Online Proposal No. IA/CG/IND1/482601/2024

EXECUTIVE SUMMARY OF
DRAFT ENVIRONMENT IMPACT ASSESSMENT REPORT FOR

Establishment of Pellet plant of 1x 0.3 MTPA (3,00,000TPA)DRI Kilns (Sponge Iron 1,80,000TPA) Induction Furnace with LRF & CCM (MS Billets /Ingots) (3,24,000TPA)Rerolled steel products through hot charging and R.H.F 3,00,000 TPA (2,40,000 TPA through hot charging & 60,000 TPA through billet RHF with Producer Gas) Si-Mn 36,000TPA OR Fe-Mn 46,000 TPA OR Fe-Si 20,000 TPA Or Pig Iron 63,000 TPA(9 MVAX2)WHRB Power Plant 3 x5MW, AFBC 2x10MW, Pipe mill/Tube mill 1,00,500 TPA & Galvanized unit 1,00,500 TPA, Brick manufacturing 36000 Bricks/day

At

Khasra no. 6, Village-Konari, Tehsil-Tilda, District-Raipur, Chhattisgarh

SUBMITTED BY

M/s SRS Steel & Power

Khasra no. 6, Village-Konari, Tehsil-Tilda, District-Raipur, Chhattisgarh

Applicable Schedule: 3 (a), Category: A

MOEF&CC File No.- . IA-J-11011/296/2024-IA-II(I) on 16th September 2024

ENVIRONMENTAL CONSULTANT

PARIVESH ENVIRONMENTAL ENGINEERING SERVICES, LUCKNOW

Accredited EIA Consultant Organization by NABET, QCI, New Delhi

QCI – NABET Certificate No. NABET/EIA/2124/IA0092 (Rev. 02); Validity: -up to 11.11.2024 and extended validity up to 10.02.2025.

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EXECUTIVE SUMMARY (English)

1.0 INTRODUCTION

M/s SRS Steel & Power is proposing to establish a Steel Plant, a greenfield project , comprising of establishment of Pellet Plant 1x0.3 MTPA (3,00,000 TPA), DRI Kilns (Sponge Iron-1,80,000 TPA), Induction Furnace along with CCM and LRF (MS Billets / Ingots-3,24,000 TPA), Rerolled steel products through 80 % hot charging with Hot Billets and remaining 20% through RHF with Producer Gas/Coal Gasifier as fuel-3,00,000 TPA), Submerged Electric Arc Furnace (SiMn - 36,000 TPA / FeMn – 46,000 TPA / FeSi – 20,000 TPA / Pig Iron – 63,000 TPA), WHRB based Power Plant – 3 x 5.0 MW, AFBC/CFBC based Power Plant – 2 x 10 MW,Pipe Mill /Tube Mill(MS Pipes/Tubes 1,00,500 TPA),Galvanized Unit (Galvanized products-1,00,500 TPA) Brick Manufacturing unit (36,000 Bricks/day). The proposed project site is located at Khasra no 6 Village-Konari, Tehsil-Tilda, Dist-Raipur, Chhattisgarh. Total land envisaged for the proposed project is 11.865 ha and same is taken on lease from Chhattisgarh State Industrial Development Corporation Limited (CSIDC Ltd.) for 99 years vide Lease Deed dated 07.10.2022.

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' and requires Environmental Clearance (EC) to be obtained from MoEF&CC, New Delhi.

The project proponents have submitted prescribed application along with Pre-Feasibility Report to the MOEF&CC, New Delhi on dated 09.07.2024 vide proposal No: IA/CG/IND1/482601/2024 for seeking terms of references for conducting the EIA Study. The proposal was considered in the 63rd meeting of the EAC (Industry-I) held during 23th & 25th July 2024 and accordingly, ToR was granted (vide. F. No. IA-J-11011/296/2024-IA-II(I)on 16th September 2024.)

Parivesh Environmental Engineering Services, Lucknow, is QCI-NABET accredited in Category "A" environment consultant organization has been assigned to undertake an Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the proposed project.

The Environmental Impact Assessment (EIA) report is prepared for obtaining Environmental Clearance (EC) from Ministry of Environment, Forest and Climate Changes (MoEF&CC), New Delhi for the proposed project.

1.1 Plant Configuration and production capacity

Table E-1: Proposed Units, Products & their Production Capacities

S. No.	Process plant	Proposed configuration of the plant	Product Name	Capacity (in TPA)
1.	Pellet plant	0.3 MTPA x 1 No.	Iron Ore Pellets	3,00,000
2.	DRI Kiln (Coal Fired)	200 TPD X 3 No.	Sponge Iron	1,80,000
3.	Induction Furnace along with CCM and LRF	Induction Furnace (20 Tons X 3 Nos. and 12 Tons x 4Nos.) with matching capacity of LRF & CCM	Billets/Ingots	3,24,000
4.	Rolling Mill			3,00,000
	Hot Charging Rolling Mill	Electrical driven Rolling Mill about 2 x 400TPD	Re-rolled Steel products (Wire rod, Rebar, TMT, Strips, Structural Steel etc.)	2,40,000
	Billet Reheating Furnace	RHF (200 TPD) with Producer Gas as fuel	Re-rolled Steel products (Wire rod, Rebar, TMT, Strips, Structural Steel etc.)	60,000
5.	Coal Gasifier	1x5000 Nm^3/Hr	Producer Gas	1x5000 Nm^3/Hr
6.	Sub-Merged Arc Furnace	Electrically operated Sub Merged Arc Furnace 9 MVA x 2 nos	Silico Manganese	36,000
			And/or	
			Ferro Manganese	46,000
			And/or	
			Ferro Silicon	20,000
			And/or	
			Pig Iron	63,000
7.	Captive Power Plant	WHRB	3x5 MW	15 MW
		AFBC/CFBC	2x10MW	20 MW
8.	Pipe Mill/Tube Mill	335 Tones per day	MS Pipes/ Tubes	1,00,500
9.	Galvanized Unit	335 Tones per day	Galvanized products	1,00,500
10.	Fly Ash Bricks/ Block making unit	Fly Ash product making facilities	Fly Ash Bricks/ Blocks	36000 Bricks/day

1.2 Location and accessibility

M/s SRS Steel & Power has proposed to establish a Steel Plant which falls in the Survey of India (SI) Toposheet No. F44 P15 at Village - Konari, Tehsil-Tilda, District-Raipur, Chhattisgarh. The geographical location of the proposed project site falls in coordinates are given below: -

