

15th September, 2022

To

The Divisional Forest Officer
Cuttack Forest Division

Sub: No-forestry use of 168.948 ha of forest land adjacent to South-Kaliapani Mines of OMC for dumping of overburden of South-Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd.

Ref: (i) F. No. 8-19/2019-FC, dt 15.10.2019 of MoEF & CC, Govt. of India.
(ii) No.10F (Cons.) 89/16/19650/F&E dt 19.10.2019 of the State Govt., F & E Dept.
(iii) Letter No.72/5F (Mining) 12/2018 dt 02.01.2020 of DFO, Cuttack.

Sir,

The point wise compliance to the conditions stipulated in the grant order of Stage-I Forest Clearance issued by MoEF & CC, Govt. of India vide letter under reference (i), the additional conditions given by the State Govt. vide letter under reference (ii) and the instruction by DFO, Cuttack vide letter under reference (iii) to comply all the conditions pertaining to Dumping of Overburden Proposal for South-Kaliapani and Sukurangi Chromite Mines of OMC is furnished herewith for kind scrutiny:

i. *Legal status of the diverted forest land shall remain unchanged.*

In compliance, it is submitted that OMC will pursue the State Govt. to keep the legal status of the diverted forest land unchanged. An undertaking to this effect is given at Sl.No.1 of Annexure-I.

ii. *Compensatory Afforestation shall be raised over equal identified non-forest land (NFL) within three years from the date of issue of Stage-II Clearance and maintained thereafter by the State Forest Department at the cost of the User Agency and at least 1000 plants per hectare shall be planted over identified non-forest land. If it is not possible to plant so many saplings in the area identified for CA, the balance saplings will be planted in any other forests as per prescriptions of approved working plan with provision for ten years on subsequent maintenance.*

In compliance, it is submitted that a scheme for compensatory afforestation over 168.948 ha of non-forest Govt. land at the rate of 1600 plants per hectare in village Tarapadar (164.073 ha) and Bhattaguda (4.875 ha) under Thuamul Rampur Tahasil of Kalahandi district have been approved with a total financial outlay of Rs 102077000/- with a maintenance period of 10 years. DFO, Cuttack vide letter No.953/5F(Forest Diversion)-12/2018 dt 09.02.2022 had raised a demand equal to the amount approved and OMC transferred the amount online through RTGS mode vide UTR No. UBINJ 22045029458 dt 14.02.2022 in ORISSA CAMPA account No.150825832908013 in Union Bank of India (IFSC Code: UBIN 0903710), New Delhi. Due to revision in wage rate, DFO, Cuttack has raised a revised demand of Rs 12288300/- vide letter No.5947/5A (Forest Diversion) 12/2018 dt 08.09.2022. OMC has transferred the said amount online through RTGS mode vide UTR No. UBINK 22258016654 dt 15.09.2022 in ORISSA CAMPA account No.150825832908378 in Union Bank of India (IFSC Code: UBIN 0996335), New Delhi. The plantation scheme shall be executed by DFO, Kalahandi (S) within a period of three years from the date of issue of stage-II forest clearance. The copy of the approved CA scheme, demand

O/c

letter by DFO, Kalahandi (S) and copy of the documents in support of proof of the deposit of the funds by OMC is enclosed as **Annexure-II series**.

iii. It is seen that 11.242 ha of forest area is proposed for construction of Haul road. State Government may explore the possibility of construction of conveyer belt. This possibility may be explored prior to stage-II approval.

In compliance, it is submitted that OMC has explored the possibility of construction of conveyor belt for transportation of overburden dump and following are the observations:

- There is no space available within South-Kaliapani ML area for construction of a loading platform for overburden.
- The topography (225 mRL to 335 mRL) does not permit to align the conveyor belt on a slope of $>42^{\circ}$ up to the maximum elevation.
- The load of OB will not be possible conveying against gravity
- The average elevation of road beyond ML area starts from 225mRL and goes up to 335mRL and then fall to 131mRL. Because of undulated terrain, the conveyor system has to accommodate both uphill and downhill conveying, which is not a feasible proposition for the instant case.
- Opencast mine does not generate uniform size overburden because of involvement of blasting operation. Conveyor systems are generally designed for a specified sized material. In order to convert the overburden to a uniform size material, crushing plant would be required for which there is practically no space available inside the ML area.
- Haulage through road would be a viable option in the instant case because of flexibility involved in road transportation.
- Environmental protective measures like water sprinkling, guard wall, drain and avenue plantation would be taken to mitigate impacts due to road transport.
- Removal of 93.725 million cubic meter of overburden and transportation through conveyor belt is not feasible to continue mining operation.
- Sticky limonite will hinder the flow of the material in belt conveyor.
- The proposed road will cover 11.242 ha to ease the movement of heavy earth moving machineries.

Considering the above constraints, it is proposed to transport the overburden by road instead of conveyor belt.

iv. It is reported that the mining plans for both the mines i.e. South-Kaliapani ML (552.457 ha) and Sukurangi ML (382.704 ha) has been revised. The approved mining plans shall be submitted.

In compliance, it is submitted that the copy of the mining plans duly approved by IBM for South-Kaliapani (552.457 ha) and Sukurangi ML (382.704 ha) is submitted herewith as **Annexure-III & Annexure-IV** respectively.

v. It is reported the area is required for 17 years. State Government may prepare and submit a plan for stabilization and reclamation of OB dump area.

In compliance, it is submitted that the plan for stabilization and reclamation of OB dump area for the entire period is enclosed herewith as **Annexure-V**.

vi. The User Agency shall transfer Net Present Value (NPV) of the forest land being diverted under this proposal, as per the orders of the Hon'ble Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009. The requisite funds shall be transferred through online portal into CAMPA account of the State Concerned.

In compliance, it is submitted that OMC has transferred Rs 137185776/- online through RTGS mode vide UTR No. UBINJ 22001493362 dt 01.01.2022 in ORISSA CAMPA account No. 1508 25832908254 in Union Bank of India (IFSC Code: UBIN 0903710), New Delhi which includes Rs 12,33,32,040/- towards cost of NPV over 168.948 ha of forest land as per the demand raised by DFO, Cuttack vide letter No. 69/5F(Mining)12/2018 dt 02.01.2020. The copy of the demand letter by DFO, Cuttack and receipt of payment in support of proof of the deposit by OMC is enclosed as **Annexure-VI**.

vii. At the time of payment of the Net Present Value (NPV) at the then prevailing rate, the User Agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India.

In compliance, an undertaking by OMC to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India is enclosed as **Annexure-VII**.

viii. The identified non-forest land for raising compensatory afforestation shall be transferred and mutated in the name of forest department and notified as RF/PF prior to Stage-II approval.

In compliance, it is submitted that the identified non-forest land in village Tarapadar (164.073 ha) and Bhattaguda (4.875 ha) for raising compensatory afforestation has been transferred and mutated in the name of the State Forest department. The non-forest land has been notified as "Tarapadar Protected Forests" and "Bhattaguda-A Protected Forest" as per the Notification No. FE-DIV-FLD-0008-2022-14657/FE&CC dt 22.08.2022 and Notification No. FE-DIV-FLD-0008-2022-14650/FE&CC dt 22.08.2022 respectively. The copy of the RoR in favour of the State Forest Department and the copy of PF Notifications are enclosed as **Annexure-VIII series**.

ix. The land identified for the purpose of CA shall be clearly depicted on a Survey of India topo sheet of 1:50,000 scale.

In compliance, it is submitted that the land identified in village Tarapadar over 164.073 ha and in village Bhattaguda over 4.875 ha has been shown on the Survey of India Topo Sheet No. E 44 F 2 on 1:50000 scale. The copy of the topo sheet is enclosed as **Annexure-IX**.

x. The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation at the current wage rate in consultation with State Forest Department in the account of CAMPA of the concerned State through online portal. The scheme may include appropriate provision for anticipated cost increase for works scheduled for subsequent years.

In compliance, it is submitted that OMC transferred Rs 102077000/- online through RTGS mode vide UTR No. UBINJ 22045029458 dt 14.02.2022 in ORISSA CAMPA account No.15082583 2908013 in Union Bank of India (IFSC Code: UBIN 0903710), New Delhi. Again due to revision in the wage rate, OMC transferred Rs 12288300/- online through RTGS mode vide UTR No. UBINK 22258016654 dt 15.09.2022 in ORISSA CAMPA account No.150825832908378 in Union Bank of India (IFSC Code: UBIN 0996335), New Delhi. The scheme includes appropriate provision for anticipated cost increase for works scheduled for subsequent years. The copy of the demand letter by DFO, Cuttack and RTGS receipt of payment in support of proof of the deposit by OMC is enclosed as **Annexure-X**.

xi. The User Agency shall stabilize the overburden dumps by appropriate grading /benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 28°.

In compliance, it is submitted that OMC shall implement the prescriptions provided in the approved scheme with a total financial outlay of Rs 860110500/- to stabilize the overburden

dumps by appropriate grading/benching, so as to ensure that the angle of repose at any given place is less than 28°. The copy of the approved scheme is enclosed as **Annexure-XI**.

xii. *The User Agency shall carry out muck/silt disposal at pre-designated sites in such a manner so as to avoid its rolling down.*

In compliance, it is submitted that OMC shall carry out muck/silt disposal at pre-designated sites so as to avoid its rolling down as per the approved scheme with a total financial outlay of Rs 23557300/-. The copy of the approved scheme is enclosed as **Annexure-XII**.

xiii. *The dumping area for muck/silt disposal shall be stabilized and reclaimed by planting suitable species by the User Agency at the cost of project under the supervision of State Forest Department. Retaining walls and terracing shall be carried out to hold the dumping material in place. Stabilization and reclamation of such dumping sites shall be completed before handing over the same to the State Forest Department in a time bound manner as per Plan.*

In compliance, it is submitted that OMC shall dispose the muck/silt and stabilize and reclaim by planting suitable species as per the approved scheme with a total financial outlay of Rs 23557300/- under the supervision of State Forest Department. Retaining walls and terracing shall be carried out to hold the dumping material in place. An undertaking (**Annexure-XIII**) by OMC to Stabilize and reclaim such dumping sites before handing over the same to the State Forest Department as per approved the time schedule indicated in the scheme.

xiv. *All the funds received from the user agency under the project shall be transferred/ deposited in CAMPA account only through e-portal ([https:// parivesh.nic.in/](https://parivesh.nic.in/)). Amount deposited through other mode will not be accepted as compliance of the Stage-I clearance.*

In compliance, it is submitted that all the funds raised on demand have been transferred / deposited through e-portal of PARIVESH by OMC. The details of the fund deposited are given in **Annexure-XIV**.

xv. *The compliance report shall be uploaded on e-portal (<https://parivesh.nic.in/>).*

In compliance, it is submitted that the stage-I compliance report has been uploaded on the e-portal of PARIVESH.

xvi. *Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under.*

In compliance, an undertaking by OMC is given at **Sl.No.2 of Annexure-I** to maintain the period of diversion co-terminus with the period of the mining lease granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under for South-Kaliapani and Sukurangi Mines. The mining lease period for South-Kaliapani is valid till dt 21.01.2030 and that of Sukurangi is valid till dt 19.09.2030. Hence the validity of the instant forest clearance shall be maintained up to dt 21.01.2030.

xvii. *The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required.*

In compliance, it is submitted that OMC has already moved MoEF & CC for grant of EC as per the provisions of the Environmental (Protection) Act, 1986. An undertaking to this effect by OMC is given at **Sl.No.3 of Annexure-I**.

xviii. *The complete compliance of the FRA, 2006 shall be ensured by way of prescribed certificate from the concerned District Collector.*

In compliance, it is submitted that the certificate in prescribed format issued by the Collector, Jajpur under FRA, 2006 over 168.948 ha of total forest land included within the project is enclosed as Annexure-XV.

xix. No labour camp shall be established on the forest land and the User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas.

In compliance, an undertaking by OMC is given at **Sl.No.4 of Annexure-I** that no labour camp shall be established on the forest land and OMC shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas.

xx. The boundary of the diverted forest land, mining lease and safety zone, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates.

In compliance, it is submitted that the boundary of the diverted forest land, mining lease and safety zone, has been demarcated on ground by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates. The photographs showing different type of pillars are enclosed Annexure-XVI.

xxi. The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government.

In compliance, an undertaking by OMC is given at **Sl.No.5 of Annexure-I** that the forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government.

xxii. No damage to the flora and fauna of the adjoining area shall be caused.

In compliance, an undertaking by OMC is given at **Sl.No.6 of Annexure-I** that no damage to the flora and fauna of the adjoining area shall be caused.

xxiii. The user agency shall explore the possibility of translocation of maximum number of trees identified to be felled and shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department.

In compliance, an undertaking by OMC is given at **Sl.No.7 of Annexure-I** to explore the possibility of translocation of maximum number of trees identified to be felled and shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department.

xxiv. Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued by this Ministry's letter No. 5-2/2017-FC dated 28.03.2019.

In compliance, an undertaking by OMC is given at **Sl.No.8 of Annexure-I** not to violate any of the above condition.

xxv. The User Agency shall submit the annual self-compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year regularly; and

In compliance, an undertaking by OMC is given at **Sl.No.9 of Annexure-I** to furnish the annual self-compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year regularly.

xxvi. The user agency shall comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

In compliance, an undertaking by OMC is given at **Sl.No.10 of Annexure-I** to comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

B. Compliance to the additional conditions stipulated in the grant order of Stage-I FC by the Special Secretary, F&E Department, Govt. of Odisha vide letter dt 19.10.2019.

a) The User Agency shall pay towards cost of removal of trees enumerated before commencement of work and tree felling should be taken up in phased manner strictly as per requirement under the supervision of the DFO, Cuttack Forest Division.

In compliance, an undertaking by OMC has been given at **Sl.No.11 of Annexure-I** to pay towards cost of removal of trees enumerated before commencement of work and ensure that the tree felling shall be taken up in phased manner strictly as per requirement under the supervision of the DFO, Cuttack Forest Division.

b) Evaluated royalty of trees enumerated and required to be felled for the project, shall be deposited by the User Agency.

In compliance, it is submitted that the evaluated royalty of trees enumerated is not be required to be paid by OMC as per the guideline No.5-1/2007-FC dt 11.12.2008 by MoEF & CC, Govt. of India. The copy of the guideline is enclosed as **Annexure-XVII** for kind reference.

c) The User Agency shall pay the cost for implementation of Regional Wildlife Management Plan as per revised cost norm.

In compliance, it is submitted that OMC has transferred Rs 137185776/- online through RTGS mode vide UTR No. UBINJ 22001493362 dt 01.01.2022 in ORISSA CAMPA account No.15082 5832908254 in Union Bank of India (IFSC Code: UBIN 0903710), New Delhi which includes Rs 13853736/- towards cost of Regional Wildlife Management as per the demand raised by DFO, Cuttack vide letter No.66/5F(Mining)12/2018 dt 02.01.2020 basing on the revised cost norm. The copy of the RTGS receipt and demand letter by DFO is enclosed as **Annexure-XVIII** series.

d) An area of 4.875 ha of forest land is to be maintained as safety zone and in no condition, it shall be used for dumping of overburden.

In compliance, an undertaking by OMC is given at **Sl.No.12 of Annexure-I** that an area of 4.875 ha of forest land shall be maintained as safety zone and in no condition, it shall be used for dumping of overburden.

e) The User Agency shall pay towards site specific conservation plan approved by the CWLW, Odisha for its implementation in lease hold as well as surrounding area.

In compliance, it is submitted that the Site Specific Wildlife Conservation Plan (SSWLCP) pertaining to South-Kaliapani ML area has been approved by the CWLW, Odisha vide letter No. 10573/5F(Misc.) dt 31.12.2013 with a total financial outlay of Rs 20114080/- out of which OMC has deposited Rs 19114080/- online through RTGS mode vide UTR No. ANDBH 14022232398 dt 22.01.2014 in ORISSA CAMPA account No. 344902010105428 in Union Bank of India (IFSC Code:

UBIN 0534498), New Delhi as per the demand raised by DFO, Cuttack for its implementation in impact area. OMC has again transferred Rs 542500/- through RTGS online vide UTR No. ANDBR 52016052500239450/ADHOC dt 25.05.2016 as per the demand raised by DFO, Cuttack vide letter No.4716/5F (Misc.)/2016 dt 13.05.2016 due to revision in wage rate.

Further, the revised SSWLCP pertaining to Sukurangi ML area has been approved by the CWLW, Odisha vide letter No.8172/5F (Forest Diversion)/2018 dt 25.11.2021 with a total financial outlay of Rs 576.5288 Lakh. OMC has deposited Rs 33309938/- online through RTGS mode vide UTR No. UBINJ 21358136793 dt 18.12.2021 in ORISSA CAMPA account No.150825884710701 in Union Bank of India (IFSC Code: UBIN 0903710), New Delhi as per the demand raised by DFO, Cuttack for its implementation in impact area. Earlier OMC had already deposited Rs 98,00,000/- as per the demand letter by DFO, Cuttack vide letter No.3355 dt 24.07.2009 vide Demand draft No.495472 dt 26.08.2009 drawn in favour of CAF, Orissa, A/c No.1585 in Corporation Bank, Lodhi Road, New Delhi.

The copy of the approvals, demand letters by DFO and RTGS receipts in support of proof of the deposit by OMC is enclosed as **Annexure-XIX Series**.

f) The User Agency shall undertake demarcation of the proposal OB dump area on the ground posting four feet high cement concrete pillars embedded two feet inside the soil with serial number forward and backward bearings and distance from Pillar to Pillar.

In compliance, it is submitted that the entire area of 168.948 ha has been demarcated by posting RCC boundary pillars of specific size, approved by IBM, embedded two feet inside the soil. The photographs of some of the ML boundary pillars are given at **Annexure-XX**.

g) In case separate EC/CTE/CTO are required, the same shall be obtained by the User Agency.

In compliance, an undertaking by OMC has been given at **Sl.No.13 of Annexure-I** to obtain separate EC/CTE/CTO, if required.

h) In case the project impact area of the Site Specific Wildlife Conservation Plan, approval for South-Kaliapani Chromite Mines and Sukurangi Chromite Mines does not include the OB dump area of 168.948 ha, the PCCF (WL) & CWLW, Odisha would revisit the said plans and revise the plans accordingly for including the entire OB dump area of 168.948 ha and additional cost thereof be deposited by the User Agency.

In compliance, it is submitted that the project impact area (10km radius) of the approved SSWLCP pertaining to South-Kaliapani and Sukurangi Chromite Mines include the OB dump area of 168.948 ha. Hence, revision of the SSWLCP may not be required and additional cost should not be levied. The impact area of South-Kaliapani and Sukurangi Chromite mining lease on survey of India Topo Sheet Nos. F45N12, F45N15, F45T9 and F45T13 shows that the OB Dump area over 168.948 ha is included within it. The copy of the Topo map is enclosed as **Annexure-XXI**.

It is requested to kindly scrutinize the above compliance and recommend for grant of Stage-II approval over 168.948 ha of forest land for dumping of overburden to be generated from South-Kaliapani and Sukurangi Chromite Mines in favour of OMC at the earliest.

Encl: as above.

Yours faithfully,


Executive Director (F&E)

UNDERTAKINGS

[As per condition No. 1,16,17,19,21,22,23,24,25 and 26 stipulated in the Stage-I Forest Clearance granted by MoEF & CC, Govt. of India vide letter No. 8-19/2019-FC, dt. 15.10.2019 and additional condition No. a, d & g of the letter No. 10F (Cons) 89/16/19650/F&E dt. 19.10.2019 given by the Special Secretary to Govt., F & E Dept. pertaining to overburden dump area over 168.948 ha for South-Kaliapani and Sukurangi mines of OMC Ltd.]

I Sri Suman Krishna Sit, General Manager (Geology), Authorized signatory of O.M.C.Ltd. for this project do hereby undertake the following for furtherance of the Forest Diversion Proposal for grant of 168.948 ha of forest land proposed for use by overburden dump to be generated from South-Kaliapani and Sukurangi mining leases of OMC located in Cuttack Forest Division of Jajpur district, Odisha:

Sl. No.	Condition No.	Undertakings by OMC
Conditions stipulated by MoEF & CC, Govt. of India vide Letter No. 8-19/2019-FC dt. 15.10.2019		
1	1	To pursue the State Govt. to keep the legal status of forest land unchanged.
2	16	To maintain the validity of the Forest Clearance co-terminus with the mining lease period of South-Kaliapani and Sukurangi Chromite Mines of OMC Ltd.
3	17	To obtain Environmental Clearance from MoEF & CC, IA Division.
4	19	That no labour camp shall be established by OMC on the forest land. The workers coming to the work site are from nearby villages and depend on cooking gas and if necessary, alternate fuels shall be provided by OMC so that there will be no damage and pressure on the nearby forest areas.
5	21	That the forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government.
6	22	That no damage to the flora and fauna of the adjoining area shall be caused.
7	23	To explore the possibility of translocation of maximum number of trees identified to be felled and shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department.
8	24	That no violation of the conditions stipulated shall be done and agree to accept action to be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued vide Ministry's letter No. 5-2/2017-FC dated 28.03.2019.
9	25	To submit the annual self-compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year regularly.
10	26	To comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

Conditions stipulated by the Special Secretary to Govt., F&E Department vide Letter No. 10F (Cons) 89/16/19650/F&E dt. 19.10.2019

11	a	To pay the cost towards removal of trees enumerated before commencement of work. OMC also undertakes that the tree felling shall be taken up in a phased manner strictly as per the requirement under the supervision of the DFO, Cuttack Forest Division.
12	d	That an area of 4.875 ha of forest land shall be maintained as safety zone and in no condition, it shall be used for dumping of overburden.
13	g	That separate EC/CTE/CTO shall be obtained by OMC before commencement of the work in the area.



[Dr. Suman Krishna Sit]
General Manager (Geology)
Authorized signatory

Suman Krishna Sit
General Manager(Geo)
Power of Attorney Holder
Omisha Mining Corporation Ltd.
Bhubaneswar

**SCHEME FOR
SITE SPECIFIC COMPENSATORY
AFFORESTATION
OVER
168.948 HA OF NON-FOREST GOVT. LAND
IDENTIFIED IN VILLAGES
TARAPADAR & BHATAGUDA
UNDER THUAMUL-RAMPUR TAHASIL
IN
KALAHANDI DISTRICT
AGAINST
DUMPING SITE FOR SOUTH-KALIAPANI CHROMITE
MINES IN JAJPUR DISTRICT, ODISHA
OF
M/s ODISHA MINING CORPORATION LTD.
(A Govt. of Odisha Undertaking)
OMC HOUSE, POST BOX-34, BHUBANESWAR-1
@ Rs. 315.00/- per Manday**

Detailed scheme for Compensatory Afforestation to be carried out in lieu of 168.948 hectares in Tarapadar and Bhataguda Village of Thuamul Rampur Tahasil in Kalahandi District to be diverted for dumping site for South-Kaliapani and Sukurangi Chromite Mines of Odisha Mining Corporation Ltd. in Jajpur District.

OMC had submitted a proposal for diversion of 168.948 ha of forest land in Forest Block-27 (Mahagiri DPF) under Sukinda Tahasil of Jajpur District in Cuttack Forest Division for dumping of excess overburden generated from ongoing South-Kaliapani Chromite Mines (ML Area:552.457 ha) and Sukurangi Chromite Mines (ML Area: 382.709 ha) of OMC Ltd. The area is located to the south and bears a common boundary with South-Kaliapani Chromite Mines of OMC Ltd.

Earlier OMC had submitted a proposal for diversion of 222.00 ha of forest land in Forest Blok-27. Since a portion of the area selected for dump had good tree growth, the RCCF instructed to exclude the area having good forest growth. Hence the area of proposed dump was shifted and the area of the dump has been reduced to 168.948 ha. Collector Kalahandi vide letter No. 576/Rev dated 24.03.2018 (Annexure-A Series) forwarded the land details with trace maps to DFO, Kalahandi South Division permitting transfer of 164.073 hectares of non-forest land for raising compensatory afforestation by the State Forest Department. A scheme over 164.073 ha was prepared which has been technically approved by APCCF (N) on 19.03.2019 while recommending the proposal to State Govt.

Stage-I FC over 168.948 ha has been granted by MoEF & CC vide letter F. No. 8-19/2019-FC dt. 15.10.2019. Condition no. (ii) of the Stage-I approval is given as under:

“Compensatory Afforestation shall be raised over equal identified non-forest land (NFL) land within three years from the date of issue of Stage-II Clearance and maintained thereafter by the State Forest Department at the cost of the User Agency and at least 1000 plants per hectare shall be planted over identified non-forest land. If it is not possible to plant so many saplings in the area identified for CA, the balance saplings will be planted in any other forests as per prescriptions of approved working plan with provision for ten years on subsequent maintenance”.

In order to comply the above condition, OMC requested Collector, Kalahandi for allotment of additional 4.875 ha (168.948-164.073) of non-forest Govt. land. Collector, Kalahandi vide letter no. 467/Rev/2019 dt. 31.01.2020 has allotted 4.875 ha of non-forest Govt. land in village Bhataguda under Thuamul Rampur Tahasil of Kalahandi District. Copy of the allotment orders by Collector, Kalahandi is enclosed as **Annexure-A Series**.

Labour Commissioner of Odisha vide letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate to Rs. 315/- per Manday.

In order to comply the conditions stipulated vide Stage-I FC and Guideline by MoEF & CC the site specific scheme has been prepared as follows:

1. Details of non-forest land:-

District: Kalahandi; Tahasil: Thuamul Rampur

Village	Khata No.	Plot No.	Area of the plot in Acre	Area considered (Acre)	Kisam
Tarapadar	15 (AAA)	01	65.35	56.63	Dangar
		21	51.31	28.09	Dangar
		42	49.41	32.78	Dangar
		159	54.05	48.21	Dangar
		162	61.55	52.68	Dangar
		163	61.05	54.89	Dangar
		187	38.35	27.92	Dangar

		205	39.20	22.59	Dangar
		206	31.92	17.29	Dangar
		208	16.88	10.79	Dangar
		186/210	57.15	53.56	Dangar
		Total		405.43 Acres or 164.073 Ha.	
Bhataguda	12 (AAA)	31	21.08	6.46	
		44	32.75	5.59	
		Total		12.05 Acres or 4.875 Ha.	
		Grand Total		417.48 Acres or 168.948 Ha.	

The village maps showing the land details for the proposed compensatory afforestation are enclosed as **Plate No. I&II**. The jointly verified non-forest land by Forest and Revenue authorities is enclosed as **Annexure-(B) Series**. G.P.S co-ordinates of survey stations & Key Plan of Compensatory Afforestation area shown on topo sheet is furnished as **Annexure-(C) Series**.

2. Description of Area

- I. **Whether the site selected for Compensatory Afforestation is a land bank or not:** This identified non-forest area is under the control of Revenue Department and classified as 'Dangar'. It is not a land bank.
- II. **If the CA site is other than the land bank, reasons be given:** No land bank has been established yet for this purpose.
- III. **In case of non-forest area identified for CA, then what is the distance of CA site from the adjoining forest boundary:** Plantation site in Tarapadar is at a distance of 0.73 Km from Ampadar RF, whereas plantation site in Bhataguda is at a distance of 0.88 km from Khakesh RF.
- IV. **Soil type:** The soil is eroded with exposed rocks in some areas. Good depth of loamy soils are available in blank plain areas and podu affected areas.
- V. **Topography :**
 - a) Hilly/Undulating/Plain: The Compensatory Afforestation sites are hilly and undulating.
 - b) Slope: Steep/Medium/Gentle: The sites selected for Compensatory Afforestation have medium to gentle slope.
- VI. **Whether the area is bearing any root stock of vegetation:** The sites selected for Compensatory Afforestation degraded Sal and root stock of Sal in some areas. Few big trees also occur in scattered manner.
- VII. **Suitability of the land for compensatory afforestation:** The identified land is free from encroachment and encumbrance.

3. Plantation Model:- Bald hill block plantation @ 1600 plants per hectare will be raised in Tarapadar over 164.073 ha and in Bhataguda over 4.875 ha. Maintenance of plantation for 10 years is also required as per F. No. 11-168/2009-FC dated 14.02.2012 of MoEF. Cost norm for bald hill block plantation @ 1600 plants per hectare is given at **Annexure-(D)**. Revised plantation scheme prepared incorporating planting of 18 months old seedlings along with cost of transportation as per stipulation and new cost norm of Principal Chief Conservator of Forests & HoFF, Odisha with enhancement of wage rate from Rs.311/- to Rs.315/-.

4. Schedule of Plantation Programme :-

Detail of year wise break up of requirements of funds is as under:-

Year	Bald Hill plantation		
	Area in Ha.	Rate/Ha.	Amount
Nursery Cost Before 2 years	168.948	89421.20	15107532.90
Nursery Cost Before 1 years		8129.21	1373413.77
0th Year		89302.00	15087394.30

1st Year		97812.75	16525268.49
2nd Year		34512.45	5830809.40
3rd Year		19183.50	3241013.96
4th Year		17529.75	2961616.20
5th Year		17529.75	2961616.20
6 th Year		17529.75	2961616.20
7th Year		17529.75	2961616.20
8th Year		17529.75	2961616.20
9th Year		17529.75	2961616.20
10th Year		17529.75	2961616.20
Total		461069.36	77896746.23

5. Technical details:- Technical details of Compensatory Afforestation Scheme are as follows:

a) General Details :

Survey & Demarcation of boundary: The identified area will be surveyed by DGPS and the area will be demarcated with RCC pillars of size 2.5 mtr x 30 cm x 30 cm. This work will be done by the User Agency at Project cost.

