



EXECUTIVE SUMMARY

1.0 Introduction

Maharashtra State Road Development Corporation Limited (MSRDC) - Project Proponent has been entrusted with the development of Access Controlled Super Communication Expressways (Shaktipeeth) which connect Vidharbha, Marathwada, Pune and Konkan region in Maharashtra. MSRDC has proposed Expressway into four different Packages falling in Vidharbha, Marathwada, Pune and Konkan Revenue Divisions as under,

Package I: Package-I start at Wardha (Ch. 0+000) and ends at Yavatmal district border (Ch.171+690). The alignment passes through Wardha and Yavatmal districts. Total length of the Package I is approx. 171.690 km

Package II: Package II starts at Nanded district border (Ch. 171+690) and ends at Osmanabad district border (Ch. 439+170). The alignment passes through Nanded, Hingoli, Beed, Latur, Parbhani and Osmanabad districts. Total length of the Package II is approx. 267.48 km

Package III: Package III starts at Ch. Solapur district border (Ch. 439+170) and ends at Kolhapur district border (Ch. 764.080). The alignment passes through Osmanabad, Solapur, Sangali and Kolhapur districts. Total length of the Package III is approx. 324.910 km

Package IV: Package IV starts at Sindhudurg district border (Ch. 764.080) and ends at at Patradevi in Sindhudurg district (Ch. 802+869). The alignment passes through Kolhapur and Sindhudurg districts. The overall length of Package IV is 38.789 km

The proposed project is for **Package II:** Starting from Karodi village in Nanded district & Ends at Wanewadi village in Osmanabad district. As per Environment Impact Assessment (EIA) Notification dated 14th September 2006, and its amendments until date, the proposed project falls under 'Category B1' with activity number 7(f).

Accordingly, the application was submitted for obtaining Terms of References (ToR) for Prior Environmental Clearance for Package II. The project was recommended in the 292nd State Expert Appraisal Committee-1 (SEAC-1) held on 11th to 15th March 2025 and by SEIAA in its 290th meeting held on 23rd April, 2025. The project was accorded ToR vide TOR Identification No. TO25B3602MH5828334N dated 29th April 2025 ((copy of original TOR is enclosed as Annexure 1).

2.0 Project Location

The proposed project alignment passes through a total of 138 villages spread across thirteen talukas-

23 villages in Hadgaon and Ardhapur Talukas of Nanded District,

25 Villages in Kalamnuri and Basmat Talukas of Hingoli District,
30 Villages in Purna, Parbhani and Sonpeth Talukas of Parbhani District,
16 Villages in Parali and Ambejogai Talukas of Beed District,
23 Villages of Renapur, Latur and Ausa Talukas of Latur District and
18 villages in Osmanabad Taluka and District in the state of Maharashtra.

The Google Earth Imagery of the project is as shown in Figure 1 and Toposheet Map of the project site & study area is as shown in Figure 2.

The details of the area and length in each of the village are as provided in Table 1.

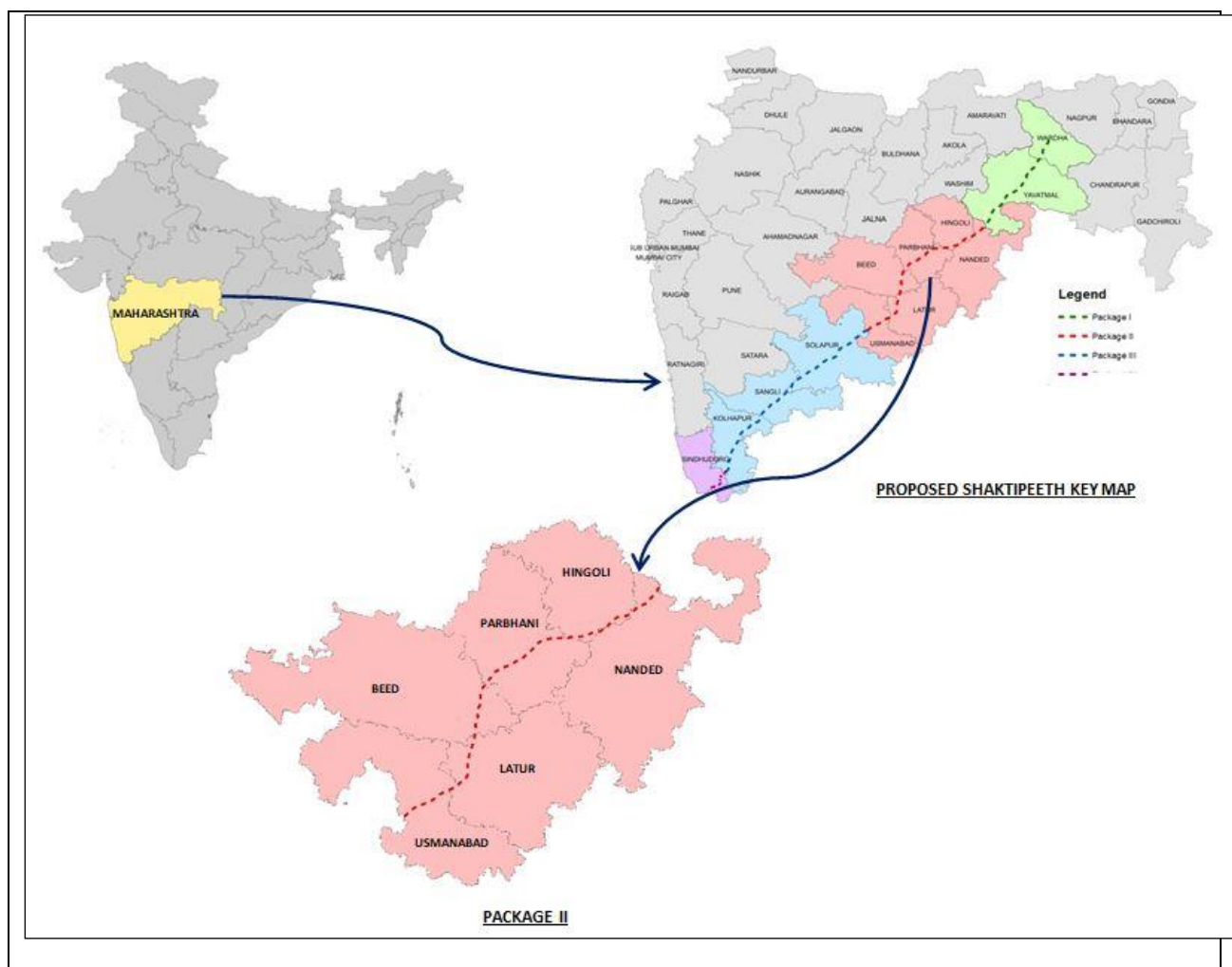


Figure 1: Location Map of the Project Site



M/s. Enviro Resources

EIA Report for Construction of Pavnar (District Wardha) to Patradevi (District Sindhudurg) at Maharashtra Goa Border Super Communication Expressway (Maharashtra Shaktipeeth Expressway) in the state of Maharashtra, Package – II (Nanded to Osmanabad)