Table.E-2: Pillar Co-ordinates

Point	Latitude	Longitude
1	21°29'15.95"N	81°48'26.17"E
2	21°29'12.70"N	81°48'28.51"E
3	21°29'20.07"N	81°48'42.94"E
4	21°29'18.75"N	81°48'42.85"E
5	21°29'18.66"N	81°48'45.01"E
6	21°29'17.01"N	81°48'43.78"E
7	21°29'12.12"N	81°48'46.22"E
8	21°29'10.66"N	81°48'46.73"E
9	21°29'8.14"N	81°48'37.48"E
10	21°29'7.55"N	81°48'36.15"E
11	21°29'12.19"N	81°48'28.28"E
12	21°29'15.78"N	81°48'25.80"E

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

Table E-3: Environmental features within 10 Km. radius of the plant site

<table>
<tr><th>S. No.</th><th>Particulars</th><th colspan="4">Details</th></tr>
<tr><td>1.</td><td>Toposheet No.</td><td colspan="4">F44 P15 (Project site)</td></tr>
<tr><td>2.</td><td>Elevation</td><td colspan="4">MSL of Project Site -315.90 to 313.20 m above mean sea level</td></tr>
<tr><td>3.</td><td>Nearest Habitation/ town</td><td colspan="4">Nakti Khapri Village - 0.5 Kms.</td></tr>
<tr><td rowspan="4">4.</td><td rowspan="4">Nearest Highway</td><td>S. No.</td><td>Particulars</td><td>Distance (Km) from Project Boundary)</td><td>Direction</td></tr>
<tr><td>1.</td><td>Tilda – Simga Road</td><td>2.0</td><td>NE</td></tr>
<tr><td>2.</td><td>NH-130B</td><td>10.4</td><td>S</td></tr>
<tr><td>3.</td><td>NH-30</td><td>11.2</td><td>W</td></tr>
<tr><td>5.</td><td>Nearest Railway Station</td><td colspan="4">Baikunth Station – 3.0 km, WNW</td></tr>
<tr><td>6.</td><td>Nearest Airport</td><td colspan="4">Swami Vivekananda International Airport – Nawa Raipur – 33.5 km, South</td></tr>
<tr><td>7.</td><td>Nearest Tourist Places</td><td colspan="4">None within 10 Km radius</td></tr>
<tr><td>8.</td><td>Défense Installations</td><td colspan="4">None within 10 Km radius.</td></tr>
<tr><td>9.</td><td>Archaeological Sites</td><td colspan="4">None within 10 Km radius.</td></tr>
</table>

<table>
<tr><td>10.</td><td>Eco sensitive Zone</td><td colspan="4">None within 10 Km radius.</td></tr>
<tr><td>11.</td><td>Reserve /Protected Forests</td><td colspan="4">There are no National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve/ migratory routes for Birds with in 10 Km. radius of the plant.
1. Mohrenga PF – 6.7 km, ESE
2. Khulidabri PF-10 km,SE
3. Bilari RF – 10.5 km, NW,
4. Bilari Ghughua RF-11.2 km, N</td></tr>
<tr><td>12.</td><td>Water bodies</td><td colspan="4"><table><tr><th>S. No.</th><th>Particulars</th><th>Distance (Km) (From Project Boundary)</th><th>Direction</th></tr><tr><td>1.</td><td>Mahanadi Canal</td><td>0.8</td><td>W</td></tr><tr><td>2.</td><td>Jamuniya Nala</td><td>2.1</td><td>E</td></tr><tr><td>3.</td><td>Kirna Tank</td><td>3</td><td>SW</td></tr><tr><td>4.</td><td>Manpur Dam</td><td>9.82</td><td>NE</td></tr><tr><td>5.</td><td>Kumhari Tank</td><td>8.7</td><td>E</td></tr><tr><td>6.</td><td>Pindraon Tank</td><td>9.3</td><td>SE</td></tr><tr><td>7.</td><td>Banjari Nala</td><td>10.4</td><td>ENE</td></tr><tr><td>8.</td><td>Patthra Nala</td><td>11</td><td>S</td></tr><tr><td>9.</td><td>Kulhan Nala</td><td>11.7</td><td>WSW</td></tr></table></td></tr>
<tr><td>13.</td><td>Seismic Zone</td><td colspan="4">Seismic Zone – II: According to BMTPC's vulnerability atlas, II edition, the area falls in a region of Low damage risk zone.</td></tr>
<tr><td>14.</td><td>Interstate boundary</td><td colspan="4">None within 10 Km radius.</td></tr>
</table>

2.0 PROJECT DESCRIPTION

As per Environmental Impact Assessment Notification dated 14th September, 2006 and subsequent amendment thereof, the proposed project falls under S. No. 3 (a) under category "A" and requires Environmental Clearance (EC) to be obtained from MoEF&CC, New Delhi.

M/s SRS Steel & Power has proposed to establish a Steel Plant, a greenfield project , comprising of establishment of Pellet Plant 1x0.3 MTPA (3,00,000 TPA), DRI Kilns (Sponge Iron-1,80,000 TPA), Induction Furnace along with CCM and LRF (MS Billets / Ingots-3,24,000 TPA), Rerolled steel products through 80 % hot charging with Hot Billets and remaining 20% through RHF with Producer Gas/Coal Gasifier as fuel-3,00,000 TPA), Submerged Electric Arc Furnace (SiMn - 36,000 TPA / FeMn – 46,000 TPA / FeSi – 20,000 TPA / Pig Iron – 63,000 TPA), WHRB based Power Plant – 3 x 5.0 MW, AFBC/CFBC based Power Plant – 2 x 10 MW,Pipe Mill /Tube Mill(MS Pipes/Tubes 1,00,500 TPA),Galvanized Unit (Galvanized products-1,00,500 TPA)

Brick Manufacturing unit (36,000 Bricks/day). The proposed project site is located at Khasra no 6 Village-Konari, Tehsil-Tilda, Dist-Raipur, Chhattisgarh. Total land envisaged for the proposed project is 11.865 ha and same is taken on lease from Chhattisgarh State Industrial Development Corporation Limited (CSIDC Ltd.) for 99 years vide Lease Deed dated 07.10.2022

