

**SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

OF

Mahendra Sponge & Power Ltd.

[Expansion of Steel plant by increase in Sponge Iron capacity from 60,000 TPA to 75,000 TPA (by use of Pellets & High Grade Coal), Induction Furnace Capacity from 50,000 TPA to 2,60,900 TPA, Rolling Mill Capacity from 50,000 TPA to 2,64,000 TPA, WHRB Power Plant from 4.0 MW to 6.0 MW, New Pellet Plant of 0.4 MTPA & Fly Ash Brick Plant of 22,000 Bricks /day]

Category – A Project

at

Phase II, Industrial Area, Siltara & Sondra Village,
Raipur Tehsil, Raipur District, Chhattisgarh

Submitted to

**CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Chhattisgarh**

1.0 PROJECT DESCRIPTION

Mahendra Sponge And Power Ltd. is an existing steel plant located at Sondra Village &Phase II, Industrial Area, Siltara, Raipur Tehsil, Raipur District, Chhattisgarh.

Following is chronology of permission obtained in the existing plant:

- Existing 1 x 100 TPD (30,000 TPA Sponge Iron) (Kiln – I) plant has obtained Consent to Establishment (CTE) from Chhattisgarh Environment Conservation Board (CECB) vide 3888/TS/CECB/2003 Raipur Dt. 31.10.2003. **EC was not applicable**, as consent has been obtained prior to EIA notification 2006 & its subsequent amendments. As per 1994 EIA notification also EC was not applicable as the project **cost is less than Rs 100 Crores**). **Enclosed as Annexure–1.**
- Existing 1 x 100 TPD Sponge Iron (Kiln – II), 4.0 MW WHRB Power Plant, 4.0 MW FBC Power Plant, 2x10T Induction Furnace has obtained CTE from Chhattisgarh Environment Conservation Board (CECB) vide No. 4585/TS/CECB/2005 Raipur Dt. 30.09.2005. **EC was not applicable**, as consent has been obtained prior to EIA notification 2006 & its subsequent amendments. As per 1994 EIA notification also EC was not applicable as the project **cost is less than Rs 100 Crores**). **Enclosed as Annexure–2.**
- Amendment in CTE is obtained by CECB vide no. 6488/TS/CECB/2015 Raipur dt. 06.01.2015 for change in product mix of Induction Furnace (2x6T&1x8T) of MS Billets / Billets (50,000 TPA) to Re-Rolled products (Induction Furnace & Rolling Mill Route–Hot charging process) – 50,000TPA.
- CTO has been obtained from the CECB vide letter no. 9649/TS/CECB/2021 Naya Raipur dt.06.02.2021 for 2 x 100 TPD Sponge Iron (Kiln – I & II), 4.0 MW WHRB Power Plant, 4.0 MWFBC Power Plant, 2 x 6 T & 1 x 8 T Induction Furnace & Rolling Mill Route – Hot charging process and same is valid till 31.01.2024. **Enclosed as Annexure–3.**

Now, it has been proposed to expand the steel plant by increase in Sponge Iron capacity from 60,000 TPA to 75,000TPA (by use of Pellets & **High Grade Coal**), Induction Furnace Capacity from 50,000 TPA to 2,60,900 TPA, Rolling Mill Capacity from 50,000 TPA to 2,64,000 TPA, WHRB Power Plant from 4.0 MW to 6.0 MW and establishment of 0.4 MTPA New Pellet Plant.

Existing plant is located 17.36 Ha. (42.9 Acres) and same is in possession of management. Proposed expansion will be taken up in the existing plant premises only. The land consists of Private Land of 13.06 Ha. (in Sondra Village) & Chhattisgarh State Industrial Development Corporation (CSIDC) leased land of 4.30 Ha. (in Phase II, Industrial Area, Siltara).

The project cost envisaged for the proposed expansion project is **Rs. 110.0 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'.