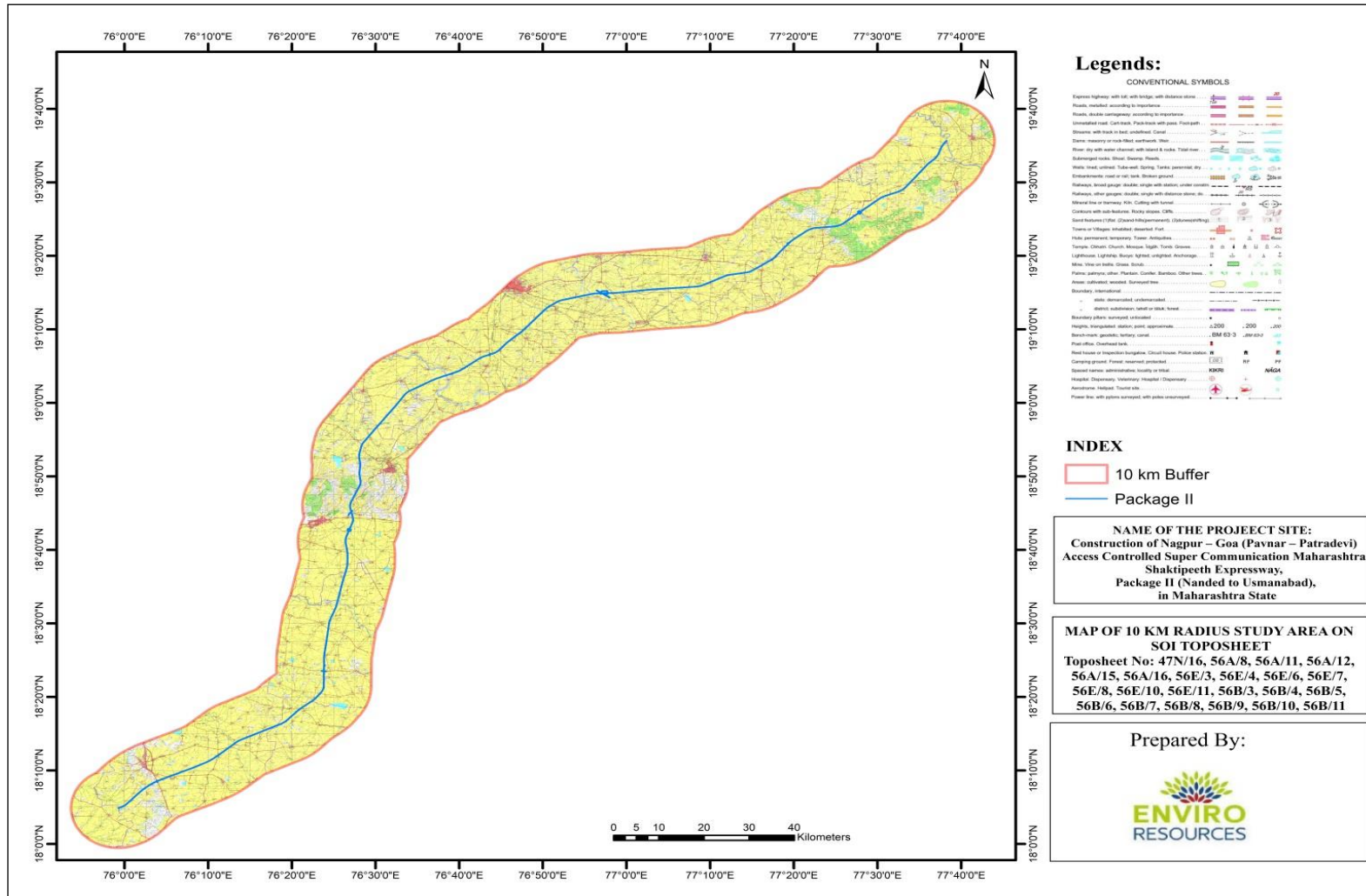


Figure 2: Toposheet Map of the Project Site & Study Area

Table 1: Details of Project Alignment Village-wise

SR NO	DISTRICT	TALUKA	VILLAGE NAME	STSRT CH	END CH
1	NANDED	HADGAON	KARODI	171+690	173+640
2	NANDED	HADGAON	KALESHWAR	173+640	173+875
3	NANDED	HADGAON	VELAMB	173+875	176+150
4	NANDED	HADGAON	UNCHEGAON_KH	176+150	177+115
5	NANDED	HADGAON	ADA	177+115	178+940
6	NANDED	HADGAON	RUI	178+940	182+410
7	NANDED	HADGAON	PALSA	182+410	186+310
8	NANDED	HADGAON	BARADSHEWALA	186+310	186+965
9	NANDED	HADGAON	KAWANA	186+965	188+830
10	NANDED	HADGAON	BAMANI	188+830	189+790
11	NANDED	HADGAON	BAMANI	189+990	190+170
12	NANDED	HADGAON	BAMANI_TANDA	189+790	189+990
13	NANDED	HADGAON	BAMANI_TANDA	190+170	190+620
14	NANDED	HADGAON	CHINCHGAVHAN	190+620	193+090
15	NANDED	HADGAON	JAGAPUR	193+090	194+020
16	NANDED	HADGAON	MANATHA	194+020	197+350
17	NANDED	HADGAON	WARWANTH	197+350	200+750
18	NANDED	HADGAON	JAMBHAL_SAVALI	200+750	201+290
19	NANDED	ARDHAPUR	BHOGAON	216+120	217+050
20	NANDED	ARDHAPUR	UMBARI	220+150	221+670
21	NANDED	ARDHAPUR	MALEGAON	222+400	226+940
22	NANDED	ARDHAPUR	DHAMDARI	224+640	224+830
23	NANDED	ARDHAPUR	DEGAON_KURHADA	226+940	227+150
24	HINGOLI	KALAMNURI	DABHADI	201+290	201+900
25	HINGOLI	KALAMNURI	MAHALINGI	201+900	204+020
26	HINGOLI	KALAMNURI	ZUNZUNWADI	204+020	205+570
27	HINGOLI	KALAMNURI	BHATEGAON	205+570	207+450
28	HINGOLI	KALAMNURI	JAMGAVHAN_TARAF_SHEWALA	207+450	208+450
29	HINGOLI	KALAMNURI	SUKALIVEER	208+450	209+720
30	HINGOLI	KALAMNURI	DONGARKADA	209+720	211+710
31	HINGOLI	KALAMNURI	JAWALA_PANCHAL	211+710	214+290
32	HINGOLI	KALAMNURI	WASFAL	214+290	216+120
33	HINGOLI	BASMAT	GIRGAON	217+050	220+150
34	HINGOLI	BASMAT	GIRGAON	221+670	222+400
35	HINGOLI	BASMAT	PALASGAON_TARF_MALOTA	227+150	229+100
36	HINGOLI	BASMAT	GUNJ	229+100	229+460
37	HINGOLI	BASMAT	Ruj_traf_asegaon	229+460	231+740
38	HINGOLI	BASMAT	SAWARGAON	231+170	231+330
39	HINGOLI	BASMAT	AASEGAON	231+740	232+980
40	HINGOLI	BASMAT	TAKALGAON	232+980	234+240



