

EXECUTIVE SUMMARY

1.0 INTRODUCTION

Environmental Impact Assessment (EIA) is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision making tool, which guides the decision makers in taking appropriate decisions for proposed projects. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are taken into account during the project designing.

1.1 Environmental Clearance

As per the Environmental Impact Assessment (EIA); Notification S.O. 1533, 14-09-2006 issued by MoEFCC, Government of India, the MS Ingots/MS Billets Manufacturing Unit expansion project is categorized as Category – B project, which mandates obtaining prior Environmental Clearance from State Environment Impact Assessment Authority, Maharashtra.

1.2 Terms of Reference

M/s. Meenakshi Ferro Ingots Private Ltd. submitted the application for Environmental Clearance as per the new notification along with prescribed Form1, proposed Terms of Reference for EIA study and pre-Feasibility report. The Expert Appraisal Committee considered the project and issue the Terms of Reference and prescribed Terms of References is incorporated in the EIA report.

1.3 Brief Description of Project

The proposed project is an expansion project of MS Ingots/ MS billets production (2000 TPM to 15000 TPM) at at Gut No. 350 and 361, Bhandgaon, Khor Road, Yavat, Tal.Daund, Dist. Pune Maharashtra. Total land is available with MFIPL is 25798.00 sq.m. No additional land is required for the proposed expansion. The project location map is given in **Figure 1**, and 10 km study area map is given in **Figure 2**.

Product Details

Existing Furnace (will be removed)	
Induction Furnace (MS Ingots/MS Billets)	4 MT x 8 Heats = 32 TPD 5 MT x 8 Heats = 40 TPD Total = 70 TPD
Proposed Furnace (New Installation)	
Induction Furnace(MS Ingots/MS Billets)	20 MT x 13 Heats = 260 TPD 20 MT x 12 Heats = 240 TPD Total = 500 TPD

Project Proponents

Meenakshi Ferro Ingots Private Limited was established in the year 2005, at Pune, Maharashtra, India. Meenakshi Ferro Ingots Private Limited, is engaged in manufacturing of MS Angles, MS Channels, MS Flats, MS Square, MS Rounds, MS Gate channel and T-Section. The offered products are fabricated using superior MS Scrap, MS Ingots and MS Billets to ensure their adherence with defined industry standards. Moreover, these are also known for features such as optimum tensile strength, dimensional accuracy, durable finish standards and corrosion resistant finish.

