SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

Greta Energy Limited

[Greenfield Project comprising of establishment of Pellet Plant (12,00,000 TPA), Coal Gasification Unit (Syn Gas 62,640 Nm^3/Hr.), Sulphur Recovery Unit (2300 TPA), Gas based DRI Plant (Sponge Iron - 4,95,000 TPA), Electric Arc Furnace with 65 T - LRF & 65 T - VD (Billets - 4,22,950 TPA), Rolling Mill (TMT Rebars & Wire Rods – 4,00,000 TPA) and Brick Manufacturing unit (10,000 Bricks/day)]

at

Plot No: B-1 & AM-1, MIDC Bhadrawati, Village Telwasa,
Tehsil Bhadrawati, District Chandrapur, Maharashtra

Submitted to

MAHARASHTRA POLLUTION CONTROL BOARD

1.0 PROJECT DESCRIPTION

Greta Energy Ltd. has proposed to establishment of Greenfield Steel Plant comprising of Pellet Plant (12,00,000 TPA), Coal Gasification Unit (Syn Gas 62,640 Nm^3/Hr.), Sulphur Recovery Unit (2300 TPA), Gas based DRI Plant (Sponge Iron - 4,95,000 TPA), Electric Arc Furnace with 65 T - LRF & 65 T - VD (Billets - 4,22,950 TPA), Rolling Mill (TMT Rebars & Wire Rods – 4,00,000 TPA) and Brick Manufacturing unit (10,000 Bricks/day) at Plot No: B-1 & AM-1, MIDC Bhadrawati, Village Telwasa, Tehsil Bhadrawati, District Chandrapur, Maharashtra.

Total land identified for the proposed project is 51.8 Ha. Out of which 43.0 Ha. of land and has been allotted by Maharashtra Industrial Development Corporation (MIDC) vide no. MIDC/RO(NAGPUR)/Bhardravati(Major)/LMS-5/562/2024 dt. 09.02.2024. and remaining 8.8 Ha., a letter has been submitted MIDC for allotment of same.

The project cost envisaged for the proposed project is Rs. 3852 Crores.

As per the Ministry of Environment, Forests & Climate Change, New Delhi, EIA notification dated 14th September 2006 & its subsequent amendments, all Primary metallurgical processing industries are listed under S.No. 3(a), under Category 'A'. *The proposed project activity is listed at schedule no. 3(a) Metallurgical Industries (ferrous & non-ferrous) under Category "A" of the schedule of the EIA Notification, 2006 and appraised at Central Level.*

In order, to obtain Environmental Clearance for the proposed project, (CAF, Form – I Part A & B), copy of Pre-Feasibility report and proposed ToRs were submitted to the Honourable Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi on 4th October 2024 vide Proposal No. **IA/MH/IND1/494942/2024**. Subsequently Standard TOR letter was issued vide letter File No. **IA-J-11011 / 378 / 2024 – IA-II (IND-I),** dated **7th October 2024**. Draft EIA report has been prepared incorporating the Terms of Reference & is being submitted to Maharashtra Pollution Control Board (MPCB) for conducting Public hearing/consultation.

Pioneer Enviro Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/EIA/2225/RA 0282**,** for preparing Environmental Impact Assessment (EIA) report for Metallurgical Unit, have prepared EIA report for the proposed project by incorporating the TOR approved by Ministry of Environment, Forests& Climate Change, New Delhi. The report contains detailed description of the following:

- Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- Assessment of air emissions, liquid waste and solid waste from the proposed project along with the noise level assessment.
- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed project, solid waste management, Greenbelt development.
- Post Project Environmental Monitoring & Budget for Environmental Protection Measures.

1.1 ENVIRONMENTAL SETTING WITHIN 10 Km. RADIUS OF THE PLANT SITE

The following is the environmental setting within the 10 Km. radius of the Project site:

Table No. 1.1: Environment Setting within 10 Kms. radius of the site

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Industrial Land
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements – 6.8%, Industrial area – 2.9%, Tank/River etc. – 5.4%, Scrub Forest – 2.1%, Single Crop – 53.5%, Plantation – 7.4%, Land with scrub – 4.1%, Land without scrub – 2.8%, Mining area – 11.4%, O B Dump – 3.6%
3.	National Park/ Wildlife sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	There are no notified National Park /Wildlife sanctuary/ Biosphere reserve/ Tiger Reserve /migratory routes for Birds within 10 Kms. radius of the project site.
4.	Historical places / Places of Tourist importance / Archeological sites	Vijasan Caves – 5.0 Kms. (North Direction)
5.	Critically polluted area as per MoEF&CC Office Memorandum dated 13th January 2010	• We would like to inform your goodselves that MIDC Chandrapur, MIDC Tadali, Ghuggus & Ballarpur areas are covered under Critically Polluted Area of Comprehensive Environmental Pollution Index (CEPI) region. • Our project site is situated in Plot No: B-1 & AM-1, MIDC Bhadrawati, Village Telwasa, Tehsil Bhadrawati, District Chandrapur, Maharashtra. • Letter is issued by MPCB vide letter no. MPCB/ROC/634/2024 dt. 01.10.2024 confirming our project site does not fall under Critically Polluted Area of Chandrapur region.

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
6.	Defence Installations	Ordnance Factory, Chandrapur - 8.5 Kms. (NE Direction)
7.	Nearest village	Telwasa Village - 0.8 Kms. (West Direction)
8.	Nearest Hospital	Urban Primary Health Centre, Bhadrawati - 5.5 Kms. (NE direction)
9.	Nearest School	Zilla Parishad Upper Primary School, Dhorwasa Village – 0.8 Kms. (NNW Direction)
10.	Forests	Bhandak Reserve Forest – 8.6 Kms. (NE Direction) & Unnamed Reserve Forest – 9.55 Kms (SWW Direction) are present within 10 Kms. radius of the project site.
11.	Water body	Wardha River – 1.2 Kms. (West Direction) & Kondha Nala – 8.0 Kms. (N Direction) are present within 10 Kms. radius of the project site.
12.	Nearest Highway	NH # 930 – 6.8 Kms. – NE Direction (by Road)
13.	Nearest Railway Station	Bhandak RS – 4.7 Kms. – NE Direction (by Road)
14.	Nearest Port facility	Nil within 10 Km. Radius.
15.	Nearest Airport	Nil within 10 Km. Radius.
16.	Nearest Interstate Boundary	Nil within 10 Km. Radius.
17.	Seismic zone as per IS-1893	Seismic Zone-II
18.	MSL of the Project area	189 m to 195 m
19.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
20.	Litigation / court case is pending against the proposed project / proposed site and or any direction passed by the court of law against the project	Nil

1.2 PLANT CONFIGURATION AND PRODUCTION CAPACITY

Following is the proposed plant configuration and proposed production capacities:

Table No.1.2: Proposed Plant Configuration & Production Capacities

S.No.	Unit (Product)	Configuration	Capacity
1.	Pellet Plant	1 x 1.2 MTPA	12,00,000 TPA
2.	Coal Gasification Unit (Syn Gas)	62,640 Nm^3/Hr.	62,640 Nm^3/Hr.
3.	Sulphur Recover Unit	1 x 2300 TPA	2300 TPA
4.	Gas based DRI plant (Sponge Iron)	1 x 1500 TPD	4,95,000 TPA
5.	Electric Arc Furnace with 65 T LRF & 65 T VD (Liquid Steel / Billets)	1 x 65 T	4,22,950 TPA
6.	Rolling Mill (TMT Rebars & Wire Rods)	1 x 1250 TPD	4,00,000 TPA
7.	Brick Manufacturing unit	10,000 Brick /day	10,000 Brick /day

S.No.	Unit (Product)	Configuration	Capacity
	(Bricks)		
8.	Air Separation Plant	2 x 500 TPD	1000 TPD

1.3 RAW MATERIAL REQUIRMENT

The following will be the raw material requirement for the proposed project:

Table No.1.3: Raw Material Requirement, Source & Mode of Transport

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
1.	**Pellet Plant (Pellet) – 12,00,000 TPA**				
a)	Iron Ore fines	11,36,384	Maharashtra / Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
b)	Limestone	10,800	Maharashtra	~ 100 Kms.	By road (through covered trucks)
c)	Bentonite	9,600	Maharashtra	~ 100 Kms.	By road (through covered trucks)
d)	Anthracite Coal	14,400	Maharashtra	~ 500 Kms.	By rail & road (through covered trucks)
2.	**For Coal Gasification unit (Syngas)**				
a)	Washed Coal	4,36,500	Maharashtra	~ 500 Kms.	By rail & road (through covered trucks)
3.	**For DRI Kilns (Sponge Iron) – 4,95,000 TPA**				
a)	Pellets	7,39,000	Inhouse generation	---	Internal transfer
b)	Cement (PSC)	4600	Maharashtra / Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
c)	Syngas	62,640 NM3/Hr.	Inhouse generation	---	Through pipes
4.	**For Electric Arc Furnace (Billets) – 4,29,000 TPA**				
a)	Cold DRI	73,600	Inhouse Generation	---	Through covered conveyers
b)	Hot DRI	4,17,450	Inhouse Generation	---	Internal transfer
c)	Calcined Lime	25,400	Maharashtra	~ 250 Kms.	By road (through covered trucks)
d)	Calcined Dolo	8450	Maharashtra	~ 250 Kms.	By road

					(through covered trucks)
e)	Ferro Alloys	8460	Maharashtra	~ 250 Kms.	By road (through covered trucks)
f)	Carbon Injection	6350	Maharashtra	~ 250 Kms.	By road (through covered trucks)
g)	Electrode	719	Maharashtra	~ 250 Kms.	By road (through covered trucks)
h)	Return Scrap	12,690	Inhouse Generation	---	Internal transfer
5.	**For Rolling Mill (TMT Rebars & Wire Rods) – 4,00,000 TPA**				
a)	Billets	4,12,400	Inhouse Generation	---	Internal transfer
b)	LDO	11622 (13358 KL/annum)	Maharashtra	~ 100 Kms.	By road (through tankers)

1.4 MANUFACTURING PROCESS

1.4.1 Pelletization

Iron ore fines will be grinded in Ball mills. The concentrate will be fed to thickener and subsequently to filtering unit. The filter cake will be sent to pellet plant comprising of Travelling grate kiln. Green pellets will be produced from this process. The flue gases from grate kiln will be treated in ESP and discharged through a stack.

1.4.2 Coal Gasification Plant/Producer Gas Plant

Gasification of coal is a conversion technology which converts coal into producer gas. The gasifier system includes a coal feed system, gasifier, HRSG unit, fines removal, and ash discharge systems. Washed coal is conveyed to the gasifier by a belt conveyor, with a grinding system ensuring the proper feed quality. The gasifier operates at 960°C and 16 bar pressure, where steam and oxygen react with coal to form syngas. The raw syngas, containing some solid particles, passes through cyclones to capture fines, which are reintroduced into the gasifier for further reaction.

The syngas at 940°C enters the HRSG for cooling and heat recovery, producing superheated steam at 40 bars and 450°C. It then goes through a high-efficiency cyclone for additional fines

removal, which are recycled into the gasifier or stored in a fines silo. Hot ash from the gasifier is cooled, depressurized, and sent to an ash cooler before being transported to an ash silo.

The gasifier generates 130,370 N cu m/hr of raw syngas, which undergoes further processing in a Water Gas Shift (WGS) and Acid Gas Removal (AGR) plant.

1.4.3 Sulphur Recovery Unit (SRU)

The H_2S-rich gas captured at the acid gas removal unit is converted into elemental sulfur, providing additional economic benefits through sulfur sales. This is done using a modified Claus reaction unit, which extracts sulfur from hydrogen sulfide, carbonyl sulfide, carbon disulfide, sulfur dioxide, and other sulfur-containing compounds through thermal and chemical reactions.

The Sulfur Recovery Unit (SRU) includes Claus trains, sulfur degassing trains, a common Tail Gas Treating (TGT) unit, and an incineration unit. The Claus process is the core of the SRU, where sulfur is recovered in two stages: a thermal stage followed by a catalytic stage. To maximize sulfur recovery, the ratio of H_2S to SO_2 in the Claus tail gas should be 2:1.

In the thermal stage, the acid gas is preheated and routed into a furnace, where it is combusted with air to form SO_2. This reaction between H_2S and SO_2 in the combustion chamber produces elemental sulfur.

1.4.4 Gas Based DRI Process Based on Syngas

The manufacturing process of sponge iron using syngas involves several key steps. First, iron ore pellets are charged into a rotary kiln or shaft furnace. In the furnace, syngas, primarily composed of Hydrogen (H_2) and carbon monoxide (CO), is introduced as a reducing agent. The syngas reacts with the iron ore at high temperatures (900°C-1,100°C), reducing iron oxides (Fe_2O_3 or Fe_3O_4) to produce sponge iron (direct reduced iron, DRI).

