

**SCHEME OF MINING &  
PROGRESSIVE MINE CLOSURE PLAN OF  
PIPARITOLA LATERITE, WHITE CLAY & OCHRE MINE**

M. L. Area - 8.0 ha. (7.972 ha. for mining and 0.028 ha. extraction path)  
M. L. Area in Forest if any - 8.0 ha. (7.972 ha. for mining and 0.028 ha. extraction path)  
Total M. L. Area - 8.0 ha. (7.972 ha. for mining and 0.028 ha. extraction path)

In Village - Piparitola  
Tehsil - Raghurajnagar, District- Satna  
State - Madhya Pradesh

For the Mineral - Laterite, White Clay & Ochre  
Proposal Period - 2011-12 to 2014-15 (up to 31.08.2014)  
Category of Mine - - Very small 'B' category

Submitted to  
Indian Bureau of Mines  
Under Rule 12(3) of M.C.D.R., 1988 and  
Under Rule 23 B of M.C.D.R., 1988

Lessee -  
**Shri Sharad Kumar Bansal**  
P.O. Jaitwara, Distt.- Satna (M.P.)  
Pin Code - 485221  
Phone - 07671 - 274260

Prepared by  
**Balram Singh Associates Pvt. Ltd.**

Regd. No.- RQP/JBP/105/2003/B, Valid upto - 14.09.2013

Chopra Colony, P.O.- Maihar  
Distt.- Satna (M.P.) Pin : 485771

Phone No. : (07674) 232473, Mob - 919425185701  
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J. Chakraborty  
8/10/14  
Controller of Mines  
J. Chakraborty  
8/10/14  
J. Chakraborty  
8/10/14

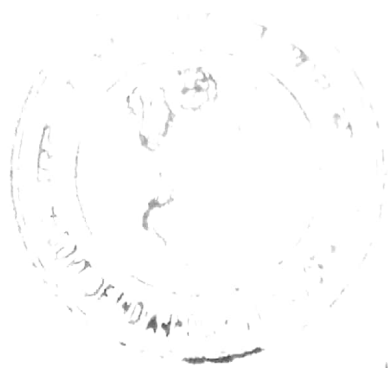
## CERTIFICATE

- (i) Certified that the provisions of Mines act. Rules & Regulations made there under have been observed in the Scheme of Mining and wherever specific permissions are required, the applicant will approach the Director General of mines safety.
- (ii) This is to certify that the provisions of Mineral Conservation and Development Rules - 1988 have been observed in the Scheme of Mining of *Piparitola Laterite, White Clay & Ochre Mine* for an area of 8.0 ha. (7.972 ha. for mining and 0.028 ha. extraction path) in Vill- Piparitola, Tehsil - Raghurajnagar, Distt. - Satna, State - M.P. applied by *Shri Sharad Kumar Bansal*, P.O.- Jaitwara and wherever specific permissions are required the applicant will approach the concerned authorities of Indian Bureau of Mines for granting the permission.
- (iii) it is also certified that the information's furnished in the above Scheme of Mining are true & correct to the best of my knowledge.

Signature of RQP

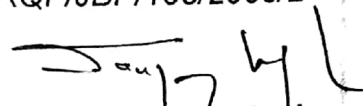
Place : Maihar

Date: 16.08.2011



SIGNATURE OF RQP  
for : **Balram Singh Associates Pvt. Ltd.**

Regd. No. - RQP/JBP/105/2003/B

  
**Sanjay K. Singh**  
Authorised signatory

Key person :-

  
**R. C. Bansal**  
(Min. Engg.)

  
वन मण्डलाधिकारी  
का बजल सतना

This Scheme of Mining in respect of **Piparitola Laterite, White Clay & Ochre Mine** Area -8.0 ha.(7.972 ha. for mining and 0.028 ha. extraction path), Mineral - Laterite, White Clay & Ochre, Village -PIPARITOLA, Tehsil - Raghurajnagar Distt.: Satna (M.P.) regarding Mining lease under Rule - 12 of M.C.D.R. 1988 has been prepared by M/s. **Balram Singh Associates Pvt. Ltd.** Regd. No.- RQP/JBP/105/03/B. I request Deputy Controller of Mines, I.B.M. Jabalpur to make further correspondence regarding modification of the Scheme of Mining with the said recognised person on their following address :

**Balram Singh Associates Pvt. Ltd.**

Regd. No. : RQP/JBP/105/2003/B

Chopra Colony, P.O.- Maihar

Distt. : Satna (M.P.) Pin : 485771

Phone : (07674) 232473

e-mail-bsapl\_myr@rediffmail.com

I hereby undertake that all the modifications so made in the Scheme of Mining by the recognised person may be deemed to have been made with my knowledge & consent & shall be acceptable to me and binding on me in all respects. I have understood the contents of the Scheme of Mining and agree to implement the same.

PLACE : JAITWARA

Date : 16.08.2011

Signature of the Owner

SHARAD KUMAR BANSAL  
Lessee



श्री.मि.डी/अपुनवले

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वन मण्डल सतना

## UNDERTAKING

1. This is to undertake that the Lease boundary points as indicated on the surface plan are marked in the field and the precise lease area forms the basis for preparation of Scheme of Mining of Piparitola Laterite, White Clay & Ochre Mine in Village PIPARITOLA, Tehsil - Raghurajnagar, Distt.: Satna (M.P.) over an area of Area - 8.0 Ha.

The boundary pillars erected on these points shall be maintained in good shape and condition throughout the subsistence of lease as per provisions under rule 33 of MCR, 1960 and item No. 2 part-VII of form K of MCR, 1960.

2. This is to certify that the PMCP of Piparitola Laterite, White Clay & Ochre Mine in Village PIPARITOLA, Tehsil - Raghurajnagar, Distt.: Satna (M.P.) over an area of Area - 8.0 Ha. complies all statutory Rules, Regulations, orders made by the Central or State Government, Statutory organizations, Court etc. and wherever any specific permission is required the I will approach the concerned authorities. I also give an undertaking to the effect that all the measures proposed in Closure Plan will be implemented in time bound manner as proposed.

3. Certify that "The provisions of Mines Act, Rules & Regulations made there under have been observed in the Scheme of Mining of Piparitola Laterite, White Clay & Ochre Mine in Village PIPARITOLA, Tehsil - Raghurajnagar, Distt.: Satna (M.P.) over an area of Area - 8.0 Ha. of SHR SHARAD KUMAR BANSAL, and where specific permission are required the lessee will approach the DGMS.

Further the standards prescribed by DGMS in respect of miners health will be strictly implemented".

