

EXECUTIVE SUMMARY

For

Proposed Expansion of Existing Grinding and Screening unit of Manganese Ore with addition of Manufacturing of 30000 TPA of Manganese Oxide by Roasting furnace & 12000 TPA of Manganese Sulphate.

At

Plot No. A-12, A-13, A-14, A-15, Mohadi MIDC and Private Land Khasra No.137/1, Village- Wadegaon, Tehsil-Mohadi & Dist. Bhandara, Maharashtra.

By

Project Proponent

M/s. Daharwal's Minerals Private Limited

Environmental Consultant:

Pollution and Ecology Control Services

Near Dhantoli Police Station, Dhantoli, Nagpur

Email: pecsnagpur@gmail.com

Accreditation no.:NABET/EIA/25-28/RA0474

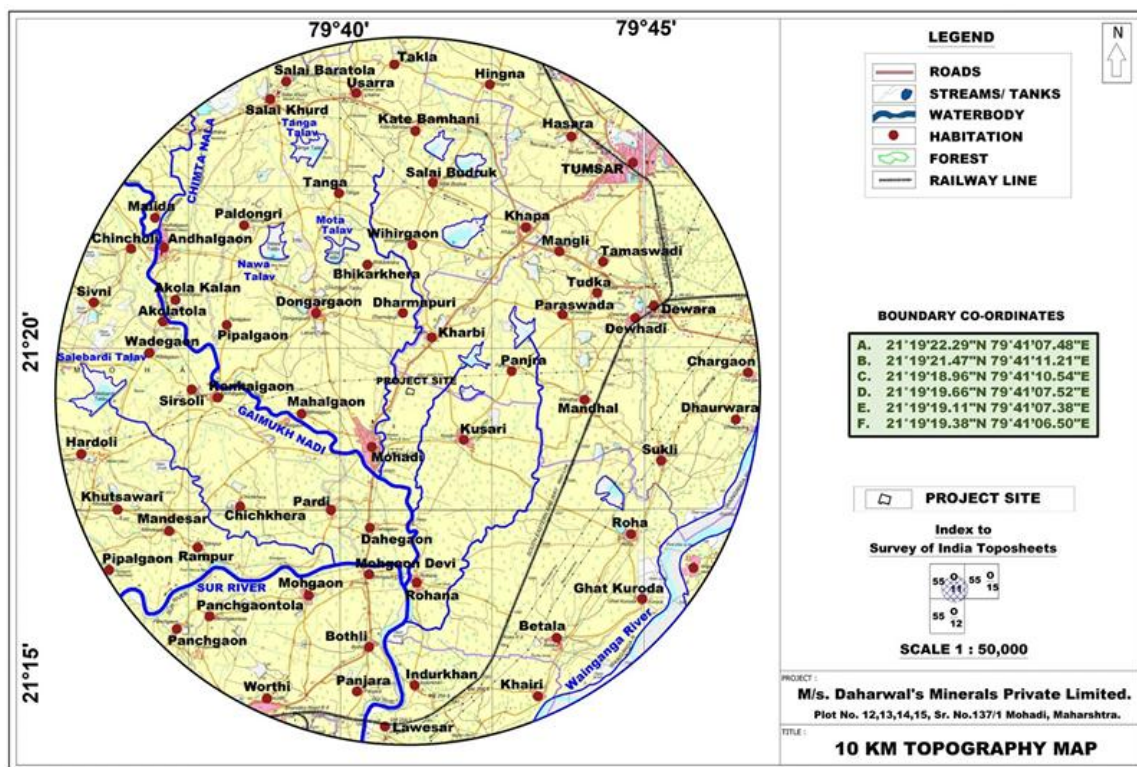
Valid upto 16th October 2028

EXECUTIVE SUMMARY

