

# **EXECUTIVE SUMMARY**

*of*

***Expansion / Modernization of existing facilities of  
Godawari Power and Ispat Ltd.  
& subsequent Merger of ECs***

**Proponent**

**Godawari Power & Ispat Ltd  
428/2, Phase-I, Industrial Area, Siltara,  
Raipur – 493111, Chhattisgarh**

**By**

**Pollution & Ecology Control Services  
NAGPUR**

## EXECUTIVE SUMMARY

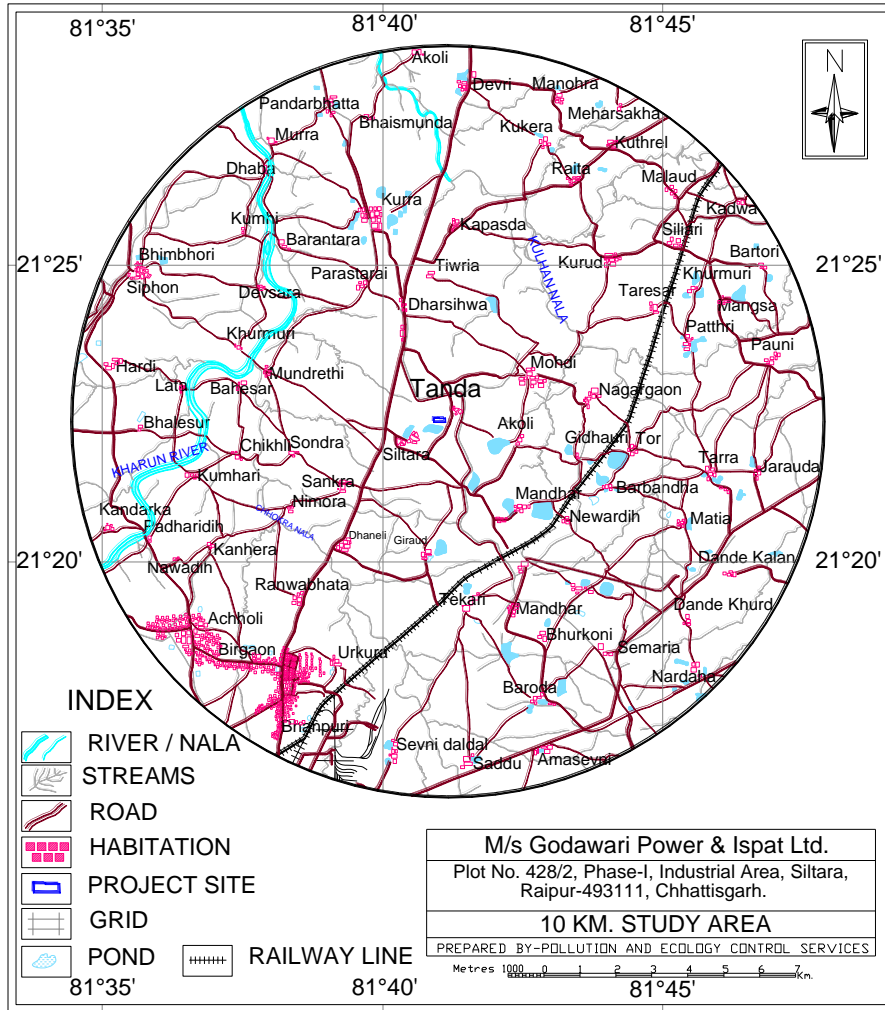
### 1. Project Name and Location

M/s. Godawari Power and Ispat Limited (GPIL) is operating integrated steel manufacturing plant at Siltara Industrial area, Raipur, Chhattisgarh since 2003. The present proposal is as follows:-

Activities	Existing Capacity (In TPA) Operational	Proposed Capacity
Steel Billets (SMS)	4,00,000	Modernization and enhancement in production capacity of Steel Melting Shop (Billets) from existing 4,00,000 TPA to 7,00,000 TPA by change in configuration of induction furnaces and installation of additional furnaces.
Power Plant	73 MW	Modernization of existing power plant by change in configuration of existing 3 TG Sets [TG-1 : 9 MW, TG-2 : 9 MW, TG-4 : 30 MW (+1 standby)] with one new energy efficient TG set of 48 MW capacity (+standby) and all existing TG shall also be retained for abnormal situations.
Iron Ore Pelletization Plant along with coal gasification plant	21,00,000 (Existing 2 Units: First unit of 6,00,000 TPA & second unit of 15,00,000 TPA) along with 60,000 Nm <sup>3</sup> /hr coal gasification plant	Enhancement in production capacity of Iron Ore Pellet Plant from existing 21,00,000 TPA (2 units) with Coal Gasification System to 24,00,000 TPA alongwith Coal Gasification System from existing capacity of 60000 NM <sup>3</sup> /hr to 92000 NM <sup>3</sup> /hr (within which 22,00,000 TPA will be pellet manufacturing & 2,00,000 TPA manufacture of Magnetite Powder / Heavy Media or 24,00,000 TPA Pellet).