In order to obtain Environmental Clearance for the proposed Steel plant, Form-I, proposed TOR along with Pre-Feasibility Report were submitted to the Honourable Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi. Subsequently Standard TOR letter was issued vide letter No.J-11011 / 422 / 2021 – IA II (I), dated 7th October 2021. Accordingly Draft EIA report has been prepared incorporating the Terms of Reference & is being submitted to Chhattisgarh Environment Conservation Board (CECB) for conducting Public Hearing / Consultation.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. **NABET/ EIA/ 2225/ RA 0282**, for preparing EIA report for Metallurgical Unit, have prepared Draft Environmental Impact Assessment (EIA) report for the proposed expansion 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 within 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 expansion 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 Plant site:

Sr. 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 – 7.8%, Industrial Area-9.4 %, Tank / River, etc.– 7.8 %, Single crop – 48.9 %, Double crop – 9.8 %, Plantation – 2.3 %, Land with scrub – 8.6%, Land without scrub – 2.5 %, Sheet rock area – 2.9%
3.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Nil
4.	Historical places / Places of Tourist importance / Archeological sites	Nil
5.	Critically polluted area as per MoEF&CC Office Memorandum dated 13 th January 2010	Proposed project area falls within 10 Kms. radius of Siltara Industrial Area & Raipur area which are Critically polluted area as categorized by CPCB with CEPI of 79.94 & 70.77 respectively.
6.	Defence Installations	Nil
7.	Nearest village	Sondra – 0.1 Km, S direction
8.	Forests	Nil within 10 Km. radius
9.	Water body	<ul style="list-style-type: none"> • Kharun river (3.25 Kms. – West Direction) • Chokra nallah (1.3 Kms. – South West Direction) • Kulhan Nala - 9.4/ NNE
10.	Nearest Highway	NH # 200 – 1.5 Kms. (E Direction)
11.	Nearest Railway Station	Mandhar Railway Station (6.3 Kms.) Byroad (SEE Direction)
12.	Nearest Port facility	Nil
13.	Nearest Airport	Raipur Airport 22.0 Km (By Aerial) (S Direction)
14.	Nearest Interstate Boundary	Nil
15.	Seismic zones as per IS-1893	Seismic zone – II
16.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
17.	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

The following are the existing & proposed units, products & their production capacities

Sr. No.	Units(Product)		Existing plant	Proposed Expansion	After Proposed Expansion
1.	Pellet Plant (Pellets)		---	0.4 MTPA	0.4 MTPA
2.	DRI Kilns (Sponge Iron)		2 x100 TPD (60,000TPA)	Increase in Production from ** 60,000 TPA to 75,000 TPA (by use of Pellets & High Grade coal)	75,000 TPA
3.	Induction Furnaces (Hot Billets / MS Ingots/ Billets)		50,000TPA with 2 x 6 T * & 1 x 8 T (Production capacity after implementation of expansion will reduce to 20,000 TPA)	2,40,900 TPA With Replacement of existing 2 x 6 T furnaces with 2 x 10 T furnaces, New 1x 8 T & 3x15 T	2,60,900 TPA With 2 x 8 T, 2 x 10 T & 3 x 15 T
4.	Rolling Mill (TMT bars/ Structural Steel) (with 85% Hot charging)		50,000 TPA	2,14,000TPA By Increase in production from 50,000 T to 1,32,000 TPA & New Rolling Mill (1 x 400 TPD - 1,32,000TPA)	2,64,000 TPA
5.	Power Plant	WHRB based	4.0 MW	Increase from 4.0 MW to 6.0 MW	6.0 MW
		FBC based	4.0 MW	---	4.0 MW
6.	Fly Ash Brick Plant ***		----	22,000 Bricks/day	22,000 Bricks/day

Note 1*	=	Existing 2x6 T Induction Furnaces will be dismantled & removed and NEW 2x10 T Induction Furnaces will be established
Note 2**	=	Proposed Steel Plant is located in Sondra Industrial Area, wherein the State Government of Chhattisgarh imposed ban on establishment of New Sponge Iron Plant and Coal based Power Plant (Ref: 783/ 205/ 07 Dated: 16/ 03/ 2007) and ban on diversification (involving use of coal as fuel or raw material) of existing industries [Ref: 3529/ 205/ 05/ 11(E) Dated: 12.12.2007]. However, the proposed increase of DRI production from 60,000 TPA to 75,000 TPA will be achieved due to use of Pellets & High Grade coal which results in lower emissions & solid waste as compared to the existing permitted pollution load due to 60,000 TPA production.
Note 3 ***	=	Fly Ash Brick plant is proposed after obtaining ToR to utilize the 100% Solid waste.

