# SCHEME OF MINING OF KOILARI DOLOMITE MINE

## (AREA: 8.0930 HECTARES)

| | | |
|---|---|---|
| MINE | : | KOILARI DOLOMITE MINE |
| MINERAL | : | DOLOMITE |
| AREA | : | 8.0930HECTARE |
| VILLAGE | : | KOILARI |
| TEHSIL | : | KATANGI |
| DISTRICT | : | BALAGHAT |
| STATE | : | MADHYA PRADESH |
| AREA IN FOREST | : | YES(COMPARTMENT NO P793) |
| LAPSE PERIOD | : | 2015-16 TO 2017-18 |
| SOM PERIOD | : | 2018-19 TO 2019-20 |

**CATEGORY OF MINE – "A"**

**[SUBMMITED UNDER RULES 42(A) OF MPMMR 1996]**

**LESSEE:**


M/S EMKE MINERALS

PROP. SHRI SHAILENDRA KAWALE (LEGAL HEIR)

R/O- WARD NO. 28, SENH NAGAR, STREET NO 4 BALAGHAT

DISTT.-BALAGHAT [M.P.]

PIN: 481001

**MOBILE NO. 8982744435**


APPROVED

DIRECTOR
GEOLOGY & MINING
MADHYA PRADESH

**PREPARED BY:**


R. K. CHOUBEY

(M. Sc. GEOLOGY, M. Sc. ENVIRONMENT & ECOLOGY)

REGN. NO. RQP/DGMMP/19/2013, VALID UPTO 28/04/2018

**1254,** VIVEKANAND WARD, DAYA NAGAR, JABALPUR (M.P.)

TEL./FAX – **0761 – 4032247,** MBN – **94253-24774**

E-mail:- **engeomin_consultant@yahoo.com**


**MAY – 2018**

# SCHEME OF MINING OF KOILARI DOLOMITE MINE

## (AREA: 8.093 HECTARES)

## [PREPARED UNDER RULES NO. 42(A) OF MPMMR 1996]

## CHAPTER - 1

### INTRODUCTORY:

The Koilari Dolomite mining lease was granted to M/s EMKE Minerals of Balaghat by State Govt. for 20 years i.e. from 06/06/1975 to 05/06/1995. As per new ordinances lease period has been extended upto 24/05/2025 (Lease deed enclosed.).Last mining plan was approved vide letter no. BGT/Dolomite/MPN-130/NGP dated 20/03/201997 valid up to 31/03/2000. Mine is closed due to litigation This Scheme of mining is prepared under rule 42(A) of MPMMR 1996.

**Details of the area are given below:**

| S. No. | Particulars | Details |
|---|---|---|
| 1 | Date of execution | 06/06/1975 |
| 2 | Date of first opening | 06/06/1975 |
| 3 | Area in hect., with forest / non-forest break up | 8.093Hect. in forest area.(Forest Compound No. P793 Range:- Katangi , Division:- South Balaghat(.P.) |
| 4 | Date of last approved documents/its proposal period | Last Mining Plan was approved vide letter no. BGT/Dolomite/MPN-130/NGP dated 20/03/201997 valid up to 31/03/2000. |
| 5 | Proposal period as per earlier approved Mining Plan | 1995-96 to 1999-2000 |
| 6 | Lease period( extension granted) | (50Years) From 06/06/1975 to 05/06/2025 |
| 7 | Lapsed period | 2015-16 To 2017-18 |
| 8 | Present SOM period | 2015-16 To 2019-20 |
| 9 | Proposal Period present documents (SOM) | 2018-19 To 2019-20 |

### DETAILS OF OTHER LEASES HELD:

Details of other leases held by lessee is given below:

| S. No. | Name & state Govt. Letter No. | Area | Present status |
|---|---|---|---|
| N.A. | | | |

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## 1.0 GENERAL:

### a) Name of Lessee

| | |
|---|---|
| Name of Lessee: | M/s EMKE Minerals ,Prop. Shri Shailendra Kawale **(Legal Heir)** |
| Address: | Ward No. 28, Senh Nagar, Street no 4 Balaghat |
| District: | Balaghat |
| State: | Madhya Pradesh |
| Pin code: | 481001 |
| Phone No. | 8982744435 |

### b) Status of Lessee:

Private Individual: M/s EMKE Minerals Prop. Shri Shailendra Kawale.

### c) Mineral(s) which is / are included in the prospecting license (For Fresh grant):

It is a running mine.

### d) Period for which the mining lease is required to be renewed:

N.A.

### e) Mineral(s) which is / are included in the letter of Intent / lease deed:

Dolomite.

### f) Mineral(s) which is the lessee intends to mine:

Dolomite.

### g) Name of Recognized Person under minor mineral rule 1996:

### Name of the RQP preparing the Scheme of Mining:

| **Name** | **R.K. Choubey** |
|---|---|
| Registration No. | RQP/DGMMP/19/2013 |
| Date of grant / Renewal | 29 April 2013 |
| Valid up to | 28 April 2018 |
| Address | 1254, Vivekanand Ward, Daya Nagar, Jabalpur (M.P.) |
| District | Jabalpur |
| State | M.P. |
| Pin code | 482002 |
| Phone No. & Mobile No. | 0761- 4032247, 94253-24774 |
| Fax. | 0761- 4032247 |
| Email | engeomin_consultant@yahoo.com |

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# CHAPTER - 2

## 2.0 LOCATION AND ACCESSIBILITY:

### a) Lease Details (Existing Mine):

Name of mine : Koilari Dolomite Mine

**Lat/long of any boundary point:**

Toposheet : No. 55 O/10
Latitude : N- 21°39'49.10" to N- 21°40'7.27"
Longitude : E 79°35'38.26" to E 79°35'55.22"

Date of grant of lease: W.e.f. 06/06/1975
Period/Expiry Date : (50Years) From 06/06/1975 to 05/06/2025.

Name of Lessee : M/s EMKE Minerals
Prop. Shri Shailendra Kawale (Legal Heir)
Address : Ward No. 28, Senh Nagar, Street no 4 Balaghat
District : Balaghat
State : Madhya Pradesh
Pin code : 481001
Phone No. : 8982744435

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

| District & State | Taluka | Village | Khasra No. | No. / Plot range compartment No. | Area in Hect. | Ownership Occupancy |
|---|---|---|---|---|---|---|
| Balaghat (MP) | Katangi | Koilari | 27/1 | P 793 | 8.093 Hect.(20.00Acres) | M/S EMKE Minerals |

Total lease area : 8.093 Hect.(20.00Acres)
Village : Koilari
Taluka : Katangi
District : Balaghat
State : Madhya Pradesh

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**Whether the area falls under Coastal Regulation Zone (CRZ) if yes, details:**

N.A.

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

**(a) Communication:**

The lease area is about 72 Km. Distance from Balaghatr district HQ. Usually one can reach the area by Balaghat -Katangi state highway no. SH-54 in West direction from Balaghat.

The lease area is connected with Balaghat by a 72 km. Long road upto Balaghat on Katangi – Tirodi road and from there to Koilari by about 30 km. Long road. The lease area is situated towards, West of Koilari on a plateau and is connected by a 3.0 km. long major road. Katangi is the nearest railhead, 30 km. away from the area towards NE.

Electric Power and water are not available in the lease area and in its vicinity.

Rest house hospital and education facilities are available at Katangi, the Tehsil H.Q., and 30 km. away from the area towards north east. Education facilities upto middle class standard are available at Koilari, 3.0 km. away from the area

**(b) Other (Nearest):**

**(i) Railway Station:** The nearest rail-head is Katangi station at 30 km distance.

**(ii) Road:** SH-54 Katangi- Waraseoni Road at a distance of 21km in North-east direction.

**(iii) PWD Rest House:** Rest house situated in Katangi.

**(iv) Village:** Village Koilari situated at 3.0 km. East of the lease area.

**(v) Thana:** Koilari is falling under Katangi range.

**(vi) Hospital:** District Hospital Katangi Situated at a distance of about 30 km from the lease area.

**Toposheet No. with latitude & longitude of all corner boundary point/pillar:**

Toposheet No. 55 O/10.

| | S. No. | Latitude | Longitude |
|---|---|---|---|
| Co-ordinates of Boundary Pillars | 1 | N 21°39'49.10" | E 79°35'38.60" |
| | 2 | N 21°39'51.63" | E 79°35'38.27" |
| | 3 | N 21°39'56.44" | E 79°35'38.26" |
| | 4 | N 21°39'58.64" | E 79°35'40.95" |
| | 5 | N 21°39'59.74" | E 79°35'40.31" |
| | 6 | N 21°40'1.54" | E 79°35'41.69" |
| | 7 | N 21°40'4.32" | E 79°35'47.71" |
| | 8 | N 21°40'7.27" | E 79°35'53.74" |
| | 9 | N 21°40'5.49" | E 79°35'55.22" |
| | 10 | N 21°40'02.79" | E 79°35'51.38" |
| | 11 | N 21°39'56.97" | E 79°35'43.37" |
| | 12 | N 21°39'55.76" | E 79°35'42.72" |
| | 13 | N 21°39'51.05" | E 79°35'43.01" |

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R. K. Choubey
RQP/DGMMP/19/2013

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

The lease area has been marked on Survey of India topographical map on a scale of 1:50000 showing area boundaries and existing and proposed access routes and a general location map on a scale of 1 cm = 2.5 km.

Enclosed as plate no. 2.

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# CHAPTER - 3

## 3.0 DETAILS OF APPROVED MINING PLAN / SCHEME OF MINING (if any):

### 3.1 Date and reference of earlier approved MP/SOM:

Last Mining Plan was approved vide letter no. BGT/Dolomite/MPN-130/NGP dated 20/03/201997 valid up to 31/03/2000.

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

No Modified Mining Plan Submitted During Past Period.

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

[i] **EXPLORATION:**

**Following was the proposal for exploration in approved Scheme of Mining.**

.last mining plan no borehole proposed.

[ii] **DEVLOPMENT:**

**PROPOSAL:**

**Following proposal of excavation was given in approved of Scheme of Mining:**

| Pit no./ trench | Broken area in $m^2$ | Pit Bottom Area $m^2$ | Surface RL in m. | Pit bottom RL in m. | Benches in m. | | | | Over all slope |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type | Bench No. | (Av) Ht. | (Av) Width | |
| Pit-1 | 8712 | 8500 | 332 | 322 | Soil/Mineral | B-1 | 10 | - | 45 |
| Pit-2 | 2794 | 2600 | 332 | 327.50 | | B-1 | 4.5 | - | |
| Pit-3 | 950 | 900 | 332 | 328 | | B-1 | 4 | - | |
| Pit-4 | 1950 | 1800 | 332 | 326 | | B-1 | 6 | - | |
| Total | **14406** | **13800** | | | | | | | |

**Location is shown in the approved five year / development and production plan and section.**

**DEVELOPMENT:**

One development bench in soil and 1 production bench in Dolomite were proposed.

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**ACHIVEMENT (as per present surface plan):**

| Pit no./ trench | Broken area in $m^2$ | Pit Bottom Area $m^2$ | Surface RL in m. | Pit bottom RL in m. | Benches in m. | | | | Over all slope |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type | Bench No. | (Av) Ht. | (Av) Width | |
| Pit-1 | 7762 | 7000 | 347 | 339 | Soil/Mineral | B-1 | 4.5 | - | $75^0$ |
| | | | | | | B-2 | 4.0 | Floor | |
| Pit-2 | 1175 | 1000 | 347 | 344 | Soil/Mineral | B-1 | 3.0 | Floor | |
| Pit-3 | 162 | 100 | 347 | 344 | Soil/Mineral | B-1 | 3.0 | Floor | |
| Total | **9099** | **8100** | | | | | | | |

**Refer Surface Plan.**

**OB MANAGEMENT:**

About 1013$m^3$ mine soil mixed with murrum was to be generated as per approved mining plan.

**SOILWITH MURRUM:**

| Five Years Proposal | | | Five Year Achievement | | |
|---|---|---|---|---|---|
| Generation $m^3$ | Disposal $m^3$ | | Generation | Disposal $m^3$ | |
| | For afforestation | To be stored | | For afforestation | Stored |
| 1013 | Proposal of soil mixed with murrum . | No proposal | Nil | Nil | Nil |

Generated soil is used by local people for agriculture, hence no soil dump seen in the area.

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**WASTE:**

About 1466.66m$^3$ mine waste was to be generated as per approved mining plan.

| Five Years Proposal | | | | Five Year Achievement | | | |
|---|---|---|---|---|---|---|---|
| | Disposal | | | | Disposal | | |
| Generation m$^3$ | Backfilling m$^3$ | External dumping m$^3$ | Others m$^3$ | Generation m$^3$ | Backfilling m$^3$ | External Dumping m$^3$ | Others m$^3$ |
| 1466.66m$^3$ mine waste was generated as per approved mining plan | No proposal | Northern & Southern side dumping in the 7.5 B.Z. | No proposal | 2275 m$^3$ old dump | Nil | Nil | Nil |

There are 2 old Waste dumps seen in the lease area.

