सरकार ने जे. एन. पी. टी. से वडोदरा तथा रेवाड़ी से दादरी के मध्य डेडिकेटेड फ्रेट कॉरिडोर परियोजना चरण –2 पर एक प्रारम्भिक सर्वे (Preparatory Survey) करने हेतु परामर्श दाताओं की एक टीम नियोजित की है। अध्ययन हेतु धन जापान इंटरनेशनल कॉपरेशन एजेंसी (JICA) द्वारा उपलब्ध कराया जा रहा हैं। यह JICA सर्वे टीम द्वारा पर्यावरणीय व सामाजिक प्रभाव आकलन (ESIA) पर किया गया अध्ययन हैं। JICA टीम ने अध्ययन पूरा करके एक मसौदा ESIA रिर्पोट और उसका सारांश तैयार कर लिया है।

यह अध्ययन "पर्यावरणीय व सामाजिक सरकारों हेतु JICA दिशानिर्देश" के अनुसार किया गया है, जिसकी आवश्यकताओं में मसौदा ESIA रिर्पोट का प्रकटीकरण (Disclosure) शामिल है।
प्रकटीकरण (Disclosuse) के उदेश्य है :

1) DFC परियोजना से उत्पन्न पर्यावरणीय व सामाजिक प्रभावों से संबंधित DFC परियोजना की सूचना प्रसारित करना और साथ ही अध्ययन क्षेत्र के पर्यावरण के प्रबंधन निरीक्षण और निवारक उपायो के बारे में एक सामान्य योजना की सूचना प्रसारित करना।
2) DFC परियोजना के पर्यावरणीय व सामाजिक मुददों पर जनता के टिप्पणियाँ व मत एकत्र करना और इन्हें फाइनल ESIA रिर्पोट में समाहित किया जाएगा।

मसौदा ESIA रिर्पोट और सारांश का वितरण 17 सितम्बर, 2011 से आरंभ होगा और 26 सितम्बर 2011 तक पूरा कर लिया जाएगा।

मसौदा ESIA रिर्पोट का सारांश अंग्रेजी और स्थानीय भाषाओं में जें. एन. पी. टी. से वड़ोदरा और रेवाड़ी से दादरी के मध्य पड़ने वाले सभी प्रभावित गाँवों में भी वितरित किया जाएगा और मसौदा ESIA रिर्पोट का एक संपूर्ण सेट DFCCIL के CPM कार्यालयों, प्रस्वावित DFC संरेख पर पड़ने वाले प्रमुख स्टेशनों और संबंधित जिला कार्यालयों में उपलब्ध होगा।

JICA सर्वे टीम ने ESIA और RRP अध्ययन तैयार करने हेतु DHI(India) Pvt. Ltd., दिल्ली को नियुक्त किया है, और DHI टीम रिर्पोट के वितरण एवं टिप्पणियों के एकत्रण में सहायता करेगी। जनता की टिप्पणियाँ DFCCIL के CPM कार्यालयों में प्रत्यक्ष रूप से या फैक्स या डाक द्वारा 26 सितम्बर 2011तक स्वीकार की जाएँगी। सितम्बर 2011 के अंत तक मसौदा ESIA रिर्पोट DHI द्वारा वापस एकत्र कर ली जाएगी।

मसौदा ESIA रिर्पोट के प्रकटीकरण के सुगम कार्यान्वयन हेतु सभी पंचायत कार्यालयों से इन रिर्पोटों को स्वीकार करने और जनता को दिखाने हेतु आवश्यक कदम उठाने का अनुरोध किया जाता है।

उपयुक्त स्थानीय परामर्शदाता संस्थाओं के प्रतिनिधि शीघ्र ही रिर्पोटों के विवरण हेतु आपसे संपर्क करेंगे।

भारत सरकार द्वारा इस परियोजना को दी गई उच्च प्राथमिकता और अध्ययन को ध्यान में रखते हुए JICA सर्वे टीम और उर्पयुक्त स्थानीय परामर्शदाता संस्थओं को सभी आवश्यक सहयोग प्रदान करें ताकि बिना किसी विलम्ब के रिर्पोटों का प्रकटीकरण हो सके जिसमें मसौदा ESIA रिर्पोट की आपके कार्यालय द्वारा प्राप्ति और जनता को दिखाने हेतु आवश्यक प्रबंध शामिल हैं।

इस संदर्भ मे उपयुक्त करवाई की जाए।

DFCCIL द्वारा हस्ताक्षरित

[Letter to Sarpanch_Marathi]

ESIA मसूदा आणि साराशं अहवालाचे स्थानिक ग्रामीण प्रशासकिय कार्यालयात वितरण

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ग्रामीण प्रशायकिय कार्यालय

विषय : जेएनपीटी ते बडोदा आणि रेवाडी ते दादरी दरम्यानच्या समर्पित मालवाहतूक जोडमार्ग (**DFC**) विकासाचा पर्यावरण व सांमाजिक प्रभाव मुल्यांकन **ESIA** मसूदा आणि अहवालाच्या वितरण.

भारत सरकारच्या विनंतीनुसार, जापान सरकार ने तंत्रज्ञानांच्या माध्यातून जेएनपीटी ते बडोदा आणि रेवाडी ते दादरी दरम्यानच्या समर्पित मालवाहतूक जोडमार्ग प्रकल्प (२ टप्पा) साठी एक सर्वेक्षण केले. या अध्यान साठी जापान इंटरनेशलन कोऑपरेशन एजन्सी (JICA) ने अर्थसहाय्य दिले होते. JICA च्या सर्वेक्षण पथकाने मुख्त्ये करुन प्रकल्पमुळे पर्यावरण आणि सामाजिक प्रभाव मुल्यांकन (ESIA) चे सर्वेक्षण केले. JICA च्या पथकाने अध्ययन पूर्ण करुन ESIA अहवालाचा मसूदा आणि सारांश तयार केले.

या अध्ययनानूसार ESIA अहवालाचा मसूदा "JICA च्या पर्यापरणात्क आणि सामाजिक प्रभावाच्या नियमावली प्रमाणे" तयार करण्यात आला आहे.ज्याचे मुद्दे खालील प्रमाणे आहेत.
१) प्रकल्प क्षेत्राच्यावर DFC प्रकल्पामुळे होणारे पर्यावरणत्मक आणि सामसजिक पभावाचे मुल्यांकन तसेच सर्वसाधारण योजनांचे व्यवस्थापन, देखरेख आणि उपजोजना विषयीच्या माहिती प्रसारीत करणे.

