

**EXECUTIVE SUMMARY OF
ENVIRONMENTAL IMPACT ASSESSMENT /
ENVIRONMENT MANAGEMENT PLAN
(As per Appendix III A of EIA Notification 2006)**

**PREPARED FOR SUBMISSION TO
CHHATTISGARH ENVIRONMENT CONSERVATION BOARD,
CHHATTISGARH**

CHHOTEDONGAR IRON ORE MINE

Near Village- Chhotedongar, Tehsil & District- Narayanpur, Chhattisgarh
(Project Area 192.25 Ha Forest Land)
Enhancement in production From 0.05 MTPA to 2.95 MTPA and
Proposed 1.0 MTPA Beneficiation Plant
(Project Category 'A')

Project Proponent

Jayaswal Neco Industries Ltd.

(Siltara Plant Division)
Siltara growth centre Siltara Raipur – 493 111 (CG.)



EIA Consultant

Srushti Seva Private Ltd.

Harihar Niwas, Agrasen Marg, Giripeth, Nagpur – Maharashtra, Pin:- 440010
NABET Accredited ; EIA Consultant Organization
Certificate No. NABET/EIA/1720/RA0105 Valid till 15/05/2020



April 2020



EXECUTIVE SUMMARY

1.0 INTRODUCTION

In order to meet the Iron Ore requirement of the Integrated Steel Plant (ISP) of Jayaswal Neco Industries Ltd (JNIL), the State Government of Chhattisgarh (the then State Government of Madhya Pradesh) had issued Letter of Intent (LOI) vide Letter No-3-52/98/12/2, Bhopal dated 21-05-1998 for grant of Mining Lease of Iron Ore over 192.25 Ha near Village Chhotedongar, Tahsil and District Narayanpur, State Chhattisgarh for a period of 30 years.

Mining Plan over an area of 192.25 Ha was approved by Indian Bureau of Mines (IBM) vide Letter No. BST/Fe/MPLN-738/NGP dated 02-04-2001 for maximum graded ore production of 50,000 Tonnes/Annum.

The State Government of Chhattisgarh granted Mining Lease to the Company over 192.25 Ha vide Letter No. F-3-52/98/12/2 dated 05-05-2005. The Mining Lease Agreement was executed between JNIL and the State Government of Chhattisgarh on 21-06-2005 for 30 years with effect from 21-06-2005 to 20-06-2035.

Since the Mining Lease is a captive lease for the Integrated Steel Plant of JNIL, as per the provisions of the Mines & Minerals (Development & Regulation) Amendment Act, 2015, the lease period is deemed to have been extended for a period of 50 years from the date of execution of lease deed.

Accordingly, the District Collector had issued Letter No. Khanij/Khanipatta-01/05/2016/1512, Narayanpur dated 27-06-2016 and the Mining Officer had issued Letter No. 1966/Khanij/KhaLip1/ML8/96/2016, Jagadapur dated 09-08-2016 for execution of the Supplementary Lease Agreement. The Supplementary Lease Agreement has been executed on 08-08-2017 extending the Mining Lease over Chhotedongar Iron Ore Deposit up to 20-06-2055.

Chhotedongar Iron Ore Mine is located near Village Chhotedongar of the Tahsil and District Narayanpur in Chhattisgarh. It is bounded by Latitude 19° 25' 40.356" N to 19° 27' 09.423" N and Longitude 81° 15' 37.175" E to 81° 17' 34.507" E and is included in Survey of India Toposheet No. 65E/7.

Chhotedongar Iron Ore Mine had commenced operations during Year 2015-16. The Mine was supposed to be made operational after construction of Approach Road. However, the Mine Development Activities could not continue due to Law & Order related issues in the area.

Now it is proposed to enhance the production capacity of the mine from 50,000 Tonnes Per Annum to 29,50,000 Tonnes Per Annum (2.95 MTPA). The Mine has been proposed to be worked by Mechanized Opencast Mining Methodology. The Lease shall remain the same i.e. 192.25 Ha. A 1 MTPA Mineral Beneficiation Plant shall also be installed for Iron Ore beneficiation within the lease area.