[iii] **EXPLOITATION:**

**Year wise proposal and achievement from the mine is given in table below:**

| | Proposal | | | | |
|---|---|---|---|---|---|
| | Year | Soil With Murrum m$^3$ | Waste m$^3$ | Total O.B. m$^3$ | Mineral (T) Dolomite |
| Proposal period | 1995-96 | 247 | - | 247 | 2033 |
| | 1996-97 | 179 | 200 | 379 | 1500 |
| | 1997-98 | 179 | 200 | 379 | 1500 |
| | 1998-99 | 204 | 400 | 604 | 3000 |
| | 1999-00 | 204 | 666.66 | 870.66 | 5000 |
| | **Total** | **1013** | **1466.66** | **2479.66** | **13033** |

| | Achievement | | | | |
|---|---|---|---|---|---|
| | Year | Soil With Murrum m$^3$ | Waste m$^3$ | Total O.B. | Dolomite (T) |
| Achievement period | 1995-96 | - | - | - | - |
| | 1996-97 | - | - | - | - |
| | 1997-98 | - | - | - | - |
| | 1998-99 | - | - | - | - |
| | 1999-00 | - | - | - | - |
| | **Total** | **-** | **-** | **-** | **-** |

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## [iv] AFFORESTATION PROGRAMME:

### PROPOSAL:

Proposal of 50 trees plantation in per year was given in the approved Mining Plan.,

| Year | Afforestation programme on | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Backfilled Area | | Waste Dumps | | Green Belt | | Bench / bf slope | | Other Areas | | Survival Rate |
| | Area | No. | Area | No. | Area | No. | Area | No. | Area | No. | |
| 1995-96 | - | - | - | - | 300 | 50 | - | - | - | - | 80% |
| 1996-97 | - | - | - | - | 300 | 50 | - | - | - | - | 80% |
| 1997-98 | - | - | - | - | 300 | 50 | - | - | - | - | 80% |
| 1998-99 | - | - | - | - | 300 | 50 | - | - | - | - | 80% |
| 1999-00 | - | - | - | - | 300 | 50 | - | - | - | - | 80% |
| **Total** | - | - | - | - | **1500 $m^2$** | **200** | - | - | - | - | - |

### ACHIVEMENT:

| Year | Afforestation programme on | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Backfilled Area | | Waste Dumps | | Green Belt | | Bench / bf slope | | Other Areas | | Survival Rate |
| | Area | No. | Area | No. | Area | No. | Area | No. | Area | No. | |
| 1995-96 | - | - | - | - | - | - | - | - | - | - | - |
| 1996-97 | - | - | - | - | - | - | - | - | - | - | - |
| 1997-98 | - | - | - | - | - | - | - | - | - | - | - |
| 1998-99 | - | - | - | - | - | - | - | - | - | - | - |
| 1999-00 | - | - | - | - | - | - | - | - | - | - | - |
| Total | - | - | - | - | - | - | - | - | - | - | - |

### DEVIATION AND JUSTIFICATION:

Few saplings were planted but did not survive as mine was closed, proper care could not be taken. .

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**[v] MINE RECLAMATION & REHABILATATION OF MINED OUT AREA AND MATURED DUMPS:**

| MP/SOM Period | Reclamation by backfilling in $m^2$ | Rehabilitation in $m^2$ | | | Rehabilitation of matured dumps by compaction & Afforestaton | Protective measures for dumps (gd/rw/st)* |
|---|---|---|---|---|---|---|
| | | Of bf area | Of bench / slope by Plantation | Water harvesting | | |
| **Proposal** | No proposal | No proposal | No proposal | No proposal | No proposal | No proposal |
| **Achievement** | Not done | Not done | Not done | Not done | Not done | Not done |

**3.4 Give status of compliance of violations pointed out by IBM:**

No violation noticed as per IBM records.

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

Yes suspension order issued by state govt. or central govt. Affidavit enclosed with regard to legal status.

**3.6 In case the MP/SOM is submitted under rules 9 and 10 of the MCDR 1988 or under rule 22(6) of the MCR1960 for approval of modification, specify reason and justification for modification under these rules:**

Last mining plan has been submitted under rule 22 of MCR 1960 for renewal of mining lease.

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# PART – A

# CHAPTER - 1

## 1.0 GEOLOGY AND EXPLORATION:

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

The lease area has almost flat topography with highest elevation of 412m. in east & west direction & lowest elevation of the lease area is 408m in north east part. Difference between highest and lowest elevation is 0 m. Rainy water follows natural slope direction.

**There are two existing pits & one well in the lease area, where sign of past working can be seen in dolomite. The depth of pits is 7 to 8m & well depth 20m.**

The area experiences sub- tropical climatic conditions. The temperature reaches up to $47^0$c during summer whereas during winter it goes down to $3^0$ c.

### (b) General Geology:

The regional stratigraphic sequence of the manganese bearing deposits now adopted for the Sausar series is a medication of that given by Fermor (1926) and west (1936) as mentioned in the geology of India and Burma by M.S. Krishnan is as follows:

| FORMATION | ROCKS TYPES |
|---|---|
| Minor intrusions | Leucocratic granite, granite-pegmatite and quartz veins. |
| Granitic intrusive | Gneissic granite and Ortho- gneiss. |
| **SAUSAR SERIES** | |
| **Bichua Stage** | **Dolomitic Marble, Calc Silicate Granulities With Tremolite, Actinolite Schist, Anthophyllite, Wollastonite And Grossularite.** |
| Junewani Stage | Biotitic- muscovite schist and quartz- biotitic granulite, biotitic gneiss. |
| Chorbaoli Stage | Quartzites, Quartz Muscovite and Felspathic Muscovite Schist, Occasionally. |
| **MANGANESE ORE AND GONDITE HORIZON:** | |
| Mansar Stage | Muscovite and Biotitic schist, Phyllite, Often Garnetiferrous; become gneissic where Feldspathized. Generally highly argillaceous. Hornblende-schist, calc gneiss, feldspar- muscovite- schist, biotitic granulites; commonly Garnetiferrous. |
| ----------DISCONFORMITY---------- | |
| Metamorphic | Hypersthene granite-gneiss, Biotitic gneiss, hornblende gneiss, amphibolites, etc. |

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

**Local geology of the mineral including drainage pattern:**

The area is covered by about 1 meter thick soil cover, the succession can be well seen in the existing leases and in lease area itself. There are more or less vertical alternative bands of mineral dolomite are running in the area and same influence can be seen in leased area also. The dip of the rocks in the area is varying from 40 to $45^0$.

The dolomite is white and fine-grained grained, breaks conchoidal fractures. Its hardness is about 3.2 to 3.5 and its B.D is 2.65 dolomite is also found in the area.

**The attitude of the primary bedding is as follows:**

| Strike | Dip |
|---|---|
| East-west | Vertical $45^0$ S |

**General logging of the area is as follows.**

| | | | |
|---|---|---|---|
| Recent (Sausar Series) | .... | Soil<br>dolomite | 0-1.0m<br>1.0m-20.m |
| Hardness | ..... | 3.2 to 3.5 | |
| Bulk Density | .... | 2.65(Dolomite) | |

There is evidence of post deformation secondary calcification and solidification in the area Ramification of calcite veins is common.

The topographic plan of the lease area prepared on a scale of 1: 1000 with contour interval of 1 m. depending upon the topography of the area should be taken as the base plan for preparation of geological plan. The details of exploration already carried out including evidences of mineral existence should be shown on the geological plan.

d) (i) Name of prospecting /exploration agency : Applicant himself.

| | | |
|---|---|---|
| Name of Lessee | : | M/s EMKE Minerals<br>Prop. Shri Shailendra Kawale (Legal Heir) |
| Address | : | Ward No. 28, Senh Nagar, Street no 4 Balaghat |
| District | : | Balaghat |
| State | : | Madhya Pradesh |
| Pin code | : | 481001 |
| Phone No. | : | 8982744435 |

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e) **Details of prospecting / exploration already carried out:**

Enclosed as a surface geological plan & sections (plate no. 5 & 6).

| S. No. | Name of pit/ trench/ bore hole | Size / dia / Total meterage | Logging in m. | Locations | Mineralized area / Recovery |
|---|---|---|---|---|---|
| 1 | Pit-1 | 115m X 67.49m X 8m | 0.0 to 1.0 soil 1to 8m. Dolomite | all mineralized area | By This Existing Pit all direction. Lateral Influence In Strike Direction. |
| 2 | Pit-2 | 75m X 15.55m X 3m | 0.0 to 1.0 soil 1to 3m. Dolomite | Do | |
| 3 | | 28m X 5.78m X 3m | 0.0 to 1.0 soil 1to 3m. Dolomite | | |
| 4 | Well within lease area | - | 0.0 to 1.0 soil 1.0to 19m. Dolomite | Do | |

*** Vertical Influence is considered up to the depth of 327 MRL in Dolomite Zone. Refer plate no 4, 5 & 6.**

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

There were no proposal of trial pits & Trenches given in the last mining Plan.

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

There was no proposal of borehole dug given in the last mining plan.

**iii) Details of samples analysis indicating type of sample (surface/sub-surface from pits/trenches/borehole etc) complete chemical analysis for entire strata for all radicals may be undertaken for selected samples from a NABL accredited Laboratory or Government laboratory or equivalent. Entire mineralized area may be analyzed meter wise with 10% of check samples. (At least for 10% of total samples may be analyzed in accordance to BIS and reports from NABL accredited/other government laboratory):**

2 no. of equidistance samples will be collected from existing Pits. After quartering and coning will be subjected to chemical analysis at NABL accredited laboratory.

iv) **Expenditure incurred in various prospecting operations:**

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**Rs** 10,000/-.

f) **The surface plan of the lease area may be prepared on a scale of 1: 1000 or 1: 2000 with contour interval of maximum of 10 m depending upon the topography and size of the area duly marked by grid lines showing all features indicated under Rule 42 of MPMMR1996:**

Surface Plan has been prepared on a scale of 1: 1000 with grid interval of 100m. and contour intervals of 1m. as the lease area is more or less flat.

**g) For preparation of geological plan, surface plan prepared on a scale of 1: 1000 or 1: 2000 scale specified under para 1.0 (f) of Part A of the format may be taken as the base plan. The details of exploration already carried out along with supporting data for existence of mineral, locations proposed exploration, various lithounits along with structural features, mineralized/ore zone with grade variation if any may be marked on the geological plan along with other features indicated under Rule 42 of MPMMR1996:**

Geological Plan has been prepared on a scale of 1: 1000 with grid interval of 100m. and contour intervals of 1m. as the lease area is more or less flat. All litho units and structures / mineralized zone have been marked on the plan.

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

Geological sections have been prepared as per the norms suggested above.

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

Following exploration has been proposed in view of establishing depth persistency of the mineral to the conceptual mining depth. 7 no. of boreholes have been suggested to assigned depth duly marked on the Geological Plan.

| Year | No. of boreholes | Total meterage | Crl. (Mrl) | Locations | Type (Core/RC/DTH) |
|---|---|---|---|---|---|
| 2018-19 | PBH-1 | 30m | 347 | W500 & S400 | Core drilling |
| | PBH-2 | 30m | 347 | W500 & S300 | |
| | PBH-3 | 30m | 347 | W500 & S200 | |
| | PBH-4 | 30m | 347 | W500 & S100 | |
| | PBH-5 | 30m | 347 | W400 & S100 | |
| | PBH-6 | 30m | 347 | W300 & S000 | |
| | PBH-7 | 30m | 347 | W200 & S000 | |

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

It is a Semi Mechanized mine. Profitable mining has been in past.

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

**Evaluation of area on UNFC Classification Basis:**

**Geological Axis:**

Influence of mineral Dolomite exposure in working Pits-1,2 & one well present in the lease area is taken maximum 300m along strike up to exposed depth under G2 Category. Thus about entire area is considered as mineralized.

The lease area is geologically probable from surface RL 347m. working Pits & one well as marked on geological plan and sections for this explored depth assigned G=2 for geological axis of UNFC classification.

On the basis of existing quarry & Well entire area is considered for mineralized zone.

**Details of Mineralization are as follows:**

| | |
|---|---|
| Soil | Seen in as 0.0 to1 m. in the lease area. |
| Dolomite band (90%) | Below the soil cover up to 1.0 -20m i.e. 19m.(avg.) |

In present scenario many putti plants & Detergent Industry are an existence and lease area dolomite suitable for specification of raw material having low MgO% and high $SiO_2$ % is accepted.

**Feasibility Axis**:

As this is semi- mechanized mine the feasibility study carried out for this area is considered to be of pre-feasibility status. Hence feasibility axis under UNFC for the deposit is F=2

**Economic Axis:**

On the basis of prefeasibility study economic viability of the deposit has been established presently to work out G2 = 19m (Up to Mrl 327m) thick mineral in the lease area. Hence economic axis under UNFC for the deposit is E=1.

**Note:**

332 = 122 probable + 222 PFMR

PFMR are potential resources blocked in 7.5m boundary, in ultimate pit slope, other block area left as per statute etc.

