

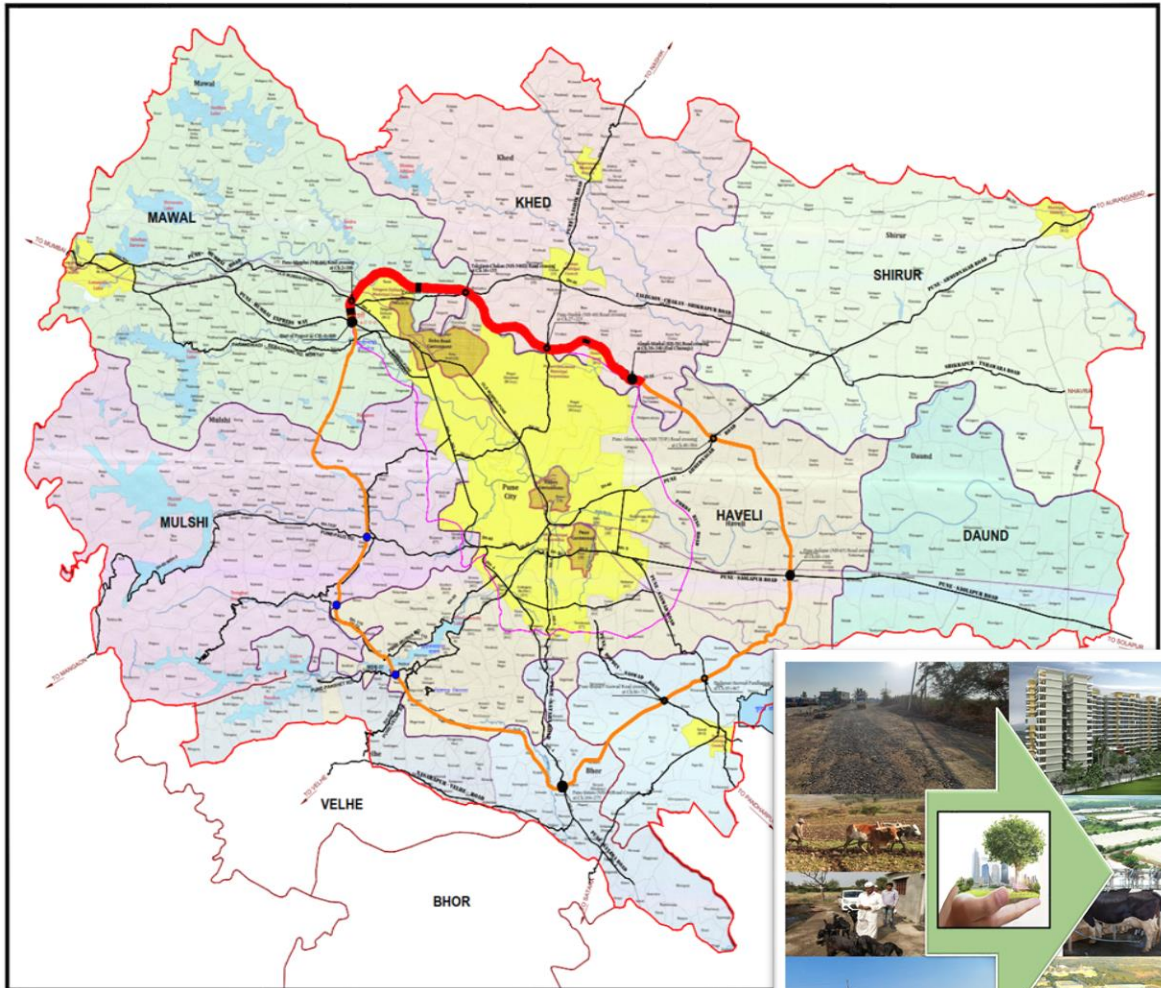


**MSRDC**

**Maharashtra State Road Development Corporation Limited.**

# Environmental Impact Assessment (EIA) Report for Pune Ring Road around the Pune City.

Phase-II: Eastern Alignment. Start at 0+000 on YCEW near Urse and  
End At 38+340 on SH-58 near Solu, District-Pune, in the state of Maharashtra



## Executive Summary

**MAY-2021**

Submitted To:

**Maharashtra Pollution  
Control Board, Mumbai.**



**MONARCH**

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**Draft Environmental Impact Assessment (EIA) Report for  
Pune Ring Road around the Pune City. Phase-II: Eastern Alignment.  
Start at 0+000 on YCEW near Urse and End At 38+340 on SH-58 near Solu,  
District-Pune, in the state of Maharashtra**

Project Proponent:



**MSRDC**

**Maharashtra State Road Development Corporation Limited.**

Report Prepared by:

DPR Consultant:



**MONARCH**

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**Baseline Period: December, 2020 to February, 2021**

## **EXECUTIVE SUMMARY**

### **1.0 Introduction**

**Maharashtra State Road Development Corporation Limited (MSRDC)** - Project Proponent has been entrusted with the assignment of development of Pune Ring Road for Pune Metropolitan Region to provide safe unhindered passage to peripheral traffic; which will in turn help in decongesting the city traffic. Accordingly, MSRDC has proposed to implement the development project under following Phases viz. Phase I - Western Alignment and Phase II - Eastern Alignment.

