

# ENVIRONMENTAL MANAGEMENT PLAN

FOR  
T.KESAVA RAO  
OVER AN EXTENT OF 1.214 HECTARES  
IN SY NO. 296 OF  
VINAGADAPA VILLAGE,  
GAMPALAGUDEM MANDAL,  
KRISHNA DISTRICT, ANDHRA PRADESH STATE

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Regn.No. RQP/DMG/AP/34/2017  
LATTICE IT,  
BOMMASANI SADHAN,  
2ND FLOOR, NEAR ONE CENTRE,  
GOLLAPUDI,  
VIJAYAWADA-521225,  
PH NO: 8940343373

# **1. INTRODUCTION**

Mining Environment and development have become complimentary to each other. As a result of developmental activities visible ill-effects of the environmental degradation are clear and give signals of the concern. Therefore a sustainable development of the area involving extraction of mineral wealth vis-à-vis protection of environment is the ultimate solution for betterment of mankind.

## **1. PURPOSE OF REPORT**

The Environmental Management Plan has been prepared to assess the current environmental scenario of the area and then based on the activities of mining proposed. The plan will identify and address the impacts, where these are adverse in nature, and there after design mitigation measures to manage such impacts in a manner as to conserve environment and ecology of the area. The EMP has been prepared with a view to ultimately ensure that the adverse impacts are minimized if these cannot be prevented altogether.

## **2. PROJECT BACKGROUND**

**Sri T. Kesava Rao** has quarry lease for Road Metal mine over an extent of 1.214 Hectares in Sy. No. 296 of Vinagadapa Village, Gampalagudem Mandal, Krishna District, Andhra Pradesh.

Asst. Director of Mines and Geology, Vijayawada decided in principle to grant quarry lease for Road Metal mine over an extent of 1.214 Hectares in Sy. No. 296 of Vinagadapa Village, Gampalagudem Mandal, Krishna District, Andhra Pradesh Vide Notice No: 1451/Q3/2017, Dt: 13-07-2017 and further the Mining Plan was approved vide letter No: 2965/Q3/2008, Dated: 15.02.2019.

## **3. LEGAL STATUS**

**Sri T. Kesava Rao** has filed an application for Consideration of issue of Environmental Clearance as per MoEF&CC, Notification S.O. No. 1533 (E) dt. 14.02.2016 and its amendment Notification S.O.No.141 (E), dt. 15.01.2016.