2.1Raw Material Requirement

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

Table E-4: Raw Material Details

S. No.	Raw material	Quantity (TPA)	Source	Distance from site (km)	Mode of Transportation
	Pellet Plant 3,00,000TPA				
a)	Iron Ore Fines	3,30,000	Barbil, Orissa NMDC, Chhattisgarh	~ 750Kms	By Rail/ Road Through Covered Trucks
b)	Bentonite	3,000	Chhattisgarh	~ 100 Kms	By road (Through covered trucks)
c)	Lime	1,200	Mines in Bilaspur	~ 100Kms	Road Through Covered Trucks
d)	Coal	41,250	SECL Chhattisgarh/ MCL Odisha	~ 500Kms	By rail & road (Through covered trucks)
	Total	**3,75,450**			
	Raw Material for Sponge Iron Production (DRI Plant) (1,80,000 TPA)				
a)	Iron Ore (100%)	2,88,000	Barbil, Orissa NMDC, Chhattisgarh	~ 750Kms	By Rail/ Road Through Covered Trucks
	OR				
	Pellets (100%)	1,57,400	Purchased from out side	~ 750Kms	Through covered conveyers
b)	Coal Indian	2,16,000	SECL Chhattisgarh/ MCL Odisha	~ 500Kms	By rail & road (Through covered trucks)
	OR				
	Coal Imported	1,62,000	Indonesia / South Africa / Australia	~ 900 Kms (from vizag Port)	Through sea route, rail route & by road

c)	Dolomite	14,400	Chhattisgarh	~ 100 Kms	By road (Through covered trucks)
	Total	**5,18,400**			
	Raw Material for Steel Melting Shop (M.S Billets / Ingots) – 3,24,000 TPA				
a)	Sponge Iron	3,24,000	Own generation/Purchased from out side (Chhattisgarh)	- ~ 100 Kms.	Through covered Conveyers/ By road (through covered trucks)
b)	Pig Iron	32,400	Chhattisgarh	~ 100 Kms	By road (through covered trucks)
c)	Scrap	32,400	Chhattisgarh	~ 100 Kms	By road (through covered trucks)
d)	Ferro Alloys	4,536	Inhouse generation	-	-
	Total	**3,93,336**			
3.(a)	**For Hot Charging Rerolling Mill (2,40,000 TPA)**				
a)	Hot Billets	2,46,720	Captive Production in Steel Melting shop	-	Internal Transfer
	Total	**2,46,720**			
3.(b)	**Reheating Furnace based Rerolling Mill (60,000 TPA)**				
a)	Cold Billets	61,680	Captive production/ Local market as per requirement	-	Internal Transfer/ By Road through covered vehicles
b)	Coal for Producer Gas plant	15013	SECL Chhattisgarh/ MCL Odisha	~ 500Kms	By rail & road (Through covered trucks)
	Total	**76,693**			
4.	**For Ferro Alloys (2 x 9 MVA)**				
4(i)	**For producing 100% Silico Manganese-36000 TPA**				
a)	Manganese Ore	75,600	Mines at Orissa and Madhya Pradesh and Vidarbha region	. ~ 450 Kms.	By Road (Covered Trucks)
b)	High Manganese Ore Slag	14,400	Open Market	~ 150 Kms.	By Road (Through Covered Trucks)
c)	Quartz	2,880	Mines in Raigarh	~ 150 Kms	By Road (Covered trucks)

d)	Coke/Coal/Charcoal	21,600	Open Market	~ 150 Kms.	By Road (Through Covered Trucks)
e)	Dolomite	1,080	Local Industries	~ 150 Kms	By road (through covered trucks)
f)	Electrode Paste	1,080	Local Industries	~ 150 Kms	By road (through covered trucks)
g)	M.S Item	360	Local Industries	~ 100 Kms	By road (through covered trucks)
h)	Lancing Pipe and Canister Sheet	540	Local Industries	~ 100 Kms	By road (through covered trucks)
	Total	**1,17,540**			
4(ii)	**For producing 100% Ferro Manganese – 46000TPA**				
a)	Manganese Ore	82,800	Mines at Orissa and Madhya Pradesh and Vidarbha region	~ 450 Kms.	By Road through covered vehicles
b)	Coke/Coal/Charcoal	27,600	Open Market	~ 150 Kms.	By Road (Through Covered Trucks)
c)	Dolomite	13,800	Local Industries	~ 150 Kms	By road (through covered trucks)
d)	Electrode paste	1,152	Local Industries	~ 150 Kms	By road (through covered trucks)
	Total	**1,25,352**			
4 (iii)	**For producing 100% Ferro Silicon – 20000TPA:**				
a)	Quartz	36,000	Mines in Raigarh	~ 150 Kms	By Road (Covered trucks)
b)	Coke/Coal/Charcoal	21,800	Open Market	~ 150 Kms.	By Road (Through Covered Trucks)
c)	Mill Sclae /Iron Ore	8,000	Local Industries	~ 100 Kms	By road (through covered trucks)
d)	Electrode Paste	1,000	Local Industries	~ 150 Kms	By road (through covered trucks)
	Total	**66,800**			
4 (iv)	**For producing 100% Pig Iron (63,000TPA)**				
a)	Iron Ore & Mill Scale	94,500	Mines at Chhattisgarh Orissa and nearby factories for mill scale	~ 450 Kms.	By Road through covered vehicles
b)	Coke/Coal/Charcoal	37,800	Open Market	~ 150 Kms.	By Road (Through Covered Trucks)
c)	Dolomite/Lime/Lime	6,300	Mines in	~ 150 Kms	By road (through

	stone		Bilaspur		covered trucks)
d)	Electrode Paste	945	Local Industries	~ 150 Kms	By road (through covered trucks)
e)	M.S Item	441	Local Industries	~ 100 Kms	By road (through covered trucks)
f)	Lancing Pipe	189	Local Industries	~ 100 Kms	By road (through covered trucks)
	Total	**1,40,175**			
5	**Raw Material for Power Plant (AFBC) 20 MW**				
a)	Dolochar	45,000	In house generation	-	through covered conveyors
	Indian Coal	92,400	SECL Chhattisgarh / MCL Odisha	~ 500 Kms	By rail & road (Through covered trucks)
	Total	**1,37,400**			
6	**Pipe Mill & Galvanizing Unit Pipe & Galvanized Pipe**				
a)	MS Strips	1,07,684	Captive Plant		
b)	Zinc	5,026	Open Market	100 KMs	By Road through covered vehicles
c)	Lead	51	Open Market	100 KMs	By Road through covered vehicles
d)	LDO/LSHS	2,010	Open Market	100 KMs	By Road through covered vehicles
e)	HCL Acid	3,518	Open Market	100 KMs	By Road through covered vehicles
f)	Lime for treatment	503	Open Market	100 KMs	By Road through covered vehicles
	Total	**1,18,792**			
7	**Fly Ash Brick Manufacturing Unit**				
a)	Fly Ash	68580	Internally available	~0.5 Kms.	-
b)	Lime	5280	Local market & through road by covered vehicles	~50 Kms.	By road
c)	Sand	2640	Local market & through road by covered vehicles	~ 50 Kms.	(Through covered trucks)
d)	Gypsum	2960	Local market & through road by covered vehicles.	~ 50Kms.	(Through covered trucks)

2.2 Manufacturing Process

Iron Ore Palletization Plant

All raw materials will be proportioned as per requirement of the product quality and intensely mixed to have homogeneity in the quality. The mixed material will be processed in a battery of disc or a drum pelletiser for formation of green balls / pellets. The pellets will be controlled for size as well as certain amount of green strength. The pellets are then classified in a roller screen to separate the undersize (-8 mm) and oversize (+18 mm). The rest of the sized pellets are charged onto the travelling grate chain. The travelling grate is an endless chain where the pellets are subjected to controlled rate of heating with updraft, downdraft, and two stages of preheating to a temperature of ~1050deg. C. The recuperated heat from the process is utilised very effectively resulting in lower fuel consumption. In the preheating zone small amount of heavy oil may be used to stabilise the preheating zone temperature. At the end of the travelling grate the pellets would gain sufficient strength to be discharged into rotary kiln for induration. The hot pellets are discharged in a circular cooler which maintains a fixed bed depth and the cooling is done by updraft air from atmosphere. The pellets in the rotary kiln will be heated by a long flame single burner from the discharge end fired by anthracite coal powder. The rotary kiln moves slowly thereby indurating the pellets homogeneously at a temperature ~ 1300 deg. C. The cooler is divided into three zones and the recuperated hot gas from each zone is utilized for process requirements. The pellets are transported for processing where they are screened to sizes between 9 to 18 mm and sent to the storage yard. These pellets are very stable and do not degrade on storage or transportation.

