PRE-FEASIBILITY REPORT

(As per Ministry of Environment and Forests Letter dated: 30-12-2010)

1. EXECUTIVE SUMMARY

<table>
<tr><th>Particulars</th><th>Details</th></tr>
<tr><td>Project name</td><td>“Proposed expansion project of Quartz, Feldspar, Calcite and Masonry Stone Mine”</td></tr>
<tr><td>Location</td><td>M.L No. 34/04, N/v: Atbhigha, Tehsil: Khandela, District: Sikar (Raj.)</td></tr>
<tr><td>GPS Co-Ordinates of Project</td><td>
<table>
<tr><th>Sr. No.</th><th>Reference point No.</th><th>Latitude (N)</th><th>Longitude (E)</th></tr>
<tr><td>1.</td><td>FRP</td><td>27°36’2.1”</td><td>75°34’20.72”</td></tr>
<tr><td>2.</td><td>A</td><td>27°36’6.01”</td><td>75°34’15.35”</td></tr>
<tr><td>3.</td><td>B</td><td>27°36’7.52”</td><td>75°34’16.74”</td></tr>
<tr><td>4.</td><td>C</td><td>27°36’10.39”</td><td>75°34’12.79”</td></tr>
<tr><td>5.</td><td>D</td><td>27°36’17.44”</td><td>75°34’19.25”</td></tr>
<tr><td>6.</td><td>E</td><td>27°36’13.74”</td><td>75°34’24.33”</td></tr>
<tr><td>7.</td><td>F</td><td>27°36’30.34”</td><td>75°34’39.57”</td></tr>
<tr><td>8.</td><td>G</td><td>27°36’27.26”</td><td>75°34’43.81”</td></tr>
<tr><td>9.</td><td>H</td><td>27°36’2.1”</td><td>75°34’20.72”</td></tr>
</table>
</td></tr>
<tr><td>Toposheet No.</td><td>Falls in survey of India Toposheet No.- 45M/10</td></tr>
<tr><td>Total Mine area</td><td>20.0 Ha. (Non-Forest Land)</td></tr>
<tr><td>Total Mineable Reserves</td><td>1,00,62,540 Tonnes</td></tr>
<tr><td>Capacity/year</td><td>Proposed production Capacity – 12,61,730 TPA (R.O.M.)</td></tr>
<tr><td>Life of Mine</td><td>~ 8.0 years</td></tr>
<tr><td>Estimated project cost</td><td>2.0 Crore</td></tr>
<tr><td>EMP Cost</td><td>3.70 Lac per annum</td></tr>
<tr><td>Power Requirement</td><td>Mining operations will be carried out from sunrise to sunset so there will be no major requirement of electricity. However it will be required for mines office and rest shelter. Though electric power is available along the tar road and near the lease area. Diesel operated</td></tr>
</table>

<table>
<tr><td></td><td>machinery will be used.</td></tr>
<tr><td>Fuel Requirement</td><td>As per requirement, will be made available by contractor for Diesel operated machineries.</td></tr>
<tr><td>DG Set</td><td>No DG Set is available at the mine site.</td></tr>
<tr><td>Highest and Lowest Elevation</td><td><table><tr><th>Sr. No.</th><th>Particulars</th><th>Elevation (mRL)</th></tr><tr><td>1.</td><td>Highest</td><td>463</td></tr><tr><td>2.</td><td>Lowest</td><td>457</td></tr></table></td></tr>
<tr><td>Land use</td><td>20.0 Ha. (Non-Forest Land)</td></tr>
<tr><td>Nearest Habitation/ town</td><td>Khandela is at an approximate distance of 6.60 Km towards west direction from mining lease area. (Population: 29044)
Source: Census 2011</td></tr>
<tr><td>Nearest Airport</td><td>Jaipur International Airport, Sanganer (Jaipur) at an approximate distance of 89.18 Km towards SSE direction from mining lease area.</td></tr>
<tr><td rowspan="4">Nearest Highway</td><td>MDR-100 which is at an approximate distance of 0.056 Km towards south east direction from mining lease area.</td></tr>
<tr><td>SH-37 which is at an approximate distance of 2.20 Km towards south west direction from mining lease area.</td></tr>
<tr><td>SH-13 which is at an approximate distance of 9.83 Km towards east-north east direction from mining lease area.</td></tr>
<tr><td>Local road is passing through the mining lease area for Khali Khera.</td></tr>
<tr><td>Nearest Railway Station</td><td>Kanwat Railway Station, Kanwat (Khandela) which is at an approximate distance of 9.44 Km towards ESE direction from mining lease area.</td></tr>
<tr><td>Power supply</td><td>Chak Basri village</td></tr>
<tr><td>Nearest Telephone</td><td>Khandela</td></tr>
<tr><td>Nearest Dispensary and Govt. Hospital</td><td>Government Hospital is in Hod Village which is at an approximate distance of 3.71 Km towards south– south west direction from mining lease area.

Government Hospital is in Khandela which is at an approximate distance of 6.65 Km towards west direction from the mining lease area.</td></tr>
<tr><td>Educational facility</td><td>Khandela Town</td></tr>
<tr><td>Water demand</td><td>5.0 KLD (Water will be bought from Atbhigha village via tanker water supply)</td></tr>
<tr><td>Nearest tourist places</td><td>Raghunathgarh Fort which is at an approximate distance of 21.61 Km towards west- north west direction from mining lease area.</td></tr>
</table>

<table>
<tr><td>Defense installations</td><td>None within 15 km radius map.</td></tr>
<tr><td>Archeological Features</td><td>None within 15 km radius map.</td></tr>
<tr><td>Ecological sensitive zones</td><td>None within 15 km radius map.</td></tr>
<tr><td>Nearest streams/ rivers/ water bodies (from mine boundary)</td><td>
<table>
<tr><th>Sr. No.</th><th>Name</th><th>Approximate distance from mining lease area</th><th>Direction from mining lease area</th></tr>
<tr><td>1.</td><td>Koat Bandh</td><td>15.76</td><td>WNW</td></tr>
</table>
</td></tr>
<tr><td>Seismic zone</td><td>Seismic zone – II
(Source: National Disaster Management Authority, www.ndma.gov.in/en/zone-map.html)</td></tr>
</table>

2.0 INTRODUCTION OF PROJECT / BACKGROUND INFORMATION

This is a "**Proposed expansion project of Quartz, Feldspar, Calcite and Masonry Stone Mine**". Initially the mining lease was granted in favor of Shri Prakram Singh S/o Shri Rajendra Singh for mineral Quartz, Feldspar, Calcite at Near Village Atbhigha, Tehsil- Khandela & District- Sikar, vide order no- DMG/SIKAR/CC-9/P-1(1)34/2004/182 dated 19/05/2006 and the registration of mining lease was held on 27.05.2006. The lease validity is 50 years (Up to 26/05/2056) from the date of registration.

