

EXECUTIVE SUMMARY

For

Greenfield project for production of 70,500 TPA Billets through 1x350 TPD DRI kilns,1x25T induction Furnace, 2x20 T Gas Oxygen Refiner, 6/11m Billet caster and 10 MW Captive Power Plant.

at

**Village: Dhatara, P.S: Raghunathpur, District: Purulia,
West Bengal**

*Study Period: Winter Season
(1st December to 29th Feb 2020)*

Applicant

**Mr. Vivek Kumar Beltharia
M/s Raiseland Steels Private Limited.
Village: Dhatara P.S: Raghunathpur District: Purulia,
West Bengal- 723133
Ph. No.: 03251-255227
Email: raiselandsteels2020@gmail.com**



Environment Consultant

**Vardan EnviroNet
(NABET/EIA/1619/SA 0077)
82-A, Sector-5, IMT Manesar
Gurgaon (Haryana)
Mail ID: metallurgy@vardanenviro.net
Contact No. 0124-4291036, 09899651342**

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Project name and location

Project Name:

Greenfield project for production of 70,500 TPA Billets through 1x350 TPD DRI kilns,1x25T Induction Furnace,2x20T Gas Oxygen Refiner,6/11m Billet caster and 10 MW Captive Power Plant.

i. Person to be employed:

Total manpower required for the proposed project shall be 250. Potential for indirect employment due to the proposed project will be much more. There is lot of places in-which employment generates indirectly viz: Transportation, Ancillary development, Travel, Packaging, Information Technology, Telecom, Automobile, Courier etc.

ii. Address for Correspondence (Name, Designation and complete address)

Mr. Vivek Kumar Beltharia
M/s Raiseland Steels Private Limited.
Village: Dhatara, P.S:Raghunathpur,
District:Purulia, West Bengal
Ph. No.: 03251-255227
Email: raiselandsteels2020@gmail.com

iii. Products and capacities. If expansion proposal then existing products with capacities and reference to earlier EC.

The company wish to install greenfield steel plant at village: Dhatara, P.S.: Raghunathpur, District: Purulia, in West Bengal for production of 70,500 TPA Billets through 1x350 Tons Coal based DRI Kiln with hydrogen injection system for production of 105,000 TPA sponge iron, 1x25 Ton Induction Furnace for production of 75,000 TPA Liquid steel, 2x20 Ton Gas Oxygen Refiner for refining of liquid steel, 6/11m Billet Caster for 70,500 TPA Billets and 10 MW WHRB and AFBC based Captive Power Plant. The plant area is 16.28 Ha.

Table-1 Units and Production Capacity of the Proposed Project

Units	Facilities	No. of days	Production Capacity TPA
Sponge Iron Plant			
DRI Kiln with Hydrogen Injection System	1x350 TPD	300	105,000
Steel Melting Shop			
Induction Furnaces	1x25 Tons	300	75,000
Gas Oxygen Refiner	2x20 Tons	300	71,250

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Units	Facilities	No. of days	Production Capacity TPA
CCM (Billet Caster)	6/11m	300	70,500
CPP – 10 MW			
WHRB	36 TPH	300	8 MW
AFBC	9 TPH	300	2 MW

iv. Requirement of land, raw material, water, power, fuel with source of supply (Quantitative)

Requirement of Land

The total plant area is 16.28 Hectare. The project is for installation of facilities for production of Billets. The land is already acquired by the project proponent.

