EXECUTIVE SUMMARY

OF DRAFT

ENVIRONMENTAL IMPACT ASSESSMENT /

ENVIRONMENT MANAGEMENT PLAN

(As Per EIA Notification No. S.O. 1533(E) dated 14th September 2006

Bhivdoni Quartz & Quartzite Mining Project

Bhivdoni Village, Taluka – Sauser, District – Chhindwara, MP
Project Area 90.06 Ha,
Peak Production Capacity 0.025 MTPA (Total Excavation),
(Category 'A' Greenfield Project)

Submission for

Public Hearing

to

Maharashtra Pollution Control Board

PROJECT PROPONENT

M/s Flex Minerals

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EIA Consultant

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NABET Accredited

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MAY 2022

EXECUTIVE SUMMARY OF

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT/ENVIRONMENT MANAGEMENT PLAN

1.0 INTRODUCTION:

The Bhivdoni Quartz & Quartzite Mining Project of M/s Flex Minerals is located in Khasra No. 239 of Bhivdoni Village, Taluka – Sausar, District – Chhindwara, State- Madhya Pradesh adjacent to border between Madhya Pradesh & Maharashtra. It is bounded by Latitude 21^0 35' 43.48" N to 21^0 36' 36.705" N and Longitude 78^0 56' 35.05" E to 78^0 57' 56.184" E.

The proposed project envisages mining of Quartz. Quartz / Quartzite, an important industrial raw material used in various industries .The mine will be developed as open cast mine for production of quartz @20000 tonnes/annum at peak production (25000 tonnes/annum Total Excavation) in the Conceptual Period.

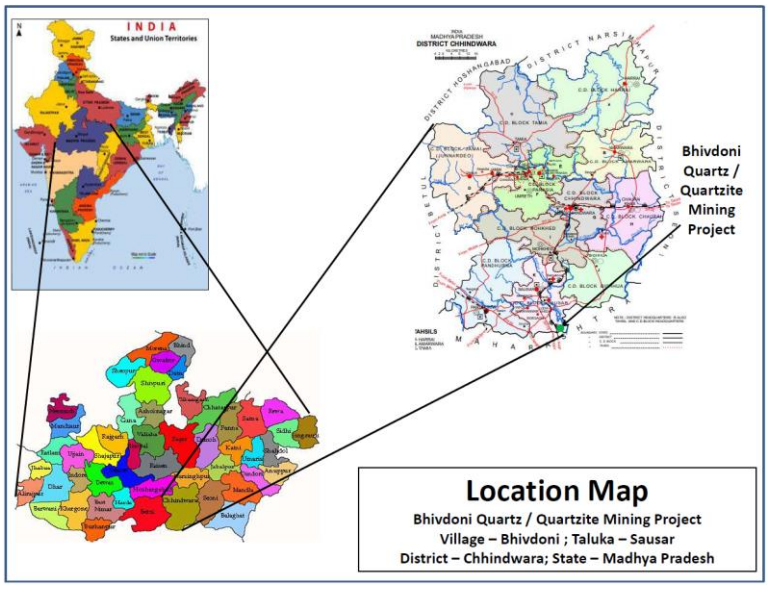
The leasehold area is 90.06 Ha which falls in government revenue land and no forest exists in the project area.

In accordance with the provisions of EIA Notification, 2006 of MoEF, Govt of India, it is mandatory for a project proponent to conduct an EIA/EMP study for any developmental activity and submit it the concerned regulatory authority for obtaining TOR to conduct EIA/EMP studies for obtaining Environmental Clearance. The Project Proponent submitted the proposal for obtaining TOR which was considered by the EAC and granted TOR on 5th July 2021 under category A due to its proximity to ESZ boundary and also location in interstate boundaries of Madhya Pradesh and Maharashtra states.

2.0 PROJECT DETAILS:

Location:

The Bhivdoni Quartz & Quartzite Mining Project of M/s Flex Minerals is located in Khasra No. 239 of Bhivdoni Village, Taluka – Sausar, District – Chhindwara, State- Madhya Pradesh adjacent to border between Madhya Pradesh & Maharashtra. It is bounded by Latitude 21^0 35' 43.48" N to 21^0 36' 36.705" N and Longitude 78^0 56' 35.05" E to 78^0 57' 56.184" E. The leasehold area is 90.06 Ha which falls in government revenue land and no forest exists in the project area.