- **Eastern Alignment (Part 1): Starting from Urse – Ending at Solu – 38.340 km**
- Eastern Alignment (Part 2): Starting from Solu – Ending at Varve (Kelawade) near Satara Highway – 66.560 km
- Western Alignment: Starting from Urse – Ending at Varve (Kelawade) on Satara Road via. Parandwadi, Paud Road, Mula Road, Mutha Road, etc. – 68.800 km
- The total length of the Proposed Ring Road is approx 173.700 km

The proposed project is for Eastern Alignment (Part 1): Starting from Urse and Ending at Solu. As per Environment Impact Assessment (EIA) Notification dated 14<sup>th</sup> September, 2006, and its amendments till date, the proposed project falls under 'Category B1' with activity number 7(f).

Accordingly, the application for obtaining Terms of References (ToR) for carrying out EIA studies for Eastern Alignment (Part 1) was submitted on PARIVESH (MoEF&CC) portal. The project was recommended in the 194<sup>th</sup> meeting of State Expert Appraisal Committee - 1 (SEAC-1) held on 12<sup>th</sup> February, 2021 and then by SEIAA during its 217<sup>th</sup> (Part A) meeting dated 12<sup>th</sup> March, 2021. As per the recommendation, PP was accorded ToR to the project vide File No. SIA/MH/NCP/60425/2021 dated 23<sup>rd</sup> March, 2021 (copy of TOR enclosed as *Annexure 1*).

