

DRAFT ENVIRONMENT IMPACT ASSESSMENT REPORT

Executive Summary In English

BIRGAHNI LIMESTONE QUARRY

at

**Village: Birgahni; Tehsil :Janjgir & District – Janjgir-Champa
(C.G.) ,**

State : Chhattisgarh ,

**Area 2.336 hac at khasra no. 1966 ,Capacity : 38,827.69 TPA
(15531.08 cum)**



Applicant

M/s. Champa Minerals

Prop: Shri Kishore Rathor

Address: ward no.09, Village: Birgahni, Tehsil: Janjgir

District – Janjgir-Champa (C.G.)



Indian Mine Planners & Consultants

(A Geological, Mining & Environmental Consultants)

EXECUTIVE SUMMARY

INTRODUCTION

Environmental Impact Assessment (EIA) 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. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are taken into account during the project designing.

The mining lease is located in village of Birgahni; Tehsil Janjgir & District – Janjgir-Champa (C.G.).Geo-graphically the QL area extends from Longitude 82°37'59.20" to 82°37'54.94" East and Latitude 22°01'23.95" to 22°01'23.37" North.

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 10 years based on the level of exploration and reserve established as per UNFC classification and expecting the market demand will remain at 38,827.69 TPA. (15,531.08 cum)

Location

The mining lease is located in village of Birgahni; Tehsil Janjgir & District – Janjgir-Champa (C.G.).Geo-graphically the QL area extends from Longitude 82°37'59.20" to 82°37'54.94" East and Latitude 22°01'23.95" to 22°01'23.37" North.

Connectivity

The lease area is about 1.50 km from Champa. The QL area can be approached from National Highway 200 which is at a distance of 470 m North Direction. The Nearest Railway Station Champa Railway Station 2.50 Km NW Direction. The Nearest Airport is Chakarbhata Bilaspur Airport 67 Km.

The lessee is M/s. Champa Minerals

Mailing/ Correspondence Address of Project Proponent:

M/s. Champa Minerals
Prop: Shri Kishore Rathor
Address: ward no.09, Village: Birgahni, Tehsil: Janjgir
District – Janjgir-Champa (C.G.)

Size of the Project

The total Mine Lease areas considered is 2.336 ha. The proposed production is 38,827.69 TPA (15,531.08 cum)

Anticipated Life of Project and Cost of the Project

The life of the mine is anticipated at 10 years based on the level of exploration and reserve established as per UNFC classification and expecting the market demand will remain at 38,827.69 TPA. (15,531.08 cum)

MINING

Opencast semi mechanized method of mining will be adopted in the lease area. The excavation will be carried out usually by manual labour with the use of jack hammers, excavator etc. and loaded into tractor/truck/tipper. The limestone will be suitably blended to be supplied in market.

Year wise Production details

Year	Tonnes
1 st	38827.69
2 nd	38175.75
3 rd	37000.13
4 th	37755.38
5 th	37256.63
6 th	36622.50
7 th	28452.50
8 th	2503.25
9 th	2626.75
10 th	2750.25
Total	261970.81

Summary of Land use at different stage will be as follows (in ha):

Articles	Land use at the end of 5 years in Hect.	Land use at the end of 10 years in Hect.
Forest Land	Nil	Nil
Agricultural Land	Nil	Nil
Waste Land		
A. Lease Area	2.336	2.336
B. Quarrying & allied area		
1. Area under pits	1.111	1.111
2. Statutory Boundary	0.542	0.542
3. Non Mineable Area	0.403	0.403
4. Area under Stone Crusher	0.280	0.280
Total ::	2.336	2.336
Area for dumping & plantation on mine boundary	0.252	0.252

Systematic working will be done by formation of benches as per M.M.R. 1961. All applicable rules of MMR 1961, Mines Act-1952, MCR-2016 and MCDR-1988 will be followed for safe, scientific & systematic working to follow the principles of safety & conservation of human health & mineral.

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:** -The top soil is proposed to be generated during the ensuing SOM period.
- (2) OB and Mine waste:** - About 10% mineral waste will be generated and the waste generated as topsoil will be used for plantation purpose at safety zone.

Selection of Dumping Site: The area selected for dumping is around the lease boundary and if the dumping of topsoil gets short than the land controlled or owned by the lease will be utilized with due permission of district mining office.

Method and manner of disposal of waste: Top soil excavated up to height of around 1.30-1.50 m at the mine boundary. The area selected for dumping is around the lease boundary and if the dumping of topsoil gets short than the land controlled or owned by the lease will be utilized with due permission of district mining office. Such topsoil will be utilized in priority for reclamation at the time of reclamation of mine.

Use of Mineral

The Limestone will be used basic raw material of civil construction works like building, Dam, Roads, etc

General Features

I) Surface Drainage Pattern

The surface water courses within 10 Km are as under –

- Hasdo River 670m towards east
- Pond – 400m towards east
- Canal at 4.70km towards south west
- Seasonal Nallah- 170m towards north east

ii). Vehicular Traffic Density

The lease area is about 2 km from Champa. The QL area can be approached from National Highway 200 (Bilaspur-Raigarh Road) which is at a distance of 470 m North –east Direction and SH from 3.9 km towards North east. The Nearest Railway Station is Champa Railway Station at 2.0 Km NE Direction. The Nearest Airport is Chakarbhata, Bilaspur Airport at a distance of 66.2 km SW Direction.

