

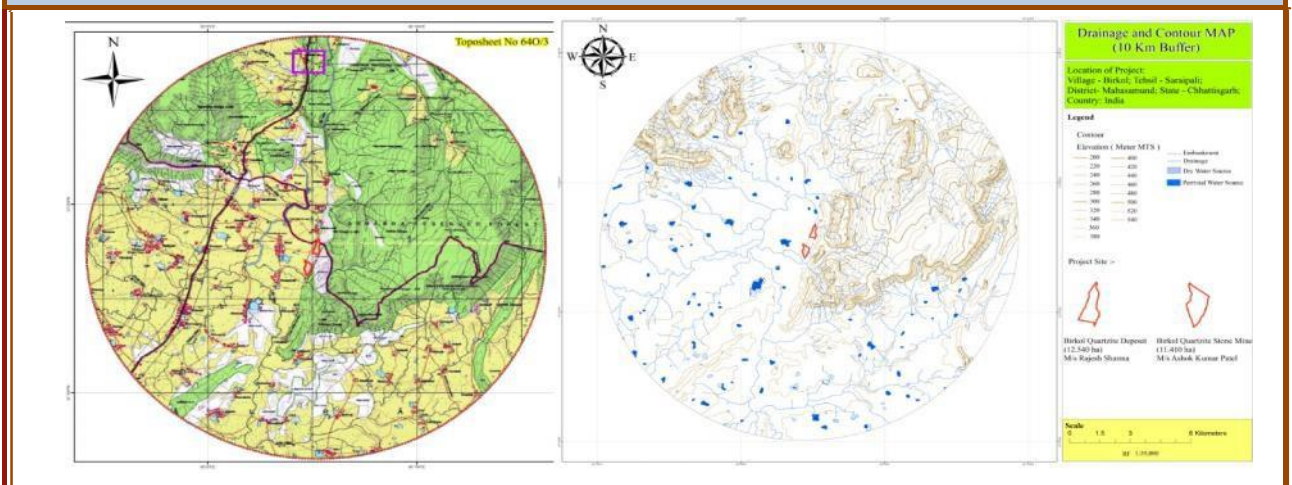
Proposed Birkol Quartzite Deposit

AT
 Khasra No 1186;
 Village - Birkol; Tehsil - Saraipali,
 District- Mahasamund; State - Chhattisgarh
 Country: India; Lease Area:11.410 ha

EXECUTIVE SUMMARY (ENGLISH)

PROJECT PROPONENT :

Mr. Ashok Kumar Patel



Project Name	Birkol Quartzite Mine
Project Proponent	M/s. Sh. Ashok Kumar Patel
Project Address	Village-Birkol, Tehsil- Saraipali, District- Mahasamund State-Chhattisgarh

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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. This document has been prepared for carrying out Public Hearing through State Pollution Control Board.

ENVIRONMENTAL CLEARANCE

As this project is of Minor Mineral, and as per the Environment Impact Assessment Notification 2006 and its subsequent amendments, all the projects of minor minerals despite of its area, it is mandatory to obtain Environment Clearance from Ministry of Environment Forests and Climate Change. As This project is having area more than 5 ha, it is being dealt by State Level Environment Impact Assessment Authority- Chhattisgarh.

TERMS OF REFERENCE

The proposal was submitted to State Environment Impact Assessment Authority (SEIAA) and the proposal was considered by the State Expert Appraisal Committee, Chhattisgarh during its 212th meeting held on 9/01/2017. Subsequently ToR was issued by State Environment Impact Assessment Authority (SEIAA) during its 69th meeting in vide letter No.1426/SEAC, **Chhatusgarh/mine/Raipur/505 ,New Raipur, dated 25.03.2017**. Due to presence of two other mines with in 500 meter radius i.e M/s Sh Rajesh Sharma 12.54 Ha area of Quartzite Mine, M/s Sushila mining Pvt Ltd. 12.00 Ha of Quartzite Mine(LOI issued). Total lease area of all the three mines are 35.95 Ha. Due to Moef & CC ,Amended notification dated 1/07/2016 cluster formed. According to this notification. total area more than 25 ha . It was decided to consider as B-1 category and recommended to issue standard TOR prescribed by the MOEF & CC, New Delhi. As per notification three month monitoring is required, so period of December to February 2017 has been considered to monitor the baseline of the area, under intimation to SEAC Chhattisgarh.

