SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENTREPORT

OF

Shree Nakoda Ispat and Power Pvt. Ltd.

[Proposed Steel Plant (Category –A Project)

[Establishment of Greenfield steel plant comprising of Pellet Plant 1 x 2,000 TPD – 6,60,000TPA,along with producer gas plant for pellet plant- 1 x 20,000 Nm^3/hr,DRI Kilns 2 x 350TPD 2,31,000TPA, Induction Furnaces with LRF & CCM (Hot Billets / Billets /Ingots) 2 x30T- 1,98,000 TPA, Rolling Mills (TMT bars / Structural Steel) (85% Hot charging with Hot Billets and remaining 15% through RHF with Coal gasifier as fuel –1,98,000 TPA, Along with Coal gasifier for Reheating Furnace- 1 x 6,000 Nm^3/hr, Galvanizing Plant Pipe unit 3 x 40,000TPA- 1,20,000 TPA, Ferro Alloy Unit 2 x 9 MVA (FeSi-14,000TPA / FeMn-40,000 TPA / SiMn28,000TPA / FeCr-30,000 TPA/ Pig Iron-48,000 TPA),Briquetting Plant -200 Kg/Hr, WHRB based Power Plant – 2 x 8 MW, FBC based Power Plant – 1 x 15 MW & Brick Manufacturingunit-31,000 Bricks / Day)

located at

Village: Sankra, Tehsil: Tilda, District: Raipur,
Chhattisgarh State.

Submitted to

CHHATTISGARH ENVIRONMENTCONSERVATION BOARD

1.0 PROJECT DESCRIPTION

Shree Nakoda Ispat and Power Pvt. Ltd. is proposing to establish a Steel Plant comprising of Establishment of Pellet Plant 1 x 2,000 TPD – 6,60,000TPA,along with producer gas plant for pellet plant- 1 x 20,000 Nm^3/hr,DRI Kilns 2 x 350TPD 2,31,000TPA, Induction Furnaces with matching LRF & CCM (Hot Billets / Billets /Ingots) 2 x30T- 1,98,000 TPA, Rolling Mills (TMT bars / Structural Steel) (85% Hot charging with Hot Billets and remaining 15% through RHF with Coal gasifier as fuel –1,98,000 TPA, Along with Coal gasifier for Reheating Furnace- 1 x 6,000 Nm^3/hr, Galvanizing Plant Pipe unit 3 x 40,000TPA- 1,20,000 TPA, Ferro Alloy Unit 2 x 9 MVA (FeSi-14,000TPA / FeMn-40,000 TPA / SiMn28,000TPA / FeCr-30,000 TPA/ Pig Iron-48,000 TPA),Briquetting Plant -200 Kg/Hr, WHRB based Power Plant – 2 x 8 MW, FBC based Power Plant – 1 x 15 MW & Brick Manufacturingunit-31,000 Bricks / Day)

Total land identified for the proposed project is 16.586 Ha. (40.984 Acres). The land earmarked for the proposed project is Private Land.

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. The Ministry of Environment, Forests & Climate Change, New Delhi has accorded Terms of Reference (TOR) for the proposed project vide letter no. **IA-J-11011/321/2024-IA-II (IND-I),** dated **18thNovember2024**.The EIA Report has been prepared by incorporating the TOR stipulated by the Hon'ble EAC.

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 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 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 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:

Environment Setting within 10 Kms. Radius of the Plant 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 – 6.6 %; Industrial area – 3.6%; Tanks / River, etc. – 8.6 %; Scrub Forest – 2.3 %; Single crop – 44.3 %; Double crop – 24.1 %; Land with scrub – 3.6 %; Land without scrub – 2.1 %; Plantation– 4.8%.
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 10Km. radius Of the plant.
4.	Historical places / Places of Tourist importance / Archeological sites	Nil
5.	Critically polluted area as per MoEF&CC Office Memorandum dated 13th January 2010	None And also the Plant area does not fall in the areas given in Hon'ble NGT order issued vide dated 10th July 2019.
6.	Defence Installations	None
7.	Nearest village	Sankra Village -1.3 Kms (NE)
8.	Forests	**Reserved Forests:-** Bilari RF- 7.3 kms
9.	Water body	Deorani Jethani nala- 0.9 Kms(SW) Kulhan nala- 0.6 kms(W) Kharun river – 2.3 Kms Shivanath river – 4.48 kms(NW)
10.	Nearest Highway	Raipur to Simgha National Highway (NH # 30– 1.9 Kms – E) the project site.
11.	Nearest Railway Station	Tilda Railway Station 13.6 Kms (NE)