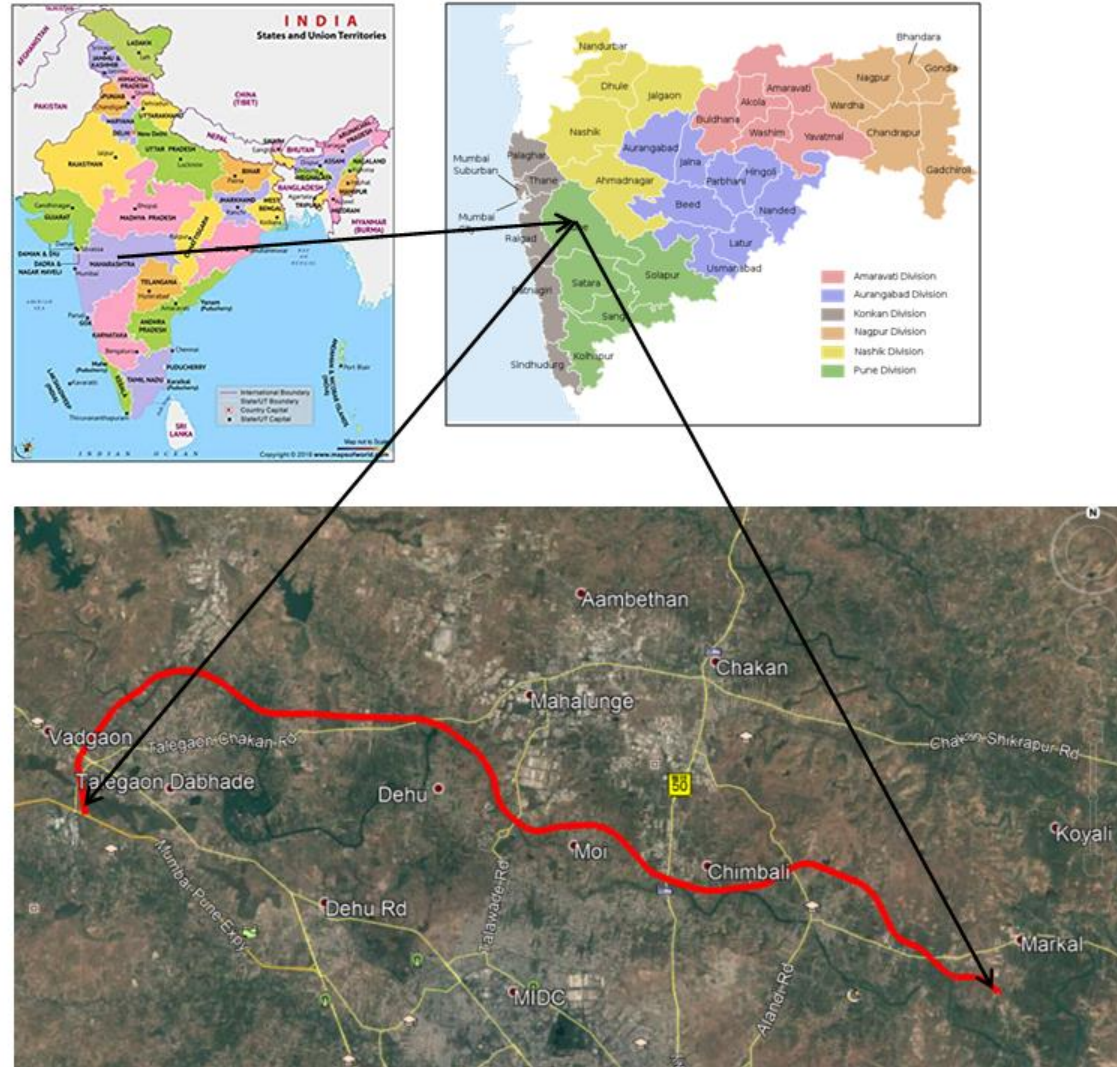
### **2.0 Project Location**

The proposed project alignment passes through 22 villages viz. Parandwadi, Urse, Talegaon, Wadgaon, Katavi, Ambi, Warale, Akurdi, Nanoli tarafe Chakan, Indori, Sudawadi & Sudumbre of Khed Taluka and Khalumbre, Noghoje, Moi, Kuruli, Chimbali, Kelgaon, Alandi, Charholi KH, Dhanore & Solu of Maval Taluka of Pune District, Maharashtra.

The proposed alignment starts at Ch: 0+000 km at Mumbai-Pune Expressway in Urse and ends at Ch: 38+340 km at Solu Village.