The Environmental Clearance was granted by the Ministry of Environment, Forest & Climate Change, Government of India vide letter no. J-11015/347/2005-IA.II (M) dated 15/05/2006 in favor of Shri Prakram Singh S/o Shri Rajendra Singh R/o: 410, Luhariya Tower, Ashok Marg, C-Scheme, Jaipur (Raj.).

Then the mining lease was transferred in favour of M/s Reverence Mines & Minerals Pvt. Ltd. R/o: A-28, Anita Colony, Bajaj Nagar, Jaipur (Raj.) Pin Code: 302015 for mineral Quartz, Feldspar, Calcite at Near Village Atbhigha, Tehsil- Khandela & District- Sikar, vide order no-DMD/SIKAR/CC-11/P.1(1)34/2004/4624 dated: 12.06.2012 and the registration of mining lease was held on 01.08.2012.

Now the application for expansion of the project is proposed for grant of Environment Clearance for Mining of Quartz, Feldspar, Masonry Stone and Calcite mineral by Shri Anil Kumar Gupta (Director) of M/s. Reverence Mines & Minerals Pvt. Ltd. The mining lease area is located near village - Atbhigha, Tehsil- Khandela & District- Sikar, Rajasthan.

2.1 Identification of the project and project proponent

Name of the Project	Proposed expansion project of Quartz, Feldspar, Calcite and Masonry Stone Mine
Name of the Applicant	Anil Kumar Gupta S/o Shri Ramji Lal Gupta

	M/s Reverence Mines & Minerals Pvt. Ltd. R/o: A-28, Anita Colony, Bajaj Nagar, Jaipur (Raj.) Pin Code: 302015
Location of the project	Village Atbhigha, Tehsil- Khandela & District- Sikar (Raj.)
Proposed Production	12,61,730 TPA (R.O.M.)
Lease Area	20.0 Hectare (Non-Forest Land)
Mob. No.	+91-9829062399
Email	gupta_anil9@yahoo.com
Status of the firm	Private Limited Company

2.2 Brief Description of nature of the project.

Nature of the Project

Proposed project is of mining of Quartz, Feldspar, Calcite and Masonry Stone having lease area 20.0 Hectare, near Village- Atbhigha, Tehsil- Khandela & District- Sikar, Rajasthan. Mining will be carried out by semi-mechanized opencast method. Proposed production will be 12,61,730 TPA (R.O.M).

2.3 Need For The Project And Its Importance To The Country:

Need of Calcite in the various industries:

- Rubber Industry : Used mostly as filler.
- Textile Industry : Used mostly as filler
- Ceramic Industry : For preparation of glazes
- Paint Industry : Manufacture of paint and distemper, and metal polish
- Cement Industry : Manufacture of cement and calcium carbide
- Optical Industry : In the Optical industry, for the manufacture of Nicol Prism, due to its very high birefringence, high degree of purity, perfect crystalline structure and transparency

Need of Masonry Stone in the various purposes:

It is used in making of coarse aggregate, fine aggregate, sand, etc.

Need of Quartz & Feldspar:

Minerals- Quartz and Feldspar are used in different forms in various industries to manufactures different products. Quartz is used in ceramics, glass manufacturing, ferrosilicon, induction furnace lining, and electric lining industries and in paint. Feldspar is used in glass, ceramics, abrasives and electrodes (as flux coating, welding rods and inductors). For all these purpose, Quartz and Feldspar are usually ground to the size of 200 to 300 meshes in grinding units.

2.4 Demands-Supply

As a result of continuation of the mining project, the demand-supply position will remain balanced. Demand of Calcite and Masonry Stone will be fulfilled by this project.

2.5 Imports vs. Indigenous Production

There will be no import for project. There will be indigenous inputs in the entire mining activity. This is a low value mineral and its landed cost in factories should be low and therefore imports will not be cost effective.

2.6 Export Possibility

The long distance transport by inland traffic will make the cost of the mineral prohibitively high making the exports economically not feasible. The mining activity is not prospecting exports.

2.7 Domestic/Export Markets

Lessee would sale out the mineral in domestic market as per requirement. No export is proposed. It will be transported to Rubber, Textile, Ceramic, Paint, Cement, Optical Industries (Calcite), Sand, Aggregate industries (Masonry Stone).

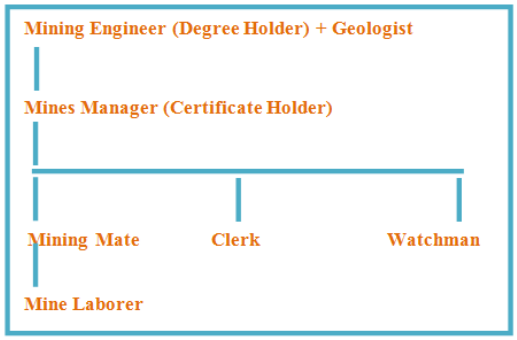
2.8 Employment Generation (Direct or Indirect)

The mining project will generate direct & indirect employment. Approximately 130 people will get direct employment, and some persons will also be affected indirectly and employed with allied and related industries, such as transportation, maintenance, etc.

TABLE NO.: 1 DETAILS OF MANPOWER REQUIREMENT

Sr. No.	Designation	No. of persons Required
1.	Skilled	35
2.	Semi - Skilled	35
3.	Un – Skilled (As per semi mechanization)	60
	Total	**130**

The following supervisory personnel are proposed with management chart:



3.0 PROJECT DESCRIPTION

3.1 Type of Project including interlinked and interdependent projects:

This is a proposed expansion project of mining of Quartz, Feldspar, Calcite and Masonry Stone. It is proposed to excavate 12,61,730 TPA (R.O.M) annually. Lease area is situated at N/V - Atbhigha, Tehsil- Khandela & District- Sikar, Rajasthan.
There is no interlinked or interdependent project associated with this project.

3.2 Location

Village : Athbhigha
Tehsil : Khandela
District : Sikar
State : Rajasthan

The entire lease area is 20.0 hectare. The lease area is Non-Forest Land.

