



EXECUTIVE SUMMARY

of

RAPID ENVIRONMENTAL IMPACT ASSESSMENT

for

PUBLIC HEARING

of

MAJRA LIMESTONE MINE (11.72 Ha)
Khasara No. 160, Mouza – Majra,
Tahsil-Wani,
Yavatmal.

July, 2009



Executive Summary of Rapid Environmental Impact Assessment

1.0 Introduction

Shri Avinash N. Warwatkar, the Majra Limestone Mine owner, is in the field of mining since long and has few mining leases in Yavatmal district. The lessee, Shri Avinash N. Warwatkar, has its office at Flat no 9, Vaibhav Apartment, Cement Road, Shivaji Nagar, Nagpur-440010.

The Majra Limestone Mine-lease has been granted to the lessee over an area of 11.72 Ha by Govt of Maharashtra in April 2005 at Mauza- Majra in Yavatmal district. The mining lease period is up to 12/5/2035.

The prospecting agency, Directorate of Geology and Mining, Govt of Maharashtra, has carried out and confirmed the reserves by exploration by drilling in the Rajur limestone & dolomite belt which covers Majra village along with other villages. The work was carried out in the years of 1972-78 and 1982-83.

The mine owner has planned to excavate the Limestone @ 1,24,200 MT/Annum from the Majra Limestone Mine to supply limestone to Steel Industries. The Majra Limestone Mine is approachable by all weather tar road upto mines.

The estimated capital investment is about Rs. 50 Lacs and estimated capital investment for pollution control will be about Rs. 10 Lacs and recurring expenditure on pollution control & social activities will be Rs. 5.0 Lacs/Annum.

This limestone mine falls under Category 'B' as per MoEF categorization.

2.0 Mine Site

Geological location of Majra Limestone Mine lies between latitude 20° 07'04" to 20° 07'18" N and longitude 78° 55'43" & 78° 55'52" E. Villages falling in and around the lease area are —Majra, Kalmna and Wanjri. Nearest village Majra is located at a crow fly distance of about 0.75 km in N-NE direction of the mine site. Topography of the mines area is flat on basement containing thick limestone beds in almost horizontal situation having height of 250 MSL. The lease area is covered with alluvial soil having thickness of 0.5 m to 1.0 m in the area. There is no nallah or river passing through the area or located within the vicinity of the area. The general drainage pattern is towards South-East direction in the lease area.

Wani town is about 6.25 km in S-SE direction as crow flies from the mine site. State Highway No. 233, State Highway No. 234, State Highway No. 236 & State Highway No. 77 meet at Wani located at 6.25 Km. Passenger Railway station is also at Wani.

There are no Mountains, National parks, Wildlife Sanctuary, Historical Monuments, and Defense Installation etc. in the 10 km radius of the mine lease area. Phiski Reserved Forest is about 6.75 Km towards NW direction, Maregaon Ramna Forest is about 6.95 Km in West direction. Wardha River is about 4.6 km towards E-NE direction & flows towards South - East direction from mine site.

Study area comes under Zone II of the Bureau of Indian Standards (BIS) 2000 Seismic Zone Map for India. Zone II is defined to be seismologically least to moderately active, thus, study area is seismologically safe.

Study area falls under Survey of India Toposheet No. 55- L/16 & 55-P/4. The Study Area of 10 km radius around the mine site, covers part of the Wani Taluka & Maregaon Taluka of District- Yavatmal and Warora Taluka & Bhadravati Taluka of District- Chandrapur, Maharashtra. Major part of study area falls in Wani Taluka of Yavatmal District.

At the closure of mine after 14 years, 8.46 Ha area will be converted into pits/water reservoirs, 2.49 Ha area under dumps will be converted into green belt, 0.04 Ha area will be utilized for internal roads, 0.02 Ha area will be utilized for Building/Shed & 0.71 Ha will remain be utilized for reclamation to convert to green belt. Thus, at closure of mine, excavated area will be converted in water pond surrounded by peripheral dumps completely converted in to green belt.