1.0 INTRODUCTION

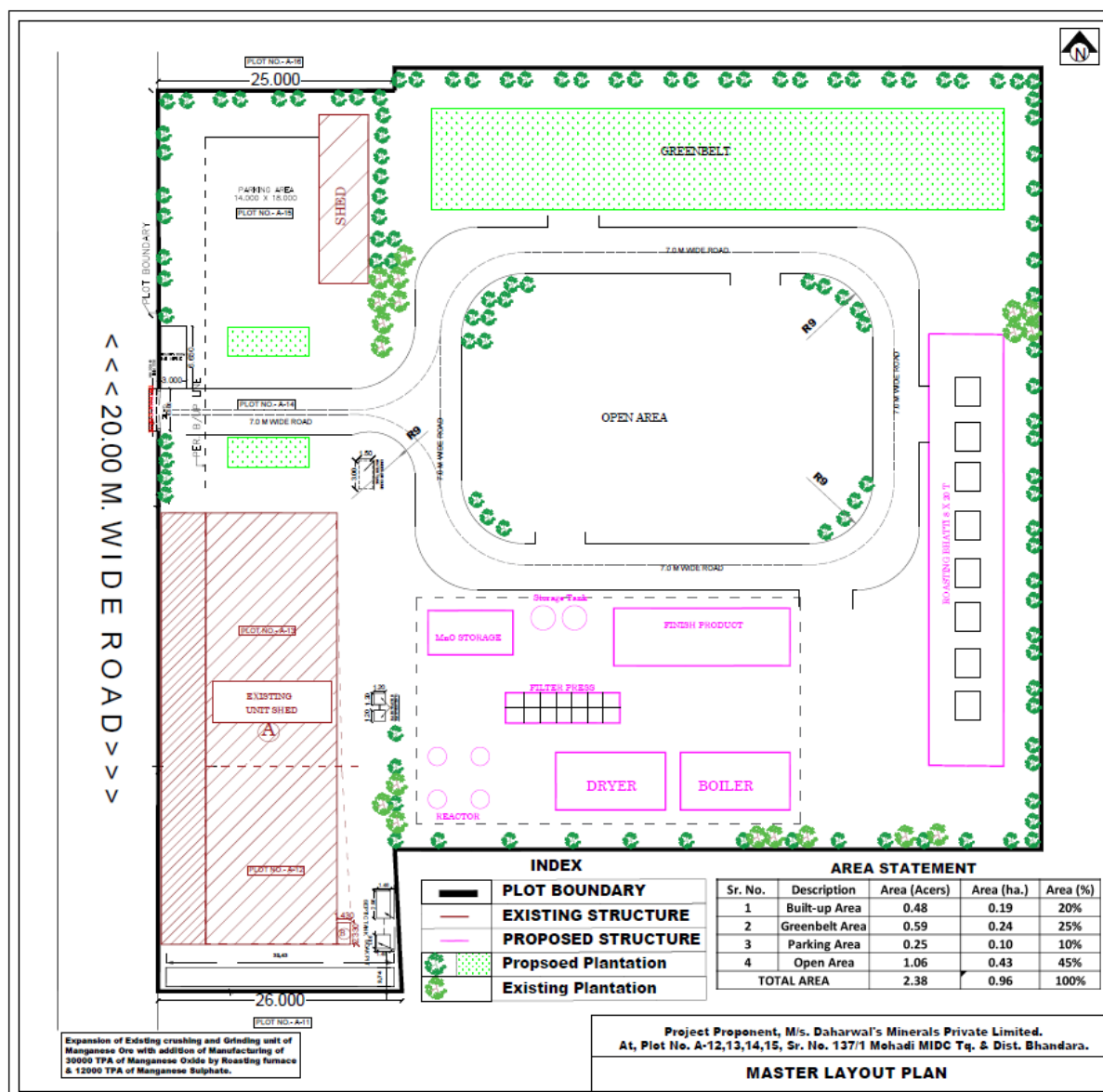
M/s. Daharwal's Minerals Private Limited has Proposed Expansion of Existing Grinding and Screening unit of Manganese Ore with addition of Manufacturing of 30,000 TPA of Manganese Oxide by Roasting furnace & 12,000 TPA of Manganese Sulphate at Plot No. A-12, A-13, A-14, A-15, Mohadi MIDC and Private Land Khasra No.137/1, Village-Wadegaon, Tehsil-Mohadi & Dist. Bhandara, Maharashtra. The project proponent acquired land of 9652 Sq. Mtrs. MIDC & Private land. The proposed project comes under Category "A" of Schedule, 3 (a) Metallurgical Industries (Ferrous and Non-ferrous) as per EIA Notification dated 14th September, 2006 & its amendments.