२) DFC प्रकल्पामुळे उद्भावणचा पर्यावरण आणि सामाजिक मुद्दयांबाबत जनते कडून विचार व सल्ले मागविणे व त्यांना अंतिम ESIA अहवालात समाविष्ट करणे.
ESIA अहवालाचा मसूदा आणि सारांशाचे वितरण १७ सप्टेंबर २०११ ला सुरु करणात येऊन हे काम २६ सप्टेंबर २०११ पर्यंत पूर्ण करण्यात येईल.

जेएनपीटी ते बडोदा आणि रेवाडी ते दादरी मार्गामुळे प्रभावीत झालेल्या प्रत्येक गावाच्या ग्रामपंचायत कार्यालयात इंग्रजी आणि स्थानिक भाषेतील ESIA अहवाल आणि सारांशाच्या प्रती वितरणासाठी उपलब्ध करण्यात येतील. तसेच DFCCIL च्या CPM कार्यालय, प्रमुख रेल्वे स्थानके,संबंधीत जिल्हा कार्यालचे तसेच मुख्य DFC जोडमार्गाच्या ठिकाणीही उपलब्ध असतील. CPM कार्यालवे,जिल्हा कार्यालये, प्रमुख स्थानके आाणि प्रकल्प बाधीत गावांची यादी परिशिष्ट- अ मध्ये देण्यात आली आहे.

DFC प्रकल्पातील JNPT ते बडोदा आणि रेवाडी ते दादरी जोडमार्गाइरम्यानच्या प्रकल्प बाधीत गावांच्या ग्रामपंचायत

ESIA आणि RRP अध्ययन JICA चे सर्वेक्षण पथक आणि DHI (इंडिया) प्रा. लि., दिल्ली यांनी संयुक्तरित्या केले तसेच ESIA अहचाल वितरणाच्या कामात तसेच विचा व सल्ले गोळा करण्याच्या कामात DHI चे पथक सहाकर्य करेल. झनते कडून यंणाऱ्या सुचना पत्रव्यवहार, फॅक्स किंवा इमेल या माध्यमातूम दि.२७ सप्टेंबर

२०११ पर्यंत फक्त DFCCIL च्या शेवटच्या आठवडयात ESIA अहवाल DHI च्या माध्यातून जमा करण्यात येईल.

प्रकल्प सुरळीतपणे व सुनियोजीत पणे पार पाडण्यासाठी सर्व ग्रामपंचायतीची ESIA अहवाल मसूदा स्विकारुन त्यावर योग्य ती कार्यवाही करुन तो जनतेच्या माहितीसाठी उपलब्ध करुन दयावा ही विनंती.
सदर अहवालाच्या वितरणासाठी स्थानिक सल्लागा कंपनीचे प्रतिनिधी लवकरच आपल्याशी संपर्क करतील.

भारत सरकारने या प्रकल्प अध्ययन सुनियोजित वेळेत पूर्ण व्हावे यासाठी याला प्रामुख्यत्व दिले आहे. JICA चे सर्वेक्षण पथक आणि स्थानिक सल्लागार कंपनी कोणत्याही प्रकारची दिरंगाई न करता ESIA अहवाल तुमच्या कार्यालयात जनतेच्या माहितीसाठी उपलब्ध करुन देतील.

स्वाक्षरी
DFCCIL

सलग्न : ESIA अहवालाचा मसूदा आणि सारांश प्रति मिळणाऱ्या जागांची यादी

[Letter to Sarpanch_English]

FOR DISTRIBUTION OF DRAFT ESIA AND SUMMARY REPORT for VILLAGE ADMINISTRATIVE OFFICE

Village Head*
Village Administration Office

New Delhi, dated 06.09.2011

Sub: Distribution of the draft Environment and Social Impact Assessment (ESIA) Report and Summary of ESIA for Development of Dedicated Freight Corridor (DFC) Project between JNPT and Vadodara and between Rewari and Dadri

Based on the request of the Government of India, the Government of Japan has assigned a team of Consultants to conduct a Preparatory Survey on Dedicated Freight Corridor Project (Phase 2) between JNPT and Vadodara and between Rewari and Dadri. The study is funded by the Japan International Cooperation Agency (JICA). It is a study to the Environment and Social Impact Assessment (ESIA) carried out by the JICA survey team. The JICA team has completed the study and prepared a draft ESIA report and its summary.

The study has been carried out as per "JICA Guidelines for Environmental and Social Considerations", whose requirements include disclosure of draft ESIA report. The objectives of disclosure are as follows:

1) Disseminate information on DFC Project in terms of the environmental and social impacts induced by DFC Project as well as general plan on the management, monitoring and mitigation measures of the environment of the study area.
2) Collection of comments and opinions from the public on environment and social issues on DFC project and further, it will be reflected in final ESIA report.

The distribution of draft ESIA reports and the summary will be started from 17th September, 2011 and completed by 26th September, 2011.

The Summary of the draft ESIA report in vernacular languages as well as English version will also be distributed to all affected village offices between JNPT and Vadodara and between Rewari and Dadri and a full set of draft ESIA reports will be available in CPM offices of DFCCIL, major stations along the proposed DFC alignment, and concerned districts offices. The list of CPM offices, district offices, major stations and project affected villages is enclosed in the Appendix A.

The JICA Survey Team has engaged DHI (India) Pvt. Ltd, Delhi for preparation of 'ESIA and RRP Study' and DHI team will help for distribution of reports and collection of comments. Comments from people will be accepted only at CPM offices of DFCCIL

through direct delivery, fax or post upto 26th September, 2011. Draft ESIA reports will be collected back by DHI by end of September, 2011.

In order to smooth implementation for disclosure of draft ESIA reports, all Panchayat offices are requested to accept these reports, and take necessary action for public viewing.

The representative of the above local consulting firm would contact to your office shortly for distribution of reports.

Considering the high priority assigned to this project by Govt. of India and urgent need to complete the study in time, all necessary assistance may be rendered to the JICA Survey Team and the above local consulting firm in order to facilitate disclosure of reports without any delay including receipt of draft ESIA reports by your office and making arrangement for public view.

Suitable action in this regard may please be taken.

Signed by (DFCCIL)

Attachment:

- List of Places for the Information Dissemination of the Draft ESIA Report and its Summary
  (* Names of all affected villages all along the proposed DFC Alignment are enclosed in the Attachment.)

