

**SUMMARY ON**  
**ENVIRONMENTAL IMPACT ASSESSMENT**  
**REPORT**

**OF**

**Airan Steel & Power Private Limited**

[Expansion of Steel Plant by Increasing the existing 100 TPD Sponge Iron production from 30,000 TPA to 33,000 TPA by increase in operating days from 300 to 330, establishment of new DRI Kiln of 1 x 100 TPD for Sponge Iron production of 33,000 TPA, WHRB based Power Plant of 4.0 MW & AFBC based Power Plant of 6.0 MW, Ferro Alloys Unit of 1 x 10 MVA to produce SiMn – 16,500 TPA (or) FeMn– 23,760 TPA (or) FeSi – 8,250 TPA (or) Pig Iron – 26,730 TPA] & Briquetting plant – 100 Kg/Hr.]

at

Plot No. 27-28, Silpahari Industrial Area, Village Hardikala,  
Tehsil Bilha, District Bilaspur, Chhattisgarh

Submitted to

**CHHATTISGARH ENVIRONMENT CONSERVATION BOARD**  
**Chhattisgarh**

## 1.0 PROJECT DESCRIPTION

**Airan Steel & Power Private Limited** is operating 100 TPD Sponge Iron & 2 x 2.04 TPH (29,400 TPA) Induction Furnaces plant in Plot No. 27-28, Silpahari Industrial Area, Village - Hardikala, Tehsil - Bilha, District - Bilaspur, Chhattisgarh.

- Existing 1 x 100 TPD Sponge Iron plant has obtained CTE from Chhattisgarh Environment Conservation Board (CECB) vide 3937/TS/CECB/2004 Raipur dt. 04<sup>th</sup> October 2004. **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**).
- Existing 2 x 2.04 TPH (29,400 TPA) Induction Furnaces has obtained CTE from CECB vide letter no. 6135/TS/CECB/2009 Raipur dt. 17<sup>th</sup> November 2009 (**EC was not applicable** - as per EIA notification 2006 & its subsequent amendments, as Secondary metallurgical activities of **capacity less than 30,000 TPA**, does not require EC).
- CTO has been obtained from the CECB vide letter no. 3628/TS/CECB/2018 Naya Raipur dt. 30<sup>th</sup> July 2018 for 1 x 100 TPD Sponge Iron plant & 2 x 2.04 TPH Induction Furnaces and same is valid till 31/08/2024.

Now it has been proposed to expand the steel plant by increase in existing 100 TPD Sponge Iron production from 30,000 TPA to 33,000 TPA by increasing operating days from 300 to 330, establishment of new DRI Kiln of 1 x 100 TPD for sponge iron production of 33,000 TPA, WHRB based Power Plant of 4.0 MW & AFBC based Power Plant of 6.0 MW capacity, Ferro Alloys Unit of 1 x 10 MVA to produce SiMn – 16,500 TPA (or) FeMn– 23,760 TPA (or) FeSi – 8,250 TPA (or) Pig Iron – 26,730 TPA & Briquetting plant – 100 Kg/Hr in the existing plant premises of 7.62 Ha. (18.82 Acres) of land. Immediately after obtaining EC for present proposal Induction furnace unit of 29,400 TPA will be removed. Existing plant is located 7.62 Ha. (18.82 acres) of land, same is in possession of management. Proposed expansion will be taken up in the existing plant premises only. Estimated Capital Investment for the proposed expansion project is Rs. 68.0 Crores.

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14<sup>th</sup> September, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. Airan Steel & Power Private Limited has made an

application to the Honourable Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi online vide proposal no. IA/CG/IND/208535/2021 dated 20th April 2021 for undertaking detailed EIA study as per the EIA Notification, 2006 and subsequent amendments. Subsequently Standard Terms of Reference letter has been issued by MOEF&CC vide letter No.F.No. J-11011 / 159 / 2021 – IA II (I), dated 23<sup>rd</sup> April 2021. The Draft EIA Report has been prepared by incorporating the TOR stipulated by the Hon'ble Ministry.

*Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad*, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/ EIA/ 1922/ RA 0149, for preparing EIA report for Metallurgical Units, have prepared Environmental Impact Assessment (EIA) report for the proposed expansion project by incorporating the TOR approved by Ministry of Environment, Forest & 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, etc.
- 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:

**Table No. 1.1: Environment Setting within 10 Km. 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: Industrial Area-3.6 %, Tank / River – 8.9 %, Single crop – 47.3 %, Double crop – 11.3%, Plantation – 3.9 %, Settlements/Aero Drome – 14.7%, Land with scrub – 5.7%, Land without scrub – 2.2 %,

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
		Sheet rock area – 1.1%, Stone quarry – 1.3%
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 <sup>th</sup> January 2010	None And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10 <sup>th</sup> July 2019.
6.	Defence Installations	Nil
7.	Nearest village	Silpahari Village – 1.0 Kms. (SE Direction)
8.	No. of Villages in the Study Area	48 nos.
9.	Nearest Hospital	Hardikala – 1.6 Kms.(SW direction)
10.	Nearest School	Silpahari – 1.3 Kms.(SEE direction)
11.	Forests	Nil with in 10 Km. radius
12.	Water body	GokenahNalla – 0.4 Kms. (N Direction), Arpa river – 4.5 Kms. (E Direction), Kurung River – 5.5 Kms. (NE Direction), Kurung Left Bank Canal – 8.3 Kms. (E Direction), Limtori Village Pond - 3.0 Kms. (SSE Direction), Bandhwa Pond – 7.8 Kms. (SW Direction) exists within the study area
13.	Nearest Highway	NH # 200 – 3.2 Kms. (SW Direction)
14.	Nearest Railway Station	Dhadhapara R.S. – 12.0 Kms. (by Road) (NW Direction)
15.	Nearest Port facility	Nil
16.	Nearest Airport	Nil
17.	Nearest Interstate Boundary	Nil
18.	Seismic zoneas per IS-1893	Seismic zone – II
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

The proposed Steel Plant envisages manufacturing of the following products.

**Table No.1.2: EXISTING & PROPOSED UNITS, PRODUCTS & THEIR PRODUCTION CAPACITIES**

S.No.	Unit (Product)	Existing Operating Plant	Proposed Expansion	After proposed expansion
1.	DRI Kiln (Sponge Iron)	1 x 100 TPD (30,000 TPA)	1 x 100 TPD (30,000 TPA to 33,000 TPA by	2 x 100 TPD (66,000 TPA)

			increase in the no. of operating days from 300 to 330)	
			1 x 100 TPD (33,000 TPA)	
2.	Induction Furnaces (MS Billets / Ingots)	2 x 2.04 TPH (29,400 TPA)	---	*2 x 2.04 TPH (29,400 TPA)
3.	Submerged Electric Arc Furnace (SEAF)	---	1 x 10 MVA (SiMn – 16,500 TPA / FeMn– 23,760 TPA / FeSi – 8,250 TPA / Pig Iron – 26,730 TPA)	1 x 10 MVA (SiMn – 16,500 TPA / FeMn– 23,760 TPA / FeSi – 8,250 TPA / Pig Iron – 26,730 TPA)
4.	Briquetting plant	--	100 Kg/Hr	100 Kg/Hr
5.	Power Plant (Electricity)	---	10 MW (4.0 MW WHRB + 6.0 MW AFBC)	10 MW (4.0 MW WHRB + 6.0 MW AFBC)

\*Note: 2 x 2.04 TPH (29,400 TPA) Induction Furnace will be removed after grant of EC for Expansion proposal

It is proposed to install Briquetting plant of capacity 200 kg/Hr.

### .3 RAW MATERIAL REQUIRMENT

The following will be the raw material requirement for the existing and proposed expansion project along with its source and mode of transportation is given as below:

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

S.No.	Raw Material	Quantity (TPA)	Sources	Mode of Transport	
1.	<b>For DRI Kilns (Sponge Iron) – 66,000 TPA (2 x 100 TPD)</b>				
a)	Iron ore	99,000	Barbil, Orissa NMDC, Chhattisgarh	By rail & road (through covered trucks)	
b)	Coal	Indian	85,800	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
		(or)			
		Imported	55,000	Indonesia / South Africa / Australia	Through sea route, rail route & by road
c)	Dolomite	3,300	Chhattisgarh	By road (through covered trucks)	
2.	<b>For AFBC Boiler [Power Generation - 6.0 MW]</b>				
a)	Indian Coal (100 %)	36,500	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)	
<b>OR</b>					