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
12.	Nearest Port facility	Nil within 10 Km. Radius.
13.	Nearest Airport	Raipur Airport 38.4 Kms(SE)
14.	Nearest Interstate Boundary	Nil within 10 Km. Radius.
15.	Seismic zone as per IS-1893	Sesimic Zone-II
16.	MSL of the Project area	278 m to 283 m
17.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the site area.
18.	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 plant configuration and production capacity proposed now

Proposed Plant Configuration & Production Capacities

S.No.	Units (Products)		Plant Configuration	Production Capacity
1.	Pellet Plant		1 x 2,000 TPD	6,60,000 TPA
2.	Producer gas Plant for Pellet Plant		1 x 20,000Nm^3/Hr	1 x 20,000Nm^3/Hr
3.	DRI Kilns (Sponge Iron)		2 x 350 TPD	2,31,000 TPA
4.	Induction Furnaces with LRF & CCM (Hot Billets / Billets / Ingots)		2 x 30 T	1,98,000 TPA
5.	Rolling Mill (TMT/Wire Rod/Strip) (85% Hot charging with Hot Billets and remaining 15% through RHF with Coal gasifier as fuel)		1 x 600 TPD	1,98,000 TPA
6.	Coal gasifier for RHF		1 x 6,000Nm^3/Hr	1 x 6,000Nm^3/Hr
7.	Galvanize Unit (Pipe, TMT, Structural Items etc)		3 x 40,000 TPA	1,20,000 TPA
8.	Ferro Alloys Unit (FeSi / FeMn / SiMn / FeCr / Pig Iron)		2 x 9 MVA	2 x 9 MVA FeSi-14,000TPA / FeMn-40,000 TPA / SiMn-28,000 TPA / FeCr-30,000 TPA/ Pig Iron-48,000 TPA
9.	Brick Manufacturing Unit		31,000 Bricks/Day	31,000 Bricks/Day
10.	Briquetting Plant		200 Kg/Hr	200 Kg/Hr
11.	Power Plant (31-MW)	WHRB Power Plant	2 x 8 MW	16.0 MW
		FBC Power Plant	1 x 15 MW	15.0 MW

1.3 RAW MATERIALS (FOR EXPANSION PROJECT)

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

Raw Material Requirement, Source &Mode of Transport

S.No.	Raw Material		Quantity (TPA)	Sources	Distance w.r.t site (in Kms.)	Mode of Transport
1.	**For Pellet Plant – 6,60,000 TPA**					
a)	Iron Ore Concentrate		7,30,000	Chhattisgarh / Odisha	~ 600 Kms.	By rail & road (covered trucks)
b)	Bentonite		5,280	Gujarat	~ 600 Kms.	By rail & road (covered trucks)
c)	Lime stone		9,900	Chhattisgarh	~ 100 Kms.	By road (covered trucks)
d)	Anthracite Coal		23,100	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By road (covered trucks)
	For Pellet plant Producer Gas plant – 1 x 20,000 NM^3/Hr TPA					
	Coal	Indian	60,000	SECL Chhattisgarh / MCL Odisha	~ 600	By rail & road (covered trucks)
		Imported	38,400	Imported	~ 600	Through vessel, rail & by road (Covered trucks)
2.	**For DRI Kilns(Sponge Iron) – 2,31,000 TPA**					
a)	Pellets		3,34,950	Own Generation	---	covered conveyors
	(or)					
b)	Iron Ore		3,69,600	Odisha & Chhattisgarh	~ 500	By rail & road (covered trucks)
c)	Coal	Indian	3,00,300	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (covered trucks)
		Imported	1,92,192	Imported	~ 600	Through vessel, rail & by road (Covered trucks)
d)	Dolomite		11,550	Chhattisgarh	~ 150	By road (covered trucks)
3.	**For Steel Melting Shop (Hot Billets/Billets/ Ingots) – 1,98,000 TPA**					
a)	Sponge Iron		2,00,000	Own generation	---	Through covered conveyers
b)	MS Scrap / Pig Iron		30,000	Own generation & Purchased from outside	~ 100	By road (covered trucks)
c)	Ferro alloys		10,000	Own generation	---	Through covered

