EXECUTIVE SUMMARY

on

ENVIRONMENTAL IMPACT ASSESSMENT

FOR

PROPOSED

2 x 350 TPD SPONGE IRON / 2 x 8 MW WHRB / 16 MW CFBC / SECONDARY STEEL PLANT

at

Survey # 91 to 95 & 97 to 103

13°23'46.47"N	80°02'35.89"E
13°23'54.34"N	80°02'52.57"E
13°23'33.33"N	80°02'51.94"E
13°23'34.39"N	80°02'37.14"E

AMIRTHAMANGALAM VILLAGE, GUMMIDIPOONDI TK, THIRUVALLUR DT, TAMIL NADU

STUDY PERIOD – December 20, 2019 -March 20, 2020

CONTENTS

Executive Summary

EXECUTIVE SUMMARY

1 PROJECT DESCRIPTION

1.1 Proposed Project

The proposed project is a Greenfield Sponge Iron Plant with Secondary Steel Plant consisting of Melting Shop, Billet Caster, Rolling Mill & Power Plant based on WHRB (Waste Heat Recovery Boiler) & CFBC (Circulating Fluidized Bed Combustion) using Dolochar.

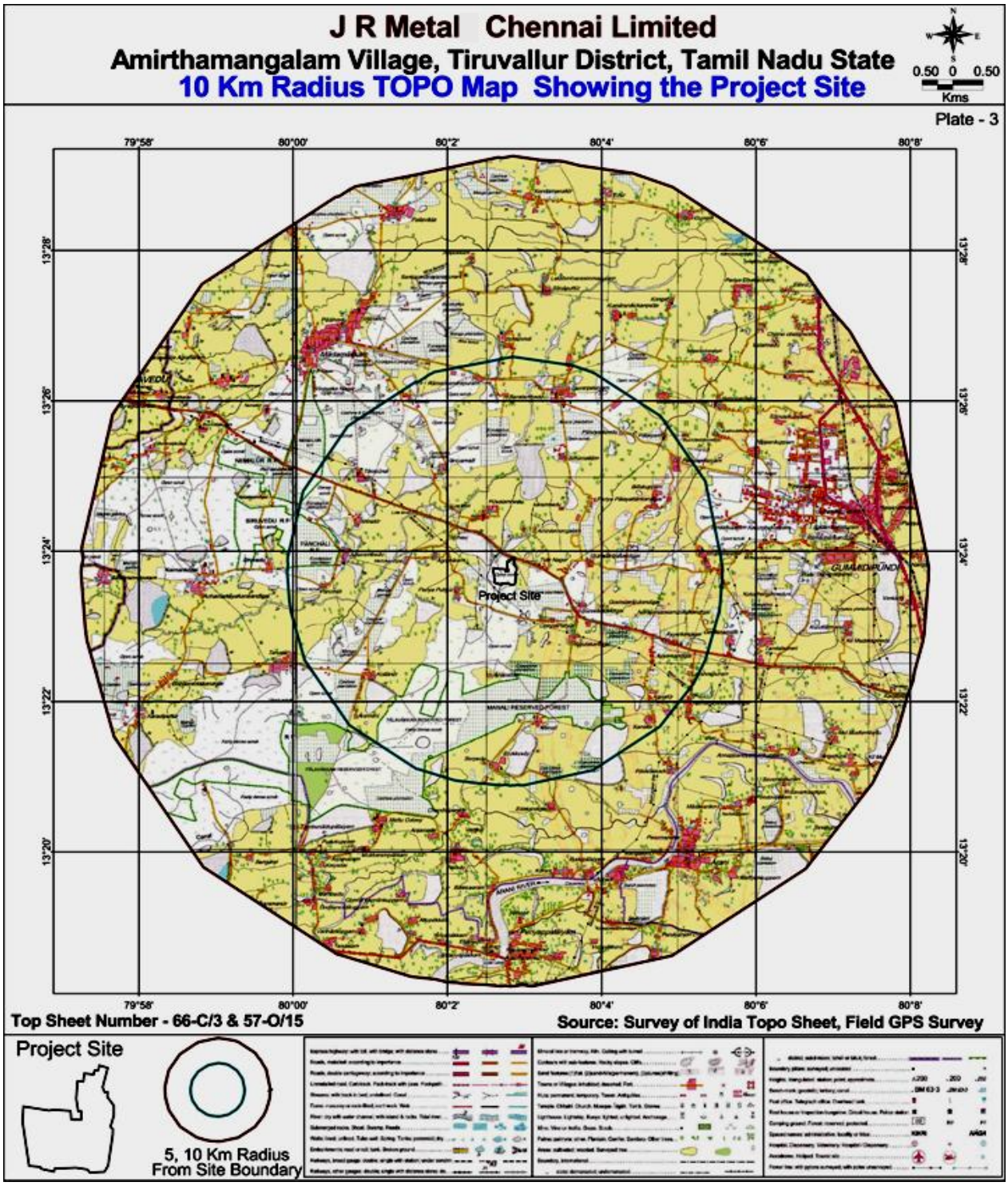
1.2 Project Location

The proposed project will be located at Survey Nos. 91 to 95 & 97 to 103 of Amirthamanagalam Village, Gummidipoondi Taluk, Thiruvallur District, Tamil Nadu ie bounded by

13°23'46.47"N	80°02'35.89"E
13°23'54.34"N	80°02'52.57"E
13°23'33.33"N	80°02'51.94"E
13°23'34.39"N	80°02'37.14"E

and is devoid of any notified Eco-Sensitive area within 10 kms radius of plant site.

Locatoin Map – Survey of India Map



1.3 Project Proponent

M/s. J.R. Metal Chennai Limited a company with 2-decade long experience in Steel Making and Marketing Business with its registered office at No.3, Manali Express Road, TKP Nagar, Thiruvottiyur, Chennai – 600 019.

1.4 Production Capacity

Products	*Production Details (TPA)*		
	PHASE – I	***PHASE - II***	***PHASE – III***
Sponge Iron (2 x 350 T)	*1,50,000*	*1,50,000*	--
Intermediate Product – M.S. Billets Induction Furnace with Billet Caster (2 x 40 T & 1 x 30 T)	--	*4,50,000*	*1,50,000*