Raw Material Requirement

Quantity of raw materials required and their source is indicated in the Table below:

Table-2 Raw Material Requirement after the Proposed Expansion

Sl. No.	Item	Per MT of Product	Requirement MT per year	Source	Mode of Transport
Sponge Iron Plant- 105000 TPA					
1.	Iron Ore	1.65	173,250	Barbil, Odisha	Road
2.	Or Pallet	1.5	157,500	Jamshedpur	Road
3.	Coal	0.7	73,500	South Africa	By Ship up to Port, then road
4.	Dolomite	0.05	5,250	Local Market	Road
Total		2.4	252,000		
Steel Melting Shop					
Induction Furnace (Liquid Steel – 75,000 TPA)					
1.	Sponge Iron	1.0625	79,688	In-house	--
2.	Scrap (10%)	0.125	9,375	Local Market + In house (Recycled scrap)	Road
3.	Pig Iron (5%)	0.0625	4,688	Local Market	Road
4.	Ferro-Alloy	0.0105	787	Local Market	Road
5.	Coke	0.009	675	Local Market	Road
6.	Flux	0.07	5,250	Local Market	Road
Total		1.3395	100463		
Gas Oxygen Refiner (Liquid Steel after Refining – 71,250 TPA)					

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Sl. No.	Item	Per MT of Product	Requirement MT per year	Source	Mode of Transport
1.	Liquid Steel	1.053	75,000	In-house	--
2.	Lime Stone	0.06	4,275	Local Market	Road
3.	Ferro-alloys	0.01	712	Local Market	Road
4.	Coal	0.05	3,563	Local Market	Road
Total		1.173	83,550		
Billet Caster (70,500 TPA)					
1.	Liquid Steel	1.0106	71,250	In-house	--
Power Plant 10 MW					
WHRB - 8MW					
1.	DRI Gas		90,000 Nm ³ /hr	In-House	-
AFBC – 2 MW					
1	Coal (GCV 4500 kcal/kg)	0.40	7200	Local Market	Road
2	Dolochar	0.60	10500	In-house	-----

Water requirement

The requirement of makeup water for industrial and domestic purposes at the final stage for operation of the installed facilities will be 1117.5 KLD. Water will be sourced from Panchet Dam. Permission for the same shall be obtained from the authorities.

Table-3: Total Water Requirement for the Proposed Plant

Sl. No	Units	Water Requirement	
		Specific Consumption	Per day requirement (KLD)
1.	Sponge Iron Plant DRI Unit	0.75 m ³	262.5
2.	Steel Melting Shop	0.8 m ³	200
3.	Power Plant	2.5 m ³ /MW/hr	600
4.	Greenbelt & Dust suppression	--	40
5.	Domestic Use	--	15
Total Make-Up Water Requirement			1117.50

Power Requirement

Total power requirement of the plant will be 6.75 MW. Initially the power shall be sourced from Damodar Valley Corporation (DVC). However, after commissioning of WHRB & AFBC (in Phase-II) the power shall be taken from Captive Power Plant (10 MW).

Table-4: Total Power Requirement for the Existing and Proposed Plant

S.No.	Unit	Specific Consumption in kWh	Power Requirement in kWh
1.	Sponge Iron	90	1,325
2.	Steel Melting Shop	400	4,170
3.	CPP Auxiliary	0.10	1000
4.	Other Areas	-	255
TOTAL			6,750

Emergency Back-up Power: DG Set of 2x750 kVA + 1x1000 kVA shall be installed. This will also be useful for emergency power to take care of safe shut down of important auxiliaries of plant. During total power failure, above DG set will also support for Emergency lighting for personnel movement in some main location of steel plant.

Manufacturing Process

Section	Technology	Process flow
Sponge Iron plant	Coal Based Rotary Kiln Process	Feeding of RM to the Rotary Kiln through feed tube → Cooling in the rotary cooler → Screening → magnetic separation of the product → sponge iron Other outputs - Char
SMS Unit	Induction Furnace (IF)	Feeding of RM Melting in IF (adding alloys as per requirement) → Metal in Liquid form → Gas Oxygen Refining Unit → CCM → casting & cooling → dispatch. Other outputs : Slag from IF and Bag Filter dust Particulate matter and gaseous emissions from Chimney
Power	Based on WHRB & AFBC	Steam from WHRB+AFBC (char used along with coal as fuel) → TG set → Power generation Other outputs : Ash from AFBC