						conveyers
4.	**For Rolling Mill through Hot charging (Rolled Products) – 1,98,000 TPA TPA**					
a)	Hot Billets / Billets / Ingots		1,75,032	Own generation	---	Through covered conveyers
b)	Billets (for Reheating furnace)		32,670	Chhattisgarh	~ 100 Kms.	By road (covered trucks)
5.	**For Coal Gasifier – 1 x 6,000 NM^3/Hr TPA**					
	Coal	Indian	18,000	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (covered trucks)
		Imported	11,520	Imported	~ 600	Through vessel, rail & by road (Covered trucks)
6.	**For Galvanize Unit – 3 x 40,000 TPA – 1,20,000 TPA**					
a)	Structural Steels		1,20,000	Own generation	---	----
7.	**For FBC Boiler [Power Generation 15 MW]**					
a)	Indian Coal (100 %)		89,100	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (covered trucks)
	OR					
b)	Imported Coal (100 %)		57,024	Imported	~ 600 (from Vizag Port)	Through sea route, rail route & by road (covered trucks)
	OR					
c)	Dolochar + Indian Coal	Dolochar	46,200	In plant generation	---	covered conveyors
		Indian Coal	66,000	SECL Chhattisgarh / MCL Odisha	~ 500	By rail & road (covered trucks)
	OR					
d)	Dolochar + Imported Coal	Dolochar	46,200	In plant generation	---	through covered conveyors
		Imported Coal	42,240	Imported	~ 600 (from Vizag Port)	Through sea route, rail route & by road (covered trucks)
8.	**For Ferro Alloys (2 x 9 MVA)**					
7 (i)	For Ferro Silicon – 14,000 TPA					
a)	Quartz		30,800	Chhattisgarh / Andhra Pradesh	~ 500	By road (covered trucks)
b)	Coke		21,700	Andhra Pradesh	~ 500	By road (covered trucks)
c)	Mill scales & MS Scrap		6,300	Own generation	---	through covered conveyors
d)	Electrode paste		1,400	Maharashtra / West Bengal	~ 300	By road (covered trucks)

e)	Briquetted Bagfilter dust	980	Own generation	---	---
7 (ii)	For Ferro Manganese – 40,000 TPA				
a)	Manganese Ore	96,000	MOIL / OMC	~ 500	By Rail & Road (covered trucks)
b)	Coke	12,000	Andhra Pradesh	~ 500	By road (covered trucks)
c)	MS Scrap / Mill scales	8,000	Inhouse Generation	---	By road (covered trucks)
d)	Electrode Paste	880	Maharashtra / West Bengal	~ 300	By road (covered trucks)
7 (iii)	For Silico Manganese –28,000 TPA				
a)	Manganese Ore	56,000	MOIL / OMC	~ 500	By Rail & Road (covered trucks)
b)	FeMn Slag	12,600	Own generation	---	---
c)	Coke	8,400	Andhra Pradesh	~ 500	By road (covered trucks)
d)	Dolomite	8,400	Chhattisgarh / Andhra Pradesh	~ 500	By road (covered trucks)
e)	Electrode paste	560	Maharashtra / West Bengal	~ 300	By road (covered trucks)
f)	Quartz	9,800	Chhattisgarh / Andhra Pradesh	~ 500	By road (covered trucks)
g)	Briquetted Bagfilter dust	420	Own generation	---	---
7(iv)	For Ferro Chrome – 30,000 TPA				
a)	Chrome Ore	72,000	Sukinda, Odisha Imported	~ 500 ~ 600 (from Vizag Port)	By road (covered trucks) From Port By Road (covered Trucks)
b)	Coke	15,000	Andhra Pradesh	~ 500	By road (covered trucks)
c)	Quartz	1,830	Chhattisgarh / Andhra Pradesh	~ 500	By road (covered trucks)
d)	MS Scrap / Mill Scale	4,500	Inhouse Generation	---	By road (covered trucks)
e)	Bauxite	4,500	Chhattisgarh / Maharashtra	~ 500	By road (covered trucks)
f)	Electrode Paste	600	Maharashtra / West Bengal	~ 300	By road (covered trucks)
g)	Briquetted Bagfilter dust	600	Own generation	---	---
7 (v)	For Pig Iron –48,000 TPA				
a)	Iron ore	52,560	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (covered trucks)
b)	Coke	30,144	Andhra Pradesh	~ 500 Kms.	By road

					(covered trucks)
c)	Lime stone	7,200	Chhattisgarh	~ 100 Kms.	By road (covered trucks)
d)	Dolomite	7,200	Chhattisgarh / Andhra Pradesh	~ 500	By road (covered trucks)
e)	Mill Scale	31,200	Inhouse Generation	---	By road (covered trucks)
f)	Fluorspar	1,200	Maharashtra / West Bengal	~ 300 Kms.	By road (covered trucks)

1.4 MANUFACTURING PROCESS

11.1.4.1 Pellatatization plant

Iron ore will be ground in a mill and subsequently processed to form Green balls for subsequent processing in a pellet plant consisting of Travelling Grate, kilns (grate kiln process) and other process plant equipment to produce pellet. The flue gases from grate kiln will be treated in ESP and discharged through a stack.

