



भारत सरकार / Government of India

खान मंत्रालय / Ministry of Mines

भारतीय खान ब्यूरो / Indian Bureau of Mines

क्षेत्रीय खान नियंत्रक का कार्यालय / Office of the Regional Controller of Mines

100, ओल्ड नेहरू कालोनी, देहरादून (उत्तराखंड) 248001 / 100 Old Nehru Colony, Dehradun (U.K.) 248001

TEL- 0135-2676350 / 2671896, FAX-0135-2674962; E-mail – ro.dehradun@ibm.gov.in

MAIL / REGISTERED POST WITH AQ



फाइलसंख्या File No: 614(2)/MP-B-286/08-DDN

दिनांक 21.11.2018

सेवा में/To :

उमर शफी ट्रम्बो

सी / ओ : सी-63 राजबाग एक्सटेंशन

श्रीनगर (जम्मू-कश्मीर) 190008

Umar Shafi Trumboo

C/o – C-63, Rajbagh Extension

Srinagar (J&k) 190008

विषय/ Sub : Approval of Review & Updation of Mining Plan along-with Progressive Mine Closure Plan in respect of Bajnar Bathyan Khrew Limestone mine of Umar Shafi Trumboo over an area of 48 hectare near Village- Bajnar Bathyn Khrew, Tehsil- Pampore in District –Srinagar of J&K State, submitted under Rule 17(1) of Minerals (Other than Atomic & Hydro Carbons Energy Minerals) Concession Rules, 2016 & 23 of MCDR 2017.

संदर्भ/Ref :

(i) Your letter No-Nil dated nil received on date 08.10.2018

(ii) This office letter of even number dated 25.10.2018.

(iii) Your letter No-Nil dated 6.11.2018 received on dated 12.11.2018

महोदय Sir,

In exercise of the power conferred by Government of India Order No- S.O. 1857 (E) dated 18.05.2016.

I hereby approve the aforesaid Review & Updation of Mining Plan (including Progressive Mine Closure Plan).

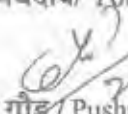
This approval is subject to the following conditions:

1. The Review & Updation of Mining Plan along with Progressive Mine Closure Plan is approved without prejudice to any other law applicable to the mine area from time to time whether made by the Central Government, State Government or any other authority and without prejudice to any order or direction from any court of competent jurisdiction.
2. The proposals shown on the plates and/or given in the document is based on the lease map /sketch submitted by the lessee and is applicable from the date of approval.
3. It is clarified that the approval of aforesaid Review & Updation of Mining Plan along with Progressive Mine Closure Plan does not in any way imply the approval of the Government in terms of any other provision of Mines & Minerals (Development & Regulation) Act, 1957, or the Minerals (Other than Atomic & Hydro Carbon Energy Minerals) Concession Rules, 2016 and any other laws including Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 or the rules made there under, Mines Act, 1952 and Rule & Regulations made there under.
4. Indian Bureau of mines has not undertaken verification of the mining lease boundary on the ground and does not undertake any responsibility regarding correctness of the boundaries of the precise area as furnished by the lessee.
5. At any stage, if it is observed that the information furnished, data incorporated in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.
6. This approval is restricted in respect of the proposals contained therein within mining lease area and is applicable from the date of approval for financial year 2018-19 to 2022-23 with a validity upto 31.03.2023 subject to all statutory compliance and clearances.
7. The Financial assurance shall be due for submission on 31.03.2023.

8. Adequate number of check dams & retaining walls shall be made & maintained in good conditions to prevent any anticipated detrimental impact on water regime.
9. "Safety Berm" of adequate dimension shall be kept at all the places in the vicinity of statutory barrier, high bench/escarpment. It shall also be ensured that no excavation is to be made in the vicinity of any high side wall/escarpment. Stability of benches, escarpment shall be closely monitored. It is the responsibility of the lessee to ensure the stability of all the escarpments/sides/benches. Lessee shall take all necessary steps time to time so as to ensure the stability of ground, which includes, but not limited to, reduction of the high side wall to safe and stable condition within first year itself.
10. Sufficient safety Berm shall be maintained with respect to public road/village roads.
11. Controlled Blasting shall be carried out and Blast Hole shall be adequately muffled. Each and every blast shall be monitored for Ground Vibrations and Air over Pressure.

Encl.: One copy of approved Review & Updation of Mining Plans along with Progressive Mine Closure Plan

भवदीय/ Yours faithfully,


(पुष्पेन्द्र गौड़ / Pushpender Gaur)
उप खान नियंत्रक एवं प्रभारी
क्षेत्रीय कार्यालय देहरादून

प्रतिलिपि सूचनार्थ प्रेषित :-

1. The Director, Directorate of Geology & Mining, Govt. of J&K, Srinagar, J&K.
(dgmjak@gmail.com)
2. Sh G.N.Chowdry, Consultant, 17-Iqbal Colony, Chanapora, Srinagar (J&K).
gnchowdry@yahoo.com

1
उप खान नियंत्रक एवं प्रभारी
क्षेत्रीय कार्यालय देहरादून

(IBM Reg. No.) IBM/11910/2012) CATEGORY "A" MINE: OPEN CAST

614(2)/MPB-286/08 DON
22/11/18

REVIEW AND UPDATION OF MINING PLAN AND PROGRESSIVE MINE CLOSURE PLAN

(Submitted under Rule 17(1) of Minerals (other than atomic and hydrocarbons energy Minerals)
concession rule 2016) & RULE 23 OF MCDR 2017

For

Bajnar Bathyan Khrew Limestone Mine (48 HECTARES)

Khasra No's 3118/3118/1 MIN CHARGED TO 3130 MIN ON 28.06.2014

VILLAGE: Bajnar Bathyan Khrew

TALUK: PAMPOHI

DISTRICT: PULWAMA

STATE: JAMMULAND KASHMIR

TOTAL LEASE AREA: 48 Hectares. (NON-FOREST 45.34 Hectares) (Govt. Land)
(Forested 2.66 hectares) (Govt. land) Stony topography

LEASE PERIOD FROM 31/10/2008 TO 30/10/2058. (As per Amended MMDR

Act' 2015) Section 8, new section 8A, sub section 3 (under process).

PERIOD OF PROPOSAL FROM NOVEMBER 2018-19 TO 2022-23.



LESSEE: Umar Shafi Trumboo. Residence: Guptganga Ishbar Nishat Srinagar
190004.

C/O: C-63 Rajbagh Extension Srinagar (J & K) 190008
PHONE NO. 01942487311, 9906281180.

E-mail- mail@tcimax.in

Prepared By:

G.N. CHOWDRY (M.Sc GEOLOGY)

FORMERLY DY. DIRECTOR GEOLOGY AND MINING DEPT. J&K GOVT.

Cell No.:- 09419086373, e-mail-gnchowdry@yahoo.com

17-Iqbal Colony, Chanapora, Srinagar (J & K)

614(2)
22/11/18

CONTENT

Chapter No.	Title	Page No.
	Introduction	1
1.0	General	2
2.0	Location and Accessibility	3
3.0	Details of Approved Mining Plan/Scheme of Mining (if any)	5
Part-A		
1.0	Geology and Exploration	7
2.0	Mining	26
3.0	Mine Drainage	44
4.0	Stacking of Mineral Reject /Sub Grade Material and Disposal of Waste	45
5.0	Use of mineral and mineral reject	46
6.0	Processing of ROM and Mineral Reject	48
7.0	Other & Site Services	50
8.0	Progressive Mine Closure Plan	51

LIST OF PLATES

S.No.	List of Plates	Plate No.
1	Location Plan	1
2	Key Plan	2
3	Surface Plan	3
4	Geological Plan	4
5	Geological Section	5
6	Composite section for five year development	6
7	Pit Position & section at the end of I Year	7
8	Pit Position & section at the end of II Year	8
9	Pit Position & section at the end of III Year	9
10	Pit Position & section at the end of IV Year	10
11	Pit Position & section at the end of V Year	11
12	Environment Plan	12
13	Conceptual Plan	13
14	Reclamation Plan	14
15	Financial Area Assurance Plan	15

LIST OF ANNEXURE

S.No.	Title	Annexure No.
1	Copy of Lease Grant Order	1A
2	Copy of Lease Deed	1B
3	Copy of Intikhab Girdawari & NOC from tehsildar	2,2A,2B.
4	Copy of approval of scheme of mining of 2016	3A
5	NOC From wild life	3
6	NOC From forest	4
7	Chemical Analysis of Bore hole	5
8	Chemical Analysis of samples from NABL Lab.	6
9	Air quality report	7
10	Water quality report	8
11	Noise quality report	9
12	Feasibility Report	10
13	Photo identity of lessee	11
14	Authenticated lease map from G&M deptt.	12
15	Bajnar Bathyan limestone mine kml file	13
16	Photographs of the lease area	14
17	CSR Expenditure	15
18	Swachhta Pakhwad Celebration News paper Cutting	16

A. CONSENT LETTER/UNDERTAKING/CERTIFICATE FROM THE APPLICANT.

01. The Review and Up-dation of Mining Plan/Progressive Mine Closure Plan in respect of **Bajnar Bathyan Khrew Limestone Mine** over an area of **(48) Hectares**, in Village **Bathyan Khrew**, Post-Office **Khrew**, District **Pulwama Jammu & Kashmir**, under **Rule 17(1) of Minerals (other than atomic and hydrocarbons energy minerals) conservation rule 2016 and E3 MDR 2017** has been prepared by **(Mr. G.N. Chowdry)**. **Qualified person.**

This is to request the Regional Controller of Mines, Indian Bureau of Mines, Dehradun, to make any further correspondence regarding any correction in the Review and Up-dation of Mining Plan/Progressive Mine Closure Plan with the said ~~person~~ ^{Qualified} person at his address below:

(G.N. Chowdry)

Geo-Technical Consultant

17-Iqbal Colony, Chanapora, Srinagar (J & K)

Phone No. 09149604929, 09419086373

We hereby undertake that all modifications/updating as made in the said Review and Up-dation of Mining Plan/Progressive Mine Closure Plan by the said ~~person~~ ^{Qualified} person be deemed to have been made with our knowledge and consent and shall be acceptable on us and binding in all respects.

02. It is certified that the CCOM Circular No-2/2010 will be and complied with when an authorized agency is approved by the State Government.
03. It is certified that the Progressive Mine Closure plan of **Bajnar Bathyan Khrew Limestone Mine** over an area of **(48 hectares)** complies with all statutory rules, Regulations, Orders Made by the Central or State Government, Statutory organization, Court etc. which have been taken into consideration and wherever any specific permission is required the lessee will approach the concerned authorities.



The information furnished in the Progressive Mine Closure plan is true and correct to the best of our knowledge and records.

- 04 "The provisions of Mines Act, Rules and Regulations made there under have been observed in the Review and Up-dation of Mining Plan/Progressive Mine Closure Plan over an area of 48 hectares in Pulwama district in J & K state pertaining to (*Bajnar Bathyan Khrew Limestone Mine*) of Umar Shafi Trumboo and where specific permissions are required, the applicant will approach the D.G.M.S. Further, standards prescribed by D.G.M.S. in respect of miners health will be strictly implemented".

Date: 17-09-2018

Umar. Shafi Trumboo
(Lessee)

C/O: C-63 Rajbagh Extension
Srinagar (J&K) 190008

G.N. Chowdry

Msc. Geology, R.Q.P.

Sr. Geotechnical Consultant

Formerly Dy. Director

Geology & Mining Deptt. J&K

Recognised Qualified Person for preparation of Mining Plan

Regd. No.: RQP /DDN/148/2002-A

E-mail :- gnchowdry@yahoo.com

M.No.: 09419086373

Saifco Cements Pvt. Ltd.



Ref. No.

Dated.

CERTIFICATE

The provisions of Mineral Conservation & Development Rules 2017 have been observed for preparation of Review and up-dation of Mining Plan and Progressive Mine closure plan for, *Bajnar Bathyan Khrew Limestone Mine*, over an area of 48 hectares of Umar Shafi Trumboo. In village *Bathyan Khrew*, Post-Office *Khrew*, District *Pulwama*, *Jammu & Kashmir*, under Rule 17(1) of Minerals (other than atomic and hydrocarbons energy minerals) concession rule 2016 and 23 of MCDR 2017 has been prepared by me and whenever specific permissions are required the lessee will approach the concerned authorities of IBM.

The information furnished in the above plan is true and correct to the best of my knowledge.

Place: Srinagar

Dated: 16-09-2018

G.N. Chowdry

M.Sc GEOLOGY (QP)

17, Iqbal Colony, Chanapora,

Srinagar (J & K).

G.N. Chowdry

Geotechnical Consultant
Formerly Ge. Director
Geology & M. Sc. Geol. JAF
Recognized Qualified Person for preparation of Mining Plan
Regd. No. RDP/DOH/143/2002-A
Email: gchowdry143@gmail.com
Phone: 98908373
Sanco Cements Pvt. Ltd.

Annexure XIII

UNDERTAKING

The CD showing entire document and plans in respect of Bajnar Bathyan
Khrew Limestone Mine belonging to Umar Shafi Trumboo is enclosed

It is also certified that CD contains same text and plates as submitted in
hard copy.



G.N. Chowdry

M.Sc Geology.

Qualified person for preparation of Mining Plan.

Dated: 04-11-2018.

INTRODUCTORY NOTES

This Review and updation of Mining Plan with Progressive Mine Closure Plan for the 'Bajnar Bathyan Khrew Limestone Mine' (S. No. 3118/3118/1MIN) Changed to Khasra No. 3120/MIN Annexure no. 2,2A,2B,2C over an area of 48 Hect. In Village: Bajnar Bathyan Khrew, Tehsil- Pampore, District - Pulwama, Jammu & Kashmir belonging to Umar Shafi Trumboo (Lessee) is submitted under Rule 17 (1) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules 2016 and Rule 23 of MCDR' 2017. The current proposal document is submitted for the five years period (i.e. 2018-19 to 2022-23).

Sequence of events regarding grant of lease are given as under:

- The lease was granted vide Govt. order no 277-IND of 2008 dated 30-10-2008 in favour Umar Shafi Trumboo Village: Bajnar Bathyan Khrew, Tehsil: Pampore, District: Pulwama, State: Jammu & Kashmir for 30 years. (copy enclosed as **Annexure No:1A**)
- A copy of land revenue records (Intikhab Girdawari & Jama-bandi) of old Khasra and new Khasra under Annexure No. 2,2A,2B,2C is enclosed where upon the land in question has been shown as Govt. land though 2.66 hectares of the lease area is forested land and is supported by NOC from forest and wildlife copy enclosed as **Annexure No.2,3&4.**

The Review and updation of mining plan for the period 2016-17 and 2017-18 was approved under MCDR 1988 by Regional Controller of Mines, Indian Bureau of Mines, Dehradun vide letter No. 614(2)/MP-B-286/08-DDN dated- 07-10-2016.

Due to local disturbance and truckers strike it was not possible to conduct the survey in the area and consequently the work on the mining plan got delayed. Now it has been started and accordingly the plan is being prepared for the period from November 2018 to 2022-23.

Lessee is already registered with IBM under rule 45 of MCDR 2017. Under No: **IBM/11910/2012.**

This Review and updation of Mining Plan has been prepared as per the proposed universal format for Review and updation of Mining Plan with PMCP under "IBM manual on Appraisal of scheme of Mining 2013" downloaded from the IBM's website.

The lessee is always committed to abide by the statutory provisions.

This Review and updation of Mining Plan with Progressive Mine Closure Plan for five years period (i.e. November 2018-19 to 2022-23) is therefore submitted under rule 17 (1) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules 2016 and rule 23 of MCDR 2017, for competent approval.



614(2)/MP-B-286/08-DDN
22/11/18

1.0 GENERAL

a)	Name of lessee	Umar Shafi Trumboo
	Rule 45 registration No.	IBM/11910/2012.
	Address	Guptganga Ishbar Nishat Srinagar 190004. Address for correspondence C-63 Rajbagh Extension Srinagar 190008.
	District	Srinagar
	State	J & K
	Pin code	190008
	Phone	01942487311
	Fax	01942486811
	Mobile No	9906281180
	Email id:	mail@tcimax.in
b)	Status of lessee	Private Individual
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	Limestone
e)	Mineral(s) which is the applicant / lessee intends to mine	Limestone
f)	Name of Person under rule 15 of Minerals (OAMHEM) Concession Rules 2016 or a Person employed under clause (c) of Sub rule (1) of rule 55 of MCDR, 2017 preparing Review of Mining Plan:	G.N. Chowdry M.Sc.(Geology), Formerly Dy. Director, Geology and Mining Department, J&K Govt.
	Address	17- Iqbal Colony, Chanapora, Srinagar (Jammu & Kashmir)
	Phone	+91-9419086373
	Fax	-----
	Email	gnchowdry@yahoo.com
	Mobile No.	09419086373, 09149604929

2.0 LOCATION AND ACCESSIBILITY

a) Lease Details (Existing Mine)

i	Name of mine	Bajnar Bathyan Khrew Limestone Mine
ii	Lat/long of any boundary point	34°02'59.64"N, 75°00'16.29"E. (Lease Pillar No. A)
iii	Date of grant of lease	Date of grant of lease 30-10-2008 (Ann. No. 1A)
iv	Period/Expiry Date	30-10-2058 (As per new MMDR Amendment Act, 2015) section 8, and new section 8A, sub section 2 and 3
v	Name of lease holder	Umar Shafi Trumboo
vi	Postal Address	Ishbar Nishat Guptganga Srinagar 190004 J&K. Address for correspondence C-63 Rajbagh Extension Srinagar 190008.
vii	Telephone	01942487311
viii	Fax	01942486811
ix	email id	mail@tcimax.in
x	Mobile No	9906281180

b) Details of lease area with location map (Existing mine)

The lease area is 48 Hect. Under Survey no, 3118/3118/1MIN

Details of Lease area (Forest & Non-Forest)

Forest (specify)	Area (ha)	Non-forest	Area(ha)
Forested on top	2.60	(i) Waste land, (Govt)	45.60
		(ii) Grazing land,	---
		(iii) Agriculture land,	---
		(iv) Others	--

Note: the certificate given by revenue department specifies the area as Shamliat government land bearing stony topography.

