

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
REPORT
& ENVIRONMENT MANAGEMENT PLAN
of**

Executive Summary English

M/s Shubham Minerals (Mohbhattha Dolomite Deposit)

at

Village- Mohbhattha, Tehsil- Berla, and District- Bemetara, State- Chhattisgarh

Area 2.26 ha

at

Khasra No: - 1299, 1301, 1302, 1303, 1304, and 1305,

Capacity: 4698 Tons per annum

Proposal No. SIA/CG/MIN/212404/2021

Applicant

**M/s Shubham Minerals
(Prop. Shri Bhaktu Lal Ramani)**

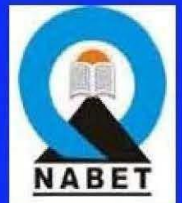


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EXECUTIVE SUMMARY

INTRODUCTION

Environmental Impact Assessment (EIA) study is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision making tool, which guides the decision makers in taking appropriate decisions for proposed projects. It aims at predicting environmental impacts at an early stage of project planning and design, find measures to reduce adverse impacts, shape projects to suit the local environmental and present the predictions and options to decision makers.

The mining lease is located in Village- Mohbhattha, Tehsil- Berla, and District- Bemetara (C.G.) Geo-graphically the ML area extends from Longitude 81°23' 35.91"E to 81°23' 45.21"E and Latitude 21°36'55.37" N to 21°37'0.24" N.

The study area of the proposed project comprises of 10 km radius around the mining lease boundary, the map showing the core zone (ML area) and buffer zone (10 km radius from the lease boundary).

The life of the mine is anticipated at 30 years based on the level of exploration and reserve established as per UNFC classification and expecting the market demand will remain at 4698 Tonnes per Annum.

Location

The mining lease is located in Village- Mohbhattha, Tehsil- Berla, and District- Bemetara (C.G.) Geo-graphically the ML area extends from Longitude 81°23' 35.91"E to 81°23' 45.21"E and Latitude 21°36'55.37" N to 21°37'0.24" N.

Connectivity

The lease area is about 50m from the road side. The QL area can be approached from National Highway-(NH-30) about which is at a distance of 19 km the Nearest Railway Station Durg at distance of 48km. The Nearest Airport is Swami Vivekanand International Airport at distance of about 60 km.

Mailing/ Correspondence Address of Project Proponent:

Proprietor Mr. B L Rammani

Shri Bhaktu Lal Rammani, S/o T. D. Rammani, Station Road Durg (C.G.) Pin code – 495001

Size of the Project

The total Mine Lease areas considered is (2.26 ha). The proposed production is 4698 Tonnes per Annum

Anticipated Life of Project and Cost of the Project

The life of the mine is anticipated at 30 years based on the level of exploration and reserve established as per UNFC classification and expecting the market demand will remain at 4698 Tonnes per Annum.

MINING

Dolomite stone mining will be done at the proposed site. Mining operations is to be carried out by opencast fully mechanized method by with the help of machinery. Mining will be carried out in the form of benches. The overburden removal from benches will be done by drilling method with blasting is involved along with deployment of small excavator and dumpers. Mining operation is proposed in this small area for further five-year plan. Drilling of dolomite boulders will be carried out by using wagon drill. For transporting waste to the respective dumping sites, tippers and Hydraulic Tractor will be used.

Production Plans for Five Years

The Proposed Production of Dolomite stone in next 5 years:

| YEAR-WISE PRODUCTION | AREA in m ² | DEPTH in (m) | VOLUME in (m ³) | SP.GP. | TONNAGE | TONNAGE YEAR |
|--------------------------------|------------------------|--------------|-----------------------------|--------|--------------|--------------|
| I year 1 st Bench | 545 | 1.5 | 817.5 | 2.85 | 2329.9 | 4010.0 |
| I year 2 nd Bench | 393 | 1.5 | 589.5 | | 1680.1 | |
| II year 1 st Bench | 500 | 1.5 | 750.0 | 2.85 | 2137.5 | 4181.0 |
| II year 2 nd Bench | 478 | 1.5 | 717.0 | | 2043.5 | |
| III year 1 st Bench | 509 | 1.5 | 763.0 | 2.85 | 2176.0 | 4253.7 |
| III year 2 nd Bench | 486 | 1.5 | 729.0 | | 2077.7 | |
| IV year 1 st Bench | 550 | 1.5 | 825.0 | 2.85 | 2351.3 | 4600.0 |
| IV year 2 nd Bench | 526 | 1.5 | 789.0 | | 2248.7 | |
| V year 1 st Bench | 562 | 1.5 | 843.0 | 2.85 | 2402.6 | 4698.3 |
| V year 2 nd Bench | 537 | 1.5 | 805.5 | | 2295.7 | |
| Total | - | - | 7629 | - | 21743 | 21743 |

Disposal of Waste

Nature of waste, its rate of yearly generation and proposals for disposal of waste: The mine waste is in the form of following: -

- (1) Top soil: -Only top soil will be removed from the lease area. Total 2660 cum top soil will be generated from the lease which will be spread on 7.5m radius along the 0.602 ha lease boundary for plantation.
- (2) OB and Mine waste: -The waste generated as top soil will be used for plantation purpose at safety zone.

Use of Mineral

Dolomite Stone is used in steel and metallurgy unit as a flux

General Features

I) Surface Drainage Pattern

In the Study area of 10 km radius, Shivnath River about 2.7 km (East)

ii). Vehicular Traffic Density

The QL area can be approached from National Highway (NH-30) which is at a distance of about 19 km. The Nearest Railway Station is about Durg at 48km. The Nearest Airport is Swami Vivekanand International Airport at a distance of about 60 km.

The mode of transport of mineral and waste will be dumpers or trucks within the QL area. The mineral transportation to the destination industry outside the mining lease area will be by road.

iii) Water demand

The water required is mainly for dust suppression, green belt development, drinking and other domestic purpose during mining operations. The total requirement will be 5.0 KLD. Water required during operation phase will be procured from bore well in the lease area and sump.

Manpower Requirement

About 14persons will be getting direct and indirect employment in this mine. The man power will be mostly skilled.

DESCRIPTION OF BASELINE-ENVIRONMENT

The study area of the Environmental Impact Assessment comprises of core and buffer zones. The data collected was pertaining to air, water, noise, soil, geology, flora, fauna, forest types and various ecological parameters. A socio-economic study was also conducted in the study area covering large habitations. Field surveys were also conducted in the study area for the purpose of augmenting the remote sensing data. For this purpose, data on various attributes such as land features, rivers, forests and vegetation types were recorded from the ground land cover facility (GLCF).

Baseline Data had been collected & analyzed in relation to proposed mine is as follows: -

- Land Environment
- Water Environment
- Air Environment
- Noise Environment
- Biological Environment
- Socio-Economic Environment.

(a) Land Use: Object of this study is to provide a baseline status of the study area covering 10 km radius around the proposed Mine site so that temporal changes due to the mining activities on the surroundings can be assessed. The land-use is divided into agriculture land, settlement, river / Nala and forest area as shown in the map. The area is fertile and dominated by the proportion of agriculture land.

Classification scheme adopted for the preparation of land use/land cover maps on 1:50,000 scales. Land use / Land cover classification is given in the table below.

Land Use Pattern of the Study Area (within 10 km Buffer)

| Land use Type | Area (Ha) |
|------------------|-----------------|
| Open Land | 845.33 |
| Stony Quarry | 56.21 |
| Settlement | 991.38 |
| Water Bodies | 354.20 |
| Agriculture Land | 29431.83 |
| TOTAL | 31678.95 |

There is no National Park, Biosphere reserve, Migratory routes of fauna and National Monument within 10km periphery of the lease area as per secondary data available. There is no habitation within lease area.

Analysis Results of Baseline Environment

(a) Results of Analysis of the Soil.