11.1.4.2 Sponge Iron (DRI)

The proposal consists of 2 x 350 TPD to manufacture 2,31,000 TPAof Sponge Iron with 16.0 MW WHRB facility. Refractory lined rotary kilns will be used for reduction of iron ore in solid state.

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 1000^0C enters the reduction zone. Temperature of the order of 1050^0C 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 160^0C. 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.

11.1.4.2 Steel Melting Shop

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 consistofInduction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). There will be6 x 15Induction furnaces to manufacture Hot Billets / MS Billets / MS Slab of 1,98,000TPA. Either the Hot Billets produced from LRF will be directly sent to Rolling Mill without using Re-heating Furnace through Hot charging method (or) Billets / Ingots will be sent to Re-heating Furnace to reheat the Billets and then sent to Rolling Mill to manufacture TMT Bars, Structural Steel - Angle, Channels, Gutters, Coils, Flat Bars, Strips, MS Pipes, MS Tubes, Galvanized Pipes and angles. The flue gases will be treated in fume extraction system with bagfilters.

11.1.4.3 Rolling Mill

The Hot Billets produced from Induction Furnaces will be directly sent to Rolling Mill to produce Rolled Products (OR) Hot Billetswill be cooled and stored will be sent to reheating furnaces for the heating and will be sent to Rolling Mill. Furnace will be heated with either LDO / Producer Gas. A Rolling mills (1 x 600 TPD) will be installed in the present proposal to produce 1,98,000 TPA of Rolled products such as TMT Bars, Structural Steel, etc.

11.1.4.4 Submerged Electric Arc Furnace

Submerged Electric Arc Furnaces (2 x 9 MVA) will be setup in the proposed project. 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 & Ferro Chrome will be produced using Chrome Ore as main raw material in a sub-merged arc furnace using reducer (Coke) under high voltage. Flue gases will be extracted through 4thhole and then treated in bag filters.

11.1.4.5 Power Generation

Through WHRB Boiler

The hot flue gases from proposed 2 x 350 TPDDRI kilns will pass through waste heat recovery Boiler to recover the heat and to generate (2 x 8 MW)electricity. The gases after heat recovery will pass through ESP and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmospherethroughstacks of adequate height.

Through FBC Boiler

Coal (Imported / Indian) along withdolochar will be used as fuel in FBC Boilers to generate 15MWofelectricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack of adequate height into the atmosphere.

11.1.4.7 Fly Ash Brick Manufacturing Unit

It is proposed to establish Fly Ash brick making unit of 31,000 bricks/day capacity. Fly ash (70%), Gypsum (5%), cement (10%) and Stone dust (15%) are manually feed into a pan mixer where water is added to the required proportion for homogeneous mixing. The proportion of raw material may vary depending upon quality of raw materials

1.8 Water Requirement

- Water required for the proposed project will be **1,640 KLD**. This includes make up water for DRI Kilns, Induction Furnaces, Rolling Mill, Galvanizing Unit, Gasifier Units, Ferro Alloys Unit, Brick manufacturing unit & for Domestic requirement.
- Online application submitted for allocation water from Kharun River before the Water Resource Department, Govt of Chhattisgarh.
- NOC obtained for abstraction of 490 KLD ground water from Central Ground Water Authority.
- A dedicated pipeline will be laid from the river to the project site.

- Water drawl permission from Water Resource Department, Govt. of Chhattisgarh will be obtained.
- Air cooled condensers will be provided to FBC Power plant instead of water cooled consdensers to reduce the water consumption significantly.