# Airan Steel & Power Pvt. Ltd.

(Expansion of Steel Plant)

Plot No. 27-28, Silpahari Industrial Area,  
Hardikala (V), Bilha (T), Bilaspur (D), Chhattisgarh

S.No.	Raw Material		Quantity (TPA)	Sources	Mode of Transport
b)	Imported Coal (100 %)		24,000	Indonesia / South Africa / Australia	Through sea route, rail route & by road
<b>OR</b>					
c)	Dolochar	Dolochar	13,200	In plant generation	through covered conveyors
	Indian Coal	Indian Coal	30,000	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
<b>OR</b>					
d)	Dolochar	Dolochar	13,200	In plant generation	through covered conveyors
	Imported Coal	Imported Coal	16,700	Indonesia / South Africa / Australia	Through sea route, rail route & by road
3.	<b>For Ferro Alloys (1 x 10 MVA)</b>				
3 (i)	<i>For Ferro Silicon – 8,250 TPA</i>				
a)	Quartz		14,625	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
b)	LAM Coke		10,600	Andhra Pradesh	By road (through covered trucks)
c)	MS Scrap / Mill scales		3,500	Chhattisgarh	By road (through covered trucks)
d)	Electrode paste		500	Bihar / West Bengal	By road (through covered trucks)
e)	Bagfilter dust		810	In plant generation	---
(or)					
3 (ii)	<i>For Ferro Manganese – 23,760 TPA</i>				
a)	Manganese Ore		53,580	MOIL / OMC	By Rail & Road (through covered trucks)
b)	LAM coke		11,700	Andhra Pradesh	By road (through covered trucks)
c)	Dolomite		8,200	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
d)	Coal		4,680	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
e)	Electrode Paste		470	Bihar / West Bengal	By road (through covered trucks)
f)	Bagfilter dust		2,340	In plant generation	---
(or)					
3 (iii)	<i>For Silico Manganese – 16,500 TPA</i>				
a)	Manganese Ore		37,375	MOIL / OMC	By Rail & Road (through covered trucks)
b)	LAM Coke		7,300	Andhra Pradesh	By road

S.No.	Raw Material	Quantity (TPA)	Sources	Mode of Transport
				(through covered trucks)
c)	FeMn. Slag	22,230	In house generation	----
d)	Dolomite	6,500	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
e)	Electrode paste	400	Bihar / West Bengal	By road (through covered trucks)
f)	Quartz	1,100	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
g)	Coal	6,500	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
h)	Bagfilter dust	1625	In plant generation	---
	(or)			
3 (iv)	<i>For Pig Iron – 26,730 TPA</i>			
a)	Iron ore	37,000	Barbil, Odisha NMDC, Chhattisgarh	By road (through covered trucks)
b)	LAM Coke	11,900	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
c)	Coal	7,900	SECL Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
d)	Dolomite	7,900	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
e)	Mill scale	26,350	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
f)	Electrode paste	525	Bihar / West Bengal	By road (through covered trucks)
g)	Limestone	9,250	Chhattisgarh / Andhra Pradesh	By road (through covered trucks)
h)	Bagfilter dust	263	In plant generation	---

## 1.4 MANUFACTURING PROCESS

### 1.4.1 Sponge Iron (DRI)

The proposal consists of 1x100 TPD of DRI kilns to produce 33,000 TPA of Sponge Iron with 1X 4 MW WHRB facility. Refractory lined rotary kiln will be used for reduction of iron ore in solid state.

Refractory lined rotary kiln 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 Pellets/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 1000<sup>0</sup>C enters the reduction zone. Temperature of the order of 1050<sup>0</sup>C 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 Heat exchanger. In Heat exchanger the material will be cooled to 160<sup>0</sup>C. 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 Boiler 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.

#### **1.4.4 Submerged Electric Arc Furnaces**

Submerged Electric Arc Furnace of 10 MVA will be setup in the proposed plant. Ferro manganese, silicon-manganese will be produced using manganese ore as main raw material, Ferro silicon will be produced using Quartz as main raw material as main raw material in sub-merged arc furnaces using reducer (Coke) under high voltage. Pig Iron will be also produced from SEAF using iron ore, dolomite as raw material. Flue gases will be extracted through 4<sup>th</sup> hole and then treated in bagfilters.