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## UNFC CATEGORIZATION OF RESERVES

**Reserves Calculations:**

**Mine-A**

1) Cat- (Mechanized )
2) Area-8.093hect (mineralized area)
3) Deposit – sedimentary
4) O.B./ soil – 0 to 1.0 m
5) Surface RL – 347 m
6) Bulk density – Dolomite-2.65 & Soil/waste considered 2.0
7) Recovery – Dolomite-90% , & 10% for waste

**CALCULATION OF RESERVE:**

Computations of reserve have been done by the cross section area method. The area between two cross section lines graphically measured and multiplied by the distance between the two section lines to get the volume and multiplied by the bulk density to get the tonnage of the mineral.

**Dolomite:-Calculation of Geological Reserve Proven: - (G2)**

**332** = Total tonnage - Excavated tonnage

| Section line | C/S Area (Sqm.) | Mean Area (Sqm.) | Distance (m.) | Vol. of Ore Body (Cum.) |
|---|---|---|---|---|
| Front of line 1-1' | 594 | 594 | 20 | 11880 |
| 1-1' to 2-2' | 2024 | 1309 | 50 | 65450 |
| 2-2' to 3-3' | 3004 | 2514 | 50 | 125700 |
| 3-3' to 4-4' | 3072 | 3038 | 50 | 151900 |
| 4-4' to 5-5' | 2330 | 2701 | 50 | 135050 |
| 5-5' to 6-6' | 1714 | 2022 | 50 | 101100 |
| 6-6' to 7-7' | 2488 | 2101 | 50 | 105050 |
| 7-7' to 8-8' | 2662 | 2575 | 50 | 128750 |
| 8-8' to 9-9' | 2434 | 2548 | 50 | 127400 |
| 9-9' to 10-10' | 2228 | 2331 | 50 | 116550 |
| 10-10' to 11-11' | 2066 | 2147 | 50 | 107350 |
| 11-11' to12-12' | 1852 | 1959 | 50 | 97950 |
| 12-12' to 13-13' | 1678 | 1765 | 50 | 88250 |
| 13-13' to 14-14' | 1534 | 1606 | 50 | 80300 |
| 14-14' Back of line | 1606 | 1606 | 41 | 65846 |
| **Total** | | | | **15,08,526 ($m^3$)** |

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**(i) Indicated Mineral Resources for Dolomite (332)**

Reserve (332) = Volume x Bulk Density x 90%

332 = **15, 08,526** $m^3$ x 2.65 x 90% = 35, 97,834T.

**Dolomite:**

P1 = Average Perimeter along lease boundary considered for loss in 7.5m boundary = 1653.2m
P2 = Average Perimeter along pit slope in UPL = 1400
Area of x section along pit slope = 182 $m^2$
P3 = Due to Block for road (Prohibited area 100m distance) =8317 $m^2$

122 = 332-222

222 = P1 x 7.5m. x B.D. x Thickness of Mineral x Recovery
= 1653.2m x 7.5m x 19m (Avg.) x 2.65 x 90%
= **5,61,860T.**

= P2 x Cross-sectional area x B.D. x Recovery
= 1400 m x 182$m^2$ x 2.65 x 90%
= 6,07,698**T.**
= P3 x Depth( m) x B.D. x Recovery
= 8317 m x 19$m^2$ x 2.65 x 90%
= 3, 76,885T
222 = (B.Z Block + Pit slope Block + Due to Block for road)
222 = (**5,61,860T** + 6,07,698T + 3, 76,885T)
222 = 15,46443T.

**Mineable reserve (122) = Insitu reserve (332) – {Blocked in BZ (222) + Blocked in slope stability (222)** + Due to Block for Road(222) **}**

122 = (35, 97,834T - 15,46443T) = 20, 51,391T.

Probable Minable Reserves for Dolomite (122) = 20, 51,391T.

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**Tabulated information is as follows:**

**I. Stratiform, Strata bound and Tabular Deposits of Regular Habit**

| UNFC Categorization = 122 | | |
|---|---|---|
| **1.Geological Axis: 2** | **G2(General Exploration) UNFC norms** | **ACTUAL** |
| | **1.Geological survey:** (i) Mapping-1:For coal, mapping 1:5000;for other minerals1:1000<br><br>(ii)Preparation of detailed topographical-cum-geological map including all surface geological features, extent of deposit, structure, location of boreholes, assay plan and sections of exploratory mine development and borehole data;<br><br>(iii) Topogrid/triangulation stations/identified fiducially linking in the maps. | **1.Geological survey:**<br>Area is surveyed and geology is marked on map prepared on 1:1000 scale. |
| | **2.Geochemical survey:** Detailed grid pattern sampling and analysis. | **2. Geochemical survey:** Chemical analysis report of pit samples annexed. |
| | **3.Geophysical survey:** Detailed and specific borehole geophysical survey. | **3. Geophysical survey: :** Mineral is proved beyond doubt through exploration (depth of well & working pit) hence it is not needed. |
| | **4.Technological:**<br>**(i)Pitting –**<br>2 to 5 per sq. km. for simple deposits;<br><br>(ii)Trenching –<br>At spacing of 200-300m;<br><br>**(iii) Drilling-**<br>closer spaced (with definite grid pattern) than that for G2 category;<br><br>For coal, i) Density of boreholes to be 12 to 15 per sq. km. depending on the complexities for geo structural proving. | **4. Technological**: Details of exploration.<br><br>(i) Details of the quarry<br>Mineral deposit uniform sedimentary having lateral influence all direction<br><br>(ii)Trenching – not done<br><br>**(iii) Drilling– not done**<br><br>i) N.A. |

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| | | |
|---|---|---|
| | ii) For opencast project grid spacing may be 100m x 50m depending on the geology, weather mantle cover, burning nature of coal. | ii) N.A. |
| | (iii) Exploratory mining and check drilling results if possible; | (iii) Exploratory mining has been carried out |
| | (iv) Sampling- systematic pit and trench sampling, core and sludge sampling for laboratory scale and bulk sample for the pilot plant scale beneficiation studies. | (iv) Grab sampling has been done from existing pit refer chemical analysis report annexure no…… |
| | **5. Petro graphic and mineral graphic study:** Refining of data on the petrographic character of rocks of the deposit and its surroundings, alterations (if any), including study of grain size texture gangue and its liberation characteristics for further refining of data | **5. Petrographic:** This study is not required. |
| | **6. Geostatistical analysis** of borehole data (thickness of ore: waste encountered in holes, assay values of samples if considered necessary. | **6. Geo-statistical analysis-not done** |
| **Feasibility Axis: 2** | **F 2 AS PER UNFC norms** | |
| | **1. Geology:** Local geology, mineralogy, identification of ore types and geometry. | 1. sedimentary form of dolomite deposit is prevalent in the lease area falling under Sausar Series of rocks. |
| | **2. Mining:** Methods, pre-production plan, development plan, manpower (rough estimate). | 2. Open cast mechanized means mining method will be continuing. Systematic & scientific mining will be carried out. 15 labours will be hired for smooth working. |
| | **3. Environment:** Base line data on environment. | 3. Existing land use pattern ,floura & fauna study had been done. Air/water/noise monitoring is carried out ones in the year. |
| | **4. Processing:** Proven laboratory scale/pilot scale beneficiation, investigation data, likely establishment, | 4. No Pilot scale beneficiation & investigation is suggested. ROM is sold directly in the market |

| | | |
|---|---|---|
| | **5.Infrastructure and services, construction activities**: Brief details | 5. Site services in the form of office/store/common room & separate toilet have been developed in the lease area. |
| | **6. Costing**: Capital and operating cost – rough estimates based on comparable mining operations. | **6.**Profitable mining has been carried *during past..* |
| | **7. Marketing**: Overview like industrial structure, demand supply relation, pricing, etc. | **7.** There is constant demand for local dolomite owing to its whiteness from wall putti & detergent industry. |
| | **8. Economic viability:** Preliminary study of cash flow forecasts. | **8.** Not required in small scale project. |
| | **9. Other factors**: Statutory provisions relating to labour, land, mining, taxation, etc. | **9.** All statutory rules & provision related to lease & labour have been observed . |
| | **Economic Inference UNFC norms** | |
| Economic Axis: 1 | 1. Detailed exploration. | By means of working Quarry. |
| | 2. Mining report / mining plan / working mines. | Regular submission of MPLN/SOM. |
| | 3. Specific end-use grades of reserves (above economic cut-off grade). | Dolomite is putti & detergent grade |
| | 4. Specific knowledge of forest/non-forest and other land use data. | NA |

I) **Mineral Reserves/Resources:**

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

| Level of Exploration | Resources in tons | Mineable reserve | Grade |
|---|---|---|---|
| G1 – Detailed exploration | - | - | - |
| G2 - General Exploration | Dolomite | Dolomite | Dolomite is wall putti detergent grade |
| | 35, 97,834T | 20, 51,391T | |
| G3 – Prospecting | - | | - |
| G4- Reconnaissance | - | | - |

**Resources and Reserves within the lease may be arrived after applying results feasibility / prefeasibility study and economic evaluation of deposit based on various factors such as:**

a) **Mining method, Recovery factor, mining losses, processing loss etc.:**

Manual mine method will be adopted, manual sorting shall be done. Recovery factor is considered to be 90% for Dolomite.

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b) **Cut off grade, Ultimate pit depth proposed:**

**Dolomite:**

Though the cut off grade established for dolomite to be used in Detergent & Putti industry is MgO 18-21%, but from the lease area Dolomite containing MgO CO3 45.12 & 46.20% is salable, hence cut off grade of Dolomite of the lease area is 17.76% MgO.

In the lease area ultimate pit depth is considered 20m. upto 327 MRL.

c) **Mineral/ ore blocked dues to benches, barriers, pillars, road, railway, river, nala, reservoir, electric line and other statutory barriers etc, under forest, sanctuaries etc. where necessary permissions are not available:**

| | UNFC Code | Quantity in tons | | Grade |
|---|---|---|---|---|
| **A. Total Mineral Reserve** | | **Dolomite** | **Total** | |
| Proved Mineral Reserve | 111 | - | - | Dolomite is wall putti detergent grade |
| Probable mineral Reserve | 122 | 20, 51,391 T | 20, 51,391 T | |
| **B. Total Remaining Resources** | | | | |
| Feasibility mineral Resource | 211 | - | - | |
| Prefeasibility mineral resource | 222 | 15,46443T | 15,46443T | |
| Measured mineral resource | 331 | - | - | |
| Indicated mineral resource | 332 | 35, 97,834T | 35, 97,834T | |
| Inferred mineral resource | 333 | - | - | |
| Reconnaissance mineral resource | 334 | - | - | |

**Following samples of the minerals (2 nos. each) have been collected and Chemical Analyzed to know its grade:**

**Dolomite:**

| Test Results | | | | | |
|---|---|---|---|---|---|
| S. No. | Test Parameter | Measurement Unit | Test Method | Test Result | |
| | | | | Sample No. 1 | Sample No. 2 |
| 1 | Loss On Ignition (LOI) | g/100g | IS 1760 | 40.70% | 41.85% |
| 2 | Silica (as $SiO_2$) | g/100g | IS 1760 | 3.08% | 2.81% |
| 3 | Calcium (as CaO) | g/100g | IS 1760 | 52.30% | 51.80% |
| 4 | Magnesium Oxide (as MgO) | g/100g | IS 1760 | 45.12% | 46.20% |
| 5 | Iron Oxide (as $Fe_2O_3$) | g/100g | IS 1760 | 1.90% | 1.92% |
| 6 | Alumina (as $Al_2O_3$) | g/100g | IS 1760 | 1.02% | 0.98% |

**The life of mine hence For Dolomite =**

**Total** Mineable reserves / Max. rate of production.

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= 20, 51,391 T /2,00,000T. = 10.25 Years say 11Yrs.



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# CHAPTER - 2

## 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:**

**Salient description of present mining methods:**

Proposed mining will be carried out by opencast mechanized means at locations shown year wise plans and sections, using excavator/loader &, dumper combination.

Results of prospecting during past, exploratory work carried out and mineralization with safety measured from different aspects with Topography also brought into consideration for delineation of mineralization & choosing working block.

Mining will be carried out by developing systematic, regular and separate benches mineral to achieve desired production.

Haulage roads 4m wide will be laid at maximum 1: 16 gradient from surface (stack yard) to pit bottom at 426mrl in Dolomite Zone.

Uniform 1 to 5m high benches in mechanized mining will be developed (however sub benching will be done to facilitate jackhammer drilling if hard portion encountered during mining (for heaving purpose only). Separate sub benches will be maintained in different grades of minerals to facilitate blending. Width of benches will be as per DGMS requirements / not less than height where as mineral bench length will be as per production requirements.

**b) Indicate year-wise tentative Excavation in Cubic Meters indicating development, ROM, pit wise as in table below:**

Proposed working is given from next five year proposal covering financial year 01/04/2015 to 31/03/2020 period. Development will be carried out by extending the existing Pits &merge into single pit & depth wise working.