Water Requirement Breakup

S.No.	Unit	Quantity in KLD
1.	Pellet Plant	290
2.	Producer gas Plant	10
3.	DRI Kilns	230
4.	Induction Furnaces	140
5.	Rolling Mills	180
6.	Coal gasifier	10
7.	Galvanize Pipe Unit	60
8.	Ferro Alloys	60
9.	Power Plant (WHRB & FBC)	620
	• Cooling tower makeup	298
	• Boilers make up	224
	• DM plant Regeneration	98
10.	Brick Manufacturing unit	10
11.	Briquetting Plant	10
12.	Domestic	20
	Total	**1640**

1.6 Wastewater Generation

- Total wastewater generated from the proposed project will be **312 KLD.**
- There will be no wastewater discharge in DRI Kilns, as closed-circuit cooling system will be adopted.
- Wastewater from Induction Furnace, Rolling Mill, Galvanized Plant, Ferro Alloys, 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.
- Effluent from Gasifier will be reused ABC chamber in DRI Kiln.
- Wastewater from Rolling Mill will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.

- Sanitary waste water will be treated in STP.
- Garland drains will be provided around all the raw material stacking areas
- 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.
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.

Breakup of Wastewater Generation

S.No.	Source	Generation (KLD)
1.	Pellet Plant	15
2.	DRI	---
3.	Induction Furnace	14
4.	Rolling Mill	9
5.	Galvanize Pipe Unit	3
6.	Gasifier	16
7.	Ferro Alloys	4
8.	Power Plant	235
	a) Cooling Tower blowdown	75
	b) Boilers blowdown	63
	c) D.M. plant regeneration water	98
9.	Sanitary Wastewater	16
	Total	**312**

1.7 Wastewater Characteristics

The following are the Characteristics of wastewater.

Characteristics of Effluent

PARAMETER	CONCENTRATION			
	Cooling Tower blowdown	DM Plant Regeneration	Boiler Blowdown	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 $PM_{2.5}$, 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.11.2.1 : AAQ Data Summary

S.No.	Parameter	Concentration range	Standard as per NAAQS
1.	$PM_{2.5}$	28.1 to 42.3 μg/m^3	60
2.	PM_{10}	46.8 to 70.5 μg/m^3	100
3.	SO_2	8.7 to 17.9 μg/m^3	80
4.	NO_X	11.4 to 21.7 μg/m^3	80
5.	CO	391 to 1210 μg/m^3	2000

2.2 Water Quality

2.2.1 Surface Water Quality

4 no. of samples i.e. 60m Upstream & 60 m Downstream from Kharun River (2.3 Kms. – West Direction), and one sample from Kulhan nala(0.6 Kms. – West direction), and one sample from Deorani Jethani nala (0.09 Kms. – SouthWest direction), 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 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 daytime&Nighttime. The equivalent day-night noise levels in the study zone are ranging from **46.73 dBA to 62.16 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_{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.

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	42.3	70.5	17.9	21.7	1210
Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	0.90	1.46	6.52	4.77	1.10
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.41	0.68	---	5.07	3.27
Net resultant concentrations during operation of the proposed project	**43.61**	**72.64**	**24.42**	**31.54**	**1214.37**
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 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.**5.66 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

- Total wastewater generated from the proposed project will be **312 KLD.**
- There will be no wastewater discharge in DRI Kilns, as closed circuit cooling system will be adopted.

- Wastewater from Induction Furnace, Rolling Mill, Galvanized Plant, Ferro Alloys, 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.
- Effluent from Gasifier will be reused ABC chamber in DRI Kiln.
- Wastewater from Rolling Mill will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Sanitary waste water will be treated in STP.
- Garland drains will be provided around all the raw material stacking areas
- 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.
- Zero Liquid Discharge (ZLD) will be maintained in 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 **5.66 Ha.** of extensive greenbelt will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposedproject.

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				
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	Twice in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
C.	STP Inlet & Outlet	Twice in a month	Composite sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month		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 $PM_{2.5}$, PM_{10}, SO_2, NOx & CO
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	Quarterly Once	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 required as the additional land shown is not having any habitations.

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.

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 SYSTEM PROPOSED

S.No.	Source	Control Equipment	Emission at the outlet
1.	Pellet Plant	Electro Static Precipitators (ESP)	PM <30 mg/Nm^3
2.	DRI kilns with WHRB's	Electro Static Precipitators (ESP)	PM <30 mg/Nm^3
3.	Induction Furnaces	Fume Extraction system with PTFE bag filters	PM < 30 mg/Nm^3
4.	Re-heating furnaces attached to Rolling Mill	Stack	PM < 30 mg/Nm^3
5.	Submerged Electric Arc Furnaces	4^{th} Hole Fume Extraction system with bag filters	PM < 30 mg/Nm^3
6.	Coal washery (coal crusher)	Dust extraction system with Bag filters	PM < 30 mg/Nm^3
7.	FBC Boiler	Electro Static Precipitators (ESP)	PM < 30 mg/Nm^3
		Lime dosing will also be done	Sox<100 mg/Nm^3
		Combustion temperature will be around 800-850^{0}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^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.			

