

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

INTRODUCTION

The mining plan of Jalwa Quartz-Quartzite (Silica Stone) Mine for fresh grant of mining lease was approved by the Regional Controller of Mines, Ranchi Region, Indian Bureau of Mines vide letter No. RAN/LKS/QRTZ-QZTMP-135(14)/00-01 dated 19.04.2001. The Mining Plan of the above mine was approved under rule 22 of M.C.R., 1960 for fresh grant. (Photocopy of approval letter for mining plan is enclosed as Annexure - 1).

The mining lease was granted in favor of M/s Idio Construction & Industries (India) Ltd. by the State Government of Bihar & the lease deed was executed on 23.08.2001 for a period of 30 years up to 22.08.2031.

(Photocopy of the lease deed is enclosed as Annexure - 2).

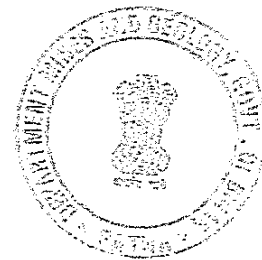
The lessee M/s Idio Construction & Industries (India) Ltd is a private limited firm & the copy of the article of association & memorandum of association is attached herewith as annexure -10.

The lease was terminated by the State Govt. & the same is revoked by the judgment of the honourable high court in the year 2010.

The scheme of mining was not prepared by the lessee for the period of 2006-07 to 2009-10 due to unavoidable circumstances. Although a scheme of mining was prepared & submitted to IBM Ranchi for the period of 2010-11 to 2015-16. But due to some unavoidable circumstances the same was not approved. Again the period 2016-17 to 2018-19 is lapse period as the mines was not in operation.

An undertaking by the lessee is enclosed regarding no further lapse period in future.

Now the scheme of mining plan is prepared for the proposed period of 2019-20, 2020-21, 2021-22, 2022-23 and 2023-24.




P. K. SEN
Qualified Person

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CHAPTER - I
GENERAL

a) Name of Applicant/Lessee:

M/s Idio Construction & Industries (India) Ltd.

Address : In the Premises of Ambika Offset Printers, Dariyapur- Gola,
District : Patna
State : Bihar
Pin Code : 800 004
Phone : +91-9308875238, +91- 8102997044
Email : idio_construction@yahoo.com

IBM Registration Number : IBM/8018/2011

b) Status of Applicant/lessee:

The lessee M/S Idio Construction & Industries (India) Ltd is a private limited firm & the copy of the article of association & memorandum of association is attached herewith as annexure - 10.

List of director also attached herewith as annexure -3.

c) Mineral(s) which is / are included in the prospecting license (For Fresh grant): Not applicable

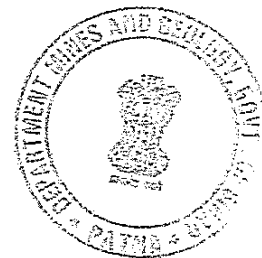
d) Mineral(s) which is / are included in the letter of Intent / lease deed: Quartz - Quartzite (Silica Stone)

e) Mineral(s) which is the applicant /lessee intends to mine: Quartz - Quartzite (Silica Stone)

f) Name of Qualified Person preparing Mining Plan:-

Name : Pradip Kumar Sen
Address : Kali Mandir Road, Doranda, Ranchi, Jharkhand - 834002
Phone : 0651 2481110
Email : pksenranchi@gmail.com
Mobile No. : 09431106275 / 08235816865

(Photocopy of experience certificate enclosed as Annexure -14)




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CHAPTER - II
LOCATION AND ACCESSIBILITY

a) Lease Details (Existing Mine)

Name of mine: Jalwa Quartz-Quartzite (Silica Stone) Mine

Village : Bishunpur

P.S. : Piri Bazar

District : Lakhisarai

State : Bihar

Lat/Long of any boundary point:-

BP-1 -

Latitude: - 25° 12' 13.41N,

Longitude: - 86° 16' 34.36" E

Date of grant of lease: 28.03.2001

Period/Expiry Date:

The mining lease was granted in favor of M/s Idio Construction & Industries (India) Ltd by the State Government of Bihar & the lease deed was executed on 23.08.2001 for a period of 30 years up to 22.08.2031.

Name of lease holder:

M/s Idio Construction & Industries (India) Ltd.

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District : Patna

State : Bihar

Pin Code : 800 004

Phone : +91-9308875238, +91- 8102997044

Email : idio_construction@yahoo.com

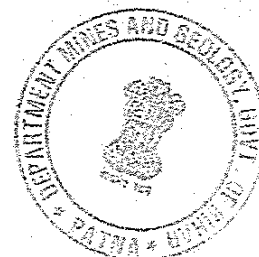
IBM Registration Number : IBM/8018/2011

b) Details of applied /lease area with location map (fresh area /mine)

Types of Land:

Forest		Non-forest	
Forest(specify)	Area(ha)	Types of land	Area(ha)
NIL	NIL	Govt. waste land	19.80


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Total lease area /applied area: 19.80 Hectares

District & State: District – Lakhisarai, State – Bihar

Taluka / Thana- Piri Bazar, Village/Mouza – Bishunpur.

**b) Whether the area falls under Coastal Regulation Zone (CRZ)? if yes, details there of
: Not Applicable**

Existence of public road/railway line, if any nearby and approximate distance:

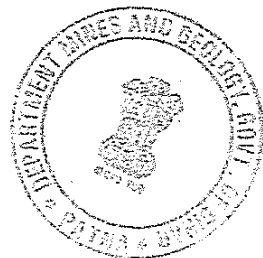
The area can be approached from Kajra Railway Station of Eastern Railway. Nearly 4 Kms. S - W and connected by Tar road up to Bariyarpur village and rest by fair weather road.

Toposheet No. : 72K/8

Latitude and Longitude of all corners Boundary Pillars is given on the surface plan.

- c) Attach a general location map showing area and access routes. It is preferred that the area be marked on a Survey of India topographical map or a cadastral map or forest map as the case may be. However, if none of these are available, the area may be shown on an administrative map.**

The Key Plan (Plate No. – 1) on Toposheet No. 72K/8 with toposheet No 72K/4 for 5 Km radius buffer zone (Scale 1:50000) is enclosed.




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CHAPTER - III
DETAILS OF APPROVED MINING PLAN /
SCHEME OF MINING (if any)

3.1 Date and reference of earlier approved MP/SOM

The mining plan of Jalwa Quartz-Quartzite (Silica Stone) Mine for fresh grant of mining lease was approved by the Regional Controller of Mines, Ranchi Region, Indian Bureau of Mines vide letter no. RAN/LKS/QRTZ-QZT/MP-135(14)/00-01 dated 19.04.2001. The Mining Plan of the above mine was approved under rule 22 of M.C.R., 1960 for fresh grant. (Photocopy of approval letter for mining plan is enclosed as Annexure - 1).

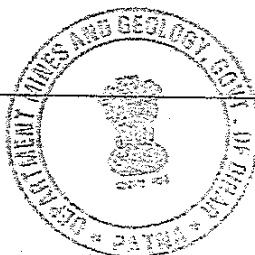
3.2 Details of last modifications if any (for the previous approved period) of approved MP/SOM, indicating date of approval, reason for modification.

There is no such modification in the approved mining plan.

3.3 Give review of earlier approved proposal (if any) in respect of exploration, excavation, reclamation etc.

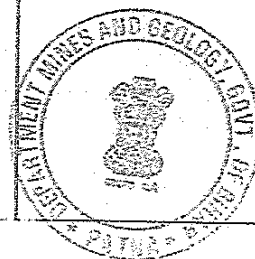
The review of earlier approved proposal mining plan for period 2001-02 to 2005-06 is as under.

i) Exploration:		
Proposed exploration as per approved mining plan	Actual exploration work done by the lessee during this plan period	Remarks
it was stated that altogether seven (7) shallow pit up to a depth of 5m will be given for finding out the existence of quartzite body below the soil cover & during third year 6 non coring Boreholes to the depth around 30 mts. are proposed to be drilled to know the depth continuity as well as approximate Chemical grade of the deposit.	It is noticed that during the approved mining plan period no exploration was carried out in the area except the development of the working quarry.	The quartzite mineral is exposed up to the surface where development of the quarry around the hill is done. Further the rest area except the hills is cultivating land where lessee could not carry out the exploration due to local disturbances in the area.



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ii) Mine Development:		
Development work proposed as per approved mining plan	Actual Development work done by the lessee during this plan period	Remarks
It is mentioned that the mine will be developed by opening quarries. There is no overburden. Quartzite will be removed by pick axes and shovels. The harder strata of Quartzite will be broken by explosives. Fork type shovels will be used in removing Quartzite from the working benches. The existing quarries at the foothill will be developed during the first five years plan period. This quarry would continue to be worked all along the hillock except the area left for safety zone for temple. In case of the demand of mineral rises, the higher production can be obtained by increasing the rate of advance in depth. 40% of the total excavation was considered as rejects.	During the approved mining plan period of working the development was carried in the area slightly other than the proposed area. There was no waste generation in the area.	During the approved mining plan period of working the development was carried in the area slightly other than the proposed area. There was no waste generation in the area..