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**Details of five year working are as follows:**

**Lapse Period:-** Year 2015-16 (1st Year), Year 2016-17 (2nd Year) & Year 2017-18 (3rd Year)

## YEAR 2018-19 (4th YEAR)

During this year about 11060m$^2$ area will be developed towards all direction by developing of 1.0 m (Avg.) height bench in soil from 347-346mrl and one production bench will be developed below the mineral of 5.0m height in dolomite from Rl 346-341mrl. This year about 1,70,050**T** Dolomite production will be achieved and 10% waste will be generated i.e. 7130 M$^3$ /14260 (T) & Soil will be generated 11060 M$^3$/22120(T) . Separate soil and waste dumped will be formed. Advancement will be done towards northern part of the lease area as shown in year wise dev. (Refer y.ear wise development and production chart).

## YEAR WISE CALCULATIONS:

| YEAR 2018-19 (4th YEAR) | | | | | | |
|---|---|---|---|---|---|---|
| **Bench** | **B-1 (Soil)** | **Dolo. B-2** | **Total Dolo. in (T)** | **Soil M$^3$/T** | **Waste M$^3$/T** | **SR = OB : ore in T.** |
| **RL in m.** | **347-346** | **346-341** | | | | |
| a) Area of excavation M$^2$ | 11060 | 14260 | | | | |
| b) Avg. height | 1.0(Avg.) | 5 | | | | |
| c) Vol. of bench excavation M$^3$ | 11060 | 71300 | 1,70,050 | 11060/ 22120 | 7130/14260 | 1:0.21 |
| d) Prod. of Dolomite (90%) T | - | 1,70,050 | | | | |
| f) Intercalated Waste (10% M$^3$/T. | - | 7130/14260 | | | | |
| g) OB Soil M$^3$/T. | 11060/22120 | - | | | | |
| **Total** | | | **1,70,050** | **11060/ 22120** | **7130/ 14260** | |

SR = OB in T. : ore in T.36, 380T: 1, 70,050T = 1 : 0.21

B D of Dolomite = 2.65, B.D of Waste & soil considered 2.0

Total Prod. Dolomite = 1,70,050T Waste =7130 M$^3$ /14260 (T) & Soil= 11060 M$^3$/22120 (T)

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**YEAR 2019-20 (5th YEAR)**

During the year no area will be freshly excavated and working will be done below the previous year working & two production benches will be developed of 5.0m & 5.0m height in dolomite from Rl 341-336mrl & 336-331mrl. This year about **2, 00,000T** Dolomite production will be achieved and 10% waste will be generated i.e. 8385 $M^3$/16770T. Separate soil and waste dumped will be formed. Advancement will be done towards northern part of the lease area as shown in year wise dev. (Refer year wise development and production chart).

**YEAR WISE CALCULATIONS:**

| YEAR 2019-20 (2nd YEAR) | | | | | | |
|---|---|---|---|---|---|---|
| **Bench** | **Dolo. B-3** | **Dolo. B-5** | **Total Dolo. in (T)** | **Soil $M^3$/T** | **Waste $M^3$/T** | **SR = OB : ore in T.** |
| **RL in m.** | **341-336** | 336-331 | 2,00,000 | - | 8385/16770 | 1:0.08 |
| a) Area of excavation / cross section $M^2$ | 14980 | 1791.6 | | | | |
| b) Avg. height | 5.0(Avg.) | 5.0(Avg.) | | | | |
| c) Vol. of bench excavation $M^3$ | 74900 | 8958 | | | | |
| d) Prod. of Dolomite (90%) T | 1,78,636 | 21364 | | | | |
| f) Intercalated Waste (10% **$M^3$/T.** | 7490/14980 | 895/1790 | | | | |
| g) OB Soil **$M^3$/T.** | - | - | | | | |
| **Total** | | | **2,00,000** | - | **8385/16770** | |

SR = OB in T. : ore in T. **16770**T: 2, 00,000T = 1 : 0.08

B D of Dolomite = 2.5, B.D of Waste & soil considered 2.0

**Total Prod. Dolomite** =2, 00,000T **Waste = 8385 $M^3$/16770T**

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## PRODUCTION OF DOLOMITE SOIL AND WASTE IN PROPOSAL PERIOD:

| Year | Production T | Soil $M^3$/ T | Waste $M^3$/ T | Total O.B in $M^3$/ T | Ratio |
|---|---|---|---|---|---|
| 2015-16 | Lapse Period | | | | |
| 2016-17 | | | | | |
| 2017-18 | | | | | |
| 2018-19 | 1,70,050 | 11060/22120 | 7130/14260 | 18190/36, 380 | 1:0.21 |
| 2019-20 | 2, 00,000 | - | 8385/16770 | 8385/16770 | 1:0.08 |
| **Total** | **3,70,050T / 1,39,641 $M^3$** | **11060$M^3$ /22120 T** | **15,515 $M^3$ / 31,030 T** | **26,575$M^3$ / 53,150 T** | |

In present scenario many putti plants (Ultra Tech, JK & local Plants) are an existence and lease area dolomite suitable for specification of raw material having low MgO% and high $SiO_2$ % is accepted.

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I. **Insitu Tentative Excavation:**

**Dolomite:**

| Year | Pit no. | Total Tentative Excavation (Cu m) | Top Soil (Cu m) | OB/SB/IB (Cu m) | ROM (Cu m) | | Mineral Reject |
|---|---|---|---|---|---|---|---|
| | | | | | Ore (Cu m)* | Mineral Reject (Cu m) | |
| 2015-16 | Lapse Period | | | | | | |
| 2016-17 | | | | | | | |
| 2017-18 | | | | | | | |
| 2018-19 | 1 | 82360 | 11060 | 7130 | 64170 | Nil | Nil |
| 2019-20 | 1 | 83858 | - | 8385 | 75473 | Nil | Nil |

There is no mineral reject, ROM will be sold after manual sorting and sizing.

I. **Dump rehandling (for the purpose of recovery of mineral):**

**There will be no dump re-handling in account of recovery of mineral.**

**Estimated available material (Cum):**

| Dump identification/no | Year wise handling (Cu m) | Estimated recovery of saleable material (Cu m)* | Reject (Cu m) |
|---|---|---|---|
| N.A. | | | |

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c) **Enclose Individual year wise development plans and sections showing pit layouts, dumps, stacks of mineral reject, if any, etc. n 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:**

Five Year Development Plan is enclosed.

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

N.A.

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

Haulage roads 6m wide will be laid at maximum 1: 16 gradient from surface (stack yard) to pit bottom at 339mrl in Dolomite.

i. **Following waste dumps are available in the area at present:**

There are 2 old waste dump is present in the area. **Refer Plate No. 4.**

| Dump No. | Type Active / inactive | Dump Diamation = Quantity $m^3$ | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|
| Dump-1 | Active | 61.5m X 16.83m X2.0m =2070 $m^3$ | 1035 | 2.0 | Lying in the Western boundary of the lease area & old dump will be used in road maintenance. |
| Dump-2 | | 27.34m X 7.5m X1.0m =205 $m^3$ | 205 | 1.0 | Lying in the Southern part of the lease area old dump will be used in road maintenance. |
| **Total** | | **2275 $m^3$** | **1240$m^2$** | | |

ii) **Following Minerals Stack dumps are available in the area at present:**

There is 1 mineral stack dump is present in the area.( **Refer Plate No. 4.)**

| Dump No. | Type Active / inactive | Dump Diamation = Quantity $m^3$ | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|
| Dump-1 | Active | 50m X 13.3m X1.0m =665 $m^3$ | 665 | | There are few hips of mineral stacks lying in the Northern part of the lease area. |
| **Total** | | **665 $m^3$** | **665$m^2$** | | |

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iii) **Following dumps will be available at the end of proposal period:**

**Soil dumps:**

| Dump No. | Type Active / inactive | Dump Diamation = Quantity $m^3$ | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|
| SD1 (2018-19) | Active | 589.86m X 7.5m X2.5m =11060 | 4424 | 2.5 | Will be kept in NW & SW part of the B.Z |
| **Total** | | **11060 $m^3$** | **4424$m^2$** | | |

**Waste dumps:**

During the proposal period about (15,515-**7130**)= 8385 $m^3$ waste will be generated which will be temporary dumped in south east part of the lease area.

| Dump No. | Type Active / inactive | Dump Diamation = Quantity $m^3$ | Base area $m^2$ | (avg.) Height m. | Remark |
|---|---|---|---|---|---|
| TWD1 (2015-16) | - | - | - | - | 5006$m^3$ /10,012t waste will be used for reclamation of mined out area in the Northern part of B.Z. upto 347mrl & reset quantity 2124 $m^3$ will be used in road maintenance .(total quantity will be used **7130** $m^3$) |
| TWD2 (2016-17) | - | - | - | - | |
| TWD3 (2017-18) | - | - | - | - | |
| TWD4 (2018-19) | - | 7130 | - | - | |
| TWD5 (2018-20) | Active | 372.67m x7.5m x3m=8385 | 2795 | 3.0(avg.) | Will be kept in SE part of the B.Z. area. |
| **Total** | | **15,515 $m^3$** | **2795$m^2$** | | |

**Refer Plate No. 6.**

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

**(i) Conceptual Development:**

Present mining is by open cast manual confined within the ultimate pit limit and in future it will be done by manual way throughout the life of mine i.e. 11 years as and when required. Infrastructure & domestic electric line will require diversion form mining area for safety of the working will be done accordingly.

Conceptual plan is made on present knowledge of 122 reserves position will be proposed for reclamation/rehabilitation unless proved to be non-mineralized.

**(a) Following pits are available in the area at present:**

| Pit no./ trench | Broken area in $m^2$ | Pit Bottom Area $m^2$ | Surface RL in m. | Pit bottom RL in m. | Benches in m. | | | | Over all slope |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type | Bench No. | (Av) Ht. | (Av) Width | |
| Pit-1 | 7762 | 7000 | 347 | 339 | Soil/Mineral | B-1 | 4.5 | - | $75^0$ |
| | | | | | | B-2 | 4.0 | Floor | |
| Pit-2 | 1175 | 1000 | 347 | 344 | Soil/Mineral | B-1 | 3.0 | Floor | |
| Pit-3 | 162 | 100 | 347 | 344 | Soil/Mineral | B-1 | 3.0 | Floor | |
| Total | **9099** | **8100** | | | | | | | |

**Locations Are Shown In the Surface Plan Plate No. 4**

**(b) Following pits will be available at the end of SOM period:**

| Pit no./ trench | Broken area in $m^2$ | Pit Bottom Area $m^2$ | Surface RL in m. | Pit bottom RL in m. | Benches in m. | | | | Over all slope |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type | Bench No. | (Av) Ht. | (Av) Width | |
| Pit-1 | 18822 | 1700 | 347 | 331 | Soil | B-1 | 1.0 | 1.0 | $45^0$ |
| | | | | | Dolomite | B-2 | 5.0 | 5.0 | |
| | | | | | | B-3 | 5.0 | 5.0 | |
| | | | | | | B-4 | 5.0 | Floor | |
| Pit-2 | 1175 | 1000 | 347 | 344 | Soil/Mineral | B-1 | 3.0 | Floor | $75^0$ |
| Pit-3 | 162 | 100 | 347 | 344 | Soil/Mineral | B-1 | 3.0 | Floor | |
| Total | **20159** | **2975** | | | | | | | |

**Locations Are Shown In The Composite Five Year Plan & Section, Plate No. 6.**

Ore to be generated during proposal period = **3,70,050T**

Waste to be generated during proposal period = 15,515 $m^3$

Soil to be generated by the end of SOM period = 11060$m^3$

c) **Following pits will be available at the end of conceptual period:**

| Pit no./ trench | Broken area in $m^2$ | Pit Bottom Area $m^2$ | Surface RL in m. | Pit bottom RL in m. | Benches in m. | | | | Over all slope |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type | Bench No. | (Av) Ht. | (Av) Width | |
| Pit-I | 60228 | 37300 | 347 | 331 | Soil | B-1 | 1.0 | 1.0 | $45^0$ |
| | | | | | Dolomite | B-2 | 5.0 | 5.0 | |
| | | | | | | B-3 | 5.0 | 5.0 | |
| | | | | | | B-4 | 5.0 | 5.0 | |
| | | | | | | B-5 | 4.0 | Floor | |
| Total | 60228 | 37300 | | | | | | | |

**Locations Are Shown In the Conceptual Plan & Sections Refer Plate No. 10**

Ore to be generated during conceptual period i.e. from the end of proposal period to end of conceptual period (mine life) = 16, 81,341 T.

Waste to be generated during conceptual period i.e. from the end of proposal period to end of conceptual period (mine life) = 70,496$m^3$/1,40,992T.

