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ENVIRONMENTAL MANAGEMENT PLAN

INTRODUCTION

The mine development in the ML area needs to be intertwined with judicious utilization of natural resources within the limits of permissible assimilative capacity. The assimilative capacity of the study area is the maximum amount of pollution load that can be discharged in the environment without affecting the designated use and is governed by dilution, dispersion and removal due to natural physicochemical and biological processes.

The environmental management must be integrated into the process of mine planning so that ecological balance of the area is maintained and adverse affects are minimized. An Environmental Management Plan (EMP) is a site specific plan developed to ensure that the project is implemented in an environmentally sustainable manner. An effective EMP ensures the application of best practice environment management to a project. The purpose of an EMP is to:

i. Assists proponent in the preparation of an effective and user friendly EMP.

ii. Improve the contribution that an EMP can make to the effectiveness of the environmental management process.

iii. Ensure a minimum standard and consistent approach to the preparation of EMP's.

iv. Ensure that the commitments made as part of the project's EIA are implemented throughout the project life.

v. Ensure that environment management details is captured and documented at all stages of a project.

The design of EMP for operational phase has been aimed to achieve the following objectives:

i. To ensure adoption of state of art technological environmental control measures and implementing them satisfactorily.

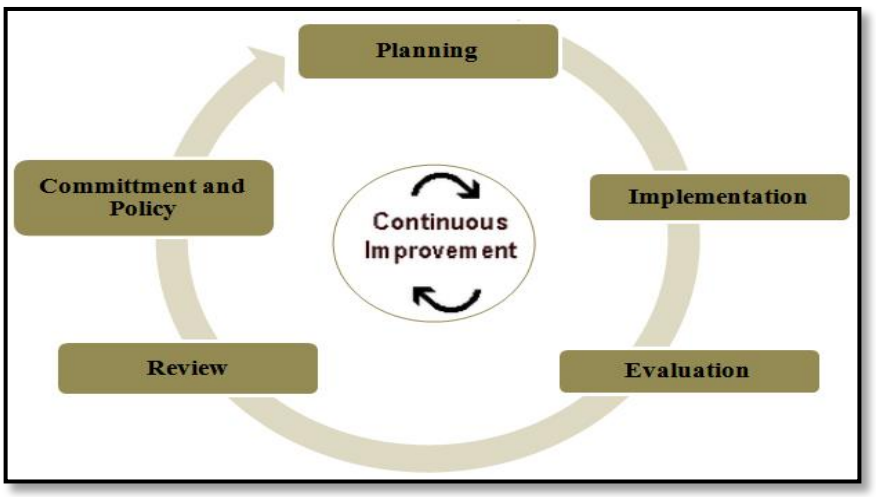
ii. Effectiveness of mitigatory measures in mitigation of impacts.

iii. Description of monitoring program of the surrounding environment.

iv. Institution arrangements to monitor effectively and take suitable corrective steps for implementation of proper EMP.

v. An Environmental Management Cell (EMC) should be set up to take care of all environment aspects and to maintain environmental quality in the project area.

The detailed hierarchy and responsibilities of Environment Management Cell is as.



Flow Chart of EMP

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LAND USE PATTERN

Deviation from planned mining procedure can lead to soil erosion/cutting and thereby degradation of land, causing loss of properties and degradation surrounding of landscape. Thus for environmental friendly major mining the following control/abatement measures will be followed:

i. Mineral will be mined out in from the proposed lease area and sufficient safety barrier should be taken during mining.
ii. Land use plan of mine lease area should be prepared to encompass pre-operational, operational and post operation phases and submitted.

AIR ENVIRONMENT MANAGEMENT

Mitigatemeasures suggested for air emission control will be based on the baseline ambient air quality monitoring data. From the point of view of maintenance of an acceptable ambient air quality in the region, it is desirable that the air quality needs to be monitored on a regular basis to check it vis-à-vis the NAAQS prescribed by MoEF&CC and in cases of non-compliance, appropriate mitigative measures will be adopted. In order to minimize impacts of mining on air and to maintain it within the prescribed limits of CPCB/ SPCB, an Environmental Management Plan (EMP) has been prepared. This will help in resolving all environmental and ecological issues likely to cause due to mining in the area.

