

**TOR Compliance & Draft  
Environmental Impact Assessment  
Report  
For  
“Expansion in M.S. Billets & Rolled  
Products from 108000 TPA to 576000  
TPA along with the existing Sponge  
Iron (90000 TPA) and Captive Power  
Plant (12 MW)”**

At

Survey Nos. **Existing:** 12, 14, 17, 22, 23, 25, 51, 52, 53, 57 & **Expansion:** 5/2, 6/1, 6/2A, 6/2B, 6/2C, 6/2D, 6/3A, 6/3B, 6/4A, 6/4B, 6/4C, 6/4D, 6/4E, 6/5A, 6/5B, 6/6A, 6/6B, 7, 8/1, 8/2, 8/3, 8/4, 9/1, 15, 18/1A, 18/1B, 19/3A, 19/4, 19/5A, 20/2A, 21/4, 21/5, 21/6, 21/7, 27/3, etc., Plot No: 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402

**TOR letter No:**  
**IA-J-11011/324/2023-IA-II(IND-I)** Dated  
**23.02.2024**

**UID No.:** PE242007-E-04

**Existing Project Area:** 21.95 ha

**Total Area After Expansion :** 37.27 ha

**Existing Production:** 90000 TPA Sponge Iron & 108000 TPA Rolled Steel Products & 12 MW Captive Power Generation

**Total Production After Expansion:** 90000 TPD Sponge Iron & 576000 TPA Rolled steel Products & 12 MW Captive Power Generation

**Existing Cost:** INR 273.17 Cr.

**Total Cost After Expansion:** INR 353.17 Cr.

**Baseline Season:** 1<sup>st</sup> March 2023 to 31<sup>st</sup> May 2023

Laboratory Assigned: M/s Perfact Researchers Pvt Ltd. vide Certificate No. TC-6993, valid upto 03.04.2025

Activity and Category As per EIA Notification, 2006: 3(a) Cat “A”

## **Project Proponent**

**M/s Noble Tech Industries Pvt. Ltd.**

Registered Address - 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402

**Email-nobletechipl2023@gmail.com.com**

## **Environmental Consultant**

**Perfact EnviroSolutions Pvt. Ltd. (PESPL)**

NABET Registered List of Accredited Consultant Organisations/ NABET/EIA/ 2225/RA 0284 (Rev.01) Valid Upto 26/11/2025

**Registered Address:-** 5th Floor, NN Mall, Sector 3, Rohini, New Delhi - 110085.

Email- [info@perfactgroup.in](mailto:info@perfactgroup.in)

Website- [www.perfactgroup.com](http://www.perfactgroup.com)

Landline No. 91-11-49281360

**Regional Office Address:-** 4<sup>th</sup> Floor, Kochur Bliss, Thiru. V. Ka. Industrial Estate, Guindy, Chennai - 600032.

**Date : 07.06.2024**

District Environment Engineer,  
Kancheepuram District,  
Plot No. CP-5B, SIPCOT Industrial  
Growth Centre, Vandalur -Wallajahbad Road,  
Oragadam,  
Sriperumbudur Taluk- 603 109

**Subject:** Conducting the Public Hearing for the proposed expansion project “M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd. - Request - reg.

**Ref:** Terms of Reference(ToR) granted issued vide letter no. **IA-J-11011/324/2023-IA-II(IND-I)**  
Dated **23.02.2024**

Dear Sir,

This is in reference to the proposed project “Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12MW)” at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu for which MOEFCC has granted TOR vide Ref. Cited above.

The unit is operational with valid Consent orders obtained and renewed from time to time, and located on land measuring 21.95 ha. After the proposed expansion, there will be an increase in the land area by 15.32 ha, thus the total plot area will be 37.27 ha. Production of M.S.Billetes and Rolled Products will increase from 108000 TPA to 576000 TPA, while other Products will remain the same.

We have obtained Terms of Reference (TOR) vide letter No. **IA-J-11011/324/2023-IA-II(IND-I)** dated **23.02.2024** from MoEFCC for the proposed expansion project and conducted Environmental Impact Assessment study by undertaking Baseline monitoring during the period from 1<sup>st</sup> March 2023 to 31<sup>st</sup> May 2023. As per the EIA Notification 2006, the proposed project falls under Schedule Activity 3(a) and category ‘A’, and conducting public hearing is necessitated.

Towards conducting the Public Hearing, we submit herewith the following documents along with our request letter to the District Environmental Engineer, Sriperumbudur for further processing:

1. Executive summary of EIA report in English & in Tamil - 12 copies each.
2. Draft EIA Report in English - 12 copies each.

3. Powerpoint Presentation in English & in Tamil - 12 copies each.
4. Soft copy of all above (One CD).
5. Demand Draft of Rs. 225000.00 favoring DIS ENVIRONMENTAL ENGINEER TN-PCB (DD No. 238669, Dated 07.06.2024, payable at State Bank of India, Drawee Branch:CCPC, Chennai).

Hope above documents shall fulfill the requirement for conduction of the Public hearing.

We shall be thankful if the process of Public Hearing is initiated at the earliest.

Thanking You,

Yours Faithfully,

**For M/s Noble Tech Industries Pvt. Ltd.**


(Authorised Signatory)




Declaration by EIA Coordinator & Experts Contributing to the EIA “Expansion in M.S. Billets and Rolled Products from 108000 TPA to 576000 TPA along with the existing sponge iron (90000 TPA) and Captive Power Pant (12 MW) at Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu by M/s Noble Tech Industries Pvt Ltd located at Factory 14/2A2, Melpakkam Village, Kaliyampoondi, Uthiramerur Taluk, Kancheepuram-603402

I hereby declare that I was involved in the following EIA Report submitted to MoEFCC, as EIA Coordinator. I further certify that the data given in this report is true and correct to the best of my knowledge.


**EIA Coordinator:**




<b>Name</b>	<b>Dr. Jayant Kumar Moitra</b>
	3(a)- Expansion in M.S. Billets and Rolled Products from 108000 TPA to 576000 TPA along with the existing sponge iron (90000 TPA) and Captive Power Pant (12 MW) at Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu
<b>Signature &amp; Date</b>	
<b>Task &amp; Period of Involvement</b>	I had visited the site along with the FAEs to understand the project site and the study area. Coordinated with the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: February 2023- Till date
<b>Office Address</b>	<b>Perfact Enviro Solutions Pvt. Ltd.</b> 5th Floor, NN Mall, Sector 3, Rohini, New Delhi- 110085



<b>Name of Assistants to EIA Coordinator</b>	<b>Mr. Muthukumaran G</b>
<b>Signature &amp; Date</b>	
<b>Task &amp; Period of Involvement</b>	I had understood the project site and the study area. Coordinated with the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: February 2023- Till date
<b>Office Address</b>	<b>Perfact Enviro Solutions Pvt. Ltd.</b> 5th Floor, NN Mall, Sector 3, Rohini, New Delhi- 110085

**List of FAEs Involved (Cat A)**

<b>S.No</b>	<b>Functional Areas</b>	<b>Name of Expert(s)</b>	<b>Involvement (Period &amp; Task)</b>	<b>Signature &amp; Date</b>
1	AP	Dr. Jayant Kumar Moitra	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring; based on the results and the site specific details along with Project Specific Details obtained , I have prepared the Impact Mitigation measures Period of Involvement: February 2023- Till date	

S.No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
2	AQ	Dr. Jayant Kumar Moitra	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and micrometeorology interpretation of modeling results and development of EMP. Period of Involvement: February 2023 - Till date	
3	WP	Mr. G Muthukumaran	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources have prepared Sampling plan & collected samples ; based on the results from the lab and the site specific details along with Project Specific Details obtained, I have prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till date	
4	RH	Dr. Jayant Kumar Moitra	I had visited the site to assess the site conditions in the surrounding area and identified hazards. After assessing the risk and hazard, I prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till date	

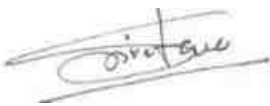


S.No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
5.	SE	Dr. Rahul Deshmukh	I had visited the site to collect the baseline status of socio-economic conditions and studied Villages in study area using Topographical maps and extracted Secondary data from Census of India. Then was involved in preparing a socio economic study report using the primary survey and secondary data which includes impact and mitigation measures. Period of Involvement: February 2023 - Till date	
6.	NV	Mr. G. Muthukumaran	I had visited the site to assess the site conditions in the surrounding area. After assessing the Noise pollution sources have prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till date	
7.	HW	Dr. Jayant Kumar Moitra	I had visited the site to assess the Solid waste sources and status in the study area. After studying the sources have prepared the Impact report and suggested Mitigation measures and development of EMP. Period of Involvement: February 2023 - Till date	





S.No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
8.	HG	Mr. Santosh Pant	The physical observation of the study area including Ground water sources and its water quality was made. After studying the Water pollution sources, the Impact report was prepared and Mitigation measures were suggested Period of Involvement: February 2023 - Till date	
9.	GEO	Mr. Santosh Pant	I had visited the site to assess the geology of the study area. After studying I have prepared the Impact report and suggested mitigation measures Period of Involvement: February 2023 - Till date	
10.	SC	Mr. Praveen Bhargava	I had visited the site to assess the site conditions in the surrounding area. After assessing the type of soil and need of Soil Conservation, Prepared the Impact Mitigation measures accordingly. Period of Involvement: February 2023 - Till date	
11.	LU	Dr. Mamta Pandey	I was involved in preparing a Land Use map using Satellite Imagery, Google maps after primary survey. Period of Involvement: February 2023 - Till date	



S.No	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
12	EB	Dr. Seema Srivastava	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, assisted FAE in preparing the Impact report and suggested Mitigation measures Period of Involvement: February 2023 - February 2024	

**List of Category-B FAEs Involved**

S.No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
1	LU	Mr. Rajneesh Maurya	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: February 2023- Till date	
2	AQ	Mrs. Shweta Rajput	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and micrometeorology interpretation of modeling results and development of EMP. Period of Involvement: February 2023- Till date	





S.No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
3	WP	Mrs. Shweta Rajput	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources have prepared Sampling plan & collected samples ; based on the results from the lab and the site specific details along with Project Specific Details obtained, I have prepared the Impact Mitigation measures. Period of Involvement: February 2023- Till date	
4	NV	Mrs. Urvi Pritam	I had visited the site to assess the site conditions in the surrounding area. After assessing the Noise pollution sources have prepared the Impact Mitigation measures. Period of Involvement: February 2023- Till date	
5	HG	Mrs. Saloni Sharma	I have visited the site and assessed the hydrology of the area. After studying the hydrology and pollution sources the impact and mitigation have been identified. Period of Involvement: February 2023- Till date	
6	GEO	Mrs. Saloni Sharma	I had visited the site to assess the physical observation of the study area. After studying the site, an Impact & mitigation report is prepared. Period of Involvement: February 2023- Till date	



S.No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature & Date
7	SC	Mr. Chandrashekhar Jha	I had visited the site to assess the site conditions in the surrounding area. After assessing the type of soil and need of Soil Conservation, Prepared the Impact Mitigation measures accordingly. Period of Involvement: February 2023- Till date	
8	AP	Mr. G. Muthukumaran	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring; based on the results and the site specific details along with Project Specific Details obtained, I have prepared the Impact Mitigation measures Period of Involvement: February 2023 - Till Date	
9	RH	Mr. G. Muthukumaran	I had visited the site to assess the site conditions in the surrounding area and identified hazards. After assessing the risk and hazard, I prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till Date.	



**List of FAA**

S. No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature
1.	AP	Mrs. Cipia Mehta	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring; based on the results and the site specific details along with Project Specific Details obtained , I have prepared the Impact Mitigation measures Period of Involvement: February 2023- Till date	
2.	LU	Mrs. Cipia Mehta	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: February 2023- Till date	



**List of Team Members**

S. No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)	Signature
1.	EB	Ms. Disha Patel	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, assisted FAE in preparing the Impact report and suggested Mitigation measures Period of Involvement: March 2023 to March 2024.	
2.	HW	Mrs. Charmi Shah	I have visited the site and assessed the hydrology of the area. After studying the hydrology and pollution sources the impact and mitigation have been identified. Period of Involvement: February 2023- Till date	



## Plagiarism/ QMS Certificate

Title of EIA Report:	“Expansion in M.S. Billets and Rolled Products from 108000 TPA to 576000 TPA along with the existing sponge iron (90000 TPA) and Captive Power Pant (12 MW)” M/s Noble Tech Industries Pvt Ltd. located at Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu.
Name of Accredited Organization:	M/s Perfact Enviro Solutions Pvt Ltd
Unique Identification Number:	PE242007-E-04
Name of EIA Coordinator (EC):	<b>Dr. Jayant Kumar Moitra</b>
Name of the Software:	Duplichecker (2%)
Date of Check:	30/03/2024
Time of Check:	1:25 pm

I hereby certify that this EIA Report has been evaluated using online/In-house software Duplichecker. The report produced has been analyzed by the system and based on it, I certify that the EIA report produced in accordance with good scientific practice.

### Date and Sign of EIA Coordinator:

Signature and Date:

Name: **Dr. Jayant Kumar Moitra**

Date and Sign of Head of Accredited Organisation:

**(Mrs. Rachna Bhargava)**

Name of the EIA consultant organisation: M/s Perfact Enviro Solutions Pvt Ltd.

NABET Certificate No. & Issue Date: NABET/EIA/2225/RA 0284 (Rev.01), issue date:- 20/10/2023 valid up to 26/11/2025



PERFACT ENVIROSOLUTIONS PVT LTD

## Undertaking by Head of EIA Consultant

I, Rachna Bhargava, Director & CEO of M/s Perfact Enviro Solutions Pvt. Ltd., 5th floor, NN Mall, Sector 3, Rohini, New Delhi, 110085 authorize Dr. JK Moitra (EIA Coordinator) for the preparation and conducting the Environment Impact Assessment for project “Expansion in M.S. Billets and Rolled Products from 108000 TPA to 576000 TPA along with the existing sponge iron (90000 TPA) and Captive Power Pant (12 MW) at Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu.

**Rachna Bhargava, Director & CEO**

**M/s Perfact Enviro Solutions Pvt. Ltd.**

5th floor, NN Mall, Mangalam Palace,  
Sector – 3, Rohini, New Delhi – 110085



## Undertaking By EIA Coordinator

I, Dr. Jk Moitra EIA Coordinator from Environmental Consultant M/s Perfact Enviro Solutions Pvt. Ltd., 5th floor, NN Mall, Sector 3, Rohini, New Delhi, 110085 for project “Expansion in M.S. Billets and Rolled Products from 108000 TPA to 576000 TPA along with the existing sponge iron (90000 TPA) and Captive Power Pant (12 MW) at Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu” hereby undertake that the report is prepared in accordance with a robust quality management system adopted by EIA consulting organization for the EIA process and the prescribed ToR have been complied with and that the data submitted is factually correct.

Signature and Date:

Name: **Dr. Jayant Kumar Moitra**

**EIA Coordinator**

**M/s Perfact Enviro Solutions Pvt. Ltd.**

5th floor, NN Mall, Mangalam Palace,  
Sector – 3, Rohini, New Delhi – 110085



## **Section A: Standard TOR Letter**



सत्यमेव जयते

File No.: IA-J-11011/324/2023-IA-II(IND-I)  
Government of India  
Ministry of Environment, Forest and Climate Change  
IA Division

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Dated 23/02/2024



To,

M/s NOBLE TECH INDUSTRIES PRIVATE LIMITED  
14/2A2, Melpakkam Village, Uthiramerur, Kanchipuram., Melapakkam, KANCHIPURAM, TAMIL  
NADU, 603402  
nobletechipl2023@gmail.com

**Subject: Grant of Standard Terms of Reference (ToR) to the proposed Project under the EIA Notification 2006-and as amended thereof-regarding.**

**Sir/Madam,**

This is in reference to your application submitted to MoEF&CC vide proposal number IA/TN/IND1/455602/2023 dated 11/02/2024 for grant of Terms of Reference (ToR) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) ToR Identification No.	TO23A1003TN5467157N
(ii) File No.	IA-J-11011/324/2023-IA-II(IND-I)
(iii) Clearance Type	Fresh ToR
(iv) Category	A
(v) Project/Activity Included Schedule No.	3(a) Metallurgical Industries (ferrous and non ferrous)
(vi) Sector	Industrial Projects - 1 Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) by M/s Noble Tech Industries Pvt Ltd
(vii) Name of Project	NOBLE TECH INDUSTRIES PRIVATE LIMITED
(viii) Name of Company/Organization	KANCHIPURAM, TAMIL NADU
(ix) Location of Project (District, State)	MoEF&CC
(x) Issuing Authority	NO
(xi) Applicability of General Conditions	

3. The **MoEF&CC** has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after detailed examination hereby decided to grant Standard Terms of Reference to the instant proposal of **M/s. NOBLE TECH INDUSTRIES PRIVATE LIMITED** under the provisions of the aforementioned Notification.

4. The brief about products and by products as submitted by the Project proponent in Form-1 (Part A, B) and Standard Terms of Reference are annexed to this letter as Annexure (1).

5. The Ministry reserves the right to stipulate additional TORs, if found necessary.

6. The Standard Terms of Reference (ToR) to the aforementioned project is under provisions of EIA Notification, 2006 and as amended thereof. It does not tantamount to approvals/consent/permissions etc required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/Regulations or Statutes, as applicable, to the project.

7. The granted letter, all the documents submitted as a part of application viz. Form-1 Part A and Part B are available on PARIVESH portal which can be accessed by scanning the QR Code above.

### **Copy To**

1. Principal Secretary to Government, Department of Environment, Climate Change and Forests, Government of Tamil Nadu.
2. Additional Chief Secretary to Government, Department of Environment, Climate Change and Forests, Government of Tamil Nadu.
3. The Director General of Forest, Ministry of Environment, Forest and Climate Change, New Delhi.
4. Principal Chief Conservator of Forests (Head of Department), Panagal Maaligai, 1, Jeenis Road, Saidapet, Chennai 600 015.
5. Regional Officer, Ministry of Environment, Forest and Climate Change, Integrated Regional Office, Ist and IInd Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai – 34.
6. Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi- 110032.
7. Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai- 600 032, Tamil Nadu.
8. Member Secretary, Central Ground Water Authority, A2, W- 3 Curzon Road Barracks, K.G. Marg, New Delhi- 110001.
9. District Collector, KANCHIPURAM District, Tamil Nadu.
10. The Monitoring Cell, IA Division, Ministry of Environment, Forest and Climate Change, New Delhi.
11. Guard File/Record File/Monitoring File/MOEF&CC Website/ Parivesh Portal

**Annexure 1**

### **Standard Terms of Reference**

#### **1. Preliminary requirements**

<b>S. No..</b>	<b>Terms of Reference</b>
<b>1.1</b>	EIA/EMP report cover page shall consists of project title with location, applicable schedule of the EIA

S. No..	Terms of Reference
	Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details with QCI/NABET/NABL accreditation certificate detail.
1.2	Besides, following points shall be compiled as per QCI/NABET norms: a. Disclaimer by the EIA consultant. b. Declaration by the Functional Area Experts contributed to the EIA study and declaration by the head of the accredited consultant organization/authorized person. c. Undertaking by the project proponent owning the contents (information and data) of the EIA/EMP report. d. Undertaking by the EIA consultant regarding compliance of ToR issued by MoEF&CC. e. Consultant shall submit the Plagiarism Certificate for the EIA/EMP Report.

## 2. Executive Summary

S. No..	Terms of Reference
2.1	Table of Contents of the EIA report including list of tables/figures/annexures/abbreviations/symbols/notations.
2.2	Point wise compliance to the ToR issued by MoEF&CC.

## 3. Executive Summary

### 3.1. Introduction

S. No..	Terms of Reference
3.1.1	Name of the project along with applicable schedule and category as per EIA, 2006.
3.1.2	Location and accessibility

## 4. Executive Summary

### 4.1. Project description

S. No..	Terms of Reference
4.1.1	Resource requirements (Land; water; fuel; manpower)
4.1.2	Operational activity
4.1.3	Key pollution concerns

## 5. Executive Summary

### 5.1. Baseline Environment Studies

S. No..	Terms of Reference
5.1.1	Ambient air quality

S. No..	Terms of Reference
5.1.2	Ambient Noise quality
5.1.3	Traffic study
5.1.4	Surface water quality
5.1.5	Ground water quality
5.1.6	Soil quality
5.1.7	Biological Environment
5.1.8	Land use
5.1.9	Socio-economic environment

## 6. Executive Summary

### 6.1. Anticipated impacts

S. No..	Terms of Reference
6.1.1	Impact on ambient air quality
6.1.2	Impact on ambient noise quality
6.1.3	Impact on road and traffic
6.1.4	Impact on surface water resource and quality
6.1.5	Impact on ground water resource and quality
6.1.6	Impact on terrestrial and aquatic habitat
6.1.7	Impact on socio-economic environment

## 7. Executive Summary

### 7.1. Alternative analysis

S. No..	Terms of Reference
7.1.1	

## 8. Executive Summary

### 8.1. Environmental Monitoring program

S. No..	Terms of Reference
8.1.1	Ambient air, noise, water and soil quality
8.1.2	Noise quality management plan
8.1.3	Emission and discharge from the plant
8.1.4	Green Belt
8.1.5	Social Parameters

## 9. Executive Summary

### 9.1. Additional Studies

S. No..	Terms of Reference
9.1.1	Risk assessment
9.1.2	Public consultation
9.1.3	Action plan to address the issues raised during public consultation as per MoEF&CC O.M. dated 30/09/2020

## 10. Executive Summary

### 10.1. Environment management plan

S. No..	Terms of Reference
10.1.1	Air quality management plan
10.1.2	Solid and hazardous waste management plan
10.1.3	Effluent management plan
10.1.4	Storm water management plan
10.1.5	Occupational health and safety management plan
10.1.6	Green belt development plan
10.1.7	Socio-economic management plan
10.1.8	Project cost and EMP implementation budget.

## 11. Introduction

S. No..	Terms of Reference
11.1	Background about the project
11.2	Need of the project
11.3	Purpose of the EIA study
11.4	Scope of the EIA study

## 12. Project description

### 12.1. Site Details

S. No..	Terms of Reference
12.1.1	Location of the project site covering village, Taluka/Tehsil, District and State.
12.1.2	Site accessibility
12.1.3	A digital toposheet in pdf or shape file compatible to google earth of the study area of radius of 10km and site location preferably on 1:50,000 scale. (including all eco-sensitive areas and environmentally sensitive places).
12.1.4	Latest High-resolution satellite image data having 1 m - 5 m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc., along with delineation of plant boundary co-ordinates. Area must include at least 100 m all around the project location.
12.1.5	Environment settings of the site and its surrounding along with map.
12.1.6	A list of major industries with name, products and distance from plant site within study area (10km radius) and the location of the industries shall be depicted in the study area map.
12.1.7	In case if the project site is in vicinity of the water body, 50 meters from the edge of the water body towards the site shall be treated as no development/construction zone. If it's near the wetland, Guidelines for implementing Wetlands (Conservation and Management) Rules, 2017 may be followed.
12.1.8	In case if the project site is in vicinity of the river, the industry shall not be located within the river flood plain corresponding to one in 25 years flood, as certified by concerned District Magistrate/Executive Engineer from State Water Resources Department (or) any other officer authorized by the State Government for this purpose as per the provisions contained in the MoEF&CC Office Memorandum dated 14/02/2022.
12.1.9	In case of canal/ nala/ seasonal drain and any other water body passing through project site, the PP shall submit the suitable steps /conservation plan/mitigation measures along with contouring, Run -off calculations, disposal etc. A robust and full proof Drainage Conservation scheme to protect the natural drainage/water bodies and its flow parameters; along with Soil conservation scheme and multiple Erosion control measures shall be provided in the report.
12.1.10	Type of land, land use of the project site needs to be submitted.

S. No..	Terms of Reference
12.1.11	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process as per the MoEF&CC O.M. dated 7/10/2014 shall be furnished.
12.1.12	Project proponent shall prepare Engineering layout plan showing all internal roads minimum 6 m width and 9 m turning radius for smooth traffic flow inside including fire tender as per NBC. Road network shall connect all service areas in layout. This drawing shall include area statement showing plot area, area under roads, parking, green belt with calculations and % with respect to plot area of project site and proper indexing. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
12.1.13	Project proponent shall submit contour map of project site along with drainage disposal system with calculations and drawings supported with proper indexing including Rain Water Harvesting details with calculations mentioning about GW recharge along with relevant drawing.
12.1.14	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted.
12.1.15	Details of drone survey for the site, needs to be included in report and presented before the EAC during appraisal of the project.

### 13. Project description

#### 13.1. Forest and wildlife related issues (if applicable)

S. No..	Terms of Reference
13.1.1	Status of Forest Clearance for the use of forest land shall be submitted.
13.1.2	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife if the project site located within notified Eco-Sensitive Zone, 10 km radius of national park/sanctuary wherein final ESZ notification is not in place as per MoEF&CC Office Memorandum dated 8/8/2019.
13.1.3	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, Eco-sensitive Zone and Eco-sensitive areas, the project proponent shall submit the map duly authenticated by Divisional Forest Officer showing the distance between the project site and the said areas.
13.1.4	Wildlife Conservation Plan duly authenticated by the Competent Authority of the State Government for conservation of Schedule I fauna along with budget and action plan, if any exists in the study area.

### 14. Project description

#### 14.1. Salient features of the project

S. No..	Terms of Reference
14.1.1	Products with capacities in Tons per Annum for the proposed project.
14.1.2	If expansion project, status of implementation of existing project, details of existing/proposed products



S. No..	Terms of Reference
	with production capacities in Tons per Annum.
14.1.3	Site preparatory activities.
14.1.4	List of raw materials required and their source along with mode of transportation.
14.1.5	Other than raw materials, other chemicals and materials required with quantities and storage capacities.
14.1.6	Manufacturing process details along with process flow diagram of proposed units.
14.1.7	Consolidated materials and energy balance for the project.
14.1.8	Total requirement of surface/ ground water and power with their respective sources, status of approval.
14.1.9	Water balance diagram
14.1.10	Details of Emission, effluents, hazardous waste generation and mode of disposal during construction as well as operation phase.
14.1.11	Man-power requirement.
14.1.12	Cost of project and scheduled time of completion.
14.1.13	In case of expansion projects, project proponent shall submit structural stability certificate showing whether existing structure withstand for proposed expansion activity.
14.1.14	<p>Brief on present status of compliance (Expansion/modernization proposals) a. Cumulative Environment Impact Assessment for the existing as well as the proposed expansion/modernization shall be carried out. b. Cumulative Impact Assessment need to be carried out by greenfield projects considering the nearby industries. c. In case of ground water drawl for the existing unit, action plan for phasing out of ground water abstraction in next two years except for domestic purposes and shall switch over to 100 % use of surface water from nearby source. d. Copy of all the Environment Clearance(s) including Amendments/validity of extension/transfer of EC, there to obtained for the project from MoEF&amp;CC/SEIAA shall be attached as Annexures. A Certified Compliance Report (CCR) of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change/ or concerned authority as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022 on the status of compliance of conditions stipulated in all the existing environment clearances including amendments shall be provided. A Certified Compliance Report (CCR) issued by the concerned Authority shall be valid for a period of one year from the date of inspection. e. In case the existing project has not obtained Environment Clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. A proper justification needs to be submitted along with documentary proof. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 1994 or 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of CTO from the Regional Office of the SPCB shall be submitted, as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022. CCR on CTO conditions issued by the concerned SPCBs/PCCs shall be valid for a period of one year from the date of inspection of the project.</p>

## 15. Description of the Environment

S. No..	Terms of Reference												
15.1	Study period												
15.2	<p>Approach and methodology for data collection as furnished below</p> <table border="1"> <thead> <tr> <th>Attributes</th> <th>Network</th> <th>Sampling Frequency</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>           Air Environment            Micro-Meteorological           <ul style="list-style-type: none"> <li>• Wind speed (Hourly)</li> <li>• Wind direction</li> <li>• Dry bulb temperature</li> <li>• Wet bulb temperature</li> <li>• Relative humidity</li> <li>• Rainfall</li> <li>• Solar radiation</li> <li>• Cloud cover</li> <li>• Environmental</li> <li>• Lapse Rate</li> </ul> </td> <td>           Minimum 1 site in the project impact area         </td> <td>           hourly continuous         </td> <td>           IS 5182 Part 1-20           <ul style="list-style-type: none"> <li>• Site specific primary data is essential</li> <li>• Secondary data from IMD, New Delhi</li> <li>• CPCB guidelines to be considered.</li> </ul> </td> </tr> <tr> <td>           Pollutants           <ul style="list-style-type: none"> <li>• PM10</li> <li>• SO2</li> <li>• NOx</li> <li>• CO</li> <li>• HC</li> <li>• Other parameters relevant to the project and topography of the area</li> </ul> </td> <td>           At least 8-12 locations         </td> <td>           As per National Ambient Air Quality Standards, CPCB Notification.         </td> <td> <ul style="list-style-type: none"> <li>• Sampling as per CPCB guidelines</li> <li>• Collection of AAQ data (except in monsoon season)</li> <li>• Locations of various stations for different parameters should be related to the characteristic properties of the parameters.</li> <li>• The monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests,</li> <li>• Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of 16/11/2009 along with min., max.,</li> </ul> </td> </tr> </tbody> </table>	Attributes	Network	Sampling Frequency	Remarks	Air Environment Micro-Meteorological <ul style="list-style-type: none"> <li>• Wind speed (Hourly)</li> <li>• Wind direction</li> <li>• Dry bulb temperature</li> <li>• Wet bulb temperature</li> <li>• Relative humidity</li> <li>• Rainfall</li> <li>• Solar radiation</li> <li>• Cloud cover</li> <li>• Environmental</li> <li>• Lapse Rate</li> </ul>	Minimum 1 site in the project impact area	hourly continuous	IS 5182 Part 1-20 <ul style="list-style-type: none"> <li>• Site specific primary data is essential</li> <li>• Secondary data from IMD, New Delhi</li> <li>• CPCB guidelines to be considered.</li> </ul>	Pollutants <ul style="list-style-type: none"> <li>• PM10</li> <li>• SO2</li> <li>• NOx</li> <li>• CO</li> <li>• HC</li> <li>• Other parameters relevant to the project and topography of the area</li> </ul>	At least 8-12 locations	As per National Ambient Air Quality Standards, CPCB Notification.	<ul style="list-style-type: none"> <li>• Sampling as per CPCB guidelines</li> <li>• Collection of AAQ data (except in monsoon season)</li> <li>• Locations of various stations for different parameters should be related to the characteristic properties of the parameters.</li> <li>• The monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests,</li> <li>• Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of 16/11/2009 along with min., max.,</li> </ul>
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S. No..	Terms of Reference
	<ul style="list-style-type: none"> <li>• Frequency of vehicles for transportation of materials</li> <li>• Additional traffic due to proposed project</li> </ul> <p>Soil</p> <ul style="list-style-type: none"> <li>• Particle size distribution</li> <li>• Texture</li> <li>• pH</li> <li>• Electrical conductivity</li> <li>• Cation exchange capacity</li> <li>• Alkali metals</li> <li>• Sodium Absorption Ratio (SAR)</li> <li>• Permeability</li> <li>• Water holding capacity</li> <li>• Porosity</li> </ul> <p>Land use/Landscape</p> <ul style="list-style-type: none"> <li>• Location code</li> <li>• Total project area</li> <li>• Topography</li> <li>• Drainage (natural)</li> </ul> <p>Cultivated, forest, plantations, water bodies, roads and settlements</p> <p>Biological Environment</p> <p>1. Aquatic</p> <ul style="list-style-type: none"> <li>• Primary productivity</li> <li>• Aquatic weeds</li> <li>• Enumeration of phyto plankton, zoo plankton and benthos</li> <li>• Fisheries</li> <li>• Diversity indices</li> <li>• Trophic levels</li> </ul> <ul style="list-style-type: none"> <li>• Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. Indicator species which indicate ecological and environment degradation should be identified and included to clearly state whether the proposed project would result in to any adverse effect on any species.</li> <li>• Samples to collect from upstream and downstream of discharge point, nearby tributaries at downstream, and also from dug wells close to activity site.</li> <li>• For forest studies, direction of wind should be considered while</li> </ul> <p style="text-align: right;">Soil samples be collected as per BIS specifications</p>

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	<ul style="list-style-type: none"> <li>• Rare and endangered species</li> <li>• Marine Parks/ Sanctuaries/ closed areas /coastal regulation zone (CRZ)</li> </ul> <p>selecting forests.</p> <ul style="list-style-type: none"> <li>• Secondary data to collect from Government offices, NGOs, published literature.</li> </ul> <p>2. Terrestrial</p> <ul style="list-style-type: none"> <li>• Vegetation-species list, economic importance, forest produce, medicinal value</li> <li>• Importance value index (IVI) of trees</li> <li>• Fauna</li> <li>• Avi fauna</li> <li>• Rare and endangered species</li> <li>• Sanctuaries / National park / Biosphere reserve</li> <li>• Migratory routes</li> </ul> <p>socio-economic Demographic structure</p> <ul style="list-style-type: none"> <li>• Infrastructure resource base</li> <li>• Economic resource base</li> <li>• Health status: Morbidity pattern</li> <li>• Cultural and aesthetic attributes.</li> <li>• Education</li> </ul> <p>Socio-economic survey is based on proportionate, stratified and random sampling method.</p> <ul style="list-style-type: none"> <li>• Primary data collection through questionnaire</li> <li>• Secondary data from census records, statistical hard books, topo sheets, health records and relevant official records available with Govt. agencies</li> </ul> <p>Approach and methodology for data collection as furnished below</p> <table border="1"> <thead> <tr> <th>Attributes</th> <th>Sampling</th> <th>Remarks</th> </tr> <tr> <td></td> <td>Network</td> <td></td> </tr> <tr> <td></td> <td>Frequency</td> <td></td> </tr> </thead> <tbody> <tr> <td>Air Environment Micro-Meteorological</td> <td></td> <td>IS 5182 Part 1-20</td> </tr> <tr> <td>• Wind speed (Hourly)</td> <td>Minimum 1 site in</td> <td>• Site specific primary data is essential</td> </tr> <tr> <td>• Wind direction</td> <td>the project impact hourly continuous area</td> <td></td> </tr> <tr> <td>• Dry bulb temperature</td> <td></td> <td>• Secondary data from IMD,</td> </tr> </tbody> </table>	Attributes	Sampling	Remarks		Network			Frequency		Air Environment Micro-Meteorological		IS 5182 Part 1-20	• Wind speed (Hourly)	Minimum 1 site in	• Site specific primary data is essential	• Wind direction	the project impact hourly continuous area		• Dry bulb temperature		• Secondary data from IMD,
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S. No..	Terms of Reference
	<p>value</p> <ul style="list-style-type: none"> <li>• Importance value index (IVI) of trees</li> <li>• Fauna</li> <li>• Avi fauna</li> <li>• Rare and endangered species</li> <li>• Sanctuaries / National park / Biosphere reserve</li> <li>• Migratory routes</li> </ul> <p>socio-economic Demographic structure</p> <ul style="list-style-type: none"> <li>• Infrastructure resource base</li> <li>• Economic resource base</li> <li>• Health status: Morbidity pattern</li> <li>• Cultural and aesthetic attributes.</li> <li>• Education</li> </ul> <p>Socio-economic survey is based on proportionate, stratified and random sampling method.</p> <ul style="list-style-type: none"> <li>• Primary data collection through questionnaire</li> <li>• Secondary data from census records, statistical hard books, topo sheets, health records and relevant official records available with Govt. agencies</li> </ul>
15.3	<p>Interpretation of each environment attribute shall be enumerated and summarized as given below: • Ambient air quality • Ambient Noise quality • Surface water quality • Ground water quality • Soil quality • Biological Environment • Land use • Socio-economic environment</p>
15.4	<p>The PP should submit the photograph of monitoring stations &amp; sampling locations. The photograph should bear the date, time, latitude &amp; longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.</p>

**16. Anticipated Environment Impacts and mitigation measures (In case of expansion, cumulative impact assessment shall be carried out)**

S. No..	Terms of Reference																
16.1	<p>Identification of potential impacts in the form of a matrix for the construction and operation phase for all the environment components</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 20%;">Environment</th> <th style="width: 20%;">Ecological</th> <th style="width: 30%;">Socio-economic</th> </tr> </thead> <tbody> <tr> <td>Activity</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Construction phase</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Operation phase</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Environment	Ecological	Socio-economic	Activity				Construction phase				Operation phase			
	Environment	Ecological	Socio-economic														
Activity																	
Construction phase																	
Operation phase																	
16.2	<p>Impact on ambient air quality (Sources; Embedded control measures; Assessment; Mitigation measures;</p>																

S. No..	Terms of Reference
	Residual impact) a. Construction phase b. Operation phase • Details of stack emissions from the existing as well as proposed activity. • Assessment of ground level concentration of pollutants from the stack emission based on AQIP Modelling The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any along with wind rose map for respective period • Impact on ground level concentration, under normal, abnormal and emergency conditions. Measures to handle emergency situations in the event of uncontrolled release of emissions.
16.3	Impact on ambient noise quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.4	Impact on traffic (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.5	Impact on soil quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.6	Impact on land use (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.7	Impact on surface water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.8	Impact on ground water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.9	Impact on terrestrial and aquatic habitat (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.10	Impact on socio-economic environment (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase
16.11	Impact on occupational health and safety (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase

#### 17. Analysis of Alternatives (Technology & Site)

S. No..	Terms of Reference
17.1	No project scenario
17.2	Site alternative
17.3	Technical and social concerns
17.4	Conclusion

#### 18. Environmental Monitoring Program

S. No..	Terms of Reference																		
18.1	Details of the Environment Management Cell																		
18.2	Performance monitoring schedule for all pollution control devices shall be furnished.																		
18.3	<p>Corporate Environment Policy</p> <p>a. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.</p> <p>b. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environment or forest norms / conditions? If so, it may be detailed in the EIA.</p> <p>c. What is the hierarchical system or Administrative order of the company to deal with the environment issues and for ensuring compliance with the environment clearance conditions? Details of this system may be given. Page 9 of 10</p> <p>d. Does the company have system of reporting of non compliances / violations of environment norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report</p>																		
18.4	<p>Action plan for post-project environment monitoring matrix:</p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Aspect</th> <th>Monitoring Parameter</th> <th>Location</th> <th>Frequency</th> <th>Responsibility</th> </tr> </thead> <tbody> <tr> <td colspan="6">Construction phase</td> </tr> <tr> <td colspan="6">Operation phase</td> </tr> </tbody> </table>	Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility	Construction phase						Operation phase					
Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility														
Construction phase																			
Operation phase																			

### 19. Additional Studies

S. No..	Terms of Reference
19.1	Project proponent shall submit a study report on Decarbonisation program, which would essentially consist of company's carbon emissions, carbon budgeting/ balancing, carbon sequestration activities and carbon capture, use and storage after offsetting strategies. Further, the report shall also contain time bound action plan to reduce its carbon intensity of its operations and supply chains, energy transition pathway from fossil fuels to Renewable energy etc. All these activities/ assessments should be measurable and monitorable with defined time frames.
19.2	Details of adoption/ implementation status/plan to achieve the goal of Glasgow COP26 Climate Submit with regard to enhance the non-fossil energy, use of renewable energy, minimization of net carbon emission and carbon intensity with long-term target of "net Zero" emission.
19.3	Implementation status/measures adopted for avoiding the generation of single used plastic waste.
19.4	In cases the project is located in Critically and Severely Polluted Areas, additional mitigation measures adopted and detailed action plan to be submitted in the EIA/EMP Report as per MoEF&CC O.M. No. 22-23/2028-IA.III dated 31/10/2019 and MoEF&CC O.M. No. 22-23/2028-IA.III dated 5/07/2022 has to be submitted.
19.5	Public consultation details (Entire proceedings as separate annexure along with authenticated English

S. No..	Terms of Reference
	Translation of Public Consultation proceedings).
19.6	As part of Corporate Environment Responsibility (CER) activity, company shall adopt nearby villages based on the socio-economic survey and undertake community developmental activities in consultation with the village Panchayat and the District Administration. In this regard, time bound action plan as per the MoEF&CC Office Memorandum dated 30/09/2020 shall be submitted.
19.7	Summary of issues raised during public consultation along with action plan to address the same as per MoEF&CC O.M. dated 30/09/2020 <b>Physical activity and action plan</b> <b>Year of implementation (Budget in INR)</b> <b>Total Expenditure (Rs. in Crores)</b> S.No      Name of the Physical Activity      Targets      1st      2nd      3rd
19.8	Risk assessment <ul style="list-style-type: none"> <li>• Methodology</li> <li>• Hazard identification</li> <li>• Frequency analysis</li> <li>• Consequence analysis</li> <li>• Risk assessment outcome</li> </ul>
19.9	Emergency response and preparedness plan

## 20. Project Benefits

S. No..	Terms of Reference
20.1	Environment benefits
20.2	Social infrastructure
20.3	Employment and business opportunity
20.4	Other tangible benefits

## 21. Environment Cost Benefit Analysis

S. No..	Terms of Reference
21.1	Net present value
21.2	Internal rate of return
21.3	Benefit cost ratio

S. No..	Terms of Reference
21.4	Cost effectiveness analysis

## 22. Environment Management Plan (Construction and Operation phase)

S. No..	Terms of Reference
22.1	Action plan for hazardous waste management
22.2	Action plan for solid waste management
22.3	Action plan for e-waste management.
22.4	Action plan for plastic waste management, considering the Plastic Waste Management Rules 2016.
22.5	Action plan for construction and demolition waste management.
22.6	Rain water harvesting plan
22.7	Plan for maximum usage of waste water/treated water in the Unit
22.8	Green belt development plan: An action plan for Green Belt development consisting of 3 tiers of plantations of native species all along the periphery of the project of adequate width shall be raised in 33% of total area with a tree density shall not less than 2500 per ha within a time frame of one year shall be submitted. Survival rate of green belt shall be monitored on periodic basis to ensure that survival rate not be less than 80 %.
22.9	Wildlife conservation plan (In case of presence of schedule I species)
22.10	Total capital cost and recurring cost/annum for environment pollution control measures shall be included.
22.11	Explore possibilities for recycling and reusing of treated water in the unit to reduce the freshwater demand and waste disposal.
22.12	An Action Plan for improving the house-keeping activities in the raw material handling area need to be submitted
22.13	Action plan for the stock piles with impervious floor, provision of garland drains and catch pits to trap run off material shall be submitted.
22.14	Action plan to limit the dust emission from all the stacks below 30 mg/Nm <sup>3</sup> shall be furnished.
22.15	Action plan for fugitive emission control in the plant premises shall be provided.

## Standard Terms of Reference for conducting Environment Impact Assessment Study for Metallurgical Industries (ferrous and non ferrous) and information to be included in EIA/EMP report

### 1.

Sr. No.	Terms of Reference
1.1	A 3-D view i.e. DEM (Digital Elevation Model) for the area in 10 km radius from the proposal site. MRL details of project site and RL of nearby sources of water shall be indicated.
1.2	Plan for the implementation of the recommendations made for the proposed Unit in the Corporate Responsibility for Environmental Protection (CREP) guidelines.
1.3	Plan for solid wastes utilization.
1.4	Plan for utilization of energy in off gases (coke oven, blast furnace)
1.5	System of coke quenching adopted with full justification.
1.6	Details on environmentally sound technologies for recycling of hazardous materials, as per CPCB Guidelines, may be mentioned in case of handling scrap and other recycled materials.
1.7	Details on toxic metal content in the waste material and its composition and end use (particularly of slag).
1.8	Details on toxic content using Toxicity Characteristic Leaching Procedure (TCLP), composition and end use of slag.
1.9	100 % dolo char generated in the plant shall be used to generate power.
1.10	Fourth Hole fume extraction system shall be provided for SAF.WHR system shall be installed to recover sensible heat from flue gases of EAF. Provision for installation of jigging and briquetting plant to utilise the fines generated in the process.
1.11	No tailing pond is permitted for Iron ore slimes. Dewatering and filtration system shall be provided.
1.12	Action plan for developing connecting and internal road in terms of MSA as per IRC guidelines shall be submitted.
1.13	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm <sup>3</sup> shall be furnished.
1.14	Action plan for 100 % solid waste utilization shall be submitted.
1.15	PM (PM <sub>10</sub> and P <sub>2.5</sub> ) present in the ambient air must be analysed for source analysis – natural dust/RSPM generated from plant operations (trace elements) of PM <sub>10</sub> to be carried over.
1.16	Iron ore/coal linkage documents along with the status of environment clearance of iron ore and coal mines, if applicable.

Sr. No.	Terms of Reference
1.17	Quantum of production of coal and iron ore from coal & iron ore mines and the projects they cater to. Mode of transportation to the plant and its impact, if applicable.
1.18	Details on environmentally sound technologies for recycling of hazardous materials, as per CPCB Guidelines, may be mentioned in case of handling scrap and other recycled materials, if applicable.

### **Additional Terms of Reference**

1. This TOR is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project.
2. This TOR granted to the project/ activity is strictly under the provisions of the EIA Notification, 2006 and its amendments issued from time to time. It does not tantamount/ construe to approvals/ consent/ permissions etc., required to be obtained or standards/conditions to be followed under any other Acts/Rules/Subordinate legislations, etc., as may be applicable to the project.

### **Annexure 2**

### **Details of Products & By-products**

Name of the product /By-product	Product / By-product	Existing	Proposed	Total	Unit	Mode of Transport / Transmission	Remarks (eg. CAS number)
Sponge Iron	Product	90000	0	90000	Tons per Annum (TPA)	Road	-
MS Billets and Rolled products	Product	108000	468000	576000	Tons per Annum (TPA)	Road	-
Captive Power Generation	Product	12	0	12	Mega Watt (MW)	Will be utilized in-house	-

**Send Approval Copy To (In case of multiple use comma as separator)**

## **Section B: TOR Compliance Statement**



### Standard Terms of Reference

Sr. No	ToR Point	TOR Compliance	Citation in EIA Report
1.1	EIA/EMP report cover page shall consist of project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details with QCI/NABET/NABL accreditation certificate detail.	The EIA report cover page consists of all the required details such as: project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details: PERFECT RESEARCHERS PVT. LTD, vide Certificate No. TC-6993, valid upto 03.04.2025	Cover Page of EIA Report.
1.2	Besides, following points shall be compiled as per QCI/NABET norms: a. Disclaimer by the EIA consultant. b. Declaration by the Functional Area Experts contributed to the EIA study and declaration by the head of the accredited consultant organization/authorized person. c. Undertaking by the project proponent owning the contents (information and data) of the EIA/EMP report. d. Undertaking by the EIA consultant regarding compliance of ToR issued by MoEF&CC. e. Consultant shall submit the Plagiarism Certificate for the EIA/EMP Report.	Noted and complied.	-
<b>2</b>	<b>Executive Summary</b>		
2.1	Table of Contents of the EIA report including list of tables/figures/annexures/abbreviations/symbols/notations.	Table of Contents of the EIA report including list of tables/figures are included in the EIA report.	-
2.2	Point wise compliance to the ToR issued by MoEF&CC.	Noted & Complied.	-
<b>3</b>	<b>Executive Summary</b>		
3.1.1	Name of the project along with applicable schedule and category as per EIA, 2006.	The proposed project is "Expansion in M.S. Billets & Rolled Products from 108000	Section 11.1 of Chapter 11 of the EIA report.

		TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW)". Schedule 3(a) of category 'A' of EIA Notification 2006 & its subsequent amendments.	
3.1.2	Location and accessibility	<p><b>Location:</b> Survey Nos.: <b>Existing:</b>12,14, 17, 22, 23, 25, 51, 52, 53, 57 &amp; <b>Expansion:</b>5/2, 6/1, 6/2A, 6/2B, 6/2C, 6/2D, 6/3A, 6/3B, 6/4A, 6/4B, 6/4C, 6/4D, 6/4E, 6/5A, 6/5B, 6/6A, 6/6B, 7, 8/1, 8/2, 8/3, 8/4, 9/1, 15, 18/1A, 18/1B, 19/3A, etc. <b>Address:</b> Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu. <b>Road-</b> Perunagar-Kaliyampundi Road, located 0.03 km NE of the project site. <b>Rail-</b> Walajabad Railway Station, located at 20.94 km North East <b>Air-</b> Arakkonam Airport at 46.00 km North.</p>	Section 11.1 of Chapter 11 of the EIA report.
4	<b>Executive Summary</b>		
4.1	<b>Project description</b>		
4.1.1	Resource requirements (Land; water; fuel; manpower)	<p><b>Land-</b> The existing plot area of 21.95 ha, will be increased to 37.27 ha after expansion. <b>Water-</b> The total water requirement will be 597 KLD after expansion, of which 543 KLD will be fresh water and 30 KLD will be treated sewage and 24 KLD treated effluent. <b>Fuel-</b> HSD @40.0 TPD will be used in DG sets and vehicles.</p>	Section 11.1 of Chapter 11 of the EIA report

		<p>Furnace oil @435.8 TPD in sponge iron plant and LPG @ 20.0 TPD will be used for scrap cutting.</p> <p><b>Manpower-</b> Permanent employment will increase from 200 Nos. to 250 Nos. and temporary/contractual employment will increase from 250 Nos. to 350 Nos.</p>	
4.1.2	Operational activity	The industry will be producing Sponge Iron @ 250 TPD, MS Billets and Rolled products @ 1600 TPD and Captive power @ 12 MW.	Section 11.1 of Chapter 11 of the EIA report
4.1.3	Key pollution concerns	<p><b>Air-</b> DG sets, boilers, and induction furnaces are expected to emit pollutants like NOx, PM, SOx, and CO. To minimize air pollution, these sources are equipped with APCMs such as ESPs, bag filters, and adequate stack height.</p> <p><b>Water-</b> Domestic wastewater will be treated in STP and reused for gardening as well as greenbelt development. Process water will be treated in ETP and recycled within the system.</p> <p><b>Soil-</b> Unscientific management of solid and hazardous wastes can deteriorate soil quality.</p> <p><b>Noise-</b> Noise from equipment/machinery shall be mitigated using barriers. Greenbelt of adequate width shall also be provided to reduce noise emission.</p>	Section 11.1 Chapter 11 of the EIA report.
5	<b>Executive Summary</b>		
5.1	<b>Baseline Environment Studies</b>		
5.1.1	Ambient air quality	The ambient air quality monitoring was done between	Section 11.3 Chapter 11 of the EIA report.

		March 2023 and May 2023 at 11 locations. The results are provided in Section 11.3.	
<b>5.1.2</b>	Ambient noise quality	The ambient noise quality monitoring was done between March 2023 and May 2023 at 10 locations. The results are provided in Section 11.3	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.3</b>	Traffic study	Traffic study was carried during the baseline period and results of the same are given in Section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.4</b>	Surface water quality	Monitoring of surface water quality was carried out during the baseline period at 9 locations. Results of analysis are given in Section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.5</b>	Ground water quality	Monitoring of groundwater quality was carried out during the baseline period at 8 locations. Results of analysis are given in Section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.6</b>	Soil quality	The results of soil quality analysis of 9 locations is given in section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.7</b>	Biological Environment	Assessment of flora and fauna at were done and the list of species are provided in section 11.3	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.8</b>	Land use	Land use study was done and respective maps are incorporated into section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.9</b>	Socio-economic environment	The findings from Socio-Economic study is given in section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>6</b>	<b>Executive Summary</b>		
<b>6.1</b>	<b>Anticipated impacts</b>		
<b>6.1.1</b>	Impact on ambient air quality	PMs, NO <sub>x</sub> , SO <sub>x</sub> , and CO <sub>2</sub> will	Section 11.4 of Chapter 11

		be emitted from DG sets, Boilers and Furnace. These pollutants can deteriorate ambient air quality if not properly controlled. APCMs will be installed to mitigate negative impact on ambient air quality.	of the EIA report.
<b>6.1.2</b>	Impact on ambient noise quality	Noise will be emitted from Boilers, DG sets and other machinery. Noise barriers and greenbelt shall be provided to mitigate such impacts. Acoustic Enclosure will be provided with the DG Set to reduce the noise.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.3</b>	Impact on road and traffic	Dust generated will be reduced by sprinkling water.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.4</b>	Impact on surface water resource and quality	The water used for domestic and process shall be recycled and reused within the plant. No wastewater shall be discharged into the environment untreated.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.5</b>	Impact on ground water resource and quality	Groundwater recharge will be done using the Rainwater Harvesting System.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.6</b>	Impact on terrestrial and aquatic habitat	Thick greenbelt of native trees shall be provided inside the project area.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.7</b>	Impact on socio-economic environment	No rehabilitation and resettlement are required. Employment opportunities will be generated for the local population during the construction/installation phase which will lead to a rise in income and improve standard of living. The expansion of existing industry would also generate jobs for the labourers during the construction phase as well as during the operation phase. It	Section 11.4 of Chapter 11 of the EIA report.

		will provide direct and indirect employment to local youth	
<b>7</b>	<b>Executive Summary</b>		
<b>7.1</b>	<b>Alternative analysis</b>	<p>The project is a Brownfield site with a proposed expansion of Sponge Iron and MS Billets &amp; Rolled products manufacturing unit. The assessment for the site is presented below:</p> <ul style="list-style-type: none"> <li>• Land: Proposed expansion requires installation of 1 No. of 30 T induction furnace, 1000 TPD TMT Mill along with 65 KLD STP and 40 KLD ETP along with additional utilities and facilities. Locating the new TMT Bar Mill and Other Structural steel mill along with the existing Sponge Iron and Structural steel plant.</li> <li>• Facilities &amp; Utilities: Already the existing plant has got all the facilities and utilities available for the proposed expansion. There will be 2 Nos. of Pump House, 2 Nos. of Cooling Tower, 1 No. of CCM Machine Stand and 5 Nos. of EOT Cranes to cater the proposed expansion..</li> <li>• The site is well connected with roads and railway networks.</li> <li>• No Rehabilitation and resettlement is required.</li> </ul>	-
<b>8</b>	<b>Executive Summary</b>		
<b>8.1</b>	<b>Environmental Monitoring Program</b>		
<b>8.1.1</b>	Ambient air, noise, water and soil quality	Monthly monitoring for ambient air, noise, water and soil quality shall be carried out during the	Section 11.5 of Chapter 11 in EIA report.

		operation phase of the project.	
<b>8.1.2</b>	Noise quality management plan	-	Section 11.5 of Chapter 11 in EIA report.
<b>8.1.3</b>	Emission and discharge from the plant	-	Section 11.5 of Chapter 11 in EIA report.
<b>8.1.4</b>	Green Belt	-	Section 11.5 of Chapter 11 in EIA report.
<b>8.1.5</b>	Social Parameters	-	Section 11.5 of Chapter 11 in EIA report.
<b>9</b>	<b>Executive Summary</b>		
<b>9.1</b>	<b>Additional Studies</b>		
<b>9.1.1</b>	Risk assessment	Hazard Identification and Risk Assessment (HIRA) was used to assess various hazards.	Section 11.6 of Chapter 11 of EIA report
<b>9.1.2</b>	Public consultation	We will submit the report for public consultation	-
<b>9.1.3</b>	Action plan to address the issues raised during public consultation as per MoEF&CC O.M. dated 30/09/2020	Noted and will be complied after PH.	-
<b>10</b>	<b>Executive Summary</b>		
<b>10.1</b>	<b>Environment management plan</b>		
<b>10.1.1</b>	Air quality management plan	INR 90.0 Lakhs will be spent for air quality monitoring.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.2</b>	Solid and hazardous waste management plan	-	
<b>10.1.3</b>	Effluent management plan	An ETP of 40 KLD is provided for the effluent treatment.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.4</b>	Stormwater management plan	INR 45.0 Lakhs will be spent for rainwater and stormwater management.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.5</b>	Occupational health and safety management plan	INR 20.0 Lakhs will be spent towards Occupational health and safety management plan	Section 11.8 Chapter 11 of EIA report.

<b>10.1.6</b>	Green belt development plan	Greenbelt @34.91% of the total plot area shall be envisaged	Section 11.8 Chapter 11 of EIA report.
<b>10.1.7</b>	Socio-economic management plan	Socio-economic management plan is provided.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.8</b>	Project cost and EMP implementation budget	Existing Cost of the Project: INR 273.17 Cr. Proposed project Cost: INR 80.00 Cr Total project cost after expansion: INR 353.17 Cr Existing EMP Capital cost: INR 107.0 Lakhs After expansion EMP Capital Cost: INR 312.0 Lakhs Existing EMP Recurring cost/Annum: INR 28.5 Lakhs After expansion EMP Recurring Cost/Annum: INR 52.5 Lakhs	Section 11.8 Chapter 11 of EIA report.
<b>11</b>	<b>Introduction</b>		
<b>11.1</b>	Background about the project		
<b>11.2</b>	Need of the project	India presently consumes about 100 MTPA Steel of which 93 MTPA carbon steel & 7 MTPA alloy & stainless steel. Predicted growth in consumption of carbon steel has shown steady rise over 7% per annum till 2027, with predicted consumptions @ 124 MTPA by 2025-26, 165 MTPA by 2030-31 and 211 MTPA by 2035-36.	Section 2.2 of Chapter 2 of EIA report.
<b>11.3</b>	Purpose of the EIA study	The purpose of the Environmental Impact Assessment Report (EIA) to assess the project's impact on the environment and identify ways to minimize any negative effects. The Standard Terms of Reference (TOR) for conducting the EIA was issued by the Ministry of	Section 1.1 of Chapter 1 of EIA report.



		Environment, Forest, and Climate Change (MoEFCC) vide letter IA-J-11011/324/2023-IA-II(IND-I), dated 23/02/2024. This EIA report is prepared as per the "Generic Structure of EIA" described in Appendix III and IIIA of the EIA Notification 2006	
<b>11.4</b>	Scope of the EIA study	<ul style="list-style-type: none"> <li>• To Determine the status of current environmental parameters</li> <li>• To Predict, Assess, categorize, quantify and mitigate probable significant environmental impacts (considering alternate assignments, baseline scenario and public opinion).</li> <li>• To prepare a detailed Environmental Management Plan (EMP) with best available management tools and techniques including monitoring, reporting along with Operation and Maintenance Budget for better implementation.</li> <li>• Undertake Risk assessment for the proposed project and lay down risk mitigation measures for safe Operations.</li> </ul>	Section 15 & 1.6 of Chapter 1 of EIA report
<b>12</b>	<b>Project description</b>		
<b>12.1</b>	<b>Site Details</b>		
<b>12.1.1</b>	Location of the project site covering village, Taluka/Tehsil, District and State.	The site is located at Plot No: 14/2A2, Melpakkam Village, Uthiramerur-Taluk, Uthiramerur, Kancheepuram (District), Tamil Nadu.	Section 2.3 of Chapter 2 of EIA report
<b>12.1.2</b>	Site accessibility	Accessibility map is given in Chapter 3 of the EIA report.	Section 2.3.4 of Chapter 2 of EIA report

<b>12.1.3</b>	A digital toposheet in pdf or shape file compatible to google earth of the study area of radius of 10km and site location preferably on 1:50,000 scale. (including all eco-sensitive areas and environmentally sensitive places).	A digital toposheet in pdf or shape file compatible with google earth of the study area of radius of 10km and site location preferably on 1:50,000 scale given in EIA.	Section 2.3.2 of Chapter 2 of EIA report.
<b>12.1.4</b>	Latest High-resolution satellite image data having 1 m - 5 m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc., along with delineation of plant boundary co-ordinates. Area must include at least 100 m all around the project location.	High-resolution satellite image data of 500 m and 1 Km around the project location is provided in EIA.	Section 3.2.1 of Chapter 3 of EIA report
<b>12.1.5</b>	Environment settings of the site and its surrounding along with map.	Environment settings of the site and its surrounding along with a map given in EIA.	Section 2.3.3 & 2.3.5 of Chapter 2 of EIA report.
<b>12.1.6</b>	A list of major industries with name, products and distance from plant site within study area (10km radius) and the location of the industries shall be depicted in the study area map.	Rockman Industries Limited (9.58 NW); Grasim Industries Limited, Birla Paint Division (7.96 NW)	Section 2.3.6 of Chapter 2 of EIA report
<b>12.1.7</b>	In case if the project site is in vicinity of the water body, 50 meters from the edge of the water body towards the site shall be treated as no development/construction zone. If it's near the wetland, Guidelines for implementing Wetlands (Conservation and Management) Rules, 2017 may be followed.	Not Applicable	-
<b>12.1.8</b>	In case if the project site is in vicinity of the river, the industry shall not be located within the river floodplain corresponding to one in 25 years flood, as certified by concerned District Magistrate/Executive Engineer from State Water Resources Department (or) any other officer authorized by the State Government for this purpose as per the provisions contained in the MoEF&CC Office Memorandum dated 14/02/2022.	Not Applicable	-

<b>12.1.9</b>	In case of canal/ nala/ seasonal drain and any other water body passing through the project site, the PP shall submit the suitable steps /conservation plan/mitigation measures along with contouring, Run -off calculations, disposal etc. A robust and full proof Drainage Conservation scheme to protect the natural drainage/water bodies and its flow parameters; along with Soil conservation scheme and multiple Erosion control measures shall be provided in the report.	Not Applicable	-
<b>12.1.10</b>	Type of land, land use of the project site needs to be submitted.	Type of land: Non Agricultural Land use of the project site is given in EIA.	Section 3.9 of Chapter 3 of EIA report
<b>12.1.11</b>	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process as per the MoEF&CC O.M. dated 7/10/2014 shall be furnished.	The existing plant is operational under 21.95 ha area, and for the proposed expansion there is addition of land area of 15.32 ha. The land is available adjacent to the factory and it is already being leased from OFB Tech Prv. Ltd. to M/s Noble Tech Industries Pvt. Ltd. vide sale deed No. 3342/2023 dated 02.08.2023.	-
<b>12.1.12</b>	Project proponents shall prepare an Engineering layout plan showing all internal roads minimum 6 m width and 9 m turning radius for smooth traffic flow inside including fire tender as per NBC. Road network shall connect all service areas in layout. This drawing shall include an area statement showing plot area, area under roads, parking, green belt with calculations and % with respect to plot area of project site and proper indexing. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within	Existing and after expansion layout plan is given in Chapter 2 of EIA report.	Section 2.3.1 of Chapter 2 of EIA report. Layout drawing is attached as Annexure 2.

	the Industrial area/Estate.		
<b>12.1.13</b>	Project proponents shall submit a contour map of project site along with drainage disposal system with calculations and drawings supported with proper indexing including Rain Water Harvesting details with calculations mentioning about GW recharge along with relevant drawing.	Rain Water Harvesting Details are provided in Chapter 2 of the EIA report.	Section 2.17 of Chapter 2 of EIA report.
<b>12.1.14</b>	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted.	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted in EIA.	Section 7.4 of Chapter 7 of EIA report.
<b>12.1.15</b>	Details of the drone survey for the site, needs to be included in the report and presented before the EAC during appraisal of the project.	Noted	-
<b>13</b>	<b>Project description</b>		
<b>13.1</b>	<b>Forest and wildlife related issues (if applicable)</b>		
<b>13.1.1</b>	Status of Forest Clearance for the use of forest land shall be submitted.	Not Applicable	
<b>13.1.2</b>	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife if the project site located within notified Eco-Sensitive Zone, 10 km radius of national park/sanctuary wherein final ESZ notification is not in place as per MoEF&CC Office Memorandum dated 8/8/2019.	Not Applicable	
<b>13.1.3</b>	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, Eco-sensitive Zone and Eco-sensitive areas, the project proponent shall submit the map duly authenticated by Divisional Forest Officer showing the distance between the project site and the	Not Applicable	

	said areas.																							
13.1.4	Wildlife Conservation Plan duly authenticated by the Competent Authority of the State Government for conservation of Schedule I fauna along with budget and action plan, if any exists in the study area.	Wildlife Conservation Plan has been submitted to the concerned department.	-																					
<b>14</b>	<b>Project description</b>																							
<b>14.1</b>	<b>Salient features of the project</b>																							
14.1.1	Products with capacities in Tons per Annum for the proposed project.	Sponge Iron: 90000 TPA MS Billets & Rolled Products: 576000 TPA Captive power: 12 MW	Section 2.4.2 of Chapter 2 of EIA report																					
14.1.2	If expansion project, status of implementation of existing project, details of existing/proposed products with production capacities in Tons per Annum.	The existing plant is producing sponge iron @ 90000 TPA and MS Billets and Rolled products @ 1,08,000 TPA. The plant also produces Captive power @ 12 MW.	Section 2.4.2 of Chapter 2 of EIA report																					
14.1.3	Site preparatory activities.	As the site is existing there will be only activities of erection and fabrications.																						
14.1.4	List of raw materials required and their source along with mode of transportation.	<table border="1"> <thead> <tr> <th>Raw Material</th> <th>Source</th> <th>Mode of transportation</th> </tr> </thead> <tbody> <tr> <td>Iron Ore</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> <tr> <td>Sponge Iron</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> <tr> <td>Coal</td> <td>Local</td> <td>Road/Truck</td> </tr> <tr> <td>MS Scrap</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> <tr> <td>Dolomite</td> <td>Indigenous</td> <td>Within Site</td> </tr> <tr> <td>Steam</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> </tbody> </table>	Raw Material	Source	Mode of transportation	Iron Ore	Indigenous/Import	Road/Truck	Sponge Iron	Indigenous/Import	Road/Truck	Coal	Local	Road/Truck	MS Scrap	Indigenous/Import	Road/Truck	Dolomite	Indigenous	Within Site	Steam	Indigenous/Import	Road/Truck	Section 2.8 of Chapter 2 of EIA report.
Raw Material	Source	Mode of transportation																						
Iron Ore	Indigenous/Import	Road/Truck																						
Sponge Iron	Indigenous/Import	Road/Truck																						
Coal	Local	Road/Truck																						
MS Scrap	Indigenous/Import	Road/Truck																						
Dolomite	Indigenous	Within Site																						
Steam	Indigenous/Import	Road/Truck																						

14.1.5	Other than raw materials, other chemicals and materials are required with quantities and storage capacities.	Not Applicable	
14.1.6	Manufacturing process details along with the process flow diagram of proposed units.	Manufacturing process and process flow has been provided in the EIA report.	Section 2.10 of Chapter 2 of EIA report
14.1.7	Consolidated materials and energy balance for the project.	-	Material Balance Sheet is attached as Annexure 8.
14.1.8	Total requirement of surface/ ground water and power with their respective sources, status of approval.	<p><b>Water-</b> The total water requirement is 597 KLD, of which 543 KLD is freshwater and will be sourced via groundwater supply. Status of Approval: Groundwater renewal NOC from TNWRD vide certificate No. 305/2024 (R-3) dated 08.05.2024 for the drawal of the total quantity of 700 KLD of groundwater. The renewal certificate is valid from 16.03.2024 to 15.03.2025.</p> <p><b>Power-</b> The total power requirement after the proposed expansion will be 47.5 MW, an increase of 17.5 MW from existing 30 MW, will be sourced from captive Power plant production 12 MW and from TANGEDCO from existing 11 KV &amp; installing a transformer of 110 kV replacing 33 KV transformer.</p>	<p><b>Water Requirement Details:</b> Section 2.12 of Chapter 2 of EIA report. Groundwater renewal NOC is attached as Annexure 3.</p> <p><b>Power Requirement Details:</b> Section 2.5 of Chapter 2 of EIA report</p>
14.1.9	Water balance diagram	Water balance diagram for existing as well as after expansion is incorporated in the Chapter 2 of EIA report.	Section 2.12 of Chapter 2 of EIA report.
14.1.10	Details of Emission, effluents, hazardous waste generation and mode of disposal during construction as well as operation phase.	<b>Air emissions:</b> Air pollutant emissions from process gas stacks and flue gas stack. After Expansion, there will be no addition of process gas stacks	<b>Air Emissions:</b> Section 2.11 of Chapter 2 of EIA report.

		<p>within the premises. There will be addition of 1 No. of flue gas stack for the proposed DG set of 1500 kVA. There will be Common stack for existing Induction Furnace and proposed Induction Furnace. Details are provided in Chapter 2 of EIA Report.</p> <p><b>Effluent Generation &amp; management:</b> After expansion the effluent generated will be 26 KLD which will be sent to ETP of 40 KLD capacity. Treated effluent @24 KLD will be reused within the process. Details are provided in Chapter 2 of EIA Report.</p> <p><b>Hazardous waste generation &amp; disposal:</b> Used/Spent oil @2.0 T/Y, Discarded barrels @130 T/Y, ETP Sludge @ 0.95 T/Y, Waste/residues containing oil @1.50 T/Y will be generated and managed via authorised HW recyclers, HW utilisers and CHWTSDF by TNWML. The authorisation for the same has been granted by the TNPCB via No. 2IHFC12957693 and dated 24.10.2021 and is valid upto 31.03.2026.</p>	<p><b>Effluent Generation &amp; management:</b> Section 2.13 of Chapter 2 of EIA report</p> <p><b>Hazardous waste generation &amp; disposal:</b> Section 2.15.3 of Chapter 2 of EIA report. HW Authorization is attached as Annexure 4.</p>																	
14.1.11	Man-power requirement.	<p><b>During Construction Phase</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>Manpower</th> </tr> </thead> <tbody> <tr> <td>Permanent</td> <td>20</td> </tr> <tr> <td>Temporary</td> <td>100</td> </tr> </tbody> </table> <p><b>During Operation Phase</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Particulars</th> <th colspan="2">Manpower</th> </tr> <tr> <th>Existing</th> <th>After Expansion</th> </tr> </thead> <tbody> <tr> <td>Permanent</td> <td>200</td> <td>250</td> </tr> <tr> <td>Temporary</td> <td>250</td> <td>350</td> </tr> </tbody> </table>	Particulars	Manpower	Permanent	20	Temporary	100	Particulars	Manpower		Existing	After Expansion	Permanent	200	250	Temporary	250	350	Section 2.9 of Chapter 2 of EIA report
Particulars	Manpower																			
Permanent	20																			
Temporary	100																			
Particulars	Manpower																			
	Existing	After Expansion																		
Permanent	200	250																		
Temporary	250	350																		
14.1.12	Cost of project and scheduled time of	Existing Cost: INR 273.17 Cr.	Section 2.4.3 of Chapter 2																	

	completion.	<p>Proposed Expansion Cost: INR 80.00 Cr. Total Cost After Expansion: INR 353.17 Cr.</p> <p>The project is likely to start construction activity by 01/10/2024 and likely date of completion of Construction activity by 30/09/2025.</p>	<p>of EIA report.</p> <p>Section 2.4.4 of Chapter 2 of EIA report.</p>
<b>14.1.13</b>	In case of expansion projects, project proponent shall submit structural stability certificate showing whether existing structure withstand for proposed expansion activity.	Existing structure of building and fabrication work of the plant are structurally sound and the stability will not be endangered by its use as a factory manufacture of MS Billed and Rolled Products, power plant.	-
<b>14.1.14</b>	Brief on present status of compliance (Expansion/modernization proposals) a. Cumulative Environment Impact Assessment for the existing as well as the proposed expansion/modernization shall be carried out.	Cumulative environmental impact assessment of air, water, noise, soil, solid and HW waste, etc. are given in the EIA report.	Section 4.4 of Chapter 4 of EIA report.
	b. Cumulative Impact Assessment need to be carried out by greenfield projects considering the nearby industries.	The plant was established with CTE (Consent to Establish) No. 2944 dated: 03.05.2005 and started operation with CTO (Consent to Operate) No. 21077 Dated: 17.08.2007.	-
	c. In case of groundwater drawl for the existing unit, action plan for phasing out of ground water abstraction in next two years except for domestic purposes and shall switch over to 100 % use of surface water from nearby source.	Groundwater renewal NOC from TNWRD vide certificate No. 305/2024 (R-3) dated 08.05.2024 for the drawal of the total quantity of 700 KLD of groundwater. The renewal certificate is valid from 16.03.2024 to 15.03.2025	NOC from TNWRD for drawal of Groundwater is attached as Annexure 3.



	<p>d. Copy of all the Environment Clearance(s) including Amendments/validity of extension/transfer of EC, there to obtained for the project from MoEF&amp;CC/SEIAA shall be attached as Annexures. A Certified Compliance Report (CCR) of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change/ or concerned authority as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022 on the status of compliance of conditions stipulated in all the existing environment clearances including amendments shall be provided. A Certified Compliance Report (CCR) issued by the concerned Authority shall be valid for a period of one year from the date of inspection.</p>	<p>The proposed project is an expansion project, going 1st time for Environment Clearance.</p>	<p>-</p>
	<p>e. In case the existing project has not obtained Environment Clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. A proper justification needs to be submitted along with documentary proof. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 1994 or 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of CTO from the Regional Office of the SPCB shall be submitted, as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022. CCR on CTO conditions issued by the concerned SPCBs/PCCs shall be valid for a period of one year from the date of inspection of the project.</p>	<p>The proposed project is an expansion project, going 1st time for Environment Clearance.</p>	<p>-</p>
<p><b>15</b></p>	<p><b>Description of the Environment</b></p>		

15.1	<b>Study period</b>					
15.2	Approach and methodology for data collection as furnished below			<p><b>Micro-Meteorological:</b> The important parameters considered are temperature, Humidity, Wind Speed, Wind Direction and Rainfall. The extract of Maximum, Minimum values (month wise) of above said parameters from MERRA-2 meteorological data, Tamil Nadu of the last twelve years (2011-2020). Details are provided in Chapter 3 of the EIA report.</p> <p><b>Ambient Air Quality:</b> PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, HC, O<sub>3</sub> and benzene were monitored twice a week for 3 months (March 2023 to May 2023) 24 hourly at uniform intervals. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Noise:</b> 10 sampling locations were selected for noise quality monitoring. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Water Quality:</b> To assess the water quality of the proposed area, 17 stations (08 groundwater, 09 surface water) were selected. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Traffic Study:</b> Traffic survey was carried out on both sides (up &amp; down) of the Kanchipuram - Uthiramerur Road and Perunagar Kaliyampoondi Road (Approach Road). Details are provided in Chapter 3 of the EIA report.</p> <p><b>Soil Quality:</b> 9 sampling locations were selected for soil quality analysis. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Land Environment:</b> Chapter 3</p>	<p><b>Micro-Meteorological:</b> Section 3.4 Chapter 3 of EIA Report.</p> <p><b>Ambient Air Quality:</b> Section 3.5 Chapter 3 of EIA Report.</p> <p><b>Ambient Noise Quality:</b> Section 3.6 Chapter 3 of EIA Report.</p> <p><b>Water Quality:</b> Section 3.8 Chapter 3 of EIA Report.</p> <p><b>Traffic Survey:</b> Section 3.13 Chapter 3 of EIA Report.</p> <p><b>Soil Quality:</b> Section 3.10 Chapter 3 of EIA Report.</p>	
Attributes		Sampling				Remark
		Network	Frequency			
<b>Air Environment</b>						<b>Micro-Meteorological</b>
<ul style="list-style-type: none"> <li>-Wind Speed (Hourly)</li> <li>-Wind direction</li> <li>-Wet bulb temperature</li> <li>-Dry bulb temperature</li> <li>-Relative humidity</li> <li>-Solar radiation</li> <li>-Rainfall</li> <li>-Cloud cover</li> <li>-Environmental Lapse Rate</li> </ul>	Minimum 1 site in the project impact area	hourly continuous	IS 5182 Part 1-20 • Site specific primary data is essential • Secondary data from IMD, New Delhi • CPCB guidelines to be considered.			
<b>Pollutants</b>						
<ul style="list-style-type: none"> <li>• PM10</li> <li>• SO<sub>2</sub></li> <li>• NO<sub>x</sub></li> <li>• CO</li> <li>• HC</li> <li>• Other parameters relevant to the project and topography of the area</li> </ul>	At least 8-12 locations	As per National Ambient Air Quality Standard, CPCB Notification	<ul style="list-style-type: none"> <li>• Sampling as per CPCB guidelines</li> <li>• Collection of AAQ data (except in monsoon season)</li> <li>• Locations of various stations for different parameters should be related to the characteristic properties of the parameters</li> <li>• The</li> </ul>			

			<p>monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests,</p> <ul style="list-style-type: none"> <li>• Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of 16/11/2009 along with min., max., average &amp; 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as annexure to the EIA report.</li> </ul>	<p>of the EIA report.</p> <p><b>Biological Environment:</b> Chapter 3 of the EIA report.</p> <p><b>Socio-Economic Environment:</b> Chapter 3 of the EIA report.</p>	<p><b>Land Environment:</b> Section 3.9 Chapter 3 of EIA Report.</p> <p><b>Biological Environment:</b> Section 3.11 Chapter 3 of EIA Report.</p> <p><b>Socio-Economic Environment:</b> SSection 3.12 Chapter 3 of EIA Report.</p>
<b>Noise</b>					

Hourly equivalent noise levels	At least 8-12 locations	-	As per CPCB norms
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**Water**

**Parameters for water quality**

<ul style="list-style-type: none"> <li>• pH, temp, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity</li> <li>• Total nitrogen, total phosphorus, DO, BOD, COD, Phenol</li> <li>• Heavy metals</li> <li>• Total coliform, faecal coliforms</li> <li>• Phytoplankton</li> <li>• Zooplankton</li> </ul>	<p>Samples for water quality should be collected and analyzed as per: IS: 2488 (Part 1-5) methods for sampling and testing of Industrial effluents</p> <ul style="list-style-type: none"> <li>• Standard methods for examination of water and wastewater analysis published by American Public Health Association</li> </ul>	
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**For River Bodies**

<ul style="list-style-type: none"> <li>• Total Carbon</li> <li>• pH</li> <li>• Dissolved Oxygen</li> <li>• Biological Oxygen Demand</li> <li>• Free NH4 • Boron</li> <li>• Sodium Absorption Ratio</li> <li>• Electrical Conductivity</li> </ul>	<p>Surface water quality of the nearest River (60m upstream and downstream) and other surface water bodies</p>	<ul style="list-style-type: none"> <li>• Yield of water sources to be measured during critical season</li> <li>• Standard methodology for collection of surface water (BIS standards)</li> </ul>
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**For Groundwater**

Ground water monitoring data should be collected at minimum of 8 locations (from existing wells /tube wells/existing current records) from the study area and shall be included.

**Traffic Study**

- Type of vehicles
- Frequency of vehicles for transportation of materials
- Additional traffic due to proposed project

Land Environment

**Soil**

- Particle size distribution
- Texture
- pH
- Electrical conductivity
- Cation exchange capacity
- Alkali metals
- Sodium Absorption Ratio (SAR)
- Permeability
- Water holding capacity
- Porosity

Soil samples be collected as per BIS specifications

**Land use/Landscape**

- Location code
- Total project area
- Topography
- Drainage (natural)
- Cultivated, forest, plantations, water bodies, roads and settlements

**Biological Environment****1. Aquatic**

- Primary productivity
- Detailed description of flora and fauna (terrestrial and aquatic)

<p>Aquatic weeds</p> <ul style="list-style-type: none"> <li>• Enumeration of phytoplankton, zooplankton and benthos</li> <li>• Fisheries</li> <li>• Diversity indices</li> <li>• Trophic levels</li> <li>• Rare and endangered species</li> <li>• Marine Parks/ Sanctuaries/ closed areas /coastal regulation zone (CRZ)</li> </ul>	<p>existing in the study area shall be given with special reference to rare, endemic and endangered species. Indicator species which indicate ecological and environmental degradation should be identified and included to clearly state whether the proposed project would result in to any adverse effect on any species.</p> <ul style="list-style-type: none"> <li>• Samples to collect from upstream and downstream of discharge point, nearby tributaries at downstream, and also from dug wells close to activity site.</li> <li>• For forest studies, direction of wind should be considered while selecting forests.</li> <li>• Secondary data to collect from Government offices, NGOs, published literature.</li> </ul>		
<p><b>2. Terrestrial</b></p>			
<ul style="list-style-type: none"> <li>• Vegetation - species list, economic importance, forest produce, medicinal value</li> <li>• Importance value index (IVI) of trees</li> <li>• Fauna</li> <li>• Avi fauna</li> <li>• Rare and endangered species</li> <li>• Sanctuaries / National park / Biosphere reserve</li> <li>• Migratory routes</li> </ul>			
<p><b>Socio-Economic</b></p>			
<p><b>Demographic structure</b></p>			
<ul style="list-style-type: none"> <li>• Infrastructure resource base</li> <li>• Economic resource base</li> <li>• Health status: Morbidity pattern</li> <li>• Cultural and aesthetic attributes</li> <li>• Education</li> </ul>	<p>Socio-economic survey is based on proportionate, stratified and random sampling methods.</p> <ul style="list-style-type: none"> <li>• Primary data collection through questionnaire</li> <li>• Secondary data from census records, statistical hand books, topo sheets, health records and relevant official records available with Govt. agencies</li> </ul>		

<p><b>15.3</b></p>	<p>Interpretation of each environment attribute shall be enumerated and summarized as given below:</p> <ul style="list-style-type: none"> <li>• Ambient air quality</li> <li>• Ambient Noise quality</li> <li>• Surface water quality</li> <li>• Ground water quality</li> <li>• Soil quality</li> <li>• Biological Environment</li> <li>• Land use</li> <li>• Socio-economic environment</li> </ul>	<p>A brief interpretation of each environmental attribute is provided in Chapter 3 of the EIA report.</p>	<p>Ambient air quality: Section 3.5.7 Chapter 3 of EIA Report  Ambient Noise quality: Section 3.6.3 Chapter 3 of EIA Report.  Surface water quality: Section 3.8.7 Chapter 3 of EIA Report.  Ground water quality: Section 3.8.5 Chapter 3 of EIA Report.  Soil quality: Section 3.10.5 Chapter 3 of EIA Report.  Biological Environment: Section 3.11.6 Chapter 3 of EIA Report.  Land use: Section 3.9.3 Chapter 3 of EIA Report.  Socio-economic environment: Section 3.12.7 Chapter 3 of EIA Report.</p>								
<p><b>15.4</b></p>	<p>The PP should submit the photograph of monitoring stations &amp; sampling locations. The photograph should bear the date, time, latitude &amp; longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.</p>	<p>The monitoring was conducted by Perfact Researchers Pvt Ltd, an NABL accredited Lab with Certificate No. TC-6993.</p>	<p>The photograph of the monitoring station &amp; sampling location is attached as an Annexure 9. NABL certificate is attached as Annexure 18.</p>								
<p><b>16 Anticipated Environment Impacts and mitigation measures (In case of expansion, cumulative impact assessment shall be carried out)</b></p>											
<p><b>16.1</b></p>	<p>Identification of potential impacts in the form of a matrix for the construction and operation phase for all the environment components</p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Environment</th> <th>Ecological</th> <th>Socio-Economic</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Activity	Environment	Ecological	Socio-Economic					<p>Potential impacts during construction and operation phase are mentioned in Chapter 4 of EIA report.</p>	<p>Section 4.2 &amp; 4.3 of Chapter 4 of EIA report.</p>
Activity	Environment	Ecological	Socio-Economic								

	<table border="1"> <tr> <td>Construction Phase</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Operation Phase</td> <td></td> <td></td> <td></td> </tr> </table>	Construction Phase				Operation Phase					
Construction Phase											
Operation Phase											
<b>16.2</b>	<p>Impact on ambient air quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact)</p> <p>a. Construction phase</p> <p>b. Operation phase • Details of stack emissions from the existing as well as proposed activity. • Assessment of ground level concentration of pollutants from the stack emission based on AQIP Modelling The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any along with wind rose map for respective period • Impact on ground level concentration, under normal, abnormal and emergency conditions. Measures to handle emergency situations in the event of uncontrolled release of emissions.</p>	The impacts on ambient air quality and its mitigation measures are given in Chapter 4 of EIA report.	<p><b>Impacts during Construction Phase:</b> Section 4.2 Chapter 4 of EIA report.</p> <p><b>Impacts during Operational Phase:</b> Section 4.3 Chapter 4 of EIA report.</p>								
<b>16.3</b>	<p>Impact on ambient noise quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact)</p> <p>a. Construction phase</p> <p>b. Operation phase</p>	The impacts on ambient noise quality and its mitigation measures are given in Chapter 4 of EIA report	<p>Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report.</p> <p>Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.</p>								
<b>16.4</b>	<p>Impact on traffic (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase</p>	The impacts on traffic and its mitigation measures are given in Chapter 4 of the EIA report.	<p>Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report.</p> <p>Impacts during Operational Phase:</p>								



			Section 4.3 Chapter 4 of EIA report.
<b>16.5</b>	Impact on soil quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on soil quality and its mitigation measures are given in Chapter 4 of the EIA report.	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.6</b>	Impact on land use (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on land use and its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.7</b>	Impact on surface water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on surface water resources and its quality and its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.8</b>	Impact on ground water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on groundwater resources and its quality and its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.9</b>	Impact on terrestrial and aquatic habitat (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on terrestrial and aquatic habitat its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.