In accordance with the provisions of EIA Notification 2006 published by MoEF&CC vide Notification No. S.O. 1533 dated 14/09/2006, the Chhotedongar Iron Ore Mining Project is required to obtain Prior Environment Clearance from the Central Government for enhancement of the production as Category “A” Project.

JNIL entrusted the services of assessment of the environmental impacts arising due to the proposed Project to NABET Accredited EIA Consultant viz. M/s Srushti Seva Pvt. Limited (SrSPL), Nagpur to facilitate grant of Prior Environment Clearance for the Project.

Accordingly, an application was submitted in MoEF&CC for obtaining Environment Clearance for the Project. The Expert Appraisal Committee of MoEF&CC considered the Project for grant of Terms of Reference in its 8th Meeting held on 27-08-2019 and accorded TOR for the Project. The MoEF&CC issued the TOR vide its Letter No F.No.J-11015/62/2019-IA-II(M) dated 20th March, 2020.

SrSPL collected the Base Line Environmental Data at the Project Site from March 2019 to May 2019 pertaining to various environmental components including air, noise, water, land and biological components along with parameters of human interest which may be affected due to proposed Project.

Further, in accordance with the discussions had in the EAC Meeting held on 27-08-2019 and on request of the Project Proponent, SrSPL again undertook the data monitoring during the month of Oct. 2019.

This Draft Report has been prepared in accordance with the TOR issued by EAC of MoEF&CC for submission to Chhattisgarh State Pollution Control Board for undertaking the Public Hearing which is a part Environmental Clearance Process.

2.0 PROJECT DETAILS

Chhotedongar Iron Ore Mine is located near Village Chhotedongar of the Tahsil and District Narayanpur in Chhattisgarh. It is bounded by Latitude 19° 25' 40.356" N to 19° 27' 09.423" N and Longitude 81° 15' 37.175" E to 81° 17' 34.507" E and is included in Survey of India Toposheet No. 65 E/7.

The village Chhotedongar is situated at a distance of about 43 kms from Narayanpur on SH 5 which is connected to Barsur via Dhaudai. From Dhaudai there is diversion of road leading to Chhotedongar located at a distance of about 7 kms. Narayanpur is connected to Kondagaon located at a distance of about 47 kms. Kondagaon is situated at a distance of about 210 kms from Raipur on NH 43. The nearest railhead for the area is Bhanupratappur located at a distance of about 123 Km. The proposed Bhanupratappur-Bailadila Railway line would pass through Narayanpur located at about 50 Km from the deposit.

Chhotedongar Iron Ore Mine had commenced operations during Year 2015-16. The Mine was supposed to made operational after construction of Approach Road. However, the Mine Development Activities could not continue due to Law & Order related issues in the area. Collection of only Float Ore could be done during the period of three years. The relevant Statutory Clearances including Environment Clearance for the capacity of 0.05 MTPA are available with the Project Proponent.





However, the Project Proponent has proposed enhancement in the production capacity and accordingly, the Revised Mining Plan for Chhotedongar Mine envisaging mining of Iron Ore @ 2.95 MTPA during the period from 2020-21 to 2024-25 has been prepared and is being submitted to IBM under Rule 17(2) of MCR 2016 and Rule 23 of MCDR- 2017 for approval.

The Chhotedongar Iron Ore Mining Project envisages peak Iron Ore production of 2.95 MTPA in Project Area of 192.25 Ha by fully Mechanized Opencast Mining Technology by deploying HEMM & Allied Machinery like excavator, rock breaker, wagon drill of 100 mm diameter for blast hole drilling, air compressor, ripper dozer, hyva dumper, pay loader, truck mounted water sprinkler, weigh bridge, storage system of fuel oil with dispensing unit, Crushing & Screening Units with total capacity of 1000 TPH, Beneficiation Plant with capacity of 1 MTPA, hired trucks for transporting mineral, ambulance, DG sets, water pump etc

The Project envisages extraction of 13.20 Million Tonnes in the five years of the Proposal Period which spans from 2020-21 to 2024-25 with corresponding OB/Waste generation of 0.064 Million Cum.