During the course of mining no toxic substances are released into the atmosphere as such there seems to be no potential threat to health of human beings.In the mining activities, thesource of gaseous emissions isengines of vehicles, Operation of mining machinery/ loading operations, drilling and blasting. The reasons may be quality of fuel, improper operation of the engine, etc; proper maintenance of engines will improve combustion process and brings reduction in pollution.

Control of Gaseous Pollution

In mining activities, the only source of gaseous emissions is from transportation of mineral, hauling & spillage of waste during loading & unloading handling, air pollution from unpaved roads & surface. There is no drilling and blasting proposed.

Control of Dust Pollution

The main pollutant in air is PM_{10}, which is generated due to various mining activities. However to reduce the impact of dust pollution the following steps have been taken during various mining activities.

a) During loading operation

i) Latest loading equipment like hydraulic excavators will be used with dumpers. This reduces the number of buckets to fill from height and thus have comparatively less dust generation. The propagation of this dust is confined to loading point only and does not affect any person both the operators of excavator and dumpers who will sit in closed chamber and will be equipped with dust mask.
ii) Skilled operators will operate excavators.
iii) Avoid overloading of dumpers and consequent spillage on the roads.
iv) Persons working at high dust prone areas will be provided with dust mask.

b) During Transport operation

i) All the haulage roads including the main ramp will be kept wide, leveled, compacted and properly maintained and watered regularly during the shift operation to prevent generation of dust due to movement of dumpers, and other vehicles.
ii) Mineral carrying trucks will be effectively covered by Tarpaulin to avoid escape of fines to atmosphere.
iii) Regular Compaction and grading of haul roads to clear accumulation of loose material.
iv) Air quality will be regularly monitored both in the core zone and the buffer zone.

c) Plantation work carried out

In order to reduce air pollution in the surroundings, green belt will be developed around mines office, mine approach road. The plantation will be done around the lease boundary, approach & haul roads, safety barrier etc.

d) Monitoring of air pollution

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Periodic air quality survey will be carried out to monitor the changes consequent upon mining activities as per the norms of CPCB/State Pollution Control Board.

NOISE AND VIBRATION ENVIRONMENT

The ambient noise level monitoring carried out in and around the proposed mine lease area shows that ambient noise levels are well within the stipulated limits of MoEF&CC.

Noise pollution due to transportation, loading unloading will cause some problem to the inhabitants of this area because there is human settlement in close proximity to the link roads in lease area. Effective steps will be taken to keep the noise level well below the DGMS prescribed limit of 85 dbA.

Noise Abatement and Control

i. All the machineries including transport vehicles will be properly maintained to minimize generation of noise.
ii. Silencers in the machineries will be provided to reduce generation of noise.
iii. Attenuation between source and receive points will be incased.
iv. Dense plantation in mining area will also reduce propagation of noise outside the core zone.
v. Rock breakers will be used instead of secondary blasting.
vi. Periodical monitoring of noise will be done to adopt corrective actions wherever needed.
vii. Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and also arrests dust.

WATER MANAGEMENT

There will be no wastewater generation from the mining operations. Only wastewater generation will be sanitary wastewater, which will be treated in septic tank followed by subsurface dispersion.

Surface Water Management

i As such no surface water body exists within the lease area; no adverse impacts are envisaged on the same.
ii Proper mitigative measures will be taken up to control the pollutants within prescribed standards and limiting the emissions to site only.
iii Garland drains will be provided to prevent the entry of rainwater into the mining pit.

Ground Water Management

i. Mining will not intersect the ground water table of the area. So it will not disturb water environment.
ii. Natural pits will be used for rainwater conservation and harvesting.
iii. Rain water harvesting practices shall be done which will lead to ground water recharge.
iv. At the end of the life of mine artificial water reservoir has been proposed in mining plan

Waste Water Management

No waste water is generated from the mining activity of minor minerals as the project only involves lifting/excavation of Stone and transportation directly to the consumers.