10.2 PROJECT DESCRIPTION

Proposed project is for Quartzite stone mine having area 11.410 ha. Project proponent for this project is Sh. Ashok Kumar Patel. This is a project for open cast Semi Mechanized method of mining of mineral with maximum production capacity of 46,778 TPA and the estimated cost of project is 25 Lakh.

The area under reference is a barren non forest stony revenue Govt. Land. Total ML area is 11.410 Ha. The area was granted for 10 years period.

The Scheme of Mining has been approved to the project proponent M/s. Sh. Ashok Kumar Patel. Mining plan along with progressive mine closure plan has been approved by Indian Bureau of Mines (IBM), central zone, Ministry of Mines vide letter No. 1391/F.No/RH/MP dated 16.05.2016.

Mailing/ Correspondence Address of Project Proponent:

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Project Proponent	M/s. Sh. Ashok Kumar Patel
Project Address	Village-Birkol, Tehsil- Saraipali, District- Mahasamund State-Chhattisgarh

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M/s. Sh Ashok Kumar Patel
S/o Sh. Shankarshan Patel
Village Birkol, Post-Nawagarhl
Tehsil-Saraipali, District-Mahasamund
Chhattisgarh – 493558
Phone. – 9753211550

Size of the Project

The total Mine Lease areas considered is 11.410 ha. The proposed production is 46,778 TPA

Anticipated Life of Project and Cost of the Project

The life of the mine is anticipated at 138 years based on the level of exploration and reserve established as per UNFC classification and expecting the market demand. Estimated Project cost of the project of Rs 32.70 Lakhs.

LOCATION

The proposed Quartzite Mine comes under village of Birkol, Tehsil - Saraipali, District- Mahasamund, State - Chhattisgarh. The applied (Birkol Quartzite Deposit) area is located about 1.5 km due south-east of village -Birkol , which is connected by good all weather road from the Birkol. The district head quarter Mahasamund is 110 km. State Capital Raipur is 164 km. and Tahsil - Saraipali and other important commercial places are 17 km. from the applied area. The nearest public works department , rest house is located at Saraipali. Buses and local taxi are continuously playing from Saraipali and Nawagarh (3.5 km.) for Birkol village .

Toposheet No.	- 640/3
Latitude	- 21°23'6.3" to 21°23'31.1" North
Longitude	- 83°07'17.9" to 83°07'29.4" East
Elevation	- 243 m to 259 m AMSL.

Salient features of Project

S.No	Particular	Description
1.0	Project Name	Birkol Quartzite Stone Mine (11.41 ha) for proposed 46,778 TPA Capacity at Birkol village, Tehsil-Saraipali, District - Mahasamund, Chhattisgarh by M/s. Sh. Ashok Kumar Patel
2.0	S. No. in the schedule and category of the project as per EIA Notification, 2006	Project falls under category B1 with project activity type "1(a)" (Mining of Minerals).
3.0	Present Mine Lease Area (mineable area and green belt area)	11.410 Ha.
4.0	Type of Land	Barren Non Forest Government land
5.0	Mining lease Period	10 years
6.0	Estimated Project Cost (INR)	32.70 Lakhs.
7.0	Man Power & No. of Working days	Manpower: 25 persons Working days : 300 Days/Year.
8.0	Water Requirement (KLD)	10.0 KLD
9.0	Ground Water Table m below ground level (BGL)	20-25 m (pre and post monsoon season)
10.0	Proved Reserve	90,70,950 Tonnes