The mineable mineral reserves of Ore Body-I as on 31-03-2019 are 25.36 Million Tonnes. Considering ROM production @ 2.95 MTPA during current Plan Period and onwards, the anticipated life of the mine will be about 8 years.

Mineral Reserve / Resource of entire 192.25 Ha Mining Lease has been estimated at about 77.52 Million Tonnes. Considering ROM production @ 2.95 MTPA the anticipated life of whole of the Mine will be about 27 Years.

The estimated Project Capital Cost is Rs. 8558.788 Lakhs (Rs. 85.59 Crores).

The Project shall provide direct employment to nearly 225 persons besides creating many indirect employment opportunities. The local persons shall be given preference in employment for mine as per their eligibility.

Necessary training shall be given to train the unemployed youths of the nearby villages. The indirect employment opportunities shall automatically be created with the re-opening of the Project in the region.

The Water Requirement of the Project is estimated to be 330 KL/Day. Out of this, 85 KL/Day of the water is required for Mines for Dust Suppression, Plantation & other activities and the 245 KL/Day for Beneficiation Plant.

Out of 330 KL/Day water requirement, 325 KL/Day water shall be sourced from Madin River and perennial Nalla locally named Kadam Nalla located at 3 Km away from the Mining Lease Area. It is proposed to deploy 4 numbers of Water Tankers each having 10 KL capacity for carrying water from River / Nalla to Mine Site for using it for various purposes.

The 5 KL/Day domestic water requirement shall be sourced from the Bore Well proposed to be sunk near foot hill region of the Mine Site. Potable water will be pumped through bore well and shall be supplied to the Mine Site through separate Water Tanker.





The Power Requirement based on rated peak capacity of 2.95 MTPA ROM Iron Ore shall be in the range of 5 MW.

Initially, it is proposed to deploy Diesel Generator Sets for meeting the power demand of the Project. Deployment of 6 DG Sets with 500 KVA capacity each is envisaged. Considering the Power Factor of 0.80, about 2.4 MW power shall be available through DG Sets.

In the later stage, the electricity connection shall be arranged at the Mine Site through the State Power Distribution Company for which establishment of Electrical Sub-Station(s) along with Transformers shall be done as per requirement.

The Project shall be requiring about 2956 Liters/Hour diesel for meeting the fuel requirement of the Heavy Earth Moving Machineries envisaged for removal of Overburden and mining of iron ore.

The Project envisages use of about 27,326 Kilograms of explosives per month for removal of Overburden.

There is no important river or stream passing through the Mining Lease Area. However, the area is drained by a system of seasonal nallas originating from the northern and southern slopes of the hill in a radial pattern.

The mined Iron Ore Lumps and beneficiated Iron Ore Fines suitable for use in the ISP shall be loaded into the trucks and shall be sent to the designated Weighbridge for weighing and for onward dispatch to the Integrated Steel Plant of the Company located at a distance of about 260 Kms from the Mine in Siltara Growth Centre near Raipur.

3.0 BASE LINE ENVIRONMENTAL STATUS

The Base Line Environmental quality data for various components of environment viz. Air, Noise, Water, Land and Socio-Economic were generated during March – May 2019 in the Study Area covering 10 Kms around Chhotedongar Iron Ore Mine. Other environmental data on Flora and Fauna, Land Use Pattern, Forest etc were also generated through field surveys and also collected from different State Government Departments.

Air Quality Monitoring was carried out at 6 Stations consisting 1 Sampling Station within the Core Zone (Project Area) and 5 Sampling Stations in the Buffer Zone (10 Kms around Core Zone). Parameters of twelve air pollutants viz. PM₁₀, PM_{2.5}, Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x), Ozone (O₃), Carbon Monoxide (CO) and Heavy Metals were monitored. These parameters were included for representing baseline status of ambient air quality within the Study Area.