**CLUSTER DETAILS**

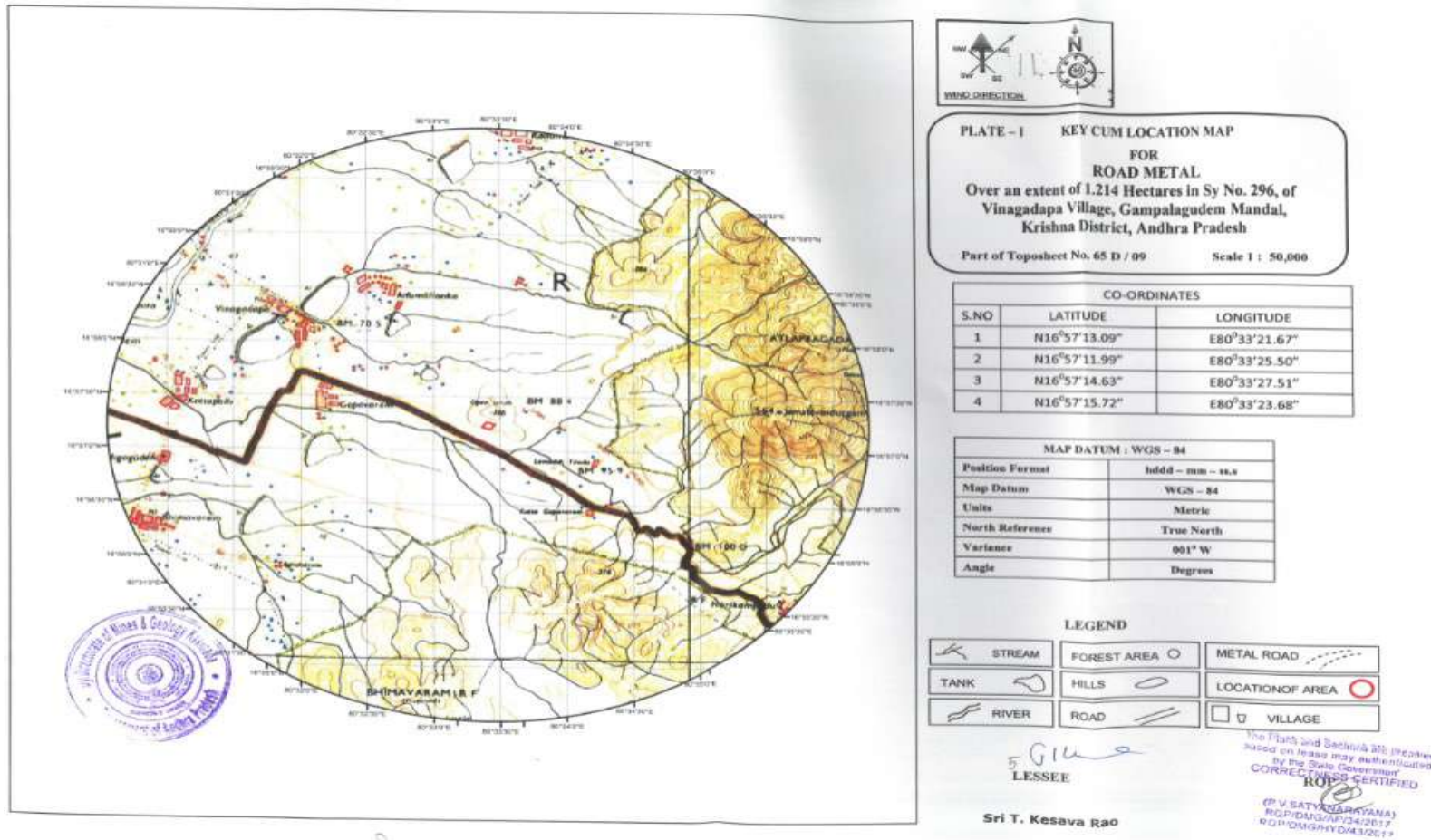
Assistant Director of Mines & Geology, Vijayawada has issued a letter stating that following leases are falling within 500 mtrs radius from the peripheral boundary line in the subject area in the Sy No.296 of Vinagadapa Village, Gampalagudem Mandal, Krishna Dist., the details are given below:

| S.No | Name of the Lease Holder       | Extent in Hects | Mineral      | Executed Date |
|------|--------------------------------|-----------------|--------------|---------------|
| 1.   | Smt Y. Tripura Sundari         | 6.125           | R.M & GRAVEL | 30.04.2013    |
| 2.   | Sri K. Suri Babu               | 2.000           | R.M & GRAVEL | 12.11.2012    |
| 3.   | Smt Y. Venkata Ratnam          | 2.181           | R.M & GRAVEL | 29.07.2008    |
| 4.   | Sri Y. Balaram                 | 1.215           | R.M & GRAVEL | 14.10.2009    |
| 5.   | M/s Sree Lakshmi constructions | 3.000           | R.M & GRAVEL | 10.06.2009    |
| 6.   | Smt Y. Tripura Sundari         | 3.000           | R.M & GRAVEL | 13.10.2008    |
| 7.   | M/s Sree Lakshmi constructions | 2.850           | GRAVEL       | 16.12.2008    |