<b>16.10</b>	Impact on socio-economic environment (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on socio-economic environment and its mitigation measures are given in Chapter 4 of EIA report.	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.11</b>	Impact on occupational health and safety (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The general safety and occupational health details are given in Chapter 7 of EIA report	Section 7.5 of Chapter 7 of EIA report.
<b>17.</b>	<b>Analysis of Alternatives (Technology &amp; Site)</b>		
<b>17.1</b>	No project scenario	Not Applicable. The plant is already existing and operational.	Chapter 5 of EIA report.
<b>17.2</b>	Site alternative	Proposed project aims to increase production of MS Billets & Rolled products from 300 TPD to 1600 TPD. It is proposed to be realized by expansion of existing Plant area and by installing additional Machineries and utilities within the existing Sponge Iron Plant	Section 5.1 of Chapter 5 of EIA report
<b>17.3</b>	Technical and social concerns	Company is fully committed to the improvement of technology to achieve conservation, safety, and environmental sustainability.	Section 5.2 of Chapter 5 of EIA report
<b>17.4</b>	Conclusion	Analysis of site alternatives is not required as it is an expansion project.	-
<b>18</b>	<b>Environmental Monitoring Program</b>		
<b>18.1</b>	Details of the Environment Management Cell	Details of the Environment Management Cell are given in Chapter 10 of EIA Report.	Section 10.2 of Chapter 10 of EIA Report. The Environment Management cell is attached as Annexure 7.

<p><b>18.2</b></p>	<p>Performance monitoring schedule for all pollution control devices shall be furnished.</p>	<p>To check the efficiency of the system with proposed modifications a regular monitoring programme has been drawn. The program has been outlined for the construction and operation phase.</p>	<p>Construction Phase: Section 6.1.1 Chapter 6 of EIA report. Operation Phase: Section 6.1.2 Chapter 6 of EIA report.</p>						
<p><b>18.3</b></p>	<p>Corporate Environment Policy a. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report. b. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environment or forest norms / conditions? If so, it may be detailed in the EIA. c. What is the hierarchical system or Administrative order of the company to deal with the environment issues and for ensuring compliance with the environment clearance conditions? Details of this system may be given. d. Does the company have a system of reporting of non compliances / violations of environment norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report.</p>	<p>a. Yes ,the company has a well laid down environment policy given in EIA. b. Yes,Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environment or forest norms / conditions c. The hierarchical system or Administrative order of the company to deal with the environment issues and for ensuring compliance with the environment clearance conditions give in EIA. d. The company has a system of reporting of non compliances / violations of environment norms to the Board of Directors of the company and / or shareholders or stakeholders at large given in EIA.</p>	<p>Section 10.2, 10.3, &amp; 10.4 Chapter 10 of EIA report.</p>						
<p><b>18.4</b></p>	<p>Action plan for post-project environment monitoring matrix: Construction Phase-</p> <table border="1"> <tr> <td><b>Acti</b></td> <td><b>Asp</b></td> <td><b>Mo</b></td> <td><b>Loc</b></td> <td><b>Fre</b></td> <td><b>Res</b></td> </tr> </table>	<b>Acti</b>	<b>Asp</b>	<b>Mo</b>	<b>Loc</b>	<b>Fre</b>	<b>Res</b>	<p>Action plan for post-project environment monitoring matrix given in EIA.</p>	<p>Section 6.1 of Chapter 6 of EIA report.</p>
<b>Acti</b>	<b>Asp</b>	<b>Mo</b>	<b>Loc</b>	<b>Fre</b>	<b>Res</b>				

Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility

Operation Phase-

Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility

**19 Additional Studies**

<p><b>19.1</b></p>	<p>Project proponent shall submit a study report on the Decarbonisation program, which would essentially consist of the company's carbon emissions, carbon budgeting/ balancing, carbon sequestration activities and carbon capture, use and storage after offsetting strategies. Further, the report shall also contain a time bound action plan to reduce its carbon intensity of its operations and supply chains, energy transition pathway from fossil fuels to Renewable energy etc. All these activities/ assessments should be measurable and monitorable with defined time frames.</p>	<p>The PP has adopted conventional technology to produce sponge iron, billets, TMT Bars &amp; electricity. In order to reduce Carbon emissions, WHRB has been considered. Direct charging of sponge iron in the Induction furnace has been considered. In order to minimize carbon emission solar panels of 500 KW has been considered. The PP is in the process of selecting expert consultants for its decarbonisation programme. The report will be submitted within 6 months after getting EC.</p>	<p>-</p>
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19.2	Details of adoption/ implementation status/plan to achieve the goal of Glasgow COP26 Climate Submit with regard to enhance the non-fossil energy, use of renewable energy, minimization of net carbon emission and carbon intensity with long-term target of “net Zero” emission.	Energy conservation plan is given in the EIA.	Ch-10 section 10.9 of EIA Report												
19.3	Implementation status/measures adopted for avoiding the generation of single used plastic waste.	Single use plastic waste, recycling as per plastic waste rules disposal is given in EIA.	-												
19.4	In cases the project is located in Critically and Severely Polluted Areas, additional mitigation measures adopted and detailed action plan to be submitted in the EIA/EMP Report as per MoEF&CC O.M. No. 2223/2028-IA.III dated 31/10/2019 and MoEF&CC O.M. No. 22-23/2028-IA.III dated 5/07/2022 has to be submitted.	Not Applicable	-												
19.5	Public consultation details (Entire proceedings as separate annexure along with authenticated English Translation of Public Consultation proceedings).	Noted and We will take note of this point during Public consultation and will incorporate the same in Final EIA	-												
19.6	As part of Corporate Environment Responsibility (CER) activity, company shall adopt nearby villages based on the socio-economic survey and undertake community developmental activities in consultation with the village Panchayat and the District Administration. In this regard, a time bound action plan as per the MoEF&CC Office Memorandum dated 30/09/2020 shall be submitted.	As part of Corporate Environment Responsibility (CER) activity, the Company Proposes expenditure of INR 80.00 Lakhs. Details of activities under CER are provided in Chapter 10 of the EIA report.	Section 10.11 Chapter 10 of the EIA Report.												
19.7	Summary of issues raised during public consultation along with action plan to address the same as per MoEF&CC O.M. dated 30/09/2020	Noted and will be complied.													
	<table border="1"> <thead> <tr> <th>Sl.</th> <th>Phy</th> <th>Yea</th> <th></th> <th></th> <th>Tot</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Sl.	Phy	Yea			Tot								
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<b>19.8</b>	Risk assessment <ul style="list-style-type: none"> <li>• Methodology</li> <li>• Hazard identification</li> <li>• Frequency analysis</li> <li>• Consequence analysis</li> <li>• Risk assessment outcome</li> </ul>						Details regarding Risk Assessment are provided in the Chapter 7 of EIA report	Section 7.3 of Chapter 7 of EIA report.																				
<b>19.9</b>	Emergency response and preparedness plan						Details regarding Emergency response and preparedness plan are provided in the Chapter 7 of EIA report	Section 7.4.4 of Chapter 7 of EIA report.																				
<b>20</b>	<b>Project Benefits</b>																											
<b>20.1</b>	Environment benefits						The proposed expansion will only add up an Induction furnace and TMT rolling Mill to the already operational Sponge Iron & MS Billets & Rolled Steel Production Plant, thereby necessitating only very limited Emission control and very lesser fresh water requirement. There will be no increase in process stack, and there will be addition of only 01 Nos. of utility stack	Section 8.1 of Chapter 8 of EIA report.																				

		for DG set of 1500 kVA and there will be a common stack for existing Induction furnace (1 No.30 T) and proposed Induction Furnace (1 No. 30 T).	
20.2	Social infrastructure	INR 30 lakhs will be spent on improving the primary health care facilities especially for building up the infrastructure for child care, workers and sanitation facilities.	Section 8.3 of Chapter 8 of EIA report
20.3	Employment and business opportunity	Due to the proposed expansion additional employment @ 50 Nos. of permanent and 100 Nos. of contractual employment will be made	Section 8.3 of Chapter 8 of EIA report.
20.4	Other tangible benefits	The project will contribute to the Government treasury by way of direct and indirect taxes, like GST, Custom Duty and Income Tax	Section 8.4 of Chapter 8 of EIA report.
<b>21</b>	<b>Environment Cost Benefit Analysis</b>		
21.1	Net present value	Given in the EIA report	Chapter 9 of EIA report
21.2	Internal rate of return	Given in the EIA report	
21.3	Benefit cost ratio	Given in the EIA report	
21.4	Cost effectiveness analysis	Cost effectiveness analysis is given in the EIA report.	
<b>22</b>	<b>Environment Management Plan (Construction and Operation phase)</b>		
22.1	Action plan for hazardous waste management	Air quality management plan Provided in EIA Report.	Section 10.8 Chapter 10 of EIA report.
22.2	Action plan for solid waste management	Action plan for solid waste management Provided in EIA Report.	

22.3	Action plan for e-waste management.	<table border="1"> <thead> <tr> <th>Name of Waste</th> <th>Source</th> <th>Quantity (TPA)</th> <th>Mode of Disposal</th> <th>Mode of Transport</th> </tr> </thead> <tbody> <tr> <td>E-Wastes</td> <td>Computer and other Electrical parts</td> <td>2.52</td> <td>Given to Authorized Recycler</td> <td>By Road</td> </tr> </tbody> </table>	Name of Waste	Source	Quantity (TPA)	Mode of Disposal	Mode of Transport	E-Wastes	Computer and other Electrical parts	2.52	Given to Authorized Recycler	By Road	
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22.4	Action plan for plastic waste management, considering the Plastic Waste Management Rules 2016.	<table border="1"> <thead> <tr> <th>Name of Waste</th> <th>Source</th> <th>Quantity (TPA)</th> <th>Mode of Disposal</th> <th>Mode of Transport</th> </tr> </thead> <tbody> <tr> <td>Plastic Waste</td> <td>Packing Material and Empty can, drums</td> <td>54.7</td> <td>Given to Authorized Recyclers/Vendors</td> <td>By Road</td> </tr> </tbody> </table>	Name of Waste	Source	Quantity (TPA)	Mode of Disposal	Mode of Transport	Plastic Waste	Packing Material and Empty can, drums	54.7	Given to Authorized Recyclers/Vendors	By Road	
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Plastic Waste	Packing Material and Empty can, drums	54.7	Given to Authorized Recyclers/Vendors	By Road									
22.5	Action plan for construction and demolition waste management.	Action plan for construction and demolition waste management. Provided in EIA Report.											
22.6	Rain water harvesting plan	Details of RWH are given in Chapter 2 of the EIA report.	Section 2.17 of Chapter 2 of EIA report.										
22.7	Plan for maximum usage of waste water/treated water in the Unit	The total wastewater generation after expansion will be 58.6 KLD. Out of which 32.6 KLD will be sent to STP of 65 KLD capacity and Rest 26 KLD effluent generated will be sent to ETP of 40 KLD capacity followed by RO. The treated sewage @30 KLD will be reused within the plant premises for gardening and/or greenbelt development. Treated effluent @24 KLD will be reused within the process.	Section 2.13 of Chapter 2 of EIA report.										



22.8	Green belt development plan: An action plan for Green Belt development consisting of 3 tiers of plantations of native species all along the periphery of the project of adequate width shall be raised in 33% of total area with a tree density shall not less than 2500 per ha within a time frame of one year shall be submitted. Survival rate of the green belt shall be monitored on a periodic basis to ensure that survival rate not be less than 80 %.	<b>Existing Greenbelt Area:</b> 7.21 ha (33%) <b>After Expansion Greenbelt Area:</b> 13.01 ha (34.91%) Existing No. of trees: 2,755 Nos. Proposed No. of trees: 29770 Nos. Total No. of trees After Expansion: 32525 Nos. Details of tree species to be planted are given in Chapter 2 of EIA Report.	Section 2.16 of Chapter 2 of EIA report.
22.9	Wildlife conservation plan (In case of presence of schedule I species)	13 Schedule I species are reported in buffer zone within a 10 km radius. Details are provided in Chapter 3 of EIA report.	Section 3.11.6 of Chapter 3 of EIA report
22.10	Total capital cost and recurring cost/annum for environment pollution control measures shall be included.	Capital Cost for EMP is INR 312.0 Lakhs and recurring cost per annum is INR 52.50 Lakhs. Details of the EMP budget is provided in Chapter 10 of EIA Report.	Section 10.9 of Chapter 10 of EIA report.
22.11	Explore possibilities for recycling and reusing of treated water in the unit to reduce the freshwater demand and waste disposal.	The existing plant recycles and reuses treated water from STP. After expansion The same system will be continued for the proposed expansion.	Section 2.13 of Chapter 2 of EIA report
22.12	An Action Plan for improving the house-keeping activities in the raw material handling area need to be submitted	Will be compiled.	
22.13	Action plan for the stock piles with impervious floor, provision of garland drains and catch pits to trap run off material shall be submitted.	Agreed and will be complied	
22.14	Action plan to limit the dust emission from all the stacks below 30 mg/Nm <sup>3</sup> shall be furnished.	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm <sup>3</sup> is given in EIA.	Chapter 2 and Chapter 4 of EIA report.

22.15	Action plan for fugitive emission control in the plant premises shall be provided.	Not Applicable	
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**Standard Terms of Reference for conducting Environment Impact Assessment Study for Metallurgical Industries (ferrous and non ferrous) and information to be included in EIA/EMP report**

Sr. No.	ToR Point	TOR Compliance	Citation in EIA Report
1.1	A 3-D view i.e. DEM (Digital Elevation Model) for the area in 10 km radius from the proposal site. MRL details of project site and RL of nearby sources of water shall be indicated.	A DEM map of the area within 10 km radius of the project site is attached in Section 2.3.4 of the EIA report.	Section 2.3.4 of Chapter 2 of EIA report.
1.2	Plan for the implementation of the recommendations made for the proposed Unit in the Corporate Responsibility for Environmental Protection (CREP) guidelines.	Implementation of the recommendations made for the Unit in the Corporate Responsibility for Environmental Protection (CREP) guidelines Provided in EIA.	Section 2.18 of Chapter 2 of EIA report.
1.3	Plan for solid wastes utilization	The organic solid wastes shall be disposed via OWC unit. Inorganic solid wastes shall be sold to authorised recyclers. Similarly, non hazardous wastes like slag shall be reused in the process. Ash generated shall be sent to vendors for manufacturing bricks. Sludge from STP shall be used as manure for greenbelt development.	Section 2.15 of Chapter 2 of EIA report
1.4	Plan for utilization of energy in off gases (coke oven, blast furnace)	Not Applicable	-
1.5	System of coke quenching adopted with full justification.	A WHR system has been installed to produce power from the waste heat recovered from coke quenching.	Section 2.10 of Chapter 2 of EIA report.
1.6	Details on environmentally sound technologies for recycling of hazardous materials, as per CPCB Guidelines, may be mentioned in case of handling scrap	The spent/used oil from plant and machinery and discarded barrels shall be sent to authorised vendors as per	Section 2.15 of Chapter 2 of EIA report.

	and other recycled materials.	CPCB guidelines.	
1.7	Details on toxic metal content in the waste material and its composition and end use (particularly of slag).	Induction Furnace Slag is not hazardous. The slag from the Induction furnace will be crushed and taken to the magnetic separator. Fe particles will be separated from the inert material. The crushed inert material will be sold for use in civil constructions.	-
1.8	Details on toxic content using Toxicity Characteristic Leaching Procedure (TCLP), composition and end use of slag.	Induction Furnace Slag is not hazardous.	-
1.9	100 % dolo char generated in the plant shall be used to generate power.	Compiled. The dolochar generated as a by-product in the sponge iron plant is completely utilized for power generation.	-
1.10	Fourth Hole fume extraction system shall be provided for SAF.WHR system shall be installed to recover sensible heat from flue gases of EAF. Provision for installation of jigging and briquetting plants to utilize the fines generated in the process.	Not Applicable	
1.11	No tailing pond is permitted for Iron ore slimes. Dewatering and filtration systems shall be provided.	Not Applicable	-
1.12	Action plan for developing connecting and internal road in terms of MSA as per IRC guidelines shall be submitted.	Will Comply	-
1.13	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm <sup>3</sup> shall be furnished.	Will Comply. Bag filters have been installed in stacks to mitigate air emission.	-
1.14	Action plan for 100 % solid waste utilization shall be submitted.	Action plan for 100 % solid waste utilization incorporated in EIA.	Section 2.15 of Chapter 2 of EIA Report

1.15	PM (PM10 and P2.5) present in the ambient air must be analyzed for source analysis – natural dust/RSPM generated from plant operations (trace elements) of PM10 to be carried over.	PM (PM 10 & PM 2.5) present in ambient air is analyzed and given in EIA.	Section 3.5.5 of Chapter 3 of EIA Report
1.16	Iron ore/coal linkage documents along with the status of environment clearance of iron ore and coal mines, if applicable.	It will be purchased from the open market.	-
1.17	Quantum of production of coal and iron ore from coal & iron ore mines and the projects they cater to. Mode of transportation to the plant and its impact, if applicable	Not Applicable, Iron ore & coal will be purchased from the open market and transported by trucks.	-
1.18	Details on environmentally sound technologies for recycling of hazardous materials, as per CPCB Guidelines, may be mentioned in case of handling scrap and other recycled materials, if applicable.	No hazardous solid waste is generated from the plant.	-

### Standard Terms of Reference

Sr. No	ToR Point	TOR Compliance	Citation in EIA Report
1.1	EIA/EMP report cover page shall consist of project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details with QCI/NABET/NABL accreditation certificate detail.	The EIA report cover page consists of all the required details such as: project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details: PERFECT RESEARCHERS PVT. LTD, vide Certificate No. TC-6993, valid upto 03.04.2025	Cover Page of EIA Report.
1.2	Besides, following points shall be compiled as per QCI/NABET norms: a. Disclaimer by the EIA consultant. b. Declaration by the Functional Area Experts contributed to the EIA study and declaration by the head of the accredited consultant organization/authorized person. c. Undertaking by the project proponent owning the contents (information and data) of the EIA/EMP report. d. Undertaking by the EIA consultant regarding compliance of ToR issued by MoEF&CC. e. Consultant shall submit the Plagiarism Certificate for the EIA/EMP Report.	Noted and complied.	-
2	<b>Executive Summary</b>		
2.1	Table of Contents of the EIA report including list of tables/figures/annexures/abbreviations/symbols/notations.	Table of Contents of the EIA report including list of tables/figures are included in the EIA report.	-
2.2	Point wise compliance to the ToR issued by MoEF&CC.	Noted & Complied.	-
3	<b>Executive Summary</b>		
3.1.1	Name of the project along with applicable schedule and category as per EIA, 2006.	The proposed project is "Expansion in M.S. Billets & Rolled Products from 108000	Section 11.1 of Chapter 11 of the EIA report.

		TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW)". Schedule 3(a) of category 'A' of EIA Notification 2006 & its subsequent amendments.	
3.1.2	Location and accessibility	<p><b>Location:</b> Survey Nos.: <b>Existing:</b>12,14, 17, 22, 23, 25, 51, 52, 53, 57 &amp; <b>Expansion:</b>5/2, 6/1, 6/2A, 6/2B, 6/2C, 6/2D, 6/3A, 6/3B, 6/4A, 6/4B, 6/4C, 6/4D, 6/4E, 6/5A, 6/5B, 6/6A, 6/6B, 7, 8/1, 8/2, 8/3, 8/4, 9/1, 15, 18/1A, 18/1B, 19/3A, etc. <b>Address:</b> Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu. <b>Road-</b> Perunagar-Kaliyampundi Road, located 0.03 km NE of the project site. <b>Rail-</b> Walajabad Railway Station, located at 20.94 km North East <b>Air-</b> Arakkonam Airport at 46.00 km North.</p>	Section 11.1 of Chapter 11 of the EIA report.
4	<b>Executive Summary</b>		
4.1	<b>Project description</b>		
4.1.1	Resource requirements (Land; water; fuel; manpower)	<p><b>Land-</b> The existing plot area of 21.95 ha, will be increased to 37.27 ha after expansion. <b>Water-</b> The total water requirement will be 597 KLD after expansion, of which 543 KLD will be fresh water and 30 KLD will be treated sewage and 24 KLD treated effluent. <b>Fuel-</b> HSD @40.0 TPD will be used in DG sets and vehicles.</p>	Section 11.1 of Chapter 11 of the EIA report

		<p>Furnace oil @435.8 TPD in sponge iron plant and LPG @ 20.0 TPD will be used for scrap cutting.</p> <p><b>Manpower-</b> Permanent employment will increase from 200 Nos. to 250 Nos. and temporary/contractual employment will increase from 250 Nos. to 350 Nos.</p>	
4.1.2	Operational activity	The industry will be producing Sponge Iron @ 250 TPD, MS Billets and Rolled products @ 1600 TPD and Captive power @ 12 MW.	Section 11.1 of Chapter 11 of the EIA report
4.1.3	Key pollution concerns	<p><b>Air-</b> DG sets, boilers, and induction furnaces are expected to emit pollutants like NOx, PM, SOx, and CO. To minimize air pollution, these sources are equipped with APCMs such as ESPs, bag filters, and adequate stack height.</p> <p><b>Water-</b> Domestic wastewater will be treated in STP and reused for gardening as well as greenbelt development. Process water will be treated in ETP and recycled within the system.</p> <p><b>Soil-</b> Unscientific management of solid and hazardous wastes can deteriorate soil quality.</p> <p><b>Noise-</b> Noise from equipment/machinery shall be mitigated using barriers. Greenbelt of adequate width shall also be provided to reduce noise emission.</p>	Section 11.1 Chapter 11 of the EIA report.
5	<b>Executive Summary</b>		
5.1	<b>Baseline Environment Studies</b>		
5.1.1	Ambient air quality	The ambient air quality monitoring was done between	Section 11.3 Chapter 11 of the EIA report.

		March 2023 and May 2023 at 11 locations. The results are provided in Section 11.3.	
<b>5.1.2</b>	Ambient noise quality	The ambient noise quality monitoring was done between March 2023 and May 2023 at 10 locations. The results are provided in Section 11.3	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.3</b>	Traffic study	Traffic study was carried during the baseline period and results of the same are given in Section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.4</b>	Surface water quality	Monitoring of surface water quality was carried out during the baseline period at 9 locations. Results of analysis are given in Section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.5</b>	Ground water quality	Monitoring of groundwater quality was carried out during the baseline period at 8 locations. Results of analysis are given in Section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.6</b>	Soil quality	The results of soil quality analysis of 9 locations is given in section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.7</b>	Biological Environment	Assessment of flora and fauna at were done and the list of species are provided in section 11.3	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.8</b>	Land use	Land use study was done and respective maps are incorporated into section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>5.1.9</b>	Socio-economic environment	The findings from Socio-Economic study is given in section 11.3.	Section 11.3 Chapter 11 of the EIA report.
<b>6</b>	<b>Executive Summary</b>		
<b>6.1</b>	<b>Anticipated impacts</b>		
<b>6.1.1</b>	Impact on ambient air quality	PMs, NO <sub>x</sub> , SO <sub>x</sub> , and CO <sub>2</sub> will	Section 11.4 of Chapter 11



		be emitted from DG sets, Boilers and Furnace. These pollutants can deteriorate ambient air quality if not properly controlled. APCMs will be installed to mitigate negative impact on ambient air quality.	of the EIA report.
<b>6.1.2</b>	Impact on ambient noise quality	Noise will be emitted from Boilers, DG sets and other machinery. Noise barriers and greenbelt shall be provided to mitigate such impacts. Acoustic Enclosure will be provided with the DG Set to reduce the noise.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.3</b>	Impact on road and traffic	Dust generated will be reduced by sprinkling water.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.4</b>	Impact on surface water resource and quality	The water used for domestic and process shall be recycled and reused within the plant. No wastewater shall be discharged into the environment untreated.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.5</b>	Impact on ground water resource and quality	Groundwater recharge will be done using the Rainwater Harvesting System.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.6</b>	Impact on terrestrial and aquatic habitat	Thick greenbelt of native trees shall be provided inside the project area.	Section 11.4 of Chapter 11 of the EIA report.
<b>6.1.7</b>	Impact on socio-economic environment	No rehabilitation and resettlement are required. Employment opportunities will be generated for the local population during the construction/installation phase which will lead to a rise in income and improve standard of living. The expansion of existing industry would also generate jobs for the labourers during the construction phase as well as during the operation phase. It	Section 11.4 of Chapter 11 of the EIA report.

		will provide direct and indirect employment to local youth	
<b>7</b>	<b>Executive Summary</b>		
<b>7.1</b>	<b>Alternative analysis</b>	<p>The project is a Brownfield site with a proposed expansion of Sponge Iron and MS Billets &amp; Rolled products manufacturing unit. The assessment for the site is presented below:</p> <ul style="list-style-type: none"> <li>• Land: Proposed expansion requires installation of 1 No. of 30 T induction furnace, 1000 TPD TMT Mill along with 65 KLD STP and 40 KLD ETP along with additional utilities and facilities. Locating the new TMT Bar Mill and Other Structural steel mill along with the existing Sponge Iron and Structural steel plant.</li> <li>• Facilities &amp; Utilities: Already the existing plant has got all the facilities and utilities available for the proposed expansion. There will be 2 Nos. of Pump House, 2 Nos. of Cooling Tower, 1 No. of CCM Machine Stand and 5 Nos. of EOT Cranes to cater the proposed expansion..</li> <li>• The site is well connected with roads and railway networks.</li> <li>• No Rehabilitation and resettlement is required.</li> </ul>	-
<b>8</b>	<b>Executive Summary</b>		
<b>8.1</b>	<b>Environmental Monitoring Program</b>		
<b>8.1.1</b>	Ambient air, noise, water and soil quality	Monthly monitoring for ambient air, noise, water and soil quality shall be carried out during the	Section 11.5 of Chapter 11 in EIA report.

		operation phase of the project.	
<b>8.1.2</b>	Noise quality management plan	-	Section 11.5 of Chapter 11 in EIA report.
<b>8.1.3</b>	Emission and discharge from the plant	-	Section 11.5 of Chapter 11 in EIA report.
<b>8.1.4</b>	Green Belt	-	Section 11.5 of Chapter 11 in EIA report.
<b>8.1.5</b>	Social Parameters	-	Section 11.5 of Chapter 11 in EIA report.
<b>9</b>	<b>Executive Summary</b>		
<b>9.1</b>	<b>Additional Studies</b>		
<b>9.1.1</b>	Risk assessment	Hazard Identification and Risk Assessment (HIRA) was used to assess various hazards.	Section 11.6 of Chapter 11 of EIA report
<b>9.1.2</b>	Public consultation	We will submit the report for public consultation	-
<b>9.1.3</b>	Action plan to address the issues raised during public consultation as per MoEF&CC O.M. dated 30/09/2020	Noted and will be complied after PH.	-
<b>10</b>	<b>Executive Summary</b>		
<b>10.1</b>	<b>Environment management plan</b>		
<b>10.1.1</b>	Air quality management plan	INR 90.0 Lakhs will be spent for air quality monitoring.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.2</b>	Solid and hazardous waste management plan	-	
<b>10.1.3</b>	Effluent management plan	An ETP of 40 KLD is provided for the effluent treatment.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.4</b>	Stormwater management plan	INR 45.0 Lakhs will be spent for rainwater and stormwater management.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.5</b>	Occupational health and safety management plan	INR 20.0 Lakhs will be spent towards Occupational health and safety management plan	Section 11.8 Chapter 11 of EIA report.

<b>10.1.6</b>	Green belt development plan	Greenbelt @34.91% of the total plot area shall be envisaged	Section 11.8 Chapter 11 of EIA report.
<b>10.1.7</b>	Socio-economic management plan	Socio-economic management plan is provided.	Section 11.8 Chapter 11 of EIA report.
<b>10.1.8</b>	Project cost and EMP implementation budget	Existing Cost of the Project: INR 273.17 Cr. Proposed project Cost: INR 80.00 Cr Total project cost after expansion: INR 353.17 Cr Existing EMP Capital cost: INR 107.0 Lakhs After expansion EMP Capital Cost: INR 312.0 Lakhs Existing EMP Recurring cost/Annum: INR 28.5 Lakhs After expansion EMP Recurring Cost/Annum: INR 52.5 Lakhs	Section 11.8 Chapter 11 of EIA report.
<b>11</b>	<b>Introduction</b>		
<b>11.1</b>	Background about the project		
<b>11.2</b>	Need of the project	India presently consumes about 100 MTPA Steel of which 93 MTPA carbon steel & 7 MTPA alloy & stainless steel. Predicted growth in consumption of carbon steel has shown steady rise over 7% per annum till 2027, with predicted consumptions @ 124 MTPA by 2025-26, 165 MTPA by 2030-31 and 211 MTPA by 2035-36.	Section 2.2 of Chapter 2 of EIA report.
<b>11.3</b>	Purpose of the EIA study	The purpose of the Environmental Impact Assessment Report (EIA) to assess the project's impact on the environment and identify ways to minimize any negative effects. The Standard Terms of Reference (TOR) for conducting the EIA was issued by the Ministry of	Section 1.1 of Chapter 1 of EIA report.

		Environment, Forest, and Climate Change (MoEFCC) vide letter IA-J-11011/324/2023-IA-II(IND-I), dated 23/02/2024. This EIA report is prepared as per the "Generic Structure of EIA" described in Appendix III and IIIA of the EIA Notification 2006	
<b>11.4</b>	Scope of the EIA study	<ul style="list-style-type: none"> <li>• To Determine the status of current environmental parameters</li> <li>• To Predict, Assess, categorize, quantify and mitigate probable significant environmental impacts (considering alternate assignments, baseline scenario and public opinion).</li> <li>• To prepare a detailed Environmental Management Plan (EMP) with best available management tools and techniques including monitoring, reporting along with Operation and Maintenance Budget for better implementation.</li> <li>• Undertake Risk assessment for the proposed project and lay down risk mitigation measures for safe Operations.</li> </ul>	Section 15 & 1.6 of Chapter 1 of EIA report
<b>12</b>	<b>Project description</b>		
<b>12.1</b>	<b>Site Details</b>		
<b>12.1.1</b>	Location of the project site covering village, Taluka/Tehsil, District and State.	The site is located at Plot No: 14/2A2, Melpakkam Village, Uthiramerur-Taluk, Uthiramerur, Kancheepuram (District), Tamil Nadu.	Section 2.3 of Chapter 2 of EIA report
<b>12.1.2</b>	Site accessibility	Accessibility map is given in Chapter 3 of the EIA report.	Section 2.3.4 of Chapter 2 of EIA report

<b>12.1.3</b>	A digital toposheet in pdf or shape file compatible to google earth of the study area of radius of 10km and site location preferably on 1:50,000 scale. (including all eco-sensitive areas and environmentally sensitive places).	A digital toposheet in pdf or shape file compatible with google earth of the study area of radius of 10km and site location preferably on 1:50,000 scale given in EIA.	Section 2.3.2 of Chapter 2 of EIA report.
<b>12.1.4</b>	Latest High-resolution satellite image data having 1 m - 5 m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc., along with delineation of plant boundary co-ordinates. Area must include at least 100 m all around the project location.	High-resolution satellite image data of 500 m and 1 Km around the project location is provided in EIA.	Section 3.2.1 of Chapter 3 of EIA report
<b>12.1.5</b>	Environment settings of the site and its surrounding along with map.	Environment settings of the site and its surrounding along with a map given in EIA.	Section 2.3.3 & 2.3.5 of Chapter 2 of EIA report.
<b>12.1.6</b>	A list of major industries with name, products and distance from plant site within study area (10km radius) and the location of the industries shall be depicted in the study area map.	Rockman Industries Limited (9.58 NW); Grasim Industries Limited, Birla Paint Division (7.96 NW)	Section 2.3.6 of Chapter 2 of EIA report
<b>12.1.7</b>	In case if the project site is in vicinity of the water body, 50 meters from the edge of the water body towards the site shall be treated as no development/construction zone. If it's near the wetland, Guidelines for implementing Wetlands (Conservation and Management) Rules, 2017 may be followed.	Not Applicable	-
<b>12.1.8</b>	In case if the project site is in vicinity of the river, the industry shall not be located within the river floodplain corresponding to one in 25 years flood, as certified by concerned District Magistrate/Executive Engineer from State Water Resources Department (or) any other officer authorized by the State Government for this purpose as per the provisions contained in the MoEF&CC Office Memorandum dated 14/02/2022.	Not Applicable	-

<b>12.1.9</b>	In case of canal/ nala/ seasonal drain and any other water body passing through the project site, the PP shall submit the suitable steps /conservation plan/mitigation measures along with contouring, Run -off calculations, disposal etc. A robust and full proof Drainage Conservation scheme to protect the natural drainage/water bodies and its flow parameters; along with Soil conservation scheme and multiple Erosion control measures shall be provided in the report.	Not Applicable	-
<b>12.1.10</b>	Type of land, land use of the project site needs to be submitted.	Type of land: Non Agricultural Land use of the project site is given in EIA.	Section 3.9 of Chapter 3 of EIA report
<b>12.1.11</b>	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process as per the MoEF&CC O.M. dated 7/10/2014 shall be furnished.	The existing plant is operational under 21.95 ha area, and for the proposed expansion there is addition of land area of 15.32 ha. The land is available adjacent to the factory and it is already being leased from OFB Tech Prv. Ltd. to M/s Noble Tech Industries Pvt. Ltd. vide sale deed No. 3342/2023 dated 02.08.2023.	Land Document is attached as Annexure 1.
<b>12.1.12</b>	Project proponents shall prepare an Engineering layout plan showing all internal roads minimum 6 m width and 9 m turning radius for smooth traffic flow inside including fire tender as per NBC. Road network shall connect all service areas in layout. This drawing shall include an area statement showing plot area, area under roads, parking, green belt with calculations and % with respect to plot area of project site and proper indexing. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within	Existing and after expansion layout plan is given in Chapter 2 of EIA report.	Section 2.3.1 of Chapter 2 of EIA report. Layout drawing is attached as Annexure 5.

	the Industrial area/Estate.		
<b>12.1.13</b>	Project proponents shall submit a contour map of project site along with drainage disposal system with calculations and drawings supported with proper indexing including Rain Water Harvesting details with calculations mentioning about GW recharge along with relevant drawing.	Rain Water Harvesting Details are provided in Chapter 2 of the EIA report.	Section 2.17 of Chapter 2 of EIA report. Contour Map is attached Annexure 6.
<b>12.1.14</b>	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted.	A detailed report covering all aspects of Fire Safety Management and Fire Emergency Plan shall be submitted in EIA.	Section 7.4 of Chapter 7 of EIA report.
<b>12.1.15</b>	Details of the drone survey for the site, needs to be included in the report and presented before the EAC during appraisal of the project.	Noted	-
<b>13</b>	<b>Project description</b>		
<b>13.1</b>	<b>Forest and wildlife related issues (if applicable)</b>		
<b>13.1.1</b>	Status of Forest Clearance for the use of forest land shall be submitted.	Not Applicable	
<b>13.1.2</b>	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife if the project site located within notified Eco-Sensitive Zone, 10 km radius of national park/sanctuary wherein final ESZ notification is not in place as per MoEF&CC Office Memorandum dated 8/8/2019.	Not Applicable	
<b>13.1.3</b>	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, Eco-sensitive Zone and Eco-sensitive areas, the project proponent shall submit the map duly authenticated by Divisional Forest Officer showing the distance between the project site and the	Not Applicable	



	said areas.																							
<b>13.1.4</b>	Wildlife Conservation Plan duly authenticated by the Competent Authority of the State Government for conservation of Schedule I fauna along with budget and action plan, if any exists in the study area.	Wildlife Conservation Plan has been submitted to the concerned department.	The Wildlife Conservation Plan is attached as Annexure 17.																					
<b>14</b>	<b>Project description</b>																							
<b>14.1</b>	<b>Salient features of the project</b>																							
<b>14.1.1</b>	Products with capacities in Tons per Annum for the proposed project.	Sponge Iron: 90000 TPA MS Billets & Rolled Products: 576000 TPA Captive power: 12 MW	Section 2.4.2 of Chapter 2 of EIA report																					
<b>14.1.2</b>	If expansion project, status of implementation of existing project, details of existing/proposed products with production capacities in Tons per Annum.	The existing plant is producing sponge iron @ 90000 TPA and MS Billets and Rolled products @ 1,08,000 TPA. The plant also produces Captive power @ 12 MW.	Section 2.4.2 of Chapter 2 of EIA report																					
<b>14.1.3</b>	Site preparatory activities.	As the site is existing there will be only activities of erection and fabrications.																						
<b>14.1.4</b>	List of raw materials required and their source along with mode of transportation.	<table border="1"> <thead> <tr> <th>Raw Material</th> <th>Source</th> <th>Mode of transportation</th> </tr> </thead> <tbody> <tr> <td>Iron Ore</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> <tr> <td>Sponge Iron</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> <tr> <td>Coal</td> <td>Local</td> <td>Road/Truck</td> </tr> <tr> <td>MS Scrap</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> <tr> <td>Dolomite</td> <td>Indigenous</td> <td>Within Site</td> </tr> <tr> <td>Steam</td> <td>Indigenous/Import</td> <td>Road/Truck</td> </tr> </tbody> </table>	Raw Material	Source	Mode of transportation	Iron Ore	Indigenous/Import	Road/Truck	Sponge Iron	Indigenous/Import	Road/Truck	Coal	Local	Road/Truck	MS Scrap	Indigenous/Import	Road/Truck	Dolomite	Indigenous	Within Site	Steam	Indigenous/Import	Road/Truck	Section 2.8 of Chapter 2 of EIA report.
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14.1.5	Other than raw materials, other chemicals and materials are required with quantities and storage capacities.	Not Applicable	
14.1.6	Manufacturing process details along with the process flow diagram of proposed units.	Manufacturing process and process flow has been provided in the EIA report.	Section 2.10 of Chapter 2 of EIA report
14.1.7	Consolidated materials and energy balance for the project.	-	Material Balance Sheet is attached as Annexure 14.
14.1.8	Total requirement of surface/ ground water and power with their respective sources, status of approval.	<p><b>Water-</b> The total water requirement is 597 KLD, of which 543 KLD is freshwater and will be sourced via groundwater supply. Status of Approval: Groundwater renewal NOC from TNWRD vide certificate No. 305/2024 (R-3) dated 08.05.2024 for the drawal of the total quantity of 700 KLD of groundwater. The renewal certificate is valid from 16.03.2024 to 15.03.2025.</p> <p><b>Power-</b> The total power requirement after the proposed expansion will be 47.5 MW, an increase of 17.5 MW from existing 30 MW, will be sourced from captive Power plant production 12 MW and from TANGEDCO from existing 11 KV &amp; installing a transformer of 110 kV replacing 33 KV transformer.</p>	<p><b>Water Requirement Details:</b> Section 2.12 of Chapter 2 of EIA report. Groundwater renewal NOC is attached as Annexure 7.</p> <p><b>Power Requirement Details:</b> Section 2.5 of Chapter 2 of EIA report</p>
14.1.9	Water balance diagram	Water balance diagram for existing as well as after expansion is incorporated in the Chapter 2 of EIA report.	Section 2.12 of Chapter 2 of EIA report.
14.1.10	Details of Emission, effluents, hazardous waste generation and mode of disposal during construction as well as operation phase.	<b>Air emissions:</b> Air pollutant emissions from process gas stacks and flue gas stack. After Expansion, there will be no addition of process gas stacks	<b>Air Emissions:</b> Section 2.11 of Chapter 2 of EIA report.

		<p>within the premises. There will be addition of 1 No. of flue gas stack for the proposed DG set of 1500 kVA. There will be Common stack for existing Induction Furnace and proposed Induction Furnace. Details are provided in Chapter 2 of EIA Report.</p> <p><b>Effluent Generation &amp; management:</b> After expansion the effluent generated will be 26 KLD which will be sent to ETP of 40 KLD capacity. Treated effluent @24 KLD will be reused within the process. Details are provided in Chapter 2 of EIA Report.</p> <p><b>Hazardous waste generation &amp; disposal:</b> Used/Spent oil @2.0 T/Y, Discarded barrels @130 T/Y, ETP Sludge @ 0.95 T/Y, Waste/residues containing oil @1.50 T/Y will be generated and managed via authorised HW recyclers, HW utilisers and CHWTSDF by TNWML. The authorisation for the same has been granted by the TNPCB via No. 2IHFC12957693 and dated 24.10.2021 and is valid upto 31.03.2026.</p>	<p><b>Effluent Generation &amp; management:</b> Section 2.13 of Chapter 2 of EIA report</p> <p><b>Hazardous waste generation &amp; disposal:</b> Section 2.15.3 of Chapter 2 of EIA report. HW Authorization is attached as Annexure 8.</p>																	
14.1.11	Man-power requirement.	<p><b>During Construction Phase</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>Manpower</th> </tr> </thead> <tbody> <tr> <td>Permanent</td> <td>20</td> </tr> <tr> <td>Temporary</td> <td>100</td> </tr> </tbody> </table> <p><b>During Operation Phase</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Particulars</th> <th colspan="2">Manpower</th> </tr> <tr> <th>Existing</th> <th>After Expansion</th> </tr> </thead> <tbody> <tr> <td>Permanent</td> <td>200</td> <td>250</td> </tr> <tr> <td>Temporary</td> <td>250</td> <td>350</td> </tr> </tbody> </table>	Particulars	Manpower	Permanent	20	Temporary	100	Particulars	Manpower		Existing	After Expansion	Permanent	200	250	Temporary	250	350	Section 2.9 of Chapter 2 of EIA report
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Particulars	Manpower																			
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Permanent	200	250																		
Temporary	250	350																		
14.1.12	Cost of project and scheduled time of	Existing Cost: INR 273.17 Cr.	Section 2.4.3 of Chapter 2																	

	completion.	<p>Proposed Expansion Cost: INR 80.00 Cr. Total Cost After Expansion: INR 353.17 Cr.</p> <p>The project is likely to start construction activity by 01/10/2024 and likely date of completion of Construction activity by 30/09/2025.</p>	<p>of EIA report.</p> <p>Section 2.4.4 of Chapter 2 of EIA report.</p>
<b>14.1.13</b>	In case of expansion projects, project proponent shall submit structural stability certificate showing whether existing structure withstand for proposed expansion activity.	Existing structure of building and fabrication work of the plant are structurally sound and the stability will not be endangered by its use as a factory manufacture of MS Billed and Rolled Products, power plant.	Structural stability certificate is attached at Annexure 11.
<b>14.1.14</b>	Brief on present status of compliance (Expansion/modernization proposals) a. Cumulative Environment Impact Assessment for the existing as well as the proposed expansion/modernization shall be carried out.	Cumulative environmental impact assessment of air, water, noise, soil, solid and HW waste, etc. are given in the EIA report.	Section 4.4 of Chapter 4 of EIA report.
	b. Cumulative Impact Assessment need to be carried out by greenfield projects considering the nearby industries.	The plant was established with CTE (Consent to Establish) No. 2944 dated: 03.05.2005 and started operation with CTO (Consent to Operate) No. 21077 Dated: 17.08.2007.	-
	c. In case of groundwater drawl for the existing unit, action plan for phasing out of ground water abstraction in next two years except for domestic purposes and shall switch over to 100 % use of surface water from nearby source.	Groundwater renewal NOC from TNWRD vide certificate No. 305/2024 (R-3) dated 08.05.2024 for the drawal of the total quantity of 700 KLD of groundwater. The renewal certificate is valid from 16.03.2024 to 15.03.2025	NOC from TNWRD for drawal of Groundwater is attached as Annexure 7.

	<p>d. Copy of all the Environment Clearance(s) including Amendments/validity of extension/transfer of EC, there to obtained for the project from MoEF&amp;CC/SEIAA shall be attached as Annexures. A Certified Compliance Report (CCR) of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change/ or concerned authority as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022 on the status of compliance of conditions stipulated in all the existing environment clearances including amendments shall be provided. A Certified Compliance Report (CCR) issued by the concerned Authority shall be valid for a period of one year from the date of inspection.</p>	<p>The proposed project is an expansion project, going 1st time for Environment Clearance.</p>	<p>CTO Compliance report is attached as Annexure 4.</p>
	<p>e. In case the existing project has not obtained Environment Clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. A proper justification needs to be submitted along with documentary proof. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 1994 or 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of CTO from the Regional Office of the SPCB shall be submitted, as per OM No. IA3-22/10/2022-IA.III [E 1772581], dated 8th June, 2022. CCR on CTO conditions issued by the concerned SPCBs/PCCs shall be valid for a period of one year from the date of inspection of the project.</p>	<p>The proposed project is an expansion project, going 1st time for Environment Clearance.</p>	<p>CTE Air and water of 2005 is attached as Annexure 2. CCR to CTO is attached as Annexure 4.</p>
<p><b>15</b></p>	<p><b>Description of the Environment</b></p>		

15.1	<b>Study period</b>												
15.2	Approach and methodology for data collection as furnished below			<p><b>Micro-Meteorological:</b> The important parameters considered are temperature, Humidity, Wind Speed, Wind Direction and Rainfall. The extract of Maximum, Minimum values (month wise) of above said parameters from MERRA-2 meteorological data, Tamil Nadu of the last twelve years (2011-2020). Details are provided in Chapter 3 of the EIA report.</p> <p><b>Ambient Air Quality:</b> PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, HC, O<sub>3</sub> and benzene were monitored twice a week for 3 months (March 2023 to May 2023) 24 hourly at uniform intervals. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Noise:</b> 10 sampling locations were selected for noise quality monitoring. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Water Quality:</b> To assess the water quality of the proposed area, 17 stations (08 groundwater, 09 surface water) were selected. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Traffic Study:</b> Traffic survey was carried out on both sides (up &amp; down) of the Kanchipuram - Uthiramerur Road and Perunagar Kaliyampoondi Road (Approach Road). Details are provided in Chapter 3 of the EIA report.</p> <p><b>Soil Quality:</b> 9 sampling locations were selected for soil quality analysis. Details are provided in Chapter 3 of the EIA report.</p> <p><b>Land Environment:</b> Chapter 3</p>	<p><b>Micro-Meteorological:</b> Section 3.4 Chapter 3 of EIA Report.</p> <p><b>Ambient Air Quality:</b> Section 3.5 Chapter 3 of EIA Report.</p> <p><b>Ambient Noise Quality:</b> Section 3.6 Chapter 3 of EIA Report.</p> <p><b>Water Quality:</b> Section 3.8 Chapter 3 of EIA Report.</p> <p><b>Traffic Survey:</b> Section 3.13 Chapter 3 of EIA Report.</p> <p><b>Soil Quality:</b> Section 3.10 Chapter 3 of EIA Report.</p>								
<table border="1"> <thead> <tr> <th>Attributes</th> <th colspan="2">Sampling</th> <th>Remark</th> </tr> <tr> <td></td> <th>Network</th> <th>Frequency</th> <td></td> </tr> </thead> </table>						Attributes	Sampling		Remark		Network	Frequency	
Attributes	Sampling		Remark										
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<b>Air Environment</b>													
<b>Micro-Meteorological</b>													
<ul style="list-style-type: none"> <li>-Wind Speed (Hourly)</li> <li>-Wind direction</li> <li>-Wet bulb temperature</li> <li>-Dry bulb temperature</li> <li>-Relative humidity</li> <li>-Solar radiation</li> <li>-Rainfall</li> <li>-Cloud cover</li> <li>-Environmental Lapse Rate</li> </ul>	Minimum 1 site in the project impact area	hourly continuous	IS 5182 Part 1-20 <ul style="list-style-type: none"> <li>• Site specific primary data is essential</li> <li>• Secondary data from IMD, New Delhi</li> <li>• CPCB guidelines to be considered.</li> </ul>										
<b>Pollutants</b>													
<ul style="list-style-type: none"> <li>• PM10</li> <li>• SO<sub>2</sub></li> <li>• NO<sub>x</sub></li> <li>• CO</li> <li>• HC</li> <li>• Other parameters relevant to the project and topography of the area</li> </ul>	At least 8-12 locations	As per National Ambient Air Quality Standard, CPCB Notification	<ul style="list-style-type: none"> <li>• Sampling as per CPCB guidelines</li> <li>• Collection of AAQ data (except in monsoon season)</li> <li>• Locations of various stations for different parameters should be related to the characteristic properties of the parameters</li> <li>• The</li> </ul>										

			<p>monitoring stations shall be based on the NAAQM standards as per GSR 826(E) dated 16/11/2009 and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests,</p> <ul style="list-style-type: none"> <li>• Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of 16/11/2009 along with min., max., average &amp; 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as annexure to the EIA report.</li> </ul>	<p>of the EIA report.</p> <p><b>Biological Environment:</b> Chapter 3 of the EIA report.</p> <p><b>Socio-Economic Environment:</b> Chapter 3 of the EIA report.</p>	<p><b>Land Environment:</b> Section 3.9 Chapter 3 of EIA Report.</p> <p><b>Biological Environment:</b> Section 3.11 Chapter 3 of EIA Report.</p> <p><b>Socio-Economic Environment:</b> SSection 3.12 Chapter 3 of EIA Report.</p>
<b>Noise</b>					

Hourly equivalent noise levels	At least 8-12 locations	-	As per CPCB norms
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**Water**

<b>Parameters for water quality</b>		
<ul style="list-style-type: none"> <li>• pH, temp, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity</li> <li>• Total nitrogen, total phosphorus, DO, BOD, COD, Phenol</li> <li>• Heavy metals</li> <li>• Total coliform, faecal coliforms</li> <li>• Phytoplankton</li> <li>• Zooplankton</li> </ul>	<p>Samples for water quality should be collected and analyzed as per: IS: 2488 (Part 1-5) methods for sampling and testing of Industrial effluents</p> <ul style="list-style-type: none"> <li>• Standard methods for examination of water and wastewater analysis published by American Public Health Association</li> </ul>	

**For River Bodies**

<ul style="list-style-type: none"> <li>• Total Carbon</li> <li>• pH</li> <li>• Dissolved Oxygen</li> <li>• Biological Oxygen Demand</li> <li>• Free NH4 • Boron</li> <li>• Sodium Absorption Ratio</li> <li>• Electrical Conductivity</li> </ul>	<p>Surface water quality of the nearest River (60m upstream and downstream) and other surface water bodies</p>	<ul style="list-style-type: none"> <li>• Yield of water sources to be measured during critical season</li> <li>• Standard methodology for collection of surface water (BIS standards)</li> </ul>
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**For Groundwater**

Ground water monitoring data should be collected at minimum of 8 locations (from existing wells /tube wells/existing current records) from the study area and shall be included.

**Traffic Study**

- Type of vehicles
- Frequency of vehicles for transportation of materials
- Additional traffic due to proposed project

Land Environment

**Soil**

- Particle size distribution
- Texture
- pH
- Electrical conductivity
- Cation exchange capacity
- Alkali metals
- Sodium Absorption Ratio (SAR)
- Permeability
- Water holding capacity
- Porosity

Soil samples be collected as per BIS specifications

**Land use/Landscape**

- Location code
- Total project area
- Topography
- Drainage (natural)
- Cultivated, forest, plantations, water bodies, roads and settlements

**Biological Environment****1. Aquatic**

- Primary productivity
- Detailed description of flora and fauna (terrestrial and aquatic)

<p>Aquatic weeds</p> <ul style="list-style-type: none"> <li>• Enumeration of phytoplankton, zooplankton and benthos</li> <li>• Fisheries</li> <li>• Diversity indices</li> <li>• Trophic levels</li> <li>• Rare and endangered species</li> <li>• Marine Parks/ Sanctuaries/ closed areas /coastal regulation zone (CRZ)</li> </ul>	<p>existing in the study area shall be given with special reference to rare, endemic and endangered species. Indicator species which indicate ecological and environmental degradation should be identified and included to clearly state whether the proposed project would result in to any adverse effect on any species.</p> <ul style="list-style-type: none"> <li>• Samples to collect from upstream and downstream of discharge point, nearby tributaries at downstream, and also from dug wells close to activity site.</li> <li>• For forest studies, direction of wind should be considered while selecting forests.</li> <li>• Secondary data to collect from Government offices, NGOs, published literature.</li> </ul>		
<p><b>2. Terrestrial</b></p>			
<ul style="list-style-type: none"> <li>• Vegetation - species list, economic importance, forest produce, medicinal value</li> <li>• Importance value index (IVI) of trees</li> <li>• Fauna</li> <li>• Avi fauna</li> <li>• Rare and endangered species</li> <li>• Sanctuaries / National park / Biosphere reserve</li> <li>• Migratory routes</li> </ul>			
<p><b>Socio-Economic</b></p>			
<p><b>Demographic structure</b></p>			
<ul style="list-style-type: none"> <li>• Infrastructure resource base</li> <li>• Economic resource base</li> <li>• Health status: Morbidity pattern</li> <li>• Cultural and aesthetic attributes</li> <li>• Education</li> </ul>	<p>Socio-economic survey is based on proportionate, stratified and random sampling methods.</p> <ul style="list-style-type: none"> <li>• Primary data collection through questionnaire</li> <li>• Secondary data from census records, statistical hand books, topo sheets, health records and relevant official records available with Govt. agencies</li> </ul>		

<p><b>15.3</b></p>	<p>Interpretation of each environment attribute shall be enumerated and summarized as given below:</p> <ul style="list-style-type: none"> <li>• Ambient air quality</li> <li>• Ambient Noise quality</li> <li>• Surface water quality</li> <li>• Ground water quality</li> <li>• Soil quality</li> <li>• Biological Environment</li> <li>• Land use</li> <li>• Socio-economic environment</li> </ul>	<p>A brief interpretation of each environmental attribute is provided in Chapter 3 of the EIA report.</p>	<p>Ambient air quality: Section 3.5.7 Chapter 3 of EIA Report  Ambient Noise quality: Section 3.6.3 Chapter 3 of EIA Report.  Surface water quality: Section 3.8.7 Chapter 3 of EIA Report.  Ground water quality: Section 3.8.5 Chapter 3 of EIA Report.  Soil quality: Section 3.10.5 Chapter 3 of EIA Report.  Biological Environment: Section 3.11.6 Chapter 3 of EIA Report.  Land use: Section 3.9.3 Chapter 3 of EIA Report.  Socio-economic environment: Section 3.12.7 Chapter 3 of EIA Report.</p>				
<p><b>15.4</b></p>	<p>The PP should submit the photograph of monitoring stations &amp; sampling locations. The photograph should bear the date, time, latitude &amp; longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.</p>	<p>The monitoring was conducted by Perfect Researchers Pvt Ltd, an NABL accredited Lab with Certificate No. TC-6993.</p>	<p>The photograph of the monitoring station &amp; sampling location is attached as an Annexure 16.  Test reports are attached as an Annexure 15.  NABL certificate is attached as Annexure 26.</p>				
<p><b>16</b></p>	<p><b>Anticipated Environment Impacts and mitigation measures (In case of expansion, cumulative impact assessment shall be carried out)</b></p>						
<p><b>16.1</b></p>	<p>Identification of potential impacts in the form of a matrix for the construction and operation phase for all the environment components</p> <table border="1"> <tr> <td><b>Activit</b></td> <td><b>Enviro</b></td> <td><b>Ecologi</b></td> <td><b>Socio-E</b></td> </tr> </table>	<b>Activit</b>	<b>Enviro</b>	<b>Ecologi</b>	<b>Socio-E</b>	<p>Potential impacts during construction and operation phase are mentioned in Chapter 4 of EIA report.</p>	<p>Section 4.2 &amp; 4.3 of Chapter 4 of EIA report.</p>
<b>Activit</b>	<b>Enviro</b>	<b>Ecologi</b>	<b>Socio-E</b>				

	Environment	Social	Economic		
	Construction Phase				
	Operation Phase				
<b>16.2</b>	<p>Impact on ambient air quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact)</p> <p>a. Construction phase</p> <p>b. Operation phase • Details of stack emissions from the existing as well as proposed activity. • Assessment of ground level concentration of pollutants from the stack emission based on AQIP Modelling The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any along with wind rose map for respective period • Impact on ground level concentration, under normal, abnormal and emergency conditions. Measures to handle emergency situations in the event of uncontrolled release of emissions.</p>	The impacts on ambient air quality and its mitigation measures are given in Chapter 4 of EIA report.	<p><b>Impacts during Construction Phase:</b> Section 4.2 Chapter 4 of EIA report.</p> <p><b>Impacts during Operational Phase:</b> Section 4.3 Chapter 4 of EIA report.</p>		
<b>16.3</b>	<p>Impact on ambient noise quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact)</p> <p>a. Construction phase</p> <p>b. Operation phase</p>	The impacts on ambient noise quality and its mitigation measures are given in Chapter 4 of EIA report	<p>Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report.</p> <p>Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.</p>		
<b>16.4</b>	<p>Impact on traffic (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a.</p>	The impacts on traffic and its mitigation measures are given in Chapter 4 of the EIA report.	Impacts during Construction Phase: Section 4.2 Chapter 4 of		

	Construction phase b. Operation phase		EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.5</b>	Impact on soil quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on soil quality and its mitigation measures are given in Chapter 4 of the EIA report.	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.6</b>	Impact on land use (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on land use and its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.7</b>	Impact on surface water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on surface water resources and its quality and its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.8</b>	Impact on ground water resource and quality (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on groundwater resources and its quality and its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.9</b>	Impact on terrestrial and aquatic habitat (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on terrestrial and aquatic habitat its mitigation measures are given in Chapter 4 of EIA report	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during

			Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.10</b>	Impact on socio-economic environment (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The impacts on socio-economic environment and its mitigation measures are given in Chapter 4 of EIA report.	Impacts during Construction Phase: Section 4.2 Chapter 4 of EIA report. Impacts during Operational Phase: Section 4.3 Chapter 4 of EIA report.
<b>16.11</b>	Impact on occupational health and safety (Sources; Embedded control measures; Assessment; Mitigation measures; Residual impact) a. Construction phase b. Operation phase	The general safety and occupational health details are given in Chapter 7 of EIA report	Section 7.5 of Chapter 7 of EIA report.
<b>17.</b>	<b>Analysis of Alternatives (Technology &amp; Site)</b>		
<b>17.1</b>	No project scenario	Not Applicable. The plant is already existing and operational.	Chapter 5 of EIA report.
<b>17.2</b>	Site alternative	Proposed project aims to increase production of MS Billets & Rolled products from 300 TPD to 1600 TPD. It is proposed to be realized by expansion of existing Plant area and by installing additional Machineries and utilities within the existing Sponge Iron Plant	Section 5.1 of Chapter 5 of EIA report
<b>17.3</b>	Technical and social concerns	Company is fully committed to the improvement of technology to achieve conservation, safety, and environmental sustainability.	Section 5.2 of Chapter 5 of EIA report
<b>17.4</b>	Conclusion	Analysis of site alternatives is not required as it is an expansion project.	-
<b>18</b>	<b>Environmental Monitoring Program</b>		
<b>18.1</b>	Details of the Environment Management Cell	Details of the Environment Management Cell are given in	Section 10.2 of Chapter 10 of EIA Report.

		Chapter 10 of EIA Report.	The Environment Management cell is attached as Annexure 13.
<b>18.2</b>	Performance monitoring schedule for all pollution control devices shall be furnished.	To check the efficiency of the system with proposed modifications a regular monitoring programme has been drawn. The program has been outlined for the construction and operation phase.	Construction Phase: Section 6.1.1 Chapter 6 of EIA report. Operation Phase: Section 6.1.2 Chapter 6 of EIA report.
<b>18.3</b>	<p>Corporate Environment Policy</p> <p>a. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.</p> <p>b. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environment or forest norms / conditions? If so, it may be detailed in the EIA.</p> <p>c. What is the hierarchical system or Administrative order of the company to deal with the environment issues and for ensuring compliance with the environment clearance conditions? Details of this system may be given.</p> <p>d. Does the company have a system of reporting of non compliances / violations of environment norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report.</p>	<p>a. Yes ,the company has a well laid down environment policy given in EIA.</p> <p>b. Yes,Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environment or forest norms / conditions</p> <p>c. The hierarchical system or Administrative order of the company to deal with the environment issues and for ensuring compliance with the environment clearance conditions give in EIA.</p> <p>d. The company has a system of reporting of non compliances / violations of environment norms to the Board of Directors of the company and / or shareholders or stakeholders at large given in EIA.</p>	Section 10.2, 10.3, & 10.4 Chapter 10 of EIA report.

<p><b>18.4</b></p>	<p>Action plan for post-project environment monitoring matrix: Construction Phase-</p> <table border="1"> <thead> <tr> <th>Acti vity</th> <th>Asp ect</th> <th>Mo nito ring Par ame ter</th> <th>Loc atio n</th> <th>Fre que ncy</th> <th>Res pon sibil ity</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Operation Phase-</p> <table border="1"> <thead> <tr> <th>Acti vity</th> <th>Asp ect</th> <th>Mo nito ring Par ame ter</th> <th>Loc atio n</th> <th>Fre que ncy</th> <th>Res pon sibil ity</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Acti vity	Asp ect	Mo nito ring Par ame ter	Loc atio n	Fre que ncy	Res pon sibil ity													Acti vity	Asp ect	Mo nito ring Par ame ter	Loc atio n	Fre que ncy	Res pon sibil ity													<p>Action plan for post-project environment monitoring matrix given in EIA.</p>	<p>Section 6.1 of Chapter 6 of EIA report.</p>
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**19 Additional Studies**

<p><b>19.1</b></p>	<p>Project proponent shall submit a study report on the Decarbonisation program, which would essentially consist of the company's carbon emissions, carbon budgeting/ balancing, carbon sequestration activities and carbon capture, use and storage after offsetting strategies. Further, the report shall also contain a time bound action plan to reduce its carbon intensity of its operations and supply chains, energy transition pathway from fossil fuels to Renewable energy etc. All these activities/ assessments should be measurable and monitorable with defined time frames.</p>	<p>The PP has adopted conventional technology to produce sponge iron, billets, TMT Bars &amp; electricity. In order to reduce Carbon emissions, WHRB has been considered. Direct charging of sponge iron in the Induction furnace has been considered. In order to minimize carbon emission solar panels of 500 KW has been considered. The PP is in the process of selecting expert consultants for its decarbonisation programme. The report will be submitted within 6 months after getting EC.</p>	<p>-</p>
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19.2	Details of adoption/ implementation status/plan to achieve the goal of Glasgow COP26 Climate Submit with regard to enhance the non-fossil energy, use of renewable energy, minimization of net carbon emission and carbon intensity with long-term target of “net Zero” emission.	Energy conservation plan is given in the EIA.	Ch-10 section 10.9 of EIA Report												
19.3	Implementation status/measures adopted for avoiding the generation of single used plastic waste.	Single use plastic waste, recycling as per plastic waste rules disposal is given in EIA.	-												
19.4	In cases the project is located in Critically and Severely Polluted Areas, additional mitigation measures adopted and detailed action plan to be submitted in the EIA/EMP Report as per MoEF&CC O.M. No. 2223/2028-IA.III dated 31/10/2019 and MoEF&CC O.M. No. 22-23/2028-IA.III dated 5/07/2022 has to be submitted.	Not Applicable	-												
19.5	Public consultation details (Entire proceedings as separate annexure along with authenticated English Translation of Public Consultation proceedings).	Noted and We will take note of this point during Public consultation and will incorporate the same in Final EIA	-												
19.6	As part of Corporate Environment Responsibility (CER) activity, company shall adopt nearby villages based on the socio-economic survey and undertake community developmental activities in consultation with the village Panchayat and the District Administration. In this regard, a time bound action plan as per the MoEF&CC Office Memorandum dated 30/09/2020 shall be submitted.	As part of Corporate Environment Responsibility (CER) activity, the Company Proposes expenditure of INR 80.00 Lakhs. Details of activities under CER are provided in Chapter 10 of the EIA report.	Section 10.11 Chapter 10 of the EIA Report.												
19.7	Summary of issues raised during public consultation along with action plan to address the same as per MoEF&CC O.M. dated 30/09/2020	Noted and will be complied.													
	<table border="1"> <thead> <tr> <th>Sl.</th> <th>Phy</th> <th>Yea</th> <th></th> <th></th> <th>Tot</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Sl.	Phy	Yea			Tot								
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	Name of Activity	Physical Targets	1st	2nd	3rd																							
<b>19.8</b>	Risk assessment <ul style="list-style-type: none"> <li>• Methodology</li> <li>• Hazard identification</li> <li>• Frequency analysis</li> <li>• Consequence analysis</li> <li>• Risk assessment outcome</li> </ul>						Details regarding Risk Assessment are provided in the Chapter 7 of EIA report	Section 7.3 of Chapter 7 of EIA report.																				
<b>19.9</b>	Emergency response and preparedness plan						Details regarding Emergency response and preparedness plan are provided in the Chapter 7 of EIA report	Section 7.4.4 of Chapter 7 of EIA report.																				
<b>20</b>	<b>Project Benefits</b>																											
<b>20.1</b>	Environment benefits						The proposed expansion will only add up an Induction furnace and TMT rolling Mill to the already operational Sponge Iron & MS Billets & Rolled Steel Production Plant, thereby necessitating only very limited Emission control and very lesser fresh water requirement. There will be no increase in process stack, and there will be addition of only 01 Nos. of utility stack	Section 8.1 of Chapter 8 of EIA report.																				

		for DG set of 1500 kVA and there will be a common stack for existing Induction furnace (1 No.30 T) and proposed Induction Furnace (1 No. 30 T).	
20.2	Social infrastructure	INR 30 lakhs will be spent on improving the primary health care facilities especially for building up the infrastructure for child care, workers and sanitation facilities.	Section 8.3 of Chapter 8 of EIA report
20.3	Employment and business opportunity	Due to the proposed expansion additional employment @ 50 Nos. of permanent and 100 Nos. of contractual employment will be made	Section 8.3 of Chapter 8 of EIA report.
20.4	Other tangible benefits	The project will contribute to the Government treasury by way of direct and indirect taxes, like GST, Custom Duty and Income Tax	Section 8.4 of Chapter 8 of EIA report.
<b>21</b>	<b>Environment Cost Benefit Analysis</b>		
21.1	Net present value	Given in the EIA report	Chapter 9 of EIA report
21.2	Internal rate of return	Given in the EIA report	
21.3	Benefit cost ratio	Given in the EIA report	
21.4	Cost effectiveness analysis	Cost effectiveness analysis is given in the EIA report.	
<b>22</b>	<b>Environment Management Plan (Construction and Operation phase)</b>		
22.1	Action plan for hazardous waste management	Air quality management plan Provided in EIA Report.	Section 10.8 Chapter 10 of EIA report.
22.2	Action plan for solid waste management	Action plan for solid waste management Provided in EIA Report.	

22.3	Action plan for e-waste management.	<table border="1"> <thead> <tr> <th>Name of Waste</th> <th>Source</th> <th>Quantity (TPA)</th> <th>Mode of Disposal</th> <th>Mode of Transport</th> </tr> </thead> <tbody> <tr> <td>E-Wastes</td> <td>Computer and other Electrical parts</td> <td>2.52</td> <td>Given to Authorized Recycler</td> <td>By Road</td> </tr> </tbody> </table>	Name of Waste	Source	Quantity (TPA)	Mode of Disposal	Mode of Transport	E-Wastes	Computer and other Electrical parts	2.52	Given to Authorized Recycler	By Road	
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E-Wastes	Computer and other Electrical parts	2.52	Given to Authorized Recycler	By Road									
22.4	Action plan for plastic waste management, considering the Plastic Waste Management Rules 2016.	<table border="1"> <thead> <tr> <th>Name of Waste</th> <th>Source</th> <th>Quantity (TPA)</th> <th>Mode of Disposal</th> <th>Mode of Transport</th> </tr> </thead> <tbody> <tr> <td>Plastic Waste</td> <td>Packing Material and Empty can, drums</td> <td>54.7</td> <td>Given to Authorized Recyclers/Vendors</td> <td>By Road</td> </tr> </tbody> </table>	Name of Waste	Source	Quantity (TPA)	Mode of Disposal	Mode of Transport	Plastic Waste	Packing Material and Empty can, drums	54.7	Given to Authorized Recyclers/Vendors	By Road	
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Plastic Waste	Packing Material and Empty can, drums	54.7	Given to Authorized Recyclers/Vendors	By Road									
22.5	Action plan for construction and demolition waste management.	Action plan for construction and demolition waste management. Provided in EIA Report.											
22.6	Rain water harvesting plan	Details of RWH are given in Chapter 2 of the EIA report.	Section 2.17 of Chapter 2 of EIA report.										
22.7	Plan for maximum usage of waste water/treated water in the Unit	The total wastewater generation after expansion will be 58.6 KLD. Out of which 32.6 KLD will be sent to STP of 65 KLD capacity and Rest 26 KLD effluent generated will be sent to ETP of 40 KLD capacity followed by RO. The treated sewage @30 KLD will be reused within the plant premises for gardening and/or greenbelt development. Treated effluent @24 KLD will be reused within the process.	Section 2.13 of Chapter 2 of EIA report.										

22.8	Green belt development plan: An action plan for Green Belt development consisting of 3 tiers of plantations of native species all along the periphery of the project of adequate width shall be raised in 33% of total area with a tree density shall not less than 2500 per ha within a time frame of one year shall be submitted. Survival rate of the green belt shall be monitored on a periodic basis to ensure that survival rate not be less than 80 %.	<b>Existing Greenbelt Area:</b> 7.21 ha (33%) <b>After Expansion Greenbelt Area:</b> 13.01 ha (34.91%) Existing No. of trees: 2,755 Nos. Proposed No. of trees: 29770 Nos. Total No. of trees After Expansion: 32525 Nos. Details of tree species to be planted are given in Chapter 2 of EIA Report.	Section 2.16 of Chapter 2 of EIA report.
22.9	Wildlife conservation plan (In case of presence of schedule I species)	13 Schedule I species are reported in buffer zone within a 10 km radius. Details are provided in Chapter 3 of EIA report.	Section 3.11.6 of Chapter 3 of EIA report Conservation plan is attached as Annexure 17.
22.10	Total capital cost and recurring cost/annum for environment pollution control measures shall be included.	Capital Cost for EMP is INR 312.0 Lakhs and recurring cost per annum is INR 52.50 Lakhs. Details of the EMP budget is provided in Chapter 10 of EIA Report.	Section 10.9 of Chapter 10 of EIA report.
22.11	Explore possibilities for recycling and reusing of treated water in the unit to reduce the freshwater demand and waste disposal.	The existing plant recycles and reuses treated water from STP. After expansion The same system will be continued for the proposed expansion.	Section 2.13 of Chapter 2 of EIA report
22.12	An Action Plan for improving the house-keeping activities in the raw material handling area need to be submitted	Will be compiled.	
22.13	Action plan for the stock piles with impervious floor, provision of garland drains and catch pits to trap run off material shall be submitted.	Agreed and will be complied	
22.14	Action plan to limit the dust emission from all the stacks below 30 mg/Nm <sup>3</sup> shall be furnished.	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm <sup>3</sup> is given in EIA.	Chapter 2 and Chapter 4 of EIA report.

22.15	Action plan for fugitive emission control in the plant premises shall be provided.	Not Applicable	
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**Standard Terms of Reference for conducting Environment Impact Assessment Study for Metallurgical Industries (ferrous and non ferrous) and information to be included in EIA/EMP report**

Sr. No.	ToR Point	TOR Compliance	Citation in EIA Report
1.1	A 3-D view i.e. DEM (Digital Elevation Model) for the area in 10 km radius from the proposal site. MRL details of project site and RL of nearby sources of water shall be indicated.	A DEM map of the area within 10 km radius of the project site is attached in Section 2.3.4 of the EIA report.	Section 2.3.4 of Chapter 2 of EIA report.
1.2	Plan for the implementation of the recommendations made for the proposed Unit in the Corporate Responsibility for Environmental Protection (CREP) guidelines.	Implementation of the recommendations made for the Unit in the Corporate Responsibility for Environmental Protection (CREP) guidelines Provided in EIA.	Section 2.18 of Chapter 2 of EIA report.
1.3	Plan for solid wastes utilization	The organic solid wastes shall be disposed via OWC unit. Inorganic solid wastes shall be sold to authorised recyclers. Similarly, non hazardous wastes like slag shall be reused in the process. Ash generated shall be sent to vendors for manufacturing bricks. Sludge from STP shall be used as manure for greenbelt development.	Section 2.15 of Chapter 2 of EIA report
1.4	Plan for utilization of energy in off gases (coke oven, blast furnace)	Not Applicable	-
1.5	System of coke quenching adopted with full justification.	A WHR system has been installed to produce power from the waste heat recovered from coke quenching.	Section 2.10 of Chapter 2 of EIA report.
1.6	Details on environmentally sound technologies for recycling of hazardous materials, as per CPCB Guidelines, may be mentioned in case of handling scrap	The spent/used oil from plant and machinery and discarded barrels shall be sent to authorised vendors as per	Section 2.15 of Chapter 2 of EIA report.

	and other recycled materials.	CPCB guidelines.	
1.7	Details on toxic metal content in the waste material and its composition and end use (particularly of slag).	Induction Furnace Slag is not hazardous. The slag from the Induction furnace will be crushed and taken to the magnetic separator. Fe particles will be separated from the inert material. The crushed inert material will be sold for use in civil constructions.	-
1.8	Details on toxic content using Toxicity Characteristic Leaching Procedure (TCLP), composition and end use of slag.	Induction Furnace Slag is not hazardous.	-
1.9	100 % dolo char generated in the plant shall be used to generate power.	Compiled. The dolochar generated as a by-product in the sponge iron plant is completely utilized for power generation.	-
1.10	Fourth Hole fume extraction system shall be provided for SAF.WHR system shall be installed to recover sensible heat from flue gases of EAF. Provision for installation of jigging and briquetting plants to utilize the fines generated in the process.	Not Applicable	
1.11	No tailing pond is permitted for Iron ore slimes. Dewatering and filtration systems shall be provided.	Not Applicable	-
1.12	Action plan for developing connecting and internal road in terms of MSA as per IRC guidelines shall be submitted.	Will Comply	-
1.13	Action plan to limit the particulate matter emission from all the stacks below 30 mg/Nm <sup>3</sup> shall be furnished.	Will Comply. Bag filters have been installed in stacks to mitigate air emission.	-
1.14	Action plan for 100 % solid waste utilization shall be submitted.	Action plan for 100 % solid waste utilization incorporated in EIA.	Section 2.15 of Chapter 2 of EIA Report

1.15	PM (PM10 and P2.5) present in the ambient air must be analyzed for source analysis – natural dust/RSPM generated from plant operations (trace elements) of PM10 to be carried over.	PM (PM 10 & PM 2.5) present in ambient air is analyzed and given in EIA.	Section 3.5.5 of Chapter 3 of EIA Report
1.16	Iron ore/coal linkage documents along with the status of environment clearance of iron ore and coal mines, if applicable.	It will be purchased from the open market.	-
1.17	Quantum of production of coal and iron ore from coal & iron ore mines and the projects they cater to. Mode of transportation to the plant and its impact, if applicable	Not Applicable, Iron ore & coal will be purchased from the open market and transported by trucks.	-
1.18	Details on environmentally sound technologies for recycling of hazardous materials, as per CPCB Guidelines, may be mentioned in case of handling scrap and other recycled materials, if applicable.	No hazardous solid waste is generated from the plant.	-



## **Section C: EIA Report**

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## 1. INTRODUCTION

**M/s Noble Tech Industries Private Limited** has been engaged in Sponge Iron production and MS Billets & Rolled Steel Products along with Captive Power plant in a plot of 21.95 ha area at Survey Nos. 12, 14, 17, 22, 23, 25, 51, 52, 53, 57, Plot No: 14/2A2, Melpakkam Village, Uthiramerur-Taluk, Kancheepuram, Tamil Nadu. The industry produces Sponge Iron @ 250 TPD, M.S. Billets & Rolled products @ 300 TPD and 12 MW in its captive Power Plant. The plant operates with latest Consent to Operate (CTO) issued vide TNPCB Consent No. 2404258959544 dated 02.05.2024 (under Air Act ) & TNPCB Consent No. 2404158959544 dated 02.05.2024 (under Water Act). The existing project cost is INR 273.17 Cr. The plant was established with CTE (Consent to Establish) No. 2944 dated: 03.05.2005 with the Project Cost INR 49.56 Cr., and started operation with CTO (Consent to Operate) No. 21077 Dated: 17.08.2007.

Now the industry proposes expansion of M.S. Billets & Rolled Production from 300 TPD to 1600 TPD retaining existing Sponge Iron production (250 TPD) and Captive Power Plant (12 MW) production; the plant area also will be increased to 37.27 ha by including abutting plots with Survey Nos. 12/1, 12/2, 14/2A2, 15, 17/1, 17/2A1, 17/2A2, 17/2A3, 17/2B, 17/2D, 17/2E, 18/1A, 18/1B, 19/3A, 19/4, 19/5A, 20/1A, 20/2A, 21/3A, 21/4, 21/5, 21/6, 21/7, 22/1, 22/2, 22/3, 22/3, 23, 24, 25, 27/3, 27/4, 27/5, 27/6, 27/7, 27/8, 27/9, 29/1A, 51/1C1, 51/1C2, 51/2A, 51/2B, 52/2, 53/2A, 53/2B, 53/2C, 53/2D, 55/1, 55/2, 55/3, 55/4, 56/1, 56/2, 56/3, 57/1A, 57/1B, 57/2, 57/3, 57/4, 57/5A, 57/5B, 57/6, 57/7, 57/8A, 57/8B, 10/1, 10/3, 11/1, 11/2, 11/3, 13/1, 13/2, 14/1B1, 14/1B2, 14/1B3, 14/2A1, 14/2B, 19/1, 19/2, 19/3B, 19/5B, 20/1B, 20/2B, 21/1, 21/2, 21/3B, 28, 29/1B, 30/2, 5/2, 6/1, 6/2A, 6/2B, 6/2C, 6/2D, 6/3A, 6/3B, 6/4A, 6/4B, 6/4C, 6/4D, 6/4E, 6/5A, 6/5B, 6/6A, 6/6B, 7, 8/1, 8/2, 8/3, 8/4, 9/1 at Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu. The total cost of the project will be INR 353.17 Cr. after expansion.

As the project is involved in the production of Sponge Iron at a capacity >200 TPD, it falls under Schedule Activity 3(a), category 'A' of EIA Notification 2006 & its subsequent amendments to date and requires public hearing as a part of EIA appraisal process.

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## **1.1 PURPOSE OF THE REPORT**

Based on the proposal submitted vide proposal number IA/TN/IND1/455602/2023, the project was granted Terms of Reference (ToR) from MoEF&CC vide letter No. **IA-J-11011/324/2023-IA-II(IND-I)**, dated **23/02/2024**. EIA study was carried out as per the TOR secured, and in compliance to the requirements of the EIA Notification, 2006 and its subsequent amendments, to identify environmental impacts resulting from the proposed project and to prescribe mitigation measures.

We are now submitting to TNPCB the EIA report & compliance to the Terms of Reference (ToR) conditions with a request to conduct Public Hearing.

### **Demand Supply Gap:**

India presently consumes about 100 MTPA steel of which 93 MTPA carbon steel & 7 MTPA alloy & stainless steel. Predicted growth in consumption of carbon steel has shown steady rise over 7% per annum till 2027, with predicted consumptions @ 124 MTPA by 2025-26, 165 MTPA by 2030-31 and 211 MTPA by 2035-36.

### **Import vs Indigenous:**

India's steel industry is a mix of both imported and indigenous steel. India has small coking coal reserves that tend to be of low quality, so they need to be blended with higher-grade imported coal for use in steel production. India's finished steel imports from China have been increasing in recent years, with China emerging as the second-biggest steel exporter to India in April and May 2023. In April 2023, India imported 0.5 million tonnes of finished steel, the highest since 2019, up 38.2% from a year earlier, with China accounting for nearly a quarter of India's overall finished steel imports. However, India is also a net exporter of finished steel, with 0.9 million tonnes sold to top buyers such as Italy, Spain, Vietnam, Nepal, and the United Arab Emirates in April 2023.

India's steel industry has been protected from import competition, which has allowed Indian steel companies to have access to cheaper raw materials and a fast-growing domestic market. Over the past decade, India has alternated between being a net steel importer and a net steel exporter, with imports and exports displaying a roughly inverse relationship. While imports of special steel

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products that are not manufactured or available in adequate quantities are understandable, from indigenous sources, India's steel industry is threatened by imports.

### **Export Possibility:**

India's steel industry is currently in a state of growth and consolidation, with increasing investments and robust demand. As of December 2022, India was the world's second-largest producer of crude steel, with an output of 124.5 MT of crude steel and finished steel production of 117.6 MT, in CY22. India's finished steel consumption is anticipated to increase to 230 MT by 2030-31 from 133.596 MT in FY22. India's steel consumption is expected to grow by 7.5% during the current fiscal year to March 2024, boosted by rising demand from the domestic construction, railways, and capital goods sectors. The steel sector has benefited from India's strong economic growth, and industries such as automotive and consumer durables are expected to fuel steel consumption. The Indian steel market is segmented by form, production, and end-user industry, with the automotive and transportation, building and construction, tools and machinery, energy, consumer goods, and other end-user industries being the major consumers. The industry is witnessing consolidation of players, which has led to investment by entities from other sectors, and the ongoing consolidation also presents an opportunity to global players to enter the Indian market. Around 40 million tonnes (MT) of new steel-making capacity will be commissioned by 2025-26. Overall, India's steel industry is poised for growth, with increasing demand and investments.

## **1.2 IDENTIFICATION OF THE PROJECT AND PROJECT PROPONENT**

### **1.2.1 Identification of the Project**

*Table 1. Identification of the Project*

<b>Name of Project</b>	<b>Activity &amp; Category</b>	<b>Remark</b>
Expansion in M.S. Billets and Rolled products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW)	Activity: 3(a) & Category: A	As per Environment Impact Assessment Notification 14.09.2006 and its subsequent amendments, the project falls under <b>Activity 3(a)</b> as Metallurgical Industries (Ferrous & Non-Ferrous) and shall be appraised as <b>Category A</b> project. Public



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Name of Project	Activity & Category	Remark
		Hearing shall be applicable.