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

Existing Traffic Scenario & LOS

Road	V (Volume in PCU/hr)	C (Capacity in PCU/hr)	Existing V/C Ratio	LOS
National Highway 200	64	1100	0.05	A

Note: V= Volume in PCU's/hr & C= Capacity in PCU's/ hr.

The existing Level of Service near Village is "A" i.e. excellent and at PWD road and NH is "A" i.e. excellent.

During Mine Operation

Total Capacity of mine	: 38827.69 TPA
No. of working days	: 240
Extraction & Transportation of mineral	: 161.78 T/day
Working hours per day	: 8 hour
Truck Capacity	: 10 Tonnes
Frequency of trucks deployed/day	: 16.17 or say 16
No. of trucks deployed/day to and fro	: 16 * 2 trucks = 32 trucks
No. of trucks deployed/d, PCU	: 32* 3.0 = 96 PCU
No of trucks deployed/hour, PCU	: 96/8 = 12

Modified Traffic Scenario & LOS

Road	Increased PCU'S- NH-200	V	C	Modified V/C Ratio	LOS
National Highway 200	64+12	76	1100	0.069	A

The LOS value from the proposed mine may be "Excellent". So the additional load on the carrying capacity of the concern roads is not likely to have any significant adverse affect.

iii) Water demand

No processing of mineral will be done in the mine. Only simple sizing and sorting will be done.

Manpower Requirement

About 35 persons will be getting direct and indirect employment in this mine. The man power will be mostly skilled.

DESCRIPTION OF BASELINE-ENVIRONMENT

This section contains the description of baseline studies of the 10 km radius of the area. The data collected has been used to understand the existing environment scenario around the proposed mining project against which the potential impacts of the project can be assessed.

Environmental data has been collected in relation to propose mining for:-

- (a) Land
- (b) Water
- (c) Air
- (d) Noise
- (e) Biological
- (f) Socio-economic

(a) Land Use: The land-use is divided into agriculture land, settlement, and river and forest area as shown in the map. The area is fertile and dominated by the proportion of agriculture land.

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

Land use Types	Area (Ha)
Open/Wasteland	503.45
Scrub Land	2512.73
River	1183.31
Settlement	850.93
Agriculture	27081.87
TOTAL	32132.29

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

(b) SOIL ENVIRONMENT

The analysis results show that soil is basic in nature as pH value ranges from 6.85 to 7.82 showing the saline property of soil. High electrical conductivity (369.01 to 496.20 $\mu\text{S}/\text{cm}$) is observed in the analysis report showing soil electrical behavior and dissolved solids in soil. The presence of Nitrogen content varies from 0.070 to 0.082 %. The concentration of Nitrogen, Phosphorus & Potassium are found low value in the soil samples. pH and EC values vary greatly and are affected by several environmental factors including, climate, local biota (plants and animals), bedrock and surficial geology, as well as human impacts are shown in the analysis report.

Low values of EC indicate relatively dilute waters, such as distilled water or glacial melt water and low deposition of TDS.

(c) WATER ENVIRONMENT

The results of Ground water samples are collected at six locations in the post-monsoon season as discussed above for organoleptic & physical parameters, general parameters, toxic and biological parameters. The analysis results at the six ground water locations and two surface water locations are given below:

The analysis results indicated that pH of the ground and surface water was in range of 6.67 – 7.75 and 7.83 – 8.27 respectively. The TDS was found in the range of 389.23 - 589.89 mg/l and 1031 – 1100 mg/l respectively. Total Hardness was found in range of 180.7 – 204.31 mg/l and 442– 465 mg/l respectively. All parameters were found within permissible limit.

(d) AMBIENT AIR QUALITY

The Ambient Air Quality Monitoring reveals that of eight monitoring stations the minimum concentrations of PM₁₀ were 50.21µg/m³ and maximum 67.74µg/m³. The result of PM_{2.5} reveals that the minimum concentration of 28.59µg/m³ was recorded while maximum concentration of 49.26 µg/m³ was also found at the same place.

As far as gaseous pollutants SO₂ and NO_x are concerned, monitored values are within the prescribed CPCB limit of 80 µg/m³ for residential and rural areas had never surpassed at any selected station. The minimum & maximum concentrations of SO₂ were found to be 8.26µg/m³ and 23.68µg/m³. The minimum and maximum concentrations of NO_x were found to be 22.79µg/m³ and 36.98µg/m³.