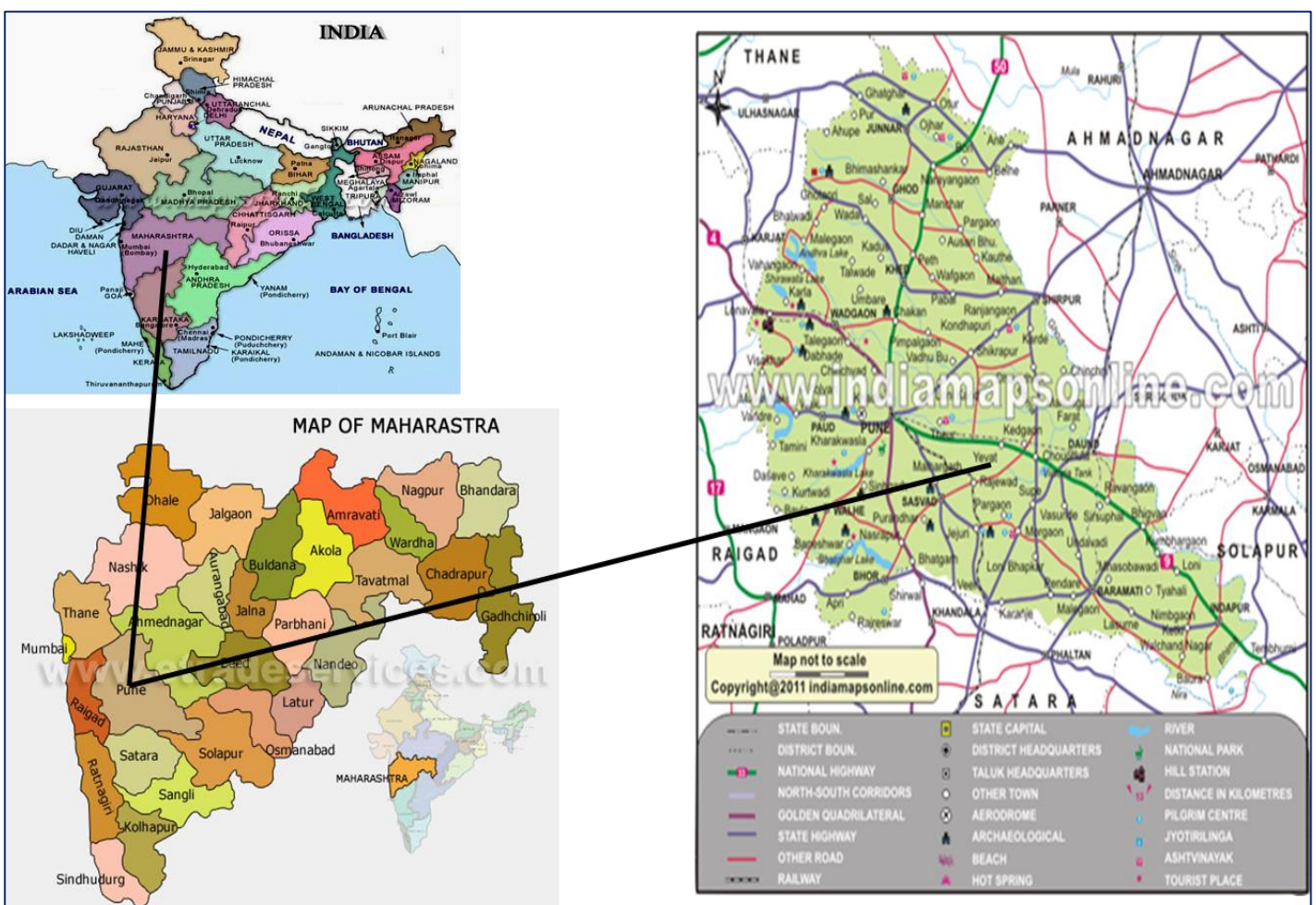


Figure 1: Project Location Map

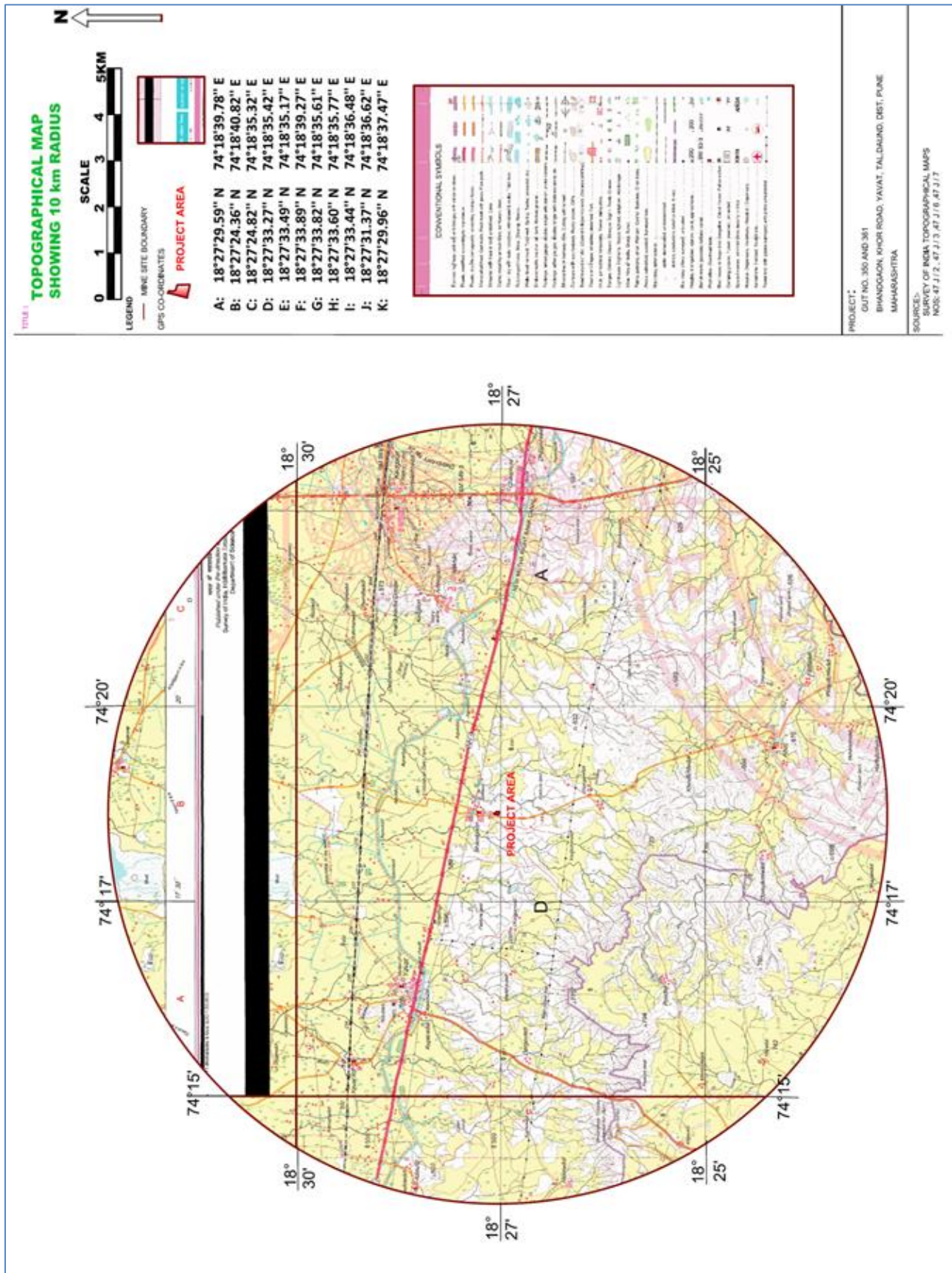


Figure 2: 10 KM Study Area Map of the Project Site

2.0 PROJECT DESCRIPTION

2.1 Raw Material Requirement

The major raw materials for the proposed expansion are Sponge Iron, Scrap and Other minerals. The raw material requirement for the production of billets is formulated based on the working days of the plant. The working days of the plant are 360 days per year. The raw material requirement per day is given in **Table 1**

Table 1: Total Raw Material Requirement after Expansion

S. No.	Raw Materials	Quantity (MTPA)	Source
1	Sponge Iron	240	Open Market
2	Metal Scrap	260	Open Market
3	Other Minerals	13	Open Market

2.1.1 Material Balance

The material balance is given in **Table 2**.

Table 2: Material Balance for Billets

Input	TPD	Out Put	TPD
Sponge Iron	240	Billets	500
Metal Scrap	260	Slag	13
Other Minerals	13	Total	513
Total	513		

2.2 Water Requirement

The manufacturing process of proposed project does not require water at any stage. The water requirement in the project will be for cooling purpose, domestic consumption and green belt development. Total initial water requirement for the project will be 164 KLD. This requirement will be met from Local Supplier. The details of water requirement for different purposes are presented in **Table 3**.

Table 3: Water Requirement

All values in KLD

Item	Water Requirement	Losses	Recirculation/ Recycle	Effluent Generation
Industrial Cooling	150	60	90	0
Domestic Purpose	8	2	0	6*
Gardening	6*	6	0	0
Total	164	68	90	6*

Water Balance

Fresh water requirement for cooling = 90 KLD

Domestic water requirement = 8.0 KLD

Domestic waste will be treated in STP.

Treated water will be used for Gardening Purposes.

Zero Discharge norms will be followed.

2.3 Land Requirement

MFIPL has acquired 25798.0 sq.m of land. The proposed expansion activity will be established within the existing plant area only. The land breakup details are presented in **Table 4**.