Arc Furnace to Induction Furnace for Casting including engineering & fabrication	-	5,000 TPA(to be revised to Induction Furnace for Casting including Engineering & Fabrication.)
Slag Crushing Plant	-	1,75,000 TPA
Mineral Grinding Plant	-	2,00,000 TPA
HB Wire	1,00,000 TPA	2,00,000 TPA
Iron Ore Beneficiation Plant	10,00,000 TPA	32,84,000 TPA

The proposed expansion activities are located at Plot No. 428/2, Phase-I, Industrial Area, Siltara, Raipur-493111, Chhattisgarh. Map showing the location of the project site is given in the Figure below,



### Specific Location of the Project Site

## 2. Products and Capacities

Details of proposed expansion of existing units with capacity enhancement / modernization and setting up of new units with final configuration are as follows :-

Sl. No.	Name of the Unit	Existing Capacity (As per EC)	Proposed Amendments / Remarks	Total after approval of this proposal
1	Sponge Iron	4,95,000 (Later amended to 6,50,000)	No change	6,50,000 TPA
2	Steel Billet	4,00,000	Modernization and capacity enhancement	7,00,000 TPA
3	Power (AFBC/WHRB) & Biomass Power Plant	73 MW	Installation of one new energy efficient TG set of 48 MW (+1 standby) + all Existing TG to be retained.	73 MW
4	Ferro Alloys	16,500	No change	16,500
5	Pig Iron	33,000	No change	33,000 TPA
6	H.B. Wire	1,00,000	1,00,000	2,00,000 TPA
7	Oxygen Plant	12,00,000NM <sup>3</sup>	No change	12,00,000 NM <sup>3</sup>
	Nitrogen Plant	45,00,000NM <sup>3</sup>	No change	45,00,000 NM <sup>3</sup>
8	Fly Ash Brick Plant	1,65,00,000 Nos.	No change	1,65,00,000 Nos.
9	Iron Ore Beneficiation Plant	10,00,000	10,00,000	32,84,000 TPA
10	Rolling Mill	3,00,000 (Later amended to 4,00,000)	No change	4,00,000 TPA
11	Arc Furnace	5,000	(to be revised to Induction Furnace for Casting) including Engineering & Fabrication	5,000 TPA
12	Iron Ore Pelletization Plants	(Existing 2 Units : Kiln-I of 6,00,000 TPA & Kiln-II of 15,00,000 TPA) 21,00,000	Proposed enhancement in production capacity to 24,00,000 TPA without change in plant and machinery	24,00,000 TPA (within which 22,00,000 TPA will be manufacture of Pellet + 2,00,000 TPA manufacture of Magnetite)

				Powder)
13	Coal Gasification System for Iron Ore Pellet Plant	Existing Gasifiers of 16,000 Nm <sup>3</sup> /hr + 1 No. standby of 4,000 Nm <sup>3</sup> /hr & 40,000 Nm <sup>3</sup> /hr + 1 No. standby 20,000 Nm <sup>3</sup> /hr (Total Operational : 56,000 Nm <sup>3</sup> /hr) 60,000 Nm <sup>3</sup> /hr	Proposal for regularization of standby Gasifiers of 24,000 Nm <sup>3</sup> /hr and installation of new Gasifiers of 12,000 Nm <sup>3</sup> /hr	92,000 Nm <sup>3</sup> /hr
14	Slag Crushing Plant	- -	Proposed	1,75,000
15	Mineral Grinding Plant	- -	Proposed	2,00,000

### 3. Requirement of Land, raw material, water, power, with source of supply

#### Requirement of Land

The land area of the company was 86.464 ha (213.657 acres) and additionally acquired the land of 7.361 ha for the proposed expansion. Thus, the existing and proposed projects will be located in the total area of 93.825 ha (231.848 acres) of the company in Siltara Industrial Area, Raipur.

#### Raw Material

Raw material and fuel details along with mode of transport is given below:-

S. N.	Name of Units	Raw Material	Quantity Required (TPA)	Source
1.	Sponge Iron	Pellet	9,42,500	Own source
		Coal	6,50,000	Coal India and its subsidiaries/open market and imported
		Dolomite	19,500	Purchase from Open market
2.	Steel Billet (SMS)	Sponge Iron	7,60,960	Own source / Purchase from Open market

		Scrap	92,030	Purchase from Open market / imported scrap
		Lime	5,954	Purchase from Open market
		Silico Manganese	10,480	Own source/ Purchase of open market
3.	Power Generation	Coal	1,13,225	Coal India and its subsidiaries / open market and imported
		Dolochar	2,678	Own source
		Rice Husk	1,67,111	Purchase from Open market
4.	Ferro Alloys / Pig Iron	Manganese Ore	34,650	Purchase from MOIL / open market and imported
		High Mn Slag	6,600	Purchase from open market
		Dolomite	495	Purchase from Open market
		Quartz	1,320	Purchase from Open market
		Coke / Steam Coal	9,900	Purchase from open market and imported
		Electrode Paste	495	Purchase from open market
		MS Item	165	Purchase from Open market
		Lancing Pipe	50	Purchase from Open market
5.	H.B. Wire	M.S. Wire Rods	2,03,000	Own source / Associate Units.
6.	Oxygen & Nitrogen Plant	Atmospheric Air	4,16,670	N/A