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	Pre-Feasibility Mineral Resource	19,02,832 Tonnes	
	Mineable Reserve	64,51,306 Tonnes(after 10 % Deduction)	
	Reserves mined out in 10 Years	467780 Tonnes	
11.0	Targeted Production	46778 TPA	
12.0	End use of Product	Quartzite sold to iron , steel, ferro-alloys, glass and foundary industries situated near to Raipur, Durg, Rajnandgaon, Champa and Raigarh.	
13.0	Climatic Conditions at IMD Raipur	Temperature	Max: 35 ^o C Min: 11 ^o C
		Wind Speed Range	1.67 to 2.22 m/s
		Predominant Wind Direction	Blowing from North East and South West
14.0	Nearest Town	Saraipali 13 Kms	
15.0	Nearest Airport	Raigarh Airport at 50 Km in NE.	
16.0	Nearest Railway Station	Mahasamund Railway Station at 110 Km	
17.0	Nearest Water Bodies	<ul style="list-style-type: none"> • Lath Nalla – 2.5 km in west • Mahanadi River – 33.0 km in North • Marsoili Nalla-7.6 Km in NE • Bendri Nalla-9.8 km in South. • Kholti Nalla-3 km in SW. 	
21.0	Historical Monuments (in 10 Km Buffer)	None within the study Area.	
22.0	Protected areas as per Wildlife Protection Act 1972 (Tiger reserve, Elephant reserve, Wildlife sanctuaries, National park, Consevation reserve and community reserve)	Gomardha Wildlife Sanctuary within study radius	
23.0	Forests within 10 km radius from mine lease boundary	No protected forest has been found in the study area. 4 Reserve forests have been reported namely; Rathan RF-6.0 NW, Gomardha RF-500m.lant RF-2.9 Km in South Direction, Sighora RF – 7 Km in NE.	
24.0	Industries falls under 15 Km	None within the 15 km radius	
25.0	Seismic Zone	Seismic Zone II as per IS-1893 (Part-1)-2002	
26.0	Nearest Govt. Hospital	Govt Hospital-3.5 km from project boundary (arial distance)	

MINING

The proposed Quarrying operation will be of semi mechanized open cast mining operation. The height and width of benches area proposed to be kept 1.5/3 meters in production bench, As there is no top soil/ murrum cover over seen over the quartzite so there will be no O.B. bench proposed. Four production benches proposed for the period of mining plan having 1.5 meters height each. Overall bench slope will be less than 45 with the horizontal. Mining operation will be done on single shift basis. The proposed quarrying operation will be start from the northern part of the lease applied area. The total working pit depth will be 7.5 meters and 5 benches of 1.5 meters height proposed upto 252m RL. Benches will be advanced from north to south direction. Produced quartzite will after sizing and sorting transported by hired trucks to various industries as per the order

2.7.1 Mining during 1st Ten Year

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For first Ten years mine development will be done. Once development work is over mining of mineral begins and then production will become constant as ore body will be reached. Development/working of deposit year wise given below.

TABLE 2.7: Pit wise tonnage and grade of production

YEAR	BENCH NO	Bench Height	Bench with Elevation Range	Area to be require in M ²	Specific Gravity of Quartzite	ROM (MT)	90% Saleable Quartzite in Tonnes	Quarrying Reject
1 st YEAR	3	1.5	258-253.5	7,100	2.65	28228	25400	2828
2 nd YEAR	3	1.5	256.5-252.0	7,100	2.65	28228	25400	2828
3 rd YEAR	3	1.5	256.5-252.0	11,500	2.65	45,712	41,144	4568
4 th YEAR	3	1.5	255.0-252.0	8,860	2.65	35,218	31,696	3522
5 th YEAR	3	1.5	256.5-252.0	11,700	2.65	46,507	41,885	4622
6 TH YEAR	4	1.5	258.0-252.0	14,600	2.65	58,304	52,473	5831
7 TH YEAR	5	1.5	259.0-252.0	15,200	2.65	60,419	54,377	6042
8 TH YEAR	5	1.5	259.0-252.0	15,200	2.65	60,419	54,377	6042
9 th YEAR	4	1.5	258.0-252.0	14,750	2.65	58,629	52,766	5863
10 TH YEAR	3	1.5	256.5-252.0	11,600	2.65	46,109	41,498	4611