Table 4: Land Break-up Details

Sr. No.	Particular	Area (Sq.m)	Area in %
1	Builtup Area	6500.755	25.2
2	Open Area	2791.0	10.83
3	Parking Area	3095.87	12.0
4	Road Area	3059.5	11.82
5	Greenbelt Area	8965.875	34.75
6	Area Available for future	1385.0	5.4
Total		25798.0	100

2.4 Power Requirement

The existing power requirement is 5.5 MW and additional 4.5 MW will be required for proposed expansion. The power will be sourced from the Maharashtra State Electricity Board. The details of Existing and proposed power requirement is given in **Table 5**.

Table 5: Power Requirement

S No	Particular	Quantity	Source
1	Existing	5.5 MW	Maharashtra State Electricity Board
2	Proposed	4.5 MW	
	Total	10.0 MW	

2.5 Man Power Requirement

The skilled/semiskilled /unskilled manpower required for the proposed expansion project. The man power requirement will be fulfilled from the surrounding villages, to help for the improvement of the socio economic status in the surrounding rural areas. The Details of employment is given in **Table 6**.

Table 6: Man Power Requirement

S No	Particular	Numbers
1	Existing Manpower (Staff + Worker)	10 + 14 = 24
2	Proposed Manpower(Staff + Worker)	10 + 24 = 34

	Total	58 Nos.
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2.6 Technology and Process Description

The induction furnace operates as a batch melting process producing batches of molten steel known “heats”. The furnace operating cycle is called the tap-to-tap cycle and is made up of the following operations:

- Furnace charging
- Melting
- Refining
- De-slagging
- Tapping
- Furnace turn-around

The process flow diagram is **Figure 3**.

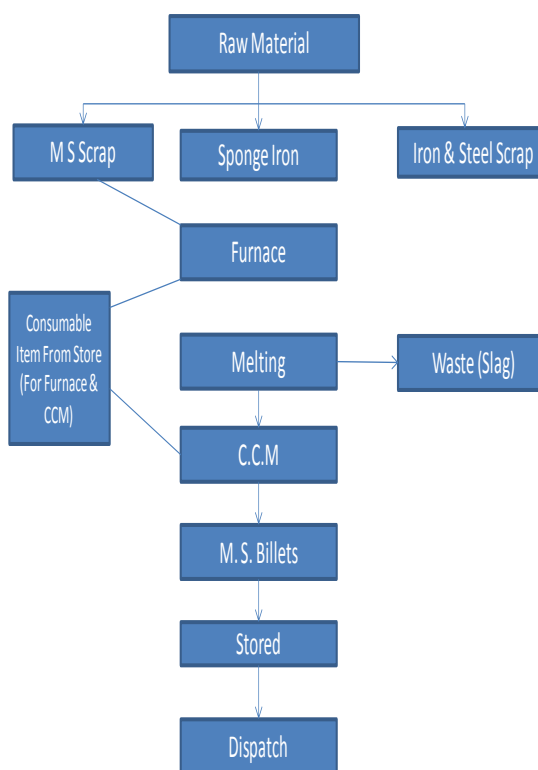


Figure: 3 -Manufacturing Process

3.0 BASELINE ENVIRONMENTAL STUDIES

Baseline environmental studies were conducted in the proposed project area and in the area within 10 km radius from the proposed expansion project area to assess the existing environmental scenario in the area. The baseline environmental quality data for various

components of environment, viz. Air, Noise, Water, Land were monitored during October 2018 to December 2018 in the study area covering 10 km around the Plant area.

3.1 Meteorology

3.1.1 Summary of the Meteorological Data Generated at Site

The site Specific meteorological data is given in **Table -7** and wind rose diagram is given in **Figure 4**.