The project proponent has made online application vide proposal number IA/MH/IND1/543743/2026 dated 20/02/2026 along with Form-1, Pre-feasibility report and other documents for obtaining Terms of Reference (ToRs) for concerned Regulatory Authority for undertaking detailed EIA study. The committee prescribed Standard ToR vide letter No. IA-J-11011/414/2025-IA-II(Ind-I) dated on 01/03/2026.



Source: SOI Toposheet

Topographical Map (10 km Radius)



Plant Layout

2.0 PROJECT DETAILS

Sr. No.	Description	Details
1	Nature of the Company	M/s. Daharwal's Minerals Private Limited
2	Plant Location	Plot No. A-12, A-13, A-14, A-15, Mohadi MIDC and Private Land Khasra No.137/1, Village- Wadegaon, Tehsil-Mohadi & Dist. Bhandara, Maharashtra.
3	Configuration	Proposed Expansion of Existing Grinding and Screening unit of Manganese Ore with addition of Manufacturing of 30000 TPA of Manganese Oxide by Roasting furnace & 12000 TPA of Manganese Sulphate

5	Water requirement for the proposed project	Requirement: 50 KLD Source: MIDC
6	Power requirement & Source	Requirement: 500 KW Source: State Electricity Board
7	Land for proposed plant	9652 Sq. Mtrs (2352 sq. Mtrs.MIDC Land + 7300 sq. Mtrs Private land)
8	Total manpower after commissioning of the unit.	60 Nos.
9	Environmental Aspects	Air Environment: In the proposed project, the source emission is envisaged from furnace during roasting of manganese ore with coke and grinding of manganese ore. Two Stacks of 30 m height will be attached to 8 nos. of roasting Furnace/Bhatti attached to wet scrubbers followed by stack to control PM emission within stipulated norms. • Project Proponent shall provide dust suction system which will control fugitive emission due to material and raw material handling. • Dust suppression system will be provided in the form of water sprinklers. • Regular monitoring of air polluting concentrations, etc. Water: • Wastewater from Furnace Cooling and Jigging process will be collected in neutralization tank for pH adjustment and stored in settling tank which will be further recycle and reuse in process. • Domestic wastewater generated from sanitary activities shall be treated in a Sewage Treatment Plant (STP).
9	Estimated Cost of the project	16 crores

3.0 PROCESS DESCRIPTION

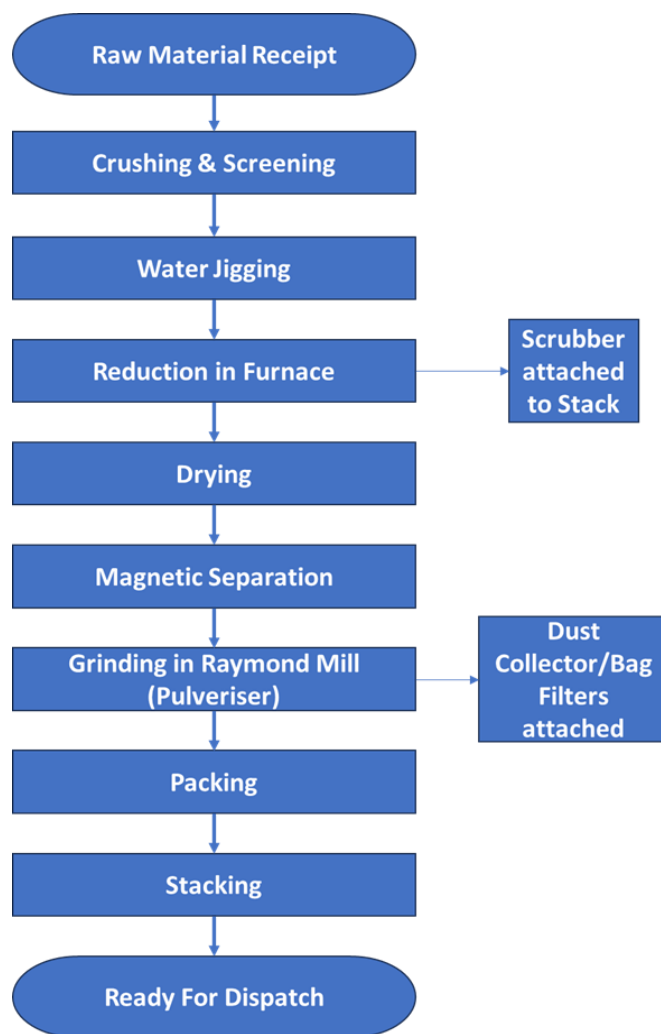
Manufacturing Process of Manganese Oxide