Toposheet No. with Latitude and Longitude:

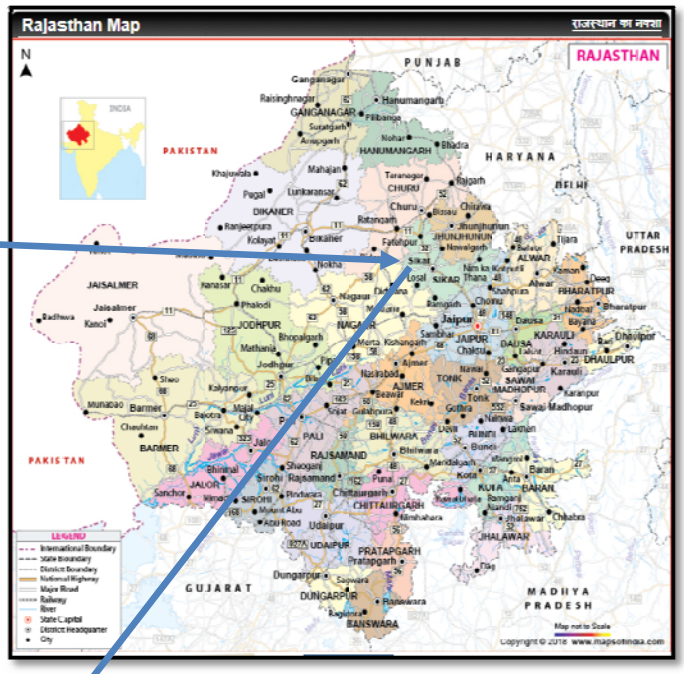
The lease area forms a part of Survey of India toposheet no. 45M/10. The lease area is located at following latitude and longitude:

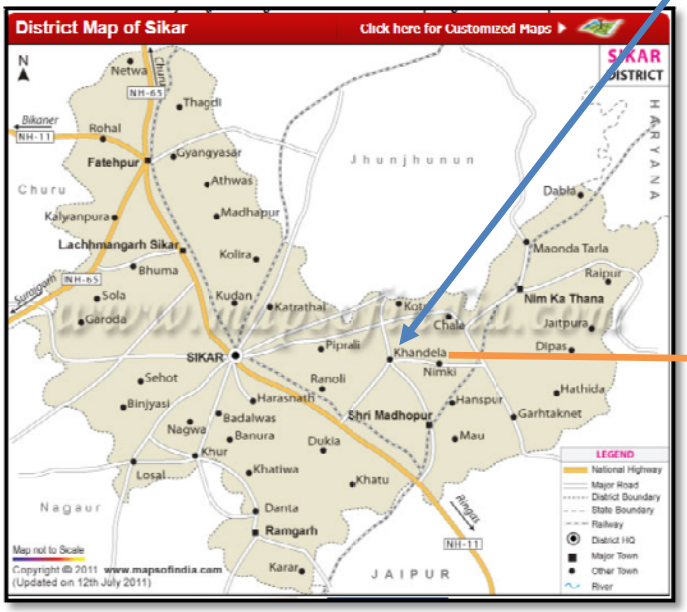
TABLE NO.: 2 LOCATION OF PROJECT

Sr. No.	Reference point No.	Latitude (N)	Longitude (E)
1.	FRP	27°36’2.1”	75°34’20.72”
2.	A	27°36’6.01”	75°34’15.35”
3.	B	27°36’7.52”	75°34’16.74”
4.	C	27°36’10.39”	75°34’12.79”
5.	D	27°36’17.44”	75°34’19.25”
6.	E	27°36’13.74”	75°34’24.33”
7.	F	27°36’30.34”	75°34’39.57”
8.	G	27°36’27.26”	75°34’43.81”
9.	H	27°36’2.1”	75°34’20.72”

The highest elevation of the lease area is 463 mRL and lowest is 457 mRL.

FIGURE NO.: 1 LOCATION PLAN OF THE STUDY AREA





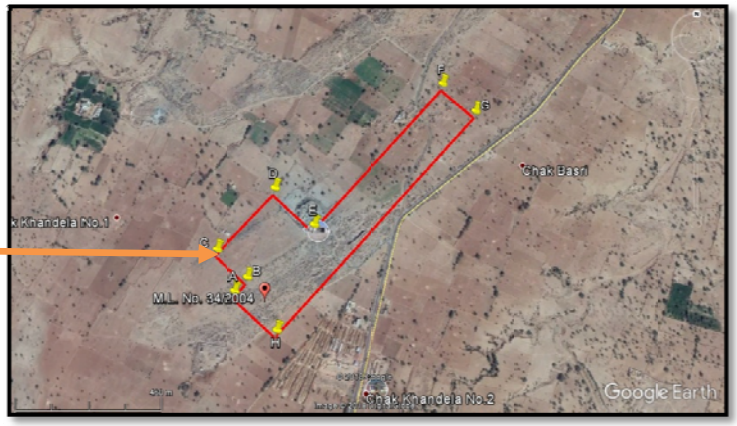
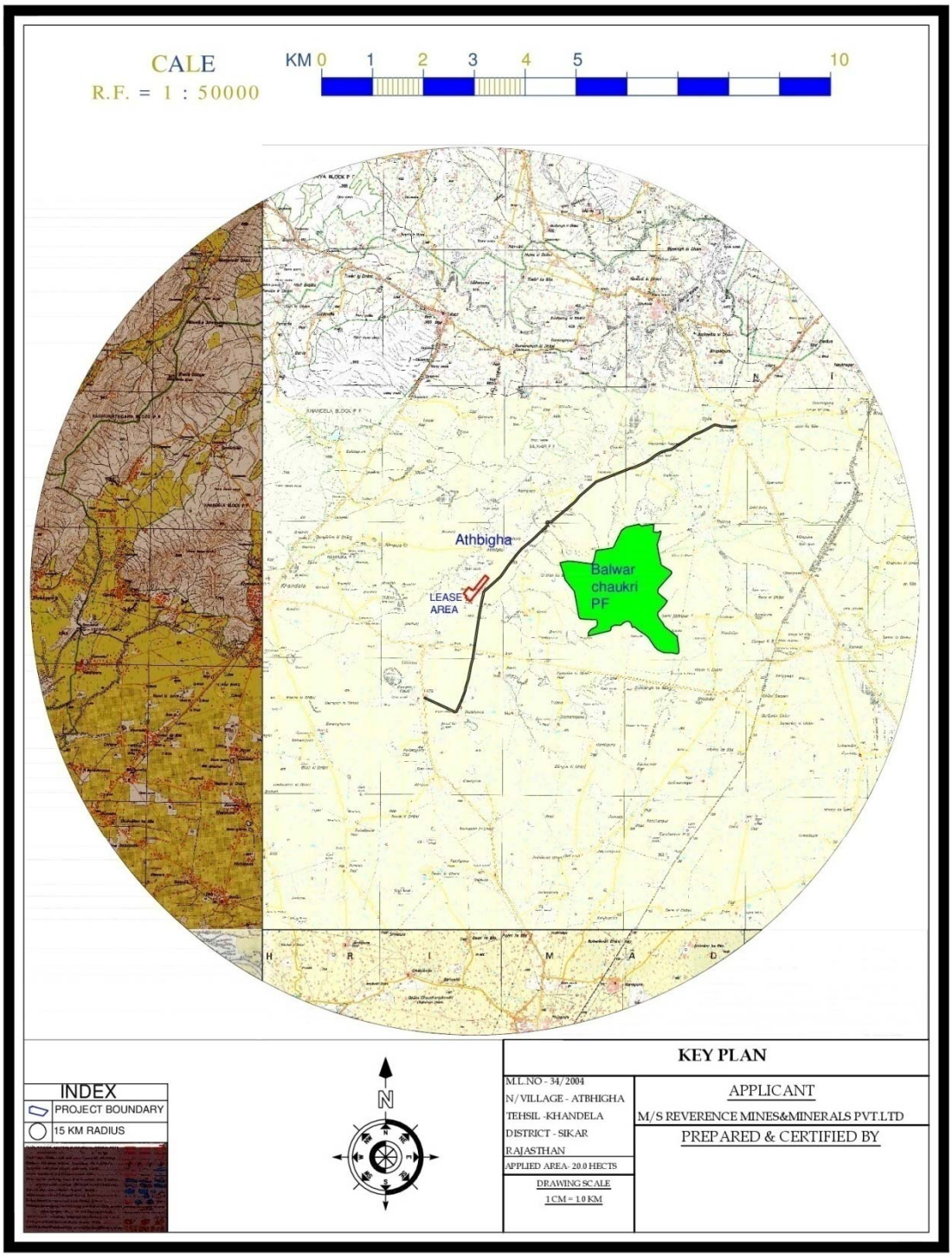