### 1.2.2 Identification of the Proponent

The list of directors and their designation are provided in Table 2.

*Table 2. List of Directors*

Sr. No.	Name of Directors	Designation
1.	Mr. Ayush Kumar	Director
2.	Mr. Shimant Bhushan Chadha	Director
3.	Mr. Suraj Ravish	Director
4.	Mr. Vikram Singh	Director

M/s. Noble Tech Industries Pvt. Ltd., has established one of the largest private sector Mini Integrated Steel Plant in Southern India wayback in 2005. In Tamil Nadu, they are the first company to produce Steel from Iron Ore using “Direct Reduced Iron” (Sponge Iron) manufacturing facility at Uthiramerur in Kanchipuram near Chennai.

### 1.3 BRIEF DESCRIPTION OF THE PROJECT

#### Description of activities and importance to the region:

The industry is engaged in the production of Sponge Iron, MS Billets, Structural products such as Beams, Channels, Ingots and Angles in accordance with BIS specification. The company contributes to the economic growth of the region by providing employment opportunities, promoting the growth of the local steel market, and contributing to the development of the locality’s infrastructure.

*Table 3. Brief Description of Site*

Sr. No.	Particulars	Details
1	Location	Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu.
		Existing Survey Nos.: 12, 14, 17, 22, 23, 25, 51, 52, 53, 57 at Plot No: 14/2A2
		Expansion Survey Nos.: 10/1, 10/3, 11/1, 11/2, 11/3, 13/1, 13/2, 14/1B1, 14/1B2, 14/1B3, 14/2A1, 14/2B, 19/1, 19/2, 19/3B, 19/5B, 20/1B, 20/2B, 21/1, 21/2, etc.,
2	Project Coordinates	Latitude: 12.644792°N Longitude: 79.70029°E

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Sr. No.	Particulars		Details
3	Plot Area	Existing	21.95 ha
		Total After Expansion	37.27 ha
4	Approach Road		Perunagar-Kaliyampundi Road (0.03 km, NE)

### Employment Generation:

Table 4. Details of Employment (Construction)

Employment Generation during Construction Phase			
Permanent Employment [X]		Temporary / Contractual Employment [Y]	
No.s of Permanent Employment [A]	20	No.s of Temporary / Contractual Employment [A]	100
Period of Employment (No. of days) [B]	365	Period of Employment (No. of days) [B]	365
No. of Man Days [A]* [B]/Annum	7300	No. of Man Days [A]* [B]	36500
<b>Total [X] + [Y] = 43800</b>			

Table 5. Details of Employment (Operation)

Particulars	Existing	Proposed	Total After Expansion
<b>Permanent Employment [X]</b>			
Nos. of Permanent Employment [A]	200	50	250
Period of Employment (No. of days) [B]	365	365	365
No. of Man Days [A]* [B]/Annum	73000	18250	91250
<b>Total Mandays [X]/Annum = 91250</b>			
<b>Temporary / Contractual Employment [Y]</b>			
Nos. of Temporary / Contractual Employment [A]	250	100	350
Period of Employment (No. of days) [B]	365	365	365
No. of Man Days [A]* [B]/Annum	91250	36500	127750
<b>Total Mandays [Y]/Annum = 127750</b>			
<b>Total [X] + [Y] = 219000</b>			

## 1.4 STATUS OF THE PROJECT SITE

The existing plot has got Sponge Iron, MS Billets and Rolled products manufacturing facility. Additionally, the plant has also got a Captive power production unit. The plot also has an adequate number of trees as greenbelt. The land area for expansion is abutting the existing plot and is devoid of structures and/or construction activities.

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*Figure 1. Site Photographs*

## **1.5 THE ASSIGNMENT & SCOPE OF THE STUDY**

- 1. To Determine the Status of Current Environmental Parameters:** This study involves assessment of present environment and ecology, flora and fauna, land use/ land cover, socio-economic condition of the area, monitoring of atmospheric pollutants like air, water, soil, noise and meteorological parameters. Studies in this respect were carried out in core zone (i.e. project area) as well as in buffer zone (area covering 10 km radius from the project) as per the guidelines of MoEF&CC and TOR Granted.
- 2. To Predict, Assess, categorize, quantify and mitigate probable significant environmental impacts (considering alternate assignments, baseline scenario and public opinion):** In order to predict the expected impact of processes and activities of the project on various environmental factors, a detailed study of interrelationship of project activities and environmental factors has been carried out in this report. Since the project is located outside an Notified Industrial Area.
- 3. To prepare a detailed Environmental Management Plan (EMP) with best available management tools and techniques including monitoring, reporting along with Operation and Maintenance Budget for better implementation.**
- 4. Undertake Risk Assessment for the proposed project and lay down risk mitigation measures for safe Operations.**

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## **1.6 SCOPE OF EIA STUDY - DETAILS OF REGULATORY SCOPING CARRIED OUT**

### **1.6.1 Scoping**

Under the provision of the EIA Notification 2006 as amended till date, Standard TOR for the purpose of preparing environment impact assessment report for obtaining Environment Clearance has been issued vide File No. **IA-J-11011/324/2023-IA-II(IND-I)**, dated **23/02/2024**. TOR letter is attached in **Section - B**.

- **Existing Environmental Clearance: NA.** The company has obtained Consent to Establish (03.05.2005) for the production of Sponge Iron, M.S. Rolled Products and Power (Captive use) Products prior EIA Notification 2006.
- **Certified Compliance Report (CCR) as per CTO:** Applicable
- **Coastal Regulation Zone (CRZ):** NA
- **Wildlife Clearance:** NA
- **Other Permissions:** NA

The consent chronology for the industry is mentioned in the table below.

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Table 6. CTE/CTO Chronology

Sr. No.	CTO / CTE	Company Name	Consent Number	Date of Issue	Validity	Products	Quantity
1	CTE	M/s. VKG Steel & Energy Pvt. Ltd.	Air - 2944 & Water -2988	03.05.2005	03.05.2007	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	16 MW
2	CTO	M/s. VKG Steel & Energy Pvt. Ltd.	Air -17114 & Water -21077	17.08.2007	31.03.2008	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	16 MW
3	CTO	M/s. Noble Tech Industries Pvt. Ltd.	Air - 17114/2011 & Water - 21077/2011	10.05.2011	31.03.2012	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	16 MW
4	CTO	M/s. Noble Tech Industries Pvt. Ltd.	Air-17114 & Water -21077 (Expansion)	01.06.2012	31.03.2013	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	8 MW
5	CTO	M/s. Noble Tech Industries Pvt. Ltd.	Air-17114 & Water -21077	06.06.2013	31.03.2015	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	8 MW
6	CTO	M/s. Noble Tech Industries Pvt. Ltd.	Air & Water -16082526735	29.01.2016	31.03.2017	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	8 MW
7	CTO	M/s. Noble Tech Industries Pvt. Ltd.	Air & Water-170728788936	23.11.2017	31.03.2022	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	12 MW
8	CTO	M/s. Noble Tech Industries Pvt. Ltd.	Air-2208243690979 & Water-2208143690979	08.04.2022	31.03.2027	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	12 MW
9	CTE (Revised)	M/s. Noble Tech Industries Pvt. Ltd.	Air - 2302255612496 & Water-2302155612496	15.11.2023	31.03.2028	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	12 MW
10	CTO - After CTE (Induction Furnace Replacement)	M/s. Noble Tech Industries Pvt. Ltd.	Air - 2404258959544 & Water - 2404158959544	02.05.2024	31.03.2027	Sponge Iron	7500 T/M
						M.S. Rolled Products	9000 T/M
						Power (Captive Use)	12 MW

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The list of statutory provisions as applicable to the project is given in **Table 4**.

*Table 7. Identified Applicable Statutory*

Sr. No	Acts/Rules	Publishing Year	Project Relevance	Objective of Legislation
1	The Environment (Protection) Act	1986, amended 1991	All types of environmental pollutants	Protection and Improvement of the Environment.
1.1	Environmental (Protection) Rules,	1986 (Amendments in 1999, 2001, 2002, 2002, 2002, 2003, 2004)	All types of Environmental Pollutants	Protection and Improvement of the Environment.
1.2	Hazardous Waste (Management and Handling) Rules	1989 amended 2000 and 2003	Hazardous Wastes generated from industries using hazardous chemicals	Management & Handling of hazardous wastes in line with the Basel convention.
1.3	Manufacture Storage and Import of Hazardous Chemicals Rules	1989 amended 2000	Hazardous Chemicals - Toxic, Explosive, Flammable, Reactive	Regulate the manufacture, storage and import of Hazardous Chemicals.
1.4	Chemical Accidents (Emergency Planning, Preparedness and Response) Rules	1996	Hazardous Chemicals - Toxic, Explosive, Flammable, Reactive	Emergency Planning Preparedness and Response to chemical accidents.
2	Factories Act	1948	All the Chemicals specified in the chapter 2	Control of the workplace environment, and providing for good health and safety of workers.
3	The Petroleum Act	1934	Class B and C - as defined in the rules are present	Regulate the import, transport, storage, production, refining and blending of petroleum.
3.1	The Petroleum Rules	2002	Class B and C - as defined in the rules are present	Regulate the import, transport, storage, production, refining and blending of petroleum.
4	The Explosives Act	1884	Explosive substances as defined under the Act like Boiler, Flammable Hazardous material	To regulate the manufacture, possession, use, sale, transport, export and import of explosives with a view to prevent accidents.

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Sr. No	Acts/Rules	Publishing Year	Project Relevance	Objective of Legislation
4.1	The Explosive Rules	1983	Explosive substances as defined under the Act	To regulate the manufacture, possession, use, sale, transport, export and import of explosives with a view to prevent accidents.
4.2	The Gas Cylinder Rules	2004	Gases (Toxic, non-toxic and non-flammable, non-toxic and flammable, Dissolved Acetylene Gas, Non-toxic and flammable liquefiable gas other than LPG, LPG	Regulate the import, storage, handling and transportation of gas cylinders with a view to prevent accidents.
4.3	The Static and Mobile Pressure Vessels (Unfired) Rules	1981	Gases (Toxic, non-toxic and non-flammable, non-toxic and flammable, Dissolved Acetylene Gas, Non-toxic and flammable liquefiable gas other than LPG, LPG	Regulate the import, manufacture, design, installation, transportation, handling, use and testing of mobile and static pressure vessels (unfired) with a view to prevent accidents.
5	Air (Prevention and Control of Pollution) Act	1981 amended 1987	Air pollutants from chemical industries.	The prevention, control and abatement of air pollution.
6	EIA Notification	2006	For all the identified developmental activities in the notification	Requirement of environmental clearance before establishment of or modernization / expansion of identified developmental projects.
7	Water (Prevention and Control of Pollution) Act	1974 amended 1988	Water Pollutants from water polluting industries	The prevention and control of water pollution and also maintaining or restoring the wholesomeness of water.
8	Public Liability Insurance Act	1991 amended 1992	Hazardous Substances	To provide immediate relief to persons affected by accident involving hazardous substances.
8.1	Public Liability Insurance Rules	1991 amended 1993	Hazardous Substances	To provide immediate relief to persons affected by accident involving hazardous substances and also for Establishing an

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Sr. No	Acts/Rules	Publishing Year	Project Relevance	Objective of Legislation
				Environmental Relief fund.
9	The Motor Vehicle Act	1988	Hazardous and Dangerous Goods	To consolidate and amend the law relating to motor vehicles.
9.1	The Central Motor Vehicle Rules	1989	Hazardous and Dangerous Goods	To consolidate and amend the law relating to motor vehicles including to regulate the transportation of dangerous goods with a view.
10	Fire Safety and Prevention act, Maharashtra	2007	Flammable and Explosive Chemical Substances/	To make more effective provisions for the prevention and safety measures in various buildings in Maharashtra.



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## 2. PROJECT DESCRIPTION

### 2.1 TYPE OF PROJECT

- 1) Type:- **Activity : 3(a), Category-A- Metallurgical Industry**
- 2) New / expansion / change in product mix:- **Expansion**

### 2.2 NEED OF THE PROJECT

Steel production is considered as a measure of a country's economic development, because it's both a raw material and intermediary product. Steel industry has been in the forefront of industrial progress and is the foundation of the economy. The growth in the industry has resulted in increase in employment opportunities and also aided growth of other industrial sectors in the country. Domestic Infrastructure is getting expanded and steel requirements to meet this demand, in addition to rising demands in the foreign countries require increased steel production in India. India presently consumes about 100 MTPA steel of which 93 MTPA carbon steel & 7 MTPA alloy & stainless steel. Predicted growth in consumption of carbon steel has shown steady rise over 7% per annum till 2027, with predicted consumptions @ 124 MTPA by 2025-26, 165 MTPA by 2030-31 and 211 MTPA by 2035-36. Hence , the proposed expansion envisaging increased M.S. Billets & Rolled Products is in line with the current economic policy .

### 2.3. PROJECT LOCATION

#### Location:

- **Existing Survey Nos.:** 12, 14, 17, 22, 23, 25, 51, 52, 53, 57.
- **After Expansion Survey Nos.:** 12/1, 12/2, 14/2A2, 15, 17/1, 17/2A1, 17/2A2, 17/2A3, 17/2B, 17/2D, 17/2E, 18/1A, 18/1B, 19/3A, 19/4, 19/5A, 20/1A, 20/2A, 21/3A, 21/4, 21/5, 21/6, 21/7, 22/1, 22/2, 22/3, 22/3, 23, 24, 25, 27/3, 27/4, 27/5, 27/6, 27/7, 27/8, 27/9, 29/1A, 51/1C1, 51/1C2, 51/2A, 51/2B, 52/2, 53/2A, 53/2B, 53/2C, 53/2D, 55/1, 55/2, 55/3, 55/4, 56/1, 56/2, 56/3, 57/1A, 57/1B, 57/2, 57/3, 57/4, 57/5A, 57/5B, 57/6, 57/7, 57/8A, 57/8B, 10/1, 10/3, 11/1, 11/2, 11/3, 13/1, 13/2, 14/1B1, 14/1B2, 14/1B3, 14/2A1, 14/2B, 19/1, 19/2, 19/3B, 19/5B, 20/1B, 20/2B, 21/1, 21/2, 21/3B, 28, 29/1B, 30/2, 5/2, 6/1, 6/2A, 6/2B, 6/2C, 6/2D, 6/3A, 6/3B, 6/4A, 6/4B, 6/4C, 6/4D, 6/4E, 6/5A, 6/5B, 6/6A, 6/6B, 7, 8/1, 8/2, 8/3, 8/4, 9/1.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

- **Address:** Plot No: 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu.
- **Latitude:** 12°38'33.67"N
- **Longitude:** 79°41'53.53"E
- **Elevation:** 94.5 m (MSL)

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 2.3.1 Google Image of Project Site

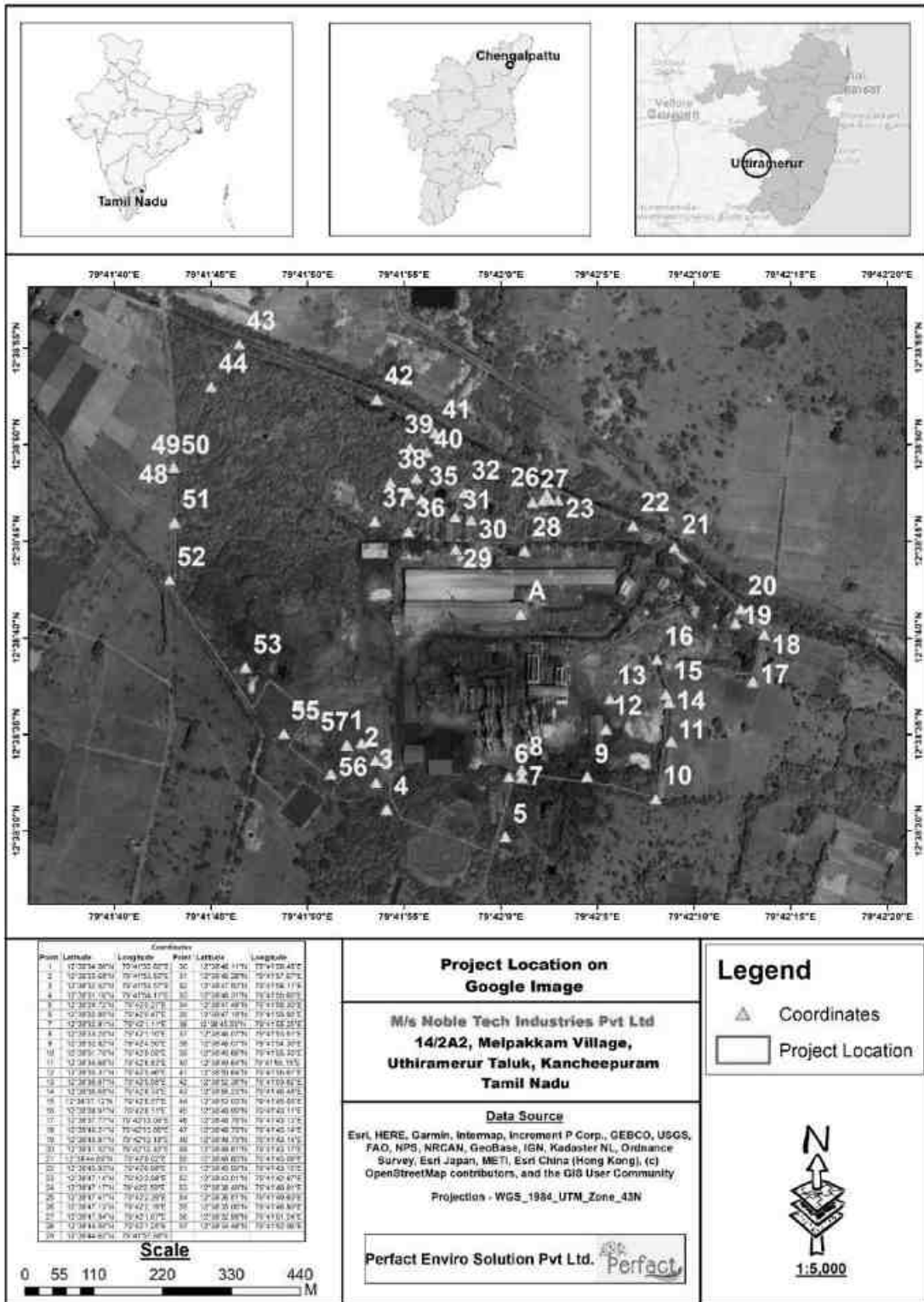


Figure 2. Google Image of Project Site showing Coordinates of the Site

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 8. Coordinates of the Project

Sr. No.	Latitude	Longitude	Elevation (MSL)
1	12°38'34.56"N	79°41'52.82"E	94.5 m
2	12°38'33.67"N	79°41'53.53"E	
3	12°38'32.52"N	79°41'53.57"E	
4	12°38'31.16"N	79°41'54.11"E	
5	12°38'29.72"N	79°42'0.27"E	
6	12°38'32.80"N	79°42'0.47"E	
7	12°38'33.18"N	79°42'1.12"E	
8	12°38'32.82"N	79°42'4.49"E	
9	12°38'31.70"N	79°42'8.04"E	
10	12°38'34.68"N	79°42'8.83"E	
11	12°38'35.30"N	79°42'5.47"E	
12	12°38'36.84"N	79°42'5.70"E	
13	12°38'36.69"N	79°42'8.74"E	
14	12°38'38.90"N	79°42'8.12"E	
15	12°38'37.77"N	79°42'13.06"E	
16	12°38'40.17"N	79°42'13.64"E	
17	12°38'40.81"N	79°42'12.21"E	
18	12°38'41.49"N	79°42'12.44"E	
19	12°38'44.69"N	79°42'9.02"E	
20	12°38'45.80"N	79°42'6.90"E	
21	12°38'47.12"N	79°42'3.01"E	
22	12°38'47.16"N	79°42'2.61"E	
23	12°38'47.47"N	79°42'2.39"E	
24	12°38'47.12"N	79°42'2.19"E	
25	12°38'47.03"N	79°42'1.67"E	
26	12°38'44.56"N	79°42'1.25"E	
27	12°38'44.61"N	79°41'57.69"E	
28	12°38'46.12"N	79°41'58.48"E	
29	12°38'46.29"N	79°41'57.68"E	
30	12°38'47.49"N	79°41'58.11"E	
31	12°38'48.29"N	79°41'55.65"E	
32	12°38'47.49"N	79°41'55.32"E	
33	12°38'47.15"N	79°41'55.92"E	

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

<b>Sr. No.</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Elevation (MSL)</b>
34	12°38'45.53"N	79°41'55.25"E	
35	12°38'46.07"N	79°41'53.51"E	
36	12°38'48.04"N	79°41'54.30"E	
37	12°38'49.84"N	79°41'55.33"E	
38	12°38'49.65"N	79°41'56.19"E	
39	12°38'50.64"N	79°41'56.60"E	
40	12°38'52.39"N	79°41'53.56"E	
41	12°38'55.22"N	79°41'46.48"E	
42	12°38'52.96"N	79°41'45.01"E	
43	12°38'48.99"N	79°41'43.11"E	
44	12°38'48.80"N	79°41'43.12"E	
45	12°38'48.78"N	79°41'43.13"E	
46	12°38'48.79"N	79°41'43.14"E	
47	12°38'48.80"N	79°41'43.16"E	
48	12°38'48.81"N	79°41'43.17"E	
49	12°38'48.80"N	79°41'43.09"E	
50	12°38'43.04"N	79°41'42.88"E	
51	12°38'38.55"N	79°41'46.79"E	
52	12°38'36.53"N	79°41'49.60"E	
53	12°38'35.08"N	79°41'48.80"E	
54	12°38'33.03"N	79°41'51.25"E	
55	12°38'34.49"N	79°41'52.06"E	

Site layout plan is attached below:

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

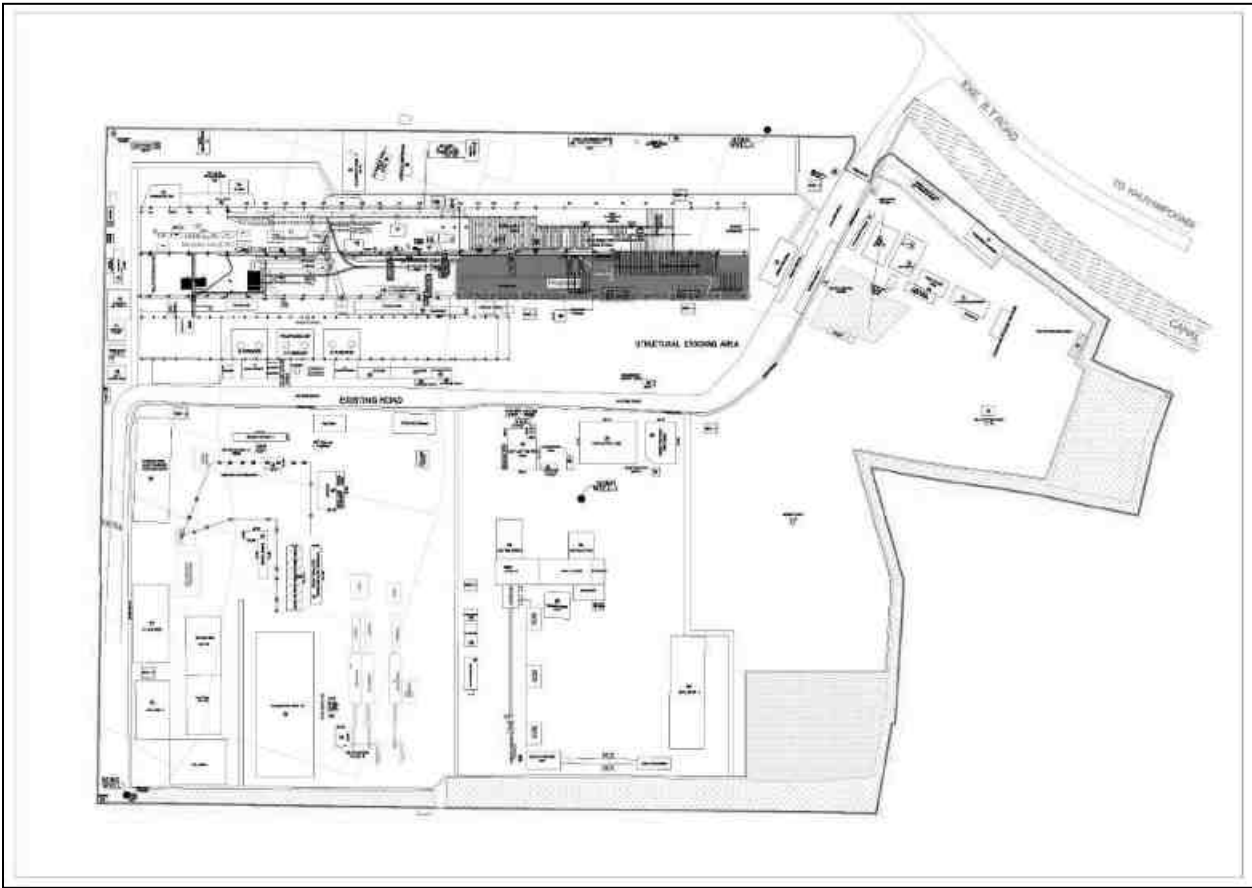


Figure 3. Layout Plan (Existing)

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

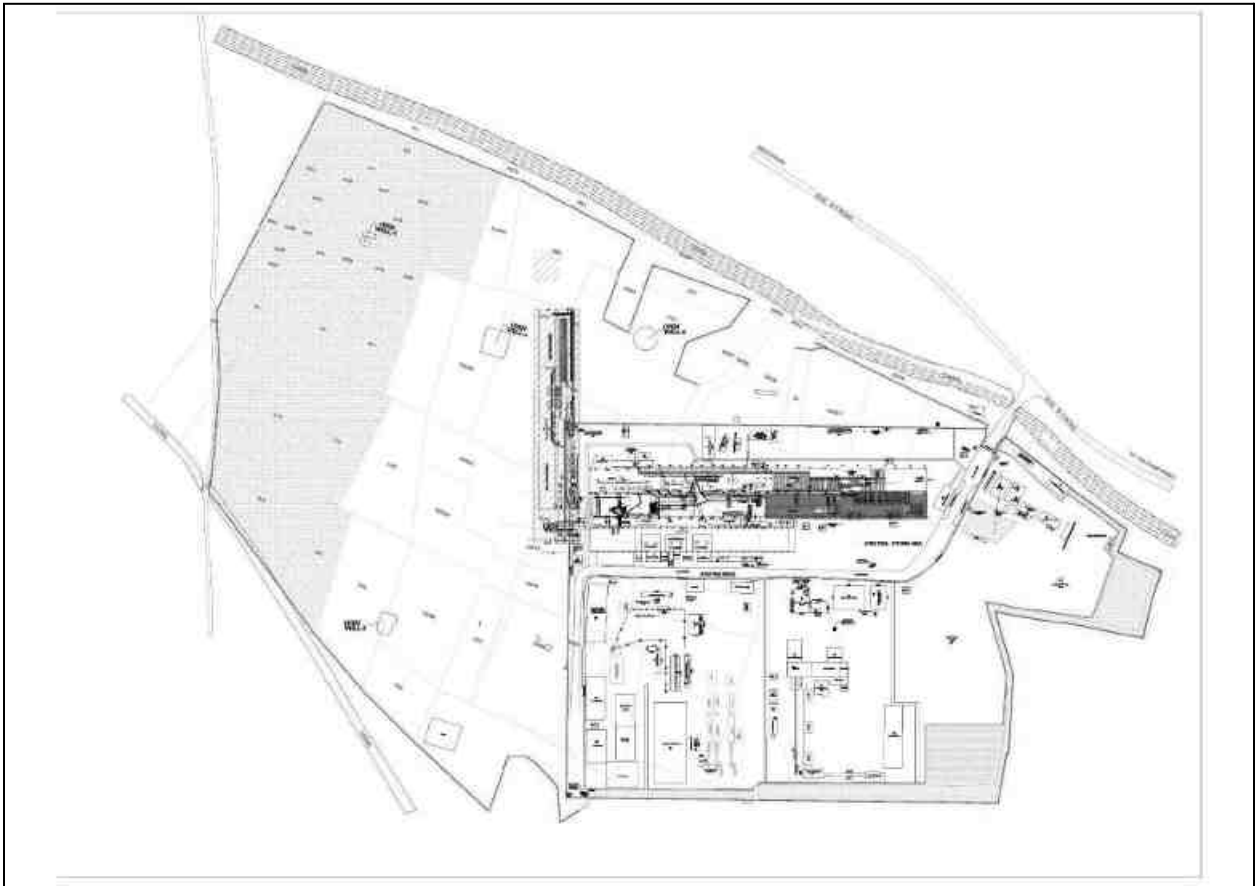


Figure 4. Layout Plan (After Expansion)

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 2.3.2. Topographical Map

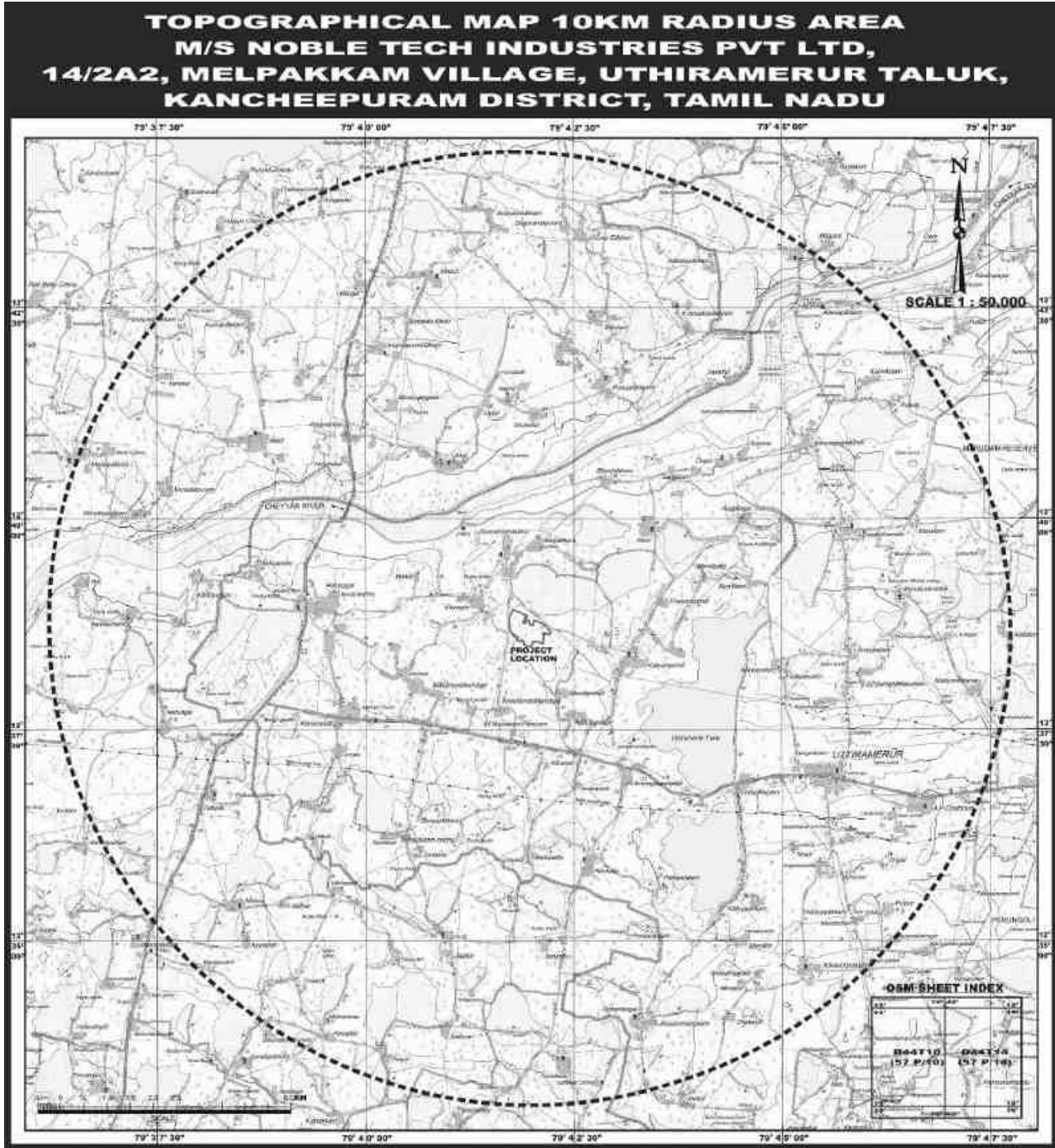


Figure 5. Topographical Map showing study area (10 Km radius)



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 2.3.3 Environment Sensitivity of the Project

Table 9. Project Site Specific Environmental Sensitivity Details

Particulars	Distance	Direction
<b>Water Bodies</b>		
Drain near Lease Boundary	0.01	N
Lake near Pudur	0.54	NNE
Lake near Melpakkam	0.78	SE
Elanagar Lake	0.85	W
Lake near Ravuttanallur	1.71	SE
Lake near Kaliyampundi	1.81	E
Drain near Anumantandalam	2.09	N
Lake near Silambakkam	2.19	NE
Cheyyar River	2.20	NW
Uthiramerur Lake	2.59	SE
Lake near Perunagar	2.92	WSW
Lake near Amaipandalur	3.42	SSE
Lake near Ukkal	3.97	NNW
Lake near Sethupattu	4.81	WNW
Lake near Tirupulliam	5.48	ENE
Kannikulam Lake	5.59	NE
Drain near Olukarai	6.15	NE
Adavapakkam Lake	7.96	NE
Big Lake Marudham	8.06	NE
Forest lake marudham	8.84	NE
Mamandur Tank	10.45	NNW
<b>Forests</b>		
Marudam Reserved Forest	9.30	NE
Perungoli Reserved Forest	10.52	SE
<b>Eco-sensitive Area</b>		
Nil		
<b>Archeological Area</b>		
Nil		
<b>Densely Populated Area</b>		
Elanagar	0.64 km	NW

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 10. Site Specific Social Infrastructure Details

<b>Particulars</b>	<b>Distance</b>	<b>Direction</b>
<b>Hospital</b>		
V2 POLY CLINIC	6.74 km	SE
Adhiparasakthi Speciality Clinic Uthiramerur	6.87 km	SE
Sri Sarada Devi Charitable Dispensary	9.71 km	ENE
<b>School</b>		
Elanagar Middle School	0.94 Km	WNW
RC Elementary School	1.62 Km	SSW
R.C. Middle School	1.63 Km	SSW
St. Joseph's High School	1.65 Km	SSW
<b>Post Office</b>		
Karthik Indian Post	0.93 km	WNW
R.N. Kandigai Post office	1.54 km	SSW
Kaliyampoodi Post Office	2.10 km	ESE
<b>Place of Worship</b>		
Sree udayambikai udayapoorisvarar Temple	1.12 km	WNW
Elanagar Sri Srinivasa Perumal Temple	1.22 km	WNW
Udaiyapurisvara	1.38 km	SSW
Arulmigu Shri kanniyamma Temple	1.63 km	WSW
<b>Bank</b>		
India 1 ATM	3.87 km	SW
INDIAN BANK	3.98 Km	W
Co-operative Bank Perunagar	4.44 km	WNW

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

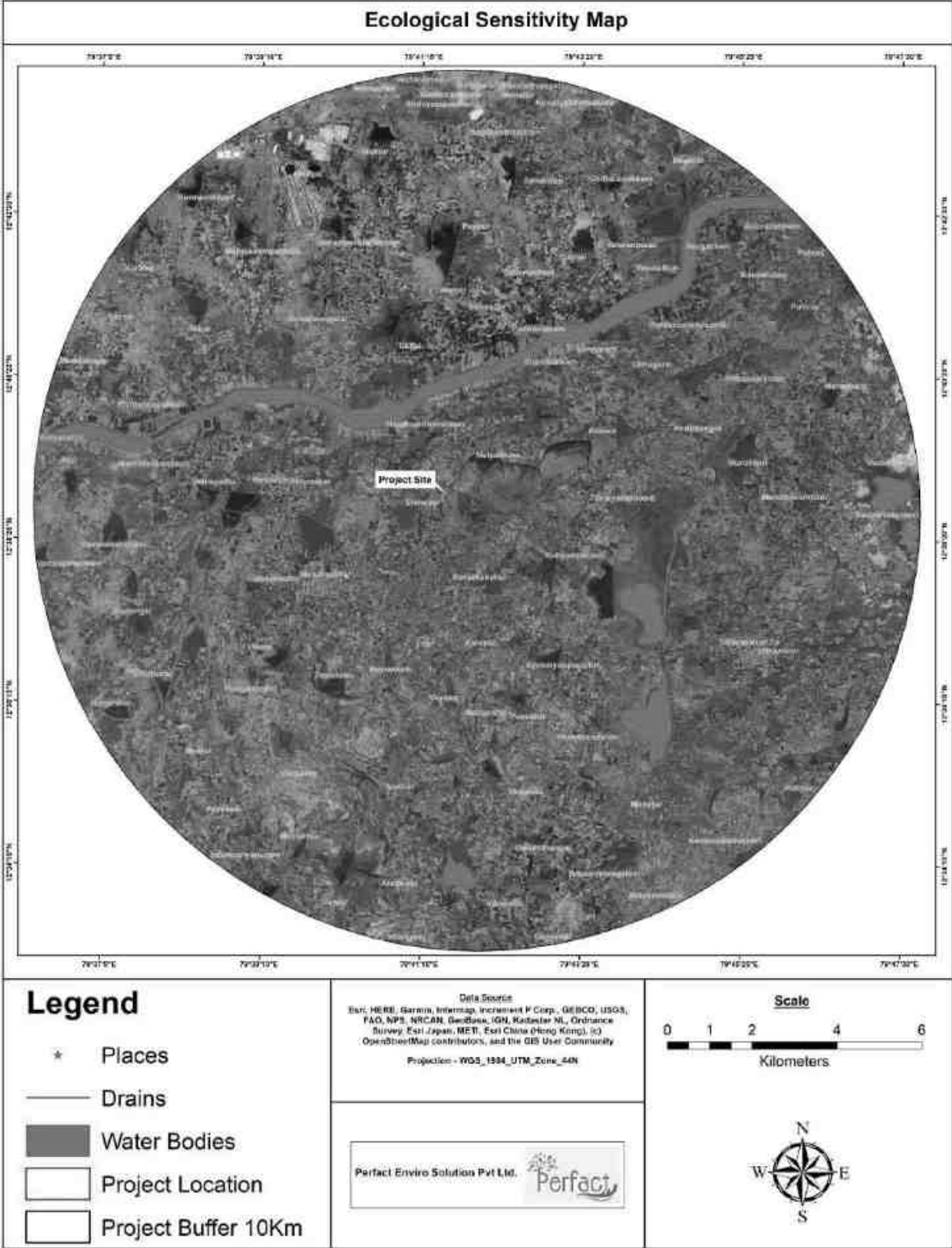


Figure 6. Project Site Specific Environmental Sensitivity Map

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 2.3.4. Accessibility & Connectivity



Figure 7. Accessibility to Project Site

### 2.3.5. Major Connectivity Near the Project

Table 11. Project Site Specific Infrastructure Details

Particulars	Distance	Direction
<b>Road</b>		
Perunagar-Kaliyampondi Road (Approach Road)	0.03 km	NE
Uthiramerur Road	2.14 km	S
State Highway No.-116	4.39 km	W
State Highway No.-118A	6.44 km	E
Endathur Road	6.86 km	SE
State Highway No.-118	7.17 km	SE
State Highway No.-5	14.33 km	SW
<b>Railway Station</b>		
Walajabad Railway Station	20.94 km	NE

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Particulars	Distance	Direction
Kanchipuram Railway Station	22.11 km	N
Pazhaya Seevaram Railway Station	23.92 km	NE
<b>Airport</b>		
Arakkonam Airport	46.00 km	N
Chennai International Airport	61.94 km	NE

### 2.3.6. Major Industries in Buffer area with 10 km radius

Table 12. List of Major Industries in 10 km radius

Sr. No.	Industry Name	Distance & Direction
1	Rockman Industries Limited	9.58 NW
2	Grasim Industries Limited, Birla Paint Division	7.96 NW

### 2.3.7 Seismicity

The project area falls in Seismic Zone- II. Suitable seismic coefficients in horizontal and vertical directions respectively, will be adopted while designing the structure. The chimneys within the premises should be strengthened.

**Earthquake:** A 3.3 magnitude earthquake hit near Kanchipuram on the morning of December 08, 2023 at 07:39 local time (Asia/Kolkata). The epicenter of this earthquake was located 4 km west-southwest of Madurantakam, Tami Nadu.


DATE AND TIME:	<b>Dec 8, 2023 07:39</b> (Kolkata time) - Dec 8, 2023 02:09 UTC
MAGNITUDE:	<b>MAG 3.2</b> Richter Scale.
EPICENTER:	<b>4 km (2 mi) west-southwest of Madurāntakam, Tamil Nadu, India</b> Coordinates 12°30'0"N 79°51'0"E.
DEPTH:	<b>10 km (6.2 mi)</b> A very shallow depth.
NEARBY COUNTRIES:	 India
SOURCES:	<b>EMSC</b> - European Seismological Centre: <a href="#">View earthquake</a>

Figure 8. Earthquake 4 km from Madurantakam on Fri Dec 8, 2023

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

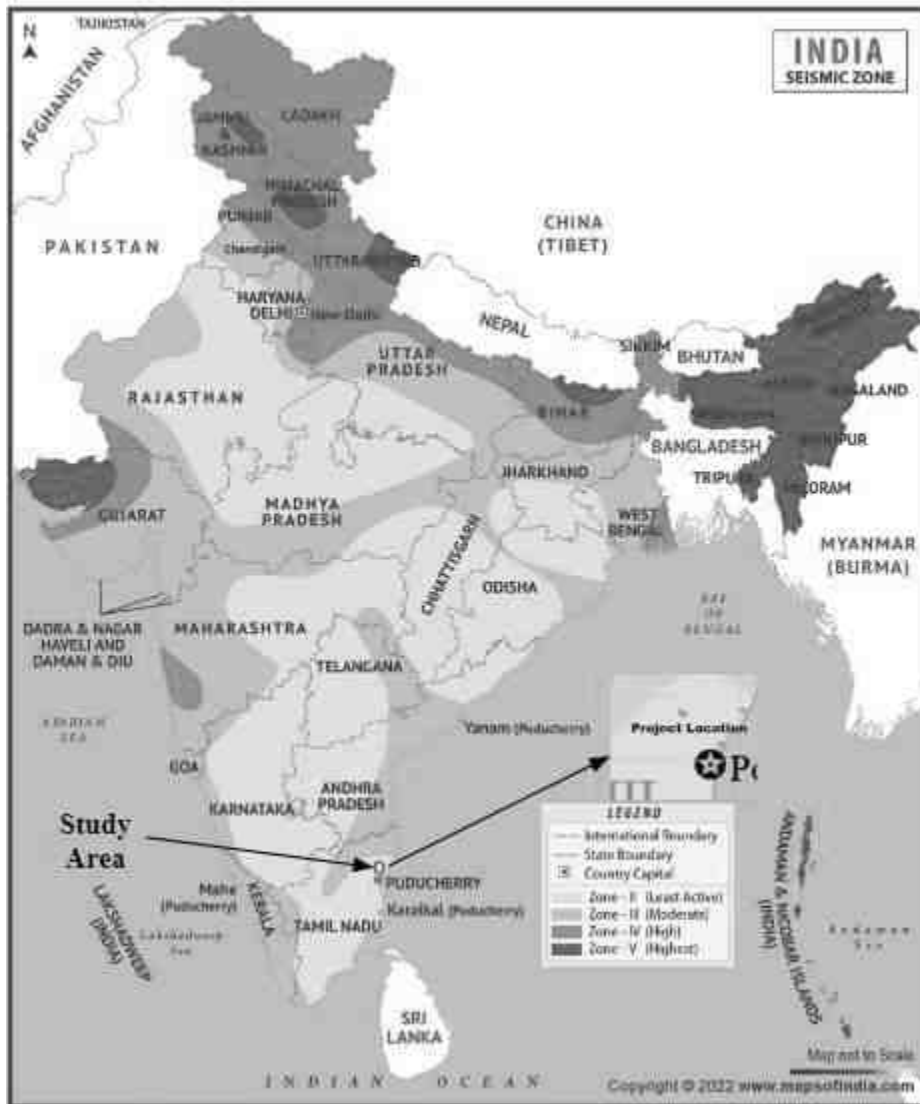


Figure 9. Map Showing Seismicity of the Area

## 2.4 SIZE AND MAGNITUDE OF OPERATION

Table 13. Project Details

Sr. No.	Particulars	Unit	Project Details		
			Existing	Proposed	Total After Expansion
<b>1</b>	<b>Plot Area</b>				
1.1	Plot Area	ha	21.95	15.32	37.27
1.2	Green Area	ha	7.21	5.80	13.01
<b>2</b>	<b>Product</b>				
2.1	Sponge Iron	TPD	250	0	250
2.2	M.S Billets and Rolled Products	TPD	300	1300	1600

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Sr. No.	Particulars	Unit	Project Details		
			Existing	Proposed	Total After Expansion
2.3	Captive Power	MW	12	0	12
<b>3</b>	<b>Cost</b>				
3.1	Project Cost	INR Crores	273.17	80.00	353.17
3.2	EMP Capital Cost	INR Lakhs	107.00	205.00	312.00
3.3	EMP Recurring Cost	INR Lakhs	28.5	24.00	52.50

#### 2.4.1 Plot Area Distribution

Existing project land area 21.95 ha will be expanded with an additional land area of 15.32 ha. So the total area after expansion will be 37.27 ha.

Table 14. Area Distribution

Sr. No.	Land Use	Land Requirement (in ha)			
		Existing	Proposed	Total After Expansion	%
1	Ground coverage	9.16	3.72	12.88	34.56
2	Internal Roads & Pavement Area	1.50	1.81	3.31	8.88
3	Surface Parking Area	0.50	2.42	2.92	7.83
4	Storage/disposal area	0.89	0.22	1.11	2.98
5	Greenbelt Area	7.21	5.80	13.01	34.91
6	Area for future activities	2.69	1.35	4.04	10.84
<b>Total</b>		<b>21.95</b>	<b>15.32</b>	<b>37.27</b>	<b>100.00</b>

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

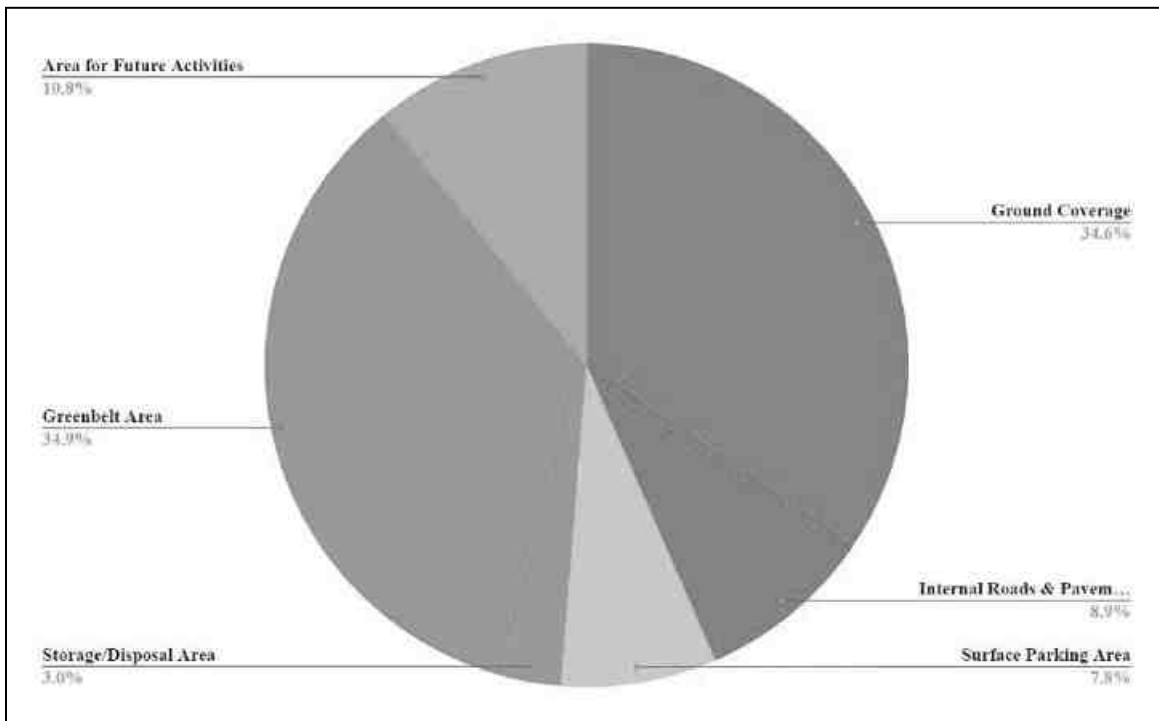


Figure 10. Area Distribution Chart

### 2.4.2 Product Details

Details of existing & proposed products are Tabulated in Table.

Table 15. Production Capacity

Sr. No.	Product	Unit	Capacity			End Use of Product
			Existing	Proposed	After Expansion	
1	Sponge Iron	TPD	250	0	250	Ingots
2	M.S Billets and Rolled Products	TPD	300	1300	1600	Rolled products manufacture
3	Captive Power	MW	12	0	12	Waste Heat Recovery & Power supply

### 2.4.3 Project Cost

Existing cost of the project **INR 273.17 Cr.**, Cost of the proposed expansion is estimated as **INR 80.00 Cr.** towards equipment and machinery including 1 No. of 30 T Induction furnace, 1 No. of RMT Mill, a Cooling Tower, EOT Cranes, installation of ETP, additional STP, etc.

Details of proposed project cost bifurcation is provided in Table below:



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 16. Proposed Cost Details

Sr. No.	Particulars	Proposed Cost (INR Crores)
1.	Land (Including all types of documentation)	2.50
2.	Construction and Development	2.00
3.	Plant Machinery & Equipments	75.5
<b>Total</b>		<b>80.00</b>

#### 2.4.4 Project Schedule and Completion

The project is applied for a Grant of EC for expansion. Tentative Public Hearing will be conducted by the end of June 2024. The project is likely to start construction activity by 01/10/2024 and likely date of completion of Construction activity by 30/09/2025.

#### 2.4.5 Equipments & Utilities

Table 17. List of Equipments & Utilities

Sr. No.	Name of Equipments/Utilities	Existing	Proposed	Total After Expansion
<b>1</b>	<b>Equipments</b>			
1.1	Induction Furnace	1 No. x 30 Ton	1 No. x 30 Ton	2 No. x 30 Ton
1.2	Steel Rolling Mill	1 Nos. x 300 TPD	-	1 No. x 300 TPD
1.3	Small Steel Rolling Mill	1 Nos. x 300 TPD	-	1 No. x 300 TPD
1.4	TMT Rolling Mill	-	1 Nos. x 1000 T/D	1 Nos. x 1000 T/D
1.5	CCM Machine Stand	2 Nos.	1 Nos.	3 Nos.
<b>2</b>	<b>Utilities</b>			
2.1	Pump House	2 Nos.	2 No.	4 Nos.
2.2	Cooling Tower	3 Nos.	2 Nos.	5 Nos.
2.3	Hydraulic Motor	5 Nos.	1 Nos.	6 Nos.
2.4	Pollution Air Suction	2 Nos.	1 Nos.	3 Nos.
2.5	Air Compressor	3 Nos.	-	3 Nos.
2.6	EOT Crane	8 Nos.	5 Nos.	13 Nos.
2.7	FBC Boiler*	1 No. x 25 TPH	-	1 No. x 25 TPH
2.8	WHR Boiler*	3 Nos. x 11.5 TPH	-	3 Nos. x 11.5 TPH
2.9	ETP Capacity	-	1 No. x 40 KLD	1 No. x 40 KLD
2.10	STP Capacity	30 KLD	35 KLD	65 KLD
2.11	Transformer**	33.0 KV + 11.0 KV	110.0 KV	110.0 KV + 11.0 KV
2.12	DG Sets	3 Nos. x 600 kVA	1 No. x 1500 kVA	3 Nos. x 600 kVA, 1 No. x 1500 kVA

\* OCMS - Stack monitoring systems in FBC & WHRB

\*\* 33.0 KV transformer will be replaced by a 110.0 KV transformer.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

## 2.5 POWER REQUIREMENT

**Demand & Source of Power Supply:** The total power requirement after the proposed expansion will be 47.5 MW, an increase of 17.5 MW from existing 30 MW, will be sourced from captive Power plant production 12 MW and from TANGEDCO from existing 11.0 KV transformer & by installing 110.0 KV transformer replacing existing 33.0 KV transformer.

To meet emergency power requirements, existing 3 Nos. of DG sets of 600 kVA will be added with one D.G. Set of capacity 1500 kVA.

Table 18. Details of Power Requirement

Particular		Existing	Proposed	Total After Expansion
<b>Source of Power Supply</b>		TANGEDCO & Captive Power Plant (Inhouse)		
a. Power Supply (TANGEDCO)	Transformer KV	33.0 + 11.0	110.0	110 + 11.0
	MW	30.0	17.5	47.5
b. Captive Power Plant	MW	12.0	0	12.0
<b>DG Sets &amp; Capacity of D.G. Sets</b>		3 Nos. (600 kVA)	1 No. (1500 kVA)	3 Nos. (600 kVA), 1 No. (1500 kVA)

## 2.6 FUELS REQUIREMENT

Fuel is required for the Sponge Iron plant, Scrap cutting process, DG sets & vehicles. Furnace oil is the primary fuel used in the sponge iron plant, with a current consumption of 435.8 TPD. LPG is used for Scrap Cutting and existing consumption is 3.61 TPD, which will be expanded to 20 TPD after the expansion. HSD is used for both DG Sets and vehicles, with a current consumption of 33.25 TPD, which will be expanded to 40.0 TPD after the expansion.

Table 19. Fuel Details

Sr. No.	Name of Fuel	Purpose of Use	Existing Quantity	Proposed Quantity	After Expansion Quantity
			TPD		
1	Furnace Oil	Sponge Iron Plant	435.8	-	435.8
2	LPG	Scrap Cutting	3.61	16.39	20.0
3	HSD	DG Sets and Vehicles	33.25	6.75	40.0

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Petroleum class “B” License from PESO was obtained and renewed from time to time for the existing 24.00 KL Diesel tank within the premises. After Expansion , the storage capacity will be increased to 40 KLD for which revised License will be obtained from PESO.

## 2.7 WATER REQUIREMENT

- **Total Water Requirement:** Existing requirement @202.2 KLD will increase after expansion to 597 KLD.
- **Fresh Water Requirement:** Existing requirement @179 KLD will increase after expansion to 543 KLD. Freshwater is being sourced from Groundwater Supply through in-house Open Wells - 5 Nos. and Borewells - 2 Nos. with valid TN-WRD Permission for extracting 700 KLD of groundwater. Proposed expansion requirement 543 KLD is within the already permitted quantity.
- **Reuse Water:**
  - Existing reuse of treated sewage @23.2 KLD will increase after expansion to 30 KLD which shall be reused for Green belt development.
  - Treated wastewater from the proposed ETP, available @24 KLD, will be reused in RM Plant and CCM Plant.

## 2.8 RAW MATERIALS REQUIREMENT

Table 20. Details of Raw Materials Quantity

Sr. No.	Name of the Raw Material	Unit	Existing Quantity	Proposed Quantity	After Expansion Quantity
1	Iron Ore	TPD	480	0	480
2	Coal	TPD	270	0	270
3	Sponge Iron	TPD	300	528	828
4	MS Scrap	TPD	100	1180	1280
5	Steam	Nm <sup>3</sup> /hr	120000	0	120000
6	Dolomite	TPD	66.7	0	66.7

Raw materials like Coal is stored under a shed and Iron ore storage is in an open yard. The raw material MS Scrap consists of Manganese, Carbon, Silicon. These are segregated before using in the process as the same will be processed on batch mode according to the market requirement of alloying needs.

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Table 21. Details of Raw Materials Source & Mode of Transportation

Sr. No.	Raw Material Name	Source (Import/ Indigenous)	Distance from the Project Site (km)	Mode of Transport
1	Iron Ore	Indigenous/ Import	80 (Chhattisgarh to Korukkupet Railway station through Train)	Road/Truck
2	Coal	Indigenous/ Import	100 (Ennore/ Krishnapatnam port)	Road/Truck
3	Sponge Iron	Local	15	Road/Truck
4	MS Scrap	Indigenous/ Import	100 (Ennore port)	Road/Truck
5	Steam	Indigenous	-	Within Site
6	Dolomite	Indigenous	100	Road/Truck

## 2.9 MANPOWER REQUIREMENT

Details of manpower are given in *Table 21*.

Table 22. Manpower Details (During Construction & Operation Phase)

Employment Generation during Construction Phase			
Permanent Employment [X]		Temporary / Contractual Employment [Y]	
No.s of Permanent Employment [A]	20	No.s of Temporary / Contractual Employment [A]	100
Period of Employment (No. of days) [B]	365	Period of Employment (No. of days) [B]	365
No. of Man Days [A]* [B]/Annum	7300	No. of Man Days [A]* [B]	36500
<b>Total [X] + [Y] = 43800</b>			

Employment Generation during Operational Phase			
Particulars	Existing	Proposed	Total After Expansion
<b>Permanent Employment [X]</b>			
Nos. of Permanent Employment [A]	200	50	250
Period of Employment (No. of days) [B]	365	365	365
No. of Man Days [A]* [B]/Annum	73000	18250	91250
<b>Total Mandays [X]/Annum = 91250</b>			
<b>Temporary / Contractual Employment [Y]</b>			
Nos. of Temporary / Contractual Employment [A]	250	100	350
Period of Employment (No. of days) [B]	365	365	365
No. of Man Days [A]* [B]/Annum	91250	36500	127750
<b>Total Mandays [Y]/Annum = 127750</b>			
<b>Total [X] + [Y] = 219000</b>			

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### **2.9.1 Facilities and Amenities**

Amenities:

- Good drinking water facility
- Canteen Facility
- Restrooms and waiting lounge
- Parking facility: Truck parking, car parking, parking for differently abled
- Retiring rooms for truck drivers
- First aid kits at all prominent places.
- OHS centre with a first Aid facility

Facilities:

- Water Treatment Plant: Groundwater will be extracted and treated up to drinking water standards to meet the domestic water requirement of Employees, Drivers and Visitors
- Sewage Treatment Plant: Sewerage network exists with connection to Sewage Treatment plant; after expansion, the same will be augmented to meet additional sewage generation. Treated sewage will be reused for green belt development.
- Effluent Treatment Plant: All trade effluent will be collected and channelized to effluent treatment plants and treated effluent will be reused in the RM and CCM Plant.
- Rainwater Harvesting: Roof-top rainwater harvesting system is available & the same will be maintained to use roof top rainwater and after treatment for reuse within the facility in Fresh water application.
- Stormwater Management: A garland stormwater network is available in the existing plot area which will be extended to the proposed plot area as well. Online percolation pits will be increased from 110 Nos. to 155 Nos. through which groundwater recharging will be made to boost the Groundwater level to a maximum extent. Excess stormwater will be drained in the external Stormwater drain network.
- Assembling points for fire and safety.

## **2.10 MANUFACTURING PROCESS AND PROCESS FLOW DIAGRAM**

### **Manufacturing process of Products**

#### **1. Sponge Iron Plant**

The plant will use coal as a base to convert Iron Ore into Iron through direct reduction. The process involves reducing Hematite ( $\text{Fe}_2\text{O}_3$ ), an oxide ore, to 'Fe' using Carbon as a reductant. The process occurs at temperatures between 900-1150°C, where coal serves as a source of heat and reducing gases. Dolomite chips of size 0.6 mm is added to absorb the sulphur dioxide formed inside the Kiln in order to prevent the combination of Sulphur impurities with iron. The entire process takes place within a Rotary Kiln. The Direct Reduced Iron (DRI) plant consists of 3 x 100 TPD kilns, along with associated accessories such as a Waste Heat Recovery Boiler power generating unit. The main facilities in the Sponge Iron plant include:

- Day bins and RMHS unit
- Rotary Kiln & Cooler
- Central Control Room
- Product separation building (PSB) and storage area
- Waste Heat Recovery Boiler (WHRB) power generation

A single day bin building meets the raw material requirements for the kiln. The building contains storage bins for Iron ore pellets (69% more Fe than Iron ore), Medium coal, fines coal, feed coal, dolomite, and other necessary materials. Iron ore reduction in a solid state will be accomplished using a refractory-lined rotary kiln. Initial heating of the kiln is performed by a central burner located at the discharge end. Sized iron ore is continuously fed into the kiln along with coal, which serves as both fuel and reductant. Dolomite is added to scavenge Sulphur from the coal. Air tubes are installed along the length of the kiln to control the combustion air volume, thereby maintaining the desired temperature profile. The Carbon monoxide generated during coal combustion reduces the iron ore, converting it into sponge iron. The rotary kiln is divided into two primary zones: the preheating zone and the reduction zone. The preheating zone, which extends over 30 to 50% of the kiln's length, drives off moisture from the charge and burns volatile matter in the coal with the supplied combustion air through the air tubes. Heat from combustion raises the temperature of the lining and the bed surface, and as the kiln rotates, the lining transfers heat to the charge. Preheated charge material, reaching temperatures around

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1000°C, enters the reduction zone, where the appropriate temperature for solid-state reduction of iron oxide to metallic iron (approximately 1150°C) is maintained. The hot material is then transferred to a rotary cooler, where it cools from 1150°C to 125°C through indirect water spraying. The discharged material from the cooler comprises sponge iron lumps, sponge iron fines, and char. The product is first moved to a vibrating screen to separate it based on size to 0-3 mm and 3-20 mm after that Magnetic and Non-Magnetic materials are separated using magnetic separators and stored in separate bins.

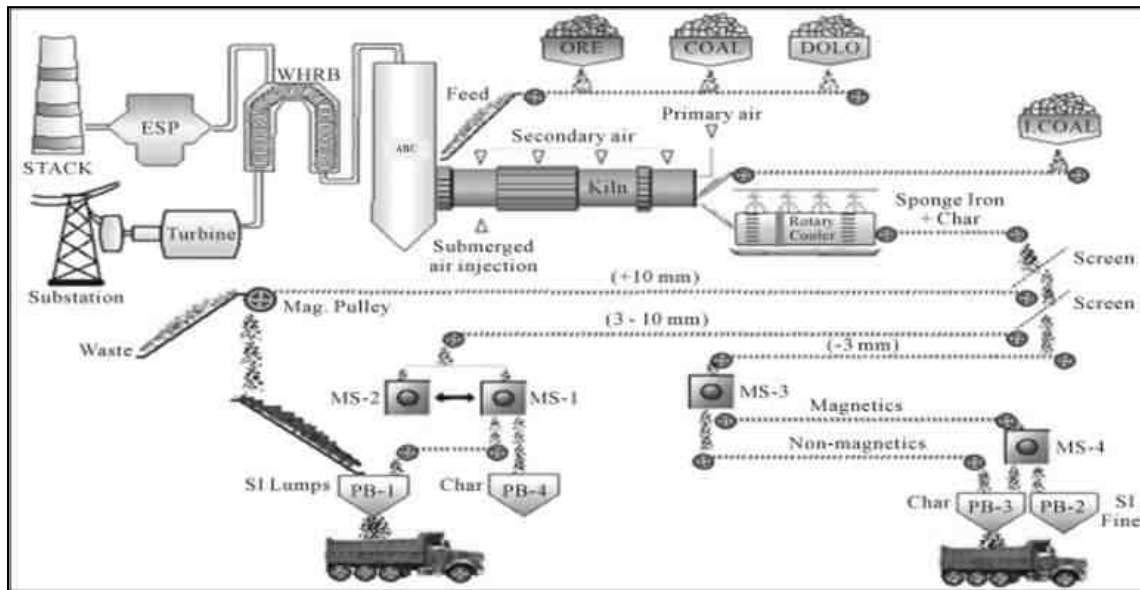


Figure 11. Process Flow Diagram of Sponge Iron

## 2. Steel Melting Shop

To produce pure liquid steel or hot billets, the Hot Metal Sponge Iron is melted together with melting scrap and fluxes. The resulting hot metal is directly sent to the Rolling Mill using the Hot Charging method, which accounts for 70% of the production. The Steel Melting Shop for this method includes the following units:

1. Induction Furnace
2. Ladles
3. Cranes
4. Continuous Casting Machine (CCM)

**The Induction Furnace** is the device that utilizes electrical power to melt the charge material. It consists of a crucible lined with water-cooled induction coils, an electrical system for controlled

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power supply to the induction coil, a hydraulic tilting system, a heat exchanger for circulating water cooling, a water softener for generating soft water, a furnace transformer, a power factor improvement system, and a surge suppressor.

**Ladles** are pots with a refractory lining capable of withstanding temperatures of 1700°C. They are equipped with side arms for lifting assistance from cranes. Ladles are used to store the liquid steel from the Induction Furnace and transport it for further processing. The ladles are designed with a bottom nozzle and a hydraulically operated slide gate for liquid discharge.

**Electric Over-Head (EOT) Cranes** of various capacities are employed to handle ladles and materials at different locations. The cranes are utilized in the melting hall for charging melting scrap, transferring ladles to the positioning ladles over the Tundish of the Continuous Caster, removing billets from the cooling bed and storing them in designated areas, and performing other necessary tasks. The sizes, capacities, and numbers of cranes are determined accordingly.

**The Continuous Casting Machine (CCM)** is used for the continuous casting of liquid steel into the desired cross-section and length. It consists of a Tundish, Mould, Roller apron with withdrawal mechanism, cooling bed, hydraulic system for the withdrawal mechanism, water pumps, and cooling towers for water spray on the withdrawn section and cooling bed. A dummy bar is provided to initiate the casting process. The Tundish is a rectangular vessel lined with refractory material and equipped with a discharge nozzle with a manually operated cast iron plug system. A stand is erected over the Tundish where the ladle is positioned to discharge the liquid into it. The Mould is made of copper and has a water-cooled jacket. Its bottom cross-section matches the size of the billet to be drawn. Initially, a dummy bar of the same size is inserted. As the liquid steel is poured into the mould, the dummy bar is slowly withdrawn, allowing the partially frozen steel to exit the mould. Water spray nozzles are installed to cool the just-drawn billet and harden its outer surface. There will be 2 x 30-tonne Induction Furnaces, and the Continuous Casting Machine with 3 stands, 6/11 radius machine will produce MS Billet & Blooms.



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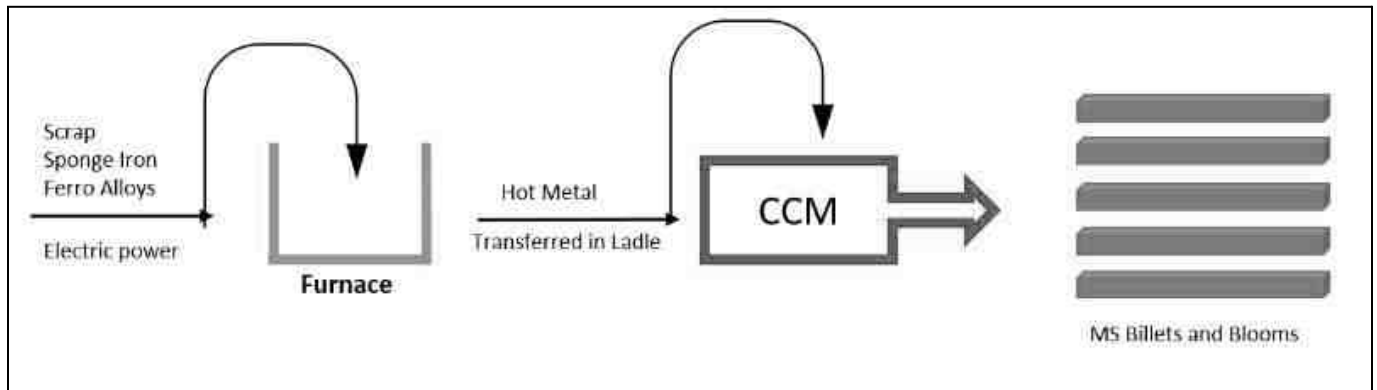


Figure 12. Process Flow Diagram of SMS

### **3. Rolling Mill**

The Rolling Mill utilizes the following methods for manufacturing rolled products:

- i. Rolling through Direct Rolling / Online Rolling (70%)
- ii. Rolling through Re-Heating Furnace (30%).

#### **i. Direct Rolling / Online Rolling:**

In this method, the raw material, which is Hot Billets in a red-hot condition, are cut using an automatic hot metal Shearing Machine. Each strand in the proposed plant is equipped with automatic hot metal shear machines. As a backup, a gas cutting facility is maintained for the hot metal shearing machine. Once the Hot Metal is cut into the required length, it is sent to the rolling stands for rolling. The steel pieces pass through all stands to achieve the desired shape of the finished goods, i.e., Rolled products like, Channel, Beam, Angle, and TMT etc.

#### **ii. Rolling through Re-Heating Furnace:**

For this method, a pusher-type furnace is provided to heat the Billets/Blooms. The Re-Heating Furnace (RHF) will have an end charging and side discharging system and will offer single row charging facility. The Dual fuel system (Coal and Furnace Oil) will be used for heating the furnace. The charging of the Reheating furnace is both through direct and ejector based. The furnace's combustion system will include air blowers, Furnace oil storage, supply and preheating system. The combustion products will exit the furnace at the discharging end, pass through an underground flue tunnel, and then go through a metallic tubular recuperator before being

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released through a self-supporting steel chimney of sufficient height. Various instruments are employed to ensure the smooth operation of the furnace.

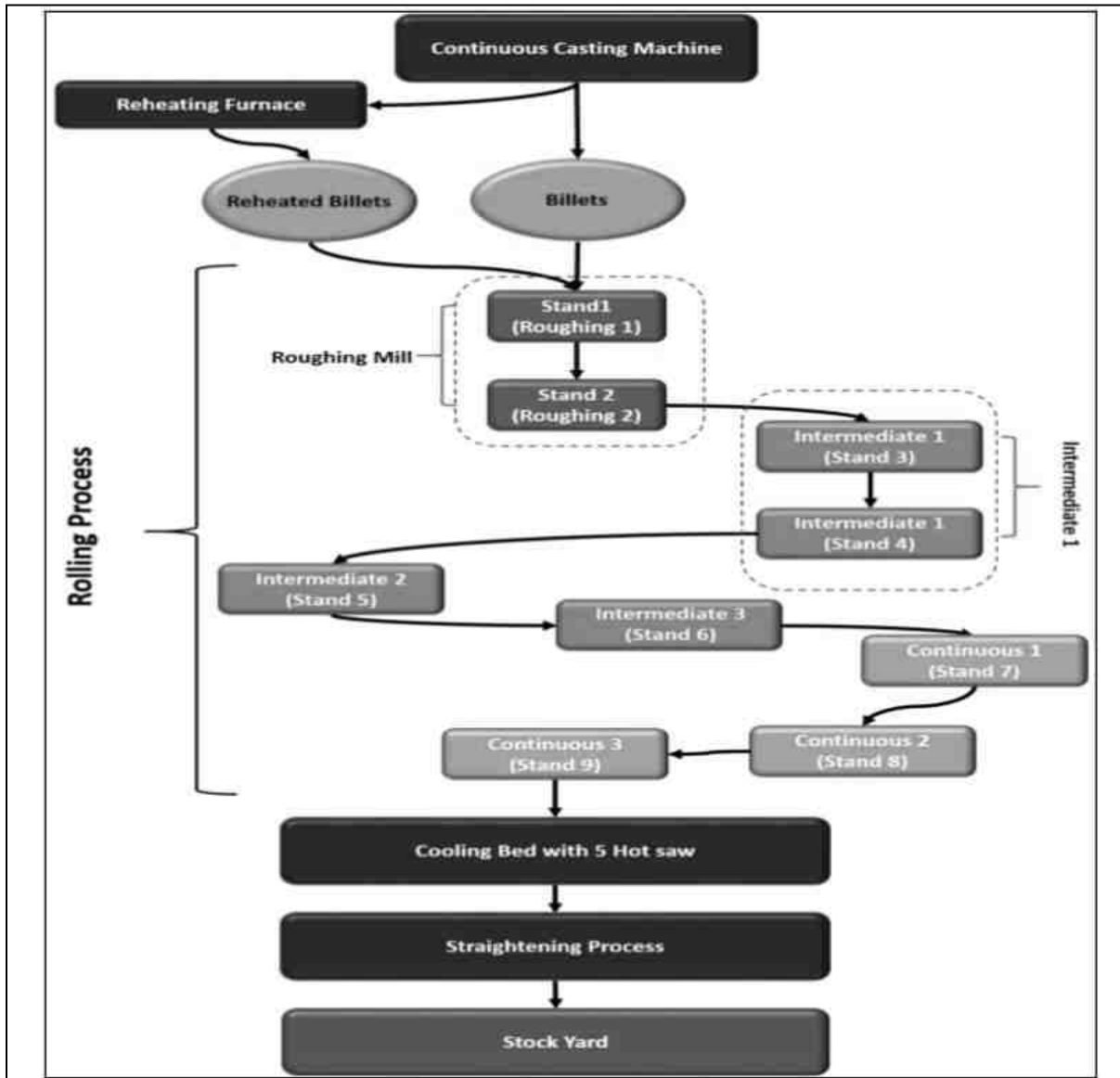


Figure 13. Process Flow Diagram of Rolling Mill

#### 4. Power Plant

Noble Tech plant consists of 12 MW power plant including Waste Heat Recovery Boiler (WHRB) and Fluidized Bed Combustion Boiler (FBC) to fulfill the power requirements of various processes in the plant, including the power plant's auxiliaries.

##### WHRB Power Plant:

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The production of sponge iron in the DRI kiln (950 °C) will generate a significant amount of hot flue gases that carry a considerable amount of sensible heat. The energy contained in these waste flue gases can be effectively utilized to generate electric power. Therefore, a WHRB power plant is considered an ideal solution to efficiently utilize this waste flue gas. The WHRB power plant is not only making the plant partially self-sufficient in terms of electric power but also contributes to energy conservation and environmental protection.

Steam Turbo-generators (STGs) will be provided for the power plant. These STGs will be multistage, extraction-cum-condensing type turbines, complete with a condenser, air evacuation system, two sets of 100% condensate extraction pumps, electronic governing system, lubricating oil system, and regenerative feed heating system. The STGs will be housed in the machine hall of the power plant 3 x 11.5 TPH boilers will be installed for the 3 x 100 TPD DRI kilns to generate power. The WHRB outlet is set at 66.5 kg/cm<sup>2</sup> and 427°C.

#### **FBC Power Plant:**

The FBC power plant unit will comprise One FBC boiler with a capacity of 25 TPH, generating a total of 5.5 MW of power. The boilers will be designed for continuous operation at the Turbine Maximum Continuous Rating (TMCR). A margin of 10% above TMCR will be considered to determine the rated capacity of the boilers. These boilers will be of the natural circulation, circulating fluidized bed combustion, two-pass, non-reheat, bi-drum, balanced draft, semi-outdoor type. The continuous evaporation rating of each boiler will be approximately 25 tonnes/hr (BMCR not less than 110% of TMCR), with steam parameters at the superheater outlet set at 66.8 kg/cm<sup>2</sup> and 465°C. The feedwater temperature at the economizer inlet is expected to be around 120°C at Maximum Continuous Rating (MCR). The steam parameters at the boiler outlet will be fine-tuned based on the actual plant layout and piping arrangement. The boilers will be equipped with ash/solid separators, economizers, air heaters, ducting, forced draft (FD) fans, induced draft (ID) fans, and primary air (PA) fans. Air-cooled condensers are present in the power plant to conserve water resources.

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## 2.11 AIR POLLUTANT EMISSIONS

### 2.11.1 Details of Process Gas Stack

Table 23. Process Gas Stack Details (Existing)

Sr. No.	Source of Emission	APCM	Stack Height (m)	Diameter (m)	MOC
1	Raw Material & Product Storage -I	Bag Filters with stack	13	0.60	MS
2	Raw Material & Product storage-II	02 Nos. of Bag Filters with individual stack	18	0.60	MS
3	Product Cooler Discharge in Kiln I & II	Common Bag Filter with stack	14	0.60	MS
4	Product Cooler Discharge in Kiln III	Bag filter with stack	13	0.60	MS
5	Oil/Coal Fired Reheating Furnace	Recuperator with stack	30	1.0	MS

**Note:-** After Expansion, there will be no addition of process gas stacks within the premises.

### 2.11.2 Details of Flue Gas Stack

Table 24. Flue Gas Stack Details

Sr. No.	Source of Emission	APCM	Stack Height (m)	Diameter (m)	MOC
<b>Existing Stack</b>					
1	Kiln I & II with 2 Nos. of WHRB	Individual ESP for Kiln I & II (WHRB) provided with common stack	40	2.80	RCC
2	Kiln III with WHRB	ESP with stack	40	1.5	MS
3	Fluidized Bed Combustion Boiler	ESP with Stack	54	3.0	RCC
4	DG set 600 kVA Sponge Iron Division	Acoustic enclosures with stack	4	0.25	MS
5	DG set 600 kVA Power Division	Acoustic enclosures with stack	4	0.25	MS
6	DG set 600 kVA Reheating Furnace and Rolling Mill Division	Acoustic enclosures with stack	4	0.25	MS
7	Induction furnace (30T-1 No.)	06 Nos. of bag houses fitted with stack	45	3.1	MS
<b>Proposed Stack</b>					
8	DG set 1500 kVA	Acoustic enclosures with stack	30	0.25	MS

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Sr. No.	Source of Emission	APCM	Stack Height (m)	Diameter (m)	MOC
9	Induction furnace (30T-1 No.)	06 Nos. of bag houses fitted with common stack*	45	3.1	MS

\*Common stack for existing Induction Furnace and proposed Induction Furnace.

## 2.12 WATER CONSUMPTION

**Source of Water** - Groundwater renewal NOC from TNWRD vide certificate No. 305/2024 (R-3) dated 08.05.2024 for the drawal of the total quantity of 700 KLD of groundwater. The renewal certificate is valid from 16.03.2024 to 15.03.2025.

Daily water requirement for the project after expansion will be around 597 KLD (Existing - 202.2 KLD, Proposed - 394.8 KLD).

**Water Requirement (Existing):** The total fresh water requirement for the operational industry is 179 KLD out of which 25 KLD is used for domestic purposes, 69 KLD is used in Cooling tower and Boiler, and remaining quantity 85 KLD in process (DM, Spray, RM & CCM). The domestic sewage is treated in STP of 30 KLD. 23.2 KLD of treated water is used for Gardening and Greenbelt development.

**Water Requirement (Total After Expansion):** The total water requirement after expansion will be 597 KLD of which 543 KLD will be fresh water, 30 KLD will be treated sewage and 24 KLD treated effluent will be recycled within the plant. Fresh water will be used for domestic purposes, DM plant, RM plant, CCM unit and Spray CT. The ETP treated water will be used in RM and CCM units. Similarly, STP treated water @ 30 KLD will be used for Greenbelt development.

Details of water consumption and wastewater generation are provided in Table below.