**TABLE - 1: SALIENT FEATURES OF THE STUDY AREA**

|  |  |                   |                  |
|--|--|-------------------|------------------|
| <b>Details of the Study Area</b>         |  | <b>1.214 Hect</b> |                  |
| Survey Numbers                           |  | 296               |                  |
| Village                                  |  | Vinagadapa        |                  |
| Mandal                                   |  | Gampalagudem      |                  |
| District                                 |  | Krishna           |                  |
| State                                    |  | Andhra Pradesh    |                  |
| Ownership of Land                        |  | Government Land   |                  |
| Elevation                                |  | 55M               |                  |
| <b>GEO Coordinates Of the lease area</b> |  |                   |                  |
|  | <b>B.P. No.</b>  | <b>Latitude</b>   | <b>Longitude</b> |
|  | 1  | N16° 57' 13.09"   | E80° 33' 21.67"  |
|  | 2  | N16° 57' 11.99"   | E80° 33' 25.50"  |
|  | 3  | N16° 57' 14.63"   | E80° 33' 27.51"  |
|  | 4  | N16° 57' 15.72"   | E80° 33' 23.68"  |
| <b>Accessibility</b>                     |  |                   |                  |
| Rail Connectivity                        | Yerrupalem Railway Station is 17 Km and Vijayawada Railway Station is 55 Km from the Site. |                   |                  |
| Air Port                                 | Gannavaram Airport - 76.3km  |                   |                  |
| Nearest Village                          | Vinagadapa village is at 2 km (SE) of Q.L area.  |                   |                  |
| <b>Environmental Sensitive Areas</b>     |  |                   |                  |
| Nearest water body                       | Water body - 8.5Km (NW)<br>Water body - 16.2Km(SE)   |                   |                  |
| Nearest Forest                           | None   |                   |                  |
| Project Cost                             | 18 Lakhs   |                   |                  |

**FIGURE -2: TOPOMAP OF 05 KM RADIUS FOR THE PROPOSED ROADMETAL MINE**



LAT 1

**FIGURE - 3: GOOGLE MAP SHOWING MINE LEASE AREA**



**2.****PROJECT DESCRIPTION****ABOUT PROJECT**

**Sri T. Kesava Rao** has quarry lease for Road Metal mine over an extent of 1.214 Hectares in Sy. No. 296 of Vinagadapa Village, Gampalagudem Mandal, Krishna District, Andhra Pradesh.

**PRODUCTION DETAILS:****TABLE: 3 - PRODUCTION DETAILS OF MINES**

| S. No. | Mine Lease Area   | Area in Ha. | Production                             |
|--------|-------------------|-------------|--|
| 1      | Sri T. Kesava Rao | 1.214       | 99,825 tonnes per annum of Road Metal. |

**MECHANIZATION:****TABLE - 4: SHOWING THE MACHINERY DEPLOYED IN THE QUARRY**

| S.No | Machinery             | No's |
|------|-----------------------|------|
| 1    | Excavator             | 1    |
| 2    | Drilling Machine      | 4    |
| 3    | Tractor with Trailers | 2    |

### **3. CUMULATIVE EFFECTS OF MINING OPERATIONS**

#### **INTRODUCTION**

Open cast mining activity causes some adverse impacts on the surround environment unless proper environmental management plan is adopted. Selecting suitable sites for mining and adopting the guidelines prescribed by the Ministry of Environment, Forest & Climate Change (MoEF&CC) and Department of Mines & Geology (DMG), one can minimize the major possible impacts.

In this chapter, an attempt has been made to quantify the possible cumulative Environmental Impacts on various features such as air, water, noise, land, ecology and socio-economies. The total production of mine is **99,825 tonnes per annum of Road Metal** over an extent of **1.214 Ha**.

#### **AIR ENVIRONMENT**

All methods of mining affect air quality. Particulate matter is released in mining when overburden is stripped from the site and stored or returned to the pit. The impacts on air environment from a mining activity depend on various factors like production capacity, machinery involved, operations and maintenance of various equipment and vehicle. Apart from these, there will be other activities associated viz transportation of mineral and waste, stocking facilities and dump management within the mine lease area that may contribute to air pollution.

#### **SOURCES OF DUST EMISSION**

Mining is carried out by open cast other than fully mechanized method by using jack hammer drilling & low explosive blasting. Based on the various operations involved in the production of minerals, the various emission sources have been identified as given below.

- a. Point sources: Dust generated from drilling equipment and loading equipment
- b. Area sources: The dust generated from roads
- c. Line sources: No line sources exist in the present context.

**a) Drilling:**

The primary drilling is done with Crawler drills of 4.5 " diameter and secondary drilling is done with jackhammers and compressor. The compressor attached to the wagon drill has 450 CFM capacity and compressor attached to jacks can cater needs of 3 jackhammers. Tippers are of 25 T capacity will be utilized for transportation from the leased area to crusher outside Q.L. Area.