- After Manganese Ore receipt at the site, it is tested for the contents of various elements and then the material is crushed and then screened. After screening you get different sizes which are jigged in automatic water jigging machine.
- The material is then roasted in Hard Coke fired furnace (Bhatti) for 10 to 12 hours. After cooling the furnace, it is unloaded and then shifted for drying and magnetic separation.
- Then the material is dried (through wood fired hot plate driers) and after Magnetic Separation it is fed to grinding Machine, where it is powdered in grinding machine in the required mesh size.
- After grinding it is semi automatically packed in 25 kg/50 kg HDPE Bags and 1250 kg Jumbo bags and kept ready for dispatch.

Magnetic separation: Manganese ore is a weakly magnetic mineral, so the strong magnetic separation method can be used for effective separation of manganese ore. The magnetic field strength of the strong magnetic separation equipment must be higher than 14000 gauss. The difference is sorted to obtain manganese concentrate. Manganese ore magnetic separation is mainly suitable for manganese oxide ore beneficiation, generally referred to as an auxiliary beneficiation process.

Manufacturing Process

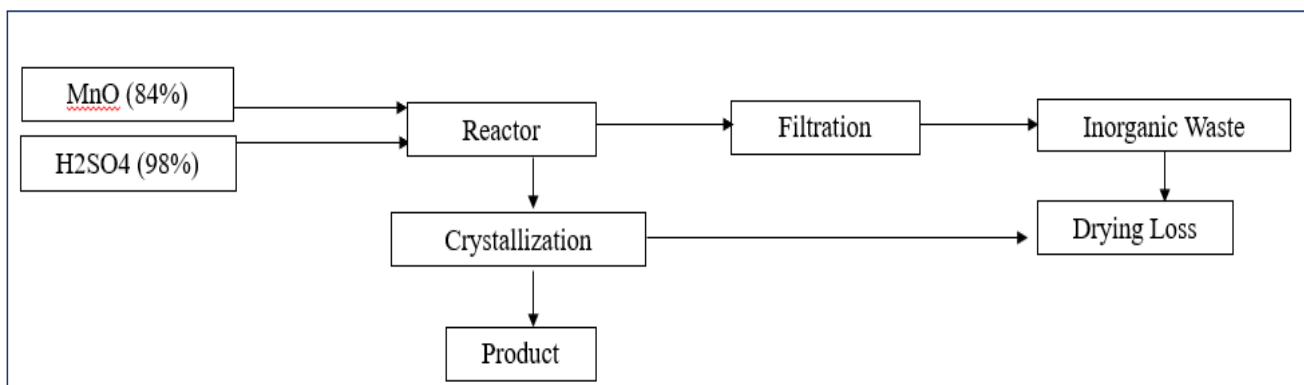
The proposed project is for Crushing, Screening, Jigging, roasting in Furnace, Drying and Grinding of Manganese Oxide. The flow diagram showing manufacturing process is given below:



Manufacturing Process of Manganese Oxide

Manufacturing Process of Manganese Sulphate

In Sulphuric acid, charge manganese oxide with vigorous stirring. After that filter the solution through filter press and allow to cool to get crystals.