Table 25. Water Requirement

Sr. No.	Area/Process	Total Water Requirement (KLD)		
		Existing	Proposed	After Expansion
1	Domestic	25.0	11.0	36.0
2	DM	25.0	20.0	45.0
3	RM	20.0	30.0	50.0
4	CCM	20.0	101.0	121.0
5	Spray CT	20.0	90.0	110.0
6	Cooling Tower	69.0	136.0	205.0

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Sr. No.	Area/Process	Total Water Requirement (KLD)		
		Existing	Proposed	After Expansion
7	Green belt	23.2	6.8	30.0
<b>Total Water Requirement</b>		<b>202.2</b>	<b>394.8</b>	<b>597.0</b>
<b>Total Fresh Water</b>		<b>179.0</b>	<b>364.0</b>	<b>543</b>
<b>Treated Sewage</b>		<b>23.2</b>	<b>6.8</b>	<b>30.0</b>
<b>Treated Effluent</b>		<b>0.0</b>	<b>24.0</b>	<b>24.0</b>

Table 26 . Domestic Water Requirement

Sr. No.	Description	Population	Consumption in LPCD			Domestic in KLD	Flushing (KLD)	Total Water Requirement (KLD)	Wastewater Generation (KLD)	STP Treated Water (KLD)
			Domestic @ 20LPCD	Flushing @ 25LPCD	Total Consumption in LPCD					
<b>Existing</b>										
1	Permanent	200	4000	5000	9000	4	5	9	-	-
2	Contractual/ Casual	250	5000	6250	11250	5	6.25	11.25	-	-
3	Visitors/ Field Staff	400	2000	2400	4400	2	2.40	4.40	-	-
<b>Total</b>		<b>850</b>	<b>11000</b>	<b>13650</b>	<b>24650</b>	<b>11</b>	<b>13.65</b>	<b>24.65</b>	<b>23.80</b>	<b>23.2</b>
<b>Proposed</b>										
1	Permanent	50	1000	1250	2250	1	1.25	2.25	-	-
2	Contractual/ Casual	100	2000	2500	4500	2	2.50	4.50	-	-
3	Visitors/ Field Staff	400	2000	2400	4400	2	2.60	4.6	-	-
<b>Total</b>		<b>550</b>	<b>5000</b>	<b>6150</b>	<b>11150</b>	<b>5</b>	<b>6.35</b>	<b>11.35</b>	<b>8.8</b>	<b>6.8</b>
<b>After Expansion</b>										
1	Permanent	250	5000	6250	11250	5	6.25	11.25	-	-
2	Contractual/ Casual	350	7000	8750	15750	7	8.75	15.75	-	-
3	Visitors/ Field Staff	800	4000	4800	8800	4	5.00	9.00	-	-
<b>Total</b>		<b>1400</b>	<b>16000</b>	<b>19800</b>	<b>35800</b>	<b>16</b>	<b>20.00</b>	<b>36.00</b>	<b>32.60</b>	<b>30.00</b>

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

**Existing Water Balance Diagram-**

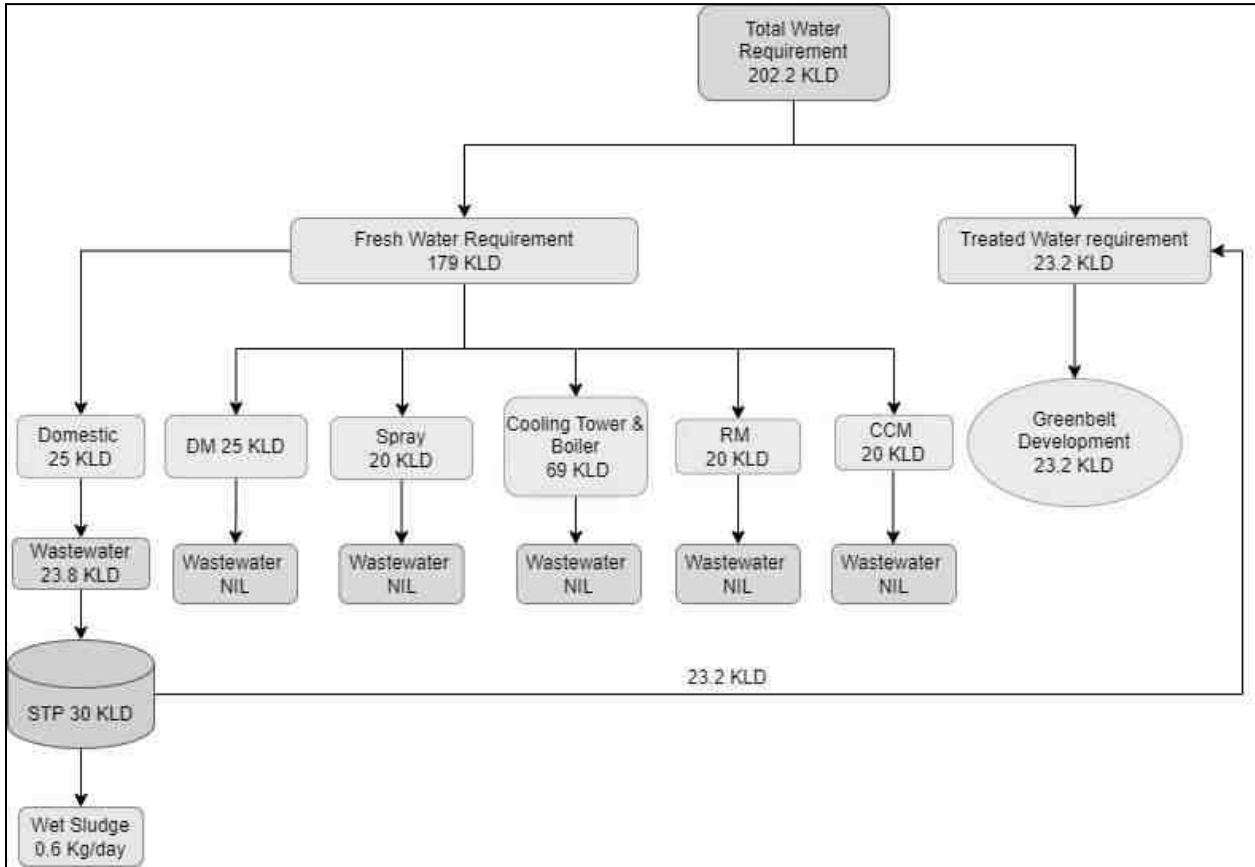


Figure 14. Water Balance Diagram (Existing)

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### After Expansion Water Balance Diagram-

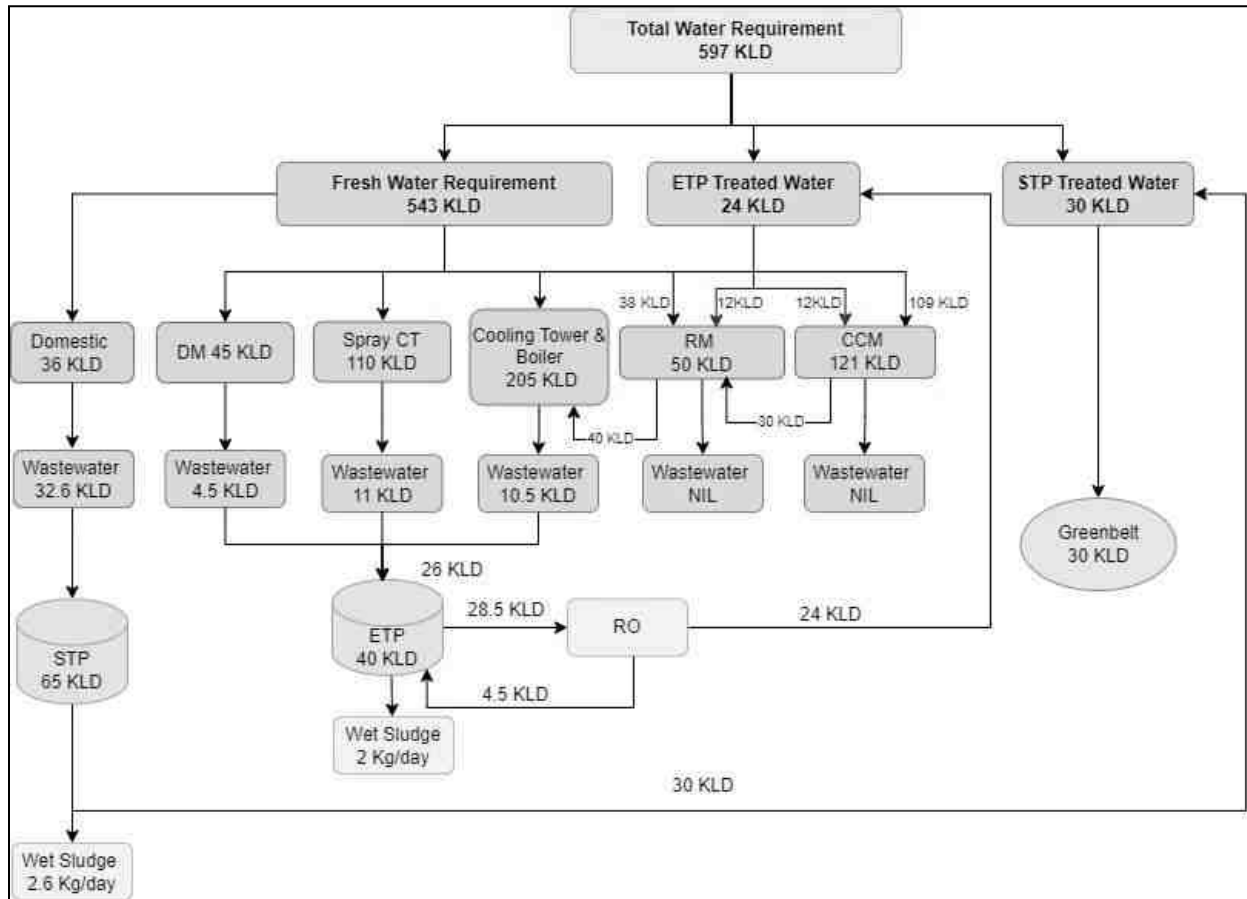


Figure 15. Water Balance Diagram (After Expansion)

## 2.13 WASTEWATER GENERATION AND ITS MANAGEMENT

Detailed waste water generation break-up of proposed project is provided in **Table 26**.

Table 27. Wastewater Management

Sr. No.	Particulars Area/Process	Total Wastewater Generation		
		Existing	Proposed	Total After Expansion
1.	Domestic	23.8	8.8	32.6
2.	Process	0	26	26
	<b>Total</b>	<b>23.8</b>	<b>34.8</b>	<b>58.6</b>

Table 28. Details of Wastewater Treatment System

Particulars	Unit	Existing Capacity	Proposed Capacity	Total Capacity After Expansion
ETP	KLD	-	40	40
STP	KLD	30	35	65



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Sewage generated 32.6 KLD will be sent to STP of 65 KLD capacity and 26 KLD trade effluent generated will be sent to ETP of 40 KLD capacity followed by RO. The treated sewage @30 KLD will be reused within the plant premises for greenbelt development. Treated effluent @24 KLD will be reused for RM & CCM plant.

### 2.13.1 Details of Proposed Trade Effluent Treatment Plant

In the existing plant there is no trade effluent generation and treatment facility. In the proposed expansion 40 KLD ETP with ZLD is proposed for treating 26 KLD of trade effluent generated.

Table 29. Inlet and Outlet Characteristics of Process Wastewater Stream

Expected Characteristics				
Parameters	Unit	Inlet	ZLD Output	Standard as per CPCB
pH	-	6.5-8.5	6.5-8.5	5.5 - 8.5
BOD	mg/l	250-300	<5	30
TSS	mg/l	250-500	<10	100
TDS	mg/l	3000-3500	200	10

### ETP Flow Chart

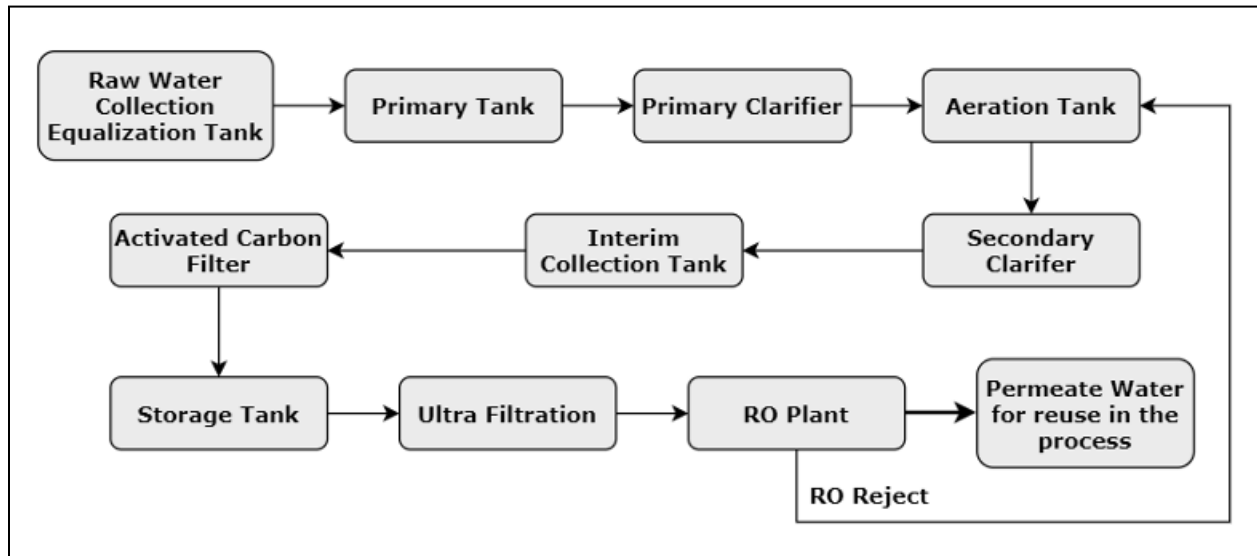


Figure 16. ETP Flow Diagram

### 2.13.2 Details of Sewage Treatment Plant

It is proposed to treat the complete wastewater in a scientific manner through a properly planned treatment plant. The objective is to stabilise the decomposable organic matters present in sewage to get an effluent and sludge having characteristics which are within safe limits. To have an efficient treatment system, this aeration system is proposed consisting of MBBR Technology.

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The sewerage treatment plant can be constructed in such a way that it becomes viable by providing Treated water and sludge that can be used as manure for further use.

The black waste from the toilets flows through bar screen chamber for removal of solid particles greater than 10 mm. The black wastewater is collected in equalization tank. The sewage is pumped to MBBR Tank for BOD & COD removal. The Activated Sludge flows from MBBR tank to settling tank, where the biomass settles & clear water is collected in clarified water tank. Sodium Hypochlorite is dosed in clarified water pumped to PSF & ACF for disinfection. The sludge is collected in the sludge holding tank & dewatered in hydraulic operated filter press.

*Table 30. Inlet and Outlet Characteristics of Sewage Treatment Plant*

<b>Parameters</b>	<b>Units</b>	<b>STP Inlet</b>	<b>STP Outlet</b>
pH	-	6.60 to 8.0	6.5-8.0
Suspended Solids	mg/l	200 - 300	<10
COD	mg/l	400-500	<50
BOD	mg/l	200-300	10
Oil & Grease	mg/l	<60	<10

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## STP Flow Chart

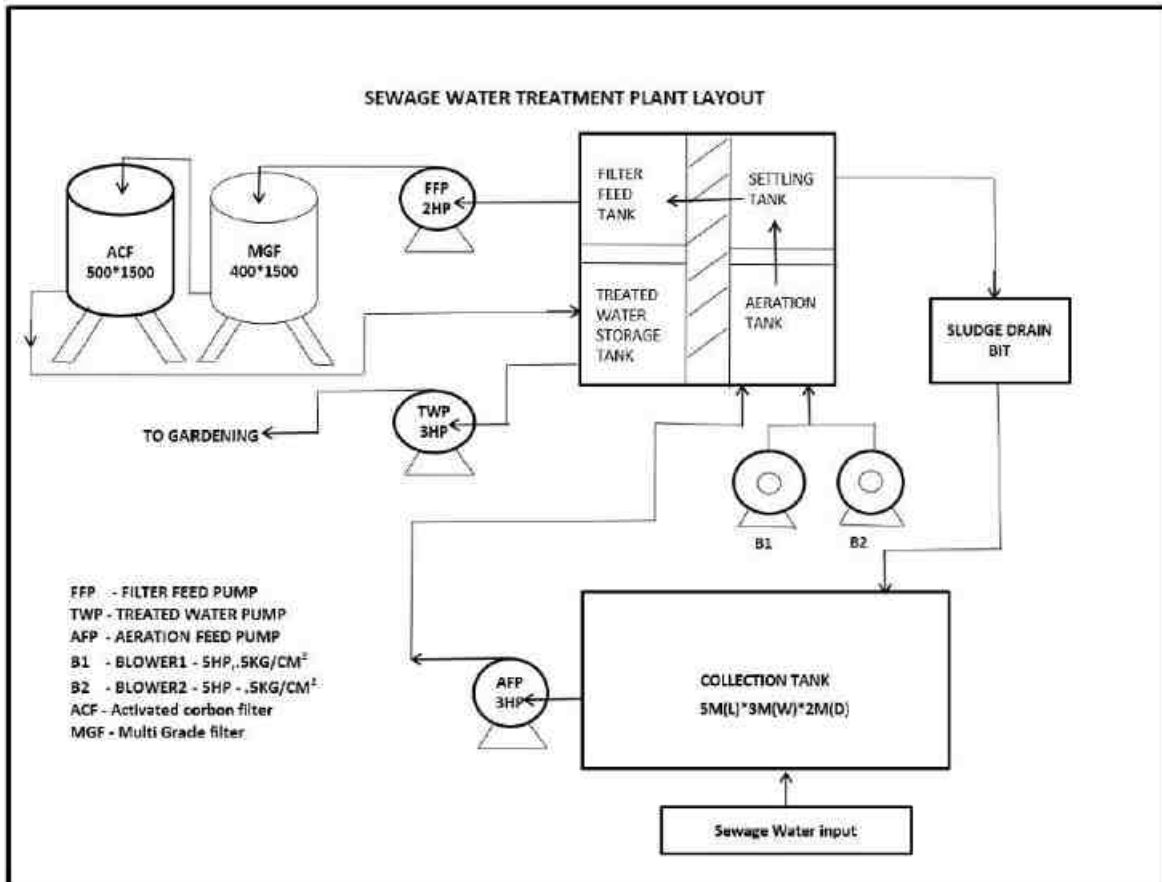


Figure 17. STP Flow Diagram

## 2.14 NOISE MANAGEMENT

- There is noise generation due to the movement of vehicles carrying construction materials and as this is only a temporary phenomenon, it will be managed by properly regulating the movement of vehicular traffic so that the ambient noise quality is not getting adversely affected.
- All the machinery and equipment will be regularly maintained to reduce the noise level.
- DG sets of capacity of 600 kVA x 3 Nos. and 1500 kVA x 1 No. will be installed acoustically enclosed.
- Barricading of 3 m will be provided in order to reduce noise impacts outside the project boundary.

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## 2.15 SOLID AND HAZARDOUS WASTE MANAGEMENT

### 2.15.1 Municipal Solid Waste

Solid Waste: Non-Biodegradable wastes like plastic, paper and glass will be sold to authorized recyclers. Biodegradable wastes will be disposed of by inhouse OWC and will be used as manure for greenbelt development.

- Permanent manpower - 0.45 kg/person/day
- Temporary workers - 0.25 kg/person/day

Table 31. Quantity of Solid Waste Generated & Management

Sr. No.	Municipal Solid Waste	Existing (kg/day)	Proposed (kg/day)	Total After Expansion (kg/day)	Mode of Disposal
1.	Organic Waste	107.5	62.5	170.0	To OWC
2.	Inorganic Waste	195.0	105.0	300.0	Sold to authorized recyclers
	<b>Total</b>	<b>302.5</b>	<b>167.5</b>	<b>470.0</b>	-

### 2.15.2 Non-Hazardous Waste

Table 32. Details of Non-hazardous Solid Generation & Management

Sr. No.	Waste	Existing Quantity	Proposed Quantity	After Expansion	Unit	Mode of disposal	Area of land earmarked For storage/ Disposal (in sq.m)
1	Ash	75	0	75	TPD	Sent to vendors for manufacturing bricks	100
2	STP Sludge	0.25	0.10	0.35	T/M	Used as manure for greenbelt development	5
3	Slag*	10	02	12	T/M	Reused in the process	20

\* Crusher is used for recovering metals using a magnetic separator.

### 2.15.3 Hazardous Waste

Hazardous wastes will be managed via authorised HW recyclers, HW utilisers and CHWTSDF by Tamil Nadu Waste Management Limited (TNWML). The authorisation for the same has been

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granted by the TNPCB via No. 2IHFC12957693 and dated 24.10.2021 and is valid upto 31.03.2026.

Table 33. Details of Hazardous Waste Management

HAZARDOUS WASTE MANAGEMENT (PROCESS)								
Sr. No.	Type of Waste	Category*	Existing	Proposed	After Expansion	Source	Waste Storage	Disposal
			T/Y					
1	Used/ Spent Oil	5.1	2.0	0.0	2.0	DG Set & Machineries	Plastic Drums	Recover & Reuse/ CPCB Authorized recyclers
2	Discarded Barrels	33.3	130	0	130	FO Storage	Impervious storage area	Recover and Reuse-Captive
3	ETP Sludge	35.3	0	0.95	0.95	ETP	-	Common TSDF of TNWML
4	Waste or residues containing Oil	5.2	0.75	0.75	1.50	Machineries	Within Premises	Common TSDF of TNWML, Gummudipoondi (for incineration)

\* As per HWM Rules, 2016

## 2.15.4 Other Wastes

### 2.15.4.1 Battery Waste

Table 34. Details of Battery Waste Generation

Particulars	Unit	Existing	Proposed	Total
Lead Acid Battery	TPA	0.6	0.4	1.0

### 2.15.4.2 E-Waste

Table 35. Details of E-Waste Generated

Particulars	Unit	Existing	Proposed	Total
Electronic items	TPA	1.08	1.44	2.52

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### 2.15.4.3 Bio-Medical Waste

Table 36. Details of Bio-Medical Waste Generated

Particulars	Unit	Existing	Proposed	Total
Waste from First Aid Activities	TPA	0.3	0.2	0.5

## 2.16 GREEN BELT DEVELOPMENT

It is proposed to develop gardening and landscaping in an area of 13.01 ha by the proponent. The overall green cover in the project site shall be 34.91% of the plot area after the proposed expansion. The water for greenbelt development will be met via the STP treated water which shall be solely dedicated for this purpose.

Photographs of already developed green areas:



Figure 18. Green Belt Photographs (Existing)

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 2.16.1 Species Details

- **Existing Greenbelt Area:** 7.21 ha (33%)
- **Greenbelt Area after Expansion:** 13.01 ha (34.91%)
- **No. of Existing Tree Species:** 2,755

Considering 2500 trees per hectare, total No. of Trees to be planted: 32,525.

Table 37. Details of Existing Trees in Currently Operational Area

Sr. No.	Common Name	Scientific Name	No. of Trees
1	Neem	<i>Azadirachta indica</i>	450
2	Ashoka	<i>Saraca asoca</i>	80
3	Illupai	<i>Madhuca longifolia</i>	70
4	Pungan	<i>Pongamia glabra</i>	250
5	Poovarasu	<i>Thespesia populnea</i>	425
6	Badam tree	<i>Prunus amygdalus</i>	250
7	Vilvam	<i>Aegle marmelos</i>	150
8	Punnai	<i>Calophyllum inophyllum</i>	400
9	Manikara	<i>Manilkara zapota</i>	50
10	Peepal Tree	<i>Ficus religiosa</i>	125
11	Jamun Tree	<i>Syzygium cumini</i>	50
12	Mango Tree	<i>Mangifera indica</i>	120
13	Gulmohar	<i>Delonix regia</i>	335
<b>Total</b>			<b>2755</b>

Table 38. Details of Proposed Trees to be Planted

Sr. No.	Common Name	Scientific Name	Existing No. of trees	Proposed No. of trees	Total No. of trees
1	Neem	<i>Azadirachta indica</i>	450	4050	4500
2	Ashoka	<i>Saraca asoca</i>	80	4285	4365
3	Illupai	<i>Madhuca longifolia</i>	70	4730	4800
4	Pungan	<i>Pongamia glabra</i>	250	4720	4970
5	Poovarasu	<i>Thespesia populnea</i>	425	4475	4900
6	Badam tree	<i>Prunus amygdalus</i>	250	-	250
7	Vilvam	<i>Aegle marmelos</i>	150	540	690
8	Punnai	<i>Calophyllum inophyllum</i>	400	3700	4100
9	Manikara	<i>Manilkara zapota</i>	50	-	50
10	Peepal Tree	<i>Ficus religiosa</i>	125	500	625
11	Jamun Tree	<i>Syzygium cumini</i>	50	440	490

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Sr. No.	Common Name	Scientific Name	Existing No. of trees	Proposed No. of trees	Total No. of trees
12	Mango Tree	<i>Mangifera indica</i>	120	-	120
13	Gulmohar	<i>Delonix regia</i>	335	-	335
14	Amaltas	<i>Cassia fistula</i>	0	725	725
15	Bullet Wood / Maulsari	<i>Mimusops Elengi</i>	0	690	690
16	Vengai Tree	<i>Pterocarpus marsupium</i>	0	450	450
17	Neer kadambu	<i>Mitragyna parvifolia</i>	0	465	465
<b>Total</b>			<b>2755</b>	<b>29770</b>	<b>32525</b>

## 2.17 RAINWATER HARVESTING & STORM WATER MANAGEMENT

Objectives:

- To maximize the roof water collection into large sumps and to reuse within the facility to the maximum extent, thereby reducing the freshwater withdrawal from underground sources.
- To channelize excess rooftop water, rainwater falling over paved & road areas through a garland network to maximize recharging the under-groundwater aquifer.
- To ensure maximum percolation in the undeveloped areas and excess if any, to be collected and disposed/percolated as much as possible.
- In the event of high intensity rainfall, to have a designed storm water collection and disposal mechanism to prevent water logging within the plant area.

Parameters of Rainwater Harvesting Potential-

- Average rainfall: 1484.69 mm/annum
- Peak intensity: 130 mm/hr
- Average no. of rainy days: 140 days
- Soil type: Lateritic Soil
- Soil infiltration rate: 3.72 - 9.47 inches per hour

Scheme for Ground Water Recharging

A rainwater harvesting system comprises components of various stages - transporting rainwater



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through pipes or drains, filtration, and tanks for ground water recharge. As the proposed facility will comprise only the roof top rain water for ground water recharge. The runoff from the first spell of rain carries a relatively larger amount of pollutants from the air and catchments surface so the system will be provided with a filtration pit consists of the layers of sand, gravel and pebbles of relevant sizes to remove the removable impurities from the runoff water from the rooftop.

### **Benefits of Rainwater Harvesting**

- Rainwater harvesting from the roof -top provides an avenue for collection & reuse with lighter filtration which in turn will reduce the consumption of fresh water
- Rainwater on the paved areas and other developed areas can be channelised and recharge through online Recharge pits
- Structured garland Storm water drain will be avoiding the flooding of low-lying areas in the factory premises.

Rainwater may be charged into the groundwater aquifers through any suitable structures like recharge pits. The size of the Percolation pit and Recharge trench are made to meet the recharging capacity designed based on soil infiltration and Groundwater level at site, and complying with the conditions of Ground water permission.

A rainwater harvesting system comprises components for transporting rainwater through pipes or drains, filtration, and pits for groundwater recharge. The proposed facility will comprise the roof top rainwater for collection and reuse; the runoff from the first spell of rain carries a relatively larger amount of solid particle over the catchments surface, and dust from air; hence, rooftop rainwater will be subjected to filtration through layers of a series of sand, gravels and pebble (mixed Grain) of relevant sizes to remove the removable impurities.

**Groundwater Recharge** : Excess Roof top rainwater after harvesting and recharging the aquifer can be diverted to the existing open / bore well after filtration. Along with this, rainwater available in the open spaces around the building may be recharged into the ground through the simple effective methods such as Percolation pits or Recharge Trench.

- **Meteorological Data-** Rainfall Statistics indicate that the district receives rainfall under the influence of the South-west monsoon period extending from June to September and North-east monsoon period monsoon extending from October to December. The

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Southwest Monsoon rainfall is erratic but the North-east monsoon provides a reliable quantity of Rain. On average, the normal rainfall for the district is 1484.69 mm/annum.

For most of the years the rainfall is in excess of the normal annual rainfall.

### Estimation of Rainwater Harvested

Estimation of harvestable rainwater can be done in many methods. Use of run-off coefficient is one of the simplest methods to assess the quantity of rain water harvested within the area. The effective rainfall is such that the amount of rainfall which can build up surface runoff after satisfying the soil moisture requirement and evaporation loss. It is assumed that about 85% total rainfall is considered to be the effective rainfall.

The details of the incremental run offs on account of the proposed development and the rain water harvesting measures are detailed in the subsequent pages.

### Rational formula for calculating runoff, $Q = C I A$

- Q = Runoff in m<sup>3</sup>/sec  
 I = Intensity of rainfall in mm/ hr.  
 A = Drainage area in hectares.  
 C = Coefficient of runoff as below

#### *Run-off coefficient for various types of surfaces*

Open grounds, unpaved street	0.30
Parks, lawns, gardens	0.30
Macadam roads, pavements	0.65
Water tight roof surface	0.85

Table 39. Rain Water Harvesting Calculation

Particulars	Rooftop Area	Road and other Paved Area	Green Belt Area
Area (sq.m)	51,520	73500	130100
Run-off Coefficient	0.85	0.65	0.3
Rainfall (mm/hr)	130	130	130
Runoff (m <sup>3</sup> /sec)	1.581	1.725	1.409
<b>Total Runoff(m<sup>3</sup>/sec)</b>	<b>4.716</b>		

Considering 1 hr rainfall,

$$Q_{1hr} = 1.581 \times 3600 = 5691.60 \text{ m}^3/\text{hr}$$

Considering first flush loss at 15% = 853.74 m<sup>3</sup>/hr

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Roof Top water that is available for collection =  $5691.60 - 853.74 = 4837.86 \text{ m}^3/\text{hr}$

Rooftop Runoff will be directed to 6 Nos. of Rainwater Sump with a capacity of 800 KL each, which will be made during proposed expansion.

Surface runoff will be diverted to the storm water drain/pits with percolation pits (110 Nos. Existing and 45 Nos. proposed) with 1.5 m diameter all along the site boundary wall. The excess water will be drained to the external stormwater drainage system.

## **2.18 COMPLIANCE FOR CREP RECOMMENDATIONS**

CREP recommendations are being implemented and summarized below:

- Specific water consumption is less than  $8 \text{ m}^3/\text{t}$ .
- Online monitoring facilities provided.
- Waste management systems are implemented.
- 10% reduction in freshwater requirement with the reuse of treated sewage and treated effluent.

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### **3. DESCRIPTION OF ENVIRONMENT**

#### **3.1. INTRODUCTION**

To cover environmental baseline studies, following aspects have been covered :-

The baseline data is generated through field study within the impact zone (Core Zone and Buffer Zone) for various components of the environment viz. Air, Noise, Soil, Water, Land, Ecology and Socioeconomic. The baseline environmental studies have been done from **March 2023 to May 2023** by M/s Perfect Researchers Pvt. Ltd. in a study area of 10 km radius from the project site. While generating the baseline status of the physical and biological environment of the study area, the concept of impact zone has been considered. The impact zone selection is based on preliminary screening and modeling studies. The data collection had been done as given below:

#### **Field Survey and Site Visit:-**

- Primary monitoring of key environmental parameters like Air, Noise, Soil, Water, Land, Ecology and Socio Economic survey during the post monsoon season.
- Consultation with local people, government departments such as the Forest department, Panchayats etc.
- Literature review on secondary information available for the study area.

#### **3.2. BASE MAPS OF THE AREA**

##### **3.2.1. Google Image of the Project Site**

Map showing Study area & Close view of the study area with 1 km Buffer radius is given below.



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 3.2.3. Accessibility Map for Environmental Monitoring

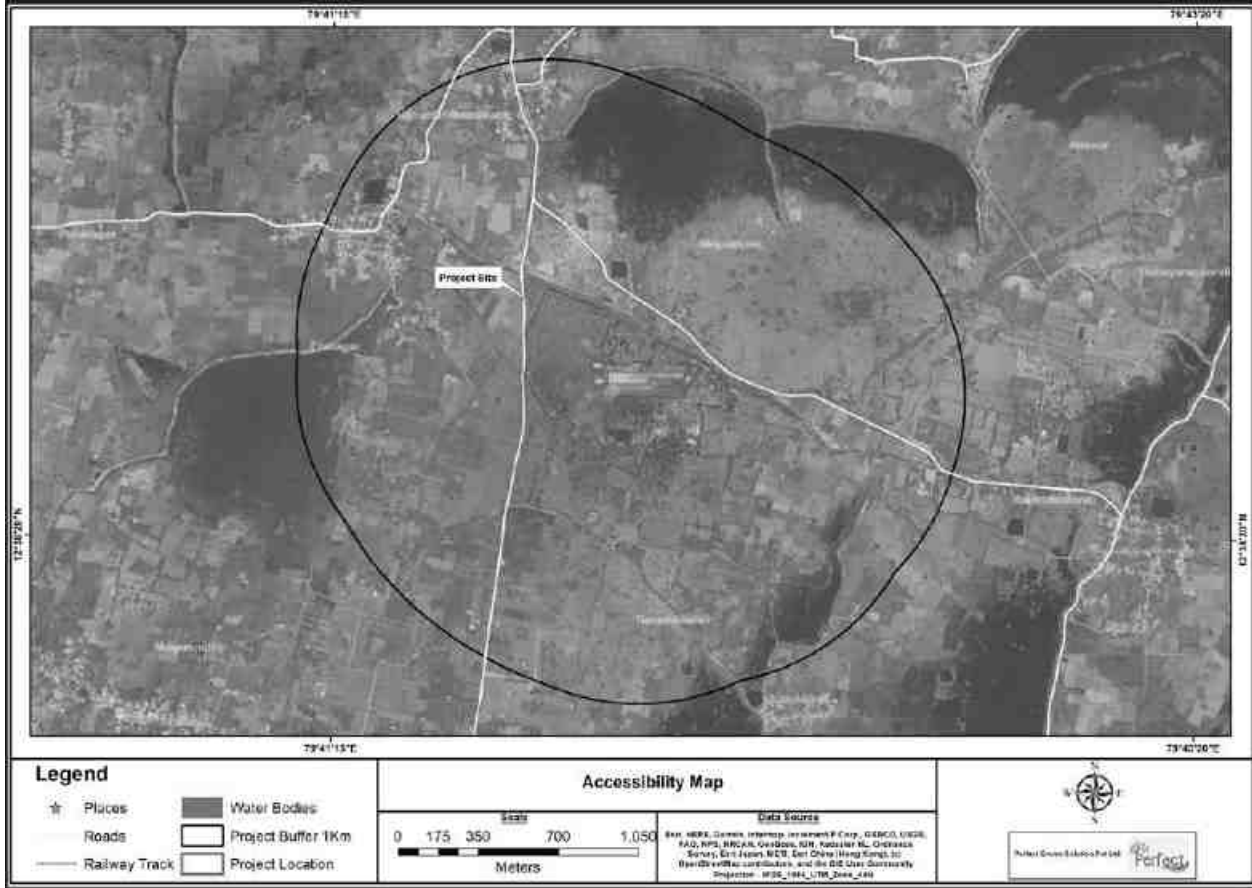


Figure 20. Accessibility Map 1 km

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

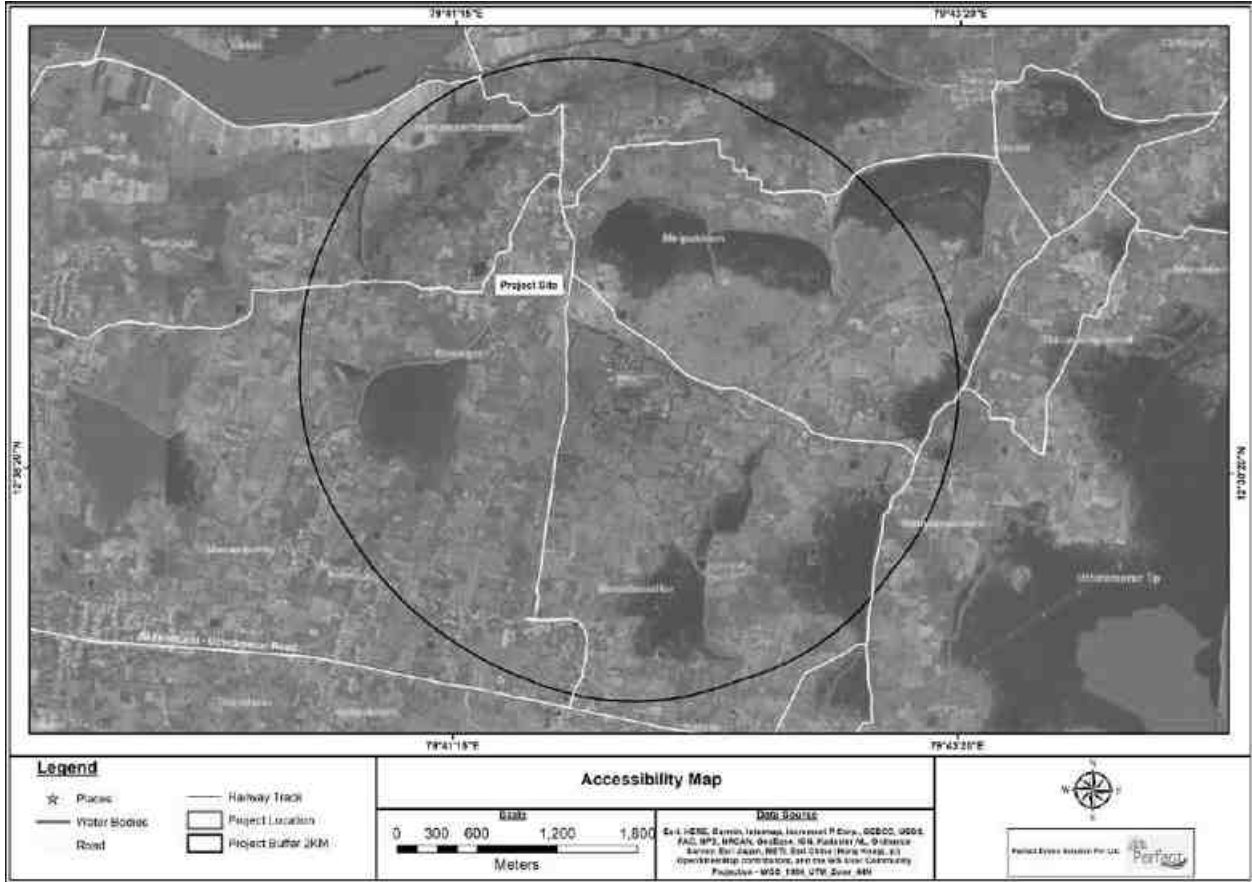


Figure 21. Accessibility Map 2 km

**3.2.4. Digital Elevation Model (DEM) Map**

DEM Map with 10 km radius is given below:

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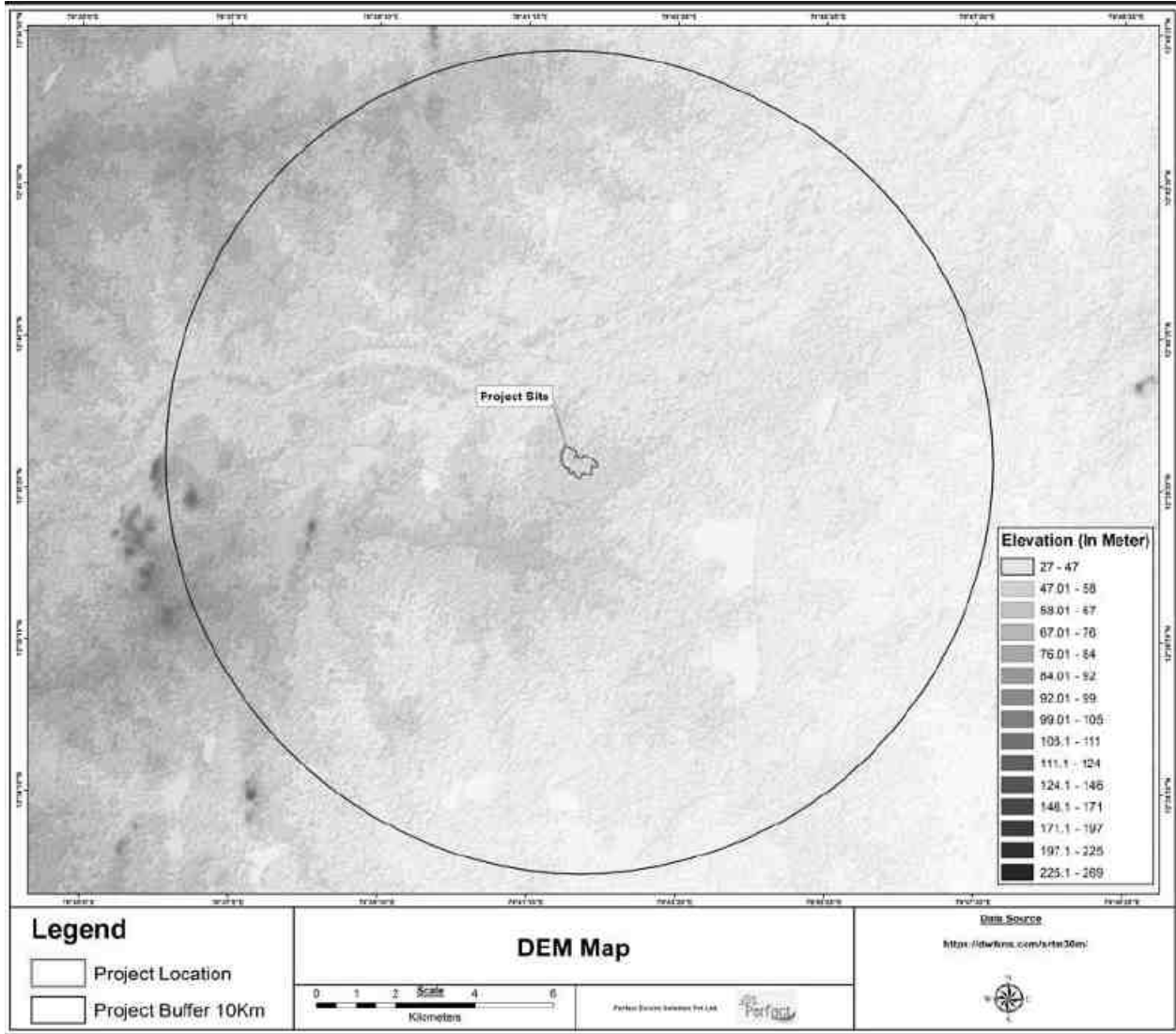


Figure 22. DEM Map

3.2.5. Village Map

Village Map with 10 km radius is given below:



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

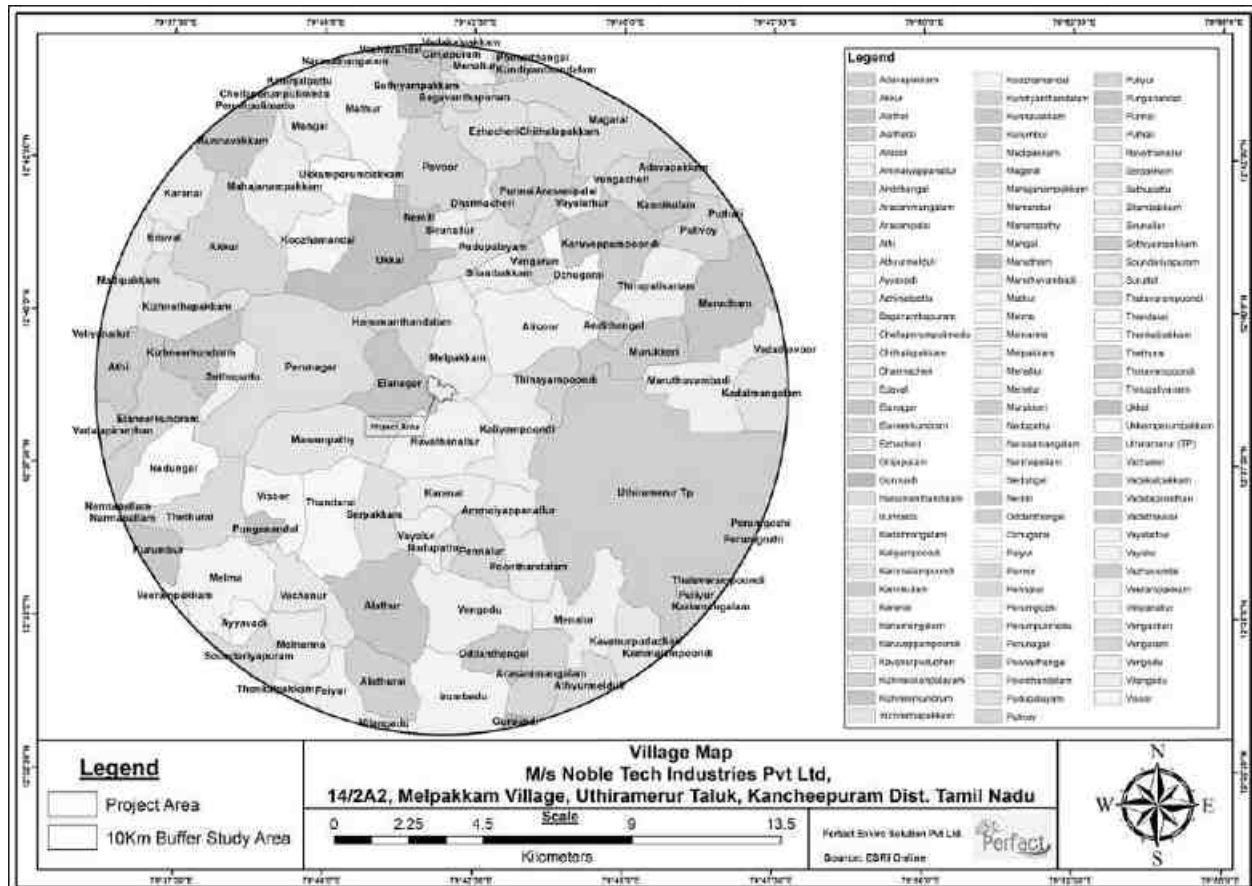


Figure 23. Village Map of the Study Area

### 3.3. METHODOLOGY OF BASELINE DATA COLLECTION

Table 40. Methodology of Baseline Data Collection

Sr. No.	Functional Area	Methodology
1.	Micro-Meteorological Data	Site specific Micro-Meteorological Data has been used for the study. The important parameters considered are temperature, humidity & wind speed.
2.	Ambient Air Quality	The ambient air quality monitoring was done to assess the ambient air quality in the summer season March 2023 to May 2023 . The guidelines for selections of ambient air monitoring stations given in IS – 5182( part 14), 2000 were followed.
3.	Water Quality	To assess the water quality of the proposed area, Grab, Composite sampling done for water sample collection. Water samples were taken as per the Standard Methods (IS & APHA, 23 <sup>rd</sup> Edition 2017). Necessary precautions were taken for the preservation of samples. The physical

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Sr. No.	Functional Area	Methodology
		parameters viz. pH, temperature and conductivity were measured at site using a portable water analyser.
4.	Ambient Noise Quality	At each station noise level was monitored for 24-hours. For each measurement, dB (A) readings were taken for every 15 minutes for 24 hrs once in a season to get Leq values.
5.	Soil Quality	Augur method was used for soil sampling and samples were collected at 15 cm depth after removing the upper crust.
6.	Topography, Land-form and Land Use	The land use/ land cover map has been generated on a 1:50,000 scale using Satellite imagery, topographical maps, Survey of India and ground truth information.
7.	Biological Environment	Primary and secondary data collection has been done by the Ecology and Biodiversity team for the study of flora and fauna in the core and Buffer Zone.
8.	Socio Economic Environment	For demography and socioeconomics, block wise data has been collected and used for the assessment of impacts.

### 3.4. METEOROLOGY

Before dwelling on the various aspects of air quality, it would be in the fitness of things to discuss the meteorological status of the area as the dispersion of fugitive emission depends largely on the meteorological conditions of the area. The selection of sampling stations is mainly guided by the predominant wind direction during the monitoring season in the area.

#### 3.4.1 Climatic Conditions (As per Indian Meteorology Department Data, Tamil Nadu)

The Important parameters considered are temperature, Humidity, Wind Speed, Wind Direction and Rainfall. The extract of Maximum, Minimum values (month wise) of above said parameters from MERRA-2 meteorological data, Tamil Nadu of the last twelve years (2011-2020) are given in the below table

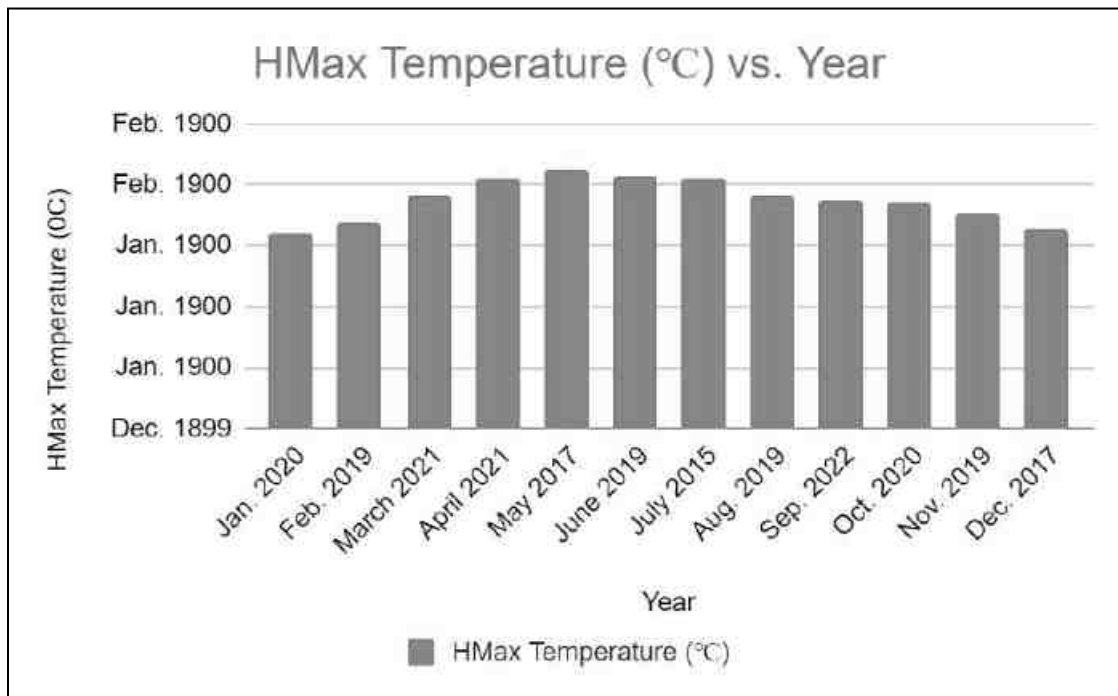
#### 3.4.2 Temperature

The maximum temperature of the area was recorded as 33.52 °C whereas the minimum temperature of the area was recorded as 26.16 °C . Data of the maximum and minimum temperature are given below.

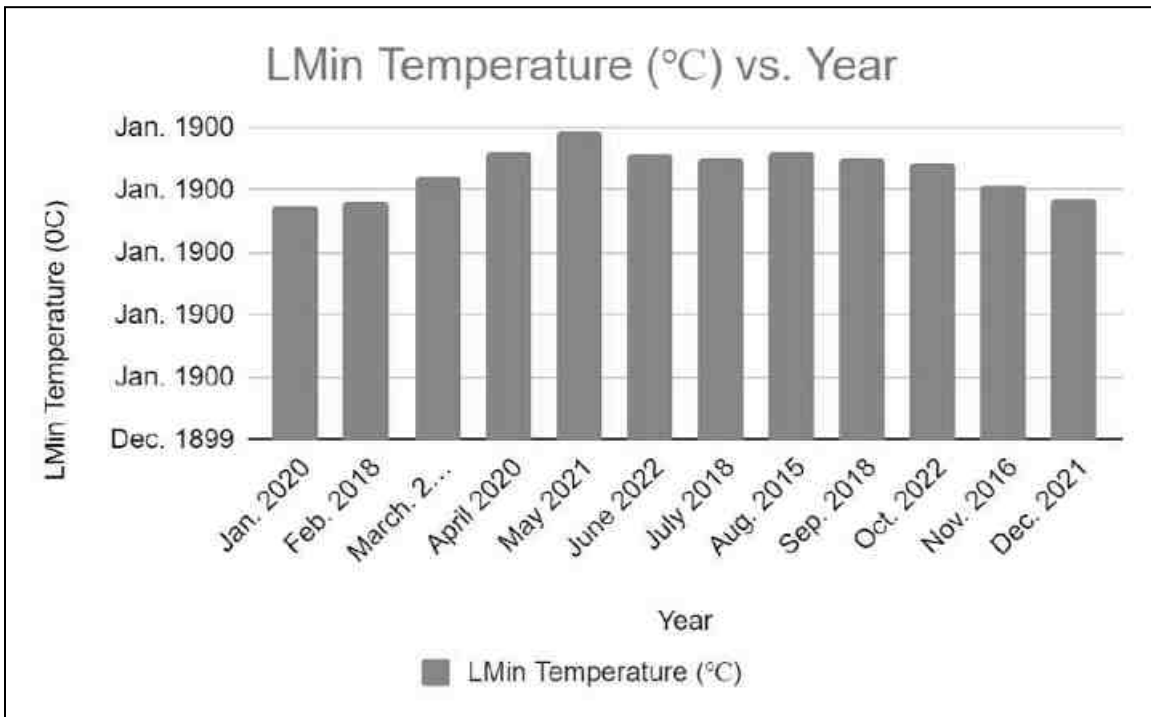
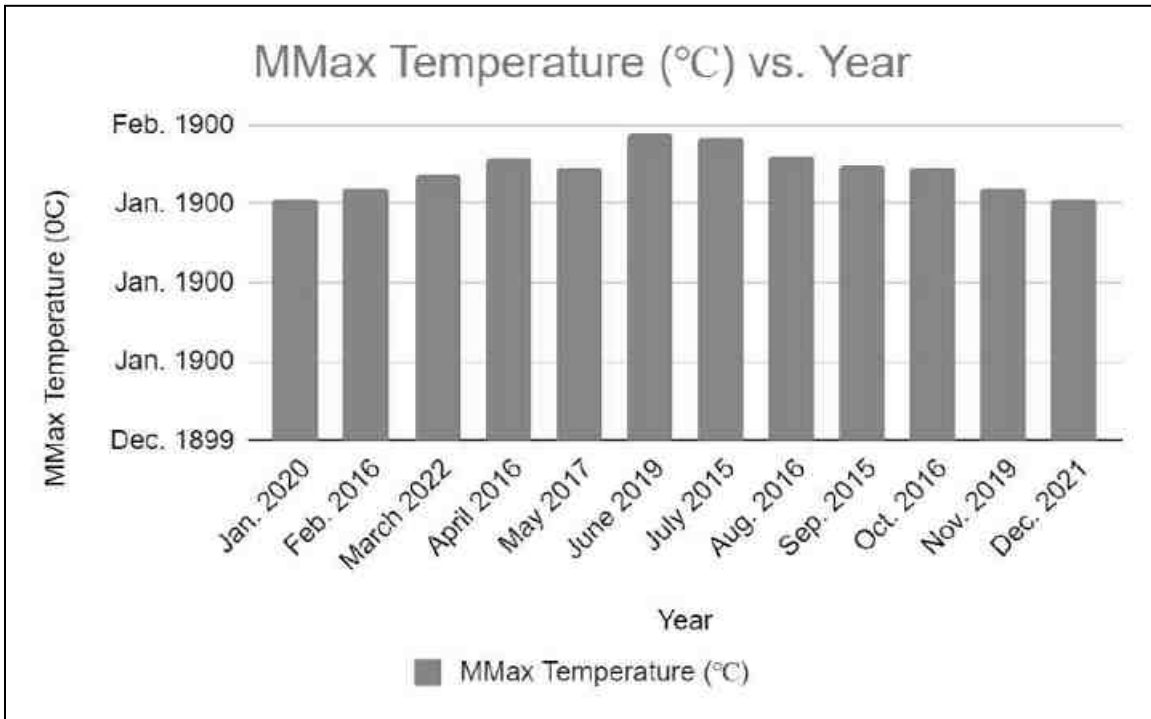
Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 41. Temperature

Month	Temperature (°C)							
	Year	HMax	Year	LMin	Year	MMax	Year	MMin
January	2020	32.2	2020	18.7	2020	30.5	2019	21.2
February	2019	34	2018	19	2016	32	2015,2017	22.3
March	2021	38.3	2018	21	2022	33.7	2018	24.6
April	2021	41.2	2020	23.1	2016	35.6	2015	27.2
May	2017	42.6	2021	24.6	2017	34.6	2022	28.3
June	2019	41.5	2022	22.8	2019	39	2016	27.6
July	2015	41.0	2018	22.4	2015	38.2	2021	26.7
August	2019	38.3	2015	23.1	2016	36.1	2018	25.7
September	2022	37.5	2018	22.4	2015	34.9	2019	25.7
October	2020	37.1	2022	22.2	2016	34.5	2022	25.2
November	2019	35.1	2016	20.4	2019	32	2022	23.4
December	2017	32.9	2021	19.2	2021	30.5	2016	22.5



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

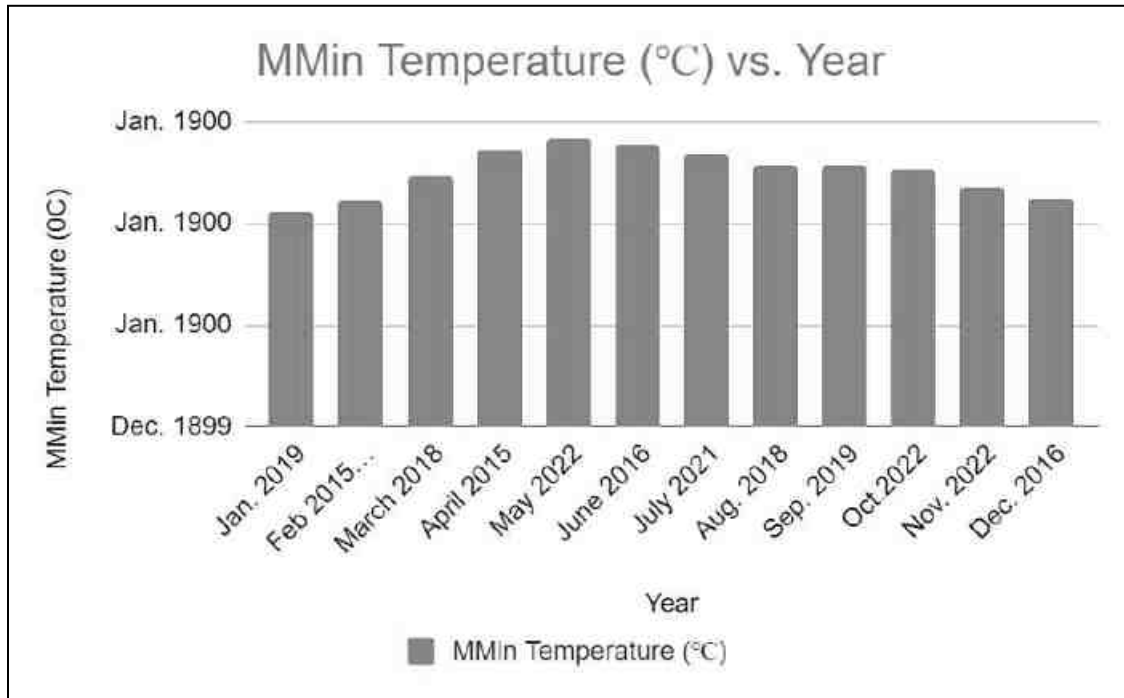


Figure 24. Highest Maximum Temperature & Lowest Minimum Temperature

### 3.4.3 Relative Humidity

The Maximum relative humidity was recorded as 90.75 %. Minimum relative humidity was recorded as 59.38 %.

Table 42. Relative Humidity

Month	Humidity (%)			
	Year	Max	Year	Min
January	2022	86	2016	64
February	2020	83	2017	61
March	2020	85	2021	64
April	2020	84	2015	68
May	2022	78	2017	60
June	2016	73	2017	55
July	2020	82	2018	56
August	2020	80	2016	59
September	2021	82	2016	68
October	2017	85	2016	65
November	2021	93	2016	67
December	2022	87	2016	69

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

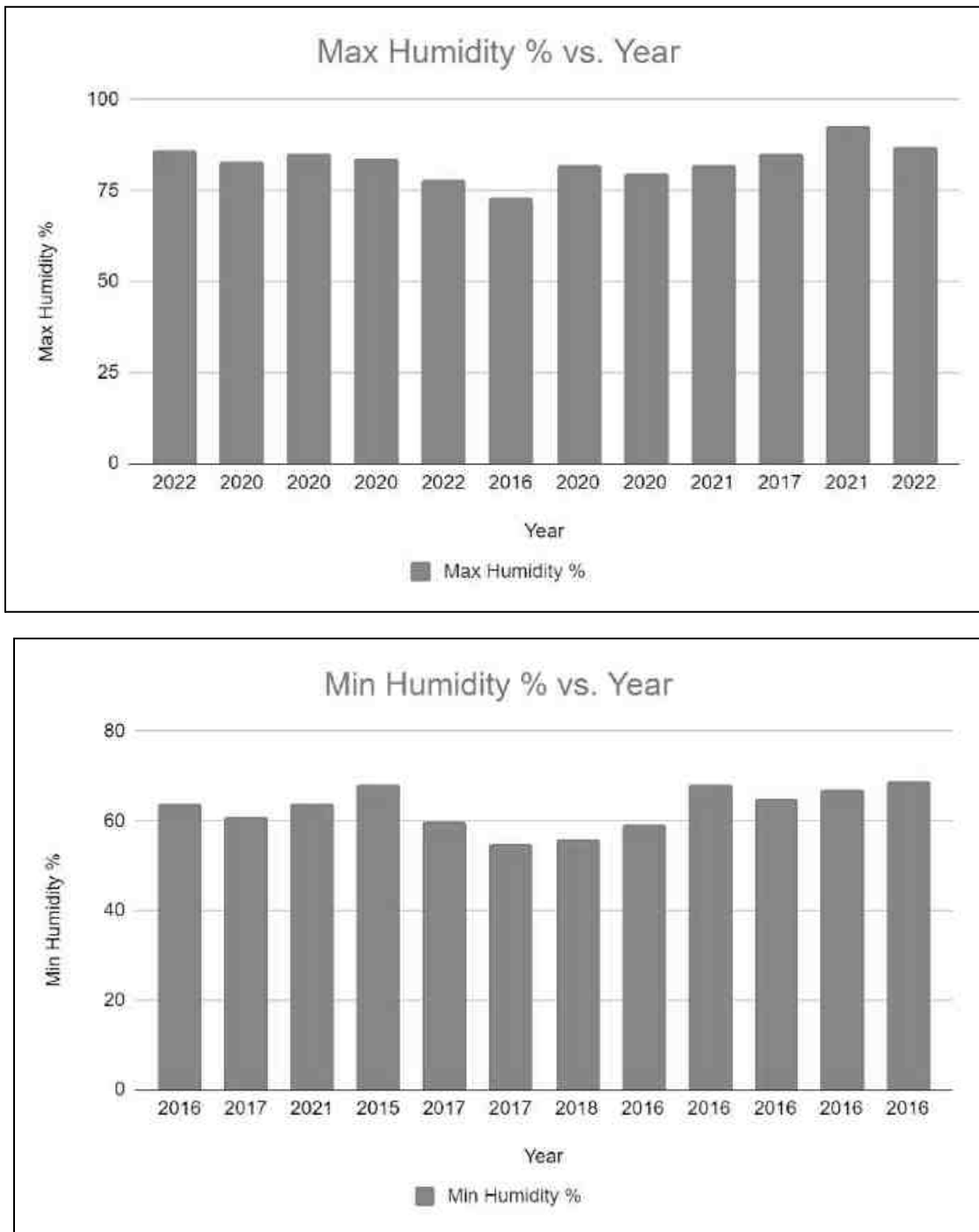


Figure 25. Highest Maximum Relative Humidity & Minimum Relative Humidity

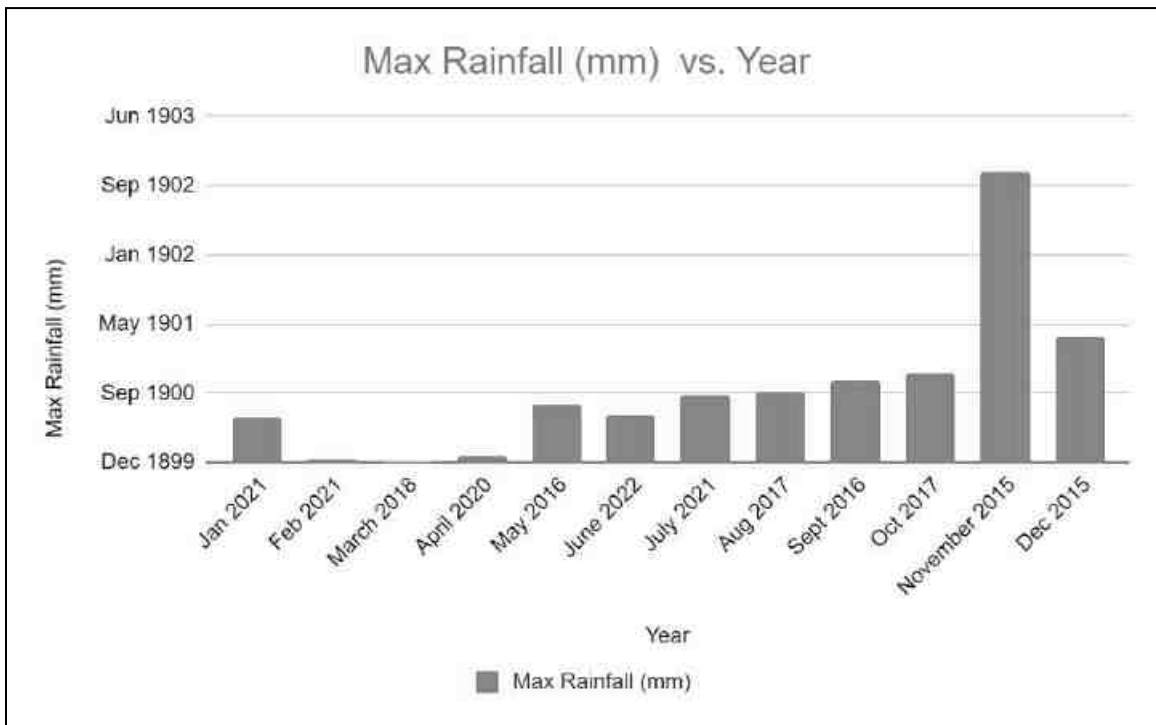
### 3.4.4 Rainfall

The maximum rainfall was recorded in November /December. From data it is clear that the maximum time of year remains Monsoon months, July to December are the wettest months and are considered the monsoon season. The Average Annual Rainfall is 1484.69 mm/annum.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 43. Rainfall

Month	Rainfall (mm)				
	Year	Max	Year	Min	Average
January	2021	166.2	2019	0.2	41.94
February	2021	8.5	2017, 2022, 2015, 2016	0	1.79
March	2018	2.9	2015-17, 2019-22	0	0.36
April	2020	25.6	2016-19, 2022	0	7.79
May	2016	208.2	2018-2020	0	34.43
June	2022	167.1	2015	20.3	71.88
July	2021	242.8	2016	43.6	131.76
August	2017	257.5	2016	44.3	132.59
September	2016	296.6	2018	60.7	128.43
October	2017	324.7	2016	22.4	211.66
November	2015	1049.3	2016	50.5	514.13
December	2015	452.1	2018	29.8	207.95



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

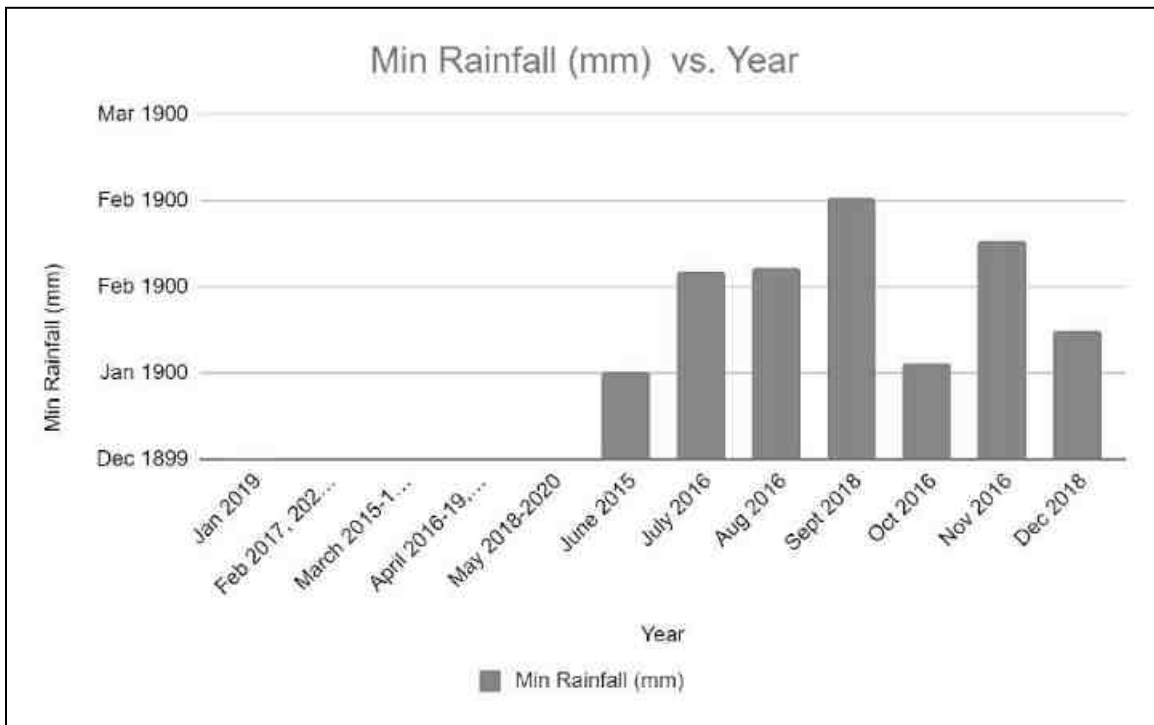


Figure 26. Maximum Rainfall & Minimum Average Rainfall

### 3.4.5 Wind Speed

The maximum wind speed was recorded up to 8.7 kmph and minimum wind speed was recorded up to 4.5 kmph in Summer .

Table 44. Wind Speed

Month	Wind speed (km/hr)			
	Year	MMax	Year	MMin
January	2017	8.4	2020	5.6
February	2019, 2021	6.6	2016	5.2
March	2017	6.4	2021	4.5
April	2016-17	7.2	2021	5.4
May	2016, 2019	7.7	2018	6.7
June	2017	8.2	2022	6.8
July	2018	8.7	2020	5.8
August	2019	8.4	2020	6
September	2015	6.2	2017	5.3
October	2018	6	2021	4.9
November	2017	7.5	2021	5.9
December	2016	8	2021	6.2



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

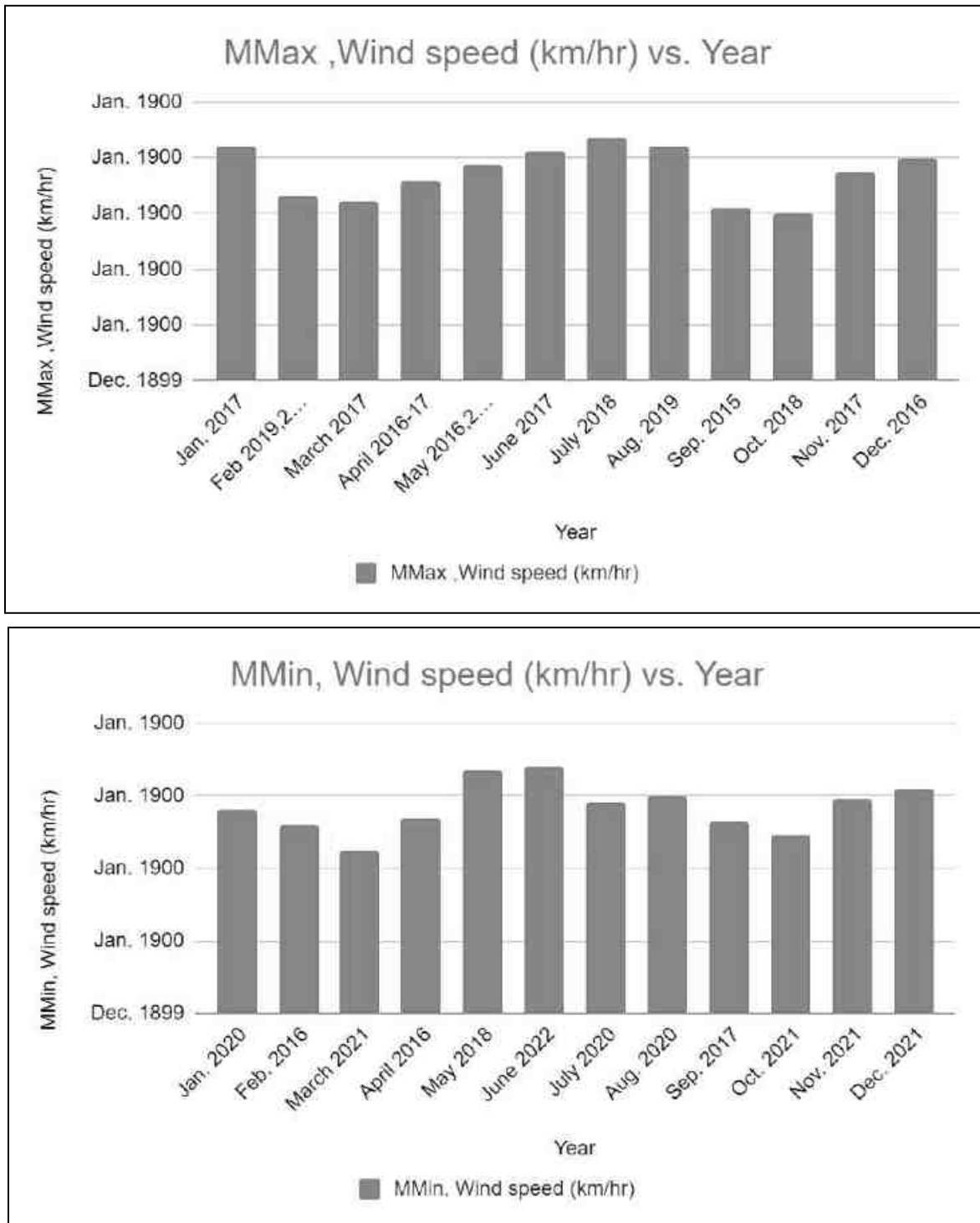


Figure 27. Mean Maximum Wind Speed & Mean Minimum Wind speed

### 3.4.6 Wind Direction

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 45. Wind Direction

Month	Wind Direction	
	Direction	Calm
January	East	21.3%
February	East	17.9%
March	West	16.3%
April	West	7.9%
May	West	5.5%
June	West	7.7%
July	West	7.5%
August	West	8.0%
September	West	17.3%
October	East	19.5%
November	East	15.0%
December	East	16.1%

The predominant wind direction is from SE to NW. The season wise predominant wind directions are given below:

Table 46. Seasonal Direction

Season	Predominant Wind Direction
Winter	North-East
Summer	South-East
Post Monsoon	North-East

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### Windrose Diagram

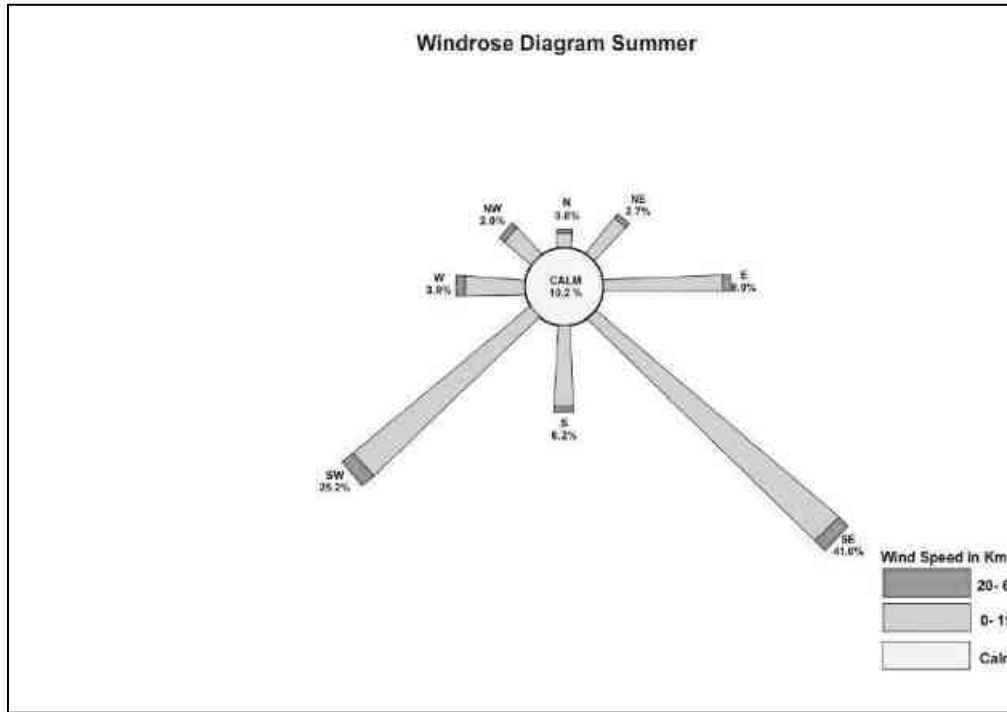


Figure 28. Windrose of Summer Season.

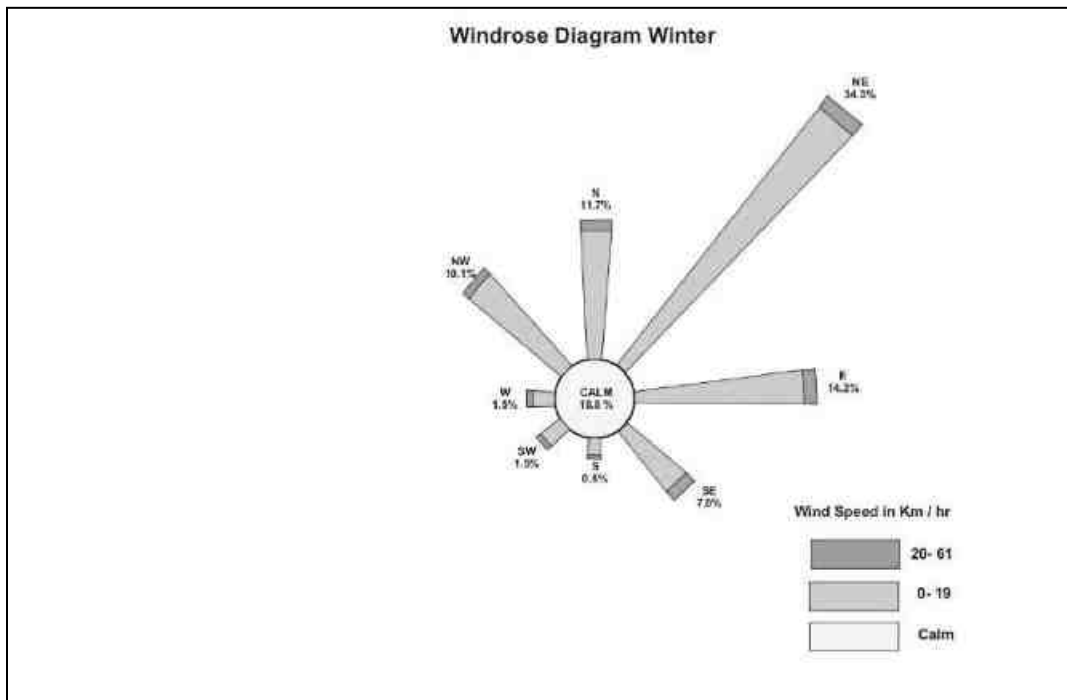


Figure 29. Windrose of Winter Season.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

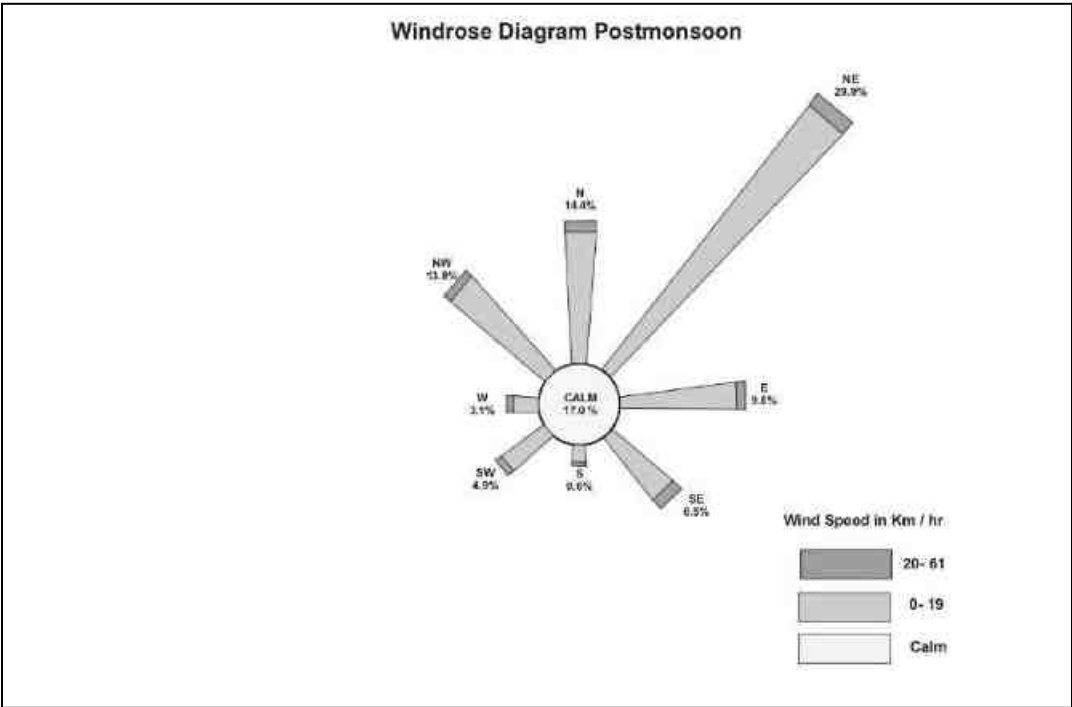


Figure 30. Windrose of Post-monsoon Season.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

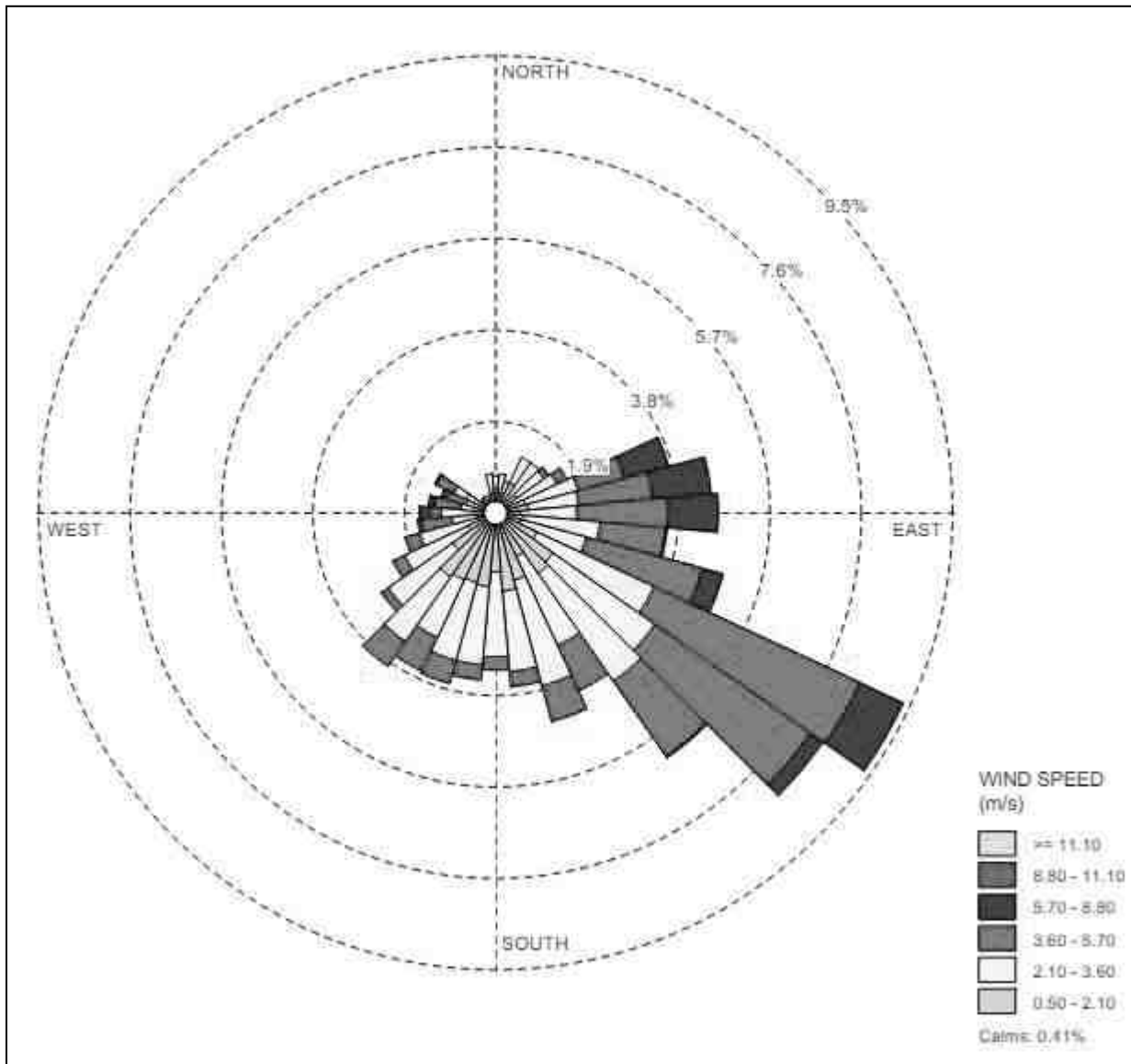


Figure 31. Annual Windrose Diagram

### 3.4.7 Onsite Season Specific measured Micro-Meteorological Data

Table 47. Micro-Meteorological Data

Month	Temperature(C)			Relative Humidity (%)			Wind speed (m/s)		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
1st March 2023 -31st March 2023	29.08	26.16	27.65	86.56	59.38	77.23	7.85	2.01	4.73
1st April 2023 -30th April 2023	30.56	27.37	29.29	85.06	62.06	76.99	7.47	0.48	4.26
1st May 2023 -31st May 2023	33.52	27.94	29.85	90.75	60.38	81.15	10.00	0.28	4.89

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### **3.5. AMBIENT AIR QUALITY**

The ambient air quality monitoring was done to assess the ambient air quality. Monitoring was carried out at Eight stations for the month of March 2023 to May 2023. The guidelines for selections of ambient air monitoring stations given in IS - 5182 parts 14, 2000 were followed. These guidelines state that, “when the objective of air sampling is to identify the contribution from specific sources of pollution, the sampling locations should be located in upwind and the downwind direction of such sources”.