Taking on powder factor basis, with a PF of 4 total explosive needed per year is  $99,825/4 = 24,956.25$  Tons.

**Explosive used:** The proponent has permission to use ANFO and also got permission under MMR 106 (2(b)) for deep hole drilling and blasting. The explosives that are used in the quarry are ANFO, cartridge slurries for booster, Pentolite boosters and other blasting accessories. Storage of Explosive/ Ammonium Nitrate:

The client has an approved explosive magazine 2 in numbers each of capacity 4.5 tons. Thus each magazine has filling permission for 10 times per month i.e. 90 tons the magazines can cater the need of explosive storage requirement. Ammonium Nitrate storage license of 100 tons at a time and twice in a month i.e., 200 tons of Ammonium Nitrate can be used in a month. The client has also obtained permission for ANFO mixing shed, where the ANFO is mixed.

The concentrations due to low explosives blasting will be confined to a maximum distance of 10 m from the area of blasting. These concentrations will not be emitted continuously. However presence of personnel near the blasting site during blasting will be totally avoided. So, the impact of blasting on the air environment will be minimal.

**b) Extraction & Loading**

Extraction & Loading will be done using cranes and excavators and these activities of mine operation are contributing to the area source emission and the extent of influence of this operation is about 100 m<sup>2</sup>.

**c) Haulage & Transportation**

In the operating mine, the sources of air pollution are due to the dust generated during the movement of tippers on the haul road. The trucks will be well maintained so that exhaust

smoke does not contribute abnormal values of noxious gases and unburnt hydrocarbons. The dressed blocks from mine face to the consumers is transported by hired trucks. The above sources, which include drilling, low explosives blasting, excavation, haulage for transport of blocks will contribute to dust pollution in the air.

### **ANTICIPATED IMPACTS**

The impacts envisaged due to mining activity are evaluated based on various factors. The emission inventory of the pollutants is as follows, the main air pollutant would be dust or particulate matter generated by handling and transportation of Road Metal.

#### **Total Traffic due to Maximum Production on Common Road Circuit**

Daily production is estimated to be **399.3 Tonnes Per Day** taking 250 days as working. It means that around **44** trucks are required to move out the mineral daily or **6** trucks will move during the peak hour to feed into crushers which are proposed outside the Q.L. area for desired sizes and utilized for the State & National Highway projects. Entire ROM is intended to use for Crushers.

#### **Exhaust fumes due to equipment**

Exhaust fumes are byproducts from the engine combustion process and from the evaporation of fuel. Major exhaust fumes emitted from trucks/tippers are Carbon Monoxide, Sulphur Dioxide, Nitrogen Dioxide and Lead. These emissions might cause harmful effects on workers working in Quarries. The combined effect is cumulative in nature.

### **NOISE ENVIRONMENT**

Noise will be produced at the mine is due to operations of machinery, drilling, blasting, and movement of vehicles. The noise generated by the mining activity is dissipated within a small zone around the mine. There is no major impact of the mining activity on the vicinity however; pronounced effect of above noise levels will felt only near the active working area and on the personnel working in the vicinity. The impact of noise on the villages is negligible as the villages are located far from the mine site. The cumulative noise effect on the common road is high during peak production times.

## **WATER ENVIRONMENT**

There will not be any additional effect on water environment.

### **Impact on Surface Water**

There will not be any additional effect on water environment due to mining operations.

### **Impact on Ground Water**

Ground water table is 15-45 m bgl in the surrounding areas. The mine lease is on elevated area, so maximum mining depth will be 55 m. Hence, there will be no effect on the ground water regime due to mining operations.

### **Impact on Water Quality**

Water quality in the buffer zone has indicated that the ground water is free from heavy metal concentration and these mining activities will not interference on the water quality.