FIGURE NO.: 2 ENVIRONMENTAL SENSITIVITY MAP OF 10 KM RADIUS



3.3 Details of alternate site considered and the Basis of Selecting the Proposed Site, particularly the environmental considerations gone into should be highlighted:

As Mining will be mineral specific and limited to mineralized area. Therefore no alternate sites considered.

3.4 Size/Magnitude of Operation:

The proposed production will be 12,61,730 TPA (R.O.M) from the mining lease area of 20.0 hectares (Non-Forest Land) by semi-mechanized open cast method of mining.

3.5 Project Description with process details

Proposed method of mining:-

It is proposed to carry out the mining activity by semi-mechanized opencast method of mining with bench formation. The bench height is proposed 6 meters and width will be more than the bench height considering the semi-mechanized workings.

Approach roads are available and will be provided as required up to the faces. Blasting will be done as and when required.

Loading

Loading of mineral and waste in tippers or tractor trolley is proposed by loaders depending on quantity of production required.

YEAR WISEPRODUCTION DETAILS OF NEXT FIVE YEARS

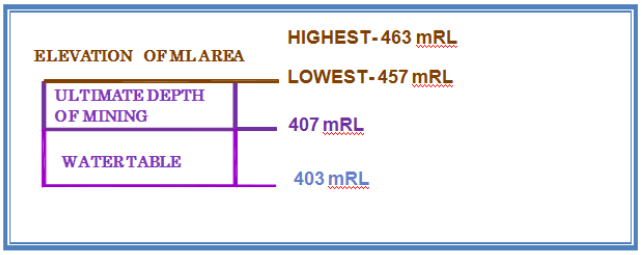
TABLE NO.: 3 YEAR WISE PRODUCTION

Year	Tentative excavation in tones (R.O.M.)	Soil in Tonnes	Waste in tones	Total Minerals in Tonnes	Masonry Stone in Tonnes	Calcite in Tonnes
2018-19	8,72,460	00	87,260	7,85,200	7,85,040	160
2019-20	9,97,150	00	99,710	8,97,440	8,97,260	180
2020-21	12,28,500	00	1,22,850	11,05,650	11,05,430	220
2021-22	12,55,800	00	1,25,580	11,30,220	11,29,990	230
2022-23	12,61,730	00	1,26,150	11,35,580	11,35,350	230
Total	**56,15,640**	**00**	**5,61,550**	**50,54,090**	**50,53,070**	**1,020**

Source-Approved Mining Plan

Ground Water Table

FIGURE NO 3: SCHEMATIC DIAGRAM SHOWING WATER TABLE & ULTIMATE WORKING DEPTH OF MINING



Proposed working will not intersect ground water table.

Extent of Mechanization:

The mining in this case is carried out by semi mechanized method by using hydraulic machineries. This method is adopted considering the nature of mineral and nature of deposit and production of mineral and generation of waste. Considering the national, state and local holidays, around 250 working days are proposed in a year. The bench height is proposed 6 meters. The width will be more than the height. Haul roads are available up to the faces and will be maintained in the future up to the proposed workings for movements of laborers and vehicles.

Face slope will be maintained 85^{o}, whereas ultimate pit slope is proposed 45^{o}. Controlled blasting is proposed for easy excavation of rocks as per approved mining plan.

FIG.4: PROCESS FLOW DIAGRAM

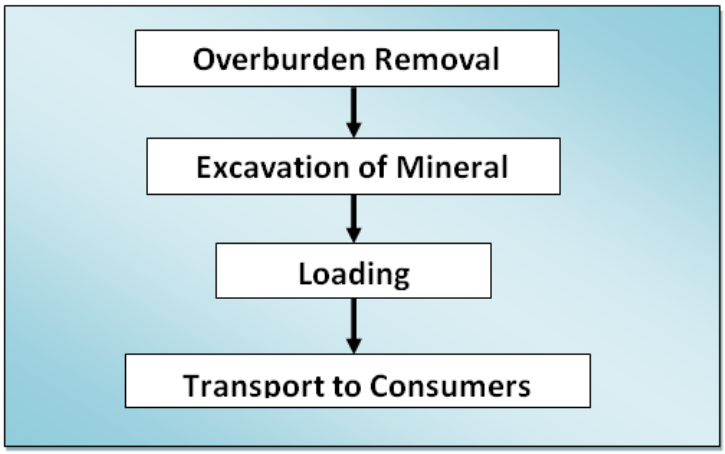


TABLE NO.4: DETAILS OF MACHINERY USE IN MINING ACTIVITY

Sr. No.	Machine	Specification/Capacity	Nos.
1.	Tippers	20 tonne	20
2.	Tractor Trolley	4 tonne	10
3.	Water Tank (Trolley Mounted)	4000 liters	2
4.	Hand Tools (As required)	-	-
5.	Air Compressor with all drilling arrangements	-	1
6.	Hydraulic excavator/ loader	-	6
7.	Long Hole Drill Machine	-	4

Source-Approved Mining Plan

3.6 Raw material required along with estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product.

There is no requirement of raw material for production of mineral. The project will itself generate raw material i.e. Quartz, Feldspar, Calcite and Masonry Stone and proposed production is 12,61,730 TPA (R.O.M.). Transportation will be done by tippers to the destination place.