4. I Sharad Kumar Bansal, Owner of Piparitola Laterite, White Clay & Ochre Mine, Area - 8.0 Ha. i Distt - Satna (M.P.) do hereby under take that "During the pendency of approval of Scheme of Mining if there is any change in the name/address of the lessee, it will be informed to the competent authority/IBM promptly".

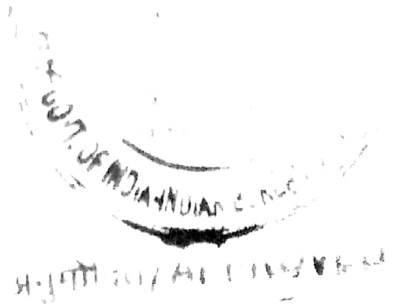
PLACE : JAITWARA

Date : 16.08.2011

Signature of the Owner



SHARAD KUMAR BANSAL  
Less



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**SCHEME OF MINING  
OF  
PIPARITOLA LATERITE, WHITE CLAY & OCHRE MINE**

LESSEE

**Shri Sharad Kumar Bansal**

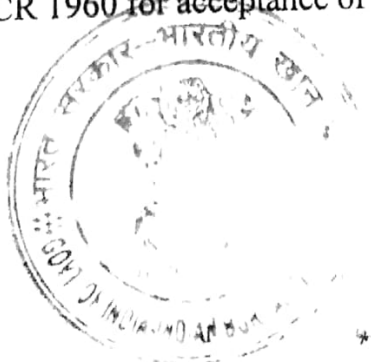
**INTRODUCTORY NOTE :-**

This Scheme of Mining has been prepared under Rule - 12(3) of M.C.D.R 1988. The guide line applicable for Very small 'B' category mine has been followed. This will be manual mine without drilling and blasting will be done.

The area under reference is situated in Village Piparitola of District Satna (M.P.) under mining lease for 10 years period w.e.f. 01.09.1994 to 31.08.2014(Annexure-2). The lease area is forest land and the forest clearance under Section -2 of FCA 1980 was also accorded by the MoEF vide letter No. - 8-C/5/435/1997-FCW/2971 dated 19.12.2002 and by the State Forest Department vide letter No. - F-5/18/97/10/3 Bhopal, dated 05.03.2003(Annexure-3). The forest clearance was also given over 8.0 ha. area which included 7.972 ha. for mining and 0.028 ha for extraction path joining road in revenue land to ML area.

The lessee later found 3.40 Hect area to be non mineralised, barren / un worked towards north and south and as such applied for surrender of part mining lease area (3.40 Hect.). This was since the working in this portion was uneconomical due to poor mineralisation and imposition of NPV by the forest department after more than 2 years of lapse of mining lease period. This is in light of Hon'ble Supreme Court of India order dated 15.09.2006 which directed to collect NPV from lessees already granted ML's after 30.10.2002.

The forest department vide letter No.- 8-C/5/435/1997-FCW/1805 dated 21.07.2009 (Annexure-4) has accepted the application and has granted approval under FCA 1980 for retention of 4.60 ha. area which includes 4.572 ha. for mining purpose and rest 0.028 ha for extraction path and surrender of balance 3.40 ha. area. The State Govt. of M.P. has issued communication letter No. F3-144/95/12/1 dated 24.04.2010 to comply the provision of Rule 29 (A) of MCR 1960 for acceptance of surrender.



*P. L. Bansal*  
P. L. Bansal  
Minister of Mines  
Government of India  
New Delhi

A mining plan was prepared and approved by the Indian Bureau of Mines vide letter no. - MP/Satna/Ochre/MPLN/Mod-4/04-05 dated 14.10.2004 over an area of 8.0 ha under modification in approved mining plan in Rule 10 of MCDR- 1988. No mining i.e. development / production, disposal of waste and related ancillary mining activities has been carried out within the curtailed area and does not forms the part of the proposed ML area.

The mine was 1<sup>st</sup> opened on 20.02.2007 after completion of the statutory approval by the MoEF of Environment Clearance under EIA Notification 2006 and hence 5 year proposal period was from 2006-07 to 2010-11. This Scheme of hence has been prepared under Rule 12(3) of MCDR 1988 for period w.e.f. 2011-12 to 2014-15 up to 31.08.2014 which is the expiry of the ML period.

The Final Mine Closure Plan over the surrendered area of 3.40 hect. under the provisions of Rule 23 (C) of MCDR 1988 has been submitted separately.

List / details of Mining leases granted/executed in favour of the applicant in the state and country:

Sl. No	Lease references No & date	Area (Ha.)	Postal address/location	Type of minerals	Remarks
1.	Piparitola Laterite Mine	23.223	P.O. – Pagar Khurd Via. Birsinghpur (Satna)	Laterite	Working Mine
2.	Piparitola Laterite & Ochre Mine	34.168	P.O. – Pagar Khurd Via. Birsinghpur (Satna)	Laterite & Ochre	Working temporarily discontinued
3.	Piparitola Laterite, Ochre & White Clay Mine	8.0	P.O. – Pagar Khurd Via. Birsinghpur (Satna)	Laterite, White Clay & Ochre	Working Mine
4.	Batahra Laterite, Ochre & White Clay Mine	28.78 Acres	P.O.- Pratappur Via. Birsingpur. (Satna)	Laterite, White Clay & Ochre	Working Mine

Coordinates of Pillar –

Pillar No.	Latitude	Longitude
A	24°50'40.5"	80°55'6.4"
B	24°50'40.3"	80°55'6.8"
1	24°50'42.7"	80°55'6.8"
2	24°50'46.3"	80°55'15.9"
3	24°50'50.5"	80°55'15.6"
4	24°50'49.2"	80°55'8.8"
5	24°50'50.5"	80°55'7.3"



## 1.0

## 1.1

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## 1.2

(i) The Mining plan was approved under 22 of MCR 1960 on 04/09.12.1997 vide letter No.M.P./Satna/Ochre/MPLN/G-36/1997-98/3668.

(ii) The Modification in **Approved** Mining plan was approved under 10 of MCDR 1988 on 14.10.2004 vide letter No. - **M.P./Satna/Ochre/MPLN/Mod-4/2004-05**.

### 1.3

The date of commencement of mining operation is 20.02.2007.



1.4

A review of compliance position of salient feature of the Mining plan on chapter wise basis bringing out marked deviations, if any, and justifications/reasons thereof. Items to be covered may include exploration, mine development, exploration, afforestation programme, reclamation & rehabilitation, control of dust, noise and ground vibration and if any other significant features :-

### [i] EXPLORATION

The area was explored during the PL period by way of given 2 bore holes up to the depth of 10m each. There was also a pit towards west in old expired ML area of Shri Shiv Kumar. No exploration is proposed during the proposal period of SOM.