Fencing: To protect the plantation from grazing and other biotic interference, it will be provided with 7 strand barbed weir fencing with RCC pillars, the cost for which will be paid by the User Agency. Since non-forest areas adjoining this site have also been taken for Compensatory Afforestation for other projects and barbed wire fencing will be done around the entire patch, the length of chain link wire mesh fence needed in this project is furnished below.

Sl. No	Village	Length of outer periphery of the site in mtr	Length of enclosures if required to be fenced	Length of common fence of adjoining project which need not be fenced	Total length of fence in mtr (3+4-5)
(1)	(2)	(3)	(4)	(5)	(6)
1	Tarapadar	10371	0	0	10371
2	Bhataguda	980			980
	Total	11351	0	0	11351

Estimate for barbed weir fencing has been provided in Annexure – (F).

Planting and post-planting:

- b) Plantation will be taken up in time as per cost norm. While taking up plantation, the following points shall be taken up for consideration: -
- Care to be taken to raise healthy plantable seedlings of minimum 60 cm height. 10% extra seedlings are to be raised for replacement of casualty.
 - Pitting shall invariably be done during November-February i.e., before onset of monsoon. If possible the soil of upper portion and lower portion of pit should be placed separately in specific direction so that while planting the pits will be filled with top-soil first.
 - Planting shall be done on the onset of monsoon to get full benefit of monsoon rain and planting should never be delayed.
 - Basal dose of 50 grams of NPK and 5 grams of Chlorpyriphos dust per plant should be applied at the time of planting carefully by mixing with top-soil so that the roots of seedlings do not come in direct contact with fertilizer.
 - In case of any mortality of planted seedlings, it should be replaced with good seedlings as soon as possible for better success rate.

Sl. No.	Area in Ha	Plantation model	Cost of Plantation in Rs. per Ha.	Total Plantation cost in Rs.	Cost of SMC Measures in Rs. per Ha.	Total cost SMC measures in Rs.
1	168.948	Baldhill block plantation	4,61,069.360	7,78,96,746.23	1,11,825.00	1,88,92,610.10
2	1000 meter of loose boulder check dam	-	0	0	3,200.00	32,00,000.00
Total				7,78,96,746.23		2,20,92,610.10

So, the cost of SMC measures amounting Rs. 2, 20, 92,610.10 is 28.36% of total plantation cost of Rs. 7, 78, 96,746.23.

e) **Protection of the plantation:** - Barbed weir fence will be provided all along the periphery of the plantation. Few watchers will also be engaged for protection of the plantation. The cost norm of Barbed weir fence is furnished as **Annexure-(F)**.

6. **Proposed Monitoring Mechanism:** - The scheme shall be executed by the Divisional Forest Officer, Kalahandi (South) Division with his staff and all prescribed records are to be maintained. Compensatory Afforestation work will be monitored by officers of State Forest Department and MoEF&CC.

7. **Total cost of the project:** The total cost of the project is **Rs. 10, 67, 76,100.00 (Rupees Ten crore sixty seven lakh seventy six thousand one hundred) only** as detailed in **Annexure-G** which shall be payable by the user agency as per demand of the D.F.O, Kalahandi South Division.

P. Prade
 Divisional Forest Officer
 Kalahandi South Division
 Divisional Forest Officer
 Kalahandi South Division

Letter No. 574 / Rev. Date 24.3.2018CORRIGENDUM

In modification to this Office Order No.1322/Rev dated 03.08.2015, revised sanction is hereby accorded for alienation of Ac.405.43 equivalent to 164.073 hectare instead of Ac. 537.89 (equivalent to 217.676 Ha.) of non-forest revenue land of mouza - Tarapadar under Th.Rampur Tahasil in favour of Forest & Environment Deptt, Odisha (D.F.O, South Divn, Kalahandi), for compensatory afforestation in lieu of diversion of equivalent forest land pertaining to mining leases against Dumping site for South-Kaliapani Chromite Mines located in Jajpur District in favour of OMC Ltd. as per the terms and conditions indicated below:

1. The lessee shall have only surface right over the land.
2. The scheduled land shall be utilized for the purpose for which it is leased out within a period of one year from the date of this order, failing which the lease shall be automatically CANCELLED.
3. The land shall not be transferred or subleased to any third party without prior permission of the lesser. Infringement of any of the above condition will result in immediate reversion of the land to Govt. in Revenue & Disaster Management Department free from all encumbrances without payment of any compensation for the land or for structures if any erected thereon and any improvement which might have been carried out on the land.

LAND SCHEDULE (REVISED)

Mouza/ Khata No.	Plot No.	Kisam	Area recommended for compensatory afforestation
TARAPADAR 15	01	Dangar	56.63
	21	Dangar	28.09
	42	Dangar	32.78
	159	Dangar	48.21
	162	Dangar	52.68
	163	Dangar	54.89
	187	Dangar	27.92
	205	Dangar	22.59
	206	Dangar	17.29
	208	Dangar	10.79
	136/210	Dangar	53.56
TOTAL			Ac. 405.43 or 164.073 Ha.

Mouza
24/3/2018
Collector, Kalahandi

Memo No. 575 / Rev. dtd. 24.3.18

Copy to the Deputy Secretary to Govt. in Revenue & DM Department, Orissa, Bhubaneswar/Secretary to Board of Revenue Orissa, Cuttack/Secretary to RDC (S.D) Berhampur for favour of information.

Mouza
24/3/2018
Collector, Kalahandi

Memo No. 576 / Rev. dtd. 24.3.18

Copy to D.F.O (South) Division, Kalahandi for information and necessary action. / Copy to Managing Director, OMC Ltd, Bhubaneswar for information and necessary action.

Copy to the Sub-Collector, Bhawanipatna for information.

Copy to Tahasildar, Th. Rampur for information. Alienation case record bearing No. 16/2014 is returned herewith for necessary correction of RoR.

Receipt of the C/R may be acknowledged.

Copy to Guard file.

M. M. S.
24/3/18
Collector, Kalahandi

OFFICE OF THE DIVISIONAL FOREST OFFICER, KALAHANDI SOUTH DIVISION



Memo No- /3F,Dt-
To The Collector Kalahandi.
Subj- Identification and allocation of non-Forest Govt. land for compensatory afforestation.
Ref- Your letter No. 848 dt. 13.08.2014.
Sir,

With reference to the above cited correspondence on the captioned subject, the joint verification report of non-forest Govt. land in respect of Dandapadar village an area of 54.238 Ha. and Tarapadar village an area of 217.676 ha. together with non-suitable Govt. land of area 28.558 ha. of village Tebhakalam submitted by the Tahasildar Th. Rampur vide his letter No. 7301 dt. 30.09.2014 against the total diversion of Forest land of 300.472 ha. pertaining to mining lease of OMC Ltd. in sundargarh Keonjhar and Jajpur District is submitted herewith for favour of information & necessary action.

As such I would request you to kindly alienate the aforesaid suitable non-forest land an area of 271.914 Ha. in favour of the undersigned for taking up compensatory afforestation over the area and the balance non-forest Govt. land an area of 28.558 ha. may kindly be allocated for the purpose at the earliest.

Encl:- 2 Nos joint verification report.

Yours Faithfully,

Sd/-
Divisional Forest Officer,
Kalahandi South Division

Memo No. 4236 Dt. 18-10-14

Copy forwarded the Chairman-cum-Managing Director, OMC, Bhubaneswar for information & necessary action.

18/10/14
Divisional Forest Officer,
Kalahandi South Division

OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE, KALAHANDI

No. 467 / Rev. 12019 Dated. 31.01.2020

To
The Divisional Forest Officer (South),
Kalahandi, Bhawanipatna.

Sub:- Allotment of Govt. land for Compensatory Afforestation.

Ref:- Your Letter No. 419/3F(Lease) Dt.28.01.2020

Sir,

I am to say that the enclosed schedules of non-forest Government land measuring Ac.12.05 equivalent to 4.875 Ha. at village Bhataguda under Th.Rampur Tahasil has been identified and joint verification completed for allocation of non forest Govt. land in lieu of diversion of forest land pertaining to Dumping of overburden of South Kallapani and Sukurangi Chromites Mines located in District Jajpur of M/s Odisha Mining Corporation Ltd.

You are therefore requested to please file necessary requisition in Form No.1-A before the Tahasildar, Th.Rampur for processing alienation proposal for sanction of the land in favor of Forest and Environment Department immediately.

Yours faithfully
[Signature]
Collector,
Kalahandi.

Memo No. 468 / Rev. Dated. 31.01.2020

Copy along with copies of joint verification report and sketch map forwarded to Tahasildar, Th.Rampur for information. He is requested to process the alienation proposal in favour of the Forest and Environment Department, Odisha on obtaining the requisition from the Divisional Forest Officer (South), Kalahandi.

[Signature]
Collector,
Kalahandi.

Memo No. 469 / Rev. Dated 31.01.2020

Copy to Sub-Collector, Bhawanipatna for information and necessary action.

[Signature]
Collector,
Kalahandi

Memo No. 470 / Rev. Dated 31.01.2020

Copy to Managing Director, OMC Ltd., Bhubaneswar for information and necessary action.

[Signature]
Collector,
Kalahandi.

[Handwritten notes]
1/28/1
23/2/20

[Handwritten notes]
MCG
Su
31/1/2020
for
31/1/2020

JOINT VERIFICATION REPORT OF NON-FOREST GOVERNMENT LAND IN DIFFERENT VILLAGES UNDER THUAMUL RAMPUR TAHASIL OF KALAHANDI DISTRICT FOR RAISING COMPENSATORY AFFORESTATION (ANR & BLOCK PLANTATION) AGAINST MINING PROJECTS OF M/s ODISHA MINING CORPORATION LIMITED LOCATED IN THE DISTRICT OF KEONJHAR, JAJPUR AND SUNDARGARH DISTRICT, ODISHA.

Certified that on joint verification of non-forest Government land (Kissam-Dangar) in Tarapadar village of Thuamul Rampur Tahasil of Kalahandi district, it is found that the schedule wise land mentioned against each village as given under is suitable for ANR and Block Plantation and are free from encroachment and encumbrances.

Name of the mines/ Project	Khata No.	Plot No.	Total area of the plot in Acr	Area asked for Compensatory Afforestation in Acr	Area recommended in acres	Kissam	Type of plantation in ha	
							Block 1600nos of plants/ha	ANR 300nos of plants/ha
Dumping site for South-Kaliapani	15 (Abada Ajogya Anabadi)	1	65.350	62.80	61.55	Dangar		
		21	51.310	29.71	28.09	Dangar		
		42	49.410	41.31	39.72	Dangar		
		159	54.050	53.45	53.45	Dangar		
		162	61.550	60.50	60.50	Dangar		
		163	61.050	61.05	61.05	Dangar		
		187	38.350	36.35	32.25	Dangar		
		204	22.280	22.28	21.18	Dangar	Block	NILL
		205	39.200	36.20	30.80	Dangar		
		206	31.920	31.92	29.74	Dangar		
		207	12.720	12.72	12.36	Dangar		
		208	16.880	16.88	16.88	Dangar		
		186/209	47.500	12.57	33.17	Dangar		
		186/210	57.150	57.15	57.15	Dangar		
Total	608.72		534.89 Acr or 216.462 ha.	537.89 Acr or 217.676 ha.		217.676 ha.		

N.B. The shortfall in area in some of these plots is compensated for in plot no.186/209.

Revenue Inspector
Kalahandi

Revenue Inspector
Kalahandi

Forest Officer
FORESTER
Gunjur Section

Forest Range Officer
RANGE OFFICER
Thuamul Rampur

Forest Range Officer
RANGE OFFICER
Tharapadar

Divisional Forest Officer
Kalahandi (S) Division

JOINT VERIFICATION REPORT OF NON-FOREST GOVERNMENT LAND IN VILLAGE BHATAGUDA UNDER TH. RAMPUR TAHASIL OF KALAHANDI DISTRICT FOR RAISING COMPENSATORY AFFORESTATION (BALD HILL PLANTATION) IN LIEU OF THE FOREST LAND PROPOSED FOR DIVERSION AGAINST DUMPING OF OVERBURDEN OF SOUTH KALIAPANI AND SUKURANGI CHROMITE MINES OF M/s ODISHA MINING CORPORATION LIMITED LOCATED IN THE DISTRICT OF JAJPUR, ODISHA.

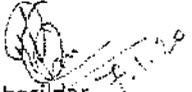
Certified that on joint verification of Non forest government land (Kissam - Dangar) in village Bhataguda of Thuamul Rampur Tahasil of Kalahandi District, it is found that the scheduled wise land mentioned as given under is suitable for bald hill Block plantation and are free from encroachment and encumbrances, does not comes under DLC land and FR Settlement.

Name of the Mines	Name of the Village	Plot No.	Khata No.	Kissam	Total area of the plot (Acres)	Area considered in (Acres)	Type of Plantation in Hectares
Dumping of Overburden of South-Kaliapani & Sukurangi Chromite Mines	Bhataguda	31	12 (AAA)	Dangar	21.08	6.46	Bald Hill Plantation 1600 Plants /Ha
		44			32.75	5.59	
TOTAL						12.05 Acres or 4.875 Ha	


Revenue Inspector
GUNPUR


Forester
Gunpur Section
Section Forester
Gunpur Section


Range Officer
Th. Rampur (N) Range
Th. Rampur (N) Range


Tahasildar
Thuamul Rampur
Tahasildar
Thuamul Rampur

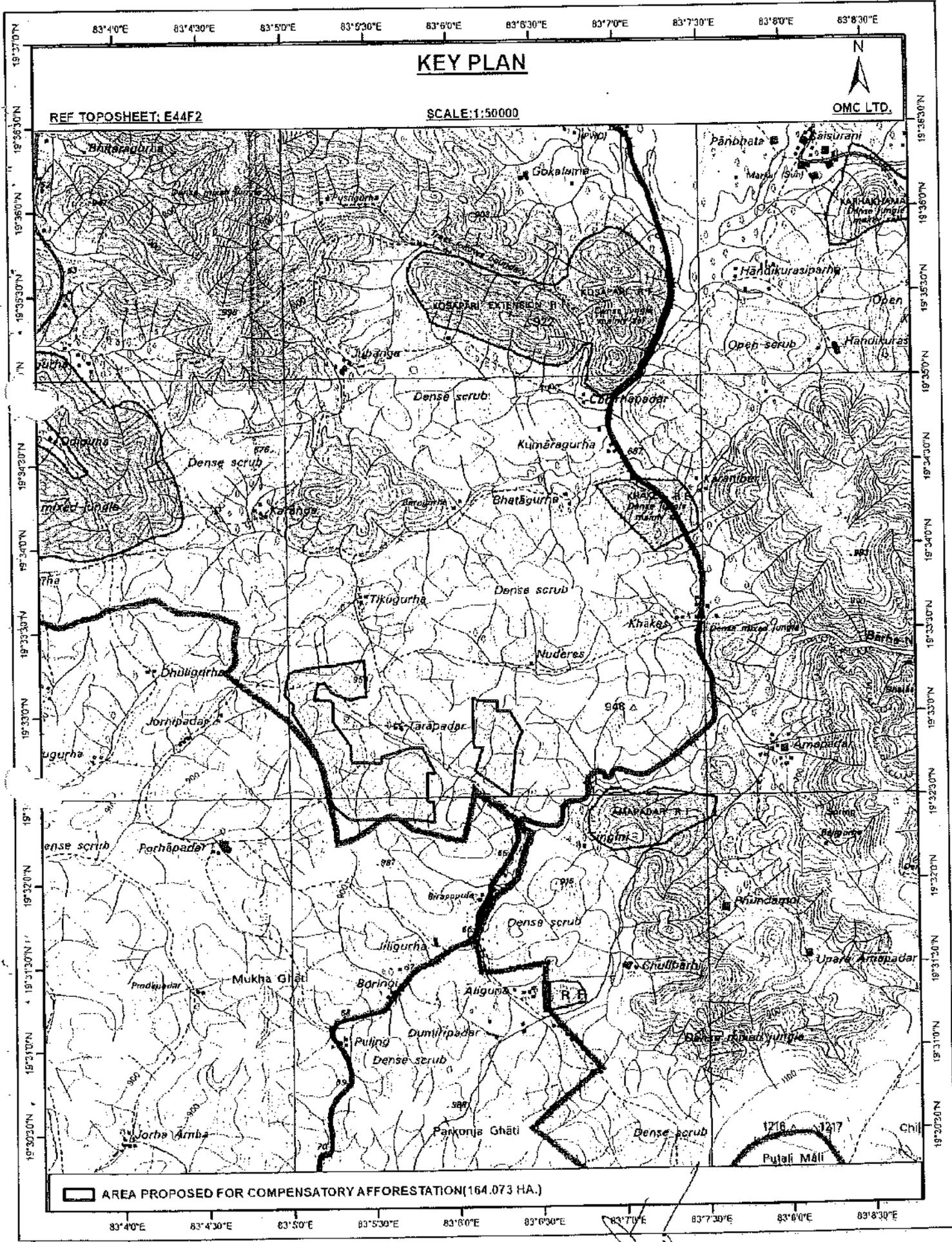

District Forest Officer
Bhubaneswar

KEY PLAN

REF TOPOSHEET: E44F2

SCALE: 1:50000

OMC LTD.



AREA PROPOSED FOR COMPENSATORY AFFORESTATION (164.073 HA.)

to
Range Officer
Machh Bande

1000

ANNEXURE-(D)

COST NORM FOR BALD HILL PLANTATION @ 1600 PLANTS PER HECTARE
(Labour cost @Rs 315.00 per manday)

Sl No	Item of Work	Preferable Period of execution	Manday	Labour Cost (Rs)	Material Cost (Rs)	Total Cost in (Rs)
NURSERY COST						
1	Cost Of raising 18 months old seedling including 10% casualty @1760 seedling per hectare.	Before 2(two) year of achievement year	219.12	69022.80	20398.40	89421.20
2	Cost of 18 months old seedling for Casualty Replacement @160 plants per hectare.	Before 01 year of achievement year	19.92	6274.80	1854.41	8129.21
Total			239.04	75297.60	22252.81	97550.41
PREPARATORY OPERATION (0TH YEAR)						
1	Survey and demarcation	June	2	630.00	0	630.00
2	Pitting (1600 per ha) each pit-45 cm ³	Nov-Dec	128	40320.00	0.00	40320.00
3	Soil and water conservation measures (a) Staggered trench along the contour @ 300 per ha (2.5mx0.5 m x0.5m); digging of percolation pits @ 600 per ha in lieu of staggered trenches, gully plugging and Drainage line treatment, half moon trench on the uphill side of each planting pit (100 MD for staggered trench / percolation pits and 30 MD for gully plugging, drainage line treatment and half moon trench). (b) Site clearance- 8 MD, alignment and staking of contour lines on ground, planting pits, contour trenches / percolation pits and check dam sites, etc.- 2 MD	Sep-Nov	130	40950.00	0.00	40950.00
		July-Aug	10	3150.00	0.00	3150.00
TOTAL 0th year			270	85050.00	0.0	85050.0
4	Monitoring & Supervision charge 5% of the total cost			0.00	0.0	4252.50
GRAND TOTAL			270	85050.00	0.0	89302.50
PLANTING OPERATION (1ST YEAR)						
1	Transportation of 18 months old polythin bag seedling in hired truck/tractor from the permanent/mega nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (1760 nos.)	July-Aug	0	0	10560	10560
2	Freshening of pits -64 MD, filling with fertile soil and farm yard manure (FYM)- 24 MD, application of insecticide and planting of 60 cm tall saplings including carriage of plants- 21 MD	Jun-Jul	109	34335	0	34335
3	Cost of Fertile Soil 0.25 cft @ Rs.8 per cft/FYM 0.25 cft @ Rs.15 per cft per pit		0	0	9200	9200
4	Sowing of seeds on dug out earth of trench	June	6	1890	200	2090

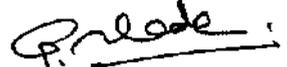
5	Carriage-6MD, Planting including Casualty replacement-6 MD, fertilizer application- 5 MD, 1st weeding-7 MD, 2nd weeding -5 MD, soil working- 7 MD	Jul-Aug	36	11340	0	11340
6	Cost of fertilizer and insecticide (Granular Insecticide @ 5 gms/plant @ Rs.80/- per kg=Rs.640.00, NPK 100 gms/plant in two doses @ Rs.24 per kg= 3840)		0	0	4480	4480
7	Maintenance of soil and Moisture Conservation measures (20% of cost)	Oct-Dec	26	8190	0	8190
8	Closure to grazing fire and other biotic interference by engaging watch & ward	Apr-Mar	30	9450	0	9450
9	Fire tracing and control, display board construction, painting / writing, other miscellaneous cost	Jan-Feb	10	3150	360	3510
	TOTAL (1st Year)		217	68355	24800	93155
10	Monitoring & Supervision charge 5% of the total cost			0.00	0	4657.75
	GRAND TOTAL		217	68355.00	24800.00	97812.75
MAINTENANCE OPERATION (2ND YEAR)						
1	Transportation of 18 months old polythene bag seedling in hired truck/tractor from the permanent/mega nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (160 nos.)	July	0	0	960	960
2	Casualty replacement 6 MD	Jun-July	6	1890	0	1890
3	Soil working- 7 MD, 1st weeding-6 MD, 2nd weeding -6 MD and fertilizer application -4 MD	Aug-Oct	23	7245	0	7245
4	Cost of fertilizer @ 50 gms NPK per plant @ Rs.24/- per kg for 1600 plants =Rs.1920.00 Insecticide @ 5 gm per plant for 160 nos. of plants @ Rs. 80 per KG = Rs. 64.00		0	0	1984	1984
5	Maintenance of Soil and Moisture Conservation measures (20% of cost)	Aug-Oct	26	8190	0	8190
6	Fire tracing and control and other miscellaneous cost	Feb-Mar	10	3150	0	3150
7	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	30	9450	0	9450
	TOTAL 2nd Year		95	29925	2944	32869
8	Monitoring & Supervision charge 5% of the total cost			0.00		1643.45
	GRAND TOTAL		95	29925.00	2944.00	34512.45
MAINTENANCE OPERATION (3RD YEAR)						
1	SMC Measures (Renovation)-26 MD and Maintenance of plantation-14 MD as per requirement	Apr-Mar	40	12600.00	0	12600.00
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 3rd Year		58	18270.00	0	18270.00
	Monitoring & Supervision charge 5% of the total cost			0.00		913.50
	GRAND TOTAL		58	18270.00	0	19183.50

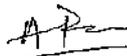
ANNEXURE-(G)

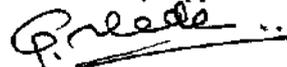
TOTAL COST OF THE COMPENSATORY AFFORESTATION SCHEME

Sl. No.	Item of Work	Total Estimated cost in Rs.
1	Barbed wire fence around plantation sites of Tarapadar & Bhataguda Rs 6,94,500/- X 11.351 km	78,83,269.50
2	Bald Hill plantation over 168.948ha X Rs. 4,61,069.360	7,78,96,746.23
3	Loose boulder check dam over 1000 meter @ Rs. 3200.00 per meter	32,00,000.00
	Total	8,89,80,015.73
	Add 20% for escalation of cost in future	1,77,96,003.15
	Grand Total	10,67,76,018.88 or say 10,67,76,100.00

(Rupees Ten crore sixty seven lakh seventy six thousand one hundred) only.


Divisional Forest Officer,
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

Checked
by me

Asst. Conservator of Forest
Kalahandi (South) Division

Technically Approved

Divisional Forest Officer,
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division



OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS & HoFF, ODISHA
ARANYA BHAWAN, BHUBANESWAR

Memo No. 2295 /9F(MG)- 374/2018
Dated, Bhubaneswar, the 07 February, 2022

To

The Divisional Forest Officer,
Cuttack/ Kalahandi (South) Forest Division

Sub: Diversion of 168.948 ha of forest land adjacent to South Kaliapani Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd

Ref: This office Memo No. 19257 (2) dated 07.11.2019.

In continuation to this office Memo on the subject cited above, it is to say that the financial outlay for the Compensatory Afforestation scheme (Bald Hill Plantation) over an area of 164.073 ha of non-forest land identified in village Tarapadar of Thuamul Rampur Tahasil under Kalahandi (South) Forest Division pertaining to the above project amounting to Rs.10,20,77,000/- (Rupees Ten crore twenty lakhs seventy seven thousand) only has been technically approved by the PCCF (FD & NO, FC Act). In this context, the approved financial outlay for Compensatory Afforestation scheme over 164.073 ha of non-forest land is enclosed herewith for information and necessary action.

In view of the above, you are requested to raise demand to the user agency for payment of the approved amount through web portal of the MoEF & CC and submit the deposit particulars of the amount paid in Adhoc-CAMPA in 12 point CAMPA format for taking further necessary action at this end.

Encl: As above

Conservator of Forests (Nodal)

Memo No. /Dt.

Copy forwarded to the Regional Chief Conservator of Forests, Angul / Bhawanipatna Circle for information and necessary action.

Conservator of Forests (Nodal)

Memo No. /Dt.

Copy forwarded to the Managing Director, OMC Ltd, OMC House, Bhubaneswar or information and necessary action.

Conservator of Forests (Nodal)

178

Financial Outlay for **Compensatory Afforestation Scheme (Bald Hill Plantation)** over **164.073 ha** of non-forest land identified in village Tarapadar of Thuamul-Rampur Tahasil in Kalahandi District against forest land to be diverted for overburden dump of **South Kaliapani and Sukurangi Chromite Mines** by **M/s OMC Ltd** in **Cuttack Forest Division**

(Wage Rate @ Rs.315/- per MD)

Sl. No.	Description	Amount (Rs.)
1.	Cost of Bald Hill Plantation @ 1600 plants per ha with 18 months old seedling over 164.073 ha @ Rs.4,30,100.37 per ha without provision of fencing with 10 years maintenance	7,05,67,858.00
2.	Add Escalation Cost (20%)	1,41,13,572.00
	Total	8,46,81,430.00
3.	Cost of Angle Iron & Chain Link wire mesh fencing over 10.371 Kms @ Rs.1677.32 per RMT with 10 years maintenance (As per approved one-time cost norm for CA)	1,73,95,486.00
	Grand Total	10,20,76,916.00 Or rounded off to 10,20,77,000.00

(Rupees Ten crore twenty lakhs seventy seven thousand) only

Approved

Approved
11/4/22

Principal Chief Conservator of Forests
Forest Diversion & Nodal Officer, FC Act

10/02/2022 I (18)

AGENCY COPY

यूनियन बैंक ऑफ इंडिया  **Union Bank of India**

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 14-02-2022

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908013
MoEF/SG File No.	8-19/2019-FC
Location.	ORRISA
Address.	OMC House Khordha
Amount(in Rs)	102077000/-

Amount In Words : Ten Crore Twenty Lakh Seventy-Seven Thousand Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825832908013 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

यूनियन बैंक ऑफ इंडिया  **Union Bank of India**

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• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

After making successful payment, User Agencies may send a line of confirmation through
Email: helpdeskampa@corpbank.co.in

Note: After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to
Email: cb0371@unionbankofindia.com

cls

Sushy 14/02/2022

DR. Sandhya Mishra
Addl. G.M.(F&E)
OMC Ltd.

S. Mohapatra 14/02/2022

S. Mohapatra
Dy. General Manager (Fin)

UBINJ22045029458



19/02/22



STATE FOREST BEARINGS OFFICE, CUTTACK
OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS & BEE
PROJECT NO. G.E.2.12, VARANASI BIJAWAN, CHANDRASEKHARPUR
BHUBANESWAR-751023

E-mail: nodal.pccfd@odisha.gov.in / nodal.pccfd@isha.org.in@gmail.com

Memo No. 2295 dated 07.02.2022

Director, Cuttack, Odisha

Principal Forest Officer
Cuttack Forest Division

Subject: Diversion of 168.948 ha of forest land adjacent to South Kaliapani Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines of M/s OMC Ltd under Cuttack Forest Division - Revised Financial outlay of CA Scheme @ Rs 326/- per manday regarding.

Reference to this office Memo No. 2295 dated 07.02.2022

In reference to this office memo on the subject cited above, it is to inform you that the revised financial outlay for Compensatory Afforestation Scheme (Bald Hill Plantation) over an area of 168.946 ha i.e. 164.073 ha of non-forest land identified in village Tarapadar & 4.875 ha non-forest land identified in village Bhataguda both under Thuanul-Rampur Tahasil in Koraput (South) Forest division pertaining to the above project has been approved by the J.D. & Nodal Officer, FC Act for Rs 11,43,65,300/- (Rupees eleven crores forty three lakhs sixty five thousand and three hundred) only at prevailing wage rate of Rs.326/- per manday which is enclosed.

You are requested to raise demand on the user agency for payment of the differential cost of funds with portal of MoF & CC and submit the deposit particulars of the amount paid.

Further you are also requested to furnish the statement of funds towards compensatory afforestation by the user agency in the prescribed CAMPA format duly signed by you and return the updated State-I compliance.

End - Revised financial outlay

[Signature]
Conservator of Forests (Nodal)

Approved: *[Signature]* Dt. 02.09.2022

This is being sent to the R.C.C. Amul Circle for information & necessary action with reference to Memo No. 2295 dated 23.08.2022 of DFO, Cuttack Forest Division

[Signature]
Conservator of Forests (Nodal)

Memo No. 17130 Dt. 03.09.2022

Copy forwarded to the R.C.C.F. Bhawanipatna Circle for information & necessary action

[Signature]
03/09/22
Conservator of Forests (Nodal)

Memo No. 17130 Dt. 03.09.2022

Copy along with a copy of the revised financial outlay forwarded to the Divisional Forest Officer, Kalahandi (South) Forest Division for information & necessary action
Encl - Revised financial outlay

[Signature]
03/09/22
Conservator of Forests (Nodal)

Memo No. 17135 Dt. 03.09.2022

Copy forwarded to the Managing Director, OMC Ltd, OMC House, BBSR for information and necessary action in continuation to this office Memo No. 2297 dated 07.02.2022.