Iron ore Pellet plant of capacity 1 x 0.3 MTPA will be installed in the proposed plant.

DRI Plant (Sponge Iron Production)

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 100^0C. 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.

- **Power Generation**

i) Waste Heat Recovery Boiler

The unit will have three (3 nos.) of Waste Heat Recovery Boilers (3 x 20 TPH capacity) to generate 15 MW (i.e 3 x 5 MW) will be installed to the Proposed 3 x 200 TPD DRI kilns. The waste gases from the DRI kilns will pass through WHRB to generate Power The gases after heat recovery will pass through ESPs and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere through stacks of adequate height.

ii) AFBC/CFBC Power Plant

Coal (Imported / Indian) along with dolochar will be used as fuel in CFBC/AFBC Boiler (2x40TPH) to generate 20 MW of electricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack of adequate height into the atmosphere.

- **Steel Melting Shop**

In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make liquid steel which is then refined in Ladle Refining furnace and then

poured into CCM to get billets. The SMS will consist of Induction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). Induction Furnace (20 Tons X 3 Nos. and 12 Tons x 4Nos.) with matching capacity of LRF & CCM are proposed to install for production of 3,24,000 TPA.

Production of Billets / Ingots

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.

Direct Hot Rolling / Hot Charging: Raw Material i.e. Hot Billets from Ladle in red hot condition is cut by automatic hot metal Shearing Machine. In the proposed plant automatic hot metal shear machines are going to be installed with each strand. The gas cutting facility will be maintained as a backup to the hot metal shearing machine.

After the Hot Metal is cut into required length, then pushed out to rolling stands for re-rolling. Steel Pieces are rolled through all stands in order to get required shape of finished goods i.e. Rolled products.

Rolling Mill

Direct Hot charging / Re-Heating Furnace

High speed roller tables enable direct hot charging of the billet after continuous casting into the roughing mill

Roller tables at the roughing mill

A motor driven roller table will feed the heated billet to the rolling passes located at the bottom roll of the roughing mill.

- **Produce gas**

Producer gas is made by the gasification agent, which is mixture of steam and air, which goes through red-hot fixed burning bed. The oxygen content in the air and steam reacts with the carbon in the fuel; generating the producer gas which has ingredients like CO, CO_2, H_2, CH_4, C_2H_4, N_2 etc.

- **Ferro Alloy Plant**

Ferro Alloys will be smelted at about 1350 – 1500^{0}C. This will be achieved by a conventional, Closed Submerged Electric Arc Furnace. The three carbon Electrodes, partially submerged in the charge, are supported on hydraulic cylinders for upward and down ward movements to maintain the desired electrical conditions.

Silico Manganese & Ferro Manganese Process

Manganese ore is in the form of MnO, SiO2, FeO, Al2O3, MgO and other Oxides. MnO is reduced to Mn and FeO is reduced to Fe taking Carbon from Coke / Coal and the product is produced as Si Mn/Fe Mn

Ferro Silicon Process

Ferro Silicon is a Slag less process. Quartz is the main raw material which contains 99%of Si O2. Charcoal and a small percentage of Coal is used as reductants. Mill Scale / Iron Ore is added to obtain Ferro Silicon. FeO is reduced to Fe and SiO2 is reduced to Si Combining with Carbon and produced as Fe S

- **Pig Iron**

It is also proposed in future to try to produce Pig Iron from Submerged Arc Furnace by using lower grades Iron ore and Magnetite Iron ores and take the liquid Iron (Hot Metal) to Induction Furnaces for production of steel.

- **Pipe/Tube Mill**

Steel Pipes Tubes are manufactured from mild steel strips sliced from Hot Rolled Low Carbon Steel Coils The strip passes through a series of drive forming and fin rolls and takes the required circular shape and is welded continuously by passage of an electric current of high frequency across the abutting edges. The steel pipes tubes thus formed and welded pass through the sizing sections where dimensional deviations if any are corrected before the tubes are cut into required length by automatic cutting machines. The tubes are then end deburred and pressure tested. Thereafter protective surface finishing operations such as hot dip Galvanizing or varnishing is done as per specific requirement. The tubes are offered as plain, bevelled, threaded ends or with flanges.

- **Fly Ash Bricks**

Fly Ash (70%) Lime (10%) Gypsum (5%) and sand (15%) are manually fed 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. After mixing, the mixture is led through the belt conveyor to automatic brick making machine, where the bricks are pressed automatically and then the bricks are placed on wooden pallets and kept as it is for two days, thereafter transported to open area

where it is water cured for 10-14 days. The bricks are sorted and tested before dispatch.

2.3 Power Requirement & Supply

The power requirement for the proposed project is estimated as 63.4 MW, out which 31.5 MW will be sourced from CPP & WHRB. 31.9 MW power will be sourced from State Grid. In addition to this total 2 Nos of 1000 kVA DG sets are proposed for emergency backup. The state of Chhattisgarh is safe and surplus in Power. Hence the emergency DG sets are required only to run the emergency loads like Water, Air, Light and emergency supplies.