Total Lease area : 48 Hectare
District & State : Pulwama, Jammu & Kashmir
Taluka : Bathyan
Village : Bajnar Bathyan Khrew

Whether the area falls under Coastal Regulation Zone(CRZ)?if yes, details thereof:	Not Applicable. The Lease area does not fall under Coastal Regulation Zone.
Existence of public road/railway line, if any nearby and approximate distance:	Road: Bathyan Khrew road exist in the vicinity of lease area which is connected via quarry road for a distance of 3km. Railway line: Nearest railway line is 15 km away in south west direction from the lease area. This railway line is part of Srinagar- Banihal section of railway.

Topo-sheet No. with latitude & longitude of all corner boundary point/pillar:

Topo sheet No	43N/4 & 43J/1		
Latitude & longitude of all corner boundary point/pillar	Table: Coordinates of lease boundary pillars		
	Lease Pillar No.	Latitude	Longitude
	A	34°02'59.64" N	75° 00' 16.29" E
	B	34°03'06.98" N	74°59'58.60" E
	C	34°03'03.13" N	74°59'48.90" E
	D	34°03'05.67" N	74°59'46.30" E
	E	34°03'08.82" N	74°59'54.29" E
	F	34°03'11.49" N	74°59'47.87" E
	G	34°03'21.04" N	74°59'35.74" E
	K	34°03'00.54" N	74°59'23.99" E
	L	34°02'55.89" N	74°59'34.10" E
	M	34°02'55.89" N	74°59'58.24" E
	<i>Format of Lat& Long is; degree°minute'seconds", seconds are in decimals. These are derived from DGPS Survey.</i>		

- 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.**

Lease area with access route is marked on route map of J&K, attached as Plate No. 1

DETAILS OF APPROVED MINING PLAN / SCHEME

3.0 Date and reference of earlier approved MP/SOM:

Table: Summary of earlier approved MP/SOM

SOM	Date of Approval	Approval Letter No.*
Review and updation of the mining plan.	07/10/2016 (2016-2018) Plan period	614(2)/MP-B-286/08-DDN

*The copy of above approval letter is attached as **Annexure no. 3**

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

Not Applicable. No modification of scheme of mining was done during the previous approval period.

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

Proposal made in Mining plan			Extent of implementation			Reasons for deviation	Corrective action to be initiated
Exploration:						As a matter of trial we have been able to put bore holes beyond the depth of 10m upto 25	Similar efforts shall be done in future also to drill exploratory bore holes
Year	Proposal no. of drill holes	Total meterage	Year	Achieved	Total meterage		
I year	-	-	I yr.	The samples from pits were regularly analysed at deptt. lab.	Not applicable		
II year	-	-	II yr.	The samples from pits were regularly analysed at deptt. lab.	Not applicable		
III year	-	-	III yr.	The samples from pits were regularly analysed at deptt. lab.	Not applicable		
IV year	4	40	IV yr.	4	100		
V year	4	40	V yr.	4	100		
Mine Development						Due to lack of	In future
Year	Job	Quantum of	1.Check dams 4 no's				

Review and updation of Mining Plan of BajnarBathyanKhrewLimestone Mine (2018-19 to 2022-23)
(Area: 48 ha.)

I year	-	-	2.Stack yard 3m*35m	adequate infrastructure and disturbed conditions only part of the road could be constructed.	efforts as far as possible shall be done for the completion of developmental activities.																		
II year	-	-	3.Retaining wall 35m long at Stack yard.																				
III year	-	-	4. Maintenance of existing road to disturbed conditions and local truckers strike only partial development could be done.																				
IV year	Road	2.5km	5. Only 401m road could be constructed.																				
	Check dams	2																					
V year	Check dams	3																					
Exploitation: 0.552 million tonnes of limestone was proposed to be extracted as under:			The details of production for 2016-17 onwards is given as under:		In future the limestone shall be exploited by road development and opening of benches at top.																		
<table><tr><td>Year</td><td>Proposal</td></tr><tr><td>2016-17 (IV Yr)</td><td>275100</td></tr><tr><td>2017-18 (V Yr)-</td><td>277560</td></tr><tr><td>Total</td><td>552660</td></tr></table>			Year	Proposal		2016-17 (IV Yr)	275100	2017-18 (V Yr)-	277560	Total	552660	<table><tr><td>Year</td><td>Achievement</td></tr><tr><td>2016-2017</td><td>168989</td></tr><tr><td>2017-2018</td><td>262400</td></tr><tr><td>April 2018 to September 2018</td><td>137485</td></tr><tr><td>Total</td><td>568874</td></tr></table>		Year	Achievement	2016-2017	168989	2017-2018	262400	April 2018 to September 2018	137485	Total	568874
Year	Proposal																						
2016-17 (IV Yr)	275100																						
2017-18 (V Yr)-	277560																						
Total	552660																						
Year	Achievement																						
2016-2017	168989																						
2017-2018	262400																						
April 2018 to September 2018	137485																						
Total	568874																						
Afforestation: In the approved plan the a forestation was proposed as under:-			104 trees have been planted towards boundary pillar "A". besides the village heads advised to plant trees outside the lease in the procured land where upon 6000 trees were planted Photograph attached.	The program was not achieved due to disturbed conditions in the valley as also local truckers strike especially in this area.	It shall be ensured to do a better job by planting more trees on the ear marked places. It is also proposed to create a green belt at the southern tail end of the mine over an area of .3604 hectares whereby 3590 trees shall be planted.																		
<table><tr><td>Year</td><td>Mined out benches</td><td>7.5 barrier UPL</td></tr><tr><td>2013-14 (I Yr)</td><td>-</td><td>-</td></tr><tr><td>2014-15 (II Yr)</td><td>-</td><td>-</td></tr><tr><td>2015-16 (III Yr)</td><td>-</td><td>-</td></tr><tr><td>2016-17 (IV Yr)</td><td>-</td><td>800</td></tr><tr><td>2017-18 (V Yr)-</td><td>Spreading of soil for plantation</td><td>500</td></tr></table>			Year	Mined out benches	7.5 barrier UPL	2013-14 (I Yr)	-	-	2014-15 (II Yr)	-	-	2015-16 (III Yr)	-	-	2016-17 (IV Yr)	-	800	2017-18 (V Yr)-	Spreading of soil for plantation	500			
Year	Mined out benches	7.5 barrier UPL																					
2013-14 (I Yr)	-	-																					
2014-15 (II Yr)	-	-																					
2015-16 (III Yr)	-	-																					
2016-17 (IV Yr)	-	800																					
2017-18 (V Yr)-	Spreading of soil for plantation	500																					
Environmental Protection aspect: No proposal. Only plantation was proposed.			Besides plantation, water is sprinkled regularly on the haulage road for dust suppression.	The Monitoring work for measurement of air quality, water quality, soil quality, noise level etc. is being done regularly in accordance with stipulations MoEF.	The Environmental effect will be regularly checked. Vibration level due to blasting shall be monitored on regular basis.																		
Reclamation/ Rehabilitation			104 trees were planted after spreading of soil near boundary pillar "A"																				

Spreading of soil on 7.5m strip near boundary pillar "A".	near boundary pillar "A"		
---	--------------------------	--	--

3.4 Give status of compliance of violations pointed out by IBM

It was communicated to prepare the mining plan and same is being done in compliances to this.

Sr no	Date of inspection	Violation date	Rule violated	Compliance status
1	—	—	—	—

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

Not Applicable.

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.

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: The allotted lease area is in hilly terrain of area 48 Ha belonging to Survey No. 3118/3118/1MIN. The lease area is an irregular polygon in shape and bounded by 10 boundary pillars and falls within latitude from 34°02'55.89"N to 34°03'21.04"N and longitude from 74°59'23.99"E to 75°00'19.29"E. The latitude and longitude of each pillar is recorded and marked on the plan. The length of the area measured east to west is about 1350m Maximum and width of the area measured north to south is about 770m Maximum.

At present, general elevation within the lease area varies from around 2411mRL (Northern side) to around 1955mRL (eastern side) showing a relief of about 456m. The lease area is undergoing the mining of Cement grade limestone, since 2008. At present, around 6.9-hectare area is excavated with the maximum depth of 186m.

The general trend of the hill range is SE - NW and main watershed is from north east to south west forming a plateau type topography at the top of the hill the both side of the catchment area east and west are drained through gullies and slopes which ultimately meet bajnarnalla in the east and datripattar (Done Valley) in the west. The general slope of the area varies from 32° to 45°.

The main working pits lie in the south east of the block.

Drainage pattern: There is no perennial source of water in the lease area. It has a dendritic pattern of drainage with small dry nallas coming from top and joining the

main BajnarBathyan valley floor and ultimately joining river Jhelum at a distance of 12km.

Vegetation: Coniferous forestation is seen along north east and south west of outside lease area. Within lease area there is a thin forestation towards North east and near boundary pillar K covering an area of 2.60 hectares in total. The village gullies and surroundings area outside lease (procured by lessee) is planted with willow, white willow, kikar, walnut trees and pine trees planted by the lessee.

Climate: The area is famous for its pleasant climate during summer, but winters are frosty and very cold. The maximum temperature recorded reveals that highest temperature recorded so far is 36° C during June to August. The lowest minimum temperature goes down to minus 5°C during December to February. Snow avalanches are reported in higher reaches of Gratnar north of lease area but in lease area there is no such report.

Rainfall: The area receives little to moderate rain during summer but winter months from December to February, receive a good amount of snow.

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

Regional Geology:

Geological Formations:

The rock types belonging to various age-group starting from Panjal Traps and other Permo-Carboniferous formations to Recent ones (Scree, talus and clays) are encountered in this area. A generalized stratigraphical sequence of this region in the descending order of age group (bottom to top) is summarized in table as given below:

Table -Stratigraphical Sequence of Khrew Valley

S.N.	Age	Rock Formations
06	Recent	Recent Deposits (Talus, Scree and Clays)
05	Pleistocene	Karewa (Clays, Silt and Sands)
-----	Unconformity	-----
04	Triassic Formations	
	(a) Upper Triassic	(Predominantly Calcareous)
	(b) Middle Triassic	(Calcareous & Argillaceous)
	(c) Lower Triassic	(Siliceous & Calcareous)
03	Permian	Zewan Series (Bottom Argillaceous, Top Calcareous)
02	Permo	Gangamopteris Beds (Represented by Carboniferous Novaculites)
01	Carboniferous	Panjal Traps

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:

Geology of the area:

An updated surface geological plan on scale of 1:2000 showing limits as on 31-10-2018 has been prepared taking recourse of the already prepared Geological plan (presented in the last SOM plate no-3).

The lithological section of the area from top to bottom is given below:-

S.NO	Rock Type	Description of litho unit	Average thickness
1	Talus scree	Unconsolidated material of rock cuttings and soil add mixture	about 4m
2	Limestone	Dark grey, fine grained, massive thickly bedded limestone	290m
3	Sand stone	Dark brown, hard, sand stone, pitching on the sides and swelling in the center portion.	20m

The entire applied area is devoid of soil cover.

Limestone:

The limestone may be correlated with upper Triassic age.

The limestone is steel grey, fine grained, thickly bedded, massive, hard and brittle and often forms escarpments. Dirty grey colored siliceous veins ranging in thickness between 1 cm to 15 cm are observed intersecting the limestone beds. These siliceous veins die out laterally. The bedding is distinct due to colors banding and compositional variation. Physical characteristic of this limestone band opens to the fact that the limestone should be of better grade Karst-topography viz, limestone caves and caverns and elephant skin texture are quite frequent. Differential weathering due to compositional variation has resulted in the erosion of soft calcareous material and leaving behind hard resistant siliceous partings. The formation trends N 12° W-S12° E to N8° W - S 8° E (348° - 352° Whole Circle) amount of dip varies from 25° - 30° & dip direction varies 78° NE - 82° NE. The strike and dip is occasionally rolling due to superimposed secondary folds. Frequently the limestone bands show both compress joints and tensional joints which when intersect at acute angles results in the exfoliation weathering. Towards ridge crest, this unit is concealed under thin forest cover.

Due to past experience of mining such limestone deposits in the vicinity of the area in JK cement mines, local quarries / mines, study of nalla section in the applied area, established massive thickness of the limestone as 290 mtr. However for purpose of persistence in depth and following the drilling of bore holes for 25m, the reserves for proved, probable and possible category could be taken as 25mtr and beyond respectively to be on safer side.

Sandstone Band:

The chocolate colored, thinly bedded, sandstone band conformably overlies the lower limestone bed. The contact is sharp and distinct but in the valleys concealed under thin

soil cover. The sandstone band is correlated with upper Triassic age. The bedding is distinct due to compositional variation and colour banding. The shale band shows pinching and swelling nature when followed laterally and at places changes to calcarenite in composition. The weathered surfaces look more like arenaceous shale.

Lithological Controls:

The hanging wall of limestone band B1 is high grade limestone while the foot wall contact is sandstone band.

Physiographic Control:

The limestone bands lies all along the slope of the hillock. The BajnarBathyan limestone block is located on the south western slope which trends NW to SE & extends from Bathyan village to Zantrag village. The highest level of limestone with in the area is 2411mRL while the lowest level of limestone out crop is 1955mRL.

Structural Control:

The limestone of Bathyanvalley is folded in series of small anticlines followed by synclines. Bajnar forms the part of another anticline with easterly moderate to steep dips from 25 to 42 degree. The general strike of beds is north west south east , being a monolithic block with a small sand stone band with pinching and swelling and sandwiched between limestone.

(i) Name of prospecting / exploration agency.

Geology & Mining Department J& K Govt. Srinagar.

(ii) Address

a) (ii) Address 4th floor SanatGharBemina Srinagar, J&K 190018.

b) (iii) E mail: dgmjak@gmail.com

c) Contact detail: 01942493588.

d) 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.**

Details of exploration carried out:

Detailed topographic and geological mapping with a contour interval of 6m was carried out and where in various litho units have been mapped coupled with channel sampling. Details are given in plate no. (3).The sampling channels were aligned across the strike of the formations and channels were drawn along the thickness of the beds. The channel samples were collected from bottom to top of the beds & samples were collected at irregular intervals depending upon the topography of the area. Over all 10 composite samples were prepared detailed as under.

Name ofChannel	Length of Channel (m)	No. of SamplesCollected
BJN/B/CH-I	60	24
BJN/B/CH-II	142	20
BJN/B/CH-III	292	20
BJN/B/CH-IV	60	12

BJN/B/CH-V	299	12
BJN/B/CH-VI	308	27
BJN/B/CH-VII	479	18
BJN/B/CH-VIII	345	15
BJN/B/CH-IX	402	12
BJN/B/CH-X	202	12

Ten composite samples were prepared out of above samples and channel wise details of the chemical analysis of these samples indicates that the range in calcium oxide as 48.67 to 51.93 and SiO₂ between 2.12 to 3.89 with MgO within 2.5. The ingredients suggest that limestone is by and large cement grade and can be utilized in making value added cement.

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/section.

Fourteen boreholes of 102mm dia for 25m depth each were drilled vertically by wagon drill (ROC).

for ascertaining the behavior of litho logical and chemical control in depth and across.

The details of the bore is given as under:

S.NO	Location	Borehole no.	Dia	Depth Vertical	Lithology
1	E1200,N280	BH1	102mm	25m	Bluish grey limestone fine to medium grained with arenaceous partings and Mgo Concentration
2	E1200,N300	BH2	102mm	25m	Bluish grey limestone fine to medium grained
3	E1180,N280	BH3	102mm	25m	Bluish grey limestone with arenaceous partings and less Mgo
4	E1150,N290	BH4	102mm	25m	Bluish grey to blackish limestone massive hard with arenaceous concentration
5	E1150,N260	BH5	102mm	25m	Bluish grey limestone fine to medium grained
6	E1150,N265	BH6	102mm	25m	Bluish grey to light grey limestone fine to medium grained
7	E1130,N295	BH7	102mm	25m	Bluish grey to blackish limestone with arenaceous partings fine to medium grained hard.
8	E1100,N320	BH8	102mm	25m	Bluish grey to blackish limestone with arenaceous partings fine to medium grained hard.
9	E1100,N200	BH9	102mm	25m	Bluish grey limestone fine to medium grained with arenaceous partings and

					MgoConcentration
10	E980,N280	BH10	102mm	25m	Bluish grey limestone fine to medium grained
11	E810,N220	BH11	102mm	25m	Bluish grey limestone fine to medium grained
12	E870,N200	BH12	102mm	25m	Bluish grey limestone fine to medium grained
13	E910,N140	BH13	102mm	25m	Bluish grey limestone fine to medium grained with arenaceous partings and Mgo Concentration
14	E790,N300	BH14	102mm	25m	Bluish grey limestone fine to medium grained

Details of samples analysis indicating type of sample (Surface/sub-surface from pits/trances/borehole etc) complete chemical analysis for entire strata for all radicals may be undertaken for selected samples form a NABL accredited Laboratory or Government laboratory or equivalent. Entire mineralized area may be analyzed meter wise with 10% of check samples.