Soil to be generated up to conceptual period = 40,069$m^3$ / 80,138T

**Conceptual OB dump management:**

**Following waste dump will be available at the end of conceptual period:**

| Dump No. | Type Active / Inactive | Quantity $m^3$ / T | Quantity $m^3$ x (CF/SF = 112%) | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|---|
| CWD | Active | 70,496$m^3$/ 1,40,992T | 78,955 $m^3$ / 1,57,910T | - | - | All waste will be used in backfilling for conceptual period. |
| Total | | 70,496$m^3$/ 1,40,992T | 78,955 $m^3$ / 1,57,910T | - | - | |

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**Following Five year Waste Dump & conceptual waste Dump details:**

| Waste generation during proposal period in $m^3$ / T | Waste generation during conceptual period in $m^3$ / T | Total waste in $m^3$ / T | Quantity $m^3$ / T x (CF/SF = 112%) | Remarks |
|---|---|---|---|---|
| 8385 $m^3$ / **16,770T** | 70,496$m^3$/ 1,40,992T | **78,881 $m^3$ /** 1,57,762T | **88346 $m^3$ /1,76,692T** | All waste will be used in backfilling for conceptual period. |

**Following Soil dump will be available at the end of conceptual period:**

| Dump No. | Type Active / Inactive | Quantity $m^3$ / T | Quantity $m^3$ / T x (CF/SF = 112%) | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|---|
| CSD | Active | 40,069$m^3$ / 80,138T | 44,877$m^3$/ 89,754T | - | - | soil cover for plantation |
| **Total** | | **40,069$m^3$ / 80,138T** | **44,877$m^3$/ 89,754T** | - | - | |

**Following Five year Soil Dump & conceptual Soil Dump details:**

| Soil generation during proposal period in $m^3$ / T | Soil generation during conceptual period in $m^3$ / T | Total waste in $m^3$ / T | Quantity $m^3$ / T x (CF/SF = 112%) | Remarks |
|---|---|---|---|---|
| **11060$m^3$/ 22120T** | 40,069$m^3$ / 80,138T | 51,129$m^3$ /1,02,258T | 57264$m^3$/11,4528 | soil spreading plantation |

**Proposal for Five Year Backfilling Details:**

**Area $m^2$ x depth m**
**PIT-1=598 $m^2$ X 8m =4784 $m^3$**
**PIT-3=74 $m^2$ X 3m =222 $m^3$**

**Total area =672 & Total Vol.- 5006 $m^3$**

**During fourth year about 7130$m^3$ waste will be generated from which 5006$m^3$ waste will be used for backfilling the 7.5m barrier zone in fourth year (2018-19).**

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## CONCEPTUAL BACKFILLING DETAILS:

Pit-1, Backfilling details:-

Pit-1, Backfilling details:-

| | | |
|---|---|---|
| (End of Five )**PIT-1** | **=598 $m^2$ X 8m** | **=4784 $m^3$** |
| (End of Five )**PIT-3** | **=74 $m^2$ X 3m** | **=222 $m^3$** |
| (Conceptual Backfilling) **PIT-1** | = 8764 $m^2$ X (8-9) m | = **78,881** $m^3$ |
| Total backfilling area | = 9436 $m^2$ | |
| Total volume of Backfilling | = 83887 $m^3$ | |
| Total volume of Backfilling | =83887 $m^3$ x 112% | =93953 $m^3$ |
| Soil Topping Vol. | = 83887 $m^2$x (1) m | =83887 $m^3$ |
| Total Soil spreading for Conceptual period area | =83887$m^3$x 112% | = 93953$m^3$ |

**Note:** Including C.F/S.F112%

Conceptual waste dump & Five Year waste dump (TWD-5) used for backfilling.

Conceptual Soil dump & Five Year Soil dump (SD-4) used for over topping of backfilled part.

There will no Waste dumps available at the end of conceptual period. (Refer Plate No. 10).

**(ii) Conceptual Reclamation And Rehabilitation:**

## RECLAMATION AND REHABILITATION STATUS OF ALL PITS AND DUMPS:

| Status | Mined out area in $m^2$ | Reclam-ation by back-filling in $m^2$ | Rehabilitation in plants ($m^2$) | | | | Rehabil-ation Of Dump By comp & Affor-estaton | Protective measures for dumps (gd/rw/st) |
|---|---|---|---|---|---|---|---|---|
| | | | Of bf area | Of bench / slope by Planta-tion | Water reser-voir | Total rehabi-lated area | | |
| At present | 9099 | 0 | 0 | 0 | 0 | 0 | 0 | |
| At the end of five year | 20159 | 672 | 672 | 1000 | 0 | 1672 | 0 | |
| At the end of conceptual period | 60228 | 8764+672 =9436 | 8764+ 672= 9436 | 6540 | 44252 | 60228 | 0 | Fencing will be done around the lease boundary. |

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(ii) **Rehabilitation status of other areas (green belt):**

| Sr. No | Area location | Area in $M^2$ | Method of rehabilitation (afforestation etc) | No of plants | Remarks |
|---|---|---|---|---|---|
| At present | Nil | Nil | Nil | - | Total Barrier zone and Bench slope + Southern part of lease area will be planted. |
| At the end of five year | Southern BZ | 1000 | plantation | 160 | |
| At the end of conceptual period | BZ + Bench slope | 20502 | Plantation | 3300 | |

(iv) **Conceptual Land use:**

Land use pattern at present (as per Surface plan)/at the end of 5yrs (as per PMCP/EMP) / at the end lease period (as per Conceptual Plan).

**Total lease Area = 8.093 Hect.**

| S. No. | Heads | at present m2 | at the end of 5yrs m2 | at the end of conceptual period m2 |
|---|---|---|---|---|
| 1 | Total Area excavated (broken) | 9099✓ | 20159✓ | 60228✓ |
| 2 | Area mined out (out of 1) (BZ) | 672 | 672 | 60228 |
| 3 | Area fully reclaimed (back filled) (out of 2) | - | 672 | 9436 |
| 4 | Area rehabilitated out of 3 by affforestation, agri use, hutment etc | 0 | - | 9436 |
| 5 | Area rehabilitated by water harvesting (out of 2) | 0 | 0 | 44252 |
| 6 | Area fully rehabilitated by bench/slope afforestation (out of 2) | 0 | 0 | 6540 |
| 7 | Total Area under dumps | 1905✓ | 9124✓ | 0 |
| 8 | Area under active dumps | 0 | 9124 | 0 |
| 9 | Dump area fully rehabilitated out of 8) | 0 | 0 | 0 |
| 10 | Area under dead dumps | 0 | 0 | 0 |
| 11 | Dump area fully rehabilitated out of 10) | 0 | 0 | 0 |
| 12 | #Area under mineral stack | 0 | 0 | 0 |
| 13 | Area under Road (Outside pit) | 100✓ | 200✓ | 0 |
| 14 | Area under Green belt (i.e. plantation on area other than dump and back filled area) | 0 | 1000✓ | 20502✓ |
| 15 | #Area under Infrastructure | 0 | 100✓ | 200✓ |
| 16 | Area under Tailing dumps | 0 | 0 | 0 |
| 17 | Area under any other use (Sizing unit & View point garden) | 0 | 0 | 0 |
| 18 | Undisturbed area | 69826✓ | 50347✓ | 0 |
| | **TOTAL** | **80930** | **80930** | **80930** |

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**(v) Opencast mines:**

**(i) Salient features of the mode of working (Mechanized):**

Opencast mechanised method of mining will be done. All operations of mining will be done by deployment of heavy earth moving machineries for excavation, loading & transport. Various mining activities such as excavation, loading and transportation will be so conducted as to ensure maximum mineral conservation and minimum environmental degradation. While planning, quality parameter of the deposit has been taken care of so as to have maximum blending ratio.

**The main activities involved will be: -**

(i) Development by removal of mine waste by loader cum excavator.
(ii) sorting
(iii) Loading
(iv) Transportation

Systematic working will be done by formation of benches as per M.M.R. 1961. All principles of MMR 1961, Mines Act-1952, MCR-1960 & MMDR 1996 will be followed for safe, scientific & systematic working to follow the principals of safety & conservation of human health & mineral.

Excavated Ore will be loaded in to the dumpers by loaders and transported to the mineral stock yard within lease area, from there it will be supplied to plants. The mine waste will be loaded by loaders and transported to the backfilling site by dumpers within lease area. Winning of mineral and handling of waste rock will be done by excavators of 0.9 cum. Capacity and transported by of Dumper 15 t. Capacity.

**(ii) Layout of mine workings, the layout of faces and sites for disposal of overburden / waste. A reference to the plans enclosed under 4(b) and 4 (d) will suffice:**

Mode of working will be mechanized l, as described in para (i).

**Layout of the quarry faces: -**

Considering, the following aspects.

General undulating / plainer ground trend having soil cover throughout the lease area over the Limestone deposit.

The working has been proposed in all around lease area from the centre of the mine. The haul road will be extended from North – East side. Planning has been made to ensure proper blending of ore to have consistent grade. The layout of the quarry on year wise basis showing the present working, position of benches at the end of the year and disposal sites of mine waste has been shown on plate-no. 6.

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**Quarry road: -**

All roads for trucks, tippers, dumpers and other machinery will be maintained in good condition. All roads leading from the opencast workings to surface will be arranged to provide one-way traffic. No road will be of a width less than 4 m. As per the width of the largest vehicle plying on that road, and definite turnouts and waiting points will be designed. All corners and bends in road will be such that the operators and drivers of vehicle have a clear view for at least 50m. along the road. The MRL of the benches will be 346m to 341 MRL maintaining 5m. height. The haul road will be minimum 4m. wide and will have a gradient of 1 in 16 while the ramp will be of gradient 1 in 12.

**Number of shift: -**

Working will be done in one shift i.e. day shift when natural light will be abundance.

**General: -**

1. Permanent fencing will be provided at the top edge of opencast working.
2. Every person working in the opencast working has been provided with a mine hat and safety boots of a type approved by the DGMS.
3. Adequate arrangements (tractor mounted tank) to for the dust suppression have been made on roads and benches where trucks and dumpsters operate.
4. Earplugs are provided to workers.

**Sites for disposal of waste: -**

The mine waste has been proposed to be backfilled within lease area in unintentionally excavated barrier zone and prohibited zone as per IEC.

**Underground mines:**

Not applicable.

(i) **Extent of Mechanizations:**

Briefly describe the calculation for adequacy and type of machinery and equipments proposed to be used in different mining operation: -

| | | |
|---|---|---|
| Targeted production of Dolomite | = | 2,00,000 t (Max.) per annum. |
| | = | 727 t. per day on average |
| Peak production on any day | = | 750 t. |
| Total handling of OB | = | 8385 cum. Per annum Av. 16,770 t. or 30 cum. Per day. (Apprx.) or 60t. |
| No. of working days. | = | 275 (Apprx.) |

10% of the targeted production on either side may be achieved considering unforeseen circumstances.

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1. **Drilling:**

| Type | Nos. | Dia of Hole | Size/Make Capacity | Motive Power |
|---|---|---|---|---|
| Atlas Copco Compressor | 1 | - | 110 CFM Atlas Copco | Diesel |
| Jack Hammer | 1 | 32mm | Atlas Copco | Compressed Air |

Regular drilling and blasting will be done in Dolomite zone in the lease area. Random holes of depth 2.5m. (max.) is proposed for sub benching of 2.5m. in hard strata using Jack hammer drilling.

**Loading Equipment:**

All loading will be done mechanically by following machine:

| Type | Nos. | Size/Capacity | Make | Motive Power | H. P. |
|---|---|---|---|---|---|
| Back Hoe Ex 210, PC 300 or 90 CK Hyd. Excavator | 1 | 0.9 cum. | Tata, Komatsu & L & T | Diesel | 200 |

**Haulage and transport equipment:**

(a) **Haulage within the lease area hold area:**

Haulage of O.B. / waste to the surface-stacking site will be done by track & dumper. The distance of the dumping yard from the working quarry is within 200m. distance. Temporary stacking of minerals will be done in the NW &SE part of the lease area.

| Type | Nos. | Size/Capacity | Make | Motive Power | H. P. |
|---|---|---|---|---|---|
| 6 Wheeler | 8 | 10 t. | Leyland | Diesel | 110 |

The dumpers will be equipped with exhaust conditioner.

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(b) **Transport from mines head to the destination:**

The mineral dolomite will be transported to the cement plants (135kms to 200 kms.), dolomite will be supplied plants near Raipur / Nagpur (400/200 kms.) by hired trucks/Hyva of local transporters.

**Details of transport machineries are as given below:**

| Type | Nos. | Size/Capacity | Make | Motive Power | H. P. |
|---|---|---|---|---|---|
| 10 Wheeler | 3 | 15t. | Telco (Hyva) | Diesel | 250-286 |
| 6 Wheeler | 3 | 10t. | Leyland | Diesel | 95-110 |

**Miscellaneous: -**

Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.

| Type | Nos. | Size/Capacity | Make | Motive Power | H. P. |
|---|---|---|---|---|---|
| Tractor with Water Tanker | 1 | 10kl | L&T | Diesel | 50 |

**Drilling parameter: -**

For drilling of the blast hole, Jackhammer compressor drill will be deployed to run the said drills.

During the Scheme of mining period of five years,
Volume of yearly excavation shall be maximum 83858 cum. in V th Year (2019-20 year).
Total 5% volume of waste will be handled by drilling and blasting – i.e 8385 cum
Volume of strata to be blasted per day 305 cum.
Volume basted by one hole (Burden x Spacing x Depth of hole) 1.0 x 1.5 x 2.5 = 3.75 cum
No of holes to be blasted per day – 82 nos.
Meterage to be drill – 82x 2.5 = 205 m
Nos. of 50 hp capacity of drill required to be in operation – 205/50 = 4.1 say 4.0
Nos. of drill required in all total – 4.0
Therefore 4 nos. of Jackhammer drill required.