Appendix-10c
Distribution List of Draft ESIA Report

Appendix-10c
Distribution List of Draft ESIA Report

1. Distribution of Main Report and Summary

A set of Draft ESIA Report (Main and Appendix) and Summaries were distributed as per the following:

Distribution Place			Main report	Summary				
				Total	English	Marathi	Gujarati	Hindi
DFCCIL	1	Head Office	3	20	5	5	5	5
1 Head Office &4 CPM/AGM Office	2	CPM-Mumbai	3	20	5	15		
	3	CPM-Surat	3	20	5		15	
	4	CPM-Vadodara	3	20	5		15	
	5	AGM-Rewari-Dadri	3	20	5			15
	Sub Total		**15**	**100**	**25**	**20**	**35**	**20**
Main Station	1	Panvel(Jn)	1	20	5	15		
Total: 17 Main Station	2	Kalyan(Jn)	1	20	5	15		
	3	Vaitrna	1	20	5	15		
	4	Kelve Road	1	20	5	15		
	5	Palghar	1	20	5	15		
	6	Dahanu Road	1	20	5	15		
	7	Sanjan	1	20	5		15	
	8	Vapi	1	20	5		15	
	9	Valsad	1	20	5		15	
	10	Billmora(Jn)	1	20	5		15	
	11	Navsari	1	20	5		15	
	12	Sachin	1	20	5		15	
	13	Kosamba(Jn)	1	20	5		15	
	14	Saniali	1	20	5		15	
	15	Rewari(Jn)	1	20	5			15
	16	Faridabad	1	20	5			15
	17	Dadri	1	20	5			15
	Sub Total		**17**	**340**	**85**	**90**	**120**	**45**
District	1	Raigad	1	15	5	10		
Total: 14 District	2	Thane	1	15	5	10		
	3	Valsad	1	15	5		10	
	4	Navasari	1	15	5		10	
	5	Surat	1	15	5		10	
	6	Bharuch	1	15	5		10	
	7	Vadodara	1	15	5		10	
	8	Rewari	1	15	5			10
	9	Alwar	1	15	5			10
	10	Mewat	1	15	5			10
	11	Gurgaon	1	15	5			10
	12	Palwal	1	15	5			10
	13	Faridabad	1	15	5			10
	14	Gautam Budha Nagar	1	15	5			10
	Sub Total		**14**	**210**	**70**	**20**	**50**	**70**
Affected Village*		136 villagese in Maharashtra		3,400	680	2,720		
Total: 374 villages		133 villagese in Gujarat		3,325	665		2,660	
		105 villagese in Haryana, Rajyasthan, UP		2,625	525			2,100
CIDCO, JNPT and CA of Thane and Raigad		Maharashtra		40	20	20		
	Sub Total			**9,390**	**1,890**	**2,740**	**2,660**	**2,100**
	Reserved copies (JST)		**4**					
Total			**50**	**10,055**	**2,085**	**2,870**	**2,865**	**2,235**

Note: * 25 sets of the Summary distributed to each village: 5 in English and 20 in local language.

2. Delivery Status of Distribution of Main Reports

The final status of delivery of Draft ESIA Report (Main and Appendix) in 4 CPM Offices, District Collectorate Offices and Main Stations is as per the following:

ESIA Report	CPM Office	Delivery date	Major Sta.	Delivery date	District Office	Delivery date
Draft ESIA report -Main report -Appendix -Summary	CPM-Mumbai	23-Sep	1) Panvel(Jn)	24-Sep	1) Raigarh	22-Sep
			2) Kalyan(Jn)	24-Sep	2) Thane	23-Sep
			3) Vaitrna	24-Sep		
			4) Kelve Road	26-Sep		
			5) Palghar	26-Sep		
			6) Dahanu Road	26-Sep		
			7) Sanjan	17-Sep		
	CPM-Surat	19-Sep	8) Vapi	17-Sep	3) Valsad	17-Sep
			9) Valsad	17-Sep	4) Navsari	19-Sep
			10) Bil,mora(Jn)	19-Sep		
			11)Navsari	19-Sep		
			12) Sachin	19-Sep		
	CPM-Vadodara	19-Sep	13) Kosamba(Jn)	21-Sep	5) Surat	23-Sep
			14) Bharudh(Jn)	21-Sep	6) Bharuch	22-Sep
					7) Vadodara	22-Sep
	AGM-Rewari-Dadri	14-Sep	15) Rewari(Jn)	19-Sep	8) Rewari	24-Sep
			16) Faridabad	20-Sep	9) Mewat	24-Sep
			17) Dadri	22-Sep	10) Gurgaon	26-Sep
					11) Palwal	23-Sep
					12) Faridabad	23-Sep
					13) Alwar	24-Sep
					14) Gautam Budha Nagar	24-Sep

3. Delivery Status of Distribution of Summary of Draft ESIA

The final status of delivery of Summary of Draft ESIA Report to Sarpanches of all project affected villages is as per the following:

1) Maharashtra

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
1	Raigarh	Mumbai-Uran	1	Jaskhar	23-Sep
2			2	Sonari	23-Sep
3			3	Karal	23-Sep
4			4	Pagote	23-Sep
5			5	Sawarkhar	23-Sep
6			6	Shemtekhar	23-Sep
7			7	Jasai	25-Sep
8			8	Chirle	25-Sep
9			9	Paundkhar	25-Sep
10			10	Khatkhar	25-Sep
11			11	Bandkhar	25-Sep
12		Panvel	1	Vahal	22-Sep
13			2	Pandeghar	22-Sep
14			3	Bambavi	22-Sep
15			4	Kunde Vahal	22-Sep
16			5	Ovale	22-Sep
17			6	Dapoli	22-Sep
18			7	Pargaon Inam	20-Sep
19			8	Kopar	20-Sep
20			9	Vadghar	20-Sep
21			10	Karanjade	20-Sep
22			11	Kalundre	20-Sep
23			12	Vichumbe	20-Sep
24			13	Panvel	20-Sep
25			14	Asudgaon	20-Sep
26			15	Tembhode	20-Sep
27			16	Valavali	21-Sep