#### **3.5.1. Sampling Location Selection**

The guidelines for the selection of ambient air monitoring stations given in IS – 5182 parts 14,2000 were followed. These guidelines state that, “when the objective of air sampling is to identify the contribution from specific sources of pollution, the sampling locations should be located in upwind and the downwind direction of such sources”.

**Criteria for site selections:** The selection of the ambient air quality monitoring sites in the core zone and buffer zone (around the project area) was based on screening the region for such important factors as meteorological conditions, sensitive environmental locations, human settlement and the surrounding geographical features.

- The meteorological features considered were wind speed and direction.
- Environmental sensitivity was considered with regards to the proximity and density of human settlements to the project site and location of such sensitive places as schools and hospitals around the project site.
- The desktop study was conducted to critically analyze the above factors using wind rose map, topographical map, and land use map to check for the correct representation of the locations around the project site.
- Based on the above factors, the location of Air sampling stations for (March 2023 - May 2023) monitoring season is shown below:

#### **3.5.2. Ambient Air Sampling Locations**

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 48. Ambient Air Sampling Locations

Location No.	Sampling Location	Latitude & Longitude	Distance & direction from the project boundary	Type of Area	Environmental Significance
A1	Onsite west	12°38'41.69"N 79°41'45.62"E	Onsite	Industrial Area	Core Zone
A2	Onsite East	12°38'37.04"N 79°42'7.94"E	Onsite		
A3	Onsite S	12°38'30.86"N 79°41'57.63"E	Onsite		
A4	Hanumanthandalam	12°39'24.34"N 79°41'44.93"E	0.98 km N	Residential Area	Buffer Zone
A5	Elanagar Village	12°38'50.47"N 79°41'29.78"E	0.42 km WNW		
A6	R.N.kandigai	12°37'43.48"N 79°41'42.56"E	1.50 km S		
A7	Kaliyampoondi village	12°38'18.12"N 79°43'9.38"E	1.93 km E		
A8	Karani Mandapam	12°37'17.82"N 79°42'27.79"E	2.37 km SE		
A9	Perunagar	12°38'55.26"N 79°39'27.03"E	4.13 km W		
A10	Nemili	12°41'14.59"N 79°42'4.76"E	4.38 km N		
A11	Sethupattu	12°39'17.73"N 79°38'44.16"E	5.48 km W		

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

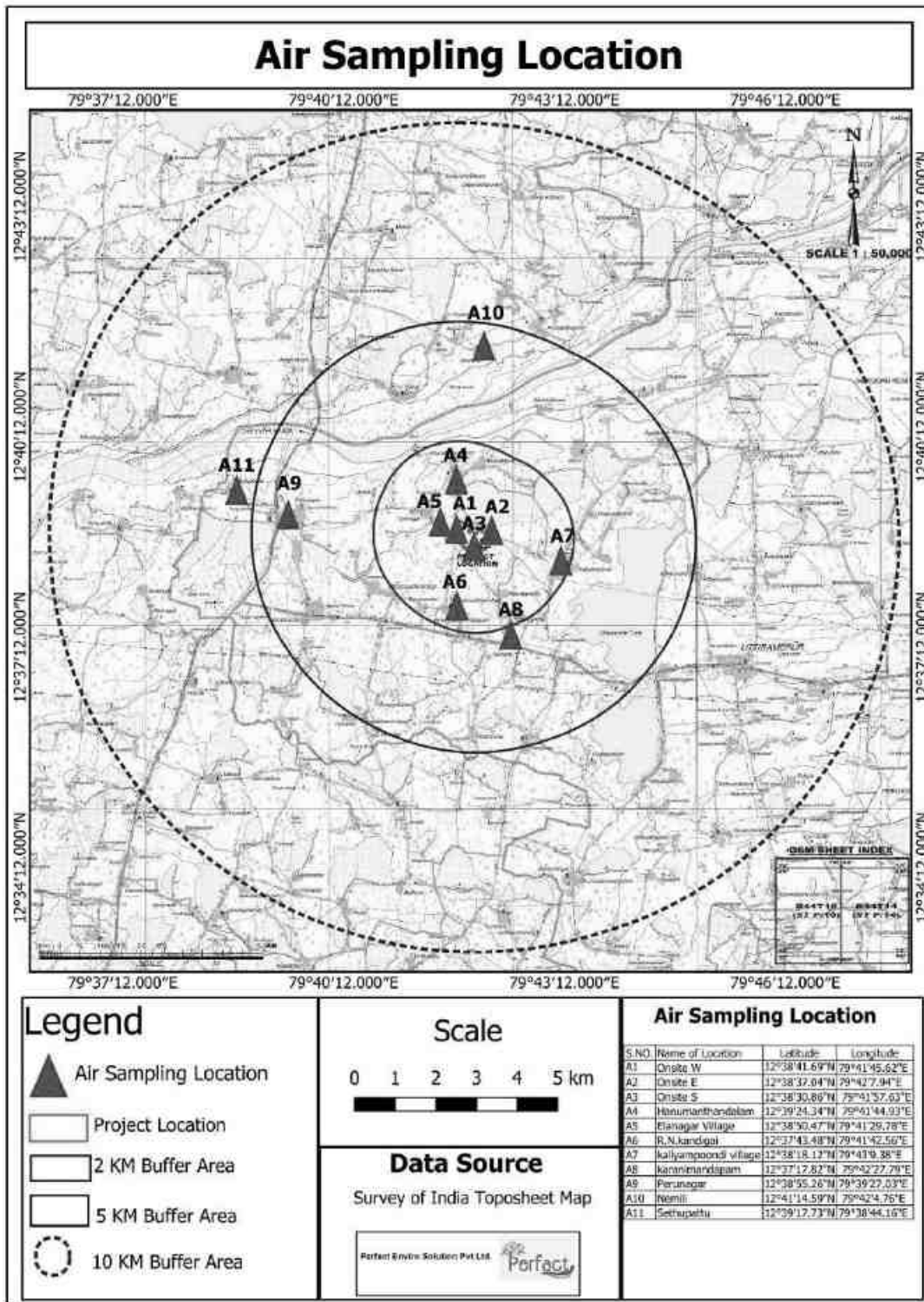


Figure 32. Air Sampling Locations



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### **3.5.3. Sampling Procedure**

Respirable Dust Samplers were used to collect samples for PM<sub>10</sub> and PM<sub>2.5</sub> in ambient air at a flow rate of 1.2 m<sup>3</sup>/min. The ambient air was sucked through the cyclone and filter paper by a blower. Samples of gases were drawn at a flow rate of 0.5 litres per minute and were analysed in the laboratory.

Monitoring was conducted in respect of the following parameters:

- Particulate Matter (PM<sub>10</sub>)
- Particulate Matter (PM<sub>2.5</sub>)
- Sulphur Dioxide (SO<sub>2</sub>)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Carbon Monoxide (CO)
- Volatile Organic Compounds (VOCs)

This procedure was adopted because there are no short-term variations and low concentration of gaseous pollutants was expected.

### **3.5.4. Analytical methods followed for ambient air quality monitoring**

- Particulate Matter (PM<sub>2.5</sub>) (US EPA Quality Assurance Handbook (Vol.II) Part II, Quality Assurance Guideline Document, 2.12): Particulate Matter (PM<sub>2.5</sub>) was analyzed by the Gravimetric Method. Particulate matter was collected on the 37 mm diameter glass microfiber Filter Paper. PM<sub>2.5</sub> value is determined from the values of volume of air passed through Ambient Fine Dust Sampler.
- Particulate Matter (PM<sub>10</sub>) (IS: 5182 Part 23:2006): Particulate Matter (PM<sub>10</sub>) was analyzed by the Gravimetric Method. It was carried out by Respirable Dust sampler as per IS: 5182(Part 23):2006. Particulate matter was collected on the GF/A Filter Paper. Particles with aerodynamics diameter less than the cut-point of the inlet are collected by the filter. The mass of these particles is determined by the difference in filter weight prior to and after sampling.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

- Sulphur dioxide (SO<sub>2</sub>) (IS: 5182; Part – II – 2001): Sulphur dioxide is absorbed by aspirating a measured air sample through a solution of Potassium or sodium tetrachloromercurate, TCM. This procedure results in the formation of a dichloro sulphite mercurate complex. The Sulphite Ion produced during sampling is reacted with sulphamic acid, formaldehyde and pararosaniline to form an azo dye and then determined colorimetrically.
- Nitrogen Oxides (IS: 5182; Part – VI – 2006): Nitrogen dioxide is collected by bubbling air through a sodium hydroxide- sodium arsenite solution to form a stable solution of sodium Nitrite. The Nitrite Ion Produced during sampling is reacted with hydrogen peroxide, Sulphanilamide and NEDA to form an azodye and then determined colorimetrically.
- Carbon monoxide (CO) (IS:5182; Part -10-1999): Samples containing Carbon monoxide in the range of 0 to 100 mg/m<sup>3</sup> are analyzed on a non-dispersive infrared absorption gas analyser, namely, an electro-optical spectrophotometer with no spectral dispersion component. It may consist of a single or double source of infrared energy and one or more infrared detectors separated by an optical cell or cells to one or more of which the sample flows, whereby the specific spectral absorption of the component of interest is determined.
- Volatile Organic Compounds (VOCs) (USEPA 0031/ ASTM D6889): Samples were analyzed by USEPA method 0031 for collection of samples from site, i.e. properly sealed in tubes, locked and refrigerated until desorbed; these were desorbed at laboratory and further analyzed by using SPME technique and followed by injection to GC similar to that of ASTM D6889. Individually quantitated peaks were then used to calculate the TVOC Value by using calibration curve obtained for standard mass liquids i.e. CRMs. The Area thus was translated into values in µg/m<sup>3</sup>. This study however did not include aldehydes, ketones, high molecular weight hydrocarbons, etc. It included Volatile PAH(s), Alcohols, Chlorinated Benzenes, Chloromethane and Chloromethane similar to that of USEPA TO-17A and USEPA 0031.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 3.5.5. Ambient Air Quality Results

#### 3.5.5.1. Summer Season (March 2023 to May 2023)

At each station ambient air quality parameters i.e PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> & CO, were monitored twice a week for 3 months (March 2023 to May 2023) 24 hourly at uniform intervals.

Table 49. Ambient Air Quality Results (PM10 & PM2.5)

Location	Min	Max	Mean	98 <sup>th</sup> Percentile	Min	Max	Mean	98 <sup>th</sup> Percentile
	PM2.5 (Standard – 60 µg/m <sup>3</sup> )				PM10 (Standard – 100 µg/m <sup>3</sup> )			
A1	28.19	44.10	36.25	42.90	52.70	82.36	66.07	79.09
A2	29.04	45.43	37.34	44.19	54.28	84.84	68.05	81.46
A3	29.88	46.75	38.42	45.47	55.86	87.31	70.04	83.84
A4	35.52	55.57	45.68	54.05	66.40	103.78	83.25	99.65
A5	33.27	52.04	42.78	50.62	62.18	97.19	77.97	93.33
A6	34.11	53.37	43.86	51.91	63.76	99.66	79.95	95.70
A7	32.42	50.72	41.69	49.34	60.60	94.72	75.98	90.95
A8	34.96	54.69	44.95	53.20	65.35	102.13	81.93	93.73
A9	36.37	56.89	46.76	55.34	67.98	106.25	85.23	102.03
A10	30.73	48.07	39.51	46.76	57.44	89.78	72.02	86.21
A11	31.58	49.4	40.60	48.05	59.02	92.25	74.00	88.58

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

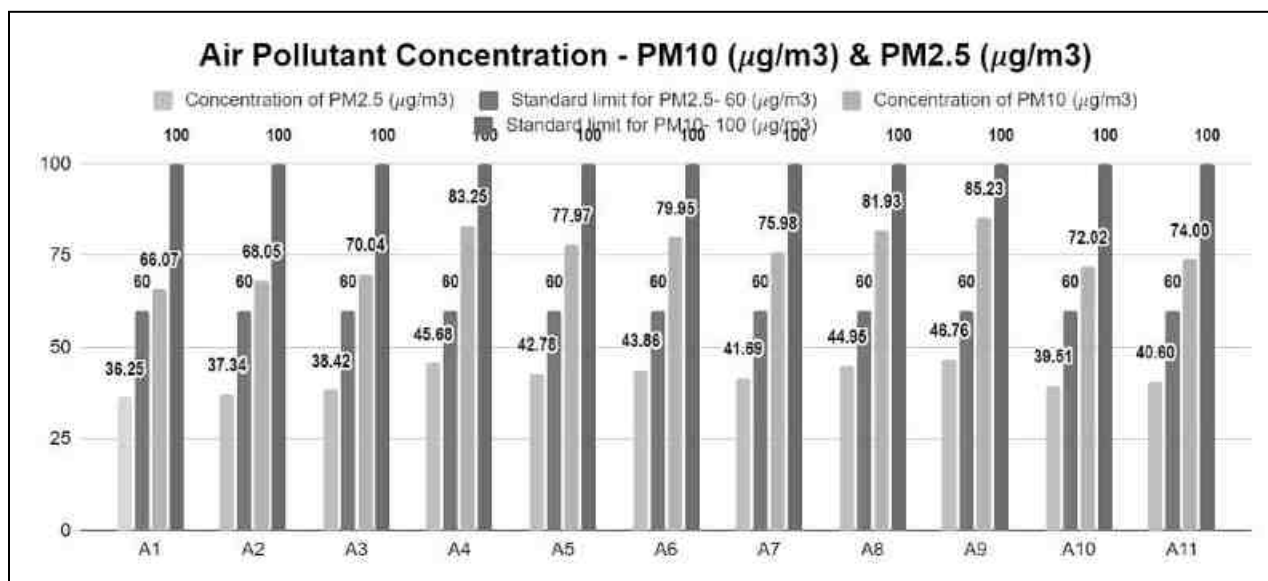


Figure 33. Ambient Air Quality Results (PM10 & PM2.5)

Table 50. Ambient Air Quality Results for SO<sub>2</sub> & NO<sub>2</sub>

Sr. No.	Min	Max	Mean	98 <sup>th</sup> Percentile	NO <sub>2</sub> (Standard – 80 µg/m <sup>3</sup> )			
					Min	Max	Mean	98 <sup>th</sup> Percentile
					SO <sub>2</sub> (Standard – 80 µg/m <sup>3</sup> )			
A1	15.53	26.37	21.43	24.82	3.65	7.83	4.83	5.52
A2	16.00	27.16	22.07	25.56	3.75	8.07	4.97	5.69
A3	16.47	27.95	22.72	26.31	3.86	8.30	5.12	5.86
A4	19.57	33.23	27.00	31.27	4.59	9.87	6.08	6.96
A5	18.33	31.12	25.29	29.29	4.30	9.24	5.69	6.37
A6	18.79	31.91	25.93	30.03	4.41	9.48	5.84	6.69
A7	17.86	30.33	24.64	28.54	4.19	9.01	5.55	6.35
A8	19.26	32.70	26.57	30.77	4.52	9.71	5.98	6.69
A9	20.04	34.02	27.65	32.02	4.7	10.1	6.22	7.13
A10	16.93	28.74	23.36	27.05	3.97	8.54	5.26	6.02
A11	17.4	29.54	24.00	27.8	4.08	8.77	5.40	6.05

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

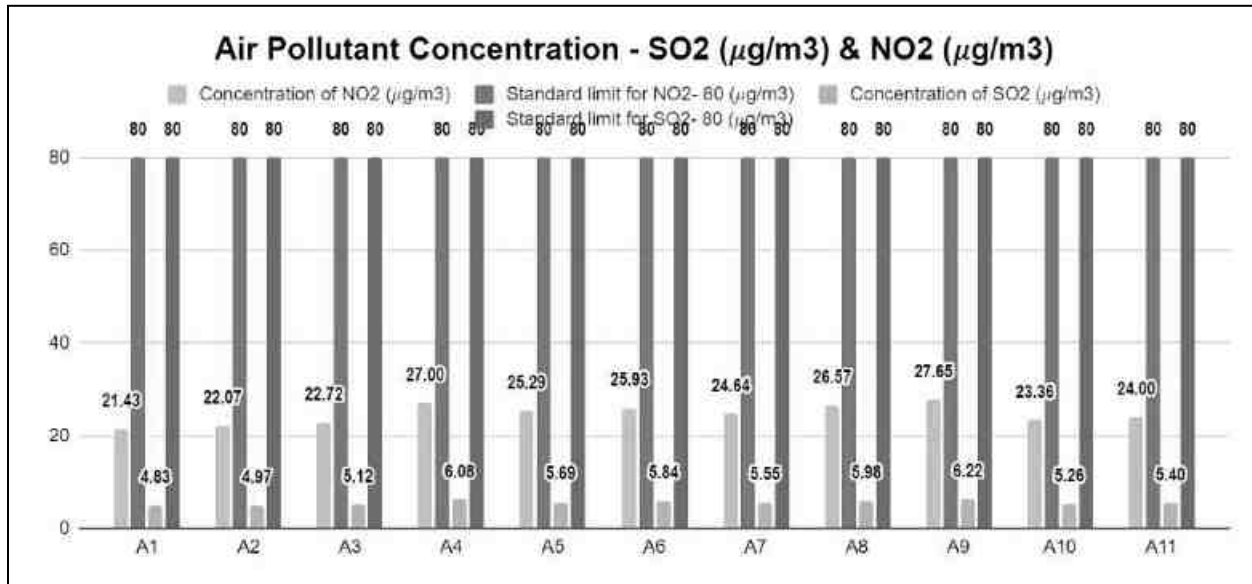


Figure 34. Ambient Air Quality Results for SO<sub>2</sub> & NO<sub>2</sub>

Table 51. Ambient Air Quality Results for CO & VOC

Location	Min	Max	Mean	98 <sup>th</sup> Percentile	CO (mg/m <sup>3</sup> )			
					Min	Max	Mean	98 <sup>th</sup> Percentile
A1	0.39	0.62	0.51	0.6	0.21	0.32	0.26	0.31
A2	0.41	0.64	0.52	0.62	0.21	0.33	0.27	0.32
A3	0.42	0.65	0.54	0.64	0.22	0.34	0.28	0.33
A4	0.5	0.78	0.64	0.76	0.26	0.4	0.33	0.39
A5	0.47	0.73	0.60	0.71	0.21	0.4	0.31	0.38
A6	0.48	0.75	0.62	0.73	0.25	0.39	0.32	0.38
A7	0.45	0.71	0.58	0.69	0.24	0.37	0.31	0.36
A8	0.49	0.77	0.63	0.74	0.25	0.4	0.33	0.39
A9	0.51	0.80	0.65	0.77	0.26	0.41	0.34	0.4
A10	0.43	0.67	0.55	0.65	0.22	0.35	0.29	0.34
A11	0.44	0.69	0.57	0.67	0.22	0.36	0.30	0.35

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

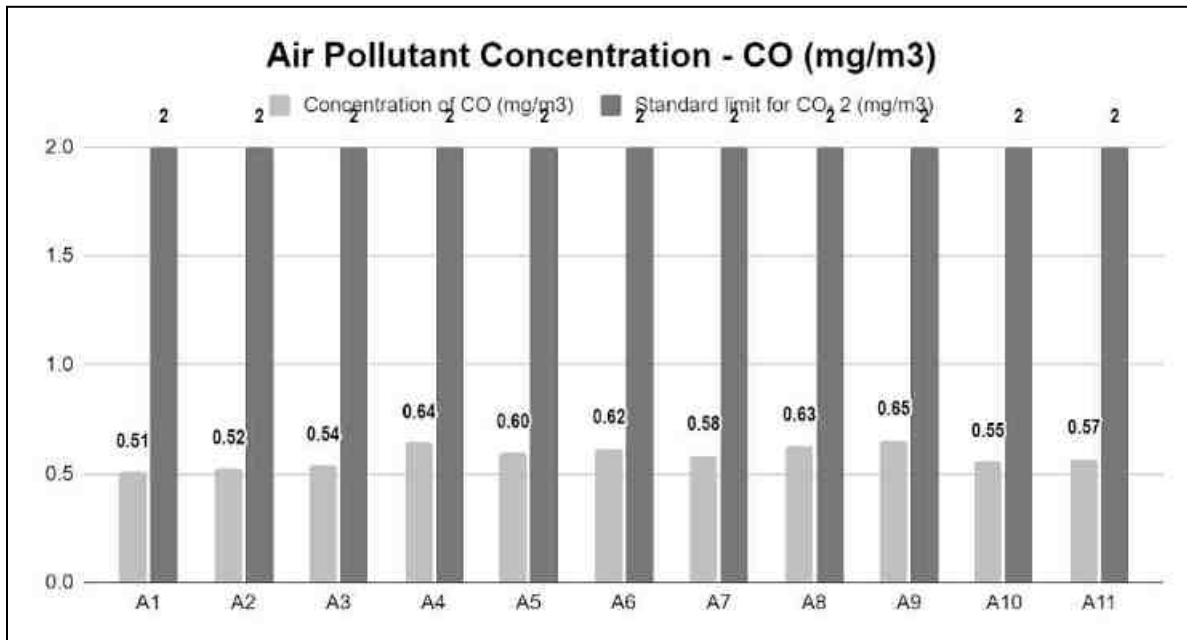


Figure 35. Ambient air quality results for CO

Table 52. Ambient Air Quality Results for HC & O<sub>3</sub>

Location	HC (µg/m <sup>3</sup> )				O <sub>3</sub> (µg/m <sup>3</sup> )			
	Min	Max	Mean	98 <sup>th</sup> Percentile	Min	Max	Mean	98 <sup>th</sup> Percentile
A1	0.25	0.39	0.32	0.37	12.58	21.36	17.36	20.1
A2	0.25	0.4	0.33	0.39	12.96	22	17.88	20.71
A3	0.26	0.41	0.34	0.4	13.34	22.64	18.40	21.31
A4	0.31	0.49	0.40	0.47	15.85	26.91	21.87	24.68
A5	0.29	0.49	0.37	0.45	14.85	26.91	20.48	23.72
A6	0.3	0.47	0.38	0.45	15.22	25.85	21.00	24.32
A7	0.28	0.44	0.36	0.43	14.47	24.56	19.96	23.12
A8	0.31	0.48	0.39	0.46	15.6	26.49	21.53	24.93
A9	0.32	0.5	0.41	0.48	16.23	27.55	22.39	25.93
A10	0.27	0.42	0.34	0.41	13.71	23.28	18.92	21.91
A11	0.28	0.43	0.35	0.42	14.09	23.92	19.44	22.52

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Table 53. Ambient Air Quality Results for (C<sub>6</sub>H<sub>6</sub>)

Location.	Min	Max	Mean	98 <sup>th</sup> Percentile
<b>Benzene (µg/m<sup>3</sup>)</b>				
A1	0.12	0.19	0.16	0.18
A2	0.13	0.2	0.16	0.19
A3	0.13	0.2	0.17	0.19
A4	0.16	0.24	0.20	0.23
A5	0.15	0.24	0.19	0.23
A6	0.15	0.23	0.19	0.22
A7	0.14	0.22	0.18	0.21
A8	0.15	0.24	0.20	0.23
A9	0.16	0.25	0.20	0.24
A10	0.13	0.21	0.17	0.2
A11	0.14	0.22	0.18	0.21

### 3.5.5.2. Inverse Distance Weighted (IDW) Interpolation

The IDW technique computes an average value for unsampled locations where sampling was not possible using values from nearby weighted locations.

The IDW interpolation has been done for the buffer zone by which the concentration of the ambient air parameters are plotted with respect to the baseline known concentration. The maximum concentration range in the Buffer areas for all the parameters are given below based on IDW Maps.

Table 54. IDW Ambient Air Result

Parameters	PM10 (µg/m <sup>3</sup> )	PM2.5 (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	CO (mg/m <sup>3</sup> )	VOC (mg/m <sup>3</sup> )	HC (µg/m <sup>3</sup> )	O <sub>3</sub> (µg/m <sup>3</sup> )	C <sub>6</sub> H <sub>6</sub> (µg/m <sup>3</sup> )
Maximum Concentration in buffer zone	106.25	56.89	10.10	34.02	0.78	0.41	0.50	27.55	0.25

### 3.5.6. Air Quality Index

As per CPCB guidelines, the worst sub index in a location is the AQI of that region (Source: <https://cpcb.nic.in/National-Air-Quality-Index/>). The results show that PM<sub>10</sub> has a good sub index

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over all the sampling sites. Therefore, the PM<sub>10</sub> has been considered for calculating the overall AQI.

The table given below shows the Air Quality Index (AQI) range & category.

AQI RANGE	AQI CATEGORY	AQI RANGE	AQI CATEGORY
Good (0-50)	Minimal Impact	Poor (201-300)	Breathing discomfort to people on prolonged exposure
Satisfactory (51-100)	Minor breathing discomfort to sensitive people	Very Poor (301-400)	Respiratory illness to the people on prolonged exposure
Moderate (101-200)	Breathing discomfort to the people with lung, heart disease, children and older adults	Severe (>401)	Respiratory effects even on healthy people

(Computed using: CPCB AQI CALCULATOR)

Figure 36. AQI Range with Category

Table 55. AQI of the Sampling Locations

Sampling Station	Sub-index Parameter	AQI Value	AQI Range
Onsite West	PM <sub>10</sub>	82.36	Satisfactory
Onsite East	PM <sub>10</sub>	84.84	Satisfactory
Onsite S	PM <sub>10</sub>	87.31	Satisfactory
Anumanthandalam	PM <sub>10</sub>	103.78	Moderate
Elanagar Village	PM <sub>10</sub>	97.19	Satisfactory
R.N.kandigai	PM <sub>10</sub>	99.66	Satisfactory
Kaliyampoondi Village	PM <sub>10</sub>	94.72	Satisfactory
Karanimandapam	PM <sub>10</sub>	102.13	Moderate
Perunagar	PM <sub>10</sub>	106.25	Moderate
Nemili	PM <sub>10</sub>	89.78	Satisfactory
Sethupattu	PM <sub>10</sub>	92.25	Satisfactory

### 3.5.7. Data Interpretation

The ambient air quality results are summarized in the above tables.

**Core zone:** The mean value of PM<sub>10</sub> at core zone locations ranges from (66.07-70.04 µg/m<sup>3</sup>) & PM<sub>2.5</sub> ranges from (36.25-37.34 µg/m<sup>3</sup>), SO<sub>2</sub> ranges from (4.83-5.12 µg/m<sup>3</sup>), NO<sub>2</sub> ranges from



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(21.43-22.72  $\mu\text{g}/\text{m}^3$ ), CO (0.51-0.54  $\text{mg}/\text{m}^3$ ), VOC (0.26-0.28  $\text{mg}/\text{m}^3$ ), HC (0.32-0.34  $\mu\text{g}/\text{m}^3$ ), O<sub>3</sub> (17.36-18.40  $\mu\text{g}/\text{m}^3$ ) and C<sub>6</sub>H<sub>6</sub> (0.16-0.17  $\mu\text{g}/\text{m}^3$ ) which are within the limits of National Ambient Air Quality Standards (NAAQS).

As per the Air Quality Index by CPCB, the air quality of the core **zone is found to be Satisfactory** during the sampling period - March 2023 - May 2023.

**Buffer zone:** The mean value of PM<sub>10</sub> at buffer zone locations ranges from (89.78-106.25  $\mu\text{g}/\text{m}^3$ ) & PM<sub>2.5</sub> ranges from (39.51-46.76  $\mu\text{g}/\text{m}^3$ ), SO<sub>2</sub> ranges from (5.22-6.22  $\mu\text{g}/\text{m}^3$ ), NO<sub>2</sub> ranges from (23.36-27.65  $\mu\text{g}/\text{m}^3$ ), CO (0.55-0.65  $\text{mg}/\text{m}^3$ ), VOC (0.29-0.34  $\text{mg}/\text{m}^3$ ), HC (0.34-0.41  $\mu\text{g}/\text{m}^3$ ), O<sub>3</sub> (18.92-22.39  $\mu\text{g}/\text{m}^3$ ) and C<sub>6</sub>H<sub>6</sub> (0.17-0.20  $\mu\text{g}/\text{m}^3$ ) which are slightly higher than the limits of National Ambient Air Quality Standards (NAAQS).

As per the Air Quality Index by CPCB, the air quality of the buffer zone is found to be **Moderate** during the sampling period - March 2023 - May 2023.

### **3.6. NOISE LEVEL**

#### **3.6.1. Methodology**

At each station noise level was monitored for 24-hours simultaneously. For each measurement, dB (A) readings were taken for every 15 minutes for 24 hrs ones in a season to get Leq values. As per CPCB guidelines, the site of an area shall be selected such that it meets the land use pattern e.g. Commercial, Residential, Industrial. To assess the noise level of the proposed area, following stations were selected.

#### **Criteria for site selection:**

The baseline study of noise levels in the study area of 3 km has been carried out by selecting the noise monitoring locations based on the following criteria:

The site selection for noise quality monitoring were selected following the CPCB guidelines:

1. As per CPCB guidelines, the sites of an area for noise quality monitoring were selected such that it meets the land use pattern e.g. Commercial, Residential, Industrial, and silent zone. Silence zone is defined as an area comprising not less than 100 m around hospitals, educational institutions and courts. As per the site location, the type of location

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that was selected: industrial location, roads, and residential area, lies within the core and buffer area.

2. The presence of Noise sensitive receptors (environmental and ecological) in the vicinity of the project site were selected for noise quality monitoring. These included schools, hospitals, old age homes, religious places, etc.
3. Proximity of the noise generating source to the human settlements. The major source of noise in the site surrounding the area is increased urbanization, vehicular movement at day time and ambient base noise at night. The impacts from these sources are expected to be captured in the levels of noise measured in the site-specific background noise monitoring study.

Based on the above factors, overall 10 stations were selected.

#### Quality Assurance:

The noise level meter was calibrated immediately prior to and following each measurement event to check for the accuracy of measurement using an acoustic calibrator.

#### 3.6.2. Ambient Noise Sampling Location

Table 56. Ambient Noise Sampling Locations

Location No.	Sampling Locations	Latitude & Longitude	Distance and direction from the project boundary	Type of Area	Environmental Significance
N1	Onsite west	12°38'41.69"N 79°41'45.62"E	Onsite	Industrial Area	Core Zone
N2	Onsite East	12°38'37.04"N 79°42'7.94"E	Onsite		
N3	Elanagar Village	12°38'50.47"N 79°41'29.78"E	0.42 km WNW	Residential Area	Buffer Zone
N4	Hanumanthandal am	12°39'23.02"N 79°41'45.40"E	0.89 km NW		
N5	Melpakkam	12°37'56.67"N 79°42'20.17"E	1.19 km SE		
N6	R.N.kandigai	12°37'43.48"N 79°41'42.56"E	1.50 km S		

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<b>Location No.</b>	<b>Sampling Locations</b>	<b>Latitude &amp; Longitude</b>	<b>Distance and direction from the project boundary</b>	<b>Type of Area</b>	<b>Environmental Significance</b>
<b>N7</b>	Silambakkam	12°39'26.34"N 79°42'34.57"E	1.58 km NNE		
<b>N8</b>	kaliyampoondi village	12°38'18.12"N 79°43'9.38"E	1.93 km E		
<b>N9</b>	Approach road	12°38'38.41"N 79°41'42.90"E	Adjacent to the site	Commercial Areal	
<b>N10</b>	Uthiramerur Road	12°37'24.03"N 79°41'32.04"E	Adjacent to the site		

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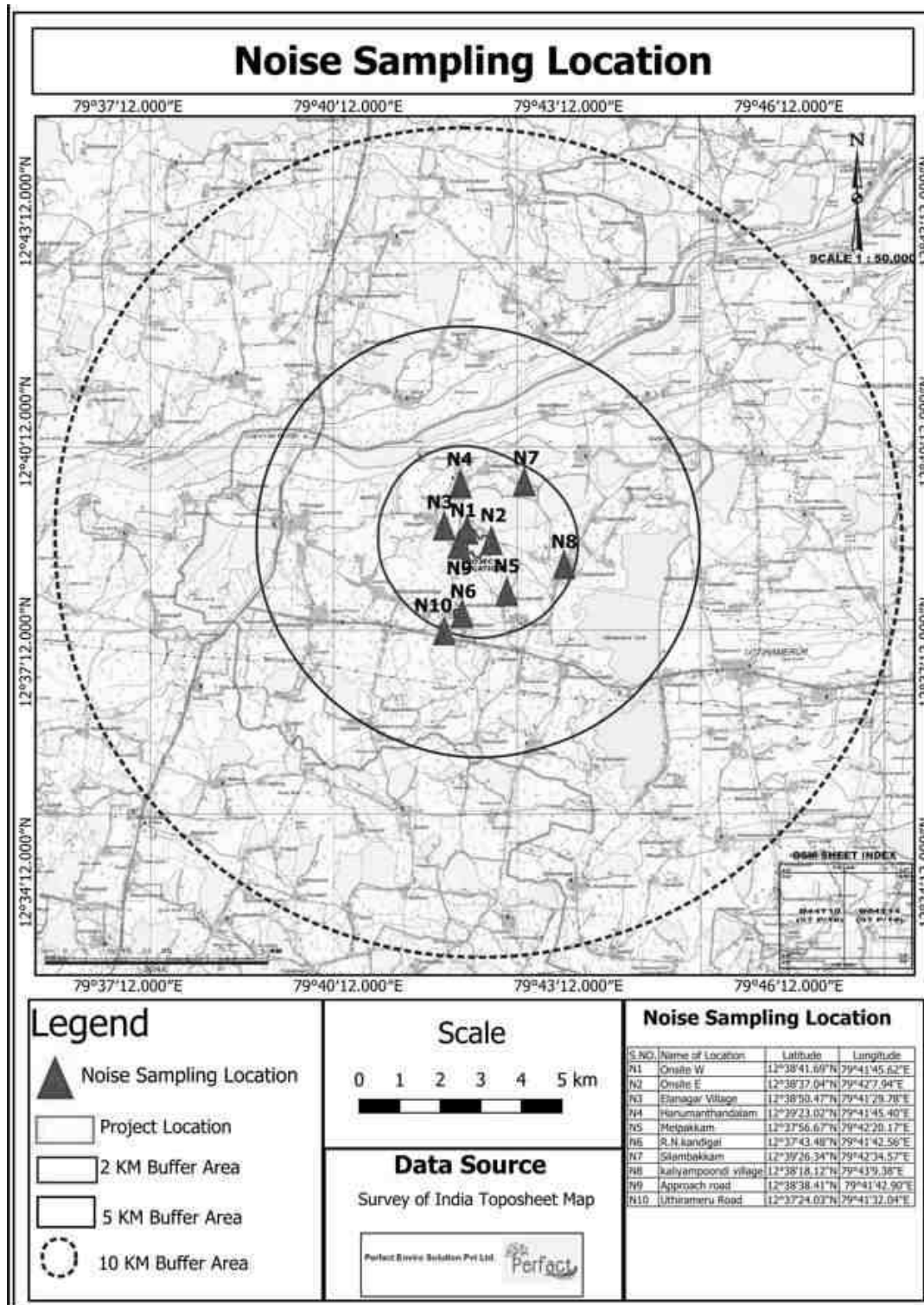


Figure 37. Noise Sampling Map

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### 3.6.3. Results and Discussion

The Ambient Noise Quality results are summarized above. The results are discussed below:

#### Core Zone:

Table 57(A). Ambient Noise Quality (Core Zone)

Location No.	Locations	Zone	Leq Day Time Leq dB(A)	Leq Night Time Leq dB(A)	Day time (6.00 A.M to 10.00P.M)	Night time (10.00 P.M to 6.00A.M)
N1	Onsite west	Industrial area	62.4	58.7	75	70
N2	Onsite East	Industrial area	61.8	57.9	75	70

The ambient noise level during day time at the proposed project site varies from 61.8 dB (A) to 62.4 dB (A) which are within the day time standard limit of Industrial area ~75.0 dB (A). During night, the noise level at the project site ranges from 57.9 dB (A) to 58.7 dB (A) which are within the night time standard limit of Industrial area 70.0 dB (A).

#### Buffer Zone:

Table 57(B). Ambient Noise Quality (Buffer Zone)

Location No.	Locations	Zone	Leq Day Time Leq	Leq Night Time Leq	Day time (6.00 A.M to 10.00P.M)	Night time (10.00 P.M to 6.00A.M)
N3	Elanagar Village (0.42 km WNW)	Residential area	53.7	45.2	55	45
N4	Hanumanthandalam (0.89 km NW)	Residential area	56.8	46.5		
N5	Melpakkam (1.19 km SE)	Residential area	53.4	46.2		
N6	R.N.kandigai (1.50 km S)	Residential area	54.1	46.9		
N7	Silambakkam (1.58 km NNE)	Residential area	54.8	45.2		
N8	Kaliyampoondi village (1.93 km E)	Residential area	55.1	44.9		

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Location No.	Locations	Zone	Leq Day Time Leq	Leq Night Time Leq	Day time (6.00 A.M to 10.00P.M)	Night time (10.00 P.M to 6.00A.M)
N9	Approach road	Commercial Area	56.8	51.5	65	55
N10	Uthiramerur Road	Commercial Area	64.7	58.9		

### Residential Area:

**N3:** The daytime ambient noise level at Elanagar Village is 53.7 dB (A) which is within the daytime noise standard limit of the Residential area of ~ 55.0 dB (A). During the night the noise level was recorded at 45.2 dB (A) which is slightly above the night-time noise standard limit of ~ 45.0 dB (A).

**N4:** The daytime noise level at Hanumanthandalam is 56.8 dB (A) which is slightly above the day time noise standard limit of ~ 55 dB (A). During the night the noise level was recorded at 46.8 dB (A) which is above the night-time noise standard limit of ~ 45 dB (A).

**N5:** The daytime ambient noise level at Melpakkam is 53.4 dB (A) which is within the daytime noise standard limit of the Residential area of ~ 55.0 dB (A). During the night the noise level was recorded at 46.2 dB (A) which is above the night-time noise standard limit of ~ 45.0 dB (A).

**N6:** The daytime ambient noise level at R.N.kandigai is 54.1 dB (A) which is within the daytime noise standard limit of Residential area ~ 55.0 dB (A). During the night the noise level was recorded at 46.9 dB (A) which is slightly above the night-time noise standard limit of ~ 45.0 dB (A).

**N7:** The daytime noise level at Silambakkam is 54.8 dB (A) which is slightly above the daytime noise standard limit of Residential area ~ 55 dB (A). During the night the noise level was recorded at 45.2 dB (A) which is slightly above the night-time noise standard limit of ~ 45 dB (A).

**N8:** The daytime noise level at Kaliyampondi village is 55.1 dB (A) which is slightly above the daytime noise standard limit of Residential area ~ 55.0 dB (A). During the night the noise level was recorded at 44.9 dB (A) which is within the night-time noise standard limit of ~ 45 dB (A).

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### **Commercial Area:**

**N9:** The daytime noise level at Approach Road is 56.8 dB (A) which is within the daytime noise standard limit of Commercial area ~ 65.0 dB (A). During the night the noise level was recorded at 51.5 dB (A) which is within the night-time noise standard limit of ~ 55 dB (A).

**N10:** The daytime noise level Uthirameru Road is 64.7 dB (A) which is slightly lower and within the standard limit of Commercial area ~ 65.0 dB (A). During the night the noise level was recorded at 58.9 dB (A) which is higher than the night-time noise standard limit of ~ 55 dB (A).

## **3.7. HYDROLOGY & GEOLOGY**

This chapter illustrates the description of the existing environmental status of the study area with reference to the prominent environmental attributes. The study area covers an area equal to 10 km radius around the project site. The existing environmental setting covers baseline conditions with respect to geology and groundwater quality.

### **3.7.1. Objectives**

The objectives of this study were to:

- To study the drainage network in the Core and Buffer zone.
- To study groundwater development status of the area.
- Identify potential impacts that the construction and operation of the Project could have on this environmental component

### **3.7.2. Topography/Geomorphology**

**Core Zone:** Topographically, the proposed site area is flat. As per kml file the minimum elevation of the project site is 92 m AMSL in the centre and northwest whereas the maximum elevation in the eastern leasehold is 101 m AMSL.

**Buffer Zone:** The buffer area too has an almost flat topography. As per kml file the maximum elevation towards the west is 138 m AMSL, whereas the minimum elevation towards the southeast and east southeast near the periphery is 63 m AMSL.

The geomorphic features of the area are shown in the Map given below:

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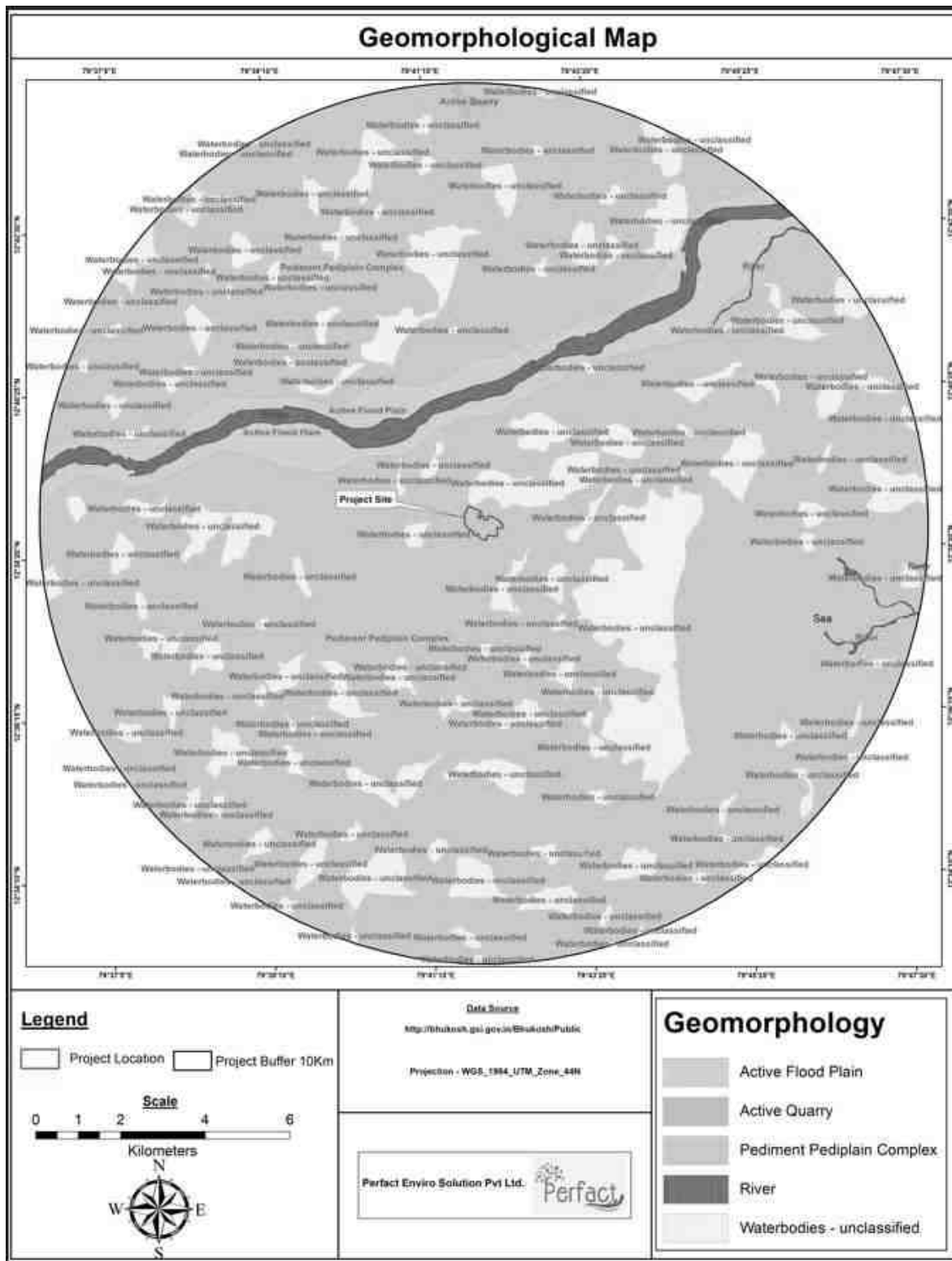


Figure 38. Geomorphological Map



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### 3.7.3 Geology

The geology of Uthiramerur taluk of Kancheepuram is a complex and varied one. The different rock units represent different periods of geological time and different environments of deposition. The area is principally made up of hard rocks and sedimentary formations. The Peninsular Gneissic Complex is the oldest rock unit in the area and is composed of charnockite, khondalite, and migmatite. The Cuddapah Supergroup is a sequence of sedimentary rocks that were deposited in a shallow sea. The Gondwana Supergroup is a sequence of sedimentary rocks that were deposited in a terrestrial environment. The Quaternary deposits are the youngest rock unit in the area and are composed of alluvium and laterite. The Stratigraphic succession is as follows:

*Table 58. Stratigraphic Succession*

<b>Age</b>	<b>Formation</b>
Recent to sub-recent	Alluvium and beach sands
Pleistocene	Laterite, soils
Pleistocene to upper Miocene	Conjeevaram gravels
Lower Cretaceous to Jurassic	Sandstones & Shales
	Boulder bed
Archean	Mixed gneisses, charnockites, granites and associated basic and ultra basic intrusives

\* Source: <https://nwm.gov.in/sites/default/files/Notes%20on%20Kancheepuram%20District.pdf>

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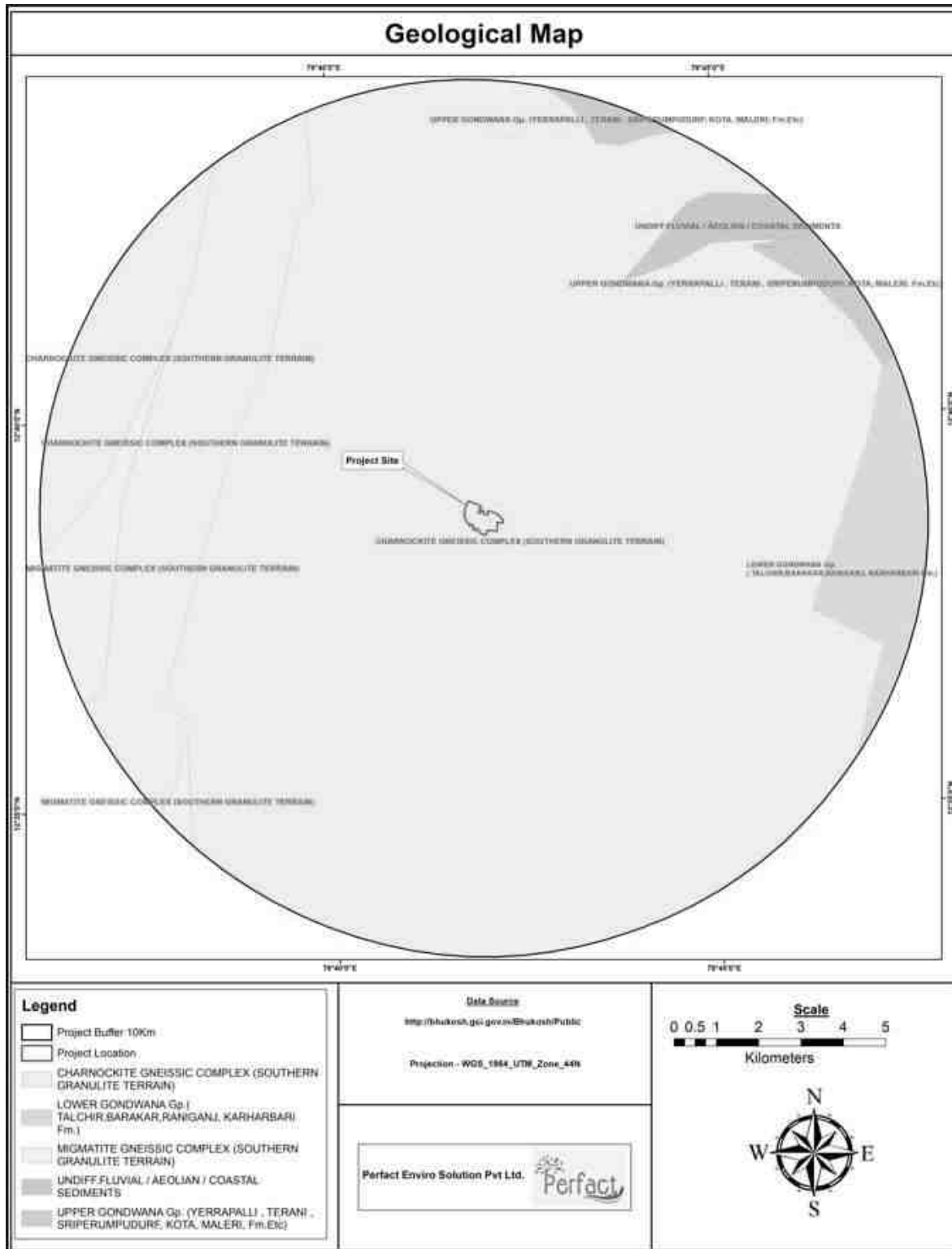


Figure 39. Geological Map

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### **3.7.4 Hydrology**

#### **3.7.4.1 Drainage**

##### **Core Zone**

- The second-order ephemeral stream passes through the Core zone from southwest to northeast of the area.
- The first-order stream enters from the south and turns westward to join the second-order stream along the core zone.
- The other second-order ephemeral stream flows towards the northeast of the area.

##### **Buffer Zone**

- The area falls in the catchment of the Cheyyar River. The buffer zone comprises various water bodies such as a river, ponds, canals, etc.
- The Cheyyar River is situated at a distance of about 2.30 km to the northwest of the project site.
- The area's major river Cheyyar flows from west to northeast. A canal also runs along the Cheyyar River on the northern side of the Cheyyar River.
- The area has parallel and dendritic drainage patterns having first to fourth-order streams.
- There is a water divide almost in the middle of the buffer trending from NE to SW. The area on the NW of the divide drains to the Cheyyar River and the area on the SE of the divide drains ultimately to the Subam River, which is located about 13.54 km south of the project site.

The drainage map is given in Figure No. 37.

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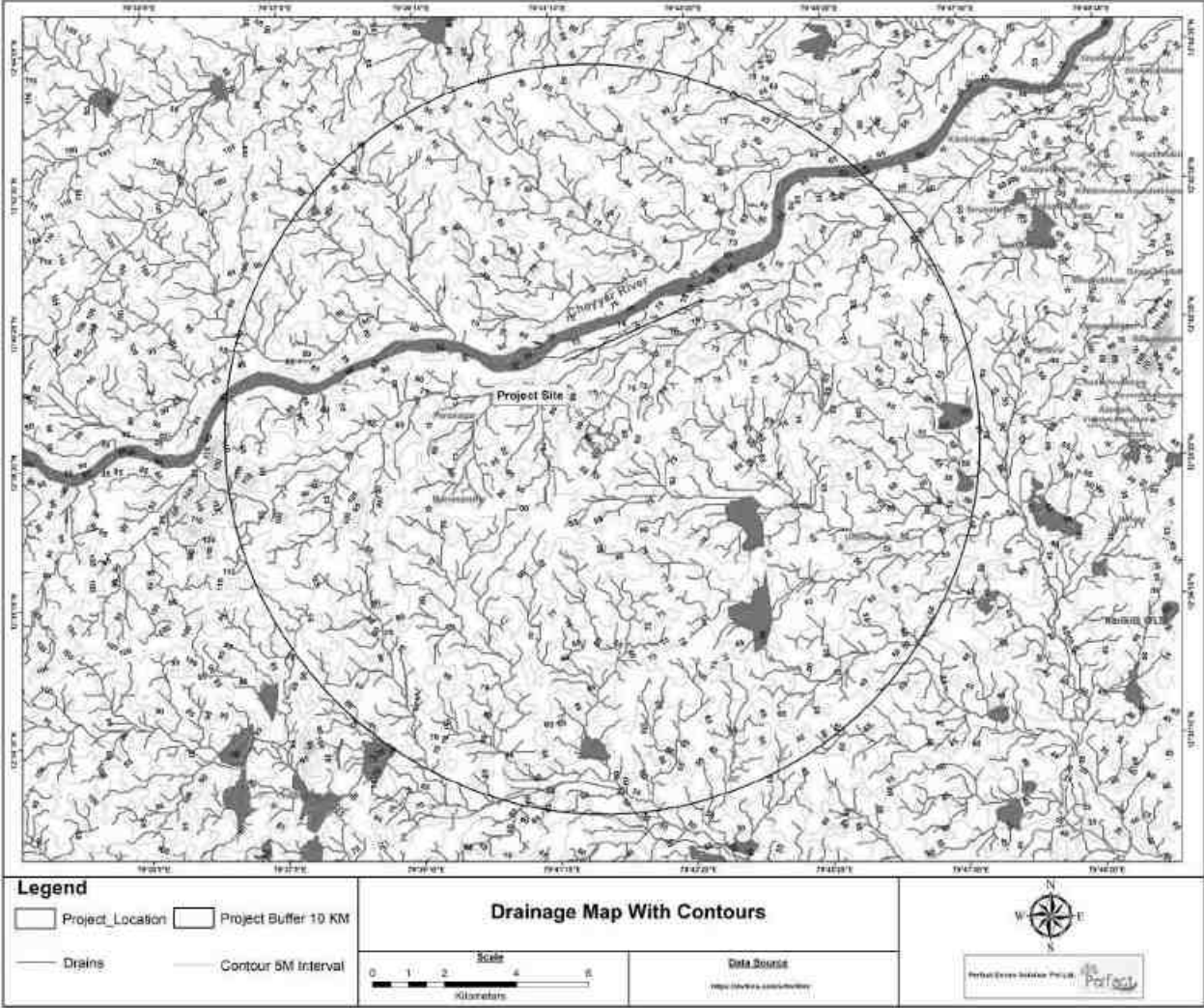


Figure 40. Drainage Map

**3.7.4.1 Flood History**

The map prepared by **India Flood Hazard Map, Building Materials and Technology Promotion Council** is given in Figure No. 40 below. The map depicts that the area is sufficiently beyond the flood hazard zones.

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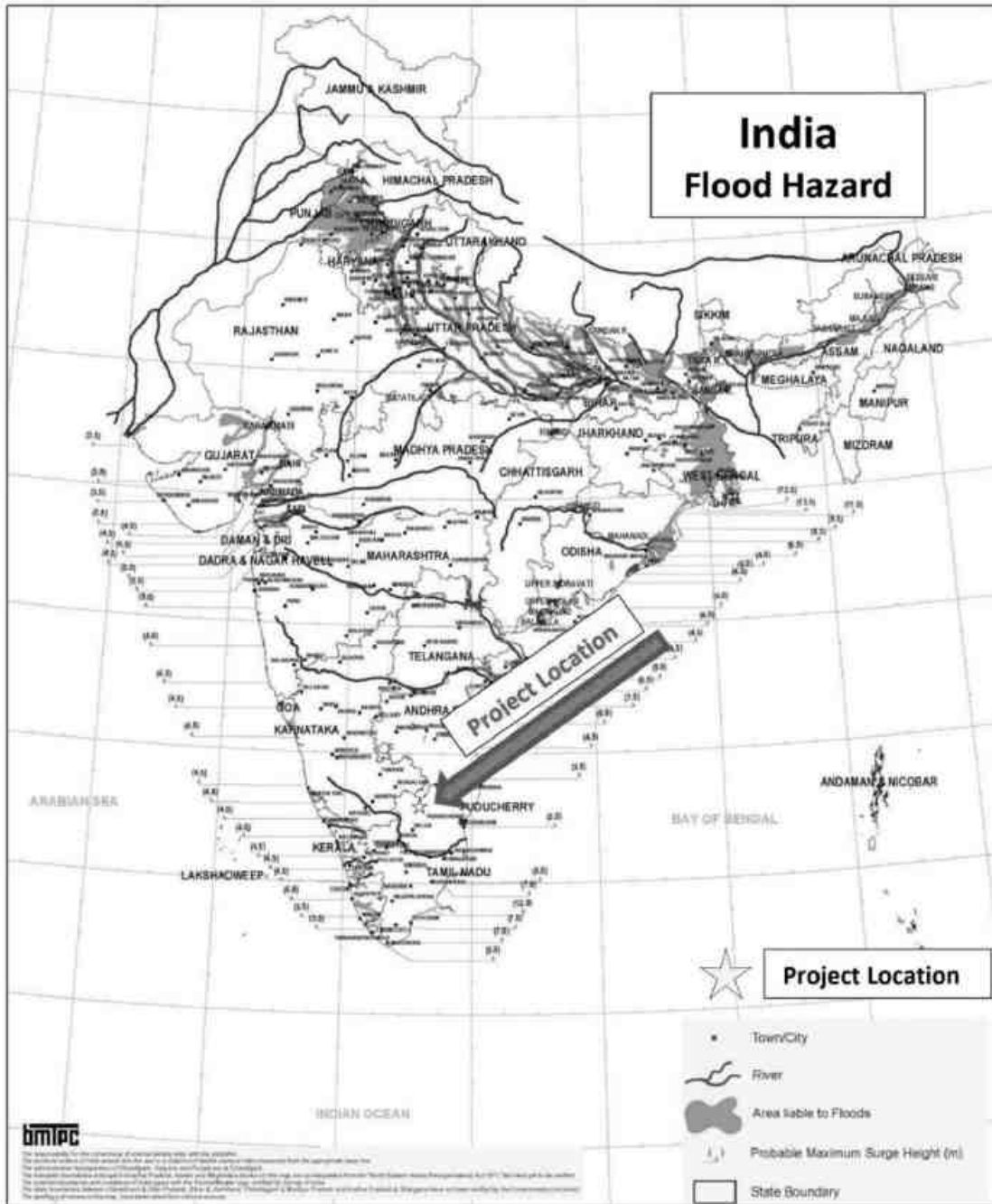


Figure 41. Flood Map

Source: <https://bmtpc.org/DataFiles/CMS/file/VAI2019/MAP/floodmap/flood.jpg/Flood-INDIA.jpg>

### 3.7.5 Geohydrology

The geohydrology of Uthiramerur taluk is characterized by the presence of two main aquifers: the weathered and fractured hard rock aquifer and the alluvial aquifer. The weathered and fractured hard rock aquifer is the main source of groundwater in this region. The aquifer is

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composed of granitic gneisses, charnockites, and amphibolites. The thickness of the aquifer varies from 15 to 20 meters. The alluvial aquifer is located in the coastal plain of the taluk. The aquifer is composed of sand, clay, and silt. The thickness of the aquifer varies from 30 to 40 meters.

### **Gneissic Type**

Groundwater occurs mostly under water table or phreatic conditions in weathered, fractured, jointed, and faulted portions of granitic rocks and under artesian conditions in fractured zones located below impervious hard rocks. The pore spaces developed in the weathered mantle act as shallow granular aquifers and form the potential water-bearing zones.

### **Charnockite type**

Groundwater occurs in shallow depth only subject to the intensity of weathering, and its development is much less than gneissic formations.

### **Sedimentary formation**

The most important formation that is carrying a substantial amount of groundwater is alluvium. Ground water occurs under water table or semi-confined conditions. The alluvium essentially composed of boulders, gravel, or coarse sand with little or no silt or clay constitutes the best aquifer. While silt or clay with little or no boulders, gravel or sand is a poor aquifer. The thickness of these aquifers ranges from 2m to 20m. Another type of aquifer associated with alluvium contains boulders free of any cementing material. The groundwater potential of such boulder beds is enormous owing to their very high permeability.

One another mode of occurrence of groundwater in alluvium is in the form of perched aquifers. Groundwater is met in these perched aquifers at a depth of 1 to 3m from the ground level.

### **Coastal Aquifers**

In the coastal area, the groundwater is available in perched water table conditions. This is very precious, the same should be used very conservatively. Since overlapping leads to seawater intrusion in the area. The aquifer is available only from 2m to 10m bgl.

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### 3.7.5.1 Groundwater Development

The area falls under the Uthiramerur Tehsil/Taluk, Kanchipuram District. As per the CGWB report (2022), the area falls under the semi-critical category with the stage of groundwater development at about 85.11684793%. The following table shows the Uthiramerur Taluk Ground water developments.

*Table 59. Details of Uthiramerur Taluk Groundwater Development*

<b>Assessment unit Taluka</b>	<b>Total Extraction</b>	<b>Annual Extractable Ground water Resources (Ham)</b>	<b>Annual GW Allocation for Domestic Use as on 2025 (Ham)</b>	<b>Net Ground Water Availability for Future Use (Ham)</b>	<b>Stage of Ground Water Development (in %)</b>	<b>Category</b>
Uthiramerur	2261.8	2657.3	88.2	395.5	85.1	semi-critical

Source: [https://www.cgwb.gov.in/old\\_website/GW-Assessment/GWR-2022-Reports%20State/Tamil%20Nadu.pdf](https://www.cgwb.gov.in/old_website/GW-Assessment/GWR-2022-Reports%20State/Tamil%20Nadu.pdf)

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

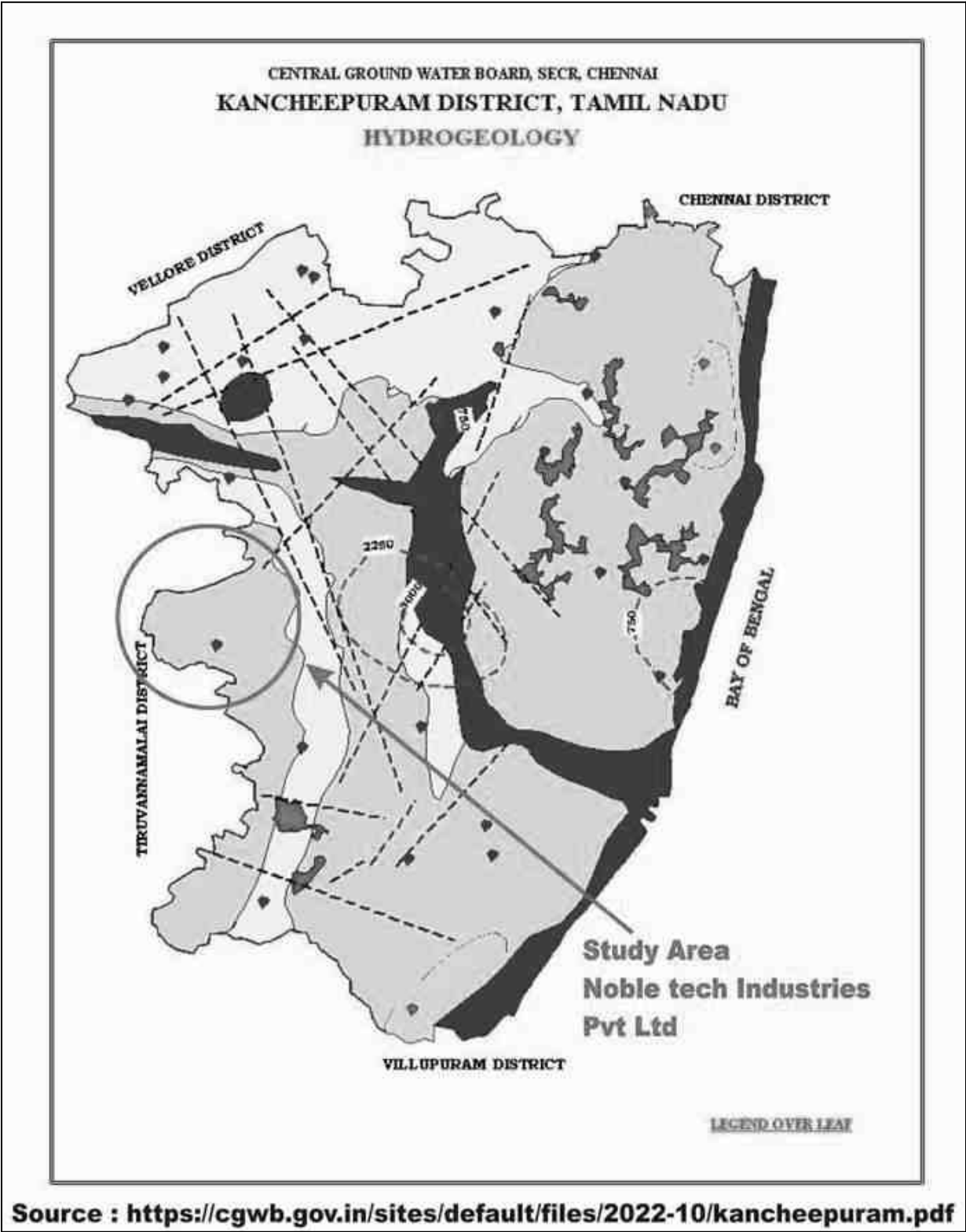


Figure 42. Hydrogeological Map



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 3.8 WATER QUALITY

#### 3.8.1 Sampling Location

To assess the water quality of the proposed area, the following 17 stations (08 groundwater, 09 surface water) were selected. Location of Water sampling stations is described below and location below:

Table 60. Groundwater Sampling Locations

Location No.	Sampling Locations	Latitude & Longitude	Distance and direction from the project boundary	Source of Water	Environmental Significance
W1	Onsite	12°38'41.69"N 79°41'45.62"E	Onsite	Groundwater	Core Zone
W2	Elanagar Village	12°38'50.47"N 79°41'29.78"E	0.42 km WNW		Buffer Zone
W3	Hanumanthandalam	12°39'23.02"N 79°41'45.40"E	0.89 km NW		
W4	Melpakkam	12°37'56.67"N 79°42'20.17"E	1.19 km SE		
W5	R.N.kandigai	12°37'43.48"N 79°41'42.56"E	1.50 km S		
W6	Silambakkam	12°39'26.34"N 79°42'34.57"E	1.58 km NNE		
W7	Kaliyampoondi village	12°38'18.12"N 79°43'9.38"E	1.93 km E		
W8	Karanimandalam	12°37'17.58"N 79°42'29.31"E	2.35 km SE		

Table 61. Surface Water Sampling Locations

Location No.	Sampling Locations	Latitude & Longitude	Distance and direction from the project boundary	Environmental Significance
SW1	Pond near Hanumanthandalam	12°39'12.17"N 79°41'51.54"E	0.57 km NNW	Buffer Zone
SW2	Elanagar Lake	12°38'37.96"N 79°41'15.67"E	0.84 km W	
SW3	Lake near	12°37'53.96"N	1.09 km SE	

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

<b>Location No.</b>	<b>Sampling Locations</b>	<b>Latitude &amp; Longitude</b>	<b>Distance and direction from the project boundary</b>	<b>Environmental Significance</b>
	Melpakkam	79°42'7.28"E		
<b>SW4</b>	Kaliyampoondi Lake	12°38'24.81"N 79°43'14.07"E	1.93 km E	
<b>SW5</b>	Cheyyar river upstream	12°40'6.49"N 79°42'12.26"E	2.37 km N	
<b>SW6</b>	Lake near Silambakkam	12°39'48.67"N 79°42'56.37"E	2.52 km NNE	
<b>SW7</b>	Uthiramerur Lake East	12°38'3.33"N 79°43'34.88"E	2.79 km E	
<b>SW8</b>	Cheyyar river downstream	12°40'18.67"N 79°43'22.22"E	3.70 km NNE	
<b>SW9</b>	Uthiramerur Lake West	12°36'54 "N 79°44'17"E	2.79 km W	

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

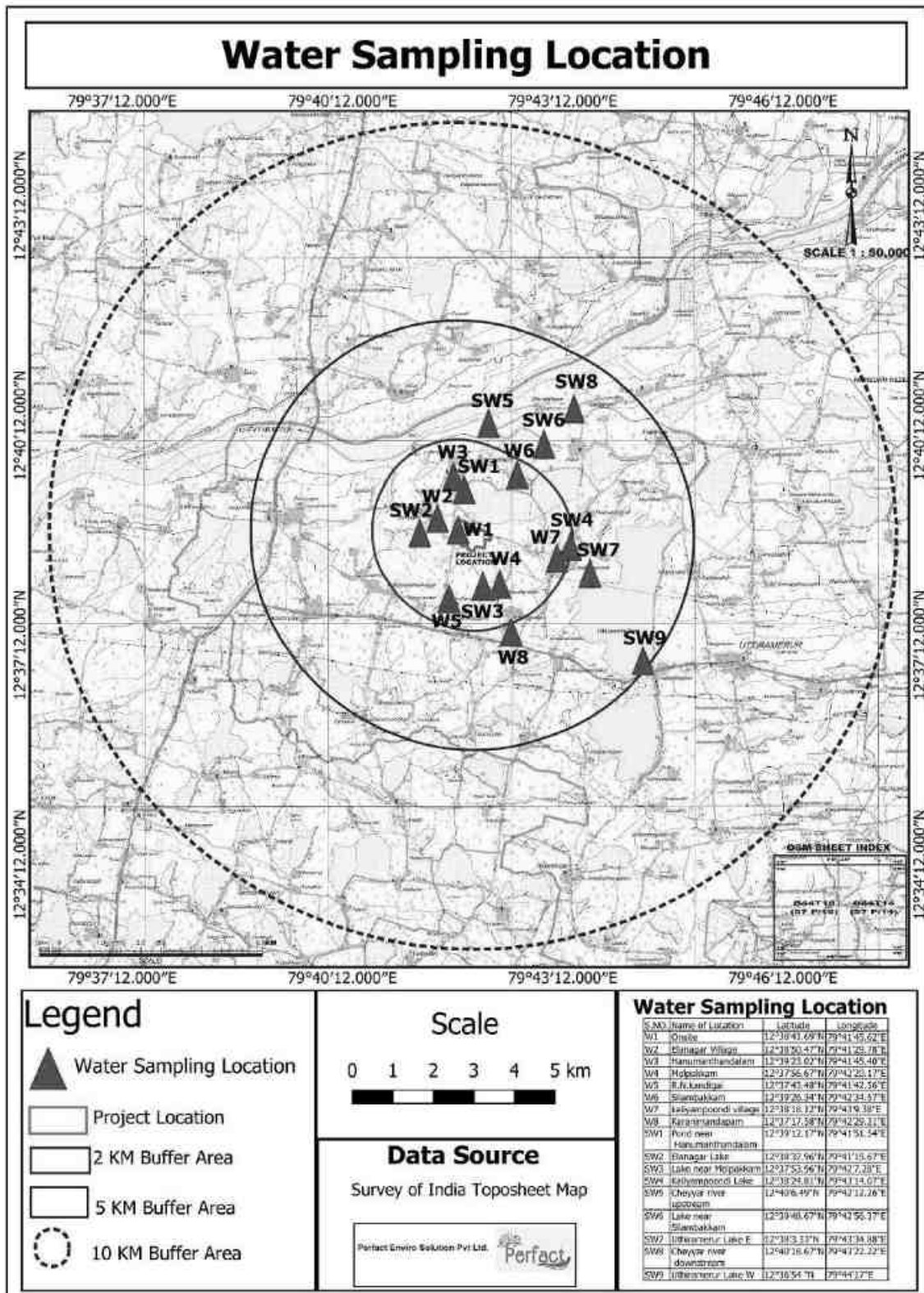


Figure 43. Water Sampling Locations

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### **3.8.2. Criteria of Selection of Sampling Locations**

#### **Quality assurance for sampling**

- Water samples were taken as per the Standard Methods (IS & APHA, 23rd Edition 2017).
- Prior to sampling, all the materials (sampling equipment, water collection bottles, storage boxes) were thoroughly cleaned and sterilized in the laboratory.
- Precautions were taken to prevent any contamination while handling the sample bottles, i.e. neither the bottle lip nor the interior surface were touched during sampling.
- Before collecting the sample, the water bottle was rinsed three times by shaking it followed by the water being discarded downstream.
- In the monitoring site, samples were collected upstream with water flowing directly towards the sample collector to avoid any human-caused contamination.
- The samples were collected thrice from each spot and were stored in a cold box. The samples were transported between laboratory and sampling sites within these cold boxes.

### **3.8.3 Sampling Frequency and Sampling Techniques**

As per the standard practice, grab sampling was done for 8 locations, Composite sampling was done for Surface Water locations as per the Standard Methods (IS & APHA, 23rd Edition 2017). Necessary precautions were taken for preservation of samples.

- The physical parameters viz. pH, temperature and conductivity were measured at site using a portable water analyzer.
- Quality assurance during sample analysis:
- The collected samples were transferred to the laboratory and analyzed for the selected water quality parameters.
- All samples were analyzed according to the methods described in the American Public Health Association Standard Method for Water and Wastewater Analysis
- All the chemicals used in the analysis were of analytical grade. Double deionized water (Milli-Q system, Millipore) water was used for analysis purposes throughout the study.
- Both the glassware and the sample containers used for the analysis were thoroughly cleaned and rinsed with double distilled water before analysis.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

As evident from the sampling locations for water quality assessment, it represented surface and groundwater.

### **3.8.4 Ground Water Quality Results**

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 62. Ground Water Quality Results

Details	Unit	IS 10500:2012 (Drinking water standard)	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8
Colour	Hazen	5.00	<1	<1	<1	<1	<1	<1	<1	<1
Odour	--	Unobjectionable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	NTU	5.00	<1	<1	<1	<1	<1	<1	<1	1.3
pH Value		6.5-8.5	7.61	7.54	7.52	7.42	7.56	7.50	7.31	7.50
Temperature	°C	-	24.2	24.4	24.3	24.1	24.8	24.2	23.7	23.9
Conductivity	µmho/cm	-	1580	2332	1238	2980	2998	1466	2222	1434
Total Dissolved Solids	mg/l	500	820	1516	805	1937	1949	953	1444	932
Chloride (as Cl)	mg/l	250	124	290	116	270	270	196	212	192
Fluoride (as F)	mg/l	1.00	<0.1	0.32	<0.1	0.84	0.15	0.78	<0.1	<0.1
Total Hardness	mg/l	200	446	660	440	620	540	400	640	580
Calcium (as Ca)	mg/l	75	82	112	80	112	112	74	108	96
Magnesium (as Mg)	mg/l	30.0	60.22	92.34	58.32	82.62	63.18	52.49	89.91	82.62
Iron (as Fe)	mg/l		<0.05	<0.05	<0.05	0.654	0.152	0.052	<0.05	<0.05
Sulphate (as SO <sub>4</sub> )	mg/l	200.00	65.62	106.98	57.82	106.87	108.29	42.36	96.05	61.17
Nitrate Nitrogen	mg/l	45.0	30.65	51.49	32.67	51.49	49.38	2.70	51.48	17.55
Nitrite Nitrogen	mg/l		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Details	Unit	IS 10500:2012 (Drinking water standard)	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8
Alkalinity	mg/l	200	132	360	128	632	312	208	544	392
Aluminium (as Al)	mg/l	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Boron (as B)	mg/l	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphate	mg/l	-	0.30	0.92	0.22	1.44	<0.01	<0.01	1.89	0.13
Sodium (as Na)	mg/l	-	74.12	200.29	71.57	305.39	382.29	141.29	166.29	131.49
Potassium (as K)	mg/l	-	6.16	7.65	4.74	151.80	1.84	1.60	92.96	2.56
Nickel (as Ni)	mg/l	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium (as Cd)	mg/l	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead (as Pb)	mg/l	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Zinc (as Zn)	mg/l	-	0.345	0.936	0.250	0.045	0.402	0.858	0.358	1.324
Lithium(as Li)	mg/l	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
TSS	mg/l	-	1.40	1.20	1.20	1.60	1.40	1.20	1.80	1.24

*\*Total Chromium, Manganese, Copper are below detection level (Source of standards: IS: 10500, Laboratory: M/s Perfact Researchers Pvt. Ltd (NABL Accredited)*

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### **3.8.5 Ground Water Quality Result Interpretation**

**Core zone:** The water quality at location GW1 shows that all the parameters are within the drinking water standards (IS:10500).

**Buffer zone:** The water quality of the buffer zone shows that

- The Total Dissolved Solids (TDS) of the sampling locations ranges from 805 mg/l to 1949 mg/l. The TDS of sampling locations are higher than acceptable limits and within the permissible limit i.e. 500 & 2000 mg/l respectively.
- The Total Hardness of the sampling locations ranges from 400 mg/l to 660 mg/l. The TH of sampling locations are within than the acceptable & permissible limit i.e. 200 & 600 mg/l respectively.
- The Alkalinity of the sampling locations ranges from 128 mg/l to 632 mg/l. The alkalinity of sampling locations are within the acceptable limit & higher than the permissible limit i.e. 200 & 600 mg/l respectively.
- The Chloride Concentration of the sampling locations ranges from 116 mg/l to 290 mg/l. The Chloride concentration of sampling locations are lesser than the acceptable limit & within permissible limits i.e. 250 & 1000 mg/l

#### **Conclusion**

- The groundwater quality parameters (buffer zone) are well within the IS 10500:2012 (Drinking water standard).

### **3.8.6 Surface Water Quality Results**



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 63. Surface Water Quality Result

Details	Unit	IS 10500:2012 (Drinking water standard)	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9
Colour	Hazen	5.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Odour	--	Unobjectionable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	NTU	5.00	6.4	2.3	1.1	1.3	3.3	1.2	1.32	2.4	1.6
pH Value		6.5-8.5	7.70	7.65	7.56	7.68	7.81	7.82	7.75	7.78	7.74
Temperature	°C	-	24.5	24.6	24.1	24.6	25.1	24.4	24.6	24.6	24.2
Conductivity	µmho/cm	-	322	474	1134	976	704	830	860	990	588
Total Dissolved Solids	mg/l	500	209	308	737	634	458	540	582	644	382
Chloride (as Cl)	mg/l	250	14	58	94	134	74	124	120	136	96
Fluoride (as F)	mg/l	1.00	<0.1	0.21	<0.1	<0.1	<0.1	0.36	0.33	0.36	0.36
Total Hardness	mg/l	200	84	184	304	320	208	240	232	280	232
Calcium (as Ca)	mg/l	75	18	38	48	67	42	42	40	58	42
Magnesium (as Mg)	mg/l	30.0	9.72	21.38	44.71	36.94	25.27	33.05	32.63	33.05	31.10
Iron (as Fe)	mg/l	200.00	0.508	0.120	0.142	0.256	0.060	0.062	0.058	0.799	0.224
Sulphate (as SO <sub>4</sub> )	mg/l	45.0	12.88	19.22	22.17	32.03	3.63	21.67	24.22	26.4	10.43
Nitrate Nitrogen	mg/l	200	5.31	5.02	3.37	7.76	6.62	4.41	4.65	5.55	2.71
Nitrite Nitrogen	mg/l	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Details	Unit	IS 10500:2012 (Drinking water standard)	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9
Alkalinity	mg/l	-	120	128	304	232	184	272	260	304	144
Aluminum (as Al)	mg/l	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Boron	mg/l	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphate	mg/l	-	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.27	0.14
Sodium (as Na)	mg/l	-	9.23	24.60	99.74	72.52	79.44	92.49	86.26	78.62	84.56
Potassium (as K)	mg/l	-	5.16	11.42	5.01	5.28	5.25	8.65	9.16	7.12	8.32
Total Chromium	mg/l	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Nickel (as Ni)	mg/l	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese (as Mn)	mg/l	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper (as Cu)	mg/l	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cadmium (as Cd)	mg/l	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001
Lead (as Pb)	mg/l	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Zinc (as Zn)	mg/l	-	0.177	0.482	0.343	0.280	0.312	0.410	0.414	0.215	0.322
Lithium(as Li)	mg/l	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
BOD	mg/l	-	4.25	2.30	7.85	2.45	3.80	7.55	7.65	6.85	7.65
COD	mg/l	-	16.0	8.0	32.0	8.0	16.0	32.0	32.0	24.0	32.0
DO	mg/l	-	6.5	7.6	5.4	7.4	7.2	5.2	5.0	5.4	5.0
Ammoniacal Nitrogen	mg/l	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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<b>Details</b>	<b>Unit</b>	<b>IS 10500:2012 (Drinking water standard)</b>	<b>SW1</b>	<b>SW2</b>	<b>SW3</b>	<b>SW4</b>	<b>SW5</b>	<b>SW6</b>	<b>SW7</b>	<b>SW8</b>	<b>SW9</b>
TSS	mg/l	-	2.60	2.20	2.40	2.80	2.60	1.80	1.60	4.60	1.60
Total Coliform	MPN/100 ml	-	700	400	920	710	540	710	700	920	710

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 64. Surface water Designated best Use by CPCB

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	pH between 6.5 and 8.5 Dissolved Oxygen 6 mg/l or more Biochemical Oxygen Demand 5 days 20 °C 2 mg/l or less
Outdoor bathing (Organised)	B	pH between 6.5 and 8.5 Dissolved Oxygen 5 mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3 mg/l or less
Drinking water source after conventional treatment and disinfection	C	pH between 6 to 9 Dissolved Oxygen 4 mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3 mg/l or less
Propagation of Wildlife and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4 mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25 °C micro mhos/cm Max.2250 Boron Max. 2 mg/l

(Source: Surface Water quality criteria as per CPCB)

### 3.8.7 Data Interpretation

As per the samples collected and analyzed from locations SW2 & SW4 surface water quality is meeting the criteria defined by class “C” as per the CPCB criteria. It is suitable for Drinking water source after conventional treatment and disinfection.

1. The Surface water quality of the Pond near Hanumanthandalam (SW1) shows that the parameters including Turbidity, TDS, TSS, Nitrate nitrogen, BOD, COD & Iron content are higher as compared with EPA discharge standards.
2. The surface water quality of the Elanagar lake (SW2) shows that the values of the parameters including TDS, nitrate nitrogen, chloride, fluoride, calcium, magnesium, iron and alkalinity are lesser than the IS drinking water quality standards. BOD & DO value indicating that the surface water quality of SW2 can be placed in Class “C” i.e., Drinking water source after

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conventional treatment and disinfection as per CPCB surface water quality- Designated Best Use Water Quality Criteria.

3. The surface water quality of the Lake near Melpakkam (SW3) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are higher than the IS drinking water quality standards.
4. The surface water quality of the Cheyyar river upstream (SW4) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards. BOD and DO value indicating that the surface water quality of SW4 can be placed in Class “C” i.e. Drinking water source without conventional treatment but after disinfection CPCB surface water quality- Designated Best Use Water Quality Criteria.
5. The surface water quality of the Lake near Silambakkam (SW5) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards.
6. The surface water quality of the Uthiramerur Lake East (SW6) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards.
7. The surface water quality of the Uthiramerur Lake West (SW7) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards.
8. The surface water quality of the Cheyyar river downstream (SW8) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards.

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9. The surface water quality of the Kaliyampoondi Lake (SW9) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards.

## **3.9 LAND ENVIRONMENT**

### **3.9.1. Image Processing**

Image processing software and GIS Software were used for the project. Image Processing Software was used for digital processing of the spatial data. Digital image processing techniques were applied for the mapping of the land use/land cover classes of the provided area from the satellite data. The methodology applied comes under following steps:

- Satellite imagery for the Area of Interest was created through image processing software.
- Geometric correction includes correction for geometric distortions due to sensor, earth geometry variations and conversion of the data to real world coordinates.
- Image enhancement is one of the important image processing functions primarily done to improve the appearance of the imagery to assist in visual interpretation and analysis.
- Google image is used as a reference map for base layer preparation.