Source:-Mine plan

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:-** No top soil is present in the area.
- (2) **Over burden/ Mine waste:-** This is in the form of fractured and bedded etc.
- (3) **Reject Stone** – This is found between soil and Quartzite and below it. The quantity generated during next 10 year is given below :-

Table No: 2.12 Year Wise Waste Generation

Year	Residual Soil (t.)	OB/Waste (t.)	Sub grade	Mineral Reject
1 st	0	2828	-	-
2 nd	0	2828	-	-
3 rd	0	4568	-	-
4 th	0	3522	-	-
5 th	0	4622	-	-
6 th	0	5831		
7 th	0	6042		
8 th	0	6042		
9 th	0	5863		
10 th	0	4611		

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Total	0	46757	-	-
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Use of Mineral

The Quartzite ore of the lease area is suitable for iron ,steel , ferro-alloys, foundry industries situated near Raipur, Durg, Rajnandgaon, Champa and Raigarh of Chhattisgarh. It will also be utilized in beneficiation plants near Saraipali. No processing/beneficiation of the mineral will be done except simple sizing and sorting.

General Features

I) Topography

Topography of the applied area is almost undulating having gentle slope towards North and North east direction. The highest elevation of the area is 259 m above Mean Sea Level (AMSL) while the lowest elevation is 243 m AMSL.

The topography of this district indicates abundance of granite rocks of the Archean Period to stratified rocks of Cuddupah group of upper Cambrian age, and alluvial soil and sand of recent age are found in abundance in the district. Also found in the region are Neo-granite, Dolerite and Quartz in intrusive forms. Topographically the prospecting license granted area is a NE-SW elongated hillock. Quartzite deposit found in the form of small hillock and gentle slope towards all the direction. Highest contour of the prospected area is 259 meters above from MSL and lowest contour is at 243 meters above from MSL. So it is a 16 meters high elongated hillock. There is no river passing within the radius of 5 km, however a small lath nala passing nearby at a distance of 2 km in west. No any other nala or tributary passing just nearby the applied area.

ii). Beneficiation/Processing

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

iii). Infrastructure and Basic Amenities

Basic amenities like rest room shelter/tents, first aid facility, temporary office and water for drinking and portable bio-toilets will be provided during operational phase.

Activity	Water requirement, KLD
Dust suppression /allied mining activity	3.5
Plantation	5.5
Domestic	1.0
Total	10.00

EMPLOYMENT GENERATION

About 25 persons will be getting direct and indirect employment in this mine. The man power will be mostly skilled.

ANALYSIS OF ALTERNATIVES

Mining is a site specific activity and mine is located in the hill of the lease area. In the proposed project, opencast semi mechanized mining will be carried out. For that, no other methodology is going to be changed, depending upon the geological set up, strata of the rock and its structural behavior.

10.3 DESCRIPTION OF ENVIRONMENT

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This section contains the description of baseline studies of the 10 km radius of the area surrounding "Birkol Quartzite Stone Mine". 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 River, Scrub Land, fallow Land, Crop Land and Broken Area as shown in the map. The area is fertile and dominated by the proportion of Fallow land.

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

S.NO	Landcover class	Area (Sq.Km)	Percentage
1	River and Water Bodies	5.82	2
2	Scrub land	56.56	21
3	Tree Cover	43.45	16
4	Crop land	102.38	38
5	Settlement	6.68	2
6	Open Land	53.73	20
	Total	268.62	100

Results of Analysis of the Soil.

The analysis results show that soil is Neutral to slightly alkaline in nature as pH value ranges from 7.16 to 7.62 showing the slightly alkaline property of soil. High electrical conductivity (526 to 552 mS/cm) is observed in the analysis report showing soil electrical behavior of soil. The presence of Nitrogen content varies from 0.067 to 0.073 %. The concentration of Nitrogen, Phosphorus & Potassium are found low value in the soil samples. Silica Content varies from 50.23 to 52.23 %. 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.