Table 7: Site Specific Climatological Data (from October 2018 to December 2018)

Month	Temperature (°C)		Relative Humidity (%)		Rainfall (mm)
	Min	Max	Min	Max	
October 2018	12.3	33.2	48	53	22.3
November 2018	11.7	32.1	44	48	11.1
December 2018	9.6	29.9	30	37	5.5
Total					38.9

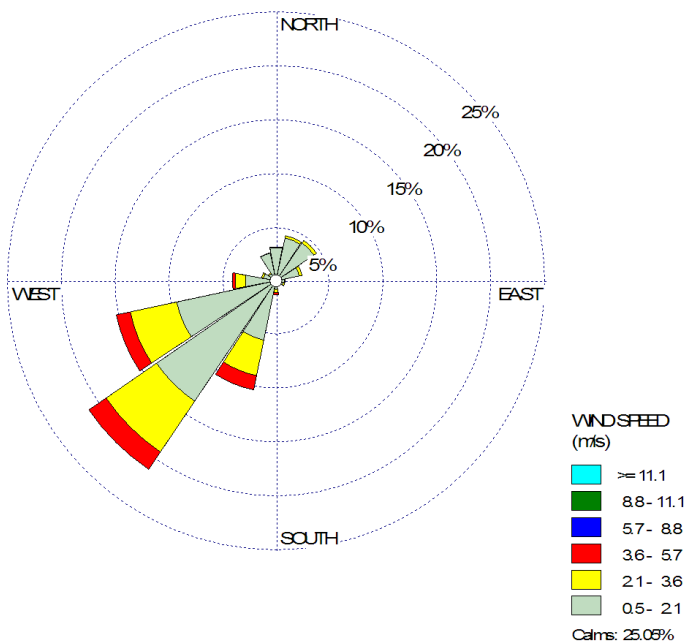


Figure 4: Windrose Diagram (Site Specific)

3.2 Ambient Air Quality Status

The status of ambient air quality within the study area was monitored for the period of during October 2018 to December 2018 at 8 locations including the Plant area and in nearby villages. Total 8 sampling locations were selected based on the meteorological conditions considering

upwind and downwind directions. The levels of Respirable Particulate Matter (PM₁₀), Fine Particulates (PM_{2.5}), Sulphur Dioxide (SO₂) and Oxides of Nitrogen (NO_x) were monitored. The minimum and maximum values of monitoring results are summarized in **Table 8**.

**Table 8: Summary of Ambient Air Quality Results
Particulate Matter – PM₁₀**

Location Name	Minimum	Maximum	Average	All Values in µg/m ³
				98 th Percentile
Project Site	69.7	77.5	73.6	77.0
Bhandgaon	50.1	57.2	53.3	56.9
Kedgaon	49.7	62.1	56.5	61.4
Nimbalkarwadi	42.4	49.4	46.2	49.4
Yavat	43.8	53.1	49.4	53.1
Dorgevasti	38.9	45.8	42.5	45.6
Dhangarwadi	58.3	65.9	63.2	65.9
Chauhala	59.6	68.7	64.3	68.6

Particulate Matter – PM_{2.5}

Location Name	Minimum	Maximum	Average	All Values in µg/m ³
				98 th Percentile
Project Site	29.2	32.1	30.6	31.9
Bhandgaon	19.5	21.8	20.8	21.7
Kedgaon	19.7	24.3	22.1	24.0
Nimbalkarwadi	17.5	19.8	18.5	19.7
Yavat	17.4	21.3	19.4	21.1
Dorgevasti	14.9	17.1	16.1	17.0
Dhangarwadi	23.4	26.9	25.5	26.9
Chauhala	23.9	28.0	25.8	28.0

Sulphurdioxide - SO₂

Location Name	Minimum	Maximum	Average	All Values in µg/m ³
				98 th Percentile
Project Site	12.0	13.3	12.6	13.2
Bhandgaon	12.8	14.6	13.7	14.6
Kedgaon	13.7	16.9	15.0	16.7
Nimbalkarwadi	10.2	11.8	11.0	11.8
Yavat	10.8	13.2	12.0	13.1
Dorgevasti	9.7	11.4	10.5	11.2
Dhangarwadi	12.1	14.0	13.0	13.9
Chauhala	11.6	13.6	12.6	13.6

Oxides of Nitrogen – NO_x

Location Name	Minimum	Maximum	Average	All Values in µg/m ³
				98 th Percentile
Project Site	14.6	16.1	15.3	16.0
Bhandgaon	15.6	17.7	16.7	17.6
Kedgaon	16.4	20.2	18.0	20.0