Sampling was carried out at 8 locations during the study period. The summary of the results is presented below:

- PH of the soil samples was found to be in the range of 6.70-7.85
- Organic matter of the soil samples was found to be medium exhibiting in the range of 0.45 % - 0.94 % and average fertility
- Soils in the area were found to be sandy silty clayey in texture with sand percentage in the range between 42.43-65.76 %, silt between 12.93-21.47 % and Clay 20.76-37.-12%.

(b) WATER ENVIRONMENT

- PH of the Ground water samples collected was in the range of 7.03-7.55
- Total dissolved solids in the samples were in the range of 421-455mg/l.
- Total Hardness was found to vary between 167.41-184.72mg/l.
- Chlorides concentration was found to vary between 60-68mg/l.
- Fluoride concentration was found to vary between 0.17-0.24mg/l.
- Sulphates concentration was found to vary between 12.22-34.23mg/l.
- Heavy metal concentrations in all samples were found to be well within the limits.

(c) AMBIENT AIR QUALITY

a. PM10: The level of PM10 indicates the level of dust and fugitive emissions in the surroundings. From the above results it can be observed that the maximum concentration of PM10 was estimated to be in the range of 33.14 to 48.43 $\mu\text{g}/\text{m}^3$ respectively. The maximum concentration of PM10 was recorded at location AAQ8 (Max GLC & Transport Convergence 48.43 $\mu\text{g}/\text{m}^3$) whereas the minimum concentration was recorded at location AAQ4 (Silent Zone 33.14 $\mu\text{g}/\text{m}^3$).

b. PM2.5: The maximum concentration of PM2.5 (Max GLC & Transport Convergence 37.12 $\mu\text{g}/\text{m}^3$) during the study period was recorded at location AAQ8. The minimum concentration recorded 21.18 $\mu\text{g}/\text{m}^3$ at location AAQ6 (Silent Zone). The high concentration at location AAQ8 indicates that the area experiences vehicular movement.

c. Sulphur dioxide (SO₂) High level of SO₂ in ambient air indicates the presence of combustion fossil fuel and burning of wood and other plant material in the vicinity. The ambient air monitoring results presented above indicate that the highest average concentration of SO₂ is experienced at Location AAQ8 (Max GLC & Transport Convergence), i.e. 24.37 $\mu\text{g}/\text{m}^3$ at location AAQ8. The minimum of SO₂ recorded at AAQ4 (Silent Zone) monitoring location during the study period was 11.14 $\mu\text{g}/\text{m}^3$.

d. Oxides of Nitrogen (NOX) the various forms of Nitrogen in NO, NO₂ and N₂O are collectively called as Oxides of Nitrogen. The highest value 28.31 µg/m³ at AAQ8 (Max GLC & Transport Convergence) while the minimum value 13.23 µg/m³ was recorded at AAQ4 (Silent Zone).

e. The descriptive statistics of ambient air quality monitoring at all the locations are indicating that pollution levels did not exceed the standards prescribed by the CPCB. It should be noted that 98th Percentile values computed at all the sampling locations were close to the maximum value observed at the respective locations. This indicates a negligible variance in the observations obtained.

(d) NOISE ENVIRONMENT

The values of noise observed in some of the areas are primarily owing to vehicular traffic and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 58.51dB (A) at NQ8 (Commercial Zone) and 37.12 dB (A) at NQ4 (Silent zone) and maximum & minimum noise levels at night time were recorded in the range of 42.61 dB(A) at NQ8(Commercial zone) and 31.11 dB(A) at NQ6 (Silent zone) in downwind direction respectively.

(e) BIOLOGICAL ENVIRONMENT

The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes. The vast array of interactions among the various components of biodiversity makes the planet habitable for all species, including humans. There is a growing recognition that, biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never been as great as it is today. Species extinction caused by human activities continues at an alarming rate. Protecting biodiversity is in our self-interest.

The biological study was under taken by Ecology & Biodiversity Expert, as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area, to compare it with past condition with the help of available data, to predict changes in the biological environment as a result of present activities and to suggested measures for maintaining its health.

(f) Socio- economic

Study Area: The ecological survey has been conducted for one season. The details are given below:

Post monsoon season: (15 October, 2021 to 15 January, 2022).