Solid waste generation and management

Table-5: Solid Waste Generation, Handling and Utilization

Type of Waste	Quantity in Tons (TPA)	Remark
Sponge Iron Plant		
Dolochar	10,500	Will be used in AFBC boiler
ESP Dust	9,800	Will be given to nearby Sinter plant

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Type of Waste	Quantity in Tons (TPA)	Remark
Wet Scrapper Sludge	1,600	Filling of low-lying area
Accretion Slag	3,150	Filling of low-lying area
Steel Melting Plant		
IF + GOR Slag	17,035	After metal recovery (approx. 10%), remaining slag shall be crushed and will be used as aggregates
IF Bag Filter Dust	7500	Shall be given to nearby Sinter Plant or Pallet Plant
Scale from CCM	250	Shall be given to nearby Sinter Plant / Pallet Plant
End cut/Rejects	500	Will be reused in Induction Furnace
Power Plant		
Fly-ash from WHRB	6,030	Will be sold to Cement Plant / Fly-ash Brick Plants
Fly Ash from AFBC	7,800	
Bottom Ash from AFBC	1,950	Will be given to the nearby Brick Plant, to be used as fuel in their Kiln

Management of Hazardous Waste

No hazardous waste shall be generated from the process except the 'Used Oil' and the same will be sold to the register recycler.

Baseline environmental data– air quality, surface and ground water quality, soil Characteristic, flora and fauna, socio-economic condition of the nearby population

Baseline Environmental Study

To predict the impact of the proposed activities on the surrounding environment, the current baseline environmental status was studied by collecting the data and carrying out monitoring for the period of 1st December to 29th February 2020. The baseline data for ambient air quality, surface and ground water quality, noise and soil quality was collected and analyzed for various parameters are as per norms.

Parameters	No. of Sites	Description	Permissible Level
Air Quality	8	<ul style="list-style-type: none"> • PM10 34.3 µg/m³ and 84.3 µg/m³ • PM2.5 20.1 µg/m³ to 49.8 µg/m³ • SO2 5.6 µg/m³ to 40.0 µg/m³ • NO2 14.0 µg/m³ to 45.5 µg/m³ 	100 µg/ m ³ 60 µg/ m ³ 80 µg/ m ³ 80 µg/ m ³

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Parameters	No. of Sites	Description	Permissible Level
		<ul style="list-style-type: none"> CO 0.30 mg/m³ to 2.06 mg/m³ 	2 mg/m ³
Ground Water Quality	8	<ul style="list-style-type: none"> pH varies from to 7.15 to 7.95 Total Hardness varies from 180.5 to 310.3 mg/l. Total Dissolved Solids varies from 450 to 610 mg/l. Chlorides varies from 60.02 to 96.4 mg/l Flouride varies from 0.16 to 0.65 mg/l 	6.5-8.5 200-600 mg/l 500-2000 mg/l 250-1000 mg/l 1.0-1.5 mg/l
Surface Water Quality	8	<ul style="list-style-type: none"> pH varies from to 7.15 to 7.65 Dissolved Oxygen varies from 4.9 to 6.1 mg/l. BOD varies from 10.5 to 18.2 mg/l. COD varies from 10 to 56.3 mg/l. 	IS:2296 Class C Norms
Soil Quality	8	<ul style="list-style-type: none"> pH 7.28 to 8.10 OM 0.50 to 0.70 % Potassium K 170 to 280 kg/Ha. Available nitrogen N 198 to 270 kg/Ha. Phosphorus 12 to 18.6 kg/Ha. 	----
Noise Level	8	<ul style="list-style-type: none"> Day Time (6:00 a.m. to 10:00 p.m.) 45.12 Leq dB(A) to 52.03 Leq dB(A) Night Time (10:00 p.m. to 6:00 a.m.) 32.40 Leq dB(A) and 42.10 Leq dB(A) 	55 Leq dB (A) 45 Leq dB (A)

Likely impact of the project on air, water, land, flora-fauna and nearby population:

Impact on Air environment

During operational phase air pollution shall be from DRI Kilns, Power plant, Induction Furnaces, CCM and Material Handling areas.