Visual interpretation techniques have been used for digitization of geographical features for different land use and vegetation cover classes based on spatial patterns of geographic features.

### **3.9.2. Interpretation of Satellite Image**

Supervised Classification and Visual interpretation technique has been used for digitization of geographical features for different land use and vegetation cover classes based on spatial pattern of geographic feature. Spectral signatures represent various land use classes. Image interpretation keys are developed based on image characteristics like colour, tone, size, shape, texture, pattern, shadow, association etc, which enables interpretation of satellite images for ground features. Statistics of geographic features have been developing for impact assessment due to project activity.

After the above process the final LULC map has been prepared. The Flow chart of the methodology is given below:

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

**Flow Chart for Methodology of LULC Map Preparation is given below:**

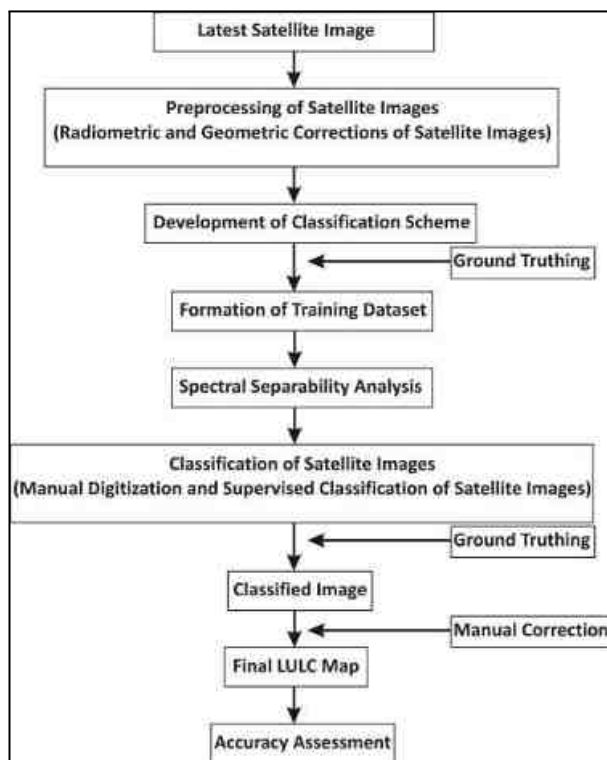


Figure 44. Flow Chart for Methodology of LULC Map Preparation

### 3.9.3 Results And Conclusions:

The land use/ land cover map has been generated on 1:50,000 scale using digital classification of Imagery. Based on the methodology developed for the present land use/ land cover, categories have been grouped under the following major land use/land cover categories.

#### General Land Use/ Land Cover:

Table 65. Major land use/land cover categories of study area (10 Km Radius Buffer zone)

Sr. No.	Category	Area in Sq. km	Area in ha	
1	Agriculture Land (71.20%)	Agricultural Crop Land	216.095	21609.5
		Agricultural Fallow Land	18.458	1845.8
		Agricultural Plantation	8.102	810.2
2	Builtup Land (6.98%)	Builtup Rural	17.972	1797.2
		Builtup Urban	1.484	148.4
		Builtup Mining	4.317	431.7

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Sr. No.	Category	Area in Sq. km	Area in ha
3	Barren Land (3.55%)	Barren / Unculturable wastelands, Barren rocky	1.69
		Barren / Unculturable wastelands, Scrub land	6.189
		Barren / Unculturable wastelands, Salt affected land	4.232
4	Forest Land (0.03%)	Forest Deciduous	0.089
5	Wet Land (18.24%)	Wetland / Water Bodies	54.889
		Wetland / Water Bodies, River / Stream / Canals	7.281
<b>Total</b>		<b>340.798</b>	<b>34079.8</b>

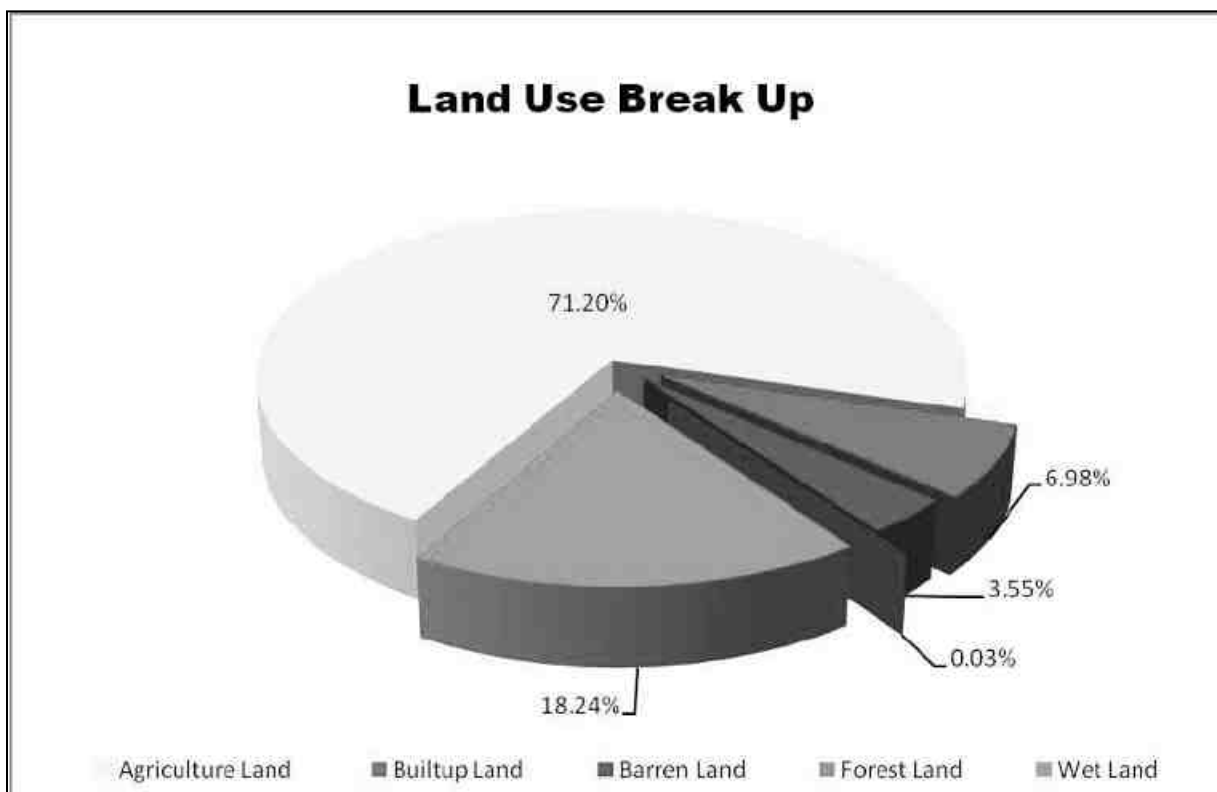


Figure 45. Land use Break-up

- **Agriculture Land:**



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Based on analyzed imagery and ground truth. Cropland and its area extent have been extracted. The Agricultural Land area is about 24265.5 hectares which is 71.20 percent of the total 10 km radius study area.

- **Built up Land :**

Based on analysis of imagery using GIS and ground truth. The total Built up area is about 2377.3 hectares which is 6.98 percent of the total study area.

- **Waste/Barren Land:**

The Barren Land area occupies around 1211.1 ha which is 3.55 percent of the study area.

- **Forest:**

Forest area occupies around 8.9 ha which is 0.03 percent of the study area.

- **Water Bodies:**

Based on satellite data and ground truth, the total area covered by the inland wetland, river and water bodies is 6217 hectares which is 18.24 percent of the total study area.

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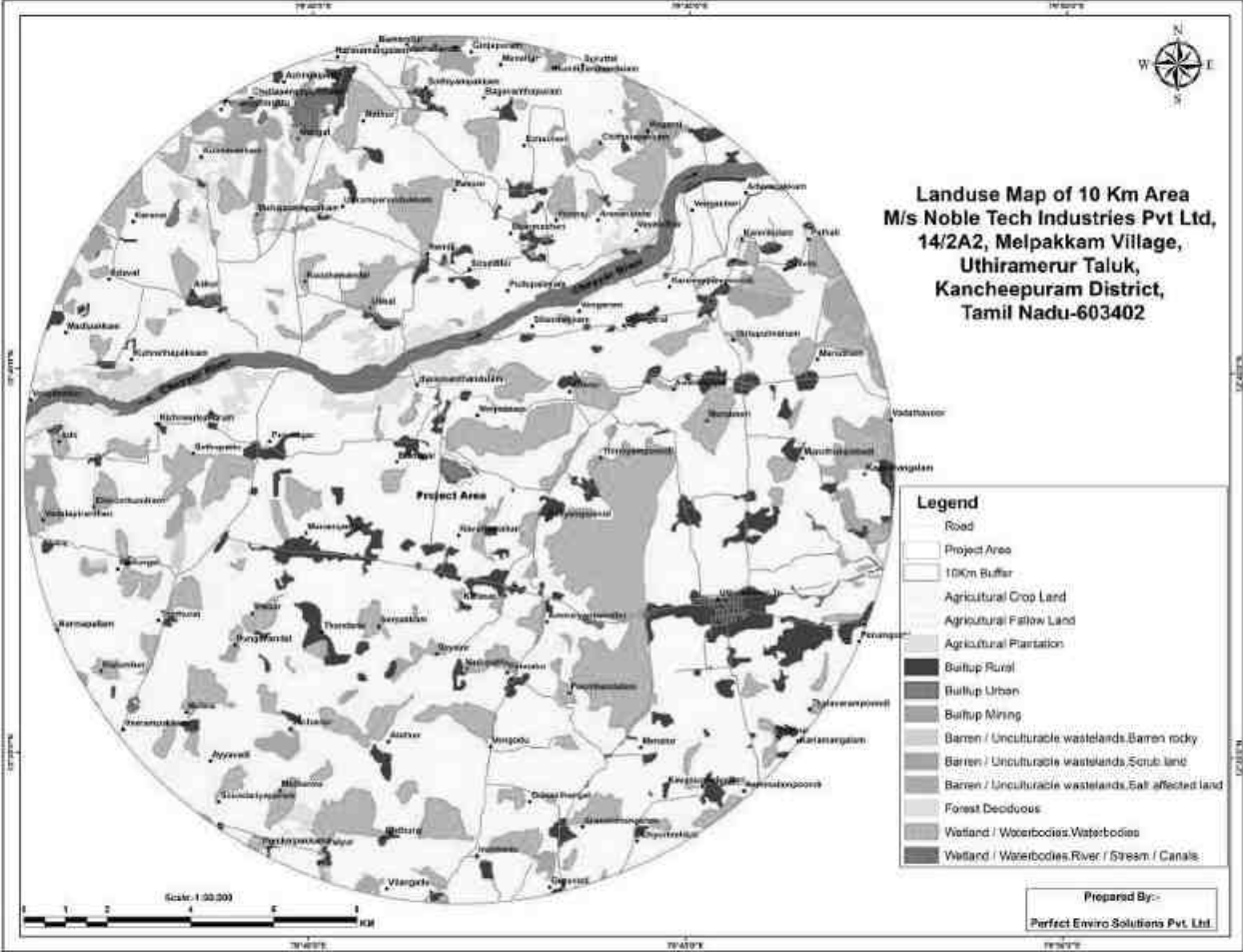


Figure 46. Land use map of the study area (10 Km buffer zone)

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- Water Bodies:**

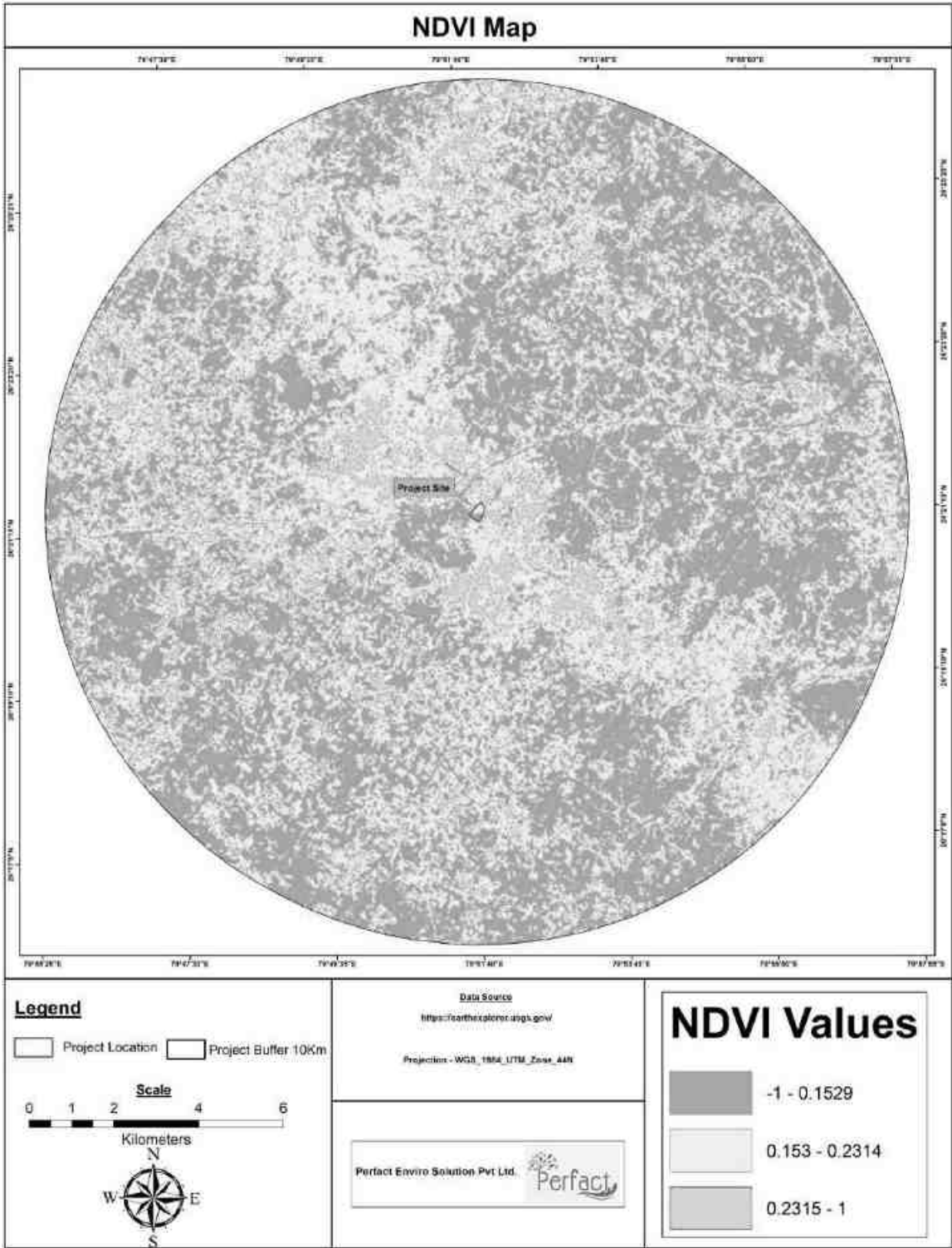


Figure 47. NDVI Map

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### 3.10 SOIL QUALITY

#### 3.10.1 Soil

Soils have been classified into 1) clayey soil, 2) red sandy or red loamy soil 3) Red sandy brown clayey soil and 4) Alluvial soil. Of the above soils brown clayey soil is the most predominant, covering more than 71 percent of the areal extent of Chengalpattu district. Alluvial soils are found on the banks of Palar, Cheyyar and other rivers. The river alluvium is transported and is seen in the coastal area of this district. Sandy coastal alluvial (arenaceous soil) occurs along the seacoast as a narrow belt.

#### 3.10.2 Sampling Location

Table 66. Offsite Soil Sampling Location

Location No.	Sampling Locations	Latitude & Longitude	Distance and direction from site	Environmental Significance
S1	Onsite	12°38'41.69"N 79°41'45.62"E	Onsite	Core Zone
S2	Nearby site	12°38'45.72"N 79°42'12.27"E	Adjacent to site	
S3	Elanagar Village	12°38'50.47"N 79°41'29.78"E	0.42 km WNW	Buffer Zone
S4	Hanumanthandalam	12°39'23.02"N 79°41'45.40"E	0.89 km NW	
S5	Melpakkam	12°37'56.67"N 79°42'20.17"E	1.19 km SE	
S6	R.N.kandigai	12°37'43.48"N 79°41'42.56"E	1.50 km S	
S7	Silambakkam	12°39'26.34"N 79°42'34.57"E	1.58 km NNE	
S8	Kaliyampoondi village	12°38'18.12"N 79°43'9.38"E	1.93 km E	
S9	Karanimandapam	12°37'17.58"N 79°42'29.31"E	2.35 km SE	

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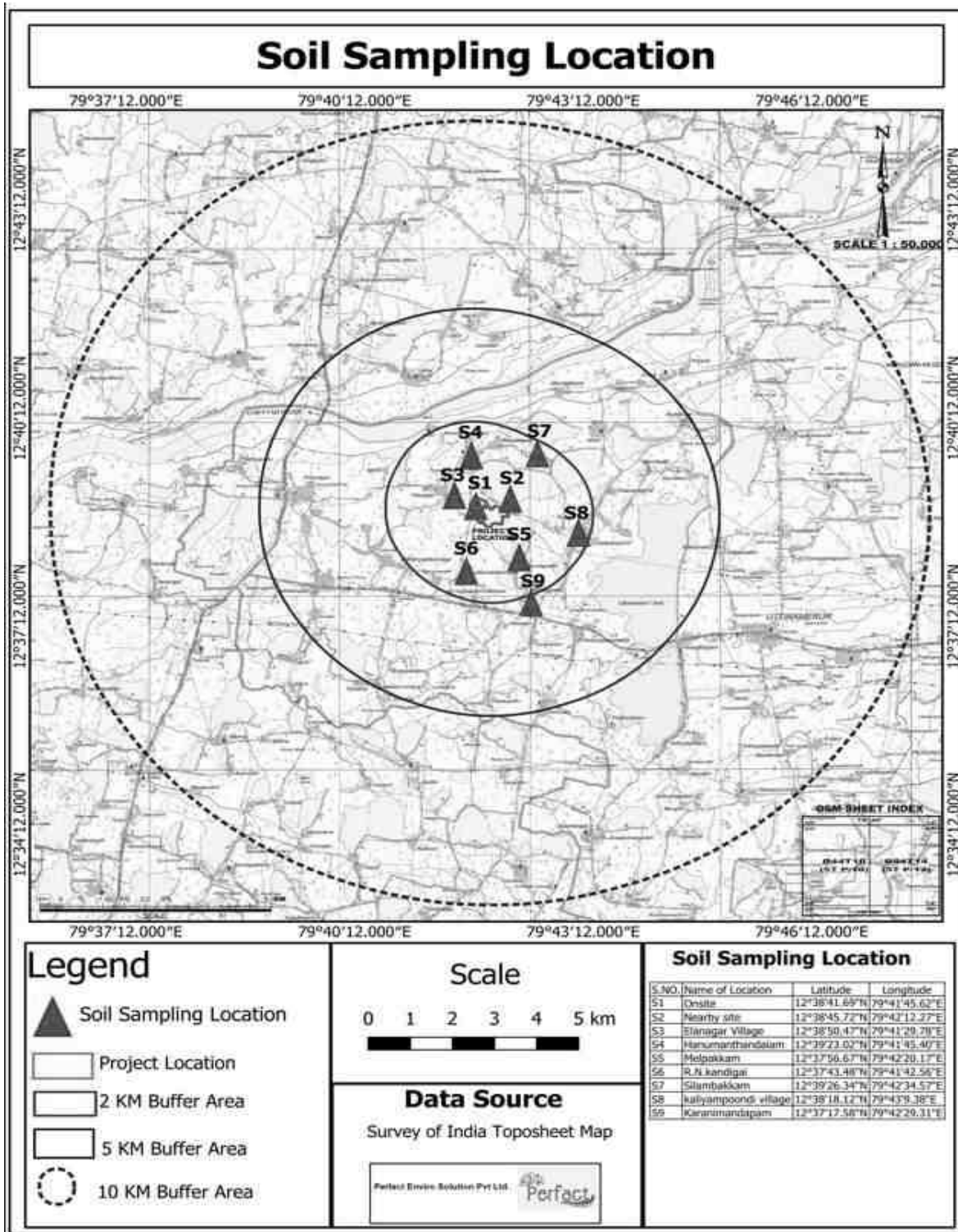


Figure 48. Soil sampling Location Map

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### **3.10.3 Sampling Procedure and Analysis**

Augur method was used and samples were collected at 15 cm depth after removing the upper crust. Samples from each spot were well mixed with hand on a clean polythene sheet. About 1 kg of soil was retained after the quartering process. This sample was kept for some time for air-drying at room temperature, stored in a polythene bag with a label at the top. Soil Quality Results are summarized below on the next page

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### 3.10.4. Physical & Chemical Properties of Soil

Table 67. Physical & Chemical Properties of Soil

Type of Land		Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses
Details	Unit	S1	S2	S3	S4	S5	S6	S7	S8	S9
pH	-	7.56	7.48	7.5	7.3	7.36	6.94	7.61	7.87	7.91
Electric Conductivity	μS/cm	189.8	150.4	55.8	53.2	99.4	71.9	211.7	112.8	91.3
Color	-	3/3 Brownish Black	3/3 Brownish Black	3/2 Brownish Black	3/2 Brownish Black	3/2 Brownish Black	3/2 Brownish Black	3/2 Brownish Black	3/2 Brownish Black	3/2 Brownish Black
Moisture content	%	8.8	4.8	6.4	4.6	5.4	6.6	6.1	5.2	4.4
Organic Matter	%	0.98	0.81	0.67	1.48	1.21	1.25	0.71	0.64	0.61
Available Nitrogen	mg/kg	78.4	74.2	54.6	49	61.6	60.2	84	72.8	63
Available Calcium	mg/kg	71.5	70.2	59.8	38.6	57.4	53.4	84.2	62.6	48.4
Available Magnesium	mg/kg	37.7	28.2	19.2	18.4	24.2	18.6	44.7	26.7	18.6
Available Potassium	mg/kg	35.7	31.6	21.1	17.3	18.8	14.3	35.2	23.9	23.1

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Type of Land		Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses
Nitrate Nitrogen	mg/kg	40.6	42	29.4	26.6	34.4	34.2	50.4	56.4	35.4
Available Phosphorus	mg/kg	10.4	10.2	6.4	5.4	8.8	7.4	12.4	11.4	9.6
Chloride	mg/kg	71	71	26.6	35.5	62.1	53.3	79.9	71	62.1
Cation Exchange Capacity	meq/100gm	16.3	13.9	15.7	15.3	14.6	17.4	16.3	18.7	16.4
Available Sulphur	mg/kg	2.8	1.8	3.6	9.4	5.2	2.67	1.8	4.3	2.4
Available Sodium	mg/kg	64.4	68.6	38.7	18.7	43.7	36.7	79.3	47.8	44.7
Bicarbonate	mg/kg	109.8	134.2	97.6	170.8	85.4	61	85.4	109.8	41.7
Texture Class		Sandy Clay Loam	Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Clay Loam	Sandy Clay Loam	Clay Loam	Clay
Texture	Sand %	46.9	43.1	48	50.7	48.1	43.8	47.5	44.3	21.1
	Silt %	18.7	32.4	23	19.5	18.6	18.3	20.4	20.9	32.1
	Clay %	34.3	24.4	28.9	29.7	33.2	37.8	32	34.7	46.7
Bulk Density	g/cc	1.32	1.33	1.34	1.37	1.35	1.32	1.36	1.28	1.18



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Type of Land		Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses	Land Put to Non-Agricultural Uses
Porosity	%	31.4	26.4	30.8	31.2	29.6	28.8	30.6	34.6	38.4
SAR	meq/100gm	8.7	9.8	6.2	3.5	6.8	6.1	9.9	7.2	7.7
Water Holding Capacity	%	44	40	46	48	44	42	45	52	60

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 68. Fertility of soil at onsite

Parameters	Low mg/kg (0-15 cm)	Medium mg/kg (0-15 cm)	High mg/kg (0-15 cm)
Nitrogen	49	72.8	84
Potassium	14.3	23.9	35.7
Phosphorus	5.4	8.8	12.4

### 3.10.5. Data Interpretation

**Core Zone :** After analyzing the samples collected from the site, it shows that the soil texture is Sandy Clay loam, Colour is Brownish Black, pH is 7.56. Amount of primary nutrients like Organic matter is 0.98 %, the available nitrogen 78.4 mg/kg is moderately high and available Potassium 35.7 mg/kg is medium while the available Phosphorus 10.4 mg/kg is in a medium range. Thus it can be concluded that soil is average fertile in the core Zone.

**Buffer Zone:** Colour Brownish Black, pH ranges from 6.94 to 7.91. Amount of primary nutrients like Organic matter 0.61 to 1.48 %, the Available Nitrogen 49 mg/kg to 84 mg/kg is medium in range, the Available Phosphorus 5.4 mg/kg to 12.4 mg/kg is low to medium in range, Available Potassium 14.3 mg/kg to 35.2 mg/kg is low in range, Primary nutrient profile shows that soil is average fertile.

### 3.11 BIOLOGICAL ENVIRONMENT

Ecological systems are complicated natural systems within which plant and animal communities serve their dynamic roles as indicators, responding against nonspecific environmental factors through self-driven interactions with various elements. These communities are susceptible to changes in environmental stresses, making a comprehensive understanding of their diversity crucial for effective area management and implementing appropriate mitigation practices. This study focuses on the project area, aiming to evaluate its potential impact on the biological environment.

Conducting thorough floral and faunal surveys, the assessments of biological diversity and its evolving status over time, are the fundamental components of Impact Assessment Techniques. This investigation therefore, sheds light on floristic diversity and faunal wealth issues, emphasizing the significance of informed decision-making in environmental management.

#### Forest Diversity

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

The forest types of the district are tropical in nature and they fall under Dry Thorn forests and Tropical Dry Evergreen Scrub forest. The field survey reveals that the study area predominantly holds Tropical Dry Evergreen Scrub forests. Marudam Reserve Forest exhibits a fairly dense scrub forest, whereas the Perungudi Reserve Forest is a dense scrub forest.

As per our baseline monitoring season we have done our primary and secondary survey in the months of March 2023 to May 2023, Kanchipuram district experiences the summer season.

### **3.11.1 Cropping Pattern**

Rice is the principal crop of this area. The Kharif crops and the Rabi Crops are cultivated in the district. The district represents multiple cropping systems with paddy, chickpea, lentils, Mustard, sesame, and different minor millets etc. The important fruits are mango and banana. Vegetables grown in the district are tomato, potato, ladies' finger, etc.

The principal crops grown include rice, pulses, sugarcane, groundnut, and gingelly.

During March to May, which is the harvest season, farmers in Kanchipuram district are busy harvesting crops like paddy, pulses, and vegetables that were planted during the summer season. In Kancheepuram district, preparations for kharif crops, particularly paddy (rice), may begin during this time. Farmers may engage in land preparation, transplanting of rice seedlings, and weed management for the upcoming kharif season. Other kharif crops such as pulses and oilseeds may also be sown during this period, depending on water availability.

In Kanchipuram district, significant crops include groundnuts, sugarcane, cereals, millets, and pulses. The district exhibits diverse soil types, including red loam, lateritic soil, sandy coastal alluvium, and red sandy soil.

### **3.11.2 Objective**

The objective of this study aligns with the Terms of Reference (ToR), focusing on a comprehensive biological assessment of the area. The primary goals include understanding the

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ecological status of existing flora and fauna, generating baseline information, and assessing potential impacts on the biological environment.

### 3.11.3 Methodology

Assessment of the existing vegetation types in the core and buffer zones has been done using standard procedures. The terrain of the impact zone is chiefly plain and in some places gentle undulations are observed. The Biodiversity studies were already carried out in the entire study area. The study of flora is conducted as per the guidelines of the Ministry of Environment and Forests, Government of India (Anonymous 1994), with respect to the scope and objectives. The study involved in collection of primary data by conducting survey in the field, examination of floral and faunal records in previously published reports and records, and analysis of the information in view of the possible alteration in environment of the proposed project site. For the survey of fauna both direct and indirect observation methods were used.

### 3.11.4 Core Zone Observations

#### *Flora of the Core Zone*

The operational nature of the project has resulted in a limited diversity of fauna and already planted species list within its boundaries, particularly when contrasted with the adjacent buffer zone. Ongoing activities and human presence associated with the project's operations have primarily led to the presence of common birds and insects species in the Core Zone, alongside familiar mammals such as squirrels, rats, cats, and dogs.

Table 69. Flora of the Core Zone

Sr. No.	BOTANICAL NAME	COMMON NAME	FAMILY
1.	<i>Azadirachta indica</i>	Neem	Meliaceae
2.	<i>Tectona grandis</i>	Teak	Lamiaceae
3.	<i>Cocus nucifera</i>	Coconut	Arecaceae
4.	<i>Musa acuminata</i>	Banana	Musaceae
5.	<i>Ficus religiosa</i>	Pipal	Moraceae
6.	<i>Mangifera indica</i>	Mango	Anacardiaceae
7.	<i>Borassus flabellifer</i>	Palm	Arecaceae

#### *Fauna of the Core Zone*

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 70. Fauna of the Core Zone

Sr. No.	ZOOLOGICAL NAME	COMMON NAME	FAMILY	Schedule
<b>Mammals</b>				
1.	<i>Bos taurus</i>	Cow	Bovidae	-
2.	<i>Bubalus bubalis</i>	Buffalo	Bovidae	IV
3.	<i>Capra aegagrus hircus</i>	Goat	Bovidae	-
4.	<i>Paradoxurus hermaphroditus</i>	Nevla	Viverridae	IV
5.	<i>Felis catus</i>	Cat	Felidae	-
<b>Aves</b>				
1.	<i>Pseudibis papillosa</i>	Black Ibis	Threskiornithidae	II

### 3.11.5 Buffer Zone Observation

#### Flora of the Buffer Zone

During the season, we conducted both primary and secondary research, drawing from a diverse array of sources including research papers and departmental records, to investigate forest data. Our findings indicate a rich presence of various trees, herbs, shrubs, and medicinal plants within a 10 km radius of the project area

Our survey highlights Coconut (*Cocos nucifera*) as the predominant species, accompanied by other significant species such as Mango (*Mangifera indica*), Jamun (*Syzygium cumini*), Teak (*Tectona grandis*), and Neem (*Azadirachta indica*) in the Kanchipuram District.

The detailed list of tree and shrub species is provided below, derived from the secondary survey.

#### TREES

Table 71. Common Floral Species of Buffer Zone

Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY
1.	<i>Acacia catechu</i>	Catechu Tree	Mimosaceae
2.	<i>Acacia leucophloea</i>	White-Barked Acacia	Mimosaceae
3.	<i>Acacia nilotica</i>	Gum Arabic Tree	Mimosaceae
4.	<i>Aegle marmelos</i>	Wood Apple	Rutaceae
5.	<i>Albizia amara</i>	Wheel Tree	Mimosaceae
6.	<i>Albizia lebbek</i>	Broome Raintree	Mimosaceae
7.	<i>Albizia odoratissima</i>	Ceylon rosewood	Mimosaceae
8.	<i>Annona reticulata</i>	Custard Apple	Annonaceae
9.	<i>Azadirachta indica</i>	Indian Liac	Meiaceae
10.	<i>Buchanania lanzan</i>	Almondette Tree	Anacardiaceae
11.	<i>Carica papaya</i>	Papaya	Caricaceae
12.	<i>Cassia fistula</i>	Golden Shower	Fabaceae
13.	<i>Casuarina equisetifolia</i>	Beach Sheoak	Casuarinaceae

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Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY
14.	<i>Citrus aurantifolia</i>	Key lime	Rutaceae
15.	<i>Citrus lemon</i>	Lemon	Rutaceae
16.	<i>Delonix elata</i>	Creamy Peacock	Fabaceae
17.	<i>Diospyros ebenum</i>	Ceylon ebony	Ebenaceae
18.	<i>Diospyros ferrea</i>	Black Ebony	Ebenaceae
19.	<i>Eucalyptus globules</i>	Tasmanian Blue Gum	Myrtaceae
20.	<i>Ficus benghalensis</i>	Banyan Tree	Moraceae
21.	<i>Ficus racemosa</i>	Cluster Fig	Moraceae
22.	<i>Ficus religiosa</i>	Sacred Fig Tree	Moraceae
23.	<i>Holoptelea integrifolia</i>	Indian Elm	Ulmaceae
24.	<i>Lagerstroemia parviflora</i>	Crape Myrtle	Lythraceae
25.	<i>Lagerstroemia speciosa</i>	Giant Crape Myrtle	Lythraceae
26.	<i>Lawsonia inermis</i>	Mignonette Tree	Lythraceae
27.	<i>Madhuca longifolia</i>	Honey Tree	Sapotaceae
28.	<i>Mangifera indica</i>	Mango	Anacardiaceae
29.	<i>Manilkara hexandra</i>	Ceylon Ironwood	Sapotaceae
30.	<i>Manilkara zapota</i>	Naseberry	Sapotaceae
31.	<i>Memecylon umbellatum</i>	Ironwood	Melastomataceae
32.	<i>Mimusops elengi</i>	Spanish Cherry	Sapotaceae
33.	<i>Morinda citrifolia</i>	Indian Mulberry	Rubiaceae
34.	<i>Moringa oleifera</i>	Drumstick	Moringaceae
35.	<i>Murraya koenigii</i>	Curry Leaf Tree	Rutaceae
36.	<i>Phyllanthus emblica</i>	Gooseberry	Phyllanthaceae
37.	<i>Polyalthia longifolia</i>	Indian Mast Tree	Annonaceae
38.	<i>Pongamia pinnata</i>	Indian Beech	Fabaceae
39.	<i>Prosopis juliflora</i>	Mesquite	Fabaceae
40.	<i>Psidium guajava</i>	Guava	Arecaceae
41.	<i>Saraca asoca</i>	Sorrowless Tree	Fabaceae
42.	<i>Syzygium cumini</i>	Malabar Plum	Myrtaceae
43.	<i>Tamarindus indica</i>	Tamarind	Caesalpiniaceae
44.	<i>Tectona grandis</i>	Teak	Lamiaceae
45.	<i>Terminalia arjuna</i>	Arjuna	Combretaceae
46.	<i>Wrightia tinctoria</i>	Dyer's Oleander	Apocynaceae

### ***Fauna of the Buffer Zone***

The data we have collected for fauna through various research papers and public consultation.

Table 72. List of Mammalian, Avifauna, Herpetofauna, of the Buffer Zone.

Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SCHEDULE
<b>CLASS: MAMMALIAN</b>				
1.	<i>Axis axis</i>	Chital	Cervidae	II
2.	<i>Bos indicus</i>	Cow	Bovidae	-

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Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SCHEDULE
3.	<i>Bos taurus</i>	Domestic Cattle	Bovidae	-
4.	<i>Bubalus bubalis</i>	Indian Water Buffalo	Bovidae	IV
5.	<i>Canis aureus</i>	Jackal	Canidae	IV
6.	<i>Canis lupus familiaris</i>	Dog	Canidae	-
7.	<i>Capra aegagrus hircus</i>	Goat	Bovidae	-
8.	<i>Felis catus</i>	Cat	Felidae	-
9.	<i>Felis chaus</i>	<b>Jungle Cat</b>	<b>Felidae</b>	<b>I</b>
10.	<i>Funambulus palmarum</i>	Three Striped Palm Squirrel	Sciuridae	-
11.	<i>Lepus nigricollis</i>	Indian Hare	Leporidae	II
12.	<i>Macaca radiata</i>	<b>Bonnet Macaque</b>	<b>Cercopithecidae</b>	<b>I</b>
13.	<i>Mus booduga</i>	Indian Field Mouse	Muridae	-
14.	<i>Ovis aries</i>	Indian Sheep	Bovidae	-
15.	<i>Pteropus giganteus</i>	Indian Flying Fox	Pteropodidae	II
16.	<i>Rattus rattus</i>	Common Black Rat	Muridae	-
17.	<i>Sus scrofa cristatus</i>	Wild Boar	Suidae	II
18.	<i>Tatera indica</i>	Indian Gerbil	Muridae	-
19.	<i>Urva auropunctata</i>	<b>Small Indian Mongoose</b>	<b>Herpestidae</b>	<b>I</b>
20.	<i>Urva edwardsii</i>	<b>Indian Grey Mongoose</b>	<b>Herpestidae</b>	<b>I</b>
<b>CLASS: AVES</b>				
1.	<i>Accipiter badius</i>	<b>Little Banded Goshawk</b>	<b>Accipitridae</b>	<b>I</b>
2.	<i>Acridotheres tristis</i>	Common Myna	Sturnidae	II
3.	<i>Alcedo atthis</i>	Common Kingfisher	Alcedinidae	II
4.	<i>Ardeola grayii</i>	Indian Pond Heron	Ardeidae	II
5.	<i>Bubulcus ibis</i>	Cattle Egret	Ardeidae	II
6.	<i>Centropus sinensis</i>	Greater Coucal	Cuculidae	II
7.	<i>Cinnyris asiaticus</i>	Purple Sunbird	Nectariniidae	II
8.	<i>Columba livia</i>	Blue Rock Pigeon	Columbidae	-
9.	<i>Copsychus saularis</i>	Oriental Magpie Robin	Muscicapidae	II
10.	<i>Corvus splendens</i>	House Crow	Corvidae	-
11.	<i>Coturnix coturnix</i>	Phasianidae	Phasianidae	II
12.	<i>Dicrurus macrocercus</i>	Black Drongo	Dicruridae	II
13.	<i>Dinopium benghalense</i>	Woodpecker	Picidae	II
14.	<i>Egretta garzetta</i>	Little Egret	Ardeidae	II
15.	<i>Eudynamis scolopaceus</i>	Asian Koel	Cuculidae	II
16.	<i>Francolinus pondicerianus</i>	Grey Francolin	Phasianidae	II
17.	<i>Fulica atra</i>	Eurasian Coot	Rallidae	II
18.	<i>Gallus sonneratii</i>	<b>Gray Junglefowl</b>	<b>Phasianidae</b>	<b>I</b>
19.	<i>Halcyon smyrnensis</i>	White-Throated Kingfisher	Dacelonidae	II
20.	<i>Lonchura striata</i>	White rumped Munia	Estrildidae	II
21.	<i>Megalaima haemacephala</i>	Coppersmith Barbet	Megalaimidae	II

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Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SCHEDULE
22.	<i>Merops orientalis</i>	Green Bee-Eater	Meropidae	II
23.	<i>Microcarbo niger</i>	Little Cormorant	Phalacrocoracidae	II
24.	<i>Milvus migrans</i>	Black Kite	Accipitridae	II
25.	<i>Motacilla flava</i>	Yellow Wagtail	Motacillidae	II
26.	<i>Oriolus oriolus</i>	Golden Oriole	Oriolidae	II
27.	<i>Passer domesticus</i>	House Sparrow	Passeridae	II
<b>28.</b>	<b><i>Pavo cristatus</i></b>	<b>Indian Peafowl</b>	<b>Phasianidae</b>	<b>I</b>
29.	<i>Phalacrocorax carbo</i>	Greater Cormorant	Phalacrocoracidae	II
30.	<i>Ploceus philippinus</i>	Baya	Ploceidae	II
31.	<i>Psittacula krameri</i>	Rose Ringed Parakeet	Psittacidae	II
32.	<i>Pycnonotus cafer</i>	Red Vented Bulbul	Pycnonotidae	II
33.	<i>Pycnonotus jocosus</i>	Red Whiskered Bulbul	Pycnonotidae	II
34.	<i>Spilopelia chinensis</i>	Spotted Dove	Columbidae	II
35.	<i>Sturnia pagodarum</i>	<i>Brahminy Starling</i>	Sturnidae	II
36.	<i>Upupa epops</i>	Common Hoopoe	Upupidae	II
37.	<i>Pseudibis papillosa</i>	Black Ibis	Threskiornithidae	-
<b>CLASS: REPTILIA</b>				
1.	<i>Ahaetulla nasuta</i>	Green Vine Snake	Colubridae	-
2.	<i>Boiga trigonata</i>	Common Cat Snake	Colubridae	-
3.	<i>Bungarus caeruleus</i>	Common Krait	Elapidae	-
4.	<i>Calotes versicolor</i>	Oriental Garden Lizard	Agamidae	-
<b>5.</b>	<b><i>Chamaeleo zeylanicus</i></b>	<b>Indian Chameleon</b>	<b>Chamaeleonidae</b>	<b>I</b>
<b>6.</b>	<b><i>Daboia russelli</i></b>	<b>Russell's Viper</b>	<b>Viperidae</b>	<b>I</b>
<b>7.</b>	<b><i>Eryx johnii</i></b>	<b>Red Sand Boa</b>	<b>Boidae</b>	<b>I</b>
8.	<i>Hemidactylus flaviviridis</i>	House Gecko	Gekkonidae	-
9.	<i>Hemidactylus leschenaultii</i>	Bark Gecko	Gekkonidae	-
10.	<i>Lycodon spp.</i>	Wolf Snake	Colubridae	-
<b>11.</b>	<b><i>Naja naja</i></b>	<b>Cobra</b>	<b>Elapidae</b>	<b>I</b>
<b>12.</b>	<b><i>Ptyas mucosa</i></b>	<b>Rat Snake</b>	<b>Colubridae</b>	<b>I</b>
<b>13.</b>	<b><i>Varanus bengalensis</i></b>	<b>Bengal Monitor</b>	<b>Varanidae</b>	<b>I</b>
<b>CLASS: AMPHIBIA</b>				
1.	<i>Duttaphrynus melanostictus</i>	Common Asian Toad	Bufonidae	-
2.	<i>Euphlyctis cyanophlyctis</i>	Skipper Frog	Ranidae	II
3.	<i>Hoplobatrachus tigerinus</i>	Indian Bull Frog	Dicroglossidae	II
4.	<i>Polypedates maculatus</i>	Indian tree frog	Rhacophoridae	-
5.	<i>Sphaerotheca breviceps</i>	Indian burrowing frog	Dicroglossidae	-

SOURCE OF INFORMATION: PRIMARY AND SECONDARY SOURCES

### Aquatic Ecology:

Table 73. List of Aquatic Macrophytes of the Buffer Zone.

<b>Type: Aquatic Macrophytes</b>			
1	Aponogeton natan	Floating Lace Plant	Aponogetonaceae

Environmental consultant M/s Perfect Enviro Solutions Pvt. Ltd.



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2	Azolla sp.	Water Fern	Salviniaceae
3	Carex cruciata	Cross Sedge	Cyperaceae
4	Cyperus exaltatus	Tall Flat Sedge	Cyperaceae
5	Eichhornia sp.	Water Hyacinths	Pontederiaceae
6	Hydrilla sp.	Water Thyme	Hydrocharitaceae
7	Ipomoea sp.	Kangkong	Convolvulaceae
8	Lemna sp.	Tiny Duckweed	Araceae
9	Nelumbo nucifera	Lotus	Nelumbonaceae
10	Nymphaea nouchali	Blue Lotus	Nymphaea
11	Vallisneria sp.	Eelgrass	Hydrocharitaceae

Table 74. List of Ichthyofauna of the Buffer Zone..

Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SCHEDULE
<b>CLASS: PISCES</b>				
1	Catla catla	South Asian Carp	Cyprinidae	-
2	Chanda nama	Elongate Glassy Perchlet	Ambassidae	-
3	Channa gachua	Dwarf Snakehead	Channidae	-
4	Channa punctatus	Spotted Snakehead	Channidae	-
5	Cirrhinus mrigala	White Carp	Cyprinidae	-
6	Clarias batrachus	Walking Catfish	Clariidae	-
7	Clarias gariepinus	African Sharptooth Catfish	Clariidae	-
8	Cyprinus carpio	Eurasian Carp	Cyprinidae	-
9	Heteropneustes fossilis	Asian Stinging Catfish	Siluridae	-
10	Labeo bata	Freshwater Minor Carp	Cyprinidae	-
11	Labeo calbasu	Orangefin Labeo	Cyprinidae	-
12	Labeo rohita	Rohu	Cyprinidae	-
13	Mastacembelus armatus	Spiny Eels	Mastacembelidae	-
14	Mystus bleekeri	Bleeker's Mystus	Bagridae	-
15	Mystus vittatus	Striped Dwarf Catfish	Bagridae	-
16	Notopterus notopterus	Bronze Featherback	Notopteridae	-
17	Oreochromis mossambicus	Java Tilapia	Cichlidae	-
18	Puntius sophore	Pool Barb	Cyprinidae	-
19	Wallago attu	Helicopter Catfish	Siluridae	-

Table 75. List of freshwater snails of the Buffer Zone.

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Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SCHEDULE
1	Bellamyia sp.	Bellamyia	Viviparidae	-
2	Gyraulus convexiusculus	Pulmonate Gastropod	Planorbidae	-
3	Indoplanorbis exustus	Indoplanorbis	Planorbidae	-
4	Melanoides tuberculatus	Red-Rimmed Melania	Thiaridae	-
5	Paludomas tranchauricus	Paludomas	Pachychilidae	-
6	Pila globosa	Indian Apple Snail	Ampullariidae	-
7	Radix luteola	Radix	Lymnaeidae	-

### 3.11.6 Endangered, Rare, Endemic and Threatened Species

Endangered and threatened animals of India have been listed in **Schedule I of the Wildlife (Protection) Act, 1972 (amended in 2002)**. The schedule status of the animal species as per the WLPA, 1972 and the amendments thereafter are also given in the respective tables along with the list of the species enlisted as Schedule I species (Table No. 70). **Thirteen (13)** Schedule I Species are reported in the Buffer zone within a 10 km radius.

Table 76. Schedule I Species of the Study Area

Sr. No.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SCHEDULE
<b>CLASS: MAMMALIAN</b>				
1.	<i>Felis chaus</i>	Jungle Cat	Felidae	I
2.	<i>Macaca radiata</i>	Bonnet Macaque	Cercopithecidae	I
3.	<i>Urva auropunctatus</i>	Small Indian Mongoose	Herpestidae	I
4.	<i>Urva edwardsii</i>	Indian Grey Mongoose	Herpestidae	I
<b>CLASS: AVES</b>				
5.	<i>Accipiter badius</i>	Little Banded Goshawk	Accipitridae	I
6.	<i>Gallus sonneratii</i>	Gray Junglefowl	Phasianidae	I
7.	<i>Pavo cristatus</i>	Indian Peafowl	Phasianidae	I
<b>CLASS: REPTILIA</b>				
8.	<i>Chamaeleo zeylanicus</i>	Indian Chameleon	Chamaeleonidae	I
9.	<i>Daboia russeli</i>	Russell's Viper	Viperidae	I
10.	<i>Eryx johnii</i>	Red Sand Boa	Boidae	I
11.	<i>Naja naja</i>	Cobra	Elapidae	I
12.	<i>Ptyas mucosa</i>	Rat Snake	Colubridae	I
13.	<i>Varanus bengalensis</i>	Bengal Monitor	Varanidae	I

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### 3.12. SOCIO-ECONOMIC ENVIRONMENT

Socio- Economic status of the population is an indicator for the development of the region. Any developmental project of any magnitude will have a bearing on the living conditions and on the economic base of population in particular and the region as a whole. Similarly, the proposed activities will have its share of socio-economic influence in the study area. The section delineates the overall appraisal of society relevant attributes. The data collection for evaluation of impact of proposed project on socioeconomic aspects in the study area has been done through primary household survey and through the analysis of secondary data available for study area.

#### Objective:

The main objectives of the study based on which the SE study was done is as follows:

Table 77. Objectives of the Socio Economic Study

Sr. No.	Aim / Objective	Area		Methodology															
		Study Area	Core Area Only																
1	To Identify and Assess																		
1.1	Social status of society in the focused area. To do this it is required to get reliable information with regards to:																		
1.1.1	People residing in the study area along with key demographic figures as per the secondary data (mainly Census of India) giving information <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td><i>Cocos nucifera</i></td> <td>Coconut</td> <td>Arecaceae</td> </tr> <tr> <td><i>Musa acuminata</i></td> <td>Banana</td> <td>Musaceae</td> </tr> <tr> <td><i>Ficus religiosa</i></td> <td>Pipal</td> <td>Moraceae</td> </tr> <tr> <td><i>Mangifera indica</i></td> <td>Mango</td> <td>Anacardiaceae</td> </tr> <tr> <td><i>Borassus flabellifer</i></td> <td>Palm</td> <td>Areacaceae</td> </tr> </table> on population, literacy, gender, and occupation	<i>Cocos nucifera</i>	Coconut	Arecaceae	<i>Musa acuminata</i>	Banana	Musaceae	<i>Ficus religiosa</i>	Pipal	Moraceae	<i>Mangifera indica</i>	Mango	Anacardiaceae	<i>Borassus flabellifer</i>	Palm	Areacaceae	10 km	-	Secondary data collection and collation from Census of India
<i>Cocos nucifera</i>	Coconut	Arecaceae																	
<i>Musa acuminata</i>	Banana	Musaceae																	
<i>Ficus religiosa</i>	Pipal	Moraceae																	
<i>Mangifera indica</i>	Mango	Anacardiaceae																	
<i>Borassus flabellifer</i>	Palm	Areacaceae																	
1.1.2	Main sub-communities dwelling in the core zone by caste and religion	-	2 km	From interviews with PRI representatives															
1.1.3	People who are vulnerable classes such as: Below Poverty Line (BPL), Scheduled Castes (SC) and Scheduled Tribes (ST)	10 km	-	From interviews with PRI representatives and census															

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Sr. No.	Aim / Objective	Area		Methodology
		Study Area	Core Area Only	
1.2	Economic status of society in the study area. To do this it is required to get reliable information with regards to:	10 km	-	
1.2.1	Occupational pattern from secondary data (mainly Census of India) giving information on main workers / marginal workers / non-working population	10 km	-	Secondary data collection and collation from Census of India
1.2.2	Sources of revenue available to Panchayati Raj Institutions (PRIs)	-	2 Km	From interviews with PRI representatives
1.2.3	Economic well-being of different classes by gaining an understanding of: prevailing daily wage rates for labor (male / female), status of land holding across different classes / landless households, major crops and farmer support, livestock and animal husbandry	10 km	-	From interviews with PRI representatives
1.3	Status of physical and social infrastructure within the core and buffer areas. To do this, it is required to get reliable information with regards to	10 km	immediate core zone	-
1.3.1	Physical infrastructure - reliable information on availability and adequacy with respect to educational facilities, road infrastructure, power, water for drinking and irrigation, sanitation, garbage / MSW, banking facilities	10 km	immediate core zone	From interviews with PRI representatives
1.3.2	Social infrastructure – reliable information on availability and adequacy with respect to infrastructure associated with sports, community events and community self-help / support group	10 km	-	From interviews with PRI representatives
1.3.3	Cultural heritage of the area	10 km	immediate core zone	From published literature and site visits
1.4	Effects of			
1.4.1	Ongoing impacts of other developments in the vicinity of the subject development on people and their lifestyle within the core impact zones, as determined by the EIAC in interaction with FAE (WP / AP & AQ / SHW / RH & NV)	-	immediate core zone	From focus group discussions

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Sr. No.	Aim / Objective	Area		Methodology
		Study Area	Core Area Only	
1.4.2	Likely impacts of proposed operations (if a greenfield project) on people and their lifestyle within the core impact zones mentioned above	-	immediate core zone	From focus group discussions
2.0	To Determine			
2.1	Needs of different communities based on the work done in identification and assessment mentioned above	-	immediate core zone	From data analysis, internal / client discussions
3.0	To Propose			
3.1	A Social Management Plan with budgets, timelines, and actionable items to achieve the expected outcomes	-	immediate core zone	From data analysis, internal / client discussions

## Methodology

The study was conducted in three parts which are described below:

1. The analysis of secondary data by referring to the census data of 2011 District Kanchipuram and Tiruvannamalai in the state of Tamil Nadu. The status of amenities from different villages are confirmed by the census data 2011 from the respective census district handbook for the villages coming in the radial distance of 10 Km from the project site.
2. The social impact assessment was done by primary survey through discussion with local villagers, project proponents and the head of the villages in surrounding villages coming under an area of 2 km,, 5 Km & 10 Km radial distance from the project site through prepared questionnaires. The villages coming under the buffer zone within radial distance of 10 Km from the project site have been with the help of KML file and listed further.
3. This is with reference to TOR; the proponent has decided to undertake the development programs for the villages lying near the project site. During the Survey demands of the locals have been noted and those will be implemented under the Corporate Environment Responsibilities by the project owner. The expected cost depends on the cost of the projects.

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### 3.12.2 Study Area

The project area is in District Kanchipuram and Tiruvannamalai in the state of Tamil Nadu. The study area (10 km buffer zone) falls in the state of Tamil Nadu. The study area consists of 105 rural villages and 1 urban area. Administrative details of the study area are given below:

Table 78. Administrative Details

Sr. No.	District	Sub District	No. of Rural Villages	No. of Urban area
1.	Kancheepuram	Uthiramerur	46	1
2	Kancheepuram	Kancheepuram	1	0
3.	Tiruvannamalai	Cheyyar	56	0
4.	Tiruvannamalai	Vandavasi	2	0
<b>Total</b>			<b>105</b>	<b>1</b>

The villages within the study area are further classified into three categories, depending upon their proximity to the project site. This includes:

- Study Area Zone-I: Includes village settlements & Urban area located within the 2 Km radius from the project site. (No. of village: 5, No. Urban area: No)
- Study Area Zone-II: Includes village settlements & Urban area located within the 2 to 5 Km radius from the project site. (No. of villages: 19, No. Urban area: 0)
- Study Area Zone-III: Includes village settlements & Urban area located within the 5 to 10 Km radius from the project site. (No. of villages: 81, No. Urban area: 1)

Table 79. Classification of Villages

Particulars	No. of Villages	No. of Urban Areas
Study Area Zone-I (0-2 Km)	5	0
Study Area Zone-II (2Km-5Km)	19	0
Study Area Zone-III (5Km-10Km)	81	1
Total	105	1

The project area is in District Kanchipuram and Tiruvannamalai in the state of Tamil Nadu. The list of villages falling under the study area is given below and further tabulated:

Table 80. List of Villages

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Sr. No.	District	Sub district	Town/Village	Name	TRU
<b>Study Area Zone-I (0 to 2 Km) Rural-5, Urban-No</b>					
1	Kancheepuram	Uthiramerur	629748	Hanumanthandalam	Rural
2	Kancheepuram	Uthiramerur	629749	Melpakkam	Rural
3	Kancheepuram	Uthiramerur	629782	Kaliyampoondi	Rural
4	Kancheepuram	Uthiramerur	629783	Ravathanallur	Rural
5	Kancheepuram	Uthiramerur	629784	Elanagar	Rural
<b>Study Area Zone-II (2 to 5 Km) Rural-19, Urban-No</b>					
6	Kancheepuram	Uthiramerur	629747	Perunagar	Rural
7	Kancheepuram	Uthiramerur	629750	Silambakkam	Rural
8	Kancheepuram	Uthiramerur	629751	Vengaram	Rural
9	Kancheepuram	Uthiramerur	629752	Ozhugarai	Rural
10	Kancheepuram	Uthiramerur	629778	Andithangal	Rural
11	Kancheepuram	Uthiramerur	629780	Thinayampoondi	Rural
12	Kancheepuram	Uthiramerur	629781	Alisoor	Rural
13	Kancheepuram	Uthiramerur	629785	Manampathy	Rural
14	Kancheepuram	Uthiramerur	629788	Thandarai	Rural
15	Kancheepuram	Uthiramerur	629789	Serpakkam	Rural
16	Kancheepuram	Uthiramerur	629790	Karanai	Rural
17	Kancheepuram	Uthiramerur	629791	Vayalur	Rural
18	Kancheepuram	Uthiramerur	629792	Nadupattu	Rural
19	Kancheepuram	Uthiramerur	629793	Pennalur	Rural
20	Kancheepuram	Uthiramerur	629794	Ammaiyappanallur	Rural
21	Kancheepuram	Uthiramerur	631337	Ukkal	Rural
22	Kancheepuram	Uthiramerur	631338	Nemili	Rural
23	Kancheepuram	Uthiramerur	631339	Sirunallur	Rural
24	Kancheepuram	Uthiramerur	631340	Pudupalayam	Rural
<b>Study Area Zone-III (5 to 10 Km) Rural-81, Urban-1</b>					
25	Kancheepuram	Kancheepuram	629733	Magaral	Rural
26	Tiruvannamalai	Cheyyar	629746	Sethupattu	Rural
27	Tiruvannamalai	Cheyyar	629753	Karuveppampoondi	Rural

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Sr. No.	District	Sub district	Town/ Village	Name	TRU
28	Tiruvannamalai	Cheyyar	629754	Vengacheri	Rural
29	Tiruvannamalai	Cheyyar	629755	Kannikulam	Rural
30	Tiruvannamalai	Cheyyar	629756	Adavapakkam	Rural
31	Tiruvannamalai	Cheyyar	629775	Puthali	Rural
32	Tiruvannamalai	Cheyyar	629776	Pulivoy	Rural
33	Tiruvannamalai	Cheyyar	629777	Thriupulivanam	Rural
34	Tiruvannamalai	Cheyyar	629779	Murukkeri	Rural
35	Tiruvannamalai	Cheyyar	629787	Visoor	Rural
36	Tiruvannamalai	Cheyyar	629795	Poonthandalam	Rural
37	Tiruvannamalai	Cheyyar	629796	Maruthuvambadi	Rural
38	Tiruvannamalai	Cheyyar	629797	Marudham	Rural
39	Tiruvannamalai	Cheyyar	629820	Vadathavoor	Rural
40	Tiruvannamalai	Cheyyar	629821	Kadalmangalam	Rural
41	Tiruvannamalai	Cheyyar	629822	Menalur	Rural
42	Tiruvannamalai	Cheyyar	629823	Arasanimangalam	Rural
43	Tiruvannamalai	Cheyyar	629824	Oddanthangal	Rural
44	Tiruvannamalai	Cheyyar	629825	Guruvadi	Rural
45	Tiruvannamalai	Cheyyar	629827	Athyurmelduli	Rural
46	Tiruvannamalai	Cheyyar	629828	Kavanurpuducheri	Rural
47	Tiruvannamalai	Cheyyar	629829	Kammalampoon di	Rural
48	Tiruvannamalai	Cheyyar	629830	Puliyur	Rural
49	Tiruvannamalai	Cheyyar	629831	Thalavarampoo ndi	Rural
50	Tiruvannamalai	Cheyyar	629832	Kariamangalam	Rural
51	Tiruvannamalai	Cheyyar	629835	Perumgozhi	Rural
52	Tiruvannamalai	Cheyyar	631256	Kundiyanthand alam	Rural
53	Tiruvannamalai	Cheyyar	631257	Suruttal	Rural
54	Tiruvannamalai	Cheyyar	631258	Poonaitangal	Rural
55	Tiruvannamalai	Cheyyar	631259	Menallur	Rural
56	Tiruvannamalai	Cheyyar	631260	Girijapuram	Rural



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Sr. No.	District	Sub district	Town/ Village	Name	TRU
57	Tiruvannamalai	Cheyyar	631261	Kizhnaickanpal ayam	Rural
58	Tiruvannamalai	Cheyyar	631262	Vadakalpakkam	Rural
59	Tiruvannamalai	Cheyyar	631263	Vazhavandal	Rural
60	Tiruvannamalai	Cheyyar	631264	Mamandur	Rural
61	Tiruvannamalai	Cheyyar	631290	Perumpulimedu	Rural
62	Tiruvannamalai	Cheyyar	631291	Chellaperumpul imedu	Rural
63	Tiruvannamalai	Cheyyar	631292	Azhinjalpattu	Rural
64	Tiruvannamalai	Cheyyar	631293	Narasamangala m	Rural
65	Tiruvannamalai	Cheyyar	631294	Mathur	Rural
66	Tiruvannamalai	Cheyyar	631295	Sothiyampakka m	Rural
67	Tiruvannamalai	Cheyyar	631296	Bagavanthapura m	Rural
68	Tiruvannamalai	Cheyyar	631297	Ezhacheri	Rural
69	Tiruvannamalai	Cheyyar	631298	Chithalapakkam	Rural
70	Tiruvannamalai	Cheyyar	631299	Vayalathur	Rural
71	Tiruvannamalai	Cheyyar	631300	Arasanipalai	Rural
72	Tiruvannamalai	Cheyyar	631301	Punnai	Rural
73	Tiruvannamalai	Cheyyar	631302	Dharmacheri	Rural
74	Tiruvannamalai	Cheyyar	631303	Pavoor	Rural
75	Tiruvannamalai	Cheyyar	631304	Ukkamperumba kkam	Rural
76	Tiruvannamalai	Cheyyar	631305	Mangal	Rural
77	Tiruvannamalai	Cheyyar	631306	Mahajanampak kam	Rural
78	Tiruvannamalai	Cheyyar	631307	Kunnavakkam	Rural
79	Tiruvannamalai	Cheyyar	631309	Karanai	Rural
80	Tiruvannamalai	Cheyyar	631333	Madipakkam	Rural
81	Tiruvannamalai	Cheyyar	631335	Akkur	Rural
82	Tiruvannamalai	Cheyyar	631336	Koozhamandal	Rural
83	Tiruvannamalai	Cheyyar	631341	Kizhnethapakka m	Rural
84	Tiruvannamalai	Cheyyar	631343	Veliyanallur	Rural

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Sr. No.	District	Sub district	Town/Village	Name	TRU
85	Tiruvannamalai	Cheyyar	631363	Vadalapiranthan	Rural
86	Tiruvannamalai	Cheyyar	631364	Athi	Rural
87	Tiruvannamalai	Cheyyar	631365	Elaneerkundram	Rural
88	Tiruvannamalai	Cheyyar	631366	Kizhneerkundrum	Rural
89	Tiruvannamalai	Cheyyar	631367	Nedungal	Rural
90	Tiruvannamalai	Cheyyar	631368	Thethurai	Rural
91	Tiruvannamalai	Cheyyar	631369	Kurumbur	Rural
92	Tiruvannamalai	Cheyyar	631370	Narmapallam	Rural
93	Tiruvannamalai	Cheyyar	631398	Veerampakkam	Rural
94	Tiruvannamalai	Cheyyar	631399	Melma	Rural
95	Tiruvannamalai	Cheyyar	631400	Ayyavadi	Rural
96	Tiruvannamalai	Cheyyar	631401	Vachanur	Rural
97	Tiruvannamalai	Cheyyar	631402	Melnarma	Rural
98	Tiruvannamalai	Cheyyar	631403	Soundariyapuram	Rural
99	Tiruvannamalai	Cheyyar	631428	Thenkalpakkam	Rural
100	Tiruvannamalai	Cheyyar	631429	Paiyur	Rural
101	Tiruvannamalai	Cheyyar	631430	Alathurai	Rural
102	Tiruvannamalai	Cheyyar	631431	Alathur	Rural
103	Tiruvannamalai	Cheyyar	631432	Vengodu	Rural
104	Tiruvannamalai	Vandavasi	631454	Vilangadu	Rural
105	Tiruvannamalai	Vandavasi	631455	Irumbedu	Rural
106	Kancheepuram	Uthiramerur	803368	Uthiramerur (TP)	Urban

**Source: Census of India, 2011, Tamil Nadu.**

### 3.12.3 Demographic Structure

Secondary data was analyzed with respect to demographic details, occupational patterns, literacy rates and available village facilities to reveal the socio-economic status of the project area located within the 10 km buffer zone from the project site.

The study area (0-10 km zone) falls under District Kanchipuram and Tiruvannamalai in the state of Tamil Nadu. The study area is further divided into three zones. The demographic profile (area

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

wise) of the study area is given below:

*Table 81. Demographic profile of the Study Area*

Sr. No	Items	Study Area Zone-I (0 km to 2 km)	Study Area Zone-II (2 km to 5 km)	Study Area Zone-III (5 km to 10 km)	Study Area (0 km to 10 km)
1	No. of Household	2251	6983	30199	39433
2	Total Population	9270	27707	121775	158752
3	Male Population	4672	13902	61116	79690
4	% of Male Population	50.39	50.17	50.18	50.19
5	Female Population	4598	13805	60659	79062
6	% age of Female Population	49.61	49.83	49.82	49.81
7	Sex Ratio	984	993	993	992
8	% of S C Population	26.95	28.91	25.69	26.33
9	% of S T Population	1.36	2.49	1.41	1.6
10	Overall Literacy	73.46	73.41	74.64	74.36
11	Male Literacy %	82.32	81.66	83.79	83.33
12	Female Literacy %	64.58	65.12	65.49	65.37
13	Household Size	4.11	3.96	4.03	4.02

**Source: Census of India, 2011, Tamil Nadu.**

#### **Demographic Details of Buffer Areas:**

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 82. Demographic Details of Buffer Area

Name	Total Household	Total Population	Total Male Population	Total Female Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
Hanumanthandalam	311	1278	625	653	1045	19.41	2.35	71.04	85.59	57.14
Melpakkam	163	581	272	309	1136	10.5	6.88	68.24	79.08	58.67
Kaliyampoondi	458	2426	1265	1161	918	40.4	1.11	77.79	83.53	71.62
Ravathanallur	851	3260	1631	1629	999	33.68	0	76.82	83.95	69.8
Elanagar	468	1725	879	846	962	6.43	1.68	64.58	76.21	52.67
<b>Total Zone I (0 to 2 Km)</b>	<b>2251</b>	<b>9270</b>	<b>4672</b>	<b>4598</b>	<b>984</b>	<b>26.95</b>	<b>1.36</b>	<b>73.46</b>	<b>82.32</b>	<b>64.58</b>
Perunagar	1346	5499	2823	2676	948	37.61	2.86	70.71	78.35	62.58
Silambakkam	114	461	244	217	889	0	2.39	65.22	78.64	50
Vengaram	48	176	89	87	978	48.86	0	64.43	77.5	49.28
Ozhugarai	322	1240	613	627	1023	39.35	0	62.91	75.18	50.72
Andithangal	109	406	206	200	971	2.46	0	74.46	84.95	63.98
Thinayampoondi	262	1103	571	532	932	80.96	4.9	74.16	79.39	68.61
Alisoor	461	1751	892	859	963	18.5	3.6	69.4	77.89	60.52
Manampathy	1663	6447	3189	3258	1022	10.27	3.23	81.36	87.85	75.09
Thandarai	326	1305	644	661	1026	18.85	0.38	68.81	78.01	59.62
Serpakkam	147	540	268	272	1015	50.37	11.85	65.9	79.92	51.88
Karanai	292	1177	613	564	920	5.78	1.1	75.7	84.38	66.28
Vayalur	196	877	425	452	1064	57.58	0	60.64	69.27	52.7
Nadupattu	47	161	80	81	1013	0	0	80.41	92.86	69.23
Pennalur	303	1139	556	583	1049	53.38	2.63	66.18	76.57	56.23
Ammaiyappanallur	251	990	505	485	960	32.53	4.24	72.95	79.46	66.37
Ukkal	611	2434	1209	1225	1013	15.78	1.36	78.17	87.94	68.71
Nemili	135	585	301	284	944	48.89	1.71	64.14	73.51	54.44

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Name	Total Household	Total Population	Total Male Population	Total Female Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
Sirunallur	136	563	267	296	1109	55.95	0	66.8	78.39	56.55
Pudupalayam	214	853	407	446	1096	55.57	0	85.75	90.79	81.14
<b>Total Zone II (2 to 5 Km)</b>	<b>6983</b>	<b>27707</b>	<b>13902</b>	<b>13805</b>	<b>993</b>	<b>28.91</b>	<b>2.49</b>	<b>73.41</b>	<b>81.66</b>	<b>65.12</b>
Magaral	709	2834	1399	1435	1026	62.7	1.27	69.3	75.5	63.3
Sethupattu	183	757	376	381	1013	26.82	0	71.43	80.23	62.68
Karuveppampoon di	436	1652	846	806	953	51.09	1.15	78.87	85.07	72.38
Vengacheri	195	753	379	374	987	0.13	5.98	65.81	79.7	51.96
Kannikulam	172	727	372	355	954	57.91	3.16	70.23	81.54	58.75
Adavapakkam	185	765	396	369	932	65.23	1.05	66.81	76.06	57.18
Puthali	266	1032	510	522	1024	74.22	2.62	75.73	84.68	66.82
Pulivoy	128	491	237	254	1072	44.2	3.87	73.14	83.26	63.06
Thriupulivanam	478	1821	892	929	1041	19.55	4.67	70.65	79.11	62.55
Murukkeri	115	485	258	227	880	0	0	64.45	75.22	52.43
Visoor	418	1686	837	849	1014	65.95	0	73.23	80.52	65.98
Poonthandalam	148	559	282	277	982	12.52	0	72.03	80.16	63.67
Maruthuvambadi	364	1560	784	776	990	28.27	1.86	70.99	79.86	61.94
Marudham	473	1893	950	943	993	19.65	0	75.65	86.71	64.61
Vadathavoor	217	838	422	416	986	86.4	0	71.31	78.31	63.99
Kadalmangalam	231	890	431	459	1065	45.84	0.9	71.84	81.17	62.95
Menalur	668	2549	1282	1267	988	7.3	0.27	71.5	84.32	58.78
Arasanimangalam	347	1314	651	663	1018	33.71	7.38	75.54	84.63	66.89
Oddanthangal	137	478	246	232	943	17.15	0	76.35	86.36	66.52
Guruvadi	55	203	106	97	915	64.53	0	63.98	64.89	63.04
Athyurmelduli	463	1812	925	887	959	8.22	0.39	73.72	86.43	60.53
Kavanurpuducheri	368	1449	734	715	974	26.36	0	69.01	78.14	59.94

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Name	Total Household	Total Population	Total Male Population	Total Female Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
Kammalampoondi	493	1987	981	1006	1025	33.87	1.61	76.66	86.14	67.62
Puliyur	197	755	372	383	1030	0	4.5	79.36	87.2	71.88
Thalavampoondi	176	664	334	330	988	1.66	20.18	63.8	70.71	56.83
Kariamangalam	205	823	409	414	1012	22.48	3.4	70.79	76.88	64.99
Perumgozhi	520	2023	1014	1009	995	29.51	2.47	68.86	78.3	59.33
Kundiyanthandalam	170	703	351	352	1003	54.2	0	74.68	83.17	66.25
Suruttal	304	1266	659	607	921	0.55	0.16	74.04	85.5	61.61
Poonathangal	80	277	132	145	1098	0	0	85.66	95.73	76.38
Menallur	363	1444	711	733	1031	45.01	0	73.35	80.13	66.82
Girijapuram	61	243	122	121	992	0	0	71.76	85.05	58.72
Kizhnaickanpalayam	141	544	264	280	1061	52.02	0	72.82	81.09	64.75
Vadakalpakkam	291	1222	628	594	946	49.51	3.76	75.3	86.4	63.75
Vzhavandal	115	444	229	215	939	15.32	23.42	71.83	82.18	60.54
Mamandur	1021	4287	2155	2132	989	9.1	0.14	76.72	88.14	65.42
Perumpulimedu	153	565	288	277	962	0	0	76.74	88.28	64.78
Chellaperumpulimedu	130	545	277	268	968	0.92	0	68.23	83.26	53.39
Azhinjalpattu	226	892	426	466	1094	32.06	0	72.73	81	64.93
Narasamangalam	392	1703	856	847	989	0.41	5.58	68.98	79.82	57.83
Mathur	509	2147	1066	1081	1014	13.55	0	72.39	83.33	61.47
Sothiyampakkam	288	1185	599	586	978	31.65	0	73.35	86.67	59.58
Bagavanthapuram	182	777	386	391	1013	0	0.9	61.28	71.51	51.04
Ezhacheri	491	2080	1065	1015	953	37.02	1.2	67.19	77.31	56.54
Chithalapakkam	145	589	284	305	1074	1.53	0	58.2	68.27	48.67
Vayalathur	117	505	257	248	965	61.98	1.39	71.65	78.54	65.07

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Name	Total Household	Total Population	Total Male Population	Total Female Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
Arasanipalai	287	1155	581	574	988	36.19	0	73.07	82.09	63.94
Punnai	194	707	338	369	1092	37.34	1.98	76.98	87.06	67.29
Dharmacheri	32	103	55	48	873	0	0	70.79	78.57	63.83
Pavoor	308	1370	688	682	991	76.64	0	68.54	71.34	65.75
Ukkamperumbakkam	293	1243	597	646	1082	44.89	4.67	77.1	84.83	69.86
Mangal	174	767	377	390	1034	53.06	2.48	74.36	84.62	64.23
Mahajanampakkam	407	1707	892	815	914	43.64	0	79.95	90.1	68.94
Kunnavakkam	315	1259	643	616	958	53.22	1.43	75.07	85.89	64.18
Karanai	139	677	351	326	929	98.38	0	71.48	79.11	62.86
Madipakkam	291	1262	625	637	1019	66.64	4.6	84.96	92.82	77.25
Akkur	754	2896	1454	1442	992	20.13	3.31	75.47	84.19	66.77
Koozhamandal	409	1750	882	868	984	5.66	0	79.01	89.38	68.58
Kizhnethapakkam	321	1314	656	658	1003	43.68	0.3	70.29	80.17	60.21
Veliyanallur	357	1538	791	747	944	26.46	0.2	64.81	76.24	52.95
Vadalapiranthan	202	764	375	389	1037	0	0.39	71.1	81.55	61.24
Athi	208	796	425	371	873	0	2.39	85.41	93.68	76.42
Elaneerkundram	383	1563	796	767	964	33.21	0.58	75.32	85.08	65.22
Kizhneerkundrum	165	649	312	337	1080	14.48	2.62	73.23	85.77	61.41
Nedungal	476	1927	987	940	952	26.52	0	77.49	87.44	67.06
Thethurai	314	1226	612	614	1003	36.46	3.59	77.65	86.87	68.31
Kurumbur	217	955	484	471	973	0	0	70.74	79.36	62.04
Narmapallam	151	605	295	310	1051	0	2.64	72.83	83.85	62.22
Veerampakkam	484	2039	1006	1033	1027	23.98	2.21	75.65	85.89	65.57
Melma	222	808	410	398	971	0	2.48	72.02	85.64	58.58
Ayyavadi	166	634	325	309	951	36.28	3.94	73.74	85.42	61.43

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Name	Total Household	Total Population	Total Male Population	Total Female Population	Sex Ratio	SC%	ST%	Overall Literacy %	Male Literacy %	Female Literacy %
Vachanur	295	1207	623	584	937	43.99	0.5	74.06	81.83	65.98
Melnarma	213	799	405	394	973	5.76	0.5	61.58	68.38	54.67
Soundariyapuram	266	1040	523	517	989	23.37	0	69.94	81.33	58.4
Thenkalpakkam	185	667	340	327	962	16.34	0	85.37	95.21	75.17
Paiyur	209	847	428	419	979	61.51	0	69.54	77.94	60.93
Alathurai	341	1437	745	692	929	30.06	0.77	67.26	76.82	56.91
Alathur	485	1840	926	914	987	31.03	0.54	69.9	79.08	60.68
Vengodu	398	1526	785	741	944	16.78	0.79	68.59	77.04	59.52
Vilangadu	166	605	283	322	1138	23.47	6.45	61.76	71.77	52.73
Irumbedu	649	2681	1352	1329	983	10.15	0.37	70.81	81.53	59.88
Uthiramerur (TP)	6197	25194	12569	12625	1004	12.3	0.72	81.74	89.17	74.42
<b>Total Zone III (5 to 10 Km)</b>	<b>30199</b>	<b>121775</b>	<b>61116</b>	<b>60659</b>	<b>993</b>	<b>25.69</b>	<b>1.41</b>	<b>74.64</b>	<b>83.79</b>	<b>65.49</b>

Source: Census of India, 2011, Tamil Nadu.



Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

### 3.12.4. Amenities

**Education:** As per 2011 records, there are about 105 villages in District Kanchipuram and Tiruvannamalai in the state of Tamil Nadu. (5 villages in Zone-I, 19 villages in Zone-II and 81 villages in Zone-III). Come under the study area (10 km radius area). About 100% of the villages in Zone-I, 94% of the villages in Zone-II and about 100% of the villages in Zone-III have government facilities. Primary school. 37 are government. Middle schools in the study area. 17 are government. Secondary schools in the study area. There are 8 senior secondary schools in the study area.

Table 83. Number of Schools

Education (No. of Villages)	Anganwadi Centre	Govt Primary School	Govt Middle School	Govt Secondary School	Govt Senior Secondary School
0-2 Km Zone-I	5	6	3	2	1
2-5 Km Zone-II	15	18	6	4	2
5-10 Km Zone-III	77	96	28	11	5
<b>Study Area</b>	<b>97</b>	<b>120</b>	<b>37</b>	<b>17</b>	<b>8</b>

### 3.12.5. Employment Pattern

As per census data 2011, the analysis of village data lying within the study area are summarized below.

#### Working status

Table 84. Details of Working Status

Name	Total House hold	Total Population	Total Worker%	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %	Total non-Worker %
Hanumanthandalam	311	1278	53.91	56.31	43.69	61.54	38.46	46.09
Melpakkam	163	581	63.68	48.65	51.35	11.62	88.38	36.32
Kaliyampoondi	458	2426	30.46	80.65	19.35	77.13	22.87	69.54
Ravathanallur	851	3260	54.08	59.5	40.5	71.7	28.3	45.92
Elanagar	468	1725	51.88	64.13	35.87	16.98	83.02	48.12
<b>Total Zone I (0 to 2 Km)</b>	<b>2251</b>	<b>9270</b>	<b>48.07</b>	<b>62.54</b>	<b>37.46</b>	<b>55.05</b>	<b>44.95</b>	<b>51.93</b>
Perunagar	1346	5499	46.74	62.41	37.59	44.9	55.1	53.26
Silambakkam	114	461	42.73	73.1	26.9	98.48	1.52	57.27
Vengaram	48	176	35.23	83.87	16.13	100	0	64.77
Ozhugarai	322	1240	43.87	65.26	34.74	72.06	27.94	56.13
Andithangal	109	406	61.08	59.68	40.32	100	0	38.92
Thinayampoondi	262	1103	62.28	53.28	46.72	37.55	62.45	37.72

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Name	Total House hold	Total Population	Total Worker%	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %	Total non-Worker %
Alisoor	461	1751	55.4	61.96	38.04	99.07	0.93	44.6
Manampathy	1663	6447	41.66	70.1	29.9	85.33	14.67	58.34
Thandarai	326	1305	52.34	59.88	40.12	72.18	27.82	47.66
Serpakkam	147	540	65.56	49.15	50.85	37.57	62.43	34.44
Karanai	292	1177	49.36	66.27	33.73	70.22	29.78	50.64
Vayalur	196	877	52	53.07	46.93	59.87	40.13	48
Nadupattu	47	161	53.42	59.3	40.7	100	0	46.58
Pennalur	303	1139	44.51	70.81	29.19	96.45	3.55	55.49
Ammaiyappanallur	251	990	48.08	66.39	33.61	62.61	37.39	51.92
Ukkal	611	2434	58.05	55.48	44.52	76.01	23.99	41.95
Nemili	135	585	53.85	58.1	41.9	83.49	16.51	46.15
Sirunallur	136	563	53.64	56.95	43.05	96.36	3.64	46.36
Pudupalayam	214	853	53.46	57.89	42.11	99.56	0.44	46.54
<b>Total Zone II (2 to 5 Km)</b>	<b>6983</b>	<b>27707</b>	<b>49.06</b>	<b>62.47</b>	<b>37.53</b>	<b>72.27</b>	<b>27.73</b>	<b>50.94</b>
Magaral	709	2834	52.96	54.7	45.3	28.45	71.55	47.04
Sethupattu	183	757	50.73	56.25	43.75	10.94	89.06	49.27
Karuveppampoondi	436	1652	47.64	59.34	40.66	99.36	0.64	52.36
Vengacheri	195	753	47.14	61.13	38.87	49.86	50.14	52.86
Kannikulam	172	727	36.45	87.55	12.45	99.62	0.38	63.55
Adavapakkam	185	765	57.65	56.01	43.99	97.96	2.04	42.35
Puthali	266	1032	55.43	58.22	41.78	69.93	30.07	44.57
Pulivoy	128	491	56.82	57.71	42.29	99.28	0.72	43.18
Thriupulivanam	478	1821	46.02	65.99	34.01	97.26	2.74	53.98
Murukkeri	115	485	64.95	56.19	43.81	93.65	6.35	35.05
Visoor	418	1686	49.82	61.9	38.1	98.1	1.9	50.18
Poonthandalam	148	559	42.75	69.46	30.54	97.07	2.93	57.25
Maruthuvambadi	364	1560	60.96	51.42	48.58	61.09	38.91	39.04
Marudham	473	1893	59.06	50.89	49.11	98.48	1.52	40.94
Vadathavoor	217	838	43.56	73.42	26.58	20.82	79.18	56.44
Kadalmangalam	231	890	60.9	53.32	46.68	42.07	57.93	39.1
Menalur	668	2549	50.18	62.71	37.29	86.63	13.37	49.82
Arasanimangalam	347	1314	53.88	59.89	40.11	39.41	60.59	46.12
Oddanthangal	137	478	63.81	51.8	48.2	4.92	95.08	36.19
Guruvadi	55	203	56.16	69.3	30.7	100	0	43.84

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Name	Total House hold	Total Population	Total Worker%	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %	Total non-Worker %
Athyurmelduli	463	1812	57.89	53.1	46.9	61.3	38.7	42.11
Kavanurpuducheri	368	1449	50.86	58.89	41.11	57.67	42.33	49.14
Kammalampondi	493	1987	56.27	55.46	44.54	59.66	40.34	43.73
Puliyur	197	755	39.6	69.23	30.77	87.96	12.04	60.4
Thalavarampondi	176	664	50.45	59.7	40.3	69.25	30.75	49.55
Kariamangalam	205	823	38.64	73.9	26.1	82.7	17.3	61.36
Perumgozhi	520	2023	36.48	77.1	22.9	64.5	35.5	63.52
Kundiyanthandalam	170	703	36.13	78.74	21.26	38.19	61.81	63.87
Suruttal	304	1266	60.19	57.35	42.65	78.61	21.39	39.81
Poonaitangal	80	277	38.99	82.41	17.59	91.67	8.33	61.01
Menallur	363	1444	40.44	71.58	28.42	78.42	21.58	59.56
Girijapuram	61	243	64.2	48.08	51.92	94.87	5.13	35.8
Kizhnaickanpalayam	141	544	71.88	50.64	49.36	25.83	74.17	28.13
Vadakalpakkam	291	1222	60.23	52.72	47.28	69.02	30.98	39.77
Vzhavandal	115	444	52.25	55.17	44.83	20.69	79.31	47.75
Mamandur	1021	4287	58.11	54.88	45.12	70.05	29.95	41.89
Perumpulimedu	153	565	57.35	54.32	45.68	80.25	19.75	42.65
Chellaperumpulimedu	130	545	45.69	59.44	40.56	99.2	0.8	54.31
Azhinjalpattu	226	892	49.78	61.94	38.06	38.96	61.04	50.22
Narasamangalam	392	1703	57.43	55.93	44.07	96.83	3.17	42.57
Mathur	509	2147	55.71	56.02	43.98	92.31	7.69	44.29
Sothiyampakkam	288	1185	60	53.02	46.98	99.02	0.98	40
Bagavanthapuram	182	777	44.4	68.7	31.3	98.84	1.16	55.6
Ezhacheri	491	2080	54.52	57.76	42.24	99.65	0.35	45.48
Chithalapakkam	145	589	47.03	57.76	42.24	49.82	50.18	52.97
Vayalathur	117	505	41.58	66.67	33.33	99.52	0.48	58.42
Arasanipalai	287	1155	40.35	65.45	34.55	78.76	21.24	59.65
Punnai	194	707	70.16	49.19	50.81	93.55	6.45	29.84
Dharmacheri	32	103	75.73	48.72	51.28	98.72	1.28	24.27
Pavoor	308	1370	44.31	68.04	31.96	99.01	0.99	55.69
Ukkamperumbakkam	293	1243	43.77	66.18	33.82	43.93	56.07	56.23
Mangal	174	767	27.25	86.12	13.88	58.37	41.63	72.75

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Name	Total House hold	Total Population	Total Worker%	Total Male Worker %	Total Female Worker %	Total Main Worker %	Total Marginal Worker %	Total non-Worker %
Mahajanampakkam	407	1707	53.49	60.57	39.43	97.7	2.3	46.51
Kunnavakkam	315	1259	44.24	63.2	36.8	84.92	15.08	55.76
Karanai	139	677	66.47	52.22	47.78	100	0	33.53
Madipakkam	291	1262	60.78	53.72	46.28	98.31	1.69	39.22
Akkur	754	2896	51.1	57.09	42.91	71.01	28.99	48.9
Koozhamandal	409	1750	46.74	64.18	35.82	88.75	11.25	53.26
Kizhneathapakkam	321	1314	60.73	53.26	46.74	70.3	29.7	39.27
Veliyanallur	357	1538	61.7	53.64	46.36	94.84	5.16	38.3
Vadalapiranthan	202	764	53.01	58.27	41.73	39.75	60.25	46.99
Athi	208	796	55.53	57.69	42.31	15.16	84.84	44.47
Elaneerkundram	383	1563	61.23	52.77	47.23	64.89	35.11	38.77
Kizhneerkundrum	165	649	63.79	54.35	45.65	85.51	14.49	36.21
Nedungal	476	1927	61.7	56.43	43.57	63.84	36.16	38.3
Thethurai	314	1226	57.34	54.2	45.8	69.99	30.01	42.66
Kurumbur	217	955	64.19	52.04	47.96	79.61	20.39	35.81
Narmapallam	151	605	65.45	50.51	49.49	30.05	69.95	34.55
Veerampakkam	484	2039	50.66	60.21	39.79	95.45	4.55	49.34
Melma	222	808	53.59	58.2	41.8	96.3	3.7	46.41
Ayyavadi	166	634	47.63	67.55	32.45	97.35	2.65	52.37
Vachanur	295	1207	57.25	61.94	38.06	95.37	4.63	42.75
Melnarma	213	799	63.2	54.46	45.54	58.81	41.19	36.8
Soundariyapuram	266	1040	62.6	53.3	46.7	65.44	34.56	37.4
Thenkalpakkam	185	667	55.77	56.18	43.82	45.43	54.57	44.23
Paiyur	209	847	62.81	53.95	46.05	99.62	0.38	37.19
Alathurai	341	1437	59.22	55.93	44.07	63.81	36.19	40.78
Alathur	485	1840	50.76	60.28	39.72	42.4	57.6	49.24
Vengodu	398	1526	56.09	58.53	41.47	77.34	22.66	43.91
Vilangadu	166	605	49.59	61.67	38.33	71.33	28.67	50.41
Irumbedu	649	2681	63.52	52.08	47.92	99.06	0.94	36.48
Uthiramerur (TP)	6197	25194	43.98	66.24	33.76	85.48	14.52	56.02
<b>Total Zone III (5 to 10 Km)</b>	<b>30199</b>	<b>121775</b>	<b>51.63</b>	<b>59.58</b>	<b>40.42</b>	<b>76.32</b>	<b>23.68</b>	<b>48.37</b>

Source: Census of India, 2011, Tamil Nadu.