[Signature]
03/09/22
Conservator of Forests (Nodal)

gf (mb)
o/c

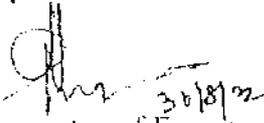
Financial Outlay for Compensatory Afforestation Scheme (Bald Hill Plantation) over 168,946 ha i.e. 164,073 ha of non-forest land identified in village Tarapadar & 4,875 ha non-forest land identified in village Bhataguda both under Thuamul-Rampar Tahasil in Kalahandi (South) Forest Division against forest land to be diverted for overburden dump of South Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd in Cuttack Forest Division

(Wage Rate @ Rs.326/- per MD)

Sl. No.	Description	Amount (Rs.)
1.	Cost of Bald Hill Plantation @ 1600 plants per ha with 18 months old seedling over 164.073 ha @ Rs.4,69,664.58 per ha without provision of fencing with 10 years maintenance	7,70,59,277.00
2.	Cost of Bald Hill Plantation @ 1600 plants per ha with 18 months old seedling over 4.875 ha @ Rs.4,69,664.58 per ha without provision of fencing & with 10 years maintenance	22,89,615.00
3.	Cost of LBCD of size 10'X10'X5' @ Rs.8944.16 per structure for 10 nos. over 4.875 ha	89,442.00
	Total	7,94,38,334.00
4.	Add Escalation Cost (20%)	1,58,87,666.00
	Total	9,53,26,000.00
5.	Cost of Angle Iron & Chain Link wire mesh fencing over 10.371 Kms - 0.98 Kms around plantation sites of Tarapadar and Bhataguda @ Rs.1677.32 per RMT with 10 years maintenance (As per approved one-time cost norm for CA)	1,90,39,259.00
	Grand Total	11,43,65,259.00
		Or rounded off to
		11,43,65,300.00

(Rupees Eleven crore forty three lakhs sixty five thousand and three hundred) only

Approved



Chief Conservator of Forests
Forest Diversion & Nodal Officer, FC Act

Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act)
O/o PCCF & HoFF, Odisha, Bhubaneswar.

135572/2022/F & E

OFFICE OF THE DIVISIONAL FOREST OFFICER, CUTTACK FOREST DIVISION
 AT:- GHATAKULA, NUAPADA, CUTTACK 753010

Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfocuttack@odisha.gov.in

No 5947/5F (Forest Diversion) 12/2018

Dated, Cuttack the 08th September, 2022

To

The Managing Director,
 Odisha Mining Corporation Ltd.,
 Odisha Mining Corporation House,
 Bhubaneswar.

Sub: - Diversion of 168.948 ha of forest land adjacent to South-Kaliapani Mines of OMC for dumping of overburden of South-Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd.-Demand on CA Scheme reg.

Ref: - Memo No.17135 dt.03.09.2022 of the Conservator of Forests (Nodal), O/o-PCCF & HoFF, Bhubaneswar to your address.

Sir,

In inviting a reference to the memo cited above on the captioned subject, it is to inform you that, the financial outlay for Compensatory Afforestation Scheme(Bald Hill Plantation) over an area of 168.948 ha i.e. 164.073 ha of non-forest land identified in village Tarapadar & 4.875 ha non-forest land identified in village Bhatguda both under Thuamul-Rampur Tahasil in Kalahandi(South) Forest division pertaining to the above project has been approved by the Chief Conservator of Forest (Forest Diversion & Nodal Officer, FC Act) for Rs.11,43,65,300/- (Rupees Eleyen Crore Forty-Three Lakhs Sixty-Five Thousand Three Hundred) only at prevailing wage rate of Rs.326/- per man day with 10 years maintenance.

In view of above, it is requested to make arrangement to deposit the differential amount Rs.1,22,88,300.00 (Rupees One Crore Twenty-Two Lakh Eighty-Eight Thousand Three Hundred) (Rs.11,43,65,300.00 - Rs.10,20,77,000.00) only with the Adhoc body of Compensatory Afforestation Fund Management & Planning Authority (CAMPA) through e- payment module & submit the receipt of the deposition to this office for ready reference.

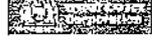
Encl: - As above.

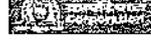
Yours Faithfully

Divisional Forest Officer
 Cuttack Forest Division

Copy for kind information to:

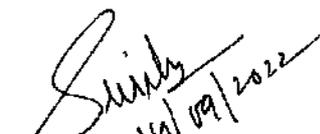
- (i)The Chief Conservator of Forests (Nodal), O/o- the Principal Chief Conservator of Forests & HoFF, Odisha, Bhubaneswar.
- (ii)The Regional Chief Conservator of Forests, Angul Circle.
- (iii)The Divisional Forest Officer, Kalahandi South Division.

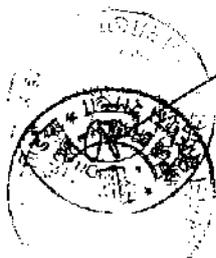
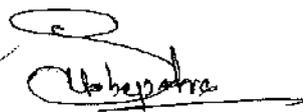
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NEFT / RTGS CHALLAN for CAMPA Funds	
Date : 14-09-2022	
Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908378
MoEF/SG File No.	8-19/2019-FC
Location.	ORRISA
Address.	OMC House Khordha
Amount(in Rs)	12288300/-
Amount in Words :One Crore Twenty-Two Lakh Eighty-Eight Thousand Three Hundred Rupees Only	
NEFT/RTGS to be made as per following details;	
Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	150825832908378 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003
<ul style="list-style-type: none"> This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only 	

BANK COPY	
  	
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Agency Name.	ODISHA MINING CORPORATION LTD
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Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003
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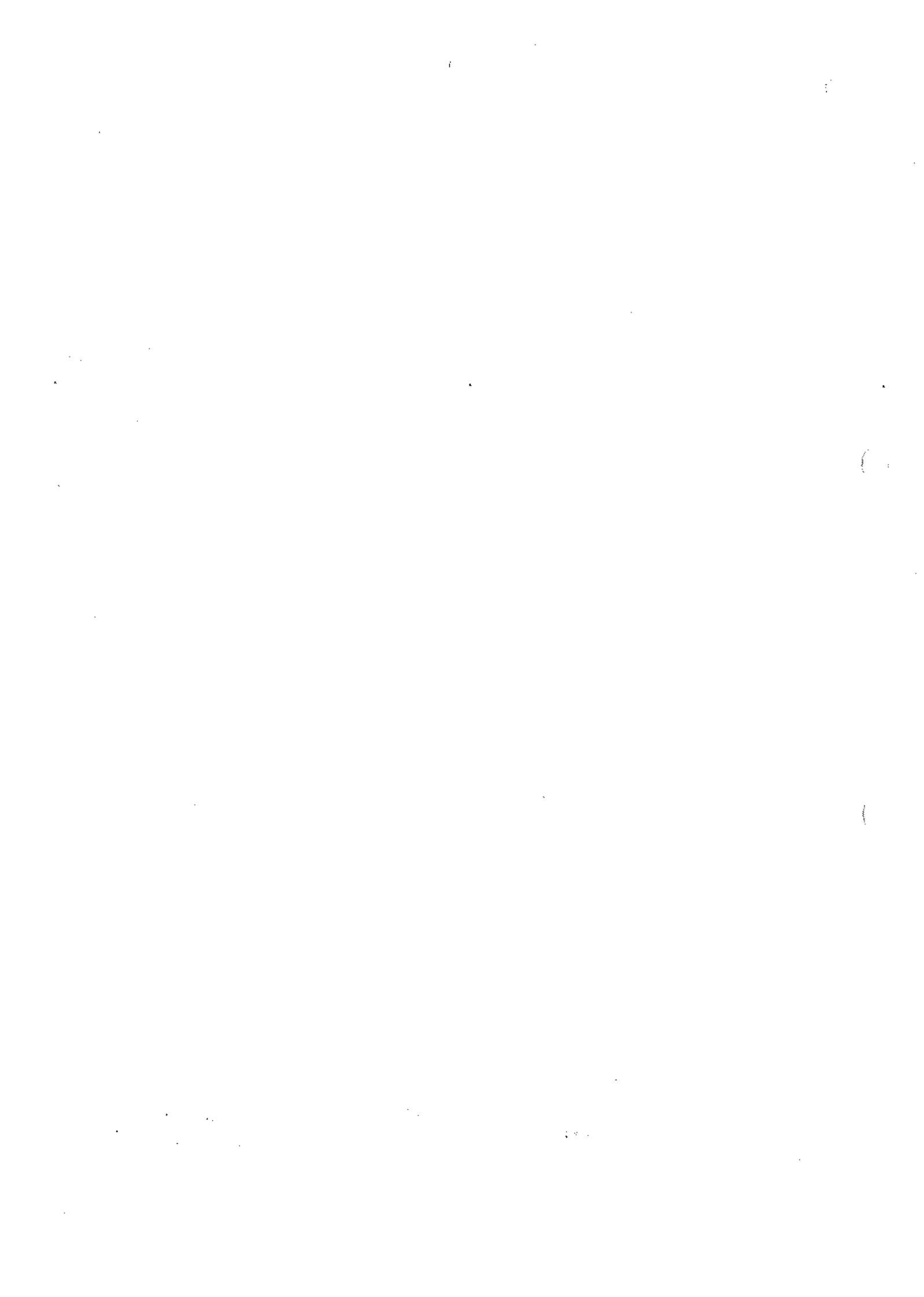
After making successful payment, User Agencies may send a line of confirmation through
Email: helpdeskcampa@corpbank.co.in

Note:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to
Email: cb0371@unionbankofindia.com

C/S

 14/09/2022
 Dr. Sandhya Mishra
 Addl. G.M. (F&E)
 OMC Ltd.



 15/09/2022
 S. Mohapatra
 Dy General Manager (Fin)

UBINK 22258016654





भारत सरकार GOVERNMENT OF INDIA
खान मंत्रालय MINISTRY OF MINES
भारतीय खान ब्यूरो INDIAN BUREAU OF MINES
क्षेत्रीय खान नियंत्रक के कार्यालय
OFFICE OF THE REGIONAL CONTROLLER OF MINES



By. Regd. Parcel / E-Mail
Phone: 0674-2352463
Tele Fax: 0674-2352490
eMail:
rc.bhubaneswar@rbm.gov.in
Plot No.149, Pokhariput
BHUBANESWAR-751020

No. RMP/A/30-ORI/BHU/2019-20 ^{16/3}

Date: 20/11/2019

To

Shri R Vineel Krishna, IAS,
Managing Director & Nominated
Owner, M/s OMC Limited,
OMC House, Bhubaneswar,
Odisha – 751001.

Sub: Approval of Review of Mining Plan of South Kaliapani Chromite Mine over an area of 552.457 ha in Jajpur district of Odisha of M/s OMC Limited submitted under Rule-17 (2) of MCR, 2016.

Ref: -i) Your letter no. 15504/OMC/PMC/19 dated 30.09.2019 received on 09.10.2019.

ii) This office letter of even no. dated 09.10.2019.

iii) This office letter of even no. dated 09.10.2019 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.

iv) This office letter of even no. dated 24.10.2019.

v) Your letter no. 17393/OMC/PMC/19 dated 07.11.2019.

vi) Your letter no. 17579/OMC/PMC/19 dated 11.11.2019.

Sir,

In exercise of the power delegated to me vide Gazette Notification No. S.O. 1857 (E) dated 18.05.2016, I hereby **Approve** the Review of Mining Plan including Progressive Mine Closure Plan of South Kaliapani Chromite Mine over an area of 552.457 ha of M/s OMC Limited in Jajpur district of Odisha State submitted under Rule 17 (2) of Mineral Concession Rules, 2016. This approval is subject to the following conditions:

- I. The Review of Mining Plan is approved without prejudice to any other law applicable to the mine area from time to time whether made by the Central Government, State Government or any other authority and without prejudice to any order or direction from any court of competent jurisdiction.
- II. The proposals shown on the plates and/or given in the document is based on the lease map /sketch submitted by the applicant/ lessee and is applicable from the date of approval.
- III. It is clarified that the approval of aforesaid Review of Mining Plan does not in any way imply the approval of the Government in terms of any other provision of Mines & Minerals (Development & Regulation) Act, 1957, or the Mineral Concession Rules, 2016 and any other laws including Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 or the rules made there under, Mines Act, 1952 and Rule & Regulations made there under.
- IV. Indian Bureau of Mines has not undertaken verification of the mining lease boundary on the ground and does not undertake any responsibility regarding correctness of the boundaries of the leasehold shown on the ground with reference to lease map & other plans furnished by the applicant / lessee.

- V. At any stage, if it is observed that the information furnished, data incorporated in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.
- VI. If this approval conflicts with any other law or court order / direction under any statute, it shall be revoked immediately.
- VII. Validity of this document shall expire on 31.03.2025.
- VIII. Next financial assurance shall be due for submission on 31.03.2025.

Encl: - One copy of approved
Review of Mining Plan

भवदीय / yours faithfully,


(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

Copy for kind information to:-

1. The Director of Mines, Directorate of Mines, Government of Odisha, Heads of the Department Building, New Capital, Bhubaneswar- 751001, Odisha along with one copy of approved Review of Mining Plan by REGISTERED PARCEL.
2. Shri A. K. Samantray and Shri Subrat Kumar Behera, Qualified Person, M/s Odisha Mining Corporation Limited, OMC House, Post Box No.34, Bhubaneswar-751001, Odisha.

(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

SOUTH KALIAPANI CHROMITE MINE

(Over an area of 552.457 Hacts in Village: Kaliapani, Dist: Jajpur)



REVIEW OF MINING PLAN

(For the period from 2020-21 to 2024-25)

Under Rule 17 (2) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule, 2016

PROGRESSIVE MINE CLOSURE PLAN

Under Rule 23 of Mineral Conservation and Development Rules, 2017

Lessee Details	Odisha Mining Corporation Limited OMC House, Bhubaneswar - 751001, District: Khurda, State: Odisha E-mail: info@odishamining.in Tel: 0674-2377400 & 2377401, Fax No: (0674) 2580145/020
ML Area	Lease Area: 552.457 Hects Diverted Forest Area: 425.398 Hects Non Forest Area: 127.059 Hects
Category of Mine: Fully Mechanised (FM)	Date of Execution of the ML Area: 22.01.1980 Date of Expiry of the ML Area: 21.01.2030 Lease Period: 50 Years
Registration no under Rule 45 of MCDR 2017: IBM/4269/2011 Mine Code No: 11ORI19007	

TEXT

Prepared by

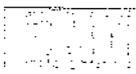
Sri Ashish Kumar Samantray, B.E & M. Tech in Mining Engineering

Sri Subrat Behera, M. Sc & M. Phil in Geology



Odisha Mining Corporation Limited
OMC House, Bhubaneswar - 751001,
District: Khurda, State: Odisha

OCTOBER 2019



DISHA
District Inhabitant Self-Help Association

South Kallapani Chromite Mine
Odisha Mining Corporation Ltd

Revision of Mining Plan including Progressive
Closure Plan from 2020-21 to 2025-26

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2.0	Mining		
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10.0	Plans and Sections	Attached as separate volume.	
11.0	Annexure	Attached as separate volume.	


 Subrat Kumar Behera
 Qualified Person


 A K Samantroy
 Qualified Person



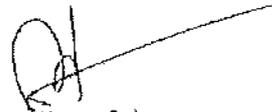
South Khatopani Chromite Mine
Odisha Mining Corporation Ltd

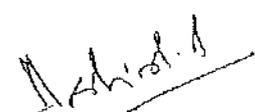
Review of Mining Plan including
Closure Plan from 2020-21 to 2024-25



LIST OF PLATES

Sl. No	Description	Plate No.	Scale
1	Key Plan	Plate No - 1	1 : 50000
2	Lease Plan	Plate no - 2	16" : 1 Mile
3	Surface Plan (As on 30.06.2019)	Plate No - 3	1 : 4000
4	Geological Plan	Plate No - 4	1 : 4000
5	Geological Cross Sections	Plate No - 5	1 : 2000
6	Year wise Pit Development Plan during FY 2020-21	Plate No - 6	1 : 4000
7	Year wise Pit Development Plan during FY 2021-22	Plate No - 7	1 : 4000
8	Year wise Pit Development Plan during FY 2022-23	Plate No - 8	1 : 4000
9	Year wise Pit Development Plan during FY 2023-24	Plate No - 9	1 : 4000
10	Year wise Pit Development Plan during FY 2024-25	Plate No - 10	1 : 4000
11	Year wise Pit Development Sections	Plate No - 11	1 : 2000
12	Conceptual Plan	Plate No - 12	1 : 4000
13	Conceptual Sections	Plate No - 13	1 : 4000
14	Environmental Plan	Plate No - 14	1 : 5000
15	Reclamation Plan	Plate No - 15	1 : 4000
16	Financial Assurance Plan	Plate No - 16	1 : 4000
17	DGPS Survey Map of lease boundary.	Plate No - 17	16" : 1 Mile

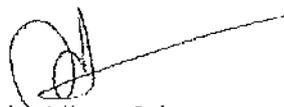

Subrat Kumar Behera
Qualified Person

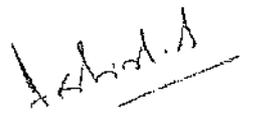

A K Samantray
Qualified Person



LIST OF ANNEXURES

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Annexure -32	Photographs	


Subrat Kumar Behera
Qualified Person


A K Samantray
Qualified Person



ODISHA
ODISHA MINING CORPORATION LTD.

South Kaliapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including
Progressive Mine Closure Plan from 2020 to 2025



INTRODUCTION

South Kaliapani Chromite Mine of M/s OMC Ltd. is located in Jajpur Dist. of Odisha. The South Kaliapani Mine was executed on 22.1.1980 for a period of 20 years. A copy of the lease deed is enclosed as Annexure 6. Application for renewal of the lease has been done before the expiry of the ML period and the lease was under deemed renewal stage. As per the MMDR Amendment Act 2015 the validity of the lease period was extended up to 31.03.2020. Subsequently, with the enactment of the Mineral (Mining by Govt. Company) Rules, 2015, the original lease period of the said lease has been granted for 50 years, i.e. from 22.01.1980 to 21.01.2030. The Supplementary Lease Deed in support of the extension of the lease period up to 21.01.2030 has been executed on 12.08.2016. The copy of the supplementary lease deed has been enclosed as Annexure 7.

The last Review of Mining Plan was approved by IBM for the period from 1.4.2015 to 31.3.2020, vide letter No. MS/FM/26-ORI/BHU/2014-15/117, dated: 16.04.2015. Modification of same was approved by IBM for the period from 01.04.2017 to 31.03.2020 vide letter No. MPM/FM/24-ORI/BHU/2017-18/2789, dated: 13.02.2018. The copy of IBM approval letter is enclosed as Annexure 14.

The mine has been accorded environment clearance vide letter No. J-11015/407/2008-IA.II(M) dated 20.7.2010 for a production capacity of 1.40 million tonnes of chromite ore per annum. A copy of the same is enclosed as Annexure 8. A copy of consent to establish granted by State Pollution Control Board, Odisha is enclosed as Annexure 9. Consent to Operate has also been granted by State Pollution Control Board, Odisha under the Air & Water (Prevent & Control of pollution) Act, which is valid up to 31.03.2020. A copy of the same is enclosed as Annexure 10.

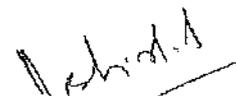
Surface right over an area of 721.25 Acres has been obtained, copy of same is attached as Annexure 12.

The mine has also been accorded permission for diversion of 425.398 Ha. of forest land vide letter dated 25.02.2016. A copy of the letter in this regard has been enclosed as Annexure 11.

The present submission is Review of Mining Plan & Progressive Mine Closure Plan for next 5 years, i.e. from 01.04.2020 to 31.03.2025, in respect of South Kaliapani Chromite Mine of OMC Ltd, over an area of 552.457 Ha, under rule 17 (2) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule, 2016 and Rule 23 of Mineral Conservation and Development Rules, 2017 respectively.

अनुमोदित
APPROVED
6/02/2021
क्षेत्रीय खान नियंत्रक
REGIONAL CONTROLLER OF MINES
भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
भुवनेश्वर/BHUBANESWAR


Subrat Kumar Behara
Qualified Person


A K Samantiray
Qualified Person



South Kaliapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including
Closure Plan from 2020



1.0 GENERAL

Shri R Vineel Krishna, IAS,
Managing Director & Nominated Owner
Odisha Mining Corporation Limited, Bhubaneswar, Odisha

- a. Name of applicant/ lessee/ Rule 45 registration No.
- Dr. Smt. Tilotama Basa
Power of Attorney Holder
Odisha Mining Corporation Limited,
Bhubaneswar - 751001, Odisha
- A list of board of directors is enclosed as Annexure 1. A copy of the relevant extract from the minutes of the 416th meeting approved by Board regarding appointment of Nominated Owner of the mine is enclosed as Annexure 2. A copy of photo id & address proof of the nominated owner of the mine is enclosed as Annexure 3.

Registration No. of OMC Ltd. under Rule 45 IBM/4260/2011

Address OMC House, Post Box No. 34
Bhubaneswar - 751001

District Khurda

State Odisha

Pin Code 751001

Phone 0674-2393431, 2395689, 2393389

Fax 0674-2391629, 2396839, 2394772

Gram -

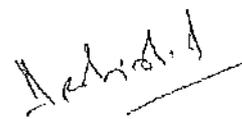
Telex -

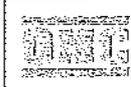
e-mail info@ormsamining.com; planningcellomc@gmail.com

- b) Status of the applicant/Lessee
- | | |
|---------------------------|----------------|
| Private individual | No |
| Cooperative Association | No |
| Private Company | No |
| Public Company | No |
| Public Sector Undertaking | Yes |
| Joint Sector Undertaking | No |
| Other (pl.specify) | Not Applicable |
- Certificate of Incorporation is enclosed as Annexure 4.

- c) Mineral(s) which is / are include in the prospecting license (For fresh grant) Not applicable
- d) Mineral(s) which is / are include in the lease deed Chrome Ore
- e) Mineral(s) which the applicant /lessee Intends to mine Chrome Ore


Subrat Kumar Behera
Qualified Person


A K Samantroy
Qualified Person



ODISHA
NEW OPPORTUNITIES

South Kaliapani Chromite Mine
Odisha Mining Corporation Ltd

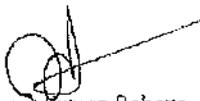
Review of Mining Plan including
Closure Plan from 2020

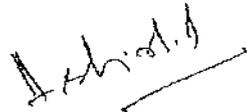


f) Name of Qualified Person under rule 15(1) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule, 2016 preparing Mining Plan:

Sri A K Samantray, Qualification: B.E & M. Tech in Mining Engineering
Address: Dy GM (Mining), OMC House, Post Box No 34, Bhubaneswar, Odisha 751001
Phone: (0674) 2393431, 2395689, 2393389
Fax: (0674) 2391629, 2396889, 2394772
Email: aksamantray@odishamining.in
Mobile No: 9937297144

Sri Subrat Kumar Behera, Qualification: M. Sc. & M. Phil in Geology
Address: Manager (Geology), OMC House, Post Box No 34, Bhubaneswar, Odisha 751001
Phone: (0674) 2393431, 2395689, 2393389
Fax: (0674) 2391629, 2396889, 2394772
Email: beherasubrat1975@gmail.com
Mobile No: 9438478061


Subrat Kumar Behera
Qualified Person


A K Samantray
Qualified Person



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DIGITAL INFORMATION SYSTEMS FOR HUMAN AID

South Kaliapani Chromite Mine,
Odisha Mining Corporation Ltd

Review of Mining Plan including
Closure Plan from 2018 to 2023



2.0 LOCATION AND ACCESSIBILITY

a) Lease Details (Existing Mine)

Name of Mine South Kaliapani Chromite Ore Lease (Lease Area : 552.457 Ha)

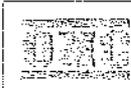
Lat/Long of any boundary point.

South Kaliapani Chromite Mine is located in Jajpur district of Odisha state. It is located between 21°01'37.98768" to 21°03'25.10640" North Latitude and between 85°46'39.53820" to 85°48'28.19916" East Longitude. The location map is shown as Plate No. 03. The Lat./ Long. of all the boundary pillars are given below:-

PILLAR NO.	GEOGRAPHIC COORDINATES		UTM COORDINATES	
	LONGITUDE	LATITUDE	EAST	NORTH
1	85°46'39.53820"	21°02'47.29236"	372994.727	2327777.211
2	85°46'45.45228"	21°02'36.76812"	373162.964	2327452.298
3	85°46'48.89244"	21°02'30.70716"	373260.838	2327265.182
4	85°46'51.35448"	21°02'26.38572"	373330.891	2327131.762
5	85°46'53.24880"	21°02'23.06004"	373384.798	2327029.094
6	85°46'56.57344"	21°02'17.20068"	373479.534	2326848.199
7	85°47'00.01464"	21°02'11.15124"	373577.302	2326661.426
8	85°47'05.97264"	21°02'00.66552"	373746.839	2326337.714
9	85°47'12.42204"	21°01'49.35792"	373930.376	2325988.605
10	85°47'14.08524"	21°01'46.40232"	373977.698	2325897.37
11	85°47'16.34820"	21°01'42.38544"	374042.089	2325773.358
12	85°47'17.82060"	21°01'39.99288"	374084.038	2325699.477
13	85°47'18.86964"	21°01'37.98768"	374113.854	2325637.592
14	85°47'20.64912"	21°01'33.07344"	374165.481	2325670.586
15	85°47'26.39076"	21°01'41.48192"	374332.029	2325774.131
16	85°47'29.57820"	21°01'44.25348"	374424.452	2325827.9
17	85°47'34.19340"	21°01'47.08438"	374558.346	2325913.952
18	85°47'35.32020"	21°01'47.77608"	374591.031	2325934.958
19	85°47'36.62376"	21°01'48.47736"	374628.827	2325956.241
20	85°47'40.29000"	21°01'50.63556"	374735.17	2326021.804
21	85°47'44.11508"	21°01'52.93164"	374846.155	2326091.565
22	85°47'46.87584"	21°01'54.53760"	374926.192	2326140.345
23	85°47'48.21612"	21°01'55.31952"	374965.069	2326164.089
24	85°47'51.00612"	21°01'56.98812"	375045.996	2326214.792
25	85°47'46.27796"	21°02'00.04092"	375198.884	2326307.518
26	85°47'59.25732"	21°02'01.58676"	375285.246	2326354.399
27	85°48'03.33000"	21°02'04.12116"	375403.402	2326431.439
28	85°48'06.99768"	21°02'06.42084"	375509.809	2326501.357
29	85°48'12.71736"	21°02'09.85992"	375675.714	2326605.855
30	85°48'14.10768"	21°02'10.62636"	375716.021	2326629.123

Subrat Kumar Behera
Qualified Person

A K Samantray
Qualified Person



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South Kaliapani Chromite Mine
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Review of Mining Plan including Progressive
Closure Plan from 2020 to 2030



31	85° 48' 18.73363"	21° 02' 13.34760"	375850.187	2326711.794
32	85° 48' 21.20976"	21° 02' 14.83044"	375922.001	2326756.36
33	85° 48' 24.83316"	21° 02' 16.95192"	376027.086	2326821.305
34	85° 48' 28.19916"	21° 02' 18.89196"	376124.692	2326880.227
35	85° 48' 25.11072"	21° 02' 23.51328"	376036.61	2327022.984
36	85° 48' 22.33512"	21° 02' 27.64464"	375957.435	2327150.621
37	85° 48' 20.51172"	21° 02' 30.38136"	375905.427	2327235.157
38	85° 48' 19.65276"	21° 02' 31.62012"	375880.923	2327273.431
39	85° 48' 16.94988"	21° 02' 35.70648"	375803.838	2327399.665
40	85° 48' 12.10248"	21° 02' 42.93820"	375665.599	2327624.61
41	85° 48' 10.57968"	21° 02' 45.08232"	375622.128	2327689.331
42	85° 48' 07.97328"	21° 02' 49.11576"	375547.829	2327813.91
43	85° 48' 02.43036"	21° 02' 57.35076"	375389.738	2328068.319
44	85° 47' 55.54140"	21° 03' 07.48944"	375193.239	2328381.553
45	85° 47' 50.80416"	21° 03' 14.41620"	375058.103	2328595.566
46	85° 47' 48.80580"	21° 03' 17.39340"	375001.114	2328687.547
47	85° 47' 47.27580"	21° 03' 19.66068"	374957.488	2328757.588
48	85° 47' 43.73376"	21° 03' 25.10640"	374856.517	2328925.811
49	85° 47' 36.60792"	21° 03' 20.88072"	374649.86	2328797.429
50	85° 47' 29.46192"	21° 03' 16.67628"	374442.619	2328669.72
51	85° 47' 28.66236"	21° 03' 16.31916"	374419.459	2328658.914
52	85° 47' 21.30648"	21° 03' 11.87460"	374206.107	2328523.866
53	85° 47' 11.84244"	21° 03' 06.31728"	373931.641	2328355.062
54	85° 47' 08.97828"	21° 03' 04.63284"	373848.573	2328303.903
55	85° 47' 03.25608"	21° 03' 01.25892"	373682.622	2328201.419
56	85° 47' 01.06368"	21° 02' 59.97048"	373619.038	2328162.284
57	85° 46' 50.26872"	21° 02' 53.64960"	373305.957	2327970.308

Date of grant of lease The South Kaliapani lease was executed on 22.1.1980 for a period of 20 years. A copy of the lease deed is enclosed as Annexure 6. The supplementary lease deed has been executed on 12.08.2016 for the extended lease period up to 21.01.2030. A copy of the supplementary lease deed is enclosed as Annexure 7.