Re-Rolled Steel Products (M.S. Rounds, Flats, Angles, etc.,) 1 No x 40 T Reheating Furnace *	--	*5,00,000*	--
Power Plant – CFBC (65 TPH)	--	*16 MW*	--
Waste Heat Recovery Boiler (WHRB)	*8 MW*	*8MW*	--

*** Reheating Furnace will be sparsely used, because, hot billet from Billet Caster will be directly fed into Roling Mill.**

1.5 Proposed Equipments

FACILITY	**CONFIGURATION**
SPONGE IRON PLANT	
Rotary Kiln (DRI)	2 x 350 Tons
STEEL MELTING UNIT	
Electric Induction Furnace	2 x 40 Tons 1 x 30 Tons
ROLLING MILL	500000 TPA
CAPTIVE POWER PLANT	
CFBC (65 TPH) using Dolochar from DRI	1 x 16 MW
WHRB [Waste Heat Recovery Boiler]	2 x 8 MW

1.6 Land Requirement

The total land area acquired for this proposed greenfield Project is 17.321 Hectares of which 11.039 Hectares will be required for Plant and utilities, and about 5.716 Hectares will be earmarked for greenbelt development.

SL. NO.	FACILITY DESCRIPTION	LAND AREA (In Ha.)
1	Sponge Iron Kiln & Power Plant	3.236
2	Melting Shop/Billet Caster/Rolling Mill	4.047
3	Switch Yard	0.405
4	Greenbelt	5.716
5	Iron Ore Stock Yard	0.725
6	Coal Storage	0.566
7	Ash dyke	0.809
8	Slag Storage	0.809
9	Scrap Yard	0.442
10	Road	0.566
	Total Land Area	**17.321**

About 33% of the Total Land Area has been exclusively earmarked for "GREEN BELT DEVELOPMENT" predominantly around the Periphery of the Plant Boundary.

1.7 Raw Material Requirement

The major raw material is Iron-Ore Pellet or Iron-Ore Lumps/Fines & Coal for Sponge Iron Plant apart from M.S Scrap, which will be used along with Sponge Iron in the Induction Furnace / Billet Caster for making Billets, which are then rolled into the final product i.e. Rolled Products.