Core zone: At the project site.

Buffer zone: Around the project site in 10 km radius.

Household: There are 7562 households in the study area and the average household size is four.

Sex Ratio: The overall sex ratio in the study area has been worked out to 10002.09 females per 1000 males, which is greater than the national average of 940 females per 1000 males. The highest sex ratio recorded in the study area is 10002.09 females per thousands of males. Sex ratio of Children belonging to 0-6 age group has been worked out to 779.06 females per 1000 males.

Literates and Literacy Rate:

All persons aged seven years and above, who can both read and write with understanding in any language including Braille are considered as literate. The total numbers of literate persons in the study area are 8430, which is 21.51percent of the total population. Of the total number of literate persons 62 percent are male and the remaining 38 percent are female.

The overall literacy rate in the study area has been worked out to 22 percent. The gender wise distribution of literacy rate reveals that 13.35 percent of the literate persons are male and 37.95 percent are female. This creates a gender gap of 24.6 percent.

Workers and Work Participation Rate

A worker has been defined as a person who participates in a productive activity with or without compensation, wages or profit and such participation may be physical and/or mental in nature. A worker may be a main worker or a marginal worker. The main workers are those workers who had worked for the major part of the total working period. In case the total working period is 365 days the worker must have worked for more than 200 days. The marginal workers, on the other hand are those workers who had worked for less than six months during the last 365 days.

The total number of workers in the study area has been worked out to 12400, which is 31.65 percent of the total population. Of the total number of workers 61.20 percent are male and the remaining 39 percent are female. The overall work participation rate is 31.65 percent. While the work participation rate of male is19.37 percent, it is only 18.41 percent in the case of females. This creates a gender gap of 1.04 percent, which is significantly high. The Main workers constitute 9.94 percent of the total workers, while marginal workers constitute only 87.67 percent of the same. An analysis of data reveals male dominancy in Male workers (72.64 percent) and female dominancy (27.35 percent) in case of Marginal workers. This was as expected. The females prefer to work as marginal workers as they have very little time to spare for other work outside their houses as they are to undertake household work besides rearing their children. The

total number of main and marginal workers in the study area is 3896 and 6580 respectively.

Further classification of the workers has revealed that in the study area 25.1 percent of the main workers are agricultural workers, and the remaining 1.50 percent is 'Other Workers'. Furthermore, of the total agricultural workers about 25.1 percent are Cultivators and the remaining 2.01 percent are Agricultural Labour. About 58 percent of cultivators are male and the remaining 42 percent are female. On the other hand, 67.34 percent of Agricultural labours are male and the remaining 33 percent are female. It may be observed from the above figures that participation of women in agriculture both as cultivators and agricultural Labour is far below in comparison to their male counterpart. This also confirms that in agriculture women work more as agricultural labours than as cultivators. The agricultural labours are mostly landless. They work in the field of big farmers for which they get wages or part of the produce. The wages of women agricultural labour is miserably low in comparison to their male counterpart, though they put same amount of hard work as the male does. The 'Other Workers' include white collar workers, blue collar workers, pink collar workers, informal workers, etc.

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Impact on Ambient Air Quality

The mining is proposed to be carried out by opencast other than fully mechanized method. The air borne particulate matter generated by ore and handling operations as well as transportation is the main air pollutant. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) contributed by vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions.

Mitigation Measures

1. Water sprinkling will be done on the haul roads twice in away.
2. The dust generated during the process will be minimized by water spray at the working faces before and after the activity.
3. Plantation will be carried out on approach roads and in Lease boundary.
4. Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (Minimize transportation over unpaved road);
5. Personal Protection Equipments (PPE) like dust masks, ear plugs etc. will be provided to mine workers.
6. Rock breaker will be used for breaking over size boulders in order to reduce dust and noise generation, which otherwise would be generated due to secondary blasting.