**Medical/Primary Health Care:** There are 105 Asha workers, 6 Primary Health Centre, 32 Primary Health Sub Centres, 13 Maternity and Child Welfare Centres, 6 TB Clinic, No

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Allopathic Hospital, 6 Dispensaries, No Mobile Health Clinic and 6 Family Welfare Centres are present in the study area for providing health care facilities.

Table 85. List of Medical/Primary Health Care

Health Care (Numbers)	Asha Workers	Primary Health Centre	Primary Health Sub Centre	Maternity And Child Welfare Centre	TB Clinic	Hospital Allopathic	Dispensary	Mobile Health Clinic	Family Welfare Centre
0-2 Km Zone-I	5	1	3	1	1	0	1	0	1
2-5 Km Zone-II	19	1	7	2	1	0	1	0	1
5-10 Km Zone-III	81	4	22	10	4	0	4	0	4
Study Area	105	6	32	13	6	0	6	0	6

**Drinking Water:** The drinking water supply in the study area is mainly by Hand Pumps and wells and Tube Wells/Borehole. Villagers also use the River/Canal, Tank Pond/Lake & springs for drinking purposes. In some villages Tap Water supply is also recorded.

Table 86. Details of Drinking Water Facility

Drinking Water	Tap Water-Treated	Tap Water Untreated	Covered Well	Uncovered Well	Hand Pump	Tube Wells/Borehole	Spring	River/Canal	Tank/Pond/Lake
Zone-I	4	4	2	3	0	1	0	0	0
Zone-II	16	13	6	7	4	5	0	0	0
Zone-III	68	67	14	51	25	24	2	2	7
Study Area	88	84	22	61	29	30	2	2	7

**Communication:** Communication facility is present in the form of post office, sub post office, landline etc. The detail as per census 2011 is as below:

Table 87. Communication Details

Communication	Post Office	Sub Post Office	Telephone Landlines	Public Call Office	Mobile Phone Coverage	Common Service Centre
Zone-I	0	4	4	5	5	0
Zone-II	3	6	15	15	19	2
Zone-III	6	20	79	55	81	4
Study Area	9	30	98	75	105	6

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**Transportation:** Public bus service facility is available in 83 villages of the study area. Railway station is not available. 19 autos, 5 taxis available. 8 vans are also available in the study area. Details are as follows:

Table 88. Transportation

Transportation	Public Bus Service	Railway Station	Auto/Modified Autos	Taxi	Vans
Zone-I	4	0	0	0	0
Zone-II	15	0	4	3	3
Zone-III	64	0	15	2	5
Study Area	83	0	19	5	8

**Road Approach:** All the villages in the study area relate to all-weather Black topped roads. Road approach as per 2011 census is given ahead: -

Table 89. Details of Roads

Road	Black Topped Road	Gravel Roads	Water Bound Macadam	All Weather Road	Footpath
Zone-I	3	5	3	5	5
Zone-II	17	19	19	19	19
Zone-III	79	80	71	81	81
Study Area	99	104	93	105	105

**Bank Facilities:** Out of 105 villages, 2 ATM, 7 Commercial banks, 11 Cooperative Bank, 9 Agricultural Credit Societies, 102 Self Help Group & 100 Public Distribution available in the study area. Details are ahead:

Table 90. Bank Facilities

Bank	ATM	Commercial Bank	Cooperative Bank	Agricultural Credit Societies	Self Help Group	Public Distribution
Zone-I	0	0	1	1	5	5
Zone-II	0	2	1	1	19	18
Zone-III	2	5	9	7	78	77
Study Area	2	7	11	9	102	100

**Electricity Supply:** Electricity is available in all the villages out of 105 villages in the study area for both domestic, agricultural, and commercial purposes.

Table 91. Electricity

Electricity	Power Supply for Domestic Use	Power Supply for Agriculture Use	Power Supply for Commercial Use	Power Supply for All Users
Zone-I	5	5	3	5
Zone-II	19	19	6	7
Zone-III	81	80	20	28
Study Area	105	104	28	40

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### 3.12.4 Primary Survey

The main objective of the socio-economic study is to collect social and economic information about the area and to identify the expected impacts due to the project activities and to provide the appropriate mitigation measures. The village level information has been compiled for the villages which were selected for the study using census data, 2011 and compared with the district level census record, 2011.

### Methodology

The process of selection of villages and collection of primary data is as follows:

- Project village and all the surrounding villages within 2 km from the project site are considered for Primary survey.
- In total 5 villages are selected.
- Indirect affected villages to be surveyed using focus group discussion having 8 to 10 persons in a group.
- Physical survey for sanitation, drinking water facilities, availability of banks, primary health centers, roads, education facilities and source of income of the villagers.

### 3.12.5 Surveyed Villages from the Project Site

*Table 92. Villages of Project Site*

Sr. No.	Villages	Distance and directions
1	Hanumanthandalam	Within 0 to 5 km NNW Direction
2	Melpakkam	Within 0 to 5 km NNE Direction
3	Kaliyampoondi	Within 0 to 5 km SE Direction
4	Ravathanallur	Within 0 to 5 km S Direction
5	Elanagar	Within 0 to 5 km NW Direction

### 3.12.6 Details of study conducted during the survey

*Table 93. Survey Result*

Gram Panchayat/ Village		Hanumanthandalam	Melpakkam	Kaliyampoondi	Ravathanallur	Elanagar
Households	Number of Total Households	400	201	522	860	480

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Gram Panchayat/ Village		Hanumanthan dalam	Melpakkam	Kaliyampoondi	Ravathannallur	Elanagar
	Number of BPL Households	30	25	450	285	45
Population	Total Population of the village	1560	497	2200	3260	1800
	No. of Females	747	257	1150	1629	900
	No. of Males	813	240	1050	1631	1000
Overall Literacy	Overall Literacy (Males/ Females)	85%	80%	90%	89%	78%
Religion (% of HH)	Hindu	99%	99%	94%	98%	96%
	Christian	1%	1%	3%	2%	1%
	Muslim	0	0	3%	No	3%
Caste (% of HH)	General	0	1%	1%	2%	1%
	OBC	78%	81%	51%	65%	87%
	SC	20%	11%	47%	33%	10%
	ST	2%	7%	1%	0%	2%
Connectivity (Length in Km)	Distance from the main road	No	1 km	No	1.5km	2 km
	Kuchha Road	Yes	Yes	Yes	No	No
	Metaled Road	Yes	Yes	Yes	Yes	Yes
Type of House (Nos)	Pacca (Concrete) (Nos.)	330	180	522	775	410
	Semi Pacca (Concrete & Tin) (Nos.)	30	5	No	40	20
	Kutch House (Mud & Grass) (Nos.)	40	16	No	45	50
Toilet Availability (% of HH)	Individual toilets	100%	100%	100%	95%	97%
	Open Defecation	No	No	No	5%	3%
Institutions/Educational Facilities (Yes /No)	Anganwadi	Yes	Yes	Yes	Yes	Yes
	Primary School	Yes	Yes	Yes	Yes	Yes
	Middle School	No	No	Yes	Yes	Yes
	High School	No	No	Yes	No	No
	College	No	No	No	No	No
Medical Facilities (Yes /No)	Sub-Centre	No	No	No	No	No
	Primary Health Centre	No	No	Yes	No	No
	Dispensary	No	No	Yes	No	No
	Private Clinic	No	No	No	Yes	Yes



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Gram Panchayat/ Village		Hanumanthan dalam	Melpakkam	Kaliyampoon di	Ravatha nallur	Elanagar
	Private Nursing Homes	No	No	No	No	No
	Asha Workers	Yes	Yes	Yes	Yes	Yes
Occupation in the village (Yes/No)	Agriculture - Farmers (No. of HHs involved)	200	100	60	160	195
	Agriculture Labors (No. of HHs involved)	50	40	100	30	50
	Other Labors (No. of HHs involved)	50	60	200	190	140
	Service- Private (No. of person)	160	50	100	100	45
	Service- Government (No. of person)	40	10	40	40	15
	Self Employed	20	5	20	60	25
	Shops (No. of person)	5	2	20	46	5
	Business (No. of person)	2	0	10	30	10
Drinking Water Source —No. of Households Dependent	PWS-Individual	400	191	500	680	375
	PWS Community	3	No	No	100	30
	Hand Pump	No	10	7	50	45
	Open Well	Yes	Yes	15	35	30
	Tube Well/ Bore Well	Yes	Yes	Yes	Yes	Yes
Surface Water	River/Pond etc.	Yes	Yes	Yes	No	Yes
Public Utilities (Yes/No)	Banks	No	No	Yes (Cooperative Bank)	No	No
	ATM	No	No	No	No	No
	Public Toilets	Yes	Yes	Yes	Yes	Yes
	Community Hall	No	No	Yes	No	Yes
	Dharamshala	Yes	Yes	Yes	No	No
	Panchayat Office	Yes	Yes	Yes	Yes	Yes
	Police Station	No	No	No	No	No
Government office	Yes	Yes	Yes	No	Yes	

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Gram Panchayat/ Village		Hanumanthan dalam	Melpakkam	Kaliyampoondi	Ravathallur	Elanagar
Electrification Facilities	Whether Electrified	Yes	Yes	Yes	Yes	Yes
	individual connections	100%	100%	100%	100%	100%
	streetlights	No	Yes	Yes	Yes	Yes
Sanitation Facilities (Yes/No)	Drainage	No	No	No	No	Yes (Not working)
	Individual Toilets	Yes	Yes	Yes	Yes	Yes
Solid waste Disposal (Yes/No)	Whether solid waste	No	Yes	Yes	Yes	Yes
	On-Land disposal	Yes	No	No	No	No
	Public Dustbin	Yes	Yes	Yes	Yes	Yes
	Composting	Yes	No	Yes	Yes	No
Key Crops of the Area (% area Covered)	Wheat	No	No	No	No	No
	Paddy	65%	60%	70%	60%	70%
	Sugar cane	No	No	No	No	No
	Vegetables	5%	5%	3%	5%	5%
	Others (specify) Ground Nut	30%	35%	27%	35%	25%
Disease Prevalence (%)	Diarrhea	1%	No	1 %	No	No
	Dysentery	No	No	No	No	No
	Jaundice	No	No	No	No	No
	Gastroenteritis	2%	1%	2%	1%	1%
	Typhoid	1%	1%	No	0.5%	1%
	Others-Specify	No	No	No	Sugar 0.5%	No
	Tuberculosis	No	No	No	No	No
	Bronchitis	No	No	No	No	No
	Asthma	1%	1 %	1%	No	No
Pneumonia	No	No	No	No	No	
Availability of Skills in the Village (Nos)	Mason	5	2	10	25	5
	Carpenter	3	2	7	15	3
	Blacksmith	No	No	No	No	No
	Mechanic	5	2	10	10	2
	Electrician	4	3	12	212	4
Farmer Category (No of HH %)	Marginal Farmers	75	60	20	50	40
	Small Farmers	100	20	30	85	130
	Medium Farmers	20	80	10	15	15

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Gram Panchayat/ Village	Hanumanthan dalam	Melpakkam	Kaliyampoon di	Ravatha nallur	Elanagar
Large Farmers	5	No	No	10	10

### 3.12.7 Finding and Conclusion:

5 villages are taken as a sample village for Primary study.

The total population of the surveyed villages as mentioned above is 9317 as compared to 2011 Census Population 9270. The total household in the surveyed villages are 2463 as compared to 2011 Census 2251. The family size as per survey is 4.11 which was 3.41 in 2011 Census. The total literacy rate in the surveyed village is 84% as compared to 2011 census 71%. Majority of the villages are Hindus by religion. Christian are recorded as less than 3%. Muslims are recorded as less than 1%. Caste wise, General, SC & OBC are the main castes in the surveyed villages. Percentage of OBC category varies 50% to 87%. Percentage of SC category is 10%-24%, whereas percentage of ST are recorded up to 0 to 7% General Category recorded up to 0 to 2%. All the villages are connected by a metal road with the main road. However, un-metalled roads are also seen within the villages. Average Pucca Houses are 90%, Average Semi Pucca Houses are 4% and Average Kutcha Houses are 6% in the surveyed villages. Category wise 31% farmers are marginal farmers Small Farmers are 47%. Medium scale farmers are 18% and Large Farmers are only 4% in the sample villages as per Primary Study. Drinking water is primarily sourced from hand pumps and bore wells. Essential services like schools, banks, hospitals, and markets are easily accessible to the villagers.

All the houses have their own individual toilet followed by a Septic Tank. Other sources of income are animal husbandry, labor wages, Govt. Jobs, Private Jobs & Self-employment.

All the villages have shops. Paddy are the main crops in the area and sown in 50-80% of the land. GroundNut is the second largest crop sown in 30% to 40% of the area. Vegetables are also grown for their own use. The average yield of Paddy in the area is 60 Man per Acre. Selling price of Paddy in the local market is Rs. 15/- to 20/- per Kg. Yield of GroundNut is recorded at 40 Man/Acre and the selling price of Groundnut in the local market is Rs.30/-to 35/- per Kg.

Diseases Like diarrhea, Gastroenteritis & Typhoid are reported on an average 0.5% -2% population in all the surveyed villages. The villages also reported 1% Asthma patients.

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**Summary:** The surveyed villages boast adequate provisions for drinking water, well-constructed roads, electricity, shopping facilities, educational institutions, and transportation services. The primary sources of income for the residents include agriculture and opportunities in both private and government sectors within the region. The majority of individuals in the surrounding areas are literate.

Industrial establishments play a significant role in the economic landscape, as a considerable number of villagers are employed in these enterprises. The overall development of this area is characterized by moderate levels, supported by well-connected roadways. Villagers primarily rely on hand pumps and bore wells for their drinking water needs.

Accessibility to vital services such as schools, post offices, banks, hospitals, and markets is readily available to the residents. The livelihoods of most people hinge on Agriculture, Labors, service, private jobs and private employment opportunities, while a minority is involved in activities like animal husbandry and poultry farming. Diverse employment opportunities exist in various industries, contributing to the economic vibrancy of the region.

### **3.13 TRAFFIC SURVEY**

The aim of the study is to undertake a Traffic and Transport study of the proposed development, including road layout, traffic circulation and management, parking locations and their accessibility, pedestrian movements and circulation and provision for public, chartered/ shuttle buses etc.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.



*Figure 49. Approach Road to the Project Site*

### **3.13.1 Traffic Demand Estimation**

Amount of traffic likely to be generated due to the proposed development have been estimated on the basis of calculated vehicular trips in weekday peak hour. The estimate is based on the projected total number of employment generated in ultimate development. Following section describes methodology adopted in estimation of traffic likely to be generated.

Most of the industries or offices in this kind of development are going to work in shifts. But the exact type of industrial units going to come up in the proposed development cannot be envisaged at this point of time, so the client suggested an assumption of every industry working in three shifts should be taken while calculating the traffic demand. This would also enable us to design for the worst case scenario. Hence the internal traffic would comprise the traffic generated by the industries and offices during these three shifts. Also there will be overlapping shifts so the transportation system needs to be designed to cater maximum peaks. All these assumptions are kept in mind while calculating the traffic demand.

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Similarly, total resident and visitor population has been calculated on the basis of standards of area required for residing populations and visitor population. Total population residing in the residential area would be working in Noble Tech Industries Pvt Ltd. Passenger trips calculations were made based on the above mentioned scenario to factor in worst case situations in future.

### 3.13.2 Methodology

1. Manual counting of vehicle plying on the roads
2. To maintain the precision of the report, manual shift is given to the surveyor.
3. The vehicles are then calculated by converting the same in PCU values.

PCU values are used to convert various vehicles into one standard vehicle i.e. Passenger car units

*Table 94. PCU values as per IRC*

S. No.	VEHICLE TYPE	PCU VALUE
1	Car	1
2	Two-wheeler	0.5
3	Truck/bus	4.5
4	Auto	1.2
5	LCV	2
6	Tractor and Trailer	5
7	Cycle rickshaw	0.5

### **FACTORS and ASSUMPTIONS: Version Factor (Ref: IRC 106, 1990)**

#### **Survey Conducted Details:**

Traffic survey was carried out on both sides (up & down) of the Kanchipuram-Uthiramerur Road and Perunagar Kaliyampoondi Road (Approach Road). Vehicles were observed and the count was recorded for 17 hours. The table below represents the total no. of vehicles over 17-hour duration.

#### **I. Traffic Analysis: Kanchipuram-Uthiramerur Road- 2 Lane, 7 Meters**

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 95. Traffic Analysis: Kanchipuram-Uthiramerur Road

Hours	Baseline					Incremental		Capacity of Road in PCU/Hr	LOS Baseline	LOS Incremental	% increase
	Car	Bus/Truck	Two Wheelers	Others/Auto	PCU/Hr	PCU/Hr	Incremental PCU/Hr				
06:00- 07:00	452	40	314	78	789	10	800	2550	0.309	0.314	1.318
07:00- 08:00	480	34	348	82	827	12	839	2550	0.324	0.329	1.451
08:00-09:00	490	24	442	90	872	14	886	2550	0.342	0.347	1.606
09:00-10:00	530	22	462	94	923	26	949	2550	0.362	0.372	2.817
10:00-11:00	570	24	466	96	972	22	994	2550	0.381	0.390	2.264
11:00-12:00	448	26	396	90	812	20	832	2550	0.318	0.326	2.463
12:00-13:00	426	32	366	88	785	16	801	2550	0.308	0.314	2.038
13:00-14:00	404	38	418	92	807	14	821	2550	0.316	0.322	1.735
14:00-15:00	406	40	360	94	787	12	799	2550	0.309	0.313	1.525
15:00-16:00	426	32	344	96	784	10	794	2550	0.307	0.311	1.276
16:00-17:00	432	30	356	92	787	12	799	2550	0.309	0.313	1.525
17:00-18:00	434	38	378	82	805	10	815	2550	0.316	0.320	1.292
18:00-19:00	472	34	400	78	840	24	864	2550	0.330	0.339	2.856
19:00-20:00	532	32	432	84	919	20	939	2550	0.361	0.368	2.175
20:00-21:00	492	30	378	90	856	14	870	2550	0.336	0.341	1.636
21:00-22:00	428	36	336	96	790	12	802	2550	0.310	0.315	1.518
22:00-23:00	346	40	308	82	686	10	696	2550	0.269	0.273	1.516
Average	457	33	383	88	826	15	841	2550	0.32	0.33	1.82

- Carrying Capacity at Kanchipuram-Uthiramerur Road = 2550 PCU/hr
- Existing traffic density at Kanchipuram-Uthiramerur Road = 826 PCU/hr
- Existing LOS (Without Project) = 0.32 i.e. Cat “B”
- Proposed traffic from Site=15 PCU/hr
- LOS (With Project) = 0.33 i.e. Cat “B”

## II. Traffic Analysis: Approach Road- 2 Lane, 5 Meters

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

Table 96. Traffic Analysis: Perunagar Kaliyampoondi Road (Approach Road)

Hours	Baseline					Incremental		Capacity of Road in PCU/Hr	LOS Baseline	LOS Incremental	% increase
	Car	Bus/Truck	Two Wheeler	Others /Auto	PCU/Hr	PCU/Hr	Incremental PCU/Hr				
06:00- 07:00	160	12	157	30	301	10	311	2040	0.147	0.153	3.458
07:00- 08:00	166	10	174	38	321	12	333	2040	0.157	0.163	3.743
08:00-09:00	176	8	221	44	357	14	371	2040	0.175	0.182	3.922
09:00-10:00	188	6	231	40	364	26	390	2040	0.178	0.191	7.146
10:00-11:00	204	6	233	44	386	22	408	2040	0.189	0.200	5.694
11:00-12:00	160	8	198	46	332	20	352	2040	0.163	0.172	6.028
12:00-13:00	152	10	183	44	318	16	334	2040	0.156	0.164	5.024
13:00-14:00	144	12	209	30	311	14	325	2040	0.153	0.159	4.499
14:00-15:00	146	14	180	32	305	12	317	2040	0.150	0.155	3.932
15:00-16:00	152	10	172	40	308	10	318	2040	0.151	0.156	3.245
16:00-17:00	154	8	178	46	315	12	327	2040	0.155	0.160	3.807
17:00-18:00	156	10	189	40	320	10	330	2040	0.157	0.162	3.255
18:00-19:00	170	12	200	34	337	24	361	2040	0.165	0.177	7.118
19:00-20:00	190	12	216	42	375	20	395	2040	0.184	0.194	5.335
20:00-21:00	176	14	189	44	354	14	368	2040	0.173	0.180	3.957
21:00-22:00	152	16	168	48	329	12	341	2040	0.161	0.167	3.650
22:00-23:00	122	10	154	40	269	10	279	2040	0.132	0.137	3.866
Average	163	10	191	40	330	15	345	2040	0.16	0.17	4.57

Carrying Capacity at Approach Road = 2040 PCU/hr

Existing traffic density at Approach Road = 330 PCU/hr

Existing LOS (Without Project) = 0.16 i.e. Cat "A"

Proposed traffic from Site=15 PCU/hr

LOS (With Project) = 0.17 i.e. Cat "A"



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### 3.13.3 Summary of Traffic Survey

Table 97. Traffic Analysis Summary

Perunagar Kaliyampoondi Road (Approach Road)	Parameter	Existing (without project)	Proposed (with project)	
	Width (m)	6.06		
Carrying Capacity (PCU/Hr)	2040			
Traffic (PCU/Hr)	330	15		
LOS	0.16 i.e. Cat "A"	0.17 i.e. Cat "A"		
Kanchipuram- Uthiramerur Road	Width (m)	9.10		
	Carrying Capacity (PCU/Hr)	2550		
	Traffic (PCU/Hr)	826	15	
	LOS	0.32 i.e. Cat "B"	0.33 i.e. Cat "B"	

### Survey Conducted Details:

Table 98. LOS Data

Sr. No.	LOS Value (Ratio of V:C) (V/C)	Category	Inference based on IRC 106: 1990
1	0-0.2	A	Represents a condition of free flow; individual users are generally unaffected by others in the traffic and this condition is generally considered in the Excellent Category.
2	0.2-0.4	B	Represents a condition of stable flow; individual users have a level of comfort and convenience but less than that of A.
3	0.4-0.6	C	Represents a condition of zonal stable flow; individual users are starting in a bit of discomfort; users start to feel inconvenience due to presence of other users on the road. General level of discomfort increases and there is a noticeable decline in convenience.
4	0.6-0.8	D	Represents the level of stable flow; Level of comfort of users is poor and discomfort is significant in the flow of traffic. This category traffic streams are extremely susceptible to traffic problems.
5	0.8-1	E	Represents operating conditions close to capacity level; freedom to traffic stream is low and the speed is relatively uniform but very less. Comfort and convenience is relatively poor and discomfort is visible.
6	1 or above	F	Breakdown Flow; These streams often break down, susceptible to long delays and therefore there is huge discomfort in these streams.

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**Conclusion:**

The Perunagar- Kaliyampoondi Road (Approach road) is a panchayat road (2-way lane). This road is not designed for carrying 10-20 tons of load. Also, the carrying capacity of this road is much less. The Panchayat will be consulted for increasing the road load bearing capacity and making it 2-lane with demarcation of central line. And at the entry point Noble Tech Industries to make a round-about with a V-shaped entry into the factory premises. This will ensure that no trucks will be parked on the road. Also, the entry and exit of trucks will be smooth and will be guarded by security staff.

Safety boards, sign boards, speed breakers are to be provided at appropriate areas for smooth flow of traffic.

The carrying capacity of the Kanchipuram-Uthiramerur Road is much higher than the proposed traffic volume. The traffic (to & fro) from the Proposed Expansion of Sponge Iron and Captive Power Plant will not create any traffic congestion.

The volume/capacity ratio is likely to be changed from 0.32 to 0.33 with LOS being “B” to “B” only.

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## **4. ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES**

Prediction of impacts is the most important component in the Environmental Impact Assessment studies. Several scientific techniques and methodologies are available to predict impacts of developmental activities on physical, ecological and socio-economic environments. Such predictions are superimposed over the baseline (pre-project) status of environmental quality to derive the ultimate (post-project) scenario of environmental conditions. The prediction of impacts helps to minimize the adverse impacts on environmental quality during pre-and post-project execution.

Generally, the environmental impacts can be categorized as either primary or secondary. Primary impacts are those, which are attributed directly by the project and secondary impacts are those, which are indirectly induced and typically include the associated investment and changed patterns of social and economic activities by the proposed actions.

### **4.1. IMPACT ASSESSMENT METHODOLOGY**

For the proposed project, the impact assessment shall be performed in following steps:

- Identification of interactions between activities and environmental receptors.
- Identification of potentially significant environmental impacts.

Based on this preliminary identification, environmental indices that are likely to be impacted due to the project are:

- **Land Use/Land Cover:** There will be change in land use as the proposed additional land area will change from a barren, unclassified land use to Industrial use; there will be increased land cover due to the proposed project as the ground coverage will increase from 9.16 ha to 12.88 ha.
- **Air Quality:** Baseline studies reveal air quality in the core zone is satisfactory and in buffer zone is moderate; due to the proposed activities during construction/installation the air quality will be affected by increased Dust generation, vehicular emission, loading/unloading activities, and during operation phase, emissions from manufacturing processes, Utilities, vehicular emission, and material handling operations.

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- **Noise:** Vehicular movement & construction /installation activities during construction phase, and from the process machineries, operation of Boilers, DG sets loading/unloading activities.
- **Water:** Increased fresh water requirement will adversely affect the neighborhood area, as the project is drawing ground water. Increased wastewater generation will require additional systems and facilities to treat and maximize reuse of treated wastewater within the facility.
- **Soil:** Excavation activity and contamination due to deposition of metals in dust oil, grease and other chemicals bearing wastewater.
- **Storage and handling** of solid and hazardous waste.
- **Ecology and Biodiversity:** Construction activities and operational activities will have an effect on the avifauna and the existing plant of the study area.
- **Socio – Economic:** There will be a minor positive impact due to increase in additional employment generation, increased revenue to neighborhood people and increased tax payment to the local administration.
- **Occupational Health, Community Health and Safety:** Occupational health risk during exposure to dust, noise, hazardous wastes and solid wastes.

#### **4.2. POTENTIAL IMPACTS DURING CONSTRUCTION PHASE**

In this proposed construction/installation phase, there will be an increase in ground coverage by 3.72 ha, in Storage/disposal area by 0.22 ha, in the greenbelt area by 5.80 ha, in the internal parking area by 2.42 ha, and in the internal roads and pavement area by 1.81 ha. STP capacity will be augmented with a new 35 KLD STP, and a new 40 KLD ETP will be constructed.

As the land area is increasing the structures for rainwater harvesting and stormwater harvesting will also be expanded. Also there will be construction of a compound wall around the industrial premises.

Also, there will be installation of 1 No. of 30 Ton Induction Furnace, 1 No. of TMT mill, 2 No. of pump house, 2 Nos. of cooling towers, 1 No. of each Hydraulic Motor, Pollution Air Suction, CCM Machine Stand and 5 Nos. of EOT Cranes.

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#### 4.2.1. Activity – Construction Activities

Construction like buildings, Industrial sheds, STP, ETP, Installation of MS structures, RCC structures, mechanical beams, etc.

#### Aspects:

- Generation of Construction and demolition (C&D) waste
- Generation of broken raw material
- Generation of Scrap materials
- Noise from construction equipment & machinery

Table 99. Construction of New Structure

Environmental Components	Anticipated Impact	Proposed Mitigation Measures
Air Environment	- Emission from DG sets	- Stack of adequate height will be provided.
	- Emission from Construction machinery including mixing machines and grinder	- Closed containers will be used to avoid emissions and leaks, periodical maintenance will be adhered to attend to prevent any leaks, loose joints, etc.
	- Cutting of MS steel structural materials at site	- Cutting activities will be restricted to an identified shed to confine dusts or any particle generation within the shed itself
	- Dust generation during material handling	- Covering the construction area upto 5m/10m height as required, water sprinkling in roads, material handling activities, etc., will be employed to reduce and restrict dust emission locally.
Water Environment	- Utility wastewater generation from cleaning and washing of vessels after construction.	- Wastewater will be collected and passed through sedimentation tanks.
	- Wastewater @ 4.8 KLD will be generated from Construction workers water requirement	- Mobile STP of 6 KLD will be installed and treated water @ 4.3 KLD will be used for greenbelt development.

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<b>Environmental Components</b>	<b>Anticipated Impact</b>	<b>Proposed Mitigation Measures</b>
Land Use	- It is already an established factory wherein we are going in for the expansion activity, hence no adequate impact.	- Existing Greenbelt area is 7.21 ha (32.85%) and will be increased to 13.01 ha (34.91%) after proposed expansion.
Soil Environment	- Construction activity does not have any negative impact on the soil as there will be no basement activities.	- Due to construction activity, soil fertility will not deteriorate, however periodically monitoring of soil quality will be conducted.
	- Improper disposal of C&D waste.	- C&D will be either disposed off weekly to the C&D Waste site or utilized in internal road formation for the proposed expansion.
Noise & Vibration	- Noise generation from DG set.	- DG set will be put under an acoustic enclosure. The noise generation will be limited to 1 m radius.
	- Vibration will be due to construction equipment like cutter and driller and will be limited as it will be operated intermittently and the vibration area is limited to 1m radius.	- Machines and equipment will be properly greased, lubricated and regularly maintained and shall be provided with anti-vibration pads.
Hydrology & Geology	- No impact	- Nil
Solid & Hazardous Waste	- Due to construction workers about 30 kg/day solid waste will be generated.	- Recyclable construction waste material will be sold to authorized recyclers.
	- Packaging waste will be generated.	- Packaging waste will be sold to authorized recyclers.
	- Construction debris & waste materials approx 1.5 tons will be generated.	- The construction debris will be used within the site for road laying.
	- Generation of used oil from DG set @ 0.1 KL/year.	- Used oil be sold to CPCB Authorized recyclers

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<b>Environmental Components</b>	<b>Anticipated Impact</b>	<b>Proposed Mitigation Measures</b>
Socio-Economic	- Positive impact by giving employment to the local people. - Increase in local economic activity.	- Nil
Ecology & Biodiversity	- No impact due to construction activity.	- Increasing the greenbelt parallelly in the expansion area and the density of the greenbelt will be increased in the existing plant area.

#### 4.2.2. Activity – Operation of Construction Machinery (Concrete mixing machinery, DG Sets, etc.)

##### Aspects

- Used oil generation
- Air emission
- Dust generation
- Noise generation

Table 100. Operation of Construction Machinery

<b>Environmental components</b>	<b>Impact</b>	<b>Proposed Mitigation Measures</b>
Air Environment	-Emissions from the use of construction machinery will cause respiratory problems to the workers at site.	-Personal Protective Equipment like masks shall be provided to the construction workers. -Emission from construction activities will be restricted within the site by providing cover sheets of 5-10 m height, water sprinkling and periodical removal of dust generating wastes.
	-Pollutants emitted from the stack will increase the Ground Level Concentration which will affect the respiratory health of people in a nearby area.	-Only source of air pollution is the DG sets. Adequate stack shall be provided in order to ensure good dispersion in air

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<b>Environmental components</b>	<b>Impact</b>	<b>Proposed Mitigation Measures</b>
	<ul style="list-style-type: none"> <li>-Generation of dust from the operation of construction machinery.</li> <li>-Spillage of Diesel, used oil, chemicals may result in emission of VOCs in the air environment which may cause irritation in eyes, nose and throat, difficulty breathing and nausea.</li> </ul>	<ul style="list-style-type: none"> <li>-Dust barriers of 5-10 m height and water sprinkling systems will be installed for suppression of particulates.</li> <li>-Quantity of fuels /oils handled at site will be less ; vehicles will be fuelled in external bunks . Collection of Used Oil from the DG sets will be done only by trained service technicians.</li> </ul>
Water Environment	<ul style="list-style-type: none"> <li>-Spillage of oil &amp; chemicals, if in any case encounters with water bodies can deteriorate the groundwater &amp; surface water body which in turn may affect life also.</li> </ul>	<ul style="list-style-type: none"> <li>-The hazardous waste generated will be Used oil only. Used Oil will be stored in HDPE drums and kept in covered rooms under lock and key and will be sold to authorized vendors only.</li> <li>-Cement residue from concrete mixer plants will be properly collected and reused in construction sites.</li> </ul>
Land Use	None	None
Soil Environment	<ul style="list-style-type: none"> <li>-Chemical degradation of soil may occur while refueling vehicles transporting construction materials and servicing of vehicles through breakage due to wear and tear.</li> </ul>	<ul style="list-style-type: none"> <li>-Vehicles will not be allowed to get fuelled within the site. SOP to that effect will be implemented.</li> <li>-Lubricating waste oil will be collected separately in drums and handed over to the authorized outside agency.</li> </ul>
Socio - Economic	<ul style="list-style-type: none"> <li>-Noise due to operation of DG Sets, Vehicular movement and construction machineries will disturb the neighborhood people</li> <li>-Positive impacts due to employment generation</li> </ul>	<ul style="list-style-type: none"> <li>-DG Sets will be used only during the Emergency.</li> <li>-Provision of Ear Plugs will be made in case of exposure to reduce the impact of noise on Ears of Workers can reduce the impacts.</li> <li>-Project construction activities will generate 43800 Man-hour employment.</li> </ul>



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<b>Environmental components</b>	<b>Impact</b>	<b>Proposed Mitigation Measures</b>
Ecology & Biodiversity	-Increase in PM level will result in deposition of dust on leaves which may cause decrease in Transpiration rate of flora.	-Water sprinkling will be done at the site to reduce dust emission. -All the construction activities will be carried out during the daytime. No activity will be done during late evenings which is the roosting time for the avian population and also during night time.
	-Increased noise will cause disturbance of existing avi-fauna; however, avifauna is not restricted to one place for a long time, thus it will not result in their displacement.	-All the machinery used will be provided with vibration isolators in accordance with their vibration generation.
Noise & Vibration	-Noise and vibration generated due to the operation of machinery and equipment may cause physiological and psychological effects on laborers like annoyance, problems like speech interference, sleep disturbance, headache, Auditory impact, increase in heartbeat of elderly people. Running of machinery will cause vibration generation in the immediate surrounding area.	-Noise & vibration due to the running of concrete mixture/Pneumatic hammer m/c will be prevented by Provision of protective devices like earmuff/plugs to the workers and keeping the machine in an enclosed system with a provision of vibration isolator. -Green belt in an area of 13.01 ha (34.9% of plot area) will act as a barrier and help in reducing noise levels at the project site as a result of attenuation of noise generated due to plant operations and transportation. -Less noise producing machinery will be purchased and shall be properly lubricated and regularly maintained.
Hydrology & Geology	None	None

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Environmental components	Impact	Proposed Mitigation Measures
Solid & Hazardous Waste	-Waste generated from construction machinery including waste oil, grease, and any other may cause nuisance if not maintained properly.	-All the waste generated will be properly disposed of as per solid waste management rules, 2016.

#### 4.2.4. Activity – Transportation (Raw Material, Labour)

##### Aspects

- Vehicular emission
- Diesel/petrol leakage
- Road congestion & breakage of roads
- Noise generation
- Dust Emission

Table 101. Transportation

Environmental Components	Impact	Proposed Mitigation Measures
Air Environment	-Emissions from vehicles used for transportation will affect the health of construction workers and nearby populations.	- Vehicles with valid PUC certificates will be used for transportation of construction material -Construction material shall be transported in closed and covered trucks. - Improved combustion efficiency, catalytic converters, and reformulated gasoline shall be used to reduce VOC emissions from vehicles. - Water sprinkling shall be carried out for dust suppression from movement of transport vehicles. - Plantation of trees around the project periphery will be carried out.

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<b>Environmental Components</b>	<b>Impact</b>	<b>Proposed Mitigation Measures</b>
Water Environment	-Leakage of Diesel/ petrol from vehicles, if in any case comes in contact with the water body then it may deteriorate the groundwater & surface water body quality. This in turn may affect aquatic life also.	- PUC certified vehicles will be used, so that diesel/ petrol leakage does not occur & air emissions will be maintained within the prescribed limit & thereby restricting its deposition on the water bodies.
	-Vehicular emission & dust emission if deposited over the surface of the water body may deteriorate the water quality and thereby affect aquatic life and make water unfit for consumption.	- The vehicles carrying construction material and construction debris will be cleaned before they are permitted to ply on the road and covered vehicles will be used to reduce the dust emission & thereby restricting its deposition on the water body. - Wheel washing arrangement of construction vehicles will be provided at site.
	-If raw material falls down near or on the water body it can deteriorate the water quality.	- Adequate drainage will be provided.
Land Use	None	None
Soil Environment	-Contamination of soil may occur due to Diesel/ petrol seepage into the soil if any spillage occurs or while refueling (Diesel/ petrol) of vehicles transporting construction materials and servicing of vehicles.	- Procedures for maintenance of vehicles would ensure that this risk is minimized, and clean-up response is rapid if any spill occurs. Lubricating waste oil shall be collected separately in drums and handed over to the authorized outside agency.

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<b>Environmental Components</b>	<b>Impact</b>	<b>Proposed Mitigation Measures</b>
Socio - Economic	-Due to the construction of the project there will be an increase in usage of vehicles which will have a direct impact on traffic load on the existing roads in the area. Due to which there will be a traffic jam, chaos, discomfort, safety issues on the roads.	- Existing road width is sufficient to handle the load of increased traffic. - Adequate temporary parking @ 15 truck parking, @50 Two wheeler parking will be provided.
	-Indirect employment generation due to transportation will be there, hence, the economic condition of their families will improve. The purchasing power of people will increase. Hence, there will be overall development of the area.	- There will be a positive impact due to increase in employment and other indirect requirements.
Ecology & Biodiversity	-None	- None
Noise & Vibration	-Due to transportation of construction materials and machinery for installation high levels of noise may be generated which may cause physiological & psychological effects.	- Barriers of noise absorbing materials with adequate height will be maintained throughout the boundary of the project site.
	-There will not be much impact due to vibration on the project.	- Green belt within the project site will be done which will dampen the noise.
Hydrology & Geology	-None	- None
Solid & Hazardous Waste	-Due to improper handling & transportation of raw material such as RMC & waste during transportation, littering of	- Proper care will be taken while handling & transportation of raw material such as RMC & waste during transportation to avoid littering of it on roads and sites.

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Environmental Components	Impact	Proposed Mitigation Measures
	waste will occur leading to unhygienic conditions.	

#### 4.2.5. Activity –Working & Daily Activity of Construction Labor

##### Aspects

- Vehicular movement of construction materials,
- Solid waste & E-waste generation,
- Water requirement & waste water disposal.

Table 102. Working & Daily Activity of Construction Labor

Environmental components	Impact	Proposed Mitigation Measures
Air Environment	- Biodegradable Waste generation may lead to odour problems if not stored properly & treated within time.	- The generated organic waste will be collected properly & will be treated in an inhouse OWC.
Water Environment	- For construction laborers (120 Nos.), 25 KLD of Domestic water shall be sourced through the groundwater supply and this will lead to 23.8 KLD of wastewater. If the waste water is not properly disposed off, then it can deteriorate the surface water quality of nearby water bodies.	- Domestic wastewater (23.8 KLD) will be generated from the plant and it will be sent to a mobile STP. - Temporary toilets & bathrooms will be made.
Land Use	- None	- None
Soil Environment	- Impact on soil due to improper disposal of solid waste & liquid waste.	- Solid waste generated during the installation phase will be treated in existing OWC.
Socio - Economic	- Improper disposal of Solid waste & wastewater from labors may cause nuisance due to smell if not properly managed & treated.	- The generated organic waste will be collected and disposed of in an existing OWC.
Ecology & Biodiversity	- None	- None

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<b>Environmental components</b>	<b>Impact</b>	<b>Proposed Mitigation Measures</b>
Noise & Vibration	- None	- None
Hydrology & Geology	- None	- None
Solid & Hazardous Waste	- Improper storage and disposal of Biodegradable waste will enhance the risk of microbial contamination and will enhance the risk of disease occurrence and cause foul smell. It will attract the vectors.	- Solid waste from the laborers will be properly collected, stored in respective color coded containers. - The generated organic waste will be collected properly and will be sent to the Solid waste Handling Site. -Recyclable materials like aluminum, steel, wood pieces, cement bags, plastic containers, cartons, glass etc. will be given to recyclers.

### 4.3. POTENTIAL IMPACT DURING OPERATION PHASE

#### 4.3.1. Activity – Loading, unloading & storage of raw material

##### Aspects

- Generation of dust particles from Coal, Iron Ore, Dolomite, Lime Powder and Scraps
- Generation of Noise
- Generation of Solid waste, packaging material
- Generation of empty barrels.

Table 103. Loading, Unloading & Storage of Raw Material

<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
Air Environment	- Point Source- Nil - Fugitive emission - Nil - Dust particle emission from material handling of Iron ore and coal. -	- Raw material dumping should be restricted to closed sheds. - Water sprinkling will be done for the dust suppression. - Loading or unloading activity will be mechanically supported.

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<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
Water Environment	- If dust particles are spread out in the neighborhood of the shed it may contaminate the water	- Dust particles and coal particles should not spill in water and soil. The storage of raw materials will be in a pucca earmarked area with flooring where washing will be done and washed water channelized to ETP. - Water sprinkling for dust suppression.
Land Use	- No impact	-
Soil Environment	- The dust if uncontrolled emission occurs over the neighborhood soil, will settle on the top soil.	- Periodic Sweeping of the surface - Periodic washing and washed water will be sent to ETP.
Socio-Economic	- The truck drivers and cleaners may create unwanted interaction with the neighborhood area.	- Restrooms for the truck drivers and other people also who are coming in the factory premises.
	- Traffic density will increase.	- Existing Perunagar Kaliyampoondi Road is 9.0 m wide, and has a carrying capacity of 2040 PCU/hr . Even after the expansion, the LOS will remain in "A" - As the plant will have 2.42 ha more additional parking area provided within its premises, there will be no impact on the Perunagar Kaliyampoondi Road.
Ecology & Biodiversity	- Vehicular emission like NO <sub>2</sub> , NO etc. can inhibit the growth of plants and premature leaves senescence.	- Water sprinkling is done to reduce dust generation.
Noise & Vibration	- Loading and unloading of raw materials will not cause much of a significant impact on noise level of the area, it may only cause physiological effects like annoyance to the workers. - Noise due to transportation	- Limited to plant area - Regular checking of PUC.

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<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
Hydrology & Geology	- None	- None
Solid & Hazardous Waste	- Improper handling of raw material may cause its littering thereby generating the waste.	- Solid waste generated from the site is collected and sent to an authorized recycler.

#### **4.3.2. Activity –Manufacturing Process**

##### **Aspects**

- Majorly the raw materials are in solid state, hence will generate dust particles.
- Sponge Iron production is coal based DRI process, with 480 TPD iron ore and 270 TPD Coal. This process will emit CO<sub>2</sub>, a greenhouse gas, and CO .
- Production process shall generate heat (1400 °C) from rotary Kiln however it will be localized. WHRB will be employed to effectively utilize the available heat energy.
- MS Billets and Structural Steels will be produced using MS Scrap, Dolomite and other alloying elements.
- The production process requires water for Spray cooling cooling tower and boilers and DM plant. Wastewater from these equipment @ 11 KLD , 10.5 KLD & 4.5 KLD - thus a total 26 KLD will be generated.
- Air Emissions classified as process emissions and utility emissions. Process emission stacks (5 Nos.)- Raw Material & Product Storage -I, Raw Material & product storage-II, Product Cooler Discharge in Kiln I & II, Product Cooler Discharge in Kiln III and Oil/Coal fired reheating furnace.
- Generation of fumes from coal firing.
- Generation of Solid & Hazardous waste from material handling, and residues.
- Generation of Noise & Vibration from machinery.



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Table 104. Manufacturing Process

Environmental Components	Impact	Mitigation Measures
Air Environment	- Emission from process.	<ul style="list-style-type: none"> <li>- Raw Material &amp; Product Storage -I will be provided with Bag Filters with a stack of 13 m.</li> <li>- Raw Material &amp; product storage-II will be provided with 02 Nos. of Bag Filters with individual stack of 14 m.</li> <li>- Product Cooler Discharge in Kiln I &amp; II will be provided with Common Bag Filter with stack of 14 m</li> <li>- Product Cooler Discharge in Kiln III will be provided with Bag filter with stack of 13 m</li> <li>- Oil/Coal fired reheating furnace will be provided with a Recuperator with a stack of 30 m.</li> <li>- Ambient air quality will be monitored regularly.</li> </ul>
	- Emission from DG sets	- Acoustic enclosures with stack of 30 m is provided for DG set
	- Dust emission during material handling.	- Water sprinkling during material handling activities will be employed to reduce and restrict dust emission locally

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<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
Water Environment	<ul style="list-style-type: none"> <li>- Fresh Water requirement will increase from 179 KLD to 543 KLD after expansion.</li> </ul>	<ul style="list-style-type: none"> <li>- TN-WRD permission is obtained for 700 KLD and valid from 16.03.2024 to 15.03.2025.</li> <li>- A Rainwater harvesting scheme will be developed to harvest 34.5 KL/day by installing RWS structures and Tanks. The same will be reused within the facility which will directly render a saving of 34.5 KL/day freshwater withdrawal from the ground.</li> <li>- In addition , surface level rainwater will be channelised through 155 Nos. Percolation pits which will aid in recharging the aquifer</li> </ul>
	<ul style="list-style-type: none"> <li>- Water sprinkling for dust suppression &amp; floor cleaning may lead to contamination of the groundwater and soil.</li> </ul>	<ul style="list-style-type: none"> <li>- Excess water in dust suppression activity and floor wash water will be collected and channelised to the proposed 40 KLD ETP for treatment and reuse. Hence , there will be no adverse impact over aquifer or soil.</li> </ul>
	<ul style="list-style-type: none"> <li>- Wastewater from process, plant and utilities (DM plant @ 4.5 KLD, Spray CT @ 11 KLD and Cooling tower and Boiler @10.5 KLD) will have a negative impact if discharged untreated.</li> </ul>	<ul style="list-style-type: none"> <li>- Groundwater recharging with rainwater harvesting during the rainy season.</li> </ul>
	<ul style="list-style-type: none"> <li>- Sewage generation will</li> </ul>	<ul style="list-style-type: none"> <li>- The existing STP of 30 KLD will be increased to 65 KLD to treat the</li> </ul>

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<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
	increase from 23.8 KLD to 32.6 KLD.	increased sewage during proposed expansion.
Land Use	- No Impact	-
Soil Environment	- No Impact	-
Socio-Economic	- Economic Impacts - Employment generation Impacts	- Revenue increase through increased - 50 permanent and 100 contractual employment will be generated.
Ecology & Biodiversity	- No impact	-
Noise & Vibration	- Noise: TMT mills, DG sets, Material Transportation.	- DG Sets will be installed with acoustic enclosures to maintain Noise levels less than 72 dB at 1m distance will have noise suppressors installed in the shed in order to localizes the noise pollution - Workers will be given a PPE/Ear muffler and controlled exposure will be allowed at a time period for 20 mins will be allowed - It will be re-checked and assured that mufflers systems will be installed in engines of machineries which helps in reduction of noise. - Machines and equipment will be properly greased, lubricated and regularly maintained and shall be provided with anti-vibration pads..
	Vibration: Due to machinery and DG sets.	- DG sets will be mounted over Anti-vibration pads.
Hydrology & Geology	- No impact	- No impact

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Environmental Components	Impact	Mitigation Measures
Solid & Hazardous Waste	- Process residues, slags, STP sludge, discarded barrels, used oil, etc. will be impacting the workers and nearby villagers	- Proper care will be taken while handling & transportation, PPE will be used. - Biodegradable MSW @170 kg/day will be disposed off by Inhouse OWC, and non- biodegradable waste @ 300 kg/day will be sold to authorized recyclers. - Hazardous waste @ 2.0 T/Y spent oil and @ 130 T/Y Discarded barrels will be recovered and reused or to CPCB authorized recyclers, @0.95 T/Y ETP Sludge will be sent to common TSDF of TNWML @1.50 TPM waste or residues containing oil will be sent to common TSDF of TNWML.

#### 4.3.3. Activity – Operation of Utility Equipment (DG set, STP, ETP, Boilers, etc.)

##### Aspects

- Operation of 1 No. FBC Boilers, 3 No. WHRB Boilers, 1 No. of Induction Furnace, 1 No. steel rolling mill, 30 KLD STP.
- Utility Emission stacks (07 Nos. Existing, 02 Nos. Proposed)- Kiln I & II with 2 Nos. of WHRB, Kiln III with WHRB, FBC Boiler, 3 Nos. DG Sets of 600 kVA & , 1 No. Induction Furnace 30 Ton. Proposed utility stacks: DG set 1500 kVA, Induction furnace (30T-1 No.).
- DM water plant for the supply of DM water.

Table 105. Operation of Manufacturing Machinery & Equipments

Environmental Components	Impact	Mitigation Measures
Air Environment	- Emission from utilities.	- Kiln I & II with 2 Nos. of WHRB will be provided with Individual ESP for Kiln I & II (WHRB) provided with a common stack of 40 m. - Kiln III with WHRB will be provided with ESP with a stack of 40 m. - Fluidized Bed Combustion Boiler

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Environmental Components	Impact	Mitigation Measures
		<p>will be provided with a stack of 54 m.</p> <ul style="list-style-type: none"> <li>- 3 no. of DG set of 600 kVA will be provided with individual acoustic enclosures with a stack of 4 m.</li> <li>- Induction furnaces will be provided with 06 Nos. of bag houses fitted with a common stack of 45 m.</li> </ul>
Water Environment	<ul style="list-style-type: none"> <li>- Utilisation of water may impact the water demand of the vicinity and Improper disposal of waste water generated may affect the quality of nearby surface water body &amp; ground water.</li> <li>- The wastewater if not properly disposed off, then it can deteriorate the surface water quality of nearby water bodies by increasing the no. of pathogens, BOD, COD, TSS etc and making water unfit for consumption. It will also affect aquatic life.</li> </ul>	<ul style="list-style-type: none"> <li>- The process wastewater generated @ 26 KLD will be sent ETP and sewage water @ 32.6 KLD will be treated STP and treated water will be used in the process and greenbelt development.</li> <li>- Groundwater recharging with rainwater harvesting during the rainy season.</li> </ul>
Land Use	- None	- None
Soil Environment	- None	- None
Socio-Economic	- None	- None
Ecology & Biodiversity	-	-
Noise & Vibration	- During the operation of machinery, noise and vibration may be generated from the	- Machineries of the reputed make and less noise producing will be purchased.

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Environmental Components	Impact	Mitigation Measures
	<p>machineries which may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure in the workers.</p>	<ul style="list-style-type: none"> <li>- Stationary machineries and equipment will be properly enclosed by enclosures and provided with dampeners for minimizing noise generated due to vibration of machineries.</li> <li>- Sufficient oiling and lubrication will be done to all the parts of the machineries to ensure that minimal noise is generated.</li> <li>- Green belt/greenery will be developed along most of the periphery of the project area as well as along roads. Green area in the plot is 13.01 ha (34.91% of plot area).</li> </ul>
Hydrology & Geology	-	-
Solid & Hazardous Waste	<ul style="list-style-type: none"> <li>- ETP sludge, discarded barrels, used oil, residues containing oil, etc. will be impacting the workers and nearby villagers</li> </ul>	<ul style="list-style-type: none"> <li>- Hazardous waste @ 2.0 T/Y spent oil and @ 130 T/Y Discarded barrels will be recovered and reused or to CPCB authorized recyclers, @0.95 T/Y ETP Sludge will be sent to common TSDF of TNWML @1.50 TPM waste or residues containing oil will be sent to common TSDF of TNWML.</li> </ul>

#### 4.3.4. Activity – Transportation of Raw material, finished product, waste, etc.

##### Aspects

- Vehicular Emission and Dust emission
- Littering of solid waste
- Road congestion & Breakage of roads
- Noise Generation
- Spillage/leakage of raw material

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Table 106. Transportation of Raw Material, Finished Products, Wastes, etc.

Environmental Components	Impact	Mitigation Measures
Air Environment	<ul style="list-style-type: none"> <li>- Gaseous emissions from vehicles used for transportation will affect the respiratory health of staff and nearby population.</li> </ul>	<ul style="list-style-type: none"> <li>- Vehicles with valid PUC certificates are being used for transportation.</li> <li>- Tree Plantation all around the periphery has been done.</li> <li>- Proper maintenance of vehicles are done periodically to ensure no leakage from the vehicles</li> <li>- Vehicular transportation is done shift wise in order to reduce the stress on the roads</li> <li>- Proper maintenance and cleaning of vehicles and tyres are done in order to reduce dust generation.</li> <li>- The transportation of the raw material, &amp; products is being done in covered trucks &amp; tempos.</li> </ul>
Water Environment	<ul style="list-style-type: none"> <li>- If dust emitted or spillage/leakage gets deposited on the water body it can deteriorate the water quality.</li> </ul>	<ul style="list-style-type: none"> <li>- Trucks used are fully covered during transportation to the project by road.</li> </ul>
Land Use	None	None
Soil Environment	-	-
Socio-Economic	<ul style="list-style-type: none"> <li>- Dust and emission from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site.</li> <li>- Traffic congestion in the area.</li> </ul>	<ul style="list-style-type: none"> <li>- The present road conditions are reasonably good for proposed movement of traffic, the site is connected to the National Highway.</li> <li>- Preventive maintenance is carried out for vehicles and pollution checks on a periodic basis.</li> <li>- Materials transported are fully covered during transportation to the project site by road.</li> </ul>

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<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
Ecology & Biodiversity	- Increased noise due to vehicular transportation will cause disturbance of existing avi-fauna, however, avifauna is not restricted to one place for a long time, thus it will not result in their displacement.	- Water sprinkling is being done to reduce the dust generation - Vehicular movements for transportation of raw material are carried out only in day-time and try to avoid unnecessary honking with the help of sign boards.
Noise & Vibration	- Due to transportation of construction materials and machinery for installation high levels of noise may be generated which may cause physiological & psychological effects on workers like annoyance, speech interference, headache, Auditory impact, increase in heartbeat of elderly people. - There will not be much impact due to vibration on the project.	- Silencers are checked in the vehicles used for transportation of materials. - No honking zone is maintained. - Reverse horn in the transportation vehicles is banned. - Only PUC certified vehicles are allowed for transportation - Maintenance of vehicles is done on a regular basis. - Tree Plantation within the project site has been done which will dampen the noise.
Hydrology & Geology	-	-
Solid & Hazardous Waste	-	-

#### 4.3.5. Activity - Working & Daily Activity of Staff, Visitors

##### Aspects

- Solid & e-waste generation
- Water requirement & wastewater generation

Table 107. Working & Daily Activity of Staff, Visitors

<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
Air Environment	- Biodegradable Waste generation may lead to odour problems if not stored properly.	- Biodegradable waste is Treatment in inhouse organic waste converter (OWC) and use manure for



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<b>Environmental Components</b>	<b>Impact</b>	<b>Mitigation Measures</b>
		horticulture development purposes in the premises.
Water Environment	<ul style="list-style-type: none"> <li>- Waste water, if not properly disposed of, can deteriorate the surface water quality of nearby water bodies.</li> <li>- The abstraction of groundwater is proposed for the project, hence there will be impact on Groundwater of the area.</li> </ul>	<ul style="list-style-type: none"> <li>- The total water requirement for the operational industry is 597 KLD out of which fresh water requirement is 543 KLD &amp; treated water (ETP &amp; STP water combined) is 54 KLD. Fresh water will be used @ 36 KLD for domestic purposes, 45 KLD will be used in DM unit, 110 KLD will be used in spray CT, 205 KLD in cooling tower and boiler, 38 KLD will be used in RM unit and 109 KLD in CCM unit. ETP treated effluent will be used @12 KLD in RM unit and CCM respectively. STP treated water will be used @ 8 KLD in Gardening.</li> </ul>
Land Use	- None	- None
Soil Environment	- None	- None
Socio-Economic	- Direct & indirect employment generation	- None
Ecology & Biodiversity	- No significant impact	- None
Noise & Vibration	- No significant impact	- None
Hydrology & Geology	- Infiltration of silt and sand may occur with improper stormwater harvesting	<ul style="list-style-type: none"> <li>- The rainwater from part of rooftops is diverted using rain water pipes to the surface and via a storm water drain network.</li> <li>- Proper closed channelization will be done.</li> </ul>
Solid & Hazardous Waste	- Improper storage and disposal of Biodegradable waste will enhance the risk of microbial contamination, population.	- Total solid waste generated from the plant is 470 kg/day); out of which 170 kg/day is biodegradable waste (will be Treatment in inhouse

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Environmental Components	Impact	Mitigation Measures
	<ul style="list-style-type: none"> <li>- Improper storage and disposal of MSW waste, will enhance the risk of disease occurrence and cause foul smell. It will attract the vectors.</li> </ul>	<p>organic waste convertor (OWC) and use manure for horticulture development purposes in the premises) and 300 kg/day is non biodegradable waste (given to authorized recycler). STP Sludge generated from wastewater @ 2.6 kg/day will be used as manure in greenbelt development, and @144 TPA of slag will be reused in the process.</p>

#### 4.4. SUMMARY OF IMPACT & MITIGATION

##### 4.4.1. Air Environment

The project activities which would increase the emission of Volatile Organic Compounds (VOC's), SO<sub>2</sub>, CO<sub>2</sub>, PM, SO<sub>2</sub>, NO<sub>2</sub> generation, dust generation which could lead to an increase in ground concentration level (GLC), respiratory problems, damage to flora and fauna and aesthetic properties in the environment and increase the level of toxic chemicals to other aspect of environment indirectly. To check such impacts, APCS like bag filters with adequate stack height, Recuperator with adequate stack height, ESP with adequate stack height, etc., are being installed. Plantation of trees, installation of water sprinkling systems and dust compression systems in the nearby areas, provision of proper nose masks to laborers, Vehicles with valid PUC certificates will be used for transportation etc. shall be done. Vehicles with valid PUC certificates will be used for transportation of construction material, raw material, waste and finished products.

##### 4.4.2 Water Environment

The activities which would probably pose an impact on the water environment would be the manufacturing process, operation of machinery & equipment, working & daily activities of staff, visitors, transportation. The aspects of the activities may be the generation of waste water, scarcity of water, depletion of water table and deterioration of water quality which could lead to deterioration of aquatic life, generation of water-borne diseases to nearby populations. The total water requirement for the operational industry is 597 KLD out of which fresh water requirement

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is 543 KLD & treated water (ETP & STP water combined) is 54 KLD. Fresh water will be used @ 36 KLD for domestic purposes, 45 KLD will be used in DM unit, 110 KLD will be used in spray CT, 205 KLD in cooling tower and boiler, 50 KLD will be used in RM unit and 121 KLD in CCM unit. Treated effluent @24 KLD will be reused in the process. Treated sewage @30 KLD water will be used in greenbelt development.

To reduce the impact on groundwater, a rainwater harvesting system and stormwater recharge pits will be implemented.

#### **4.4.3 Soil Environment**

The major activities which would negatively impact the soil environment would be loading & unloading of raw material, manufacturing process of product, operation of machinery (Boiler, DG sets, Induction furnace, Rolling Mills, ETP, STP, etc.), handling of raw material, transportation of raw material, finished product and waste. The aspects of the activities would be soil erosion, waste generation and spillage of hazardous wastes or chemical on the soil which could lead to permanent damage to land productivity, destabilization of landscape, decrease in permeability, damage to fertility of soil, chemical degradation and indirect negative impact on other aspects of environment like Air, Water & Ecology and Biodiversity.

Due to construction activity, soil fertility will not deteriorate, however periodically monitoring of soil quality will be conducted. C&D will be either disposed off weekly to the C&D Waste site or utilized in internal road formation for the proposed expansion. Solid waste generated during the installation phase will be treated in existing OWC. Contamination of soil may occur due to Diesel/ petrol seepage into the soil if any spillage occurs or while refueling (Diesel/ petrol) of vehicles transporting construction materials and servicing of vehicles. Procedures for maintenance of vehicles would ensure that this risk is minimized, and clean-up response is rapid if any spill occurs. Lubricating waste oil shall be collected separately in drums and handed over to the authorized outside agency. Vehicles will not be allowed to get fuelled within the site. SOP to that effect will be implemented..

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#### **4.4.4 Socio-Economic**

Aspects of project activities which would be dust emission, waste generation and socio-economic conditions in the nearby area which could impact to the extent of annoyance, loss of life respiratory problems to nearby population further, positive impacts include an increase in employment and revenue generation among the population in the nearby area. To minimize negative impacts, mitigation measures like proper air pollution control systems will be used, effluent treatment by ETP will be provided and industrial activities will be restricted and limited only to the project area. Proper segregation of waste, good housekeeping, maximization of employment to locals, proper treatment and disposal of all wastes generated from the plant would also be adopted in the area. All the safety measures will be followed and a safety data sheet will be provided.

#### **4.4.5 Ecology & Biodiversity**

The major activities which would have an impact on the Ecology and Biodiversity in the project area and the surroundings would be site preparation, excavation, manufacturing process, operation of machinery & equipment, transportation, loading & unloading of raw material. The aspects of the activities would be dust emission, increase in GLC, increase in noise level, soil erosion, noise generation, water contamination, vehicular emission and waste generation which would directly /indirectly impact in decrease in transpiration rate of flora, loss of habitat, decrease in plant/tree cover, disturbance to avi-fauna and other species, premature senescence of floral species and hence decrease in population of local faunal species in the area and the surroundings. To minimize such impacts, mitigation measures like provision of air pollution control equipment, scrubbing system to the vents, provision and proper maintenance of green area, installation of water sprinkling systems and dust suppression systems, provision of noise barriers, maintenance of vehicular movement near the project site and proper disposal and treatment of wastes generated from the project site. Vehicular movement for transportation of raw material will be carried out only in day-time and will try to avoid unnecessary honking with the help of sign boards. Green belt/greenery will be developed along most of the periphery of the project area as well as along roads.

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#### **4.4.6 Noise and Vibration**

The major activities which would have an impact on the environment would be operation of machinery and transportation. The aspects of the activities would be an increase in noise level and increased noise generation which could lead to physiological and psychological problems to workers and nearby population, increased vibration in the nearby areas and an indirect decrease in the biological diversity in the nearby area. To minimize such impacts, mitigation measures like silencers are checked in the vehicles used for transportation of materials, No honking zone will be maintained, Reverse horn in the transportation vehicles will be banned. Only PUC certified vehicles are allowed for transportation, maintenance of vehicles is done on a regular basis. Machineries of the reputed make and less noise producing will be purchased. Stationary machineries and equipment will be properly enclosed by enclosures and provided with dampeners for minimizing noise generated due to vibration of machineries. Sufficient oiling and lubrication will be done to all the parts of the machineries to ensure that minimal noise is generated. Green belt/greenery will be developed along most of the periphery of the project area as well as along roads. Green area in the plot is 13.01 ha (34.91% of plot area).

#### **4.4.7 Hydrology and Geology**

The major activities which would have an impact on the hydrology and geology would be excavation, manufacturing process, operation of machinery & equipment, working of daily activity of laborers, staff and visitors and transportation. The aspects of the activities are generation of Solid Waste, E-Waste and Bio-Medical Waste, Wastewater generation, spillage/leakage of waste/chemical which would impact in deterioration of water quality (in both Surface Water and Groundwater). To minimize such impacts, mitigation measures proper channelization of waste water and proper disposal, all probable leakage areas such as pipelines, joints, pumps and structure of reactor/ storage vessel inspection, installation of leak Detector(s), case of spills of chemicals, dry adsorbents/cotton shall be used for cleaning instead of water and Proper treatment and disposal of Waste water shall be adapted in the project site.

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#### **4.4.8 Solid and Hazardous Waste**

The solid wastes generated from the expansion units will be utilized for beneficial purposes. The Company has assured that it will not dump the solid wastes inside the plant premises or on any land outside the plant premises.

The Hazardous Wastes that will be generated from the expansion units will be disposed of in a scientifically acceptable manner, after obtaining authorization from TNPCB, as per Rules. The wastes will be collected in drums and stored at an earmarked place in a covered shed. The storage will be done for a maximum 90 days and thereafter given to TSDF or sold to authorized re-processors. The details of hazardous wastes are given below:

Item 5.1: Spent / used Oil: 2 T/Y (collected in drums and Recover & Reuse/CPCB Authorized recyclers)

Item 5.2: Waste or residues containing Oil: 1.50 T/Y (Send to common TSDF of TNWML, Gummudipoondi for incineration)

Item 33.3: Discarded Barrels: 130 T/Y (Recover and Reuse-Captive)

Item 35.3: ETP Sludge: 0.95 T/Y (CHWTSDF).

#### **4.4.9 Traffic Density**

The activities which would probably be responsible for traffic congestion would be transportation of raw materials and products for which trucks and tempo will be used. Traffic to the different sites during construction/installation will be intensive and heavier than at present in normal operating conditions. The aspect of the activities would be generation of dust from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site. In turn, it will subject existing roads to more stress. To control the impact, dust suppression systems (water spray) will be used as per requirement at the construction site. Construction materials will be fully covered during transportation to the project site by road. Vehicle flow during shift changes will be regulated by allowing exits in a phased manner. The present road conditions are reasonably good for proposed movement of traffic. Preventive maintenance will be carried out for vehicles and pollution checks on a periodic basis

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will be mandatory. All the activities will be done for a limited period of time. The traffic survey for the proposed unit was conducted and detail is given in Chapter 3 Section 3.13.

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## 5. ANALYSIS OF ALTERNATIVES

### 5.1. SITE SELECTION

Proposed project aims to increase production of MS Billets & Rolled products from 300 TPD to 1600 TPD. It is proposed to be realized by expansion of existing Plant area and by installing additional Machineries and utilities within the existing Sponge Iron Plant. However, the assessment for the site is presented below:

- **Land/Site :** Proposed expansion requires installation of 1 No. of 30 T induction furnace, 1000 TPD TMT Mill along with 65 KLD STP and 40 KLD ETP along with additional utilities and facilities. Locating the new TMT Bar Mill and Other Structural steel mill along with the existing Sponge Iron and Structural steel plant will be more advantageous in terms of utilizing existing infrastructure available.
- **Facilities & Utilities:** Already the existing plant has got all the facilities and utilities available for the proposed expansion. There will be 2 Nos. of Pump House, 2 Nos. of Cooling Tower, 1 No. of CCM Machine Stand and 5 Nos. of EOT Cranes to cater the proposed expansion.
- **Power :** Power requirement will be met from existing 11.0 KV transformer & also there will be addition of 110.0 KV transformer replacing 33 KV existing transformer and 17.5 MW of power supply from TANGEDCO. Also, there will be addition of 1 No. of DG set of 1500 kVA as a back-up source for power.
- **Water:** The fresh water requirement due to the proposed expansion will increase from 179 KLD to 543 KLD.
- **Employment Generation :** The project is located in a non-notified industrial area but it is providing 50 Nos. of permanent employment and 100 Nos. of temporary employment for the proposed expansion.
- **Greenbelt:** The green belt area is increasing from 7.21 ha to 13.01 ha (34.91% of total land area) after the proposed expansion, to maintain good air quality.
- The site is well connected with roads and railway networks.
- No Rehabilitation and Resettlement is required.



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Considering the above mentioned advantages of the project location the existing site has been considered for the proposed expansion. This would also give benefits in utilizing the existing utilities and infrastructure within the project site to have minimal environmental and social footprints.

## **5.2. TECHNOLOGY**

Company is fully committed to the improvement of technology to achieve conservation, safety, and environmental sustainability.

### **Analysis of Alternative Technology**

There will be no increase in the production of DRI Sponge Iron ;MS Billet production and structural steel capacity will be increased . The proposed plant will deploy :

- The unit will adopt the best technology available so far in the market for the manufacturing of proposed products to achieve maximum yield with minimum pollution generation and emission.
- Industry is very concerned and conscious about the product quality and equally about the environmental protection and resource conservation; and hence, Industry will put continuous efforts for replacing/ upgrading plant and machinery from time to time with the best available technology.

## 6. ENVIRONMENTAL MONITORING PROGRAM

### 6.1. DETAILS OF MONITORING TO JUDGE EFFECTIVENESS OF MEASURE

To check the efficiency of the system with proposed modifications a regular monitoring programme has been drawn. The program has been outlined for the construction and operation phase. In order to facilitate this, the regular site inspections and their noting will be documented by the PP/Contractor. The organizational structure (Environment Management Cell or EMC) of the M/s Noble Tech Industries Pvt. Ltd is discussed in Chapter 10.

#### 6.1.1. Construction Phase

Periodic monitoring of the below mentioned parameters will be done once the industry commences construction.

Table 108. Environment Monitoring Plan-Construction Phase

Sr. No.	Type of Monitoring	Frequency of Monitoring	Parameter	Location	No. Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility
1	Ambient Air Quality	Six Monthly	Particulate Matter (PM <sub>2.5</sub> ) Particulate Matter (PM <sub>10</sub> ) Sulphur Dioxide (SO <sub>2</sub> ) Nitrogen Oxides (NO <sub>x</sub> ) Volatile Organic Compound (VOCs) Carbon monoxide (CO)	2 in Core Zone and 4 in buffer zone	12	5500	66000	-EMC (Air Incharge) & Contractor
2	Stack emission for point sources	Six Monthly	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs,	1 No. - DG Stack	2	500	1000	-EMC (Air Incharge) & Contractor
3	Water Quality for drinking	Six Monthly	All parameters mentioned in IS:10500	One drinking water sample	2	7500	15000	-EMC (Water Incharge) & Contractor

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Sr. No.	Type of Monitoring	Frequency of Monitoring	Parameter	Location	No. Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility
	water							
4	Water Quality for Construction purpose	Six Monthly	All parameters mentioned in IS:456	One construction water sample	2	7500	15000	-EMC (Water Incharge) & Contractor
5	Ambient Noise Level	Six Monthly	Day and Night noise level	2 Locations	4	2000	8000	-EMC (Noise Incharge) & Contractor
6	DG Set Room Noise Level	Six Monthly	-	None as DG set shall be used as stand-by power	0	0	0	-
7	Soil Quality	Six Monthly	All parameters to check soil Fertility	Two Locations in core zone and 4 locations in buffer zone	12	4000	48000	-EMC (Soil Incharge) & Contractor
<b>Total Cost (Rs)</b>							<b>153000</b>	<b>-</b>

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### 6.1.2. Operation Phase

The periodic monitoring schedule is mentioned below in the table.

Table 109. Monitoring Plan-Operation Phase

Monitoring	Frequency of Monitoring	Parameters	Location	Numbers Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility	Records to be maintained
<b>Air &amp; Stack</b>								
Ambient Air Quality	Monthly	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , VOCs	2 Onsite Location	24	5500	132000	-EMC (Air Incharge) -External Laboratory analyst & incharge	NABL Accredited Lab Result
Process Stack	Monthly	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , VOCs	5 No. of Stack	60	6500	390000	-EMC (Air Incharge) -External Laboratory analyst & incharge	NABL Accredited Lab Result
Utility Stack	Monthly	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , VOCs	8 No. of Stack	96	600	57600	-EMC (Air Incharge) -External Laboratory analyst & incharge	NABL Accredited Lab Result
Operational hrs of DG sets, Boilers, Induction Furnaces	Monthly Verification during Audit	Operational hrs and the exit velocity	4 No. of DG Sets, 4 No. of Boilers, 2 No. Induction Furnace	120	500	60000	-EMC (Air Incharge) -3 <sup>rd</sup> Party environment consultant	Log books
<b>Water &amp; Wastewater</b>								

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Monitoring	Frequency of Monitoring	Parameters	Location	Numbers Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility	Records to be maintained
Water Quality	Monthly	Monitoring for relevant parameters as per Drinking water standard IS – 10500	Groundwater: Open well & Borewell	84	7500	630000	-EMC (Water Incharge) -External Laboratory analyst & incharge	NABL Accredited Lab Result
Waste Water Quality (Treated & Untreated)	Monthly	<b>Daily</b> -BOD, COD, TSS, TDS, pH, Oil & Grease <b>Monthly</b> - Toxicity test/Bioassay and Parameters as given in the Standards for Organic Chemical Manufacturing Industry (GSR 608 (E) dated 21st July 2010	ETP Inlet & Outlet, STP Inlet & Outlet	48	6000	288000	-EMC (Water Incharge) -Internal Laboratory analyst & incharge for daily parameters -External Laboratory analyst & incharge for monthly parameters	NABL Accredited Lab Result & Logbooks
<b>Noise</b>								

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Monitoring	Frequency of Monitoring	Parameters	Location	Numbers Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility	Records to be maintained
Day & Night level Noise Monitoring	Monthly	Leq (night), Leq (day), Leq (24 hourly)	2 Onsite Location	24	2000	48000	-EMC (Noise Incharge) -External Environmental consultant	NABL Accredited Lab Result
<b>Soil</b>								
Qualitative and Quantitative Parameters	Monthly	All Parameters to check soil fertility	1 Onsite Location	12	4000	48000	-EMC (Soil Incharge) -External Environmental consultant	NABL Accredited Lab Result
<b>Waste Generation Monitoring / Record Keeping</b>								
Records of generation, handling, storage, transportation and disposal	Monthly	Hazardous, Non Hazardous, E-waste, Organic waste, Recyclable Waste	-	12	500	6000	-	Logbooks
Sludge Characteristics and Quantity	Characteristics - Monthly Quantity - daily	TCLP Test and Quantity	ETP Sludge, STP Sludge	24	5000	120000	-External Laboratory analyst & incharge	NABL Accredited Lab Result
<b>Ecology and Biodiversity Monitoring</b>								
Green belt & plantation	Six monthly	Survival rate of the planted	-	2	30000	60000	EMC (gardener) -External	Logbooks

Environmental consultant M/s Perfect Enviro Solutions Pvt. Ltd.

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Monitoring	Frequency of Monitoring	Parameters	Location	Numbers Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility	Records to be maintained
monitoring		Trees, Greenbelt development status						
<b>Social Monitoring</b>								
Checking Effectiveness of the Corporate Social Responsibility/ Corporate Environmental Responsibility	Annual	Cost spent and where it is carried out	-	1	30000	30000	CSR Team	Audit Reports
<b>Power and Energy Monitoring</b>								
Energy savings	Annual	Energy consumption in terms of 1. Quantity of fossil fuels 2. Power drawn Renewable energy 1. Solar harvesting 2. use of	-	1	50000	50000	Utility Team	Energy meter

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Monitoring	Frequency of Monitoring	Parameters	Location	Numbers Per Year	Unit rate (Rs)	Cost (Rs)	Responsibility	Records to be maintained
		Alternate source of energy						
<b>Work Zone Monitoring</b>								
Work Zone	Monthly	PM10, PM2.5, SO2, NOX, CO2, CO & VOCs.	Process Area, DG Set Area, Raw material and finished good Storage Area	12	20000	240000	-External Laboratory analyst & incharge	NABL Accredited Lab Result
<b>Sum Total. (Estimates)</b>						<b>2159600</b>	-	-



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## **6.2. SUBMISSION OF SIX MONTHLY COMPLIANCES**

As per the standard environment clearance conditions, six monthly compliances of the conditions mentioned in the EC letter will be submitted to various concerned officials of MOEF, SPCB and Regional office of CPCB. These compliances will be submitted in the months of June and December for the periods April to September and October to March respectively every year for construction phase until the construction is completed and operation phase for the life of the project.

## **6.3. ENVIRONMENT AUDIT**

Annual Environment Audits with Form V statements will be regularly conducted to check the compliance of environmental conditions for the operational industry to MoEF&CC R.O.

## **6.4 COMPLIANCE OF ENVIRONMENTAL APPROVALS**

### **6.4.1. Environment Clearance**

The existing plant is operational with latest Consent to Operate (CTO) issued vide TNPCB Consent No. 2404258959544 under Air Act & TNPCB Consent No. 2404158959544 under Water Act dated 02.05.2024 from TNPCB. The project is going for a fresh Environment Clearance for the proposed expansion.

### **6.4.2. HW Authorisation/Disposal**

For the safe disposal of the Hazardous waste, TNPCB-Hazardous Waste Authorization vide No. 21HFC12957693 dated 24/10/2021, valid upto 31/03.2026.

### **6.4.3. TN-WRD Clearance**

TNWRD Renewal NOC vide Certificate No. 305/2024 (R-3) dated 08.05.2024 for drawal of the total quantity of 700 KPD of groundwater for the purpose of “Industry (Steel Manufacturing Industry)” from the ground water structures (05 Nos. of open wells and 02 Nos. of bore well). The renewal certificate is valid from 16.03.2024 to 15.03.2025.

### **6.4.4. Conservation Plan**

There are 13 schedule -I Species found in study area i.e. *Felis chaus* (Jungle Cat), *Macaca radiata* (Bonnet Macaque), *Urva auropunctatus* (Small Indian Mongoose), *Urva edwardsii*

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(Indian Grey Mongoose), *Accipiter badius* ( Little Banded Goshawk), *Gallus sonneratii* (Gray Junglefowl), *Pavo cristatus* (Indian Peafowl), *Chamaeleo zeylanicus* (Indian Chameleon), *Daboia russeli* (Russell's Viper), *Eryx johnii* (Red Sand Boa), *Naja naja* (Cobra), *Ptyas mucosa* (Rat Snake), *Varanus bengalensis* (Bengal Monitor). Conservation plan has been drafted.

#### **6.4.5. Forest Clearance**

No forest land involved. Hence, Not Applicable.

#### **6.4.6. Annual returns**

The Proponent with the help of 3rd party Environmental consultants will annually submit the Environment Audit with the Form V statement, FORM 13 of Hazardous waste, CTO Compliance. Similarly, six monthly EC compliance will be submitted to MoEF&CC R.O. and Regional State Pollution Control Board (Tamil Nadu) after the grant of the Environmental clearances.

The industry will have the well-defined Environmental Management Cell (EMC) for the communication with internal and external Stakeholders. The detailed existing reporting mechanism with the role and responsibilities is given in Chapter 10 Section 10.2.1.

## **7. ADDITIONAL STUDIES**

### **7.1. INTRODUCTION**

As per the Terms of Reference issued vide letter No IA-J-11011/329/2022-IA-II (IND-I) dated 09/05/2023 by Ministry of Environment, Forest, and Climate Change (MoEFCC), New Delhi following Additional Studies required to be carried out for the proposed expansion project.

- Hazard Identification and Risk Management; and
- Risk Assessment and Disaster Management Plan.
- Study On Decarbonisation Program

### **7.2. PUBLIC CONSULTATION**

Details will be incorporated after Public consultation.

### **7.3. RISK AND HAZARD**

#### **7.3.1 Definition**

**Risk** is a combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health that can be caused by the event or exposure(s).

**Risk assessment** is a process of evaluating the risk(s) arises from a hazard(s), taking into account the adequacy of any existing controls, and deciding whether or not the risk(s) is acceptable.

**Hazard** is a source, situation, or act with a potential for harm in terms of human injury or ill health, or a combination of these.

**Disaster** is a natural or man-made hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life or drastic change in environment.

#### **7.3.2 Study Methodology**

The Risk Assessment Methodology is primarily based on the likelihood of occurrence of the risk identified and their possible hazard consequences based on the professional/expert judgement & hypothetical scenarios. With respect to the proposed project, major risks associated like leaks,

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rupture of storage tanks have been assessed qualitatively and evaluated through a risk matrix generated to combine the risk severity and likelihood factor.

Hazard identification exercise is conducted taking into consideration of materials, material handling methods, and safety measures to be taken in the proposed plant. Containment failure scenario related to storage area is considered for hazard Analysis and consequences of such containment failures are considered in detail.