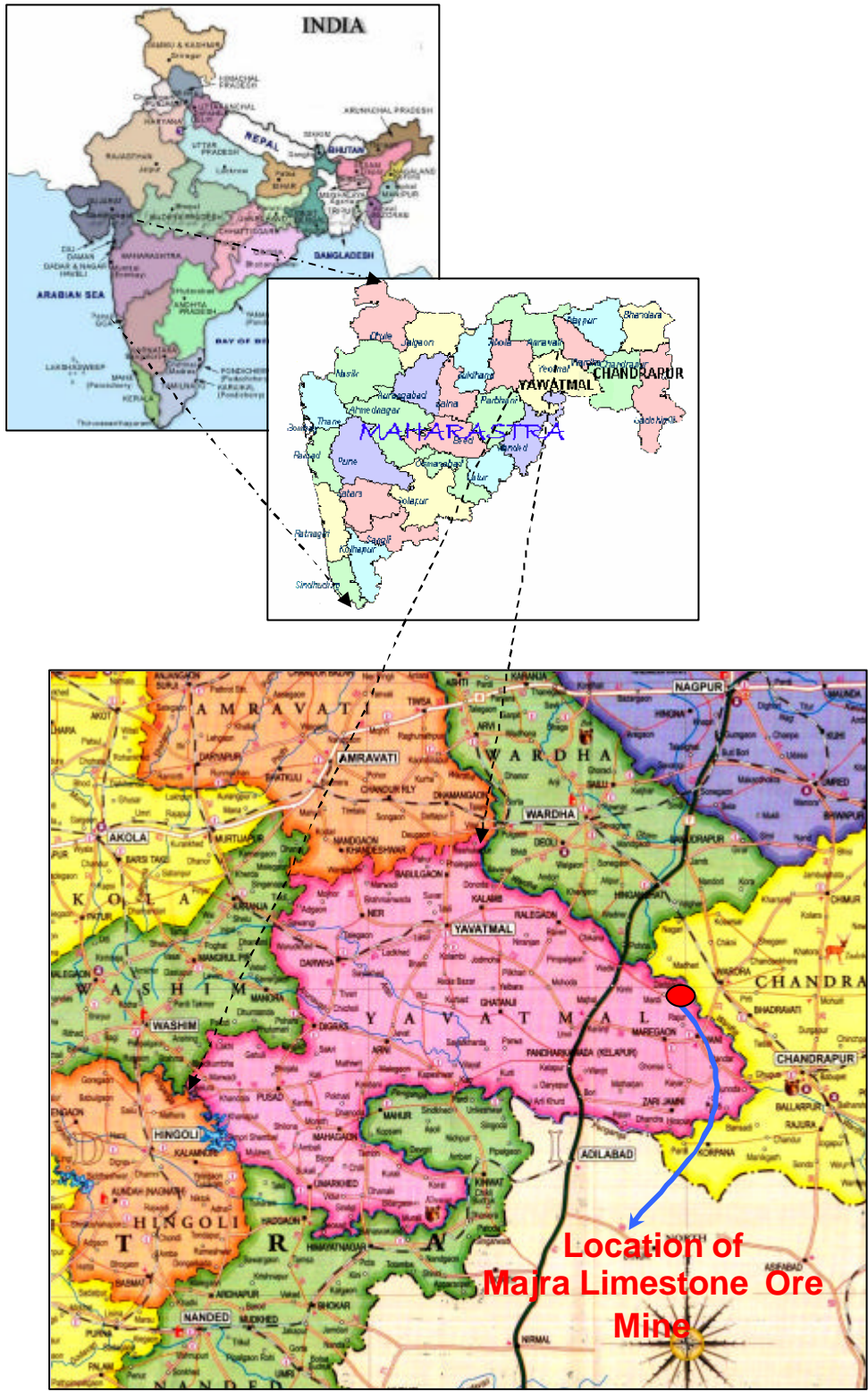