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iii) Exploitation:-																														
Proposed quantity of ore as per approved mining plan	Actual quantity of ore achieved by the lessee during this plan period	Remarks																												
During the Plan period the targeted production was as under: <table><tr><th>Year</th><th>Quantity in Tonnes.</th></tr><tr><td>2001-02</td><td>390100</td></tr><tr><td>2002-03</td><td>443937</td></tr><tr><td>2003-04</td><td>413762</td></tr><tr><td>2004-05</td><td>378625</td></tr><tr><td>2005-06</td><td>380250</td></tr><tr><td>Total:</td><td>2006674</td></tr></table>	Year	Quantity in Tonnes.	2001-02	390100	2002-03	443937	2003-04	413762	2004-05	378625	2005-06	380250	Total:	2006674	The actual production of Quartzite is achieved during the last plan period is given in the following table. <table><tr><th>Year</th><th>Quantity in Tonnes.</th></tr><tr><td>2001-02</td><td>00</td></tr><tr><td>2002-03</td><td>3300</td></tr><tr><td>2003-04</td><td>1640</td></tr><tr><td>2004-05</td><td>1480</td></tr><tr><td>2005-06</td><td>1790</td></tr><tr><td>Total:</td><td>8210</td></tr></table>	Year	Quantity in Tonnes.	2001-02	00	2002-03	3300	2003-04	1640	2004-05	1480	2005-06	1790	Total:	8210	During the plan period it was proposed that total 2006674 tonnes of Quartzite will be produced but during the course of actual mining in the area it is observed that only 8210 tonnes of Quartzite is produced. Production of Quartzite is less as compared to the proposal made in the approved mining plan. The reason for that is due to less demand of quartzite in the market as well as local problem.
Year	Quantity in Tonnes.																													
2001-02	390100																													
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2003-04	413762																													
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Total:	8210																													

iv) Afforestation:		
Afforestation work proposed as per approved mining plan	Actual afforestation work done by the lessee	Remarks
It was proposed that 160 numbers of plants in every year of this plan period along the lease boundary.	During the last plan period not a single sapling is planted.	The reason for that is due to cultivating land & local problem not a single sapling is planted.

v) Land Reclamation and Rehabilitation:		
proposed as per approved scheme of mining	Actual work done by the lessee	Remarks
The nature of the deposit shows that it continues towards depth and depth has not been proved yet so no reclamation has been discussed under this para.	It is found that no waste is removed during the plan period & no reclamation is done.	It is found that no waste is removed during the plan period & no reclamation is done as the quantum of work is very low.

The scheme of mining was not prepared by the lessee for the period of 2006-07 to 2018-19 due to unavoidable circumstances. The production made during this lapse period is tabulated below:-

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Year	Production in Tonnes
2006-07	10680
2007-08	60346
2008-09	00
2009-10	00
2010-11	00
2011-12	4831
2012-13	88358
2013-14	00
2014-15	00
2015-16	00
2016-17	00
2017-18	00
2018-19	00
Total	164215

3.4 Give status of compliance of violations pointed out by IBM
Review of Compliance of violations pointed out after inspections made under MCDR 1988 during last five years.

Photocopy of Compliance of violations were pointed out after inspections made under MCDR 1988 & MCDR 2017 during last five years is attached as annexure – 6

Letter No.	Date	Violations pointed under MCDR, 1988	Comply status
BIH/MUG/QRT/645/RRO	05.03.2003 & 26.03.06	Rules – 13(1), 45(1)(a), 45(1)(c), 46	Complied
BIH/MUG/QRT/645/RRO	05.03.2003	Rules – 13(1), 23B(2), 45(1)(a), 45(1)(c), 46	Complied
BIH/MUG/QRT/645/RRO	24.11.2004	Rules – 13(1), 23B(2), 46	Complied

3.5 Indicate and give details of any suspension /closure/ prohibitory order issued by any Government agency under any rule or Court of law.

There is not any suspension / closure / prohibitory order issued by any Government agency under any rule or Court of law.

3.6 In case the MP/SOM is submitted under rules 9 and 10 of the MCDR'88 or under rule 22(6) of the MCR'1960 for approval of modification, specify reason and justification for modification under these rules.

Not applicable.


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PART - A
1.0 GEOLOGY AND EXPLORATION:

a) Briefly describe the topography, drainage pattern, vegetation, climate, rainfall data of the area applied/mining lease area.

Topography:

Physically the area represents a diversified and picturesque country side consisting hills and flat land. In the applied area there are two hillocks. The hills are moderate to gentle slope. The trend of the hillock is N 80°E - S 80°W. The Exgora pahar is situated 3.5 km away due SSW of the applied area. Another hilly area lies 8 km away due N 80°E and the hillock named Abhinath pahar. South is divided by the arcuate Kharagpur hill range.

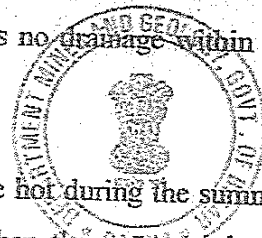
North Eastern and North Western as well as Northern part of the area is covered with quartzite where as Southern, South Eastern and South Western part of the area is covered with soil.

The maximum and minimum height attained by the area is 64m and 32m from the M.S.L. respectively. The eastern part of the area raises upto 64m from MSL whereas the western part raises upto a height of 52m from M.S.L.

Drainage There are several small seasonal Nallas originating from the Southern-higher ridges, which all join the Gark Nadi flowing from NE to SW about 3km North of the applied area. There is a lake of 200m x 200m with a hot spring at a distance of 3km due SE of the applied area. There is another hot spring with a lake at a distance of 3 km due south from the applied area which measures 200m x 20m. The river Ganga is flowing from West to East and is situated at a distance of 13 km from the proposed area. There is no drainage within the applied area.

Climate:

The climate of the district is somewhat extreme in nature, i.e., quite hot during the summer and fairly cold during the winter. January is the coldest month when the mean minimum temperature comes down to approximately 40° C. The temperature starts rising from March and reaches its peak in May when the mercury touches about 45°C. The average annual rainfall of the district is 1170 mm and about 85% of the rainfall is by South-west monsoon during June to September.



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b) Brief descriptions of Regional Geology with reference to location of lease / applied area.

The area belongs to Dharwar Group of Archean age. The major rock types area quartzite and mica schist. Mica Schist is highly weathered and converted into soil. Quartzite is exposed all along the hill range from Munger to Jamui with general north-south trend. The general stratigraphic Succession RS described by Sri. M. S. Krishnan, 1968. Geology of India Burma and Mineral wealth of Bihar, I.M. Vol. 28, No. 4 of the quartzite bearing zone in and around the area is as follows:

Dharwar	Upper Mica Schist Quartzite Lower Mica Schist
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c) Detailed description of geology of the lease area such as shape and size of the mineral/ore deposit, disposition various litho-units indicating structural features if any etc. (Applicable for Mining Plan for grant & renewal and not for Scheme of Mining/Modifications in the approved mining plan/scheme of Mining).

Local Geology:

Within the applied area only the quartzite are exposed. No, prominent. Mica Schist exposure is exposed within the entire leasehold area. Due to prolonged weathering effect mica schist has been converted into soil which has been inferred through field observations. Hence quartzite is the only one formation as exposed represents the Dharwar within the applied area.

The two hillocks are 500m apart and the eastern one rises up to 64m from M.S.L. where as western hill raises upto 52m form M.S.L. The two hillocks are made up to of quartzite and there is no other mineral or rocks are associated with it.

The dip of the quartzite varies from 80° to 85° due south and the strike of the quartzite varies from $N5^{\circ} E$ to almost E-W.

There are two prominent sets of joints intersect at a high angle to form a conjugate system. One set is striking East to West with dip 80° to 85° towards South. The other set is vertical and perpendicular to the bedding plane which is parallel to the foliation plane. The joint planes are parallel at a gap of 3 to 4 meters making the quartzite into bit blocks.

d) (i) Name of prospecting /exploration agency -

M/s Idio Construction & Industries (India) Ltd.

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e) Details of prospecting / exploration already carried out:

i) Number of pits and trenches indicating dimensions, spacing etc along and across the strike/foliation with reference to geological plan.

No pits & trenches are made in the area except development of quarry in around of the hills.

ii) Number of boreholes indicating type (Core/RC/DTH), diameter, spacing, inclination, Collar level, depth etc with standard borehole logs duly marking on geological plan/sections.

No Boreholes is drilled & quartzite minerals are exposed up to the surface in the hills.

iii) Sampling & grade:

QUARTZITE

SiO₂ – 96.52%

Fe₂O₃ - 0.55%

Al₂O₃ – 2.02%

LOW – GRADE QUARTZITE

SiO₂ – 90.11%

The analysis of 6 samples of Quartzite and 10 samples of Low-grade quartzite is carried out in State Geological Laboratory, Hazaribagh. (Refer Annexure –)

f) The surface plan of the lease area may be prepared on a scale of 1: 1000 or 1: 2000 with contour interval of maximum of 10 m depending upon the topography and size of the area duly marked by grid lines showing all features .