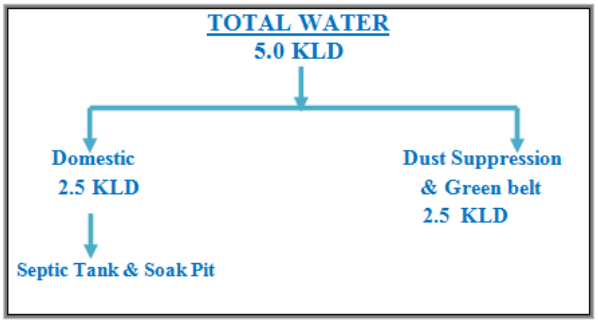
3.7 Resource optimization/recycling and reuse envisaged in the project, if any, should be briefly outlet:

N.A

3.8 Availability of water its source, energy/power requirement and source

Total water requirement for the mine will be about 5.0 KLD for domestic, dust suppression and green belt. Detail of water requirement in KLD is given below:

FIGURE: 5: WATER REQUIREMENT CHART



3.9 QUANTITY OF WASTES TO BE GENERATED (LIQUID AND SOLID) AND SCHEME FOR THEIR MANAGEMENT/DISPOSAL:

Quantity of waste likely to be generated during the five years is as follows:

TABLE NO. : 5 DETAILS OF YEAR WISE WASTE GENERATION

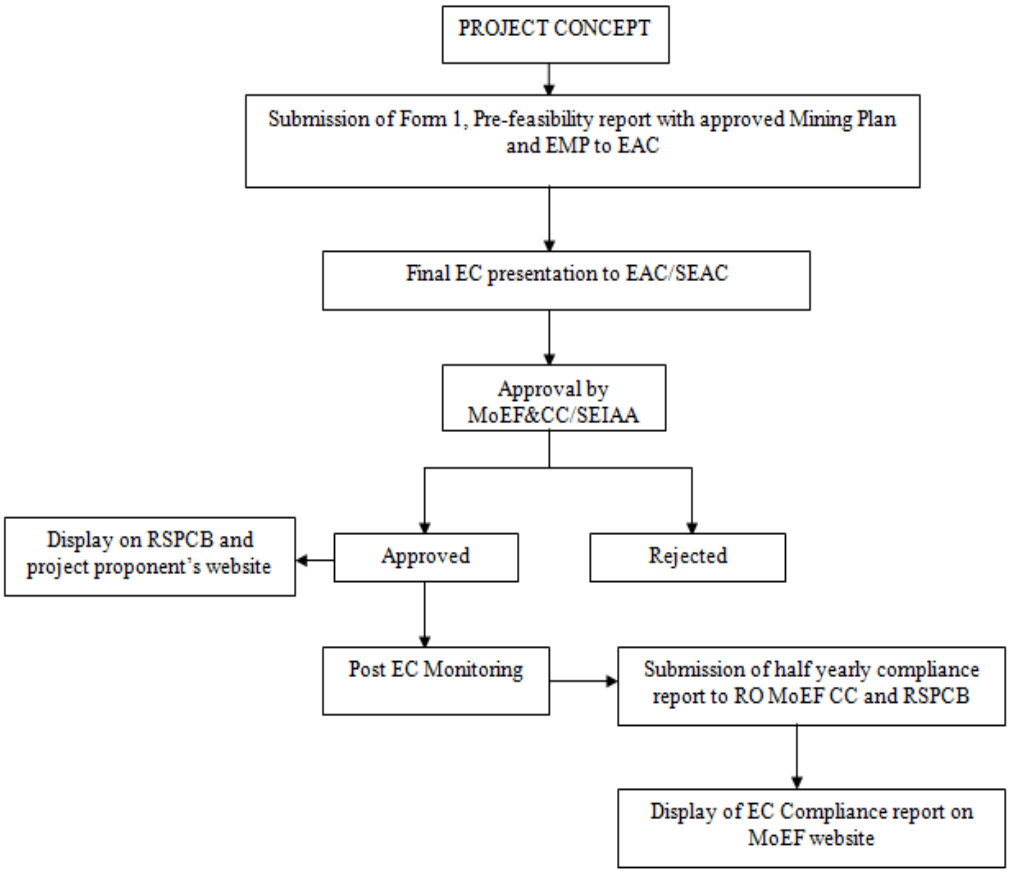
Year	2018-19	2019-20	2020-21	2021-22	2022-23
MINERAL WASTE (MT)	87,260	99,710	1,22,850	1,25,580	1,26,150
Total	87,260	99,710	1,22,850	1,25,580	1,26,150

Source-Approved Mining Plan

No liquid waste will be generated in the mining operation.

3.10 SCHEMATIC REPRESENTATIONS OF THE FEASIBILITY DRAWING WHICH GIVE INFORMATION EC PURPOSE:

FIGURE NO. 6: PROCESS DIAGRAM FOR ENVIRONMENTAL CLEARANCE



4.0 SITE ANALYSIS

The lease area is of mineral Quartz, Feldspar, Calcite and Masonry Stone which is suitable for use in rubber, textile, ceramic, aggregate industry on the basis of physical and chemical properties. The selected site has the following advantages.

1. Site is mineral specific
2. The area chosen is not having habitation.
3. The site is well connected by road.
4. No endangered species are present around the mine site.

4.1 Connectivity:

Connectivity details from Project Site

TABLE NO.: 6 DETAILS OF CONNECTIVITY FOR PROJECT

Sr. No.	Particulars	Details
1.	Road Connectivity	Local Road passing through the mining lease area for Khali Khera.
2.	Nearest Highway	MDR-100 which is at an approximate distance of 0.056 Km towards south east direction from mining lease area.
3.	Nearest Railway Station	Railway Station, Kanwat which is at an approximate distance of 9.44 Km towards east – south east direction from mining lease area.
4.	Nearest Airport	Jaipur Airport which is at an approximate distance of 89.18 Km towards south- south east direction from mining lease area.

4.2 Land form, land use and land ownership

The lease area is Non-Forest Land. The lease area falls in Survey of India Topo sheet No. 45M/10. The highest and lowest point of the lease area is 463 mRL and 457 mRL respectively.

Village : Athbhigha
Tehsil : Khandela
District : Sikar
State : Rajasthan

4.3 Topography:

The lease area is almost flat terrain. The Contour varies from 463 mRL to 457 mRL.