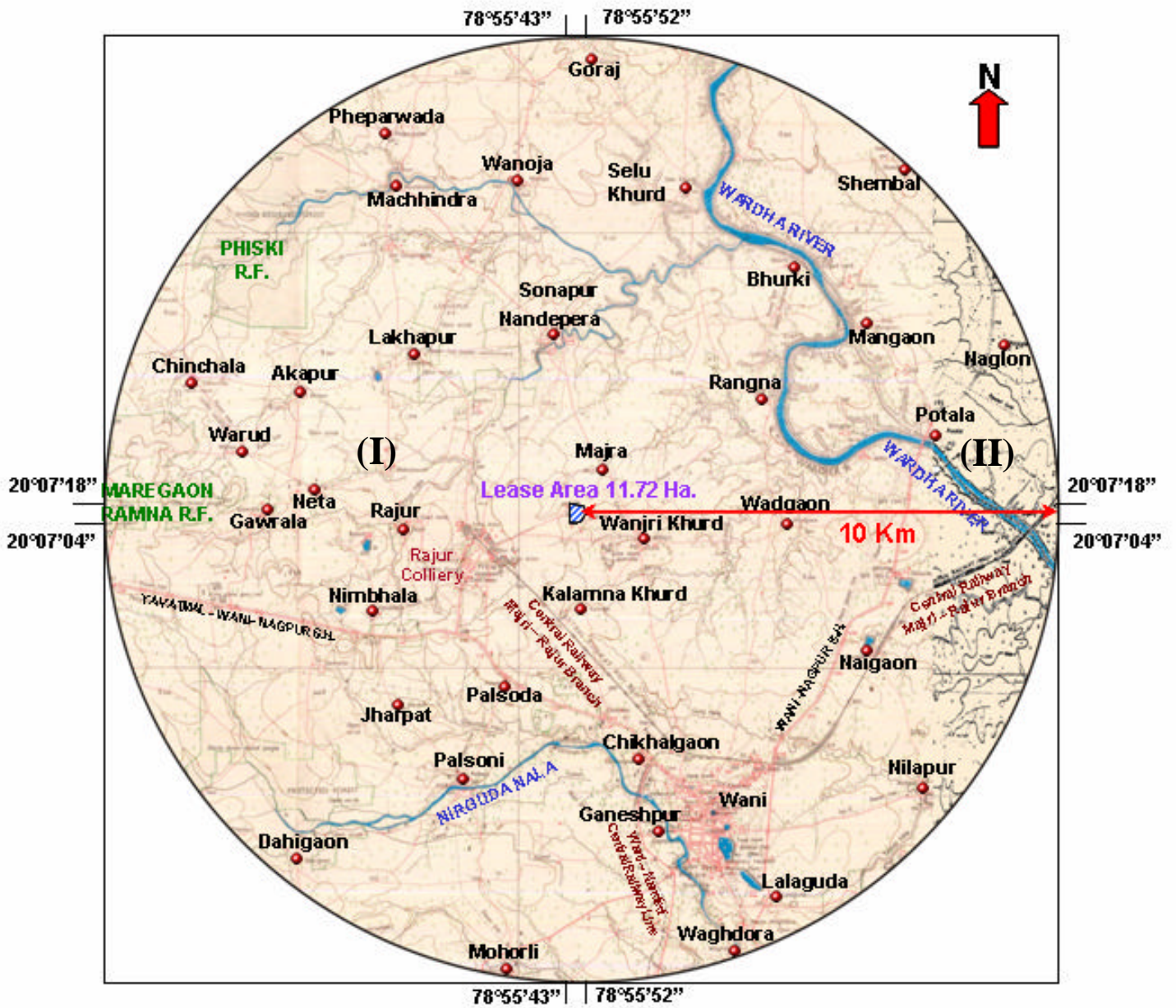