The Noise Level was measured at nineteen stations with 15 minutes interval for 24 hrs duration at each station between 15th March to 25th March.

The Water Quality was assessed through ten water samples, ground water (six) and surface water (four) samples which were selected in 10 km buffer zone of Mine Lease area.





Results & Discussion:

On the basis of observations the parameter wise result of monitored parameters are discussed below compared with National Ambient Air Quality Standards.

Particulate Matter (PM₁₀): The maximum PM₁₀ concentration covering all the air quality monitoring stations i.e. A-1 to A-6 were observed in the range of 31.9-59.6 µg/m³. Almost all the stations have PM₁₀ concentrations less than half of 24 hours average permissible limit i.e. 100 µg/m³ as prescribed by MoEF &CC for industrial, residential, rural and other area.

Particulate Matter (PM_{2.5}): The maximum PM_{2.5} concentration covering all the air quality monitoring stations A-1 to A-6 were observed in the range of 17.3-34.6 µg/m³ as against the NAAQ Standards of MoEF & CC prescribed limit of 60 µg/m³ for industrial, residential, rural and other areas.

Sulphur Dioxide (SO₂): The maximum SO₂ concentrations covering all sampling stations A-1 to A-6 were in the range of 7.1-14.5 µg/m³. All monitored stations have SO₂ concentrations well within the stipulated (annual 24 hours) limit of 80 µg/m³ as prescribed for industrial, residential, rural and other areas under revised NAAQ Standards of MoEF & CC.

Oxides of Nitrogen (NO_x): The maximum NO_x concentrations covering all sampling stations A-1 to A-6 were observed in the range of 7.1-23.3 µg/m³. All monitored stations have NO_x concentrations well within the stipulated (annual 24 hours) limit of 80 µg/m³ as prescribed for industrial, residential, rural and other areas under NAAQ Standards of MoEF&CC.

Heavy Metals: Representative samples from all sampling stations were collected and analyzed for heavy metals i.e. Lead, Arsenic & Nickel. The concentrations of heavy metals were observed below detectable limit at all the stations.

Free Silica: A few samples of PM₁₀ were analyzed for free silica which was found to be always below 0.0001 percent.

In summary, the ambient air quality of Chhotedongar Iron Ore Mine area and its buffer zone showed that the concentrations of all monitored parameters were within the stipulated standards of MoEF&CC.

Noise Quality: The noise Levels in the Chhotedongar Iron Ore Mine lease buffer zone was observed in the range of 36.6 to 54.9 dB (A) which are below the prescribed regulatory limits.

Water Quality: In summary, overall quality of water samples indicated that the water quality of all the sources is satisfactory of the area are not polluted except the surface water samples which showed bacteriological contamination possibly from surface run-off.

Hydrogeology: Chhotedongar Iron Ore Mine falls under safe zone of Central Ground Water Authority (CGWA). The hydrogeological study concludes that there is no intersection of ground water during mining down to the depth of 75 m bgl. The maximum RL of mine bottom will be 808 m a msl whereas water table will be below 600 m a msl. Hence, there will not be any abstractions of ground water in this mine. Further, impact of surface and ground water due to iron ore mining will infer either natural or positive phenomena.





Soil Quality: A total of seven Samples were collected from 7 different locations representing waste land, agriculture land and forest land at 3 different depths viz. 0-30, 30-60 and 60-90 cm below the surface. The forest land soil is found to have sufficient nutrients. The agricultural land soils are also found suitable for cultivation of climatic crops and have good fertility.

Socio-Economics: Primary Socio economic survey on selected villages has been carried out and the details are provided in EIA/EMP. As per Census 2011 demographic characteristics of the study area are represented by a number of criteria, namely population composition, sex ratio, family structure, and age distribution pattern. Attempt has been made to compare the demographic features between the census data whenever corresponding data are available. The area selected for the study constitutes 31 inhabited villages.