CFBC Boiler will use a mix of Dolochar & Coal to produce power, whereas, WHRB will make use of Waste Flue Gases from the DRI ie Sponge Iron Kiln.

Sponge Iron (Based on Iron-Ore Pellet)

RAW MATERIAL	QUANTITY (TPA)	SOURCE	TRANSPORT MODE
Iron Ore Pellet	4,26,000	Indigenous	
Coal	2,70,000	Imported	Road/Ship
Dolomite/Limestone/Quartz	15,000	Indigenous	

Sponge Iron (Based on Iron Ore Lumps/Fines)

RAW MATERIAL	QUANTITY (TPA)	SOURCE	TRANSPORT MODE
Iron Ore	3,50,000	Indigenous	
Coal	2,19,990	Imported	Road/Ship
Dolomite/Limestone/Quartz	10,000	Indigenous	

Steel Melting Shop/Rolling Mill

Raw Material	Quantity (TPA)	Source	TRANSPORT MODE
Sponge Iron	3,00,000	Captive – In House	-
Melting Scrap Ferro Alloy	3,70,000 6,000	Indigenous/Imported Indigenous	Road/Ship

Re Rolling Mill

The Billet produced by the Steel Melt Shop will be the Raw Material for Re-Rolling Mill

Sl. No.	Raw Material (Re-Heating Furnace)*	Quantity	Source	TRANSPORT MODE
1. 2.	Coal Furnace Oil	23,000 TPA 4 KL/day	Imported/Indigenous Indigenous	 Road/Ship

*Billet from Billet Charger will be Directly Fed into Rolling Mill, & Re-Heating Furnace will not be used, & is only a Standby in case of the instances when Raw Billets are Procured, and hence will not be using Coal or Furnace Oil at all for Billet Reheating purpose, and is only a stand-by, and estimated requirement to the maximum will only be upto 2% of the Operation in a Year.

Power Plant

Dolochar from sponge iron plant will be the main raw material that will be used in the CFBC Boiler for power generation of 16MW, wherein about 14-30% fuel will be coal blended to obtain necessary calorific value & heat for generation of steam

Sl. No.	Raw Material	Quantity
1.	Imported Coal (South Africa)	106 TPD
2.	Dolochar	247 TPD

The Coal used will be with Sulphur Content < 1%.

1.8 Raw Water Requirement

The proposed plant intends to use **Dry Adiabatic Air Cooling System** for Electric Induction Coil Cooling, and also Air Cooled System for Main & Auxiliary Cooling in Power Plant.

The Water Requirement will be for cooling water make-up of Furnace, Rotary Kiln, Concast Mill & Rolling Mill.