FIG: MAP SHOWING LOCATION OF MAJRA LIMESTONE MINE



Toposheet No.: (I) → 55-L/16 & (II) → 55-P/4

Legend

	Mining Area		River/ Nala		Road		Forest
	Village		Contour		Railway		

FIG: TOPOGRAPHIC MAP SHOWING STUDY AREA (10 KM RADIUS)

3.0 Mining Details

3.1 Reserves

Based on the geological occurrences of limestone in the entire lease area and depth consideration of 10 m below soil cover, the mineable reserves are estimated to 22,04,500 Tonnes. The recovery factor has been taken as 90% and Bulk Density as 2.5.

3.2 Mineable Reserves and Anticipated Life of the Mine

The available reserves out of mineable reserves of 22,04,500 tonnes are 19,10,100 tonnes. The difference in both figures is due to blocked reserves of 2,94,400 tonnes. Proposed rate of production Run of Mine (ROM) is 1,38,000 tonnes. By mining at this rate, these reserves are sufficient for a period of about 14 years.

3.3 Salient Features of the Mine

The mining lease area is a non-forest, Govt. revenue land. The mining method will be open cast & mechanised. The proposed production rate will be 1,38,000 tonnes of Run of Mine (ROM) so as to have production of about 1,24,200 tonnes of graded limestone. The machineries will be hired from contractor to meet production target, the face of mine will be about 70 deg and final slope of the mine pit will be 45 deg. The mining operation will be on single shift basis.

3.4 Mining Method

The mining operations will be fully mechanized & opencast. Water table will not be intercepted during mining. Mine will be developed as per approved mining scheme.

The excavator will remove & load the top soil in dumpers for stacking and preservation at soil dump site. The Excavator / JCB of 1 to 1.5 cu.m. capacity will be deployed for removing both top soil and ROM. The excavator will also such soil to trucks for transport to the dump.

The benches for limestone will be 5 m height. Haulage roads will have 15 m width and gradient will be 1:16. There will be scientific reclamation of mine and dumps. Water sprinkling will be carried out on haulage & internal roads and benches will be kept clean as far as possible.

The jack hammer drills (34 mm dia) for the hole up to 1.5 m will be operated and as per requirement DTH drill (75mm to 125mm dia) will be used for mechanized development to make 5 to 6m depth holes. The holes will be charged by explosives for blast using detonator, the fuse wire etc.

The excavators/JCB will take out blasted material. Limestone will be loaded in dumpers which will be finally taken to Steel Industries and Reject materials will be loaded in tippers to develop reject material dump along the periphery of mine lease area.

Storage, handling of explosive & blasting will be strictly carried out as per the guidelines of Explosive Act and provision of MMR 1961 and as per DGMS Rules which also ensure safety of workers and material along with control of noise and ground vibration.

The top soil generated during mining operations will be taken to the dumping site by haul road by trucks

3.5 Disposal of Mine Waste

The lease area has top soil and there is no overburden of waste rock as such except rejections from intercalations with limestone beds. The soil cover is 1m and will be separately removed and dumped as soil dumps.

The other overburden is not likely to be generated except rejects which is 10 % of ROM. The total reject will be stacked separately all along the boundary of lease area and will be reclaimed. This reject material dump will be 12.5 m width and 12.0 m height barrier all along the boundary of lease area .

4.0 Water Requirement

The necessary water requirement for drinking and for mining activity is from the dugwell /borewell water and harvested rain water in pits. The water table in the lease area is below 15 m and will not be intercepted..

The industrial requirement is estimated to be @ 4.0 KLD mainly for dust suppression purposes and will be met from rainwater collected in mine pits as well as it will be taken from dug well. While for domestic purpose it will be available from the open well and tubewell nearby @ 5.0 KLD. For green belt development the water @ 6.0 KLD will be fulfilled from harvested rain water .

5.0 Baseline Environmental Status

The baseline environmental status of the study area covering 10 km radius around the mine site with reference to the prominent environmental attributes has been carried out during Summer 2009 . The details are given herewith.

5.1 Land Environment

Land environment studies has been carried out to get land use pattern, soil quality and flora & fauna in the study area.

Topography of the area is relatively plain having no hills or valley in the immediate vicinity of mine site. In the study area, no rare, threatened or endangered plant species have been encountered. Endangered fauna are also not reported except for few smaller areas covered by jungles.

Land use pattern of the study area is studied 10 Km around the mine lease area based on village-wise land use data given in Census 2001.

Land use pattern reveals that out of total study area of 31414.4 Ha, various facets are Forest (3.17%), Irrigated land (4.85%), Unirrigated land (68.52%), Cultivable wasteland (5.03%), land not under cultivation (13.46%) and land under Uninhabited villages (4.97%).

The soil texture in the study area (10 km radius)is predominantly silty loam. The study area, in particular, is mostly plain. The cultivable soils are spread over in the study area.