Emission from Point Source (Stack)

Dust and gaseous emission shall be from the flue gases generated at DRI Kiln, Power Plant, Induction Furnaces and Gas oxygen unit.

Emission from Area Source (Fugitive Emission)

Fugitive emissions are expected during melting operation in Induction Furnace, charging of raw materials and transportation of raw materials. Dust is also generated during loading and unloading and transportation of material. Fugitive emission is also generated due to vehicular movement in the premises.

Impact on Water due to Water usage and Water discharge

Water requirement of the plant be 1117.5 m³/day. RSPL draws its requirement of raw water from intake point at Panchet Dam to the Raw water reservoir of the plant. No impact on ground water is also envisaged since no ground water will be used by RSPL for the proposed project.

Proposed water intake point at Panchet Dam is not falling under Polluted River Stretch, notified by CPCB. Hence, no significant impact of the project is due to the water usage.

Waste water generation from the proposed operations will be due to blow downs from cooling towers, DM unit regeneration wastewater, back wash from Softening Plant and domestic waste water. Wastewater streams comprising cooling tower blow down, Softening Plant back wash, DM plant wastewater will be collected and utilized quantitatively for slag cooling. The sewage & sanitary wastewater from toilets, washrooms and canteen shall be treated in septic tank and waste water, if any shall be used for horticulture.

The Environmental Management Plan describes the plan for proper and adequate implementation of treatment and control facilities to control air and water pollution and for maintaining the environment. It also includes the development of green belts in and around the plant, proper safety of the workers, noise control, fire protection systems and measures.

To ensure the effective implementation of the proposed mitigation measures, the monitoring plan has been developed.

Air Pollution Mitigation Measures:

The industry proposes to install Dust Settling Chamber with After Burning Chamber & ESP with DRI Kiln. Hydrogen Injection system will be installed with DRI Kiln to optimize combustion in DRI Kiln. This technology increases the combustion efficiency and hence reduce the pollution. The hydrogen injection system in the DRI Kiln of Sponge Iron plant will have following benefits:

1. Around 20% of Coal Consumption could be reduced.
2. Dust will be less due to complete combustion.
3. ESP working efficiency will also increase due to less dust load.
4. Accretion forming in the Rotary Kiln would also reduce and campaign life goes up.
5. The Char & Dolo-Char generation will reduce due to higher combustion in the Rotary Kiln due to which Product Handling Equipment Efficiency will also increase.
6. In SMS, the Melting Efficiency will be increased and liquid metal quality will also improve due to the higher Fe (T) and Fe (M). (Refer point number 4, above). At the same time, Slag Percentage during melting will also come down.

Cyclone cum spark arrester with Pulsejet Bag Filter with Induction Furnace and Pulsejet Bag Filter system with Gas Oxygen Refiner for controlling dust emission. The hot gas emitted from the furnaces will be conditioned by using radiant coolers to reduce the temperature before entering the Bag filters. Pucca roads within premises water sprinkling in dusty areas and greenbelt/plantation to arrest fugitive dust.