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
28			17	Ambetkhar	21-Sep
29			18	Rodpali	21-Sep
30			19	Navadhe	21-Sep
31			20	Pendhar	21-Sep
32			21	Taloja	21-Sep
33			22	Pisarve	21-Sep
34			23	Rohinjan	21-Sep
35			24	Dhansar	21-Sep
36			25	Vaklan	21-Sep
37			26	Nighu	21-Sep
38			27	Usroli	21-Sep
39			28	Kolkhe	22-Sep
40			29	Kone	22-Sep
41			30	Chikhale	21-Sep
Total : District			41		41
42	Thane	Thane	1	Narivali	25-Sep
43			2	Wadavali	25-Sep
44		Kalyan	1	Ghesar	25-Sep
45			2	Nilaje	25-Sep
46			3	Katai	25-Sep
47			4	Usarghar	25-Sep
48			5	Betavade	25-Sep
49			6	Bhopar	24-Sep
50			7	Nandivali	24-Sep
51			8	Aayre	24-Sep
52			9	Kopar	24-Sep
53			10	Juni-Dombivli	24-Sep
54			11	Thakurli	24-Sep
55			12	Navagaon	24-Sep
56			13	Gaodevi	24-Sep
57		Bhiwandi	1	Pimpalner	25-Sep
58			2	Pimplas	25-Sep
59			3	Ovali	25-Sep
60			4	Kamatghar	25-Sep
61			5	Rahanal	25-Sep
62			6	Kalwar	26-Sep
63			7	Wadghar	26-Sep
64			8	Dunge	26-Sep
65			9	Vadunavghar	26-Sep
66			10	Kharbao	26-Sep
67			11	Malodhi	26-Sep
68			12	Payegaon	26-Sep
69			13	Paye	26-Sep
70		Vasai	1	Nagle	25-Sep
71			2	Shilottar	25-Sep
72			3	Sasunavghar	25-Sep
73			4	Sarjamori	25-Sep
74			5	Mori	25-Sep
75			6	Kaman	25-Sep
76			7	Bapane	25-Sep
77			8	Juchandra	25-Sep
78			9	Chandrapada	22-Sep
79			10	Tivri	22-Sep
80			11	Rajavalli	22-Sep
81			12	Gokhivare	22-Sep
82			13	Bilalpada	22-Sep
83			14	Dhaniv	23-Sep
84			15	Bhatpadi	23-Sep
85			16	Chandansar	23-Sep
86			17	Shirgaon	23-Sep
87			18	Dahisar	23-Sep
88			19	Kasrali	23-Sep
89		Palghar	1	Wadi Saravali	24-Sep
90			2	Kandanvan	24-Sep
91			3	Karvale	24-Sep
92			4	Sartodi	24-Sep
93			5	Saphale	24-Sep
94			6	Umbarpada Nandade	24-Sep

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
95			7	Kardal (Old Makan Kapase)	19-Sep
96			8	Kapase	19-Sep
97			9	Makunsar	19-Sep
98			10	Rothe	19-Sep
99			11	Kelve Road	19-Sep
100			12	Kasbe Mahim	19-Sep
101			13	Navli	19-Sep
102			14	Palghar	19-Sep
103			15	Gothanpur	20-Sep
104			16	Kolgaon	20-Sep
105			17	Umroli	20-Sep
106			18	Birwadi	20-Sep
107			19	Panchali	20-Sep
108			20	Kambalgaon	20-Sep
109			21	Khairapada (Old Saravali)	20-Sep
110			22	Dandipada	20-Sep
111			23	Boisar	20-Sep
112			24	Katkar	22-Sep
113			25	Rani Shingaon	22-Sep
114			26	Navale	22-Sep
115		Dahanu	1	Kolavali	19-Sep
116			2	Vangaon	19-Sep
117			3	Kapshi	19-Sep
118			4	Asangaon	19-Sep
119			5	Dehane	19-Sep
120			6	Pale	19-Sep
121			7	Aagwan	22-Sep
122			8	Saravali	22-Sep
123			9	Patilpada	22-Sep
124			10	Manfod	22-Sep
125			11	Junnarpada	22-Sep
126			12	Nandore	22-Sep
127			13	Dahanu	22-Sep
128			14	Kasara	21-Sep
129			15	Waki	21-Sep
130			16	Ambewadi	21-Sep
131			17	Chikhale	21-Sep
132			18	Gholwad	21-Sep
133			19	Bordee	21-Sep
134		Talasari	1	Brahmanpada	21-Sep
135			2	Borigaon	21-Sep
136			3	Vevaji	21-Sep
Total : District			95		95
Total : State			136		136

2) Gujarat

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
137	Valsad	Umargaon	1	Govada	18-Sep
138			2	Dahad	18-Sep
139			3	Solsumba	18-Sep
140			4	Humbran	18-Sep
141			5	Sanjan	18-Sep
142			6	Gumse Kankaria	18-Sep
143			7	Tumb	19-Sep
144			8	Malav	19-Sep
145			9	Deheli	19-Sep
146			10	Vankash	19-Sep
147			11	Bhilad	18-Sep
148			12	Karamveli	18-Sep
149			13	Valvada	18-Sep
150		Pardi	1	Vapi / Vapi-2	21-Sep
151			2	Orvad	21-Sep
152			3	Rentlav	21-Sep
153			4	Motiwada	21-Sep
154			5	Umersadi	21-Sep
155		Valsad	1	Haria	19-Sep

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
156			2	Atul	19-Sep
157			3	Dived	19-Sep
158			4	Maghod	19-Sep
159			5	Pari Parnera	19-Sep
160			6	Vasiyer	21-Sep
161			7	Abrama	21-Sep
162			8	Mograwadi	21-Sep
163			9	Pardi Sadpur	21-Sep
164			10	Vejalpur	21-Sep
165			11	Lilapur	21-Sep
166			12	Sarodhi	19-Sep
167			13	Chikhala	19-Sep
168			14	Sankar talav	20-Sep
169			15	Dungri	20-Sep
170			16	Rolla	20-Sep
171			17	Jespore	20-Sep
172			18	Olgaon	20-Sep
173			19	Jora Vasan	20-Sep
Total：District			37		37
174	Navsari	Gandevi	1	Desra	22-Sep
175			2	Billimora	22-Sep
176			3	Bhatha	22-Sep
177			4	Devdha	22-Sep
178			5	Sarikhurad	22-Sep
179			6	Saribujrang	22-Sep
180			7	Amalsad	22-Sep
181			8	Ancheli	22-Sep
182			9	Mohanpur	22-Sep
183			10	Khaparwada	24-Sep
184		Jalalpore	1	Vedchha	24-Sep
185			2	Mandir	24-Sep
186			3	Hansapore	24-Sep
187		Navsari (Rural)	1	Vejalpore	24-Sep
188			2	Veravan	24-Sep
189		Jalalpore	1	Tavdi	22-Sep
190			2	Sagra	22-Sep
191			3	Chhinam	22-Sep
192			4	Kadoli	22-Sep
193			5	Mahuwar	22-Sep
194			6	Ponsra	22-Sep
195			7	Maroli	22-Sep
Total：District			22		22
196	Surat	Choryasi	1	Kansad	19-Sep
197			2	Sachin	19-Sep
198		Surat City	1	Unn	18-Sep
199			2	Bhestan	18-Sep
200			3	Bhedwad	18-Sep
201		Choryasi	1	Dindoli	20-Sep
202			2	Godadra	20-Sep
203			3	Devach	20-Sep
204			4	Dakhanwada	20-Sep
205		Palsana	1	Sedhav	21-Sep
206			2	Niyol	21-Sep
207		Kamrej	1	Vedchha	17-Sep
208			2	Chhedchha	17-Sep
209			3	Kosmada	17-Sep
210			4	Khadsad	17-Sep
211			5	Pasodra	17-Sep
212			6	Laskana	17-Sep
213			7	Valak	17-Sep
214			8	Bhada	17-Sep
215		Choryasi	1	Bharthana Kosad	19-Sep
216		Surat City	1	Variyav	18-Sep
217			2	Kosad	18-Sep
218		Kamrej	1	Abrama	21-Sep
219			2	Shekhpur	21-Sep
220			3	Kathodara	21-Sep
221		Olpad	1	Gothan	25-Sep