Nimbalkarwadi	13.0	14.7	13.7	14.6
Yavat	13.6	16.4	14.9	16.4
Dorgevasti	12.7	13.8	13.3	13.7
Dhangarwadi	14.6	17.1	15.7	16.9
Chauhala	14.5	17.2	15.7	17.0

Carbon Monoxide – CO

All Values in mg/m³

Location Name	Minimum	Maximum	Average	98 th Percentile
Project Site	0.50	0.68	0.62	0.68
Bhandgaon	<0.1	<0.1	<0.1	<0.1
Kedgaon	<0.1	<0.1	<0.1	<0.1
Nimbalkarwadi	<0.1	<0.1	<0.1	<0.1
Yavat	<0.1	<0.1	<0.1	<0.1
Dorgevasti	<0.1	<0.1	<0.1	<0.1
Dhangarwadi	<0.1	<0.1	<0.1	<0.1
Chauhala	<0.1	<0.1	<0.1	<0.1

From the above results, it is observed that the ambient air quality with respect to PM₁₀, PM_{2.5}, SO₂ and NO_x at all the monitoring locations was within the permissible limits specified by CPCB.

3.3 Ambient Noise Levels

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 9**.

Table 9: Summary of Ambient Noise Level Monitoring Results [Leq in dB(A)]

Equivalent Noise levels	Project Site	Bhandgaon	Kedgaon	Nimbalkarwadi	Yavat	Dorgevasti	Dhangarwadi	Chauhala
L _d	65.1	48.6	52.3	51.1	51.8	49.6	52.1	52.4
L _n	58.2	42.1	44.6	42.3	44.9	41.3	43.6	44.3
CPCB L	75	55	55	55	55	55	55	55
	70	45	45	45	45	45	45	45

L_d : Day Equivalent
L_n : Night Equivalents

Conclusion

The Maximum Noise (day) value was observed 65.1 dB(A) and the minimum noise (day) valve was observed 48.6 dB(A). The Maximum Noise (night) value was observed 58.2 dB(A) and the minimum noise (night) valve was observed 41.3 dB(A).

3.4 Surface and Ground Water Resources & Quality

Surface Water

- pH of the ground water sample collected and result was 7.33.
- Total Dissolved Solids result was 840 mg/l.

- Total Hardness was found 270 mg/l.

The heavy metal contents are found to be negligible. Water quality is excellent but it is not potable due to presence of coliform. It can be used for drinking purpose after installing bacteriological treatment devices at individual or at community level.

Ground Water

Sampling was carried out at 8 locations during the study period. Sampling and analysis was carried out, as per standard methods and frequency of the sampling was thrice/stations. The summary of the results are presented below: pH in ground water sample was observed to be in the range 6.25 – 8.13, while TDS was observed in the range of 415 – 852 mg/l. The value of hardness were observed in the range of 280 – 410 mg/l and 124 to 232 mg/l respectively. Whereas the heavy metals were found to be within the limits.

3.5 Land use Land Cover classification

The Land Cover classes and their coverage are summarized in **Table 10**.

Table 10: LU/LC Classes and their Coverage in SQ. km of 10 km Radius)

S. No.	Particular	Area (ha.)	PGA *** (%)
1	Water body	593.04	1.8
2	Settlement	450.85	1.5
3	Fallow Land	9313.92	29
4	Barren Land	2895.66	9
5	Open Scrub	2445.57	7.5
6	Grass Land	4112.37	12.7
7	Agriculture Land	12370.13	38.5
	Total	32181.54	100

3.6 Soil Quality

Sampling was carried out at 8 locations during the study period. The summary of the results are presented below:

- pH in soil sample was observed in the range 7.3 to 8.4.
- Potassium was observed in the range of 10.0-62.0 g/cc.

3.7 Biological Environment

Rare and Endangered Flora in the Study Area

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of

the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity. **Among the enumerated flora in the study area, none of them were assigned any threat category, by RED data book of Indian Plants.**

3.8 Socio-economic Environment

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from census 2011 & village directory 2011. Summary of the socio-economic status of the study area is given in

Table 7.