1.3 RAW MATERIALS (FOR EXPANSION PROJECT)

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

S.No.	Raw Material /Fuel	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
1.	Pellet Plant (Pellets) - 4,00,000 TPA				
a)	Iron Ore Concentrate	4,10,000	Chhattisgarh	~ 100Kms.	By Road (covered trucks)
b)	Bentonite	3,200	Gujarat	~ 600Kms.	By rail & Road (covered trucks)
c)	Limestone	6,000	Chhattisgarh	~ 100Kms.	By Road (covered trucks)
d)	Anthracite Coal	4,000	SECL, Chhattisgarh / MCL Odisha	~ 500Kms.	By rail & Road (covered trucks)
2.	DRI Kilns (Sponge Iron) – 75,000 TPA				
a)	Pellets (100%)	1,12,500	Own generation	---	Through conveyers
b)	High grade coal	62,400	Indonesia / South Africa / Australia	~ 600Kms. (from Vizag Port)	Through sea route, By rail & Road (covered trucks)
c)	Dolomite	3,750	Chhattisgarh	~ 100Kms.	By Road (covered trucks)
3.	Steel Melting Shop (Hot Billets / MS Ingots / Billets) – 2,60,900 TPA				
			Own generation	---	---
a)	Sponge Iron	2,64,000	& External Purchase	~ 100Kms.	By Road (covered trucks)
b)	MS Scrap / Pig Iron	39,000	Chhattisgarh	~ 100Kms.	By Road (covered trucks)
c)	Ferrous alloys	13,000	Chhattisgarh	~ 100Kms.	By Road (covered trucks)
4.	Rolling Mill through Hot charging (Rolled Products) – 2,64,000 TPA				
a)	Hot Billets (85 % Hot Charging)	2,33,376	Own generation	---	Through conveyers
b)	MS Billets / Ingots	43,560	Own generation	---	Through conveyers
c)	LDO / LSHS	2000 KI / annum	Nearby IOCL Depot	~ 100 Kms.	By road (through Tankers)

1.4 MANUFACTURING PROCESS

1.4.1 Process of Pellet Manufacturing

The process of pelletization enables converting Iron Ore Fines into “Uniformed Sized Iron Ore Pellets” that will be charged into the Rotary Kiln for production of Direct Reduced Iron (DRI). Pellets are uniform size, with purity of 63%- 65% contributing to faster reduction and high metallization rates. Pellets with their high, uniform mechanical strength and high abrasive strength. Pellet plant of capacity 0.4MTPA will be installed in the proposed project

1.4.2 Manufacturing of Sponge Iron (DRI)

The proposal consists of 2 x 100 TPD to manufacture 75,000 TPA of Sponge Iron with 6.0 MW WHRB facility. Refractory lined rotary kilns will be used for reduction of iron ore in solid state. A central Burner located at the discharge end will be used for initial heating of the kiln. Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the iron ore and converts it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000⁰C enters the reduction zone. Temperature of the order of 1050⁰C will be maintained in the reduction zone, which is the appropriate temperature for solid state reduction of iron oxide to metallic iron.

This hot material will be transferred to DRI cooler. In DRI cooler the material will be cooled to 160⁰C. The cooler discharge material consists of sponge iron lumps, sponge iron fines and char. Magnetic and non-magnetic material will be separated through magnetic separators and stored in separate bins. The hot flue gases will be taken to a Waste Heat Recovery Boilers and after heat recovery they will be treated in high efficiency ESP and discharged into the atmosphere through stack whose height will be in accordance with CPCB norms.

1.4.3 Steel Melting Shop

It is proposed to Increase the production capacity of Hot Billets / MS Ingots / Billets 50,000 TPA to 2,60,900 TPA by replacement of existing 2 x 6 T Furnaces with 2 x 10 Furnaces and establishment of New 1 x 8 T & 3 x 15 T Induction Furnaces. In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make pure liquid steel

and then to mould it in required size billets. The SMS will consist of Induction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). Either the Hot Billets produced from LRF will be directly sent to Rolling Mill through Hot charging method to manufacture Rolled Products. The flue gases will be treated in fume extraction system with bagfilters.

1.4.4 Rolling Mill

It is proposed to increase the production capacity of TMT bars / Structural Steel / Re-rolled product from 50,000 TPA to 2,64,000 TPA by upgradation & modification in existing Rolling Mill 50,000 to 1,32,000 TPA and establishment of 1,32,000 TPA (1 x 400 TPD) of New Rolling Mill. The Hot Billets produced from Induction Furnaces will be directly sent to Rolling Mill to produce Rolled Products.