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
222			2	Umara	25-Sep
223			3	Sayan	25-Sep
224			4	Kareli	25-Sep
225			5	Kudsad	25-Sep
226			6	Kim	25-Sep
227		Mangrol	1	Siyalaj	24-Sep
228			2	Kunwarda	24-Sep
229			3	Kosamba	24-Sep
230			4	Hathuran	24-Sep
Total：District			35		35
231	Bharuch	Amod	1	Ochhan	23-Sep
232			2	Telod	23-Sep
233			3	Ikhar	23-Sep
234			4	Dhora	23-Sep
235			5	Wantarsa	23-Sep
236			6	Tankariya	23-Sep
237			7	Pardriya	23-Sep
238		Bharuch	1	Parkhet	21-Sep
239			2	Pipaliya	21-Sep
240			3	Pariyej	21-Sep
241			4	Tralsa	21-Sep
242			5	Tralsi	21-Sep
243			6	Derol	21-Sep
244			7	Mahudhala	21-Sep
245			8	Tham	21-Sep
246			9	Kanthariya	21-Sep
247			10	Manubar	21-Sep
248			11	Dahegam	21-Sep
249			12	Kukarwada	21-Sep
250		Ankleshwar	1	Sarfudin	24-Sep
251			2	Deeva	24-Sep
252			3	Ankleswar	24-Sep
253			4	Piraman	24-Sep
254			5	Umarwada	24-Sep
255			6	Bhatkodra	25-Sep
256			7	Kapodra	25-Sep
257			8	Sakkarpor	25-Sep
258			9	Sanjali	25-Sep
259			10	Panoli	25-Sep
Total：District			29		29
260	Vadodara	Karjan	1	Mesrad	20-Sep
261			2	Mangrol	20-Sep
262			3	Kambola	20-Sep
263			4	Bodka	20-Sep
264			5	Handod	20-Sep
265			6	Khanda	20-Sep
266			7	Kurai	20-Sep
267			8	Pingalwada	20-Sep
268		Vadodara	1	Unitya Medad	20-Sep
269			2	Gosindra	20-Sep
Total：District			10		10
Total：State			133		133

3) Rajasthan

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
270	Alwar	Tijara	1	Rabarka	18-Sep
271			2	Salarpur	18-Sep
272			3	Shahpur	18-Sep
273			4	Kalaka	18-Sep
274			5	Tatarpur	18-Sep
275			6	Thara	18-Sep
276			7	Khajooriwas	18-Sep
277			8	Jiwana	19-Sep
278			9	Banban	19-Sep
279			10	Kehrani	19-Sep
280			11	Mundana Meo	19-Sep
281			12	Amlaki	19-Sep

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
282			13	Shahdod	19-Sep
Total : District			13		13
Total : State			13		13

4) Haryana

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
283	Rewari	Rewari	1	Daliaki	19-Sep
284			2	Jatuwas	18-Sep
285			3	Bhadawas	18-Sep
286			4	Bithwana	20-Sep
287			5	Bhiwari	20-Sep
288			6	Kamalpur	19-Sep
289			7	Devlawas	18-Sep
290			8	Dhamlaka	20-Sep
291			9	Dawana	18-Sep
292			10	Lalpur	18-Sep
293			11	Kasola	20-Sep
294			12	Lodhana	19-Sep
295			13	Pithanwas	19-Sep
296			14	Mukandpur Basi	19-Sep
297			15	Asiaki Tappa Jarthal	18-Sep
298			16	Jarthal	18-Sep
299			17	Nandrampur bas	20-Sep
Total : District			17		17
300	Mewat	Taoru	1	Sewaka	20-Sep
301			2	Raniyaki	18-Sep
302			3	Gunawat	18-Sep
303			4	Dhidara	19-Sep
304			5	Bharangpur	18-Sep
305			6	Taoru	18-Sep
306			7	Gaurka	18-Sep
307			8	Buraka	20-Sep
308			9	Rahedi	19-Sep
309			10	Malaka	20-Sep
310			11	Dalaka	20-Sep
311			12	Dhulawat	20-Sep
312			13	Sashol Patuka	20-Sep
313			14	Khor	19-Sep
314			15	Marola	19-Sep
315			16	Rojka	19-Sep
316			17	Aata	20-Sep
317			18	Rampur	18-Sep
318			19	Uddaka	20-Sep
Total : District			19		19
319	Gurgaon	Sohna	1	Raipur	23-Sep
320			2	Sohna	23-Sep
321			3	Lakhuwas	24-Sep
322			4	Sancholi	23-Sep
323			5	Bhirawati	25-Sep
324			6	Karanki	24-Sep
325			7	Silani	24-Sep
326			8	Khuntpuri	25-Sep
327			9	Barkhera (Rati Ka Nawad)	25-Sep
Total : District			9		9
328	Palwal	Palwal	1	Parauli	24-Sep
329			2	Dahlaka	24-Sep
330			3	Kalwaka	23-Sep
331			4	Chhapraula	24-Sep
332			5	Pirthala	23-Sep
333			6	Jataula	23-Sep
334			7	Asawati	23-Sep
335			8	Laadpur	23-Sep

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
Total：District			8		8
336	Faridabad	Ballabgarh	1	Pahaladpur	23-Sep
337			2	Fatehpur Billoch	20-Sep
338			3	Ladauli	20-Sep
339			4	Bahbalpur	20-Sep
340			5	Fafunda	20-Sep
341			6	Dayalpur	23-Sep
342			7	Machgar	20-Sep
343			8	Bukharpur	19-Sep
344			9	Nawada Tigaon	23-Sep
345		Faridabad	1	Tigaon	19-Sep
346			2	Nimka	23-Sep
347			3	Saidpur	20-Sep
348			4	Faridpur	20-Sep
349			5	Kheri Kala	20-Sep
350			6	Nachauli	19-Sep
351			7	Bhopani	19-Sep
352			8	Dhandhar	19-Sep
353			9	Mahawatpur	19-Sep
354			10	Laalpur	20-Sep
355			11	Riwazpur	20-Sep
356			12	Tikawali	20-Sep
357			13	Baadshahpur	19-Sep
358			14	Palwali	20-Sep
359			15	Wazipur	20-Sep
360			16	Mawai	19-Sep
361			17	Mewala Maharajpur	20-Sep
362			18	Sarai Khawaza	20-Sep
363			19	Pul pahladpur	20-Sep
Total：District			28		28
Total：State			81		81