PROPOSAL AS PER APPROVED SOM			ACHIVEMENT	
TYPE OF EXPLORATION	QUANTUM SIZE/NOS.	LOCATION	Type	QUANTUM SIZE/NOS.
Nil	Not applicable.	Not applicable.	2 trial pits.	The trial pit of size 5m x 5m x 3m was given from toward west and east. The same has now merged in to the quarry.

**Justification:** There is deviation as additional exploration has been carried out.

Signature/Approved

#### 1.4.(ii) Mine Development :-

The development in the area was proposed at one place. A quarry was proposed towards north and proposed to be advanced towards south, east & west.

#### PROPOSAL AS PER APPROVED SOM -

Pit No.-1			BROKEN AREA HA/m2			PIT BOTTOM RL	
BENCHES		SIZE-M(HXW)	At beginning of proposal period	ADDITI ONAL propos ed	At end of proposal period	At beginning of proposal period	At end of proposal period
SOIL/laterite	S1	1.5 x 1.5	Nil	0.4365	0.4365	NA	379 mRL (360m AMSL)
OB/WASTE	B2 & B3	1.5 – 2.0 x 3.0					
Ochre	B4 to B7	1.5 x 1.5					

#### Actual Achieved during proposal period -

				BROKEN AREA-HA/m2			PRESRNT
	BENCHES		SIZE-M(HXW)	At beginning of proposal period	ADDITIONAL Achieved	At end of proposal period	PIT BOTTOM RL(lowest)
Pit No.-1	SOIL	S1	1.5 x 1.5	Nil	0.10	0.10	360m AMSL
	OB/WASTE	B2 to B4	1.5 - 1.75 x 1.75				
	Ochre	B5	6.0 x 6.0				
Pit No.-2	SOIL/laterite	S1	1.0 x 1.5	Nil	0.16	0.16	361m AMSL
	Ochre	B5	3.0 x 3.0				

**JUSTIFICATION -** The mine development was on lower side. This was due to mine closed by forest department w.e.f. 31.08.2008 to 24.09.2009 for nonpayment of NPV . The place of development also deviated. Development was proposed at one place while was carried out at two places.



## 1.4 (iii) EXPLOITATION

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

	PROPOSAL							ACHIVEMENT				
	YRS	SOIL M3	WASTE E M3	TOTAL OB	MINERAL MT		SR	SOIL M3	WASTE M3	TOTAL OB	MINERAL MT	SR
					Ochre	Laterite					Ochre	
Propo- sal period	2006- 2007	630	1762	2390	653	1575	1:2.22	200	400	600	607.850	1:0.98
	2007- 2008	368	1059	1427	743	919	1:1.60	400	700	1100	2635.40	1:0.41
	2008- 2009	446	1118	1564	3380	1115	1:0.44	600	1000	1600	3653.60	1:0.43
	2009- 2010	525	1190	1715	3892	1312	1:0.41	500	900	1400	8102.00	1:0.17
	2010- 2011	1087	2772	3859	10776	2719	1:0.32	140 0	2500	3900	4790	1:0.81
	TOTAL	3056	7901	10957	19444	7640	1:0.40	310 0	5500	8600	19788.85	1:0.43

**Justification:** The exploitation of over burden removal and production was on lower side. This was due to closure of mine.

(iv) Afforestation –

0.10 ha. was covered under green belt at the commencement of the approved Scheme of Mining period. Year wise proposal and achievement from the mine is given in table below.

**PROPOSAL**

YEAR	AFFORESTATION PROGRAMME ON										
	BACKFILLED AREA		WASTE DUMPS		GREEN BELT		BENCH/BF SLOPE		OTHER areas		SIRVIVAL RATE
	AREA	NOS	NOS	AREA	NOS	AREA(sq.m)	NOS	AERA	NOS	AERA	
2006-2007	-	-	-	-	200	1000	-	-	-	-	80%
2007-2008	-	-	-	-	200	1000	-	-	-	-	80%
2008-2009	-	-	-	-	200	1000	-	-	-	-	80%
2009-2010	-	-	-	-	200	1000	-	-	-	-	80%
2010-2011	-	-	-	-	200	1000	-	-	-	-	80%
TOTAL	-	-	-	-	1000	5000	-	-	-	-	80%

**ACHIVEMENT**

YEAR	AFFORESTATION DONE ON										
	BACKFILLED AREA		WASTE DUMPS		GREEN BELT		BENCH/BF SLOPE		OTHER areas		SIRVIVAL RATE
	AREA	NOS	AREA	NOS	AREA (sq.m)	NOS	AERA	NOS	AERA	NOS	
2006-2007	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2007-2008	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2008-2009	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2009-2010	Nil	Nil	Nil	Nil	800	500	Nil	Nil	Nil	Nil	90%
2010-2011	Nil	Nil	Nil	Nil	200	100	Nil	Nil	Nil	Nil	90%
TOTAL	Nil	Nil	Nil	Nil	1000	600	Nil	Nil	Nil	Nil	90%

**Justification:** The afforestation achieved is on lower side due to intervention in mining operations by the forest department in between the ML period. The native species planted were of Kangi, Khamar, Eucalyptus, Jetropa.

**(v) Waste management**

**OB MANAGEMENT SOIL** –The soil is in form of lateritic soil. There is no top soil in the area. There were no external waste dumps at the beginning. During proposal period lateritic soil to be generated was proposed to be stacked in non mineralized area towards south for 3 years and then simultaneous backfilling was proposed. For proposed dimension of dumps at the end of proposal period, refer previous 5<sup>th</sup> year Development plan.

5 YR PROPOSAL			5 YR ACHIVEMENT		
GENRATION M3	DISPOSAL -M3		GENRATION	DISPOSAL-M3	
	For External Dumping	Backfilling		FOR AFFORESTATION	STORED
3056	1444	1612	3100	NA	NA

The lateritic soil has been utilized for preparation and maintenance of the extraction path and haul road within the area.

**WASTE –**

There were no external waste dumps at the beginning. During proposal period, waste to be generated was proposed to be stacked in non mineralized area towards south for 4 years and then simultaneous backfilling was proposed. For proposed dimension of dumps at the end of proposal period, refer previous 5<sup>th</sup> year Development plan. The mine waste in the form of fines created during mining has been utilized for preparation and maintenance of the extraction path and haul road within the area.

Proposed and actual waste management in proposal period is given in table below.