**Explosive Consumption: -**

| | | |
|---|---|---|
| 1. | Max Excavation | 83858 cum. in V th Year (2019-20 year). |
| 2. | Percentage of waste/mineral through blasting | 10% |
| 3. | Max waste volume through blasting | 8385 $m^3$ |
| 4. | Daily rate of excavation | 305 $m^3$ |
| (Considering 275 effective working days in an year) | | |
| 5. | Explosive consumption | 10 x 0.40 = 4 kg |

**Explosive to be used: -**

Ammonium Nitrate and Fuel Oil (ANFO) mixture based explosive are recommended for primary blasting.

Power factor is considered approx. 10 T/Kg. of Explosive. As per practical observation.

**Type of explosive to be used: -**

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(i) Gun powder with safety fuse. (ii) Ordinary detonator. (iii) Gelatin.

**Whether secondary blasting in needed:**

No.

**Miscellaneous:**

Regular oiling greasing and maintenance of the machine will be done at the mine site.

**Precaution to be observed during drilling & blasting: -**

Following precautions will be taken during blasting period.

1. Sufficient warning by signal is given over the entire area falling within the danger zone & ensure that all persons within such area have taken proper shelter.
2. Wet drilling is to be done in hand holes & as well as jack hammer drilling.
3. Suitable air respirator will be provided to drillers. During blasting controlled blasting will be done and not more than ten holes will be blasted at a time and no hole will be charged with more than 450 grms. of explosive at a time.( As the case may be dolomite zone.

Muffle blasting will be done to prevent flying fragments, which may cause injury to local inhabitations within danger zone. Muffle blasting will be carried out by keeping sand filled bags on wire net placed on holes.

**Quality Control: -**

In spite of the fact that the grade variation in the production may arise, presently all the grades have good marketing. So the sub grade shall be blended with the higher grade in order to meet the specification of the end users.

**Loading and Transportation: -**

The loading of ore is being done by excavator cum loader to the dumper / tipper and the over burden loading is done by pay loader. Further transportation to the consumption site, dumpers are used.

**Calculation for nos. of dumpers required: -**

| | | |
|---|---|---|
| Ore to be transported | = | 2,00,000T / Per Yr. |
| | = | 727T / Per day |
| Capacity of the dumper | = | 15 MT |
| Availability of the dumper | = | Whole day |

Minimum a Dumper will be completing 24 trips for transport the mineral from mines to stack yard per day.

| | | |
|---|---|---|
| No. of Dumpers required | = | 727 / 15 / 24 = 2.0 |
| Stand by | = | 1 Nos. |
| Total no. of dumpers required | = | 3 Nos. |

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**For over burden transport:**

Average run of dumper site is taken both up and down travel distance would be 200m. minimum one hour shall be taken a Dumper for loading and un loading the waste material from mines to Dumping yard. So a dumper will be doing 10 trips for transport the Waste from mines to dump yard per day.

Waste likely to be generated daily 305 cum / day.

Capacity of the dumper = 3cum
No. of Dumpers required = 305/3 = 1 dumper can made 102 trips in a day.
Dumper used for the mineral will make extra for the waste/ over burden transport.

**Calculation for nos. of Poclains required: -**

| | | | |
|---|---|---|---|
| 1. | Poclain availability | = | 85% |
| 2. | Poclain utilization | = | 70% |
| 3. | In 8hr shift effective working hours for a poclain 8 x 0.85 x 0.70 | = | 4.76 hrs or 285.6mt |
| 4. | Therefore, in one shift one Poclain would excavate 285.6/0.7 | = | 408 times |
| 5. | Quantity of materials carried in one boom | = | 2.0 MT |
| 6. | Maximum excavation expected by pocklen | = | 408x2 x 275=224400 |
| 7. | A Poclain is targeted to excavate (363 x 275) | = | 2,00,000T (Apprx) |

The Projected maximum production of ore would be 2,00,000T /annum. (19-20)

Hence the nos. of Poclain required (for Ore + waste handling) is 2,00,000/224400 = 0.89 say 1

Excavation of 5% (Av) Overburden + Mineral will require one no. of poclain.

**BLASTING: (For Dolomite)**

a) **Broad Blasting Parameters:**

| | |
|---|---|
| Spacing | 1.20m |
| Burden | 1.0m |
| Depth of hole | 1.5 – 2.0m |
| Diameter of hole | 35mm |
| Powder factor | 10t/kg of explosive |
| Charge per hole | 450gm |

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Double row blasting of maximum number to holes of total charge of 4.5 Kg. Occasional blasting is proposed for heaving purpose only.

b) **Type of Explosive be used/ to be used:**

Gunpowder with safety fuse.

c) **Powder Factor:**

The powder factor anticipated is 10.0 tonnes of dolomite for 1 kg of explosive used.

d) **Whether secondary blasting is needed:**

Secondary blasting will not be needed due to the better fragmentation results in the above-mentioned blasting pattern.

e) **Storage of explosive in the mine:**

There will be no storage of explosive at the mine site. The predetermined quantity will be purchased from Jabalpur and used.

f) **Parameters adopted during blasting/ drilling are as follows:**

All the necessary precautions such as hoisting of red flag at a safe distance alarming the people by whistling and shouting and removing them to safe distance would be taken before blasting.

The blasting operation will be done by a qualified blaster

**Any change in proposed method of mining and development of machinery.**

**As discussed, the mining in the area to be done by semi mechanized method with following machineries:**

1. Drilling by Jackhammer drill.
2. Disposal of mineral rejects from mining faces to stockyard by trucks & tippers.
3. Supply of drinking water will be ensured top workers.

Spraying of water on mines road by water tankers.

**List of Machineries**

| S. No. | Particulars of Machinery | Make | Capacity | Number Required |
|---|---|---|---|---|
| 1. | Jack hammer Drill/Wagon drill | ATLAS COPCO 32mm Dia | 50HP | 4 |
| 2 | Hydraulic Excavator | L & T | 2.0 MT | 1 |
| 3 | Tractor | Hindustan | 50 HP | 1 |
| 4 | Portable tractor driven Water tanker | Hindustan | 2000 Lit. | 1 |
| 5 | Trucks/Tippers/dumper | Tata | 10T & 15T | 3 &3 |
| 6 | Pump Set | Crompton | 10 HP | 1 |
| 7 | Drill & Other tools & spares | | As per Requirement | |
| 8 | Mining safety equipments as safety shoes, helmets, hand gloves, leg guard etc. | | As per Requirement MMR 1961 | |
| 9 | Mining implements such as crowbar, pick-axe, spade chisel etc. | | As required | |

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d) **Whether secondary blasting is needed:**

Secondary blasting will not be needed due to the better fragmentation results in the above-mentioned blasting pattern.

e) **Storage of explosive in the mine:**

There will be no storage of explosive at the mine site. The predetermined quantity will be purchased from Jabalpur and used.

f) **Parameters adopted during blasting/ drilling are as follows:**

All the necessary precautions such as hoisting of red flag at a safe distance alarming the people by whistling and shouting and removing them to safe distance would be taken before blasting.

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**List of Machineries**

| S. No. | Particulars of Machinery | Make | Capacity | Number Required |
|---|---|---|---|---|
| 1. | Jack hammer Drill/Wagon drill | ATLAS COPCO 32mm Dia | 50HP | 4 |
| 2 | Hydraulic Excavator | L & T | 2.0 MT | 1 |
| 3 | Tractor | Hindustan | 50 HP | 1 |
| 4 | Portable tractor driven Water tanker | Hindustan | 2000 Lit. | 1 |
| 5 | Trucks/Tippers/dumper | Tata | 10T & 15T | 3 &3 |
| 6 | Pump Set | Crompton | 10 HP | 1 |
| 7 | Drill & Other tools & spares | | As per Requirement | |
| 8 | Mining safety equipments as safety shoes, helmets, hand gloves, leg guard etc. | | As per Requirement MMR 1961 | |
| 9 | Mining implements such as crowbar, pick-axe, spade chisel etc. | | As required | |

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# CHAPTER - 3

## 3.0 MINE DRAINAGE:

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

Likely depth of water table based on observations from nearby wells and water bodies Water level is about 38m to 40m. deep from general ground level 347 m.

**(b) Indicate maximum and minimum depth of Workings:**

Workings expected upto 327m. MRL, which will be 39 m. above water table by the end of Conceptual period.

**(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:**

Ground water table will not be intersected during five year as well as conceptual period. No water will be pumped in view of working proposed much above the ground water table.

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

Drainage pattern is dendratic. The average annual rain fall is 1100mm. Rain water gets arrested in mine pit. The water channels follow natural flow direction. Garland drains have been proposed with tanks at the lower contour to arrest the solid wash off in silt etc.

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# CHAPTER - 4

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

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

**(1) Present waste/soil dumps:**

There are 2 old waste dump is present in the area. **Refer Plate No. 4.**

| Dump No. | Type Active / inactive | Dump dimension = Quantity $m^3$ | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|
| Dump-1 | Active | 61.5m X 16.83m X2.0m =2070 $m^3$ | 1035 | 2.0 | Lying in the Western part of the lease area & old dump will be used in road maintenance. |
| Dump-2 | | 27.34m X 7.5m X1.0m =205 $m^3$ | 205 | 1.0 | Lying in the Southern part of the lease area. |
| **Total** | | **2275 $m^3$** | **1240$m^2$** | | |

**(2) Present Mineral Stack dumps:**

There is 1 mineral stack dump is present in the area.( **Refer Plate No. 4.)**

| Dump No. | Type Active / inactive | Dump dimension = Quantity $m^3$ | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|
| M S Dump-1 | Active | 50m X 13.3m X1.0m =665 $m^3$ | 665 | 1.0 | There are few hips of mineral stacks lying in the Northern part of the lease area. |
| Total | | **665 $m^3$** | **665$m^2$** | | |

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## (3) PROPOSED YEAR WISE WASTE AND SOIL GENERATION:

| Year | Waste ($M^3$) | Soil($M^3$) | Total O.B. In ($M^3$) | Sub Grade (Tones) | Reject |
|---|---|---|---|---|---|
| 2015-16 | | | | | |
| 2016-17 | | | | | |
| 2017-18 | | | | | |
| 2018-19 | 7130 | 11060 | 18190 | - | - |
| 2019-20 | 8385 | 0 | 8385 | - | - |
| TOTAL | 1,55,15$m^3$ | 11060 $m^3$ | 26575$m^3$ | - | - |

**Refer Plate No. 6.**

| Year | Top soil(Cu m) | | Waste(Cu m) | |
|---|---|---|---|---|
| | Reuse/spreading | storage | Backfilling | Storage |
| 2015-16 | 0 | 0 | | 0 |
| 2016-17 | 0 | 0 | - | 0 |
| 2017-18 | 0 | 0 | - | 0 |
| 2018-19 | 0 | 11060 | 5006 | 0 |
| 2019-20 | 0 | 0 | - | 8385 |

**(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:**

Temporary dumping is proposed within the lease area in mineralized zone which will be used for reclamation in conceptual / mine life period.

**(c) Attach a note indicating the manner of disposal of Soil & waste, configuration and sequence of year wise build up of dumps along with the proposals for protective measures:**

**Waste dumps:**

This will be in loose form containing Silica, soil mixed with grits and pebbles.

The year wise generation of soil, mine waste during next 5 year is given below. The quantity of mine waste (inter burden) within ore body has been considered as 90% in case of Dolomite, based on the past experience.

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**Land chosen for disposal of waste with proposed justification:**

During the proposal period about (15,515-**7130**)= 8385 $m^3$ waste will be generated. The generated quantity will be temporarily stacked in South East part of the mining lease area. The proposed site is away from the proposed working area and will not interfere with working in near future. **Retaining wall will be constructed around dumps. Garland drain is proposed to be constructing around lease area from higher to lower contour direction & settling tank will be provided at regular intervals.**

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| Dump No. | Type Active / inactive | Dump dimension = Quantity $m^3$ | Base area $m^2$ | (avg.) Height m. | Remark |
|---|---|---|---|---|---|
| TWD1 (2015-16) | - | - | - | - | 5006$m^3$ /10,012t waste will be used for reclamation of mined out area in the Northern part of B.Z. upto 347mrl & reset quantity 2124 $m^3$ will be used in road maintenance .(total quantity will be used **7130** $m^3$) |
| TWD2 (2016-17) | - | - | - | - | |
| TWD3 (2017-18) | - | - | - | - | |
| TWD4 (2018-19) | - | 7130 | - | - | |
| TWD5 (2018-20) | Active | 372.67m x7.5m x3m=8385 | 2795 | 3.0(avg.) | Will be kept in SE part of the B.Z. area. |
| **Total** | | **15,515 $m^3$** | **2795$m^2$** | | |

**Refer Plate No. 6.**

**Soil dumps:**

| Dump No. | Type Active / inactive | Dump dimension n = Quantity $m^3$ | Base area $m^2$ | (av.) Height M. | Remark |
|---|---|---|---|---|---|
| SD1 (2018-19) | Active | 589.86m X 7.5m X2.5m =11060 | 4424 | 2.5 | Will be kept in NW & SW part of the B.Z |
| **Total** | | **11060 $m^3$** | **4424$m^2$** | | |

**Refer Plate No. 6.**

The manner of disposal of waste will be by loader. The mine waste will be loaded and unloaded mechanically.