10 Channel sample lines have been drawn to collect 172 samples and 10 composite samples were collected and chemically analyzed. The chemical analysis of composite samples and borehole samples is given as under:-

DETAILS OF CHANNEL SAMPLES

Channel No.	Sample No's	Total Samples	Average Grade (%)					
			CaO	MgO	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	L.O.I.
CH-I	N300E B/N/B/CH-I/01 to B/N/B/CH-I/10 B/N/B/CH-I/ Composite.	1	50.42	2.43	2.19	0.80	1.14	42.64
CH-II	N300E B/N/B/CH-II/01 to B/N/B/CH-II/20 B/N/B/CH-II/ Composite.	2	49.95	2.42	3.15	0.60	1.08	42.17
CH-III	N300E B/N/B/CH-III/01 to B/N/B/CH-III/25 B/N/B/CH-III/ Composite.	3	48.67	2.41	4.55	0.75	1.19	41.59
CH-IV	N300E B/N/B/CH-IV/01 to B/N/B/CH-IV/19 B/N/B/CH-IV/ Composite.	4	49.77	2.02	3.89	0.40	1.43	42.23
CH-V	N300E B/N/B/CH-V/01 to B/N/B/CH-V/12 B/N/B/CH-V/ Composite.	5	50.58	2.02	3.03	0.45	1.03	42.64
CH-VI	N300E B/N/B/CH-VI/01 to B/N/B/CH-VI/12 B/N/B/CH-VI/ Composite.	6	52.00	1.40	2.01	0.60	1.04	42.06
CH-VII	N300E B/N/B/CH-VII/01 to B/N/B/CH-VII/17 B/N/B/CH-VII/ Composite.	7	50.82	1.60	3.17	0.39	1.43	42.28
CH-VIII	N300E B/N/B/CH-VIII/01 to B/N/B/CH-VIII/14 B/N/B/CH-VIII/ Composite.	8	51.84	1.01	3.12	0.64	0.01	42.19
CH-IX	N300E B/N/B/CH-IX/01 to B/N/B/CH-IX/14 B/N/B/CH-IX/ Composite.	9	51.93	1.63	2.12	0.60	1.03	42.79
CH-X	N300E B/N/B/CH-X/01 to B/N/B/CH-X/24 B/N/B/CH-X/ Composite.	10	51.93	1.63	2.12	0.60	1.03	42.06

iii) (At least for 10% of total samples may be analyzed in accordance to BIS and reports from NABL accredited/other government laboratory).

Chemical analysis of borehole samples was done from NABL accredited lab Noida detailed at Annexure (5).

iv) Expenditure incurred in various prospecting operations.

Rupees 4.00 Lac have been spent on prospecting.

e) 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 10m depending upon the topography and size of the area duly marked by grid lines showing all features indicated under Rule 28 (1) (a) of MCDR 1988.

Surface Plan on scale of 1:2000 has been prepared - Plate No. 3.

f) 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 litho units along with structural features, mineralized/ore zone with grade variation if any may be marked on the geological plan along with other features indicated under Rule 28 (1) (b) of MCDR 1988.

Surface Geological Plan has been prepared on scale of 1:2000 & is given in Plate No. 4.

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

Geological Section have been prepared to delineate different litho units on scale of 1:2000 and are given in plate no. 5.

h) (i) Name of prospecting / exploration agency:

The area was initially explored/ identified by Geology & Mining dept. J&K Govt. (State Govt) and prospected by the lessee

(ii) Address 4th floor SanatGharBemina Srinagar, J&K 190018.

(iii) E mail: dgmjak@gmail.com

Contact detail: 01942493588.

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

No pits or trenches have been given except collection of chip/channel samples where in the presence of mineral limestone is well established. The Quantum of exploration done and amount of excavation so far reveals the consistency in grade and litho logy.

Future Programme of Exploration:

1. The quantum of exploration carried out by Geology & Mining department is considered adequate for sustenance of the existing requirement. However, the sampling is done from time to time from the existing working pits, which are chemically analyzed at the chemical lab of TCI MAX CEMENT PLANT. The level of exploration already done including drilling of bore holes and analysis of data thus derived suggests that this whole area 15.66 hectares is covered under UNFC G1 axis and does not warrant any future exploration. However for purpose of collection of more relevant data to gain more confidence it is proposed to give additional seven bore holes with the help of wagon drill for a dia of 102mm and depth upto 25m. the year wise proposal is given as under:-

S.NO	Year	Bore hole No.	Depth of each hole	Location
1	Ist year(2018-19)	PBH1	25m	E620,N300
2	II Year (2019-20)	PBH2	25m	E520,N361
		PBH3	25m	E344,N300
3	III Year(2020-21)	PBH4	25m	E400,N400
		PBH5	25m	E367,N534
4	IV Year(2021-22)	PBH6	25m	E583,N539
5	V Year(2022-23)	PBH7	25m	E457,N600

With the help of above exploration, the present and proposed part of the lease area will come under G1 axis by the year 2022.

i) **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).**

The thresh hold value prescribed by IBM indicates limestone with less than 34%CaO and more than 12% silica is to be treated as low grade as it does not satisfy LSF. In case of this deposit, the chemical composition of limestone derived from the chemical analysis indicates that this limestone has CaO% more than 48% and silica less than 12% and as such could be termed as cement grade. The lime stone available in this part of deposit has already been explored and exploited coupled with collection of channel samples, drilling and production pits can be classified under

UNFC classification to have been explored to the level of G1 up to depth of 25m. Further the lateral extension of limestone in strike exposed towards upper side of hill is having identical lithological behavior and chemical composition as that in lower altitude for more than 200m and thus the level of exploration could be safely considered for 25m depth as measured mineral resource. Besides in terms of Rule 9 of Minerals (Evidence of mineral contents) Rules 2015 which reads "the majority of the inferred mineral resource could be upgraded to indicated mineral resources with continued exploration as G2 axis." In the case of this mine as has already been described continued exploration has already been proposed. As such we could safely take the Resources i.e 331 measured mineral resource up to 25m depth and beyond that up to base as 333 indicated mineral resource on which we could safely bank up on.

For purpose of breakup of mineral resource the deposit of limestone from surface up to 25m could be termed as measured mineral resources (331) beyond which as indicated mineral resources (333).

S.NO	CATEGORY OF RESOURCE UNDER UNFC	LEVEL OF EXPLORATION UNDER UNFC	Depth	TONNES	AREA Sqm.
1	Measured resources (331)	(G1 Axis)	25m	19145050	147809
2	Indicated resources(332)	(G2 Axis)	-	0	0
3	Inferred Resources(333)	(G3 Axis)	Up to base	36362300	227182

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.

Assessment of the deposit has been carried out based on the followings: -

1. Core BH data comprising of topographical data, assay data etc.
2. Working pits available in the area
3. Exposures of mineral in the area

Accordingly based on above feasibility report of the deposit has been prepared and it is placed at annexure 10.

Estimation of Resources/ Reserves

Method adopted for Resources/ Reserves estimation

Estimation of resources and reserves has been carried out by cross sectional area method.

i) Area and Depth Considered for Resources/ Reserves estimation

For estimation of geological resources, the depth considered is based on data as encountered in drill cutting up to 25m which shall be termed as measured mineral resource and beyond which as indicated mineral resource up to base. Similarly the reserves up to 25m from surface are designated as proved (111 UNFC) and beyond which up to base as probable reserves (122 UNFC).

Review and updation of Mining Plan of BajnarBathyanKhrewLimestone Mine (2018-19 to 2022-23)
(Area: 48 ha.)

Category wise/ Bench wise mineral reserves Under UNFC Code are given in tables below:

Section wise Mineable reserves

Section	Sectional area (sqm)	Intersection distance (m)	Volume (cum)	Reserves tonnes
1-1'	38041	120	4564920	11412300
2-2'	44259	100	4425900	11064750
3-3'	7842	100	784200	1960500
TOTAL			9775020	24437550

111 (UNFC)

Section	Sectional area (sqm)	Intersection distance (m)	Volume (cum)	Reserves tonnes
1-1'	14707	120	1764840	4412100
2-2'	15425	100	1542500	3856250
3-3'	3197	100	319700	799250
TOTAL				9067600

122 (UNFC)

Section	Sectional area (sqm)	Intersection distance (m)	Volume (cum)	Reserves tonnes
1-1'	23334	120	2800080	7000200
2-2'	28834	100	2883400	7208500
3-3'	4645	100	464500	1161250
TOTAL				15369950

111 (UNFC) = 9067600 Tonnes.

~~122~~ (UNFC) = 15369950 Tonnes.

Total=24437550 Tonnes

Table showing bench wise / section wise reserves of limestone section 1-1'

RL. MTRS	BENCH	SECTIONAL AREA	INTERECTION DISTANCE (m)	VOLUME	RESERVES
2237-31	M1	8	120	960	2400
2231-25	M2	36	120	4320	10800
2225-19	M3	105	120	12600	31500
2219-13	M4	161	120	19320	48300
2213-07	M5	176	120	21120	52800
2207-01	M6	191	120	22920	57300
2201-95	M7	209	120	25080	62700
2195-89	M8	232	120	27840	69600
2189-83	M9	261	120	31320	78300
2183-77	M10	296	120	35520	88800
2177-71	M11	328	120	39360	98400
2171-65	M12	357	120	42840	107100
2165-59	M13	386	120	46320	115800
2159-53	M14	406	120	48720	121800
2153-47	M15	426	120	51120	127800
2147-41	M16	445	120	53400	133500
2141-35	M17	496	120	59520	148800
2135-29	M18	611	120	73320	183300
2129-23	M19	816	120	97920	244800
2123-17	M20	911	120	109320	273300
2117-11	M21	1007	120	120840	302100
2111-05	M22	1061	120	127320	318300
2105-99	M23	1101	120	132120	330300
2099-93	M24	1116	120	133920	334800
2093-87	M25	1112	120	133440	333600
2087-81	M26	1264	120	151680	379200
2081-75	M27	1296	120	155520	388800
2075-69	M28	1436	120	172320	430800
2069-63	M29	1442	120	173040	432600
2063-57	M30	1449	120	173880	434700
2057-51	M31	1454	120	174480	436200
2051-45	M32	1482	120	177840	444600
2045-39	M33	1528	120	183360	458400
2039-33	M34	1573	120	188760	471900
2033-27	M35	1618	120	194160	485400
2027-21	M36	1662	120	199440	498600

Review and updation of Mining Plan of BajnarBathyanKhrewLimestone Mine (2018-19 to 2022-23)
(Area: 48 ha.)

2021-15	M37	1730	120	207600	519000
2015-09	M38	1831	120	219720	549300
2009-03	M39	1931	120	231720	579300
2003-97	M40	2033	120	243960	609900
1997-91	M41	2058	120	246960	617400
Total		38041		4564920	11412300

Table showing bench wise / section wise reserves of limestone section 2-2'

RL. MTRS	BENCH	SECTIONAL AREA	INTERSECTION DISTANCE (m)	VOLUME	RESERVES
2231-25	M2	15	100	1500	3750
2225-19	M3	80	100	8000	20000
2219-13	M4	133	100	13300	33250
2213-07	M5	192	100	19200	48000
2207-01	M6	255	100	25500	63750
2201-95	M7	289	100	28900	72250
2195-89	M8	330	100	33000	82500
2189-83	M9	365	100	36500	91250
2183-77	M10	392	100	39200	98000
2177-71	M11	424	100	42400	106000
2171-65	M12	489	100	48900	122250
2165-59	M13	552	100	55200	138000
2159-53	M14	594	100	59400	148500
2153-47	M15	647	100	64700	161750
2147-41	M16	701	100	70100	175250
2141-35	M17	768	100	76800	192000
2135-29	M18	796	100	79600	199000
2129-23	M19	814	100	81400	203500
2123-17	M20	851	100	85100	212750
2117-11	M21	911	100	91100	227750
2111-05	M22	965	100	96500	241250
2105-99	M23	985	100	98500	246250
2099-93	M24	988	100	98800	247000
2093-87	M25	1125	100	112500	281250
2087-81	M26	1165	100	116500	291250
2081-75	M27	1390	100	139000	347500
2075-69	M28	1675	100	167500	418750
2069-63	M29	1673	100	167300	418250
2063-57	M30	1671	100	167100	417750

Review and updation of Mining Plan of BajnarBathyanKhrewLimestone Mine (2018-19 to 2022-23)
(Area: 48 ha.)

2057-51	M31	2000	100	200000	500000
2051-45	M32	1997	100	199700	499250
2045-39	M33	1979	100	197900	494750
2039-33	M34	2089	100	208900	522250
2033-27	M35	2087	100	208700	521750
2027-21	M36	2164	100	216400	541000
2021-15	M37	2154	100	215400	538500
2015-09	M38	2144	100	214400	536000
2009-03	M39	2134	100	213400	533500
2003-97	M40	2124	100	212400	531000
1997-91	M41	2152	100	215200	538000
Total		44259		4425900	11064750

Table showing bench wise / section wise reserves of limestone section 3-3'

RL. MTRS	BENCH	SECTIONAL AREA	INTERECTION DISTANCE (m)	VOLUME	RESERVES
2201-95	M7	20	100	2000	5000
2195-89	M8	69	100	6900	17250
2189-83	M9	127	100	12700	31750
2183-77	M10	196	100	19600	49000
2177-71	M11	254	100	25400	63500
2171-65	M12	301	100	30100	75250
2165-59	M13	353	100	35300	88250
2159-53	M14	414	100	41400	103500
2153-47	M15	503	100	50300	125750
2147-41	M16	571	100	57100	142750
2141-35	M17	599	100	59900	149750
2135-29	M18	597	100	59700	149250
2129-23	M19	634	100	63400	158500
2123-17	M20	636	100	63600	159000
2117-11	M21	638	100	63800	159500
2111-05	M22	641	100	64100	160250
2105-99	M23	643	100	64300	160750
2099-93	M24	646	100	64600	161500
Total		7842		784200	1960500

ii) Usable Limestone

The entire limestone has been considered as usable limestone for manufacture of Cement. Thus, the cut off limit has been set as prescribed by CCOM Circular No. 03/2010 dated 14.07.2010 ($>34\%$ CaO and $<4\%$ of MgO) during estimation of limestone resources/reserves. Although the CaO contents in both the grades is higher side.

The cement grade limestone is being only produced at the mine in focus for captive use only as the lessee has a cement plant in the vicinity as TCI MAX CEMENT PLANT. The entire mineral produced irrespective of size is utilized very smartly. This is all for conservation of valuable mineral.

iii) Ultimate Pit Limit in the Mining Area

The ultimate pit limit has been marked on the basis of the extent of mineralization of cement grade limestone observed within the area of ML. Laterally the boundary barrier within the lease area forms the limit of mining while at depth the ultimate pit bottom shall be restricted upto 2267mRL part of northern west area is covered under forest and has been has not been considered for mining besides north west slope of the water shed has been blocked for exploitation because during mining the boulders may fall on the other outside the lease area.

iv) Tonnage Factor

An overall tonnage factor of 2.5 has been considered for limestone for this area.

vi) Recovery

Based on past experience, the recovery of limestone is considered 100% of total in-situ rocks.

Resources/ Reserves Categories under UNFC.

The resources and reserves of the area have been categorized under different geological axis as per the followings: -

The exploitation and available data suggest that the G1 level of exploration has been done in the north eastern area forming the lower portion of the lease area below RL 2237m of 15.64 hectares and where under the reserves for limestone, have been estimated from RL 2237 to 1991m where upon it is expected to obtain more than 24.43 million tonnes of limestone. As per the proposal for mining the benches up to M12 RL 2165-71m shall be worked out which shall yield about 1499575 tonnes and rest of about more than 23 million tonnes could be exploited in future programme till then further exploration has already been proposed for rest of the area on the upper side lease area upto watershed. The level of exploration and area is given as under:

S.NO	LEVEL OF EXPLORATION UNDER UNFC	Depth	AREA Sqm.
1	(G1 Axis)	25m	147809
2	(G2 Axis)	-	0
3	(G3 Axis)	Up to base	227182
4	Water shed	Not covered	78386
5	Non mineralized zone		26623
	Total		480000

The detailed Feasibility Study Report is enclosed as **Annexure No.10**.