PROPOSALS 5 YR				ACHIVEMENT 5 YR			
GENRATIO N M <sup>3</sup>	DISPOSAL			GENRATION M <sup>3</sup>	DISPOSAL		
	BACKFILLI NG-M <sup>3</sup>	EXTERNA L DUMPING M <sup>3</sup>	OTHERS M <sup>3</sup>		BACKFI LLING	EXTER NAL DUMPI NG	OTHERS (Maintenance of approach road)
7901	2772	5129	Nil	5500	Nil	Nil	5500

(vi) Reclamation of mined out area

PROPOSAL PERIOD	RECLAMATION BY BACKFILLING IN M2/HACT.	REHABILITATION IN M2/HACT			REHABILITATION OF MATURED DUMPS BY COMPACT ION & AFFOREST ATION	PROTECTIVE MEASURES FOR DUMPS(GD/RW/ST)*
		OF BF AREA	OF BENCH/SLOPE BY PLANTATION	WATER HARVESTING		
PROPOSAL	1520	Nil	Nil	Nil	NA	Nil
ACHIVEMENT	Nil	NA	NA	NA	NA	NA

(vii) **Control of dust, noise and vibration and any other significant features :-**

The dust generated due to mining activities and plying of vehicles was controlled by Sprinkling of water. The noise level was below 60 dBA. There is no significant dust and noise polluting source due to manual operation in the mine. Hence, no deviation from the approved Mining Plan. There are no other significant features.

(viii) **Any other significant feature :-** Nil

## CHAPTER - II

### PROPOSAL UNDER SCHEME OF MINING FOR THE NEXT 5 YEARS:-

#### 2.0 **EXPLORATION AND RESERVES**

##### 2.1 Reserve estimated in the approved mining plan with grade:-

Proved geological reserve of Red Ochre	= 4,05,000 t.
Proved geological reserve of Laterite	= 2,25,000 t.

##### Grade :-

The ochre is of moderate grade and suitable for colour washing.

##### 2.2 Depletion of reserve during the period of the approved Mining Plan:-

The depletion of the reserve during the period of Mining Plan is as under -

Year	Production(t.) Ochre
2006-07	607.850
2007-08	2635.400
2008-09	3653.600
2009-10	8102.000
2010-11	4790
<b>Total</b>	<b>19788.850 t.</b>



##### 2.3 Additional reserve established (wise with basis and parameters considered) during the period of mining plan:-

###### (a) The reserve as per approved Mining Plan.

Proved geological reserve of Red Ochre	= 4,05,000 t.
Proved geological reserve of Laterite	= 2,25,000 t.

###### (b) Ore depleted, Red Ochre      Saleable ore = 19788.85 t.

###### (c) Balance reserve as per approved Mining Plan :-

Proved geological reserve of Red Ochre	= 4,05,000 t. - 19788.850 t. = 3,85,211.15 t.
Proved geological reserve of Laterite	= 2,25,000 t.



(d) **Additional reserve established: -**

No additional reserve has been established. Instead no economically mineable laterite was found. The updated reserves are hereunder in view of UNF classification implemented.

**Method of estimation of mineral reserves:-**

The total mineral resource has been calculated by surface area method. In this method the surface mineralised area has been multiplied by the average thickness of the ore body to find out the volume. This in turn has been multiplied by the bulk density to find out the tonnage. The mineral reserve thereafter has been calculated by depleting remaining resource from total mineral resource.

**Categorisation of total mineral resources and mineral reserve:-**

The total mineral resource has been put under 332 category while the mineral reserve has been put under 122 category as per the UNF classification.

1) **Economic Axis:-**

E-1 - (i) Detailed exploration laterally as well as in depth by way of pitting.

(ii) Mining report/Mining Plan prepared under Rule 22 of MCR 1960 & 12(3) of MCDR 1988.

(iii) Specific end use grade of reserve established. The reserves of ochre is of moderate grade suitable for colour washing.

(iv) Specific knowledge of forest and other land use data available. The lease area is forest land.

2) **Feasible Axis: - Pre Feasibility study carried out**

F-2 - 1. **Geology:** Local geology, Mineralogy and Geometry of the ochre deposit in the lease area established during mining operations. The identification of the ore body carried out and only ochre is found to occur in the lease area.

2. **Mining:** The mine will be worked by manual method. Pre production & development plan prepared and appended. The estimate of man power has been carried out.

3. **Environment :** Base line data on environment such as AAQ data, soil analysis, surface & ground water sampling, noise level data and land use data etc. has been generated and appended as annexure of the Scheme of Mining.



4. **Processing:** No processing is proposed at mine site.

5. **Infrastructure:** Infrastructure & services - Site services such as rest shelter, first aid room, drinking water facilities etc. will be provided in compliance of Mines Act 1952 and Mines Rules 1955.

6. **Costing :** Capital cost and operating cost has been evaluated based on comparable mining operations and appended in feasibility report.

7. **Marketing :** The Ore of the lease area is proposed for colour washing in local market.

8. **Economic Viability :** The mine is economically viable.

9. **Other factors :** Statutory provisions relating to land etc. has been complied while labour, mining and taxation etc. will be done during the course of mining.

3) **Geological Axis :-**

G-2 - 1. (i) **Geological survey :** Mapping on a scale of 1:1000 with triangulation points & bench marks carried out and shown in surface geological plan. Extensive pitting has been done and the nature of deposition of minerals have been shown on geological plan & section.

(ii) Linking of map with topogrid carried out and latitude and longitude of the corner points taken.

(iii) Assessment of lithology carried out based on the exposures in the pit, structure and surface mineralization studied and mapped during the course of mining and given in the Scheme of Mining.

2. **Geochemical survey :** Detailed sampling of the quarry face.

3. **Geophysical survey :** Geophysical survey carried out.

4. **Technological :** Extensive pitting carried out through the lease area. 2 pits exist within 7.972 ha. area for mining in lease area. The deposit is regular. Surface and sub surface lithology and co-relation of mineralised zones carried out by above mentioned pitting. 150m influence of pit has been taken.

G-2 - **Technological:** 150m influence has been taken.



**Mineral Resources :-**

(i) Indicated Mineral Resource (332)

Resource = Surface mineralised area x Av. Thickness of ore body x Bulk density x % recovery

Surface Mineralised Mineable area, Ochre = 52,500 ha.

Av. Thickness, Ochre = 4.5 m

Bulk density, Ochre = 2.0

Recovery, Ochre = 90%

Ore depleted due to previous mining, Ochre = 19,800 t.