7. Speed limit will be enforced to reduce airborne fugitive dust from vehicular traffic.
8. Deploying PUC certified vehicles to reduce their noise emission.
9. Haul road shall be covered with gravels
10. Spillage from the trucks will be prevented by covering tarpaulin over the trucks.
11. Ambient Air Quality Monitoring will be conducted on regularly basis to assess the quality of ambient air.
12. Proper maintenance of machines improves combustion process & makes reduction in the pollution.
13. Good maintenance and monitoring of fuel and oil will not allow significant addition in the gaseous emission.

NOISE ENVIRONMENT

Noise generated at the mine is due to mechanized mining operations and truck transportation activities. The noise generated by the mining activity dissipates within the mine. There is no major impact of the mining activity on the nearby villages. However, pronounced effect of above noise levels is felt only near the active working area.

The impact of noise on the villages is negligible as the villages are far located from the mine workings. Since there is no involvement of major machinery, the impact of noise levels will be minimal.

| S.No. | Impact Prediction | Mitigation Measures |
|-------|---|---|
| 1 | Noise Impact due to mining activities. | The noise levels from all the sources are periodical and restricted to particular operation. |
| 2 | Noise impact due to vehicular movement. | a) Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce the generation of noise. b) Plantation along the sides of approach roads, around office building and mine area will be done to minimize the propagation of noise. c) Personal Protective Equipments (PPE) like earmuffs/earplugs will be provided to all operators and employees working near mining machineries or at higher noise zone. d) Periodical noise level monitoring will be done |

BIOLOGICAL ENVIRONMENT

| S.No. | Impact Predicted | Suggestive measure |
|-------|---|---|
| 1 | Disturbance of free movement/living of wild fauna | <ul style="list-style-type: none"> Care will be taken that noise produced during vehicles movement for carrying OB and ore materials are within the permissible noise level. Care will be taken that no hunting of animals (birds) carried out by labours. If wild animals are noticed crossing the core zone, it will not be disturbed at all. Labours will not be allowed to discards food, plastic etc., which can attract animals near the core site. Only low polluting vehicle will be allowed for carrying ore materials. All vehicles allowed in the project site area will have to provide pollution under control certificate at the end of three months Noise level will be within permissible limit (silent zone- 50dB during day time) as per noise pollution (regulation and control), rules, 2000, CPCB norms |
| 2 | Harvesting of flora | <ul style="list-style-type: none"> No tree cutting, chopping, lumbering, uprooting of shrubs and herbs should be allowed Collections of economically important plants will be fully restricted |

LAND ENVIRONMENT

| S. No. | Impact Prediction | Mitigation Measures |
|--------|---|--|
| 1 | Change in the Topography of the Land / Land Degradation | The proposed mining activity is carried out in hilly region and waste land After removal of ore body, a undulating portion will be created. All the broken area will be reclaimed by systematic backfilling and rehabilitated by afforestation so that landscape of the area is improved. |
| 2 | Solid waste generation | About 10% mineral wastes will be generated. Top Soil will backfilled in the mined out areas on which plantation will be raised. |
| 3 | Change in Drainage Pattern | Water flow / course will not be obstructed and natural drains or nallahs will not be disturbed. Run-off from mine and mineral stack will be prevented to avoid being discharged to surroundings, particularly to agricultural land. Garland drains and, catch pits has been constructed to prevent run off affecting the |

| | | |
|---|---|--|
| | | surrounding agricultural land. Green belt has been developed in boundary. |
| 4 | Impact on the Agricultural Practice at nearby area due to dust generation | Agriculture activities are practiced nearby areas may impacted because of dust generation but mitigative measures such as regular water sprinkling on active areas for example haul roads, excavation sites will be strictly followed so that impact is minimized. |