**Sub-grade minerals:**

No sub-grade mineral will be generated. All ROM mineral will be used.

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# CHAPTER – 5

## 5.0 USE OF MINERAL AND MINERAL REJECT:

**There will no mineral reject.**

**A) Describe briefly the requirement of end-use industry specifically in terms of physical and chemical composition:**

**GRADE:**

Grab sampling was carried out in existing pits. Three such samples were collected and tested for chemical analysis. These samples were analyzed for its chemical composition.

**The chemical composition is given below:**

**Refer para 1.0 Geology & Exploration.**

**(I) The specification laid down for supply of Dolomite to the steel plants are given below:**

**Dolomite:**

The following classifications are recommended.

**(a) Refractory:**

**(i) L. D. Grade:**

| | |
|---|---|
| Mgo | 21% (min.) |
| $SiO_2$ | 1% (max.) |
| $Al_2O_3$ | 1% (max.) |
| $Fe_2O_3$ | 1% (max.) |

**Physical:** Fine grained and non – decrepitating on calcinations.

**(ii) SMS & Fettling grade:**

| | |
|---|---|
| MgO | 20% (min.) |
| $SiO_2$ | 4% (max.) |
| Total insoluble | 6% (max.) |

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**Physical:** Homogenous fine grained and non – decrepitating on calcinations.

**(b) B.F. & Sintering grade:**

| | |
|---|---|
| MgO | 19% (min.) |
| Acid insoluble | 12% (max.) |

**(c) Glass:**

| | |
|---|---|
| CaO + MgO | 50% (min.) |
| $Fe_2O_3$ | 0.15% (max.) |
| $SiO_2$ | 2.5% (max.) |

Dolomite of the area is of inferior grade, use for blending with high grade material. Dolomite of the lease is being used in wall putti and detergent industry.

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

N.A.

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

N.A.

**D) Indicate precise physical and chemical specification stipulated by buyers:**

For putti Industry lumps of Dolomite having size 5mm to 100mm with MgO content 16-20 with silica less than 10% is acceptable. Whiteness above 65% is acceptable.

**E) Give details of processes adopted to upgrade the ROM to suit the user requirements:**

Mineral is directly sold to the in concerning industries.

**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:**

Manual sorting & sizing will be done to enhance physical & chemical quality of the ore.

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# CHAPTER – 6

## 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.:**

N.A.

**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:**

N.A.

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

N.A.

**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:**

N.A.

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

N.A.

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

N.A.

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**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:**

12 KLD water is required for dust suppression and plantation were is 1 KLD drinking water is required. Rain water accumulated in mine will be used for plantation and dust suppression and for drinking and domestic use hand pump is provided.

# CHAPTER – 7

## 7.0 OTHER:

**Describe briefly the following:**

### (a) Site services:

Site services has been provided as per the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955.

### Office and Stores:

Office and stores will be provided as per Rules DGMS within the applied area. There is no record of DGMS visit in last five years.

### First Aid:

Specified first aid station (along with stretcher will be maintained at the site office and the rest shelter as per Mines Act 1952. & DGMS norms the mines manager and other statutory personnel will be the qualified.

### (b) Employment potential:

Employment personnel's will be appointed as per rule 42 of MPMMR 1996.

A part Time Mining Engineer, B.E. Mining having second class mines manager certificate will be employed to supervise the mining operation. Details of existing and proposed employment potential are given below:

**Details of existing and proposed employment potential are given below:**

**MANAGEMENT & SUPERVISORY PERSONNEL:**

| S. No. | Particulars | Existing | Proposed |
|---|---|---|---|
| 1 | Mining Engineer (Diploma Holder) | - | 1 |
| 2 | Mining Mate | - | 1 |
| 3 | Part Time Geologist | - | 1 |

**LABOUR:-SKILLED / SEMI-SKILLED / UN-SKILLED:**

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| S. No. | Particulars | |
|---|---|---|
| 1 | Un-skilled Labour | 15 |
| 2 | No. of Working Days | 275 |
| 3 | Max Annual Production | 2,00,000t |
| 4 | O.M.S. | 48 t. Say 49t |

# CHAPTER - 8

## 8.0 PROGRESSIVE MINE CLOSURE PLAN UNDER RULE 42 OF MPMMR'1996:

### 8.1 Environment Base line information:

**a) Attach a note on the status of baseline information with regard to the following:**

Existing land use pattern indicating the area already degraded due to quarrying / pitting, dumping, roads, processing plant, workshop, township etc in a tabular form.

**EXISTING LAND USE PATTERN**: Existing land use pattern of lease area is as follows:

| Degradation type | Govt. Land | | | | | Private land | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Forest land $M^2$ | Agriculture land $M^2$ | Grass land $M^2$ | Waste land $M^2$ | Other | Forest land $M^2$ | Crop land $M^2$ | Grass land $M^2$ | Waste land $M^2$ | Other | Ownership |
| Pits, TP and trenches | 9099 | - | - | - | - | - | - | - | - | - | - |
| Dumps | 1905 | - | - | - | - | - | - | - | - | - | |
| Infrastructure inclusive of office workshop | 0 | - | - | - | - | - | - | - | - | - | - |
| Area occupied by roads (footpath) | 100 | - | - | - | - | - | - | - | - | - | - |
| Water bodies like tank river/nala | - | - | - | - | - | - | - | - | - | - | - |
| Town ship | - | - | - | - | - | - | - | - | - | - | - |
| others | 69826 | - | - | - | - | - | - | - | - | - | - |
| **Total** | **80930** | - | - | - | - | - | - | - | - | - | - |

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**DETAILS OF LAND AROUND 60M & 500 M.RADIUS OF THE LEASE AREA:**

| | NORTH | EAST | SOUTH | WEST |
|---|---|---|---|---|
| 60M | Forest land | Forest land | Forest land | Forest land |
| 500M | Forest land | Forestland | Forest land | Forest land |

**Water regime:**

**Area is having sloping topography water drained in northern and southern side by local nala which ultimately drains in agriculture fields. There is no prominent water body in the area:**

There are no water bodies in buffer zone area within 500m radius. (Refer surface plan and key plan.)

Water dependency of people in core/buffer zone in the form of Hand pumps etc. Ground water level is reported as 38m to 40-m in post monsoon and summer respectively. Hydro geological study& Water danger plan is not required

**Flora and fauna:**

Natural plantation growth has been largely degraded by human intervention. There is one Choyala tree present in the lease area. The dominant species of the region are Mangoes, Choyala, Mahua and Pipal etc. Snail, white ant, red ant, cricket and black ant, road etc. have been noticed. The following birds are common in lease area. Owl, kite, cookie, Indian myna etc. have also been noticed.

**Quality of air, ambient noise level and water:**

**Ambient air quality:**

Except plying of vehicle the area does not have any industrial activity in the core/ buffer zone and hence the ambient air quality is within permissible limits and good for habitants

**Ambient noise level:**

The area does not have any industrial activity in the core/ buffer zone, the ambient noise quality is affected by plying of vehicles to some extent

**Ambient water quality:**

Quality of water as potable as per sample collected from hand pump Groundwater of this area is free from pollution and is suitable for drinking purpose.

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**Climatic Conditions:**

Subtropical climate condition exists within the area. Average rainfall is about 1145 mm. The temperature ranges between 40 to 47.60c.The predominant wind direction is North West-south east. The temperature and rainfall recorded during last ten years is given below. Source: Meteorological department, Balaghat (M.P.).

| Year | Annual rainfall | Temperature 0c | |
|---|---|---|---|
| | Mm. | Maximum | Minimum |
| 2007 | 1240 | 47.1 | 4.3 |
| 2008 | 1255 | 48.1 | 4.2 |
| 2009 | 1245 | 49.1 | 4.12 |
| 2010 | 1260 | 46.2 | 4.2 |
| 2011 | 1250 | 45.3 | 4.2 |
| 2012 | 1280 | 44.1 | 4.4 |
| 2013 | 1371 | 44.1 | 4.5 |
| 2014 | 1260 | 45.2 | 4.2 |
| 2015 | 1275 | 47.8 | 4.1 |
| 2016 | 1220 | 47.3 | 4.1 |
| 2017 | 1265 | 47.5 | 4.2 |

**Human settlements:**

| Details are given below: | | | | | |
|---|---|---|---|---|---|
| S. No. | Name of Village | Direction from area | Distance (Km) | Population | Occupation |
| 1. | Koilari | East | 2.0 | 2000 | Agri/Mine |
| 2. | Paraspani | North | 3.0 | 1500 | labours |
| 3. | piparwani | West | 2.0 | 4000 | …do… |
| 4. | Banda- Rewa | South | 3.8 | 150 | …do… |
| 5. | Pathrapeth | North-East | 4.15 | 250 | …do… |
| 6. | Dulhpur | North | 4.5 | 1000 | …do… |

**Public buildings, places of worship and monuments:**

**Mention public building, places of worship and monument located within 500 m. radius of the area:**

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| | |
|---|---|
| North | Forest Land. |
| South | Forest Land. |
| East | Forest land. |
| West | Forest Land. |

**Attach plans showing the locations of sampling stations:**

Refer environment plan plate no. 9.

**Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974:**

Yes.

**Indicate any sanctuary is located in the vicinity of leasehold:**

N.A.

**8.2 Impact Assessment:**

**Attach an Environmental Impact Assessment Statement describing the impact of mining and beneficiation on environment on the following:**

**i) Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:**

**Describe effects on Land Environment on following items:**

**Landscape and land subsidence:**

Landscaping of the lease area will be changed as excavation will be done in already excavated and adjoining fresh area also.

**Aesthetic environment and tourist spots (if any):**

There no disturbance to environment and there is no tourist spots within 500m.

**Soil & land use pattern.**

Refer para 4

**Agriculture:**

There is no effect over the agricultural land mining activity will be within limits.

**Forest:**

There is yes forest within 500m.

**Vegetation:**

No effects.

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**Public buildings, places and monuments including archaeological sites:**

No public building and other monuments within 500m.

**Cumulative land degradation:**

| Sr. No. | Heads | At present $M^2$ | At the end of 5 years- $M^2$ | At the end of conceptual period - Hect. (for 'B' category mines) $M^2$ |
|---|---|---|---|---|
| 1. | Pits (broken area) | 9099 | 20159 | 60228 |
| 2. | Dumps | 1905 | 9124 | 0 |
| 3. | Road | 100 | 200 | 0 |
| 4. | Green belt | 0 | 1000 | 20502 |
| 5. | Infrastructure | 0 | 100 | 200 |
| 6. | Water reservoir | - | - | 44252 |

ii) **Air quality:**

The airborne particulate matter i.e. dust (SPM) is the major air pollutant in open cast mining. Apart from fine sized solid particles resulting during surface mining, particulate matter is carried in the atmosphere due to wind action over mineral and waste dumps. The movement of vehicles and transport of minerals by road adds to the problem. It is also produced due to transport activities in surrounding area. Air pollution may lead to some respiratory problems to persons living in highly dust prone areas. Plants growth is also affected by dust deposition on leaf.

The present air pollutants level is well within the permissible limits for rural & residential area. Based on the predicted post project concentration of various pollutants, it is inferred that the area is unlikely to be affected significantly due to this mining project. The dust may also become the course of pollution due to plying of vehicles.

The air quality in the lease area is well below permissible limits of pollutants. Small-scale mining activity is existing in the lease area and the levels of SPM, SO2, RPM, Ammonia, CO in the area are within promulgated limit.

| | |
|---|---|
| SPM | 200 ug/$m^3$ |
| $SO_2$ | 80 " |
| $NO_8$ | 80 |

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iii) **Water quality:**

There is no effects on surface/ground water quality due to mining like effects due to leaching, water contamination due to discharge of polluted mine water in water bodies, wash off from settling tank etc. Due to slight sloping terrain area and no major nala and other source present, there will be no effect of mining activity on water quality. Only seasonal water will be accumulate in the pits and it gets drained automatically. There is no toxic element present in the surface water.

iv) **Noise levels:**

Noise pollution is envisaged due to vehicular movement. Transportation will be done by dumpers and hyva. Exposures of noise level above threshold limit value have a detrimental effect on the health of the workers. The ill effect of high-level noise are both psychological & biochemical. Continued exposure may result in annoyance, fatigue,

v) **Vibration levels ( due to blasting):**

Blasting is proposed.

vi) **Water regime:**

1) **Surface water:**

Surface water will flow through natural process and there is no major water course in the area. There are no interfaces through mining activity with water bodies and vice versa. There is no diversion of natural course is required for mining. There is no Effects on surface water by sedimentation/pollution due to mine water discharge and dump wash off.

2) **Ground water:**

Use of water for mining purpose like sprinkling and other activity will be fulfilled gram panchayat Talab.

vii) **Acid mine drainage:**

Acid mine drainage is produced where ever a mine of any type of impermeable formation interact with water table, aquifer, perched water body or where surface water finds its way in to the mine in terrain where sulphide (particularly Pyrites) are present in the ore or country rock. Among objectionable features acid mine drainage are low pit and high-level sulphide of Iron and total dissolved solid. They deplete O2 level in water, increase toxicity by rending heavy metal soluble and create corrosion problem. There is no sulphide in country rock, hence problem of acid mine drainage is irrelevant in the mine.