7.	Fly Ash Bricks Plant	Fly Ash	70,000	Own source
		Lime & Gypsum	15,000	Purchase from Open market
		Granulated Ferro Alloys Slag	7,000	Own source
		Sand	8,000	Purchase from Open market
8.	Iron Ore Beneficiation	Crushed Iron Ore	32,84,000	Captive Mines at Ari Dongri and Boria Tibbu & Open Market
9.	Rolling Mill	Steel Billets	4,25,500	Own source
10.	Induction Furnace for Casting	Steel Scrap & Borings	2511	Purchase from Open market
		Pig Iron & Silicon	277	Purchase from Open market
		Ferro Manganese	16.5	Purchase from Open market
		Ferro Silicon Magnesium	10.5	Purchase from Open market
		Inoculants	3.3	Purchase from Open market
		Silica Sand	250	Purchase from Open market
		Bentonoide	2.5	Purchase from Open market
		Coal Dust	15	Purchase from Open market
	Fabrication / Engineering	Following Engineering Items, Steel (Plates, Pipe, Structures etc), Bearing, Gear Box, Motor, Tools and Tackles etc	2550	Purchase from Open market
11.	Mineral Grinding	Mineral Ore	2,00,000	Own Source / Purchase from Open market
12	Iron Ore Pellet Plant Total proposed capacity – 24,00,000 TPA			



	(within which 22,00,000 TPA will be manufacture of pellet & 2,00,000 TPA manufacture of magnetite powder or 24,00,000 TPA Pellet)			
Manufacture of Pellets – 22,00,000 TPA	Iron Ore Fines (DRY including Return Fines) and Mill scale	22,88,000		Own source and shortfall if any will be procured from outside sources
	Bentonite/ Binder	22,000		Purchase from Open market
	Lime Stone / Dolomite	35,200		Purchase from Open market
	F. Oil (Calorific value balancer for gasification)	2,300 KL F. Oil / Ignite Oil / LDO/ Tar as and when required not exceeding 2,300 KL		Purchase from Petroleum companies / open market
Manufacture of Magnetite Powder – 2,00,000 TPA	Magnetite Ore	2,00,000		Own source
Manufacture of Pellets – 24,00,000 TPA	Iron Ore Fines (DRY including Return Fines) and Mill scale	24,96,000		Own source and shortfall if any will be procured from outside sources
	Bentonite/ Binder	24,000		Purchase from Open market
	Lime Stone / Dolomite	38,400		Purchase from Open market
	F. Oil (Calorific value balancer for	2,300 KL F. Oil / Ignite Oil /		Purchase from Petroleum companies / open market

		gasification)	LDO/ Tar as and when required not exceeding 2,300 KL	
13	Gasification System for Pellet Plant – 92,000 Nm3/hr	Coal	2,86,364	Coal India and its subsidiaries / open market and imported

### Water Requirement

The company has existing reservoir and water is being sourced from Chhattisgarh Ispat Bhoomi Limited (A body of CSIDC), the nodal agency for supply of water to the industrial areas. The company has an agreement for supply of 18,000 KL/day water with Chhattisgarh Ispat Bhoomi Limited for its industrial use in integrated steel facilities for post expansion requirement. The company has also obtained the permission from Central Ground Water Board for withdrawal of 479 KL/day for drinking & sanitation purpose.

Compliance status of conditions stipulated in NOC for ground water withdrawal issued to M/s Godawari Power & Ispat Ltd by government of India, Central Ground Water Authority, Ministry of water resources, river development & ganga rejuvenation vide noc no. cgwa/noc/ind/orig/2019/4875 dated 26.02.2019, is attached as **Annexure IIIC**. Unit wise water requirement is given below in **Table 2.10**:

### Water Requirement

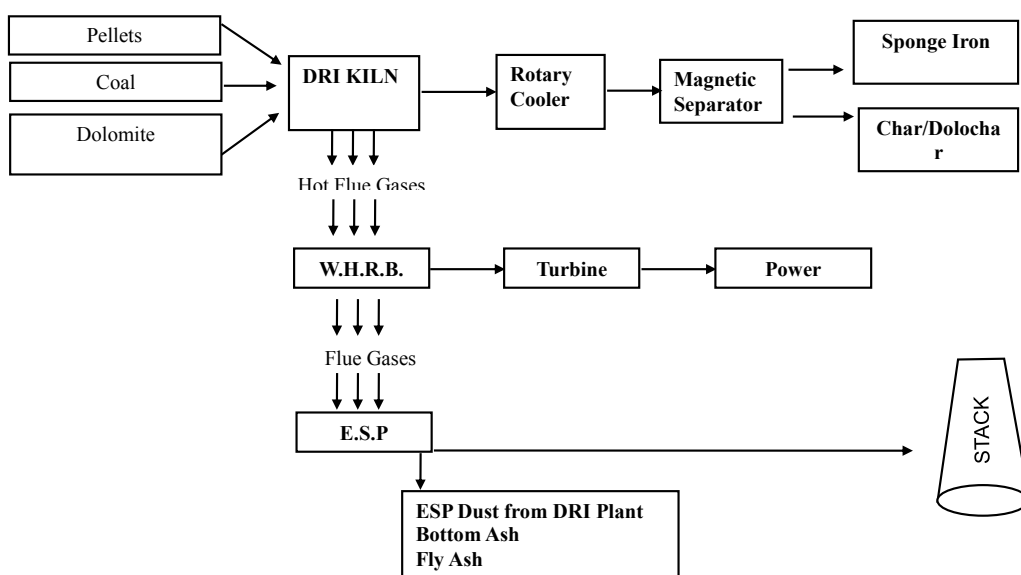
S.N.	Divisions	Total Quantity of Water (KLD)	
		Existing	Post-expansion
1	Sponge Iron	2900	2900
2	Steel Billets	2854	5000
3	Power Plant (AFBC/ WHRB/ Biomass based)	6132	-
		-	6132
4	Ferro Alloys	160	160
5	HB Wire	5	7
6	Oxygen & Nitrogen Plant	30	38

7	Fly Ash Brick Plant	38	30
8	Iron Ore Beneficiation		800
9	Rolling Mill	-	100
10	Engineering Division including Induction Furnace for Casting	-	5
11	Iron Ore Pellet Plant	1450	1700
12	Gasification System	450	900
13	Slag Crushing Plant	-	10
14	Mineral Grinding Plant	-	Nil
15	Others		
14	Domestic	130	170
	Environmental Activities (Water Sprinkling, Plantation, etc.)	Waste water generation from the processes will be reutilized after treatment in ETP	
	Fire	30	30
	<b>Total</b>		<b>17982</b>
	<b>Requirement of Water after expansion as per plant operational efficiency (92%)</b>		<b>16543 KLD</b>

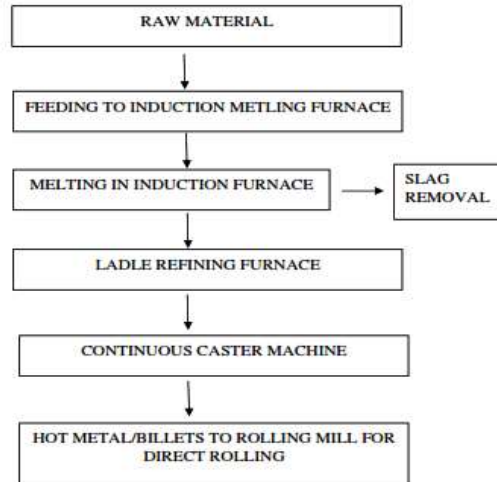
#### Power Requirement

Out of total requirement of power of about 142 MW, 73 MW power will be of captive generation and 25 MW from associate concern with captive status. Balance (shortfall) will be met through the Chhattisgarh State Electricity Board/Power Grid.