WATER ENVIRONMENT

| S. No. | Impact Prediction | Mitigation Measures |
|--------|---------------------------------------|--|
| 1 | Effect on the Ground Water Table | Max Elevation of the ML area is 267m AMSL Ultimate depth of mine is up to 266m AMSL. Ground Water table is 25m to 30m AMSL. The mining activity will not intersect with the ground water table. |
| 2 | Wash off from the dumps | No dumping has been proposed. |
| 3 | Soil Erosion | Reclamation of the mined out area will be done with plantation to avoid the soil erosion |
| 4 | Waste Water generation/ Discharge | Portable Bio-toilets will be used; hence no sewage / liquid effluent will be generated and contamination is also not expected due to percolation. |
| 5 | Siltation in nearby agriculture field | Garland drains have been constructed on the sloping side barrier of the ML area. The garland drain has been routed through settling tank to remove suspended solids from flowing into storm water. |

ADDITIONAL STUDIES

DISASTER MANAGEMENT PLAN

In order to avoid any danger in the mine site at the end of life of mine a disaster management cell headed by local authority District Collector will be constituted. Police department health authorities, including doctor, ambulances and so on will have a vital part to play following a disaster along with the mine management, and they will be an integral part of the disaster management plan.

The disaster management plan is aimed to ensure safety of human life and property and protection of environment Following are the objective of the disaster management plan.

- (i) First Aid to injure.
- (ii) Rescue operation and provision of adequate medical facilities to the injured.
- (iii) Safety of the human life in the buffer zone if needed.
- (iv) Protecting and minimizing damage to property and the environment.
- (v) Initially restrict and ultimately bring the incident under control.
- (vi) Identify any dead.
- (vii) Inform to the administration, DGMS and statutory persons as per Rules.

PROJECT BENEFITS AND COSTS EVALUATION

The project will improve the physical infrastructure, social infrastructure like improvement of road conditions water supply during dry season, drainage, educational institutions and improved environmental conditions, etc. The project also provides direct employment to 50 persons and indirect employment to another 40 persons. It increases economic activities, better living standard, educational facility, health facility and infrastructural development. The project will contribute to district mineral fund which will directly provide aid to the local authority to fund the development projects. The management will provide free saplings of fruit bearing and other trees, etc. to local during rain for plantation. This will increase the consciousness in workers and near-by villagers for greenery. Fruit trees can contribute towards their financial gains.

The CSR activities are increasingly being taken up by the project proponent not only as fulfilling of mandatory provisions but also for the formation or enhancement of brand image. Besides the above, CSR is seen more as a responsibility towards society rather than a business promotion activity.

Budget for Environmental Protection

| Particulars | Capital Cost | Recurring Cost/ year in Rs. |
|--------------------------------------|-----------------|--------------------------------|
| Environmental Protection | | |
| Dust Suppression & Pollution Control | 1,00,000 | 1,00,000 |
| Tarpaulin and cover for stack of ore | 70,000 | 40,000 |
| Environmental Monitoring | 30,000 | 30,000 |
| Green Belt | 3,00,000 | 30,000 |
| Total | 5,00,000 | 200,000 |

Budget for Occupational Health

| Particulars | Capital Cost (Rs.) | Recurring Cost (Rs.) |
|-----------------------|--------------------|----------------------|
| For routine checkup | -- | 50,000 |
| Infrastructure &PPE's | 50,000 | 50,000 |

Budget for Water, Shelter and Sanitation for Mine Worker

| Scheme | Capital Cost (In Rs) | Recurring Cost (In Rs)/year |
|---------------------------------|----------------------|-----------------------------|
| Drinking water facility | 50,000 | 20,000 |
| Rest shelter | 50,000 | 20,000 |
| Sanitation (Urinal and Toilet) | 1,00,000 | 30,000 |
| Total | 2,00,000 | 70,000 |

CONCLUSION

The project will throw opportunities to local people for both direct and indirect employment. The proposed mining operation in the state will not only fetch income to the state exchequer but also ensure healthy development of proposed mining in the state of Chhattisgarh. Illegal mining and unorganized mining pose a much bigger health hazard whereas organized mining under QL facilities to undergo periodic health check-ups.

At present agriculture is the main occupation of the people living in the study area. Due to mining project the occupational pattern of the people in the area will change making more people engaged in industrial and business activities there by leading to urbanization. It is expected that education, health, housing, water and electricity etc. facility will improve to due to this mining project and associated industrial and business activities.