Period/Expiry Date After the enactment of MMDR Amendment Act 2015, the validity of lease period was extended up to 31.03.2020. Subsequently, with the enactment of Mineral (Mining by Govt. Company) Rules, 2015, the original lease period of the said lease has been granted for 50 years i.e. from 22.01.1980 to 21.1.2030. The Supplementary lease deed in support of the validity of extension of the lease period has been enclosed as Annexure 7.

Name of lease holder Odisha Mining Corporation Limited

Address OMC House, Post Box No. 34
Bhubaneswar – 751001, Odisha

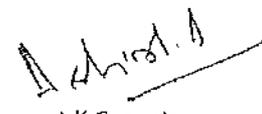
Tel. 0674-2393431, 2395689, 2393389

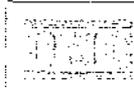
Fax 0674-2391629, 2396889, 2394772

e-mail info@orissamining.com; planningcellomc@gmail.com

Mobile 9937297144 / 9438478061


Subrat Kumar Behera
Qualified Person


A K Samantroy
Qualified Person



DISHA
Department of Industrial Safety & Health

South Kaliapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including
Closure Plan from 2020-21 to 2024-25



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

Forest (Specify)	Area, Ha	Non Forest (Specify)	Area, Ha
Reserve Forest	-	Waste Land	51.57
Demarcated Protected Forest (Diverted)	72.821	Grazing Land	0.42
Village Forest	-	Agriculture Land	4.01
Un-demarcated Protected Forest (Diverted)	352.577	Others (Non Forest)	71.059
Total	425.398	Total	127.059

Total lease area / applied area 552.457 Ha

District & State

District : Jajpur, State : Odisha

Taluka

Sukinda

Village

Kaliapani, Gurujangpal, Sukurangi and Saruabil.

Whether the area falls under Coastal Regulation Zone (CRZ)? If yes, details thereof

No

Lease plan of South Kaliapani Chromite Mine lease is shown in Plate No 2.

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

South Kaliapani Chromite Mine in Sukinda ultramafic complex is located in Sukinda Tahasil of Jajpur district in Orissa. The mine is connected with the nearest rail head at Jajpur-Keonjhar Road on Howrah-Bhubaneswar-Chennai line of SE railway by an all weather road of 53 km via Duburi and Tomka. The leasehold area is linked with Daitari-Paradeep Express Highway. State Capital at Bhubaneswar and district head quarter at Jajpur Road is located at road distances of 150 km and 53 km respectively from South Kaliapani leasehold area. The deposit is covered under Survey of India toposheet no. F45N16 at latitudes 21°01'33.4" N - 21°03'25.1" N and longitudes 85°46'39.4"E - 85°48'28.2"E. The leasehold area covers part of Mahagiri Protected forest block no. 27 of Sukinda range and also village limits of Kaliapani, Gurujangpal, Sukurangi and Saruabil.

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

The deposit is covered under Survey of India toposheet no. F45N16. It is located between 21°01'37.98768" to 21°03'25.10640" North Latitude and between 85°46'39.53820" to 85°48'28.19916" East Longitude. The location map is shown as Plate No 1. The lat./ long. of all the boundary pillars are given in the chapter 2.0 (a) of the RMP.

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 same has been shown in the key plan as Plate No 1.

Subrat Kumar Behera
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A K Samantray
Qualified Person



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

3.1 Date and reference of earlier approved MP/ RMP:

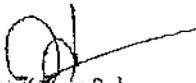
The last Review of Mining Plan was approved by IBM for the period from 1.4.2015 to 31.3.2020 vide letter No. MS/FM/26-ORI/BHU/2014-15/117 DATED 16.04.2015. Modification of same was approved by IBM for the period from 01.04.2017 to 31.03.2020 vide letter No. MPM/FM/24-ORI/BHU/2017-18/2789, dated: 13.02.2018. The copy of IBM approval letters have been enclosed as Annexure 14.

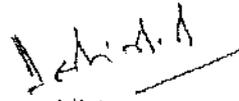
The details of earlier approval of Scheme of Mining and Mining Plan has been given in the table below.

Sl No	Mining Plan / Review of Mining Plan	Submitted under (Rule reference)	Approval Letter No & Date	Period	Valid Upto
1	Mod. To approved Review of Mining Plan	Under rule 17(3) of MCR 2016 and 23 of MCDR 2017	MPM/FM/24-ORI/BHU/2017-18/2789, Date: 13.02.2018	01.04.2017 to 31.03.2020	31.03.2020
2	Scheme of Mining	Under rule 10(1) & 23(B) MCDR 1988	MS/FM/26-ORI/BHU/2014-15/224, Date: 16.04.2015	01.04.2015 to 31.03.2020	31.03.2020
3	Mod. To approved Scheme of Mining	Under rule 10(1) & 23(B) MCDR 1988	MSM/FM/30-ORI/BHU/2013-14/2027, Date: 22.08.2014	01.04.2014 to 31.03.2015	31.03.2015
4	Scheme of Mining	Under rule 12 & 23(B) of MCDR 1988	314(3)/2009-MCCM(CZ)/MS-41, Date: 22.03.2010	01.04.2010 to 31.03.2015	31.03.2015
5	Scheme of Mining	Under rule 12 & 23(B) of MCDR 1988	314(3)/2006-MCCM(CZ)/S-15, Date: 22.03.2007	01.04.2005 to 31.03.2010	31.03.2010
6	Scheme of Mining	Under rule 11 of MCDR 1988	314(3)/2000/MCCM(C)/M P-19, dated: 21.02.2003	01.04.2000 to 31.03.2005	31.03.2005
7	Mining Plan	Under rule 11 of MCDR 1988	314(3)/94/MCCM(C)/MP-7, Dated: 17/08/1995	Prepared for first 5 years.	

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

Under the Rule 3(1) of Mineral (Mining by Govt. Company) Rules, 2015 as notified by Ministry of Mines on 03.12.2015, the original lease period of the South Kaliapani Chrome ore lease has been granted for 50 years i.e. from 22.01.1980 to 21.01.2030. The Supplementary lease deed in support of extension of the lease period up to 21.01.2030 has been executed on 12.08.2016 (Copy enclosed as Annexure 7). The lessee also obtained diversion for the entire forest land on 25.02.2016. Due to increased demand for chrome ore, lessee also proposed increase in ore production. The modification to the above effect in the last scheme of mining was approved by IBM vide letter dtd. 13.02.2018 for the period from 1.4.2017 to 31.3.2020 under rule 17(3) of MCR 2016 and rule 23 of MCDR 2017.


 Subrat Kumar Behera
 Qualified Person


 A K Samantray
 Qualified Person



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

Achievements against the proposals envisaged in the approved review of mining plan for the period w.e.f 2015-15 to 2019-20 and the justification thereof for deviations, if any, is mentioned below:

i. Exploration:

Year	Nos. of boreholes		
	Planned	Actual	Reason for deviation
2015-16	35nos / 7050 m	05 nos / 289 m	Shortfall is due to lack of forest clearance over the entire lease area.
2016-17	10 nos / 2000 m	11 nos / 1841 m	More or less achieved.
2017-18	10 nos / 2450 m	12 nos / 2922.5 m	No deviation.
	09 nos / 1800 m	11 completed & 2 was running/ 1963.10 m	No deviation.
2018-19	27 nos / 4950 m	23 nos/ 5076.5 m	More or less achieved.
2019-20	12 nos / 3750 m	15 nos / 4828.80m (up to 31.10.2019)	No deviation.

Except 2015-16, the proposed exploration drilling have been more or less achieved. During 2015-16, the shortfall in achievement against proposal is due to lack of forest clearance over the entire ML area.

ii. Mine Development and Exploitation

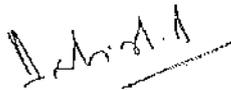
The achievement against the target in respect of ROM, overburden is given in the table below.

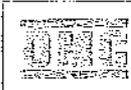
Year	ROM (in Tonnes)		Overburden (in CuM)		Stripping Ratio (CuM/Tonnes)	
	Planned	Actual	Planned	Actual	Planned	Actual
2015-16	1110319	830015	4127928	2666805	3.72	3.21
2016-17	1098524	1008820	4463232	3560288	4.06	3.53
2017-18	1076727	132280 (Till Dec 2017)	4308096	2926289 (Till Dec 2017)	4.00	22.12 (Till Dec 2017)
	832716 (01.01.2018 to 01.3.2018)	622865	10328625 (01.01.2018 to 31.03.2018)	2114869	12.40 (01.01.2018 to 01.3.2018)	3.39
2018-19	1391228	1050513	11967194	6610599	8.60	6.29
2019-20	1385751	255447 (till 30.6.2019)	12871763	1388333 (till 30.06.2019)	9.29	5.43 (till 30.06.2019)

Reasons for Deviation:

Year 2015-16: Due to non-availability of Forest clearance the mining operation was restricted within the approved area for which the excavation of ore and OB against the proposed quantity could not be possible.


 Subrat Kumar Behera
 Qualified Person

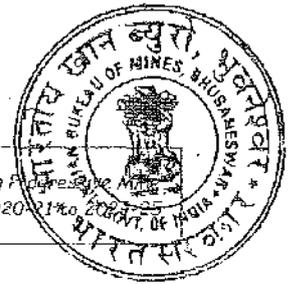

 A K Samantray
 Qualified Person



DISHA
DEPARTMENT OF INDUSTRIAL
AND MINES

South Kalijani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2024-25



Year 2016-17: Though the Forest Clearance was obtained on dtd: 25.02.2016, but due to delay in handing over the area by the forest department, the mining operation was restricted within the approved area. The balance forest land was handed over by forest department on dtd: 21.07.2017. The copy of letter in this regard is enclosed as Annexure 11.

During the 2017-18, 2018-19 and 2019-20, it was proposed to develop opencast working in Band-IV. However due to delay in finalization of contract agreement to develop the quarry, same couldn't be commenced. So, the targeted quarry development and exploitation in Band IV couldn't be achieved.

iii. **Afforestation**

The achievement against the target in respect of afforestation is given below.

Year	Afforestation, Nos	
	Planned	Actual
2015-16	2500	3130
2016-17	500	4993
2017-18	500	10200
2018-19	20000	20200
2019-20	30000	33136

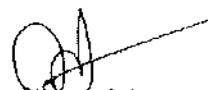
Afforestation against proposal have been achieved in all years.

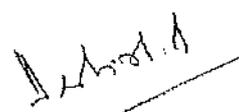
iv. **Land Reclamation and Rehabilitation:**

During the last review of mining plan period from 2015-16 to 2019-20, there was no proposal for land reclamation and rehabilitation.

v. **Waste dump management:**

Year	Proposed Waste generation in CuM	Proposed location of disposal of waste	Achievement in CuM
2015-16	4127928	WD 1	2666805
2016-17	4463232	WD 1	3560288
2017-18	4308096	WD 1 & WD 2	2926289 (Till Dec 2017)
	10328625 (01.01.2018 to 1.03.2018)	WD 1 & WD 2	2114869 in WD 1
2018-19	11967194	WD 1 & WD 2	4667489 in WD 1 <u>1943110 in WD 2</u> Total: 6610599
2019-20	12871763	WD 1 & WD 2	682228 in WD 1 <u>706105 in WD 2</u> Total: 1388333 (Till 30.06.2019)


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The details of protective measures envisaged for the dump with year wise proposed reclamation/rehabilitation measures are given below:-

Year	Proposal			Achievement		
	Length of Garland drain, m	Length of retaining wall, m	No. of settling pits	Length of Garland drain, m	Length of retaining wall, m	No. of settling pits
2015-16	600	600	1 No	600	600	2
2016-17	-	-	-	1400	1400	5
2017-18	1600	1600	2 Nos	16698	3810	24
2018-19	1600	1600	2 Nos	5980	1150	15
2019-20	1900	1900	2 Nos	250 (up to 30.06.2019)	300 (up to 30.06.2019)	0 (up to 30.06.2019)

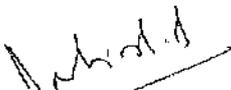
vi. Control of dust, Noise and ground vibration:
 It was proposed to carry out sampling of air, water and noise periodically and take mitigation measures to limit the pollution level of these parameters. Monitoring of the air quality, noise quality, water quality etc have been regularly carried out as per the norms and details of environmental monitoring report is enclosed as Annexure 17.

3.4 Give status of compliance of violations pointed out by IBM
 The violations pointed out by IBM during the period from 01.04.2015 to 30.06.2019 and their compliance status as submitted to IBM by OMC have been enclosed as Annexure 13.

3.5 Indicate and give details of any suspension /closure/ prohibitory order issued by any Government agency under any rule or Court of law:
 Order of suspension of mining operations was issued by Indian Bureau of Mines under rule 13(2) of MCDR 1988 vide letter dated 06.06.2016. Copy of the letter enclosed at Annexure 13. RCOM, IBM, Bhubaneswar Region during his inspection on dated: 15.03.2016 has observed that the tailings generated from chrome ore beneficiation plant of South Kallapani Chromite mine is being discharged in Quarry-1 of Kallapani chromite mine which was not approved. Accordingly, vide letter dated 04.04.2016 from IBM, the mining operation were suspended. Subsequently after complying with all provisions, revocation of the above order of suspension was issued by Indian Bureau of Mines under rule 13(2) of MCDR 1988 vide letter dated 25.07.2016. Copy of letter enclosed as Annexure 13.

3.6 In case the MP/SOM is submitted under rules 9 and 10 of the MCDR/2017 or under rule 22(6) of the MCR/2016 for approval of modification, specify reason and justification for modification under these rules:
 Not applicable


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South Kallapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progress Report
Closure Plan from 2020-21 to 2024-25



PART – A

1.0 GEOLOGY AND EXPLORATION

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

i. Physiography & Drainage

The mine lease is located in southern part of funnel shaped Sukinda Valley which extends from east to west with the open end facing west. The northern part of the Sukinda Valley is marked by Daitari hill range which rises sharply from about 140 m above mean sea level to more than 600 mRL. There are peaks exceeding 800 mRL in Daitari hill range. At places Hills are marked by very steep escarpments. The southern part of the valley is bounded by Mahagiri hill range, which also is very steep and rises to more than 600 mRL. In Mahagiri hill range also there are a few bare rocky cliffs. The hills are densely forested. The mine lease is between 132 m RL in the north and 250 m RL in the south-west and slopes from north to south. The principal drainage channel of the Sukinda valley is Damsalnala which flows from east to west and traverses towards north of the lease area. Several seasonal and perennial channels flow down from the Daitari hill range and the Mahagiri hill range to join the Damsalnala. A few of the drainage channels emerging from Mahagiri hill range flow north and north-west through the South Kallapani Mine lease to join Damsalnala. Damsalnala gradually bends towards the south-west and on emerging from the Sukinda valley turns south to join the Brahmani River.

ii. Vegetation

In this part of the Mahagiri P.F., the forests consist of grasslands with widely spaced mature trees, of which, Sal (Shorea robusta), Asan (Terminalia tomentosa), Mahul (Madhuca indica), Mango (Mangifera indica), Bahada (Terminalia bellirica) and Tendu (Diospyros melanoxylon) are prominent.

iii. Climate & Rainfall of the Lease Area

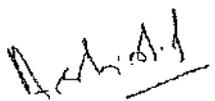
The study area lies in tropical region where climate is characterised by very hot summers and cool winters. Summer is typically from March to June when daily average maximum temperature ranges from a maximum of 43°C during daytime to a minimum of 16°C at night. Winter is from November to February when daily average maximum temperature during day goes up to 30°C and minimum temperature at night becomes as low as 10°C. The annual rainfall as recorded at mines is 1035.2 mm in the year 2018. The Southwest monsoon lasts from mid June to mid September and the area gets more than 75% of the annual rainfall during this period.

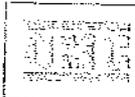
b) Brief descriptions of Regional Geology with reference to location of lease/applied area.

Regional Geology

The chromite bearing ultramafics of Sukinda area have intruded in to the Precambrian metamorphites in the form of a lopolith. The intrusive has width of 2-5 km and extends for about 20 km in ENE-WNW direction from Kansa in the east to Maruabil and beyond in the west.


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South Kalopani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2024-25



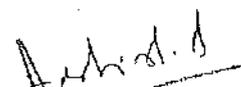
The ultramafic body consists essentially of magnesium-rich dunite devoid of chromite bands and subordinate amount of pyroxenite devoid of chromite mineralization. The pyroxenite is relatively fresh but the dunite –peridotite members are highly serpentinised and intensely lateritised. The granite is exposed at several places. However, generalized Stratigraphy of Sukinda ultramafic complex (Sahoo, 1974) is as follows:-

Recent to Pleistocene		Soil, Alluvium, Laterities
----- Unconformity -----		
		Dolerite, Granite, Gabbro-diorite
Precambrian	Ultramafics	Pyroxenite, Dunite-peridotite with chrome ore
	Meta-sediments and meta-volcanics	Gritty quartzite Meta-Volcanics
Base not seen		

Small exposures of diorite rocks are found in Kathpal and Bhimtanagar. Besides, several dolerite dykes have intruded into the ultramafics, quartzites as well as the granites. This happens to be the last stage of igneous activity in this Precambrian terrain. Soil, alluvium and laterite of recent origin are overlying the ultramafics unconformably.

- 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).

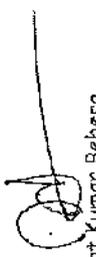

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Summarized Information of the Chrome Ore bands present within the lease area									
Number of Regional Chrome Ore bands present within the lease area	5								
Name of the Regional Chrome Ore band present within the lease area									
Local nomenclature of the Regional Ore band within the lease area									
Location (Quarry name/pt)									
Length of the Chrome Ore band									
Width of the Chrome Ore band									
Explored Depth (in mRL)									
Level of Exploration as per UNFC of the Chrome Ore bands									
Strike, direction, Dip direction and Dip amount									
Present UPL (in mRL) for Opencast method of Mining									
Nature of Chrome Ore band (Physical description)									
Chemical analysis of Chrome Ore band									
Gangue minerals associated with Chrome Ore band									
Control of mineralization									
Associated lithology									




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Closure Plan From 2020-21 to 2024-25

II	Middle Band	Quarry D	1.55k m	7- Sm	25 mRL	G1: 25 mRL; G2: 00 mRL	ENE-WSW, N57°E-S57°W, NNW, 60-75	75 mRL	It is friable, hard sometimes chilled brownish to reddish brown in colour. Swelling and pinching is quite common with the ore body	On an average, the chemical analysis of chromite in this band consists of 15-45% Cr ₂ O ₃ , 9-25% Fe, 1-13% SiO ₂ as principal constituents.	Gangue minerals are goethite, limonite (ferrous oxide) weathered serpentinous and talcosic materials, cherts/ silica (in form of veins) etc	Lithological & Structural	Limonite, Cherty Limonite, Weathered/unweathered Ultramafic rocks (Peridotite/ Serpentinite), Dolomite
III	BAND III	BAND III D III	0.85k m	2- 3m	+50 mRL	G2: +50 mRL	ENE-WSW, N57°E-S57°W, NNW, 60-75	-	It is friable, hard sometimes chilled brownish to reddish brown in colour. Swelling and pinching is quite common with the ore body	On an average, the chemical analysis of chromite in this band consists of 25-48% Cr ₂ O ₃ , 10-12% Fe, & 8-25% SiO ₂ as principal constituents.	Gangue minerals are weathered serpentinous and talcosic materials, cherts/ silica/ magnesite (in form of veins) etc	Lithological & Structural	Weathered/unweathered Ultramafic rocks (Peridotite/ Serpentinite), Dolomite
IV	BAND IV	Quarry F	2.0km	7-10 m	+50 mRL	G1: 50 mRL; G2: 25 mRL	ENE-WSW, N57°E-S57°W, NW, 60-75 (ce from 145 OE to 1100E) SE, 60-75 (ce from 1400E to	58 mRL	It is friable, hard sometimes chilled brownish to reddish brown in colour. Swelling and pinching is quite common with the ore body	On an average, the chemical analysis of chromite in this band consists of 25-48% Cr ₂ O ₃ , 10-12% Fe, & 8-25% SiO ₂ as principal constituents.	Gangue minerals are weathered serpentinous and talcosic materials, cherts/ silica/ magnesite (in form of veins) etc	Lithological & Structural	Weathered/unweathered Ultramafic rocks (Peridotite/ Serpentinite), Dolomite



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A. K. Samantroy

(Signature)
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V	BAND V	Quarry A, B, B1, B2	0.750 km	S-8 m	G3: 110 mRL	Lensoid ore body (discontinuous in nature)	150W)	It is friable, hard sometimes chilled and brownish to reddish brown in colour. Swelling and pinching is quite common with the ore body	On an average, the chemical analysis of chromite in this band consists of 25-48% Cr ₂ O ₃ , 10-12% Fe ₂ O ₃ & 8-25% SiO ₂ as principal constituents.	Gangue minerals are weathered serpentinous and talcosic materials, cherts/ silica/ magnesite (in form of veins) etc	Lithological & Structural	Weathered/unweathered Ultramafic rocks (Peridotite/ Serpentine), Dolomite
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A K Samantray

Qualified Person

(Handwritten Signature)

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

1. Indian Bureau of Mines
2. Odisha Mining Corporation Ltd.
3. Thriveni Earthmovers Limited

(ii) Address

1. Indian Bureau of Mines
Indira Bhawan, Civil Lines,
Nagpur- 440 001
2. Odisha Mining Corporation Ltd.
OMC House, Post Box No. 34
Bhubaneswar - 751001

(iii) E mail address and phone no.

1. Indian Bureau of Mines
Phone + 91 712 2560041,
Fax + 91 712 2565073,
2. M/s Odisha Mining Corporation Ltd.
Phone (0674) 2393431, 2395689, 2393389

e) Details of prospecting/exploration already carried out :

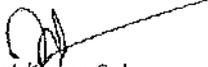
i) Number of pits and trenches indicating dimensions, spacing etc along and across the strike/ foliation with reference to geological plan.

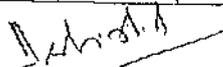
The geological mapping of the area has been done. However, no pitting / trenching work has been carried out as the area needs to be explored with deep core drills only.

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.

A summary of boreholes drilled in the lease area is furnished in the table below: as on 30.06.2019

Ore Band	No. of Boreholes	Total Waterage, mtrs	Spacing	Max. depth	Min Depth
Band I	177nos (Core)	23092.30	50 m x 25 m to 100m x 100m grid	550.00m	67.73 m
Band II	168nos (Core)	12944	50 m x 25 m to 100m x 100m grid	330.00 m	13.30 m
Band III	10 nos (Core)	547.3	50 m x 25 m to 100m x 100m grid	80.7 m	33.00 m
Band IV	143 nos (Core)	12842	50 m x 25 m to 100m x 100m grid	205 m	11.00 m
Band V	2 nos (Core)	66	-----	44 m	22.00 m
Proving of Barren/Possible Chrome Mineralisation	42 nos (Core)	6872.1	200m x 200 m grid	330 m	70.20 m


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South Khatapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including
Closure Plan from 2020



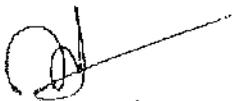
All the mineralized area of Band I, II & IV have been explored under G1 level of exploration. Approximately 50% of the Band III has been explored under G1 category. Borehole proposals have been given for exploring Band V in G2 level initially.

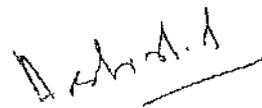
The UNFC boundaries are constructed as per the present status of exploration under MEMC Rules 2015. As per the prescribed table of IBM, exploration already carried in the ML area as indicated above is given under UNFC norms as follows:

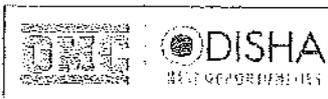
Item of Information	Lease Area explored as per UNFC norms (in Ha.) as on 30.06.2019					Remarks / Comments including reasons for not carrying out the exploration as per UNFC norms.
	Total Mining Lease area (552.457) = A+B+C+D+E					
	G1 Level	G2 Level	G3 Level	Explored and found non-mineralized with level of exploration (Remark)	Unexplored Lease Area	
	A	B	C	D	E	
Area as per level of exploration	195.74	11.32	Nil	85.67	259.727	(Barren proving)
No of BH drilled	495	9	-	42	-	
No of BH considered for Resource Estimation	432	9	-	42	-	
Meterage Drilled	47981.6	1510	-	6872.1	-	
Grid Interval	50m x 25m to 100m x 100m grid	50m x 25m to 100m x 100m grid	-	200 m x 200m	-	
Scale of Mapping	1 : 2000	1 : 2000	1 : 2000	1 : 2000	1 : 2000	

The G1 and G2 boundary of ore body at depth is furnished.

Ore Body	Deepest intersection(mRL)	Explored Depth of G1 And G2 Exploration (in mRL)	Depth of G1/G2 Level of exploration from Surface (m)
Band 1	-250	-250	380
Band 2	100	100	60
Band 3	105	105	160
Band 4	70	70	160


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Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2024-25

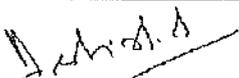
The year wise details of Boreholes drilled in different bands during 1979 to 2019-20 (as on 30.06.2019) in South Kaliapani Chromite Mine is shown in the table below:

Year	No of Boreholes	Total Meterage
As on 31.03.1994	170	15478.20
1994-95	12	1424.50
1995-96	6	517.50
1996-97	0	0
1997-98	0	0
1998-99	0	0
1999-2000	23	1408
2000-01	19	1013
2001-02	0	0
2002-03	4	294
2003-04	11	930
2004-05	17	1005
2005-06	24	1573
2006-07	20	1446
2007-08	19	1104
2008-09	53	5268
2009-10	68	9119.30
2010-11	10	814.50
2011-12	8	805
2012-13	7	723
2013-14	6	590
2014-15	2	27.80
2015-16	5	289
2016-17	11	1841
2017-18	23	4885.60
2018-19	23	5076.50
2019-20 (as on 30.06.2019)	05	730.80
Cumulative (as on 30.06.2019)	546	56363.7

All the above boreholes have been shown in the Geological Plan at Plate No 4. The extent and location of mineralized area is given in the table below.

Ore Band	UTM Co-ordinates	Area
Band I	2327369N – 2328293N 373258E-373822E	Non Forest / Diverted Forest
Band II	2327857N – 2328461N 374275E – 374601 E	Non Forest / Diverted Forest
Band III	2327161N-2327607N 375162E-375668E	Non Forest / Diverted Forest
Band IV	2325913N-2327299N 374011E-375858E	Non Forest / Diverted Forest


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South Kaliapani Chromite Mine
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Closure Plan from 2020-21 to 2024



- 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).

A total of 6344 nos. of samples have been drawn for analysis for Band I & II, 135 nos of samples for Band III and 596 nos of samples have been drawn for Band IV. Also 12 nos of samples have been drawn for Band V. Apart from above 324nos of samples have been drawn from boreholes drilled for proving barren area/possible chromite mineralization. The details of samples tested at NABL accredited laboratory has been enclosed as Annexure 16.

- iv) Expenditure incurred in various prospecting operations.

The total cost involvement for the exploratory drilling from FY 2017-18 till date is approximately Rs. 7.27crores. The documentary evidence in support of expenditure incurred towards contractual drilling has been enclosed as Annexure 22.

- 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 28(1)(a) of MCDR 2017.

The surface plan of the leasehold area is enclosed as Plate No 3. However, the mine has permission to prepare the drawing in a scale of 1: 4000.

- 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 litho units along with structural features, mineralized/ore zone with grade variation if any may be marked on the geological plan along with other features indicated under Rule 28 (1)(b) of MCDR 2017.

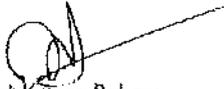
The geological plan of the leasehold area showing all the above features is enclosed as Plate No 4. However, the mine has permission to prepare the drawing in a scale of 1: 4000.

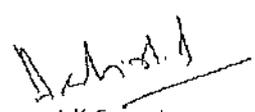
- h) Geological sections may be prepared on natural scale of geological plan at suitable interval across the lease area from boundary to boundary.

The geological sections of the leasehold area showing all the above features is enclosed as Plate No 5.

- 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.

The detail of the proposed boreholes to be drilled to cover the entire ML area in a time bound manner is given in the following table. The proposal of boreholes are given in a manner so as to explore the area of proposed tailing pond and waste dump area in first and before commencement of waste dumping. The location of proposed boreholes (all boreholes of coring type) have been shown in the Geological Plan as No 4.