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**

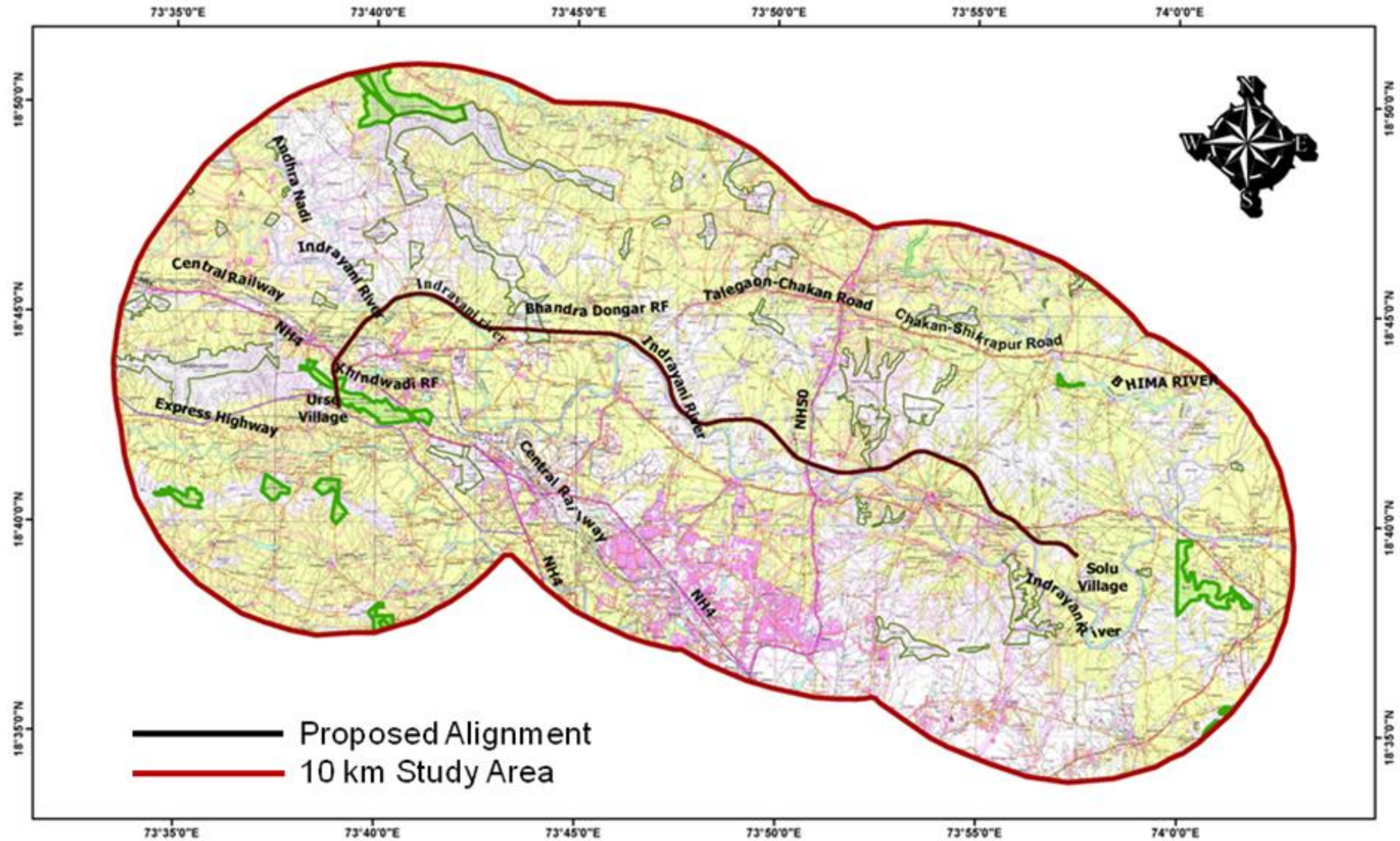


Figure 2: Toposheet Map of the Project Site & Study Area

**Table 1: Details of Length and Area in Each Village**

| SN             | District      | Taluka      | Village             | Land Area (Ha.) | Design Chainage |        | Length (km)   |
|----------------|---------------|-------------|---------------------|-----------------|-----------------|--------|---------------|
|                |               |             |                     |                 | From            | To     |               |
| 1              | Pune District | Khed        | Parandwadi          | 6.4854          | 0+000           | 0.756  | 0.756         |
| 2              |               |             | Urse                | 1.0906          | 0+450           | 0+830  | 0.380         |
| 3              |               |             | Talegaon            | 4.5505          | 0+756           | 1+200  | 0.444         |
| 4              |               |             | Wadgaon             | 23.8918         | 1+200           | 3+320  | 2.120         |
| 5              |               |             | Katavi              | 16.8360         | 3+320           | 4+846  | 1.526         |
| 6              |               |             | Ambi                | 16.7696         | 4+846           | 6+400  | 1.554         |
| 7              |               |             | Warale              | 4.6847          | 6+400           | 6+854  | 0.454         |
| 8              |               |             | Akurdi              | 12.9969         | 6+854           | 8+800  | 1.946         |
| 9              |               |             | Nanoli tarfe Chakan | 18.2827         | 8+800           | 9+648  | 0.848         |
| 10             |               |             | Indori              | 35.8826         | 9+648           | 13+064 | 3.416         |
| 11             |               |             | Sudawadi            | 26.2427         | 13+064          | 15+458 | 2.394         |
| 12             |               |             | Sudumbre            | 9.4733          | 15+458          | 16+311 | 0.853         |
| 13             |               |             | Maval               | Khalumbre       | 23.7454         | 16+311 | 18+462        |
| 14             |               | Noghoje     |                     | 44.1107         | 18+462          | 22+470 | 4.010         |
| 15             |               | Moi         |                     | 30.2480         | 22+470          | 25+235 | 2.765         |
| 16             |               | Kuruli      |                     | 56.1128         | 25+235          | 27+583 | 2.348         |
| 17             |               | Chimbali    |                     | 25.9288         | 27+583          | 29+953 | 2.370         |
| 18             |               | Kelgaon     |                     | 29.5149         | 29+953          | 32+631 | 2.678         |
| 19             |               | Alandi      |                     | 20.5609         | 32+631          | 34+507 | 1.876         |
| 20             |               | Charholi KH |                     | 20.5728         | 34+507          | 36+376 | 1.869         |
| 21             |               | Dhanore     |                     | 19.0019         | 36+376          | 38+174 | 1.798         |
| 22             |               | Solu        |                     | 28.7342         | 38+174          | 38+340 | 0.166         |
| <b>Total :</b> |               |             |                     | <b>475.72</b>   |                 |        | <b>38.340</b> |

### 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 proposed | 38.340 km   |
| 2 | State                 | Maharashtra   |
| 3 | District              | Pune  |
| 4 | Village               | The proposed alignment will pass through Parandwadi, Urse, Talegaon, Vadgaon, Katvi, Ambi, Warale, Akurdi, Nanoli tarfe Chakan, Induri, Sudvadi, Sudubare, Khalumbe, Nigije, Moi, Kuruli, Chimboli, Kelgaon, Alandi, Chahroli, Dhanori and Solu Villages. |
| 5 | Terrain               | Mostly plain and hilly at some places   |
| 6 | Seismic Zone          | III as per IS 1893 (Part 1) : 2002  |
| 7 | Land Use              | The alignment is passing through plain terrain. The predominant land use along the alignment is agricultural followed by residential & commercial and mix (built up) land use.  |
| 8 | RoW                   | 110 m except at interchanges  |