### **Water Consumption & Wastewater Generation**

The water requirement for operating of mine will be 8.0 KLD. Breakup details are:

**TABLE - 6: TOTAL WATER REQUIREMENT FOR MINE LEASE AREA**

| <b>S.No</b> | <b>Purpose</b>    | <b>Quantity in (KLD)</b> |
|-------------|-------------------|--------------------------|
| 1.          | Dust suppression  | 1.00                     |
| 2.          | Domestic use      | 4.00                     |
| 3.          | Greenbelt purpose | 3.00                     |
|             | <b>Total</b>      | <b>8.00</b>              |

There is no generation & discharge of wastewater mining operations. However Domestic waste water generated will be about 1.0 KLD. Domestic waste water is sent to septic tank followed by Soak pit.

## **LAND ENVIRONMENT**

The land in the respective quarries is degraded due to mining activity.

**Impact on Land use**

There will not be impact on land due to mining operations.

**Impact of Ground vibrations**

If the blasting of both the mines is conducted at the same time it will have additional bad effect on the noise environment. If the blasts are performed at different times there will not be any additional negative effect. Hence if blasting has to be done, it will be carried out at different times to reduce the impact.

**BIOLOGICAL ENVIRONMENT**

There are no adverse impacts are anticipated due to the proposed mining activity on biological environment. However, with the implementation of the environmental management measures, there will be improvement in the parameters of biological environment.

The tree species found with the core zone represent the common type of flora species along with small shrubs and bushes. Due to mining activities community structure of the vegetation will not change. Whereas diversity of plant species and food web index of the area reduced to certain extent.

However, if the proposed reclamation of the mining area and dumped out area using proper re-vegetation techniques and development of green belt around the ultimate limit and roadside there will be an improvement in the species diversity and food web index compared to the existing level. There will not be any additional impact on the biological environment due to mining operations.

## **SOCIO- ECONOMIC ENVIRONMENT**

### **Rehabilitation**

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc. exist within the lease area or in the vicinity. The mining operations will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated due to mining operations.

### **Improvement in Socio Economic Status**

It will be obvious to assume that the activities of the mining operations have to be produced some improvements in the socio-economic levels in the study area.

The Lessee will provide employment to local population and it will give preference to the local people whenever there is requirement of manpower.

The proposed mining activities will provide employment to persons of different skills and trades. The local population is the largest plausibility among these employees. The employment potential ameliorated economic conditions of these families directly and provided employment to many other families indirectly who are involved in business and service-oriented activities. This in-turn will improve the socio-economic conditions of the area.

### **Occupational Health and Safety**

The mining operations will be carried out by semi mechanized opencast method by line drilling & low explosive blasting. No major crushing will be done here. The small-scale mining will not have any ill effects on the health of labour.

Excessive dust and noise are the chief health hazards for the miners. As already mentioned these causative factors are well within the safety limits and the proponents will strictly implement the prescribed safety measures. The health of the workers will be regularly checked and suitable medical facilities should be created on or close to the site. Highest safety will be ensured in the working conditions of the miners. Due to truck movement on the roads, the additional dust caused at any given time during peak production periods can cause health problems to the workers unless precautions are taken.

## 4.

# MITIGATION MEASURES

### INTRODUCTION

The mining development in the study area needs to intertwine with judicious utilization 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 physio-chemical and biological processes.

This chapter covers proposed measures required for meeting the prevailing statutory requirements of gaseous emissions, wastewater discharge characteristics, noise levels etc. for environmental management purpose in connection with the mining and mining related activities in the study area.

This section discusses the management plan for mitigation/abatement impacts and enhancement of beneficial impacts due to mining.

### AIR POLLUTION CONTROL MEASURES

The present ambient air quality measurements in the mining area are well within the limits. Due to the proposed production of **99,825 tonnes per annum** of Road Metal from mine will increase dust concentrations.

Mitigative measures for air pollution control are 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, air quality will be monitored on a regular basis to check it vis-à-vis the standards prescribed by CPCB and in cases of non-compliance appropriate mitigation measures will be adopted.

The following dust prone areas are identified for adopting proper control measures in the mine area.