#### **1.4.5 Power Generation**

##### **Through WHRB Boiler**



The hot flue gases from existing 1X100 TPD and proposed 1x100 TPD capacity DRI kiln will pass through waste heat recovery Boiler to recover the heat and to generate 4 MWelectricity. The gases after heat recovery will pass through ESP and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere through stack of adequate height.

**Through AFBC Boiler**

Coal (Imported / Indian) along with dolomite will be used as fuel in AFBC Boiler to generate 6MW of electricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack of adequate height into the atmosphere.

**1.5 Water Requirement**

- Water requirement in the existing plant is 70 KLD. This includes make up water for DRI Kiln, Induction Furnaces & Domestic purpose. Water required in the existing plant is being sourced from Ground water source. Water required for the proposed expansion project will be 400 KLD. This includes make up water for additional DRI production of existing plant & new DRI Kiln, Power Plant, Ferro Alloys & Domestic purpose. Water required for proposed expansion project will be sourced from Arpa River which is at a distance of 4.5 Kms. from the plant site. Application has been submitted to Water drawl permission from Water Resource Department, Chhattisgarh and same is under process. Air cooled condensers will be provided FBC Power plant. The details of total water consumption & its breakup are given below.

**Table No.1.4: Water Requirement Breakup**

S.No.	Unit	Quantity in KLD		
		Existing Operating plant	Proposed Expansion	After Proposed Expansion
1.	DRI Kilns	50	60	110
2.	Induction Furnaces	10 *	---	---
3.	Submerged Electric Arc Furnaces	---	40	40
4.	Power Plant	---	280	280
	• Cooling tower makeup	---	135	135
	• Boiler make up	---	101	101
	• DM plant Regeneration	---	44	44
5.	Domestic	10	20	30
	<b>Total</b>	<b>70</b>	<b>400</b>	<b>460</b>

\* Note: 2 x 2.04 MTPH (29,400 TPA) Induction Furnace will be removed after grant of EC for Expansion proposal

## 1.6 Wastewater Generation

The total effluent generation from the existing & proposed expansion project will be 130KLD inclusive of sanitary wastewater. Closed loop cooling water system will be adopted in DRI and Ferro Alloys units. Effluent from power plant will be treated and after ensuring compliance with SPCB norms, it will be used for dust suppression, Ash conveying and for greenbelt development. Sanitary waste water will be treated in STP. There will not be any effluent discharge outside the premises. ZLD will be followed. The following will be the total wastewater & its break-up.

**Table No.1.5: Breakup of Wastewater Generation**

S.No.	Source	Generation (KLD)		
		Existing Operating plant	Proposed Expansion	After Proposed Expansion
1.	DRI Kilns	---	---	---
2.	Induction Furnaces	---	---	---
3.	Submerged Electric Arc Furnaces	---	---	---
4.	Power Plant	---	106	106
	a) Cooling Tower blowdown	---	34	34
	b) Boiler blowdown	---	28	28
	c) D.M. plant regeneration water	---	44	44
5.	Sanitary Wastewater	8	16	24
	<b>Total</b>	<b>8</b>	<b>122</b>	<b>130</b>

## 1.7 Wastewater Characteristics

The following are the Characteristics of wastewater.

**Table No.1.6: Characteristics of Effluent**

PARAMETER	CONCENTRATION			
	Cooling Tower blowdown	DM Plant Regeneration	Boiler Blowdown	Sanitary wastewater
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<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>& CO at 8 stations including plant site during **1<sup>st</sup> March 2021 to 31<sup>st</sup> May 2021**. The following are the concentrations of various parameters at the monitoring stations:

**TableNo.2.1: Ambient Air Quality Summary**

S.No.	Parameter		Concentration
1.	PM <sub>2.5</sub>	:	21.5 to 39.4µg/m <sup>3</sup>
2.	PM <sub>10</sub>	:	36.5 to 65.7µg/m <sup>3</sup>
3.	SO <sub>2</sub>	:	10.3 to 17.3µg/m <sup>3</sup>
4.	NO <sub>2</sub>	:	12.1 to 23.7µg/m <sup>3</sup>
5.	CO	:	532 to 1121µg/m <sup>3</sup>

### 2.2 Water Quality

#### 2.2.1 Surface Water Quality

2 samples from Arpa River & 1 (one) sample from GokenaNallahhas been collected. 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

8No. 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 45.00dBA to 69.12dBA.