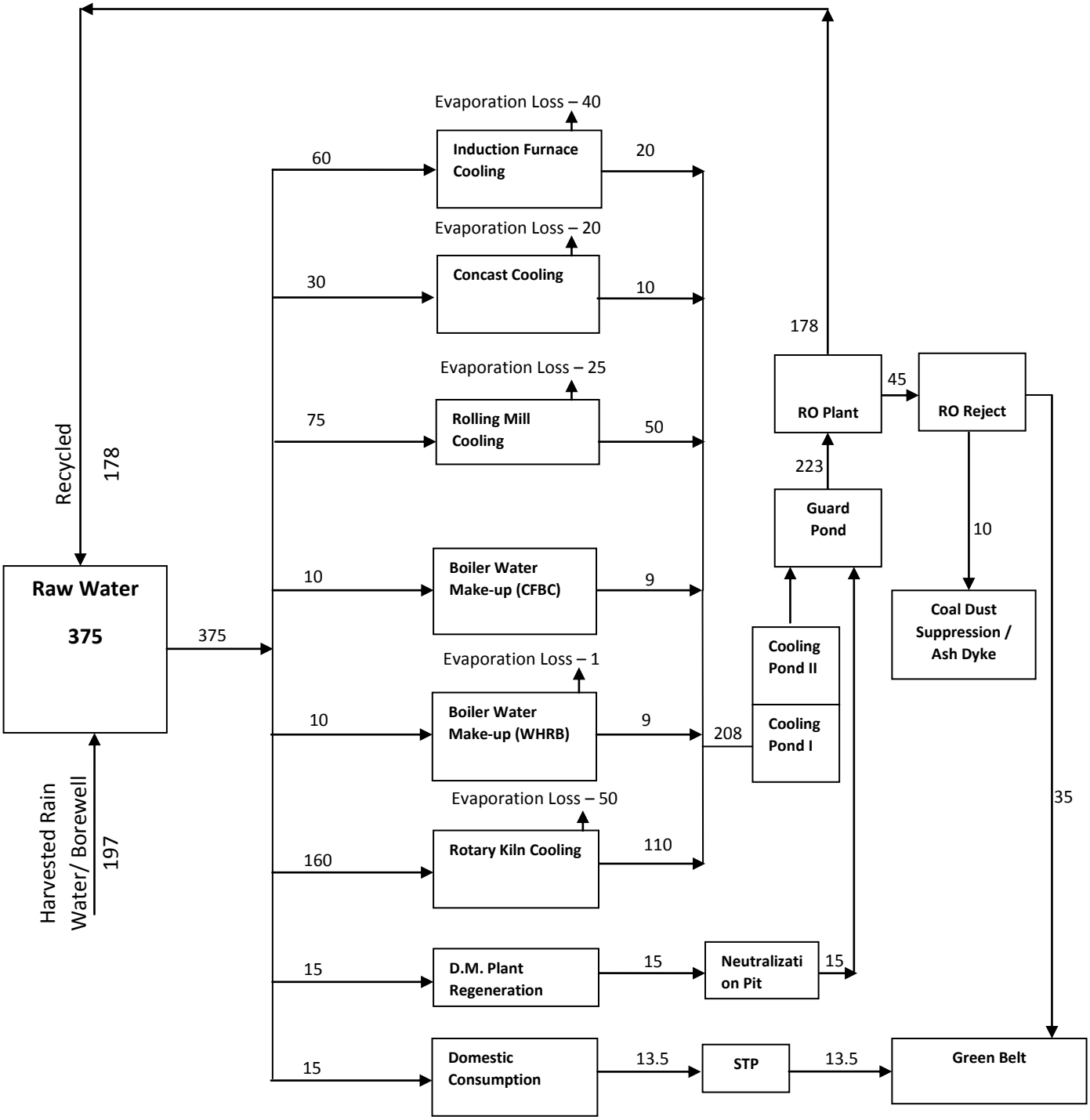
S.No	POINT OF USAGE	QUANITY (KLD)
	COOLING WATER MAKE-UP	
1	Rotary Kiln Cooling	160
2	Electric Induction Coil Cooling	60
3	Concast Cooling	30
4	Rolling Mill Cooling	75
	BOILER FEED MAKE-UP	
5	CFBC	10
6	WHRB	10
7	**D.M.PLANT REGENRATION**	15
8	**DOMESTIC**	15
	Total	**375**

The raw water requirement will be 375 KLD. Which will be met by recycling 178 KLD of treated waste water and 197 KLD will be drawn from ground water.

Water balance diagram is as follows.

WATER BALANCE DIAGRAM

All values are in KLD.



1.9 Energy Requirement

The total power required will be 60 MW, of which 24 MW will be through captive generation & balance 36 MW will be met from state utility ie TANGEDCO.

PROCESS UNIT	POWER CONSUMPTION (MW)
Sponge Iron Plant	10
Steel Melting & Billet Caster	40
Rolling Mill	10
TOTAL	**60**

The energy balance considering captive generation will be as follows,

SOURCE OF POWER GENERATION	PLANT CAPACITY (MW)	ACTUAL GENERATION MW (85%PLF)
WHRB	2 X 8	27
CFBC	1 X 16	
Auxiliary Power Consumption		**3**
NET POWER AVAILABLE FROM CAPTIVE GENERATION		**24**

1.10 Man Power Requirement

About 300-employees would be needed for the operation of the proposed plant, including direct and indirect workers.

1.11 Manufacturing Process

The main raw material required in Sponge Iron Plant will be Iron-ore Pellet or Iron Ore Lump/fines, Imported South Africa Non-Coking Coal, and Dolomite/Limestone. The raw material from respective bins will be conveyed in closed gantry conveyors to the feeding platform and then to the kiln. In-order to maintain the heat at top of the rotary kiln, coal is injected through coal burners in the kiln. The preheated Iron-ore pellet or iron-ore are then reduced to sponge iron, where as, carbon and volatile matter are reduced to char. The Sponge Iron is then separated in a magnetic separator.