(b) WATER ENVIRONMENT

The results of Ground water samples are collected at Five locations in the Winter season as discussed above for organoleptic & physical parameters, general parameters, toxic and biological parameters. The analysis results at the four ground water locations and Two surface water locations are given below:

The analysis results indicate that pH of the groundwater is in range of 7.27 – 7.87. The TDS were found to be in the range of 322-396 mg/l. Total Hardness is in range of 121 - 202 mg/l. The analysis results indicate that pH of the surface water to be in range of 7.73 – 7.87. The TDS is found to be in the range of 300 – 302 mg/l. Total Hardness is in range of 108.0 – 110.0 mg/l. Other parameters like chloride and sulphate are observed within the prescribed limits. The

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physico – chemical analysis for some of the parameters is exceeding the standards as per IS: 10500. The necessary treatment required to minimize the impact is mentioned in Environment Management Plan and cost is born by the Project Proponent.

Interpretation

Surface water of 10 km study area comes under Class C i.e Drinking water source after conventional treatment and disinfection and Ground water comes under Class A i.e Drinking water source without Conventional Treatment but after disinfection.

(c) AMBIENT AIR QUALITY

The Ambient Air Quality Monitoring for period (Dec 2016 –Feb 2017) and additional one month monitoring (March 2017) reveals that of Nine monitoring stations the minimum concentrations of PM₁₀ are 43.76 µg/m³ at AQ6 and maximum 65.33 µg/m³ at AQ1. The results of PM_{2.5} reveal that the minimum concentration of 25.89 µg/m³ at AQ1 while maximum concentration of 40.54 µg/m³ is found at AQ 1. These values for PM10 and PM2.5 are within prescribed CPCB limit of 100 µg/m³ and 60 µg/m³ respectively for residential and rural areas at all stations.

The gaseous pollutants SO₂ and NO_x are within the prescribed CPCB limit of 80 µg/m³ for residential and rural areas at all stations. The minimum & maximum concentrations of SO₂ were found to be 5.90 µg/m³ at AQ6 & 9.76 µg/m³ at AQ1 respectively. The minimum & maximum concentrations of NO_x were found to be 10.01 µg/m³ at AQ6 & 15.92 µg/m³ at AQ1 respectively.

(d) NOISE ENVIRONMENT

The result of Noise Quality at Night time Leq (Ln) varies from 36.2 dB(A) to 54.9 dB(A) and the hourly daytime Leq (Ld) varies from 48.6 dB(A) to 61.1 dB(A) within the study area. Low noise level is due to absence of any mining activity in the area.

(e) BIOLOGICAL ENVIRONMENT

The lease area as well as buffer zone area most of animals found in the study area are of least concern only 5 endangered species of fauna in the area.

(f) Socio- economic

The study area of the Proposed Birkol Quartzite Project, located at Khasra No – 1186; village Birkol, Tehsil: Saraipalli, District: Mahasamund; State: Chhattisgarh (Lease area: 11.410 ha) to be developed by Sh. Ashok Kumar Patel. The study area comprises parts of Tehsil- Saraipalli; of Mahasamund Sarangarh, Baramkela of Raigarh District.

The study area is involves 103 rural villages and 5 reserve forests; however it comes under Revenue village: Birkol, Tehsil: Saraipalli, District: Mahasamund; State: Chhattisgarh. Total 103 settlements/ villages are falling within study area.

Population Composition

According to Census 2011, Core zone doesn't have any human habitation. The buffer zone houses about 42371 Individuals general caste dominate with a percentage of 59% and schedule caste and schedule tribe are forming 16 & 25 percent respectively.

Social Structure

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The Proposed Birkol Quartzite Stone Mine Project located at village Birkol, Tehsil: Saraipali, District: Mahasamund; State: Chhattisgarh (Lease area: 11.410 ha) to be developed by Sh. Ashok Kumar Patel offers a much required infrastructural input for the mineral development of Mahasamund and Chhattisgarh.