The reduction reaction occurs in two stages: first, CO reduces iron oxide to iron monoxide (FeO), followed by hydrogen reducing FeO to metallic iron. The process generates waste gases that are cooled and treated for fine particle removal. The resulting sponge iron, with low carbon content, is then cooled and discharged for further processing.

1.4.5 Electric Arc Furnace:

Manufacturing of Billets using Cold DRI, Hot DRI, Calcined lime, Calcined Dolo, Ferro Alloys etc. as raw materials though Electric Arc Furnace, In which primarily uses high-voltage electrified arcs to melt scrap steel for conversion into liquid steel without altering the electrochemical properties of the specific metal. There will be 1 x 65 T Electric Arc Furnace to manufacture Billets.

1.4.6 Rolling Mill

The combined bar and wire rod mill is designed to produce 300,000 TPA of wire rods in coils and 100,000 TPA of rebars in straight lengths. The mill features an induction heater for reheating steel billets, with provisions for a future reheating furnace if needed. The billets from the continuous caster are fed into roughing, intermediate, and finishing trains. Crop shears are provided to trim the ends of the rolled stock. Rebars are cooled in water boxes and cut into desired lengths before being moved to a cooling bed, where they are subdivided, bundled, and stored. For wire rods, bars are diverted to a separate line with pre-finishing stands and a no-twist finishing block. After controlled water cooling, rods are placed on a loop conveyor for air cooling, then formed into coils at a reforming station. Coils are compacted, weighed, and unloaded via an overhead crane.

1.4.7 Brick Manufacturing Plant (10,000 Bricks/day)

A slag brick making unit with a capacity of 10,000 bricks/day will use slag (70%), gypsum (5%), cement (10%), and stone dust (15%). After mixing in a pan mixer, the mixture is pressed in an automatic block-making machine, cured for 10-15 days, and then sorted, tested, and dispatched.

1.5 Water Requirement

- Water required for proposed project (for process and domestic) is **10,704 KLD (i.e.446 Cum/Hr.)** & Water required for proposed project will be supplied by Maharashtra Industrial Development Corporation (MIDC). This includes make up water for Pellet plant, Gasification Plant, DRI Kiln, Electric Arc Furnaces, Rolling Mill, Brick Manufacturing unit, & Domestic purpose.

- Water required for the proposed project will be supplied by Maharashtra Industrial Development Corporation (MIDC).

Table No.1.4: Breakup of Water Requirement

S.No.	Unit	Quantity in Cubic meter per Hour
1.	Pellet Plant	22
2.	Coal Gasifier	78
3.	Sulfur Recovery Unit	14
4.	Syngas based DRI Unit	91
5.	Electric Arc Furnace	27
6.	Ladle Furnace	17
7.	VD Unit	33
8.	Billet Caster	17
9.	Rolling Mill	32
10.	Chiller plant	30
11.	DM Plant	67
12.	Softening Plant	10
13.	Raw material handling system	5
14.	Fire Fighting system	1
15.	Air Separation Plant	74
16.	Domestic	4
17.	Misc.	3
	Total	**525**
	Recover from ETP	**84**
	Net Make up	**441**
	Losses in Raw water reservoir & RWTP	**5**
	Raw water required	**446**

1.6 Wastewater Generation

- Total wastewater generated from the proposed project is 93 Cum/Hr.
- Effluent generated from Sponge Iron, Electric Arc Furnace, Rolling Mill will be sent to Effluent Treatment Plant (ETP) for treatment and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning, greenbelt development and for Slag Cooling.
- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.

- Sanitary waste water will be treated in STP and after treatment it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be maintained in the proposed project.
- During monsoon the treated effluent will be utilized as makeup water in Rolling Mill. Accordingly, the makeup water for Rolling mill also reduces during the rainy period.