Hence, Indicated Mineral Resource (332) of Ochre

$$= [(52,500 \text{ sqm} \times 4.5 \text{ m} \times 2.0 \times 0.9) - 19,800 \text{ t.}] = 4,21,200 \text{ t.}$$

**Mineral reserve and Remaining Resources:-**

Mineral reserve = Total mineral resource - Remaining resources

**Remaining Resources (Pre Feasibility Mineral Resource - 222)**

The following are the Pre Feasibility Mineral Resource under UNF classification 222 after deduction of all statutory barriers as per MMR 1961, MCR 1960 and MCDR 1988 and as per definition of Public works.

**Ochre -**

(1) Deduction due to 7.5 m barrier as per M.M.R. 1961

$$= \text{Length} \times \text{width} \times \text{Av. Thickness} \times \text{B.D.} \times \% \text{ recovery}$$

$$= 1000 \text{ m} \times 7.5 \text{ m} \times 4.5 \text{ m} \times 2.0 \times 0.90 = 60,750 \text{ t.}$$

(2) Deduction due to slope stability =  $945 \text{ m} \times 3.0 \text{ m} \times 4.5 \text{ m} \times 2.0 \times 0.90$   
 $= 22,964 \text{ t.}$

(3) Deduction due to proposed curtailment of area by forest department and surrender by the applicant

$$= \text{Area} \times \text{Av. Thickness} \times \text{B.D.} \times \% \text{ recovery}$$

$$= 7500 \text{ sqm} \times 4.5 \text{ m} \times 2.0 \times 0.90 = 60,750 \text{ t.}$$

Hence, total Feasibility Mineral Resource under UNF classification 222

$$= 60,750 \text{ t.} + 22,964 \text{ t.} + 60,750 \text{ t.} = 1,44,464 \text{ t.}$$

**Mineral reserve and Remaining Resources:-**

Mineral reserve = Total mineral resource - Remaining resources

$$\text{Mineral reserve of Ochre} = 4,21,200 \text{ t.} - 1,44,464 \text{ t.} = 2,76,736 \text{ t.}$$

- 2.4 Updated reserve with grade( indicate end use grade with analysis) as well as marginal grades, based on above:-

**MINERAL RESERVE AS PER UNFC CLASSIFICATION :-**

United Nations Frame-work Classification (UNFC)	UNFC code	Ochre (tones)	Grade
Proved Mineral Reserve	111	-	The Ochre is of moderate grade.
Probable Mineral Reserve	122	2,76,736	
Feasibility mineral Resource	211	-	
Pre-Feasibility Mineral Resource	222	1,44,464	
Measured Mineral Resource	331	-	
Indicated Mineral Resource	332	-	
Inferred Mineral Resource	333	-	
Reconnaissance Mineral Resource	334	-	

- 2.5 Year wise exploration proposed to be carried out during the ensuing 5 year period.  
Location of trial pits and/ or boreholes to be depicted on the geological plan:-

No exploration will be carried out. Instead the working will be spread in both the pits so that the influence of each pit comes within 100m distance.

## CHAPTER - III

3.0

### **MINING**

3.1

#### **Year wise development for the ensuing four years period:-**

Opencast manual method of mining has been adopted in the lease area using hand tools like crowbars, sledge hammers, chisels & spades. Loading of OB and ore into the tippers is done manually. Haul road has been extended to the bottom of the quarry. No blasting has been done nor is required. The same method of mining will be continued in future.

There are 2 pits existing in the ML area. The details are furnished here under -

**Pit No. -1 in North West - 50m x 16m x 12m**

**Pit No. -2 in S-E - 90m x (7 - 35)m x (2-4)m**

The development is proposed at two places in pit 1 & 2 towards north west and south east respectively. It is proposed to extend pit -1 towards east and pit - 2 towards north east.

This will be done in order to mine out both the minerals and suitably blend ochre.

The pit - 1 will be developed in three benches in over burden. The height of the 1<sup>st</sup> bench in lateritic soil will be up to 1.0m and width 1.5m. The 2<sup>nd</sup> and 3<sup>rd</sup> bench will be in weathered sand stone. The height and width of the benches will be 3.0m each. Development in mineral ochre will be carried in two benches. The height of the benches will be 3.0m each. The width of 1<sup>st</sup> bench will be 3.0m and that of last will follow the quarry floor.

The pit - 2 will be developed in one bench in over burden lateritic soil/ weathered sand stone. The height and width of the benches will be 1.0m and width 3.0m. Development in mineral ochre will be carried in one bench of height 3.0m and width will follow the quarry floor.

This being a opencast manual mine, no labour camp will be required. The transport of men is not applicable and they come from nearby villages on their own foot. They take the equipment/tools/material with them. No tubs, haulage rope, conveyor or locomotive will be used. The OB and ore will be loaded manually on dumpers or trucks.

3.2

#### **Year wise production for the ensuing four years period :-**

Production will be carried out by manual means using hand tools. No blasting has been done nor is required. It is proposed to extend eastern face of pit 1 towards further east and the eastern face of pit - 2 towards north east. Production will be carried out from 2 benches in pit - 1 of height and width equal to 3.0m.. The production from pit - 2 will be carried out in one bench of height and width equal to 3.0m.

Year wise development / production for the next four years: -

Pit - 1	Bench	Bench - 1 Lateritic Soil	Bench - 2 Weathered Sand Stone	Bench - 3 Weathered Sand Stone	Bench - 4 Ochre	Bench - 5 Ochre	Soil (m <sup>3</sup> )	OB/Waste (m <sup>3</sup> )	Prod'n. (t.)	Stripping ratio
Area affected (sqm)		1320	1134	1080	1026	765				
Av.Face Height (m)		1.0	3.0	3.0	3.0	3.0				
Volume (cum)		1320	3402	3240	3078	2295				
Prodction (t.)		-	-	-	5540	4131	1320	7179	9671	1:0.87
Soil (m <sup>3</sup> )		1320	-	-	-	-				
O.B./Waste (m <sup>3</sup> )		-	3402	3240	308	229				
Reduced level(m)		373	367	367	364	361				
Area affected (sqm)		858	819	780	741	765				
Av.Face Height (m)		1.0	3.0	3.0	3.0	3.0				
Volume (cum)		858	2457	2340	2223	2295				
Prodction (t.)		-	-	-	4001	4131	858	5248	8132	1:0.75
Soil (m <sup>3</sup> )		858	-	-	-	-				
O.B./Waste (m <sup>3</sup> )		-	2457	2340	222	229				
Reduced level(m)		373	370	367	364	361				
Area affected (sqm)		858	819	780	741	765				
Av.Face Height (m)		1.0	3.0	3.0	3.0	3.0				
Volume (cum)		858	2457	2340	2223	2295				
Prodction (t.)		-	-	-	4001	4131	858	5248	8132	1:0.75
Soil (m <sup>3</sup> )		858	-	-	-	-				
O.B./Waste (m <sup>3</sup> )		-	2457	2340	222	229				
Reduced level(m)		373	370	367	364	361				
Area affected (sqm)		858	819	780	741	765				
Av.Face Height (m)		1.0	3.0	3.0	3.0	3.0				
Volume (cum)		858	2457	2340	2223	2295				
Prodction (t.)		-	-	-	4001	4131	858	5248	8132	1:0.75
Soil (m <sup>3</sup> )		858	-	-	-	-				
O.B./Waste (m <sup>3</sup> )		-	2457	2340	222	229				
Reduced level(m)		373	370	367	364	361				
Total							3894	22923	34067	1:0.78