1.5 Water Requirement

- Water required for existing plant is 1030 KLD and is being supplied by CG Ispat Bhumi Ltd.
- Water required for the proposed expansion project will be 610 KLD.
- Total water requirement after the proposed expansion will be 1640 KLD.
- Water required for expansion project also will be supplied by CG Ispat Bhumi Ltd. and will enter agreement for the additional Quantity.
- The details of total water consumption& it's breakup are shown in below Table

BREAKUP OF WATER REQUIREMENT

S.No.	Unit	Quantity in KLD		
		Existing plant	Proposed Expansion	After Proposed Expansion
1.	Pellets	---	230	230
2.	DRI Kilns	60	---	60
3.	Induction Furnaces	35	170	205
4.	Rolling Mill	45	190	235
5.	Power Plant	880	---	880
	• Cooling tower makeup	423	---	423
	• Boiler makeup	318	---	318
	• DM plant Regeneration	139	---	139
6.	Domestic	10	20	30
	Total	1030	610	1640

1.6 Waste Water Generation

- There will be no effluent discharge in the Sponge Iron unit as closed circuit cooling system will be adopted.
- Effluent from Induction Furnace, Rolling mill units will be treated in ETP and R.O Plant.
- After ensuring compliance with the norms the treated effluent from ETP will be utilized for dust suppression in CHP, ash conditioning and for greenbelt development.
- R.O. rejects will be utilized for dust suppression in CHP, Floor Washings, Cleaning of Toilets and Flushing.
- During monsoon period, the treated wastewater will be utilized as makeup water for Rolling Mill.
- Sanitary wastewater from existing & proposed plant will be (24 KLD) will be treated in STP (25 KLD) and after ensuring compliance with the norms it will be utilized for greenbelt development.
- Garland drains will be provided around all the raw material stacking areas.
- Zero effluent discharge will be maintained.

BREAKUPOF WASTE WATER GENERATION

Sr. No.	Source	Generation in KLD		
		Existing plant	Proposed Expansion	After Proposed Expansion
1.	Pellets	---	---	---
2.	DRI Kilns	---	---	---
3.	Induction Furnaces	2	10	12
4.	Rolling Mill	3	11	14
5.	Power Plant	334	---	334
	• Cooling tower makeup	106	---	106
	• Boiler make up	89	---	89
	• DM plant Regeneration	139	---	139
6.	Domestic	8	16	24
	Total	347	37	384

1.7 Wastewater Characteristics

The following are the Characteristics of waste water

CHARACTERISTICS OF EFFLUENT

PARAMETER	CONCENTRATION			
	Cooling Tower blow-down	DM Plant Regeneration	Boiler Blow- down	Sanitary waste water
pH	7.0 – 8.0	5.0 – 10.0	9.5 – 10.5	7.0 – 8.5
BOD (mg/l)	--	--	--	200 – 250
COD (mg/l)	--	--	--	300 – 400
TDS (mg/l)	1000	5000 – 6000	1000 mg/l	800 – 900
Oil & Grease (mg/l)	--	10	--	5 - 10
TSS (mg/l)	--	--	--	150-200

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}, PM₁₀, SO₂, NO₂& CO at 8 stations including plant site during 1st October 2022 to 31st December 2022. The following are the concentrations of various parameters at the monitoring stations:

Parameter		Concentration
PM _{2.5}	:	30.7 to 49.4 µg/m ³
PM ₁₀	:	52.2 to 84.6 µg/m ³
SO ₂	:	12.4 to 25.9 µg/m ³
NO ₂	:	18.4 to 39.2 µg/m ³
CO	:	852 to 1675 µg/m ³

2.2 Water Quality

2.2.1 Surface Water Quality

2 nos. of samples (Upstream and Downstream) from Kharun River, 1 no. of sample from Chokra Nallah. No other samples have been collected as there is no availability of water in the seasonal streams. Surface water samples have been collected and analyzed for various physico-chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

2.2.2 Ground Water Quality

8 No. 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 day time & Night time. The noise levels at the monitoring stations are ranging from **48.75 dBA to 65.02 dBA**.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Prediction of impacts on air quality