The surface plan is prepared on a Scale of 1:2000 with 2m contour interval is enclosed as Plate No. 3.

g) For preparation of geological plan, surface plan prepared on a scale of 1: 1000 or 1: 2000 scale specified under para 1.0 (f) of Part A of the format may be taken as the base plan. The details of exploration already carried out along with supporting data for existence of mineral, locations proposed exploration, various lithounits along with structural features, mineralized/ore zone with grade variation if any may be marked on the geological plan along with other features

The Geological plan is prepared on a Scale of 1:2000 with 2m contour intervals enclosed as Plate No. 4.

h) Geological sections may be prepared on natural scale of geological plan at suitable interval across the lease area from boundary to boundary.

17 Nos. of Geological cross Sections (1-1' to 17-17') & 7 numbers of longitudinal sections (A-A' to G-G') have been prepared at suitable interval, depending on spatial location of the boreholes, on a scale of 1:2000 and is enclosed as Plate No. 4A.

i) Broadly indicate the future programme of exploration with due justification (duly marking on Geological plan year wise location in different colours) taking into consideration the future tentative excavation programme planned in next five years as in table below:

Nine numbers of DTH drilling will be done during this plan period for proving the depth continuity of the deposit.

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Year	No. of boreholes	(Core/RC/ DTH)	Grid interval	Explored area	Meterage
2020-21	9	DTH	100m X 100m	90000	450

j) Reserves and Resources as per UNFC with respect to the threshold value notified by IBM may be furnished in a tabular form as given below: (Area explored under different level of exploration may be marked on the geological plan and UNFC code for area considered for different categories of reserve/resources estimation may also be marked on geological cross sections). Submit a feasibility/pre-feasibility study report along with financial analysis for economic viability of the deposit as specified under the UNFC field guidelines may be incorporated.

Feasibility study based on the geographical conditions and operating conditions:

Infrastructure: Road and railway sand is easily approachable from the working site. Manpower is cheaply available.

Geology: Geologically the area is potential and the deposit with grade as per requirement by the consuming party.

Legal matters: Lease area is valid up to 22.08.2031. There will be no displacement. Mostly the area is GM land. The land is acquired as per Rule.

Socio-economic impact and public acceptance: - 25 years back, the major inhabitants of the area were illiterate and used to live in hardship. Due to mining operation their livelihood has been uplifted and even literacy can be observed within them.

Due to mining operation, their livelihood will be uplifted and literacy could be observed more in the surrounding area because of employment generation due to mining activity directly or indirectly. Thus, due to mining operation, their traditional culture could be changed but financial condition would be improved by getting employment in the mine and in allied work.

Operating: The lessee will make an agreement for all the mining equipments used for the scientific mining with the vendor or own by the lessee. The mine is eco-friendly.

Economically the ore is mineable as compared to overburden thickness. The ore is also economically viable for its consuming party.

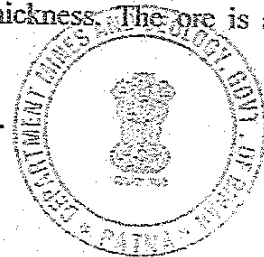
Thus the economic, feasible and geology axis are categorized as - 1.

Thus the mineable prove reserve as estimated is categorized as 111

Probable reserve is categorized as 122.

Economically ore is mineable as compared to overburden thickness and it is viable for the captive plant and is categorized as - 1.

Feasibility study of the deposit is yet to establish. So, it is categorized as -2



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Geologically the area is potential but the deposit in the depth is yet to establish with grade as per the requirement by the captive plant and it is categorized as -2.

Feasibility report is enclosed as annexure –

RESERVES AND RESOURCES ESTIMATED FOR QUARTZITE AS ON 01.04.2019

Classification	Code	Quantity In tonnes	Average Grade
A. Total Mineral Reserve			
Proved Mineral Reserve	111	3368550	SiO ₂ – 96.52%
Probable Mineral Reserve	121	—	—
	122	857663	SiO ₂ – 96.52%
B. Total Remaining Resources			
Feasibility Mineral Resource	211	1135250	SiO ₂ – 96.52%
Pre-feasibility Mineral Resource	221	—	—
	222	513425	SiO ₂ – 96.52%
Measured Mineral Resource	331	—	—
(Indicated Mineral Resource	332	—	—
Inferred Mineral Resource	333	—	—
Reconnaissance Mineral Resource	334	—	—
Total Reserves + Resources		5874888	

k) Furnish detailed calculation of reserves/resources section wise (When the mine is fully mechanized and deposit is of complex nature with variation of size, shape of mineralized zones, grade due to intrusion within ore zone etc. an attempt may be made to estimate reserves/resources by slice plan method). In case of deposits where underground mining is proposed, reserve/resources may be estimated by level plan method, as applicable, as per the proposed mining parameters.

Category wise Reserves as per approved mining plan as on 01.04.2001 is tabulated below:-

Proved reserve	2894495 Tonnes
Probable Reserve	9215190 Tonnes
Total	12109685 Tonnes



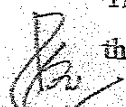
Depletion in Mineable Reserve:

Category of Reserve	Quantity in tonnes	Depletion in tonnes	Balanced reserve In tonnes
Proved reserve	2894495	164215	2730280
Probable Reserve	9215190	00	9215190
Total	12109685	164215	11945470

Note: - The reserves estimated in the approved mining plan were not based on UNFC classification. So, in this scheme of mining fresh reserve is estimated based on the UNFC classification.

Method of estimation Geological Resources of Quartzite in Jalwa Mining Lease:

The Resources have been computed for the Quartzite on the basis of quarries developed in the area as demarcated in Plate No. 4 and on the basis of study of Quartzite exposed in the


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quarries as well as surface in the form of hillock. The resources have been computed for measured mineral resources and indicated mineral resources on the basis of Cross Sectional method. The measured mineral resources are computed on the basis of cross sectional area of the Quartzite and it is multiplied with the length of influence of the respective section. Thus, the volume of Quartzite is obtained. The volume of the ore is again multiplied with the tonnage factor as considered as 2.5. Quartzite is exposed up to the RL 32m & further 5m is considered as measured mineral resources. Thus the thickness 25m in Block A and 30 m Block B of Quartzite is considered for measured mineral resources as per exposed quartzite in the hillock. Further 5 m thickness of Quartzite below the measured mineral resources are considered for indicated mineral resources. The grade for Quartzite has been considered 96.52. Thus the average grade of deposit comes as given below.

QUARTZITE

SiO₂ - 96.52%

Fe₂O₃ - 0.55%

Al₂O₃ - 2.02%

LOW - GRADE QUARTZITE

SiO₂ - 90.11%

The analysis of 6 samples of Quartzite and 10 samples of Low-grade quartzite is carried out in State Geological Laboratory, Hazaribagh. (Refer Annexure -).

CATEGORY	BLOCK A	BLOCK B	TOTAL
MEASURED MINERAL RESOURCES (331)	1030075	3473725	4503800
BLOCKED MEASURED MINERAL RESOURCES (211)	77250	1058000	1135250
PROVED RESERVE (111)	952825	2415725	3368550

CATEGORY	BLOCK A	BLOCK B	TOTAL
INDICATED MINERAL RESOURCES (332)	392338	978750	1371088
BLOCKED INDICATED MINERAL RESOURCES (222)	69338	444087	513425
PROBABLE RESERVE (122)	323000	534663	857663

Summary of reserve & remaining resources:-

Category of Resource	Mineable Reserves in Tonnes	Non Mineable in Tonnes	
Proved (111)	3368550	Feasibility Mineral Resources (211)	1135250
Probable (122)	857663	Pre-Feasibility Mineral Resources (222)	513425
TOTAL	4226213		1648675

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
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Total reserve will be used in industries and used as building materials i.e. for use as minor mineral which the lessee has selling permission from the State Government.

Anticipated life of the mine:-

The total mineable ore (ROM) would be 4226213 tonnes. The production of Quartzite in these five years of plan period would be 2417617 tonnes. The balance reserve would be 1808596 tonnes. Considering production @ 502968 tonnes per annum after the plan period the balance reserve will be mined out in 3.60 years or say 4 years. Thus the life of the mine would be about 9 years (5 years + 4 Years). The reserve is based on the present exploratory data. In future further exploration is proposed during the plan period. On the outcome of exploratory data there is possibility of enhancement of reserve. Hence the life of the mine also may increase.

Feasibility study based on the geographical conditions and operating conditions:

Infrastructure: Road and railway sand is easily approachable from the working site. Manpower is cheaply available.

Geology: Geologically the area is potential and the deposit with grade as per requirement by the consuming party.

Legal matters: Lease area is valid up to 22.08.2031. There will be no displacement. Mostly the area is GM land. The land is acquired as per Rule.

Socio-economic impact and public acceptance: - Due to mining operation their livelihood has been uplifted and even literacy can be observed within them.

Due to mining operation, their livelihood will be uplifted and literacy could be observed more in the surrounding area because of employment generation due to mining activity directly or indirectly. Thus, due to mining operation, their traditional culture could be changed but financial condition would be improved by getting employment in the mine and in allied work.

Operating: The lessee will make an agreement for all the mining equipments used for the scientific mining with the vendor or own by the lessee. The mine is eco-friendly.

Economically the ore is mineable as compared to overburden thickness. The ore is also economically viable for its consuming party.

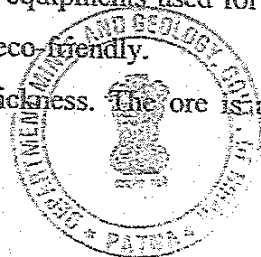
Thus the economic, feasible and geology axis are categorized as - 1.

