

Executive Summary

Of

Proposed expansion of the existing Sponge Iron Plant from 33,000 TPA to 3,96,000 TPA and establishment of 29 MW WHRB based power plant and 54 MW Coal Based Power Plant

Project by

M/s Rajuri Steels & Alloys India Pvt. Ltd.

At Plot B-6, 7 & 8, MIDC, Mul Growth Centre, District – Chandrapur,
Maharashtra.

Environmental Consultant

Pollution and Ecology Control Services

Accreditation no.: NABET/EIA/2225/RA 0291 Valid up to 16th October 2025

Executive Summary

1.0 Name of the project along with applicable schedule and category as per EIA, 2006

M/s. Rajuri Steels & Alloys India Pvt. Ltd. proposes a project for the expansion of the existing Sponge Iron Plant from 33.000 TPA to 3,96,000 TPA and establishment of 29 MW WHRB based power plant and 54 MW Coal Based Power Plant at Plot no. B – 6, 7 & 8, MIDC, Mul Growth Centre, District – Chandrapur, Maharashtra. The proposed project attracts the provisions of EIA Notification, 2006 and falls under Category “A” of 3 (a) in Schedule to the Notification.

As a part of EIA process, proponent has made online application on 18th September 2020 along with Form-1, copy of pre-feasibility report and other documents. The Ministry vide letter IA-J11015/542/2021-IA.II (IND-1) dated 3th May, 2023 prescribed Standard ToRs for EIA study.

2.0 Location and accessibility

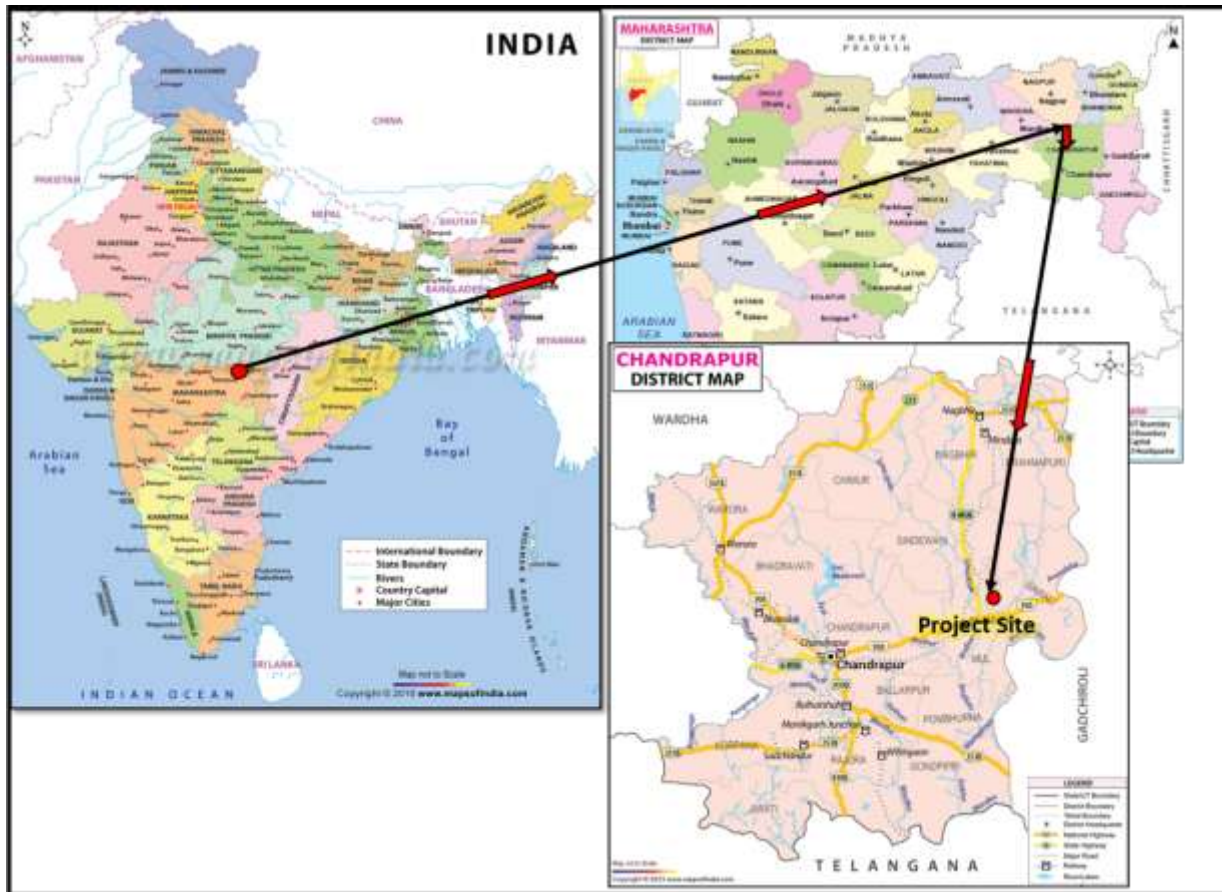
The proposed project will be located at Plot no. 6, 7 & 8, MIDC, Mul Growth Centre, District – Chandrapur, Maharashtra. The total area requirement for the proposed project is 10.01 ha. The nearest highway is NH-930 at 340 m in South of South East direction. The nearest Airport is Nagpur International Airport 131 km.