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Year of Drilling	Section No	Proposed Bore Hole No.	UTM Co-ordinate		Collar mRL	Bottom mRL	Proposed Borehole Depth	Angle of Drilling	Direction of Drilling (Azimuth)	Type of drill hole (Core/RC/DT H)	Purpose of Borehole
			Northing	Easting							
2020-21	350	PBH 01	373350	2327754	97	-503	600	90	0	Core	Reserve & Resource Update
	250	PBH 02	373297	2327665	81	-401.96	500	75	147	Core	Reserve & Resource Update
	250	PBH 03	373297	2327665	81	-569.00	650	90	0	Core	Reserve & Resource Update
	1000	PBH 04	373880	2328139	46	-83.90	150	60	147	Core	Reserve & Resource Update
	900	PBH 05	373857	2328060	21	-172.19	200	75	147	Core	Reserve & Resource Update
	900	PBH 06	373730	2328122	73	-177.00	250	90	0	Core	Reserve & Resource Update
	900	PBH 07	373712	2328204	123	-52.26	200	65	327	Core	Reserve & Resource Update
	850	PBH 08	373816	2327971	29.44	-151.82	200	65	147	Core	Reserve & Resource Update
	800	PBH 09	373717	2328024	54.6	-186.88	250	75	147	Core	Reserve & Resource Update
	800	PBH 10	373746	2327983	31.6	-398.18	300	75	147	Core	Reserve & Resource Update
	500	PBH 11	373617	2327731	16.1	-70.50	100	60	147	Core	Reserve & Resource Update
	500	PBH 12	373550	2327769	45	-358.11	350	60	147	Core	Reserve & Resource Update
	450	PBH 13	373489	2327740	17	-162.79	250	55	147	Core	Reserve & Resource Update
	200	PBH 14	373314	2327555	67	-96.83	200	55	147	Core	Reserve & Resource Update
	100	PBH 15	373261	2327456	98	-55.83	200	55	147	Core	Reserve & Resource Update
	100	PBH 16	373175	2327578	130	-460.88	600	80	147	Core	Reserve & Resource Update
	800	PBH 17	373659	2328105	92	-197.78	300	75	327	Core	Reserve & Resource Update
	300	PBH 18	373338	2327694	91	-509.00	600	90	0	Core	Reserve & Resource Update
	900	PBH 19	373828	2328041	41	-359.00	300	90	0	Core	Reserve & Resource Update
	500	PBH 20	373530	2327768	45	-311.37	400	75	147	Core	Reserve & Resource Update
	450	PBH 21	373489	2327740	32	-458.90	500	90	0	Core	Reserve & Resource Update
	450	PBH 22	373345	2327944	120	-380.00	600	90	0	Core	Reserve & Resource Update
	200	PBH 23	373314	2327555	67	-319.37	400	75	147	Core	Reserve & Resource Update
	200	PBH 24	373228	2327377	118.36	-472.52	600	80	147	Core	Reserve & Resource Update




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South Kalijapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive Mine
Closure Plan from 2020-21 to 2024-25

Year of Drilling	Section No	Proposed Bore Hole No	UTM Co-ordinate	Collar mRL	Bottom mRL	Proposed Borehole Depth	Angle of Drilling	Direction of Drilling (Azimuth)	Type of drill hole (Core/RC/DT)	Purpose of BoreHole	
2022-23	100	PBH 25	373232	2327495	117	-164.91	300	70	147	Core	Reserve & Resource Updation
	1100	PBH 26	375060	2326647	78	-75.21	200	50	327	Core	Reserve & Resource Updation
	1300	PBH 27	375229	2326763	179	25.79	200	50	327	Core	Reserve & Resource Updation
	1500	PBH 28	375386	2326878	160	6.79	200	50	327	Core	Reserve & Resource Updation
	1700	PBH 29	375550	2326993	160	6.79	200	50	327	Core	Reserve & Resource Updation
	1900	PBH 30	375713	2327109	160	6.79	200	50	327	Core	Reserve & Resource Updation
	200	PBH 31	374562	2326225	186	-95.91	300	70	327	Core	Reserve & Resource Updation
	400	PBH 32	374521	2326196	200	-81.91	300	70	327	Core	Reserve & Resource Updation
	600	PBH 33	374684	2326312	73	-208.91	300	70	327	Core	Reserve & Resource Updation
	800	PBH 34	374848	2326427	86	-195.91	300	70	327	Core	Reserve & Resource Updation
	1000	PBH 35	372551	2330016	210	-71.91	300	70	327	Core	Reserve & Resource Updation
	1200	PBH 36	372714	2330132	210	-71.91	300	70	327	Core	Reserve & Resource Updation
	200	PBH 37	373458	2327350	97	-184.91	300	70	147	Core	Reserve & Resource Updation
	400	PBH 38	373622	2327466	63	-218.91	300	70	147	Core	Reserve & Resource Updation
	600	PBH 39	375785	2327581	60	-221.91	300	70	147	Core	Reserve & Resource Updation
	800	PBH 40	375949	2327697	88	-193.91	300	70	147	Core	Reserve & Resource Updation
	1000	PBH 41	374112	2327813	38	-193.91	300	70	147	Core	Reserve & Resource Updation
	1200	PBH 42	374362	2327906	160	-56.51	250	60	147	Core	Reserve & Resource Updation
	1400	PBH 43	374524	2327922	160	-56.51	250	60	147	Core	Reserve & Resource Updation
	1600	PBH 44	374688	2328037	160	-56.51	250	60	147	Core	Reserve & Resource Updation
1800	PBH 45	374851	2328153	160	-56.51	250	60	147	Core	Reserve & Resource Updation	
2023-24	1750	PBH 46	375331	2327390	166	-7.21	200	60	147	Core	Reserve & Resource Updation
1850	PBH 47	375412	2327446	166	-7.21	200	60	147	Core	Reserve & Resource Updation	
1950	PBH 48	375490	2327506	166	-7.21	200	60	147	Core	Reserve & Resource Updation	
2050	PBH 49	375575	2327563	166	-7.21	200	60	147	Core	Reserve & Resource Updation	
100	PBH 50	374319	2325876	212	-115.66	400	55	327	Core	Reserve & Resource Updation	



(Signature)
A K Samantray

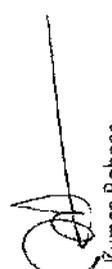
Qualified Person

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Subrat Kumar Behera
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Year of Drilling	Section No	Proposed Bore Hole No	UTM Co-ordinate	Collar mRL	Bottom mRL	Proposed Borehole Depth	Angle of Drilling	Direction of Drilling (Azimuth)	Type of drill hole (Core/RC/DT)	Purpose of Borehole
2024-25	150	PBH 51	374400 2325995	212	-115.66	400	55	327	Core	Reserve & Resource Update
	250	PBH 52	374483 2325992	202	-125.66	400	55	327	Core	Reserve & Resource Update
	350	PBH 53	374564 2326049	186	-141.66	400	55	327	Core	Reserve & Resource Update
	450	PBH 54	374645 2326106	210	-117.66	400	55	327	Core	Reserve & Resource Update
	550	PBH 55	374628 2326164	218	-109.66	400	55	327	Core	Reserve & Resource Update
	650	PBH 56	374809 2326223	206	-121.66	400	55	327	Core	Reserve & Resource Update
	750	PBH 57	374891 2326281	206	-121.66	400	55	327	Core	Reserve & Resource Update
	850	PBH 58	374972 2326339	206	-121.66	400	55	327	Core	Reserve & Resource Update
	950	PBH 59	375053 2326397	206	-121.66	400	55	327	Core	Reserve & Resource Update
	1050	PBH 60	375135 2326455	206	-121.66	400	55	327	Core	Reserve & Resource Update
	1150	PBH 61	375217 2326513	202	-125.66	400	55	327	Core	Reserve & Resource Update
	1250	PBH 62	375297 2326570	202	-125.66	400	55	327	Core	Reserve & Resource Update
	1350	PBH 63	375379 2326628	202	-125.66	400	55	327	Core	Reserve & Resource Update
	1750	PBH 64	375705 2326858	202	-79.91	300	70	147	Core	Reserve & Resource Update
	1850	PBH 65	375787 2326917	202	-79.91	300	70	147	Core	Reserve & Resource Update
	1950	PBH 66	375870 2326973	194	-87.91	300	70	147	Core	Reserve & Resource Update




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- 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.

The summary of the reserves established as per UNFC in the last approved modified review of mining plan at 10% Cr₂O₃ cut off and as on 31.12.2017 is given below:-

Reserves and Resources as per UNFC as per last approved modification to Review of Mining Plan, in Million Tonnes (as on 31.12.2017)

Sl. No	Reserve Category (UNFC Classification)	Qty. in Million Tonnes	Avg. Grade (Cr ₂ O ₃ %)
1	Proved Mineral Reserves (111)	5.69	49.4
2	Probable Mineral Reserves (112)	NIL	NA
3	Feasibility Mineral Resource (211)	9.32	40.41
	Feasibility Mineral Resource (212)	NIL	NA
4	Remaining measured resource (331)	NIL	NA
5	Indicated Resource (332)	NIL	NA
6	Inferred Resource (333)	NIL	NA
7	Reconnaissance Resource (334)	NIL	NA

Depletion of Reserves

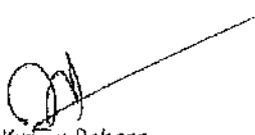
Depletion of reserves has been calculated on the basis of production of ore made between 01.01.2018 to 30.06.2019.

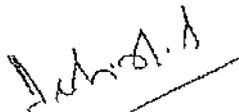
Table 3.1

Year	Production, Million Tonnes
2017-18 (Between 01.01.2018 to 31.03.2018)	0.63
2018-19	1.05
2019-20 (upto 30.06.2019)	0.25
Total	1.93

Additional reserves established category-wise

The reserves as on 31.12.2017 have already been updated in the last approved modified review of mining plan as per the Minerals (Evidence of Mineral Content) Rules, 2015. The same is reported in table 3.1 above. Further exploration has been carried out in the present plan period in Band I, II, III, IV & V.


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Category wise updated reserve with grade

The reserved have been re-assessed considering the Minerals (Evidence of Mineral Contents) Rules, 2015. The ore envelops have been re-construct considering the fresh guidelines. While preparing the ore sections, the extension of ore intercepts in boreholes have been restricted within G1 limit, i.e. 50m. While constructing the 3D ore body model in the software package SURPAC, projections of ore envelops on either side of the section have been restricted within 25m.

The details of re-assessment of reserves in the software package SURPAC has been detailed as below.

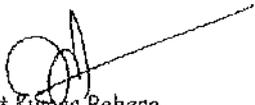
The re-assessment of the reserves has been carried out at a Cr₂O₃ cut off 10% as per the UNFC guidelines. The reserve/ resource assessment was carried out in the mine planning software package "GEOVIA SURPAC". The following were used as basic input data for the preparation of geological model.

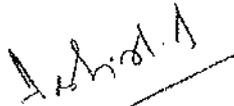
- I. Contour data of updated pit position and surface topography.
- II. Borehole logging data generated from exploration of different bands done by Directorate of Mining & Geology (DMG), Govt. of Odisha and OMCL.

Summary of the exploration carried out for G1/G2 areas indicating mapping, drilling (No. / spacing), sample drawn / analyzed etc. is given in the table below:-

Block	No. of Boreholes	Total meterage, m	Spacing	Samples drawn	Max. depth	Level of exploration
Band-I	177 nos (Core)	23092.30	50m x 25 m to 100m x 100m grid	8417	415 m	G1
Band-II	168nos (Core)	12944	50m x 25 m to 100m x 100m grid		136 m	G1
Band-III	10 nos (Core)	547.3	50m x 25 m grid	69	80.7 m	G1/G2
Band-IV	143 nos (Core)	12842	50m x 25 m to 100m x 100m grid	1722	205 m	G1
Band-V	2 nos (Core)	66	50m x 25 m to 100m x 100m grid	47	44 m	G1
Proving of Barren / possible Chrome mineralization	42nos (Core)	6872.1	50m x 25 m to 100m x 100m grid	1229	230 m	G1/G2

Sixty (60) experiments were conducted for determination of bulk densities of different bands in ore & waste. The samples of were drawn from different ore bands in South Kaliapani as well as in the adjoining Sukrangi lease, 53 sample values were subjected to regression analysis by plotting bulk density values against the Cr₂O₃% grade of each sample. The details of samples subjected to regression analysis are given in the table below.


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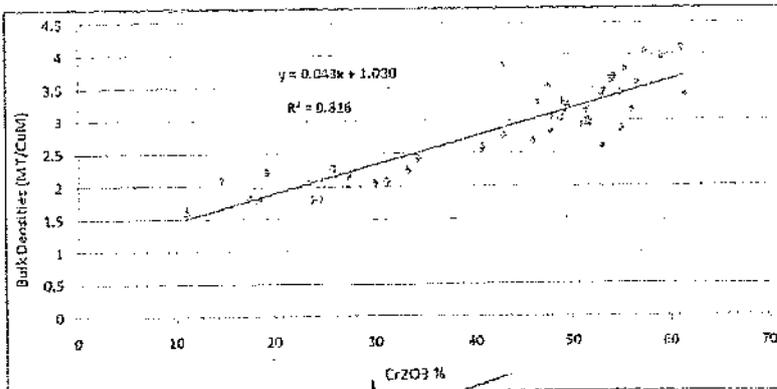
Sl. No.	Grade (% Cr ₂ O ₃)	Bulk Density	Sl.No	Grade (% Cr ₂ O ₃)	Bulk Density
1	57.38	4.07	28	47.75	2.83
2	61.18	4.12	29	23.8	1.81
3	61.43	3.39	30	45.99	2.69
4	10.88	1.67	31	14.57	2.1
5	59.04	3.98	32	53.96	3.61
6	53.2	3.47	33	40.78	2.58
7	55.35	3.79	34	34.18	2.43
8	48.76	3.01	35	54.97	2.87
9	42.95	2.77	36	23.42	2.05
10	54.21	3.67	37	27.35	2.16
11	47.89	3.05	38	17.47	1.83
12	56.61	3.58	39	49.52	3.22
13	53.83	3.62	40	51.55	3.01
14	47.62	3.52	41	56.11	3.16
15	54.86	3.42	42	52.96	3.39
16	42.95	3.82	43	51.44	3.18
17	11.01	1.58	44	25.83	2.25
18	52.96	2.62	45	50.92	2.93
19	24.56	1.81	46	51.59	2.92
20	18.1	1.78	47	25.83	2.29
21	48.89	3.3	48	33.18	2.24
22	18.61	1.83	49	31.15	2.07
23	30.01	2.04	50	47.75	2.83
24	49.02	3.13	51	47.75	3.06
25	25.83	2.29	52	46.37	3.28
26	33.18	2.24	53	19.24	2.22
27	31.15	2.07			

The following linear regression equation was established from the X-Y scatter plot of bulk density (BD) & Cr₂O₃% value of samples.

$$Y = 0.043x + 1.030 \text{ at a correlation coefficient of } 0.093$$

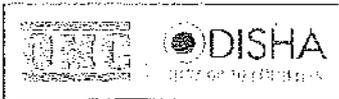
Where, y = Bulk density

X = Grade in Cr₂O₃%



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The regression equation was used as a tonnage factor for computation of reserves of different chromite bands. On basis of the above geological work carried out, the area covered under Band-I-S & N, band-II-S & N, Band- IV can be considered under G1 category of the geological axis as per the UNFC classification of reserves.

Parameters considered for estimation of Mineral Resources

- I. The threshold value considered as per the IBM guidelines is 10% Cr₂O₃.
- II. The entire data has been transferred to form a geological database in an ore body modeling software namely 'SURPAC'.

(i) Preparation of database

Four basic files namely collar, survey, assay and litho files are required in comma separated Value (CSV) format for further processing by SURPAC software. Ore type wise litho codes used for database preparation is given below.

(ii) Delineation of Ore Geometry and Construction of Ore Body

Preparation of Transverse Sections

Boreholes were displayed in SURPAC graphics window along with litho, Cr₂O₃%. Transverse sections were drawn across the strike of different chromite bands with the following details

Band	Baseline orientation	Grid From/ To	No. of Sections	Distance between adj. sections (m)
I-South	N57°E-S57°W	50E-1200E	24	50
I-North	N80°W-S80°E	150W-200E	8	50
II-South	N57°E-S57°W	0-1850E	24	100(0-1150E)
II-North	N80°W-S80°E	300E-1000E	15	50
III	N57°E-S57°W	1800E-1900E	3	50
IV	N57°E-S57°W	1750W-500E	46	50

The ore envelopes were delineated at each section considering Cr₂O₃%cut off OF 10%. Since the ore body continues in further down-depth direction the transverse section should have been open towards the downward directions. But for ore-body modeling in the software, closed geological domain has to be considered. Hence string sections of ore were closed considering suitable influence of the boreholes intercepts of ore.

The reserves have been re-assessed considering the Minerals (Evidence of Mineral Contents) Rules, 2015. The ore envelopes have been re-constructed considering the fresh guidelines. While preparing the ore sections, the extension of ore intercepts in boreholes have been restricted within G1 limit i.e. 50m. The down hole extension of ore body from the ore intercept of the bottom most boreholes has been reduced within the prescribed limit, i.e. 50m.

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Review of Mining Plan including Progressive and
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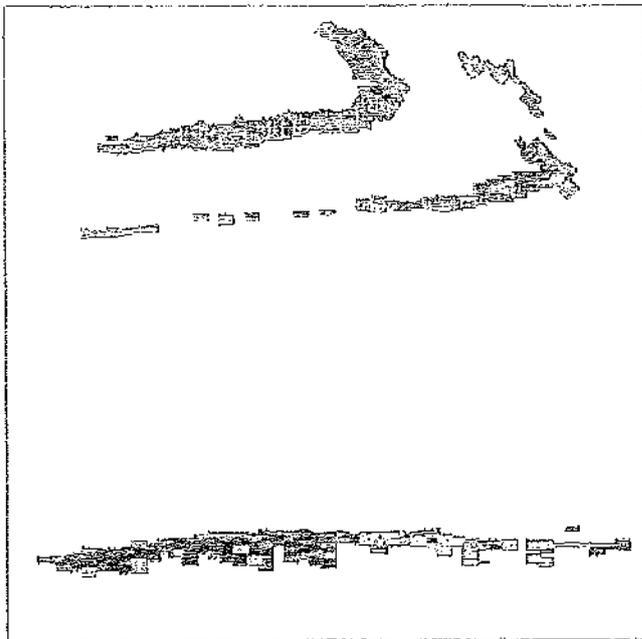


Preparation of Digital Terrain Model (DTM) of Surface Topography

The digitized contour of updated surface plan with Z values have been transformed into digital terrain model (DTM) utilizing the principles of triangulation and wire framing of points with X,Y and Z co-ordinates. Digital terrain model is the most effective way of representing a surface in three dimensional computerized form. It is an important tool to calculate volume between two or more surfaces. The digital terrain model of surface topography with drill holes of South Kaliapani deposit is shown in the figure below.



3-D Solid Modeling of Ore Body



The band wise ore zones of the respective transverse cross sections have been connected / joined to form band-wise solid ore body models. Ore type-wise 3-D Solid model of South Kaliapani deposit is presented in the figure below.

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(iii) Geo-statistical analysis (Variogram modeling)

The continuity of mineralization in different directions can be well judged through analysis of variograms. In addition, the range of influence of sample in different directions can be deciphered. A variogram is evaluated with respect to sill, range and nugget effect. The variogram function is defined as follows.

$$Y(h) = 1/2n \sum \{z(x+h) - z(x)\}^2$$

Where, n = Number of sample pairs at distance 'h'
 $Y(h)$ = Variogram value at distance 'h'
 $Z(x)$ = Assay value at point x
 $Z(x+h)$ = Assay value at point x+h

The $Y(h)$ is calculated for different distance pair 'h' and is plotted against distance pair. As the distance pair increases the $y(h)$ value also increases and levels off after certain distance pair. The distance pair at which the $y(h)$ value levels off is known as 'Range' beyond which samples become statistically independent without any correlation. This distance provides an idea of range of influence of a particular sampling point. The value of $y(h)$ at which the graph levels off is known as 'sill'. This value is related to the theoretical variance of the data set. 'Nugget' is the value of $y(h)$ at zero distance pair. The inherent variability of the data is represented by "nugget". The deposit with zero or very low nugget effect possesses uniform grade distribution.

Variogram modeling has been carried out for determining the spatial variability of mineralization & grade distribution in different directions. Composites (0.5m length) of each ore containing $Cr_2O_3\%$ were individually used for variogram modeling. In order to ascertain the variability of deposit of South Kaliapani lease, composites all the samples of 0.5 m length within the leasehold were extracted & the normal variograms of composited assay data have been developed along strike & dip direction of the deposit and also along boreholes depth. The fitted Variograms model along strike, dip and along the borehole direction of the deposit is shown in figures below. The variogram model parameter for the above directions is presented in the table below. Results of variogram modeling for above three directions for South Kaliapani Chromite deposit is given in table below.

Variogram model parameters in three orthogonal directions

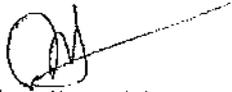
Sl.No.	Direction	Azimuth	Plunge	Spread	Lag	Maximum Distance
1	Along Dip Direction	0	-75	90	40m	1200m
2	Along Strike Direction	90	0	90	50m	1200m
3	Along Borehole Depth	180	-60	11.25	1m	20m

Result of variogram modeling in three orthogonal directions

Sl. No.	Direction	Nugget	Sill	Range
1	Along Dip Direction	0.063469	0.150617	20.000
2	Along Strike Direction	0.063469	0.917745	55.941
3	Along Borehole Depth	0.063469	0.663822	10.245

Validation of Variogram

The variograms are then validated and used for further block modeling.



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(iv) **Block modeling**

The entire deposit is divided into no. of judiciously chosen sub-blocks for proper estimation of grade and quantity, keeping in view of the structural discontinuity of the deposit, extent etc. The estimated blocks in the block model has been used optimum pit generation, mine planning and production scheduling

• Selection of block size

Considering the accuracy desired borehole spacing and mining constraints, a unit block of 1.5m x 1.5m x 1.5m has been considered, in X x Y x Z directions, for block wise grade estimation.

• Development of Block Model

In order to cover the entire extent of South Kaliapani chrome ore deposit in three dimensions, a dummy block model with unit block sizes as indicated above have been generated. An constrained block model is shown in the figure below:-

• Additions of attributes

Attributes are the properties of individual block such as $Cr_2O_3\%$, specific gravity, ore type etc. These attributes were added in the dummy block model using suitable technique.

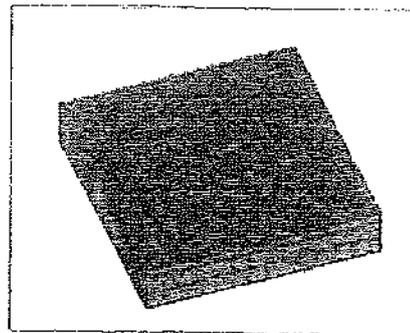
• Application of constraints

Constraints are the logical combination of spatial operators and objects such as DTM of surface contour, solid model of ore zone, block etc. with which the block model can be enveloped / intersected with respect to inside / outside and above / below their spatial position. *The block model developed for South Kaliapani chrome ore deposit has been constrained with the surface DTM and updated pit positions, mining lease boundary, statutory safety barriers, individuals quarry boundaries as well as ore type-wise 3-D solid models as developed and discussed in the preceding paragraphs.* In this way, the blocks have been enveloped within ore zone boundary and surface topography for the purposed of grade interpolation and reserves estimation.

Block model constrained by lease boundary

• Block Model estimation

Block model estimation parameters such as anisotropic ratio, search distances etc. were derived from the results of variogram analysis discussed in previous para. South Kaliapani chrome ore deposit is uniform in mineralization. It is not erratic in behavior. The coefficient of variation of grades in all the ores are low indicating uniform grade distribution and the deposits has also been explored at almost uniform grid along dip and strike direction, the globally accepted technique of Inverse Square Distance method has been used for ore reserve estimation for different ore types. The parameters for reserve estimation have been derived from the statistical and geo-statistical analysis done previously. A search ellipsoid as indicated below has been used to select samples for assigning grade to the blocks. The axial parameters and its search orientation were derived from the results of geo-statistical analysis.



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For estimation of resources the following parameters have been considered:

Measured resources:-

The entire exploratory drill holes with grid spacing of 50m x 50m & below has been considered as G1 category and has been categorized under 331 as per UNFC code.

On the basis of UNFC guidelines the resources as on 30.06.2019 can be categorized on the basis of different levels of exploration as under.

Level of Exploration	Resources in million tonnes	Grade (% Cr ₂ O ₃)
G1-Detailed exploration	13.89	45.83
G2-General exploration	0.01	41.52
G3-Prospecting		
G4-Reconnaissance		

The details of the reserves/resources established at 10% Cr₂O₃ cut off for South Kaliapani deposit as on 30.06.2019 given in table below.

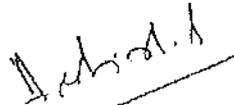
Resource Type	Total tonnage at cut-off (+10% Cr ₂ O ₃), in Million tonnes	Remarks
Measured mineral resources (331)	13.90	

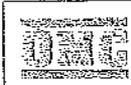
Resource Type	Total tonnage at cut-off (+40% Cr ₂ O ₃), in Million tons	Remarks
Measured mineral resources (331)	11.90	

Feasibility study was then carried out and enclosed in Annexure 26 and the reserves/ resources classified thereafter for the G1 areas comprising of Band-IV-S&N, Band-III-S & N part of Band-V are given below:-

Reserves		Remaining resources				
Category	Quantity (Mineable)	Category	Quantity (Mineable)	Category		Quantity (Mineable)
Proved (111)	8.50/43.38% Cr ₂ O ₃	Proved (111)	8.50/43.38% Cr ₂ O ₃	Proved (111)	8.50/43.38% Cr ₂ O ₃	Proved (111)


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South Kaliapani Chromite Mine
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Review of Mining Plan including
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- k) Furnish detailed calculation of reserves /resources section wise (When the mine is fully mechanized and deposit is of complex nature with variation of size, shape of mineralized zone, 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, reserves / resources may be estimated by level plan method, as applicable, as per the proposed mining parameters.

The detailed calculation of the level wise resources as on 01.07.2019 established at +10% Cr₂O₃ is furnished in the table below.

BAND I

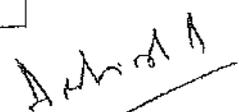
Cr ₂ O ₃ %	Z (mRL)		Tonnes
+ 10 to (-) 40	-2	-8	770
+ 10 to (-) 40	-8	-14	8520
+ 10 to (-) 40	-14	-20	20444
+ 10 to (-) 40	-20	-26	21928
+ 10 to (-) 40	-26	-32	19564
+ 10 to (-) 40	-32	-38	25886
+ 10 to (-) 40	-38	-44	14569
+ 10 to (-) 40	-44	-50	14569
Sub Total			126350

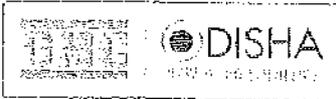
Cr ₂ O ₃	Z (mRL)		Tonnes
+ 40	-2	-8	200252
+ 40	-8	-14	165099
+ 40	-14	-20	162688
+ 40	-20	-26	145756
+ 40	-26	-32	114349
+ 40	-32	-38	109702
+ 40	-38	-44	86954
+ 40	-44	-50	78574
Sub Total			1063374
+ 40	BELOW -50		4735704
Total > 40% Cr₂O₃			5799077

BAND II

Cr ₂ O ₃	Z (mRL)		Tonnes
+ 10 to (-) 40	154	148	36150
+ 10 to (-) 40	148	142	51375
+ 10 to (-) 40	142	136	44708
+ 10 to (-) 40	136	130	48208


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South Kallapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive Mine
Closure Plan From 2020-21 to 2024-25



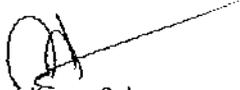
Cr ₂ O ₃	Z (mRL)		Tonnes
+ 10 to (-) 40	130	124	131900
+ 10 to (-) 40	124	118	193608
+ 10 to (-) 40	118	112	161182
+ 10 to (-) 40	112	106	140920
+ 10 to (-) 40	106	100	142014
+ 10 to (-) 40	100	94	120428
+ 10 to (-) 40	94	88	139391
+ 10 to (-) 40	88	82	142030
+ 10 to (-) 40	82	76	146568
Sub Total			1498482
+ 10 to (-) 40	BELOW 76		0
Total 10-40 % Cr ₂ O ₃			1498482

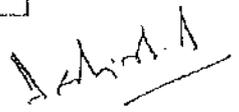
Cr ₂ O ₃	Z (mRL)	Tonnes
+ 40	BELOW 76	36188
Total > 40% Cr ₂ O ₃		36188

Band IV

Cr ₂ O ₃	Z (mRL)		Tonnes
+ 10 to (-) 40	202	196	2153
+ 10 to (-) 40	196	190	4826
+ 10 to (-) 40	190	184	11138
+ 10 to (-) 40	184	178	27897
+ 10 to (-) 40	178	172	95049
+ 10 to (-) 40	172	166	192071
+ 10 to (-) 40	202	196	2153
+ 10 to (-) 40	196	190	4826
+ 10 to (-) 40	190	184	11138
+ 10 to (-) 40	184	178	27897
+ 10 to (-) 40	178	172	95049
+ 10 to (-) 40	172	166	192071
Sub Total + 10 to (-) 40			333132

Cr ₂ O ₃	Z (mRL)		Tonnes
+ 40	166	160	325544
+ 40	160	154	484412
+ 40	154	148	665501
+ 40	148	142	737088
+ 40	142	136	456734


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Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2025



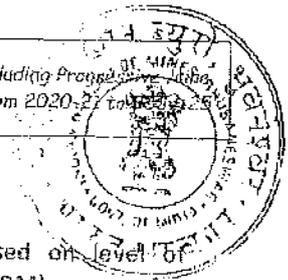
Cr ₂ O ₃	Z (mRL)		Tonnes
+ 40	136	130	474531
+ 40	130	124	454249
+ 40	124	118	314151
+ 40	118	112	284237
+ 40	112	106	233283
+ 40	106	100	230509
+ 40	100	94	175323
+ 40	94	88	143119
+ 40	88	82	117314
+ 40	82	76	98719
+ 40	76	70	93160
+ 40	70	64	86784
+ 40	64	58	100924
Sub Total			5475582
+ 40	BELOW 58		606977
Total > 40% Cr ₂ O ₃			6082558

The geological resources as on 01.07.2019 in different Ore bands inside the lease are shown in the table below:

Band	Cr ₂ O ₃	Million Tonnes	Cr ₂ O ₃ %
I	+ 10 to (-) 40	0.13	32.7
	+ 40	5.80	49.6
Sub Total		5.93	5.93
II	+ 10 to (-) 40	1.50	31.29
	+ 40	0.04	44.65
Sub Total		1.54	1.54
IV	+ 10 to (-) 40	0.33	33.8
	+ 40	6.09	46.78
Sub Total		6.42	6.42
III	+ 10 to (-) 40	0.00	0.00
	+ 40	0.01	41.52
Sub Total		0.01	0.01
GRAND TOTAL		13.90	13.90

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

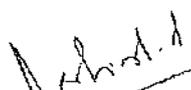
The details of the mineable reserves/ resources established (as on 01.07.2019) at 10% Cr₂O₃ cut off is given in the table below:-

Reserve / Resources as on 01.07.2018 (in Million Tonnes)				
Classification	UNFC Code	Qty. in Million Tonnes		Avg. Grade (Cr ₂ O ₃ , %)
A. Total Mineral Reserves				
1. Proved mineral reserves	111	+ 10 to (-) 40	2.54	31.60
		+ 40	5.97	48.39
2. Probable mineral reserves	121	Nil		NA
	122			
Sub Total:		8.51		
B. Total Remaining Resources				
1. Feasibility Mineral Resources	211	+ 10 to (-) 40	0.11	33.92
		+ 40	5.29	49.91
2. Prefeasibility Mineral Resources	221	Nil		NA
	222			
3. Measured Mineral Resources	331	Nil		NA
4. Indicated Mineral Resources	332	Nil		NA
5. Inferred Mineral Resources	333	Nil		NA
6. Reconnaissance Mineral Resources	334	Nil		NA
Sub Total:		5.40		
Total Reserves + Resources (A+B)		13.91		

The details of Reserve and Resources estimation by cross sectional method is attached as Annexure 29.