- j) **Furnish detailed calculation of reserves/resources section wise furnished (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).**

Table showing the Geological resources along section line (1-1')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	29461	120	3535320	2.5	8838300
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources (333)	29301	120	3516120	2.5	8790300
Total					17628600

Table showing the Geological resources along section line (2-2')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	35871	100	3587100	2.5	8967750
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources(333)	28038	100	2803800	2.5	7009500
Total					15977250

Table showing the Geological resources along section line (3-3')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	5356	100	535600	2.5	1339000
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources(333)	8182	100	818200	2.5	2045500
Total					3384500

Review and updation of Mining Plan of BajnarBathyanKhrewLimestone Mine (2018-19 to 2022-23)
(Area: 48 ha.)

Table showing the Geological resources along section line (4-4')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	0	0	0	0	0
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources(333)	19487	100	1948700	2.5	4871750
Total					4871750

Table showing the Geological resources along section line (5-5')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	0	0	0	0	0
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources(333)	23782	100	2378200	2.5	5945500
Total					5945500

Table showing the Geological resources along section line (6-6')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	0	0	0	0	0
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources(333)	16946	100	1694600	2.5	4236500
Total					4236500

Table showing the Geological resources along section line (7-7')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	0	0	0	0	0
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources(333)	11180	100	1118000	2.5	2795000
Total					2795000

Table showing the Geological resources along section line (8-8')

Geological resources	Sectional area (sqm)	Width (m)	Volume (cum)	Bulk density	Tonnes
Measured mineral resources(331)	0	0	0	0	0
Indicated mineral resources(332)	0	0	0	0	0
Inferred mineral resources(333)	2673	100	267300	2.5	668250
Total					668250

Category wise UNFC Mineral reserves

111 (UNFC) = 9067600 Tonnes.

121(UNFC) = 0Tonnes.

(Resource) 331(UNFC) = 19145050 tonnes

k) Mineral Reserves/Resources Review and updated as on 31-10-2018:

Mineral Resources: (Mineral resources may be estimated purely based on level of exploration, with reference to the threshold value of minerals declared by IBM)

Table: Updated UNFC Resources/ Reserves as on 31-10-2018

	UNFC Code	Limestone (in tonnes)	Remark
A. Total Mineral Reserve			
Proved Mineral Reserve	111	9067600	Cement Grade
Probable mineral Reserve	121 & 122	15369950	
B. Total Remaining Resources		0	
Feasibility mineral Resource	211	0	
Prefeasibility mineral resource	221 & 222	0	
Measured mineral resource	331	19145050	Cement Grade
Indicated mineral resource	332	0	0
Inferred mineral resource	333	36362300	Cement Grade
Reconnaissance mineral resource	334	0	
Total Resources		55507350	

Review and updation of Mining Plan of BajnarBathyanKhrewLimestone Mine (2018-19 to 2022-23)
(Area: 48 ha.)

Life of Mine:

Total mineable reserves	9067600	Tonnes
Rate of production average	350000 approx.	Tonne/Year
Total mine life	26	Years

Total resources – 55567350 tonnes say 55.56 million tonnes

Depletion of reserves :

The production from Sept. 2009 (the date of start of mining operations) to Sept. 2018 is 1865728 tonnes. This depletion of reserves has already been taken into account while assessing the quantity of resource and reserves upto date.

The resources and reserves in previous scheme of mining have been estimated taking recourse to surface exploration and where by resource upto 25m have been shown under 331 category, below that upto 10m depth as 332 category and below that upto further 10m depth as 333 category . Thus geological resource thus estimated under different categories is given as under

331 = 20150281 tonnes

332= 59661562 tonnes

333= 4832812 tonnes

Accordingly the proved reserves under different category have been estimated by subtracting mineral blocked due to 7.5 m statutory barrier from geological resource and thus the proved reserves of 111 have been given as 201502891-412031=19738250 tonnes

Probable reserve 122= 5961562-122812=5838750 tonnes

i.e 19.73 /20.15 reserves / resource in million tonnes under G1 Exploration

5.83/5.96 reserves/ resource in million tonnes against G2 Exploration

While in the present estimation of resource and reserves as per directives of IBM the drilling factor has been incorporated as essential part for estimation of resource under G1 Exploration and beyond therefore the resource in current plan are 55.56 million tonnes, and reserves 9.06 million tonnes. This approach is scientifically correct and with the exploration proposed during next five years it is expected that the figure of the proved reserves under 111 UNFC shall increase considerably.

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 and proposed method of Mining: The existing method of mining is Open cast. The category of mine is 'A' Open Pit Mine (OTFM). Details as follows-

- i) Mining will be open cast mechanized.
- ii) It is being proposed to start the mining from RL 2237m to M12 RL 2165m which shall yield about 1499575 tonnes. Further exploration is being proposed for rest of the area on the upper side of lease area upto watershed RL 2375m. Mining benches will be opened from top to downward so that benches shall be rehabilitated. The primary drilling with 102mm diasize wagon drill shall be under taken. Blasting will be undertaken with suitable slurry explosives. The area consists of high-grade limestone & no beneficiation shall be carried out. The maximum height and minimum width of the benches shall remain 6 meter and 6 meter respectively.
- iii) Existing 1115m long road having width 6m & gradient 1:14 to 1:20 shall be carried further up from 2150m RL for a length of 1000m to open the benches MI RL 2237m to RL 2150m from top to downward. Parapet walls of 1.5 meter length, 0.75 meter height and 0.5 meter width along southern side of the road shall be erected.
- iv) The slope of the mining faces will be kept 75° to 80°.
- v) Large boulders of limestone will be broken manually with the help of hammer or by using rock breaker.
- vi) Limestone shall be loaded into tippers by poclain/loader shovel.
- vii) The recovery of limestone has been considered 100% of the total excavation. The area consists of high grade limestone having no soil cover. Towards eastern side the thin sandstone band is exposed with pinching and swelling. Thus this sandstone shall form non-mineralized zone as far as mining is considered in this plan period.
- viii) Mining faces will open from the top level from the proposed haul roads. From now onward the production will be achieved through development of road & the opening of mining faces. Waiting points will be provided at each turning of roads to ensure safe passing of tippers.
- ix) The area consists of high grade limestone having no soil cover. In the present plan period no benches shall be formed in the overburden and all the benches shall be formed in limestone band.
- ix) Since the mine is located on a hill slope and as such proper benching from top have been proposed. Further in the five year development plan proposals have been made for erection of retaining walls, check dams, parapet walls to ensure stability of the slopes and safe mining. Besides suitable and adequate proposals for controlled blasting techniques are also proposed in the relevant chapters pertaining to blasting.

- x) Mining is proposed in limestone from M1 to M12. No sub-grade mineral or mineral reject shall be generated during this plan period. About 3.0 hectares area shall be covered by mining faces which shall include the development of haulage road. Previously around 6.9 hectares area was covered by mining. The plantation shall be carried out in the earmarked green belt in south eastern part.

The bench will be opened through a box cut and advanced towards NE direction. This will facilitate environmentally safe mining as rolling of boulders and debris will be avoided. The ultimate bench heights will be 6m which will be advanced through sub benches of 3m each.

The pit layout, temporary dump yard and pit sections showing yearly advancement is shown on Plate No. 7 to 11.

b) **Extent of Mechanization:**

The quantum and type of equipment to be provided for the various mining operations is given below:

Drilling Machines

Table - Drilling Equipment & Compressors.

S.No	Type	No's	Dia of hole (mm)	Size/ capacity	Make	Motive Power	H.P.
1	DTH drills with water mist system	2	102 mm	24m	Atlas Copco	Compressed air	N.A
2	Air compressor	2	NA	600 cfm	Atlas Copco XA-280	Diesel	180

2. Loading Equipment

Table - Loading Equipment

S.No	Type	No's	Bucket capacity	Make	Motive Power	H.P.
1	Hydraulic excavators	1	0.9m ³	Kobelco	Diesel	107-125

3. Haulage and Transportation Equipment

Table - Haulage and Transportation Equipment

S. No	Type	No's	Size/ capacity	Make	Motive Power	H.P.
1	Tipper	20	10 M.T.	Tata	Diesel	31.5
2.	Water Tanker (Tipper mounted)	1	5000 liters	Tata	Diesel	31.5

4. Miscellaneous Equipment

In addition to above, equipment should be provided for dozing, construction & maintenance of haul roads, cleaning of faces and haul road, dust suppression along haul roads by water spraying, transportation of men and material, through pick up vans.

The Dozing equipment to be provided at this mine is indicated in Table below:

S.no	Type	Nos	Size/ capacity	Make	Motive Power	H.P.
1	Dozer D-155A-1	1		BEML	Diesel	320
2	Hydraulic Rock Breaker	1		Kobelco	Diesel	107-125

5. Proposal for controlled blasting, Ground Vibrations, Air over pressure standards.

The blasting shall be carried out using Delay detonators, proper stemming and charging of holes. The nearest population and building structures are about 2km away from the lease area, even then it is expected that there will be not significant ground vibrations due to controlled blasting as it is hard rock and permissible limits of vibrations here are 100mm/s as per DGMS prescribed norms besides the air over pressure standards and limit shall be taken into account and it is expected that permissible limit 0.0145psi (134db) as per bureau of mines recommendations for surface mine blasting shall be taken into account and efforts shall be made not to exceed the permissible limits. Besides for monitoring the vibration effects, on daily basis, vibration measuring equipment shall be procured, there by monitoring daily vibrations due to blasting. The other procedures are given in detail as under.

a) Blasting Pattern:

The pattern of initiation adopted affects the standard of fragmentation, muck profile after the blast, ground vibrations are caused, noise generated besides fly rock and air blast. Some of the blasting patterns are indicated below in brief:

It will be preferable to use millisecond delay sequence and use of in hole delays. It permits to divide the shot into smaller charges which are detonated in predetermined millisecond sequence at specific time interval. It shall reduce the ground vibrations and air blast to a greater extend besides checking of the fly rocks. All other measures shall be kept in place to ensure reduction of ground vibration.

The pattern at case no 2 below shall be adopted for the purpose.

Single Row

Case 1 Simultaneous firing,

0-----0-----0-----0-----0-----0-----0

It gives spread out muck pile

Case 2 Using short delays, single hole per delay

0-----0-----0-----0-----0-----0-----0
Zero 1 2 3 4 5

It gives minimum vibrations

Case 3 Using short delays, in pair (s)

0-----0-----0-----0-----0-----0-----0
3 2 1 Zero 1 2 3

It gives better fragmentation

Charge per delay

- | | |
|------------------------------------|---|
| 1. Total material required per day | 1200 Tonnes |
| 2. Charge per day | 150 Kg producing 1200 tonnes |
| 3. Charge per delay per hole | 19kg to obtain 150 tonnes @ 8 tonnes per kg |
| 4. No. of holes to be blasted | 1200/150=8 holes of 6m depth with short delay single hole per delay technique as in case 2 above. |

b) Maximum number of holes blasted in a round

The number of holes to be blasted in a round shall be kept at 10 holes each in 6 days. These shall be covered by 6 delays each with 1 holes per delay. Each round shall yield about $10 \times 150 = 1500$ tonnes. In six days a week, the yield would be $1500 \times 6 = 9000$ tonnes. This quantity is adequate to feed the crusher for about 7 days.

Manner and sequence of firing

Two-row drilling and blasting pattern (square grid V pattern) with sequence of drilling as discussed under (viii) above shall be adopted as per the existing practice.

Distribution of charge and decking

Considering the nature of strata/ deposit and height of the bench, no decking is considered necessary. However use of wooden spacers as decks may in future be resorted to with a view to improve the powder factor and blasting efficiency. The explosive charge shall be kept at the bottom of the hole

c) Type of explosive to be used:

Nitrate mixture slurry explosive (class 2) based on Ammonium nitrate viz. power gel aquadyne etc. shall be used for blasting purpose. Use of ANFO explosive with slurry based primary explosive is not advisable due to security reasons.

d) Storage for Explosive: The explosive magazine of 1800kgs capacity has been installed as per the requirement of department of Explosive by the lessee.

e) Precaution during blasting:

Following precautions will be undertaken:

1. Stemming should be strong and of adequate length and not less than 3:7 of burden to check the blow outs.
2. Over confinement and consequent vertical catering will be avoided by adhering to designed burden & spacing & firing sequence with appropriate delays.
3. Blasting should be avoided in early morning and late evening hours to avoid temperature inversion conditions.
4. Blasting may be avoided at the time when strong surface winds are blowing towards inhabited area.
5. The burden at any point in the charge length should not be less than optimal.



614(2) MP-B-286/08-DON
22/11/18

6. The wind direction at the time of blasting should not be towards the structure to be protected, especially if wind speed is high.
7. Blasting should be done during day time when there is heavy background noise.
8. Before electric firing, the circuit will be tested by an approved tester/blaster.
9. Flags erection and siren signaling systems will also be provided during time of blasting. For further safety, the blasting time will also be fixed during the lunch time 1:30pm of the shift so that all the workers leave the danger zone.

f) Indicate year-wise tentative Excavation in Cubic Meters indicating development, ROM, pit wise as in table below.

The proposed excavation year-wise plan is given for five years; starting from November 2018 to 31st March'2023.

The likely position of the benches & roads etc. in this mine at the end of first to five year is shown in the plate no. 7,8,9,10&11.

1. In-situ Tentative Excavation in m³

Year	Total tentative Excavation (m ³)	Top Soil (m ³)	OB (Cum)	ROM (Limestone) (Tonnes)		Mineral reject (Tonnes)	ROM/Waste Ratio
				Limestone (Tonnes)	Mining losses (Tonnes)		
1	2	3	4	5	6	7	8
I year (From November 2018 to March 2019)	60000	-	-	150000	-	-	1:0
II year (2019-20)	144720	-	-	361800	-	-	1:0
III year (2020-21)	148260	-	-	370650	-	-	1:0
IV year (2021-22)	133680	-	-	334200	-	-	1:0
V year (2022-23)	135090	-	-	337725	-	-	1:0
Total	621750			*1554375			

Tentative tonnage of the ore may be arrived by computing approximate bulk density of 2.50 tonnes per cum. *(Values put in round figure to avoid decimals fractions in reserve)

Gy
22/11/18
Indian Bureau of Mines

II. Dump re-handling (for the purpose of recovery of mineral): Nil.

Estimated available material from the existing lease area (Cum)

Mineral dump position as on 31-10-2018

Particular	Area (sqm)	Height (m)
---	---	---

Year	Dump identification/ no	Year-wise handling (Cum)	Estimated recovery of saleable material (Cum) *	Reject (Cum)
2018-19	Nil	Nil	Nil	Nil
2019-20	Nil	Nil	Nil	Nil
2020-21	Nil	Nil	Nil	Nil
2021-22	Nil	Nil	Nil	Nil
2022-23	Nil	Nil	Nil	Nil

* Tentative tonnage of the saleable material may be arrived by computing approximate bulk density and recovery factor as these data are variable and may be established on time series.

- g) 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.

Composite five-year development plan and sections for year November 2018-19 to 2022-23 workings showing pit layouts attached as Plate No. 7 to 11 at the scale of 1:2000 respectively.

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

Salient feature of proposed method of working

Following design parameters are set for casting the mining proposal for ensuring next five years-

Category of Mine	Category A
Method of mining	Opencast (With adoption of drilling and blasting)
Production Target	The average annual production target of mineral limestone is proposed around 350000 tonnes per year
Bench Height and Width	Max. Height: 6m. Width: Minimum width of bench shall be 6m
First bench - Limestone	Maximum 6m from surface

Drilling & Blasting	Occasional adoption of drilling and blasting
pit slope	The edge of excavation shall be adequately sloped and secured so as to prevent danger of sliding as per the Regulation 106 of the Metalliferous Mines Regulation, 1961. The face slope will be at 75 degree and overall bench slope will maintain at 43 degree.
Excavation and loading	Hydraulic excavator - 1.3 cum bucket capacity
Transportation within mine	Dumpers / Trucks
Transportation outside mine	Contractual trucks/dumpers

UTILITIES AND SITE SERVICES

- An office cum store with maintenance shed is near mine site. A first aid box with necessary medical facility is available and maintained at the mine office.
 - Maintenance of all the machineries are done at lease area
 - Power supply: The mine will work in one shift only in day time, so no electric power supply is required for mining operations. However the mine office is connected with eclectic supply.
 - Water supply: there is no source of drinking water within the lease area. Drinking water & water for other purpose is brought from TCI MAX tube well situated outside lease area. Drinking water stored in clean and hygienic waterpurifiers is provided to workers.
 - Latrine and Urinal: latrine and urinal is provided as per rule.
 - First-Aid Room: A first-aid room with all necessary medical facilities is provided as per mines act and mines rules.
- f) 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.

Five year development and production proposal for the period November 2018-19 to 2022-23

1 year: (November 2018-2019)

DEVELOPMENT

During this year already developed haulage road shall be metalled for 100m and thereafter same shall be extended from RL 2150m to 2231m for a length of 1000m having a width 8m. Two check dams shall be constructed with dimensions of 1m*0.75m and 1m height towards south eastern corner near boundary pillar M & A. Also parapet walls for 54m length on the present road shall be constructed, besides construction of retaining wall along boundary pillar A,M for 25m to check land erosion. The width of the parapet wall shall be 0.75m and height shall be 1m. Besides this

plantation on 542 square mtrs towards the boundary pillar A shall be done to plan about 540 trees. Barbed wire fencing around lease area for 500m shall be undertaken.