|    |                                |   |
|----|--------------------------------|---|
| 9  | Total Area of Land Acquisition | Total Land Acquisition: 475.72 ha<br>Government Land: 71.3576 ha<br>Private Land: 384.8235 ha<br>Forest Land: 19.5361   |
| 10 | Main Carriageway (Proposed)    | 4+4 Lane Divided Carriageway  |
| 11 | Interchange                    | 5 locations at:<br>Ch. 02+263, On NH-48, (Old Pune-Mumbai Road)<br>Ch. 16+165, On NH-548D, (Talegaon-Chakan-Shikrapur Road)<br>Ch. 21+215, On MIDC Road (PCMC-Talawade-Chakan MIDC Connector)<br>Ch. 27+310, On NH-60, (Pune-Nashik Road)<br>Ch. 38+340, on SH-58, (Chimbali-Alandi-Markal-Lonikand Road) |
| 12 | Major Bridge                   | 3 Nos. at:<br>1. Ch. 4+932,<br>2. Ch. 6+701 &<br>3. Ch. 15+533.   |
| 13 | Minor Bridge                   | 6 Nos. at Ch.<br>1. Ch. 8+176,<br>2. Ch. 17+313,<br>3. Ch. 18+491,<br>4. Ch 22+241,<br>5. Ch 23+396 &<br>6. Ch. 33+974.   |
| 14 | Elevated Flyover               | 4 Nos. at:<br>1. Ch. 2+263<br>2. Ch. 16+165<br>3. Ch. 21+215<br>4. Ch. 27+310<br>5. Ch. 38+340  |
| 15 | Underpass Box/VUP/SVUP/VOP     | 23 Nos. VUP/SVUP; 4 Nos. VOP  |
| 16 | Road Over Bridges (ROB's)      | 1 No.<br>(at Ch.3+501 on Central Railway line near Katavi Village)  |
| 17 | Tunnel                         | 3 Nos.<br>1. Ch. 1+052 (From 0+700 to 1+405=705m )<br>2. Ch. 12+975(From 12+670 to 13+280=610m)<br>3. Ch. 32+537 =(From 32+275 to 32+800=525m)<br>(Total Length 1.840 km)   |
| 18 | Culvert                        | 32 Nos.   |
| 19 | Rainwater Harvesting System    | Rain water 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.  |
| 20 | Toll Plaza                     | Closed Loop system adopted for this corridor.<br>Toll Tokens issued/vehicle registered at Entry Point and Toll deducted from Fast tag at Exit Point on the basis of Travel Distance.  |

|    |  |   |
|----|--|---|
|    |  | at the Entry point 2 lanes of 3.50m and 2 lanes of 4.50m for OSV are proposed<br>at the Exit point 3 lanes of 3.50m and 2 lanes of 4.50m for OSV are proposed   |
| 21 | Construction Period  | 18 to 30 months   |
| 22 | Employment   | Approx. 500 during construction and approx. 50 during operation phase (for Toll Plazas).  |
| 23 | Total Civil Cost   | 3995.93 Cr.   |
| 24 | Total Capital Cost (including LA and Utility Shifting, etc.) | 5971.66CR   |
| 25 | 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. |

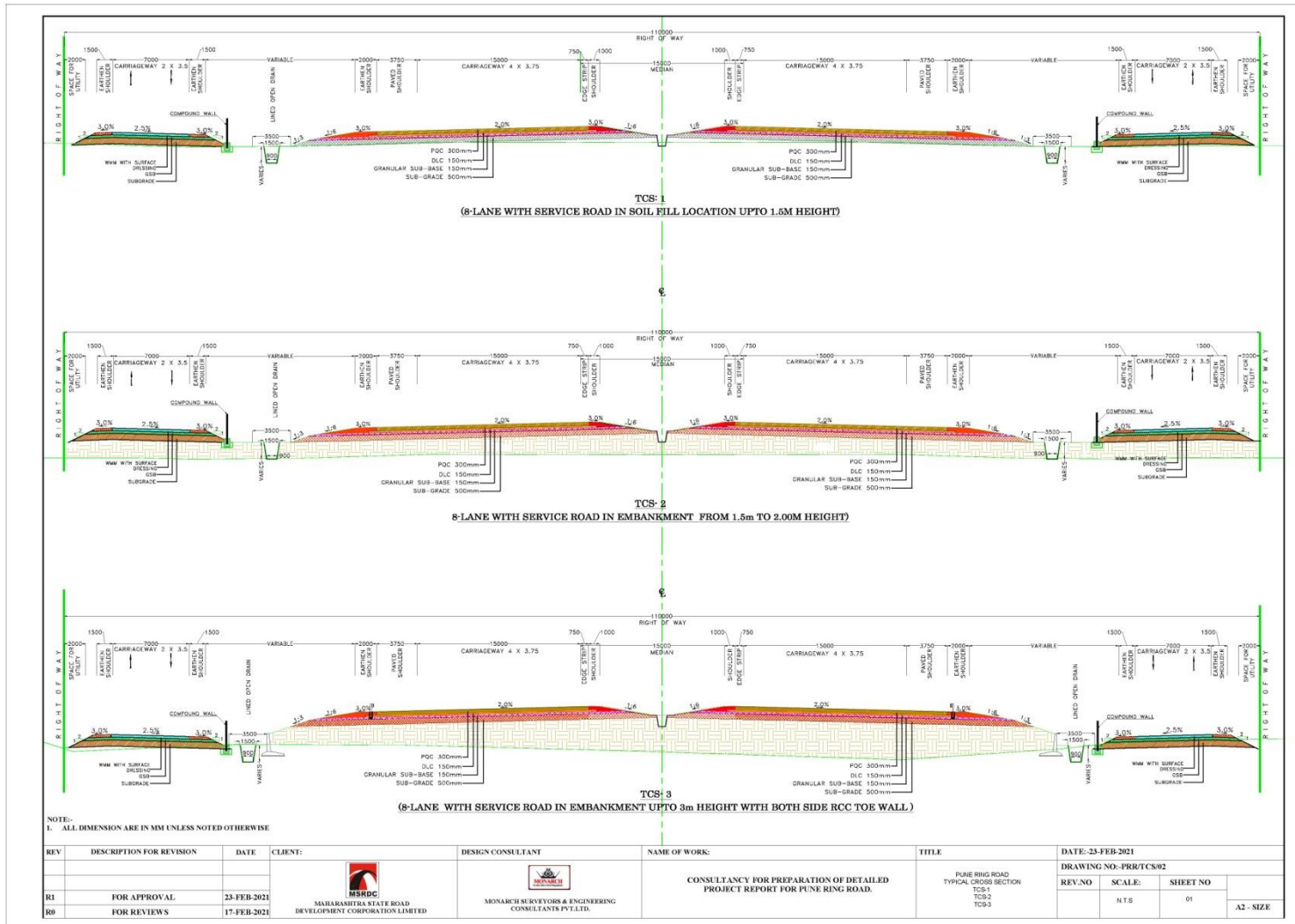
The typical cross-section of the proposed alignment is as shown in **Figure 3**.