7.2 Water Environment

- Total wastewater generated from the proposed project will be **312 KLD.**
- There will be no wastewater discharge in DRI Kilns, as closed-circuit cooling system will be adopted.
- Wastewater from Induction Furnace, Rolling Mill, Galvanized Plant, Ferro Alloys, 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.
- Effluent from Gasifier will be reused ABC chamber in DRI Kiln.

- Wastewater from Rolling Mill will be treated in oil separator followed by settling tank and will be recycled through closed circuit cooling system.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Sanitary waste water will be treated in STP.
- Garland drains will be provided around all the raw material stacking areas
- 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.
- Zero Liquid Discharge (ZLD) will be maintained in the proposed project.

TREATED EFFLUENT DISPOSAL

Total treated effluent generation	**312 KLD**
Effluent to be used for dust suppression	59 KLD
Effluent quantity to be used for ash conditioning in CHP	42KLD
Effluent to be used for Greenbelt development	140 KLD
RO Rejects to be used for Floor washing, Toiler cleaning & Flushing	55 KLD
Effluent from Gasifier to be used in ABC of DRI	16 KLD

5.66 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 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 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 proposedproject.

TABLE NO. 7.2: SOLID WASTE GENERATION & ITS DISPOSAL

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
1.	Ash from Pellet Plant	19,800	Will be utilized in the proposed Brick Manufacturing Unit
2.	Ash from DRI	41,580	Will be utilized in the proposed Brick Manufacturing Unit
3.	Dolochar	46,200	Will be used in proposes FBC power plant as fuel.
4.	Kiln Accretion Slag	2,079	Will be utilized in the proposed Brick Manufacturing Unit
5.	Wet scrapper sludge	9,240	Will be utilized in the proposed Brick Manufacturing Unit
6.	SMS Slag	19,800	Will be given to road contractor for road laying
7.	End Cuttings from Rolling Mill	5,940	Will be reused in the SMS
8.	Mill scales from Rolling Mill	594	Mill scales will be utilized in the proposed Ferro alloys manufacturing units.
9.	Ash from Power Plant (Indian Coal + Dolochar)	57,420	Will be utilized in the proposed Brick Manufacturing Unit
10.	Slag from FeMn	40,000	Will be reused in manufacture of SiMn as it contains high SiO_2 and Silicon.
	(or)		
11.	Slag from FeSi	1,960	Will be given to Cast iron foundries
	(or)		
12.	Slag from SiMn	28,000	will be used for Road construction / will be given to slag cement manufacturing
	(or)		
13.	Slag from FeCr	27,000	Will be processed in Zigging plant for Chrome recovery. After Chrome recovery, the left-over slag will be analysed for Chrome content through TCLP test, if the Chrome content in the slag is within the permissible limits, then it will be utilised for Road laying /brick manufacturing. If Chrome content exceeds the permissible limits, it will be sent to nearest TSDF.
14.	Slag from Pig Iron	28,800	Will be given toslag basedcement manufacturing unit
15.	Zinc Dross from galvanizing unit	780	Will be given to SPCB approved vendors / TSDF

7.5 Greenbelt Development

- .66 Ha. of Greenbelt (34.1%) will be developed within the project site which is more the norms
- 10 m wide greenbelt will be maintained along the periphery of the project site.
- The total no .of trees exist in project site are 165 numbers . Out of which are to 110 numbers will be retained as it is . Remaining 55 numbers will be translocated peripherally with in project site premises. Compensatory afforestation of 275 nos. plants will be planted additionally.
- Greenbelt will be developed as per CPCB guidelines.
- 2500 plants will be planted per Hectare as per CPCB norms.
- Total number of plants will be 14,150 nos. (inclusive of 275 nos. of additional plantation)
- Local DFO will be consulted in developing the green belt.
- The tree species to be selected for the plantation are pollutant tolerant, fast growing, wind firm, deep rooted with 8 to 10 feet height. 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.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 60 Crores

Recurring Cost per annum for Environmental protection : Rs. 10.4 Crores

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 WHR Boiler.
- 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.
- Additional Rain water harvesting pits will be constructed outside the plant premises in consultation with CGWB.