SR NO	DISTRICT	TALUKA	VILLAGE NAME	STSRT CH	END CH
41	HINGOLI	BASMAT	RAJAPUR	234+240	236+270
42	HINGOLI	BASMAT	BABHULGAON	236+270	239+850
43	HINGOLI	BASMAT	PIMPA_ CHOURE	239+850	239+970
44	HINGOLI	BASMAT	RENKAPUR	239+970	242+280
45	HINGOLI	BASMAT	LON_BK	242+280	243+375
46	HINGOLI	BASMAT	HAYATNAGAR	243+375	247+960
47	HINGOLI	BASMAT	JAWALA_KH	247+960	249+620
48	HINGOLI	BASMAT	JAWALA_BK	249+620	25+150
49	BEED	PARALI	INJEGAON	317+550	319+480
50	BEED	PARLI	PANGRI	INTERCHANGE	
51	BEED	PARALI	KAUTHALI	319+480	324+100
52	BEED	PARLI	LIMBOTA	INTERCHANGE	
53	BEED	PARALI	TALEGAON_PARLI	324+100	326+470
54	BEED	PARALI	DABHI	326+470	330+455
55	BEED	PARALI	KANHERWADI	330+455	332+180
56	BEED	PARALI	BHOPLA	3332+180	335+820
57	BEED	AMBEJOGAI	varwati	335+820	339+500
58	BEED	AMBEJOGAI	PIMPLA DAHYGUDA_	339+500	344+650
59	BEED	AMBEJOGAI	GIRAWLI_APTI	341+880	342+320
60	BEED	AMBEJOGAI	GIRAWLI_BAWNE	342+320	342+840
61	BEED	AMBEJOGAI	GEETA	344+650	348+390
62	BEED	AMBEJOGAI	BHARAJ	348+390	350+270
63	BEED	AMBEJOGAI	SAYEGAON	350+270	352+400
64	BEED	AMBEJOGAI	NANDGAON	352+400	355+880
65	LATUR	RENAPUR	MORWAD	355+880	356+210
66	LATUR	RENAPUR	CHATGAON	356+210	358+480
67	LATUR	RENAPUR	MOTEGAON	358+480	358+620
68	LATUR	RENAPUR	BHOKARMBHA	358+480	360+500
69	LATUR	RENAPUR	DIGHOL DESHMUKH	360+500	363+370
70	LATUR	LATUR	GANJUR	363+370	365+650
71	LATUR	LATUR	RAMESHWAR	365+650	367+520
72	LATUR	LATUR	DINDEGAON	367+520	368+620
73	LATUR	LATUR	KASAR JAWALA	368+620	371+210
74	LATUR	LATUR	Dhoki	371+210	371+710
75	LATUR	LATUR	Katgaon	371+710	373+065
76	LATUR	LATUR	Manjari	373+065	375+570
77	LATUR	LATUR	Chincholi Ballalnath	375+570	375+880
78	LATUR	LATUR	Gategaon	375+880	379+580
79	LATUR	LATUR	Murud Akola	379+580	383+220
80	LATUR	LATUR	CHATA	383+220	383+300
81	LATUR	LATUR	CHATA	384+300	386+810
82	LATUR	LATUR	BHOYARA	383+220	384+300



SR NO	DISTRICT	TALUKA	VILLAGE NAME	STSRT CH	END CH
83	LATUR	LATUR	BOPALA	386+810	389+600
84	LATUR	AUSA	KAWTHA KEJ	389+600	391+280
85	LATUR	AUSA	NAHOLI	391+280	392+930
86	LATUR	AUSA	BHETA	392+930	395+450
87	LATUR	AUSA	ANDORA	395+450	399+050
88	PARBHANI	PURNA	SURWADI	25+150	251+530
89	PARBHANI	PURNA	AHERWADII	251+530	254+430
90	PARBHANI	PURNA	NABAKI	254+430	255+820
91	PARBHANI	PURNA	KANTHESHWAR	Interchange	
92	PARBHANI	PURNA	PIMPALGAON_BALAPUR	255+820	258+070
93	PARBHANI	PURNA	SADLAPUR	258+070	260+290
94	PARBHANI	PARBHANI	ULKHAD	260+290	262+040
95	PARBHANI	PARBHANI	BABHALI	262+040	265+790
96	PARBHANI	PARBHANI	PINGALI	265+790	272+000
97	PARBHANI	PARBHANI	SHENDRA	272+000	273+050
98	PARBHANI	PARBHANI	TAKALGAVHAN	273+050	275+980
99	PARBHANI	PARBHANI	LOHGAON	275+980	279+440
100	PARBHANI	PARBHANI	JAWLA	279+440	279+540
101	PARBHANI	PARBHANI	SAJPUR	279+440	282+020
102	PARBHANI	PARBHANI	AAMBADAPUR	282+020	282+190
103	PARBHANI	PARBHANI	AMBETAKLI	283+220	286+250
104	PARBHANI	PARBHANI	POKHARNI_NURSIH	286+250	289+170
105	PARBHANI	PARBHANI	DAITHANA	289+170	292+020
106	PARBHANI	PARBHANI	INDEWADI	291+400	291+720
107	PARBHANI	PARBHANI	SALAPURI	292+020	297+740
108	PARBHANI	SONPETH	Sirori	297+740	297+920
109	PARBHANI	SONPETH	Dobadi Tanda (N.V.)	297+740	300+190
110	PARBHANI	SONPETH	Sirsi Bk.	300+190	300+450
111	PARBHANI	SONPETH	Kanhegaon	300+450	304+370
112	PARBHANI	SONPETH	Saikheda	304+370	307+270
113	PARBHANI	SONPETH	Shelgaon_Hatkar	307+270	307+540
114	PARBHANI	SONPETH	Narwadi	307+540	311+230
115	PARBHANI	SONPETH	Kothala	311+230	312+350
116	PARBHANI	SONPETH	Dighol_Islampur	312+350	317+170
117	PARBHANI	SONPETH	Dhamoni	317+170	317+550
118	OSMANABAD	OSMANABAD	Nitali	399+050	404+460
119	OSMANABAD	OSMANABAD	Ghuggi	404+360	404+460
120	OSMANABAD	OSMANABAD	Lasona	404+460	407+460
121	OSMANABAD	OSMANABAD	Sangvi	407+460	409+460
122	OSMANABAD	OSMANABAD	Kamegaon	409+460	412+040
123	OSMANABAD	OSMANABAD	Chikhali	412+040	416+820
124	OSMANABAD	OSMANABAD	Mahalingi	416+820	417+760