The details of environmental setting are given in **Table 1.1** and the location map is given in **Figure 1.1**.

Table 1.1: Details of Environmental Settings

S No	Particulars	Details
1	Project Site	Plot No. B – 6, 7 & 8 MIDC, Mul Growth Centre, District – Chandrapur, Maharashtra
2	Co-ordinates	A) 20° 4'49.08"N 79°42'54.09"E B) 20° 4'49.81"N 79°43'3.67"E C) 20° 4'41.35"N 79°43'3.58"E D) 20° 4'34.86"N 79°42'59.88"E E) 20° 4'34.37"N 79°42'55.26"E
	Survey of India Toposheet No.	55 P/12, 55 P/16, 56 M/9, 56 M/13
3	Elevation above MSL	190 MSL

5	Present land use	Industrial																				
6	Nearest National Highway/State Highway	SH - 9 : 1.2 Km (W) NH - 930 : 340 m (SSE)																				
7	Nearest Airport/ Air Strip	Nagpur Airport, 131.0 Km (NNW)																				
8	Nearest Railway Station	Maroda Railway Station : 5.7 Km (WNW)																				
9	Nearest Village	Marhegaon : 700m (SW)																				
10	Forest	Rajoli Reserved Forest : 2.4 Km (NNE) Mul Reserved Forest : 9.0 Km (WSW)																				
11	Ecologically Sensitive Zones like wild life sanctuaries, national parks and biospheres	The project is located at distances of 2.49 km from the Wildlife Corridor and 5.17 kms from the outer boundary of ESZ of Tadobal Andhari Tiger Reserve (TATR) and 17.19 kms from the protected area of TATR. The ESZ of TATR was notified by Ministry vide notification no. 192. S.O. 3249(E) dated 11.09.2019.																				
12	Water Bodies	Mul River : 1.4 Km (WSW) Human Nadi : 3.5 Km (NW) Pathri Nadi : 2.8 Km (E) Saoli Nadi : 1.4 Km (SSE) Mungejhari Nala : 6.4 Km (NW) Banasyoran Nala : 4.8 Km (NNW) Bheokund Nala : 3.9 Km (NW)																				
13	School	1) Vidyamandir Convent : 3.9 Km (WSW) 2) Z.P. School Mul : 4.2 Km (WSW) 3) St. Annes High School : 4.9 Km (WSW)																				
14	Hospital	1) Dr. Bokarey Clinic : 4.0 Km (WSW) 2) Dr. Tagade Clinic Mul : 5.8 Km (SW)																				
15	Temple	1) Gajanan Maharaj Temple : 5.2 Km (WSW) 2) Hanuman Temple : 5.1 Km (SW)																				
16	Major Industries within 10 Km area	<table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Name of the Industry</th> <th>Distance</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>M/s.Creta Energy Ltd.</td> <td>120 m</td> <td>NW</td> </tr> <tr> <td>2</td> <td>M/s.Prithvi Ferro Alloys Pvt. Ltd.</td> <td>1.0 km</td> <td>NW</td> </tr> <tr> <td>3</td> <td>M/s.Mahalaxmi Rice Industries</td> <td>2.7 Km</td> <td>SW</td> </tr> <tr> <td>4</td> <td>M/s.Shri Bajrang Agro Industries</td> <td>2.6 Km</td> <td>SW</td> </tr> </tbody> </table>	Sr. No.	Name of the Industry	Distance	Direction	1	M/s.Creta Energy Ltd.	120 m	NW	2	M/s.Prithvi Ferro Alloys Pvt. Ltd.	1.0 km	NW	3	M/s.Mahalaxmi Rice Industries	2.7 Km	SW	4	M/s.Shri Bajrang Agro Industries	2.6 Km	SW
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Source: Maps of India