Accessibility:

The proposed Quartz and Quartzite project is about 17 km from tehsil Headquarter Sausar in North-West. The village Bhivdoni is at about 50 km in south direction from district HQ Chhindwara and about 56 Km north of Nagpur (Maharashtra). The village is

approachable from Khapa / Saoner and also Sausar by a tar road. The nearest railway station is Lodhikheda in Madhya Pradesh at about 9.50 km from the lease area in west direction.

Geological Formation & Ore Reserves

Regionally the applied area belongs to Mesoproterozoic age. The Precambrian manganiferous ENE-WSW trending Sausar Group of rocks occur in the northern parts of the Maharashtra and southern parts of the MP. Synsedimentary Stratiform manganese ore deposits of this area mainly associated with the psammo-pelitic rocks of the Sausar group . The Sausar group comprises mainly quartz mica schist, quartzite, calc granulite and gneiss with calcite and dolomite marble. The basement for this group of rock is Tirodi gneiss. The total geological reserves of quartz are estimated to be 4,27,118,Tonnes. The total mineable reserves of quartz are estimated to be 3,59,498 Tonnes.

Topography:

The proposed mine area is surrounded by many hillocks and valleys which are on the sloping towards south. The highest elevation of 530 m at the eastern side and the lowest one is of 375 m is in the foothills in the northern direction. The gradient of the hillock is varying between 20° and 40°.

Drainage:

The proposed lease area it is situated on a hillock, being in the southern slope, there is no possibility of any problem related to the drainage of rain water in this area. The rain water will flow in the natural direction system of that area without any effect on the drainage system.

Groundwater:

There is no groundwater source in the proposed lease area. The groundwater level is found about 20 m below the surface. Mining is proposed from the highest point of the hill. Therefore pumping will not be required even in the rainy season. The surface water sources are:

Kanhan River	-	5.8 km (South – west)
Khekra Nala Water Reservoir	-	4.65 km South in Maharashtra
Rural Water Reservoir	-	0.85 km South in Maharashtra

Water Abstraction Arrangements:

Water collected in the mining pit during the rainy season will be used for the dust suppression, plantation and vehicle washing.

Employment Potential:

About 18 persons will be required to work in this mine and will be given job as per their eligibility.

Landuse:

Existing Landaus:

As per administrative records, the landuse under the proposed mining project is as follows:

Sr. No.	Land Use	Present Area (Ha)
1	Total Area Excavated (Broken)	0.0054
2	Total Area Under Dumps	0.0000
5	Green Belt	0.0000
6	Area Under Min. Separation plant / Mineral Stack	0.0000
7	Area Under Road	0.0000
8	Area Under Infrastructure (Office/Store Etc.)	0.0000
9	Balance Area of the Lease	90.0616
	Total Leasehold Area =	**90.06**

Proposed Landuse:

The proposed landuse of the project area after the mining is given in the following table:

Sr. No	Particulars	Present Area (Ha)	End of 5 Years Period (Ha)	At the End of Conceptual Period (Ha)
1	Mining Pit	0.0054	0.9045	8.0245
2	Dumps	0.0000	0.0000	0.0000
3	Roads	0.0000	0.3300	1.5000
4	Green Belt	0.0000	0.0450	0.1800
5	Infrastructure	0.0000	0.0100	0.0000
6	Balance Area of Mining Lease	90.0616	88.7775	80.3625
	Total	**90.067**	**90.067**	**90.067**

Mining Method:

In the proposed project, mining will be done by manual method. The soil and overburden are proposed to be store at the designated dumping site. Quartz mineral will be produced using drilling and blasting. The quartz mineral produced in this way will be classified in to small pieces and preserve. Muffle blasting is proposed to be used for preventing the flying rocks during blasting. The explosives will be stored outside at a safe place, the quartz mineral produced in this project will be converted manually in to small pieces and no processing will be done.

Waste Production and Management:

By the final stage of the project about 29391 m^3 waste material is likely to be produced. This waste material will be used for road construction and its maintenance.