Water Conservation

The project do not consume any process water except for drinking, dust suppression and plantation. Plantation is proposed, which will increase the water holding capacity and help in recharging of ground water. Artificial rainwater harvesting is proposed for the present project.

SOLID WASTE AND TOP SOIL MANAGEMENT

Waste Management

The waste will be of OB & weathered clay. Waste generating during proposed mining will be temporary dumped towards north western part of the lease area. Later on conceptual period will be utilized for carpeting along of the approach road.

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Top Soil Management
Top soil will be generated this will be used for the plantation in 7.5 m safety barrier zone.

GREEN BELT DEVELOPMENT
The proposed green belt in the lease area is to be developed taking into consideration the availability of area as the efficiency of green belt in pollution control mainly depends on tree species, its width, distance from pollution sources, side of the habitat from working place and tree height. The proposed green belt has been designed to control PM_{10}, gaseous pollutants, noise, surface run off and soil erosion etc. While considering the above aspects due care will be taken for selecting the suitable characteristics plant species such as fast growing, locally suitable plant species, resistant to specific pollutant and those which would maintain the regional ecological balance, soil and hydrological conditions.

Plantation Program
Under the afforestation plan, plantation in nearby villages and connecting roads will be undertaken. The implementation for development of greenbelt will be of paramount importance as it will not only add up as an aesthetic feature but will also act as a pollution sink.The species to be grown in the areas should be dust tolerant and fast growing species so that a permanent greenbelt is created. Plantation in the barrier zone and roads is necessary as these areas will contain fine particulates resulting from mining operation and vehicle movement. Plantation will also be carried out as social forestry program in village, school and the areas allocated by the Panchayat/State authorities.Native plants like Neem, Peepal, Aam, Jamun, Bargad, Siris, Sheesham sand other local species will be planted. A suitable combination of trees that can grow fast and also have good leaf cover shall be adopted to develop the greenbelt.

SOCIO-ECONOMIC ENVIRONMENT
Management Plan for Socio-Economic Environment

i. In general, socio-economic environment will have positive impact due to the mining project in the area.
ii. The deployed laborers will be from nearby villages only as these people are mainly dependent upon such mining activities.
iii. In order to further improve the socio-economic conditions of the area, the management will contributefor development works in consultation with local bodies**.**

ENVIRONMENTAL AND SOCIAL RESPONSIBILITY
Proposed ESR Activities -Apart from the various environmental protection measures, the project proponent is conscious of its social responsibility and as any good corporate citizen, it is proposed to undertake the following works in the surrounding areas of the mine.

- Community Health Improvement activities such as periodically medical checkup camps, blood donation camps and health awareness camps for child and mother care, health and hygiene practices shall be implemented
- Disinfection of dug wells and other potable water sources and awareness camps shall be organized on water borne diseases, health and hygiene etc.
- Improvement in community educational activities will cover the distribution of educational books, stationary and aids and other infrastructure facilities etc.
- Decrease water scarcity problem at a possible extent during scarcity period through conducting water conservation programs and by built up rain water harvesting pits.
- Afforestation programs will involve the activities such as greenbelt development, plantation of trees in villages' road side and development of nursery for maintaining the greenery of the area & preventing pollution.

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Therefore, the proposed mining project can be considered “significantly positive” i.e. keep regular watch on adverse impacts through practicing pollution control measures and post monitoring with simultaneous contribution towards raising standard of living of the people in study area together with its development.

OCCUPATIONAL HEALTH AND SAFETY

Occupational Health and Safety professionals develop and coordinate safety and health systems and strategies within organizations. They identify workplace hazards, assess risks to employee health and safety, and recommend solutions. Increasingly, Health and Safety Professionals are also responsible for many of the environmental aspects of their workplace. As this profession matures there is an increased emphasis on risk management strategy and on the development of workplace culture.

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