Figure: 1.1 General Location Map

3.0 Resource Requirements:

Raw Material Requirement:

The details pertaining raw material requirement along with source and mode of transportation is provided in the following table:

S.No.	Raw Material	Quantity (TPA)	Sources	Distance from site (in Kms.)	Mode of Transport
1.	For DRI Kilns (Sponge Iron) – 3,96,000 TPA				
a)	Iron ore (100%)	7,12,800	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road through covered trucks
b)	Coal	Indian (or)	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road through covered trucks)
		Imported	Indonesia / South Africa /Australia	~ 900 Kms. (from Vizag Port)	Through sea route, rail route & by road through covered Trucks
c)	Dolomite	19,800	Chhattisgarh	~ 300 Kms.	By Road through covered trucks
2.	FBC power plant- 54 MW (Combined Fuel Dolochar & coal based)				
a)	Dolochar	1,58,400	Own generation	---	In covered trucks
b)	Coal (Indian/ Imported)	3,73,792	SECL Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)

Water Requirement:

The total water requirement will be 1988 KLD which will be sourced MIDC, Mul. M/s Rajuri Steels & Alloys India Pvt. Ltd. is committed for ZERO Liquid Discharge; entire wastewater will be treated and reused.

Land Requirement:

The proposed project will be established over an area of 10.01 ha. The entire land is in possession of the proponent for industrial set up as well as green belt development.

Man Power Requirement:

The manpower requirement for the operational phase of the project is 700 people. In addition, there will be an indirect employment for skilled/ semi-skilled people during project life. All attempts will be made to employ suitable, locally available, skilled personnel from the nearby area. In case of non-availability of skilled persons, people will be employed from outside area.

Power Requirement

Total Power required for the proposed project during operation is 14.5 MW, which will be sourced from captive power plant. In case of excess power requirement, same will be met from Maharashtra State Power Transmission Corporation Limited. Power requirement during construction will be met from Maharashtra State Power Transmission Corporation Limited.

4.0 Operational Activity:

The production process of each plant is explained in brief in the following paragraphs:

DRI Plant:

The sponge iron, is the product of reducing iron oxide in the form of iron ore below the melting point of iron and typically in the range of 800–1200 °C. Iron oxide is charged into rotary kiln in the form of pellet, iron ore lumps, or fines along with Coal and Dolomite. The Iron Oxide is reduced to Iron Ore. The coal and dolomite get burnt in the Kiln. The material from the kiln is cooled in the cooler and the same is subjected to magnetic separation to separate sponge iron and Dolomite. The emissions from Kiln are sent to After Burning Chamber for complete burning of CO. The heat from the stack emissions is utilised by Waste Heat Recovery Boiler (WHRB) for production of power. The emissions after utilizing the heat will be sent to ESP and discharged finally to atmosphere after arresting the dust particles (99.99% efficiency) through stack of height 72 meters.

Power Plant:***WHRB Based Power Plant:***

Production of sponge iron in DRI kiln generates huge quantities of hot flue gases carrying considerable sensible heat. The energy content of these gases can effectively be used to generate electric power as well as steam for meeting various process requirements.

FBC Boiler Based Power Plant

The power plant will operate on Dolochar generated in the DRI Kiln. The Dolochar along with other auxiliary fuels such as coal, etc. will be used in the furnace for production of power.

5.0 Key Pollution Concerns:

The key pollution concerns from the proposed expansion project will be stack emissions, fugitive emissions, wastewater generation, noise levels and solid waste generation. The project will provide pollution control equipment for restricting the pollution from stack emissions. Dust suppression system will be provided for controlling the fugitive emissions. Green belt will be developed and equipment will be maintained regularly. Zero liquid discharge will be implemented. Solid waste generated will be recycled/supplied to others for re-utilization, etc.