SR NO	DISTRICT	TALUKA	VILLAGE NAME	STSRT CH	END CH
125	OSMANABAD	OSMANABAD	Baramgaon_Bk.	417+760	420+230
126	OSMANABAD	OSMANABAD	Medsinga	420+230	423+120
127	OSMANABAD	OSMANABAD	Deolali	423+120	425+290
128	OSMANABAD	OSMANABAD	Deolali	425+540	425+830
129	OSMANABAD	OSMANABAD	OSMANABAD RURAL	425+290	425+540
130	OSMANABAD	OSMANABAD	SHEKAPUR	425+830	428+730
131	OSMANABAD	OSMANABAD	Wadgaon	INTERCHANGE	
132	OSMANABAD	OSMANABAD	Gaosud	428+730	432+000
133	OSMANABAD	OSMANABAD	WARWANTI	432+000	432+430
134	OSMANABAD	OSMANABAD	POHNAR	432+430	435+280
135	OSMANABAD	OSMANABAD	Begada	435+280	436+500
136	OSMANABAD	OSMANABAD	SURDI	436+500	439+170

Source: Design Report by Monarch

3.0 Project Description

The salient features of the proposed project are as tabulated below in Table 2.

Table 2: Salient Features

1	Total Length	267.48 km		
2	State	Maharashtra		
3	District	Nanded, Hingoli, Parbhani, Beed, Latur and Osmanabad		
4	Talukas	The proposed alignment will pass through Hadgaon, Kalamnuri, Ardhapur, Basmat, Purna, Parbhani, Sonpeth, Parali, Ambejogai, Renapur, Latur, Ausa, Osmanabad & Tuljapur Talukas. i.e. 14 talukas		
5	Terrain	Plain, Rolling		
6	Seismic Zone	II as per IS 1893 (Part 1) : 2002		
7	Land Use	The predominant land use along the alignment is agriculture.		
8	RoW	100 m for Non-Forest area and 60 m for forest area with 3+3 Lanes		
9	Total Area of Land Acquisition	Total Land Acquisition: 3145.02 ha Government Land : 71.76 ha Private Land: 3073.26 ha Forest Land: Nill (Source: Land records by Monarch)		
10	Main Carriageway (Proposed)	3+3 Lane Divided Carriageway		
11	Interchange	7 locations at:		
		IC05	224+770	Ardhapur -Parbhani National Highway)NH61(
		IC06	257+930	Jalna -Nanded Expressway
		IC07	287+095	Parbhani -Gangakhed)Daithana (Road)MDR(
		IC08	323+270	Parali -Beed National Highway
		IC09	351+100	Warapgaon - Latur
		IC10	381+480	Murud Latur Road National Highway)NH63(

			IC11	428+550	Osmanabad -Tuljapur National Highway)NH53(
12	No. of Structure		Particulars		Numbers
			Major Bridges		6
			Minor Bridges		29
			Box culvet		176
			Canal crossing		64
			Culvet (Portal Type)		18
			CUP/PUP		185
			Flyover		30
			LVUP		95
			MJB		6
			MNB		29
			ROB		6
			Utility box		53
			Viaduct		2
			VOP		12
			VUP		30
			Total		706
13	Rainwater Harvesting System	Rainwater harvesting shall be done as per IRC: SP: 50-2013 and as per Ministry Circular no. NHAI/TIC/VIP Ref/ 2012 dated 26th October 2015.			
14	Toll Plaza	Closed Loop system adopted for this corridor. Toll Tokens issued/vehicle registered at Entry Point and Toll deducted from Fast tag at Exit Point based on Travel Distance.			
15	Construction Period	36 months			
16	Employment	1500 nos. including management and supervisory staff during construction phase			
17	Total Capital Cost (including LA and Utility Shifting, etc.)	28733.54 Cr			
18	R&R Plan	The R&R compensation activities shall be accomplished in consonance with Maharashtra Highways Act, 1955. Provisions of R&R Plan in Maharashtra Highways Act form the basis for Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. The budget is already included in the land acquisition portion for the same.			



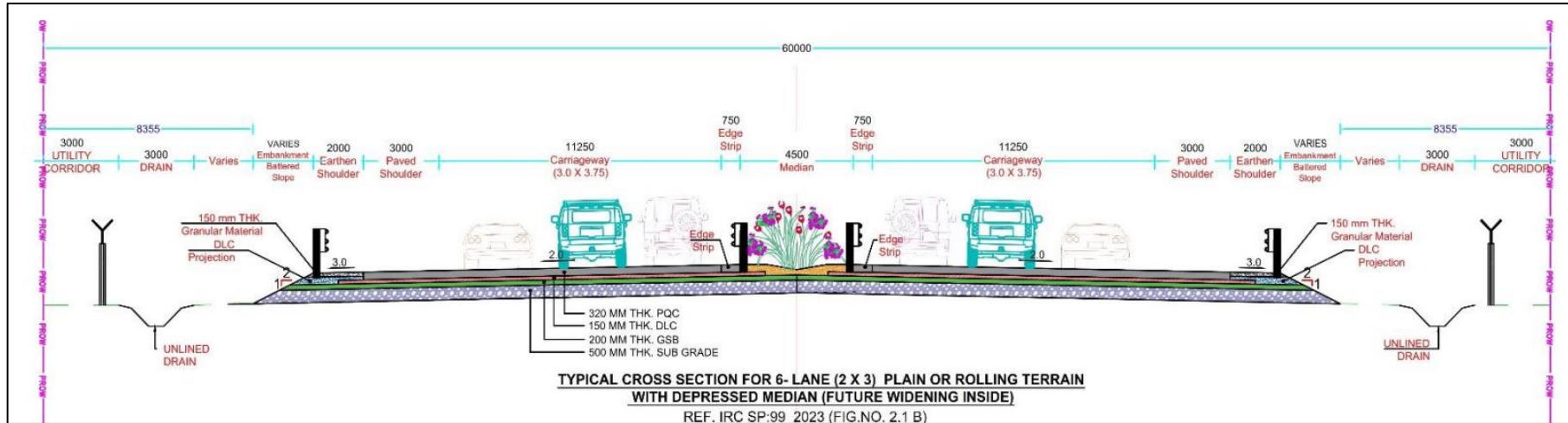
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The typical cross-section of the proposed alignment is as shown in Figure 3.