Table No.1.5: Breakup of Wastewater Generation

S.No.	Source	Generation (Cub.M/Hr.)
1.	From Coal Gasifier	10
2.	From Sulfur Recovery Unit	3
3.	From Syngas based DRI Unit	20
4.	From Electric Arc Furnace	6
5.	From Ladle Furnace	4
6.	From VD Unit	8
7.	From Billet Caster	4
8.	From Rolling Mill	8
9.	From Chiller plant	7
10.	From DM Plant	2
11.	From Softening Plant	1
12.	Air Separation Plant	17
13.	Sanitary wastewater	3
	Total	**93**

2.0 DESCRIPTION OF ENVIRONMENT

Base line data has been collected on ambient air quality, water quality, noise levels, flora and fauna and socio-economic details of people within 10 km radius of the plant.

2.1 Ambient air quality

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2, NOx & CO at 8 stations including project site during ***1st October 2024 to 31st December 2024***. The following are the concentrations of various parameters at the monitoring stations:

Table No.2.1: AAQ Data Summary

S.No.	Parameter	Concentration (in µg/m³)	Standard as per NAAQS (in µg/m³)
1.	$PM_{2.5}$	32.20 to 50.20	60
2.	PM_{10}	53.60 to 86.50	100
3.	SO_2	12.10 to 18.50	80
4.	NO_X	18.90 to 24.80	80
5.	CO	920.00 to 1750.00	2000

2.2 Water Quality

2.2.1 Surface Water Quality

Three samples (60m Upstream and 60m Downstream) from Wardha River and one sample from Sakharwai Village Pond have been collected and analyzed for various parameters. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

2.2.2 Ground Water Quality

8 Nos. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

2.3 Noise Levels

Noise levels were measured at 8 locations during daytime & Nighttime. The equivalent **day-night** noise levels in the study zone are ranging from **50.21 dBA to 72.81 dBA.**

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Prediction of impacts on air quality

The likely emissions from the proposed project are $PM_{2.5}$, PM_{10}, SO_2, NOx & CO. The predictions of Ground level concentrations have been carried out using Industrial Source Complex (ISC-3) model. Meteorological data such as wind direction, wind speed, max. and min. temperatures collected at the site have been used as input data to run the model.

The predicted max. Incremental $PM_{2.5}$ concentrations (24 hourly) due to the proposed project will be **0.61 µg/M³** at a distance of **2100 m** from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in $PM_{2.5}$ concentration due to the Vehicular emission will be **0.39 µg/m³.**

Hence the total predicted incremental rise in $PM_{2.5}$concentration due to the emission from proposed project and due the vehicular emissions will be **0.61 µg/m³ + 0.39 µg/m³ = 1.00 µg/m³.**

The predicted max. Incremental PM_{10}concentrations (24 hourly) due to the proposed project will be **1.09 µg/M³** at a distance of **2100 m** from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in PM_{10} concentration due to the Vehicular emission will be **0.65 µg/m³.**

Hence the total predicted incremental rise in PM_{10} concentration due to the emission from proposed project and due the vehicular emissions will be **1.09 µg/m³ + 0.65 µg/m³ = 1.74 µg/m³.**

The predicted max incremental **SO_2** concentrations (24 hourly) due to the emissions from operation of proposed project will be **11.65 µg/m³** at a distance of **1700 m** from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental **NO_2** concentrations (24 hourly) due to the proposed project will be **9.55 µg/m³** at a distance of **2700 m** from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in **NOx** concentration due to the Vehicular emission will be **4.84 µg/m³.**

Hence the total predicted incremental rise in NOx concentration due to the emission from project and due the vehicular emission will be **9.55 µg/m³ + 4.84 µg/m³ = 14.39 µg/m³**

The predicted max incremental **CO** concentrations (24 hourly) due to the proposed project will be **0.65 µg/m³** at a distance of **1590 m** from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in **CO** concentration due to the Vehicular emissions will be **3.12 µg/m³**.

Hence the total predicted incremental rise in CO concentration due to the emission from project and due the vehicular emission will be **0.65 µg/m³ + 3.12 µg/m³ = 3.77 µg/m³**

The net resultant concentrations (Maximum baseline conc. + predicted incremental rise in conc.) of PM, SO_2 and NO_X shown in Table No. 3.1, by considering the emissions from other industries in the area will be well within the National Ambient Air Quality Standards (NAAQS)

when the plant will commence the operation. Hence there will not be any adverse impact on air environment due to the proposed activities.