Manufacturing Process of Manganese Sulphate

4.0 Description of Environment

The ambient air quality monitored at 08 locations selected based on predominant wind direction, indicated the following ranges;

PM₁₀ : 45.95 – 61.32 µg/m³

PM_{2.5} : 40.94 – 45.95 µg/m³

SO₂ : 28.96 – 31.80 µg/m³

NO_x : 37.68 – 42.89 µg/m³

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

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

Water Environment

A total of 16 samples including eight surface & eight ground water samples were collected and analyzed. The water samples were analyzed as per Standard Methods for Analysis of Water and Wastewater, American Public Health Association (APHA) Publication. The data indicates that the ground water as well as the surface water quality are below the stipulated standard for drinking water (BIS 10500 – 2012) except presence of coliform in surface water, which may be due to the human activities

Noise Environment

It has found that in the proposed plant, noise levels are in the range of 37.0 (night time) to 51.0 dB (A) (day time) at all eight stations. Maximum levels of noise have recorded in day hours which are natural as our most of activities have done in day hours.

Noise levels measured at all eight stations are well within limit of either 65.0 dB(A) for Residential Area or 75.0 dB(A) for Industrial Area as given in MoEF Gazette notification for National Ambient Noise Level Standard.

Land Environment

Eight Soil samples were collected analysed for physico-chemical characteristics at selected locations in the study area to assess the existing soil conditions around the proposed project site. The observation of soil characteristics is discussed parameter wise below;

- a) Texture of all soil samples are Silty Clay in Texture Classification.
- b) Colour of soil samples from agriculture and waste land is yellow, Brown and Red in Colour.
- c) The bulk density of soil samples is in the range of 1.28 to 1.44 gm/cc.
- d) Soil samples have pH values in the range of 7.44 to 7.72. The pH values are indicating nature of soil samples as neutral.
- e) Soil samples have conductivities between 296.4 to 354.1 mmhos/cm.
- f) Soil samples have Organic Matter between 1.28 to 1.55%. These values represent average fertility of soils.
- g) Soil samples have concentration of Available Nitrogen values ranged between 0.14 to 0.24 kg/ha.
- h) Soil sample have concentration of Available Phosphorous values ranged between 0.02 to 0.07 kg/ha.
- i) Soil sample have concentration of Available Potassium values range between 9.62 to 14.16 kg/ha.
- j) Soil sample have concentration of Available chlorides values range between 18.6 to 24.2 mg/kg.

5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Air Environment

In the Proposed expansion project, the source emission is envisaged from 8 nos. of furnace during roasting of manganese ore with coke and grinding of manganese ore. Each common stack of 30 m height will be attached to 4 roasting Furnaces/Bhatti.

The proposed project activity will result in air emissions from the following areas.

- a) Raw materials Handling and storage area
- b) Furnace (MnO)

c) Transportation

Mitigation Measures

a) Raw Material Handling & Storage

- Covered storage of manganese ore and coke.
- Water sprinkling/fogging at unloading and storage areas.
- Enclosed transfer points and regular road cleaning.
- Development of greenbelt around the plant.

b) Furnaces (MnO Production)

- Eight roasting furnaces connected to two 30 m high common stacks through wet scrubbers.
- Wet scrubbers provided to control particulate emissions.
- Grinding unit equipped with dust collectors and bag filters to maintain PM emissions below 30 mg/Nm³.
- Regular maintenance and monitoring of pollution control equipment.

c) Transportation

- Vehicles covered with tarpaulin during material transport.
- Regular water sprinkling on internal roads.
- Speed control and proper vehicle maintenance.
- Greenbelt development along roads and plant boundary.

6.0 Discussion on Modelling Results

The air dispersion modelling was carried out using site-specific micro-meteorological data to predict the incremental Ground Level Concentrations (GLCs) of PM₁₀, PM_{2.5}, SO₂ and NO_x due to the proposed project. The predicted maximum incremental concentrations were found to be **0.577 µg/m³ for PM₁₀, 0.348 µg/m³ for PM_{2.5}, 0.934 µg/m³ for SO₂ and 0.440 µg/m³ for NO_x**, occurring within **400–550 m in the north-eastern (NE) direction** from the proposed project site. The maximum impacts are

observed in the NE direction, consistent with the prevailing wind pattern during the study period.

