

Executive Summary

for

Expansion of Project by Installation of 2 x 4.5 MTPA Iron Ore Grinding Unit, 10 MTPA Thickening & Filtration Unit and 2 X 4 MTPA Iron Ore Pellet Plant.

at

MIDC Konsari, Village: Konsari, Tahsil: Chamorshi, Dist:
Gadchiroli, Maharashtra

Project Proponent



M/s. Lloyds Metals and Energy Limited

Environmental Consultant
Pollution and Ecology Control Services

Accreditation no.: NABET/EIA/2023/SA 0165 Valid upto 9th June 2023

EXECUTIVE SUMMARY

INTRODUCTION

The proposed expansion project attracts the provisions of EIA Notification, 2006 and its various amendments falling under Category “A” of Schedule, 3 (a) Metallurgical Industries (Ferrous and Non-ferrous). The project proponent made online application on 21st October 2022 along with Form-1, Pre-feasibility report and other documents for obtaining Terms of Reference (TORs) from concerned Regulatory Authority for undertaking detailed EIA study. The proposal was considered in 18th Meeting of EAC (Industry - I) held on 29th November 2022, the committee prescribed ToRs for EIA study for the proposed expansion of Project by Installation of 2 x 4.5 MTPA Iron Ore Grinding Unit, 10 MTPA Thickening & Filtration Unit and 2 x 4 MTPA Iron Ore Pellet Plant at MIDC Konsari, Village: Konsari, Tahsil: Chamorshi, Dist: Gadchiroli, Maharashtra ToRs vide letter No. J-11011/465/2022-IA-II (I) dated 27th January, 2023.

PROJECT DETAILS

Project at a Glance

Particulars	Description
Cost of the Project	Rs. 1900 Crores
Total Area	MIDC allotted 124 Acre (50.29 ha.) land for the existing (under construction) and proposed expansion plant to Lloyds Metals & Energy Limited. In addition to this 20.33 ha adjacent land has been identified and in acquisition process through MIDC for stacking of unsold cinder ash.
Water Requirement for proposed project	The total requirement of water including existing unit for the operation of plant is 6857 KLD (6600 KLD Proposed and 257 KLD Existing) and it will be supplied from Wainganga river. Water shall be conveyed to the plant site through pipeline (under construction) and will be stored in reservoir of capacity 45000 m ³ approx. If water coming water along with slurry, then excess treated water of 4008 KLD will be sent back to Wanganga river following

	the natural drainage adjacent to the plant and CPCB guidelines as per Schedule – VI for discharge of treated water in surface water body will be followed.
Power Requirement for proposed project	55 MW Maharashtra State Electricity Board
Man power requirement for proposed project	about 800 nos. direct and 2000 nos. indirect employment
No. of working days	320

PROCESS DESCRIPTION

Wet Grinding - Thickening – Slurry Storage & Filtration:

Iron ore fines (0-10mm) are transported in trucks to Plant and fines are unloaded using the truck tipplers. These fines are either stacked in the yard by a stacker cum reclaimer or directly go to Iron ore Bins located near the Ore grinding building by a set of conveyors. The reclaimed Iron ore fines from yard are also sent to grinding building through the same set of conveyors

The fines fed to storage bins. The Iron ore fines of size (0-10mm) and having surface moisture depending on the season (from 5-10%) are drawn from below the bins using weigh feeder and fed to a wet screen for separation of -1.0 mm size fines before being fed into ball mill.

The screen undersize -1 mm will be sent to ball mill discharge tank and screen oversize i.e., +1 mm material is conveyed to Ball mill, for grinding the material to -45 microns.

The entire grinding process will be done in the ball mill using chrome balls as grinding media and the iron ore is ground to 80% passing 325 mesh (0.045 mm) in the ball mills in closed circuit, with a hydro cyclone. The overflow from the hydro cyclone is sent to the Thickener and the underflow from the cyclone is fed back to the ball mill.

The slurry from the grinding building is fed to the thickener for recovering the water by the addition of flocculent and results in more overflow water clarity. Around 60 – 65% of water is recovered and recirculated in the process.

After the slurry achieves a concentration of 67% solids and 33% water at the bottom, then the underflow from the thickener will be pumped to the slurry tanks with an agitator.