Thus the mineable prove reserve as estimated is categorized as 111

Probable reserve is categorized as 122.

Economically ore is mineable as compared to overburden thickness and it is viable for the captive plant and is categorized as - 1.


P.K. SEN
Qualified Person



SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
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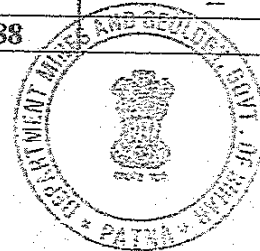
Feasibility study of the deposit is yet to establish. So, it is categorized as -2

Geologically the area is potential but the deposit in the depth is yet to establish with grade as per the requirement by the captive plant and it is categorized as -2.

Feasibility report is enclosed as annexure -

RESERVES AND RESOURCES ESTIMATED FOR QUARTZITE AS ON 01.04.2019

Classification	Code	Quantity In tonnes	Average Grade
A. Total Mineral Reserve			
Proved Mineral Reserve	111	3368550	SiO ₂ - 96.52%
Probable Mineral Reserve	121	—	—
	122	857663	SiO ₂ - 96.52%
B. Total Remaining Resources		—	—
Feasibility Mineral Resource	211	1135250	SiO ₂ - 96.52%
Pre-feasibility Mineral Resource	221	—	—
	222	513425	SiO ₂ - 96.52%
Measured Mineral Resource	331	—	—
(Indicated Mineral Resource	332	—	—
Inferred Mineral Resource	333	—	—
Reconnaissance Mineral Resource	334	—	—
Total Reserves + Resources		5874888	




P. K. SEN
 Qualified Person

2.0 MINING

A. OPEN CAST MINING:

a) Briefly describe the existing as well as proposed method for excavation with all design parameters indicating on plans /sections. :-

Existing method of mining:- Mining operations were started in this lease in 2001 to mine Quartzite. As shown in Plate-3 quarries have been opened in the area. Quarries have been worked up to a depth of over 7m to 10m in different faces. The working has all along been Mechanized (OTFM) and will continue to be by Mechanized (OTFM) in future.

Proposed method of Mining:

It is, now proposed to work will be carried out in two quarries systematically in the two hill starting from the western side & extended towards eastern side with systematically benching system. Each quarry will be worked to its complete strike length and full depth. The quarries would continue to be worked by mechanized (OTFM) method. The drilling and blasting shall be carried out by deep hole blasting.

Bench Design and Formation:

In the Mine the height of benches will be usually kept below 6m, in consonance with the DGMS permission granted, being lower than the boom height of the shovels used. The bench width is maintained at minimum 6m or larger.

b) Indicate year-wise tentative Excavation in tonnes indicating development, ROM, pit wise as in table below.

I. Insitu Tentative Excavation

Year	Quartzite in tonnes
2019-20	412933
2020-21	500958
2021-22	500085
2022-23	500673
2023-24	502968
Total	2417617

c) Enclose Individual year wise development plans and sections showing pit layouts, dumps, stacks of mineral reject, if any, etc in case of 'A' category mines. Composite development plans showing pit layouts, dumps, stacks of mineral reject, if any, etc. and year wise sections in case of 'B' category mines.

The mining activities in the leasehold are in east central part of the lease where the face has been planned to develop in all direction during the plan period.

Working of the next five years will be started from the existing quarry and extended towards south and further depth. Details of advancement and formation of benches are shown in Development Plan & Sections (Plates: 5, 5A, 6, 6A, 7, 7A, 8, 8A, 9 & 9A) in the scale 1:2000.

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

1st year: 1st year development will be started from the western side in two blocks with four benches of 6m X 6m in dimension up to 28 RL. For haulage of the stone ramp will be maintained at the quarry face. Detail calculations are given bellow:-

YEAR 2019-20						
REF. SECTION	BENCH RL	SECTIONAL AREA (m ²)	LENGTH OF INFLUENCE(m)	VOLUME (m ³)	T.F.	QUARTZITE (IN TONNES)
B-B'	52-46	167	55	9185	2.5	22962.5
	46-40	294	75	22050	2.5	55125
	40-34	364	88	32032	2.5	80080
	34-28	556	88	48928	2.5	122320
F-F'	52-46	94	30	2820	2.5	7050
	46-40	149	30	4470	2.5	11175
	40-34	143	33	4719	2.5	11797.5
	34-28	126	25	3150	2.5	7875
G-G'	46-40	242	37	8954	2.5	22385
	40-34	300	37	11100	2.5	27750
	34-28	323	55	17765	2.5	44412.5
TOTAL				165173		412933

2nd year: During this year working will be extended towards east from the west with six benches of 6m X 6m in dimension up to 22 RL. For haulage of the stone ramp will be maintained at the quarry face. Detail calculations are given bellow:-

YEAR 2020-21						
REF. SECTION	BENCH RL	SECTIONAL AREA (m ²)	LENGTH OF INFLUENCE(m)	VOLUME (m ³)	T.F.	QUARTZITE (IN TONNES)
F-F'	58-52	226	61	13786	2.5	34465
	52-46	382	66	25212	2.5	63030
	46-40	480	71	34080	2.5	85200
	40-34	549	65	35685	2.5	89212.5
	34-28	564	64	36096	2.5	90240
G-G'	46-40	67	47	3149	2.5	7872.5
	40-34	65	47	3055	2.5	7637.5
B-B'	28-22	548	90	49320	2.5	123300
TOTAL				200383		500958

3rd year: During this year working will be continued extending towards east in the same respective quarries from the west with five benches of 6m X 6m in dimension up to 28 RL. For haulage of the stone ramp will be maintained at the quarry face. Detail calculations are given bellow:-

YEAR 2021-22						
REF. SECTION	BENCH RL	SECTIONAL AREA (m ²)	LENGTH OF INFLUENCE (m)	VOLUME (m ³)	T.F.	QUARTZITE (IN TONNES)
E-E'	46-40	162	33	5346	2.5	13365
	40-34	236	40	9440	2.5	23600
	34-28	185	40	7400	2.5	18500
F-F'	58-52	316	72	22752	2.5	56880
	52-46	288	93	26784	2.5	66960
	46-40	288	50	14400	2.5	36000
	40-34	288	50	14400	2.5	36000

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

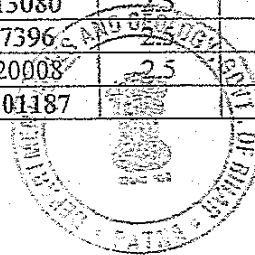
	34-28	288	50	14400	2.5	36000
G-G'	46-40	205	30	6150	2.5	15375
	40-34	298	61	18178	2.5	45445
	34-28	394	64	25216	2.5	63040
B-B'	52-46	152	62	9424	2.5	23560
	46-40	152	87	13224	2.5	33060
	40-34	152	85	12920	2.5	32300
TOTAL				200034		500085

4th year: During this year working will be continued extending towards east in the same respective quarries from the west with seven benches of 6m X 6m in dimension up to 22 RL. For haulage of the stone ramp will be maintained at the quarry face. Detail calculations are given below:-

YEAR 2022-23						
REF. SECTION	BENCH RL	SECTIONAL AREA (m ²)	LENGTH OF INFLUENCE (m)	VOLUME (m ³)	T.F.	QUARTZITE (IN TONNES)
B-B'	34-28	143	93	13299	2.5	33248
	28-22	143	87	12441	2.5	31103
E-E'	64-58	64	50	3200	2.5	8000
	58-52	286	33	9438	2.5	23595
	52-46	407	41	16687	2.5	41718
	46-40	436	44	19184	2.5	47960
	40-34	436	56	24416	2.5	61040
F-F'	58-52	564	37	20868	2.5	52170
	52-46	464	47	21808	2.5	54520
	46-40	464	69	32016	2.5	80040
	40-34	464	58	26912	2.5	67280
TOTAL				200269		500673

5th year: During this year working will be extended towards east from the west with four benches of 6m X 6m in dimension up to 28 RL. For haulage of the stone ramp will be maintained at the quarry face. Detail calculations are given below:-

YEAR 2023-24						
REF. SECTION	BENCH RL	SECTIONAL AREA (m ²)	LENGTH OF INFLUENCE (m)	VOLUME (m ³)	T.F.	QUARTZITE (IN TONNES)
E-E'	34-28	437	48	20976	2.5	52440
F-F'	34-28	428	50	21400	2.5	53500
G-G'	40-34	297	29	8613	2.5	21533
	34-28	467	45	21015	2.5	52538
B-B'	52-46	365	71	25915	2.5	64788
	46-40	436	94	40984	2.5	102460
	40-34	436	50	21800	2.5	54500
	34-28	436	30	13080	2.5	32700
A-A'	40-34	172	43	7396	2.5	18490
	34-28	488	41	20008	2.5	50020
TOTAL				201187		502968



SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)

LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

d) Describe briefly giving salient features of the proposed method of working indicating Category of mine.

The first mining bench will start from the top portion of the proposed area in quarry and advanced towards all the direction of the quarry. Topographically, the area is hilly. The top bench for mineral will be worked first during the year 2019-20 only. 6m bench will be developed with the help of poclain dumper combination. When the height of bench reaches 6 m in mineral the next bench of mineral will be started.