M/s. Enviro Resources

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

Project Schedule & Cost : The proposed project is scheduled to be completed within 18 to 30 months after Environment Clearance (EC) and other statutory approvals are granted. The estimated cost of the project is Rs. 5971.66 Crores. The budget for Environment Protection in the proposed project is ~ 22.8 Crores.

Resource Requirements

- Land : The proposed project will be executed on total land area of ~475.72 Ha and is being acquired by MSRDC, Government of Maharashtra.
- Water : The domestic water requirement will be approximately 22.5 m<sup>3</sup>/day (i.e. 45 lpd for 500 labours). Additional water of ~370 m<sup>3</sup>/day will be required for dust suppression & construction activities. The water will be sourced from nearby surface water sources such as Indrayani 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 500 for the proposed project.

#### 4.0 Description of the Environment

Primary baseline environmental monitoring studies in 10-km buffer study area were conducted through an NABL Accredited and MoEF&CC Recognized laboratory [Enviro-Tech Services] during December, 2020 to February, 2021.

**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 analyzed based on multispectral satellite imagery reveals that Agriculture is the highest category of land use accounting as much as 44.17% (474.96 km<sup>2</sup>) of the total area followed by Built-Up 26.55 % (285.53 km<sup>2</sup>) & the least land use class was represented by Mining 1.34% (14.37 km<sup>2</sup>). Of the land cover classes Waste land was the major land cover class which accounted to 22.96% (246.85 km<sup>2</sup>) followed by Forest which accounted to 3.59% (38.65 km<sup>2</sup>) and one feature viz. Water bodies which comprised of River/Stream as land cover & Lake/Reservoir/Tank/Canal as land use accounted to 1.40% (15.02 km<sup>2</sup>).

**Soil** - The soil quality was monitored at ten locations within the study area. Some of the important soil parameters are summarised in the below table;

| Parameter        | Value         |
|------------------|---------------|
| pH               | 7.224 – 8.29  |
| Nitrogen mg/kg   | 73.5 – 101.5  |
| Phosphorus mg/kg | 23.43- 25.7   |
| Potassium mg/kg  | 36.04 – 56.18 |
| Organic Carbon % | 1.3 – 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 area can be classified under high fertile category.

**Ambient Air Quality** - The Ambient Air quality was monitored for PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, SO<sub>2</sub>, CO at eleven locations in the study area.