Two Slurry tanks each of size 18 m dia and 20 m height are provided for each pellet plant. The slurry tanks will be provided with an agitator , to keep slurry under constant stirring and maintain concentration

Slurry from the tank is fed to the filter press for dewatering and product from the pressure filters , i.e Filter cake having moisture (Around 9.5 to 10 %) is collected by a set of conveyors and sent to designated bins in the mixing building.

When ever excess cake is produced and cannot be sent to mixing building , the same is diverted to a covered emergency filter cake storage shed by a set of conveyors and filter cake is stockpiled using a tripper conveyor. Another set of conveyors along with ground hoppers are provided to reclaim the filter cake and put back into the system

Palletisation Process

The iron ore fines of weathered hematite origin with significant amounts of aluminium-silicate clays will be delivered to the pellet plant in a mixture of materials from mines.

It is expected that the pellets produced by the plant will have a lime to silica ratio of 0.46.

Bentonite will be used as binder for green pellet formation. Limestone is used as the fluxing agent (Additive) and Limestone will be required to control the basicity of the pellets. Bentonite, limestone and Coke will be ground to pellet fineness in a separate dry grinding system.

Intensive mixers of the most advanced type will be provided for thorough mixing of ground ore, coke and bentonite. Balling discs in open circuit have been specified to form green pellets. Each balling disc will have a SDRS to separate 100 % over size material and part of undersize material. Later it would go to the double deck roller screen to separate under size material and make two layers of green pellets over the pellet cars.

The oversize and undersize green pellets will also collect all the spillages and recirculate to mixer/mixed material bins.

For firing the green pellets and the production of high quality product pellets, a Lurgi type straight traveling grate induration machine has been proposed.

Producer Gas Plant

Coal Gasification

Process Description

The Producer Gas required as fuel will be produced by coal gasification in producer gas plant. Coal contains combustible matter in form of fixed carbon as well as hydrocarbons which are the volatile matter present in the coal. When a mixture of air and steam is passed over hot bed of coal, chains of reactions take place depending on the temperature zone of the bed and resultant gas is a mixture of gas providing bulk of heating value to the gas.

Slurry Pipeline Details

LMEL is considering the development of a slurry pipeline to transport iron ore concentrate from Surjagarh iron ore mine to Konsari steel plant at Gadchiroli district of Maharashtra.

The concentrate pipeline will originate from Hedri, Village nearby Surjagarh Iron Ore Mines and then proceed to a terminal station located in Konsari with nominal throughput of 10 MTPA

System Design Summary

The system design includes the Surjagarh pump station with slurry pumps and tanks, a slurry pipeline and a Konsari terminal station with slurry tanks. The slurry pipeline designs. Supporting calculations, details and descriptions are discussed in Draft EIA report.

DESCRIPTION OF ENVIRONMENT

Air Environment

The ambient air quality monitored at 10 locations selected based on predominant wind direction, indicated the following ranges;

PM ₁₀	:	24.8 to 65.8 µg/m ³ .
PM _{2.5}	:	9.9 to 30.0 µg/m ³
SO ₂	:	5.3 to 16.6 µg/m ³
NO _x	:	10.9 to 22.2 µg/m ³
CO	:	0.3 to 0.6 mg/m ³

Industrial Area	PM ₁₀	PM _{2.5}	SO ₂	NO _x
Residential, Rural Area (CPCB Norms)	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³

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

Water Environment

A total 18 samples including eight surface & ten 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 (BIS 10500 – 2012) except high concentration of total coli form in surface water, which may be due to the human activities.

Noise Environment

Noise levels measured at ten 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.

Area Code	Category of Area	Limits in dB(A) Leq	
		Day time	Night time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone**	50	40

** Silence zone is defined as area up to 100 meters around premises of hospitals, educational institutions and courts. Use of vehicle horns, loud speakers and bursting of crackers are banned in these zones

Land Environment

Six Soil samples were collected analyzed for physico-chemical characteristics at selected locations in the study area to assess the existing soil conditions around the proposed project site. The relevant parameters show the following characteristics.

- a) Soil samples have pH values in the range of 7.19 to 7.81. The pH values are indicating nature of soil samples as neutral.