Mine Layout:

Mine will be mechanized (OTFM) mine. Blasting is required as the overburden and mineral. At present mechanized operation is going on and benches are worked, in mineral. Though the height of the bench varies depending on the thickness of the concerned strata, the maximum height is kept below 6m. where the thickness of mineral exceeds this limit an additional bench is opened.

The faces are laid so as to start from the edge of the quarry and advance inwards towards the centre of the property.

The length of the faces in mineral varies from place to place. The faces are not necessarily straight, the main objective being to maintain despatchable grade.

Tippers/trucks transport the loaded material to the consuming party.

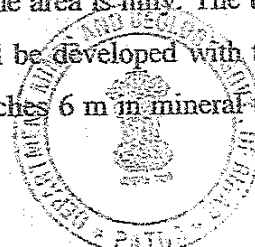
Since the size-specification permits all lower-size ore to be dispatched, there is no loss on account of size.

e) Describe briefly the layout of mine workings, pit road layout, the layout of faces and sites for disposal of overburden/waste along with ground preparation prior to disposal of waste, reject etc. A reference to the plans and sections may be given. UPL or ultimate size of the pit is to be shown for identification of the suitable dumping site.

The first mining bench will start from the top portion of the proposed area in quarry and advanced towards all the direction of the quarry. Topographically, the area is hilly. The top bench for mineral will be worked during every year. 6m bench will be developed with the help of poclain dumper combination. When the height of bench reaches 6 m in mineral the next bench of mineral will be started.

Mine Layout:

Mine will be mechanized (OTFM) mine. Blasting is required as the overburden and mineral. At present mechanized operation is going on and benches are worked, in mineral. Though the height of the bench varies depending on the thickness of the concerned strata, the




SEN
Authorized Person

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
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The length of the faces in mineral varies from place to place. The faces are not necessarily straight, the main objective being to maintain despatchable grade.

Tippers/trucks transport the loaded material to the consuming party.

Since the size-specification permits all lower-size ore to be dispatched, there is no loss on account of size.

Extent of Mechanization

Since mechanized (OTFM) mining is to be done, equipment will be deployed.

DRILL MACHINES (88-100 mm Dia):

Wagon drill of 88-100 mm diameter is proposed to be deployed and the numbers of units required are:

For Quartzite production		
Bench Height	:	6 m
Drill hole dia	:	100 mm
Burden	:	2.5 m
Spacing	:	3 m
Bulk Density insitu	:	2.5 MT/m ³
Depth of hole including Low-grade drilling	:	6.6 m
Yield per meter of drilling	:	$\frac{6 \times 2.5 \times 3 \times 2.5}{6.6} = 17 \text{ MT}$
Meterage required per day	:	$\frac{1705}{17} = 100 \text{ m}$
Rate of Drilling	:	25 m per hour
Drilling capacity per day with effective working of 6 hrs per shift	:	6 hrs x 25m = 150 m
No. Of drills required for one shifts in a day	:	$\frac{100}{150} = 0.67$
Considering 80% availability, the requirement of machines will be $0.67/0.80 = 0.84$ say 1 machine. Therefore one drill machine is adequate to meet the required production target.		

Details of drilling machine:

Type	Nos.	Dia of drill hole in mm	Capacity	Motive power	HP	Remarks
DTH	1	100	25m/hour	Diesel	440	On Hire Basis

The Quartzite bench height is a maximum of 6.0 m. Burden and spacing are maintained 2.5 m and 3m depending upon the compactness of formation.

Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum no of holes blasted in a round, manner and sequence of firing, etc. is given below:


R.K. SEN
 Qualified Person

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
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For Quartzite Production

Bench Height : 6m
Burden : 2.5m
Spacing : 3 m
Bulk Density insitu : 2.5 MT/m³
Depth of hole : Bench height 6.0m x 10% (S.G.Drilling) = 6.6 m
Tonnage per hole = $6.6 \times 2.5 \times 3 \times 2.5$
= 123.75 Tonnes
Powder factor = 7 Tonnes/ kg.
Charge per hole = $123.75/7 = 17.67$ say 18 kg

Holes will be drilled in square/scattered pattern. The holes are charged with explosives. Shot firing is done usually with the help of safety fuse and ordinary detonator.

The following blasting parameters are being adopted:

Explosive	Slurry Explosives
Bench Height	6 m
Depth of Hole	6.6 m
Burden	2.5 m
Spacing	3 m
Volume	$6.6 \text{ m} \times 2.5 \text{ m} \times 3 \text{ m} = 49.5 \text{ cum}$
Charge/Hole	18 kg
Method of blasting	1 row of 10-20 holes in one round
Explosive	360 Kg of slurry explosives (20 holes)

Blasting is usually done during the lunch interval, i.e. from 1.00 to 2.00 pm.

STORAGE OF EXPLOSIVES

The lessee will made an agreement with the blasting agency before starting mining operation.

SAFE PRATICES DURING SHOT FIRING

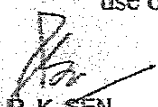
Taking required precautionary measures to avoid Kinking during firing.

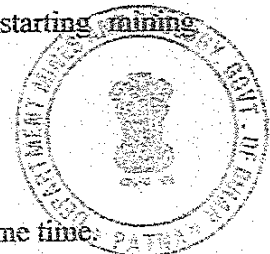
Drilling and charging of holes could not be carried out in the same area in same time.

A detailed record of the hole of the hole positions, type of explosives, quantity of explosives, hole depth, charge column and stemming could be maintained for finding out the depth of the charge in case of a misfire.

Before firing any shot all persons should be withdrawn from the blasting site to a safe place, i.e. more than 300m away.

Blasting time is generally fixed after consultation with neighboring mines after the working shift-taking all required precautions, like marking the danger zone of 300m with red flags, use of warning signals and providing blasting shelters etc.


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Qualified Person



SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)

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EXCAVATORS: (Loading Equipment)

For Quartzite Production:

Required Production	:	502968 MT/annum
No. of working days	:	295
Material required to be handled per day	:	$\frac{502968}{295} = 1705 \text{ MT}$
Bucket fill factor	:	80%
Bucket Capacity	:	0.9 cum. i.e. 0.72 cum @ 80%
Bulk density loose	:	2.9
Material handled by each bucket	:	$0.72 \times 2.9 = 2.088 \text{ MT}$
Cycle time (including pastime) for each bucket	:	30 sec
Utilization (Job efficiency) and	:	70%
Tonnage handled/hr	:	$\frac{2.088 \times 0.7 \times 60 \times 60}{30} = 175.39 \text{ MT}$ Say 175 MT/hr
Tonnage handled per shift (6hrs shift) for one shift	:	$6 \times 175 = 1052 \text{ MT}$
Number of excavators required	:	$1705 / 1052 = 1.62$
Considering 80% availability the requirement of excavator is $1.62/0.8 = 2.025$ say 2 no. For emergency purpose one more excavator will be suggestible. Therefore three excavators will be sufficient to handle the required targeted production.		

Detail of excavator:

Type	Nos.	Bucket capacity In cu m	Motive power	H.P	Remarks
Hydraulic Excavators	3	0.9	Diesel	124	On Hire Basis

b) Transport from mine - head to the destination

The mined out material will be transported by the Hired tippers/trucks to the destination of the buyers.

Miscellaneous:

Describe briefly and allied operation and machineries related to the mining of the deposit not covered.

The details of other machinery is as mentioned below

Description	Quantity	Capacity
Water tanker	1	5000 liters
Tractor with trailer	1	-
Ambulance van	1	-

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

Machineries Deployed

Salient features of the Proposed Mining Machinery are enlisted below

S. No	Type of machine	No	Dia of hole In mm	Size/ capacity	Motive power	H.P
1	DTH	1	100	25m/hr	Diesel	440
2	Excavators	3	-	0.9 cum	Diesel	124
3	Compressor	2	---	300 cfm	Diesel operated	1
4	Jackhammer	4				

f) Conceptual Mine planning upto the end of lease period taking into consideration the present available reserves and resources describing the excavation, recovery of ROM, Disposal of waste, backfilling of voids, reclamation and rehabilitation showing on a plan with few relevant sections.

Anticipated life of the mine:-

The total mineable ore (ROM) would be 4226213 tonnes. The production of Quartzite in these five years of plan period would be 2417617 tonnes. The balance reserve would be 1808596 tonnes. Considering production @ 502968 tonnes per annum after the plan period the balance reserve will be mined out in 3.60 years or say 4 years. Thus the life of the mine would be about 9 years (5 years + 4 Years). The reserve is based on the present exploratory data. In future further exploration is proposed during the plan period. On the outcome of exploratory data there is possibility of enhancement of reserve. Hence the life of the mine also may increase.

Future Exploration:-

Nine numbers of DTH drilling will be done during this plan period for proving the depth continuity of the deposit.