90% recovery of ochre has been taken from total volume of excavation.

Rest 10% is inter burden. B.D. of Red Ochre = 2.



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Year wise development / production for the next four years: -

Pit - 2

Yr	Bench	Bench -1 Soil Weathered Sand Stone	Bench -2 Ochre	Soil(m <sup>3</sup> )	OB/Wa ste(m <sup>3</sup> )	Production (t.) Ochre	Stripping ratio
11-12	Area affected (sqm) Av.Face Height (m) Volume (cum) Prodction (t.) Soil (m <sup>3</sup> ) O.B./Waste (m <sup>3</sup> ) Reduced level(m)	1105 1.0 1105 - 500 605 364	790 3.0 2370 4266 - 237 361	500	842	4266	1:0.31
12-13	Area affected (sqm) Av.Face Height (m) Volume (cum) Prodction (t.) Soil (m <sup>3</sup> ) O.B./Waste (m <sup>3</sup> ) Reduced level(m)	850 1.0 850 - 400 450 364	790 3.0 2370 4266 - 237 361	400	687	4266	1:0.25
13-14	Area affected (sqm) Av.Face Height (m) Volume (cum) Prodction (t.) Soil (m <sup>3</sup> ) O.B./Waste (m <sup>3</sup> ) Reduced level(m)	850 1.0 850 - 400 450 364	790 3.0 2370 4266 - 237 361	400	687	4266	1:0.25
14-15	Area affected (sqm) Av.Face Height (m) Volume (cum) Prodction (t.) Soil (m <sup>3</sup> ) O.B./Waste (m <sup>3</sup> ) Reduced level(m)	850 1.0 850 - 400 450 364	790 3.0 2370 4266 - 237 361	400	687	4266	1:0.25
Total				1700	2903	17064	1:0.26

90% recovery of ochre has been taken from 2<sup>nd</sup> bench.

Rest 10% is inter burden. B.D. of Red Ochre =2.



**Quantum of development and tonnage of production:**

YEAR	PIT NO	Top Soil IN M <sup>3</sup>	OB/Waste IN M <sup>3</sup>	SALEABLE ORE Ochre (MT)	Stripping ratio (T: cum)
2011-12	Pit 1 & 2	.	9841	13937	1:0.70
2012-13	Pit 1 & 2	.	7193	12398	1:0.58
2013-14	Pit 1 & 2	.	7193	12398	1:0.58
2014-15	Pit 1 & 2	.	7193	12398	1:0.58
<b>Total</b>		.	<b>31420</b>	<b>51131</b>	<b>1:0.61</b>



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Any change in the proposed method of Mining, Drilling, Blasting & development of machinery if so, given details: -

(a) **Method of mining: -**

Opencast manual method of mining was proposed in the approved Mining Plan and the same method has been adopted during past and will be continued in future also.

The O.B. and the mineral being soft has been excavated manually with hand tools like sledge, hammers, chisels, spades and crowbars. The haul road has been extended up to the bottom of the quarry. Loading and unloading is done manually.

(b) **Drilling: -**

No drilling has been proposed nor has been done and as such there is no change in the proposed method of mining.

(c) **Blasting: -**

Since no blasting has been proposed nor has been done, there is no change in this system also.

(d) **Broad blasting parameters: -**

Not applicable.

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

Since no drilling and blasting is done, no precautions are required to be observed.



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## CHAPTER - IV

### 4.0 DISPOSAL OF MINE WASTE & SEPARATE STACKING OF SUB GRADE MINERALS :-

4.1 Nature of waste & its rate of yearly generation: - The mine waste is in the form of: -

- (a) Soil: - There is no top soil. The soil is lateritic in the form of loose material.
- (b) Mine waste: - The mine waste is in form of lateritic soil, murrum and unaltered sand stone.

Present waste dumps: There is no waste dump in the ML area.

### YEAR WISE WASTE GENERATION

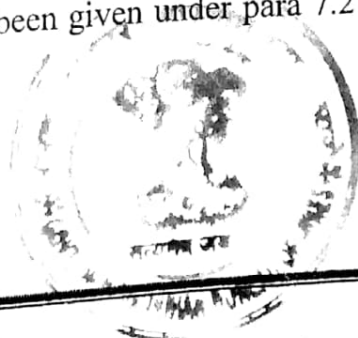
Year	Top Soil	OB/Waste(OBW+IW)	Sub grade	Reject
2011-12	-	9841	-	-
2012-13	-	7193	-	-
2013-14	-	7193	-	-
2014-15	-	7193	-	-
Total	-	31420	-	-

### OB/Waste disposal -

Year (A)	Waste generation during the year (B)	Old Waste dump handling during the year (C)	Total Waste Handled (D)	Effective Volume = $SF \times CF \times D$ (1.4 x 0.8 x D)	Quantity Disposed of on	
	M3	M3	M3	M3	Back fill area in pit 1 & 2	Maintenance of approach road
2011-12	9841	Nil	9841	11021	5000	6021
2012-13	7193	Nil	7193	8056	5000	3056
2013-14	7193	Nil	7193	8056	5000	3056
2014-15	7193	Nil	7193	8056	4000	4056
Total	31420	Nil	31420	35189	19000	16189

### 4.2 Selection of dumping site:-

No external dumping will be done. Simultaneous backfilling will be done in the excavated portion of the lease area. The year wise backfilling programme indicating area and depth of filling has been given under para 7.2 (c). The backfilled area has been shown on plate - 11 & 12.



43 **Method of dumping & maximum height and spread of dumps: -**

No external dumping will be done as mentioned above. Instead, simultaneous backfilling and reclamation will be done in the excavated portion of the lease area.