The floral and faunal assemblage in the study area is also provided in the report.

National Park, Wildlife sanctuary, defense installation or sensitive area are not located within 15 km radius of the mine.

4.0 ANTICIPATED IMPACT

Impact on Climate: The proposed Project is not expected to have any major irreversible impact on the climatological features like temperature, rainfall, wind speed, humidity etc.

Impact on Topography: The mining operations will change the topography and the landscape of mineral bearing area and its immediate vicinity in the core zone only. As indicated the Revised Mining Plan, the mining shall be initiated from the 880m RL and shall extend upto 862m RL by taking horizontal slices. From 862m RL formation of benches shall be undertaken and at the end of the five years Proposal Period of 2020-21 to 2024-25 the mining shall reach up to 844m. The same pit shall be extended further upto the 808m RL during the Conceptual Period. Thus at the end of the Conceptual Period, there will a pit of about 54m at the hill top.

Impact on Drainage: Due to mining activities proposed on the hill top, high land, where rainwater is not being logged now will be prone to water logging. The run off rate will also reduce due to formation of 36m depth pit at the top. This will change the hydrological condition of the area especially the surface water flow following the natural drainage lines along the slopes.

Impact on Land Use: The proposed opencast iron ore mine as well as the Mineral Beneficiation Plant will result in change of the land use pattern of the Mining Lease Area. The land degradation is expected during mining activities of excavation, overburden dumps, crushing & screening, mineral beneficiation, tailings disposal etc.

Impact on Soil: Soil erosion may also get accelerated on areas where the overburden will be dumped. As there is neither a toxic effluent nor solid waste from the mines, quality of soil is not expected to be adversely affected. Impact on soil will be localized i.e. around the mine site. Likelihood of any adverse impact from soil erosion and disturbance in quality is remote.

Impact on Air Quality due to Mining: In order to estimate the ground level concentrations due to the emission from the proposed increase in production, EPA approved Industrial Source Complex AERMOD View Model has been employed.





Predicted 24 hourly Ground Level Incremental Concentrations of PM₁₀ & PM_{2.5} are estimated to be 2.5 ug/m³ and 1.2 ug/m³ respectively. This prediction is based on various mining operations and site specific meteorological data in worst scenario.

Impact on Air Quality due to Transportation: The maximum ground level concentration due to proposed transport is estimated to be increased by 9.78 ug/m³. The proposed road for the transport of iron from the mine face to end user passes through forest land and specific permission for the transport of iron ore from the forest land has been obtained. There is no village located enroute and there is no significant habitation or agriculture land is located.

Impact on Noise Quality: From the Noise Modelling results, it is observed that the maximum resultant noise levels near the mine lease boundary will be about 65 dB(A). The noise levels will be further reduced and the predicted resultant noise levels at the nearest village habitation i.e. Madamnar village will be below 40 dB(A).

Impact due to Ground Vibrations & Fly Rocks: The proposed maximum charge per blast of 525 kg will result in ground vibrations well below the minimum Peak Particle Velocity limit of 5 mm/s for domestic houses located in Madamnar village. However, since the mine lease area is located on top of a hill, blasting near the boundary of mine lease area may cause breakage of parting left in the form of safety zone. This may result in rolling of loose boulders along the hill slope causing damage to trees and animals down the hill. So, protective measures need to be adopted while blasting on the top benches near boundary of the mine lease area. Apart from this, additional control measures needs to be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

Impact on Water Regime: It is expected that surface water runoff will decrease and ground water runoff (base flow) will increase in Madin Nadi Sub-Basin in which Chhotedongar Mine is located. The mine operation will be above water table as such there is no shallow aquifer exists in the core zone. Accordingly there will not be any adverse impact on ground water. It is expected that suspended particle in surface water during rainy season may increase. The suspended solids generated during the mining operations pose major problem for contamination of surface water.