The green belt will be developed in the dumping area plantation of local grass species trees. Garland drains will be constructed outside dumping area to arrest sand and soil in the rainy season.

Sr. No.	Particular	Details
1	Method of Mining	Manual Opencast Method using hand tools such as spades, hammer, crowbar, chisel
2	Proposed Production	20,000 Tonnes/Annum (Total Max. Excavation: 25,000 TPA)
3	Life of Mine	21 Years
4	Height / Width of Bencvh	2 m
5	Ground Level	375 m – 530 m a msl
6	Ground water Level	20 m bgl
7	Ultimate Mine Pit Depth	2 m
8	Slope of the mine pit	45°
9	Stripping ratio	1:0.2
10	Working days	300 (one shift)
11	Waste generation	2707 m^3
12	Conceptual period Waste generation	29391 m^3

3.0 BASELINE ENVIRONMENTAL STATUS:

The total project area (90.06 Ha) of the Bhivdoni Quartz & Quartzite Mining Project is considered as Core Zone while the 10 Km surrounding area of core zone is considered as Buffer Zone. Baseline environmental data was collected for all the components of environment like meteorology, air, water, noise, soil, geology, hydrogeology, flora-fauna, demographic and socio-economics, industries, places of archeological and historical importance etc. Standard guidelines prescribed by Ministry of Environment & Forests & Climate Change and Central Pollution Control Board were used for this study. The EIA report incorporates the baseline data generated through primary surveys for three months during March 2021 to May representing summer season.

Landuse of the Buffer Zone:

As per census the total area estimated within 10 km radius of buffer zone (study area) around mine was 31400 Ha. The study area of the buffer zone mainly comprises of agricultural land with 43.82 % .In the southwest and west portion forest land which makes up to 50.52%. The waste land comprises of 2.14 %. The area covered under water body and river is 2.88 %.

Water Quality: Total 5 surface & 6 ground water sampling stations were monitored in the study area. The analysis indicates that almost all parameters are within the prescribed limit.

Air Quality:

To assess the baseline ambient air quality, 6 air quality monitoring locations were selected on the basis of topography and meteorological parameters in core and buffer zone. One station was located in core zone and 5 in the buffer zone. The monitoring was carried out for 13 weeks from March 2021 to May 2021. The study area represents totally rural environment. Air pollutants viz. PM_{10}, $PM_{2.5}$, Sulphur dioxide (SO_2), Oxides of Nitrogen (NO_X), Ozone (O_3), Carbon Monoxide (CO) & Heavy Metals were monitored as representative parameters of ambient air quality in the study area.

Particulate Matter (PM_{10}):
The maximum PM_{10} concentration covering all the air quality monitoring stations i.e. A-1 to A-6 were observed in the range of 32.9 to 56.6 µg/m^3. Almost all the stations have PM_{10} concentrations less than half of 24 hours average permissible limit i.e. 100 µg/m^3 as prescribed by MoEF &CC for industrial, residential, rural and other area.

Particulate Matter ($PM_{2.5}$): The maximum $PM_{2.5}$ concentration covering all the air quality monitoring stations A-1 to A-6 were observed in the range of 16.4 to 30.3 µg/m^3 as against the NAAQ Standards of MoEF & CC prescribed limit of 60 µg/m^3 for industrial, residential, rural and other areas.

Sulphur Dioxide (SO_2): The maximum SO_2 concentrations covering all sampling stations A-1 to A-6 were in the range of 6.7 to 19.9 µg/m^3. All monitored stations have SO_2 concentrations well within the stipulated (annual 24 hours) limit of 80 µg/m^3 as prescribed for industrial, residential, rural and other areas under revised NAAQ Standards of MoEF&CC.

Oxides of Nitrogen (NO_X): The maximum NO_x concentrations covering all sampling stations A-1 to A-6 were observed in the range of 8-22 µg/m^3. All monitored stations have NO_X concentrations well within the stipulated (annual 24 hours) limit of 80 µg/m^3 as prescribed for industrial, residential, rural and other areas under NAAQ Standards of MoEF&CC.

Noise
The noise levels in the Bhivdoni quartz Mine core and buffer zone were observed in the range of 36.6 to 54.9 dB (A) and are within the permissible standards limits during day time and also during the night time the occasional high noise levels were due to passing of vehicles/ trucks or other commercial activities at those specific sites.