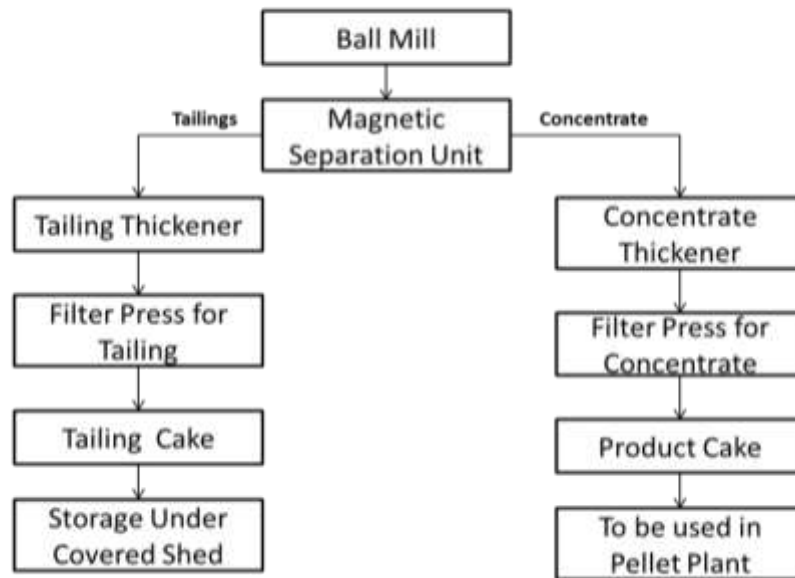
#### 4. Process Description



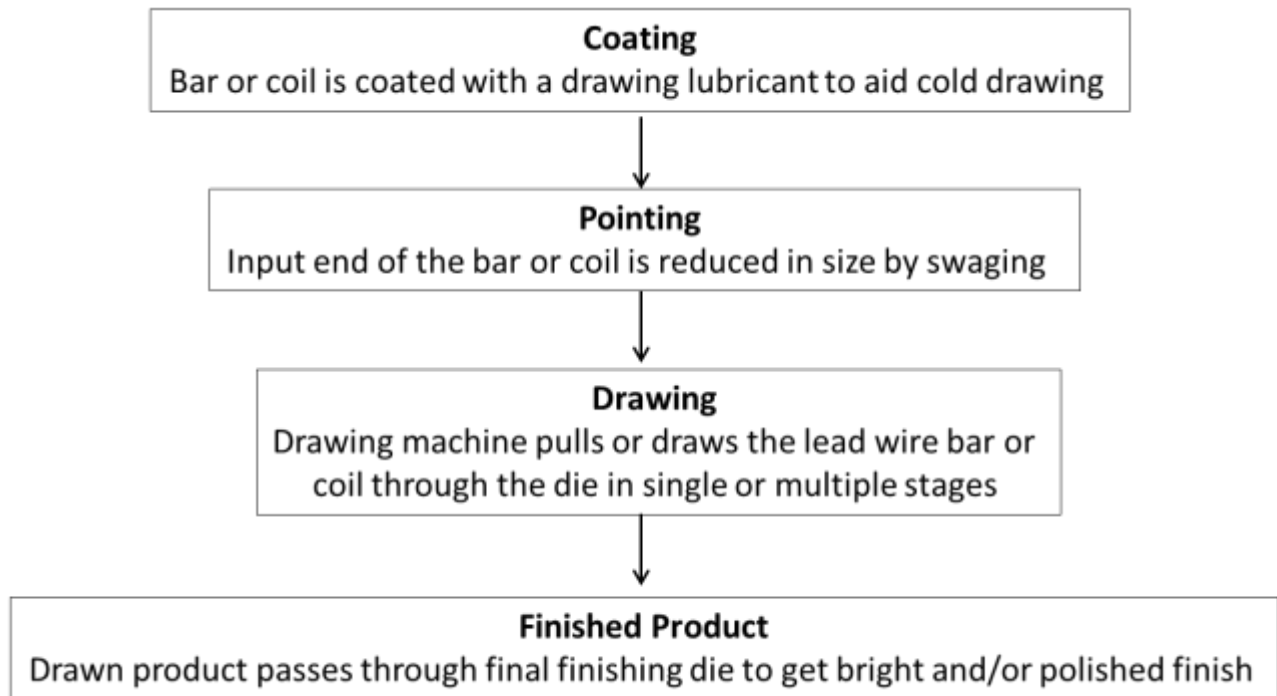
### Process Flow Diagram of DRI Kiln



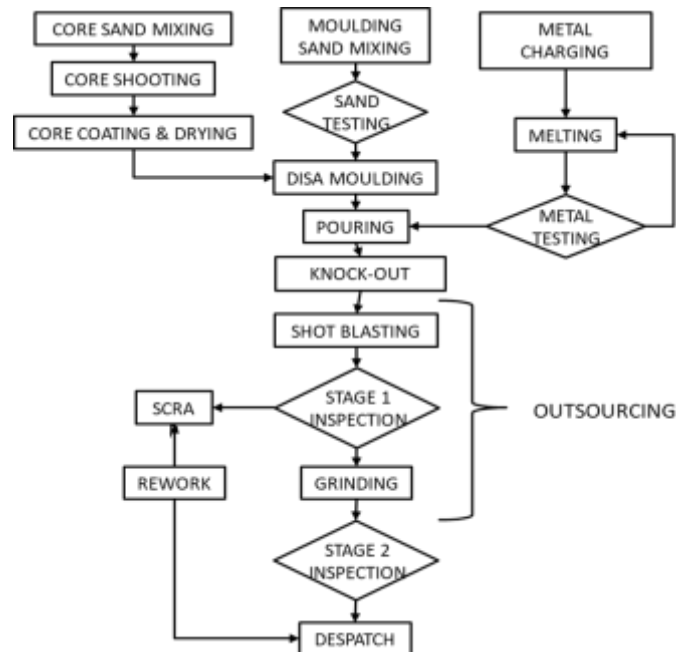
### Process Flow Diagram of SMS Plant



### Process Flow Diagram of Beneficiation Plant



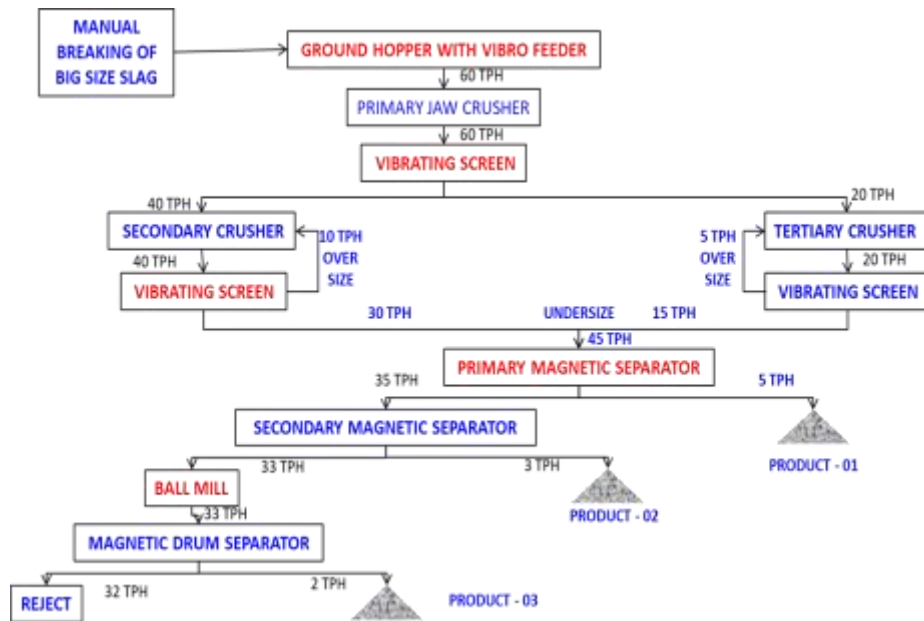
**Process Flow Diagram of H.B Wire**



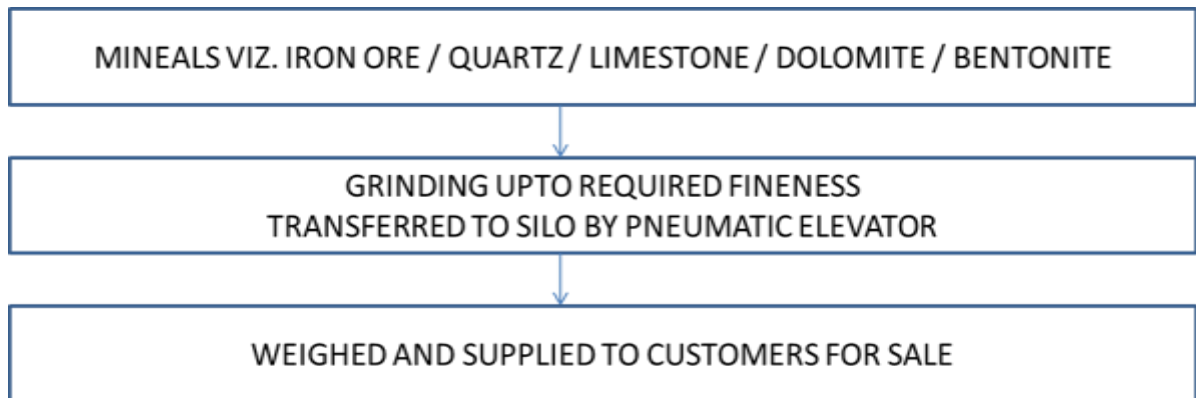
**Flow Chart of Induction Furnace for Casting**



**Flow Chart of Pellet Plant**



**Flow Diagram of Slag Crushing Unit**



**Process Flow Chart of Mineral Grinding Unit**

## 5. Mitigation Measures

### **Sponge Iron Plant**

- Adequate measures already adopted to arrest the emission of pollutants within the stipulated & statutory norms.
- Adoption of technology like recovery of dust/ash for re-use as raw material is fulfilling the twin objectives of material conservation and pollution control.
- The measures to control the air pollution ensure the ambient air quality standards as laid down by Central Pollution Control Board for industrial and mixed use areas.
- GPIL is carrying out continuous online monitoring within and outside the Plant premises.
- Dust Collectors are installed at all the points
- Water spraying on coal heap, coal yard and raw material is being done to control the fugitive emissions.

- The Waste Gases fed in the Waste Heat Recovery Boiler wherein Electro Static Precipitators are installed.
- Continuous water sprinkling on the internal roads

### **Iron Ore Beneficiation Plant**

- There is no fugitive emission since the fines have been eliminated in the process of crushing and iron ore beneficiation will be done through **wet process**.
- The slurry water from filter press will be recycled in the process.
- Tailings will be used in embankments, road formation, filling of low-lying areas and as additives in cement manufacturing.

### **Steel Melting Shop (SMS)**

- The Fugitive emissions from the Induction furnaces will be sucked through hoods and will pass through a fume extraction system with bag filter and then cleaned gas will be discharged into the atmosphere through stack of 30 m height for effective dispersion of emissions from Induction Furnaces. The outlet dust emission in the exhaust gases will be less than 35 mg/Nm<sup>3</sup>.
- The plant is further equipped with Natural Draft Exhaust Fans attached to shed for ventilation.
- Fugitive emission from the LRF will be collected using suitable fume extraction system, connected to bag filter.
- Bag filters of Capacity 80000 m<sup>3</sup>/Hr is installed in existing steel melting shop and the same system of adequate capacity will be inducted for proposed furnaces.