Impact on Flora & Fauna: Due to mining and associated activities, fugitive dust in the atmosphere may deposit on different parts of the plants in the surrounding area leading to the destruction of flora. During operation phase, various vehicle/ machinery movement and blasting activities would create excessive noise that may force the movement of animals from nearby forest patches. There is no Wildlife Sanctuary or National Park in 15 Km radius of the Chhotedongar Iron Ore Mining Project. There is no reported migratory path of wildlife or bird species of threatened or protected species. The transport route of the mineral also lies away from these areas.

Impact on Socio-Economic Aspects: The project is likely to create positive impacts due to creation of employment opportunities both direct and indirect. Generation of employment opportunities is important as the project region is devoid of any industrial activities and agriculture is the only main source of income.





5.0 REHABILITATION & RESETTLEMENT

Since the entire 192.25 Ha leasehold area of the Chhotedongar Deposit is forest land, the question of R & R does not arise in this Project. However, though the Action Plan against R & R is not required, a specific Action Plan towards the Project Affected Persons (PAPs) has been proposed in EIA/EMP.

6.0 CORPORATE SOCIAL RESPONSIBILITY (CSR)

JNIL proposes to undertake a number of activities under the Corporate Social Responsibility Initiative during the operation of Chhotedongar Iron Ore Mining Project. The capital CSR Budget has been worked out as per the expressed felt needs of villagers during Rapid Rural Appraisal. The proposed total capital budget is to the extent **Rs. 30.85 Lakhs** (Rupees Thirty Lakhs & Eighty five Thousand Only) and will be spent in core and buffer villages of study area during the first five years.

7.0 CORPORATE ENVIRONMENT RESPONSIBILITY (CER)

In addition to the CSR, JNIL proposes to undertake a number of activities as one time measure under the Corporate Environment Responsibility Initiative during the operation of Chhotedongar Iron Ore Mining Project. A budgetary provision of Rs. 85.58 Lakhs is proposed to be made for implementing the CER Activities.

8.0 ENVIRONMENTAL MITIGATION MEASURES

Mitigation Measures at the source level and an overall Management Plan at the Study Area Level are elicited so as to improve the supportive capacity of the Study Area and also to preserve the assimilative capacity of the receiving bodies. The Report provides detailed Action Plan for each pollutant viz. Air, Water, Noise, Socio-Economic, Land Use and Plantation Activities.

The proposed Mitigative Measures to be adopted during operation of the Chhotedongar Iron Ore Mining Project are briefly described below under various head:

8.1 Air Pollution Management:

- ⇒ All construction equipment will be maintained properly.
- ⇒ Provision of regular water sprinkling at excavation & levelling sites and temporary soil disposal sites to minimize dust generation.
- ⇒ Development of green belt around the Beneficiation plant boundary, in advance of the plant construction activities.
- ⇒ All the vehicles carrying construction material will be covered with tarpaulin.
- ⇒ Covered storage and/or periodic water sprinkling, as applicable, on fine material used for construction.
- ⇒ Only “Pollution under Control (PUC)” certified vehicles will be deployed at site.
- ⇒ Strengthening of approach roads to the plant site and regular water sprinkling on it to minimize dust emissions during material transport.
- ⇒ Use of sharp teeth shovels;
- ⇒ Wet drilling;
- ⇒ Water sprinkling on haul roads within ML area;





- ⇒ Water sprinkling on transport road by truck mounted mist spray;
- ⇒ Controlled blasting;
- ⇒ Optimize charge per hole and charge per round;
- ⇒ Afforestation of completely mined out area, with minimum gap between excavation and afforestation;
- ⇒ Enclosures with ventilation and exhaust system at crushing plant;
- ⇒ Regular maintenance of vehicles and machinery;
- ⇒ Cabins for shovel and dumpers and dust masks to workmen;
- ⇒ Good housekeeping.
- ⇒ Prohibition on overloading and over-speeding.
- ⇒ Thick plantation along both the sides of transport road connecting village road.
- ⇒ Periodic maintenance of village road used for mineral transport
- ⇒ Transportation of processed ore and tailings through trucks covered with tarpaulin.