The predicted incremental concentrations at all ambient air quality monitoring locations are very small compared to the existing baseline concentrations. The total post-project concentrations, obtained by superimposing the predicted incremental concentrations over the baseline values, indicate only marginal increases in pollutant levels.

The maximum post-project concentrations are:

- **PM₁₀**: 67.57 µg/m³ at Kharbi.
- **PM_{2.5}**: 28.35 µg/m³ at the Project Site.
- **SO₂**: 43.08 µg/m³ at Kharbi.
- **NO_x**: 44.47 µg/m³ at the Project .

The modelling results demonstrate that the proposed project will have only a negligible impact on the ambient air quality of the study area. The predicted post-project concentrations of all pollutants remain well within the prescribed National Ambient Air Quality Standards (NAAQS), even after considering the cumulative effect of the existing baseline concentrations. Therefore, with the installation and proper operation of the proposed air pollution control systems and adoption of good environmental management practices, the project is not expected to cause any significant adverse impact on the ambient air environment in the surrounding area.

Noise Pollution & Control Measures

During operational phase in the proposed project the major noise generating source is plant machinery. Under any circumstances the noise level from each of these sources will not exceed 75 dB (A). Noise levels generated in the project site will be confined within the proposed plant so, the impact noise level on surrounding will be insignificant.

Mitigation Measures

The noise levels stipulated by Central Pollution Control Board at any point of time will not exceed the standards.

- 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 rotating items will be well lubricated and provided with enclosures as far as possible to reduce noise transmission.

Impact on Water

The total water requirement for the proposed expansion project is 50 KLD. There will not be any impact on the water quality as the water system is in close loop used for cooling rolls in the process. Sewage of around 2.5 KLD will be generated from consumption for domestic purposes. The sewage generated will be treated in Packaged Type STP to bring the treated sewage parameters (BOD, COD, TSS, TN etc.) below the permissible limit which is stipulated by the Pollution Control Board. As no sewage will be discharged outside the plant premises, there will be no impact on the water quality of any surface water bodies of the area.

Mitigation Measure

Packaged Type STP

The packaged Sewage Treatment Plant (STP) is designed to treat domestic wastewater and ensure that the treated effluent meets the discharge/reuse standards prescribed by the State Pollution Control Board for parameters such as BOD, COD, TSS, Total Nitrogen (TN), and other applicable constituents. The STP is based on Moving Bed Biofilm Reactor (MBBR) technology, which provides efficient biological treatment, stable process performance, and consistent treated water quality suitable for reuse within the plant premises.

Process Description of Package STP

1. Preliminary Treatment

The influent sewage water passes through a bar screen to remove all the large objects like cans, rags, sticks, plastic packets etc. which are carried in the sewage stream.

2. Secondary Treatment

a. Anaerobic

The first stage of STP is an oxygen-depleted anaerobic zone in which the solids in raw sewage get settled while allowing the scum to float on the surface. It is a zone in which the settled sludge is stabilized by anaerobic digestion.

b. Anoxic

The sewage then enters the anoxic zone in which denitrification of the wastewater stream is accomplished by returning the activated sludge from the final sedimentation zone to the anoxic zone; wherein dissolved oxygen levels are maintained approximately as 0.2 to 0.5 mg/l. In the denitrification process, anoxic microbes break down to the existing nitrates, this results in the release of inert nitrogen gas into the atmosphere.

c. Aeration

The sewage from solid separation flows into the aeration zone. Air is diffused with the help of air blowers which encourages the growth of bacteria cultures in and around the floating plastic media added in the aeration zone. The MBBR media provides the extended surface area for the growth of microorganisms.

d. Sedimentation

The next step of treatment involves the sedimentation zone where organic waste is settled. The settled waste in the bottom of the tank is pumped back to the anoxic zone as a return sludge, which is done to ensure that the quality of effluent must pass the stipulated sewage parameters.