Year	No. of boreholes	(Core/RC/ DTH)	Grid interval	Explored area	meterage
2020-21	9	DTH	100m X 100m	90000	450

Production:

When the mine will be fully developed the rate of production will be around 502968 tonnes per annum from fifth year onwards. The production target for the plan period is as under:

Year	Quartzite in tonnes
2019-20	412933
2020-21	500958
2021-22	500085
2022-23	500673
2023-24	502968
Total	2417617

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

Average Grade:

QUARTZITE

SiO₂ – 96.52%

Fe₂O₃ - 0.55%

Al₂O₃ – 2.02%

SUB – GRADE QUARTZITE

SiO₂ – 90.11%

After the conceptual mining period, on the basis of proposed production planning and available reserve position, the ultimate pit area, ultimate pit depth, ultimate generation of waste, final pits slope, afforestation programme is given in the following table:

Ultimate pit area covered by mining	7.7 Ha
Average Ultimate pit depth In Block A	10 m (From surface level)
Average Ultimate pit depth In Block B	10 m (from surface level)
Ultimate generation of waste	No generation of Waste
Total No. of plantation during the plan period	1900 saplings
Total No. of plantation at the conceptual Stage	5950 saplings

Land Use Pattern:

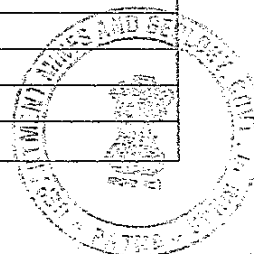
Existing Land Use:

DESCRIPTION	AREA IN HECTARES
Quarry	3.38
Temporary Low-grade dump	1.36
Road	0.37
Infrastructure	0.02
Area in use	5.13
Balance land unused	14.67
TOTAL :	19.80

Land use after Plan Period

The land Use Pattern at the end of 5 years plan period will be as under:

DESCRIPTION	AREA IN HECTARES
Quarry	7.18
Temporary Low-grade dump	1.36
Road	0.59
Infrastructure	0.27
Plantation	0.76
Area in use	10.16
Balance land unused	9.64
TOTAL :	19.80



SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

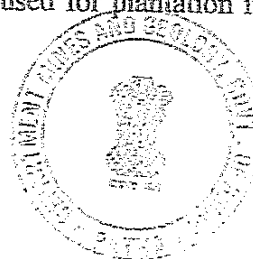
Land use after the Life of the Mine:

DESCRIPTION	AREA IN HECTARES
Quarry	9.78
Road	0.16
Infrastructure	0.02
Plantation	2.38
Area in use	12.34
Balance land unused	7.46
TOTAL :	19.80

Environment – With rapid industrialization and consequent deleterious impact of pollutants on environment, values of environmental protection offered by trees are becoming clear. Trees are very suitable for detecting, recognizing and monitoring air pollution effects. Monitoring of biological effects of air pollutant by the use of plants as indicators has been applied on local, regional and national scale. Trees function as sinks of air pollutants, besides their bio-esthetical values, owing to their presence in large numbers. Annual need of oxygen for one person is met by 150 m² of leaf surfaces i.e. 30-40 m² of greenery. So, it is necessary to develop green belt/plantation in and around the polluted site with suitable species to combat the air pollution effectively.

The green belt development not only functions as a foreground and background landscape feature resulting in harmonizing and amalgamating the physical structures of the mines with surrounding environment, but also acts as a pollution sink as indicated above. Thus, implementation of afforestation program is of paramount importance. In addition to augmenting existing vegetation, it will also check soil erosion, make the ecosystem more complex and functionally more stable and make the climate more conducive.

Every year of this proposed plan period 0.16 ha area will be used for plantation in every year around the lease boundary with 400 numbers of saplings.



3.0 MINE DRAINAGE

a) Minimum and maximum depth of water table based on observations from nearby wells and water bodies

From the nearby well water table studied below 15m from the ground level.

b) Indicate maximum and minimum depth of Workings.

Hill cutting mining will be done hence the depth of quarry from the general ground level is about 10m only.

c) Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged

Hill cutting mining will be done hence there will be not any seepage & rain water clogging. only surface runoff will be seen during monsoon.

The water quality monitoring will be done all four seasons for surface and ground water as per the MoEF norms.

d) Describe regional and local drainage pattern. Also indicate annual rain fall, catchments area, and likely quantity of rain water to flow through the lease area, arrangement for arresting solid wash off etc.

DRAINAGE PATTERN:

There are several small seasonal Nallas originating from the Southern-higher ridges, which all join the Gark Nadi flowing from NE to SW about 3km North of the applied area. There is a lake of 200m x 200m with a hot spring at a distance of 3km due SE of the applied area. There is another hot spring with a lake at a distance of 3 km due south from the applied area which measures 200m x 20m. The river Ganga is flowing from West to East and is situated at a distance of 13 km from the proposed area. There is no drainage within the applied area.

Annual Rain fall:

The average annual rainfall of the district is 1170 mm

Estimation of runoff using Rational Method:

Annual rainfall (mm) , A	1170 (1.17m)
Area (sqm) , I	198000
Rational runoff coefficient, C	0.5
Runoff(cum)= C x I x A	115830

Hill cutting mining will be done hence there will be not any seepage & rain water clogging.

Only surface runoff will be seen during monsoon. Thus there will be no such required of pumps for pumping out clogging water. More over during rainy season garland channel around the quarry face & sump will be developed for sedimentation of the surface runoff.

4.0 STACKING OF MINERAL REJECT / SUB GRADE MATERIAL AND DISPOSAL OF WASTE

A) Top Soil, OB & Intercalated Waste:-

Quartzite is exposed up to the surface & during mining no OB, Rejects will be produced.

Total quartzite will be used in industries and used as building materials i.e. for use as minor mineral which the lessee has selling permission from the State Government.

Year	Top Soil (Cum)		Mineral Rejects (Cum) *			
	Reuse / spreading	Storage	Backfilling	Storage	Blending	Beneficiation
2019-20	Nil	Nil	Nil	Nil	Nil	Nil
2020-21	Nil	Nil	Nil	Nil	Nil	Nil
2021-22	Nil	Nil	Nil	Nil	Nil	Nil
2022-23	Nil	Nil	Nil	Nil	Nil	Nil
2023-24	Nil	Nil	Nil	Nil	Nil	Nil
Total	Nil	Nil	Nil	Nil	Nil	Nil

B) The proposed dumping ground within the lease area be proved for presence or absence of mineral and be outside the UPL unless simultaneous backfilling is proposed or purely temporary dumping for a short period is proposed in mineralized area with technical constraints & justification:-

Quartzite is exposed up to the surface & during mining no OB, Rejects will be produced.

The total quartzite will be used in industries and used as building materials i.e., for use as minor mineral which the lessee has selling permission from the State Government. Temporary dumping of the Low-grade material is proposed in the non-mineralized area outside of the ultimate pit limit.

C) Attach a note indicating the manner of disposal of waste, configuration and sequence of year wise build up of dumps along with the proposals for protective measures.

Quartzite is exposed up to the surface & during mining no OB, Rejects will be produced.

Out of the total quality quartzite is 100% used in industries and used as building materials i.e., for use as minor mineral which the lessee has selling permission from the State Government. Temporary dumping of the Low-grade material is proposed in the non-mineralized area outside of the ultimate pit limit.

5.0 USE OF MINERAL AND MINERAL REJECT

The quartzite of the area contain on an average 96.5% SiO_2 and 0.45% Fe_2O_3 so, it will be used in the refractory plant for manufacturing silica bricks. The Silica bricks are used particularly in the construction of coke ovens and in the roofs of Steel furnaces, where the conditions of rapid alterations of temperature would disintegrate ordinary fire bricks. For this purpose rather piece crushed quartzite will be used of which there is plentiful supply in this Archean quartzites. Silica in the form of sand will also be used as moulding sand in foundry work.

The specification required by the refractories for making silica bricks is as follows:-

SiO_2 as Silica - 96 % (minimum)

Fe_2O_3 as Iron - 1% (maximum)

Thus the above grade is suitable for making silica bricks.

In the steel plant, the quartzite is used as flux the specification required by the users is as follows:-

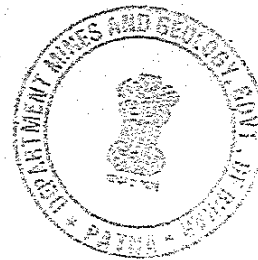
Size - 10 mm to 80 mm

SiO_2 as Silica - 94 % (minimum)

Fe_2O_3 as Iron - 2.5% (maximum)

Al_2O_3 as Alumina - 1% (maximum)

The low grade mineral has no industrial use, so, the entire low - grade mineral is sold to the local consumers for using as building material for which the lessee has obtained permission from the State Government.




P. K. SEN
Qualified Person

6.0 PROCESSING OF ROM AND MINERAL REJECT

Beneficiation is not required only hand sorting will be done to separate out the iron rich and weathered materials from the excavated quartzite. During sizing supervision will be needed to ensure that proper and quality quartzite is dispatched.




P. V. SEN
Qualified Person

7.0 OTHER

Site Services:

Construction of the pit office cum attendance room and first aid centre potable water storage points is already provided within the area as shown on the plan.