Table No.3.1: NET RESULTANT MAXIMUM CONCENTRATIONS DURING THE OPERATION OF THE PROPOSEDPROJECT (APCS WORKING SCENARIO)

Item	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	CO ($\mu g/m^3$)
Maximum baseline conc. in the study area	50.20	86.50	18.50	24.80	1750.00
Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	0.61	1.09	11.65	9.55	0.65
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.39	0.65	---	4.84	3.12
Net resultant concentrations during operation of the proposed project	**51.20**	**88.24**	**30.15**	**34.35**	**1753.77**
National Ambient Air Quality Standards	**60**	**100**	**80**	**80**	**2000**

The net resultant Ground level concentrations during operation of the proposed project are within the NAAQS. Hence, there will not be any adverse impact on air environment due to the proposed project.

3.2 Prediction of impacts on Noise quality

The major sources of noise generation in the proposed project will be Kiln, Furnaces, Mills, DG set, etc. Acoustic enclosures will be provided. The ambient noise levels will be within the standards prescribed by MoEF vide notification dated 14-02-2000 under the Noise Pollution (Regulation & Control), Rules 2000 i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. **20.72 Ha.** of extensive greenbelt will be developed to further attenuate the noise levels. Hence there will not be any adverse impact due to noise on population in surrounding areas due to the proposed project.

3.3 Prediction of impacts on Water Environment

- Effluent generated from Sponge Iron, Electric Arc Furnace, Rolling Mill will be sent to Effluent Treatment Plant (ETP) for treatment and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning, greenbelt development and for Slag Cooling.

- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP and after treatment it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be maintained in the proposed project.
- During monsoon the treated effluent will be utilized as makeup water in Rolling Mill. Accordingly, the makeup water for Rolling mill also reduces during the rainy period.

Hence there will not be any adverse impact on environment due to the proposed project.

3.4 Prediction of Impacts on Land Environment

The effluent will be treated to achieve SPCB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / SPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. **20.72 Ha.** of extensive greenbelt will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed project.

3.5 Socio - Economic Environment

There will be certain upliftment in Socio Economic status of the people in the area & development of the area due to the proposed project. Due to this the economic conditions, the educational and medical standards of the people living in the study area will certainly move upwards which will result in overall economic development, improvement in general aesthetic environment and increase in business opportunities.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of SPCB and MoEF&CC are tabulated below:

TABLE NO.4.1: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Wastewater quality				

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
A.	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis	Grab sampling	As per IS: 10500
B.	Effluent at the outlet of the ETP	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Once in a month	Composite sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Quarterly Once	Continuous ----	PM, SO_2, NOx & CO PM, SO_2, NOx & CO
B.	Ambient Air quality (CAAQMS)	Continuous Quarterly Once	Continuous 24 hours	$PM_{2.5}$, PM_{10}, SO_2, NOx CO & O_3 $PM_{2.5}$, PM_{10}, SO_2, NOx CO & O_3
C.	Fugitive emissions	Quarterly Once	8 hours	PM
3. Meteorological Data				
A.	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
A.	Ambient Noise levels	Once in a month (hourly)	Continuous for 24 hours with 1 hour interval	Noise levels
5. Soil Quality monitoring				
A.	Soil Quality	Half yearly once	Core drilling sample	pH, SAR, texture, N,P,K, etc.

5.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is involved in the proposed project as there are no habitations in the project site.

6.0 PROJECT BENEFITS

With the establishment of the proposed project employment potential will increase. Land prices in the area will increase. The economic status of the people in the area will improve

due to the proposed project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment.

The estimated manpower (direct employment) after completion of the project shall be 567 personnel comprising administrative, technical, non-technical, skilled & unskilled work force.

As per MoEF&CC Office Memorandum vide F.No.22-65/2017-IA.III dt. 30th September 2020, the budgetary allocation for commitment made by Project Proponent to address the concern raised during public hearing & based on Social Impact Assessment (SIA). Hence a separate budget will be allocated for Social welfare measures after completion of Public Hearing.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

The following are air emission control systems proposed in the proposed project:

Table No.7.1: Air Emission Control Systems Proposed

S.No.	Source	Control Equipment	Emission at Outlet
1.	Pellet Plant	Electro Static Precipitators (ESP)	PM < 30 mg/Nm^3
2.	Gas based DRI kilns	Bagfilters	PM < 30 mg/Nm^3
3.	EAF	Fume Extraction system with PTFE bag Filters. EAF to have 4th hole extraction system.	PM < 30 mg/Nm^3
4.	Rolling Mill	Stack	PM < 30 mg/Nm^3
5.	Coal Gasification Unit	Cyclones	PM < 30 mg/Nm^3
Note: Apart from the above Dry fog system with dust suppression at transfer points, crushing plant, dust extraction system with bagfilters at other dust emanating areas, covered conveyers, mechanical dust sweepers, etc. will also be provided.			