**Back fill configuration**

Pit- 1 & 2 -

A	B			C	D		
year	Size of back fill Portion at the begining of the year			Effective Quantity backfilled during the year	Size of back fill Portion at the end of the year		
	Bottom area M2	Top areaM2	Avg. height / thick ness	M3	Bottom area (M2)	Top area (M2)	Avg. height/ thickness (M)
2011-12	-	-	-	5000	1500	1000	4.0
2012-13	1500	1000	4.0	5000	2750	1750	4.5
2013-14	2750	1750	4.5	5000	3500	2500	5.0
2014-15	3500	2500	5.0	4000	4240	2000	6.0

**NB:** Part of mining waste will be used for road maintenance.

44 **Precautions for confinement of dumps to prevent pollution of surface water bodies / courses: -**

Backfilling will be done in the excavated area and pit boundary will prevent wash off and run off.

45 **Arrangement for separate stacking of sub-grade minerals: -**

No sub-grade mineral will be generated.



## CHAPTER - V

### USE OF MINERAL

Changes proposed in the specifications of mineral being sold including anticipated changes & new industries using the minerals: -

No changes are anticipated in specification and new industries using minerals. The lessee is producing limited amount of minerals and selling in above mentioned industries only.

Ochre is basically judged for its quality and sale value in physical properties like staining power, brilliance and fineness of texture. Ochre is mostly used for colour washing. Laterite is suitable for cement plants.

Efforts made for utilisation of the sub-grade minerals including fines :-

No sub-grade mineral is expected to be generated.

## CHAPTER - VI

### EMPLOYMENT POTENTIAL

Management & supervisory personal :-

1.	Mining Engineer	-	1
2.	Mining mate	-	1
3.	Supervisor	-	1
4.	Part time Geologist	-	1

Labour skilled, semi-skilled & un-skilled :-

1.	Skilled (Gang men)	-	1
2.	Semi-skilled (Face workers)	-	16
3.	Un-skilled (Loader & other)	-	4
4.	No. of working days	-	300
5.	Targeted production per year	-	15,000 t./year

The statutory requirement in respect of miners health will be implemented as per rules.

# CHAPTER - VII

## ENVIRONMENTAL MANAGEMENT PLAN

7.0

ENVIRONMENTAL MANAGEMENT PLAN												
Item	Proposals as per approved Mining Plan				Position at the end of 5 year of Mining Plan		Proposal for the next 4 year of Scheme of Mining period					
Top soil storage, preservation and utilisation	There is no top soil in the area. The lateritic soil was proposed to be stacked in south non mineralized area for three years and then simultaneous backfilling was proposed.				No top soil was generated.		No top soil is expected to be generated.					
Land reclamation & Rehabilitation	Reclamation was proposed to be carried out of mined out area from 4 <sup>th</sup> year onwards. About 1520 sqm area up to 6.0m height was proposed to be backfilled.				No reclamation was carried out in view of mining not carried out up to full depth of mineralization and insufficient space at quarry bottom to do so.		Simultaneous land reclamation is proposed as per proposal given in chapter 4.3 and 8.4 during the ensuing Scheme of Mining period.					
Waste dump management	The over burden and waste was proposed to be stacked for 3 to 4 years and then simultaneous backfilling was proposed.				No reclamation was carried out as the mine waste generated was meager and utilised for maintenance of approach road.		The OB/waste will be simultaneously backfilled in chapter 4.3 and 8.4 during the ensuing Scheme of Mining period.					
Afforestation programme with precaution for survival and protection of plantation	Year wise afforestation as per the below :-				No afforestation was carried out.		Plantation will be done in the east side boundary as well as backfilled area per the programme given below.					
	Year	No. of trees	Area (ha.)	SR	Year	No of trees	Area (ha)	SR				
	07-08	200	0.10	80%	07-08	Nil	Nil	Nil	11-12	50	0.05	80%
	08-09	200	0.10	80%	08-09	Nil	Nil	Nil	12-13	50	0.05	80%
	09-10	200	0.10	80%	09-10	500	0.08	90%	13-14	110	0.11	80%
	10-11	200	0.10	80%	10-11	100	0.02	90%	14-15	115	0.115	80%
									The species of Babool, Sub-babool and Mango trees will be planted every year.			

Quality of mine water and any interference with surface water sources.	The mine water gets sufficient time for settling and as such is clear. No surface water course exists within the ML area and hence no interference.	No change.	No change.
Fly rock problems and precautions	No drilling and blasting was proposed and hence not applicable.	No change.	No drilling and blasting is proposed and hence not applicable.



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## CHAPTER - VIII

### CONCEPTUAL MINING PLAN

Time frame of completion of mineral exploration programme in lease hold area:-

The lease area was earlier held under PL by the applicant. There are two pits existing at 140m distance apart. The pits will be extended within 4 years such that the distance is reduced within 100m. Hence no exploration has been proposed after 4 years of ensuing Scheme of Mining period. The applied area will be sufficiently explored will be completed within 2 years to establish the nature and extent of mineralization under 111 category of reserves.

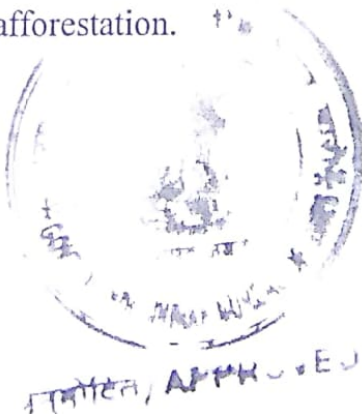
TYPE	AS ON DATE		DURING PROPOSAL PERIOD			DURING CONCEPTUAL PERIOD		
	QUANTUM NO./SIZE	AREA COVERED	TYPE	QUANTUM NO./SIZE	AREA COVERED	TYPE	QUANTUM NO./SIZE	AREA COVERED
PITS	2 No,	0.20 ha.	PITS	2 No,	0.75 ha.	PITS	1	3.822 ha.
	Nil	NA	TRENC H	Nil	NA	TRENC H	Nil	NA
	Nil	NA	BH	Nil	NA	BH	Nil	NA
	Nil	NA	OTHER	Nil	NA	OTHER	Nil	NA

Whether ultimate pit limit has been determined and demarcated on surface and geological plan:-

Ultimate pit limit has been determined and demarcated on the surface and geological plan. The dimension of the conceptual pit will be as follows -

	Size at surface	Size at floor
Area	2000 sqm	2200 sqm
Depth	4m to 12m	

The ultimate slope will be 45°. The conceptual pit position at the end of life of mine will be leaving 7.5m barrier as per MMR 1961 covering an area of 3.822 ha. How ever at final closure of mine no void/ pit will remain and the total degraded area will be reclaimed and rehabilitated by way of afforestation.