For 6 Lane - Forest Area



For 6 Lane - Non Forest Area

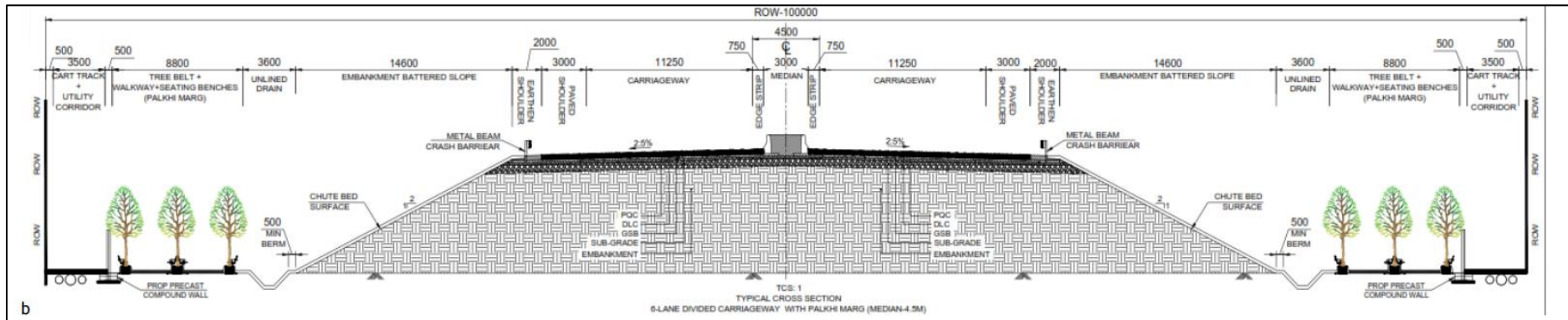


Figure 3: (Typ.) Cross Section of Proposed Alignment



M/s. Enviro Resources

EIA Report for Construction of Pavnar (District Wardha) to Patradevi (District Sindhudurg) at Maharashtra Goa Border Super Communication Expressway (Maharashtra Shaktipeeth Expressway) in the state of Maharashtra, Package – II (Nanded to Osmanabad)



Source: MSRDC (PP) and Monarch (DPR Consultant)



Project Schedule & Cost : The proposed project is scheduled to be completed within 30 months after Environment Clearance (EC) and other statutory approvals are granted. The estimated cost of the project is Rs. 28733.54. Crores. The budget for Environment Protection for the proposed project is ~ 450 Crores.

Resource Requirements

Land : The proposed project will be executed on a total land area of ~3145.02 ha which is being acquired by MSRDC, Government of Maharashtra.

Water : The domestic water requirement will be approximately 0.68m³/day (i.e. 45 lpd for 1500 labours). Additional water of ~ 13380 m³/day will be required for dust suppression & construction activities. The water will be sourced from nearby surface water sources such as Penganga River, Kayadhu River, Purna River, Godavari River, Manjra River, and Tirna River with prior consent from the Authorities having Jurisdiction.

Power : LSD D.G sets will be used for power for onsite construction and labour camps, wherever grid supply is not available.

Manpower : The manpower envisaged is approximately 1500 for the proposed project.

4.0 Description of the Environment

As per the EIA Guidance Manual for Highways (MoEF&CC, February 2010), a study area of 15 km radius from the proposed alignment was considered for secondary data collection. Primary data has been collected within 500 meters on either side of the proposed alignment. Baseline environment monitoring was carried out for the period of March 2024 to May 2024.

Topography, Land use& its Classification – The topography around the project site is mostly plain and hilly at some places.

The land use and land cover of the study area was analyzed based on multispectral satellite imagery reveals that Agriculture is the highest category of Land Use accounting as much as 82 % (5659.63 km²) of the total area followed by Built-up 3.59 % (248.01 km²) & the least Land Use Class was represented by Water Bodies 0.68% (46.95 km²). Of the Land Cover Classes, Waste land was the major Land Cover Class which accounted to 13.61 % (939.37 km²) followed by Forest which accounted to 0.11 % (7.90 km²) and one feature viz. Water

bodies which comprised of River/Stream as Land Cover & Lake/Reservoir/Tank/Canal as land use accounted to 0.68 % (46.95 km²).

Soil - The soil quality was monitored at Thirty one (31) locations within the study area. Some of the important soil parameters are summarised in the below table;

Parameter	Value
pH	7.2 - 8.64
Nitrogen mg/kg	80.8 – 101.5
Phosphorus mg/kg	23.43- 52.7
Potassium mg/kg	37.07 – 56.18
Organic Carbon %	0.2 – 1.9

As per the Chemical Classification of Soil Quality by ICAR, the soils in study area come under moderate to highly productive, whereas as per Levels of Soil Fertility by Tondon H.L.S, the soils in study are can be classified under high fertile category.

Ambient Air Quality - The Ambient Air quality was monitored at Thiry-one (31) locations for parameters such as PM₁₀, PM_{2.5}, NO_x, SO₂, CO in the study area.

Parameter		A1	A2	A3	A4	A 5	A6	A7	A8	A9	A10
PM _{2.5} (µg/m ³)	Min.	20.80	21.43	22.48	22.85	19.05	18.89	18.36	16.71	19.42	24.68
	Max.	43.52	49.24	41.62	41.05	48.63	42.34	48.75	40.15	49.72	47.26
	Avg	32.16	35.34	32.05	31.95	33.84	30.62	33.56	28.43	34.57	35.97
	98 %ile	42.65	48.26	40.79	40.23	47.66	41.49	47.78	39.35	48.73	46.31
PM ₁₀ (µg/m ³)	Min.	49.38	47.22	49.32	46.12	48.52	43.35	44.12	47.47	49.24	45.61
	Max.	91.27	89.35	90.68	92.61	91.25	89.39	91.27	87.36	90.27	89.57
	Avg	70.33	68.29	70.00	69.37	69.89	66.37	67.70	67.42	69.76	67.59
	98 %ile	89.44	87.56	88.87	90.76	89.43	87.60	89.44	85.61	88.46	87.78
SO ₂ (µg/m ³)	Min.	6.85	5.26	4.69	5.48	5.78	4.3	4.53	4.36	6.75	5.63
	Max.	42.09	38.62	41.62	38.58	40.67	36.34	31.67	42.75	39.62	32.37
	Avg	24.47	21.94	23.16	22.03	23.23	20.32	18.10	23.56	23.19	19.00
	98 %ile	41.25	37.85	40.79	37.81	39.86	35.61	31.04	41.90	38.83	31.72
NO _x (µg/m ³)	Min.	6.35	5.34	4.8	2.36	5.8	3.62	6.9	2.77	3.16	4.58
	Max.	39.74	42.62	43.51	45.85	49.77	41.02	50.3	40.25	45.05	47.67
	Avg	23.05	23.98	24.16	24.11	27.79	22.32	28.60	21.51	24.11	26.13
	98 %ile	38.95	41.77	42.64	44.93	48.77	40.20	49.29	39.45	44.15	46.72
CO mg/m ³	Min.	0.35	0.21	0.39	0.38	0.42	0.28	0.34	0.4	0.33	0.29
	Max.	1.35	1.17	1.65	1.25	1.25	0.98	1.05	1.24	1.18	1.15
	Avg	0.85	0.69	1.02	0.82	0.84	0.63	0.70	0.82	0.76	0.72
	98 %ile	1.32	1.15	1.62	1.23	1.23	0.96	1.03	1.22	1.16	1.13