Table E-5: Power Requirement

S. No.	Units (Products)	Power Consumption	Production capacity (MW)
1.	Pellet plant	0.3 kWH/Ton	2.0
2.	DRI Kilns (Sponge Iron)	80 kWh/ton	2.0
3.	SMS	750 kWh/ton	33.5
4.	Rolling Mill	95 Kwh/ton	3.9
5.	SAF Ferro Alloy Unit	3000 - 8000 Kwh/ton	18
6.	Power Plant -WHRB	Aux. Consumption @ 10%	1.5
7.	Power plant –AFBC	Aux. Consumption @ 10%	2.0
8.	Fly Ash Brick Manufacturing Unit	0.10 kWh/No	0.5
Total Power Consumption			63.4
Total Power Generation by CPP @ 90% Efficiency			31.5
Requirement of Balance Power from Grid			31.9

2.4Water Requirement

The total one-time water requirement will be 1693 KLD. Daily freshwater requirement will be 1365 KLD and recycled water 328 KLD. Water will use for cooling system, DM Plant, Domestic and greenbelt purposes. Cooling water will be re-circulating in system. Fly ash will be given for bricks/blocks manufacturing. Dolochar will be used in CFBC Boiler. STP treated water will be used in greenbelt. The details of water requirements for different purposes are presented below:

Table E-6: Water Requirement (KLD)

Units	Total Water demand (KLD)	Losses (KLD)	Waste Water generation (KLD)	Remarks

Pellet plant	43	39	4.0		D.M. plant regeneration water, Boiler blowdown and cooling tower (Auxiliary) Blow down, waste water from, Pellet plant, SMS, rolling mill, Ferro Alloy will be treated in ETP (Neutralization pit) Followed by RO. R.O. permeate (279 KLD) will be recycle within the plant and 49 KLD will be reused for plantation. RO reject will be used for Dust suppression (54 KLD) Ash Conditioning (57 KLD) after ensuring compliance with CECB/CPCB norms. 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. **ZLD will be maintained**.
DRI Plant	195	158	37		
Power Plant	700	436	CT B/D	84	
			Boiler blowdown	70	
			D.M. plant regeneration water	110	
SMS	240	185	55		
Ferro Alloy	60	51	9		
Rolling Mill	300	230	70		Effluent from Rolling mills will be sent to oil separator followed settling tank (ETP) and will be recycled through closed circuit cooling system.
Galvanizing unit/Pipe mill	60	6	54		A separate ETP (65KLD) for Galvanization unit will be provided
Fly Ash Bricks	10	12	0.0		There will be no wastewater generation in the production of Fly ash brick Plant.
Gasifier	10	6	4		Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.

Domestic	75	15	60	55 KLD treated domestic water through STP (Cap. 70KLD) which will be used in green belt development. ETP followed by RO treated water will also use for Gardening Purposes. Thus Total 104 KLD will be used for Greenbelt/Gardening purposes.
Total	**1693 (Fresh water 1365 and 328 Recycle)**	**1138**	**557**	**-**

2.5 Project cost

The project cost of the project is estimated as Rs. 700 Crores.

2.6 Land Requirement

Total land 11.8650 ha. (118650 Sq. M) and same is taken on lease from Chhattisgarh State Industrial Development Corporation Limited (CSIDC Ltd.) for 99 years vide Lease Deed dated 07.10.2022. Current Land use is Industrial use. Land is under the possession of company. The land use and breakup details are presented in **Table-E-7.**

Table.E-7: Land Area Breakup

Particulars	Area in Ha.	%
Induction Furnace & caster shed	0.4608	3.88
Rolling mill shed	0.6528	5.50
Pellet Plant	0.045	0.38
Pepe mill shed	0.5520	4.65
Power plant	0.4750	4.00
DRI Kiln	1.7500	14.75
SAF	0.5600	4.72
Galvanizing unit	0.080	0.67
Fly ash brick plant	0.0375	0.32
Admin office and store	0.0310	0.26
Store Shed	0.0120	0.10
Coal yard	0.0900	0.76
Time office	0.0061	0.05
Weight Bridge 2 nos	0.0125	0.10
Water tank	0.1050	0.88
Sub-Station	0.0680	0.57
ETP & STP	0.0096	0.08
Internal Road	0.9764	8.23

Truck Parking	0.1120	0.94
Greenbelt area	3.9601	33.38
Other miscellaneous (i.e open space)	1.8692	15.75
Total	**11.8650**	**100**

2.7 Employment Generation (Direct & Indirect) Due to the Project.

The skilled/semiskilled /unskilled manpower required for the proposed Project is 720 No's (Direct -300 Nos., Indirect -420 Nos.). The manpower required will be fulfilled from the surrounding villages, to help for the improvement of the socio economic status in the surrounding rural areas.

2.8 Key pollution concerns

S. No.	Source	Control Equipment	Emission at the outlet
i.	Pellet Plant	Electrostatic Precipitators (ESP) with a Chimney	PM< 30mg/Nm^3
ii.	DRI kilns with WHRB's	Dust extraction system, Electrostatic Precipitators (ESP) with a Chimney Bag Filters for Product house; Kiln discharge end and transfer points.	PM< 30mg/Nm^3
iii.	Induction Furnaces	Movable suction hood along with Bag Filters with a chimney	PM< 30mg/Nm^3
iv.	Billet Reheating Furnace attached to Rerolling Mill	Waste heat recuperator with Wet Scrubber/Bag Filter with a Chimney	PM< 30mg/Nm^3
v.	Submerged Electric Arc Furnaces	4th Hole Fume Extraction system with bag filters	PM< 30mg/Nm^3
vi.	CFBC/AFBC Boiler	Electro Static Precipitators (ESP) (High Performance rigid electrodes)	PM< 30mg/Nm^3
		Limestone will be used as bed material and act as sulphur absorbent. Lime dosing will also be done	SO_2 < 100 mg/Nm^3
		Combustion temperature will be around 800-8500C, 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
vii.	Galvanization unit	Fume Extraction system along with Wet scrubber	
viii.	DG Set (1000 KVA x 2 Nos.)	Acoustic Enclosure	-

3.0 DESCRIPTION OF BASELINE ENVIRONMENT

Baseline data was generated during post-monsoon season from **1st October 2024 to 31st December 2024.** Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. Baseline environmental quality data for various environmental component like Air, Noise, Water, Land, Biological Environment and Socio-Economic.

A. Air Quality

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2, NO_x & CO, at 8 stations including project site. The following are the concentrations of various parameters at the monitoring stations:

Table E-8: AAQ DATA SUMMARY

Parameter	Concentration
PM_{10}	47.1 µg/m³ to 65.9 µg/m³
$PM_{2.5}$	29.1 µg/m³ to 42.9 µg/m³
SO_2	9.6 µg/m³ to 15.9 µg/m³
NO_2	10.2 µg/m³ to 25.5 µg/m³
CO	460 µg/m³ to 1499 µg/m³

B. Surface Quality

Water samples from 5 surface water bodies have been collected and analysed as per IS standards. Based on test result data comparison study, The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

- pH of the surface water samples collected was in the range of 7.6– 8.1
- Total dissolved solids in the samples were in the range of 335-590 mg/l.
- Total Hardness was found to vary between 150-215 mg/l.
- Chlorides concentration was found to vary between 71-118 mg/l.
- Total Coliforms Organism MPN/100ml -130-160
- Dissolved Oxygen 3.3-5.6 mg/l
- Biochemical Oxygen Demand (3 days at 27°C) – 2.1 to 2.8 mg/l
- Heavy metal concentrations in all the samples were found to be well within the limits.