The water holding capacity is observed to be good at all the sampling stations. The pH of soil samples is found to be in the range of 6.71-7.35 indicating the neutral nature of the soil.

Available nitrogen is found in the range of 1.8-3.8 mg/100gm. Available nitrogen content in soil samples in the study area predominantly is less in terms of standard soil classification. Available phosphorus varied in the range of 0.5-1.0 mg/100gm of soil. Available phosphorus in soil in the study area predominantly is found to be less in content in terms of standard soil classification. Available Potassium in soil varied from 2.1-8.3 mg/100gm of soil indicating very less content of this nutrient in the study area in terms of standard soil classification.

Thus on overall observation, it can be inferred that the soil in the study area requires nutrients for increasing fertility.

5.2 Air Environment

Air Environment baseline status of the study area has been monitored & micrometeorological data has been collected.

In the month of May 2009, the prevailing winds were from West to NW quadrant.

In the study area, the 98th percentile values of 24 hourly SPM at all the sampling locations ranged between 136.40-180.10 $\mu\text{g}/\text{m}^3$ in summer season. For RPM, it has been observed to be varying in the range of 49.10-78.40 $\mu\text{g}/\text{m}^3$. For SO_2 it has been observed to be in the range of 12.20-20.60 $\mu\text{g}/\text{m}^3$. For NO_x , it has been varied between 19.30-36.10 $\mu\text{g}/\text{m}^3$.

At all the stations, the 98th percentile values are observed to be within the ambient air quality standards promulgated by CPCB for residential/rural area.

5.3 Noise Environment

During Summer 2009, background noise levels (Leq) has been monitored in the human settlements within the study area of 10 Km radius. The day noise levels have been monitored during 6 am to 10 pm and night levels during 10 pm to 6 am at locations covered in the study area.

The noise levels during day and night time varied in between 47.6 dB(A) to 56.8 dB(A) and 40.8 dB(A) to 51.3 dB(A) respectively in the commercial and residential area in the study area.

Ambient noise levels in the study area are found to be within prescribed CPCB norms.

5.4 Water Environment

Water table in the mine lease area is below 15 m and water table will not be intercepted during limestone mining activity.

Drainage pattern in the study area is towards South-East. In the study area, normally ground water is used for domestic and agricultural purposes. The ground water in this region is extracted through dugwells and borewells.

For assessing the water quality in the study area and to evaluate the anticipated impacts of the mine, selected water quality parameters of water samples in the study area have been studied.

Surface as well as ground water samples of the study area have been collected for analyzing water quality.

In surface water samples , pH is found in between 7.31-7.83 which indicates its neutral nature. Dissolved oxygen levels varied between 5.7 to 5.8 mg/l respectively, indicating good aquatic conditions & useful for drinking purpose.

Total dissolved solids are found to vary between 341.0-388.0 mg/l and total hardness is found to vary between 104.0-156.0 mg/l. Chloride in the water samples were observed to vary between 9.5-23.9 mg/l respectively. Sulphate in the water samples was found to vary between 16.5-17.4 mg/l respectively. These values indicate that the water is meeting the quality for domestic and agricultural purposes. The metals analyzed namely Arsenic, Copper, Cadmium, Zinc, Nickel and Chromium are found to be below the permissible limit.

In ground water samples, pH is found in the range of 7.31-7.67, indicating desirable range required for potability. Total dissolved solids are in the range of 480.0-867.2 mg/l. Total hardness is found in the range of 152.0-284.0 mg/l. The total hardness is found within the permissible limit. The metals analyzed namely Arsenic, Manganese, Lead, Copper, Cadmium, Zinc, Nickel and Chromium are found below the permissible limit.

Overall , surface and ground water quality in the study area is meeting the norms for domestic and agriculture purposes.

5.5 Socio-economic Environment

Baseline data such as demographic pattern, occupational status, educational, health and other amenities as existing in the study area have been studied.