10.4 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

10.4.1 IMPACT ON AMBIENT AIR QUALITY

The mining is proposed to be carried out by opencast semi 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.

The maximum incremental value of PM₁₀ is found to be around 1.8µg/m³ due to transportation activity only as blasting is occasionally proposed on the project site. The same has been predicted by using softwares for modelling. It is seen that the GLC's obtained at various locations for the study period are well within the CPCB standards (dated 18th November, 2009).

Mitigation Measures

- Water sprinkling will be done on the haul roads twice in a day.
- The dust generated during the process will be minimized by water spray at the working faces before and after the activity.
- Plantation will be carried out on approach roads and in Lease boundary.
- Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road);
- Personal Protection Equipments (PPE) like dust masks, ear plugs etc. will be provided to mine workers.
- 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.
- Speed limit will be enforced to reduce airborne fugitive dust from vehicular traffic.
- Deploying PUC certified vehicles to reduce their noise emission.
- Spillage from the trucks will be prevented by covering tarpaulin over the trucks.
- Ambient Air Quality Monitoring will be conducted on regularly basis to assess the quality of ambient air.
- Proper maintenance of machines improves combustion process & makes reduction in the pollution.
- Good maintenance and monitoring of fuel and oil will not allow significant addition in the gaseous emission.

10.4.2 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.

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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.	<ul style="list-style-type: none"> ➤ Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce the generation of noise. ➤ Plantation along the sides of approach roads, around office building and mine area will be done to minimize the propagation of noise. ➤ Plants with fleshy leaves and other with branches / dense foliage in uniform vertical distribution would mask and absorb noise. Such measures for afforestation expected to curb high-level noise at the source point would be objectively undertaken; ➤ Personal Protective Equipments (PPE) like earmuffs/earplugs will be provided to all operators and employees working near mining machineries or at higher noise zone. ➤ Periodical noise level monitoring will be done.

10.4.3 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 discard 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

10.4.4 LAND

S.No	Impact Prediction	Mitigation Measures
1	Change in the Topography of the Land / Land Degradation	The proposed mining activity is carried out in almost 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 by afforestation so that landscape of the area is improved.

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2	Solid waste generation	The OB/ mine waste will be utilized as backfilling, preparation and maintenance of approach road to ML area. Dumping in form of preparation of protective bund has been proposed at conceptual stage all along the proposed water reservoir. No external dump will remain.
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.

10.4.5 WATER ENVIRONMENT

S.No	Impact Prediction	Mitigation Measures
1	Effect on the Ground Water Table	The surface level varies from 243 m to 259 m AMSL. The working depth will be 7.5 m below ground level i.e upto 251.5 m above Mean Sea Level (MSL). Ground Water table varies from 218 m to 223 m AMSL. Hence the mining operation will be carried out 28.5m above ground water table.
2	Wash off from the dumps	Adequate drainage systems will be planned in the mining, work shop for allowing the water to flow in the pre-determined path. The drainage system will be designed in such a way even to meet excess rainfall. No water will be allowed to flow across the temporary waste dumps. However, few check dams will be constructed to arrest wash out from the waste dumps during rainy season.
3	Soil Erosion	The working area will be protected by making a bund around the working face and slope of the back filling/dump yard will be covered with plants & grass to avoid the land sliding & 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 drain will be made towards sloping northern side to prevent erosion, sedimentation, and siltation. Protection bund will be erected at the foot of the backfilling/dump area to protect soil erosion due to rain;

10.5 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 injured.
- (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.

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10.6 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 provide direct employment to 25 persons and indirect employment to another 35 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 baring 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.

Steps for CSR Implementation:

The CSR programme will be implemented in the following steps

- Floating of RFP/tender for CSR implementation
- Finalization of CSR implementation organisation
- Memorandum of Understanding and award of CSR Project
- Monitoring & Evaluation
- Reporting

Likely CSR Implementation Organisation:

1. Society for Integrated Development and Assistance – House No 213; Mission Compound; Jhilmila; Saraipalli; Mahasamund
2. Through own CSR wing.