Production:-

During this year excavation is proposed from November 2018 by opening Bench M1 RL (2237-31m) and downwards upto bench M4 RL (2219-13m) shall be opened from the west to east and taking a swing in the center towards northeast, whereby we could extract 150000 tonnes for a total face length of 780m, maintaining a face slope of 75° and pit slope of 43°. The maximum height of the benches shall be 6m and minimum width of the benches shall be 6m.

The production is shown in table below:

RL. MTRS	BENCH	Section 1-1' Reserves	Section 2-2' Reserves	Section 3-3' Reserves	Total
2237-31	M1	2400	0	0	2400
2231-25	M2	10800	3750	0	14550
2225-19	M3	31500	20000	0	51500
2219-13	M4	48300	33250	0	81550
Total		93000	57000		150000

The pit position, plantation, road development and other developmental activities are shown in plate no. 7.

II Year: (2019-20)

DEVELOPMENT

During this year parapet wall for a length of 49m on the already developed haulage road on north eastern side shall be erected maintaining the width of 0.75m and height of 1m. 30m haulage road shall be metaled and maintained, besides erection of retaining wall for length of 25m near boundary pillar A width 0.75m and height of 2m shall be erected in continuation to already constructed retaining wall for the stability of slope. Besides this plantation on the ear marked southern eastern side shall be done for 670 square mtrs planting 670 trees. Barbed wire fencing around lease area for 500m shall be undertaken.

Production:

During this year new Benches M5 to M7 RL (2213-07 to 2201 to 2195) shall be opened in the west towards east taking a swing towards north east in the middle and finally moving towards south east for a face length of 760 m to obtain a total limestone of 361800 tonnes, maintaining the face slope of 75° and pit slope of 43°. The maximum height shall be 6m and minimum width shall be 6m.

The production is shown in table below.

RL. MTRS	BENCH	Section 1-1' Reserves	Section 2-2' Reserves	Section 3-3' Reserves	Total
2213-07	M5	52800	48000	0	100800
2207-01	M6	57300	63750	0	121050
2201-95	M7	62700	72250	5000	139950
Total		172800	184000	5000	361800

The pit position, plantation, road development and other developmental activities are shown in plate no.8.

III Year: (2020-21)

DEVELOPMENT

During this year parapet wall for a length of 26m on haulage road toward south near boundary pillar M shall be erected maintaining a width of 0.75m and height of 1m. Also 30m road shall be metaled and maintained. Besides retaining wall for length of 25m and width 0.75m and height of 2m shall be erected for the stability of slope towards southern side. Plantation for 742 square mtrs planting 740 trees shall be under taken as well over the earmarked green belt in south eastern side. Barbed wire fencing around lease area for 500m shall be undertaken.

Production:

During this year new bench M8RL(2195-89) shall be opened in the west to obtain 169350 tonnes of limestone. Further another Bench M9 (2189-83) shall be advanced from west to east for a face length of 150m and thereafter shall take a swing towards north eastern side for another 150m to obtain 201350 tonnes of limestone, totaling the production of 370650 tonnes of limestone during this year total for a face length of 640m, maintaining a face slope of 75° and pit slope of 43°. The maximum height of the bench shall be 6m and minimum width shall be 6m.

The production is shown in table below.

RL. MTRS	BENCH	Section 1-1' Reserves	Section 2-2' Reserves	Section 3-3' Reserves	Total
2195-89	M8	69600	82500	17250	169350
2189-83	M9	78300	91250	31750	201300
Total		147900	173750	49000	370650

The pit position, plantation, road development and other developmental activities are shown in plate 9.

IV Year: (2021-22)

DEVELOPMENT

During this year the parapet wall for a length of 49m shall be erected near boundary pillar M. Besides maintenance of parapet wall and already constructed check dams shall be done. The retaining wall construction for another 25m shall be continued beyond III Year in the south western portion of the lease boundary along boundary pillar AM for stability of the slope. Further 840 trees shall be planted on 840sqm on green belt strip near boundary pillar A. Barbed wire fencing around lease area for 500m shall be undertaken.

Production

During this year the production of limestone will be achieved by opening new Bench M10 RL (2183-77) for a face length of another 320m to obtain 235800tonnes of limestone. Another bench M11 RL (2177-71) shall be opened in the west and continued towards north-north east for a face length of 120m to obtain 98400 tonnes of limestone thereby a total of 334200 tonnes of limestone shall be extracted during this year for total face length of 440m, maintaining the faceslope of 75° and pit slope of 43°. The maximum height of the bench shall be 6 and minimum width of the bench shall be 6m.

The production is shown in table below:

RL. MTRS	BENCH	Section 1-1' Reserves	Section 2-2' Reserves	Section 3-3' Reserves	Total
2183-77	M10	88800	98000	49000	235800
2177-71	M11	98400	0	0	98400
Total		187200	98000	49000	334200

The pit position, plantation, road development and other developmental activities are shown in plate 10.

V Year: (2122-23)

DEVELOPMENT

During this year parapet wall on the haulage road for a length of 58m near boundary pillar M shall be constructed and maintaining the width of 0.75m and height of 1m for safe guard. The retaining wall on boundary line AM shall be continued to be constructed for another 20m for the safe guard of the slope. The plantation shall be done on near boundary pillar A for 801 sqm planting 800 trees. Barbed wire fencing around lease area for 500m shall be undertaken.

Production

During this year the production of limestone will be achieved by continuing the work on bench M11 RL (2177-71) for a face length of 200m towards north-north east to obtain 169500 tonnes of limestone. Thereafter another bench M12 RL (2171-65) shall be opened in the west towards north-north east and then taking a swing to east and another swing for 150m towards north east to obtain 168225 tonnes of limestone totaling 337725 tonnes of limestone, maintaining the face slope of 75° and pit slope of 43°, the maximum height of the bench shall be 6m and minimum width shall be 6m.

The production is shown in table below:

RL. MTRS	BENCH	Section 1-1' Reserves	Section 2-2' Reserves	Section 3-3' Reserves	Total
2177-71	M11	0	106000	63500	169500
2171-65	M12	107100	61125	0	168225
Total		187200	98000	49000	337725

The pit position, plantation, road development and other developmental activities are shown in plate 11.

The development works during the five year period is given below in tabular form.

Activity	I year November 2018- 2019	II year 2019- 2020	III Year 2020-2021	IV Year 2021- 2022	V Year 2022- 2023
Already developed Haulage road	100m road to be Metaled	30m road to be metaled	30m road to be metaled	Maintenance	Maintenance
Check Dam	02 check dam shall be constructe d	Maintenance of check dams	Maintena nce of check dams	Maintenanc e of check dams	Maintenanc e of check dams
Parapet wall along southern side of the road	54m The width shall be 0.75 and height of 1m	49m The width shall be 0.75 and height of 1m	26m The width shall be 0.75 and height of 1m	49m The width shall be 0.75 and height of 1m	58m The width shall be 0.75 and height of 1m
Retaining wall	25m the width shall be 0.75m and 2m height	25m Width of 0.75m and height of 2m	25m Width of 0.75m and height of 2m	25m Width of 0.75m and height of 2m	20m Width of 0.75m and height of 2m
Barbed wire	500m	500m	500m	500m	500m

PRODUCTION DURING FIVE YEARS PERIOD IS GIVEN BELOW

Year	Bench with RL	Tonnes
I Year from November, 2018-March 2019	M1 TO M4RL(2237-13)	150000
II Year (2019-20)	M5, M6, M7 RL(2213-2195)	361800
III Year (2020-21)	M8 & M9 RL(2195-2183)	370650
IV Year (2021-22)	M10, M11 partly RL(2183-2177)	334200
V Year (2122-23)	M11 partly 77-2165)	337725
Total		1554375

Extent of Mechanization

The operations in this mine will include drilling and blasting of limestone & transport to cement plant. The system for carrying out these operations and selection of machinery for the same are intimately inter-connected and therefore both have been discussed together.

Drilling:

Drilling of Horizontal/Vertical holes 102mm dia through wagon drill is proposed for mining of limestone. To control the problem of toes, a provision of 10% sub-grade drilling has been made. In case toes still tend to appear, these may be tackled by drilling and blasting of some toe periodically, depending upon the situation.

However if needed rock breaker shall be used from time to time for sizing the boulders. The length of holes is generally governed by the bench height. The larger the length of the hole, the more will be the burden and spacing, which in turn will yield bigger size boulders in the blasted mass. If the shovel size is already fixed, as is the case in this area, and the boulders are too big for the shovel to load, secondary drilling and blasting for reducing the size of such boulder will have to be increased. On the contrary, the smaller the hole length, lesser would be the burden and spacing of holes which means more meter age of drilling for the same excavation. Accordingly for the 6m high benches adopted for this mine, the diameter of blast holes is proposed 102 mm.

The requirement of drills has been calculated as follows:

1	The maximum level of annual Production planned	370650 tonnes per year
2	Daily production required assuming 300 working days	1200 tonnes
3	Requirement of Wagon Drills	
4	Yield per hole with a burden and spacing of 3.0m x 2.5m, bench height 10m and specific gravity of limestone as 2.5.	$3m \times 2.5m \times 10m \times 2.5 = 187$ tonnes per hole
5	Daily production required	1200 tonnes
6	Number of holes to be drilled per shift	6 nos.
7	Length of each hole with a sub-grade drilling of 10%	3.3m
8	Therefore meterage required to be drilled per shift	$3.3 \times 6 =$ say 26 m
9	Expected performance of drills in proposed mine site per wagon drill in effective 5 hours	30m

	per shift	
10	Therefore number of drills required for limestone production	$29/30=.96$ no's say 1 number

Breaking of big boulders:

The secondary blasting is detrimental to ecology and as such has been discarded. The production of limestone requires manual sorting. The manual sorting of big boulders involves their breaking. Therefore, for some time manual labour shall be involved to break the boulders into desired size of 400mm. after some time rock breaker shall be hired to break large size of boulders if any.

Transport of Limestone

The requirement of dumpers for the transport of limestone from the mine to the cement plant out as follow.

i) To and fro journey time :	
To and fro journey of 2.5 km mine road @ 15 km/hr	30 min
From mine site to stack yard, Cycle time of dumpers	
Spotting and waiting	5 min
Loading (machine loading)	5 min
Turning and unloading	15min
Therefore total cycle time	60 min
ii) Requirement of dumpers :	
Limestone required to be transported per day	1200 tonnes
Cycle time of dumpers	60 minute
Average load carried per trip	10 tonnes
Therefore round trips per dumper per hour	$60/60=1$
Taking 6 effective hours of utilization per shift	$6 \times 1 = 6$, Say 6 trips
Average load carried per round trip	10 tonnes
Therefore average carrying capacity per dumper per shift:	$6 \times 10 = 60$
Therefore number of dumpers required	$1200/60 = 20$, say 20no's.
Stand by dumper @ 25%	2
Therefore total requirement of tippers	20 no's

After execution of lease deed the lessee has procured few dumpers on behalf on company side & as well as engaging dumpers on contract for the purpose of transporting limestone to the factory. The transport on contract basis works out to be slightly cheaper than the departmental transport possible because of the lower overhead expenses of the contractors. Therefore, it is recommended that this mixed system of transport shall be continued so that while complete dependence on outside agencies is avoided, some economy is also achieved in the operation.

No overburden shall be generated during course of mining, therefore requirement of dumpers for overburden disposal is not applicable in this mine.

B. General Services:

The opencast mining operations basically consist of drilling, blasting, loading and transport. But certain ancillary facilities are necessary for the efficient utilization of the machinery used in these operations. Thus facilities for supplying explosives for blasting at site, creating properly-shaped heaped of debris for efficient operation of loading units, water sprinkling on the transport roads for dust suppression, supplying fuel to diesel operated machinery working on the benches, routine maintenance of loading units at the face itself and provision of accessories for blasting such as exploders, ohm-meters, sirens, etc. are essentially required.

The requirement of excavator will be basically for cleaning the drilling area for loading and dozing of the scattered debris after blasting for creating properly-shaped heaps of debris for efficient loading operation. The excavator will also be helpful in the construction and repair of roads. Besides these regular jobs, excavator will also take care of miscellaneous jobs such as towing of other machines.

A diesel-driven truck-mounted water tanker of about 5000 liter capacity shall be envisaged for water sprinkling.

It is proposed to install a diesel pump within the proposed cement plant, it shall cater to the diesel requirement of machinery in cement plant and mine.

g) **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.**

The lease area is presently having mineable reserve of approx. 9.06 million tonnes of limestone expected from an area of about 15.66 hectares, which is fully prospected under G1 exploration. The rest of the lease area out of 48 hectares remains 32.44 hectares has already been covered through channel sampling which indicates the presence of limestone and thus can be classified as to have been covered through G3 level of exploration. It is further proposed to drill additional 7 drill holes of 25m each depth and whereby it is expected to cover the whole area under G1 exploration after confirming the quality and quantity besides extension of litho logical control.

The production target for the first five years has been kept around 350000 per annum. With this rate of production the life of mine for 9.06 million tones (111 UNFC) is expected to be 26 years approximately..

Once more reserves are proved by further exploration in years to come it is expected that life of the mine shall increase many fold. But at the same time the life of the mine then would also be depend on the quantum of production envisaged at that point of time. At present it would be too early to conceptualize that situation. Overall the mining activity is expected to be carried out in 4 pits.

A conceptual plan showing pit position at the end of the life of the mine which at present is 26 years and end of the lease period which is 2058 i.e 40 years, hereafter, have been given with relevant sections showing the position of lease with due reclamation and rehabilitation and is attached as **plate no.13**

Life of the mine based on present mineable reserves, proposed production during five year plan period is given in following table.

Total mineable reserves	9067600	Tonne
Average Rate of production	350000	Tonne/Year
Total mine life	26	Years

Time Frame of Completion of Exploration:

S.NO	Year	Bore hole No.	Depth of each hole	Location
1	Ist year(2018-19)	PBH1	25m	E620,N300
2	II Year (2019-20)	PBH2	25m	E520,N361
		PBH3	25m	E344,N300
3	III Year(2020-21)	PBH4	25m	E400,N400
		PBH5	25m	E367,N534
4	IV Year(2021-22)	PBH6	25m	E583,N539
5	V Year(2022-23)	PBH7	25m	E457,N600

With the help of above exploration, whole area shall come under G1 axis by the year 2022.

The Shape & size of approximately 4 mining pits at the end of lease period is given below:

Year	Area (Ha.) Trapezium	Shape
2058	2.8771	By & large Shape of lease area

Sites for Disposal of Waste Rock and Sub grade Mineral:

The lease hold consists of limestone. It is proposed that only limestone will be extracted during this plan period.

Infrastructure facilities: About 0.006 hectare area will be occupied by check dams, retaining walls, parapet walls and further parapet walls discussed in development chapter shall be erected.

Road: 1115m long road is already occupied by development of haul roads.

Afforestation: The plantation shall be mostly done in south eastern corner of the lease area near boundary pillar A. Year wise details of plantation are given as under.

Year	Area (Ha.)	No. of sapling proposed to be planted
November 2018- 19	0.0542	540
2019-20	0.0670	670
2020-21	0.0742	740
2021-22	0.0840	840
2022-23	0.0801	800
TOTAL	0.3604	3590

Rehabilitation of benches:

By the end of lease period, top benches from RL 2237m downwards are proposed to reach the ultimate pit limit therefore plantation shall be carried out over the benches.

Ultimate Pit Limit:

An ultimate pit limit has been marked after leaving a non-mineable barrier zone of 7.5m on all sides measuring 2.8245 hectares, forested area having area about 2.6 hectares and area blocked due to water shed about 7.5560 hectares, totaling 12.9805 hectares shall be blocked and not proposed to be mined.

The shape of this deposit is by and large a polygon. Mining shall be done through mechanized open cast method. The haulage road of 1115 meters shall be used for opening of faces and transportation of mineral. The alignment of mining faces shall be by and large west to east direction. During the present plan period the benches from RL 2237m downwards to RL 2165m shall be developed and rest of the benches down below upto RL 1991m shall be worked out in phased manner in the future planning beyond this plan period.

After conducting further exploration in the form of drilling etc. on the upper slopes preferably from RL 2411m down wards to RL 2237m. The ultimate pit limit would then be proposed at RL 2411 (Watershed area). It would be advisable to block the area below this water shed towards western side of the lease area due to apprehension of falling of boulders outside lease area and also no mining activity from the ecological point of view, is to be proposed in the forested area which as per the revenue record is a Govt. land. The height and width of the benches shall always be kept as maximum 6m and width minimum 6m with angle of mining faces to be kept around 75° to 8° degrees maintaining ultimate pit slope of 43°. The alignment of the mining faces shall be by and large north north-east to south south-west towards the end of life of the lease the worked out benches would have to be covered with 0.4m soil to make them worth plantation. The terraced hillock shall be planted in such a manner to give it ecofriendly look besides erection of check dams and retaining walls around the lease area for stability of the slope. At the bottom of the ultimate pit limit Children Park and school shall be built for betterment of the community.