Whether the site (s) for disposal of waste rock & unsaleable ores (has/have been examined for adequacy of land & suitability of long terms use in the event of continuation of mining activity.)

The site for disposal of waste rock has been examined for adequacy of land and suitability of long terms use in the event of continuation of mining activity. No external dumping will be done. Simultaneous backfilling has been proposed. The details regarding this are as under -

The quantity of OB/waste to be generated during next 5 years = 29,371 cum

The quantity of OB/waste to be generated by the end of mine life = 1,40,000 cum.

Area to be backfilled during next 5 years = 0.424 sqm

Area to be backfilled at the end of life of mine = 3.822 ha.

Whether backfilling of pits after recovery of ore / mineral upto techno-economical feasible depth envisaged, if so, describe the broad features of the proposal :-

Backfilling has been proposed during the ensuing mining scheme period as per programme given under para 4.4 and detailed here under. This is in view of mining done upto full depth of mineralisation.

#### Back fill configuration

Pit - 1 & 2 -

A	B			C	D		
year	Size of back fill Portion at the beginning of the year			Effective Quantity backfilled during the year	Size of back fill Portion at the end of the year		
	Bottom area M2	Top area M2	Avg. height / thickness	M3	Bottom area (M2)	Top area (M2)	Avg. height/ thickness (M)
2011-12	-	-	-	5000	1500	1000	4.0
2012-13	1500	1000	4.0	5000	2750	1750	4.5
2013-14	2750	1750	4.5	5000	3500	2500	5.0
2014-15	3500	2500	5.0	4000	4240	2000	6.0





## Conceptual reclamation and rehabilitation -

### (i) Present land use -

1.	Pits and quarries	-	0.26 ha
2.	Dumps	-	Nil
3.	Road / Infrastructure	-	0.128 ha
4.	Forest / barren land	-	4.112 ha.
5.	Plantation	-	0.10 ha

### (ii) Area under use during the plan period -

1. Pits and quarries - 7549 sqm area will be degraded in original forest/ barren land.
2. Dumps - No dumping has been proposed.
3. Road - No further road construction will be needed.
4. Green Belt - Plantation will be carried out in 0.20 hect. area towards the north - western barrier zone.
5. Site services - Rest shelters will be made in 0.01 hect. area in original waste/ barren land.
6. Proposed reclamation & rehabilitation - Reclamation will be carried out simultaneously from 1st year onwards. 4,240 sqm area will be backfilled up to 6.0m depth. Rehabilitation has been proposed in 0.125 ha. area by way of afforestation in pit -2.

### (iii) Area under use at conceptual stage -

1. Pits and quarries - 3.822 Ha area will be degraded. The original land use of this area is forest land.
2. Plantation - Green belt will be prepared in 0.75 ha. area which is presently barren land while plantation in reclaimed area will be done in 3.822 hect. area. Out of this 0.26 hect. is presently excavated and additional 4.314 hect. area is barren forest land.
3. Proposed reclamation & rehabilitation - Reclamation will be carried out simultaneously. About 1,800 sqm area will be reclaimed per year from 5<sup>th</sup> year onwards. Rehabilitation by way of afforestation will be carried out in 2,400 sqm area per year. The quantity of OB and waste to be utilised per year will be about 7,500 cum.



1. Green belt - 0.75 Hects.
2. Reclaimed and rehabilitated to Plantation - 3.822 Hects.
3. Details of sapplings - The recommended species are Neem, Gulmohar, Mango, Sagwan, Shisham, Kachnar, Bauhinia, Gamhar, Jamun, Agaves, etc. The spacing between the trees will vary from 1.0m to 3.0m. However minimum tree density of 1000 trees per hect. will be maintained at end. The expected survival rate will be 80%. Before final closure of mine it is proposed to develop plantation in 4.272 hect. with atleast 80% survival rate and height of 2m. During final closure of mine 0.30 hect. will be afforested and all efforts will be made for better survival of the sapplings and their healthy growth like watering, fencing, keeping watch and ward.

### RECLAMATION AND REHABILITATION STATUS of all pits and dumps

STATUS	MINI D OUT AREA in m2/hect t	RECLAM ATION BY BACKFIL LING in m2/hect	REHABILITATION in hect				REHABI LATION OF DUMP BY COMP& AFFO- RESTAT ON	PROTECTI VE MEASURE S FOR DUMPS(G D/RW/ST)
			OF BF AREA	OF BENCH/SLO PE BY PLANTATIO N	WATER RESERV OIR	TOTAL REHAB ILATE D AREA		
AT PRESENT	0.04	Nil	Nil	Nil	Nil	Nil	Nil	
AT THE END OF FIVE YEAR	0.60 ha.	0.424	0.125	Nil	Nil	0.125	Nil	Garland drain and bund
AT THE END OF CONCEPT UAL PERIOD	3.822 ha.	3.822 ha.	3.822 ha.	Nil	Nil	3.822 ha.	Nil	

Summary of Land use at different stage will be as follows :

Conceptual land use –

1.	Green belt	-	0.75 ha.
2.	Water harvesting	-	Nil
3.	Reclaimed & rehabilitated to Afforestation	-	3.822 ha.
4.	Extraction path afforested	-	0.028 ha.

Summary of Land use at different stage will be as follows ( in ha. ) :

	Existing	5 <sup>th</sup> year end	Mine Life end
1) Total area excavated (broken)	0.26	1.015	3.822
2) Area fully mined out (out of 1)	0.04	0.60	3.822
3) Area fully reclaimed (Backfilled out of 2)	Nil	0.424	3.822
4) Area rehabilitated out of 3 by afforestation	NA	0.125	3.822
5) Area reclaimed by water harvesting	Nil	Nil	Nil
6) Total area under dumps	Nil	Nil	Nil
7) Area under active dumps	Nil	Nil	Nil
8) Area under mineral stack	Nil	Nil	Nil
9) Area under Road	0.128	0.128	Nil
10) Area under Green belt (i.e. plantation on area other than dump and backfilled area)	0.10	0.30	0.778
11) Area under infrastructure	Nil	0.01	Nil
12) Undisturbed area	4.112	3.147	Nil



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Handwritten signature and a rectangular stamp with text in Hindi: 'महाराष्ट्र सरकार' (Government of Maharashtra) and 'पर्यावरण, वन और जल विभाग' (Department of Environment, Forest and Water).