5) Uttar Pradesh

Total Sl. No.	District	Sub-district	No. per Sub-district	Name of Village	Delivery date
364	Gautam Budha Nagar	Sadar	1	Dalelpur	22-Sep
365			2	Gulaoli	24-Sep
366			3	Jhatta	22-Sep
367			4	Badoli Bangar	23-Sep
368			5	Mubarakpur	23-Sep
369			6	Guijarpur	22-Sep
370			7	Namoli	22-Sep
371			8	Gulistanpur	25-Sep
372			9	Saquipur	22-Sep
373			10	Pali	24-Sep
374			11	Tilpata Karanbas	25-Sep
Total：District			11		11
Total：State			11		11

Appendix-10d
Original Letters for Comments from the Public on Draft ESIA Report

Appendix-10d
Original Letters for Comments from the Public
on Draft ESIA Report

[Letter 1_Palwal]

Gmail - Views/Comments https://mail.google.com/mail/?ui=2&ik=75009e2273&view=pt&searc...

Gmail by Google

mayumi goto <dfc.phase2@gmail.com>

Views/Comments

1 message

[redacted]
To: dfc.phase2@gmail.com

26 September 2011 15:15

For Saraswati Computer Point

Puneet Kaushik
Managing Director
Mob. No.: [redacted]
E-mail Id: [redacted]

scan.pdf
13K

1 / 1 2011/09/29 12:37

To

The Hon. SDM (Civil)
Palwal, Distt. Palwal.
Haryana

Sir,

Sub. Objection/view related to DFCCIL Phase – II (Section 15-16)project passing through my fields (Asaoti)

I am to submit that during the meeting held at Palwal on 14.9.11 under your kind Chairmanship along with Rly. officials with Kisans effected by this project. The Pros and cons of the project were addressed in details. The Hon. SDM Civil Palwal assured the Kisans to solve all the expected problems likely to be faced by the Kisans. By a book let entitled "Summary of the Environment and Social Impact Assessment (ESIA) Study views of the kisans were to be submitted upto 26.9.11. In this connection my comments/doubts are summerised as follows.

(A) By virtue of its aim and objects and the fact that the DFCCIL is registered under Companies Act is does not fall under "Public Interest" category, hence the cost of the land my kindly be paid accordingly and that too by single payment.

(B) The land Acquisition Amendment Act is pending in Parliament for passing. This act will be effective from retrospective date. This fact may please be kept in view while paying the compensation.

(C) The parameter of **minimum area of land acquired** for giving employment was not declared. It may please be done at the earliest.

(D) It is presumed that all the Co-sharer of land (JOINT KHEWAT) to be acquired will be given employment. The position may please be clarified. The accounts of the land could not be separated due to so may reasons.

(E) The procedure for paying the cost of land among Co-share holders was not clarified. It requires clarification.

Cont…..2

-2-

(F) In case land is partition into pieces the whole land may be acquired as the remaining part of land is not usable for farming purpose.

(G) To shift the water sources of the Kisan particularly electricity Tubewell, all the cost may be born by the DFCCIL as the Haryana Electricity Corporation is charging heavy amount for shifting the connection.

(H) Path for the fields provided during the Land Consolidation may be kept at the same place by providing Under Bridge **without any condition of width of the path**.

(I) Proposed roads likely to be constructed by DFC parallel to the track on both side may be **allowed for use by Kisan's without ifs and buts.**

(J) The passage for water channel may be retained at the exiting places without change.

(L) **The facility of exemption from paying Stamp Duty etc. for acquiring the landed property all over India for the amount received by the Kisan may be provided.**

(M) The acquisition of three crop land may please be avoided as for as possible. If indispensable, due consideration may please be taken while fixing the cost of such land.

(N) Dust pollution is unavoidable at the construction in site inspite of taking all available measures to control it. I am grower of vegetable and dalhan crops which are bound to be suffered by dust pollution and I have to switch over to other crops. Due compensation for such loss may please be paid for construction period of the project.

(O) Kisans doing farming on lease - holding land may please be dully compensated.

Cont…….3

-3-

(P) Dependant family members of the effected Kisans may please be associated by DFC by providing other livelihood means like petty contractor, labour contractor, building material supplier, issue of tea stall, clearing and forwarding agency, authorized transport license etc.

Not the last but the least, I request your Honour to kindly consider all the aforesaid points at the time of taking any final decision in this matter. It is further requested that assurances/ facilities likely to be given by the DFCCIL may kindly be taken in the from of Undertaking by the Haryana Govt. authority so that the kisan like me are not left in the wilderness after the acquisition. In this connection you kind attention is drawn to an exiting such case of Indian Oil Corporation Project located at Asawati. At the time of takingover of land for the said project many verable assurances including employment were given to the kisans but they are still inlurch and looking for a ray of hope in the darkness.

Thanking you in anticipation for a favourable decision in the matter.

Date : 26.09.2011 Your Sincerely

Place : Asawati

[redacted]
V.P.O. Asawati
Tehsil & Distt. Palwl

[Letter 2_Palwal]

Gmail - remarks regarding aquirement of land for DFCCIL https://mail.google.com/mail/?ui=2&ik=75009e2273&view=pt&searc...

mayumi goto <dfc.phase2@gmail.com>

remarks regarding aquirement of land for DFCCIL

1 message

baldev tavar <b_tavar@rediffmail.com> 28 September 2011 15:45
To: "dfc.phase2@gmail.com" <dfc.phase2@gmail.com>

Dear Sir,
We are submitting our suggestions as well as remarks as under:--
1. Job and compensation should be on the basis of nominated persons for the ownership of the land concerned.
2. Proper Compensation for tubewell and vegetation affected by the aquirement.

we have submitted our suggestions and remarks already to SDO Palwal under the receipt no. 4856/16-11-2010.
Regards,
Sons of late sh. Ram Singh,
Sons of Sh. balRam
Sons of Sh. Nanhe Ram,
Sons of Sh.Bal Singh S/O Late Sh. Hukam Singh
R/O Village Medapur Jatola
Owners of the Land To be aquired for dfccil as under:-
Khevat No.-1,Khatoni No. 1,Ta: 7,Musteel No. 19//17/1,17/2,18,19
Total area to be aquired=.6807 hactares