The Sponge Iron thus produced alongwith M.S. Scrap / Ferro Alloy is melted in the Electric Induction Furnace.

The molten metal is cast into Billets in a Billet castor.

The billet at 1050°C – 1250°C are then fed to different rolling mills to produce rolled products as per requirement.

1.12Air Emissions

POINT SOURCES

S.No	SOURCES OF POINT EMISSION	PREDOMINANT POLLUTANT
1	Sponge Iron Kiln/WHRB	Particulates
2	Sponge Iron Screening	Particulates
3	Electric Induction Furnace	Particulates
4	Reheating Furnace*	Particulates, SO_2, NO_X
5	Coal Crusher	Particulates
6	CFBC Boiler	Particulates, SO_2, NO_X

* Reheating Furnace will be sparsely used as billet from billet caster will be directly charged to Rolling Mill.

CONTROL MEASURE – POINT SOURCE EMISSION

S.No	SOURCES OF POINT EMISSION	CONTROL MEASURE
1	Sponge Iron Kiln/WHRB	**ESP**/Stack(**50M**)
2	Sponge Iron Screening	**Bag Filter**/Stack(**15M**)
3	Electric Induction Furnace	**Bag Filter**/Stack(**30M**)
4	Reheating Furnace*	**Scrubber**/Stack(**30M**)
5	Coal Crusher	**Bag Filter**/Stack(**15M**)
6	CFBC Boiler	**ESP/FGD**/ Stack(**41M**)

Apart from above there will also be D.G.Set to be used as a standby during power shut down or exigencies, and will use low sulphur fuel provided with a stack of adequate height as per CPCB Norms.

1.13Waste Water Generation

The plant predominantly uses Air Cooled System, however, cooling water make-up is required for certain operations in furnace, concast mill, rolling mill apart from Boiler Feed, and the waste water generated will be blowdown from these operations.

S.No	POINT OF GENERATION	QUANITY (KLD)
	COOLING WATER BLOW DOWN	
1	Rotary Kiln Cooling	110
2	Electric Induction Coil Cooling	20
3	Concast Cooling	10
4	Rolling Mill Cooling	50
	BOILER BLOW DOWN	
5	CFBC	9
6	WHRB	9
7	**D.M.PLANT REGENRATION**	15
8	**DOMESTIC SEWAGE**	13.5
	TOTAL	**236.5**

The waste water generated from the domestic use ie domestic sewage will be treated in a full fledged sewage treatment plant proposed to be installed, which will be based on Activated Sludge Process, and will have a capacity to treat 15 KLD of domestic sewage.

The D M Plant Regeneration waste water will be treated in a Neutralization Tank, and then mixed with other waste water in the Guard Pond, which will be the collection tank to collect composite waste water, and will then be the feed to R.O.Plant for re-use of the treated waste water back into the process.

1.14Solid Waste Generation & Method of Disposal

There are no HAZARDOUS WASTE generation from the process operation.

The hazardous waste generated is only from maintenance activity such as Used Lubricating Oils & Cotton Waste Containing Oil.

S.No	WASTE CATEGORY	WASTE SOURCE	WASTE DESCRIPTION	QUANITY(TPA)
	HAZARDOUS WASTE			
1	5.1	Lubrication/Maintenance	Used or Spent Oil	2.0
2	5.2	Lubrication/Maintenance	Waste Containing Oil	2.0
	SOLID WASTE			
3	-	Sponge Iron Kiln	Dolochar	90000
4	-	Melting Furnace	Slag	60000
5	-	CFBC Boiler	Fly-Ash	60000
6	-	CFBC Boiler	Bottom-Ash	15000

All the solid waste generated find useful application in many upstream/downstream industries, where as, hazardous waste is disposed to Authorized Agencies.

WASTEDESCRIPTION	END USE/DISPOSAL
HAZARDOUS WASTE	
Used or Spent Oil	Authorised Waste Oil Recyclers
Waste Containing Oil	Incinerated at CPCB Authorised TSDF
SOLID WASTE	
Dolochar	CFBC Boiler Within Plant for Power Generation
Slag	Cement Manufacturers/Concrete Road Making
Fly-Ash/Bottom-Ash	Cement/Brick Manufacturers

1.15Estimated Project Cost & Schedule

The estimated project cost is Rs. 350 Crores and the estimated time of completion will be 24-month (Phase-I), 60-month (Phase-II), and 84-months (Phase-III) from zero date.