STACKING OF MINERAL REJECT AND DISPOSAL OF WASTEEND OF LIFE OF MINE

The area consists of high grade limestone having no top soil cover therefore no top soil sub grade mineral or mineral reject shall be generated. Towards eastern side of the lease area along boundary pillar AB a small sand stone band about 40m thick is sandwiched within limestone and due to its placement it forms overburden of less than 1:1 and thus part of limestone below it is economically not viable to be mined and lying on the extreme boundary and treated as blocked till such time the value of the limestone is upgraded to the extent that the ratio of over burden makes it viable. However as has already been stated that there is huge quantum of limestone reserve available without overburden and thus necessity of working out this deposit is not felt.

Table: Calculation of Mineral Rejects

Year	Top Soil (cum)		Mineral Rejects (cum)			
	Reuse/ Spreading	Storage	Backfilling	Storage*	Blending	Beneficiation
2018-19	Nil	Nil	Nil	Nil	Nil	Nil
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
Total	Nil	Nil	Nil	Nil	Nil	Nil

Backfilling of Void: As there is no OB lying inside the lease area, so there will be no backfilling material available to backfill the void, thus the void generated if any will be converted into the water-reservoir for storing surface run off.

Reclamation and Rehabilitation: No proposal for backfilling of pits or works out area is made in this review of mining plan. At the end of mining worked out area will be leveled and used for plantation.

As the conceptual planning, green belt of suitable width shall be developed along south eastern part of the lease area earmarked for plantation. The row of plants facing mine should be of smaller species and those facing outside should be of taller species. The post plantation care is proposed to maintain the growth of plantation. Plantation will reduce the land erosion possibility in the surrounding area.

The void formed at the base of worked out area will be left to be recharged by rain water (in level ground). This front portion at the base of hill lock about 1 hectare shall be rendered plain where public library and amusement park shall be constructed at the end of lease period. Three check dams shall be constructed to check the stability of the slope. All the proposals for conceptual planning, have been shown on 'Conceptual Plan' attached as Plate 13.

FENCING AROUND LEASE AREA

Barbed wire fencing around lease area has already been done for partly and shall be resumed on year wise basis as shown in

Table 8.3. as well as plate 13,14 & 15.

B. UNDERGROUND MINING - Not Applicable

3.0 MINE DRAINAGE

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

The average depth (m) of the water table based on observations from nearby village tube wells is given below:

Max. Water Table	Min. Water Table
180 m	170 m

- b) **Indicate maximum and minimum depth of Workings.**

Proposed Maximum and minimum working depth during ensuing five years will be 72m and 6m from surface. Proposed working area will be in between 2237m to 2165m RL along hill slope.

- 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**

The mine excavation activity in the next five-year period will be above the ground water table. Hence, mining will not have any impact on ground water in the area. All the rain water flows down to lower side in the lease area. There it is allowed to pass through settlers to arrest any silt in the water. Clean water is allowed in the natural drainage system. Limestone is non-toxic and hence no chemical treatment of mine water is required. Periodical quality monitoring will be carried out and reports submitted to concerned authorities. The ground water analysis report shows drinkable water in Annexure no9B.

- 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.**

The area is dry hilly with dendritic type of drainage in the form of dry nallahs dissecting the main hillocks. Three dry nallahs drain rainy water down in to main BathynZantrag valley which ultimately recharge the groundwater. The mine is situated at higher altitude from surrounding level so during rainy season, water will drain out from nearby areas into nallah. Within lease area no mine out limestone is left behind on slopes so the possibility of rolling of stone during rainy season does not arises.

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

- a) **Indicate briefly the nature and quantity of top soil, overburden / waste and Mineral Reject to be disposed off:**

The lease area is devoid of overburden. Limestone is exposed on the surface itself. Very thin layer of soil exists at places and this gets mixed up with limestone which is disposed of for cement making. The quartzite which forms over burden towards eastern side of the lease area has restricted width of 40m and lies close to the lease boundary. In view of the large quantity of limestone available in the lease area at the movement there is no chance of mining of this quartzite band with limestone.

Table: Year-wise quantity of Top soil, OB/waste and Mineral Rejects

Year	Top Soil (cum)		Mineral Rejects (cum)			
	Reuse/ Spreading	Storage	Backfilling	Storage*	Blending	Beneficiation
2018-19	Nil	Nil	Nil	Nil	Nil	Nil
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
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.**

There is no chance of incidental mining of reject material within the lease area therefore no proposal for dumping is given.

- c) **Attach a note indicating the manner of disposal of waste, configuration and sequence of year wise buildup of dumps along with the proposals for protective measures.**

Not Applicable. As the area is devoid of OB/ waste thus no permanent dump for disposal of waste is required. The talus, Scree, Quarry cuttings of limestone shall find it use in cement industry.

5.0 USE OF MINERAL AND MINERAL REJECT

The following are to be furnished in the interest of mineral conservation.

- a) Describe briefly the requirement of end-use industry specifically in terms of physical and chemical composition.

The Limestone should be soft, to satisfy LSF. Generally, Cao should be + 44%, with MgO < 2.5%, SiO₂ < 12.5% for making cement & lime. Other additions are low grade limestone with higher silica, clay, iron ore as per raw mix design. The limestone of the lease area is suitable for crushing through jaw crushers, the crushing strength of limestone is 58 N/m³. Chemically it satisfies LSF (Lime saturation factor) and as such is fed to 1000 TPD cement plant (TCI MAX CEMENT PLANT) installed 2.5km away from the lease area. The cement thus manufactured is sold in market. The end use of this limestone is making of cement.

Table: Typical Chemical analysis of Cement Gr. Limestone

CaO (%)	MgO (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	SiO ₂ (%)	LOI
52.0	-	0.81	1.46	2.42	42

No changes are proposed in the use of mineral. Limestone produced at this mine is sent to company's cement plant after crushing and in future also the same will continue.

Cement Manufacture:

Chemical composition	Acceptable range for OPC %	Limiting value for other type of cement, scope of beneficiation and blending %
CaO	44 - 52 %	40
MgO	Max 3.5 %	Max 3.5
SiO ₂	To satisfy LSF, Silica & Alumina Modulii of raw mix	
Al ₂ O ₃		
Fe ₂ O ₃		
Mn ₂ O ₃	<0.5	<3.0
R ₂ O	<0.6	<1.0
Total S as SO ₃	<0.6	<0.8
P ₂ O ₅	<0.6	<1.0
Cl	<0.05	<0.1

LSF	0.90 -0.95
SM	1.8 - 2.8
AM	1.8-2.8

- b) Give brief requirement of intermediate industries involved in upgradation of mineral before its end-use.**

No intermediate industry is required for up-gradation.

- c) Give detail requirements for other industries, captive consumption, export, associated industrial use etc.**

Not applicable, as this mineral is only for captive use.

- d) Indicate precise physical and chemical specification stipulated by buyers**

As the ROM is being used for the Captive consumption and specifications are already mentioned in above 5.0 a) section.

- e) Give details of processes adopted to upgrade the ROM to suit the user requirements.**

No up-gradation of ROM is needed.

The useable mineral recovered from ROM may not be directly used in any industry and may need intermediate process to suit the user industry in terms of physical and chemical compositions. The limestone needs crushing to 25mm size for further processing in cement technology. The limestone crusher and cement plant is located about 2.5km from lease area.

6.0 PROCESSING OF ROM AND MINERAL REJECT

- a) If processing / beneficiation of the ROM or Mineral Reject is planned to be conducted, briefly describe nature of processing / beneficiation. This may indicate size and grade of feed material and concentrate (finished marketable product), recovery etc.

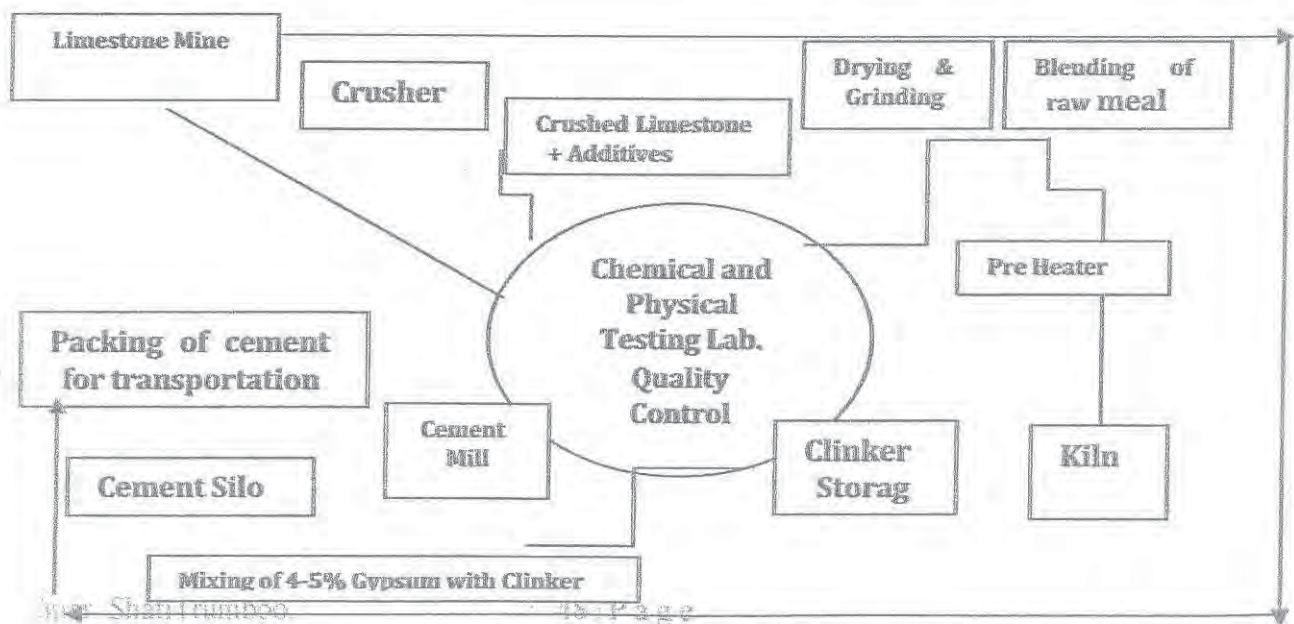
No beneficiation of ROM is needed as it suits the requirement of industry, only crushing is involved.

- b) Give a material balance chart with a flow sheet or schematic diagram of the processing procedure indicating feed, product, recovery, and its grade at each stage of processing.

Flow sheet of Material Balance Chart:

Material balance chart

Mining of limestone, sizing upto 600mm size and transportation in tippers and feeding to crusher. 20mm size crushed material is mixed with other additives like silica, alumina and iron to make raw mix as per chemical proportion. The crushed material raw meal is fed to raw mill for further grinding, then this raw mix is fed to pre-heater from where the pre calcinised material is fed to kiln for burning whereby clinker is formed. After cooling the clinker, it is mixed with 4 to 5% gypsum and fed to cement mill for further crushing. The cement is air lifted to cement silo and packed in bags of 50kg for marketing. The role of chemical and physical testing lab of quality control deptt. is defined at right from mining of suitable material, preparing raw mix design and clinker formation, testing of cement for strength.



- c) **Explain the disposal method for tailings or reject from the processing plant.**

Not Applicable. No tailings or reject shall be generated.

- d) **Quantity and quality of tailings /reject proposed to be disposed, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailings dam.**

Not Applicable

- e) **Specify quantity and type of chemicals if any to be used in the processing plant.**

Not Applicable

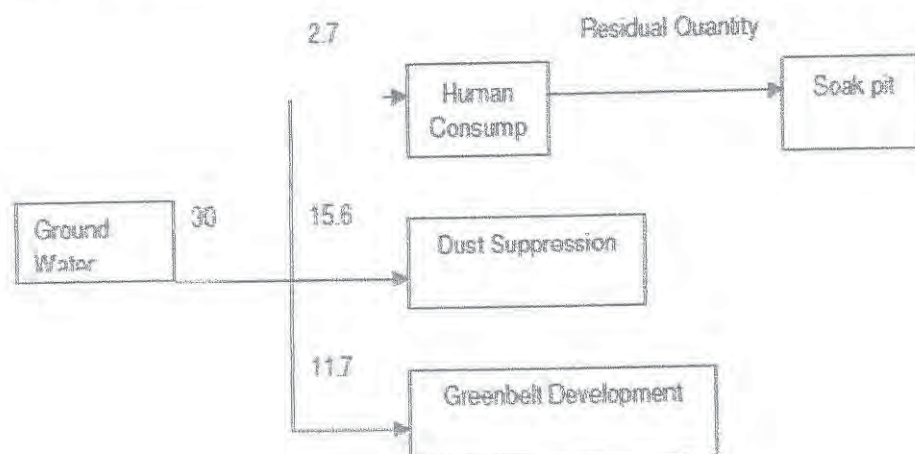
- f) **Specify quantity and type of chemicals to be stored on site / plant.**

Not Applicable

- g) **Indicate quantity (cum per day) of water required for mining and processing and sources of supply of water, disposal of water and extent of recycling. Water balance chart may be given.**

The mining doesn't need water, except 3000 liters for sprinkling on roads for dust suppression and shall be brought from company tube well per day for such purpose.

The projected water requirements for the mine site are likely to be in the range of 60 KLD. It is to be noted that due to mechanical nature of mining in this lease the water requirement for the dust suppression will be optimal. Water balance diagram is given below:



7.0 OTHER

Describe briefly the following:

a) Site services:

Office cum rest shelter for mining staff & labour has been erected at bottom of hillocks where toilet, drinking water & first aid is provided.

As regards to other specific mine site service requirements, the position is as follows:

Rest Shelter: Rest shelter along with first-aid station complying with all the provisions of Mines Rules is constructed out side of the company private land itself.

Water Supply: There is a deep tube well adjacent to cement plant from which water will be supplied for drinking and toilet purpose as well as for dust suppression measures.

Power Supply: The mine will work in one shift (i.e. general shift) only, so no lighting arrangement will be required. At present there is no electric supply.

Workshop & stores: These are situated with our cement establishment and will be serving to the machineries deployed at this mine.

All other facility like regular medical check-ups and other benefits to be provided to the mine workers regarding their health as per Mines Act 1952 are already provided.

b. Employment potential :

1. Manager Mines	-	1
2. Mining Geologist	-	1
3. Mining Engineer	-	1
4. Mine Mate/Blasters	-	2
5. Machinery Operators	-	2
6. Extractors, Labours for breaking of limestone to size	-	10
7. Office Clerks	-	2
8. Shovel Operators	-	2
9. Compressor Operators	-	2

Un-skilled:

Piece rated workers	-	15
---------------------	---	----

The services of following persons/agencies have been retained on part time basis.

i) Geo-technical consultant

ii) Mines surveyor

8.0 PROGRESSIVE MINE CLOSURE PLAN UNDER RULE 23 OF MCDR'2017

8.1 Environment Base line information:

I. Existing Land Use Pattern:

The lease area is a government barren land and part of Survey No. 3118/3118/1 min which falls under survey of india toposheet no.43N/4, 43J/16

The highest R.L. in the block is 2411m MSL at water shed' and lowest RL is 1955m MSL near boundary pillar "A". No prominent drainage pattern exist within the lease area, water follows down the slope and is generally flowing towards low lying fields which carry water only during rainy season, otherwise remain dry for most of the year.

There is a little forested land 2.66 hectares within the lease area. As per revenue records the whole lease area of 48 hectares is government land/ Shamliat deh/ Kacharie land. The revenue department besides the forest has issued NOC for this lease area which is enclosed as annexure 4. Existing land use pattern is given as below:

TABLE - 8.1 Existing land use pattern

Sl. No.	Head	Area put on use at start of Mining Plan (ha)
1.	Area under mining (old pit, Prop. Pit & trench)	6.9
2.	Storage for top soil	0.0000
3.	Waste dump site	0.0000
4.	Mineral storage	0.0048
5.	Infrastructure - workshop, administrative building etc.	0.0000
6.	Roads	0.892
7.	Green belt/rehabilitated	0.2450
8.	Tailing pond	0
9.	Effluent Treatment Plant	0
10.	Crusher	0.000
11.	Forested land	2.66
12.	Others(channel retaining wall)	0.0078
13.	Grand Total	10.4598
14.	Remaining Lease area	37.5402
15.	Grand Total (Lease area)	48

II. Water Regime, quality of air and ambient noise level, flora, climatic conditions

Water Regime

Water Quality Management:

i.) Existing surface:

The existing surface of the area is undulated and rugged with gentle to steep slopes. The general slope of the area is Northeast & Southwest. The highest RL is at 2411m RL along water shed trending Northwest- South east with in the area whereas lowest level is at 1955m RL is towards southeast slope of the area along boundary pillar A. part of the lease area forms western side of the water shed.