- i) Line Drilling & Controlled blasting
- ii) Excavation
- iii) Transportation

The environmental control measures which will be implemented to control the fugitive dust released from the proposed production are given below:

- Wet drilling system & Dust proof.
- Use of sharp drill bits for drilling holes. The charge concentration of the explosives will be charged with 100 grams and filled with clan pills subsequently and the shot hole will be stemmed using brass stemming rods.
- Water sprinkling arrangements such as specially fabricated tankers mounted on tipper are deployed at mine site to control the fugitive dust generation from the haulage roads.
- Regular grading of haul roads and service roads to clear accumulation of loose material.
- The blasted blocks (temporary) are wetted by spraying water
- Avoiding blasting during high windy periods, night times and temperature inversion periods.
- Excavation operations are suspended during periods of very strong winds.
- Greenbelt will be developed for control of dust.
- Spraying of water on sub grade stacks.
- Fixed hose and funnel-type local exhaust extraction system will be fitted to trucks/tippers to disperse the fumes.
- The vehicles and machinery are kept in well-maintained condition so that emission of fugitive constituents is minimized.
- The use of small quantities of ethanol blended with diesel to reduce exhaust emissions from trucks/tippers.
- Plantation of wide leaf trees, creepers, tall grass around working pit, along roads will help suppress dust.
- Tall trees with an average height of 5 m will be developed all along the boundary of the lease area to minimize the dispersion of the dust from the mining.
- Periodical monitoring of air quality to take steps to control the pollutants.

The following methods of abatement will be employed for the air pollution control from D.G. sets.

- ✎ Personal Protective Equipment for Employees.
- ✎ DG set will be provided with a stack height meeting CPCB Guidelines for proper dispersion of sulfur dioxide and oxides of nitrogen.
- ✎ Speed restriction will be followed within the project and speed breakers will be provided at entry and exit points.

#### **4.2.1 OCCUPATIONAL HEALTH & SAFETY MEASURES**

All the precautions would be adopted to prevent dust generation in the mine lease area and to be dispersed into the outer environment. However, for the safety of workers, engaged at strategic locations/dust generation points like drilling, loading and unloading points, etc., dust masks would be provided. Dust masks would prevent inhalation of RSPM thereby reducing the risk of lung diseases and other respiratory disorders. Regular health monitoring of workers will be carried out.

#### **NOISE POLLUTION CONTROL MEASURES**

The ambient noise level monitoring is carried out in and around the proposed mine shows that ambient noise levels are well within the stipulated limits of CPCB.

Noise generation may be for an instant, intermittent or for continuous periods, with low to high decibels. Periodic inspection and checks of the risk prone areas and equipment have to be conducted.

To control noise pollution during the proposed mining operations following steps will be practiced.

- The noise generated by the machinery will be reduced by proper lubrication of the machinery and equipment.
- The workers employed will be provided with personal hearing protection equipment, with earmuffs and earplugs combined, as a protection from the high noise level generated at the mine area.
- The provision of green barrier along the 7.5 m buffer zone and along the both sides of approach road which will further reduce the propagation of noise level generated.

- Limiting time exposure of workers to excessive noise.
- Speed of trucks entering or leaving the mine is limited to moderate speed of 25 kmph to prevent undue noise from empty tippers.

### **Safety in Blasting**

Care will be taken to evacuate the mining area completely at the time of low explosive blasting operations. The blasting team will be equipped with all personal safety and precautionary measure. The following safety measures will be given attention while conducting the blasting operations.

- A blasting SIREN will be used at the time of blasting for audio signal.
- Before blasting and after blasting, red & green flags will be displayed as visual signals.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS will be displayed prominently.

### **WATER POLLUTION CONTROL MEASURES.**

The proponent **Sri T. Kesava Rao** has proposed to construct garland drains around the Q.L. Areas which are directed to siltation pits of 5 m width and 5 m wide area. These drains will be sloped in such a way that the water will be diverted to pits of 5 m x 5m x 2 m size with grill door. This pit will be lined on its sides with temporary methods which will protect the walls from collapse. The water entering the pit will either in-filter down to Earth or will overflow in a clean condition. Periodically the pit will be de-silted during monsoon and the de-silted material will be dumped in the area meant for. The further south of the garland drain will be utilized for plantation which will be useful for stabilization on later stage.