4.4 Existing Land use Pattern

The lease area is of 20.0 Ha (Non-Forest Land). Existing land use pattern is given as below:

TABLE No. 7: EXISTING LAND USE PATTERN

S. No.	Land use Category	Present (Hect.)
1.	Area to be excavated	0.85
2.	Storage of top soil	0.00
3.	Overburden dump	0.10
4.	Mineral/ Sub-grade stack	0.05
5.	Infrastructure	0.00
6.	Roads	0.40
7.	Green Belt	0.20
8.	Reclamation	0.00
9.	Undisturbed	18.4
Total		**20.00**

4.5 Existing Infrastructure

The site office and rest shelter is already present at site and other site services will be provided as suggested by officials time to time.

4.6 Soil / rock classification

4.6.1 Soil:

The soils of the district have been broadly classified by Agriculture Department, Govt. of Rajasthan as given below:

- Desertic soil
- Red desertic soil
- Serozems
- Saline soil
- Lithosols
- Regosols
- Old alluvium

4.6.2 Regional Geology: -

The geological sequence as per approved mining plan is given as under:

TABLE NO.8: GEOLOGY OF THE REGION

Recent		Soil, Sand dunes
Post Delhi		Pegmatite, Granite, Amphibolite,
Delhi Super Group	Ajabgarh Group	Ferruginous quartzite, Gritty Quartzite, Dolomite, Ortho Quartzite, Phyllite, Carbonaceous phyllite, Impure marble, Quartzite
	Alwar Group	Gritty Quartzite with basic flow, conglomerate, quartzite, calc silicate
Local Geology		
Recent		Soil
Post Delhi		Pegmatite
Delhi Super Group Ajabgarh Group		Albite, Calc silicate

Source-Approved Mining Plan

4.7 Climatic data from secondary sources

The district is largely part of semi-arid region and is typically characterized by hot summer, fairly good rainfall, a chilly winter season. Humidity levels are quite low resulting into general dryness in the air, except in the brief monsoon season when the humidity reaches upto maximum of 60%. The months of March to June are summers when the maximum temperature approaches 47°C to 48°C whereas the winter months witness extremely cold nights with temperature dropping to about 1°C. The average temperature around the year is about 16 to 20 °C. The average rainfall in this district is just about 363.7 mm, mostly received from the south-west monsoon during the months of July to September.

(Source: Hydrogeological Atlas of Sikar District, year 2013)

4.8 SOCIAL INFRASTRUCTURE

- The infrastructure like, toilets, first aid stations etc. already exists at mine site.
- Health facilities such as dispensaries and hospitals and educational facilities (Govt. Primary and Govt. Secondary Schools) are available in Athbhigha village and Khandela.
- Medical facilities, Primary Health Centre are there in the area, imparting services for medical facilities. In each village one health worker has been appointed by the Govt. to provide primary health facilities.
- Village people are availing drinking water facilities generally from the hand pump, open well and tube well.
- An occupational health unit will be organized and the proposed measures will be adopted:
  - Pre & Periodical Medical Checkup program for all the workers.
  - Compulsory medical checkup program and first-aid box with necessary equipment will be provided.
  - Training for workers regarding occupational hazards.
  - Regarding Safety equipment i.e. dusts mask, safety shoes, gloves etc.

5.0 PLANNING BRIEF

5.1 Planning Concept:

It is a mining project of Quartz, Feldspar, Calcite and Masonry Stone. The proposed production of is 12,61,730 TPA (R.O.M). Semi-mechanized opencast method of mining will be adopted and transportation of mineral will be done in trucks.

5.2 Population Projection

Man power requirement for mining is estimated to be approx 130. Most of the employees will be recruited from neighboring villages. The laborers are provided along with tractor trolley by contractor. So there will no permanent migration of people.

5.3 Land use Planning:

TABLE NO.9: Part-(A) LAND: STAGE WISE LAND USE AND RECLAMATION AREA

S. No.	Land use Category	Present (Ha)	End of 5th year (Ha)	End of lease (Ha)
1.	Area to be excavated	0.85	9.20	12.80
2.	Storage of top soil	0.00	0.01	0.00
3.	Overburden dump	0.10	0.40	0.00
4.	Mineral/ Sub-grade stack	0.05	0.05	0.00
5.	Infrastructure	0.00	0.40	0.40
6.	Roads	0.40	0.40	0.20
7.	Green Belt	0.40	6.60	6.60
8.	Reclamation	0.00	0.00	0.00
9.	Undisturbed	18.20	2.94	-
Total		**20.00**	**20.00**	**20.0**

At the end of life of mine, total excavated area will be 12.80 Hectare which will be converted into water reservoir which would have a positive impact by recharging the ground water table and 6.60 hectare area will be converted into greenbelt.

TABLE NO. : 10 Part-(B) POST MINING LAND USE OF CORE ZONE WITH ENVIRONMENT MANAGEMENT

S. No.	Description	Land Use (In Ha.)				
		Plantation	Water Body	Public Use	Undisturbed	Total
1.	Top Soil Dump	-	--	--	--	-
2.	Overburden Dump	-	--	--	--	--
3.	(a) Excavation (Voids)		12.80	--	--	12.80
	(b) Excavation (backfilled)	-	--	-	--	--
4.	Road	--	--	0.20	--	0.20
5.	Built Up Area	--	--	0.40	--	0.40
6.	Township Area	--	--	--	--	--
7.	Afforestation	6.60	--	--	--	6.60
8.	Temp. Mineral Storage	--	--	--	--	--
9.	Undisturbed Area	--	--	--	--	--
	Total	**6.60**	**12.80**	**0.60**	--	**20.0**

TABLE NO.11: Part-(C) REQUIREMENTS FOR PLANTS FOR AFFORESTATION AND RECLAMATION

Year	Un-worked Area		Waste Dump		(Reclaimed Area)		Top Soil Dumps		Total	
	Area (Ha)	No. of Trees	Area (Ha)	No. of Trees	Area (Ha)	No. of Trees	Area (Ha)	No. of Trees	Area (Ha)	No. of Trees
Existing	0.40	400	-	-	-	-	-	-	0.40	400
I	1.24	1240	-	-	-	-	-	-	1.24	1240
II	1.24	1240	-	-	-	-	-	-	1.24	1240
III	1.24	1240	-	-	-	-	-	-	1.24	1240
IV	1.24	1240	--	--	--	--	--	--	1.24	1240
V	1.24	1240	--	--	--	--	--	--	1.24	1240
VI year onwards	--	--	--	--	--	--	--	--	--	--
Total	**6.6**	**6600**	**--**	**--**	**--**	**--**	**-**	**-**	**6.6**	**6600**

Total 6600 trees will be planted over an area of 6.6 hectare, out of which 400 trees already exist at the mining lease area covering 0.40 ha. Certain species which are more suitable to the local environment are preferred to be planted such as Khejari, Neem, Pipal, Sheesham, Mango etc.