### **Power Plant**

Being an integrated project, the gases generated from Sponge Iron project are re-used to generate electricity. The fuel for AFBC power plant is Coal, Char/Dolochar and Rice Husk. The following pollution control measures are installed:

- At all the points, Dust Collectors/ dust suppression systems are installed.
- Water sprinklers have been provided across the plant.



- The waste gases are fed in the Waste Heat Recovery Boiler wherein Electro Static Precipitator is installed and coal/Dolochar fired AFBC boiler is also installed with ESP.
- For handling of Ash – Pneumatic Ash Conveying system is installed & the ash is being used as Waste for land leveling, supply to brick manufacturers & cement plants.
- All internal roads are RCC made.
- All conveyors are covered.
- All the stacks are equipped with continuous emission monitoring system along with remote calibration facility for gaseous parameters and connectivity with CECB & CPCB server.

### **Ferro Alloys**

- The dust bearing gases leaving the furnace is collected using fume extraction system.
- Fume extraction system with Bag filters followed by stack. Installed Bag Filter of 540 bags. An ID Fan of capacity 140000 M<sup>3</sup>/Hr., Static Pressure 550 MM /WC is connected to stack.
- Suitable bag house installed at various transfer points for collection of dust and improving atmosphere.
- All the dust collected in bag filters is being recycled in the process.
- Closed circuit cooling system has been adopted in Ferro Alloys Plant and hence there is no scope of any waste water generation from process and cooling.
- Ferroalloy making is dry process where no water is consumed. Only cooling water is required to maintain the desired temperature of furnace shell. Only make-up water is added to cooling tower. Silico Manganese Slag is collected at the point of production, which is not hazardous in nature and the same is utilized for construction of roads and filling of low-lying areas, landfill within the plant premises.
- Used oil is sold to authorized reprocessing units having valid authorization.

### **Rolling Mill**

- Since the Rolling Mill will be on direct hot charging route, there is no requirement of any fuel / HDO and air pollution control equipments.
- There is no SO<sub>2</sub> emission.
- The generated solid waste i.e. mill scale, end cutting & mis-roll of 25,500 TPA will be recycled in our existing Steel Melting Shop.

### **Pellet Plant & Gassifier**

- The flue gases from the Travelling Grate Kiln are treated in ESP & discharged through stack of 100 m (1.5 MTPA) & 60 m (0.6 MTPA) height for effective dispersion of emissions into the atmosphere. The stack height is designed as per CPCB norms. The outlet Particulate emission is less than 35 mg/Nm<sup>3</sup>.
- All conveyors are covered to prevent fugitive emission.
- Material transfer points are provided with Dust Extraction system.
- Tar generated from existing coal gasification plant is being separated through Electrostatic Tar Precipitator and then clean gas is being sent to Pelletization unit and the same will be implemented also for proposed gasification plant.
- Fugitive dust generated from Raw Material Handling, Bentonite Grinding, Lime and Coal Grinding and Bentonite Transfer points is collected using suction ducts and clean in Bag Houses.
- Bag filter dust collected from the bentonite and lime stone systems and other systems is returned to their respective storage bins. Dust collected from ESP's and Bag Filters is reused.
- Various dust extraction and dust suppression systems are indicated below.

### **Dust extraction system**

<b>Sl. No.</b>	<b>Location / Shop</b>	<b>Facilities</b>
I	Flue and hot gases from Grate-Kiln-Cooler system	Flue gas & dust extraction system comprising of multicyclone, Electrostatic precipitators, tall chimney etc.
ii	Flux grinding system	Pulse jet type bag filter, centrifugal fan and motor, duct work including suction hoods, duct supports, stack, dust hopper,

		rotary air lock valves, dust conditioner, etc.
i	Material handling system	Water spray - dust separation system.

- However, in order to meet the statutory ground level concentration limit, suitable stack heights are provided for proper dispersion. All stacks are provided with port holes and working platform so that stack monitoring is being done as per norms.
- Stacks of 60Mtr. Height & 100 Mtr. height have been provided in 0.6 MTPA & 1.5 MTPA Pellet Plants respectively.
- The Phenolic waste water generated from Coal Gasification is being co-processed (incinerated) in the after burning chamber of Sponge Iron Plant as stipulated by the CPCB.

#### 6. Capital Cost

Project cost for proposed project is Rs. 199.65 Crores. Present Cost is Rs. 1789.22 Crores. Total project cost is Rs. 1988.87 Crores.

#### 7. Site Selected for the Project

M/s. Godawari Power & Ispat Limited (GPIL) are proposing expansion / modernization of some of the existing units with capacity enhancement and setting up of some units in existing plant premises.

#### 8. Baseline Environmental Data

Baseline Environmental status in and around the proposed activities indicates the existing quality of Air, Noise, Water, Soil and Socio-economic environment. The baseline environmental quality for the study period of March, April, May & June 2019 was assessed within 10 km radial distance from the project site.