- b) Soil samples have conductivities between 21.84 to 56.38 $\mu\text{mho/cm}$.
- c) Soil samples have Organic Carbon between 0.72 to 1.2 %. These values represent average fertility of soils.
- d) Soil samples have concentration of Available Nitrogen values ranged between 107 to 152 kg/ha.
- e) Soil sample have concentration of Available Phosphorous values ranged between 6.4 to 8.42 kg/ha.
- f) Soil sample have concentration of Available Potassium values range between 215 to 445 kg/ha.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact on Air Quality

The major pollutants of air in a proposed plant will be the particulate matters from the process stacks and fugitive emissions due to material handling. Company will take all measures to effectively control the air emissions and periodic monitoring of the stack emissions & ambient air quality monitoring will be to monitor the pollutant concentration levels. During operation phase, air emissions both gaseous and fugitive will be on account of process emissions from stacks of Sponge Iron Plant (under construction) and Pellet Plant as well as transportation of men and raw materials. The impacts on air quality due to source of the air pollutant in the proposed facilities have been identified.

Sources of Emissions

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.

Raw Material Handling / Transport System

The possible pollutants are fugitive dust emissions from raw materials handling areas viz. loading / unloading, etc. Raw materials will be fed to hopper with the help of pay-loader / tipper.

Mitigation Measures

- The fumes from the proposed Pellet Plant will be extracted through the ESP followed by stack of 110 mt height.
- The flue gases generated from existing Sponge Iron project (under construction) will be re-used to generate electricity.
- At all the points, Dust Collectors/ dust suppression systems will be installed.
- Water sprinkling is being/will be done regularly to control the fugitive emissions.
- The waste gases from existing rotary kiln is fed to Waste Heat Recovery Boiler wherein Electro Static Precipitator will be installed with ESP.
- All internal roads will be tarred.
- All belt conveyors will be covered.
- All stacks will be equipped with continuous emission monitoring system (CEMS) along with remote calibration facility for gaseous parameters and in expansion also CEMS will be installed.
- Ambient air quality monitoring will be carried out on regular basis to ensure the compliance with National Ambient Air Quality Standards (NAAQS). The ambient air quality within the factory premises shall not exceed the standards (PM_{10} 100 $\mu\text{g}/\text{m}^3$, $PM_{2.5}$ 60 $\mu\text{g}/\text{m}^3$, SO_2 80 $\mu\text{g}/\text{m}^3$, NO_x 80 $\mu\text{g}/\text{m}^3$ and CO 04 $\mu\text{g}/\text{m}^3$) prescribed by CPCB.

Noise Levels

During operation, the major noise generating sources are 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 stipulated by Central Pollution Control Board at any point of time will not exceed the standards.

- By providing padding at various locations to avoid sharp noise due to vibration.

- 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.
- The insulation provided for prevention of loss of heat and personnel safety will also act as noise reducers.

Impact on Water

The total requirement of water including existing unit for the operation of plant is 6857 KLD (6600 KLD Proposed and 257 KLD Existing) and it will be supplied from Wainganga river (8 Km lifting point). Industrial Waste Water will be treated in settling tank and Domestic waste water will be taken to adequately designed STP. The treated water will be recycled for utilization in Green Belt Development.

During the operation of part II of Phase II incoming water along with slurry will be 657.38 cum/hr, after filtering unit with the losses of water along with filter cake, 140.10 cum/hr, the balance quantity will be 517.28 cum/hr (treated at water treatment plant). With the losses at water treatment plant (10.34 cum/hr), the water availability will be 507 cum/hr.

So, the net water requirement as makeup will be 340 cum/hr. 167 cum/hr will be excess treated water will be sent back to Wanganga river, following the natural drainage adjacent to the plant.

CPCB guidelines for the treated effluent discharge will be followed.

Solid Waste Generation

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

Solid Waste Management

Waste	Annual Qty Ton/ Annum	Disposal/ Use
ESP and Bag filter Dust	1,80,000	ESP & Bag filter dust generated from pellet plant will be pneumatically transferred to dust silo and it will be recycled in pellet manufacturing process.
Cinder Ash from PGP	208910	Shall be supplied to brick manufacturers and cement plants, back filling of nearby mine voids. If any discontinuation of supply, it will be stacked in company's own proposed land adjacent to project site.

Hazardous Waste Generation

Solid Waste	Quantity	Mitigation Measures
Used/Spent oil	15.0 KL/Annum (Approx.)	Will be Sold to authorized vendors
Tar	18462.6 TPA	Will be Used in Pellet Plant as secondary fuel/ Sold to authorized vendors

Impact on Socio-Economic Environment

The project would create certain impacts which could be beneficial as well as adverse. It is necessary to identify the extent of these impacts for further planning of control measures leading to mitigation of the adverse impact. The impacts due to project on parameters of human interest are assessed and given below.