8.2 Water Pollution Management:

- ⇒ Water channels/drains carrying the rain water from the mine will be provided with baffles and settling pits to arrest the suspended solids;
- ⇒ Worked out slopes will be stabilized by planting appropriate shrub/grass species on the slopes. This will help in preventing wash-off of dump from these slopes;
- ⇒ The mine water will be regularly tested and appropriate measures will be taken in case any element is found exceeding the limits prescribed by CPCB; and
- ⇒ Seepage water and rain water collected in the open pits will be pumped out and discharged into natural drainage system after de-silting in settling ponds.
- ⇒ The probable cause of surface water pollution in the proposed mining area will be soil erosion and wash off from the waste dumps and mineral stock yards in monsoon season. The run-off water during monsoon season flows through natural water courses into nallas. The surface water entering into the mine during rainy season will be diverted through suitable drains to reduce the wash off of soil. The general drainage direction in the working area will be towards the mine sump, for collection of water. The water will be utilized for greenbelt development, mining operation, which will reduce the fresh water requirement.
- ⇒ Adequate measures to protect the mine during rains will be taken by providing garland drains around the mine excavations and also providing suitable drainage gradients for mine benches. Sumps of adequate capacity will be provided on the quarry floor.

8.3 Noise & Vibration Management:

- ⇒ Secondary blasting will be minimized to the extent possible;
- ⇒ Systematic blasting with proper spacing, burden and stemming will be carried out;
- ⇒ Minimum quantity of detonating fuse will be consumed by using non-electrical initiation system;
- ⇒ Blasting will be carried out during favorable atmospheric conditions and also when human activities are at their minimum;
- ⇒ Prime movers/diesel engines will be properly maintained;
- ⇒ A buffer barrier of tree belt will be provided in phased manner along the periphery of the mine to attenuate noise;





- ⇒ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM;(HEMM) producing high levels of noise will be made; and
- ⇒ Exposure time of workers to the higher noise levels would be minimized.
- ⇒ At transfer points free fall material will be minimized and suitable lining material will be provided
- ⇒ Isolation/enclosure of noisy machines/equipment, wherever possible.
- ⇒ Reducing idling time of machines/equipments.
- ⇒ Provision of enclosures, silencers, etc to the possible extent to control noise propagation.
- ⇒ Use of adequate silencers and practising speed limit for material transport vehicles

8.4 Solid Waste Management:

- ⇒ Stabilization of overburden dumps;
- ⇒ Construction of retaining boulder walls;
- ⇒ Construction of garland drains for drainage;
- ⇒ Provision of jute mesh to facilitate grass or vegetative growth on slopes;
- ⇒ Provision of good soil mixed with manure and subsequent watering for growth of grass for anchorage on slopes. Plantation mixed with indigenous and fast growing plant species;
- ⇒ Degraded area will be reclaimed and rehabilitated in a phased manner with local plant species;
- ⇒ Transport roads will be planted with trees on either side; and
- ⇒ The beneficiation plant tailings will be temporarily dumped in the designated place towards east of the working quarry from where it shall be sold out to cement/ bricks /tiles industry as per requirement.

However, there is an option in Chhattisgarh State to dispose off generated tailings waste for filling of old pits, abandoned quarry and for landscaping outside the lease area or to be given to the villagers with prior permission from State Govt. after paying royalty as prescribed. It is proposed to utilize these tailings, for brick manufacture, at a later stage of the project.