The study area includes 10 km radial area which covers Dist.- Chandrapur & Dist.- Yavatmal. Villages covering the study area fall under Bhadravati Tahsil (Dist.- Chandrapur), Warora, Tahsil (Dist.- Chandrapur), Wani Tahsil (Dist.- Yavatmal), and Maregaon Tahsil (Dist.- Yavatmal). However, major part of the study area falls under Wani Tahsil of district Yavatmal.

The study area covers 61 villages, including 7 uninhabited villages. Total population of the villages is 107835 in which 55564 are males and 52271 are females. There are 23045 households in the study area and density of the people is around 4.71 persons per hours as per the 2001 primary census.

Occupational pattern of the study area shows that only 33.29% of the total population comes under the main workers category. Other categories are marginal workers 5.94% and non workers 60.77%. Non workers outweigh the main and marginal workers in the study area.

6.0 Environmental Impact Assessment

6.1 Land Environment

The mining will generate top soil and mining rejects which will be used for development of dump along mine periphery. Mine boundary will be developed with barrier wall of reject material and after stabilization; same will be gradually reclaimed and rehabilitated using suitable plant species and grasses. The area excavated during the mining will be developed as natural water reservoir.

There will be no toxic and hazardous element present in the waste material and there will not be any hazardous wastes generation from mining activity. The mining is by open cast method through mechanical means.

A well planned green belt as per CPCB guidelines will be developed on the open land available for the purpose of improving the environmental quality as well as visual aesthetics of the lease area.

Thus, land environment would not be adversely affected.

6.2 Air Environment

In the mining operations, emissions from combustion of fossil fuels will be during transportation of limestone and rejects only. The diesel will be consumed in the mining machinery. All the machinery will be maintained in good condition to minimize emissions and improve average.

Fugitive dust emissions from mining operations as drilling, blasting, excavation, transportation etc, will be controlled by use of advanced machinery, water sprinkling, compaction of haulage roads, covering of trucks/tippers.

Prediction of impacts have been carried out using ISCST-3 model. The maximum ground level concentration (GLC) of SPM for air pollution sources due to mining is predicted to be $2.86 \mu\text{g}/\text{m}^3$ at a distance of 1.0 km in South direction from the mine site. The GLCs of SPM will be below the stipulated standards of CPCB.

Thus, limestone mining operations will not have adverse impact on air environment.

6.3 Noise Environment

All the mining operations will be carried out in single shift during day time only. Vehicular traffic will be regulated and allowed during day time only. Controlled blasting has been planned to ensure low noise & vibration during mining operations. Use of ear plugs/ear muffs will be made compulsory to workers using heavy machinery. DGMS Rules will be strictly followed during mining.

The nearest Majra village is about 0.75 km in N-NE direction from mine lease area. The measured noise levels at Majra Village during day time in the commercial area is 53.60 dB(A) and in residential area it is varied in the range of 47.60 dB(A).

The expected maximum noise level during day time at Majra Village considering the impact of full fledged mining activities in commercial area will be 53.65 dB(A) and in residential area will be 47.82 dB(A). Ambient noise quality of the Majra Village considering the mining activities will meet the norms.

Thus, limestone mining operations will not have significant impact on noise environment.

6.4 Water Environment

At the mine lease area, water table is below 15 m and during mining it will not be intercepted. Storm water of the mine lease area will be diverted through garland drains.

At full mining capacity, domestic effluent generation will be @ $4.0 \text{ m}^3/\text{day}$ and it will be treated in septic tanks and soak pits.

Industrial effluent generation will be nil and clear water collected in mine pit will be utilized for mining operations and allied activities like dust suppression, wet drilling and greenbelt development in the lease area. If required, harvested water will be supplied to villagers for agriculture purpose in the surroundings during scarcity.

Thus, there will be no negative impacts on water environment due to mining activity.

6.5 Socio-Economic Environment

Agriculture is the main income source of the people in the study area. Poultry and cattle rearing are other sources of income of the people in the study area. Employment & income generation opportunities are minimal in the region.

As the size of this mine is not big, certain number of locals will be given employment.

The mine management will take part in community welfare activities related to sanitation, social harmony, environmental awareness programmes, health checkup camps etc. Tree plantation programmes will be organized in the nearby villages.