Positive impacts

LMEL will provide about 800 nos. direct and 2000 nos. indirect employment for the Expansion Project. The local persons will be given preference in employment as per the qualification and technical competencies. 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.

ENVIRONMENTAL MONITORING PROGRAMME

Lloyds Metals and Energy Limited 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.

Ground Water Monitoring

Ground water quality & Waste water quality samples will be collected and analyzed by NABL accredited lab, ground water from different locations on quarterly basis and analyzed by NABL accredited lab. Reports will be submitted to MPCB, CPCB and MoEF.

Noise Environment

Noise levels will be monitored at various locations of the plant for day and night time as per the CPCB guidelines.

Fugitive emission

Monitoring of Ground level dust concentration/Fugitive emission along with gaseous pollutants viz SO₂, NO_x will be carried out periodically.

Necessary control measures will be adopted to keep the secondary fugitive emission within limits.

ADDITIONAL STUDIES

The additional studies as per the ToR issued by MoEF&CC are Public Consultation, Social Impact Assessment, Risk Assessment, & Disaster Management Plan.

PROJECT BENEFITS

With the establishment of the proposed expansion project employment potential will increase. The economic status of the people in the area will improve due to the proposed project. Top priority will be given to locals in employment.

CSR activity will be done as per the company law on the basis of the profit to the company. The CER activities by the company can be considerably beneficial for the health, education, upliftment of poor people, welfare of women & labors, assistance to the disabled people etc. These all together with the economic benefits of the project will result in further benefits in terms of the literacy level, primary and middle level education and on health facilities.

Based on Need of nearby villagers as per socioeconomic study following activities may be carried out

- 1) Training to the unemployed youth in nearby villages and establishment of Skill Development Center.
- 2) Improvement in physical infrastructure.
- 3) Arrangement of Health check-up camp.
- 4) Plantation in nearby villages.
- 5) Medical Facilities
- 6) Establishment of Garment Units

However, the project has already carried different CSR activities to improve the social and physical infrastructure of the local area. The PP have conducted community need assessment surveys around the project site to identify the areas which need development and improvement under CSR activities. Lloyds Metals & Energy Ltd. is having a full-fledged CSR team to oversee all the CSR activities implementation. So far, PP have spent Rs. 89.50 Lakhs under various heads such as infrastructural development, health facilities, sanitation, employment, women empowerment etc.

The main benefit of the project is a step towards the conservation of the mineral by utilizing Iron Ore fines. Due to this proposed project the main raw material of steel industries in the form of iron ore pellets will be readily available and further leads to development of allied industries in the vicinity.

FUTURE COMMUNITY DEVELOPMENT PLAN

In future various social welfare activities will be continued to improve the physical and social infrastructures of the local community. The company has proposed the adoption of three villages namely; Jairampur, Konsari and Muduli and planned to implement different community development programs like Educational facilities, improvement of Anganwadi centers, medical facilities, health camps, drinking water

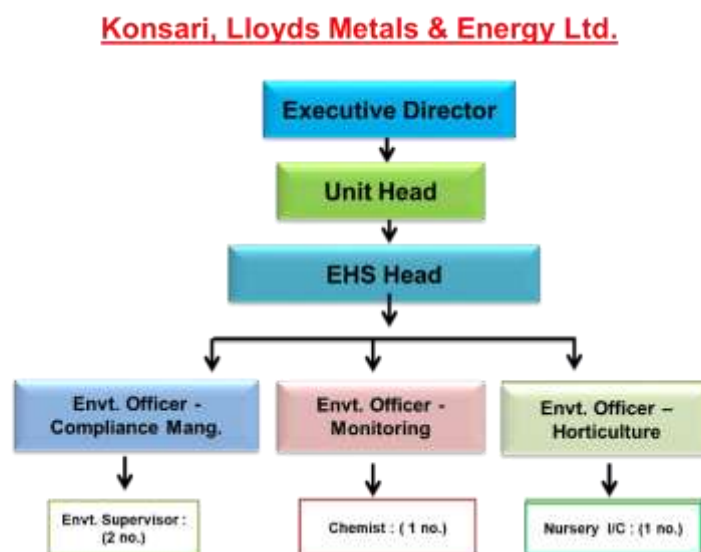
facilities through bore well and over head tanks, infrastructure developments i.e. PCC roads, SHG group development i.e. pickle making, mushroom cultivation, skill development and women empowerment i.e. Nursing training, driving training, tailoring & embroidery etc. The approx. cost of Rs. 25.48 Crores is proposed towards the implementation of activities in the vicinity of the plant premises.