5.4 Assessment of Infrastructure Demand

No infrastructure facility is available at mine site except mine office and rest shelter. Water will be bought from Atbhigha village via tanker water supply.

5.5 Facilities Provided:

5.5.1 Infrastructure

Most of the workers will be employed from nearby villages so no accommodation is proposed at mine site.

Socio-Economic Impact:

The mining activity will have positive impact due to direct and indirect employment and development of ancillary industries. No displacement due to the proposed mine extension/ expansion project. Approx. 130 local workers will have employment opportunities along with periodical training to generate local skills.

TABLE No. 12:
PROPOSED BUDGETARY ALLOCATION FOR CORPORATE ENVIRONMENTAL RESPONSIBILITY

Focus Area	CER Activities proposed	Estimated Cost (Lacs)
Education	❖ Donation of text books to govt. educational institutions. ❖ Providing wooden benches to nearby Govt Middle School of village Atibhigha. ❖ Providing fans, tubelights to educational centers.	1.0
Health	❖Providing drinking water and Public Pyau to nearby villages during peak summer.	0.50
Social Welfare	❖Organizing self employment program and distributing sewing machines to women's	0.50
Total		2.00

5.5.2 Landscaping and Green Belt Development

Total 6600 trees will be planted over an area of 6.6 hectare, out of which 400 trees already exist at the mining lease area covering 0.40 hectare and remaining 6200 tress will be planted around the periphery of the mine lease area covering an area of 6.2 ha in the first five years assuming survival rate of plants around 50%.

Year	No. of Saplings	Replacement (Assuming survival rate of 50 %)
1st	1240	620
2nd	1240	620
3rd	1240	620
4th	1240	620
5th	1240	620
Total	**6200**	**3100**

5.5.3 Health and Safety System

During the opencast working, and allied activities, all the precautionary measures shall be taken into account as per MMR 1961 and MCDR 1988 for safety and security. Following safety & security measures will be enforced;

- Moving front of the lease shall have temporary fencing.

- Permanent fencing will be provided where excavated pit has reached the ultimate pit limit.
- Mine entrance will have a permanent check post and record shall be maintained of all persons / vehicles entering the mine area.
- Round the clock security arrangement shall be provided to prevent inadvertent entry of persons.

All safety measures prescribed under mining laws will be followed strictly. All workers will be medically examined in pre- placement phase and also periodically. First Aid Personnel with first aid kit will be available at the mine site to provide first aid to injured person. Arrangement for transportation of persons to nearby medical facilities will be made. Potable water facility will be provided to mine workers. Personal protective equipments (earmuffs/ earplugs, helmets, face masks, gloves, goggles) will be provided to mine workers as safeguards. Regular medical check-up camps shall also be arranged for detection of occupational diseases and minor disease in the nearby villages. Free check-up and medicine for treatment for their acute and chronic illness shall be provided. Awareness program will be organized for workers. The medical examination schedule & cost is provided in Table below:

TABLE NO.: 12 Budgetary Breakup for Labour Welfare

Sr. No.	Facility Provided for Laborers	Capital Cost in Rs.	Recurring Cost in Rs.
1.	Shelters, Safe drinking water, Sanitation facility		Maintenance Cost: 30,000
3.	Periodical medical Examination once in three years @ 500		65,000
4.	Fuel for cooking (LPG Cylinder) @ 950 Per month		11,400
5.	Education for children of labors @ 2,400 per labor		3,12,000
6.	Group Insurance @ Rs.1500 per worker	1,95,000	-
7.	Provision for personal protection equipment (PPEs) like ear plug, dust mask, Helmet, shoes etc., for 130 workers • Safety shoes@350 Rs (2 times/year) • Hand Gloves @50 Rs (1 time in month) • Dust mask@25 Rs (2 times in month) • Ear plugs@25 Rs (2 times in month) • Helmets @ 450 Rs(1 time in three years)		91,000 78,000 78,000 78,000 58,500
8.	First Aid Box		10,000
9.	Fire Safety	40,000	10,000
Total		**2,35,000**	**8,21,900/-**

5.5.4 Disaster Management and Risk Assessment

This may deal with action plan for high risk accidents like landslides, subsidence flood, inundation in underground mines, fire, seismic activities, tailing dam failure etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of lessee to meet such eventualities and the assistance to be required from the local authority may also be described. The area lies in seismic Zone II; therefore precautionary measures shall be adopted. In the land slide prone zone area, fast growing soil binding species shall be planted & cemented bunds shall be made at the lower side so that minimum damage could be observed during land slide period.

Some of the aspects to be included in emergency plan are as follow:

- Organization details of command structure, working systems, implementation procedures and emergency control centre & have of incident controller, site main controller, their duties & other key personnel.
- Communication centres & persons involved call signs & list of telephone numbers.
- Availability of special emergency equipment e.g. heavy lifting gear, bulldozers, trucks, special fire fighting equipment.
- Details of voluntary organizations with names of organizers, telephone numbers, resources etc. Humanitarian arrangements e.g. transport evacuation centres, emergency feeding, treatment of¬ injured, first aid, ambulances etc.
- No other accidents like subsidence of flood, tailing dam failure etc. observed during mining in the region.

In spite of following all the precautionary measures and safety rules, regulations and procedures, mining accidents cannot be ruled out completely. Following are the accidents which can take place in semi mechanized opencast mining and measures proposed to be taken.

- Fall of human beings or fall of machines from benches/ dumps/haul roads.
- Fire & Explosion in machinery.
- Emergency situation due to social reason such as public unrest, terrorism etc.

Preventive Measures:

- Creating berm on the side of benches/ haul roads of height greater than or equal to ½ tyre radius. Minimum height of berm shall be 1.2 m and slope $45^{0.}$ Minimum clearance of 1.5 m will be maintained between outer tyre and berm.
- All provisions of MMR 1961, conditions imposed in permission for Deep hole drilling and blasting and use of HEMM, and conditions of explosive license will be followed**.**
- Fire fighting equipment in the machinery/ workshop/ office will be maintained. Persons will be trained in the use of fire fighting equipment and mock rehearsal will be conducted.
- Training of security personnel.

- Procedures as laid down in Disaster Management Plan to be followed**.**

Training;

Persons will be trained in the following:

- Training of protective equipment.
- Procedures for reporting emergencies.
- Location and use of fire fighting equipment.
- Knowledge of alarm system and siren.
- Evacuation procedures.
- Training in first aid as per Mines Rules 1955.