8.5 Top Soil Management:

- ⇒ Garland drains will be provided around the mine wherever required to arrest any soil from the mine area being carried away by the rain water;
- ⇒ Toe drains with suitable baffles will be provided all along the toe of the soil dumps to arrest any soil from the dump slopes being carried away by the rain water;
- ⇒ Special local stone paved chutes and channels will be provided, wherever required, to allow controlled descent of water, especially from top of the slope along the foothills;
- ⇒ Bench levels will be provided with water gradient against the general pit slope, to decrease the speed of storm water and prevent its uncontrolled descent.
- ⇒ Gully formations, if any, on sides of the benches will be provided with check dams of local stone or sand filled bags. The inactive slopes will be planted with bushes, grass, shrubs and trees after applying top soil to prevent soil erosion;
- ⇒ Loose material slopes will be covered by plantation by making contour trenches at 2 m interval to check soil erosion both due to wind and rain;





- ⇒ Retaining walls (concrete or local stone) will be constructed, around the stockpile or wherever required, to support the benches or any loose material as well as to arrest sliding of loose debris.
- ⇒ Regular addition of manure and vegetative mulches in soil.

8.6 Plantation:

M/s JNIL proposes to develop about 21 Ha (including safety & reclaimed area and OB dump) of land with 42000 saplings under plantation and greenbelt development programme in progressive manner during the life of the mine.

9.0 IMPLEMENTATION OF EMP & ITS MONITORING

In order to mitigate the anticipated impacts of the Iron Ore Mining & Allied Activities, implementation and monitoring of the suggested EMP is an important aspect of the Environmental Impact Assessment / Environment Management Plan Document.

JNIL proposes a full-fledged Environment Department consisting of two separate Cells viz. EMP Implementation Cell and Environment Monitoring Cell to review, implement, supervise and monitor the environmental related issues. As regards to air quality monitoring two continuous ambient air monitoring stations will be installed one in the core zone and one in the buffer zone. The water quality, noise level, vibration monitoring, ground water level (using 10 piezometers) will be carried out and the records will be submitted to the competent authorities besides uploading the same on JNIL website.

The Mitigation Measures suggested in the Report shall be implemented so as to reduce the impact on environment due to operations of the proposed mining activities.

In order to facilitate easy implementation, mitigation measures are phased as per the priority implementation. A separate budgetary allocation of the funds shall be made for the Environmental Protection Measures. The monitoring of the pollution to know the effectiveness of the applied control measures shall be carried out at regular interval.

JNIL consider protection of workers' health and well- being as their prime concern and responsibility. The company accordingly proposes to adopt certain measures for providing proper occupational health services which will ensure optimal physical and mental health of employees & workers.

The Capital Budget for Environmental Protection Measure is estimated to be Rs. 570.00 Lakhs and the Recurring Budget is estimated to be Rs. 65.00 Lakhs.





10.0 PROJECT BENEFITS

The primary benefits to the Government (State as well as Central) from any mining project are generation of additional revenues in terms of receipt of royalties and other statutory levies against the mineral mined. The secondary benefits to the Government are socio-political benefits in terms of enhanced economic activities and employment opportunities in the Project Area resulting into overall development of the area.

The tentatively economic benefits that would accrue to the Government from the Chhotedongar Iron Ore Mining Project during the entire mine life of 27 years are expected to be around Rs. 398093 Lakhs.

The Project shall have positive impacts in the Project Area and surrounding villages in terms of development of infrastructure facilities like roads and communication, transport, schools as well as basic amenities viz. drinking water, sanitation, hospitals, health care, and overall socio economic development.

The Company shall initiate necessary steps to create above facilities which will ultimately help in uplifting the living standards of local communities.

The direct requirement of manpower for the Project has been assessed at 225. Considering the number of persons per family as four, this employment potential of 225 persons translates to direct benefit of the Project to about 900 individuals.

The Project shall offer creation of Secondary & Tertiary Business Opportunities for the local people in the form of Service Industry resulting in development of ancillary & allied services like Security, Canteen & Mess, Transport, Civil Repair & Maintenance, HEMM Repair and Maintenance etc.

JNIL is operating its Integrated Steel Plant (ISP) in the State of Chhattisgarh. This ISP needs Iron Ore. The Chhotedongar Project shall be meeting about 2.95 MTPA Iron Ore requirement of the ISP. The Project shall be providing consistent supply of iron ore of improved quality at lower price to the ISP of JNIL.