Soil Quality:
Soil samples were collected at 4 selected locations in the study area to assess the existing soil conditions around the mine. Overall soils are moderately suitable for cultivation of arable crops and have moderate fertility.

Biological Environment:
The core and buffer zones include the village settlements with their cultivated fields, forest areas as well as vast areas reduced to wasteland. The detailed inventory of floral and faunal assemblage of the core and buffer zone has been prepared. The details of flora and fauna are provided in EIA/EMP. There are no ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the buffer zone.

In 10 Km Study Area, , there are varrious Reserved Forests, and some patches of Reserved Open Mixed Jungle.

Human settlement and demography
The area selected for the study constitutes 54 inhabited villages. The inhabited villages have a population of 38695 comprising of 19990 males and 18705 females. The number of females per 1000 males is 937. The overall literacy was 77.12%.

Risk Assessment & Disaster Management Plan:

In any mining project, work safety is taken care of as per provisions in the Mines Act, Rules framed there under. Inundation, fly rocks during blasting operations, risks associated with handling and use of explosives, during operations of equipment and movement of vehicles has been dealt. The risk management plan as per the directives of competent authorities will be Implemented strictly.

Environmental Impact Assessment:

For the purpose of development and economic up-liftment of people, there is need for an establishment of mining industries but it should be environmental friendly. Therefore, it is essential to assess the impacts of mining on different environmental parameters such as change of land use, flora and fauna of the area, surface drainage, and change in air, water and soil quality and socio-economic environment before starting the mining operations, so that abatement measures could be planned in advance for eco-friendly mining in the area. Accordingly, Environmental Impact Assessment due to the proposed mining activities on each component of the environment and described in the Draft EIA report.

4.0 ENVIORNMENT MANGEMENT PLAN

Air Pollution Management :

- Haulage roads will be frequently sprinkled with water for which truck mounted water tankers with sprinkler arrangement have been provided.
- Mineral will be covered by tarpaulins to prevent spread of dust from it during transportation.
- Regular maintenance of vehicles and machineries will be carried out in order to control emissions.
- The dust respirators will be provided to all the workers in dusty atmosphere
- Good housekeeping and proper maintenance will be practiced which will help in controlling the pollution.
- Drilling machines shall be equipped with water injection or dust extraction system to prevent dust from getting air borne.
- Controlled blasting shall be carried out in most scientific manner by use of non electric ignition system, use of millisecond delay detonators and optimizing the blasting parameters to control & prevent the dust to get air borne and to control the fly rock.
- Green Belt / Plantation are shall be carried out around the pit boundary , along the roads, office, workshop, etc.

Water Pollution Management:

The mining project will require continuous supply of water for various purposes during mining, vegetation etc. apart from drinking water supply. The main source of water pollution in opencast mining is the surface run-off due to rainfall. There will not be any mine discharge during dry weather seasons. There may be small quantity of mine discharge during monsoon season, which contains fine silt. This will be treated in settling tanks followed by desilting tanks and the treated water (overflow) will be let into the natural nallahs during monsoon. While it will be stored and used for dust suppression and plantation during non monsoon season.

- Garland Drains shall be provided around the pit to prevent the entry of rainwater into the mining pit.

- Garland drain/ filtration bund shall be provided around dumps to retain the rain water percolating from waste dumps.
- Septic tanks and soak pits shall be provided for disposal of domestic waste water.
- Rainwater falling in the catchments area of mining pit shall be collected in sump of mines.

Noise & Vibration Management

- Controlled Blasting shall be carried out to minimize vibration.
- PPEs like earmuffs/earplugs shall be provided to all operators and employees working near the machinery.
- At the boundary of mining lease green belt of local trees will be planted which will act as acoustic barriers. Planting of bushy trees of rich canopy in and around the mine area to intercept noise transmission. A 7.5 m wide belt of trees of different heights will be useful to act as noise attenuator in the mining areas.
- Delay detonators millisecond delay interval will be used. For keeping the vibrations minimum.