Table 7: Population Details

S.No.	Particulars	0-10km
1	Number of households	22606
2	Male population	57695
3	Female population	54556
4	Total population	112252
5	SC population	14818
6	ST population	2262
7	Total population (0-6 years)	14097
8	Average household size	4.96
9	% of males to the total Population	51.4
10	% of females to the total population	48.6

4.0 IMPACT ASSESSMENT AND MITIGATION MEASURES

4.1 AIR Pollution

The air quality modeling has been done and the details are given below:

24 Hourly Concentrations	Particulate Matter (PM) ($\mu\text{g}/\text{m}^3$)	Oxides of Nitrogen (NOx) ($\mu\text{g}/\text{m}^3$)
Baseline Scenario (Max)	77.5	20.2
Predicted Ground Level Concentration (Max)	1.02	2.03
Overall Scenario	78.52	22.23
NAAQ Standards	100	80

Mitigation Measures

Following measures will be taken to control air/fugitive pollution during operation:

- Stack height would be approx. 40 m (2 nos.) for gaseous emission confirming to the CPCB norms. D. G. Sets, stack height of 3.0 m above the roof level will be maintained.

- Stack emission level will be kept within permissible limit by installation of Fume extraction system with ventury scrubber and online stack emission monitoring will be done.
- Ambient air quality and stack emission would be regularly monitored and effective control exercised, so as to keep limits on stack emission loads would be met honestly at all the time.
- In order to avoid fugitive emissions from different sources, water will be sprayed. Also the roads within the premises will be concreted to prevent dust emission.
- The ambient air monitoring will be carried out regularly in the work zone and surrounding areas, to check that ambient air levels of the contaminants, are well below the stipulated norms.
- Green belt around the periphery and within premises will be developed which will help in attenuating the pollutants emitted by the plant.

4.2 Water Quality Management

The total water requirement of the plant is 164 KLD and fresh water requirement will be 90.0 KLD for cooling and 8.0 KLD for domestic purposes. The water will be mainly used for furnace cooling purpose, greenbelt, dust suppression and domestic purpose only. Cooling water will be continuously recalculated in the cooling circuit and domestic effluent is sent to septic tank followed by soak pit. The water is supplied for cooling water in Induction Furnace. The water for other areas i.e. for greenbelt, dust suppression and domestic use is supplied directly. However, the Plant will be designed for Zero Discharge from the operations.

4.3 Noise Pollution Control

Noise level at the plant boundary, calculated from the above equation, is expected to be less than 60 dB (A) without considering any attenuation factors.

Various components of industrial operations will cause some amount of noise, which will be controlled by proper maintenance and compact technology.

- i. Time to time oiling and servicing of machineries will be done.
- ii. Acoustic enclosure for Turbine and D.G. sets will be provided.
- iii. Green belt development (plantation of dense trees across the boundary) will help in reducing noise levels in the plant as a result of attenuation of noise generated due to plant operations, and transportation.

4.4 Greenbelt Development and Plantation

About 33% of the total Plant area will be developed as green belt.

4.5 Solid and Hazardous Waste Generation and Management

The details of solid waste generation are given below:

Sr. No.	Particular	Existing (TPD)	After Expansion (TPD)	Management
1	Slag	2.0	17.0	Sold to Brick Manufactures
2	Used Oil	1.0	2.0	Sold to Board Authorized Vendor

4.6 EMP and CER Details

Details of environment management plan are given in **Table 11** and **CER in Table 12**.

Table 11: EMP Budget

S. No	Environmental Aspect	Capital Expenditure (Rs. Lacs)	Recurring Expenditure (Rs. Lacs)
1	Air pollution control device, Chimney, water cooling, insulation etc	65.00	12.00
2	Wastewater Management	04.50	01.50
3	Green Belt development	02.00	01.00
4	Monitoring	05.00	03.00
5	Solid Waste Management	10.00	03.00
6	Environmental Cell	03.00	01.00
	Total	89.50	21.50

Table 12: CER Budget

Activity Identified	CER Budget INR (Lakhs)
Plantation in surrounding Villages	6.0
Environmental Awareness Programe	3.0
Solid waste management	3.0
Total	12.0

5.0 CONCLUSION

As discussed, it is safe to say that the project is not likely to cause any significant impact on the ecology of the area, as adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the project.