Emergency Equipment & Facilities:

- Mobiles.
- Fire fighting equipment's
- Emergency medical supplies

Other protective equipment's i.e. goggles, helmet, face shield, hand gloves, safety belts, barricade tape. First Aid box will be provided as per the provisions of Mines Rules 1955.

6.0 PROPOSED INFRASTRUCTURE

All necessary social infrastructures is already present at the site.

7.0 REHABILITATION & RESETTLEMENT PLAN

No R&R is applicable to this project.

8. PROJECT SCHEDULE

8.1 Likely date of start of construction and likely date of completion (time schedule for the project to be given)

This is exiting mine lease area and application for proposed expansion is being filed to the concerned department for the grant of Environment Clearance. Earlier the Environmental Clearance is granted by the Ministry of Environment, Forest & Climate Change, Government of India vide letter no. J-11015/347/2005-IA.II (M) dated 15/05/2006.

8.2 Project Cost Estimation

Estimated Project Cost with the proposed production is Rs. 2.00 Crore.

(B) Operational cost-

The mineral Quartz, Feldspar, Calcite and Masonry Stone will be mined from the applied lease area and the cost of Quartz, Feldspar, Calcite and Masonry Stone will be average Rs. 700/- per MT.

8.3 Economic Viability

The anticipated cost of Quartz, Feldspar, Calcite and Masonry Stone is Rs. 700/- per MT. Average sale value is Rs. 750/- per MT. Hence the project will be viable.

9. ANALYSIS OF PROPOSAL

- Project will create direct & indirect employment opportunities within the surrounding region. Unit will use good faith efforts to employ local people from the nearby villages depending upon the availability of skilled & un-skilled man-power surrounding the project site.
- In operation phase, the proposed project would require significant workforce of non-technical and technical persons. Migration of highly education and skilled experience will result in increase of literacy in the surrounding villages.
- In addition, the proposed expansion of project shall enhance the prospects of employment.
- Assessment of the potential socioeconomic benefits during mining focused primarily on work force requirements, acquisition of supplies, and the temporary increased demand for services related to the mining project like food, housing, communications, law enforcement, medical care, local transportation etc. Due to these, additional revenue to local suppliers for required products and services related to the construction and operation phases of the project will generate.
- Thus, mining activities will provide numerous new, although temporary, work opportunities for both skilled and unskilled labor, as well as contribute significantly to the local economy.
- Additional government revenue expected from royalty, taxes, duties and other fees.
- An added benefit to the proposed project will result in considerable growth of stimulating the industrial and commercial activities in the state. Small and medium scale industries may be further developed as a consequence.

---------********--------

ENVIRONMENTAL MANAGEMENT PLAN

WATER QUALITY MANAGEMENT

No water reservoir located in the lease area. If rain water will accumulate in the working, than same will be dewatered by centrifugal pump of 10 H.P. The dewatering is proposed through a sump made in the bottom of the pit to check the silt, which spread in the nearby area. The proposed deepest working is above the ground water table thus quality of water will not decrease by proposed mining. Water table in the area is sufficiently below from ultimate depth of mining. No toxic mineral is present, which pollute the quality of ground water. No tailing pond is proposed, which pollute the quality of ground water. The mined out area will be converted into a small water reservoir which will support to recharge the ground water level of the area, which shall be useful as to the society during post mining scenario.

Domestic waste water will be generated from office toilet only. Generated domestic waste water will be disposed through septic tank followed by soak pit.

AIR QUALITY MANAGEMENT :

Water sprinklers are proposed on haul road and at work place for dust suppression. Dust mask will be provided to the operator & mine workers.
The source of air pollution is vehicular movement but the transportation will be towards the lower side hence the impact is not very much significant. Vehicular emission will be controlled and regularly monitored. Loading is also creating air pollution. Water spraying is proposed over the material before loading and transportation. Covered tippers will be used in transportation. Green belt will be developed to arrest dust pollution. Proposed mining is semi-mechanized and no processing/ grinding unit is proposed in the applied area, hence the air pollution will remain in permissible limit. For drilling wet drilling method will be used to control fugitive dust at source. Blasting will be done by covering blast holes with cement bags filled with sand so that chances of fly rocks will be minimized. Green belt development will be done to arrest dust pollution.

NOISE MANAGEMENT:

The proposed mining will be done by opencast method but some amount of noise will be generated due to operation of dumper, and driller which will be deployed on hire basis for removal of overburden and due to vehicular movement. Transportation vehicles will be properly maintained and provided with good silencers. Precaution and regular maintenance of dumper, tipper & dumper replacement for damaged/ worn out parts when ever required will be taken. Ear plugs will be provided to operator and mine workers. Trees will be planted which will attenuate the noise levels. Blasting will be done during day time. Blasting will be avoided in the morning and evening hours, on foggy days, at night time and at times of high wind velocity. All workers and other persons will be sent away in a safe zone prior to the blasting. Drilling will be done with the help of sharp drill bits. Trees will be planted along the barrier of 7.5 m along the boundary of mine lease area which will act as a buffer for noise. The greenbelt with species of rich canopy will further attenuate the noise levels. The main source of noise generation in drilling machine is compressor. Compressor will be fitted with an acoustic enclosure.

SOLID WASTE MANAGEMENT:

Stacking the Rejects
The rejects generated while sorting out the mineral produced will be stacked temporarily at the sites. These rejects will be backfilled in the excavated area.

Green Belt Development:
Total 6600 trees will be planted over an area of 6.6 hectare, out of which 400 trees already exist at the mining lease area covering 0.40 ha. Certain species which are more suitable to the local environment are preferred to be planted such as Khejari, Neem, Pipal, Sheesham,

Mango etc.

Reclamation Plan:

At the end of life of mine, total excavated area will be 12.80 Hectare which will be converted into water reservoir which would have a positive impact by recharging the ground water table.

BUDGETARY PROVISION FOR EMP IMPLEMENTATION & MONITORING

In order to implement the environmental protection measures, timely funds will be released as per requirement. In addition to above, it is proposed to invest total recurring cost of Rs 4.25 Lac per year on pollution control, green belt and environmental monitoring systems. The break-up of the investment is given in the following table.

TABLE NO.17: Annual Capital & Recurring Cost For Environmental Protection Measures

S. No.	Particulars	Capital Cost (in Rs. Lac)	Recurring cost (in Rs. Lac)
1	Pollution Monitoring-Air, Water, Noise, Soil.	-	1.50
2	Pollution Control (Water Sprinkler for dust suppression)	0.50	0.20
3	Greenbelt development (Tree guards, maintenance etc)	0.50	2.00
Total		1.00	3.70