Note: It is not be possible to quantify grade wise reserve, as normally there is considerable variation in size and grade distribution within the ore zone, which results variable recovery factor and bulk density. Thus tonnages arrived are tentative.


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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.

The South Kaliapani Chromite mines come under Category-A (Fully Mechanized category) as per the IBM guideline. The deposit is worked by opencast mining method with formation of benches. Working benches are kept 6 m high and minimum 11 m wide. The conventional mining method deploys use of 115/150 mm diameter drills and blasting with low density cartridge explosives, 30-40 t capacity dumper/ tipper with matching capacity hydraulic excavators/ loaders for loading and transportation of ore to sale plots and transportation of waste/ mineral reject materials to their respective dumps/ stock yards have been envisaged in this plan period.

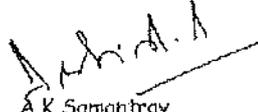
In general the stratum is soft. However, occasional drilling & blasting is being carried out in the ore patches for improved fragmentation and few hard patches in the hang wall side benches. For the purpose of carrying out drilling, 115-150 mm diameter down the hole (DTH) blast-hole drills are deployed. The drilling pattern for 115-150 mm diameter holes is at a burden of 2-3m and spacing of 3-4m. The bench height has been kept at 6 m. Therefore keeping into account the factor for sub grade drilling & extra drilling to take care of hole collapse, the depth of the holes are kept around 6.5 m.

2.5-4 cu.m bucket capacity hydraulic excavators (diesel powered) are being used in conjunction with 30-40 t capacity dumpers. The ROM is being segregated at the mining face itself as ore/ beneficiable ore/ mineral reject ore depending on the content of Cr_2O_3 in it. If the Cr_2O_3 % content in the ore is more than 40%, it is being considered into direct ore, if the Cr_2O_3 % content in the ore is between 30-40% it is being considered as beneficiable ore and if the Cr_2O_3 content in the ore is in between 10-30% it is being considered as mineral reject ore. Accordingly the ore is being stacked into their respective stacking plots. Waste & mineral reject materials generated is being transported to their respective dumping/ stacking locations. Front end loader of around 1.5-3.0 cu.m bucket capacity is being deployed to load the ore/ beneficiable grade ore from the respective stacking plots.

Regular sampling of the ore at mine face itself is being carried out for on-face segregation of ore/ beneficiable grade ore & mineral reject ore. Present mine configuration and mine design parameters adopted for South Kaliapani Chromite mine is given below. As per draft report of CIMFR, overall pit slope angle has been considered as 30 degree for quarry design. Same is attached as Annexure 27.

Sl No	Parameters	D Quarry	F Quarry
1	Present Quarry Size (L x W x D), as on 30.06.2019	1390m x 760m x 170m(F/W) & 125m (H/W)	590m x 280m x 28m
2	Top Bench RL	172 mRL(F/W) & 127mRL (H/W)	181 mRL
3	Bottom Bench RL	0 to 2.44 mRL	153 mRL
4	Maximum Bench Height	6 m	1.5 m
5	Minimum Bench Width	11 m	2.5 m
6	No. of benches in Ore	2	2
7	No. of benches in waste	27	14
8	Ultimate Pit Slope angle	< 30 degree	< 30 degree
9	Ultimate Pit Limit	(-) 50 mRL	58 mRL


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

I. In-situ Tentative Excavation:

Year	Pit No	Total tentative excavation (CuM)	Top Soil (CuM)	O8/SB/IB (CuM)	ROM (CuM)		Mineral Reject	ROM/Waste Ratio (CuM/CuM)
					Ore (CuM)	Mineral Reject (CuM)		
1	2	3	4	5	6	7	8	9
2020-21	Band I	7391152	0	7200000	173375	17778	Chemically Sub grader: 10% to (-) 40% CrsOs.	37.7
	Band II	1905263	19000	1781000	0	105263		15.9
	Band IV	4195959	123000	3877000	171569	24390		19.8
	Band IV Manual	8000	0	3000	5000	0		0.6
	Total	13500374	142000	12861000	349943	147431		25.9
2021-22	Band I	2864616	0	2800000	55728	8889		43.3
	Band II	2305263	22000	2178000	0	105263		20.7
	Band IV	6197553	110000	5890000	165033	32520		29.8
	Band IV Manual	8000	0	3000	5000	0		0.6
	Total	11375433	132000	10871000	225760	146672		29.2
2022-23	Band I	2864616	0	2800000	55728	8889		43.3
	Band II	2305263	21000	2179000	0	105263		20.7
	Band IV	6697553	132000	6368000	165033	32520		32.2
	Band IV Manual	8000	0	3000	5000	0		0.6
	Total	11875433	153000	11350000	225760	146672		30.5
2023-24	Band I	1032308	0	1000000	27864	4444	NA	
	Band II	1052632	7000	993000	0	52632	18.9	
	Band IV	3129005	25000	2975000	112745	16260	23.1	
	Band IV Manual	8000	0	3000	5000	0	0.6	
	Total	5221945	32000	4971000	145609	73336	22.7	
2024-25	Band I	1032308	0	1000000	27864	4444	NA	
	Band II	1052632	7000	993000	0	52632	18.9	
	Band IV	3129005	25000	2975000	112745	16260	23.1	
	Band IV Manual	8000	0	3000	5000	0	0.6	
	Total	5221945	32000	4971000	145609	73336	22.7	

II. Dump re-handling (for the purpose of recovery of mineral):
Not applicable, as dump re handling has not been envisaged. However, during Quarry D development over Band I & II, the existing mineral reject dump between Quarry D and overburden dump needs to be re-handled and shifted in order to make scope for development of Quarry D.

APPROVED

REGIONAL CONTROLLER OF MINES
भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
भुवनेश्वर/BHUBANESWAR

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South Kalijapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive Mine
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- c) Enclose individual year wise development plans and sections showing pit layouts, dumps, stacks of mineral reject, if any, etc. in case of 'A' category mines. Composite development plans showing pit layouts, dumps, stacks of mineral reject, if any, etc. and year wise sections in case of 'B' category mines.

The year wise pit & dump development plans at the end of FY 2020-21 to FY 2024-25 are shown in Plate No. 06 to Plate No 10. The sections of the year wise pit & dump are shown in Plate No. 11. During the plan period, based on exploration done in Band I, II & IV, the quarry development over Band I, II & IV have been proposed.

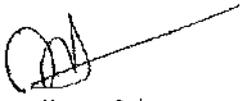
The year-wise development & production quantity in tones for the proposed plan period is given below:

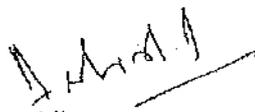
Year	ROM Production, Million Tonnes			Overburden, Million CuM	Stripping Ratio (CuM/Tonne)
	Ore (Saleable)	Mineral Reject	Total (Ore + Mineral Reject)		
2020-21	1.1	0.3	1.4	13.00	9.2
2021-22	0.7	0.3	1.0	11.00	11.0
2022-23	0.7	0.3	1.0	11.50	11.5
2023-24	0.45	0.15	0.6	5.00	8.3
2024-25	0.45	0.15	0.6	5.00	8.3
Total	3.4	1.2	4.6	45.50	9.89

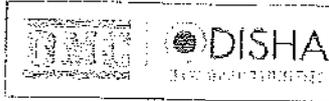
The band wise production schedule in different grade range (saleable/mineral reject) is furnished in the table below.

Ore Band	Cr ₂ O ₃ % range	2020-21	2021-22	2022-23	2023-24	2024-25
		Tonnes	Tonnes	Tonnes	Tonnes	Tonnes
Band I	10 to < 40	40000	20000	20000	10000	10000
	> 40	560000	180000	180000	90000	90000
	Sub Total	600000	200000	200000	100000	100000
Band II	10 to < 40	200000	200000	200000	100000	100000
	> 40	0	0	0	0	0
	Sub Total	200000	200000	200000	100000	100000
Band IV	10 to < 40	60000	80000	80000	40000	40000
	> 40	525000	505000	505000	345000	345000
	Sub Total	585000	585000	585000	385000	385000
Band IV Manual	10 to < 40	0	0	0	0	0
	> 40	15000	15000	15000	15000	15000
	Sub Total	15000	15000	15000	15000	15000
Total	> 10	1400000	1000000	1000000	600000	600000

Based on time series data and few sample test, approximate tonnage factor / bulk density have been considered at present for different grades of chrome ore. Details of same are given in chapter 3. Thus year wise tonnages are tentative.


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South Kalipani Chromite Mine
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Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2024-25



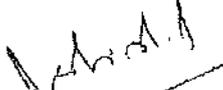
The proposed mine development during this review of mining plan period, i.e. from 2020-21 to 2024-25 is given in the following tables.

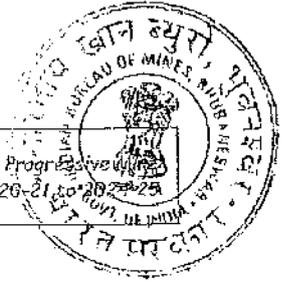
Proposed Mining during 2020-21

Name of Ore Band	Band I	Band II	Band IV	Band IV (Manual)
Top mRL	136mRL (H/W)	155mRL (H/W)	162mRL (F/W)	162mRL (F/W)
RL of Quarry floor	(-) 26 mRL	118 mRL	136 mRL	142 mRL
Depth of Excavation	162 mtrs	37 mtrs	26 mtrs	20 mtrs
Area of workings	100E - 1400E 1800N - 2600N	1300E - 1900E 1900N - 2400N	30W - 1020E 350N - 700N	1300E - 2000E 400N - 700N
Method of working	Mechanised opencast working with engagement of HEMM & deep hole blasting.			Manual opencast working
ROM in CuM	191153	105263	195959	5000
ROM in tonnes	600000	200000	585000	15000
Recovery of Ore from ROM	100%	100%	100%	100%
Salable Ore in tonnes (+40% Cr ₂ O ₃)	560000	0	525000	15000
Mineral Reject (+10% to -40% Cr ₂ O ₃) in Tonnes	40000	200000	60000	0
Overburden in CuM	7200000	1800000	4000000	3000
ROM (Tonnes) : Overburden (CuM)	1 : 12	1 : 9	1 : 6.8	1 : 0.2
Overburden dumping location	Existing OB Dump	Existing OB Dump	Existing OB Dump	Existing OB Dump
Storing of Mineral Reject	Mineral Reject Dump	Mineral Reject Dump	Mineral Reject Dump	NA

Note:
A portion of existing mineral reject dump between Quarry D and overburden dump needs to be re-handled and shifted in order to make scope for development of Quarry D.


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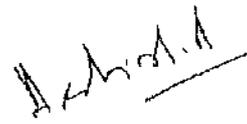

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Proposed Mining during 2021-22

Name of Ore Band	Band I	Band II	Band IV	Band IV (Manual)
Top mRL	136mRL (H/W)	155mRL (H/W)	162mRL (F/W)	162mRL (F/W)
RL of Quarry floor	(-) 32 mRL	106 mRL	118 mRL	140 mRL
Depth of Excavation	168 mtrs	49 mtrs	44 mtrs	22 mtrs
Area of workings	100E - 1400E 1800N - 2600N	900E - 1900E 1800N - 2500N	70W - 1070E 300N - 750N	1300E - 2000E 400N - 700N
Method of working	Mechanised opencast working with engagement of HEMM & deep hole blasting.			Manual opencast working
ROM in CuM	64617	105263	197553	5000
ROM in tonnes	200000	200000	585000	15000
Recovery of Ore from ROM	100%	100%	100%	100%
Salable Ore in tonnes (+40% Cr ₂ O ₃)	180000	0	505000	15000
Mineral Reject (+10% to -40% Cr ₂ O ₃) in Tonnes	20000	200000	80000	0
Overburden in CuM	2800000	2200000	6000000	3000
ROM (Tonnes) : Overburden (CuM)	1 : 14	1 : 11	1 : 10.2	1 : 0.2
Overburden dumping location	Existing OB Dump	Existing OB Dump	Existing OB Dump	Existing OB Dump
Storing of Mineral Reject	Mineral Reject Dump	Mineral Reject Dump	Mineral Reject Dump	NA
<p>Note: It is proposed to conduct trial of vertical mining using grab over Band I in quarry D. A portion of existing mineral reject dump between Quarry D and overburden dump needs to be re-handled and shifted in order to make scope for development of Quarry D.</p>				


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Review of Mining Plan including Pre-requisite
Closure Plan from 2020-21 to 2023-24



Proposed Mining during 2022-23

Name of Ore Band	Band I	Band II	Band IV	Band IV (Manual)
Top mRL	136mRL (H/W)	155mRL (H/W)	162mRL (F/W)	162mRL (F/W)
RL of Quarry floor	(-) 38 mRL	100 mRL	100 mRL	138 mRL
Depth of Excavation	174 mtrs	55 mtrs	62 mtrs	24 mtrs
Area of workings	100E - 1400E 1800N - 2600N	100E - 1950E 1800N - 2500N	160W - 1250E 250N - 800N	1350E - 2000E 400N - 700N
Method of working	Mechanised opencast working with engagement of HEMM & deep hole blasting.			Manual opencast working
ROM in CuM	64617	105263	197553	5000
ROM in tonnes	200000	200000	585000	15000
Recovery of Ore from ROM	100%	100%	100%	100%
Salable Ore in tonnes (+10% Cr ₂ O ₃)	180000	0	505000	15000
Mineral Reject (+10% to -40% Cr ₂ O ₃) in Tonnes	20000	200000	80000	0
Overburden in CuM	2800000	2200000	6500000	3000
ROM (Tonnes) : Overburden (CuM)	1 : 14	1 : 11	1 : 11.1	1 : 0.2
Overburden dumping location	Existing OB Dump	Existing OB Dump	Existing OB Dump	Existing OB Dump
Storing of Mineral Reject	Mineral Reject Dump	Mineral Reject Dump	Mineral Reject Dump	NA

Note:

It is proposed to continue trial of vertical mining using grab over Band I in quarry D.
A portion of existing mineral reject dump between Quarry D and overburden dump needs to be re-handled and shifted in order to make scope for development of Quarry D.


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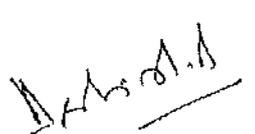
Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2024-25



Proposed Mining during 2023-24

Name of Ore Band	Band I	Band II	Band IV	Band IV (Manual)
Top mRL	136mRL (H/W)	155mRL (H/W)	162mRL (F/W)	162mRL (F/W)
RL of Quarry floor	(-) 44 mRL	94 mRL	88 mRL	135 mRL
Depth of Excavation	180 mtrs	61 mtrs	74 mtrs	27 mtrs
Area of workings	100E - 1400E 1800N - 2600N	850E - 2000E 1750N - 2500N	1070W - 1400E 250N - 800N	1300E - 2000E 400N - 700N
Method of working	Mechanised opencast working with engagement of HEMM & deep hole blasting.			Manual opencast working
ROM in CuM	32308	52632	129005	5000
ROM in tonnes	100000	100000	385000	15000
Recovery of Ore from ROM	100%	100%	100%	100%
Salable Ore in tonnes (+40% Cr ₂ O ₃)	90000	0	345000	15000
Mineral Reject (+10% to -40% Cr ₂ O ₃) in Tonnes	10000	100000	40000	0
Overburden in CuM	1000000	1000000	3000000	3000
ROM (Tonnes) : Overburden (CuM)	1 : 10	1 : 10	1 : 8.3	1 : 0.2
Overburden dumping location	Existing OB Dump	Existing OB Dump	Existing OB Dump	Existing OB Dump
Storing of Mineral Reject	Mineral Reject Dump	Mineral Reject Dump	Mineral Reject Dump	NA

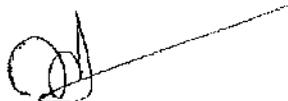

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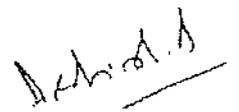

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Proposed Mining during 2024-25

Name of Ore Band	Band I	Band II	Band IV	Band IV (Manual)
Top mRL	136mRL (H/W)	155mRL (H/W)	162mRL (F/W)	162mRL (F/W)
RL of Quarry floor	(-) 50 mRL	88 mRL	82 mRL	132 mRL
Depth of Excavation	186 mtrs	67 mtrs	80 mtrs	30 mtrs
Area of workings	100E - 1400E 1800N - 2600N	300E - 2000E 1650N - 2580N	270W - 1600E 220N - 820N	1300E - 2000E 400N - 700N
Method of working	Mechanised opencast working with engagement of HEMM & deep hole blasting			Manual opencast working
ROM in CuM	32308	52632	129005	5000
ROM in tonnes	100000	100000	385000	15000
Recovery of Ore from ROM	100%	100%	100%	100%
Salable Ore in tonnes (+40% Cr ₂ O ₃)	90000	0	345000	15000
Mineral Reject (+10% to -40% Cr ₂ O ₃) in Tonnes	10000	100000	40000	0
Overburden in CuM	1000000	1000000	3000000	3000
ROM (Tonnes) : Overburden (CuM)	1 : 10	1 : 10	1 : 8.3	1 : 0.2
Overburden dumping location	Existing OB Dump	Existing OB Dump	Existing OB Dump	Existing OB Dump
Storing of Mineral Reject/Sub Grade	Mineral Reject Dump	Mineral Reject Dump	Mineral Reject Dump	NA


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DISHA
NEW OPPORTUNITIES

South Kalupani Chromite Mine
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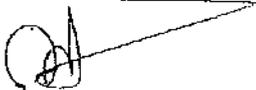
Review of Mining Plan including Progress
Closure Plan from 2020-21

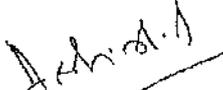


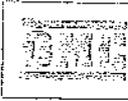
The section wise calculation of volume of overburden in the plan period have been furnished in the table below.

YEAR 2020-21

SECTION WISE CALCULATION FOR OVERBURDEN FOR 2020-21				
	Cross Section	Area, Sq Mtr	Influence, Mtr	Volume, CuM
Band I	0E	0	200	0
	200E	0	200	0
	400E	8827	200	1765400
	600E	12211	200	2442200
	800E	5574	200	1114800
	1000E	4029	200	805800
	1200E	0	200	0
	1400E	0	200	0
	1600E	0	200	0
Total				7200151
Band II	0E	0	200	0
	200E	0	200	0
	400E	0	200	0
	600E	0	200	0
	800E	0	200	0
	1000E	0	200	0
	1200E	0	200	0
	1400E	2099	200	419800
	1600E	2663	200	532600
1800E	4239	200	847800	
Total				1800200
Band IV	0E	621	200	124192
	200E	4195	200	839000
	400E	4202	200	840400
	600E	6535	200	1307000
	800E	4078	200	815600
	1000E	370	200	74027
	1200E	0	200	0
	1400E	0	200	0
	1600E	0	200	0
1800E	0	200	0	
Total				4000219


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Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2024-25



YEAR 2021-22

SECTION WISE CALCULATION FOR OVERBURDEN FOR 2021-22				
	Cross Section	Area, Sq Mtr	Influence, Mtr	Volume, CuM
Band I	0E	0	200	0
	200E	0	200	0
	400E	1229	200	245800
	600E	1093	200	218626
	800E	1054	200	210800
	1000E	2154	200	430800
	1200E	2015	200	403000
	1400E	0	200	0
	1600E	4138	200	827600
	1800E	2335	200	467079
Total				2803705
Band II	0E	0	200	0
	200E	0	200	0
	400E	0	200	0
	600E	0	200	0
	800E	0	200	0
	1000E	0	200	0
	1200E	3108	200	621600
	1400E	2449	200	489800
	1600E	1310	200	262000
	1800E	2134	200	426800
Total				1800200
Band IV	0E	4639	200	927800
	200E	6857	200	1371469
	400E	6912	200	1382400
	600E	2093	200	418600
	800E	6451	200	1290221
	1000E	3095	200	619000
	1200E	0	200	0
	1400E	0	200	0
	1600E	0	200	0
	1800E	0	200	0
Total				6009491

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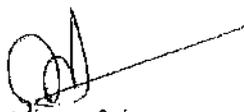
South Kaliapani Chromite Mine
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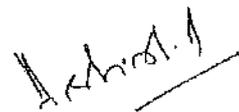
Review of Mining Plan including Progressive Mine
Closure Plan from 2020-21 to 2024-25



YEAR 2022-23

SECTION WISE CALCULATION FOR OVERBURDEN FOR 2022-23				
	Cross Section	Area, Sq Mtr	Influence, Mtr	Volume, CuM
Band I	0E	0	200	0
	200E	0	200	0
	400E	2463	200	492600
	600E	1387	200	277419
	800E	1897	200	379400
	1000E	1952	200	390357
	1200E	2684	200	536725
	1400E	280	200	56020
	1600E	1450	200	289965
	1800E	1910	200	382010
Total				2804495
Band II	0E	0	200	0
	200E	0	200	0
	400E	0	200	0
	600E	0	200	0
	800E	0	200	0
	1000E	0	200	0
	1200E	2754	200	550800
	1400E	3087	200	617459
	1600E	2987	200	597400
	1800E	2187	200	437400
Total				2203059
Band IV	0E	4569	200	913745
	200E	5997	200	1199334
	400E	6027	200	1205400
	600E	3437	200	687400
	800E	7375	200	1475000
	1000E	5102	200	1020400
	1200E	0	200	0
	1400E	0	200	0
	1600E	0	200	0
	1800E	0	200	0
Total				6501279


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Review of Mining Plan including Progress
Closure Plan from 2020-21

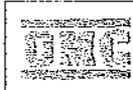


YEAR 2023-24

SECTION WISE CALCULATION FOR OVERBURDEN FOR 2023-24				
	Cross Section	Area, Sq Mtr	Influence, Mtr	Volume, CuM
Band I	0E	0	200	0
	200E	0	200	0
	400E	446	200	89109
	600E	747	200	149438
	800E	985	200	197000
	1000E	859	200	171800
	1200E	683	200	136600
	1400E	0	200	0
	1600E	403	200	80600
	1800E	885	200	177000
Total				1001547
Band II	0E	0	200	0
	200E	0	200	0
	400E	0	200	0
	600E	0	200	0
	800E	0	200	0
	1000E	0	200	0
	1200E	780	200	156020
	1400E	1209	200	241801
	1600E	1161	200	232228
	1800E	1885	200	377081
Total				1007129
Band IV	0E	2495	200	499000
	200E	3106	200	621200
	400E	3165	200	633000
	600E	3126	200	625200
	800E	2950	200	590000
	1000E	180	200	35949
	1200E	0	200	0
	1400E	0	200	0
	1600E	0	200	0
	1800E	0	200	0
Total				3004349

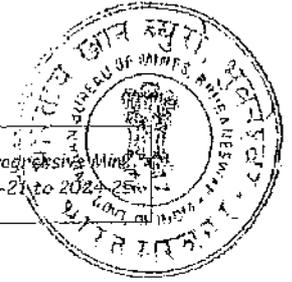
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South Kalipani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive Mining
Closure Plan from 2020-21 to 2024-25



YEAR 2024-25

	SECTION WISE CALCULATION FOR OVERBURDEN FOR 2024-25			
	Cross Section	Area, Sq Mtr	Influence, Mtr	Volume, CuM
Band I	0E	0	200	0
	200E	0	200	0
	400E	807	200	161400
	600E	847	200	169400
	800E	764	200	152800
	1000E	659	200	131800
	1200E	657	200	131400
	1400E	753	200	150600
	1600E	340	200	68000
	1800E	178	200	35600
	Total			1001000
Band II	0E	0	200	0
	200E	0	200	0
	400E	0	200	0
	600E	0	200	0
	800E	0	200	0
	1000E	0	200	0
	1200E	1387	200	277400
	1400E	1103	200	220600
	1600E	1329	200	265800
	1800E	1209	200	241800
	Total			1005600
Band IV	0E	2003	200	400600
	200E	2713	200	542600
	400E	2776	200	555200
	600E	2733	200	546600
	800E	2739	200	547800
	1000E	2078	200	415548
	1200E	0	200	0
	1400E	0	200	0
	1600E	0	200	0
	1800E	0	200	0
	Total			3008348

The section wise calculation of volume and tonnage of ROM, Ore and Mineral Reject is attached as Annexure 29.

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

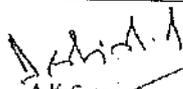
The South Kaliapani Chromite mines come under Category-A (Fully Mechanized category) as per the IBM guideline. The deposit is worked by opencast mining method with formation of benches. Working benches are kept 6 m high and minimum 11 m wide. The conventional mining method deploys use of 115-150mm diameter drills and blasting with low density cartridge explosives. 30-40 t capacity dumper/ tipper with matching capacity hydraulic excavators/ loaders for loading and transportation of ore to sale plots and transportation of waste/ mineral reject materials to their respective dumps/ stock yards have been envisaged in this mining plan.

In general the stratum is soft. However, occasional drilling & blasting is being carried out in the ore patches for improved fragmentation and few hard patches in the hang wall side benches. For the purpose of carrying out drilling, 115-150 mm diameter down the hole (DTH) blast-hole drills are deployed. The drilling pattern for 115-150 mm diameter holes is at a burden of 2-3m and spacing of 3-4m. The bench height has been kept at 6 m. Therefore keeping into account the factor for sub grade drilling & extra drilling to take care of hole collapse, the depth of the holes are kept around 6.5 m. 2.5-4 cu.m bucket capacity hydraulic excavators (diesel powered) are being used in conjunction with 30-40 t capacity dumpers. The ROM is being segregated at the mining face itself as ore/ beneficiable ore/ mineral reject ore depending on the content of Cr₂O₃ in it. If the Cr₂O₃ content in the ore is more than 40%, it is being considered into direct ore, if the Cr₂O₃ content in the ore is between 30-40% it is being considered as beneficiable ore and if the Cr₂O₃% content in the ore is in between 10-30% it is being considered as sub grade ore. Accordingly the ore is being stacked into their respective stacking plots. Waste & mineral reject materials generated is being transported to their respective dumping/ stacking locations. Front end loader of around 1.5-3.0 cu.m bucket capacity is being deployed to load the ore/ beneficiable grade ore from the respective stacking plots.

Regular sampling of the ore at mine face itself is being carried out for on-face segregation of ore/ beneficiable grade ore & mineral reject ore. Mechanised opencast working over Band IV will commence. However, to engage manual labor, the existing quarry F over Band IV shall also be worked. Sufficient distance between mechanized and manual quarry over Band IV shall be maintained. During the end of plan period both quarries shall merge to form a single bench of 6m height and manual mining shall cease. Present mine configuration and mine design parameters adopted for South Kaliapani Chromite mine is given below.

Sl No	Parameters	D Quarry	F Quarry
1	Present Quarry Size (L x W x D), as on 30.06.2019	1390m x 760m x 170m(F/W) & 125m (H/W)	590m x 280m x 28m
2	Top Bench RL	172 mRL(F/W) & 127mRL (H/W)	181 mRL
3	Bottom Bench RL	0 to 2.44 mRL	153 mRL
4	Maximum Bench Height	6 m	1.5 m
5	Minimum Bench Width	11 m	2.5 m
6	No. of benches in Ore	2	2
7	No. of benches in waste	27	14
8	Ultimate Pit Slope angle	< 30 degree	< 30 degree
9	Ultimate Pit Limit	(-) 50 mRL	58 mRL


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Scientific study for developing mining method beyond UPL of opencast working. The present method of opencast mining in Band I, II & IV shall continue till ultimate pit limits are reached. However, in order to scientifically design a feasible mining method, with an objective of mining ore beyond opencast conceptual limit, the lessee is proposing a scientific study to be undertaken by a scientific institute of repute. The basic principle of proposed opencast method is to excavate vertically downward in ore bearing zone by grab and support the side walls by series of micropiles of steel casings. After excavation to the designed depth is complete, it is to be backfilled by overburden materials available in the mine before next area is taken up for excavation. Based on the recommendations of scientific report, lessee is intending to implement the method after getting all statutory permissions.