The general seasonal drainages in the surrounding area are heading towards south. These drainage courses ultimately merge into BathynZantrag valley. There is no permanent water source or spring observed within the area except few springs in Bathyn village which is 3Kms away.

ii.) Ground water bodies/Surface water bodies:

There are no surface and ground water bodies within the area. The only source of water shall be the rain water which too will flow down into the nallahs. The nallahs in the adjoining area flows by and large from northeast to Southwest direction and ultimately meet river Jhelum form the main drainage of the area on a regional scale & it is about 15 kms towards the south of the area.

iii.) Hydro-Geological study:

Water table aquifer in the area is unconfined. Its movement is controlled by the porosity and the Krastic nature of the Limestone. Some tube wells have been drilled to depth of about 250 meters in Bathyn valley (which is composed of talus and scree) where from TCI MAX CEMENT PLANT draw the water.

iv.) The water balance chart:

The mining operations do not require water, except sprinkling on the roads and for the work force employed at the mines etc. The water for spraying on roads, use in mines and in plantation is got from TCI MAX CEMENT PLANT tube well drilled for the purpose.

v.) Air Quality Management:

On the basis of results of air sample in close vicinity of the area, core zone and buffer zone, SPM PM_{10} is 79.27, $PM_{2.5}$ 44.68, SO₂ 15.68, NoX 28.16. It can be well understood that air quality of the region can be considered normal. The

area is approachable through un-metalled road. During the movement of vehicles, tippers loaded with water tank of one cubic water capacity is used to sprinkle water on the road to suppress the dust for pollution control. No chemical or toxic effluents shall be discharged in the area during mining operation.

vi.) Ambient Noise Level:

The area is free from any noise as it is isolated place away from habitation. The only noise is that of moving few tippers during transportation of mineral which is not of any considerable nature.

vii) Flora:

The lease area is dry hilly with very less vegetation that of thorny bushes. The wild animals include occasional stray Jackals, snakes which are present but not venomous. Coniferous Forest lies in the northeastern of lease area.

viii) Climatic Condition:

The winters are frostily and cold between December to February when temperature goes sometimes even to -5°C. Precipitation in the form of snow occurs in January and February while as rainfall in March, April, October and November. Summers are warm and pleasant. The maximum temperature hardly reaches 34°. The meteorological data is given in Annexure 13.

ix) Human Settlement:

There is no village and hutments within the lease. Farming is the main job of the people of Bathyn and nearby villages.

TABLE-8.2

S.No.	Name of Village	Total area of village (Ha.)	Total Population
1	Khonmoh	196	8630
2	Sangar	150	584
3	Chak	70	357
4	Wuyan	1156	5874
5	Zawoora	60	880
6	Namblan	59	332
7	Khrew	80	15230
8	Bathyan	551.1	862
9	Sharshali	655.6	6178
10	Mandakpal	230.20	1256
11	Zantrag	187.40	616
12	Nagender	167.90	351
13	Satapokrin	332.70	1342
14	Lodou	904.90	4604

The locals are farmers, quarry holders and transporters. Paddy, Maize, Saffron cultivation is main profession. During winter the labour class migrates to Jammu, Punjab and other valuables districts to earn their livelihood.

III. Public Building, Place of Worship and Monuments:

Juwalamukhi Temple at Khrew is of historical importance located at distance of 6.0 Km from mine.

IV. Indicate any Sanctuary located in the vicinity of the leasehold:

Dachigam wildlife sanctuary exists in the vicinity of lease hold at a distance of 8Km from lease area.

8.2 Environment Impact Assessment:

(i) Land area usage:

At the end of five year plan period, the damage to the landscape in the form of pit & road, about 9.9 hect will be degraded. The area influence of mining at the end of year is given below:

TABLE - 8.3 Existing vs at the end of Plan period land use pattern

S.No.	Head	Area put on use at start of the plan (in hectare) A	Additional required during plan period (in hectare) B	Total area (in hectare) C=(A+B)
1	Area under mining (old pit, Prop. Pit & trench) including road	6.9	3.0	9.9
2	Storage for top soil	0.0000	0.0000	0.0000
3	Waste dump site	0.0000	0	0.0000
4	Mineral storage	0	0.0048	0.0048
5	Infrastructure - workshop, administrative building etc.	0.000	0.0000	0.0000
6	Green belt / Forested area including	0.245/2.66	0.000	2.905
7	proposed plantation	0.00	0.3604	0.3604
8	Reclaimed area	0	0	0
9	Mineral Separation Plant	0.000	0.000	0.000
10	Township area	0	0	0
11	Others(channel, retaining wall)	0.0078	0.0129	0.0207
12	Grand Total	9.8128	3.3781	13.1909
13	Remaining Area	38.1872		34.8091
14	Lease Area	48		48

(ii) **Air Quality:**

In mining activity main pollutant of air is suspended particulate matter (SPM).
Dust will be generated from drilling, blasting, transportation and sizing

Table: Air pollution monitoring and control measures

Potential Impact	Action	Parameters for Monitoring	Timing
Air Emissions	All equipments are operated within specified design parameters.	Random checks of equipment logs/ manuals	During site clearing
	Vehicle trips to be minimized to the extent possible	Vehicle logs / Increase the capacity of vehicle	During site clearing, transportation of minerals
	Topsoil (if any) must be removed from the entire area to be mined and stored from where it can be recovered and utilized immediately in other areas.	Absence of stockpiles	During site clearing
	Use proper drills bits for drilling holes and wet drilling method.	Random check of equipment used for drilling	During blast hole drilling
	Regular water spraying shall be done	Quantity of water requirement shall be monitored	During site clearing, transportation etc.
	Ambient air quality within the premises of the proposed unit to be monitored.	The ambient air quality will conform to the standards for SPM, SO ₂ and NO ₂	As per CPCB requirement. The air quality shall be monitored at monitoring station 'A' earmarked on the plan.

(iii) Water Quality:

The lease area does not contain any prominent features. The deposit does not contain any harmful contents such as sulfur, potash etc, so it is not going to affect the quality of water in surrounding area. The depth of ultimate pit in the lease area will be much above the level of ground water table.

Table: Water quality monitoring and control measures

Potential Impact	Action	Parameters for Monitoring	Timing
Water Quality	During extraction of mineral proper care should be taken such that it does not disturb the ground water table. The water shall be regularly tested for qualitative analysis.	No discharge of waste water from mining operation	During mining operation
	After extraction of mineral, rainwater will be stored in void generated.	Quantity of water used for green belt development	During mining operation.

(iv) Noise Levels:

Noise pollution in mining is due to operation of drilling, blasting and HEMM equipment. Occasional plying trucks on the road will also cause impact on ambient noise quality.

It will not cause any problem to the inhabitants of this area because there is no human settlement in the close proximity to the lease area. The nearest village is far away to be affected by noise pollution. However noise level monitored at the monitoring station 'N' ear marked on the plan.

Table 6-5: Noise quality monitoring and control measures

Potential Impact	Action	Parameters for Monitoring	Timing
Noise	List of all noise generating machinery onsite along with age to be prepared. Equipment to be maintained in good working order.	Equipment logs, noise reading	During mining operation.
	Generation of vehicular noise	Maintenance records of vehicles	During transportation.
	Implement good working practices (equipment selection and siting) to minimize noise and also reduce its impacts on human health (ear muffs, safe distances and enclosures). Adopt good blasting practices to reduce impact on flora and fauna. Muffling will be done at the time of blasting	Site working practices records, noise reading	During blasting
Noise	Noise to be monitored in ambient air near blasting shelter and at the lease boundaries.	Noise reading	As per GPCB requirement or quarterly whichever is earlier.
	The Noise level should not exceed the permissible limit both during day and night time.		
	All equipment operated within specified design parameters.	Random checks of equipment logs/ manuals	During mining operation
	Vehicle trips to be minimized to the extent possible	Vehicle logs	During mining operation
	Plantation of dense hedges on the boundary of lease area, these will reduce dust and noise in the vicinity area.	Adhere to mine closure plan	

(v) Vibration Levels (Due to Blasting):

During blasting, all the necessary measures will be taken for minimizing noise and vibration, like optimum charge per delay, various controlled blasting techniques etc. However there will be little impact in and around 500 mts of this area which is un populated as well. it is proposed to conduct regular monitoring of the vibration levels with the help of Seismograph.

Potential Impact	Action	Parameters for Monitoring	Timing
Ground Vibrations due to Blasting	Good blasting layout must be adopted Adopting less number of holes per delay	Vibrations due to blasting shall be monitored daily. With the help of portable (Seismograph) which is being procured shortly.	At the time of blasting or based on the blasting data

(vi) Water Regime:

Surface water: There is no surface water accumulation within the area of mining, and hence there will not be any impact on surface water.

Ground Water: The mining excavation will not go deeper down the ground level, because limestone deposit is an elevated one, above the ground level, excavation of which will never touch the ground water table. Hence no question of ground water pollution arises.

(vii) Acid Mine Drainage:

The deposit does not contain any harmful contents such as sulfur, potash etc, so it is not going to affect the quality of water in surrounding area. Also no dumps are to be maintained lease area to cause any AMD issue.

(viii) Surface Subsidence:

Not Applicable as this is an Open pit Mining however the mined out pit will not be deep down in the ground so no risk of Surface subsidence involves with this project.

(ix) Socio Economics:

Mining in this lease will give more job opportunity directly and indirectly to the local people. This will reduce in the migration of jobless labourers from native places to other distant places.

The project will not generate hazardous dust and also human settlement is about 1kms away from mining area. Thus, mining will not have any adverse impact on the village human settlement.

(x) Historical Monuments:

There is no monuments related to historical importance found in the core as well as buffer zone area. Except one temple known as Jawalamukhi Temple situated on the hillock near khrew village is of some historic importance.

Monitoring Schedule of Environment data:

S.N.	Activity	Schedule
Air Pollution Monitoring		
1.	Ambient air monitoring of parameters specified by CPCB in their air consents from time to time within the TCL's mining lease	Once in every season except monsoon
2.	Ambient air monitoring of parameters specified by GPCB in their air consents from time to time at stations outside TCL mining lease	Once in every season except monsoon
Water Quality Monitoring		
3.	Monitoring water quality from rain water collected in mine pit area. Rain water will be used for plantation purpose.	During Monsoon
4.	Monitoring of one sample of tube well and open well at mine / nearby location. Parameters are essential parameters as per IS: 10500:1991.	Once in every season except monsoon
5.	Monitoring of water spray requirements	Log-sheet of water spray will be maintained on daily basis
Noise Quality Monitoring		
6.	Noise in the ambient atmosphere in other mining leases.	Once in every season except monsoon
Greenbelt Maintenance		
7.	Monitor schedule for Greenbelt development as per approved mining plan	Yearly
Soil Quality Monitoring		
8.	Soil at two locations	Once in every year
Ground Vibration monitoring		
9.	Close to human settlement or other structure or at 300m from blasting side.	Daily

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.*

A. Sustainable Mining.

The mining culture in J&K being in infancy stage (as compared to other parts of the country) and has not developed despite advancement in mining techniques . small mining lease holders are less focused on skill and resource needed for socially and environmentally sound and safe mining. Now that mine owners have waken up to the call from some NGOS and initiatives from central and state govt. mining organizations. The lease holders should start to develop plans bearing in mind local conditions and mines life cycle – main focus on safe and healthy atmosphere, economic, social environmental issues to reduce negative effects on communities, vegetation, wildlife, water, land and air. Following steps are needed to be taken/have been taken by the lessee in this regard for Sustainable mining in this area.

a. All the necessary measure have already been suggested to conduct safe, healthy working atmosphere including minimizing ground vibrations and Air Over Pressure, celebration of SAWACHHTA PAKHWADA from 16 Oct to 31 Oct 2018 Annexure 16. The techniques and safety measures are already in place viz, development of the mine taking safety measures and minimizing risk factors.

b. The mine workers are given suitable wages, allowances besides soap, oil, gud on monthly basis and cement on concessional rates.

c. Towards local welfare necessary funds to the tune of approximately 1.28 crores have being spent from Oct. 17 to march 2018 towards Corporate Social Responsibility (CSR) Annexure 15. by providing cement on concessional rates, widow fund, funds for school, mosque, play ground, roads besides a Tubewell to augment the water supply for locals of Village Bathyan and around. Besides about 30 workers have been appointed from the adjacent locality.

d. The limestone mine is already covered with EC where under the stipulations and conditions imposed by MOEF and SPCB are taken due care by monitoring Air, Water, Noise quarterly submitting the report to the concerned besides taking preventive measures for reducing the adverse impact of mining on the environment. Water spraying on the roads through companies' water tanker, use of air plugs and other protective equipments for the mine workers lubrication of machinery, development of green belt towards southeastern side of the lease.

e. The wild life sanctuary is 6.5 Km away from the lease area there is no appreciable species of wild life in the lease area except few jackals, snakes (non venomous). However the lease area is already covered by NOC from Wild life and in future if any protective measures are suggested those will be taken care of.

f. Water regime, quality of air, ambient noise level, flora and fauna, climatic conditions have already been discussed in the environment chapters and all the precautions are taken to make this mining an ecofriendly activity so that the fruits of sustainable mine development are reaped.

B. Reclamation Plan.

The following measures have been taken to mitigate the effects of mining and reclamation thereof.

The mining shall be done forming benches of maximum 6m height and minimum 6m width with face slope of 75° and pit slope of 43°. The chances of destabilization of slopes and vegetated areas shall be reduced to minimum. The following measures shall be under taken to safe guard the mined out land .

1. The parameters and design of mining faces shall be maintained.
2. The boulders on the edges of the benches shall be removed and not allowed to be rolled down instead shall be broken on spot and removed.
3. The area is hard rock country with very little soil as over burden. Protective engineering measures such as erection of Retaining Walls, Checkdams, Parapet Walls, Dressing of worked out benches shall be resorted to.
4. No bench at present shall reach to the ultimate pit limit and as such the plantation shall be restricted in the lower part of the lease area earmarked as green belt near boundary pillar A. About 30cm of the soil shall be spread over this portion for making it ready for plantation.
5. There is no surface water or under ground water available in the lease area which shall need conservation or treatment. The rain water in the form of surface runoff shall get discharged through natural drainage down below in the main valley floor.
6. In order that the lease area will be free from other encumbrances and entry of stranger human being, stray cattle etc. it is advisable that the whole lease area is properly fenced with six parallel line barbed wire 2m height with 1.75m poles intervals.

The details with respect to protective engineering measures have already been discussed in the relevant chapters viz, Development of mine etc. the other measures for the ecofriendly mining and handling of the mined out land is given as under:-

i) Aesthetics:

Mining operations open ugly sights of dug out slopes and fuming debris which in the hills are visible from long distances. It is desirable to screen away such sights

so that inevitable unpleasantness of operations is not exposed to the public eye. Well planned plantation of ornamental trees improves the aesthetic value of land.

ii) Production:

Trees and shrubs produce timber, fodder, fuel, fruits, fibers etc. for direct use of village community.

Programme of Afforestation:

Based on the above consideration, the following afforestation programme has been worked out:

a) Mining area:

The mine faces will be rehabilitated in the following manner:

- i) After completion of mining bench, it will be left exposed for about one month for weathering and for soil working.
- ii) The soil working will consist of waste & soil. Smaller pieces of waste rock should first be laid for about 200mm and about 300mm, soil layer will be spread over it. If more soil is easily available it will be advantageous to have this layer even thicker.
- iii) 500mm high dry-stone wall should be constructed along the bench edge. The bench filling should be kept slightly sloping say 1 in 200, inward to facilitate drainage.
- iv) On the outer 1/3 rdwidth of the bench, grasses and shrubs will be planted at 1m x 1m spacing.
- v) Tree species should be planted in the inner two third width at 1.5m x 1.5m spacing in pits prepared in advance.
- vi) The species recommended for planting are:
Grasses & Hedges: Local grass, Pudina, ivory hedges
Shrubs & Herbs: Zeera, Ven, rose
Trees: Kikar, Walnut, white willow, Handoon

Various methods adopted for reclamation and afforestation of mining benches are as below:

b) Method of Pitting and Planting:

Reclamation in the worked out mining benches shall be undertaken by making pits of 75cm x 75cm x 1m size, 1.5m apart. The pits shall be filled with sweet earth sand & cowdung.

- i) Neem powders should also be applied in the pit to protect the plants from white ants.
- ii) After such ground preparation before monsoon, appropriate varieties of saplings shall be planted in March.
- iii) During May the weeds shall be allowed to be cleared from planted area & chemical manures shall be applied to ensure healthy growth of the plants and to enhance the rate of survival.

iv) The planted area shall be adequately fenced with wooden poles and barbed wire to protect the plants from cattle grazing and destruction.

By adopting the above methods the applicant shall be able to achieve 60% rate of survival of plants.

c) **Method of Silting, Plantation and grassing on the mined out benches:**

After mining, the landscape will be left in the form of benches. Gradually, due to weathering and mostly during rains, the loose earthen material accumulates at the feet of the rock walls in silt formation.

Generally, very hardy species and some species of leguminous plants may be used. This will help nitro generating the soil. On the silt, appropriate saplings are planted in the usual manner.

Besides on the upper slopes of the benches, re-greening activities are undertaken by planting grasses of local species.

d) **Other area:**

Plantation has been undertaken towards the east and west in the UPL area. The pits having dimension of 75 cm x 75 cm x 100 cm will be dug. About 40 - 45 day before the plantation and soil and manure will be filled in the pits. Planting should be done in large sized 75cm x 75cm x 100cm due in advance and filled about 50 days before planting. The plantation raised at foot hills is being earlier carefully maintained mortalities replaced by fresh planting.

The year wise afforestation programme is given below:

Year	Bench RL (m)	Mined out Benches		At South east foot hill zone		
		Area in (Ha.)	No. of Trees	Area in (Ha.)	No. of Trees	Total no. of trees
2018-19	UPL	-	-	0.542	540	540
2019-20	UPL	-	-	0.0670	670	670
2020-21	UPL	-	-	0.742	740	740
2021-22	UPL	-	-	0.0849	840	840
2022-23	UPL	-	-	0.0801	800	800
Total		-	-	0.3604	3590	3590

It has been revealed from the adjacent areas and from the data of forest department, the survival rate of saplings will be about 60%. The reclamation plan is shown in Plate No.13 & environment plan is shown in Plate No. 12.