Parameter		A 11	A 12	A13	A 14	A 15	A 16	A 17	A 18	A19	A20
PM _{2.5} (µg/m ³)	Min.	20.67	15.53	18.65	19.59	21.37	18.67	18.22	19.36	18.95	15.31
	Max.	41.52	47.28	42.17	49.65	43.75	40.34	49.47	48.34	40.56	40.36

Parameter		A 11	A 12	A13	A 14	A 15	A 16	A 17	A 18	A19	A20
PM10 ($\mu\text{g}/\text{m}^3$)	Average	31.10	31.41	30.41	34.62	32.56	29.51	33.85	33.85	29.76	27.84
	98 %ile	40.69	46.33	41.33	48.66	42.88	39.53	48.48	47.37	39.75	39.55
	Min.	47.61	50.78	50.37	45.85	45.27	46.14	52.37	43.12	49.87	46.58
	Max.	90.23	95.62	87.78	86.25	90.58	89.22	88.08	86.58	88.58	93.39
SO2 ($\mu\text{g}/\text{m}^3$)	Average	68.92	73.20	69.08	66.05	67.93	67.68	70.23	64.85	69.23	69.99
	98 %ile	88.43	93.71	86.02	84.53	88.77	87.44	86.32	84.85	86.81	91.52
	Min.	5.85	6.53	4.62	5.78	4.75	5.47	6.07	3.98	4.56	3.92
	Max.	31.63	32.33	31.57	40.01	28.88	36.22	29.37	33.24	31.22	26.54
NOX ($\mu\text{g}/\text{m}^3$)	Average	18.74	19.43	18.10	22.90	16.82	20.85	17.72	18.61	17.89	15.23
	98 %ile	31.00	31.68	30.94	39.21	28.30	35.50	28.78	32.58	30.60	26.01
	Min.	5.62	4.28	3.89	4.64	5.28	4.89	2.23	4.8	2.07	4.26
	Max.	42.7	48.77	46.23	41.7	42.65	51.83	44.61	47.74	49.06	51.08
CO (mg/m^3)	Average	24.16	26.53	25.06	23.17	23.97	28.36	23.42	24.77	25.57	26.17
	98 %ile	41.85	47.79	45.31	40.87	41.80	50.79	43.72	46.79	48.08	50.06
	Min.	0.3	0.36	0.39	0.44	0.42	0.5	0.75	0.34	0.37	0.21
	Max.	1.29	1.21	1.19	1.19	1.14	1.2	1.17	1.8	1.12	1.01
	Average	0.80	0.79	0.79	0.82	0.78	0.85	0.96	1.07	0.75	0.61
	98 %ile	1.26	1.19	1.17	1.17	1.12	1.18	1.15	1.76	1.10	0.99

Parameter		A21	A22	A23	A24	A25	A26	A27	A28	A29	A30	A31
PM2.5 $\mu\text{g}/\text{m}^3$	Min.	21.87	20.52	21.76	19.65	18.7	18.24	20.48	16.57	18.34	22.68	20.67
	Max.	44.27	46.22	48.62	46.33	48.23	45.34	46.88	44.15	45.72	49.71	40.33
	Average	33.07	33.37	35.19	32.99	33.47	31.79	33.68	30.36	32.03	36.20	30.50
	98 %ile	43.38	45.30	47.65	45.40	47.27	44.43	45.94	43.27	44.81	48.72	39.52
PM10 $\mu\text{g}/\text{m}^3$	Min.	50.05	47.12	51.32	48.75	48.3	46.52	45.75	47.98	51.35	46.32	47.64
	Max.	88.58	94.28	91.58	93.58	94.02	90.61	89.24	88.51	87.58	88.13	87.58
	Average	69.32	70.70	71.45	71.17	71.16	68.57	67.50	68.25	69.47	67.23	67.61
	98 %ile	86.81	92.39	89.75	91.71	92.14	88.80	87.46	86.74	85.83	86.37	85.83
SO2 $\mu\text{g}/\text{m}^3$	Min.	6.20	5.72	4.43	5.32	6.78	4.26	4.47	4.78	6.75	5.26	5.97
	Max.	43.03	37.62	42.62	40.58	39.67	35.34	32.67	41.7	38.54	34.31	31.64
	Average	24.62	21.67	23.53	22.95	23.23	19.80	18.57	23.24	22.65	19.79	18.81
	98 %ile	42.17	36.87	41.77	39.77	38.88	34.63	32.02	40.87	37.77	33.62	31.01
NOX $\mu\text{g}/\text{m}^3$	Min.	6.05	5.37	4.68	2.54	5.9	3.32	6.86	2.42	3.6	4.84	5.75
	Max.	39.85	42.64	43.12	45.85	49.57	41.75	50.37	40.22	45.87	47.62	42.16
	Average	22.95	24.01	23.90	24.20	27.74	22.54	28.62	21.32	24.74	26.23	23.96
	98 %ile	39.05	41.79	42.26	44.93	48.58	40.92	49.36	39.42	44.95	46.67	41.32
CO mg/m^3	Min.	0.29	0.22	0.37	0.32	0.47	0.28	0.38	0.58	0.65	0.31	0.41
	Max.	1.45	1.3	1.85	1.21	1.22	0.88	1.04	1.26	1.15	1.1	1.25
	Average	0.87	0.76	1.11	0.77	0.85	0.58	0.71	0.92	0.90	0.71	0.83
	98 %ile	1.42	1.27	1.81	1.19	1.20	0.86	1.02	1.23	1.13	1.08	1.23

In general, the ambient air quality is satisfactory with respect to all major pollutants. The 98th percentile values of all pollutants were found to be below NAAQS, 2009 and its further amendments.