C. Ground Water

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

- pH of the ground water samples collected was in the range of 7.1– 7.7
- Total Dissolved Solids in the samples was in the range of 276-493 mg/l
- Total Hardness was found to vary between 130-490 mg/l.
- Chlorides concentration was found to vary between 10.65-56.8 mg/l.
- Fluoride concentration was found to vary between 0.20 – 0.40mg/l.
- Sulphates concentration was found to vary between 58.56-98.2 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

D. Noise Quality

Noise levels were measured at 8 locations during day time & Night time. The Maximum Noise (day) value was observed 62.7 dB(A) and the minimum noise (day) valve was observed 44.8 dB(A). The Maximum Noise (night) value was observed 52.2 dB(A) and the minimum noise (night) valve was observed 38.9 dB(A).

E. Soil Environment

- The bulk density of the soil in the study area ranged between 1.15 - 1.64 gm/cc contain sufficient pore space to retain enough water and air for plant growth.
- pH is found to be neutral 7.2 – 7.8 in reaction. Based on the pH values, soil nature in the study area is found to be neutral to slightly alkaline.
- Organic carbon of the soil in the study area 0.8-1.25 % which is high. Higher soil organic matter levels allow the soil to retain more water, which results in better crop yields, reduces soil erosion, increases plant nutrient retention, increases biological diversity.

F. Biological Environment

No schedule I species have been reported from the study area. The species are duly confined in the following Schedules i.e II, III, IV and V of the Indian Wildlife

(Protection) Act,1972. Also, there is no presence of endangered flora as per Botanical Survey India records in the study area.

No national park or wildlife sanctuary or biosphere reserve is present in the study area. No endangered species of flora and fauna is found in the study area.

G. Socio Economy

- Total Population of the villages in the Study area (10 Km radius) is 301415.
- Sex Ratio (No. of females per 1000 Males) is 993
- The literacy rate in study area is 62.53%

H. Land Use Land Cover Classification

The Land Cover classes and their coverage are summarized below:

LU/LC Class	Area (Ha.)	Area in %
Built-up Land	732.68	2.2
Industry	3051.1	9.3
Sand	3.000	0.01
Water Bodies	542.37	1.6
Waste Land	4.280	0.01
Forest	26.13	0.08
Coal/Stone Mine	1180.58	3.6
Scrub Land	460.15	1.4
Agricultural Land	26962.15	81.8
Total	**32962.44**	**100**

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Prediction of impacts on air quality

The likely emissions from the proposed project are PM_{10}, $PM_{2.5}$, SO_2 and NOx. In the present case, predictions of Ground level concentrations have been carried out using ISCST -3 model.

The incremental GLC values of PM_{10}, $PM_{2.5}$, SO_2 and NOx, CO around the project site is presented as isopleths in Chapter**-4.**

Table -E-9: Net Resultant Maximum Concentrations

Item	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO ($\mu g/m^3$)
Maximum baseline conc. in the study area	65.9	42.9	25.5	15.9	1499

Maximum predicted incremental rise in concentration due to proposed project (Point Sources)	1.8	1.1	6.5	10	----
Maximum predicted incremental rise in concentration due to proposed project (Vehicular emissions)	0.88	0.56	2.59	---	1.08
Net resultant concentrations during operation of the proposed project	68.58	44.56	34.59	25.9	1500.08
The net resultant Ground level concentrations during operation of the proposed expansion project are within the NAAQS. Hence, there will not be any adverse impact on air environment due to the proposed project.					

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

B. Prediction of impacts on Noise quality

The noise generation will be from operational activities in DRI Kiln, Air compressor ID Fan, Bag filters, DG sets, Turbine, Cooling Tower, and storage areas. All machinery will be manufactured keeping in view of the MOEF&CC/OSHA standards on Noise levels. The ambient noise levels will be within the standards prescribed by MoEF&CC i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. 39601 SQM i.e.,33.38 %) of land is envisaged for greenbelt out of the total 11.865 ha will be developed for green area. Hence, there will not be any adverse impact due to noise on population in surrounding areas due to the proposed project.

C. Prediction of impacts on Water Environment

The implementation of proposed project may have some impact on the water environment. The impact may be on the source of water in the form of depletion of water resources of the area and in the form of deterioration of quality of natural water resources due to discharge of plant effluent.

100% of waste water will be recycled and Zero discharge condition will be maintained.

Units	Waste Water generation (KLD)		Remarks
Pellet plant	4.0		D.M. plant regeneration water, Boiler blowdown and cooling tower (Auxiliary) Blow down, waste water from, Pellet plant, SMS, rolling mill, Ferro Alloy will be treated in ETP (Neutralization pit) Followed by RO. R.O. permeate (279 KLD) will be recycle within the plant and 49 KLD will used for plantation. RO reject will be used for Dust suppression (54 KLD) Ash Conditioning (57 KLD) after ensuring compliance with CECB/CPCB norms. 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. **ZLD will be maintained**.
DRI Plant	37		
Power Plant	CT B/D	84	
	Boiler blowdown	70	
	D.M. plant regeneration water	110	
SMS	55		
Ferro Alloy	9		
Rolling Mill	70		Effluent from Rolling mills will be sent to oil separator followed settling tank (ETP) and will be recycled through closed circuit cooling system.
Galvanizing unit/Pipe mill	54		A separate ETP (65KLD) for Galvanization unit will be provided
Fly Ash Bricks	0.0		There will be no wastewater generation in the production of Fly ash brick Plant.
Gasifier	4		Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.
Domestic	60		55 KLD treated domestic water through STP (Cap. 70KLD) which will be used in green belt development. ETP followed by RO treated water will also use for Gardening Purposes. Thus Total 104 KLD will be used for Greenbelt/Gardening purposes.
Total	**557**		**-**

D. Prediction of impacts 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.

E. 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. plantation will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed project.

F. Biological Environment

There is no ecological sensitive area like national park, sanctuary, biosphere reserve, within 10 km radial distance from the project site. Noland involved in the project activities. Thus, no significant impact envisaged on biological environment. 39601 SQM i.e.,33.38 %) of land is envisaged for greenbelt out of the total 11.86 ha will be developed for green area. It is proposed to plant 9900 nos. plants for greenbelt development. Indigenous and broad leaf species for greenbelt development.

5.0 ENVIRONMENTAL MONITORING PROGRAM

Environmental Management Cell (EMC) will be set up to undertake routine environmental monitoring. Monitoring will be done to ensure compliance with the prescribed laws and standards. The Head of EMC will report to the Plant Head. Qualified staff will be recruited in EMC. Environmental monitoring of ambient air, stack emission, fugitive dust emission, noise levels, groundwater quality, surface water quality and soils will be carried out as per norms.