Table-6: Details of the Air Pollution Control facilities

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Sl. No	Location	Pollution Control Equipment	Nos.	Connected with no. of Stack	Stack Height	Stack Emissions
Sponge Iron Plant						
1	Coal Crusher & Screen House	Bag Filter	1	1	30 m	< 30 mg/Nm ³
2	Iron Ore Crusher & Screen House and Iron Ore Fines Bunker	Bag Filter	1	1	30 m	< 30 mg/Nm ³
3	Transfer House and Jn. House	Bag Filter	1	1	30 m	< 30 mg/Nm ³
4	Cooler Discharge	Bag Filter	1	1	30 m	< 30 mg/Nm ³
5	Intermediate Building & Product Separation	Bag Filter	1	1	30 m	< 30 mg/Nm ³
6	Product House	Bag Filter	1	1	30 m	< 30 mg/Nm ³
Power Plant						
7	DRI & WHRB	ESP	1	1	62 m	< 30 mg/Nm ³
8	AFBC Boiler	ESP	1			
9	Coal Handling Area	Bag Filter	1	1	30 m	< 30 mg/Nm ³
Steel Melting Shop						
10	1x25 T Induction Furnace	Bag Filter	1	1	30 m	< 30 mg/Nm ³
11	2x20 Ton Gas Oxygen Refiner	Bag Filter	1	1	30 m	< 30 mg/Nm ³
Total - 9 Bag Filters + 2 ESPs				Total Stacks - 10		

Water Pollution mitigation measures

All discharges from Neutralization Pit, Cooling Towers and Domestic waste water shall be used for either slag cooling, dust suppression and / or horticulture after treatment. Zero water discharge from the plant is proposed and hence there will not be any impact on the water course due to the project.

Table – 7: Details of Effluent discharges from different source

Sl. No.	Unit	Type of Pollution Control System	Quantity (m ³ /day)	Usages
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Sl. No.	Unit	Type of Pollution Control System	Quantity (m ³ /day)	Usages
1	DM Plant / Softening Plant reject	Neutralization Pit	20	Slag cooling & Dust suppression
2	Cooling Tower blow down from SMS	-	20	
3	Cooling Tower blow down from Power Plant	-	155	
5	Domestic wastewater	Septic tank with Soak Pit	2	
Total Discharge			197 KLD	

Greenbelt development Plan

Green Belt will be developed over 33% of the plant area. Indigenous trees will be planted in 5.37 Ha out of the total area of 16.285 Ha. Tree density of 1600 trees per hectare with local board leaf specification will be planted. The budget of Rs. 30 Lakhs (Approx.) has been kept for Green Belt development.

Capital cost of the project, estimated time of completion:

Total Project Cost is estimated as Rs. 150.72 Crores. Project implementation time is 38 months.

Descriptions of Environmental sensitivity in 10 km radius form the site. Selection of the project – Nature of land – Agricultural (single/double crop), barren, Govt/private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest, eco-sensitive zones, accessibility.

S. No.	Features	Details
1.	Village, District and State	Village: Dhatara P.O: Raghunathpur District: Purulia, West Bengal.
2.	Topo sheet	Toposheet No.- 73I/10, 73I/11, 73I/14 & 73I/15
3.	Latitude	23°36'48.20"N
4.	Longitude	86°42'39.74"
5.	Total Area	16.285 Ha. (40.22 Acres)
6.	Nearest Highway/State High Way	SH-5 is at distance of 2.0 Km in South SH-8 is at distance of 8.2 Km in SW
7.	Nearest Railway Station	Ramkanali Junction at 5.5 Km in SE
8.	Nearest Airport	Birsa Munda Airport, Ranchi – 145 km in SW
9.	Water Bodies	Uttala nadi is at a distance of 1.2 km in NW direction Atta nadi is at a distance of 6.32 km in SW direction Pathartikuri nadi is at a distance of 6.51 km in SW direction