Noise Quality - The noise quality was monitored at Thiry-one (31) locations in the study area during the study period.

Category	Leq daytime	Leq night time	Daytime Standard	Night time Standard
Residential	48.6	45.6	55	45

The noise quality in the study area except around the commercial locations was found to be satisfactory in the residential & industrial areas.

Water Quality - Surface water samples were collected once during the study period at Twenty (20) locations to assess the baseline water quality in the study area. The samples were compared with the CPCB's surface water classification and they conform to 'Class E' Water Quality Criteria. Some of the important parameters are summarized in the below table;

Parameter	Value
pH	7.3 – 7.8
Dissolved Oxygen mg/l	4.4 – 5.4
Biochemical Oxygen Demand mg/l	5.4– 8.6
Total Coliform No./100ml	25-67
E- Coli No./100 ml	4-9

Ground water samples were collected from Thiry-one (31) locations to assess the existing groundwater quality of the study area during the study period. The physico-chemical characteristics of Ground water are confirming to permissible limits of drinking water standards, prescribed in IS: 10500 (2012) (Test Characteristics for Drinking Water) and suitable for consumption. Some of the important parameters are summarized in the below table;

Parameter	Value
pH	7.32 – 8.15
Turbidity NTU	<0.1
Total Dissolved Solids mg/l	443 – 596
Total Hardness as CaCO ₃ mg/l	221– 395
Alkalinity	254 – 311
Fluoride as F mg/l	0.43 – 0.76
Nitrate as NO ₃ mg/l	1.01 – 1.48

Biotic Environment

Project Site and surrounding- Flora & Fauna

The area in and around proposed alignment prevailed varied terrain features such as hills, hillocks, mounds, scrub lands, vegetated areas, depressions, plantations & agricultural fields. The observed in vegetation in study area was by virtue of natural vegetation & plantations in some locations.

Flora: 101 plant species, which comprised of 13 herb species, 7 species of grasses 7 climber species, 18 shrub species & 56 tree species.

Fauna: 29 bird species, 3 reptile & 5 mammal species were recorded in & within immediate vicinity of proposed alignment.

Species of concern category – The observed bird, reptile & mammal species are common & abundantly wide spread across the Marathwada Region. *Urva Edwardsii* (Indian grey mongoose) a mammal species is the only Schedule I species observed during survey. While Scat of Nilgai, Scratches of wild boar recorded from RoW area. Overall 29 bird's species recorded during survey in which, 28 falls under schedule II & 1 species not included in any Schedule of WPA 2022. One bird species, *Mycteria leucocephala* (Painted Stork), is listed as Near Threatened as per the IUCN Red List. It is a resident species and is commonly observed in the region. All the species recorded in and around the project site are very common in the Marathwada region

Study area Flora & Fauna

Flora: 195 plant species, which comprised of 31 herb species, 19 climber species, 38 shrub species, 11 grass species & 96 tree species.

Fauna: 74 bird species, 15 mammal species, 8 reptilian species were recorded from study area.

Species of concern category –

Flora: As per the IUCN red data list 120 species listed in Least category while 1 species under data deficiency, 1 near thretend species viz. *Pterocarpus marsupium* (Bibla), 1 endangered species viz, *Tectona grandis* (Teak), 1 Vulnarable species viz. *Saraca asoca* (Ashoka) were recorded in the study area

Fauna: 1 Near Threatened bird species viz. (*Mycteria leucocephala* - Painted Stork) which are a resident species, 2 reptilian species viz. *Python molurus* (Rock Python) and *Varanus bengalensis* (Indian monitor lizards), 2 Vulnarable species of mammals viz. *Macaca radiate* (Bonnet macaque), *Rusa unicolour* (sambhar) were recorded in study area from primary study and from interaction with locals. 7 bird species and 6 reptilian species fall in Schedule 1 of WPA 2022 Amendment

Socio-Economic Environment

The socio economics of study area was studied through primary and secondary survey. The socio-economic aspects of the study area is summarised in the table given below;



Parameters	Study area (10 km)
Total No. of Villages	138
Total no. of Households	54875
Total Population	278003
Sex ratio	933
SC/ST population	17.94% (SC) & 3.33% (ST)
Literacy Rate	65.06

Source: Primary Census Abstract & DCHB 2011, Nanded, Hingoli, Parbhani, Beed, Latur and Osmanabad Districts, State Maharashtra

In the study area, education is available from Anganwadi Centers, Preprimary School to Senior Secondary School but for further education, people have to travel about 2-15 km. highest educational level in the study area is up to 12th class. The scope for higher and technical education is existing only at the district place and only few people are able to take benefits of these educational institutions.

5.0 Anticipated Environment Impacts and Mitigation Measures

Construction Phase: The proposed project is a green field project. The construction involves minimum ground clearing, as the profile of the proposed alignment will match the natural topography to the extent feasible. The construction phase of the proposed project will be of shorter duration for about 30 months only.

The potential impacts will be localised, very limited and insignificant due to the construction activity like fugitive dust, noise during excavation, civil works, operation of construction equipment's, storage & handling of construction material, surface water runoffs, etc.

These impacts shall be minimised by providing appropriate storage for construction material, provision of acoustic barriers and enclosures for high noise generating equipment, fugitive dust control by water sprinkling on road used by vehicles, construction activities shall be avoided during night time, surface runoff shall be checked for contaminations such as oil & grease by routing the surface runoffs in small bunds around the construction areas, all hazardous & non-hazardous material shall be handled as per statutory requirements.

Further except for the identified trees to be felled in 100 m ROW, the proposed project activities does not alter the surrounding the surrounding biotic environment in whatsoever manner. If pilling activity is to be done in riverbed, this may lead to rise in suspended solids which may render the bottom waters turbid. However such effect will be temporal & original contours will be restored after cease of construction activity at river bed.

Therefore, the impacts during construction phase is to be short term, reversible, localised and are not expected to contribute significantly.

Operational Phase: The potential environmental impacts due to the proposed project have been assessed in detail. These include impact on air quality, noise, water quality, solid waste, ecology and socio economics, etc. The modelling and analysis of the data indicate that the predicted impacts are minimal and are within the prescribed norms and standards. Comprehensive mitigation measures have been incorporated in the environment management plan to ensure that the environmental quality is protected and enhanced. These have been summarised in below table.

Air Environment:

The following probable sources are identified in operation phase:

Vehicular emissions from vehicles plying on the constructed road

The prediction of the Ground Level Concentrations (GLC's) due to emissions of pollutants such as PM, SO₂, NO_x and CO from the operation phase has been computed by A CALINEpro. CALINE3 based CO model with queuing and hot spot calculations and with a traffic model to calculate delays and queues that occur at signalized intersections.