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[Letter 3_Faridabad_Hindi]

mayumi goto <dfc.phase2@gmail.com>

Bombay to Dadri Freight Corridor

1 message

[redacted] 28 September 2011 20:48
To: dfc.phase2@gmail.com

[redacted]
V.P.O FATEHPUR BILLOCH,
TEH.BALLABGARH,DISTT.FARIDABAD,
HARYANA-121004

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To: "makrand.sharma@rediffmail.com" <makrand.sharma@rediffmail.com>
Date:
Subject:

Sagar Sharma

3 attachments

सेवा में

माननीय रेल मंत्री
भारत सरकार
नई दिल्ली।

मार्फत : जिला उपायुक्त
फरीदाबाद

विषय : मुम्बई रेवाडी दादरी फ्रेरेट कारिडोर का रास्ता बदलने वारे।

महोदय,

हम सब फरीदाबाद हरियाणा के किसान आपका ध्यान रेलवे विभाग द्वारा प्रस्तावित मुम्बई रेवाडी दादरी फ्रेरेट कारिडोर की तरफ दिलान चाहते हैं, रेलवे विभाग से मिली जानकारी के अनुसार यह कारिडोर मुम्बई को दादरी से जोडेगा तथा इसके लिए दर्जनों गांवों की उपजाउ जमीन के अधिग्रहण तैयारी है। जबकी दूसरी तरफ हरियाणा सरकार के अधिकारियों से मिली जानकारी के अनुसार यदि यह कारिडोर अपने वर्तमान स्वरुप में बनता है तो इससे फरीदाबाद का मास्टर प्लान 2031 पूरी तरह से बदलना पडेगा, यही नहीं इस कारिडोर की चपेट में हजारों एकड उपजाउ जमीन आ जाएगी जिससे की देश के सामने अन्न का संकट पैदा हो सकता है।

इन्हीं कारणों को ध्यान में रखते हुए हमारा आप से अनुरोध है कि क्योंकि पहले से मुम्बई से दिल्ली तक सीधी रेलवे लाईन आ रही है और इस लाईन के साथ अभी भी रेलवे विभाग की जमीन खाली पडी है जिस कारण यदि यह नई लाईन वर्तमान रेलवे लाईन के साथ ही डाली जाती है तो उससे न तो मास्टर प्लान पर ही कोई फर्क पडेगा और न हि हजारों किसानों के सामने रोजी रोटी की समस्या पैदा होगी।

माननीय रेल मंत्री महोदय हमारा आप से अनुरोध है कि इस सुझाव की तरफ ध्यान दिया जाए और यदि ऐसा संभव न हो पाए तो इस बात का ध्यान रखा जाए कि

सरकार इस रेलवे मार्ग के लिए रास्ते में आने वाली जमीन में से 65 मीटर चौडाई के हिसाब से जमीन अधिग्रहण कर रही है, इसके लिए सरकार ने अभी, कलेक्टर रेट पर मुआवजा देने की बात कही है। जबकी इस अधिग्रहण से जिले के हजारों किसान प्रभावित होगें, साथ ही ऐसे किसानों की संख्या भी बहुतायत में रहेगी जिनके खेत इस रेलवे लाईन के बाद या तो छोटे-छोटे दो हिस्सों में बंट जाएंगे या फिर उनके पास इतना ही हिस्सा शेष रहेगा कि उसमें खेती कर पाना असंभव होगा, क्योकि इस मार्ग की रेलवे लाईन लगभग तीन किलोमीटर के क्षेत्र में माईनरी के साथ-साथ जाएगी साथ ही कई किसानों के टयूबवैल भी भेंट चढ जाएंगे जिससे किसानों के सामने पानी की समस्या भी पैदा हो सकती है।

यही कारण है कि यदि किसानों की उपजाउ भूमि का अधिग्रहण किया जाता है तो

1. भूमि का अधिग्रहण कलेक्टर रेट के स्थान पर पांच करोड रुपए प्रति एकड के हिसाब से किया जाए तथा हरियाणा सरकार की नीति अनुरुप जिन किसानों की जमीन का अधिग्रहण किया जाए उनको आगामी 33 साल तक रायल्टी दी जाए।

2.पानी के प्रबंध का जिम्मा रेलवे उठाए चाहे फिर इसके लिए टयूबवैल लगाना हो या फिर माईनरी से पक्की नाली बनावानी हो,

3. अधिग्रहित भूमि में लगे पेड व अन्य मकान आदि का मुआवाजा अलग से दिया जाए,

4. रेलवे विभाग की नीति एक परिवार को नौकरी के स्थान पर किसान के बेटों के परिवार के हिसाब से उनकी योगयता अनुसार नौकरी दीं जाएं,

5.रेलवे लाईन के दोनो तरफ के रास्ते को लिखित तौर पर आम रास्ता घोषित किया जाए,

6.यदि अधिग्रहण के बाद किसानों की जमीन कृषि लायक नहीं रहती और छोटा टुकडा बचता है तो उसका अधिग्रहण भी रेलवे विभाग साथ में ही करें,

7. प्रत्येक परिवार को एक प्लाट दिया जाए।

8. इस कारिडोर के निर्माण के दौरान इस बात का ध्यान भी रखा जाए कि जो कम से कम चार करम का रास्ता इस निर्माण के चलते बंद हो रहे हैं वहां पर अंडर पास बनाया जाए।

9. इस कारिडोर के निर्माण के दौरान उन गांवों में इसकी उंचाई अपेक्षाकृत ज्यादा रखी जाए जहां पर यह कारिडोर गांव के मध्य से गूजर रहा है ताकि विषम परिस्थितियों में जान माल की हानि का डर न रहे।

10. इस मार्ग के लिए भूमि अधिग्रहण के लिए रेलवे बोर्ड के चेयरमेन की अध्यक्षता में केन्द्र व राज्य सरकार के विशेषज्ञों की एक कमेटी का गठन किया जाए जो कि मौके पर जाकर पूरे प्रोजेक्ट का अवलोकन कर अपनी रपट दे।

महोदय, हमें उम्मीद है कि आप हम किसानों की इन समस्याओं को ध्यान में रखते हुए उचित निर्णय लेंगें तथा हमें किसी आंदोलन पर मजबूर नहीं होना पडेगा।

धन्यवाद

मकरंद शर्मा (09868565668)
प्रधान
एवं समस्त किसान जिला फरीदाबाद

प्रति : मुख्यमंत्री हरियाणा सरकार चंडीगढ
प्रति : उपाध्यक्ष योजना आयोग भारत, नई दिल्ली
प्रति : जयराम रमेश केन्द्रीय मंत्री