6.0 Baseline Environmental Studies:**Ambient Air Quality:**

The ambient air quality monitored at 8 locations for 12 weeks during March-May 2023. The ambient air quality levels were as follows:

PM₁₀ : 41.8 to 68.1 µg/m³

PM_{2.5} : 17.6 to 39.4 µg/m³

SO₂ : 10.0 to 25.1 µg/m³

NO_x : 14.9 to 31.5 µg/m³

The concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x were found within the National Ambient Air Quality Standards (NAAQ).

Ambient Noise Quality:

Noise levels measured at eight stations within the study area. Recorded noise levels in the study area of proposed project site, are in the range of 37.6 – 50.8(night time) to 38.2–55.7 dB (A) (day time) at all eight monitoring stations. Noise levels measured are within limit of 55dB(A) for Residential Area or 75 dB(A) for Industrial Area.

Surface & Ground Water Quality:

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 is within respective prescribed standards.

Soil Quality:

Eight Soil samples were collected analyzed for physico-chemical characteristics at selected locations in the study area. Texture of all Soil samples are found to be Silty Sand silty clay, Silty sand with gravel, as per Texture Classification. Colour of all Soil samples are found to be Gray to Black Cotton. pH values varied between 6.74 to 7.85. The NPK levels of soils in the study area found to be in good range.

Biologic Environment:

During the Ecology & Biodiversity survey total 157 species of plant have been observed. During Fauna study total 14 species of fish, 3 species of Amphibian, 16 species of Reptiles, 47 species of Birds & 16 species of Mammals have been reported from the discussion with local people. No endangered plant was observed during survey but vegetation is rich, many diversity of herbs and shrubs. Many medicinal plants were observed. Some quadrates have shown dominance of herb and shrub.

Land use:

The majority of the study area is occupied by agriculture land. Forest occupies 60% of the study area. Water bodies along with rivers/stream/canals occupied 1.99% of the study area.

Socio-Economic Environment:

Female to Male population found to be 1001 females to 1000 males. People expressed satisfaction about quality and quantity of drinking water. Communication facilities are very poor in the villages. Agriculture is the main occupation of the respondents. Rainfed crops are grown. Unemployment is a crucial problem.

7.0 Anticipated Impacts:**Impact on Ambient Air Quality:**

The major pollutants of air in a proposed plant are the particulate matters from the various stacks and fugitive emissions due to material handling. SO₂ also add to the pollutant level due to Boiler. Company is presently taking all measures to effectively control the air emissions and periodic monitoring of the stack emissions & ambient air quality is being done to monitor the pollutant concentrations. Same will be continued after the proposed expansion. During operation phase, air emissions both gaseous and fugitive will be on account of process emissions from stacks of Sponge Iron Plant and captive power plant as well as transportation of men and material. The impacts on air quality due to source of the air pollutant in the proposed facilities have been identified.

I. Stack Emission

Emissions released from the stack during operation phase will get dispersed in the atmosphere and finally reach the ground at a specified distance from the sources. From the proposed activities the possible environmental impact on air quality has been envisaged due to the following sources.

In this case the source emission is envisaged from various sources, 1 existing and 4 proposed Stacks of different heights are available for proper dispersion of gaseous pollutants (**Table 4.1**).

Mitigation Measures**Sponge Iron Plant**

- 1 No. of ESP is installed in the existing plant to control emissions from sponge iron plant.

- 100 nos. of water sprinklers are installed in the existing plant.
- Dust Suppression system and water sprinklers are installed to control Fugitive emission.
- Internal roads and working area is concreted
- 2 Nos. of ESP will be installed in the proposed plant.
- All the other pollution control practices stated above will be practiced in the proposed plant also.
- Adequate spares of critical components of dust and gas collection systems will be kept to ensure trouble - free operations and continuous compliance to emission norms.

Power Plant

- The waste gases from DRI plant will be fed in the Waste Heat Recovery Boiler wherein Electro Static Precipitator is installed and AFBC boiler is also installed with ESP.
- The fly ash is being utilized in cement plants.
- All internal roads are tarred.
- All belt conveyors are covered.