The resultant modelled (incremental) concentrations for all the pollutants (PM, SO₂, NO_x and CO) have been found to remain within the corresponding National Ambient and Air Quality Standards (NAAQS). Mitigation measures will be in place to minimize potential adverse impacts of air emissions on health of receptors. In view of this, the atmospheric emissions during the operation phase are anticipated to be localised and the impact significance is assessed as negligible.

Mitigation Measures

BS-IV or higher version accommodating engines shall be adopted in future, however modelling is been performed considering emission factors for BS-II version vehicles.

Roads shall be maintained regularly to avoid dust emissions

Tree plantation shall be done to avoid dispersion of particles

Native trees with higher APTI (Air Pollution Tolerance Index) value shall be planted

Noise Environment

Noise generating sources are due to the following activities:

During operation phase/ after completion of road construction work, the major source of noise will be due to Vehicular movement by vehicles using the road.

The prediction of ambient noise from the proposed project was carried out using software tool “dhwani PRO”. The anticipated noise generation by vehicles plying on the road will be 45 dB (A).

The distance wise drop down in anticipated cumulative noise from road in operational phase will be as given in following table.

Sr. No.	Distance in meters from alignment boundary	Noise in dB(A)
1	100	51.04
2	200	48.61
3	300	45.14
4	400	42.21
5	500	38.17

Thus, these noise levels will remain well within acceptable limits and will not have any impact outside the boundary from the proposed project.

Mitigation Measures

Tree plantation is to be proposed along the alignment to minimize the intensity of dissipating noise

Noise barrier shall be provided on bridges and links close to human habitation

Water Environment

The road operations do not require any significant water quantity, apart from time to time requirement during works such as maintenance of road. However, as needed water will be sourced from water tankers or from Penganga River, Kayadhu River, Purna River, Godavari River, Manjra River, and Tirna River with necessary consents from the jurisdictional authorities. Adequate precautions will be taken and proper withdrawal management plan shall be thoroughly followed.

Land Environment

Land pollution may take place during the operation phase due to accidental spillage hazardous materials in case are transported/conveyed using the proposed road.

Mitigation Measures

Such scenarios will be tackled by District Disaster Management in place & use.

Littering of solid wastes on proposed road shall be strictly prohibited.

Biotic Environment

Emissions & Noise – Vehicular emissions & noise generated from vehicles plying on the proposed road, however such emissions will be non-point & non continuous & the concentration of such emissions escaping the proposed road corridor will be extremely minimal and noise generation will be event specific viz. only during passing/ travel course of vehicles at any given point of time. Hence adverse/negative impacts on surrounding biotic environment during road operational phase are not envisaged.

6.0 Analysis of Alternatives

The proposed alignment was thoroughly studied based on engineering, socio-economic, environmental, cost, and safety aspects. The weightage of parameters within each aspect was tabulated, and based on the ranking, the said alignment was finalized. Details of alternative alignment locations have been discussed in details within the EIA Report and the finalised alignment has been discussed and analysed within this EIA Report.

7.0 Environmental Monitoring Programme

The Environmental Monitoring Programs are also suggested to provide information on which management decisions may be taken during construction and operational phase. The objective of this program is to evaluate the efficiency of mitigation and enhancement measures, updating the actions & impacts of baseline data and adaptation of additional mitigation measures.

The environmental monitoring cost is estimated based on the length and existing environmental scenario of the proposed project. Environmental monitoring cost of, 9,42,24,600/- during Construction Phase and 2,54,10,000 /-for 10 years during Operation Phase has been allocated.

The sampling, analysis and frequency of environmental attributes including monitoring locations will be as per the guidelines provided by MoEF&CC/CPCB/MPCB. The monitoring shall be carried out by third party laboratories that are accredited by NABL or recognized by MoEF&CC.

8.0 Environmental Management Plan

The proposed project will be certified for the internationally accepted Environmental Management System based on ISO-14001, Quality Management and Occupational Health & Safety Management Systems. An environmental monitoring program shall be put in place, periodic review & audits shall be carried out for effective environmental management. The execution team shall have an Environmental Management Cell which shall ensure overall effective implementation of the management plan.

In general, systems shall be in place to ensure compliance with respect to environmental statutory requirements and Environment Policy are strongly adhered to all time.

9.0 Project Benefits

The proposed expressway will provide better, fast, safe and smooth connectivity for the commuters of Vidharbh-Marathwada and Konkan. Smooth and fast-moving traffic will cause only lower emissions thereby reducing pollution levels. Development of the proposed project road will improve the local agriculture and enable farmers to realize better value for their products as well as attract more investment to that region, thus boost economy of the area, state and nation as a whole. The vehicle operating and maintenance cost is expected to go down substantially. The proposed road alignment will also include general amenities like rest areas, etc. as feasible at built-up locations, pedestrian and cattle underpasses, animal underpasses, landscaping and tree plantation, traffic aid post, emergency telecom system, emergency medical aid post, street light at built ups etc. and thus overall facilities to the road users shall improve. People will have increased access to better social and health infrastructure and other services located outside the project area. This will in turn lead to overall improvement of the quality of life of the people residing in the project zone in terms of their economic, social and health status. Growth of local tourism and resultant boost to local economy is also expected due to proposed project.

10.0 Project Schedule and Cost

The proposed project is scheduled to be commissioned within 30 months after Environment Clearance (EC) and other statutory approvals are granted. The estimated cost of the proposed project is Rs. 28,733.54 Crores. For protection of environment, it is proposed to spend 450 Crores as capital cost of EMP budget.

11.0 Conclusion

This impact assessment study indicates that the overall impact from the proposed project activities will be short term, reversible, localised and are not expected to contribute significantly to the surrounding environment. In addition, with the implementation of the pollution control and the environment management measures, these anticipated impacts due to construction and operation of the proposed project will be mitigated to reduce it further.

The project proponent will also ensure that the environmental performances of all the activities are monitored throughout execution of the project during both construction and operation phase. The project proponent will report environmental performance and monitoring reports regularly to statutory authorities.



The Project Proponent shall develop systems and procedures for effective environmental management. The effective management system coupled with monitoring of environmental components and efforts for continual improvements will result in exemplary environmental performance.

Based on the EIA study and surveys conducted for the Project, it can be safely concluded that associated potential adverse environmental impacts can be mitigated to an acceptable level by adequate implementation of the measures as stated in the EIA Report. Adequate provisions has been made in the Project to cover the environmental mitigation and monitoring requirements, and their associated costs as suggested in environmental budget. The proposed project shall improve Road efficiency and bring economic growth. In terms of air and noise quality, the project shall bring considerable improvement to possible exposure levels to population.