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

The year wise pit development plan & section for the next 5 years, i.e. from 2020-21 to 2024-25 have been shown in Plate No 6 to 10. The Surface Plan is shown in Plate No 3. The development of mining operations in this review of mining plan period is envisaged in the three quarries located at the northern and southern end of the mining lease viz., Band I, Band II and Band IV.

The sequence of mining in Band I, II & IV is given below.

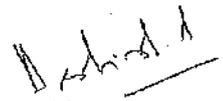
Year	ROM, Lakh Tonnes				Overburden, Lakh CuM			
	Band I	Band II	Band IV (including manual working)	Total	Band I	Band II	Band IV (including manual working)	Total
2020-21	6	2	6	14	72	18	40.03	130.03
2021-22	2	2	6	10	28	22	60.03	110.03
2022-23	2	2	6	10	28	22	65.03	115.03
2023-24	1	1	4	6	10	10	30.03	50.03
2024-25	1	1	4	6	10	10	30.03	50.03

The sequence of disposal of overburden during mining in Band I, II & IV is given below.

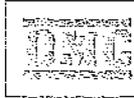
Year	Disposal of Overburden over existing dump yard, Lakh CuM	Disposal of Top Soil for Plantation purpose, Lakh CuM
2020-21	128.61	1.42
2021-22	108.71	1.32
2022-23	113.50	1.53
2023-24	49.71	0.32
2024-25	49.71	0.32



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South Kaliapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive Mine
Closure Plan from 2020-21 to 2024-25



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

The South Kaliapani Chromite mine comes under Category-A (Fully mechanized category) as per the IBM guidelines. The conceptual plan of South Kaliapani mine has been prepared following the guidelines of IBM, keeping in view the present knowledge of the deposit, topography of the area, surface drainage pattern, mineable reserves available, life of mine, mining technology and selection of the sites for waste disposal within the lease area etc.

From the six bands of chromite encountered in the Sukinda Valley, the South Kaliapani mine lease area consists of three sub parallel lodes. They are dipping sub – vertically towards N – W with pinch and swell structure.

- (i) Band - I: Chromite band No. I, of South Kaliapani lease is the northern-most band. The insitu ore body exposed in the quarries, within this band is brown, friable and medium grained. Presently, quarry No. D exists over this ore band.
- (ii) Band - II: Quarry development has been carried out recently over Band II.
- (iii) Band - IV: The insitu ore body exposed in the quarries, within this band is brown, friable and medium grained. Presently, quarry no. F exists over this ore band.

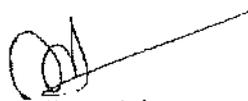
As per the present exploration completed and geological ore body model prepared in the ore body modeling software, the extent of Band No. I exists to much deeper levels. Following bench configuration and overall slope angle have been considered for finalizing the ultimate pit limit.

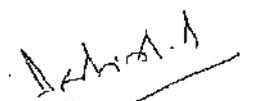
Bench height	: 6m	Bench width	: 10m
Bank slope angle	: 70 degrees	Overall pit slope angle	: 30 degrees.

After exhausting the ore by opencast method, the left out ore is proposed to be mined by vertical mining using grab and underground mining method in due course after carrying out the required studies to assess the strata competency. Tailings from the proposed tailing pond shall be re-handled in conceptual period, so that eastern side of Quarry F can be further deepened for extraction of mineral by opencast method.

Life of Mine: Considering proved reserve as on date, the life of South Kaliapani lease is around 8 years, i.e. upto FY 2028-29 at the proposed exploitation rate of 1.4 million tonne of ROM ore per annum. However, lessee will conduct further exploration as proposed, which shall add more reserve to present ore inventory. Similarly, vertical mining & underground mining is proposed to be implemented in a phased manner. These will convert a major portion of resource to reserve category, thereby increasing life of mine.

Disposal of Mineral Reject mineral: The mineral reject material generated will be in the range of 10-40% Cr₂O₃ and will be stacked as external dumps at the earmarked places. A total of 1.95 Million tonnes of sub grade material will be generated up to the conceptual stage. The mineral reject materials will be stacked at their respective demarcated places as shown in the plans. The mineral reject material will be blended with HG ore for making it saleable. Also it will be beneficiated in the COB plant.


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South Kaliapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Pro-
Closure Plan From 2020



Waste Disposal: The waste generated during the course of mining operations will be stacked over the existing dumpyard. All the lodes continue to exist almost vertically at deeper levels. The ultimate pit at band No. 1 & 2 has been designed at -50mRL and for band IV at 58mRL. The selection of the dump site for external dumping is on the basis of following criteria.

- All dump sites have been located outside the mineralized zone beyond ultimate pit limits.
- Topography features have been taken into account, particularly in the context of water drainage.

It has been calculated that approximately 827 Lakh CuM of overburden will be generated during the course of opencast mining in Band I, II & IV beyond 30.06.2019 till end of conceptual period. The existing dump is having a balance capacity of 535 Lakh CuM as on 30.06.2019. Out of 827 Lakh CuM of overburden to be generated, approx. 535 Lakh CuM will be dumped over the existing dump yard. During the proposed mine plan period all overburden will be dumped over the existing dump yard. In order to cater the dumping requirement of overburden, lessee has obtained necessary "no objection" from Steel & Mines Dept, Govt of Odisha for requirement of land outside ML area for dumping of overburden generated from South Kaliapani and Sukurangi Chromite Mines. Refer Annexure 25. MoEF&CC has also accorded stage 1 clearance for diversion of 168.948 Ha. of forest land adjacent to South Kaliapani Chromite mine of OMC for dumping of overburden of South Kaliapani Chromite mine and Sukurangi Chromite mine of OMC Ltd. Refer Annexure 25. After obtaining all required statutory permissions, lessee shall utilize the adjoining land for dumping of balance 292 Lakh CuM of overburden.

The height & width of individual terrace of overburden will be 20 m with bank slope angle of 37° of individual lift for a total number of 7 lifts. The maximum height of overburden dump is planned to be 150 mtrs from ground level and maximum upto 310mRL. CIMFR has been entrusted to study the dump design for 150mtrs and prima facie the proposed dump is stable and safe. The draft report of CIMFR is attached as Annexure 27.

The dumps will be compacted and afforested on the terraces as well as along the slopes after spreading a layer of top soil over it before rehabilitation. The location of these dumps is marked on conceptual plan. Progressive afforestation is proposed to be carried out over the dumps as and when the dead end is reached and settled. Dumps will be afforested to check against wash off and guarded with retaining walls at their toes along the lower contours. Following the retaining wall a garland drain will be developed for carrying water to the natural drainage system through settling tanks & ultimately leading into the natural drainage pattern of the area. All the waste dumps will be rehabilitated on conceptual period by adequate plantation along the slopes as well as terraces so as to avoid any wash off.

Top Soil: There will be generation of top soil from the freshly broken area which will be utilized for concurrent afforestation over the dumps & for avenue plantation.

Environmental Monitoring: Noise, air, water and other environmental parameters will be measured periodically to have a close monitoring of the environmental condition. Spraying of water on haul roads, dust arrester on drills, prevention of ground vibration by utilization of optimal quantity of explosive per delay, plantation along road and other areas will be taken up. At the end of conceptual period the area will have mined out voids surrounded from all the sides by plantation, afforested dumps and avenue plantation.

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Reclamation and Rehabilitation:

During this Plan period, the present opencast mining in Band I shall reach its ultimate limit but opencast mining in Band II shall continue beyond proposed plan period. Thereafter vertical mining using grab is proposed to be done to mine out ore below ultimate pit limits. Amalgamation of adjacent mining leases of same lessee will further create scope for deepening of quarry. So opencast mining in Quarry D shall continue for few more years beyond proposed plan period. Once, opencast activities in Quarry D is completed, the mine void shall be backfilled up to certain height with overburden being generated from Quarry F or re-handling of overburden dump. Remaining void shall be used as water reservoir. Quarry F shall continue for few more years beyond proposed plan period. Amalgamation of adjacent mining leases of same lessee, vertical mining using grab, re-handling of tailing dam etc shall further create scope for quarry deepening thus increasing mine life. Once, opencast activities in Quarry F is completed, the mine void shall be backfilled up to certain height with re-handling of overburden dump. Remaining void shall be used as water reservoir.

Land Use Pattern: The land use pattern at the end of conceptual period on the basis of current level of exploration data is given below.

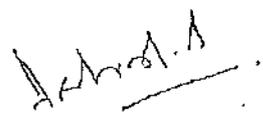
Sl No	Heads	Area, (Ha.)		
		Existing land use (as on 30.06.2019)	Land use at the end of Review of Mining Plan	Conceptual Land Use
1	Area under Mining	135.785	227.742	255.273
2	Overburden Dump	120.751	144.484	144.484
3	Mineral storage & Sub grade ore storage	21.873	55.385	47.450
4	Infrastructure (Workshop, Admin. Building ETP, COBP etc)	10.259	34.1041	40.099
5	Roads	12.082	27.252	27.252
6	Tailing pond	Nil	20.000	20.000
7	Safety Zone	(5.578) *	(5.578) *	5.578
8	Untouched tenant land	(6.516) *	(6.516) *	6.516
		300.750	508.9671	552.457

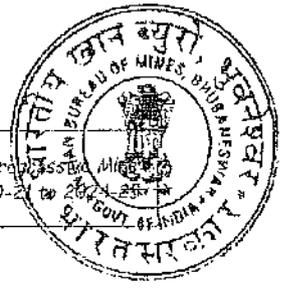
Note: Excluding * as shown in the above table.

In order to mine friable ore below UPL of Band I up to the extent possible, necessary scientific study for vertical mining by grab will be carried out. Also, feasibility studies for underground mining in Band I is under progress. Based on the findings, necessary step shall be taken for implementation of same.

The existing and proposed Chrome Ore Beneficiation Plant (COBP) will be in operational state till end of life of mine. The proposed tailing pond is an integral extension of COBP. The Conceptual Plan has been prepared on the basis of present level of ore body of Band IV. Same would be revised with deeper level of exploration of Band IV and subsequently re-handling of tailing will be proposed in future proposals, with modification of conceptual plan.


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The post-mining land use is given below:

Particular of Land	Area in Ha.	Post Mining Land Use
Area under Mining	255.273	Mined out area over Band I shall be reclaimed up to 75mRL & rehabilitated by plantation. Mined out Band II and IV quarry shall be utilized for water reservoirs.
Overburden Dump	144.484	Plantation shall be done over this area in a phased manner.
Mineral storage & Mineral Reject ore storage	47.450	The area shall be utilised for plantation after cessation of the mining activities.
Infrastructure (Workshop, Admn. Building ETP, COBP etc)	40.099	This area shall be left as it is for future utilisation by concerned authority OR will be dismantled.
Roads	27.252	This area shall be left as it is for future utilisation by concerned authority.
Tailing Pond	20.000	Plantation shall be done over this area in a phased manner.
Safety Zone	5.578	Status shall be maintained.
Untouched tenant land	6.516	Status shall be maintained.
Total	552.457	

B. UNDERGROUND MINING

Currently, ore extraction from Band-I is being done by conventional opencast mining in South Kaliapani Chromite Mine. The opencast quarry in Band I will reach its ultimate depth in coming few years because of surface constraints. In view of long term sustainability, OMC has envisages transition to underground mining in Band I. Extensive exploratory drilling has confirmed continuity of ore in deeper depth, thus justifying underground mining.

Initial assessment indicates, friable and weathering of ore and host rock in Band-I to certain depth due to effect of surface weathering in the region. Hence, conceptualizing underground mining has become technically very challenging and requires detailed exploration along with complete demarcation of the weathering profile in the lease area. Apart from above, detail characterisation of the ore and the associated host rocks in terms of geological, geotechnical, hydro geological, laboratory test works etc have to be done so as to establish detailed feasibility of the underground mining for band-I.

Considering the aforementioned technical challenges and complexity of the friable ore body along with incompetent host rock, OMC put forward to conduct a Detailed Feasibility study for Underground mining of Band-I. In this regard, OMC has already engaged technical consultant for establishing feasibility of underground mining in Band-I. This includes Exploration, Geotechnical, Geo-hydrological field investigations, Laboratory test works and all related technical studies for establishing feasibility for Underground mining of Band-I. Based on findings of Feasibility Study, underground mining will be planned for Band I.


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C. Extent of Mechanization

Details of existing machineries:

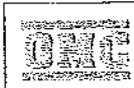
Machinery Type	Size / Capacity	Nos.
Hydraulic Excavator	3.3 CuM	10 nos
Hydraulic Excavator	1.3 CuM	1 no
Dozer	200 HP	7 nos
Drilling Machine	165mm	1 no
Tipper	19.5 CuM	54 nos
Motor Grader	183 HP	2 nos
Water Tanker	12 KL	6 nos
Diesel Pumps	715 Ltr/Min	14 nos

It is proposed to engage the following fleet of mining and ancillary equipments in South Kaliapani chromite mines during the plan period.

Machinery Type	Size / Capacity	Nos.	Purpose
Hydraulic Excavator	2.5 - 3.5 CuM	10 nos (including standby)	For loading of Ore, OB and misc work
Dumpers	40 tonne	55 nos (including standby)	For transportation of Ore and SG to designated unloading places
Drilling Machine	115 - 150mm	2 nos	For drilling
Front End Loader	1.5 - 2.5 CuM	2 Nos	For Loading and misc work
Dozer	375 HP	7 Nos (including standby)	In dump area, maintaining working face etc
Motor Grader	234 HP	2 Nos	Maintaining road.
Water Tanker	12 KL	6 Nos	Water sprinkling over haul road
Diesel Browser	12 KL	3 Nos	For diesel filling to HEMMs
Pumps	Diff. Capacity	14 Nos	Mine dewatering and Others
Maintenance Van		2 Nos	For maintenance of HEMMs

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D. Blasting

- a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.

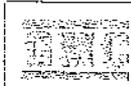
The blast design configuration for South Kaliapani Chromite mines is given below:-

S.No.	Parameters	Value
1	Drill diameter, mm	115
2	Burden, m	2
3	Spacing, m	3
4	Average Bulk density, t/cubic meters	2.5
5	Yield, T/m (3x4x5)	15
6	Bench height, m	6
7	Hole depth, m	6.5
8	Charge length, m	2.9
9	Deck, m	1.5
10	Stemming length, m	2.1
11	Loading Density, kg/m	6.6
12	Charge per hole (11x8)	19.14
13	Production per hole (5x6)	90
14	Max. handling, Lt	4.5
15	No. of holes required/ yr. (14/13)	5000
16	Production per blast, t (17x13)	3510
17	Charge per blast, kgs, (12x17)	746.46
18	Freq. of blast per week	3
19	Nos. of holes/ blast/ day	40
20	No. of rounds fired / day	2
21	No. of holes per round	20
22	Expl. Consumed per round, kgs	382.8
23	Expl. Consumed per day, kgs	765.6
24	Charge per delay, kgs	57.42
25	Powder factor, T/cubic meters, (18/19)	4.7
26	Delay interval	25/ 50 ms

As the charge per delay is limited therefore there won't be any impact of vibrations induced due to deep hole blasts. Typical firing pattern for above design is given below.

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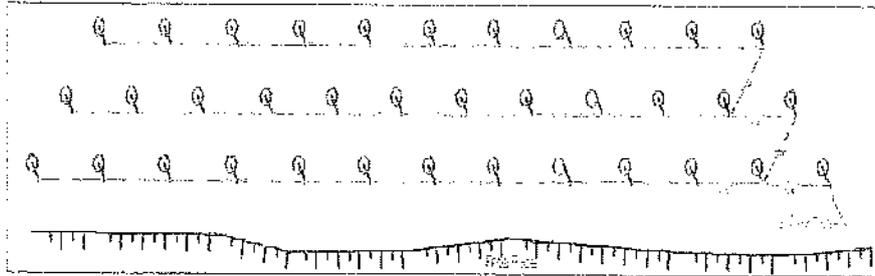
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NONEL is also being used occasionally in the mines in place of cord relays.

b) Storage of explosives (like capacity and type of explosive magazine)

The magazine is located within Kalarangi lease of same lessee and is licensed to store the following quantities:-

(i) Explosives	: 3 t
(ii) Detonating fuse	: 10000 m
(iii) Safety fuse	: 40000 m
(iv) Detonator	: 44000 Nos.

Apart from the above there is a provision of tripartite agreement with third party (named as Agency) for supply of explosive from his outside magazine to mines site by his approved type explosive van for blasting at Mines.

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3.0 MINE DRAINAGE

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

Ground water table as monitoring in open dug wells monitored during the baseline data generation is around 6.1 m bgl during summer season & 2.1 m bgl during post monsoon season. The minimum level of water table is 122mRL and maximum level of water table is 126mRL as mentioned in approved EIA/EMP.

- b) Indicate maximum and minimum depth of Workings.

Maximum and minimum depth of workings of existing quarry and at the end of proposed mining plan period is given below.

Depth	Existing Quarry as on 30.06.2019	Ground Water Level, mRL	At the end of Mining Plan Period i.e. 31.03.2025	At the end of Conceptual Period
Bottom most Bench RL	1 mRL	Maximum: 126mRL Minimum: 122mRL	(-) 50 mRL in Quarry D and 82 mRL in Quarry F	(-) 50 mRL in Quarry D 58 mRL in Quarry F

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

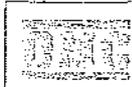
The mine has a catchment area of approx. 132 Ha. and the annual rainfall in the year 2018 was around 1054mm. Therefore the accumulation of water in the mine catchment areas will be around 139 thousand KL. Taking 10% loss of surface run offs and 10% ground precipitation, the net water accumulated within the mined out voids is around 118 thousand KL. In order to dewater the above accumulated water a total of 4 nos. of centrifugal pumps have been installed with an average de-watering rate of 400 cu.m/ hr. depending upon an average availability of 3 pumps for around 15 hrs/ day.

At the end of proposed mining plan period, the mine will have a catchment area of 255 Ha. Considering the annual rainfall as 1054mm, the accumulation of water in the mine catchment areas would be around 269 thousand KL. Taking 10% loss of surface run offs and 10% ground precipitation, the net water accumulated within the mined out voids would be around 216 thousand KL. In order to dewater the above accumulated water, the existing 4 nos. of centrifugal pumps have been installed with an average de-watering rate of 400 KL/ hr. depending upon an average availability of 3 pumps for around 15 hrs/ day.

The accumulated mine water at D-quarry is being pumped out through a series of centrifugal pumps. The removed mine water is allowed to pass through an ETP. Similarly the mine water dewatered from the F-quarry is also allowed to pass through another ETP. However, garland drains have been provided to avert movement of water into the pit. Garland drains have also been provided around the dump. In the present setup ferrous sulphate and alum solution is blended in the ratio of 5:1 and the mixed solution is then allowed to fall over the incoming mine water. Thereafter the treated mine water is allowed to pass through a series of settling tanks in order to increase the retention time and ultimately discharged to the natural run off course after it is ensured that all the parameters are within permissible limit.

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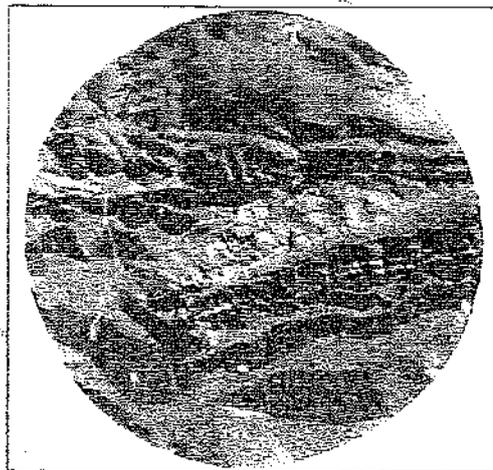


Method of treatment of hexavalent chromium in ETP

Mines seepage water from opencast pit and mines runoff water during monsoon period is pumped at controlled rate to Flash Mixing tank, where reducing agent (FeSO_4) is dosed along with polyelectrolyte through metering type dosers. The content is then let into High Rate Reactivator type Clarifier, which reduces consumption of reagents and tolerate fluctuation in turbidity of feed while yielding consistent output quality. The clarifier supernatant is collected in supernatant tank and after on-line adjustment of pH using NaOH, it is pumped through multi grade pressure sand filter. The output from the filter is of reusable quality or safe for disposal. The sludge from the clarifier is continuously withdrawn in sludge sump and pumped through filter press for dewatering. The dewatered cakes contains $\text{Cr}(\text{OH})_3$ and $\text{Fe}(\text{OH})_3$ which then is disposed off through SPCB approved agency for Land Fill.

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

The mine lease is located in southern part of funnel shaped SukindaValley which extends from east to west with the open end facing west. The northern part of the SukindaValley is marked by Daitari hill range which rises sharply from about 140 m above mean sea level to more than 600 mRL. There are peaks exceeding 800 mRL in Daitari hill range. At places Hills are marked by very steep slopes including bare rocky cliffs. The southern part of the valley is bounded by Mahagiri hill range, which also is very steep and rises to more than 600 mRL. In Mahagiri hill range also there are a few bare rocky cliffs. The hills are densely forested. The mine lease is between 132 m RL in the north and 217 m RL in the south-west and slopes from north to south. The principal drainage channel of the Sukinda valley is Damsal nala which flows from east to west and traverses towards north of the lease area. The drainage pattern of the area is shown in the figure below:-



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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.

The stratum encountered in the lease area is soft in nature. The topsoil is of lateritic in nature and the waste/overburden is mainly limonitic in nature.

The mine waste and mineral reject mineral generated during the course of mining operations will be handled separately. These materials will be dumped at their respective ear marked places inside South Kaliapani lease only. The dumps shall be formed by retreating method of dumping so as to facilitate early reclamation. The topsoil generated will be used for afforestation. Mineral reject material (10 to 40% Cr₂O₃) shall be beneficiated in the existing as well as proposed new chrome ore beneficiation plants.

The year-wise quantity of topsoil, mineral reject and overburden generation and disposal during the mining plan period is given below.

Year	Top Soil, Lakh CuM		Waste, Lakh CuM		Mineral Reject, Lakh Tonnes		
	Reuse/Spreading	Storage	Backfilling	Storage	Storage	Blending	Beneficiation*
2020-21	1.42	-	-	128.61	2.50	0.50	-
2021-22	1.32	-	-	108.71	2.50	0.50	-
2022-23	1.53	-	-	113.50	2.50	0.50	-
2023-24	0.32	-	-	49.71	1.00	0.50	-
2024-25	0.32	-	-	49.71	1.00	0.50	-

* Beneficiation of mineral reject is proposed from mineral reject dump.

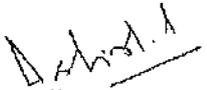
b) The proposed dumping ground within the lease area be proved for presence or absence of mineral and be outside the UPL unless simultaneous backfilling is proposed or purely temporary dumping for a short period is proposed in mineralized area with technical constraints & justification.

The overburden dump exists over non-mineralised zone and beyond the ultimate pit limits. The waste generated during the course of mining operations will be stacked over the existing dump yard. Opencast working in Band I shall reach its ultimate limit by end of proposed plan period. However, opencast mining in Band II & IV shall continue thereafter. The height of existing overburden dump is proposed to be increased up to 150mtrs from ground level in seven stages (maximum up to 310mRL). Central Mining & Fuel Research Institute, Dhanbad has been entrusted. The dump yard is having sufficient capacity to accommodate the overburden and waste being generated during opencast working. The existing waste dump yard is shown in Plate No 3 and final dump profile is shown in Conceptual Plan, refer Plate No 12. The dump will extend to its periphery first and then retreat backwards in order to facilitate early reclamation of its slopes.

The selection of the dump site for external dumping is on the basis of following criteria.

- All dump sites have been located outside the mineralized zone beyond ultimate pit limits.
- Topography features have been taken into account, particularly in the context of water drainage.


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It is estimated that approximately 455 Lakh CuM of overburden will be generated during the proposed plan period (i.e. from 2020-21 to 2014-25) from opencast mining in Band I, II & IV. The existing dump is having a balance capacity of 535 Lakh CuM as on 30.06.2019. During the proposed plan period, all overburden will be dumped over the existing dump yard.

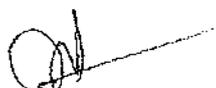
The height & width of individual terrace will be 20 m with bank slope angle of 37° of individual lift. The dumps will be compacted and afforested on the slopes after spreading a layer of top soil over it before rehabilitation. The location of proposed dump has been designed beyond the ultimate pit limits. The location of these dumps is marked on conceptual plan. Progressive afforestation is proposed to be carried out over the dumps as and when the dead end is reached and settled. Dumps will be afforested to check against wash off and guarded with retaining walls at their toes along the lower contours. Following the retaining wall a garland drain will be developed for channelizing water to the effluent treatment plant for treatment & ultimately leading the treated water into the natural drainage pattern of the area. All the waste dumps will be rehabilitated on conceptual period by adequate plantation along the slopes as well as terraces so as to avoid any wash off.

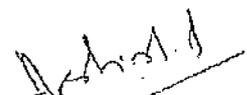
There will be generation of top soil from the freshly broken area which will be utilized for concurrent afforestation over the dumps & for avenue plantation

Detail of existing overburden dump.

Sl No	Waste Dump Nomenclature	Location in UTM coordinates	Area Occupied		Volume in CuM	Quantity in Tonnes
			m ²	Ha.		
01	Waste Dump	2327700N to 2326500N 373500E to 375000E	1207510	120.751	53.56 million CuM as on 30.06.2019	131.75 million tones as on 30.06.2019

Extent (Local Grid)	Bottom RL	Top RL	Designed Capacity, Million CuM	Present Dumped, Million CuM as on 30.06.2019	Remaining Capacity, Million CuM as on 30.06.2019
-100 E to 1500E 800N to 1700N	136mRL	273mRL	106.81	53.56	53.25


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The detail of existing mineral reject dump:

Sl No	Mineral Reject dump Nomenclature	Location in UTM coordinates	Area Occupied		Volume in CuM	Quantity in Tonnes as on 30.06.2019	Av Grade Cr2O3 %
			m2	Ha.			
1	Mineral Reject Dump 01	2327250N to 2327600N 374100E to 374300E	64546	6.45	597588 CuM	1180835 Tonnes (Volume = 597588 CuM @ Bulk Density of 1.976T/CuM)	10 to below 40% Cr ₂ O ₃
2	Mineral Reject Dump 02	2326300N to 2326600N 374400E to 374000E	19591	1.95			

Mineral Reject Dump	Extent (Local Grid)	Bottom RL	Top RL	Designed Capacity, CuM	Present Stock as on 30.06.2019, Tonnes	Remaining Capacity, CuM
Mineral Reject Dump 01	500E to 915E 1630N to 1835N	162.84	199.8	890499	1180835 Tonnes	304981
Mineral Reject Dump 02	1382E to 1555E 727N to 848N	153.4	158.4	12070	(Volume = 597588 CuM @ Bulk Density of 1.976T/CuM)	

Following precautions are envisaged in the overburden dump yard:

1. The maximum height of overburden dump to be 150 mtrs from ground level in seven stages (maximum upto 310mRL).
2. Garland drains to be provided around the periphery of the dump to channelise & collect run-off water.
3. Proper terracing to be done, so that overall slope does not exceed 28 degree from horizontal.
4. The dump to be vegetated with suitable native species to prevent soil erosion.
5. Retaining wall to be provided at toe of dump to check run-off and siltation.

A portion of dead ends of the dump have been stabilised by plantation. Garland drains, check dams & retaining wall have been provided along the toe of the dump. Environmental protective works have been carried out around overburden dump. Same are shown in Plate No 3.

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

All the dumps will be formed by retreating method of dumping, so as to facilitate early reclamation. The height of the individual terrace will be 20m and the maximum height of the dump will be limited to 150m. The bank slope angle considered for designing the dump is 37 degrees and the overall slope angle of the dumps are below 28 degrees. The manner of year-wise disposal of waste, configuration and build up of dump is summarised below.

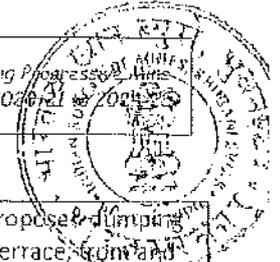
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Year	Overburdn to be dumped, Million CuM	Dump nomenclature	Location of Dumping (coordinates)	Existing & Proposed area (m ²)	Proposed dumping terrace, from and to mRL
1	2	3	4	5	6
2020-21	12.86	Existing Waste Dump	2328750N to 2326500N 375750E to 3735000E	Existing Area: 1207510m ² Proposed Area: 1444840m ²	170mRL to 190mRL
2021-22	10.87				190mRL to 230mRL
2022-23	11.35				230mRL to 250mRL
2023-24	4.97				250mRL to 270mRL
2024-25	4.97				270mRL to 310mRL

No of terraces proposed	Individual Terrace height	Slope of Terrace	Overall slope angle of dump	Total Height	Remark
7	8	9	10	11	12
2020-21	20 mtrs	37 ^o	24 ^o	120mtr	Proposed dumping is outside UPL, permanent in nature and over non-mineralised area.
2021-22				120mtr	
2022-23				120mtr	
2023-24				120mtr	
2024-25				150mtr	

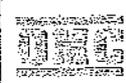
The manner of year-wise disposal of mineral reject is summarised below.