सरपंच
ग्राम पंचायत फतेहपुर बिल्लोच
खण्ड बल्लबगढ (फरीदाबाद)

सरपंच
ग्राम पंचायत बहबलपुर
बल्लबगढ (फरीदाबाद
15-9-2011

सरपंच
ग्राम पंचायत लहौली
खण्ड बल्लबगढ
15-9-2011

वीर सिंह नम्बरदार
गाँव पहलादपुर डोग
ब० बल्लबगढ़ (फरीदाबाद)

[Letter 4_Gurgaon_Hindi]

मननीय रेल मंत्री
भारत सरकार
नई दिल्ली।
मार्फत : जिला उपायुक्त
गुडगांवा

विषय : मुम्बई रेवाडी दादरी फ्ररेट कारिडोर का रास्ता बदलने वारे।
महोदय,

हम सब सोहना जिला गुडगांवा हरियाणा के किसान आपका ध्यान रेलवे विभाग द्वारा प्रस्तावित मुम्बई रेवाडी फ्ररेट कारिडोर की तरफ दिलाना चाहते हैं, रेलवे विभाग से मिली जानकारी के अनेसार यह कारिडोर मुम्बई को दादरी से जोडेंगा तथा इसके लिए दर्जनों गांवों की ऊपजाऊ जमीन के अधिग्रहण की तैयारी है। जबकी दूसरी तरफ हरियाणा सरकार के अधिकारियों से मिली जानकारी के अनुसार यदि यह कारिडोर अपने वर्तमान स्वरूप में बनता है तो उसमें गुडगांव जिला का मास्टर प्लान 2031 पूरी तरह से बदलना पडेगा, यही नही इस कारिडोर की चपेट में हजारों एकड़ उपजाऊ जमीन आ जाएगी जिससे की देश के सामने अन्न का सकट पैदा हो सकता है।

इन्ही कारणों को ध्यान में रखते हुए हमारा आपसे अनुरोध है कि क्योकि पहले से मुम्बई से दिल्ली तक सीधी रेलवे लाईन आ रही है और इस लाइन के साथ अभी भी रेलवे विभाग की जमीन खाली पड़ी है जिस कारण यदि यह नई लाइन वर्तमान रेलवे लाईन के साथ ही डाली जाती है तो उससे ना तो मास्टर प्लान पर ही कोई फर्क पड़ेगा और ना ही हजारो किसानो के सामने रोजी– रोटी की समस्या पैदा होगी।

माननीय रेलवे मत्रीं महोदय हमारा आपसे अनुरोध है कि इस सुझाव की तरफ ध्यान दिया जाए और यदि ऐसा सम्भव न हो पाय तो इस बात का ध्यान रखा जाए कि

सरकार इस रेलवे मार्ग के लिए रास्ते में आने वाली जमीन में से 65मी0 चौड़ाई के हिसाब से जमीन अधिग्रहण कर रही है, इसके लिए सरकार ने यथा कलक्टर रेट पर मुआवजा देने की बात कही है। जबकी इस अधिग्रहण से तहसील के हजारों किसान प्रभावित होगें, साथ ही ऐसे किसानों की संख्या भी बहुतायत में रहेगी जिनके खेत इस रेलवे लाईन के बाद या तो छोटे – छोटे दो हिस्सों में बंट जाएंगे या फिर उनके पास इतना ही हिस्सा शेष रहेगा कि उसमें खेती कर पाना असंभव होगा, क्योकि इस मार्ग की रेलवे लाईन लगभग तीन किलोमीटर के क्षेत्र में माईनरी के साथ –साथ जाएगी साथ ही कई किसानों के टयूबवैल भी भेंट चढ जाएंगे जिससे किसानों के सामने पानी की समस्या भी पैदा हो सकती है।

यही कारण हे कि यदि किसानों की उपजाउ भूमि का अधिग्रहण किया जाता है तो

1. भूमि का अधिग्रहण कलेक्टर रेट के स्थान पर पांच करोड रूपय प्रति एकड के हिसाब से किया जाए तथा हरियाणा सरकार की नीति अनुरूप जिन किसानों की जमीन का अधिग्रहण किया जाए उनको आगामी 33 साल तक रायल्टी दी जाए।
2. पानी के प्रबंध का जिम्मा रेलवे उठाए चाहे फिर इसके लिए टयूबवैल लगाना हो या फिर माईनरी से पक्की नाली बनावानी हो,
3. अधिगृहित भूमि में लगे पेंड व अन्य मकान आदि का मुआवाजा अलग से दिया जाए।
4. रेलवे विभाग की नीति एक परिवार को नौकरी के स्थान पर किसान के बेटों के परिवार के हिसाब से उनकी योगयता अनुसार नौकरी दीं जाएं,
5. रेलवे लाइन के दोनो तरफ के रास्ते को लिखित तौर पर आम रास्ता घोषित किया जाए।

6. यदि अधिग्रहण के बाद किसानों की जमीन कृषि लायक नहीं रहती और छोटा टूकडा बचता है तो उसका अधिग्रहण भी रेलवे विभाग साथ में ही करे,
7. प्रत्येक परिवार को एक प्लाट दिया जाए।
8. इस कारिडोर के निर्माण के दौरान इस बात का ध्यान भी रखाजाए कि जो कम से कम चार करम का रास्ता इस निर्माण के चलते बंद हो रहे हें वहां पर अंडर पास बनाया जाए।
9. इस कारिडेर के निर्माण के दौरान उन गांवों में इसकी उंचाई अपेक्षाकृत ज्यादा रखी जाए जहां पर यह कारिडोर गांव के मध्य से गूजर रहा है ताकि विषम परिस्थितियों में जाने माल की हानि का डर न रहे।
10. इस मार्ग के लिए भूमि अधिग्रहण के लिए रेलवे बोर्ड के चेयरमेन की अध्यक्षता में केन्द्र व राज्य सरकार के विशेषज्ञों की एक कमेटी का गठन किया जाए जो कि मौके पर जाकर पूरे प्रोजेक्ट का अवलोकन कर अपनी रपट दे।

महोदय, हमें उम्मीद हे कि आप हम किसानों की इन समस्याओं को ध्यान में रखते हुए उचित निर्णय लेगीं तथा हमें किसी आंदोलन पर मजबूर नहीं होना पडेगा।

धन्यवाद

एवं समस्त किसान तहसील सोहना

दयावती
सरपच
श्रीमती दयावती
ग्राम पंचायत करनकी खेडली
ब्लॉक सोहना

प्रति : मुख्यमंत्री हरियाणा सरकार चंडीगढ
प्रति : उपाध्यक्ष योजना आयोग भारत, नई दिल्ली
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