The predicted max. Incremental concentrations (24 hourly) due to the emissions from operation of proposed expansion project are given below.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE EXPANSION PROJECT (APCS WORKING SCENARIO)

Item	PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	CO (µg/m ³)
Maximum baseline conc. in the study area	84.6	25.9	39.2	1675
Maximum predicted incremental rise in concentration due to proposed expansion of MSPL	0.73	1.47	5.11	----
Maximum predicted incremental rise in concentration due to Vehicular Emissions from the proposed expansion of MSPL	0.44	----	3.31	2.14
Net resultant concentrations during operation of the plant	85.77	27.37	47.62	1677.14
National Ambient Air Quality Standards	100	80	80	2000
The net resultant Ground level concentrations during operation of the expansion project are within the NAAQS. Hence there will not be any adverse impact on air environment due to the proposed expansion project.				

3.2 Prediction of impacts on Noise quality

The major sources of noise generation in the proposed expansion project will be STG, boilers, compressors, DG set, etc. Acoustic enclosures will be provided to the STG. 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. **17.3 Acres (7.0 Ha.)** of greenbelt will be developed (inclusive of existing) 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 expansion project.

3.3 Prediction of impacts on Water Environment

The effluent generated will be recycled with closed loop cooling water system. Effluent from power plant will be treated in ETP and after ensuring compliance with CECB norms, it will be used for dust suppression, Ash conveying, and for greenbelt development. Garland drains will be provided around all the raw material stacking areas. Sanitary waste water

will be treated in STP. There will not be any effluent discharge outside the premises. ZLD will be followed. Hence there will not be any adverse impact on environment due to the proposed expansion project.

3.4 Prediction of Impacts on Land Environment

The effluent will be treated to achieve CECB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / CECB norms. All solid wastes will be disposed / utilized as per CPCB / CECB norms. **17.3 Acres (7.0 Ha.)** of greenbelt will be developed (inclusive of existing) as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed expansion project.

3.5 Socio - Economic Environment

There will be further upliftment in Socio Economic status of the people in the area. Hence, there will be further development of the area due to the proposed expansion 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 CECB and MoEF&CC are tabulated below:

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Wastewater quality				
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	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Once in a month	Composite sampling	As per EPA Rules 1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month	---	PM,SO ₂ & NO _x PM,SO ₂ & NO _x
B.	Ambient Air quality (CAAQMS)	Continuous QuarterlyOnce	Continuous 24 hours	PM ₁₀ , SO ₂ & NO _x PM _{2.5} , PM ₁₀ , SO ₂ , NO _x & CO
C.	Fugitive emissions	QuarterlyOnce	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	Continuous for 24 hours with 1 hour interval	Noise levels

5.0 ADDITIONAL STUDIES

An existing steel plant located at Sondra Village & Phase II, Industrial Area, Siltara, Raipur Tehsil, Raipur District, Chhattisgarh. Total land available with company is **17.36 Ha. (42.9 Acres)**. The proposed expansion project will be taken in the existing plant premises. No Rehabilitation and Resettlement is involved in the proposed expansion project. Hence, no R & R study has been carried out.

6.0 PROJECT BENEFITS

With the establishment of the proposed expansion 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 expansion project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment. 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:

S.No.	Source	Control Equipment	Emission at the outlet
Upgradation of existing APCS			
1	DRI kilns with WHRB's	Electro Static Precipitator	PM Emission in CTO is <50mg/Nm ³ , now it is *proposed 25mg/Nm ³
2	Induction Furnaces with CCM	Fume Extraction system with PFTE bag filters	PM Emission in CTO is <30 mg/Nm ³ , now it is *proposed 25mg/Nm ³
3	FBC Boiler	Electro Static Precipitator	PM Emission in CTO is <50mg/Nm ³ , now it is *proposed 25mg/Nm ³
Proposed APCS			
1	Pellet Plant	Electro Static Precipitator	PM 25mg/Nm ³
2	DRI kilns with WHRB's	Electro Static Preipitator	PM 25mg/Nm ³
3	Induction Furnaces with CCM	Fume Extraction system with PFTE bag filters	PM 25mg/Nm ³
4	Re-heating furnace to Rolling mill	Stack	PM 25mg/Nm ³
5	FBC Boiler	Electro Static Preipitator	PM <25mg/Nm ³
		Lime dosing	SOx <100mg/Nm ³
		Low NOx burners with 3-stage combustion, flue gas recirculation and auto combustion control system	NOx < 100 mg/Nm ³
Note : Apart from the above Fume extraction system with bag filters, dry fog system, dust suppression system, covered conveyers, water cannon spray etc. will also be installed.			
*to comply with Mechanism For Environmental Management Of Critically And Severally Polluted Area Vide CPCB Circular dt.25.10.2019			