Land Reclamation Measures:

The possibility of persistence of ore will be assessed during exploration programme and accordingly the reclamation will be decided. However the float area, after removal of float in first year will be back filled subsequently with waste/rejects material of subsequent year. The same will be reclaimed by plantation.

Plantation:

It is proposed to select the local tree species for control of fugitive dust from the mining lease. Number of saplings and species proposed to be planted in next 5 years and at conceptual period are given in the following table.

YEARS	NO. OF PLANTS	AREA (Sqm)
1st	360	1800
2nd	360	1800
3rd	360	1800
4th	360	1800
5th	360	1800
TOTAL	**1800**	**9000**

Proposed Social Responsibility Measures:

A systematic approach for the implementation of the peripheral area development in selected villages in the buffer zone starting from the nearest village will drawn up with the help of local community based organization & in consultation with the villagers. Assistance in the field of health and sanitation, environment conservation, water conservation, literacy, self help groups, development of infrastructure. The project proponents are envisaging undertaking the following socio-economic measures.

- **Health Care:** These include family planning ,medical camps and aid to the existing and proposed hospitals. Awareness camps for hygienic habits and its importance in avoiding water and air borne diseases. Reproductive Child Health programmes,

awareness programme on family planning, nutrition improvement with the help of medical practitioner will be arranged on regular basis.

- **Training Facility:** It is proposed to conduct skill development training programe for unemployed youth.
- **Employment:** It is proposed to employ the local population wherever possible in the proposed project activities.

Plantation:

Plantation outside the mining lease area will be carried out at common places like school, anganwadi, hospitals, Grampanchayat, village roads, periphery of playgrounds and any other open land with prior consent from the local governing body. It is also proposed to nourish and maintain the saplings till they attain maturity and are self sustained. The plantation will be protected from grazing and illicit felling.

Civic Amenities: These include support to community toilets, drinking water facilities, repairing of school buildings, Gram panchayat building and sanitation, etc.

- Participation in Cultural activity, sports etc will also be made.
- Provision for street solar lamps at selected places in nearby village.
- A provision of Rs. 7 lakh / year is earmarked for these activities.

Occupational health:

- All the mine workers will be sent to Hospital which have the facilities for chest X-ray, pulmonary function test & audiometry, TB, Malaria, HIV etc. once in 5 year.
- A safety committee will be constituted to implement the proposed OSHA management plan and environment management programme and take proper mitigative measures as per EIA/EMP.
- Services of Occupational Health Specialist will be arranged regularly.
- The proponent will bear all the expenditure related to health check up and treatment of the mine workers.
- Individual health record of every worker will be maintained till the end of service or the end of mining operations.

Villages within the buffer zone will be benefited by direct and indirect employment opportunities created by the mining activities. A budgetary provision of Rs. 10 lakhs as capital investment is made in the environment management plan.

The mitigation measures suggested above shall be implemented so as to reduce the impact on environment due to operations of proposed mining activities. In order to facilitate easy implementation, mitigation measures are phased as per the priority implementation. The monitoring of the pollution to know the effectiveness of the applied control measures will be carried out at regular interval.

The Project Proponent shall keep the funds earmarked for environmental protection measures in this account and shall not divert the deposited funds for other purposes. The account shall be subject to audit on annual basis. The year wise expenditure of such funds should be reported to the MoEF&CC and its concerned Regional Office.

APPEAL

In compliance with the environmental procedure the environmental clearance application is made. Necessary scientific studies have been undertaken as per the guidelines set by the Ministry of Environment and Forests & Climate Change (MoEF & CC). The suggestions/recommendations of all the experts, competent authorities, and government officials are being sought for the impacts of the proposed project. Views and guidance of the local residents, community based organizations, social organizations are extremely important in order to devise a full proof Environment Management Plan for the proposed mining project and also mitigate the damages caused due to the project. Allocation of necessary funds, manpower and machinery will be made to for the protection and conservation of all the components of environment. It is ensured that all mandatory clearances will be sought from respective competent authorities before operating the proposed Bhivdoni Quartz & Quartzite Mining Project (90.06 Ha).

We at M/s. Flex Minerals is committed to implement the suggestions for the improvement of the environment and assure that every attempt will be made for the conservation and protection of the environment to the maximum extent. It is requested to support this project by providing your consent.