Man Power Deployment at present:

The following mining officials are employed in the mines:

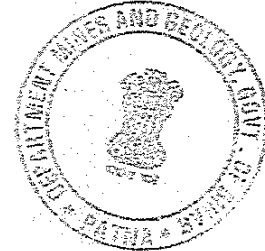
1.	Mining Engineer	:	1
2.	Geologist	:	1
2.	Manager (2nd Class)	:	1
3.	Mining Mate	:	1
4.	Clerk cum Register Keeper	:	1

Apart from the above employment following manpower is engaged:

Highly Skilled	:	None
Semi-skilled	:	
Miner	:	50 including absentee.
Unskilled	:	31
Total Strength of workers	:	91

Man Power Deployment in future:

1.	Mining Engineer	:	1
2.	Geologist	:	1
3.	1st Class Manager	:	1
4.	Mines Foreman	:	1
5.	Mining Mate	:	1
6.	Clerk cum Register Keeper	:	1
7.	Excavator operator	:	4
8.	Tipper/Dumper operator	:	30
9.	Generator/Pump Operator	:	1
10.	Miner	:	50
	Total	:	91



8.0 PROGRESSIVE MINE CLOSURE PLAN

8.1 Environment Base line information: Attach a note on the status of baseline information with regard to the following.

Types of Land: -

Plan showing the land and water environment within 5 kms around the area under reference is given in Plate No. 1 (key Plan). The details of land within 500m of the area are given in the Plate No. - 9 (Environment Plan)

Types of Land:

Forest		Non-forest	
Forest(specify)	Area(ha)	Types of land	Area(ha)
NIL	NIL	Govt. waste land	19.80

Existing Land Use:

DESCRIPTION	AREA IN HECTARES
Quarry	3.38
Temporary Low-grade dump	1.36
Road	0.37
Infrastructure	0.02
Area in use	5.13
Balance land unused	14.67
TOTAL :	19.80

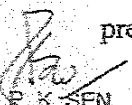
Water Regime:

Gark Nadi flowing NE-SW about 3 km. north of the applied area. There is a lake and hot spring at a distance of 3 km due South East and South respectively can be seen. The river Gango is flowing from West to East and is situated at 13 km away from the area. Nearest ground water source is well 7 tubes well located near the village.

Quality of air:-

Mining area is considered to be dust prone, as dust is generated at various points of operations in the mines. Major sources of dust generations are drilling, blasting, excavation, transportation of materials, loading into trucks etc. Most of the dust generation is fugitive in nature and is normally localized near the generation points. In this aspect quarterly monitoring of air will be done as per the MoEF norms & regular water sprinkling also done in this area to maintain the air quality.

Proper maintenance of truck & dumper bodies and covering the trucks with tarpaulin prevents spillage, which is a major source of SPM generation during road transport.


P.K. SEN
Qualified Person

Noise:

The area is clam, quite and silent. At night only the twittering of the crickets from the nearby fields and jungles can be heard. During daytime noise is produced due to mining operation like drilling, blasting, movement of vehicles etc. In this aspect quarterly monitoring of noise will be done as per the MoEF norms.

In this mine the noise level is up to tolerable limit (90dbA^o) and the noise level also reduced by:

- 1) Choosing suitable equipment.
- 2) Proper maintenance of vehicles.
- 3) Afforestation.

Flora :

Flora – Natural vegetation is scarce in the area except in some scattered part where numeous shrubs are noticed.

The forest density in the surrounding area varies between 0.23 to 0.29.

Fauna – Herbivorous animals are abundant in the area, dominant among them being cows, goats, buffaloes etc. The birds are hens, pigeons etc. Snakes of varies species are also found.

Human Settlement and Demographic Profile:-

There are number of small villages within 5 km radius, 4768. All the villages are either connected by road or trekking paths. The inhabitants are mixed populated. Most of them are engaged in cultivation. The literacy is 30% and employment is only 5%.

There are primary schools, High School near in surrounding villages.

Public Building etc:

There is no Public building within 5 km. of the proposed leasehold area.

Climate:

The climate of the district is somewhat extreme in nature, i.e., quite hot during the summer and fairly cold during the winter. January is the coldest month when the mean minimum temperature comes down to approximately 40° C. The temperature starts rising from March and reaches its peak in May when the mercury touches about 45°C. The average annual rainfall of the district is 1170 mm and about 85% of the rainfall is by South-west monsoon during June to September.

Whether the area comes under notified any sanctuary:

There is no sanctuary within the 10 Km buffer zone.

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
LESSEE: - M/S IDIO CONSTRUCTION & INDUSTRIES (INDIA) LTD.

8.2 Impact Assessment:

In such a shallow mine impact due to mining will be insignificant as given below:

i) Land Environment:

Existing Land Use:

DESCRIPTION	AREA IN HECTARES
Quarry	3.38
Temporary Low-grade dump	1.36
Road	0.37
Infrastructure	0.02
Area in use	5.13
Balance land unused	14.67
TOTAL :	19.80

Land use after Plan Period

The land Use Pattern at the end of 5 years plan period will be as under:

DESCRIPTION	AREA IN HECTARES
Quarry	7.18
Low-grade dump	1.36
Road	0.59
Infrastructure	0.27
Plantation	0.76
Area in use	10.16
Balance land unused	9.64
TOTAL :	19.80

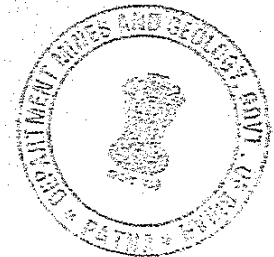
Land use after the Life of the Mine:

DESCRIPTION	AREA IN HECTARES
Quarry	9.78
Road	0.16
Infrastructure	0.02
Plantation	2.38
Area in use	12.34
Balance land unused	7.46
TOTAL :	19.80

ii) Quality of air:-

Mining area is considered to be dust prone, as dust is generated at various points of operations in the mines. Major sources of dust generations are drilling, blasting, excavation, transportation of materials, loading into trucks etc. Most of the dust generation is fugitive in nature and is normally localized near the generation points. In this aspect quarterly monitoring of air will be done as per the MoEF norms & regular water sprinkling also done in this area to maintain the air quality.


P. K. SEN
Qualified Person



iii) Water Environment:

Surface Water:

As there is no seasonal nalla or water body within the leasehold area, therefore no change will be observed due to mining operation.

Ground Water:

Ground water level of the area in general is low (Below 15m). The mining activity will be restricted up to a depth of 10m. Therefore; the mining activity in the leasehold area will not make any impact on ground water.

Water Quality:

No change will be noticed due to mining operation as the source of drinking water is far away from the area. In this aspect quarterly monitoring of water quality (surface water, drinking water) will be done as per the MoEF norms.

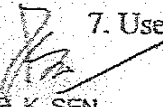
iv) Noise:

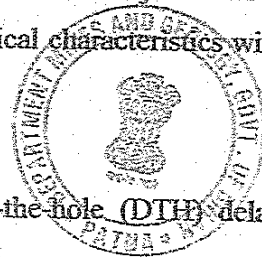
The area is clam, quite and silent. At night only the twittering of the crickets from the nearby fields and jungles can be heard. During daytime noise is produced due to mining operation like drilling, blasting, movement of vehicles etc. In this aspect quarterly monitoring of noise will be done as per the MoEF norms.

v) Ground vibration due to blasting - In this mine, the vibrations are caused due to blasting. The vibrations by their mechanical effects act on existing rocks and subject them to tensile, compressive and shearing stresses, which spoil their mechanical characteristics with an immediate consequence.

Control of Vibrations:

1. Blast holes shall be initiated by non-electric (NONEL) down-the-hole (DTH) delay detonators.
2. Care is taken to ensure that effective burden is not excessive and the face shall be kept sufficiently long. The burden shall be kept at 3m & spacing is 3.5m
3. Optimum charge per delay shall be kept as low as possible.
4. The depth of the hole is normally 5m, which includes about 0.5 meter of sub grade drilling. i.e. about 10% of the depth of hole. The diameter of the hole shall be kept at 100 mm.
5. Adoption of two row blasting and V pattern of firing.
6. The firing of maximum possible no. of blast holes towards free face.
7. Use of delay detonators between the holes and rows of blasting.


P.K. SEN
Qualified Person



vi) Water Regime

There will be no contamination of the water body as the water body is far away from the proposed area for working.

During the plan period of working, the mining will be restricted up to a moderate depth & the water table of the area is below the ground. So, no seepages could be seen and entrance of surface water is not possible.

Hill cutting mining will be done hence there will be not any seepage & rain water clogging. Only surface runoff will be seen during monsoon.

The water quality monitoring will be done all four seasons for surface and ground water as per the MoEF norms.

vii) Acid mine drainage:-

There will be no such acid mine drainage as the only mining operation will be done in the area without any beneficiation.

viii) Socio – economic Environment:

Mining in this area has not shifted any settlement; on the other hand, workers are all local residents. Therefore, there is no question of any migration. Besides the lessee provides for basic facilities on medical, educational and recreational to the nearby areas.

Above all the employees are getting better wages which has increased the level of income of local people. Thus there is general improvements of the socio- economic conditions.

ix) Social and Demographic Profile:

Due to mining operation their livelihood has been uplifted and even literacy can be observed within them. Thus due to mining operation their traditional culture will be changed.

x) Recreation Facility:

Mining activity in the area will not affect the recreation facility of the local inhabitants. They will get more facility of recreation by library, play ground and other cultural programmes.

xi) Historical Monuments etc

As there is no historical monument located in the buffer zone, there is no problem of any danger to them by mining activities in the area.

8.3 Progressive Reclamation Plan:

To mitigate the impacts and ameliorate the condition, describe year wise steps proposed for phased restoration, reclamation of lands already/to be degraded in respect of following items separately for 5 years period.