Apart from the above the following air emission control systems/ measures are proposed in the Plant:

- All conveyors will be completely covered with G.I. sheets to control fugitive dust.
- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.
- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.

7.2 Water Environment

- Total wastewater generated from the proposed project is 93 Cum/Hr.
- Effluent generated from Sponge Iron, Electric Arc Furnace, Rolling Mill will be sent to Effluent Treatment Plant (ETP) for treatment and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning, greenbelt development and for Slag Cooling.
- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP and after treatment it will be utilized for greenbelt development.
- Zero liquid effluent discharge practice will be maintained in the proposed project.
- During monsoon the treated effluent will be utilized as makeup water in Rolling Mill. Accordingly, the makeup water for Rolling mill also reduces during the rainy period.

TREATED EFFLUENT DISPOSAL

Effluent quantity to be used for ash conditioning	20 Cum/Hr.
Effluent to be used for dust suppression	35 Cum/Hr.
Effluent to be used for Greenbelt development	21 Cum/Hr.
Rejects to be used for washing, Toilet cleaning & Flushing	17 Cum/Hr.

20.72 Ha. of greenbelt will be developed within the plant premises by using the treated effluent. A dedicated pipe distribution network will be provided for using the treated effluent for greenbelt development.

7.3 Noise Environment

The major sources of noise generation in the proposed project will be Kiln, Furnaces, Mills, DG set, etc. Acoustic enclosure will be provided. All the machinery will be manufactured in accordance with MoEF&CC norms on Noise levels. The employees working near the noise generating sources will be provided with earplugs. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around administrative block and other utility units.

7.4 Land Environment

The wastewater generated from the proposed project will be treated in the Effluent Treatment Plant to comply with the SPCB standards and will be used for dust suppression, ash conditioning and for greenbelt development. All the required Air emission control systems will be installed and operated to comply with SPCB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed project.

Table No.7.2: Solid Waste Generation and Disposal

S.No.	Waste / By product	Quantity (TPA)	Proposed method of disposal
1.	Ash from Pellet plant	28,800	Will be utilized in the proposed Brick Manufacturing Unit within the premises.
2.	Gasification unit	1,74,600	Will be utilized in the proposed Brick Manufacturing Unit within the premises.
3.	SMS Slag	42,900	Slag from SMS will be crushed and iron will be recovered & then remaining non -magnetic material being inert by nature will be used in proposed Brick Manufacturing Unit
4.	End Cuttings from Rolling Mill	10,300	Will be reused in the SMS
5.	Mill scales from Rolling Mill	2,100	Mill scales will be recycled to Ferro alloys unit.

7.5 Greenbelt Development

- **20.72 Ha.** (40% of total land) of land is earmarked for Greenbelt development in the proposed project.
- Total of 51,800 nos. (@2500 nos. per Ha.) of plant will be planted in the proposed project.
- 15m of width of Greenbelt will be maintained all around the peripheral boundary of the project site.
- The tree species to be selected for the plantation are pollutant tolerant, fast growing, wind firm, deep rooted. A three-tier plantation is proposed comprising of an outer most belt of taller trees which will act as barrier, middle core acting as air cleaner and the innermost core which may be termed as absorptive layer consisting of trees which are known to be particularly tolerant to pollutants.
- Local DFO will be consulted in developing the green belt**.**

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 40.0 Crores

Recurring Cost per annum for Environmental protection : Rs. 7.0 Crores/annum

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be implemented & followed strictly.

- Continuous stack monitoring system is proposed for stack attached to all the Stacks.
- Online Ambient Air Quality Monitoring Stations will be established in consultation with SPCB during operation of the plant.
- Fugitive emission monitoring will be carried out as per CPCB norms.
- Energy meters will be installed for all the pollution control systems.
- Rain water harvesting pits will be constructed in consultation with CGWB.