Evaluation of Socioeconomic profile of the study area as well as socio-economic survey of the region has revealed that the mining activities will result in: (i) generation of direct employment to certain extent and indirect employment to local people, (ii) increase opportunities for auxiliary & ancillary business, (iii) increase in revenue to the State Government.

It can be concluded that due to the Majra Limestone Mine even though the social impact will be of marginal level, the impact will be positive and it will further improve the socio-economic status of the study area to a certain extent.

7.0 Environmental Monitoring Programme

Effectiveness of pollution control measures adopted for mining will be regularly checked under Environmental Monitoring Programme. The location of sampling, frequency & analysis of environmental attributes will be as per the guidelines of CPCB/MPCB.

The budgetary expenditure on this activity will be approximately 0.72 Lacs/Annum.

8.0 Additional Studies

As per EIA notification, 2006, the points raised during public hearing conducted will be incorporated in the Final REIA report.

Risk assessment has been undertaken to identify major failure scenarios to evaluate consequences and to examine the associated risk levels. In the mining activities, blasting will be the only source of risk factor. However, controlled blasting will be carried out through experienced manpower which reduces the risk significantly.

Explosive will be made available from contractor as and when required, from the authorized agency holding the license from the Controller of Explosive Agra or Nagpur. All DGMS Rules will be followed to ensure safety of workers and material along with control of noise and ground vibration. For case of emergency, Disaster Management Plan has been prepared to organise and co-ordinate all activities prior to, during and after occurrence of an emergency till normalcy is restored. First aid medical facilities, fire fighting facilities, transport vehicle, communication facilities will be available at mine site.

Hence, Mine Authorities has taken steps to handle effectively any possible emergency.

9.0 Project Benefits

The demand for limestone for various industries is sharply increased with rapid industrial growth in India & in Maharashtra as well. Limestone mining will help to fulfill the demand of this material.

The major benefit in terms of employment generation in the study area will increase., also nearby grampanchayats will start getting the regular tax from the mine.

Surface water availability in the study area will increase with collection of rain water in pits and collected water may be supplied to nearby villagers for domestic & agricultural uses.

10.0 Environment Management Plan

An Environment Management Plan is prepared for the environmental conservation further.

During operation of the limestone mine, EMP will be implemented for mitigation of pollutants at source itself. Also various welfare activities will be carried out for improving the socio-economic status of the nearby area. An Environment Monitoring Cell will be developed for environmental monitoring, analysis and pollution control.

Machineries required would be deployed through contractors to meet the production target and the mining operations will be on single shift basis on working days only. Explosives would not be stored at site. Drilling & Blasting would be carried out through expert manpower on contract basis.

The top soil and reject materials from limestone mining activity would be taken to the separate dumping site along the periphery of lease area by haul road by trucks for stacking and preservation. A well planned afforestation will be carried out to conserve the environment. Water sprinkling system will be operated regularly .

The management will keep regular budget provision of minimum Rs. 5 lacs per year for successful execution environment management plan.

EMP would help to mitigate impacts likely to arise out of the mining activities.

11.0 Conclusion

The Majra Limestone Mine has been granted lease over an area of 11.72 ha by Govt of Maharashtra at Mauza- Majra in Yavatmal district. The mining operations will be fully mechanized & opencast method . Graded Limestone @ 1, 24,200 tonnes per annum will be supplied to Steel Industries. Mine life at the proposed production rate will be for next fourteen years.

Machineries required will be deployed through contractors to meet the production target and the mining operations will be on single shift basis on working days only. Explosives will not be stored at site. Drilling & Blasting will be carried out through expert manpower on contract basis.

The top soil and reject materials from limestone mining activity will be taken to the separate dumping site along the periphery of lease area by trucks for stacking and preservation. At closure of mine, mine pit will be converted as water pond.

The management has proposed adequate pollution control measures for the effective control of environmental pollution at source itself. Similarly, green belt development, rain water harvesting, waste reclamation and social welfare activities will also be taken on priority in the study area.

An Environment Management Plan will be implemented vigorously. An Environment Monitoring Cell will look after pollution control at source, environmental monitoring, remedial measures, social welfare activities etc.

In view of above, the Majra Limestone Mine will be environmentally compatible in all respect.