8.3.1. Mined-Out Land:

Describe the proposals to be implemented for reclamation and rehabilitation of mined-out land including the manner in which the actual site of the pit will be restored for future use. The proposals may be supported with yearly plans and sections depicting yearly progress in the activities for land restoration/ reclamation / rehabilitation, afforestation etc, called "Reclamation Plan".

Anticipated life of the mine:-

The total mineable ore (ROM) would be 4226213 tonnes. The production of Quartzite in these five years of plan period would be 2417617 tonnes. The balance reserve would be 1808596 tonnes. Considering production @ 502968 tonnes per annum after the plan period the balance reserve will be mined out in 3.60 years or say 4 years. Thus the life of the mine would be about 9 years (5 years + 4 Years). The reserve is based on the present exploratory data. In future further exploration is proposed during the plan period. On the outcome of exploratory data there is possibility of enhancement of reserve. Hence the life of the mine also may increase.

Future Exploration:-

Nine numbers of DTH drilling will be done during this plan period for proving the depth continuity of the deposit.

Year	No. of boreholes	(Core/RC/ DTH)	Grid interval	Explored area	meterage
2020-21	9	DTH	100m X 100m	90000	450

Production:

When the mine will be fully developed the rate of production will be around 502968 tonnes per annum from fifth year onwards. The production target for the plan period is as under:

Year	Quartzite in Tonnes
2019-20	412933
2020-21	500958
2021-22	500085
2022-23	500673
2023-24	502968
Total	2417617

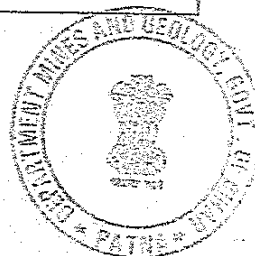
Average Grade:

QUARTZITE

SiO₂ – 96.52%

Fe₂O₃ - 0.55%

Al₂O₃ – 2.02%



Qualified Person

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
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LOW - GRADE QUARTZITE

SiO₂ - 90.11%

After the conceptual mining period, on the basis of proposed production planning and available reserve position, the ultimate pit area, ultimate pit depth, ultimate generation of waste, final pits slope, afforestation programme is given in the following table:

Ultimate pit area covered by mining	7.7 Ha
Average Ultimate pit depth In Block A	10 m (From surface level)
Average Ultimate pit depth In Block B	10 m (from surface level)
Ultimate generation of waste	No generation of Waste
Total No. of plantation during the plan period	1200 saplings
Total No. of plantation at the conceptual Stage	4425 saplings

Land Use Pattern:

Existing Land Use:

DESCRIPTION	AREA IN HECTARES
Quarry	3.38
Temporary Low-grade dump	1.36
Road	0.37
Infrastructure	0.02
Area in use	5.13
Balance land unused	14.67
TOTAL :	19.80

Land use after Plan Period

The land Use Pattern at the end of 5 years plan period will be as under:

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Land use after the Life of the Mine:

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Environment - With rapid industrialization and consequent deleterious impact of pollutants on environment, values of environmental protection offered by trees are becoming clear.

SEN
Qualified Person

Trees are very suitable for detecting, recognizing and monitoring air pollution effects. Monitoring of biological effects of air pollutant by the use of plants as indicators has been applied on local, regional and national scale. Trees function as sinks of air pollutants, besides their bio-esthetical values, owing to their presence in large numbers. Annual need of oxygen for one person is met by 150 m² of leaf surfaces i.e. 30-40 m² of greenery. So, it is necessary to develop green belt/plantation in and around the polluted site with suitable species to combat the air pollution effectively.

The green belt development not only functions as a foreground and background landscape feature resulting in harmonizing and amalgamating the physical structures of the mines with surrounding environment, but also acts as a pollution sink as indicated above. Thus, implementation of afforestation program is of paramount importance. In addition to augmenting existing vegetation, it will also check soil erosion, make the ecosystem more complex and functionally more stable and make the climate more conducive.

Every year of this proposed plan period 0.16 ha area will be used for plantation in every year around the lease boundary with 400 numbers of saplings.

8.3.2 Topsoil Management: The topsoil available at the site and its utilization may be described.

Quartzite is exposed up to the surface & during mining no OB, Rejects will be produced.

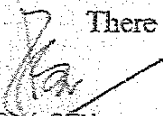
Year	Top Soil (Cum)		Mineral Rejects (Cum) *			
	Reuse / spreading	Storage	Backfilling	Storage	Blending	Beneficiation
2019-20	Nil	Nil	Nil	Nil	Nil	Nil
2020-21	Nil	Nil	Nil	Nil	Nil	Nil
2021-22	Nil	Nil	Nil	Nil	Nil	Nil
2022-23	Nil	Nil	Nil	Nil	Nil	Nil
2023-24	Nil	Nil	Nil	Nil	Nil	Nil
Total	Nil	Nil	Nil	Nil	Nil	Nil

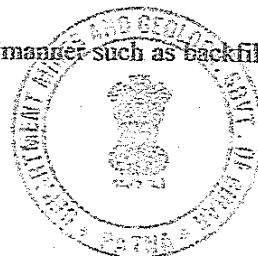
8.3.3 Tailings Dam Management: The steps to be taken for protection and stability of tailing dam, stabilization of tailing material and its utilization, periodic desilting measures to prevent water pollution from tailings etc, arrangement for surplus water overflow along with detail design, structural stability studies, the embankment seepage loss into the receiving environment and ground water contaminant if any may be described.

Tailings/ rejects generated if any, will be dealt in environmental friendly manner such as backfilling etc.

8.3.4 Acid mine drainage, if any and its mitigative measures.

There shall be no acid mine drainage in the area.


P. K. SEN
Qualified Person



8.3.5 Surface subsidence mitigation measures through backfilling of mine voids or by any other means and its monitoring mechanism.

The exhausted mine will be used for water reservoir and later on it will be used for agriculture and pisciculture purpose.

8.4 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.

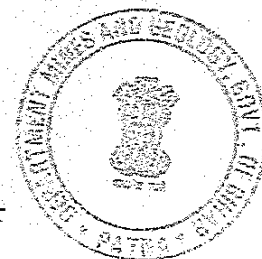
The working is being carried out at shallow depth, no risk assessment or disaster management is required.

High risk factors such as landslide, subsidence flood, fire, tailing dam failure etc are not encountered nor anticipated during proposed plan period. As such, emergency plan for quick evacuation, protective measures are not proposed. Also, no local habitant exists as the working area is far away from the locality.

Mining and allied activities are associated with several potential hazards both to the employees and the public. A worker in a mine should be able to work under conditions that are adequately safe and healthy. At the same time the environmental conditions should be such as not to impair his working efficiency. The various safeguards to be taken to ensure the safety of the mine and that of employees are provided in the Mines Act. 1952.

Following facilities are available at the mine site:-

1. Telephone / Mobile
2. Runner / Messenger
3. Emergency alarm
4. Fire frightening equipments and accessories with trained manpower
5. Training Centre
6. Fire Extinguisher
7. Dispensary, First Aid & ambulance van
8. Jeep / Bolero.



8.5 Care and maintenance during temporary discontinuance: An emergency plan for the situation of temporary discontinuance due to court order or due to statutory requirements or any other unforeseen circumstances may indicate measures of care, maintenance and monitoring of status of discontinued mining operations expected to reopen in near future.


P.K. SEN
Qualified Person

SCHEME OF MINING OF JALWA QUARTZ-QUARTZITE (SILICA STONE) MINE (19.80 Ha.)
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Due to unforeseen reason the mine will be a closed temporarily then proper care of workers and staffs will be taken. Temporary discontinuance notice in the prescribed form will be sent to the concerned authority of Central & State Government

Security guards to take care of the infrastructure shall be kept under the roll of the management in case of any temporary discontinuation.

8.6 Financial Assurance:

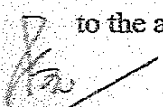
Table indicating the break-up of areas in the Mining Lease for calculation of Financial Assurance

Sl No	Head	Area put on use at start of Review of mining plan Ha.	Additional requirement during plan period Ha.	Total Area in Ha.	Area considered as fully reclaimed & rehabilitated Ha.	Net area considered for calculation Ha.
A	B	C	D	E $E=(C+D)$	F	G $G=(E-F)$
1.	Area under mining	3.38	3.80	7.18	00	7.18
2.	Storage for top soil	00	00	00	00	00
3.	Waste Dump site	00	00	00	00	00
4.	Mineral storage	1.36	00	1.36	00	1.36
5.	Infrastructure (Workshop, administrative building etc.)	0.02	0.25	0.27	00	0.27
6.	Roads	0.37	0.22	0.59	00	0.59
7.	Railways	00	00	00	00	00
8.	Tailing pond	00	00	00	00	00
9.	Effluent treatment plant	00	00	00	00	00
10.	Mineral separation plant	00	00	00	00	00
11.	Township area	00	00	00	00	00
12.	Others to specify Greenbelt	00	0.76	0.76	00	0.76
	Grand Total	5.13	5.03	10.16	00	10.16

Computation for financial assurance:-

Total area under use - 10.16 Hectares

Financial assurance for the amount as decided by the concerned authority will be submitted to the authority before approval of this Review of mining plan.


P. K. SEN
 Qualified Person