### **LAND ENVIRONMENT**

The Dhanbad declaration on Environmental Management in Mining Industry states "It is imperative that in order to ensure the continued and sustained progress of the mining industry in India, the environmental dimensions should be integrated into the planning, design, development, operation and working practices of quarry on scientific and rational lines, by the Governments and the industry in a mutually reinforcing manner". The land

related Environmental Management Plan (EMP) has been presented here under two sections viz., Soil & Water conservation and Afforestation.

**Storage and Reuse of Top Soil:**

Topsoil removed during clearing of the area for Road Metal extraction will be stacked separately to check the erosion of the stacked soil. A retaining wall will be constructed all around the topsoil stockyard. Planting of grass and local species etc., are proposed on the surface of this stack to prevent erosion and to increase the soil nitrogen. As per the analysis of the soil samples they are found to be basic in nature. During Greenbelt development, we will plant fast growing species with good canopy cover and dense leaf density and some ornamental species to give a good aesthetic look.

**Dump Management:**

The waste generated will be dumped in SE of the Quarry lease area (with in the quarry lease area ) covering an area of 578M<sup>2</sup> with an average height of 3M with 45<sup>0</sup> -65<sup>0</sup> slope angle will be formed. The waste will be re-handled for backfilling during the conceptual plan period.

**Land Restoration/Reclamation:** Land restoration or reclamation of the area is very essential in any mining industry. Proper measures adopted during restoration will control most of the adverse environmental impacts of Quarry and also improve the aesthetic beauty of the area. Due to the Quarry activities in this area the profile of the ground will change due to formation of pits. At the end of the Quarry operations, the top soil/mineral rejects will be utilized for back filling wherever suitable and rehabilitated.

Following steps will be taken for improving and protecting the environment.

- a) Quarry lease area
- b) Surrounding the Quarry lease area.
- c) Surrounding the statutory buildings

d) On the undisturbed virgin lease area.

**Existing land use pattern:** The subject area is a revenue waste land and it is not being put to any other use, serve as a grazing land at times. It is also proposed to restore the degraded the land after closer of the mine, by filling with mine waste and level the surface with top soil. The Mining lease applied area is located on a part of hill Rock.

**Surrounding the Mining area:**

The dust generated during the quarrying operations will be carried by wind and will be deposited over the trees and on the adjacent area around the quarry in the buffer zone. To filter this dust, a green belt of 10m width will be developed along the quarry lease area i.e., around ultimate pit limit, this green belt will also act as sound barrier. In between the tree saplings, grass and bushes will be grown. Creation of the greenbelt around the lease areas will be undertaken on priority basis and will be completed concurrent to Quarry over a 4-year period.

**Traffic Management**

The daily production of Road Metal is **399.3 Tonnes Per Day** . 16 Tippers of 25 Ton capacity will be employed at peak hour for transportation of mineral to crushers which will be established outside the QL. Area.

**The measures proposed to be taken to combat the cumulative effects on the road due to increased Truck Density, Safety, Greenary on Common Roads are**

- Rumble strips, signboard/ cautionary board, providing signage and speed restrictions on common roads.
- The vehicle location tracking device and emergency buttons shall be fitted.
- Truck Body Code for safe cabins to drivers and other road users.
- Mandatory Fitment of Speed Governors on Transport Vehicles to avoid over speeding.
- Model Automated point for checking fitness of the vehicles.
- Plantations will be done on either side of road (450 m) at 3 m interval.

**Afforestation Programme:**

The quarry lease area is scanty suitable for plantation as most of area is rocky. There are chances of growing trees in South West side of the Q.L. area. It is also proposed to plant few saplings in the Eastern side of the buffer zone of Q.L. Area. Planting of saplings are proposed in the nearby village area in areas shown by the village Panchayat. Planting of some saplings are proposed on either side of the approach roads (450 m) at 3 m interval. Plantations within the lease area for 4 years is 700. Total No of Trees grown on either side of the approach road =  $700 * 2 = 1400/3 = 466$  trees approximately. Plant species are selected for greenbelt which can be grown to a height of 2m with wide canopy. Tree guard (fencing) around the plants will be setup to protect the plant species.