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viii) **Surface Subsidence:**

**Cumulative land degradation:**

| Sr. No. | Heads | At present $M^2$ | At the end of 5 years- $M^2$ | At the end of conceptual period - Hect. (for 'B' category mines) $M^2$ |
|---|---|---|---|---|
| 1. | Pits (broken area) | 9099 | 20159 | 60228 |
| 2. | Dumps | 1905 | 9124 | 0 |
| 3. | Road | 100 | 200 | 0 |
| 4. | Green belt | 0 | 1000 | 20502 |
| 5. | Infrastructure | 0 | 100 | 200 |
| 6. | Water reservoir | - | - | 44252 |

ix) **Socio-economics:**

The medium -scale mining operation will upgrade the socio-economics of the area. On the other hand these operations will provide employment to the local people and help in uplifting their living standard.

x) **Historical monuments etc.:**

There are no historical monuments in and around 500 m. radius of the lease area

## 8.3 PROGRESSIVE RECLAMATION PLAN:

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

### 8.3.1. Mined-Out Land:

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

**MINED-OUT LAND:**

**Present position and end of five year and extent of mined out land details are given below:**

| | | |
|---|---|---|
| Area already excavated (As on date) | : | 0.9099Hect. |
| Area already mine out | : | 0.0672 Hect. |
| Area under use during SOM period | : | 2.0159Hect. |
| Area under use at the end of mine life | : | 6.0228Hect. |

For more details refer para 4.0 (iii)

1. Area reclaimed by back filling at the end of proposal period = 0.0672 Hect.

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**Pit wise information:**

**Reclamation (back filling) Details:**

Reclamation (backfilling) / rehabilitation proposed in Scheme of Mining period.

**Pit no.1**

| Year | Broken area at the beginning of yr | Area Broken during the yr | Cum broken area at the end of yr | Mined out Area at the beginning of yr | Mined out Area during the yr | Cum Mined out Area at the end of yr | @ Area reclaimed by back filling at the beginning of yr out of e | Area reclaimed by back filling during the yr | Cum Area reclaimed by back filling by the end of yr |
|---|---|---|---|---|---|---|---|---|---|
| A | b | c | D=b+c | e | f | G=e+f | h | I | J=h+i |
| 2015-16 | Lapse Period | | | | | | | | |
| 2016-17 | | | | | | | | | |
| 2017-18 | | | | | | | | | |
| 2018-19 | 9099 | 11060 | 20159 | 672 | 0 | 672 | 672 | 0 | 672 |
| 2019-20 | 20159 | 0 | 12956 | 672 | 0 | 672 | 672 | 0 | 672 |
| Conceptual Period | 20159 | 40069 | 60228 | 672 | 8764 | 9436 | 672 | 8764 | 9436 |

A) **Area to be reclaimed in proposal period = 672m$^2$,** Average height of reclamation = 8.0m

**Rehabilitation Details:**

| Year | Balance Un Rehabilitated mined out area at the beginning of yr | Mined out Area during the yr | Total Un Rehabilitated mined out area | Rehabilitation during the yr By | | | Total Rehabilitation | Balance Un Rehabilitated mined out area at the end of yr |
|---|---|---|---|---|---|---|---|---|
| A | b | c | D=b+c | E | | | F=x+y+z | G=D-F |
| | | | | x | y | z | | |
| | | | | Plantation /Agri use/other on BF area | Making water reservoir | Bench/slope plantation | | |
| 2015-16 | Lapse Period | | | | | | | |
| 2016-17 | | | | | | | | |
| 2017-18 | | | | | | | | |
| 2018-19 | 0 | 672 | 672 | 0 | 0 | 0 | 0 | 0 |
| 2019-20 | 672 | 0 | 672 | 0 | 0 | 0 | 0 | 0 |
| Conceptual Period | 20159 | 40069 | 60228 | 9436 | 44252 | 6540 | 60228 | 0 |

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**Future Afforestation Programme:**

| Status | Mined out area in $m^2$ | Reclam-ation by back-filling in $m^2$ | Rehabilitation in plants ($m^2$) | | | | Rehabil-ation Of Dump By comp & Affor-estaton | Protective measures for dumps (gd/rw/st) |
|---|---|---|---|---|---|---|---|---|
| | | | Of bf area | Of bench / slope by Planta-tion | Water reser-voir | Total rehabi-lated area | | |
| At present | 9099 | 0 | 0 | 0 | 0 | 0 | 0 | |
| At the end of five year | 20159 | 672 | 672 | 1000 | 0 | 1672 | 0 | |
| At the end of conceptual period | 60228 | 8764+672 =9436 | 8764+ 672= 9436 | 6540 | 44252 | 60228 | 0 | Fencing will be done around the lease boundary. |

### 8.3.2 Topsoil Management:

Refer para 4.0.

### 8.3.3 Tailings Dam Management:

No tailing dam will be created in the lease area in future. There is no chance of any water storage. No toxic contamination is there in the water body.

### 8.3.4 Acid mine drainage, if any and its mitigative measures:

Acid mine drainage is produced where ever a mine of any type of impermeable formation interact with water table, aquifer, perched water body or where surface water finds its way in to the mine in terrain where sulphide (particularly Pyrites) are present in the ore or country rock. Among objectionable features acid mine drainage are low pit and high-level sulphide of Iron and total dissolved solid. They deplete O2 level in water, increase toxicity by rending heavy metal soluble and create corrosion problem. There is no sulphide in country rock, hence problem of acid mine drainage is irrelevant in the mine.

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

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Details are as follows:

As the mineral continuity is seen upto 20.0m depth, simultaneous backfilling is proposed in entire five year working.

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

## SUMMARY OF YEARWISE PROPOSAL FOR ITEM NO. 8.3.5

| Item | Details | Actual | Proposed | Remarks |
|---|---|---|---|---|
| Dump management | Area afforested (hect.) | - | -. | - |
| | No of saplings planted | - | - | - |
| | Cumulative no of plants | - | - | - |
| | Cost including watch and care during the year | - | 60000/- * | Salary of chaukidar |
| Management of worked out benches | Area available for rehabilitation (hect.) | | | |
| | Afforestation done (hect.) | - | - | - |
| | 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 (Area $m^2$) pit | - | $672m^2$ | Barrier Zone |
| | wise /stope wise | - | - | - |
| | Void filled by waste /tailings | - | $5006m^3$ | waste |
| | Afforestaion on the backfilled area | - | - | - |
| | Rehabilitation by making water reservoir | - | - | - |
| | Any other means (specify) | - | - | |
| Rehabilitation of waste land within lease | Area available (hect.) | - | **0.1*** | **B.Z. Plantations** |
| | Area rehabilitated | - | **0.1*** | **B.Z. Plantations** |
| | Method of rehabilitation | - | **0.1*** | **B.Z. Plantations, nos. of plantation 160trees.** |
| Others (specify) | - | - | **80000/-** | - |
| Total | | | **1,40,000/-** | ***Total cast** |

* Salary of chowkidar cum Mali and saplings.

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## 8.4 Disaster Management and Risk Assessment:

This being small scale mine, chances of risk of any accident or disaster is negligible. This is an opencast mine and problem of land slide is negligible in the area. The other incidents related to underground mines are not applicable in this case.

A first-aid box and a stretcher shall be kept at the mine site (in case of any eventuality/ accident that occurs) in the office of mines manager. Mines manager will make necessary arrangements at the time of any mishap. At the time of any eventuality mine manager will give first-aid treatment to the miner/person injured during mining activity; simultaneously will also inform DGMS. In case of casualty DGMS has to be informed first; at the same time he should see that site of accident is not tampered till the competent authority from DGMS inspects the site. Mines manager should see that the injured persons are admitted in the hospital.

## 8.5 Care and maintenance during temporary discontinuance:

The quarry faces at top will be suitably fenced or parapet wall around pit will be made in order to avoid any cattle fall or accident in the mine during the course of temporary discontinuance under the guidance of mines manager/ applicant. On employment of a permanent chowkidar, he will properly guard the mine. In case of any eventuality chowkidar will inform mines manager, who would handle the case as per the situation within limit of rules and regulations.

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.

## Economic Repercussions of closure of mine and manpower retrenchments:

(i) Mine closure is an important activity in the community development and surrounding in general and for mining site in particular. Mining ceases as a result of exhaustion of mineral reserves, uneconomical mining or any technical or legal reasons. These aspects are generally relevant at the time of final or permanent closure of mine or in case of mine where it is proposed to reduce the manpower in a phased manner. This will be a working mine during the progressive mine closure plan period. No manpower retrenchment is expected in progressive mine closure plan period or in near future.

No permanent labour will be employed in the mine. About 20 labours mainly local agricultural labours will be employed in the mine. On average the labour employment will be uniform & the employees will remain same.

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(ii) As stated above mostly local residents involved in agriculture works will be employed. The mine will not be closed during the ensuing Progressive mine closure plan period. The mining will continue at least upto the mining lease period end. And as such, no compensation will be paid.

(iii) Agriculture is the other satellite occupation connected to the mining industry. About 15 labours will be employed on average for 275 days in a year. No permanent labour will be employed & persons employed only join works related to the mining after being free form their related agriculture works. No closure of mine is expected in PMCP period and as such is not applicable. After mine closure they will continue with their agriculture occupation.

(iv) After exhaustion of mineral in the mined out land, it will be simultaneously backfilled and rehabilitated by way of afforestation. The employees may employed thereafter as security guards for safety and security purpose, pump operations and mechanic etc. depending upon the demand in the locality.

(v) No manpower retrenchment will be done during the ensuing Progressive mine closure plan period. No socio-economic repercussions are envisaged as such. On the other hand due to employment given to local residents, socio-economic awareness & uplift will take place. Also the poverty will reduce. As stated earlier the mine will not be closed during the ensuing period & it will be on small scale only.

**Number of local residents employed in the mine, status of the continuation of family occupation and scope of joining the occupation back:**

No permanent labour is employed in the mine. About 15 labours will employ in the mine. On average the labour employment will be uniform & the employees will remain same.

**Compensation given or to be given to the employees connecting with sustenance of himself and their family members:**

Not required refer above para.

**Satellite occupations connected to the mining industry - number of persons engaged therein - continuance of such business after mine closes:**

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Agriculture is the other satellite occupation connected to the mining industry. About 20 labours will be employed on average for 275 days in a year. No permanent labour is employed and persons employed only join works related to the mining after being free from their related agriculture works. No closure of mine is expected in PMCP period and as such is not applicable. After mine closure they will continue with their agriculture occupation.

**Continued engagement of employees in the rehabilitated status of mining lease area and any other remnant activities:**

After exhaustion of mineral in the mined out land, it will be simultaneously back filled and rehabilitated by way of Afforestation and converting land for the agriculture purpose. In the remaining part of the lease area. The employees may be employed thereafter as security guards for safety and security purpose, pump operators and mechanic etc. depending upon the demand in the locality.

**Envisaged repercussions on the expectation of the society around due to closure of mine:**

No manpower retrenchment will be done during the ensuing Progressive Mine Closure Plan period. No socio-economic repercussions are envisaged as such. On the other hand due to employment given to local residents, socio-economic awareness & uplift will take place. Also the

**Time scheduling for reclamation and rehabilitation:**

No abandonment of any activity as stated in para 3 is expected up to the end of the lease period. This is a running mine and on the other hand all constructions and related work will be done in the ensuing period. However, a projected time scheduling of major activity related to mine closure and rehabilitation has been given on page of the progressive mine closure plan (horizontal bar chart).

No abandonment for the reasons stated above is expected during the next five-year ensuing period. Besides the statutory personnel required for mining activity, a mine guard will be employed to look after the safety of the person in the local area approaching the mine site and cattle fall. He will be paid Rs. 5000/- per month; making a total of Rs. 60000/- per annum. No rehabilitation will be done during next 5 years.

**Reclamation and rehabilitation Cost:**

Reclamation and rehabilitation cost is mentioned in the below paragraph.

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Details of the abandonment cost are as follows:

| | | (In rupees) |
|---|---|---|
| (i) | Backfilling | Rs. 20,000/- |
| (ii) | Salary of chaukidar | Rs. 60,000/- |
| (iii) | Plantation and care taking | Rs. 30,000/- |
| (iv) | Miscellaneous | Rs. 30,000/- |
| | **Total** | **Rs. 1,40,000/- per year** |

**8.6 Financial Assurance:**

The Bank Guarantee Amount calculated for the purpose of Financial Assurance is based on the MPMMR1996. The bank guarantee of Rs 1,35,000/will be submitted in favour of District Collector / Director DGM.

**8.7 Certificate:**

A certificate & undertaking regarding mine closure plan has been appended herewith.

**8.8 Plans, sections etc:**

Plans & sections in support of Chapter 1, 2, 3 & 4 have been appended.

**Signature of RQP**

**Date: 28/05/2018**

**(Rakesh K. Choubey)**
**Regd. No. RQP/DGMMP/19/2013**

R. K. Choubey
RQP/DGMMP/19/2013

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