| Parameter                                 |               | A1        | A2        | A3        | A4        | A5        | A6        | A7        | A8        | A9        | A10       | A11       |
|---|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | Min           | 29.2      | 24.4      | 25.1      | 27.4      | 30.1      | 25.9      | 25.4      | 31.7      | 26.1      | 29.4      | 28.0      |
|   | Max           | 41.0      | 34.2      | 35.2      | 38.8      | 42.1      | 36.5      | 35.6      | 44.5      | 36.8      | 41.2      | 39.5      |
|   | Average       | 33.4      | 27.8      | 28.6      | 31.5      | 34.3      | 29.6      | 29.0      | 36.2      | 29.9      | 33.6      | 32.1      |
|   | 98 percentile | 40.6<br>3 | 33.8<br>9 | 34.8<br>6 | 38.3<br>8 | 41.7<br>5 | 36.0<br>9 | 35.2<br>6 | 44.1<br>0 | 36.4<br>5 | 40.8<br>5 | 39.1<br>5 |
| PM <sub>10</sub><br>(µg/m <sup>3</sup> )  | Min           | 68.0      | 56.7      | 58.3      | 64.2      | 69.9      | 60.4      | 59.0      | 73.8      | 61.0      | 68.4      | 65.4      |
|   | Max           | 83.8      | 68.4      | 70.4      | 77.4      | 84.3      | 72.8      | 71.2      | 89.2      | 73.5      | 82.6      | 79.0      |
|   | Average       | 74.9      | 61.9      | 63.8      | 70.1      | 76.4      | 65.9      | 64.5      | 80.7      | 66.6      | 74.8      | 71.5      |
|   | 98 percentile | 83.0<br>5 | 68.3<br>0 | 70.2<br>9 | 77.3<br>2 | 84.1<br>8 | 72.7<br>3 | 71.1<br>4 | 89.0<br>6 | 73.4<br>6 | 82.4<br>3 | 78.8<br>7 |
| SO <sub>2</sub><br>(µg/m <sup>3</sup> )   | Min           | 7.5       | 6.2       | 6.5       | 4.9       | 7.8       | 4.6       | 6.6       | 8.3       | 4.7       | 7.7       | 5.0       |
|   | Max           | 15.0      | 12.4      | 12.9      | 12.9      | 15.4      | 12.1      | 13.0      | 16.3      | 12.2      | 15.1      | 13.1      |
|   | Average       | 12.4      | 10.3      | 10.6      | 10.2      | 12.7      | 9.6       | 10.7      | 13.4      | 9.7       | 12.4      | 10.4      |
|   | 98 percentile | 14.9<br>5 | 12.4<br>0 | 12.8<br>1 | 12.7<br>6 | 15.3<br>5 | 12.0<br>3 | 12.9<br>6 | 16.1<br>9 | 12.1<br>5 | 15.0<br>2 | 13.0<br>1 |
| NO <sub>x</sub><br>(µg/m <sup>3</sup> )   | Min           | 22.0      | 18.3      | 18.9      | 20.7      | 22.6      | 19.5      | 19.1      | 23.9      | 19.7      | 22.1      | 21.1      |
|   | Max           | 29.1      | 24.3      | 24.9      | 27.3      | 29.8      | 25.8      | 25.1      | 31.5      | 26.0      | 29.1      | 27.9      |
|   | Average       | 24.2      | 20.2      | 20.8      | 22.9      | 24.9      | 21.5      | 21.1      | 26.4      | 21.7      | 24.4      | 23.3      |
|   | 98 percentile | 28.3<br>2 | 23.6<br>2 | 24.2<br>8 | 26.6<br>8 | 29.0<br>4 | 25.1<br>0 | 24.5<br>7 | 30.7<br>4 | 25.3<br>6 | 28.4<br>6 | 27.2<br>1 |
| CO<br>(mg/m <sup>3</sup> )                | Min           | 0.48      | 0.50      | 0.55      | 0.51      | 0.55      | 0.51      | 0.55      | 0.51      | 0.48      | 0.58      | 0.52      |
|   | Max           | 0.90      | 0.92      | 0.93      | 0.93      | 0.93      | 0.93      | 0.93      | 0.88      | 0.90      | 0.96      | 0.86      |
|   | Average       | 0.72      | 0.74      | 0.81      | 0.76      | 0.81      | 0.76      | 0.81      | 0.75      | 0.75      | 0.85      | 0.73      |
|   | 98 percentile | 0.88      | 0.91      | 0.84      | 0.91      | 0.84      | 0.91      | 0.84      | 0.87      | 0.90      | 0.96      | 0.86      |

In general, the ambient air quality is satisfactory with respect to all major pollutants. The 98<sup>th</sup> percentile values of all pollutants were found to be below NAAQS.

**Noise Quality** - The noise quality was monitored at eleven locations in the study area during the study period.

| Category    | Leq daytime | Leq night time | Daytime Standard | Night time Standard |
|-------------|-------------|----------------|------------------|---------------------|
| Residential | 52.4        | 40.8           | 55               | 45                  |
| Commercial  | 68.2        | 57.4           | 65               | 55                  |
| Industrial  | 51.8        | 41.3           | 75               | 70                  |

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 eight 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                             | 6.84 – 7.58 |
| Dissolved Oxygen mg/l          | 4.08 – 6.46 |
| Biochemical Oxygen Demand mg/l | 5.51– 8.0   |
| Total Coliform No./100ml       | Absent      |
| E- Coli No./100 ml             | Absent      |