**TABLE - 6: YEAR WISE PLANTATION PROGRAMME**

| <b>Year</b>  | <b>No. of Plants</b> | Plantation will be done |
|--------------|----------------------|-------------------------|
| II-Year      | 250                  | in along the 7.5m       |
| III-Year     | 200                  | barrier safety zone and |
| IV-Year      | 150                  | along the both sides of |
| V-Year       | 100                  | approach road           |
| <b>Total</b> | <b>700</b>           |                         |

Apart from the greenbelt and aesthetic plantation for eliminating fugitive emissions and noise control, all other massive plantation efforts will be decided and executed with the assistance and co-operation of the local community. Based on the community needs the afforestation would mainly aim at:

- a) Protection & Development of Natural Vegetation
- b) Protection of soil erosion
- c) Plantations of fuel wood blocks to meet the energy requirements.

#### **SOCIO ECONOMIC BENEFITS**

There is positive impact on socio-economics of people living in the villages. The villages in buffer zone depend upon agriculture. Mining operations in the subject area has positive impact by providing direct and indirect job opportunities. There will be indirect employment opportunities in transportation of Road Metal to Crushers outside the Q.L area.

#### **POST PROJECT MONITORING**

The Lessee will monitor the environmental parameters as per MoEF&CC/SPCB/CPCB guidelines.

#### **IMPLEMENTATION OF EMP, ESC & MONITORING PROGRAMME**

The environment management plan is detailed on the basis of impact assessment. Control and mitigation measures for the adverse impacts envisaged. As the major environmental attributes have been confined to the project area alone, implementations of the proposed control measures and monitoring thereof will be undertaken on the regional basis. The

Lessee will ensure the implementation of the measures within the mine area and carryout efficient monitoring. In order to implement the measures suggested for mitigating the adverse impacts on the environment, it is suggested to monitor the environmental parameters regularly. Project Proponent will allot Rs. 1.25 Lakhs for Entrepreneur Social Commitment (ESC).

**TABLE - 9: EMP BUDGET**

| S. No                   | Description              | Item   | Capital cost (Lakhs) | Recurring cost (Lakhs) | Remarks   |
|-------------------------|--------------------------|--|----------------------|------------------------|---|
| 1                       | Air Pollution            | Nose masks, cloth for drillers, Road wetting   | 1.0                  | 0.15                   | Replaceable and cost can increase with time & issued Thrice in a year and for road wetting two tankers required per day.                            |
| 2                       | Water Pollution          | De-silting operations and retaining wall for waste dump in slopes side   | 1.0                  | 0.15                   | For De-silting it should be done yearly & retaining wall should be constructed around the dip of the side   |
| 3                       | Noise Pollution          | Maintenance of machinery suitability, PPE's like Ear Muffs   | 1.0                  | 0.15                   | Maintenance of Machinery is included in main cost & Ear muffs should be given once in six months  |
| 4                       | Occupational Health      | First aid kits, Fire extinguishers, PPE's to all employees, Training and awareness programmes on risk factors during emergencies by the experts and periodical medical checkup and supply of medicines | 1.0                  | 0.15                   | First aid kits -once in a year by conducting periodical Checkup & Fire extinguishers, Training & Awareness programs should be given once in a year. |
| 5                       | Environmental Monitoring | Ambient air, water quality, Noise studies and Vibration studies  | --                   | 0.15                   | MoEF/NABL Recognized Laboratories   |
| 6                       | Garland drainage         | Trench with the depth of 1.5m garland drainage with the length of 350M   | 1.0                  | -                      | --  |
| 7                       | Green Belt               | Planting the plants  | 2.24                 | 0.70                   | 700 plants to be proposed during this period  |
| <b>TOTAL</b>            |                          |  | <b>7.24</b>          | <b>1.45</b>            |   |
| <b>Total EMP Budget</b> |                          |  | <b>8.69</b>          | <b>Lakhs</b>           |   |

**CONCLUSION**

The development of Q.L. areas for Road Metal Mine by **Sri T. Kesava Rao** will be beneficial for the development of the nearby villages. The likely adverse effects due to the mining operations are very marginal and negligible. More over the residential area is far away. However, the effective implementation of the recommended Environmental Management Plan, all the negative effects on the environment will be mitigated. We will have Environmental Safety and Occupational Health Management in place.

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