##### Air Environment

Ambient air quality (AAQ) samples were collected on basis of 24-hour sampling and twice a week at each site. The ambient air quality samples were collected for continuous 13-weeks beginning from 15<sup>th</sup> March 2019 to 15<sup>th</sup> June 2019. The ambient air quality monitored at 8 locations selected based on predominant wind direction. The concentrations of

PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> were found within the National Ambient Air Quality Standards (NAAQ).

### **Water Environment**

A total 16 samples including eight surface & eight ground water samples were collected and analyzed. The water samples were analyzed as per Standard Methods for Analysis of Water and Wastewater, American Public Health Association (APHA) Publication.

The data indicates that the ground water as well as the surface water quality are below the stipulated standard for drinking water (IS 10500 – 2012).

### **Noise Environment**

Noise levels measured nine stations are within limit of 55.0 dB (A) for Residential Area or 75.0 dB (A) for Industrial Area as given in MoEF Gazette notification for National Ambient Noise Level Standard.

### **Land Environment**

The characteristics of the soil sample were compared with different depths for respective parameters in three stations. The soil analysis report indicates that the soil in the area are capable of supporting plant growth.

## **9. Impact of the Project**

The impacts of the projects are tabulated below:-

<b>S.N.</b>	<b>Impact Topics</b>	<b>Impact On</b>	<b>Impact Due to</b>	<b>Adopted Measures</b>
1.	Physical Resources	Air Environment	Release of air pollutants	Incorporation & installation of air pollution control systems and ensuring their effective functioning.
		Water Environment	Drawl of water and release of polluted waste water	Maximum recirculation of water and Incorporation & installation of water pollution control systems and ensuring their effective functioning.
		Soil	Release of polluted waste water, Deposition of PM released &	Incorporation & installation of water and air pollution control systems, Handling &

			Dumping of solid waste	disposal of solid waste in accordance with Statutory norms.
2	Biological Resources	Vegetation	Release of polluted wastewater, Deposition of pollutants released.	Incorporation & installation of water and air pollution control systems
3.	Land Acquisition	Land environment, Aesthetics	Conversion of existing land use pattern	The 93.825 Ha of the land is in possession of GPIL.
4.	Noise	Habitats	Use of equipment having operating sound level more than the statutory level.	Noise Control measures as required have been envisaged. All noise levels will be maintained within the permissible statutory limits.
5.	Solid Waste	Habitats and Surrounding Environment	Release of toxic chemicals	Reuse and minimization of solid waste
6.	Transportation	Habitats and Surrounding Environment	Release of pollutant, Improper traffic management.	Use of vehicles meeting the statutory norms related to emission, transport by railway, proper traffic management
7.	Social & Economic	Human, livelihood, Education etc	Influx of people, Settlement, Stress on existing infrastructure etc.	No negative impact envisaged. Moreover additional social improvement activities have also been planned by the project management in the region.
8.	Cultural resources	Human	Influx of people, Settlement	No negative impact envisaged

#### 10. CSR Plan

Nearby Villages adaptation have been taken for CSR activities such as supporting Education, Health, Infrastructural Development, Environment Conservation and Sports. Details are given in the final EIA report. .

The expenditure on various CSR activities by the company for the last five years is:

<b>Year</b>	<b>Expenses (In Lac)</b>
FY: 2014-15	155.56
FY : 2015-16	160.94
FY : 2016-17	60.79
FY : 2017-18	119.57
FY 2018-19	166.29

As per the Notification dated 1.05.2018 issued by MOEF&CC, it is mandatory to prepare Corporate Environment Responsibility Plan (CER) to spend 0.75 % (project cost > 100 Crores to ≤ 500 Crores) of additional capital investment of the expansion project on social, economical and peripheral development activities.

As per the draft mechanism for consideration of projects under CPA/SPA, vide letter No. Q-16017/38/2018-CPA dated 21.10.2019. Now CER is considered 1.5% of the total project cost. So, Rs. 300 lacs will be allocated for CER based on need of the villages in study area. The activities mentioned in CER may change based on the issues raised at the time of public hearing. The CER for the proposed expansion is as follows:-

The activities under CER may change as per the points raised at the time of public hearing.

#### **11. Occupational Health Measures**

GPIL is following guidelines provided by the Directorate of Industrial Health and Safety and Labour Ministry of State which is amended time to time as directed by the authority.

GPIL has functional 24 x 7 Occupational health centre with full time factory medical officer. Three Clinic Attendants who work in shift duties and a ward boy.

#### **12. Post Project Monitoring Plan**

Godawari Power & Ispat Limited is carrying out the Environmental monitoring on regular basis. GPIL has established in-house Laboratory facility for collection and analysis of Environmental Samples. The laboratory is being operated under supervision of the competent technical personnel.

The Ambient Air Quality, Meteorological Data, Stack Emissions, Fugitive Emissions,

Water Quality, Wastewater Quality, Noise Levels etc. are being monitored as per the consent conditions. The methodologies adopted for environmental monitoring are in accordance with the CPCB procedures