Ground water samples were collected from seven 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 (Test Characteristics for Drinking Water) and suitable for consumption. Some of the important parameters are summarized in the below table;

| Parameter                                | Value       |
|--|-------------|
| pH                                       | 7.22 – 8.05 |
| Turbidity NTU                            | <0.1        |
| Total Dissolved Solids mg/l              | 446 – 596   |
| Total Hardness as CaCO <sub>3</sub> mg/l | 221– 390    |
| Alkalinity                               | 254 – 311   |
| Fluoride as F mg/l                       | 0.43 – 0.76 |
| Nitrate as NO <sub>3</sub> mg/l          | 1.01 – 1.54 |

### **Biotic Environment**

The biotic environment study of the area has been conducted within 10 km buffer area of the project site in order to assess the prevailing flora and fauna.

**Flora:** 43 species of Trees, 13 species of Shrubs, 22 species of Herbs, 5 species of Climbers, 3 species of Grass and 6 Aquatic species were identified.

**Avifauna:** 43 species were recorded within the Study Area.

No critically endangered, vulnerable or rare & Schedule I species were observed in study area. There are no National Parks or Wildlife Sanctuaries within 5 km of the proposed Project Site.

### **Socio-Economic Environment**

The socio economics of study area is 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   | 136                      |
| Total no. of Households | 98794                    |
| Total Population        | 449569                   |
| Sex ratio               | 879                      |
| SC/ST population        | 10.40% (SC) & 5.55% (ST) |
| Literacy Rate           | 72.334                   |

In the study area, education is available from Pre-primary School to senior secondary school. Higher education facilities along with Colleges and other diploma courses are available at Pune and are 19 km to 41km. away from the project site. There are Fifty-Two (52) government healthcare facilities available within the study area. However; Eighty-Four (84) villages in the study areas were lacking in medical facilities. Hospitals and other better medical facilities were available at Pune. The main water supply in the surveyed villages is through well, tap water, hand pump, and tube well is the main sources of drinking water in the region. All villages are availing electricity facility for all purpose.

## **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 18 to 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 110 m ROW, the proposed project activities does not alter the surrounding the surrounding biotic environment in whatsoever manner & if pilling activity to be done in river bed 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 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, SO<sub>2</sub>, NO<sub>x</sub> 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, SO<sub>2</sub>, NO<sub>x</sub> 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 modeling is been performed considering emission factors for BS-II version vehicles.
- Roads shall be maintained on timely basis 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 “Custic 3.2.”. 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  | 41.03          |
| 2       | 200  | 40.35          |
| 3       | 300  | 39.9           |
| 4       | 400  | 38.84          |
| 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*

- Tunneling shall be based on advance engineering and shall have noise and vibration dampening features. At most of the places,
- 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 does not require any significant water quantity, apart from time to time requirement during works such as maintenance of road. However, it is more likely that water from rivers / canals will not be tapped at all for this purpose & there will not be generation of wastewater, thus no impacts are anticipated during operational phase of proposed project.

### **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 in place 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 constructed road, however the 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**

During study and site inspection of alignment, it was observed that alignment at following points is required to be changed.

- i. Ambi Village (Gaothan Area)
- ii. Bhandara Hill,
- iii. Alandi town (Dence Populated Area)

Details of alternative alignment at each of the above locations have been discussed in details within the EIA Report and the finalised alignment has been discussed.

## **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 on the basis of the length and existing environmental scenario of the proposed project. Environmental monitoring cost of, 18,45,000/- during Construction Phase and 64,00,000/- per year 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 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 terminal 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 Pune District and especially in Khed and Maval Taluka region. Smooth and fast- moving traffic will cause only lower emissions thereby reducing pollution levels. Accident rates are also expected to come down substantially.

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, service road as feasible at built-up locations, pedestrian and cattle 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 Corporate Environment Responsibility (CER) Action Plan**

The estimated cost of proposed project is 5971.66 Crores & CER activities will be implemented to address the concerns raised during the Public Consultation (Public Hearing) process as per MoEF&CC Office Memorandum vide F. No. 22-65/2017-IA.III dated 30<sup>th</sup> September, 2020. The Public Consultation is to be conducted for the proposed project, hence CER plan will be formulated post Public Consultation process.

### **11.0 Project Schedule and Cost**

The proposed project is scheduled to be commissioned within 18 to 30 months after Environment Clearance (EC) and other statutory approvals are granted. The estimated cost of the proposed project is Rs. 5971.66 Crores. For protection of environment, it is proposed to spend 22.8 Crores as capital cost of EMP budget.

### **12.0 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. Also, 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.



**M/s. Enviro Resources**

**Draft EIA Report** for  
Pune Ring Road around the Pune City. Phase-II: Eastern Alignment.  
Start at 0+000 on YCEW near Urse and End At 38+340 on SH-58 near  
Solu, District-Pune, in the state of Maharashtra.



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 shall be 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.