2 Baseline Environmental Status

2.1 Ambient Air Quality

PARTICULATE MATTER (PM_{10})

The concentration of PM_{10} in ambient air during the present study varied between **30 and 87 µg/m³.** The **98th** percentile value of PM_{10} recorded during the study period varied between **40.5 and 86.1 µg/m³**.

PARTICULATE MATTER ($PM_{2.5}$)

The concentration of $PM_{2.5}$ in ambient air during the present study varied between **9 and 29 µg/m³.** The **98th** percentile value of $PM_{2.5}$ recorded during the study period varied between **12 and 29 µg/m³**.

SULPHUR-DI-OXIDE

The concentration of SO_2 in ambient air during the present study was found to vary between **7.1 and 21.8 µg/m³**. The **98th** percentile value of SO_2 recorded during the study period varied between **11.2 and 21.8 µg/m³.**

NITROGEN OXIDES

The concentration of NOx in ambient air during the present study varied between **11.2 and 26.7 μg/m³.** The **98th** percentile value of NOx recorded during the study period varied between **14.9 and 26.1 μg/m³**.

Whereas, Carbon Monoxide (CO), Ammonia (NH_3), Nickel (Ni), Arsenic (As), Lead (Pb), Ozone (O_3), Benzene and Benzo Pyrene were all Below Detectable Levels during Study Period.

2.2 Surface Water Quality

None of the Surface Water Samples Tested had any Semblance of Industrial Pollution, or Microbial Contamination, except Turbidity, which may be because of Inability of Suspended Solids to percolate due to absence of desilting, that had not been carried out for long time.

2.3 Ground Water Quality

All the Ground Water Samples Tested were devoid of Heavy or Toxic Metals, Pesticides or Microbial Contamination, and were within permissible limits as per IS 10500 Standard for Drinking Water.

2.4 Soil Quality

The soil at all locations, where sample was tested was free of toxicity, and with a less than moderate fertility indicated by the presence of Nitrogen, Phosphorous & Potassium. The soil also had low Sodium Absorbtion Ratio, thus indicating that the nutrient present in the soil will remain undamaged. The soil in general were free of any Industrial Pollution.

2.5 Flora & Fauna

The study area was devoid of any Schedule I fauna and had also been devoid of any rare, endemic or endangered floral species as per IUCN, most of the species identified as per IUCN were of **least concern**.

2.6 Socio Economic Status

The project site is devoid of any settlement, and hence a detailed rehabilitation study was not required, and site falls under "S3" Category, wherein there is no impact on the families due to the project.

The study area in general has better sex ratio, literacy rate, better employment in agriculture and industry, better per-capita income, and also better facility for higher education.

Although the district had good health facility, the core zone is lacking primary health care facility, and also ambulance facility.

Sanitation facility available in the core-zone have been largely scattered, and most people still follow open defecation.

There were substantial availability of fair price shops in the study area. There was also ample supply of LPG for cooking, and was also well connected by Communication & Road Network.

The working population had largely shifted to Industrial work moving away from the Agriculatural Labour mainly due to proximity to Chennai & rapid industrialization of the region, and this offering them regular & better incomes than Agricultural activity.

2.7 Land Use Classification

The present land for proposed project is a Dry Agriculture Land as per Revenue Records and unclassified as per DTCP Records.

2.8 Ground Water

As per G.O.M.S. No. 161 dated 23.10.2019, The Public Works Department of Government of Tamil Nadu, the present site falls under Poovalambedu Revenue Firka, which is Categorized as Safe Zone thus permitting drawal of ground water with permission for drawalfrom State Ground Water Board, however, the proposed project will have extensive rain water harvesting system, thus negating any impact on the existing ground water regime.

3 Environmental Impact and Management Plan

3.1 Air Impact

All Point Source of Emission are provided control measures to limit emission to within permissible levels, however, the maximum predicted incremental ground level pollutants will be as follows.