- 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

The total effluent generation from the existing & proposed expansion projects will be 384KLD inclusive of sanitary wastewater. The treated effluent will be utilized for dust suppression, ash conditioning and for Green belt development. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented.

TREATED EFFLUENT UTILISATION

Total effluent after expansion

(inclusive of sanitary wastewater) : **384 KLD**

Effluent quantity to be used for ash conditioning : 80 KLD

Effluent to be used for dust suppression in CHP : 107 KLD

Effluent for Floor Washing, Toilet cleaning & Flushing : 24 KLD

Effluent to be used for Green belt development : 173 KLD

7.0 Ha. (17.3 acres) of green belt (including existing green belt) i.e. 40% of total project area, is earmarked for green belt developed within the plant premises by using the treated effluent. During monsoon period, when there is no requirement of water for green belt development, 70m³/day of effluent will be used as make up water for Rolling Mill. The characteristics of the treated effluent will comply with the SPCB Standards for onland irrigation. Hence there will not be any adverse impact on ground water / surface water due to the proposed expansion project.

7.3 Noise Environment

The major sources of noise generation in the proposed expansion project will be STG, boilers, compressors, 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 green belt 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 expansion project will be treated in the Effluent Treatment Plant to comply with the CECB standards and will be utilized dust suppression, Ash conveying and for greenbelt development. All the required Air emission control systems will be installed and operated to comply with CECB 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 expansion project.

SOLID WASTE GENERATION AND ITS DISPOSAL

S.No.	Waste/By product	Quantity(TPA)			Proposed method of disposal
		Existing	Expansion	After expansion	
1.	Ash from Pellet Plant	---	12,000	12,000	Will be used in making Fly ash Bricks within the premises.
2.	Ash from DRI	10,800	Reduce due to use of Pellets & High Grade coal by 1,800 TPA	9,000	Is being given to brick manufacturing units & will be used in making Fly ash Bricks within the premises.
3.	Dolochar	18,000	Reduce due to use of Pellets & High Grade coal by 4,500 TPA	13,500	Is being used as fuel in FBC power plant. Same practice will be continued after expansion also.
4.	Kiln Accretion Slag	600	Reduce due to use of pellets & High Grade coal by 90 TPA	510	Is being used in road construction & Will be used in making Fly ash Bricks within the premises.
5.	Wet scrap per sludge	3,000	Reduce due to use of pellets & High Grade coal by 450 TPA	2,550	Is being used in road construction & will be used in making Fly ash Bricks within the premises.

6.	SMS Slag	5,000 (after implementation of expansion it will reduce to 2,000)	24,090	26,090	Slag from SMS crushed and iron is recovered & then remaining non-magnetic material being inert by nature will be used in making Pavers for Road construction / for Brick making within the plant premises.
7.	End Cuttings From Rolling Mill	1,500	6,420	7,920	Reused in the SMS. Same practice will continue after expansion also.
8.	Mill scales from Rolling Mill	1,000	2002	3,002	Mill scales are given to Ferro alloys manufacturing units. Same practice will continue after expansion also.
9.	Ash from Power Plant (Indian coal + Dolochar)	16,470	---	16,470	Presently is being given to brick manufacturing units & will be used in making Fly ash Bricks within the premises.

7.5 Greenbelt Development

- Out of total 17.36 Ha. (42.9 Acres) of land, 7.0 Ha. (17.3 Acres) i.e. 40% of land is envisaged for greenbelt development.
- Minimum of 15 m wide greenbelt is being / will be maintained all around the plant.
- 2500 plants is being / will be planted per acre as per CPCB norms.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : **Rs. 14 Crores**
Recurring Cost per annum for Environmental protection : **Rs.2.45 Crores/Annum**

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.

- Continuous stack monitoring system is proposed for stack attached to all the Stacks.
- 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 are being constructed in consultation with CGWB.