### 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

#### 3.1 Prediction of impacts on air quality

The predicted max. Incremental PM<sub>10</sub> concentrations (24 hourly) due to the emissions from operation of proposed expansion project will be 0.35 µg/m<sup>3</sup> at a distance of 1050 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in PM concentration due to the Vehicular emission will be 0.09 µg/m<sup>3</sup>.

Hence the total predicted incremental rise in Particulate Matter concentration due to the emission from proposed project and due the vehicular emissions will be 0.35 µg/m<sup>3</sup> + 0.09 µg/m<sup>3</sup> = 0.44 µg/m<sup>3</sup>.

The predicted max incremental SO<sub>2</sub> concentrations (24 hourly) due to the emissions from operation of proposed expansion project will be 4.34 µg/m<sup>3</sup> at a distance of 1050 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NO<sub>x</sub> concentrations (24 hourly) due to the emissions from operation of proposed project will be 1.91 µg/m<sup>3</sup> at a distance of 1050 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NO<sub>x</sub> concentration due to the Vehicular emission will be 0.66 µg/m<sup>3</sup>.

Hence the total predicted incremental rise in NO<sub>x</sub> concentration due to the emission from project and due the vehicular emission will be 1.91 µg/m<sup>3</sup> + 0.66 µg/m<sup>3</sup> = 2.57 µg/m<sup>3</sup>

The predicted incremental rise in CO concentration due to the Vehicular emission will be 0.48 µg/m<sup>3</sup>.

The net resultant concentrations (Maximum baseline conc. + predicted incremental rise in conc.) of PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> & CO 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 expansion activities.

**Table No.3.1: NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE EXPANSION PROJECT  
(APCS WORKING SCENARIO)**

Item	PM <sub>10</sub> (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	CO (µg/m <sup>3</sup> )
Maximum baseline conc. in the study area	65.7	17.3	23.7	1121
Maximum predicted incremental rise in concentration due to proposed project (Point source)	0.35	4.34	1.91	--
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.09	--	0.66	0.48
<b>Net resultant concentrations during operation of the plant</b>	<b>67.94</b>	<b>21.64</b>	<b>26.27</b>	<b>1121.48</b>
<b>National Ambient Air Quality Standards</b>	<b>100</b>	<b>80</b>	<b>80</b>	<b>2000</b>

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 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. 6.2 Acres (2.5 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 from DRI kiln, SEAF units 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. 6.2 Acres (2.5 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 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
<b>1. Water &amp; Waste water quality</b>				
A.	Water quality in the area	Once in a month	Grab sampling	As per IS: 10500
B.	Effluent at the inlet & outlet of the ETP	Once in a month	composite sampling (24 hourly)	As per EPA Rules, 1996
C.	Sanitary Wastewater (inlet & outlet of STP)	Once in a month	Composite sampling	As per EPA Rules, 1996
<b>2. Air Quality</b>				
A.	Stack Monitoring	CEMS (all Stacks) Once in a month	--	PM PM, SO <sub>2</sub> &NO <sub>x</sub>
B.	Ambient Air quality	CAAQMS Quarterly in a Month	Continuously 24 hours	PM PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> ,

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
				NOx& CO
C.	Fugitive emissions	Quarterly in a Month	8 hours	PM
<b>3. Meteorological Data</b>				
	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
<b>4. Noise level monitoring</b>				
	Ambient Noise levels	Once in a month (Hourly)	Continuous for 24 hours with 1-hour interval	Noise levels

## 5.0 ADDITIONAL STUDIES

Existing plant is located at Plot No. 27-28, Silpahari Industrial Area, Village - Hardikala, Tehsil -Bilha, District -Bilaspur, Chhattisgarh. Total land available with company is 7.62 Ha. (18.82 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 expansion project:

**Table No.7.1: Air Emission Control Systems Proposed**

S.No.	Source	Control Equipment	Emission at the outlet
1.	DRI kiln with WHRB	Electro Static Precipitators (ESP) (high performance rigid electrodes with transformer)	PM <30 mg/Nm <sup>3</sup>
2.	Submerged Electric Arc Furnace	4th Hole Fume Extraction system	PM < 30 mg/Nm <sup>3</sup>

S.No.	Source	Control Equipment	Emission at the outlet
		with PTFE membrane bag filters	
3.	AFBC Boiler	Electro Static Precipitator (ESP) (high performance rigid electrodes with transformer)	PM < 30 mg/Nm <sup>3</sup>
		Limestone will be used as bed material and act as sulphur absorbent. Lime dosing will also be done	SOx < 100 mg/Nm <sup>3</sup>
		Combustion temperature will be around 800-850 <sup>0</sup> C, which is not conducive for thermal NOx formation. Low NOx burners with 3-stage combustion, flue gas recirculation and auto combustion control system will be provided.	NOx < 100 mg/Nm <sup>3</sup>

**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

The total effluent generation from the existing & proposed expansion projects will be 130 KLD inclusive of sanitary wastewater. The following will be the treatment method

pH of the boiler blowdown will be between 9.5 to 10.5. Hence a neutralization tank will be constructed for neutralizing the boiler blow down. DM plant regeneration water will be neutralized in a neutralization tank. After neutralization, these two effluent streams will be mixed with Cooling Tower blowdown in a Holding Tank. Service water will be treated in an



oil separator and after treatment it will be taken to Holding Tank. The treated effluent will be re-circulated for Cooling Tower make-up, utilized for ABC & GCT cooling in DRI plant, dust suppression, Ash conveying, for Road washing and for greenbelt development. No effluent will be let out of the plant premises. Sanitary waste water will be treated in STP. There will not be any effluent discharge outside the premises. ZLD will be followed.

### **TREATED EFFLUENT DISPOSAL**

**Table No. 7.2**

#### **Utilization of treated effluent during Non-Monsoon period:**

##### **TREATED EFFLUENT UTILISATION**

Total Net effluent generation from project	:	130 KLD
Effluent quantity to be used for ash conditioning	:	22 KLD
Effluent to be used for dust suppression in CHP	:	84 KLD
Balance effluent to be used for Greenbelt development	:	24 KLD

6.2 Acres (2.5 Ha.) of greenbelt will be maintained 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 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 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 expansion project will be treated in the Effluent Treatment Plant to comply with the CECB standards and will be utilized for 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.

**Table No.7.3: Solid Waste Generation and Disposal**

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
1.	Ash from DRI	11,880	Will be given to Cement Plants & Brick manufacturers.
2.	Dolochar	13,200	Will be used in FBC power plant as fuel.
3.	Kiln Accretion Slag	660	Will be used in road construction & given to brick manufacturers.
4.	Wet scrapper sludge	3,300	Will be used in road construction & given to brick manufacturer.
5.	Ash from Power Plant (with Indian Coal + dolochar)	21,420	Ash generated will be given to Cement Plants / Brick Manufacturers.
6.	Slag from FeMn	22,230	Will be reused in manufacture of SiMn as it contains high SiO <sub>2</sub> and Silicon.
7.	Slag from FeSi	325	Will be given to Cast iron foundries
8.	Slag from SiMn	14,625	will be used for Road construction / will be given to slag cement manufacturing
9.	Slag from Pig Iron	9,200	Will be given to slag cement manufacturing
10.	Dust from SEAF	2,340	Will be briquetted and reused in SEAF.

### 7.5 Greenbelt Development

- Greenbelt has been developed in the existing plant. 4600 nos. of plants are existing. Out of total land, 6.2 Acres (2.5 Ha.)(morethan 1/3<sup>rd</sup> of total) of land will be developed with greenbelt (which includes existing greenbelt). Now it is proposed to maintain 1000 sapling per Acres, hence we will develop additional 1600 plants in the plant premises by July 2022 to further mitigate the emissions.
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### 7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed expansion project:Rs. 19.23 Crores

Recurring Cost per annum for Environmental protection for expansion project:Rs. 3.81Crores.