### **7.3.3 Hazard Identification**

The principal objective of the study is to identify the potential hazards from the proposed facility and estimate the effects of the hazards to people and property within the vicinity of the plant premises. The consequences resulting due to accidental release of flammable gases and leakage of fuels will provide data for developing strategies to prevent accidents right from design to operational phase. This will also generate information for formulating a meaningful Disaster Management Plan (DMP).

Typical methods for hazard identification employed are:

- Identification of major hazardous units based on Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 of Government of India (as amended in 2000)
- Identification of hazardous units and segments of plants and storage units based on relative ranking technique, viz. Fire-Explosion and Toxicity Index (FE&TI).

A preliminary hazard analysis shall be carried out to identify major hazards associated with storages in the facility, handling of Chemicals and Metals, and process involved for the production and Manufacturing of Metallurgical products like sponge Iron, Billets and Rolled products. Hazard Involved can be categorized into the following Categories as mentioned below as per the Technical Guideline Manual for Metallurgical Industry:

1. Physical Hazard
2. Mechanical Hazard
3. Ergonomic and Psychological Hazard
4. Frequent Accidental causes
5. Hazardous substances and waste
6. General Concerns

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Table 110. Hazard Categorization

S. No	Activity	Hazard
1	Loading/Unloading of materials by Trucks & Dumpers	Fall of material on person while unloading material from truck/dumper resulting in blunt injury. Toppling of vehicle resulting into fatal/major injury
		Collision of vehicle with people or hitting the structure resulting into fall of structure which may lead to serious / fatal injuries Accident
2	Material Handling by Cranes	Fall of materials resulting into Impact injury
		Spill-over of material and dust all around may cause breathing problems and eye problems.
3	Material handling by Belt conveyors	Belt breakage may cause major injury or fracture to the person meeting the mishap, Spillage of Material.
4	Material feeding in day bins.	Structural failure, Fall or Slip
		Dust pollution during material feeding; breathing problem.
5	Material feeding in charging hopper	Dust problem, Spillage of material
6	Charging of materials in Furnace	Burn injury due to hot gasses, hot metal / furnace eruption
		Electrocution.
7	Kiln / Furnace Operation	Charge Eruption, Burn injury, Heat stress, Fumes & Dust emission
		Electric shock by high voltage.
8	Scrap / Correction Material feeding to Furnace	Charge Eruption, Burn injury, Cut injury, Heat stress, Fumes & Dust emission
9	Furnace start up, tapping	Furnace puncture hot metal leakage, Hot material eruption, Heat stress resulting in fatigue.
		Over flow of hot slag & metal, Hot metal spillage -burnt injury
		Electrocution
10	Operation of the transformer	Electrocution, Burn injury and Transformer oil firing
11	Kiln & Furnace repair work	Deposited slag, loose castle may fall on workmen, Slip/ fall
		Exposure to furnace gasses while replacement of the contact clamp & Pr. Ring etc..

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S. No	Activity	Hazard
		Eye injury / infection, Burn injuries due to hot steam, Equipment water leakage.
12	Operation of LRF	Fall of material, Hot metal leakage,
13	Handling of hot metal cakes in finished yard	Heat stress, Respiratory problem due to fumes. Explosion in hot metal, Burn injury
14	Slag crushing	While crushing the induction furnace slag, may come in contact with eyes & causes eye injury,
		Fractures in other body parts due to fall & trip, hand fingers & leg toe injury while handling buckets/tubs.
15	Metal & slag loading /unloading.	Gantry Crane may hit the person, major Fracture/injury takes place, Fall/Slip
		Roll away or fall of Gantry crane due to heavy wind, burn injury, Cut injury.
16	Metal separation by jiggling m/c	Fall / slip causing fracture, blunt injury, hand Fingers & leg toe injury during handling metal/slag tubs
17	Material crushing by m/c (crushing m/c)	Fall of person, Electrocution, Eye injury, Caught in rotating machine parts, Respiratory disorder due to dust
18	Crusher operation	Fall of person, Electrocution, Eye injury, Caught in rotating machine parts, Respiratory disorder due to dust
19	Loading of materials in trucks	Fall & Slip hazard due to improper supervisions during loading
20	Work on gantry crane rail tracks	Accident on track or hit by crane movement may result impact injury, fracture or loss of organ
21	Maintenance of Idlers, Rollers.	Fall of Idlers, Rollers which make deep cuts.
22	Electric arc welding	Electric shock resulting muscle spasms or cardiac arrest, Exposure to welding arc resulting into arc eye or Cataract
		unconsciousness or severe burn injury, Fall at floor level resulting into blunt injury, Exposure to welding fumes during welding resulting into breathing difficulty or lung cancer
		Burn injury due to Contact with hot metals, contact with holder, welding sparks fallen on clothes and Fire hazard.
23	Gas Cutting set jobs	Burn injuries, Fall of cylinders while handling Fire / Explosion due to Backfire.
24	Grinding Operation	Electrocution, Eye injury due to flying spatters, Fire & High noise, Wheel breakage resulting into deep cut or injury

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S. No	Activity	Hazard
25	Running of Compressor	High noise resulting to hearing loss
26	Running of ID Fan	High noise resulting in hearing loss , Person may trap in rotating parts.
27	Unloading of hopper dust	Come in contact with heat dust Due to inhalation of dust lungs problem
28	Dismantling of filter bags	Come in contact with heat & dust, inhalation of dust may cause lungs problem
29	Unloading of dust from ash silo	Come in contact with heat & dust, inhalation of dust may cause lungs problem
30	Maintenance activity of Dewatering pump suction pipes	Fall of person in tank, slip/ fall.
31	Maintenance jobs of hydraulic equipment	Bursting of hydraulic hose & fire hazard Hit by pressurized oil jet Fall of material Fall, slip.
32	Cleaning of blowdown & cold water, hot water, dewatering & cooling tower tank.	Person fall from ladder result impact injury, Fall into cooling tower tank, Burn injury due to hot water
		During Cleaning of slippery floor person maybe slip result impact injury, fracture
33	Maintenance activity in softener plant /DM plant	Fire incident Slip / Fall injury.
34	Changeover of I.D.Fan	Come in contact with running equipment / rotating parts, sound pollution
35	Changeover of cold water	Failure of f/c running equipment due to drop in water pressures.
36	Changeover of hot water pumps	Failure of f/c running equipment due to drop in water pressures.
37	Transformer maintenance.	Fall, Slipped due to transformer oil, Electrical shock
38	Repairing of electrical appliances	Cut by running equipment. Electric shock resulting into muscular spasm
39	Working with electrical appliances	Electric shock resulting into muscular spasm, cardiac arrest, burn injury, Fire resulting into burn injury
40	Working at height for laying and welding of pipe.	Falling from height, Electrocutation during welding

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S. No	Activity	Hazard
41	Cleaning of Surge Hopper/ Ground Hopper	Head injury, dust exposure, Slip/ Fall
42	Replacement of blower	Falling from height, Exposure to furnace gases while replacement of the blower, Electric shock, Cut Injury, burn injury
43	Maintenance of EOT Crane	Falling from height, Electric shock & dust emission while cleaning
44	Maintenance of FDC motor	Falling from height, Electric shock, cut injury & dust emission while cleaning,
45	Maintenance of ID fan motor & Actuator	Falling from height, Electric shock, cut injury & dust emission while cleaning
46	Maintenance of DG set	Electric shock
47	Laying of Cable on Trays.	Falling from height, Electric shock, cut injury & dust emission while cleaning,

#### 7.3.4. Brief

By conducting a comprehensive risk analysis of the proposed expansion, potential hazards associated with the expansion were identified in the following section. This Hazard analysis enables the development of appropriate mitigation strategies, ensuring that the expanded plant operates safely, complies with regulations, and effectively addresses potential risk and hazards.

#### 7.3.5. Hazard Assessment and Evaluation

Hazard study for the expansion project was assessed and subsequently reviews were formulated. The following table (**Table 111**) shows the hazard categorization and subsequently the hazards for the project were calculated and control measures were suggested (**Table 112**).



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Table 111. Hazard Categorization

Sr. No.	S = Severity (Hazard Severity)	P= Probability (Probability of Hazard)	N=No. of persons will get affected	D=Asset Damage
1	1 = (unlikely to have an adverse impact on employee's safety and health)	1 = Less likely. Can occur once/once in a year	1 = 1 person	1 = Inside the premises, negligible impact, can be corrected immediately with less than Rs 1000 as correction expense
2	2 = Minor (unlikely to result in a near miss accident or to have a minor impact on employees health)	2 = May be possible. Exposure occurs few times in Quarter	2 = 2 Person	2= Can cause property damage which can be corrected with up to Rs 1 lakh expense
3	3= Moderate (likely to result in a near miss accident or to have a minor impact on employees health or first aid)	3 = Likely occurrence. Exposure occurs few times in a month.	3 = 5-10 person	3= Can cause damage resulting in stoppage of the production operation, with Rs. 5 to Rs.20 lakh as correction expense
4	4= Serious (Likely to result in an accident with minor injuries or to have a moderate impact on employees health or reportable accident)	4 = Likely occurrence. Exposure occurs few times in a week.	4 = More than 10 person	4= Can cause catastrophic damage within the premises with > Rs.10 lakh as correction expense
5	5= Extremely serious (likely to result in a serious accident or to have a serious impact on employees health or death)	5 = High probability. Occurs very frequently, many times in a Day. Highly certain, Constant and continuous exposure exists	5 = More than 50	5=Can cause damage to a property external to the premises - say outside surroundings

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Sr. No.	S = Severity (Hazard Severity)	P= Probability (Probability of Hazard)	N=No. of persons will get affected	D=Asset Damage
<b>Total Score= Total Risk Score (R) = Severity (S) x Probability (P) x No. Of Person affected (N) x Asset Damage (A)</b>				
	Significant Risk	=Total score=200 & >200		Instructions /Toolbox talk, Training & additional measures or Objectives and Programs to be formulated to reduce the risk level to tolerable levels.
	No significant Risk	= Total score <200		

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Table 112. Hazard Identification, Assessment and Evaluation Table

Sr. No.	Activity	Hazard	Risk Rating					Control Measures	Recommendations	Risk Rating				
			S	P	N	A	Total Risk (R)			S	P	N	A	Total Risk (R)
1	Unloading of Raw Material from Trucks	Fall from Height Fall of material causing injury to person. Crush Injury Leakage/Spillage of chemicals causing fire & explosion in case of flammable materials.	4	1	3	1	12	Trained & Experience persons are deployed. Required PPEs are provided. Work is planned during the daytime. SOP is made First aid boxes & safety showers are available. Fire Extinguishers are provided.	Toolbox talk to be given before start up. SOP to be modified for adding HES requirement. No hot work around the unloading area. Unloading to be started after parking the vehicle & driver remains out of the driver's cabin with the key. Training on "Safe Material Handling" to be imparted.	2	1	1	1	2

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Sr. No.	Activity	Hazard	Risk Rating					Control Measures	Recommendations	Risk Rating				
			S	P	N	A	Total Risk (R)			S	P	N	A	Total Risk (R)
2	Store of Raw Material.	Spillage & Leakage Fire & Explosion Fall of containers if stacked high. Inhalation of fumes.	2	1	2	2	8	Air Ventilators are provided on the roof. Fire Extinguishers are provided. No Electrical supply. Identification of chemicals displayed	Ventilation to be provided at ground floor level. Cautionary Sign Board indicating restricted entry, Hazardous properties to be displayed. Foam trolley with nozzle is to be provided. Spill control kit to be provided. Smoke detectors to be installed.					
3	Transportation of raw materials to the feeding floor using hoists.	Spill & leak Inhalation of vapor. Fire & Explosion Physically hazardous to person	2	2	5	1	20	Drums/containers are transported using a standard trolley. Hoist is dedicated for	Spill & leak kit is to be kept at site  SOP to be made.					

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Sr. No.	Activity	Hazard	Risk Rating					Control Measures	Recommendations	Risk Rating				
			S	P	N	A	Total Risk (R)			S	P	N	A	Total Risk (R)
								transport material. Trained & Experienced person. PPEs like dust						
4	Charging of Raw Material into reactors.	Explosion of vapor. al Injury Leak	2	4	4	3	96	Trained & Experienced person. SOP is available. PPEs like dust mask, Apron, Safety Gloves etc. being used. Supervision.	SOP to be reviewed & HSE requirement to be added. Spill leak kit to be made available. Fire blanket to be made available. Mechanical ventilation is to be provided.					

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### **7.3.6 Risk Mitigation Measure**

Identification of major hazards associated with storages and the processes of the plant. This is followed by consequence analysis to quantify these hazards. Finally, the vulnerable zones are plotted for which risk reducing measures are deduced and implemented. The Major aspects are described below:

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Table 113. Major Aspects and mitigation measures

Equipment	Process	Potential Hazard	Mitigation
Sponge Iron Kiln	Reduction of Iron Ore	Falling of Hot Mass & Dust	<ul style="list-style-type: none"> <li>Ensuring before opening the kiln bottom door, first clean the inner surface of the stack cap, such that the dust particles and hard clinkers which are deposited in the cap are dropped into the DSC.</li> <li>Ensure before opening the DSC bottom door to check the DSC bar position and condition and to clean the big block of constables or any hard clinkers which are blocking the dust flow passage to the wet scrapper chute.</li> <li>Ensure to clean the dust by opening the man hole provided in the chute and check the spiking rods and the screen. In-built safety systems are provided in the construction of furnaces with suitable refractory walls.</li> <li>Allow the wet scrapper to run to remove the sludge, then open the drain pipe of the wet scrapper, which is located at bottom on either side, pour sufficient water to clean the sludge and the slurry dust to flow through the drain pipe.</li> <li>Ensure to stop the wet scrapper and open the top plate to check the alignment, weak and tear of the plates and take necessary precaution against the excessive worn-out plate</li> </ul>
Sponge Iron Kiln	Reduction of Iron Ore	Air emission	Adequately designed ESP and other Air Pollution control systems will be provided with interlock to the kiln feeding system in order to prevent by passing of emissions through safety cap and also during non-operation of ESP or any other pollution control devices.
<b>Power plant</b>			

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Equipment	Process	Potential Hazard	Mitigation
Turbine	Convert pressure in the flue gas into Mechanical Energy	Mechanical & Fire Hazards Noise	Layout of Equipment / Machinery will be in accordance with factory and electrical inspectorate.
Generator	Convert Mechanical energy into electrical energy	Mechanical & Fire Hazards a) Lube Oil System b) Cable galleries c) Short circuits	Layout of Equipment / Machinery will be in accordance to factory and electrical inspectorate
		Noise	<ul style="list-style-type: none"> <li>● Acoustic enclosure</li> <li>● Isolated panel rooms</li> <li>● Special foundation with vibration absorbers</li> </ul>
Power Transformers	----	Fire and explosion	Automatic fire fighting systems will be provided. Isolated with fencing and restricted entry.
Switchyard	transformer	Fire	All electrical fittings and cables are provided as per the specified standards.
Switchyard control room		Fire in cable galleries and switch	
Coal storage shed	Storage of coal for 10 days requirement.	Fire and Spontaneous combustion	Coal storage yards will be continuously sprinkled with water with garden type sprinklers.
Coal handling bunkers	-	Fire and dust explosions	Continuous water sprinkling



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<b>Equipment</b>	<b>Process</b>	<b>Potential Hazard</b>	<b>Mitigation</b>
Compressor House	Plant operation	Governor failure due to the failure of pins and springs leading to opening of safety valves	The design precautions of safety will be followed in manufacture and erection of compressors.
Coal storage yard	Coal dust is combustible	Explosion Hazard	<ul style="list-style-type: none"> <li>● Coal storage shall be minimized</li> <li>● Coal piles shall not be located above heat sources such as steam lines.</li> <li>● motors.</li> <li>● All mechanical &amp; electrical equipment inside the coal storage area shall be approved for use in hazardous locations and provided with spark proof.</li> </ul>
STG, draft fans, soot blowing From boiler, ventilation pipes	Noise generated due to operation of STG, working of fans, ventilation system,	Noise hazard	<ul style="list-style-type: none"> <li>● Acoustic enclosures will be provided to STG.</li> <li>● Enclose fans, insulating ventilation pipes</li> <li>● use of dampeners.</li> </ul>
LDO /LSHS storage area	MS tanks	Fire & explosion	Precautions as per TAC and OISD will be implemented.
Failure of APCS	DUST / SMOKE	Air emission	<ul style="list-style-type: none"> <li>● Emergency alarm to be given to Villagers.</li> <li>● Interlocking system will be provided to APCS.</li> <li>● Water sprinkling arrangements</li> </ul>

## **7.4. DISASTER MANAGEMENT PLAN**

The purpose of this Disaster Management Plan (DMP) is to detail organizational responsibilities, actions, reporting requirements and support resources available to ensure effective and timely management of emergencies at or affecting any operation of proposed expansion. This will be achieved by.

- Describing procedures to deal with emergencies affecting personnel, equipment, third party contractors, local community and environment.
- Defining the role and responsibility of Incident Response Group (IRG) and others at the plant.
- Describing the external resources available to the IRG for use in an emergency and how these resources will be coordinated.
- This plan should recognize that.
- Incident Controllers will be authorized to initially control and contain any and all emergency situations.
- The Site Controller will be authorized to coordinate strategic response to all emergencies associated with the operation.
- The EHS management Review Committee will be authorized to co-ordinate the overall strategic response to any emergency at the plant.
- It should be clubbed with DMP of existing operation.

### **7.4.1 Objective of DMP**

Following are the main objectives of the DMP.

- Define and assess emergencies, including hazards and risk.
- Control and contain incidents.
- Safeguard employees and people in the vicinity.
- Minimize damage to property and/ or the environment.
- Minimization of risk and impact of event accident.
- Preparation of action plan to handle disasters and to contain damage.
- Inform employees, general public and the authority about the hazards/ risk assessed, the role to be played by them in the event of an emergency and to provide safeguards.
- Be ready for 'mutual aid' if need arises to help neighboring units.

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- Inform authorities and mutual aid centres to come for help.
- Effective rescue and treatment of casualties.
- Effective rehabilitation of the affected people and prevention of damage to the property.
- Identify and listing of any fatality.
- Inform and help kith and kin.
- Secure the safe rehabilitation of affected areas and to restore normalcy.
- Provide authoritative information to the media, etc.

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#### **7.4.2 Methodology**

- No matter how well a process is controlled and safeguarded by instruments and process safety procedures, it is inevitable that there is a residual risk, which is capable of causing a variety of emergencies.
- The Factories Act, 1948 as amended in the year 1987 under section 41B requires that every occupier shall draw up a Disaster Management Plan and detailed disaster control measures for his plant and make them known to the employees and to the general public living in the vicinity of the plant. According to GFR, it is statutory for the industries to submit Disaster Management Plan with relevant details.
- Its objective is to reduce the severity of loss in particular hazardous incidents. At the same time, it must be clearly understood that it is not a substitute for maintaining good standards for working consistency with the requirements of safety and health inside the plants.

#### **7.4.3 Classification of Emergencies**

Emergencies can be categorized into the following three (3) broad levels on the basis of seriousness and response requirement.

**Level-I:** This is an emergency or an incident which

- Can be effectively and safely managed and contained within the site, location or installation by the available resources.
- It has no impact outside the site, location or installation.

**Level-II:** This is an emergency or an incident which

- Cannot be effectively and safely managed or contained at the location or installation by the available resources and additional support is alerted or required.
- Is having or has the potential to have an effect beyond the site, location or installation and where external support of mutual aid partners may be involved.

**Level-III:** This is an emergency or an incident with off-site impact which

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- Could be catastrophic and is likely to affect the population, property and environment inside and outside the installation.
- Management and control are done by the District Administration.

Although Level-III emergencies fall under the purview of the District Authority, until the Authority steps in, it should be the responsibility of the concerned unit to manage the emergency. Based on the QRA study, chances of Level-III emergencies occurring are negligible.

#### **7.4.4 Emergency Preparedness Plan (EPP)**

Incidents, accidents and contingency preparedness should be accounted for during the construction and operation process. Emergency Preparedness Plan (EPP) is prepared as per the National Environmental Emergency Plan and OSHA guidelines. According to these guidelines, an environmental emergency plan would essentially provide the following information:

1. Assignment of duties and responsibilities among the authorities, participating agencies, response team, their coordinators and/or those responsible for the pollution incident.
2. Relationship with other emergency plans.
3. A reporting system that ensures rapid notification in the event of a pollution incident.
4. The establishment of a focal point for coordination and directions connected to the implementation of the plan.
5. Response operations should always cover these four phases:
  - Discovery and alarm
  - Evaluation, notification and plan invocation
  - Containment and countermeasures
  - Cleanup and disposal
6. Identification of expertise and response resources available for assistance for the implementation of plan.
7. Directions on the necessary emergency provisions applicable to the handling, treatment or disposal of certain pollutants.
8. Link to the local community for assistance, if necessary.

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9. Support measures, such as procedures for providing public information, carrying out surveillance, issuing post-incident reports, review and updating of the plan, and periodic exercising of the plan.

#### **7.4.4.1 Emergency Organisation**

It is recommended to set up an Emergency Organization. A senior executive who has control over the affairs of the Plant would be heading the Emergency Organization. He would be designated as Site Controller. In the case of stores, utilities, open areas which are not under the control of production heads, executives responsible for maintenance of utilities would be designated as Incident Controllers. All the Incident Controllers would be reporting to the Site Controller.

Each Incident Controller organizes a team responsible for controlling the incident with the personnel under his control. Shift in-charge would be the Reporting Officer, who would report the incident to the Incident Controller.

Emergency Coordinators would be appointed who would undertake the responsibilities like fire fighting, rescue, rehabilitation, transport and support services. For these purposes, Security in-charge, staff of the Personnel Department/ Essential services would be engaged. All these personnel would be designated as key personnel.

In each shift, electrical supervisor, pump house in-charge and other maintenance staff would be drafted for emergency operations. In the event of Power communication system failure, some of the staff members in the office/ Plant offices would be drafted and their services would be utilized as messengers for quick passing of communications. All these personnel would be declared as essential personnel.

#### **7.4.4.2 Emergency Communication**

Whosoever notices an emergency situation such as fire, growth of fire, leakage etc. would inform his immediate superior and Emergency Control Center. The person on duty in the Emergency Control Centre would appraise the site controller. Site controller verifies the situation from the Incident Controller of that area or the shift in-charge and takes a decision about implementing On-Site Emergency Plan. This would be communicated to all the Incident Controllers and Emergency Coordinators. Simultaneously, the emergency warning system

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would be activated on the instructions of the Site Controller.

#### **7.4.4.3 Emergency Responsibilities**

The responsibilities of the key personnel are appended below:

##### **7.4.4.3.1 Site Controller**

On receiving information about an emergency, he/she would rush to the Emergency Control Centre (ECC) and take charge of the ECC and the situation. He /She would assess the magnitude of the situation in consultation with the incident controller and decide:

- Whether affected area needs to be evacuated.
- Whether personnel who are at assembly points need to be evacuated.
- Declares Emergency and orders for operation of emergency sirens.
- Organizes announcement by public address system about location of emergency.
- Assesses the areas which are likely to be affected, and need to be evacuated or alerted.
- Maintains a continuous review of possible development and assesses the overall situation to decide whether shutting down any section or whole of the Plant is required.
- Directs personnel of rescue, rehabilitation, transport, fire brigade, medical and other designated mutual support systems, locally available, for meeting emergencies.
- Controls evacuation of affected areas. If the situation is likely to go out of control or effects are likely to go beyond the premises of the factory, inform the District Emergency Authority, Police, and Hospital and seek their intervention and help.
- Informs Inspector of factories, Deputy Chief Inspector of factories, SPCB and other statutory authorities.
- Give a public statement, if necessary.
- Keeps record of chronological events and prepares an investigation report and preserves the evidence.

After managing the emergent situation and bringing the normalcy at the workplace, he /she makes a statement accordingly.

##### **7.4.4.3.2 Incident Controller**

The Responsibilities of the Incident Controller are mentioned below:

- Assembles the incident control team.

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- Directs operations within the affected areas with the priorities for safety to personnel, minimizes damage to the plant, property and environment and minimizes the loss of materials.
- Directs the shutting down and evacuation of plants and areas likely to be adversely affected by the emergency.
- Ensures that all-key personnel help is sought.
- Provides advice and information to the Fire and Security officer and the local Fire Services as and when they arrive.
- Ensures that all non-essential workers / staff of the affected areas evacuated to the appropriate assembly points and the areas are searched for victims, if any
- Understands the need for preservation of evidence so as to facilitate any inquiry into the cause and circumstances, which resulted or escalated the emergency.
- Coordinates with emergency services at the site.
- Provides tools and safety equipment's to the team members.
- Keep in touch with the team and advise them regarding the method of control to be used.
- Keep the Site Controller informed continuously about the progress being made.

#### **7.4.4.3.3 Emergency Coordinator : Rescue and Fire-Fighting**

The Responsibilities are mentioned below:

- Rushes to the Emergency Control Centre after knowing about the emergency.
- Helps the Incident Controller in containment of the emergency.
- Ensures fire pumps in operating conditions and instructs pump house operators to be ready for any emergency.
- Guides the fire fighting crew i.e. Firemen, trained Plant personnel and security staff.
- Organizes shifting the fire fighting facilities to the emergency site, if required.
- Takes guidance of the Incident Controller for firefighting as well as assesses the requirements of outside help.
- Arranges the traffic control at the gate and the incident area.
- Directs the security staff to the incident site to take part in the emergency operations



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under his guidance and supervision.

- Evacuates the people in the Plant or in the nearby areas as advised by the site controller.
- Searches for any casualties and arranges proper aid for them.
- Assembles search and evacuation team.
- Decides paths for the workers evacuating the site
- Maintains law and order in the area, and if necessary, seeks the help of police and local administration.
- Arranges safety tools/equipment for the members of his team.

#### **7.4.4.3.4 Emergency Coordinator: Medical, Mutual Aid, Rehabilitation, Transport and Communication**

- The event of failure of electric supply and there by internal telephone, sets up communication point and establishes contact with the Emergency Control Center (ECC) in the event of failure of electric supply and communication network.
- Organizes medical treatment to the injured and if necessary, will shift them to nearby hospitals.
- Mobilizes extra medical help from outside, if necessary
- Keeps a list of qualified first aid providers of the factory and seek their assistance.
- Maintains first aid and medical emergency requirements.
- Makes sure that all safety equipment's are made available to the emergency team.
- Assists Site Controller with necessary data and coordinates the emergency activities.
- Assists Site Controller in updating emergency plans.
- Maintains liaison with Civil Administration
- Ensures availability of canteen facilities and maintenance of rehabilitation centre.
- Remains in liaison with Site Controller / Incident Controller.
- Ensures availability of necessary cash for rescue / rehabilitation and emergency expenditure.
- Controls rehabilitation of affected areas at the end of emergency.
- Makes available diesel/petrol for transport vehicles engaged in emergency operation

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#### **7.4.4.4 Emergency Facilities**

##### **7.4.4.4.1 Emergency Control Centre**

During the emergency, the office block would function as an Emergency Control Centre. It would have an external Telephone & Fax facility. All the Incident Controllers, Officers, senior personnel would be available there.

The following information and equipment will be provided at the ECC.

- Intercom, telephone
- Fire suit / gas tight goggles / gloves / helmets
- Factory layout, emergency site plan
- Emergency lamp / torchlight
- Plan indicating locations of hazardous inventories, Plant control room, sources of safety equipment, work road plan, assembly points, rescue locations, vulnerable zones, escape routes.
- Hazard chart
- Self-contained breathing apparatus
- Hand tools, wind direction, wind velocity indications
- Public Address Megaphone, Hand bell, Telephone directories (Internal and External).
- Address with telephone numbers of key personnel, Emergency coordinator.
- Important addresses, telephone numbers of experts from outside, government agencies, neighboring industries etc.
- Emergency shutdown procedures.
- Nominal roll of employees.

##### **7.4.4.4.2 Emergency Medical Facilities**

Gas masks and general first aid materials for dealing with chemical burns, fire burns etc. would be maintained in the medical Centre as well as in the emergency control room. Private medical practitioners' help would be sought. Government hospitals would be approached for emergency

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help.

Apart from Plant first aid facilities, external facilities would be augmented. Names of Medical Personnel, Medical facilities nearby town i.e., Melpakkam would be prepared and updated. Necessary specific medicines for emergency treatment of burnt patients and for those affected by toxicity would be maintained.

Breathing apparatus and other emergency medical equipment would be provided and maintained. The help of nearby industrial managements in this regard would also be taken on a mutual support basis.

#### **7.4.4.4.3 Fire Fighting Facilities**

First Aid and Fire Fighting equipment suitable for emergencies should be maintained as per statutory requirements/ TAC Regulations. Fire hydrant line covering major areas would be laid. It would be maintained at 6 kg / sq.cm. pressure.

#### **7.4.4.5 Emergency Actions**

##### **7.4.4.5.1 Emergency Warning**

Communication of emergency would be made familiar to the personnel inside the plant and people outside. An emergency warning system would be established.

##### **7.4.4.5.2 Emergency Shutdown**

There are number of facilities which can be provided to help in dealing with hazardous conditions. The suggested arrangements are:

- Stop feed
- Deluge contents
- Remove heat
- Transfer contents

Methods of removing additional heat include removal by the normal cooling arrangements or by the use of an emergency cooling system. Cooling facilities which vaporize liquid may be particularly effective, since a big increase in vaporization can be obtained by reducing pressure.

##### **7.4.4.5.3 Evacuation of Personnel**

The area would have an adequate number of exits and staircases. In the event of an emergency,

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unrelated personnel have to escape to the assembly point. Operators have to take emergency shutdown procedures and escape. Time office maintains a copy of deployment of employees in each shift at the Emergency Communication Centre. If necessary, persons can be evacuated by rescue teams.

## **7.5 GENERAL SAFETY AND OCCUPATIONAL HEALTH**

It is of utmost importance to take into account the safety of the plant personnel irrespective of the plant size. Proper safety measures should be followed in this regard.

- These include the use of Personal Protective Equipment (hand gloves, dust masks, face shield, goggles, apron, etc.) during working.
- Avoid contact with the raw materials without the use of Personal protective equipment.
- A schedule should be prepared for regular maintenance of each unit and the same should be followed regularly.
- All the valves, which are prone to open and spill inflammable/ toxic material due to accident impact, must be placed with a suitable guard.
- The unit's management should ensure that all rotating machines and moving parts are provided with appropriate guards and the guards are put back in the position after check-up and maintenance.
- All the control systems are being periodically checked for their reliability and accuracy.
- Proper ventilation to be provided in areas where there are chances of a build-up of hazardous gases, chemicals and causing fire hazards

### **7.5.1 General Working Conditions**

#### **7.5.1.1 Housekeeping**

- All the passages, floors, and stairways should be maintained in good condition. The system should be available to deal with any spillage of dry or liquid chemicals at the plant.
- Sufficient disposable bins should be clearly marked, and these should be suitably located in the plant.
- Chemical storage area specifically designed as per chemical properties

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- Walkways should be clearly marked and free from obstructions.
- In the plant, precaution, and instructions should be displayed at strategic locations.
- All pits, sumps should be properly covered or securely fenced.
- Roads/walkways within the plant should be maintained neat and clean.

#### **7.5.1.2 Ventilation**

- Adequate ventilation should be provided in the work floor environment.
- The work environment should be assessed and monitored regularly.
- Local ventilation is most effective method for controlling dust and gaseous emissions at work floor

#### **7.5.1.3 Electrical Safety**

- A licensed electrician has deployed to complete all temporary wiring and electrical installations required for construction activities.
- Approved Rubber mat will be provided below the MCC panels and near the electrical junction.
- Electric proof hand gloves will be available to avoid electrical shock.
- Fuses and circuit breakers (ELCB's) are used to protect motherboards, conductors and equipment to avoid short circuiting and electric shock. MCB's and fuses are also to use to protect the electrical equipment from over current and over voltage.
- Extension cords for equipment or as part of a temporary wiring system shall not be damaged or compromised in any way and insulation must be of the highest grade.
- The joints of electrical wires avoided or an extension cord can be used if needed
- Anytime electrical equipment will be deactivated for repair, or circuits will be shut off, the equipment have locked out and tagged at the point where it can be energized.
- Proper earthing is ensured for all equipment and electrical panels.
- Temporary lights are not suspended by their cords.
- The employer will provide the necessary safety equipment, supplies and monitoring equipment to their personnel.
- To follow the Lock Out Tag Out (LOTO) system.

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#### **7.5.1.4 Work Permit**

❖ **Safety Permit will be taken for job in case of:**

- Work on line opening involving hazardous chemicals
- Work involving entry into tanks, vessels or work on pipelines.
- Work involving hot jobs like gas cutting, welding, burning, lighting etc. required to be done in the battery limit / hazardous area of the plant.
- When it is required to carry out hot work on or adjacent (within 7 mt. Radius) to tank / vessel containing inflammable liquid / gas / solid, rubber lines equipment and piping.
- Work involving electric shock or hazards from starting up of equipment.
- When the work is to be done on the roof of buildings.
- Working at a height above 2 mt. Where working arrangements like ladders, stairs, platforms, railing etc. are not available.
- Work involving excavation and digging jobs in plant / factory premises.

❖ **Cold Work Permit will be taken for job in case of:**

- Work below 2 m height.
- Work where no inflammable material available within 7 m Radius.
- Work on pipeline – where hazardous material or height work is not to be carried out.
- Excavation and digging job inside plant / factory premises.
- Any maintenance job which does not follow Safety permit criteria.

❖ **Jobs will be extended beyond office hours or non-working days:**

- Permit must be revalidated by and permitted with the consent of DGM / HOD.
- Responsible person of the concerned department should present till the validity of extension of permit.
- Shift in-charge (permit issuer) will personally take care of the situation and take necessary safety precautions like using PPE, Isolation, Decontamination, Draining, Venting, depressurization etc.

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- In case of an emergency breakdown job - outside working hours (apart from 'G' shift timings) - Shift In charge (issuer) and Permittee will take care of the whole job by due concern with the Safety Department by following all the SOPs and Safety Guidelines.

#### **7.5.1.5 Working at Heights**

- Examine ropes, hooks for defects before putting them into service. Use chains or cables to suspend tackle over tonners.
- Each man handling the falls should know how to tie the rope knots properly and safely.
- Make sure that supports to which hoists are attached are strong enough to withstand the loads to which they will be subject.
- Do not tie knots to retain cables run through chains and hooks.
- Use cable clamps or wedge sockets, manila rope is not to be used for slings on material contaminated with acid.
- Care should be exercised in selecting equipment to snug taglines. Be sure it is strong enough to withstand the load.
- Hoisting equipment operators should keep their eyes on the man giving signals. Do not allow cables to stack up on the side of the drum. In giving signals to the Crane Operator, keep attention on the load.
- As a matter of safety, all this equipment should be inspected every year and each year a different color code is to be used to show and exhibit that the equipment has been checked.
- Hoist ropes must not be used if more than three outside adjacent wires are broken within a length of one lay or if outer wires are worn 2/3 of their original diameter, or if marked corrosion appears.
- Truck cranes must be properly blocked and be on firm footing before lifting a heavy load with a low room.

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- Employees must stand clear off the swing of the crane and keep out from under suspended loads.

#### **7.5.1.6 Boiler Safety**

Boiler shall be installed as per the Boiler Rules with all the safety equipment and instruments. Start-up and shut down procedures shall be formulated and complied with. Boiler operation will be carried out by qualified personnel with a boiler proficiency certificate. Boiler inspections will be done as per rules.

#### **Hazards associated with Boiler Room:**

- Risk Of Explosion
- High Pressure steam
- Combustion Gases
- Moving Machinery
- Hot Surfaces

#### **Safety aspects:**

- Water level
- Safety Valve
- Steam valves/traps
- Flame scanner system
- Burner control system
- Use of protective clothing like face shield along with safety glasses
- Fire safety plans shall include the locations of fire alarms, fire extinguishers, the main electrical breaker, fire main, and exits for each area of the facility
- Lock Out Tag Out System

#### **7.5.2 Engineering Control**

- Drains and vents will be provided on chemical pipe lines to pump suction.
- Checking schedule/maintenance Schedule for Pump, Control valves, Air Instrument system and Instrument will be prepared



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- Testing, inspection and certification will be carried out for all pressure vessels, lifting tackles and storage tanks as per Factories Act.
- Calibration will be carried out to maintain the flow indicator.
- Mechanical sealed pumps will be used to avoid and reduce leakages and fugitive emissions.
- Double mechanical seals will be provided for agitators
- Workplace monitoring will be carried out.
- Removal of combustible scrap and debris (wood, clearing/grubbing material) from the site daily and to store it at designated places.

Spill prevention control will be provided to limit the risk of hazardous material release into the environment.

- Secondary control will be provided for material transfer in the form of leakage collection tray.
- Alarm system will be provided for deviation of temperature, Pressure and level in storage tanks.
- Cooling arrangement will be provided for the storage tank in case of fire/Heat.
- Double earthing system/Earthing grid will be provided for tanks, piping and road tankers.
- Proper labeling will be provided for all equipment and materials.
- Safety systems like Emergency Shut Down (ESD ‘) switches will be provided for proper functioning.
- Sprinkler systems, gas/fire detectors and Remote operated valves (ROV) will be provided as safety systems.
- Lightning protection systems will be provided to cover tank farms.
- Windsocks at various locations to know the direction of wind in case of a leak or fire.
- Proper ventilation will be provided to keep the area well-ventilated to avoid accumulation of gas/ vapors and to keep it below PEL/ TWL values.
- Every floor, working place and passageway will be free from protruding nails, splinters, holes or loose boards.
- Working surfaces will be dry to prevent slips and falls.

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- Occupational health centers will be developed to cater any emergency.
- Competent and authorized contractors will be deployed for transport of hazardous material and to follow the Motor vehicles act strictly for hazardous material transportation.

## 7.6 R&R ACTION PLANS

There is no need for R&R activities for the proposed unit, the additional land required for further construction is abutting the existing plot area.

## 7.7 PLAN AND BUDGET FOR OCCUPATIONAL HEALTH AND SAFETY

*Table 114. Plan and Budget for Occupational Health and Safety*

<b>Sr. No.</b>	<b>Description</b>	<b>Amount (INR Lakhs)</b>
1	Workers will be subjected to primary health check-up before they are employed to ascertain their health conditions. Thereafter, Regular Medical check-up & First Aid facility will be organized for workers to evaluate the adverse impact if any on these persons due to the proposed activity. Occupational health surveillance programmes shall be done yearly. A Medical Officer and full-fledged medical staff are recruited.	10.0
2	Facilities such as sanitation, restroom, canteen etc. shall be provided to the labour force during construction as well as to the casual workers including truck drivers during the operation phase.	5.0
3	Covered transportation of vehicles.	5.0
<b>Total</b>		<b>20.0</b>

## 7.8 DECARBONIZATION PROGRAM

The PP has adopted conventional technology to produce sponge iron, billetes, TMT Bars & electricity. In order to reduce Carbon emissions, WHRB has been considered. direct charging of sponge iron in Induction furnaces has been considered. In order to minimise carbon emission solar panels of 500 KW have been considered. The PP is in the process of selecting expert consultants for its decarbonisation programme.

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## **8. PROJECT BENEFITS**

### **8.1. ENVIRONMENTAL BENEFITS**

- a. There will be Additional Air Emission Control systems and the Plant will continue to ensure ZLD. By developing a thick canopy of Green Belt , Noise and Dusts will be controlled.
- b. The proposed expansion will only add up an Induction furnace and TMT rolling Mill to the already operational Sponge Iron & MS Billets & Rolled Steel Production Plant, thereby necessitating only very limited Emission control and very lesser fresh water requirement. There will be addition of 01 No. of utility stack for DG set of 1500 kVA and there will be additional 6 Bag house filters but the stack will be a common stack for both existing Induction furnace and proposed Induction Furnace.
- c. Freshwater requirements will be met from 02 Nos. of Borewells and 05 Nos. of Open wells within the site. Through a structured RWH scheme, there will be substantial savings in groundwater drawl to an extent 34.5 KL/Day. Aquifer recharging is also planned through collection of Stormwater and all other water from sources into stormwater drain and through percolation of the same through 155 No. Recharge Pits.
- d. Wastewater will be segregated into Sewage and Trade Effluents, and will be treated in a STP/ETP respectively. Treated effluents @ 24 KLD will be reused, treated sewage @ 30 KLD will be used in Greenbelt development.No wastewater will be discharged out of the factory premises, hence maintaining ZLD.
- e. The project will continue to operate abiding by the environmental norms by installation and maintenance of APCS. Maximum Ground Level Concentration due to project activities: PM<sub>2.5</sub> - 0.85 µg/m<sup>3</sup>, PM<sub>10</sub> - 0.71 µg/m<sup>3</sup>, NO<sub>2</sub>- 2.64 µg/m<sup>3</sup>, SO<sub>2</sub> - 2.07 µg/m<sup>3</sup>, CO - 0.007 mg/m<sup>3</sup>, TVOC - 0.01 mg/m<sup>3</sup>.
- f. Organic Municipal Solid Waste @ 170 kg/day will be converted into manure using an in-house OWC, and the resultant manure will be used for greenbelt development.
- g. Through CER , there will be infrastructure improvement in nearby villages.

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## **8.2. ECONOMICAL BENEFITS**

The proposed expansion investment cost is INR 80 Cr. The increased production will bring direct revenue to local panchayats and villages nearby in the form of taxation. Also there will be an increase in small vending activities that will create small economic activities for local people.

## **8.3. SOCIAL BENEFITS**

- a. Due to the proposed expansion additional employment @ 50 Nos. of permanent and 100 Nos. of contractual employment will be made
- b. INR 30 lakhs will be spent on improving the primary health care facilities especially for building up the infrastructure for child care, workers and sanitation facilities.

## **8.4. OTHER TANGIBLE BENEFITS**

India presently consumes about 100 MTPA steel of which 93 MTPA carbon steel & 7 MTPA alloy & stainless steel. Predicted growth in consumption of carbon steel has shown steady rise over 7% per annum till 2027, with predicted consumptions @ 124 MTPA by 2025-26, 165 MTPA by 2030-31 and 211 MTPA by 2035-36. Initially driven by construction, the industrial sector gradually catches up, overtaking the construction sector's share.

The project will contribute to the Government treasury by way of direct and indirect taxes, like GST, Custom Duty and Income Tax. Noble Tech Industries Pvt. Ltd will contribute funds for undertaking infrastructure development in surrounding villages, including roads, community centers, training centers, traditional activity, health, education under the Corporate Social Responsibility, as prescribed under the Companies Act.

## **9. ENVIRONMENTAL COST BENEFIT ANALYSIS**

As per EIA Notification 2006, Chapter 9 i.e. Environmental Cost Benefit Analysis to be prepared if recommended at the Scoping Stage.

- Environmental Cost Benefit Analysis (ECBA) is the application of Cost Benefit Analysis (CBA) to projects or activities or policies that have careful aim of environmental improvement or action that somehow affect the natural environment as an indirect consequence.
- CBA is a tool which now financial analysts adopt before considering a commercial activity involving a huge investment having substantial impact on the environment. Environment to be clean & safe is the prime concern and need of society.
- CBA is a set of practical procedures for guiding “No Go” or “Go” decisions. There can be the most efficient resource distribution with maximum net benefit.
- Project benefits include Use and Non-Use values to man and environment, bequest values, option values. Environmental components broadly include living organisms, air, water & soil.
- Environmental costs include pollution prevention cost, pollution damage cost, welfare damage cost and cost for environmental mitigation measures and environmental management plans.
- It is a decision-making process that guides the decision maker to compare all possible and foreseeable direct and indirect beneficial and adverse impacts of the proposed project.

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## **10. ENVIRONMENT MANAGEMENT PLAN**

### **10.1 INTRODUCTION**

The Environment Management Plan (EMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner where all stakeholders including the project proponents, contractors and subcontractors, including consultants, understand the potential environmental risks arising from the proposed project and take appropriate actions to properly manage that risk. Adequate environment management measures need to be incorporated during the entire planning, construction and operating stages of the project to minimize any adverse environmental impact and assure sustainable development of the area.

The Environment Management Plan presented below will be followed and regular monitoring of relevant parameters as stated in the post – project monitoring schedule will be carried out. The Environment Management Plan will be proactive in nature and will be upgraded if new facilities or modification of existing facilities, with environmental concerns, come up at a later stage.

### **10.2. ORGANIZATIONAL ROLE AND RESPONSIBILITY**

#### **Management Policy**

The company has a written policy for safety, Health and Environment Management. Through this policy, the company management commits itself to the following objectives:

- Meet all the relevant laws, regulations and international agreements.
- Conduct its activities safely, protecting the health of all employees and the product's users.
- Reduce the adverse environmental impacts to a practicable minimum at an acceptable cost to the company and society.
- Encourage continuous improvement in safety, health and environment performance.

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

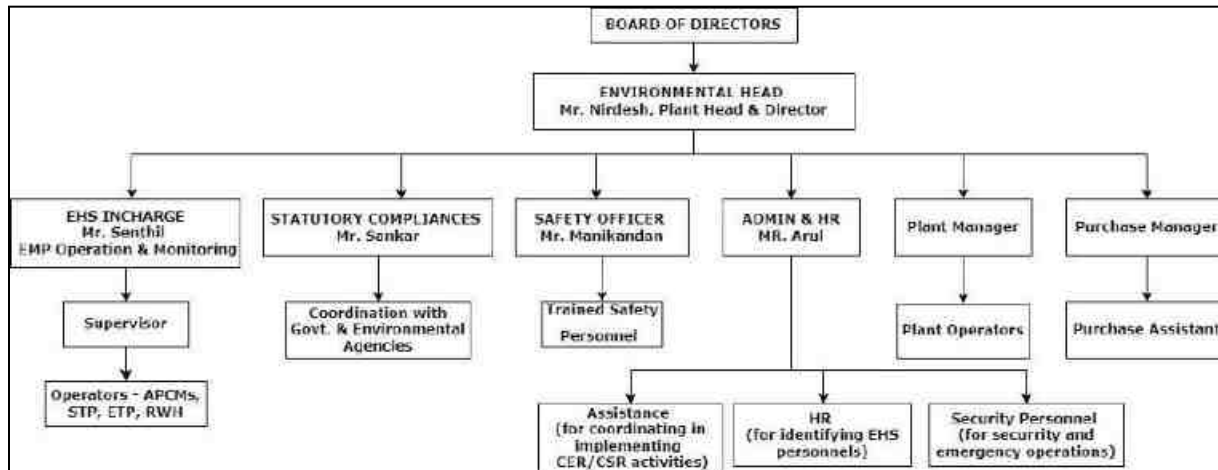


Figure 50. Environment Management Cell

## Environment Management

- Periodic review of environmental status;
- Implementation and maintenance of green buffer areas;
- Review of ETP, Boilers, DG operations and maintenance of APCS;
- Monitoring of collection and treatment of waste;
- Compliance to conditions stipulated in Environmental Clearances (EC) and consents;
- Implementation of EMP;
- Undertake awareness activities for industries and residential areas.

## Social Management

- Undertake continuous engagement with local community;
- Address grievances of the complex, local community and residents.

## 10.3. ROLE OF PROJECT PROPONENT (TOP MANAGEMENT)

M/s Noble Tech Industries Pvt. Ltd. will have ultimate responsibility for implementing the provisions of the EMP. This will include the management of environmental impacts, monitoring of contractor performance as well as development of mechanisms for dealing with environmental problems. The proponent will also ensure that the activities of its contractors during the installation and implementation of which will be required through contractual documentation. In order to facilitate this, the regular site inspections and their noting will be

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documented by the PP/Contractor. The organizational structure of the company is presented below.

#### **10.4. ROLE OF CONTRACTOR**

Contractors will also be expected to demonstrate commitment to the environmental monitoring programs at all levels in the contractor's management structure. It will be ensured the following:

- The Contractors involved in the project will be responsible for implementation of and adherence to, all the mitigation measures outlined in the EIA;
- Appropriate experienced and qualified personnel are employed as the Contractor's Environmental Manager
- All the environmental incidents to be reported at the earliest;
- To maintain records of all the inspections conducted;
- A program of regular self-inspection and audit will be developed and implemented and results reporting will be done to the M/s Noble Tech Industries Pvt. Ltd. EHS team on a regular basis.

#### **10.5. INSPECTION, MONITORING AND AUDIT**

This will increase the effectiveness of the EMP. Through this process M/s Noble Tech industries Pvt. Ltd. will ensure the conditions stipulated in the Environmental Clearance (EC), Consent to Establish (CTE), Consent to Operate (CTO) etc are complied with. The Audit will be conducted by the team for the implementation of the management system. The entire process of inspection and audit will be documented and findings of the above will be implemented by M/s Noble Tech Industries Pvt. Ltd.

#### **10.6. MONITORING, REPORTING AND DOCUMENTATION**

- Reporting of environmental, health, safety and social performance reports or check list, incident record register etc. will be developed and implemented through a program of reporting and reviewing throughout the project.



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- Reports from inspection, audits and other improvement program will be regularly communicated;
- All complaints and enquiries will be addressed with records maintained in an assigned register by the safety officer of each contractor;
- Internal and external reporting mechanism will be developed, internal reporting will comprise the concerned officials from the Environment management team, the representatives of the contractors and the top management of M/s Noble Tech Industries Pvt. Ltd.
- The internal reporting will be undertaken on quarterly basis while the external reporting will be undertaken half yearly.
- Annual environmental report known as 'Environment statement' as per FORM V of the EPA Rules, 1986, six monthly compliance reports as per EC of MoEFCC, compliance reports as per CTE/CTO etc. will be submitted to the regulatory authorities.

## **10.7. INTERNAL MONITORING, REPORTING AND COMMUNICATION**

The EHS In-Charge will be responsible for the internal monitoring. Inspection and audit findings along with the improvement program will be reported to the senior management regularly. Records should be maintained for regulatory, monitoring and operational issues..

### **10.7.1. Documentation**

It is the most important step in the implementation of the Environment Management plan. M/s Noble Tech industries Pvt. Ltd. has a well established record keeping and management system as per the requirement. Responsibilities will be assigned to the relevant personnel ensuring that the EMP documentation and records are maintained. Typical record keeping requirements for the proposed project is summarized below.

- Master Environment Management System document
- Legal register
- Operation control Procedures
- Work Instructions
- Incident reports

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- Emergency preparedness and response procedure
- Training records
- Monitoring reports
- Audit reports
- Compliance Report
- Safety Committee meeting record.
- Complaints/Suggestions register and issue attended/closed
- Solid Waste and Hazardous waste generation, Handling and Disposal
- Quantity of wastewater and Treated water generated and its quality
- Survival rate/ratio of the Trees planted.
- Environmental Permits / Consents from MOEF
- Employee environmental, health and safety records
- Equipment inspection and calibration record where applicable
- Vehicle maintenance and inspection record

## **10.8. EMP REVIEW & AMENDMENTS**

The EMP will be reviewed periodically to update it addressing any changes in the organization, process or regulatory requirements. The EHS Head has the mandate for coordination of the actions required for environment mitigation and management and monitoring the progress of the proposed management plans and various action plans to be implemented for the project.

### **10.8.1. Environment Management Plan**

An Environment Plan has been developed following the identification of impacts and mitigation measures. The mitigation measures suggested will be as according to the monitoring schedule.

The EMP includes the following:

- Mitigations suggested for adverse environmental and social impacts and associated risks;

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- Personnel responsible for implementing the mitigation measures at various stages of the project;
- The mitigation measures suggested in Chapter 4 would be implemented. This will reduce the impact on the environment due to the proposed project. To facilitate easy implementation, the recommendations suggested are grouped in different phases.

All the above reports will be documented in the documentation system as per the requirement of MoEFCC and other relevant regulatory authorities.

## 10.9. DECARBONIZATION PROGRAM

The PP has adopted conventional technology to produce MS Billets, Sponge Iron & electricity. In order to reduce Carbon emissions, WHRB has been considered. Direct hot charging of sponge iron in Induction furnace has been considered. In order to minimize carbon emission solar panels of 500 KW have been considered.

## 10.10 EMP IMPLEMENTATION BUDGET

During Operation Phase:

### i) Capital Cost

Table 115. Capital Expenditure

Sl. No.	Particulars	Existing	Proposed	Total After Expansion
		INR Lakhs		
1	Air Pollution Control Systems	50.00	40.00	90.00
2	Water Pollution Control Systems	12.00	60.00	72.00
3	Environment Monitoring	10.00	10.00	20.00
4	Rain Water Harvesting and Others	20.00	25.00	45.00
5	Green Belt Development	15.00	15.00	30.00
6	Solar Power	0.00	55.00	55.00
<b>Total</b>		<b>107.00</b>	<b>205.00</b>	<b>312.00</b>

### ii) Recurring Cost

Table 116. Recurring Expenditure

Sl. No.	Particulars	Existing	Proposed	Total After Expansion
		in INR Lakhs/Annum		
1	Air Pollution Control Systems	8.50	7.00	15.50

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Sl. No.	Particulars	Existing	Proposed	Total After Expansion
		in INR Lakhs/Annum		
2	Water Pollution Control Systems	6.00	9.00	15.00
3	Environment Monitoring	5.00	2.50	7.50
4	Rain Water Harvesting and Others	3.00	4.50	7.50
5	Green Belt Development	6.00	1.00	7.00
<b>Total</b>		<b>28.5</b>	<b>24.00</b>	<b>52.50</b>

### 10.11. CER BUDGET

Table 117. CER Expenditure

Sr. No.	Particular	Proposed Cost (In INR Lakhs)
1	Nearby Villages Development- I. Improvement in Primary Health Care Centres at Elanagar and Melpakkam village II. Improvement in Government Higher Secondary school at Elanagar and Melpakkam village III. Improvement in Government Primary health care centre, Anganwadi, Government Primary School at Hanumanthandalam village	50.00
2	Provision of Safe Drinking Water Facilities	10.00
3	Improvement of Sanitation Facilities	15.00
4	Provision of Safety Boards, Sign boards at road	5.00
<b>Total</b>		<b>80.0</b>

### 10.12. ENVIRONMENTAL & CER COST SUMMARY

Table 118. Cost Summary

Sr. No.	Cost Summary	Cost (in Lakhs)	% of the project Cost
1	Project Cost	35317.0	-
2	Capital cost for Environment Management Plan	312.0	0.88
3	Recurring cost for Environment Management Plan	52.5	0.15
4	Occupational Health and Safety	20.0	0.06
5	Social Welfare/ CER	80.0	0.23

### 10.13. CARBON FOOTPRINT

#### Mitigation Measures of Carbon Footprint:

Expansion in M.S. Billets & Rolled Products from 108000 TPA to 576000 TPA along with the existing Sponge Iron (90000 TPA) and Captive Power Plant (12 MW) at Plot No. 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu - 603402 by M/s Noble Tech Industries Pvt. Ltd.

1. Development of Greenbelt.
2. Prevent further GHG mitigation with alternatives.
3. Procurement of RM from nearby sources
4. Operate air conditioning on a schedule.
5. Use of Public transportation.
6. Switch to energy-efficient light bulbs.
7. Transition to net-zero buildings.
8. Opportunities for process improvements in energy efficiency, manufacturing process changes, product or feedstock.
9. Use of renewable energy.
10. More efficient use and recycling of materials.
11. Carbon capture and storage (CCS) to reduce emissions over the long term.
12. Fuel switching.
13. Combined heat and power.
14. Use of low-emission alternatives.
15. Reduction of HFCs.

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## 11. SUMMARY & CONCLUSION

### 11.1. ABOUT PROJECT

**M/s Noble Tech Industries Pvt. Ltd.**, a steel manufacturing industry located at Survey Nos. Existing:12,14, 17, 22, 23, 25, 51, 52, 53, 57, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu proposes the “Expansion of M.S. Billets & Rolled Products along with the existing Sponge Iron and Captive Power Plant”. The industry will also expand its plot area into the abutting land with SF No.5/2, 6/1, 6/2A, 6/2B, 6/2C, 6/2D, 6/3A, 6/3B, 6/4A, 6/4B, 6/4C, 6/4D, 6/4E, 6/5A, 6/5B, 6/6A, 6/6B, 7, 8/1, 8/2, 8/3, 8/4, 9/1, 15, 18/1A, 18/1B, 19/3A, 19/4, 19/5A, 20/2A,21/4, 21/5, 21/6, 21/7, 27/3, etc. The total project cost will be **INR 353.17 Cr.** The land is owned by M/s Noble Tech Industries Pvt. Ltd.

As the project is involved in the production of Sponge Iron with a capacity >200 TPD, it falls under Schedule 3(a) of category ‘A’ of EIA Notification 2006 & its subsequent amendments to date and requires public hearing as a part of EIA appraisal process.

The production capacity of MS Billets & Rolled products will be **1600 TPD** after expansion. The production of Sponge Iron, **3(a)** EC product will unchanged **@250 TPD**. Similarly, the captive power generation will remain **@12 MW**.

### 11.2. PROJECT DESCRIPTION

#### Location & Accessibility

##### Location:

- **Existing Survey Nos.:** 12, 14, 17, 22, 23, 25, 51, 52, 53, 57.
- **Expansion Survey Nos.:** 12/1, 12/2, 14/2A2, 15, 17/1, 17/2A1, 17/2A2, 17/2A3, 17/2B, 17/2D, 17/2E, 18/1A, 18/1B, 19/3A, 19/4, 19/5A, 20/1A, 20/2A, 21/3A, 21/4, 21/5, 21/6, 21/7, 22/1, 22/2, 22/3, 22/3, 23, 24, 25, 27/3, 27/4, 27/5, 27/6, 27/7, 27/8, 27/9, 29/1A, 51/1C1, 51/1C2, 51/2A, 51/2B, 52/2, 53/2A, 53/2B, 53/2C, 53/2D, 55/1, 55/2, 55/3, 55/4, 56/1, 56/2, 56/3, 57/1A, 57/1B, 57/2, 57/3, 57/4, 57/5A, 57/5B, 57/6, 57/7, 57/8A, 57/8B, 10/1, 10/3, 11/1, 11/2, 11/3, 13/1, 13/2, 14/1B1, 14/1B2, 14/1B3, 14/2A1, 14/2B, 19/1,

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19/2, 19/3B, 19/5B, 20/1B, 20/2B, 21/1, 21/2, 21/3B, 28, 29/1B, 30/2, 5/2, 6/1, 6/2A, 6/2B, 6/2C, 6/2D, 6/3A, 6/3B, 6/4A, 6/4B, 6/4C, 6/4D, 6/4E, 6/5A, 6/5B, 6/6A, 6/6B, 7, 8/1, 8/2, 8/3, 8/4, 9/1.

- **Address:** Plot No: 14/2A2, Melpakkam Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu.
- **Latitude:** 12°38'33.67"N
- **Longitude:** 79°41'53.53"E
- **Elevation:** 94.5 m (MSL)

Table 119. Accessibility to the Project Site

Particulars	Distance	Direction
<b>Road</b>		
Perunagar-Kaliyampundi Road	0.03 km	NE
Uthiramerur Road	2.14 km	S
State Highway No.-116	4.39 km	W
State Highway No.-118A	6.44 km	E
Endathur Road	6.86 km	SE
State Highway No.-118	7.17 km	SE
<b>Railway Station</b>		
Walajabad Railway Station	20.94 km	NE
Kanchipuram Railway Station	22.11 km	N
Pazhaya Seevaram Railway Station	23.92 km	NE
<b>Airport</b>		
Arakkonam Airport	46.00 km	N
Chennai International Airport	61.94 km	NE

● **Production Capacity**

Table 120. Production Capacity

Sr. No.	Product	Unit	Capacity			End Use of Product
			Existing	Proposed	After Expansion	
1	Sponge Iron	TPD	250	0	250	Ingots
2	M.S Billets and Rolled Products	TPD	300	1300	1600	Rolled products manufacture
3	Captive Power	MW	12	0	12	Waste Heat Recovery & Power supply

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- **Water Requirement:**

Daily water requirement for the project will increase to 597 KLD from the existing requirement 202.2 KLD of which Freshwater requirement will be 543 KLD. Freshwater will be sourced from in-house borewells and dug wells, for which already permission is received Vide Lr. No. DD(G)/OT 9/G-3/388/Renewal NOC/Chennai/2023/dated:22.05.2023 valid till, from 16.03.2023 to 15.03.2024. Renewal of No Objection Certificate is under process.

**Break-up Details of Water Requirement:** Domestic water increases from 25 KLD to 36 KLD, Cooling tower and Boiler requirement increases from 69 KLD to 205 KLD, and process water (DM, Spray, RM & CCM) requirement increases from 85 KLD to 326 KLD. The domestic sewage is treated in STP of 30 KLD. 23.2 KLD of treated water is used for Gardening and Greenbelt development.

**Wastewater Generation & Management:**

Wastewater generation from Domestic uses increases from 23.8 KLD to 32.6 KLD, Cooling tower and Boiler wastewater generation increases from 0 KLD to 10.5 KLD, and process water (DM, Spray, RM & CCM) wastewater generation from 0 KLD to 15.5 KLD. Thus, the sewage quantity increases from 23.8 to 32.6 KLD and Trade Effluent increases from 0 KLD to 26 KLD.

Existing STP of 30 KLD will be augmented by another STP of 35 KLD. A new ETP of 40 KLD will be installed. The treated sewage @30 KLD will be reused for greenbelt development and treated effluent @24 KLD will be reused within the process.

- **Power Requirement**

**Demand & Source of Power Supply:** The total power requirement will increase from 30 MW to 47.5 MW and it will be sourced from TANGEDCO by existing 11.0 KV transformer & installation of a new transformer of 110.0 KV replacing existing 33.0 KV transformer.

To meet emergency power requirements, existing 3 Nos. of DG sets of 600 kVA will be added with one D.G. Set of capacity 1500 kVA.



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- **Fuel Requirement:**

HSD will be used as fuel in DG Sets and material handling equipment, which will increase from 33.25 TPD to 40.0 TPD after the expansion.

Furnace oil is the primary fuel used in the sponge iron plant, with a current consumption of 435.8 TPD.

LPG is used for Scrap Cutting and existing consumption is 3.61 TPD, which will be expanded to 20 TPD after the expansion.

- **Manpower:**

Permanent employment will increase from 200 Nos. to 250 Nos. and temporary/contractual employment will increase from 250 Nos. to 350 Nos.

- **Greenbelt Development**

Greenbelt area will increase from 7.21 ha to 13.01 ha. The overall green cover in the project site will be 34.91% of the plot area after the proposed expansion. The No. of trees in greenbelt development will increase from 2755 No. to 32525 No., by planting native trees with different species.

- **RWH**

Rooftop water that is available for collection will be 4837.86 m<sup>3</sup>/hr. Rooftop Runoff will be directed to 6 Nos. of Rainwater Sump with a capacity of 800 KL each, which will be made during proposed expansion.

Surface runoff will be diverted to the storm water drain/pits with percolation pits (110 Nos. Existing and 45 Nos. proposed) with 1.5 m diameter all along the site boundary wall. The excess water will be drained to the external stormwater drainage system.

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### 11.3. DESCRIPTION OF THE ENVIRONMENT

#### Study Period:

Monitoring was carried out in the **Summer Season from March 2023 - May 2023.**

#### Ambient Air Quality:

**Core Zone:** The mean value of PM<sub>10</sub> at core zone locations ranges from (66.07-70.04 µg/m<sup>3</sup>) & PM<sub>2.5</sub> ranges from (36.25-37.34 µg/m<sup>3</sup>), SO<sub>2</sub> ranges from (4.83-5.12 µg/m<sup>3</sup>), NO<sub>2</sub> ranges from (21.43-22.72 µg/m<sup>3</sup>), CO (0.51-0.54 mg/m<sup>3</sup>), VOC (0.26-0.28 mg/m<sup>3</sup>), HC (0.32-0.34 µg/m<sup>3</sup>), O<sub>3</sub> (17.36-18.40 µg/m<sup>3</sup>) and C<sub>6</sub>H<sub>6</sub> (0.16-0.17 µg/m<sup>3</sup>) which are within the limits of National Ambient Air Quality Standards (NAAQS).

As per the Air Quality Index by CPCB, the air quality of the core zone is found to be Satisfactory during the sampling period - March 2023 - May 2023.

**Buffer Zone:** The mean value of PM<sub>10</sub> at buffer zone locations ranges from (89.78-106.25 µg/m<sup>3</sup>) & PM<sub>2.5</sub> ranges from (39.51-46.76 µg/m<sup>3</sup>), SO<sub>2</sub> ranges from (5.22-6.22 µg/m<sup>3</sup>), NO<sub>2</sub> ranges from (23.36 - 27.65 µg/m<sup>3</sup>), CO (0.55-0.65 mg/m<sup>3</sup>), VOC (0.29-0.34 mg/m<sup>3</sup>), HC (0.34-0.41 µg/m<sup>3</sup>), O<sub>3</sub> (18.92-22.39 µg/m<sup>3</sup>) and C<sub>6</sub>H<sub>6</sub> (0.17-0.20 µg/m<sup>3</sup>) which are within the limits of National Ambient Air Quality Standards (NAAQS).

As per the Air Quality Index by CPCB, the air quality of the buffer zone is found to be Satisfactory during the sampling period - March 2023 - May 2023.

#### Ambient Noise Quality:

**Core Zone:** The ambient noise level during day time at the proposed project site varies from 61.8 dB (A) to 62.4 dB (A) which are within the day time standard limit of Industrial area ~75.0 dB (A). During night, the noise level at the project site ranges from 57.9 dB (A) to 58.7 dB (A) which are within the night time standard limit of Industrial area 70.0 dB (A).

**Buffer Zone:** The maximum daytime ambient noise level recorded was 64.7 dB (A) at Uthirameru Road which is slightly higher than the standard limit of Commercial area ~ 65.0 dB

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(A). The maximum noise level during night was also recorded at Uthirameru Road i.e, 58.9 dB (A) which is higher than the night-time noise standard limit of ~ 55 dB (A).

Similarly the lowest daytime ambient noise level recorded was 53.4 dB (A) at Melpakkam which is below the daytime noise standard limit of the Residential area of ~ 55.0 dB (A). The lowest nighttime noise level recorded was 44.9 dB (A) at Kaliyampondi village which is within the night-time noise standard limit of ~ 45 dB (A).

### **Groundwater Quality:**

**Core Zone:** The water quality at location GW1 shows that all the parameters are within the drinking water standards (IS:10500).

**Buffer Zone:** The groundwater quality parameters (buffer zone) are well within the IS 10500:2012 (Drinking water standard).

### **Surface Water Quality:**

The surface water quality of the Elanagar lake (SW2) and Cheyyar river upstream (SW4) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards. BOD and DO value indicating that the surface water quality of SW4 can be placed in Class "C" i.e., Drinking water source without conventional treatment but after disinfection CPCB surface water quality- Designated Best Use Water Quality Criteria.

The Surface water quality of the Pond near Hanumanthandalam (SW1), Lake near Melpakkam (SW3), the Lake near Silambakkam (SW5), Uthiramerur Lake East (SW6), Uthiramerur Lake West (SW7), Cheyyar river downstream (SW8) and Kaliyampondi Lake (SW9) shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards.

### **Soil Quality:**

**Core Zone :** After analyzing the samples collected from the site, it shows that the soil texture is Sandy Clay loam, Colour is Brownish Black, pH is 7.56. Amount of primary nutrients like

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Organic matter is 0.98 %, the available nitrogen 78.4 mg/kg is moderately high and available Potassium 35.7 mg/kg is medium while the available Phosphorus 10.4 mg/kg is in a medium range. Thus it can be concluded that soil is average fertile in the core Zone.

**Buffer Zone:** Colour Brownish Black, pH ranges from 6.94 to 7.91. Amount of primary nutrients like Organic matter 0.61 to 1.48 %, the Available Nitrogen 49 mg/kg to 84 mg/kg is medium in range, the Available Phosphorus 5.4 mg/kg to 12.4 mg/kg is low to medium in range, Available Potassium 14.3 mg/kg to 35.2 mg/kg is low in range, Primary nutrient profile shows that soil is average fertile.

### **Biological Environment:**

#### **Core Zone:**

The operational nature of the project has resulted in a limited diversity of fauna and already planted species list within its boundaries, particularly when contrasted with the adjacent buffer zone. Ongoing activities and human presence associated with the project's operations have primarily led to the presence of common birds and insects species in the Core Zone, alongside familiar mammals such as squirrels, rats, cats, and dogs.

#### **Buffer Zone:**

During the season, we conducted both primary and secondary research, drawing from a diverse array of sources including research papers and departmental records, to investigate forest data. Our findings indicate a rich presence of various trees, herbs, shrubs, and medicinal plants within a 10 km radius of the project area

Our survey highlights Coconut (*Cocos nucifera*) as the predominant species, accompanied by other significant species such as Mango (*Mangifera indica*), Jamun (*Syzygium cumini*), Teak (*Tectona grandis*), and Neem (*Azadirachta indica*) in the Kancheepuram District.

### **Socio-Economic Environment:**

The surveyed villages boast adequate provisions for drinking water, well-constructed roads, electricity, shopping facilities, educational institutions, and transportation services. The primary

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sources of income for the residents include agriculture and opportunities in both private and government sectors within the region. The majority of individuals in the surrounding areas are literate.

Industrial establishments play a significant role in the economic landscape, as a considerable number of villagers are employed in these enterprises. The overall development of this area is characterized by moderate levels, supported by well-connected roadways. Villagers primarily rely on hand pumps and bore wells for their drinking water needs.

Accessibility to vital services such as schools, post offices, banks, hospitals, and markets is readily available to the residents. The livelihoods of most people hinge on Agriculture, Labors, service, private jobs and private employment opportunities, while a minority is involved in activities like animal husbandry and poultry farming. Diverse employment opportunities exist in various industries, contributing to the economic vibrancy of the region.

## **11.4. ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES**

### **Air environment**

**During the installation phase**, impacts on ambient air would be mainly due to dust emissions and movement of vehicles. However, these impacts would be short term in nature and limited only to the construction period. Dust suppression systems (water spray) will be used. Construction materials will be fully covered during transportation to the project site by road.

**During the operational phase**, impacts will be mainly due to emissions from the operation of DG sets and Boilers (WHRB and FBC). Adequate stack height and other APCMs shall be installed to mitigate negative impacts on the environment.

### **Water Environment**

**Source of Fresh Water:** Groundwater Supply

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**Construction phase:** The water used for construction purposes will be treated in sedimentation tanks and shall be reused appropriately. The wastewater from domestic activities will be managed in STP. No water shall be released untreated in the environment.

**Operational phase:** The plant will install ETP to manage processed wastewater. Treated water will be recycled and reused within the plant. STP treated water will be reused for greenbelt development.

### **Land Use and Soil quality**

There won't be any change in land use during the proposed expansion. To avoid impact on soil quality, C&D wastes during the construction phase shall be collected and disposed off separately. Similarly, solid and hazardous wastes shall be collected and managed in separated drums to avoid open disposal.

### **Noise Levels**

The major noise generation sources during construction and operation phases are DG sets, vehicular movement, Boilers etc and other plant machineries. Noise barriers and anti vibration pads shall be installed to mitigate noise impacts. Similarly, to reduce noise from vehicular movement, servicing shall be carried out at regular intervals. Greenbelt of adequate width shall be provided to mitigate the overall noise level from the plant during its operation. The workers shall be provided with ear muffs to avoid health impacts.

### **Solid and Hazardous Waste**

Solid wastes are segregated onsite into biodegradable and non biodegradable. Biodegradable wastes shall be managed via OWC and composting. Non Biodegradable waste shall be supplied to authorised recyclers and vendors.

Hazardous waste shall be collected in separate drums and transported authorised vendors.

### **Flora and Fauna:**

Additional greenbelt consisting of native tree species shall be provided inside the plot area. This will also enhance the natural beauty of the project site along with added benefits of noise and air emission reduction.

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### **Socio-Economic Environment:**

No rehabilitation and resettlement are required. Employment opportunities will be generated for the local population during the construction/installation phase which will lead to a rise in income and improve standard of living. The expansion of existing industry would also generate jobs for the labourers during the construction phase as well as during the operation phase. It will provide direct and indirect employment to local youth.

## **11.5. ENVIRONMENTAL MONITORING PROGRAMME**

M/s Noble Tech Industries Pvt. Ltd. will ensure that the environmental performances of all the activities are monitored throughout the execution of the various project activities. Monitoring will include all the aspects and parameters related to the process emissions from the manufacturing process, storage area, work zone area, quantities of waste generated, effluent generation and its characteristics, Environmental quality of components like Air, water, Soil, Noise are being verified that they meet the prescribed standards. Occupational health and safety monitoring will include Effective Health and safety management of the workers engaged, periodic health check up, reporting of all the incidents in the plant during the installation and operation phase. All the reports will be periodically submitted to the concerned regulatory authorities as compliance, audit reports.

## **11.6. ADDITIONAL STUDIES**

### **Public Consultation**

Details will be incorporated after Public consultation.

### **Risk Assessment**

A Hazard Identification and Risk Assessment (HIRA) is a systematic risk assessment tool that can be used to assess the risks of various hazards. Risk Assessment is done through consequence analysis to know the type of damage that any accident could pose on the human beings and property. Based on the extent of damage, risk mitigation measures are suggested. In order to manage the hazard, an on-site risk management plan is prepared. The on-site risk management

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plan is also known as Disaster Management Plan. Off-site risk management plan is prepared if the consequence analysis predicts the possibility of risks to people and property present within the damage zone.

### **General Safety Measures**

- Occupational health surveillance programmes will be done six monthly & and their records will be well maintained.
- At the project site an emergency First Aid facility will be provided. A room will be provided separately with provision of bed and an experienced doctor.
- Health check-up camps will be organised on a regular basis at company dispensary / nearby locations for nearby people to evaluate exposure of the workers to chemicals during pre-placement and periodic medical monitoring.
- Prior to working with chemicals, workers will be trained on its proper handling & storage and its MSDS.
- Proper medical facility arrangements will be provided in case of any accidental release.
- Label Precautions and First Aid facility will be provided.
- Emergency plans will be prepared and a mock drill of the on-site emergency conducted.
- Employers and employees will be made aware of the hazardous properties of materials in their workplaces, and the degree of hazard each poses.
- Inspection of the industrial activity will be done at least once a year and an annual status report on compliance with the Rules will be submitted.
- An Environment, Health and Safety (EHS) Head will be available, which handles all the safety issues related to man, machine & materials.
- Exterior refuge or safe areas include parking lots, open fields or streets which will be located away from the site of the emergency and which provide sufficient space to accommodate the employees.

### **11.7. PROJECT BENEFITS**

The benefits due to the proposed project are given below:

- The industry will spent INR 80 lakhs towards social activities



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- The proposed industry will lead to a rise in income and improve standard of living. The industry would also generate jobs for the labourers during the construction phase as well as during the operation phase. It will provide direct and indirect employment to local youth.
- Additional employment opportunities will lead to a rise in income and improve standard of living. Setting up of industry would also generate jobs for the labourers during the construction phase as well as during operation phase. It will provide direct and indirect employment and training to local people.
- Since many of the products are import substitutes - Make in India theme will get a boost. The country will be able to save valuable foreign exchange.

## **11.8. ENVIRONMENT MANAGEMENT PLAN**

The effective management system involves proper and regular monitoring of the environment components for continual improvement. Based on the project descriptions and the activities associated, the Environment Management plan has been prepared for all the valued Components for which the Budget of INR 312.0 lakhs after expansion as capital cost & 52.5 INR Lakhs after expansion as recurring cost has been proposed by M/s Noble Tech Industries Pvt. Ltd.. Work zone monitoring shall be carried out by the HSE department every month for gaseous pollutants and dust. Records will be kept in standard Form as per Factories Rules. Location for sampling shall be identified. Monthly monitoring will be done by a 3rd party during the operation phase.

## **11.9. CONCLUSION**

The proposed expansion won't bring much change to the land use of the area. Thus, it can be concluded on a positive note that after the implementation of the mitigation measures and Environmental Management Plan, the operation of the project will have no major impact on the environment.

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## 12. DISCLOSURE OF CONSULTANTS ENGAGED

### About Environmental Consultant

Perfact Enviro Solutions Pvt. Ltd, established by experienced environmental and related experts, provides specialized services in the field of Environment and Pollution Control for all types of Industrial, Construction, Nuclear Sciences, Biodiversity Mining, Aerial Ropeway and other related fields. Our transparent and professional approach, commitment to excellent quality and service, and timely deliveries have contributed to create a name in the field of environment. We have a core group of highly qualified experts from various fields like Environment, Forestry, Chemistry, Civil Engineering, Geology, Social Sciences, Electronics and Telecommunication with rich and diversified experience in the field of environment and pollution control. Perfact Enviro Solutions Pvt. Ltd. management, experience, excellence, professionalism and ultimate satisfaction has helped in achieving the heights of success in their specialized field of environment.

### ACCREDITATIONS OBTAINED

- ISO-9001:2015 Certification
- ISO-14001:2015 Certification
- QCI – NABET Scheme for Accreditation of EIA Consultant Organizations

Table 121. List of FAEs Involved (Category A)

Sr. No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)
1.	EIA Coordinator	Dr. Jayant Kumar Moitra	I had visited the site with the FAEs to assess the project site and the study area. Coordinated With the experts and prepared the impact assessment methodology. Identification and Prediction of the impact assessment, Formulation of the Environment Management Plan, Technical Review. Period of Involvement: February 2023 - Till Date
2	AP	Dr. Jayant Kumar Moitra	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring; based on the results and the site specific details along with Project Specific Details obtained , I have prepared the Impact Mitigation measures

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<b>Sr. No.</b>	<b>Functional Areas</b>	<b>Name of Expert(s)</b>	<b>Involvement (Period &amp; Task)</b>
			Period of Involvement: February 2023 - Till Date
<b>3</b>	<b>AQ</b>	Dr. Jayant Kumar Moitra	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and micrometeorology interpretation of modeling results and development of EMP. Period of Involvement: February 2023 - Till Date
<b>4</b>	<b>WP</b>	Mr. G. Muthukumaran	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources have prepared Sampling plan & collected samples ; based on the results from the lab and the site specific details along with Project Specific Details obtained, I have prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till Date
<b>5</b>	<b>RH</b>	Dr. Jayant Kumar Moitra	I had visited the site to assess the site conditions in the surrounding area and identified hazards. After assessing the risk and hazard, I prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till Date
<b>6</b>	<b>SE</b>	Dr. Rahul Deshmukh	I had visited the site to collect the baseline status of socio-economic conditions and studied Villages in study areas using Topographical maps and extracted Secondary data from Census of India. Then was involved in preparing a socio economic study report using the primary survey and secondary data which includes impact and mitigation measures. Period of Involvement: February 2023 - Till Date
<b>7</b>	<b>NV</b>	Mr. G. Muthukumaran	I had visited the site to assess the site conditions in the surrounding area. After assessing the Noise pollution sources have prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till Date
<b>8</b>	<b>HW</b>	Dr. Jayant Kumar Moitra	I had visited the site to assess the Solid waste sources and status in the study area. After studying the sources have prepared the Impact report and suggested Mitigation measures and development of EMP. Period of Involvement: February 2023 - Till Date
<b>9</b>	<b>HG</b>	Mr. Santosh Pant	The physical observation of the study area including Ground water sources and its water quality was made. After studying the Water pollution sources,

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Sr. No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)
			the Impact report was prepared and Mitigation measures were suggested Period of Involvement: February 2023 - Till Date
10	Geo	Mr. Santosh Pant	I had visited the site to assess the geology of the study area. After studying I have prepared the Impact report and suggested mitigation measures Period of Involvement: February 2023 - Till Date
11	SC	Mr. Praveen Bhargava	I had visited the site to assess the site conditions in the surrounding area. After assessing the type of soil and need of Soil Conservation, Prepared the Impact Mitigation measures accordingly. Period of Involvement: February 2023 - Till Date
12	LU	Dr. Mamta Pandey	I was involved in preparing a Land Use map using Satellite Imagery, Google maps after primary survey. Period of Involvement: February 2023 - Till Date
13	EB	Dr. Seema Srivastava	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, assisted FAE in preparing the Impact report and suggested Mitigation measures Period of Involvement: February 2023 -Till Date

### List of FAEs Involved (Category B)

Table 122. List of FAEs Involved (Category B)

Sr. No.	Functional Areas	Name of Expert(s)	Involvement (Period & Task)
1.	AP	Mr. G. Muthukumar	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring; based on the results and the site specific details along with Project Specific Details obtained, I have prepared the Impact Mitigation measures Period of Involvement: February 2023 - Till Date
2.	AQ	Mrs. Shweta Rajput	I had visited the site for the assessment of the sources and the emissions. After studying, I calculated the model input data related to the proposed emissions and micrometeorology interpretation of modeling results and development of EMP. Period of Involvement: February 2023 - Till Date

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<b>Sr. No.</b>	<b>Functional Areas</b>	<b>Name of Expert(s)</b>	<b>Involvement (Period &amp; Task)</b>
3.	LU	Mr. Rajneesh Maurya	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: February 2023 - Till Date.
4.	RH	Mr. G. Muthukumaran	I had visited the site to assess the site conditions in the surrounding area and identified hazards. After assessing the risk and hazard, I prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till Date.
5.	WP	Mrs. Shweta Rajput	I had visited the site to assess the water sources and its water quality in the study area. After studying the Water pollution sources have prepared Sampling plan & collected samples ; based on the results from the lab and the site specific details along with Project Specific Details obtained, I have prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till Date.
6.	NV	Mrs. Urvi Pritam	I had visited the site to assess the site conditions in the surrounding area. After assessing the Noise pollution sources have prepared the Impact Mitigation measures. Period of Involvement: February 2023 - Till Date.
7.	HG	Mrs. Saloni Sharma	I have visited the site and assessed the hydrology of the area. After studying the hydrology and pollution sources the impact and mitigation have been identified. Period of Involvement: February 2023 - Till Date.
8.	GEO	Mrs. Saloni Sharma	I had visited the site to assess the physical observation of the study area. After studying the site, an Impact & mitigation report is prepared. Period of Involvement: February 2023 - Till Date.
9.	SC	Mr. C. S. Jha	I had visited the site to assess the site conditions in the surrounding area. After assessing the type of soil and need of Soil Conservation, Prepared the Impact Mitigation measures accordingly. Period of Involvement: February 2023 - Till Date.

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### List of FAA Involved

Table 123 . List of FAA Involved

Sr. No.	Functional Area	Name of Expert(s)	Involvement (Period & Task)
1.	AP	Mrs. Cipia Mehta	I had visited the site to assess the site conditions in the surrounding area. After assessing the Air pollution sources. Made Sampling plan & conducted monitoring; based on the results and the site specific details along with Project Specific Details obtained , I have prepared the Impact Mitigation measures Period of Involvement: February 2023 - Till Date
2.	LU	Mrs. Cipia Mehta	I was involved in preparing a Land Use map using Satellite Imagery, Google maps and Toposheet after primary survey. Period of Involvement: February 2023 - Till Date

### List of Team Member Involved

Table 124. List of Team member Involved

Sr. No.	Functional Area	Name of Expert(s)	Involvement (Period & Task)
1.	EB	Mrs. Disha Patel	I had visited the site to assess the various forest areas, Ecological and Biodiversity sources in the study area. After studying the various floral and faunal species, assisted FAE in preparing the Impact report and suggested Mitigation measures Period of Involvement: February 2023 - Till Date
2.	HW	Mrs. Charmi Shah	I had visited the site to assess the Solid waste sources and status in the study area. After studying the sources have prepared the Impact report and suggested Mitigation measures and development of EMP. Period of Involvement: February 2023 - Till Date