Fugitive Emission

Fugitive emissions are the air pollutants released in the air. Fugitive dust may be defined as “any solid particulate matter that becomes airborne by natural or man-made activities, excluding particulate matter emitted from an exhaust stack.

Sources of Fugitive Emissions& Mitigation Measures

In plant, the fugitive dust is emitted primarily from the following:

Transportation: Movement of heavy trucks/vehicles on the roads generates substantial Quantity of dust. This is due to the presence of dust over the road, which is carried away by wind.

Handling: Raw materials like Manganese ore Dolomite etc. when transferred within the premises by road, Wagon Tripler, etc. will lead to the fugitive dust emissions.

Material Transfer: Dust is/will be generated from all the transfer points of belt conveyors. This is/will be controlled by providing bag filters at material transfer points.

Fuel Handling: Fuel (coal) transportation causes dispersion of dust while handling, loading etc.

Storage of Raw Materials & Finished Product: Dust may be generated due to carryover by wind. However, to avoid this, the raw materials is/will be stored in covered shed.

Action plan to control Fugitive emissions

- All Internal roads are paved to prevent the fugitive dust emission due to vehicular movement.
- Speed limit in plant premises is in control.
- All transportation vehicles carry/ will carry a valid PUC (Pollution under Control) Certificate.
- Flow of vehicles is being/will be maintained.
- Proper traffic management is being/will be undertaken.
- Proper servicing & maintenance of vehicles is being/will be carried out.
- Proper dust masks are being/will be provided to workers coming in direct contact of fugitive emissions
- Adequate greenbelt has already been developed in the plant area. Greenbelt acts as a surface for settling of dust particles and thus reduces the concentration of particulate matter in air.
- Water Sprinkling is being /will be done to reduce fugitive emission in the plant and maintain the ambient air quality within CPCB standard.
- Adequate spares of critical components of dust and gas collection systems will be kept to ensure trouble - free operations and continuous compliance to emission norms.
- Ambient air quality is being/will be regularly monitored, so as to keep a check on the emissions of different pollutants.
- Fugitive emission sources are being /will identified and monitored at regular basis.

- **Interlocking system:** All Pollution control equipment have interlocking system. Whenever the they fails, there will be no production in the unit till the same is rectified.

Impact on Ambient Noise Quality:

During operation, the major noise generating sources are crushing mill, auto loading section, electric motors etc. These sources will be located far off from each other. Under any circumstances the noise level from each of these sources will not exceed 85 dB (A).

Noise levels generated in the project site will be confined to the noise generating plant units hence the impact of noise levels on surroundings will be insignificant

Mitigation Measures

The noise levels will not exceed the standards stipulated by Central Pollution Control Board at any point of time. The equipments will have inbuilt noise control devices. The measured noise level produced by any equipment will not exceed 85 dB(A) at a distance of 1.0-m from its boundary in any direction under any load condition. The noise produced in valves and piping associated with handling compressible and incompressible fluids will be attenuated to 75 dB(A) at a distance of 1.0 m from the source by the use of low noise trims, baffle plate silencers/line silencers, acoustic lagging (insulation), thick-walled pipe work as and where necessary. The general mitigation for the attenuation of the noise are given below:

- ❖ Encasement of noise generating equipment where otherwise noise cannot be controlled
- ❖ Providing noise proof cabins to operators where remote control for operating noise generating equipment is feasible.
- ❖ In all the design/installation precautions are taken as specified by the manufacturers with respect to noise control will be strictly adhered to;
- ❖ High noise generating sources will be insulated adequately by providing suitable enclosures;
- ❖ Use of lagging with attenuation properties on plant components / installation of

- sound attenuation panels around the equipment
- ❖ Other than the regular maintenance of the various equipment, ear plugs/muffs are recommended for the personnel working close to the noise generating units;
 - ❖ All the openings like covers, partitions will be designed properly
 - ❖ Inlet and outlet mufflers will be provided which are easy to design and construct.
 - ❖ All rotating items will be well lubricated and provided with enclosures as far as possible to reduce noise transmission. Extensive vibration monitoring system will be provided to check and reduce vibrations. Vibration isolators will be provided to reduce vibration and noise wherever possible;
 - ❖ The insulation provided for prevention of loss of heat and personnel safety will also act as noise reducers.