PARAMETER	CONCENTRATION (µg/m^3)		
	BASELINE	INCREMENTAL	CUMULATIVE
SO_2	11.60	10.39	21.99
NO_X	15.20	3.06	18.26
SPM	77.00	1.07	78.07

3.2 Water Impact

The entire waste water is treated and reused back in the process. The ground water drawl will also be adequately compensated by rainwater harvesting. The plant ensures Zero Discharge, and least impact on water environment in the surrounding environment.

3.3 Land Impact

The plant does not generate any hazardous waste of major nature.

The run off from raw material storage is also averted by storage of all these raw material in closed shed, more-over control of Air/Water pollution to negligible levels will also ensure least impact on the Land Environment.

3.4 Emergency Preparedness Plan

There is a robust offsite and onsite Emergency Preparedness Plan and Disaster Management proposed, wherein disaster / emergency are identified, and responsibilities will be assigned to within the organization, communications and co-ordination within other civic authorities and government identified agencies.

3.5 Occupational Health Measures

With objective to ensure health & Safety of workers, a well delineated system consisting of health & Safety guidelines, work area safety and health precautions standard operating procedures, elimination of unsafe acts, provision of PPE's and other industrial hyginene measures are provided for to ensure "ZERO ACCIDENT & ZERO INCIDENT".

3.6 Identification of Hazards

The only major hazard is due to spontaneous ignition of coal in the stock yard, wherein, the control measure such as restricting the coal height to <1.6m, and constant water sprinkling will keep coal dump moist, and prevent fire hazards.

Other identified hazards in the process will be provided with sensors and probes for temperature control, flow control, leak detection, and PLC systems to control any probable risks.

4 Post Project Monitoring Plan

Area of Monitoring	Number and location of sampling stations	Frequency of sampling	Parameters to be analysed
Ambient Air Quality	4 stations	Once a month	As per NAAQS
Stack Emission	Stack emission measurement – All Stacks	Once every 15- days	SPM, SO_2 and NO_x
Surface Water Quality	1 nearest surface water bodies	Once every 3-months	Physical, chemical and biological parameters
Ground Water Quality	4 locations adjacent to the ambient air quality stations.	Once every 3-months	Physical, chemical and bacteriological parameters. Heavy metals and toxic constituents.
Soils	At the plant site and from close to the air quality monitoring stations.	Once every 3- months	Physical, chemical, cat ion exchange value, permeability, heavy metals
Noise	4 locations	Once every month	Ambient soundlevels (L_{eq}values).

CONTINUOUS ONLINE MONITOIRNG will be installed and connected to Care Air Center of TNPCB/CPCB of Stack Connected to DRI Kiln, Electic Induction Furnace & CFBC Boiler.

5 Project Benefits

The Present Project is proposed in a land which is fallow at present, and in an area devoid of any Environmental Sensitivity, thus 17.321 ha. Land is being put to better utilization and also ensuring least pollution of environmental impact on land or the surrounding environment.

Further,

- Availability of Additional Long Product ie TMT Bars will give an Impetus for Construction Industry
- The project as such would generate Large scale Direct/Indirect Employment apart from Large Scale Direct/In Direct commerce resulting in Social & Economic Uplift with a multiplier effect in multiple layers & extent of the society
- Availability of Additional Long Product ie TMT Bars will generate huge employment as well as Social & Economic development by enabling large scale Infrastructure project such as Roads, Highways, Airports, Ports, Water Supply, Sanitation, Schools, Hospitals, Government Buldingsetcof the Government thus resulting in development & growth of the country
- Apart from this proposed project aiding Infrastructure, it will also enable additional growth in Housing Sector both in the Private & Public sector , this additional will result in Social & Economic Growth
- All the above benefits will not only result in the social & economic growth as mentioned above, but project per se will directly contribute to the Government coffer in the form of Direct/Indirect Taxes to the tune of Rs. 650/- Crores per year, enabling government revenues to aid social & infrastructure development, apart from direct contribution from the project per se, the resultant other development activities given impetus by availability of this additional long product ie TMT Bars will also contribute to the Government coffers in the form of Direct Taxes, Indirects Taxes , Levies etc , which will further enable Government to undertake rapid development of Infrastructure etc thus enabling prosperity & growth of the country.

All benefits accrueing above, is still being achieved with adequate protection to environment by controlling environmental impact & ensuring negligible impact to the environment, which is a huge positive for the project.