CSR Implementation Area: The Corporate Social Responsibility Programmes will be implemented in the following villages;

1. Nawagarh;
2. Bodesara;
3. Jalpur;
4. Tilaipali;
5. Mohda;
6. Chakarda;
7. Limauguda
8. Mohanmunda
9. Nunpani

CSR Programme: Safe Drinking Water Supply

Safe Drinking Water Supply programmes (SDWS)

In the survey it was told by many villagers that in summer the drinking water availability and fluoride contamination are the main problems faced by the society. It is proposed that the Safe Drinking Water Supply programmes will be implemented in the selected nine villages by the PP Mr. Ashok Kumar Patel.

Project Implementation Schedule:

Project Implementation Plan for 1st year

Project Name	Birkol Quartzite Mine
Project Proponent	M/s. Sh. Ashok Kumar Patel
Project Address	Village-Birkol, Tehsil- Saraipali, District- Mahasamund State-Chattisgarh

1(a)(i)

S.No.	Activities/ Month	1	2	3	4	5	6	7	8	9	10	11	12
Safe Drinking Water Supply programmes													
b	Deployment of Water Tanker for supply the drinking water												
c	Organizing the Training of Sanitation and safe drinking water												
d	Monitoring & Reporting												

The brief budget outline is as follows:

S. No.	Activities	1 st year	Total Annual CSR cost (in lac)
1	Water & Sanitation programme	0.65	0.65
	Total Budget	0.65	0.65

Budget for Environmental Protection

Particulars	Capital Cost	Recurring Cost/ year in Rs.
Environmental Protection		
Dust Suppression & Pollution Control	50,000	20,000
Tarpaulin and cover for stack of ore	35,000	15,000
Environmental Monitoring	50,000	20,000
Garland Drain, Check Dam and settling tank etc	18,000	8,000
Green Belt	10,000	7,000
Total	1,63,500	70,000

10.7 IMPORTANT ASPECTS OF THE ENVIRONMENTAL MANAGEMENT PLAN

Afforestation is a major thrust area in pollution control of mining. Afforestation is suitable for detecting, recognizing and reducing air pollution effects. Trees function as sinks of air pollutants, besides their bio-aesthetical values, owing to its large surface area. The green belt supplements oxygen to the atmosphere and combat air pollution effectively. It not only improves the aesthetic beauty and land scape resulting in harmonizing and amalgamating the physical structures of the mines with surrounding environment, but also acts as pollution sink as indicated above. Thus afforestation is of paramount importance. It also checks soil erosion, make the ecosystem more complex and functionally stable and make the climate more conducive. About 300 number of sapling per year for the afforestation purpose

Afforestation of native species such as Neem, Babool, Bans, Amaltas, Putranjiva, Safeda, etc. is proposed in the barrier zone as well as backfilled area.

The proposed land use at the end of fifth year and at the end of mine life is given in table below:

Break-Up of Land Utilization Pattern (Area in ha)

Sr. No.	Particular	5 th year end	10 th year end

Project Name	Birkol Quartzite Mine
Project Proponent	M/s. Sh. Ashok Kumar Patel
Project Address	Village-Birkol, Tehsil- Saraipali, District- Mahasamund State-Chattisgarh

1(a)(i)

1	Area under pits	2.268	2.268
2	Area for dumping	0.092	0.092
3	Area for road	0.188	0.188
4	Area for infrastructure	0.011	0.011
5	Plantation	0.047	1.100
6	Storage of Mineral	0.000	0.000
7	Storage of Fines	0.000	0.000
8	Crushing Unit	0.000	0.000
9	Unused Area	8.804	7.751

10.8 IMPORTANT ASPECTS OF THE ENVIRONMENTAL MONITORING PROGRAMME

The monitoring of the environment parameters will be out sourced and carried by the lab of SPCB or a lab approved by MoEF/NABL. A budget of Rs 1.0 lac per annum has been allocated for the purpose.

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 "Birkol Quartzite Stone Mine".