(e) NOISE ENVIRONMENT

The values of noise observed in some of the areas are primarily owing to vehicular traffic and other anthropogenic activities. Ambient noise levels are monitored in day and night separately as per method approved by CPCB. One hourly (1hly) noise monitoring reveals that minimum and maximum noise levels were in the range of **49.3** dB (A) at NQ5 (Silent zone) to **55.7** dB (A) at NQ8 (Max GCL & Transport convergence) respectively in day time and in the range of 30.1 dB (A) at NQ5 (Silent Zone) to 45.1 dB (A) at NQ8 (Max GCL & Transport convergence) in night at the same locations.

(f) BIOLOGICAL ENVIRONMENT

The lease area as well as buffer zone area reveals no endangered and endemic species of flora and fauna in the area.

(g) SOCIO- ECONOMIC **Population Composition**

According to 2011 Population Census the study area has a total population of 98293. Of this 54.4 percent are male and the remaining 45.6 percent are female. Further 12.3 percent of the total population belongs to 0-6 age group. About 54.3 percent of them are male and the remaining 45.7 percent are female.

Sex Ratio

The overall sex ratio in the study area has been worked out to 840 females per 1000 males, which is less than the national average of 940 females per 1000 males.

The sex ratio of Children belonging to 0-6 age group has been worked out to 840 females per 1000 males.

Density of Population

The overall density of population in the study area has been worked out to 389 persons per sq. Kilometer.

Households

There are 17579 households in the study area and the average household size is 6.

Social Structure

In the study area, the total number of persons belonging to Scheduled Caste community is 17465, which is 17.8 percent of the total population. The gender wise distribution of schedule caste population is male 53.6 percent and female 46.4 percent, registering a sex ratio of 867 females per one thousand males.

About 81.7 percent of the total population belongs to General category, which includes people belonging to 'Other Backward Castes'. In absolute number the population belongs to this category are 80327 with 54.6 percent male and 45.4 percent female. The sex ratio of General category population has been worked out to 831 females per 1000 males.

Socio-economic development of poor and downtrodden scheduled caste and scheduled tribe people is a continuous process and the government, both at the centre and the states is constantly making efforts to improve the destiny of these people. The State Government has drawn up its own list of socially and educationally backward classes and implementing various developmental schemes for them, mainly in the field of education and income generation. All the ongoing schemes are critically examined and modified periodically to cater to the needs of different groups amongst the above communities. The government has also started various schemes to improve the quality of life of the rural poor, especially for the scheduled castes and scheduled tribes by making special provisions for them..

Over the decades the Scheduled caste and scheduled tribe people are making rapid progress both in economic and social sphere. Today they are no more untouchables. The literate Schedule Caste and Scheduled tribe people are engaged in trade, commerce & industry, private & government services including police and armed forces.

Literacy Status

All persons aged seven years and above, who can both read and write with understanding in any language are considered as literate. The total number of literate persons in the study

area is 64423, which is 65.5 percent of the total population. Of the total number of literate persons 60 percent are male and the remaining 40 percent are female. The overall literacy rate in the study area has been worked out to 74.7 percent. The gender wise distribution of literacy rate reveals that 82.3 percent of the literate persons are male and 65.6 percent are female. This creates a gender gap of 16.7 percent.

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 a day.
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 stony 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 waste 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, catchpits 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 255m AMSL Ultimate depth of mine is up to 253m AMSL. Ground Water table is 35m to 40m 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	toilets with soak pits 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 and indirect employment to 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 monsoon season 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.

All the activities listed are for community development as a whole and not for individual person or a family. Each development initiative will be implemented in close collaboration with the village Panchayat. The Project proponent may avail the services of a NGO for the implementation of the above programme, if felt needed.

Budget for Environmental Management Plan

Budget for Environmental Protection

Particulars	Capital Cost	Recurring Cost/ year in Rs.
Environmental Protection		
Dust Suppression & Pollution Control	2,00,000	1,00,000
Tarpaulin and cover for stack of ore	2,00,000	50,000
Environmental Monitoring	2,00,000	70,000
Green Belt	2,80,000	80,000
Total	8,80,000	3,00,000

Budget for Occupational Health

Particulars	Capital Cost (Rs.)	Recurring Cost (Rs.)
For routine checkup	--	1,00,000
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	75,000	50,000
Rest shelter	25,000	15,000
Sanitation (Urinal and Toilet)	1,00,000	35,000
Total	2,00,000	1,00,000

Corporate Environment Responsibility

Activities under CER	Expenditure	Recurring Cost
Installation of Rain water harvesting system in the school premises (Rs. 1.0 lakh * 2school)	2,00,000	20,000
Portable drinking water facility Will be installed in the government Middle school Birghani &	60,000	

PROJECT: BIRGAHNI LIMESTONE MINE OVER AN AREA OF 2.336 Ha VILLAGE BIRGHANI
APPLICANT: KISHOR RATHOR

primary school Birghani for drinking purpose (Rs. 30000*2) with two years maintenance		
Separate water tanks for toilet of boys and girls will be constructed in school (20000 * 2)	40 000	5000
Plantation along with tree guards (30000 * 2)	60,000	10000
Total	3,60,000	35000/-

CONCLUSION

As discussed, it is safe to say that the proposed facilities are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to serve as biological indicators for the pollutants released from the premises of the "Limestone Quarry."