Impact on Water:

The total water requirement will be about 1988 KLD. Water requirement for the project will be sourced from MIDC.

Rajuri Steels & Alloys India Pvt. Ltd. is committed to ZERO Discharge of waste water. 140 KLD Industrial waste water from proposed project will be treated in Neutralization Pit and settling tank.

25 KLD of Domestic waste water due to proposed plant will be taken to STP. The treated water will be recycled for utilization in Green Belt Development.

Solid Waste Generation

The solid waste generation in the existing and proposed expansion activities are given in following table.

Solid Waste Management

S.N.	Waste	Quantity (TPA)	Proposed method of disposal
Sponge Iron Plant			
1.	Char & Dolochar	1,58,400	Used in captive power plant & sold to secondary users viz. nearby power plant
2.	ESP Dust	1,42,560	Sold to brick manufacturers and land filling.
Power Plant			
3.	Fly Ash	1,05,671	Sold to Brick manufacturers

Impact on Socio Economic Environment:

Rajuri Steels & Alloys India Pvt. Ltd. is providing direct employment 700 workers. The local persons have been given preference in employment as per the qualification and technical competencies. The project will also carry out developmental activities under CER and CSR.

8.0 Environmental Monitoring Program:

Rajuri Steels & Alloys India Pvt. Ltd. will carry out the Environmental Monitoring on regular basis. The methodologies adopted for environmental monitoring are in accordance with the CPCB guidelines.

The environmental monitoring points will be done considering the environmental impacts likely to occur due to the operation proposed project as the main scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action and adopt mitigation measures for protection of environment.

Air quality management plan:

The pollution control equipment like ESPs/bag filters/dust collectors will be provided for controlling the emissions from stack. Dust suppression system will be provided for controlling fugitive emissions. Green belt will be developed. Ambient air quality, stack emissions and fugitive emissions will be monitored regularly.

Noise quality management plan:

Padding/insulation will be provided at various locations to avoid noise due to various activity. Regular maintenance of the various equipment will be done. Ear plugs/muffs will be provided. Ambient and work zone noise levels will be monitored.

Solid and Hazardous Waste Management Plan:

The solid waste generated from the proposed plant will be managed as per the existing rules, authorization to be obtained from MPCB. Part of the solid waste will be reused and others will be supplied to different vendors for reusing.

Effluent Management Plan

The project will implement zero liquid discharge. Entire wastewater generated will be reused after suitable treatment. A packaged STP will be provided for the treatment of sewage. Treated sewage will be reused for plantation.

Storm Water Management Plan

RWH structures will be provided to harvest the rain water around the plant area and roof top. The collected rain water shall be utilized for plant uses to minimize the raw water requirement from the source. The surface water run-off from the main plant area would be led to a sump for settling and the over flow would be collected in the common water basin for further uses in the plant to optimize the raw water requirement of the plant.

Occupational Health & Safety Management Plan:

M/s. Rajuri Steels & Alloys India Pvt. Ltd. will provide all necessary provisions under Factory Act. In addition, a safety committee will be formed and manned by equal participants from Management and Workers. All personal protective equipment like Safety shoes, helmet & uniform will be issued to each employee based on the nature of job involved. Regular health check-up of all the workers at nearby Hospitals. First aid training shall be given to the employees.

Greenbelt Development Plan:

The plantation will be developed along the boundary, along roads and open areas. The green belt in the project will be developed over an area of 3.31 ha. i.e. 33% of the project area. The species will be selected in consultation with local forest department.

Socio-economic management plan:

M/s. Rajuri Steels & Alloys India Pvt. Ltd. would aid in the overall social and economic development of the region. The plant will give employment to about 700 nos. of people. In order to mitigate the adverse impacts likely to arise in the proposed project activities and also to minimize the apprehensions to the local people, it is necessary to formulate an affective EMP for smooth initiation and functioning of the project.

Project Cost and EMP Implementation Budget:

The estimated project cost for the proposed project is about Rs. 700 Cr. The project proposes to allocate a budget of Rs. 56.77 Crores for capital works under Environment Management and recurring cost is Rs. 2.65 Crores annual operation and maintenance.

CONCLUSION

It can be concluded that the proposed project activities will not have any major adverse effect on the surrounding environment. Further, due to proposed project, local people will get employment.