Post plantation care:

This will include the following measures:

- Protection from grazing and fire.
- Watering at least once a week during dry spells.
- Manuring.

- Weeding three times in the first year and twice a year during the subsequent two years soil working.
- Mulching.
- Replacement of causalities.
- Protection from pests.

This post-plantation care will undertake at least for three years after the plantation.

Choice of Species:

The area is well known for fruit trees like apples and wall nuts. It would be in fitness of things that local fruit species are planted in abundance however a few pine, Kikar, trees and Handon may be introduced in between to create variety. The outer and inner part of plantation may be overlapped with a screen of Rose to ameliorate the aesthetic sense.

Technique for plantation:

a) Spacing:

As quick closing of canopy is necessary, the spacing adopted should be 1m*1m. In view of rocky formation at places it may not possible to follow this spacing strictly but effort should be to adhere as nearly as possible, to this spacing.

b) Soil Working:

75 cm. x 75cm. pits should be dug in February. The soil and well rotten farmyard manure (5 Kg. per pit) should be mixed well with the dugout soil and refilled by the third week of March. The level of the refilled soil should be about 30cm. above the general ground level. Stone pieces should be carefully separated from the soil.

In many places, the pits will be larger the underlying rock will need to be broken. Care should be taken to ensure that the rock at the bottom of the pit should be thoroughly cracked to ensure easy penetration of roots of the seedlings.

c) Planting:

Only strong healthy nursery raised plants should be used to ensure success. The plants of coniferous should be at lease 40cm. in height and broad leaves species should have a minimum height of 60cm.

d) Stabilization and Vegetation of Dumps:

It has been already stated that area consists of high grade limestone having no soil cover & generation of soil & waste shall be nil. Therefore, no waste dumps shall be created & proposal stabilization & vegetation of waste dumps shall not arise.

e) Measures to control erosion/sedimentation of water courses:

No water courses exist within the area or in the vicinity of the area. The area is marked by limestone out crops having no soil cover, therefore the question of erosion & sedimentation of water courses shall not arise plantation over completed benches and retaining wall at the edge of the benches will also control the sedimentation / erosion.

f) Treatment and disposal of waste from mine:

Mining activities will not penetrate the water table during first five years. The rainy water will drain out through the slopes. However, the water accumulate in the working pit will be pumped out and channelize through the slopes. No toxic elements will present in the water and no need of treatment of water will be required.

g) Measures for minimizing adverse effect on water regime:

The proposed afforestation is expected to improve the infiltration-surface run off relationship. Due care has been taken so that surface water does not receive any suspension from the mining areas.

As mentioned earlier the impact on water regime will be limited as no perennial stream passes through the area and there is no spring having catchment relationship with mining. However periodically water sampling will be conducted after rainy season to take care of eventualities of scree and increased suspension, in the water.

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

There is no top soil over the limestone out crops except inter-burden soil of negligible quantity which shall get mixed with limestone as POM. However in case some good quality soil is generated due to mining activities shall be dumped at earmarked place and utilized latter for plantation purposes.

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 de-silting 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.

No tailing shall be generated and as such no tailing dam needs management.

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

The lease area holds the limestone without association of any mineral which may have acidic impact so the mining is restricted for the extraction of limestone which shall not involve any acid formation so acid drainage not involved.

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

As defined earlier the area is a hard rock country of limestone and shall not involve slope failure. However check dams and retaining walls wherever necessary have been proposed to safeguard the slope. There are no chances of subsidence which happens in the clayey formations.

The information on protective measures for reclamation and rehabilitation works year wise may be provided as per the following table.

Summary of Year-wise Proposal for Year 2018-19 for Item No. 8.3

Items	Details	Proposed	Actual	Remarks
Dump management	Area afforested (ha)	-	-	-
	No of saplings planted	-	-	-
	Cumulative no of plants	-	-	-
	Cost including watch and care during the year	-	-	-
Management of worked out benches	Area available for rehabilitation (ha)	-	-	-
	Afforestation done(ha)	-	-	-
	No of saplings planted in the year	-	-	-
	Cumulative no of plants	-	-	-
	Any other method of rehabilitation (specify)	-	-	-
	Cost including watch and care during the year	-	-	-
Reclamation and Rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /stope wise	-	-	-
	Void filled by waste /tailings	-	-	-
	Afforestation on the backfilled area	-	-	-
	Rehabilitation by making water reservoir	-	-	-
	Any other means (specify)	-	-	-
Rehabilitation of waste land within lease	Area available (ha) -Green belt	-	-	-
	Area rehabilitated	-	-	-
	Method of rehabilitation	Barbed wire Fencing around lease area (m)	500m	400000
		No. of trees	540	27000
		Maintenance		10,000
Environmental Monitoring	I) Ambient Air Quality	1		20,000
	II) Water Quality	1		10,000
	III) Noise level survey	1		10,000
	IV) Ground Vibration study (including cost of vibration sensor/seismograph)	-		430000
	V) Others (Please specify)			
Total Expenditure (Rs.)				907000

Summary of Year-wise Proposal for Year 2019-20 for Item No. 8.3

Items	Details	Proposed	Actual	Remarks
Dump management	Area afforested (ha)	-	-	-
	No of saplings planted	-	-	-
	Cumulative no of plants	-	-	-
	Cost including watch and care during the year	-	-	-
Management of worked out benches	Area available for rehabilitation (ha)	-	-	-
	Afforestation done(ha)	-	-	-
	No of saplings planted in the year	-	-	-
	Cumulative no of plants	-	-	-
	Any other method of rehabilitation (specify)	-	-	-
	Cost including watch and care during the year	-	-	-
Reclamation and Rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /stope wise	-	-	-
	Void filled by waste /tailings	-	-	-
	Afforestation on the backfilled area	-	-	-
	Rehabilitation by making water reservoir	-	-	-
	Any other means (specify)	-	-	-
Rehabilitation of waste land within lease	Area available (ha) -Green belt	-	-	-
	Area rehabilitated	-	-	-
	Method of rehabilitation	Barbed wire Fencing around lease area (m)	500	400000
		No. of trees	670	33500
		Maintenance		10,000
Environmental Monitoring	I) Ambient Air Quality	1		20,000
	II) Water Quality	1		10,000
	III) Noise level survey	1		10,000
	IV) Ground Vibration study			180000
	V) Others (Please specify)			
Total Expenditure (Rs.)				663500

Summary of Year-wise Proposal for Year 2020-21 for Item No. 8.3

Items	Details	Proposed	Actual	Remarks
Dump management	Area afforested (ha)	-	-	-
	No of saplings planted	-	-	-
	Cumulative no of plants	-	-	-
	Cost including watch and care during the year	-	-	-
Management of worked out benches	Area available for rehabilitation (ha)	-	-	-
	Afforestation done(ha)	-	-	-
	No of saplings planted in the year	-	-	-
	Cumulative no of plants	-	-	-
	Any other method of rehabilitation (specify)	-	-	-
	Cost including watch and care during the year	-	-	-
Reclamation and Rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /stope wise	-	-	-
	Void filled by waste /tailings	-	-	-
	Afforestation on the backfilled area	-	-	-
	Rehabilitation by making water reservoir	-	-	-
	Any other means (specify)	-	-	-
Rehabilitation of waste land within lease	Area available (ha) -Green belt	-	-	-
	Area rehabilitated	-	-	-
	Method of rehabilitation	Barbed wire Fencing around lease area (m)	500	400000
		No. of trees	740	37000
		Maintenance		10,000
Environmental Monitoring	I) Ambient Air Quality	1		20,000
	II) Water Quality	1		10,000
	III) Noise level survey	1		10,000
	IV) Ground Vibration study			180000
	V) Others (Please specify)			
Total Expenditure (Rs.)				667000

Summary of Year-wise Proposal for Year 2021-22 for Item No. 8.3

Items	Details	Proposed	Actual	Remarks
Dump management	Area afforested (ha)	-	-	-
	No of saplings planted	-	-	-
	Cumulative no of plants	-	-	-
	Cost including watch and care during the year	-	-	-
Management of worked out benches	Area available for rehabilitation (ha)	-	-	-
	A forestation done(ha)	-	-	-
	No of saplings planted in the year	-	-	-
	Cumulative no of plants	-	-	-
	Any other method of rehabilitation (specify)	-	-	-
	Cost including watch and care during the year	-	-	-
Reclamation and Rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /slope wise	-	-	-
	Void filled by waste /tailings	-	-	-
	A forestation on the backfilled area	-	-	-
	Rehabilitation by making water reservoir	-	-	-
	Any other means (specify)	-	-	-
Rehabilitation of waste land within lease	Area available (ha) –Green belt	-		
	Area rehabilitated	-		
	Method of rehabilitation	Barbed wire Fencing around lease area (m)	500	400000
		No. of trees	840	42000
		Maintenance		10,000
Environmental Monitoring	I) Ambient Air Quality	1		20,000
	II) Water Quality	1		10,000
	III) Noise level survey	1		10,000
	IV) Ground Vibration study			180000
	V) Others (Please specify)			
Total Expenditure (Rs.)				672000

Summary of Year-wise Proposal for Year 2022-23 for Item No. 8.3

Items	Details	Proposed	Actual	Remarks
Dump management	Area afforested (ha)	-	-	-
	No of saplings planted	-	-	-
	Cumulative no of plants	-	-	-
	Cost including watch and care during the year	-	-	-
Management of worked out benches	Area available for rehabilitation (ha)	-	-	-
	Afforestation done(ha)	-	-	-
	No of saplings planted in the year	-	-	-
	Cumulative no of plants	-	-	-
	Any other method of rehabilitation (specify)	-	-	-
	Cost including watch and care during the year	-	-	-
Reclamation and Rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /slope wise	-	-	-
	Void filled by waste /tailings	-	-	-
	Afforestation on the backfilled area	-	-	-
	Rehabilitation by making water reservoir	-	-	-
	Any other means (specify)	-	-	-
Rehabilitation of waste land within lease	Area available (ha) –Green belt	-	-	-
	Area rehabilitated	-	-	-
	Method of rehabilitation	Barbed wire Fencing around lease area (m)	500	40000
		No. of trees	800	40000
		Maintenance		10,000
Environmental Monitoring	I) Ambient Air Quality	1		20,000
	II) Water Quality	1		10,000
	III) Noise level survey	1		10,000
	IV) Ground Vibration study			180000
	V) Others (Please specify)			
Total Expenditure (Rs.)				670000

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 existing excavations in the area will be developed by opencast method of mining by adoption of drilling & short-hole blasting. Exploitation and transportation of mineral are to be carried out by tippers/trucks means. Bench height is maintained 6m. There is no problem of ground water/surface water, but causes of disaster can't be ruled out. Therefore, all the statutory precautions shall be undertaken into account as per mines Act, Mines Rules 1955, MMR 1941 and MCDR 1988. Disaster Management plan is a comprehensive and structured system for ensuring the prevention of risks / disasters involved. The principles used to priorities work are as follows.

- ❖ Priority must be given to human safety and health, where it is seriously threatened.
- ❖ Acute problems must be addressed before long term problems.
- ❖ Measures affecting a large population must be given priority over measures benefiting a smaller number of people.

A major emergency in a mine is one that may cause serious injury or loss of life to the workers engaged in the mining and allied operations. Therefore the first action under the disaster management is the identification of risks involved and their priorities. From this risk assessment the identified hazards are as below:

i). **Use of explosive and the blasting operation:**

The explosives may cause death or injury in the mine area. The nearest habited village is about 3km away from proposed mine. All the precautions as laid down by DGMS and Explosive department shall be adhered to. The blasting shall be carried out using Delay detonators, Proper stemming and charging of holes. Besides for monitoring the vibration effects, on daily basis, vibration measuring equipment shall be procured, there by monitoring daily vibrations due to blasting.

ii). **Slope failures:**

The mining is proposed from top level and gradually advances towards lower levels. Height of benches will be kept 6m with advancement of sub benches 3m height. It is also proposed that when benches shall reach the ultimate pit limit, soil will be spread over the benches for the purpose of plantation. In that case chances of slope failures will be negligible. However there is no history of any slope failure in adjoining quarry belt.

iii). **Solid waste generation, their disposal and rehabilitation:**

No topsoil shall be generated incidental to mining of benches, if any inter-burden soil is generated, that will be stacked separately but not in near future or during this plan period. The retaining wall will be made along the periphery of stacks. The stacks will be temporary in nature and soil will be spread over for the purpose of plantation.

iv). Proper training on the use of equipment's:

Proper training on use of compressor and Jack hammer shall be imparted to operators.

v). Development of Green belt:

The green belt development program will help in:

- Prevention of dust (leaves acting as a sink) and screening noise.
- Maintaining ecological balance.
- Increasing aesthetic value. Plantation will be under taken towards the southeastern flank, earmarked as green belt covering an area of 0.3604 hectares where by 3590 trees shall be planted on the year wise basis.

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 re-open in near future.

At the time of temporary discontinuance of mine notice (as per rule 24 of MCDR, 1988 & Reg. 6 of MMR 1961) shall be sent to IBM and Mines Safety authorities. Notice shall be accompanied as per rule 24 of MCDR, 1988, vide Form No. D-1. All the precautionary steps shall be taken into account in the respect of care & maintenance.

In the event of temporary discontinuance of mining operations or incomplete program due to a Court order or due to statutory requirements or any other unforeseen circumstances, it would be necessary to take appropriate measures for care, maintenance and monitoring status of unplanned discontinued mining operations expected to reopen in near future.

With the objective in mind that the mining operations can start immediately after the causes as above have been removed it would be necessary to carry out maintenance and monitoring of the mines as detailed below:

Monitoring:

- Carry out mine inspections daily by qualified staff to ensure that the workings remain safe for restarting work.
- Monitor the quality of Air & Water as per CPCB guide lines or as per IBM guide lines.

MAINTENANCE:

Carry out maintenance of the following in such a way as would have been done as if the mines were operating:

Retaining walls, haul roads, Fencings around the mine excavations, checking and maintenance of machines and equipment's, Drinking water arrangements, mine office, first aid stations etc.

To carry out the above functions necessary staff shall continue to be employed at the mines under intimation to the authority under whose orders the mining operations were closed temporarily.

Caution:

It is worth mention here that all the above proposals become inoperative because in most of the cases and in particulars the court orders the lessees are prohibited from entering the mining areas even for carrying out functions necessary for safety of maintenance personnel or even the neighboring habitat.

8.6 Financial Assurance: (Rule 27(1) of Mineral Conservation and Development Rules, (2017)

The area considered for financial assurance during the proposal period of 'Review of Mining Plan' is calculated based on the Financial Area Assurance Plan (Plate No. 16) and the same is given in following table.

The table indicate that the total 9.9 hect. area out of 48 hectare will be put in use for the period during year November 2018-19 to 2022-23 of mining. The detailed calculation for amount of financial assurance is as under:

1	Area considered for calculation	9.9ha
2	Financial assurance amount	Rs. 3,00,000/ Ha (Rule 27 of MCDR, 2017, Subject to minimum of Rs. Ten lakhs
3	Total amount for Financial assurance	$(9.9 \times 300000) = \text{Rs} 29,70000/-$

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

S.No.	Head	Area put on use at start of the plan (in hectare) A	Additional required during plan period (in hectare) B	Total area (in hectare) C=(A+B)	Area considered as fully reclaimed & rehabilitated (in hectare) D	Net area considered for calculation (in hectare) E = (C - D)
1	Area under mining (old pit, Prop. Pit & trench including road)	6.9	3.0	9.9	0	9.9
2	Storage for top soil	0	0	0	0	0
3	Waste dump site	0	0	0	0	0
4	Mineral storage*	0	0	0	0	0
5	Infrastructure - workshop, administrative building etc.	0	0	0	0	0
6	Tailing pond	0	0	0	0	0
7	Effluent Treatment Plant	0	0	0	0	0
8	Mineral Separation Plant	0	0	0	0	0
9	Township area	0				
10	Others(retaining wall, channels)*	0	0	0	0	0
11	Undisturbed area including forest and statutory 7.5 mine barrier	-	-	38.1	-	0
	Grand Total	6.9	3.0	48	0	9.9

* Already accounted for and is included in item 1 above.

This is A Category mine where upon the Financial assurance @Rs.3,00,000/- per hectare, thus for an area of 9.9hectares, the financial assurance shall amount to Rs. 29,70,000/= The financial assurance for amount of Rs. 29,70,000 is submitted to IBM with this final submission. The financial assurance already submitted for Rs 3,43,000/= with the previous plan may kindly be returned

Dated: 04/11/2018

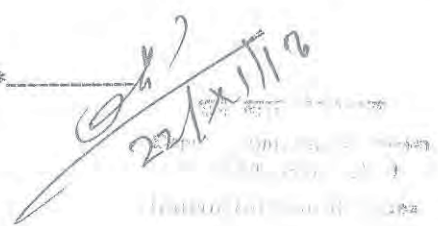
Place: Srinagar.



G.N.CHOWDRY

M.Sc Geology

Geo technical consultant


22/11/18