ENVIRONMENTAL MANAGEMENT PLAN

A separate environmental management cell is established to implement the management plan. The unit is headed by a Unit Head having qualified EHS head with Environment Compliance, Monitoring & Horticulture officers. The team is ensuring and will extend the suitability, adequacy and effectiveness of the Environment Management Program. The functions of Environmental Management Cell are:

- Obtaining the statutory clearances from State Pollution Control Board.
- Environmental monitoring.
- Analysis of environmental data, preparations and submission of report to statutory authorities, & Corporate Office.
- To co-ordinate with statutory bodies, functional groups of the plant units & head office.
- Interactions with plant official for modification programme if any to improve pollution control devices / systems.
- Environmental Appraisal (Internal) and Environmental Audit.

Structure of Environment Management Cell is given below:



Air pollution

- There will be fugitive emission from proposed expansion plant which will be controlled by proper dust suppression system.
- Proper Dust Suppression is proposed in the premises, sprinkling on internal roads, regular checkup & maintenance of vehicles, it will be ensured that all trucks/dumper will be covered by Tarpaulin.
- Water spraying on coal hip, coal yard and raw material is being done to control the fugitive emissions
- Internal roads are being Tarred / Concreted with installation of water sprinklers to suppress dust due to transportation.

The facilities planned for controlling the air pollution are summarized in the table below

Sl.No.	Location/Shop	Facilities
1	Iron Ore Pelletization Plant	Various equipment such as fabric filters, ESP, etc. will be adopted to remove particulate matter from gas streams.
2	Raw Material Handling, Transfer Points, Junction Houses	- Water sprinkling - Bag filter will be provided at the transfer points of material at flux and bentonite, hearth layer separation bin, hearth layer silo.
3	Product Processing Building	Dust extraction system comprising of suction hood, duct, ESP, fan, stack etc.

Water pollution

Water pollution from the steel plant mainly comprises inorganic solids, either in suspension or in solution, like oil, grease, etc. Wastewater from the process will be treated in ETP and reused for dust suppression and green belt development.

The domestic wastewater generated will be treated in STP which will be reused for green belt development.

Noise Pollution

All noise generating equipment shall be housed within acoustic enclosure (wherever possible), to ensure attenuation of noise. The employees shall be trained in the mitigation measures and personal protection measures to be taken to prevent noise related health impacts. The general mitigation for the attenuation of the noise are given below:

- ❖ Providing padding at various locations to avoid sharp noise due to vibration.
- ❖ Other than the regular maintenance of the various equipment, ear plugs/muffs are recommended for the personnel working close to the noise generating units;
- ❖ 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.

Solid Waste Management

For the overall pellet plant, the pelletizing process practically generates no solid waste. A very small quantity of ESP dust from air pollution control equipment, which will be recycled for Pellet making. Hence there is no solid waste generation. Cinder Ash generated will be used for brick manufacturers, cement plants, back filling of nearby mine voids. If any discontinuation of supply, it will be stacked in company's own proposed land adjacent to project site.

1,80,000 TPA ESP & Bag filter dust generated from pellet plant will be pneumatically transferred to dust silo and it will be recycled in pellet manufacturing process. 208910 TPA Cinder Ash from PGP Shall be supplied to brick manufacturers, cement plants, back filling of nearby mine voids. If any discontinuation of supply, it will be stacked in company's own proposed land adjacent to project site. 18462.6 TPA Tar will be used in Pellet Plant/ Sold to authorized vendors

There is no generation of hazardous waste except used oil from machineries and transformers and Tar from coal gasifier. This waste oil will be used for secondary purpose and will be disposed through authorized vendors / recyclers.

GREEN BELT

The plantation helps to capture the fugitive emissions and attenuate the noise apart from improving the aesthetics quality of the region Avenue plantation within the plant and green belt development will be done. Avenue plantation within the plant and green belt development is done. Total area of the project is Out of 50. 29 ha. 33% (17.09 ha.) of total land will be developed as a green belt. Since the existing plant is in under construction, the detailed plan with plantation program will be carried before the upcoming monsoon.