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S. No.	Features	Details
		Panchet Reservoir is at a distance of 8.0 km in NW direction
10.	Forest	There are many Protected Forest within 10 km radius however, only two reserved forests are found Panchet Reserve Forest at distance of 3.2 kms in NE direction Senara Reserve Forest at distance of 5 kms in South direction
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Raiband Hospital in NW at a distance of 4.78 Km Shiva Temple at distance of 2.28 km in West direction Dhatara Primary School is at distance of 1 km in South direction Gobang community hall at a distance of 5.86 km in SE direction
12.	State, National boundaries	Jharkhand and West Bengal Border at 8.2 km in NE direction
13.	Densely populated or built-up area	Raghunathpur in SSW at 9.55 Km
14.	Defense Installation	Nil within 10 Km radius
15.	National Park/Wild life Sanctuary	Nil within 10 Km radius
16.	Nearest dam	Panchet dam 7.75 km in NE
17.	Nearest Power Station	Raghunathpur Thermal power Station of DVC is at 5 Km in NW direction
18.	Proposed Production Capacity	Production of 70,500 TPA Billets.
19.	Cost of the Project	Total: Rs. 150.72 Cr.
20.	Manpower Requirement	Total:250
21.	Requirement of Water (in KLD) and Source	Total requirement: 1117.5 KLD Source: Panchet Dam
22.	Requirement of Power (in MW) and Source	Total: 6.75 MW DG set 2x750 KVA & 1x1000 KVA DG Set has been proposed to be installed. Source: DVC for First phase then in second phase CPP will be used for power supply.

Environment Monitoring Program

Environmental Monitoring is an essential tool for sustainable development and ensuring effective most implementation and monitoring of Environmental Management Plan and mitigation

measures. Monitoring involves periodic checking to ascertain whether activities are going according to the plans. A detailed monitoring plan has been prepared to keep regular check on Ambient Air quality, to keep check on Stack emissions, ground water quality, surface water quality and effluent discharges, once in each quarter.

A budget of Rs. 7,50,000 per year has been kept for the Environmental Monitoring Program.

Emergency preparedness plan in case of natural or in plant emergencies:

On-site and Off-site Emergency Preparedness Plan has been developed to control emergency situations. The emergency control room and Assembly area shall be set up at a safe location and marked on the site plan and will be manned round the clock. The control room will be activated in case of an emergency to direct and co-ordinate the operations to handle the emergency. It will be furnished with external and internal telephone connections etc; list of essential telephone numbers; list of key personnel and their address; fire fighting system and site plan. Depending upon site requirements, additional control room will be considered.

Issues raised during public hearing (if applicable) and response given:

Public hearing issues along with technical details and budget of the activities proposed as per the commitments provided by PP during Public Hearing will be incorporated after the public hearing is conducted by SPCB.

Occupational Health Measures

The project proponent strongly believes in the safety and health of the workers. The company will conduct regular medical checkup of the worker and on the safer side there will always be a rotation of the job for the worker who are exposed to dust and high noise. Safety being the first policy of the company.

M/s Raiseland Steel Private Limited shall establish procedures and systems for reporting and recording of Occupational accidents and diseases and dangerous occurrences and incidents. All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses shall be investigated with the assistance of a person knowledgeable/competent in occupational safety.

Capital budget of Rs. 52 Lakhs and recurring budget of Rs. 24.5 lakhs per year has been kept for OH & S.

Project Benefits:

The proposed project would have the following advantages:

- Direct employment to approx. 250 persons and indirect employment is expected to be much more in the area of transport, ancillary development etc.
- Improvement in infrastructure like road, market, installation of hand pump, dug well etc.
- Land is available with the project proponent, hence no procurement of land or displacement of people.

- Revenue for the State
- Socio-economic benefits and consequent improvement in the living conditions of local population in the study area and in region.

Implementation of Environment Management Plan:

M/s Raiseland Steels Private Limited is responsible for implementation of all the mitigation and management measures. A separate department "Environment Management Cell" (EMC) shall be established to look after all environmental related matters of the plant. The EMC will supervise the reported activity from time to time for smooth implementation of Environmental Mitigation and Management measures and will take necessary actions if required. It will also ensure to meet all the Statutory Requirements.

The estimated capital expenditure for implementation of EMP will be Rs. 640 lakhs and recurring cost Rs. 63 lakhs/year.