Table- E-10: Environmental Monitoring Programme

S. No	Particulars	Frequency of monitoring	Duration	Parameters required to be monitored
1	Ambient Air quality	CAAQMS Quarterly Once	Continuously 24 Hourly	$PM_{2.5}$, PM_{10}, SO_2, NO_x
2	Stack Monitoring	CEMS (all Stacks) Once in a month	-- --	PM, SO_2& NOx
3	Fugitive emissions	Once in a Month	8 hours	PM
4	Meteorology	daily	Continuously	Temperature, Relative

				Humidity, rainfall, wind direction & wind speed.
5	Noise	Once in a month (Hourly)	Continuous for 24 hours with 1-hour interval	Equivalent noise level- dB (A)
6	Water quality in the area	Quarterly Once	Grab sampling	As per IS: 10500
7	Effluent at the inlet & outlet of the ETP	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
8	Sanitary Wastewater (inlet & outlet of STP)	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
9	Greenbelt	-	-	Number of plantation (Units), Number of Survived plants/ trees, Number of poor plants/ Trees
10	Environmental Audit	Once in year	-	With Respect to Environment Clearance, Consent conditions and ISO 140001.

6.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is not involved in the proposed project. Hence, no R & R study has been carried out.

Risk Assessment:

The assessment of risk in the proposed project has been estimated for fire, explosion and toxicity and corresponding mitigation measures are suggested in the EIA/EMP report.

Hazard analysis involves the identification and quantification of the various hazards (unsafe conditions) that exist in the project site. On the other hand, risk analysis deals with the identification and quantification of risks occurring due to the plant equipment and personnel exposed, due to accident resulting from the hazards in the plant. The occupational and safety hazards and preventive measures, process hazards and their preventive measures, and storage hazards and preventing measures are provided in details in Chapter 7 of the EIA report.

The main objective of the risk assessment study is to determine damage due to major hazards having damage potential to life and property and provide a scientific basis to assess safety level of the facility. The secondary objective is to identify major risk in manufacturing process, operation, occupation and provide control through assessment and also to prepare on-site, off site plans to control hazards.

The assessment of risk in the proposed project has been estimated for material handling, movement of Trucks/Tippers, Dust hazards, Hazards, shock hazards, etc. and corresponding mitigation measures are suggested in the EIA/EMP report.

7.0 PROJECT BENEFITS

During Construction Phase there would be direct job generation for at least 100 peoples and many more indirect jobs would be generated automatically. 720 Number (Direct -300no. and indirect- 420nos.) of man power will be required to meet the projects and additional many more indirect employments. Besides the production staff some more manpower shall be needed for administrative purposes. All the labour/manpower will be hired from the local places. CSR activities will be done as per rules of Government of India. The Budgetary provision will be made as per norms.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

A. Air Environment

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

S. No.	Source	Control Equipment	Emission at the outlet
i.	Pellet Plant	Electrostatic Precipitators (ESP) with a Chimney	PM< 30mg/Nm^3
ii.	DRI kilns with WHRB's	. Dust extraction system, Electrostatic Precipitators (ESP) with a Chimney . Bag Filters for Product house; Kiln discharge end and transfer points.	PM< 30mg/Nm^3
iii.	Induction Furnaces	Movable suction hood along with Bag Filters with a chimney	PM< 30mg/Nm^3
iv.	Billet Reheating Furnace attached to Rerolling Mill	Waste heat recuperator with Wet Scrubber/Bag Filter with a Chimney	PM< 30mg/Nm^3
v.	Submerged Electric Arc Furnaces	4th Hole Fume Extraction system with bag filters	PM< 30mg/Nm^3
vi.	AFBC Boiler	Electro Static Precipitators (ESP) (High Performance rigid electrodes)	PM< 30mg/Nm^3
		Limestone will be used as bed material and act as sulphur absorbent. Lime dosing will also be done	SO_2 < 100 mg/Nm^3
		Combustion temperature will be around 800-8500C, which is not conducive for thermal NOx formation. Low NOx burners with 3-stage	NOx < 100 mg/Nm^3

		combustion, flue gas recirculation and auto combustion control system will be provided.	
vii.	Galvanization unit	Fume Extraction system along with Wet scrubber	
viii.	DG Set (1000 KVA x 2 Nos.)	Acoustic Enclosure	-

Internal Roads:

- All internal roads will be asphalted to prevent fugitive emissions due to vehicular movement.
- Vacuum cleaning will be provided to control the fugitive emissions.
- Water Sprinklers will be provided all along the roads.

B. Water Environment

Table E-11: Waste water Generation (KLD)

Units	Waste Water generation (KLD)		Remarks
Pellet plant	4.0		D.M. plant regeneration water, Boiler blowdown and cooling tower (Auxiliary) Blow down, waste water from, Pellet plant, SMS, rolling mill, Ferro Alloy will be treated in ETP (Neutralization pit) Followed by RO. R.O. permeate (279 KLD) will be recycle within the plant and 49 KLD will used for plantation.RO reject will be used for Dust suppression (54 KLD) Ash Conditioning (57 KLD) after ensuring compliance with CECB/CPCB norms. 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. **ZLD will be maintained**.
DRI Plant	37		
Power Plant	CT B/D	84	
	Boiler blowdown	70	
	D.M. plant regeneration water	110	
SMS	55		
Ferro Alloy	9		
Rolling Mill	70		Effluent from Rolling mills will be sent to oil separator followed settling tank (ETP) and will be recycled through closed circuit cooling system.
Galvanizing unit/Pipe mill	54		A separate ETP (65KLD) for Galvanization unit will be provided
Fly Ash Bricks	0.0		There will be no wastewater generation in the production of Fly ash brick Plant.

Gasifier	4	Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.
Domestic	60	55 KLD treated domestic water through STP (Cap. 70KLD) which will be used in green belt development. ETP followed by RO treated water will also use for Gardening Purposes. Thus Total 104 KLD will be used for Greenbelt/Gardening purposes.
Total	**557**	**-**

C. Noise Environment

Major noise-generating source will be machinery and equipment. The proposed equipment of the proposed plant would be designed for noise levels not exceeding 75 dB (A). In general, the following methods will be adopted to control the noise pollution.

- The major noise generating sources in the plant will be operational activities in DRI Kiln, Air compressor ID Fan, Bag filters, DG sets, Turbine, Cooling Tower, and storage areas
- All machinery will be used as per MoEF&CC/OSHA & other international standards on noise levels.
- The noise levels will be confined to the working zones of the plant.
- Ear plugs will be provided to all employees who will enter into the noise prone areas.
- Community noise levels are not likely to be affected due to the proposed thick green belt and attenuation due to the physical barriers.
- The ambient noise levels will be in accordance with MoEF&CC norms i.e. ambient noise levels will be < 75 dBA during daytime and < 70 dBA during night time.

D. Land Environment

The wastewater generated from the proposed project will be treated in the Effluent Treatment Plant to comply with the SPCB standards and will be used for dust suppression, ash conditioning and for greenbelt development. All the required Air emission control systems will be installed and operated to comply with SPCB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed

in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed project.