3. Tertiary Treatment

The secondary treated sewage is then passed through the Pressure Sand Filter and Activated Carbon Filter for the removal of suspended solids (TSS), colour, and odour. The treated water is then disinfected using sodium hypochlorite before it is reused.

Solid Waste Generation

The solid and hazardous waste generation and mitigation measures are given in **Table** below:

Sr. No.	Solid Waste	Proposed Quantity (TPA)	Disposal / Utilization
1.	Hard Coke Ash	800	Will be sold to brick manufacturers
2.	Firewood Ash	240	Will be sold to brick manufacturers
3.	Filter Cake (MnSO ₄)	360	Dried tailings (high SiO ₂ + Fe ₂ O ₃) will be Use as additive in cement or as clay replacement in bricks.

7.0 ENVIRONMENTAL MONITORING PROGRAMME

An Environmental Monitoring Programme will be implemented to ensure compliance with CPCB/SPCB standards and to assess the effectiveness of pollution control measures during the construction and operation phases of the project. Monitoring will be carried out for ambient air quality (PM₁₀, PM_{2.5}, SO₂, NO_x), stack emissions, water quality, noise levels, and soil quality at regular intervals as per prescribed norms.

A dedicated Environment Management Cell (EMC) will oversee the monitoring activities, maintain records, and ensure timely reporting to regulatory authorities. The programme will facilitate early detection of any environmental impacts and implementation of corrective measures, ensuring sustainable operation of the project.

8.0 ADDITIONAL STUDIES

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

9.0 PROJECT BENEFITS

CORPORATE ENVIRONMENT RESPONSIBILITY (CER)

Developmental activities should be based on community priority and with significant local contributions. Important areas identified by Social Impact Assessment and during Public hearings have been considered under CER activities. This approach will strengthen the groups, empower the members and local people will be benefited.

CER Budget

The proposed capital budget of Rs. 8.00 Lakhs will be spent on CER activities in 3 years.

- CER Budget will be finalized after the conduction of Public Hearing based on issues raised in Public Hearing.
- The amount will be spent in various activities as per the issues raised in public hearing
- After successful completion of CER activities more villages will be selected for CSR.
- CSR activity shall be regular feature till the life span of project.

10.0 ENVIRONMENTAL MANAGEMENT PLAN

The environmental management plan will be followed during construction and operation phases. Total cost of the proposed project is Rs.16 Crores. The project will allocate a EMP budget of Rs.1.28 Crores for capital works for environment protection. In addition to this, an amount of Rs.12 Lakh will be allocated annually.

GREEN BELT DEVELOPMENT

M/s Daharwal's Minerals Private Limited. has allocated about 0.24 ha. (25% of the total plant area) for the development of a greenbelt. This greenbelt/plantation surrounding the facility serve as a protective barrier between the plant and its surroundings. The establishment of this greenbelt aid in capturing fugitive emissions, reducing noise levels, thereby helping to maintain air quality and noise gut standards. Additionally, it will enhance the visual appeal of the surrounding environment.

CONCLUSION

The proposed project of Daharwal's Minerals Private Limited Proposed Expansion of Existing Grinding and Screening unit of Manganese Ore with addition of Manufacturing of 30,000 TPA of Manganese Oxide by Roasting furnace & 12,000 TPA of Manganese Sulphate at Plot No. A-12, A-13, A-14, A-15, Mohadi MIDC and Private Land Khasra No.137/1, Village- Wadegaon, Tehsil-Mohadi & Dist. Bhandara, Maharashtra, will contribute to industrial growth and socio-economic development of the region. The baseline environmental quality of the study area is within the prescribed standards and the anticipated environmental impacts can be effectively mitigated through the proposed pollution control systems and Environmental Management Plan (EMP). Adequate measures for air pollution control, wastewater management, solid waste handling, greenbelt development, and occupational health & safety will be implemented. With the adoption of necessary environmental safeguards and compliance with statutory requirements, the proposed project can be developed and operated in an environmentally sustainable manner.