Table -E-12: Solid waste generation and disposal

S. No.	Waste	Process where the waste generated	Quantity (TPA)	Management
1.	ESP dust from Pellet plant	Pellet plant	11,250	Captive use in own Fly Ash Brick unit
2.	Ash from DRI	DRI Kiln	38,340	Will be utilized in the proposed Brick Manufacturing Unit
3.	Dolochar	DRI Kiln	45,000	Will be used in proposed AFBC power plant as fuel.
4.	Accretion and old Refractory	DRI Kiln	1,800	Will be utilized in the proposed Brick Manufacturing Unit
5.	SMS Slag	SMS	60912	Slag from SMS will be crushed and iron will be recovered & then remaining non -magnetic material being inert by nature will be used in proposed Brick Manufacturing Unit.
6.	Defective and Miss Roll (RM)	Rolling Mill	6900	Reused in own Induction furnace
7.	Mill Scale (RM)	Rolling Mill	1500	Captive use in Ferro Alloys Plants
8.	Ash from Coal firing in PG Plant (RM)	Producer plant	5,255	Used in own Fly Ash Brick making unit
9.	Ash from Dolochar	Power Plant	2700	Captive use in own Fly Ash Brick unit
10.	Ash From Coal (PP)	Power Plant	41580	Sold to Cement plants
11.	Slag from FeMn	Ferro Alloy Plant	22,540	Will be reused in manufacture of SiMn as it contains high SiO2 and Silicon.
		OR		

12.	Slag from Ferro Silicon Manufacturing Process	Ferro Alloy Plant	12,000	will be given to Cast iron foundries
		OR		
13.	Slag from Silico Manganese Manufacturing Process	Ferro Alloy Plant	36,000	will be given for Road construction
		OR		
14.	Slag from Pig Iron manufacturing process	Ferro Alloy Plant	12,600	will be given to nearby Cement plant for slag cement
15.	MS Scrap Generated (Pipe Mill)	Pipe mill	10050	Reused in own Induction furnace
16.	STP Sludge	STP	32 TPA	Used for Composting and then applied for Green Belt

Table E-13: Hazardous Waste & Its Management

Type of Hazardous Waste	H. W. Category (as per HWM Schedule I)	Quantity (TPA)	Disposal
Zinc dross Generated (Galvanizing)	6.2	13	Sold to authorized recyclers
Mill Scale Generated in Pickling etc. (Galvanizing)	6.2	1005	Sold to authorized recyclers
Acid Neutralization Lime Sludge Generated (Galvanizing)	35.3	1206	Sold to authorized recyclers
Lead Dross generation (Galvanizing)	9.1	13	Sold to authorized recyclers
Waste Oil/Used Oil	5.1	5 KL/annum	Will be given to authorized recycler having authorization from competent authority.
Empty barrels/ containers /liners contaminated with hazardous s chemicals /wastes	33.1	2.0	Reused / given to authorized recycler having authorization from competent

			authority.
Contaminated cotton rags or cleaning materials	33.2	1.0	Reused / given to co processing to Cement plant etc.

Table E.14: MUNICIPAL SOLID WASTE GENERATION & ITS DISPOSAL

Type of Municipal solid waste	Qty (TPA)	Proposed method of disposal
Canteen waste (Biodegradable)	42	Used in composting / Vermiculture Used as manure for greenbelt development within the premises
Non- Biodegradable	28	Used for landfill within the plant site to the extent possible

E. Green Belt Development

1/3rd (39601 SQM i.e.,33.38 %) of total land availability is reserved for greenbelt developed in the project site. About 9900Nos. (3.96 ha x 2500 plant/ha) Plants will be maintained. Plant species will be planted after consultation of local forest department. The tree species to be selected for the plantation are pollutant tolerant, fast growing, wind firm, deep rooted. A three-tier plantation is proposed comprising of an outer most belt of taller trees which will act as barrier, middle core acting as air cleaner and the innermost core which may be termed as absorptive layer consisting of trees which are known to be particularly tolerant to pollutants. Greenbelt will be developed as per CPCB guidelines. Local and native species will be planted with a density of 2500 plants per hectare.

The following points will be considered for selection of plants species:

- Greenbelt absorbs both gaseous as well as particulate pollutants to a great extent. For absorbance of gases, the duration of the foliage should be longer.
- Characteristics of tree/plants including shapes of crowns considered necessary for effective removal of dust particles.
- Greenbelt/Plant species having good root system will be selected, so that soil erosion rates can be controlled significantly.

F. Cost for Environment Protection

S. No	Item	Capital Cost (Rs. Crores)	Recurring Cost /Annum (Rs. In Crores)

1	**Air Emission Management**		
	Electrostatic Precipitators	25	0.5
	Fume Extraction system with bag filters	4.0	0.2
	other APCS & Conveyor systems	4.0	0.4
	Stacks	5.0	0.2
	Mechanical Dust sweepers	0.30	0.02
	Water Sprinklers	0.30	0.005
2	**Wastewater Management**		
	For STP	0.6	0.16
	For ETP	0.65	0.1
	for Garland drains	0.80	0.03
	for Settling Pond	0.10	0.003
3	**Solid waste Management**		
	Fly Ash Handling & disposal	2.0	0.40
	Slag Handling & Disposal	0.40	0.05
	Hazardous waste storage & disposal	0.10	0.05
	Municipal solid waste storage & disposal	0.1	0.025
4	Greenbelt development, Land scaping	0.5	0.05
5	Noise Management	0.2	0.1
7	RWH in Plant	0.5	0.007
8	Fire Safety Systems	1.5	0.25
9	Environment Monitoring and Management	-	0.15
	CEMS	1.12	0.05
	CAAQMS	1.6	0.32
	Environment Monitoring	-	0.15
	Performance Monitoring of APCS	-	0.02
10	Occupational Health & Safety	0.50	0.15
	Total (A)	**49.27**	**3.39**
11.	Proposed CER	10.5	-
	Total (B)	10.5	-
Total(A+B)		**59.77**	**3.39**

9.0 Conclusion

The operation of plant has significant positive impact on the socio-economic environment of the area which helps for development of this area including further development of physical infrastructure facilities. In the interest of improve the social conditions of the local habitants this project should be allowed after considering all the environment aspects.

The technology involved in the project is well proven and reliable. Many plants are operating all over the country in this pattern are successful. All equipment purchased shall be brand new & latest in model and will be purchased from reputed suppliers. For O&M of the plant, experienced Engineers/Technicians are available in the region.

The region shall also be benefited from the project as there will be direct employment of people in the Steel plant. Preference will be given to the people of the state possessing requisite skill and qualification criteria. Also, there will be lot of scope for indirect employment of the people of the state in and around the project site like in transportation sector.

In view of the above the proposed project of **M/s. SRS Steel and Power** is technically feasible and financially viable.

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