Year	Mineral Reject to be dumped, Lakh CuM	Dump nomenclature	Location of Dumping (coordinates)	Existing & Proposed area (m ²)	Proposed dumping terrace, from and to mRL
1	2	3	4	5	6
2020-21	1.47	Mineral Reject Dump	2326300N to 2326600N 374400E to 374000E	Existing area: 19591m ² Proposed area: 19591m ²	153mRL to 173mRL
2021-22	1.46				
2022-23	1.47				
2023-24	0.73				
2024-25	0.74				

No of terraces proposed	Individual Terrace height	Slope of Terrace	Overall slope angle of dump	Total Height	Remark
7	8	9	10	11	12
2020-21	1 terrace of 20 mtrs height	37 ^o	26 ^o	20 mtrs	Proposed dumping is outside UPL, permanent in nature and over non-mineralised area.
2021-22					
2022-23					
2023-24					
2024-25					

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The details of the protective measures envisaged for the existing dump with year wise proposed reclamation/ rehabilitation measures are given below:-

Year	Waste Dump	Length of garland drain, m	Length of retaining wall, m	Area to be planted, Ha	No of Plants, Nos
2020-21	Existing Waste Dump	1100	1200	1 Ha	2500
2021-22		1100	1300	1 Ha	2500
2022-23		700	1300	1 Ha	2500
2023-24		1750	-	1 Ha	2500
2024-25		1500	-	1 Ha	2500

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5.0 USE OF MINERAL AND MINERAL REJECT

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

The ore mined from this mine would be supplied in the open market to the manufacturers of ferro chrome. The ROM is stacked as per different grade specifications before being dispatched to different buyers. The physical & chemical specifications required by the buyers are given below.

Physical Specification: Size of Lumps & Chips is 10-100 mm & size of Fines is (-)10mm.
Chemical Specification: The cut off grade of ore as stipulated by Buyer is + 30% Cr₂O₃.

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

No intermediate industry involved for up-gradation of mineral.

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

The ore mined would be supplied in the open market to the manufacturers of ferro chrome and other industries. The physical & chemical specifications required by the buyers are given below.

Physical Specification: Size of Lumps & Chips is 10-100 mm & size of Fines is (-)10mm.
Chemical Specification: The cut off grade of ore as stipulated by Buyer is + 30% Cr₂O₃.

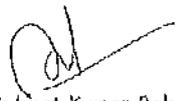
- d) Indicate precise physical and chemical specification stipulated by buyers
The physical & chemical specifications required by the buyers are given below:-

Physical Specification: Size of Lumps & Chips is 10-100 mm & size of Fines is (-)10mm.
Chemical Specification: The cut off grade of ore as stipulated by Buyer is + 30% Cr₂O₃.

- d) Give detail of processes adopted to upgrade the ROM to suit the user requirements.
The ROM recovered are configured into three parts, direct ore (+30% Cr₂O₃), beneficiable ore (+30-40% Cr₂O₃), mineral reject ore (+10-30% Cr₂O₃) and rejects (below 10% Cr₂O₃). The beneficiable grade ore is proposed to be upgraded to +46% Cr₂O₃, after beneficiation in existing as well as proposed new COB plant.

- e) The useable mineral recovered from ROM may not be directly used in any industry and may need intermediate process to suit the user industry in terms of physical and chemical compositions.

The ROM recovered are configured into three parts, direct ore (+30% Cr₂O₃), beneficiable ore (+30-40% Cr₂O₃), mineral reject ore (+10-30% Cr₂O₃) and rejects (below 10% Cr₂O₃). The direct ore is directly sold in market. The beneficiable ore is upgraded in the Chrome ore beneficiation plant (COBP) and the concentrates produced are sold in the market, the mineral reject ore will be stacked and the rejects will be disposed in external dumps. In the prospect of mineral conservation, it is proposed to directly sell the Mineral Reject and also to blend the mineral reject with high grade ore for making it saleable.


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6.0 PROCESSING OF ROM AND MINERAL REJECT

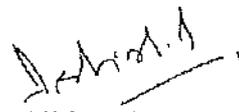
- a) If processing / beneficiation of the ROM or Mineral Reject is planned to be conducted, briefly describe nature of processing / beneficiation. This may indicate size and grade of feed material and concentrate (finished marketable product), recovery etc.

The existing Chrome Ore Beneficiation (COB) Plant of Odisha Mining Corporation Limited at South Kaliapani, Jalpur District, Odisha was commissioned in April 1995 to produce saleable concentrates by upgrading the low grade ore. The plant was designed to treat annually 3,24,000 tons (dry basis) of ore analysing about 33% Cr_2O_3 and produce coarse and fines concentrate with 50-52% and 51-53% Cr_2O_3 content respectively. The design parameters were developed based on beneficiation study carried out at the mineral processing laboratory of Bhaba Atomic Research Centre (BARC), Hyderabad. In the plant, the feed material crushed to 18mm, is wet screened at 1mm. The screen oversize is ground to D80 210 μ /d100 300 μ m in close circuit operation with a hydrocyclone.

The composite product comprising cyclone underflow and screen undersize material is de-slimed at about 10 μ m in a cluster of hydrocyclones. The de-slimed product obtained as hydro-cyclone underflow is treated in hydro-sizer, a multicompartiment teeter-bed separator (TBS). The top size of +300 μ m from the first compartment of the hydrosizer is recycled to the grinding mill. The coarse fraction obtained from the 2nd to 5th compartment is the final product of 46-48% Cr_2O_3 . The fines obtained from 6th to 9th compartment product of the hydrosizer and analysing about 38-40% Cr_2O_3 was to be treated in the Bartles Mosley Separator (BMS) for production of the fines concentrate. However, the BMS could not be made to work properly and hence, for some recovery of the fines material, OMC provided hydrocyclones in its place. Both sand and fines concentrates are dewatered in pan filters and stacked in ground stock pile. This circuit of the plant could produce concentrate at about 68% recovery.

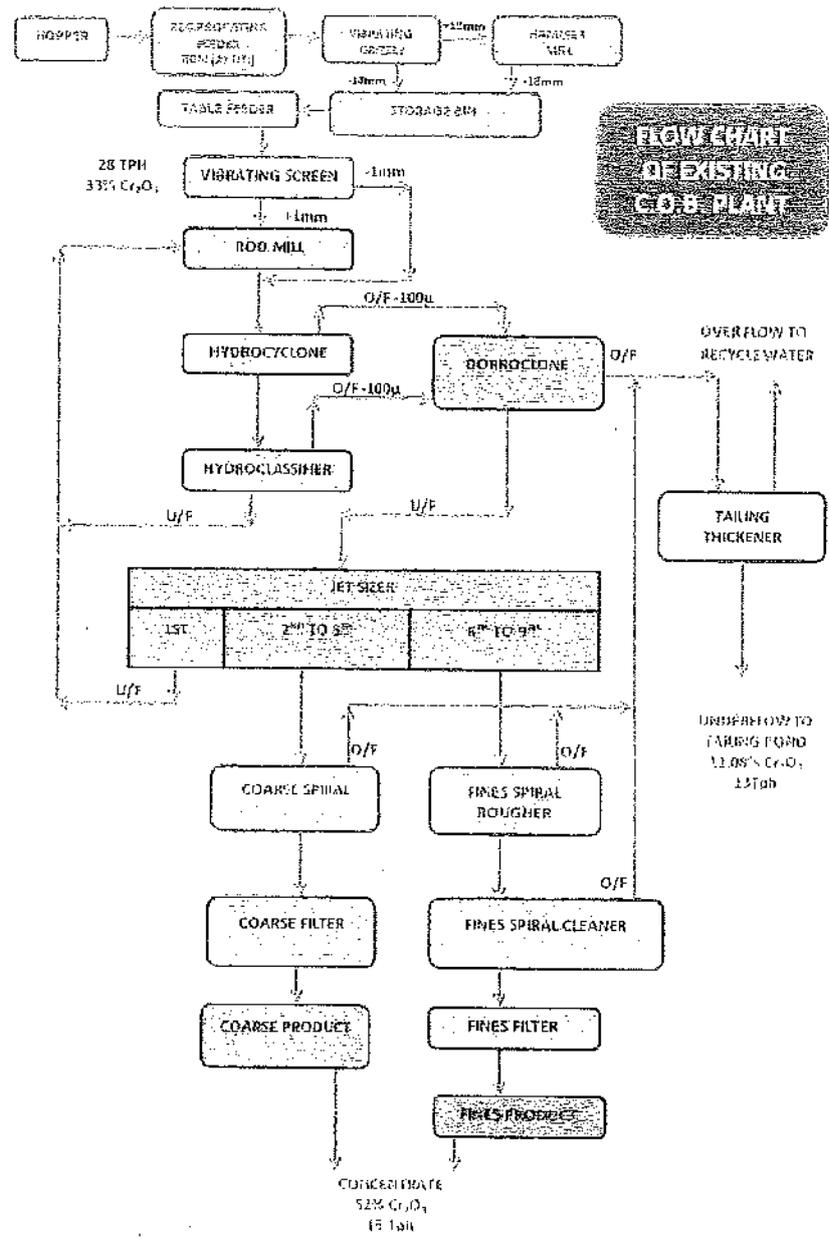
Modification work was required in this COB Plant to enable attainment of desired grade of product (50-52% Cr_2O_3) with optimum recovery in coarse and fine concentrates. For this purpose, open circuit operation of the rod mill is planned to be converted to close circuit operation, as per the original flow sheet, by replacing the existing cyclone with the combination of a Hydro cyclone and Hydrosizer unit. The cyclone overflow will be directed to sump pump and cyclone underflow will be discharged in to the hydrosizer by gravity. The close circuit hydrosizer underflow will be discharged in to the mill for further size reduction. The sizer overflow will be directed to same sump pump where hydro cyclone overflow is collected. From the sump slurry with -150 μ m will be pumped to the existing dorroclone for disliming the underflow of dorroclone will be fed to the jet sizer (existing hydrosizer) and the coarse product of the sizer will be fed to the coarse spiral concentrator, the medium fraction will be fed to the fine spiral concentrate (Rougher) and the fine fraction will be directed to existing tailing thickener. The concentrate from the rougher spiral will be fed to cleaner spiral and the concentrate from the cleaner will be collected in fines spiral sump. Coarse spiral product will be collected in a separate sump. The overflow from the dorroclone, the tailings from coarse spiral, rougher spiral and the tailing from the cleaner will be directed to existing tailing thickner and will be discharged in to abandoned quarry. The coarse concentrate and fines concentrate thus obtained will be filtered in the existing coarse and fine concentrate filters respectively.

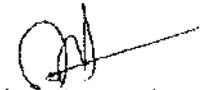

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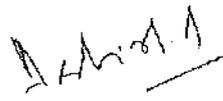

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The modified circuit has been designed by M/s MBE-CMT, Kolkata to process ROM of 30-35% Cr₂O₃ at 28TPH to produce about 15TPH of concentrate of about 52% Cr₂O₃. The process flow sheet of existing COBP is shown below.




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Review of Mining Plan including Progressive
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Description of the New Chrome Ore Beneficiation Plant:

The installation of new Chrome Ore Beneficiation Plant (Project) of the OMC Ltd, is going on at South Kaliapani, Dist:- Jajpur, Odisha located at right angle orientation to the existing plant building. The Plant having capacity to treat annually 1,50,000MT (DRY basis Chrome Ore Grade 30-35% Cr₂O₃ & produce Chrome Concentrate analysing 52% Cr₂O₃ @ 72000 MT on dry basis. The beneficiation process Plant includes all equipments and facilities required for smooth operation of the four major sections, (a) Crushing & Storage Section b) washing & grinding section, c) Concentration Section d) dewatering & stock piling section.

The Chrome ore of -300mm size will be directly dumped in to a hopper. The ore will be drawn out from the hopper to feed a vibrating grizzly to scalp out the -18mm fraction. The grizzly oversize will be fed to a hammer mill and the crushed and scalped product will be collected in a crushed ore Storage Bin. The crushed ore will then be scrubbed in a drum scrubber & will be fed to a wet vibrating screen of 1mm aperture. The -1mm screen under size will be cleaned in a spiral classifier and the rake classifier sand along with +1mm fraction obtained as screen oversize will be fed to a rod mill, in close circuit with a classifying hydro-cyclone for reducing feed ore to d80 size 150 µm. Underflow from the classifying hydro-cyclone will be recycled to the rod mill. The ground product obtained as overflow of close circuit hydro-cyclone will be further treated in a de-slimming cyclones. Underflow of de-slimming hydro cyclone will feed to a hydro-sizer and overflow will be collected in the tailings sump. Overflow of spiral classifier will be fed to a set of hydro-cyclones followed by tabling for further processing.

Underflow of the de-slimming hydro-cyclones will be fed to a two (2) stage hydro-sizer and will be classified for obtaining coarse, medium and fine fractions. The stray plus 300 µm fraction obtained from this equipment will be re-circulated to rod mill by gravity for size reduction. The coarse product from hydro-sizer will be processed in spiral concentrator to obtain concentrate and tails. The concentrate will be collected in concentrate sump and tails from the same will be directly sent to tailings sump.

The medium fraction will be treated in spiral concentrators for further up-gradation. Concentrate thus produced will be collected in composite concentrate sump and the tails will be discharged. Middling from spiral concentrators will be reground for further liberation in a regrinding mill and, then treated in a pair of wet tables to obtain concentrate, middling and tailings fraction. Concentrate and middling fractions will be collected in the composite concentrate sump, when the ore from South Kaliapani mine is being treated. While treating the ore from Sukurangi Mine, only concentrate will be discharged to composite concentrate sump and the middling fraction will be diverted to the tailing sump.

After de-slimming with hydro-cyclones, fine fraction and overflow of hydro-sizer will be treated in a spiral concentrator. While treating the ore from Sukurangi Mines, the concentrate will be transported to the composite concentrate sump and the middling fraction with tailings will be sent to the tailings sump. During, the processing of South Kallapani ore, the concentrate and middling fraction will be collected in the composite concentrate sump and the tailings will be collected in the tailing sump.

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The overflow of the spiral classifier will be treated in de-slimming hydro-cyclones. The overflow of the hydro-cyclones will be directly fed to the tailing sump and the underflow of the same will be treated in a pair of wet vibrating tables. The concentrates and the tailings will be collected in the concentrate sump and tailings sump respectively. Composite concentrate and tailing from the respective sump will be processed for dewatering.

Concentrate will be pumped from concentrate sump to a concentrate thickener and thickened concentrate slurry contain about 50% solid will be fed by thickener underflow pumps to a horizontal pan filter. The filter cake obtained from the filter will be delivered to ground stockpiles through belt conveyor. The filtrate will be collected in a RCC tank located adjacent to the thickener, along with thickener overflows water. Water from this tank will be pumped to a ground water storage tank recycle to the system.

Tails from tailings sump will be pumped to a tailings thickener. Water recovered from tailings thickener will be recycled to the Plant and thickened tailings will be pumped to tailings pond.

It is expected that the new COB plant would be under operation by 2020-21. The process flow sheet of the new COBP under construction is shown below.

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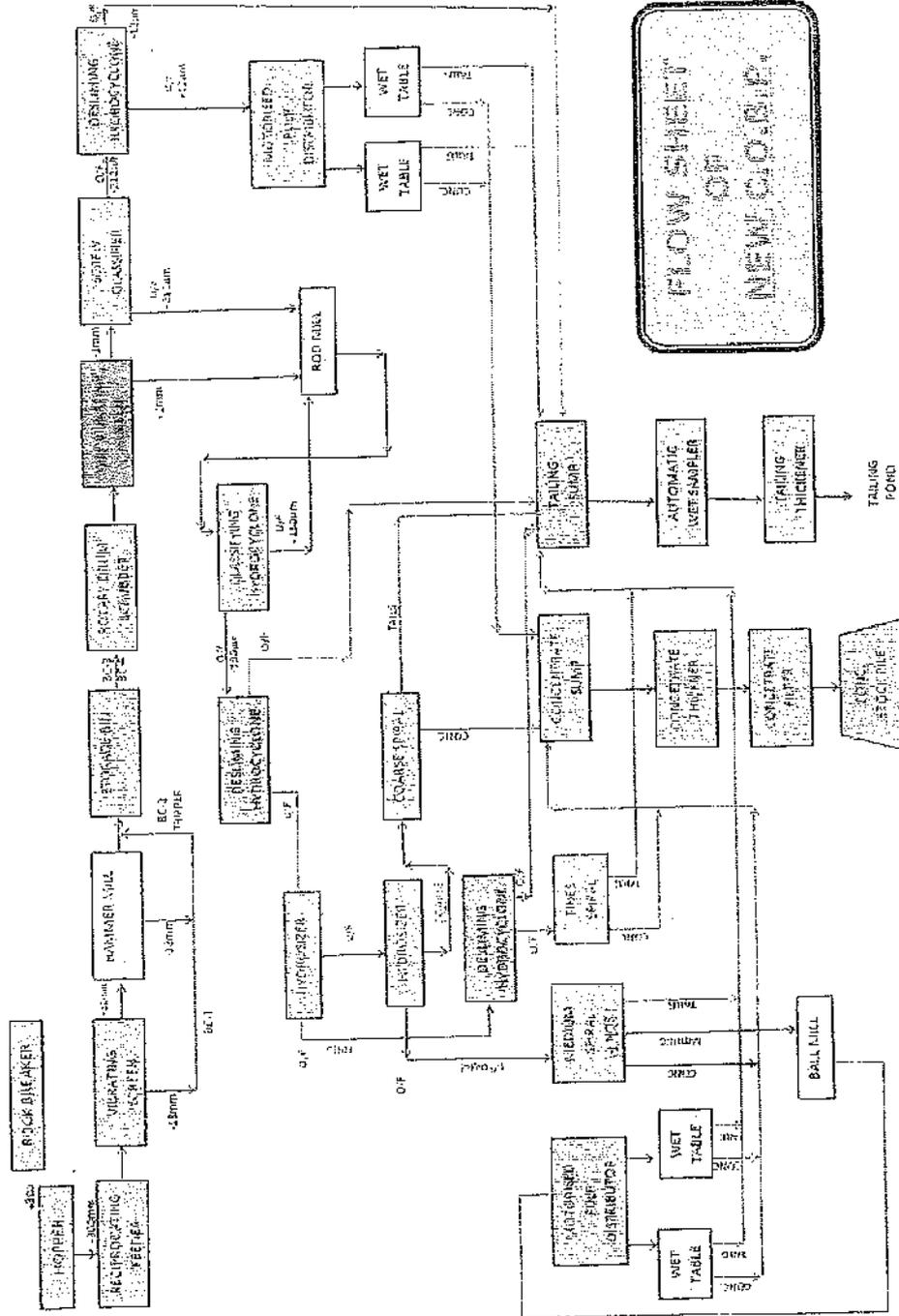
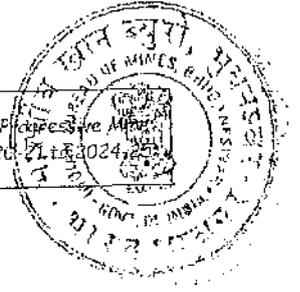
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DISHA
ODISHA MINING CORPORATION

South Kallepani Chromite Mine
Odisha Mining Corporation Ltd

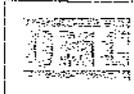
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Closure Plan from 2020 to 2024



FLOW SHEET
OF
NEW CLOSURE

(Signature)
Subrat Kumar Behera
Qualified Person

(Signature)
A K Samantray
Qualified Person



DISHA
DIGITAL INFORMATION SYSTEMS & ANALYTICS

South Kaliapani Chromite Mine
Odisha Mining Corporation Ltd

Review of Mining Plan including Progressive
Closure Plan from 2020-21 to 2024-25



- 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.

The existing Chrome Ore Beneficiation (COB) Plant of Odisha Mining Corporation Limited at South Kaliapani, Jajpur district, Odisha, was commissioned in April 1995 to produce saleable concentrates by upgrading the beneficiable mineral reject ore. The plant was designed to treat annually 3,24,000 tons (dry basis) of ore analyzing about 33% Cr_2O_3 and produce coarse and fine concentrates with 50-52% and 51-53% Cr_2O_3 content respectively.

In the plant, the feed material crushed to 18mm, is wet screened at 1mm. The screen oversize is ground to D80 150 μ m/d100 300 μ m in close circuit operation with a hydro-cyclone. The composite product comprising cyclone underflow and screen undersize material is de-slimed at about 20-30 μ m in a cluster of hydro-cyclones. The de-slimed product obtained as hydro-cyclone underflow is treated in hydro-sizer, a multi-compartment teeter-bed separator (TBS). The top size of +300 μ m from the first compartment of the hydro-sizer is recycled to the grinding mill. The coarse fraction obtained from the 2nd to 5th compartment is the final product of 46-48% Cr_2O_3 . The fines obtained from 6th to 9th compartment product of the hydro-sizer and analyzing about 38-40% Cr_2O_3 was to be treated in Bartles Mosley Separator (BMS) for production of fine concentrate. However, the BMS could not be made to work properly and hence, for some recovery of the fines material, OMC provided hydro-cyclones in its place. Both sand and fine concentrates are dewatered in pan filters and stacked in ground stockpile. The circuit of the plant could produce concentrate at about 68% recovery. After few modification in the existing COBP, the plant could able to process ROM of 30-35% Cr_2O_3 at 28TPH to produce about 15 TPH of concentrate of about 52% Cr_2O_3 .

The flow sheet indicating the material & water balance of the existing COBP is given below and the flow sheet indicating the material & water balance of the proposed new COBP is attached as Annexure 24.

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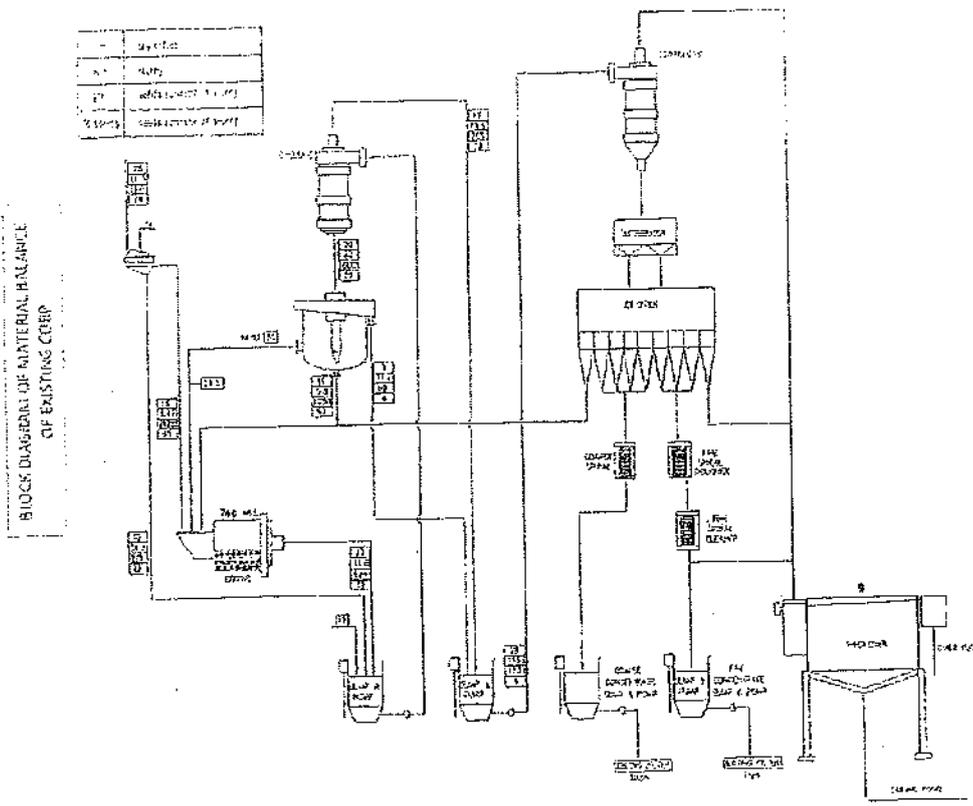
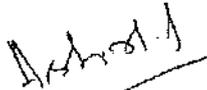


Figure: Flow sheet indicating the material & water balance of the existing COBP

c) Explain the disposal method for tailings or reject from the processing plant. A site, adjacent to the F-Quarry of South Kaliapani mines of size about 1000Mtr x 200Mtr has been identified for construction of a tailing pond along with ETP. The site survey and soil investigation works have been completed under the technical guidance of M/s MECON, Ranchi- the technical consultant for this work. The basic engineering work of this proposed tailing pond construction work has been completed by MECON. Excerpts from the study report regarding the tailing pond design is enclosed as Annexure 28. The pond will be designed with HDPE Liner all along the pond bottom and U/S slopes to prevent contamination of harmful slurry with ground water.

It will also be designed to meet the statutory norms specifying the limit of total chromium and hexavalent chromium content of effluent water when discharged into surface water along with other parameters. It has been investigated that the proposed pond will be of two compartments design, each having a life cycle of 3.8 years having facility for reclamation. Tailing pond has been earmarked over an area of 20 Hects within the leasehold area. Same is shown in Plate No 3 & 12.


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- 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.

Lessee has already taken steps for treatment of tailings generated from the existing COB plant along with the tailings from the new COB plant under construction. Accordingly an area has been earmarked of size about 1000m x 200m, i.e. 20 Hects for construction of a tailing pond alongwith ETP. Same is shown in Plate No 3 & 12. The pond will be designed with HDPE liner all along the pond bottom and U/S slopes to prevent contamination of slurry with ground water. The ETP will be used to treat the effluent water of tailing pond and limit the total chromium, hexavalent chromium and other parameters within prescribed limit before discharging outside. It has been envisaged that the proposed pond will be of two compartment design with facilities for reclamation. The location of the proposed tailing pond has been finalized considering following aspects:-

- Beyond the ultimate pit limit of Quarry - F (Band IV).
- Topography of the area.
- Minimal risk to the local community / inhabitants.

Generation of tailings:

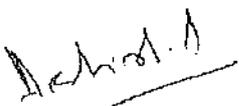
Lessee has sought amendment in EC in respect of South Kaliapani Chromite mine regarding location of tailing pond. It is expected to get the amendment in EC shortly. Thereafter, construction of tailing pond will start, which will take approx. 12 months. The existing COBP is non-operational due to non-availability of tailing pond. After completion of tailing pond, the COB plant will be operational.

The throughput capacity of the existing COBP is 3,24,000 Tonnes/Annum and that of the new COBP (under construction) adjoining to the existing one is 1,50,000 Tonnes/Annum. Therefore a total 4,74,000 Tonnes/Annum of throughput will generate approx. 2,40,000 MT of tailing per annum. The details are as follows:

Sl No	Particular	Existing COBP	New COBP (under construction)	Total
1	Throughput (30-35% Cr ₂ O ₃) in Tonne/Annum	3,24,000	1,50,000	4,74,000
2	Concentrate (+48 -50% Cr ₂ O ₃) in Tonne/Annum	1,64,000	70,000	2,34,000
3	Tailing (11 -20% Cr ₂ O ₃) in Tonne/Annum	1,60,000	80,000	2,40,000

Rate of Tailing generation: 2,40,000 Tonne per Annum
 % of solid in tailing 40% solid (w/w)
 Cr₂O₃ % in Tailing Approx. 11 to 20%
 Saturated unit weight of tailing: 1.35 gm/cc
 Volume of the settled sediment: 1,77,777 CuM/Annum
 Specific gravity of the tailing slurry: 1.3 to 1.4


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Tailing Pond:

There will be two pond system separated by an embankment.

1mm HDPE liner will be provided all along pond bottom and u/s slopes.

Total tailing generation: 2,40,000 tonnes/year

Total area of tailing pond is 1000m x 200m 2,00,000 m² (i.e. 20 Ha)

Rainfall intensity 82.37 mm/hr

Specific Gravity Slurry: 1.3 to 1.4 and Solid: 1.35

Topography Max: 206mRL and Min: 172mRL

Levels

Pond 1: Top RL: 189.5m and Bottom RL: 179m

Pond 2: Top RL: 183.5m and Bottom RL: 173m

Free Board: 1.5m

Overflow of tailing pond will go to Effluent Treatment Plant (ETP) by gravity. Treated water from ETP will be collected and will be pumped back to COBP. The drawing of proposed tailing pond is attached in Annexure 28.

Management of tailings:

It is expected that the average grade of tailing would be above threshold value of chromite, thus has to be considered as mineral reject and has to be analysed, accounted and stored. The tailing would be stored in the proposed tailing pond. In future, lessee would propose scientific study to develop mineral processing method for further beneficiation of the tailing having grade above 10% Cr₂O₃.

Proposed Production Schedule from COB plants:

Year	Feed to COB Plant, Tonnes			Ore Concentrates, Tonnes			Tailings, Tonnes		
	Existing COB	New COB	Total	Existing COB	New COB	Total	Existing COB	New COB	Total
2020-21	324000	50000	374000	164000	23500	187500	160000	26500	186500
2021-22	324000	100000	424000	164000	47000	211000	160000	53000	213000
2022-23	324000	150000	474000	164000	70000	234000	160000	80000	240000
2023-24	324000	150000	474000	164000	70000	234000	160000	80000	240000
2024-25	324000	150000	474000	164000	70000	234000	160000	80000	240000

Presently, the existing COB plant is not under operation because of want of EC for tailing pond and the new COB plant is under construction. The proposed production schedule from both the COB plants during the plan period is done based on assumption that, both the plants are under operation from 2020-21.


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e) Specify quantity and type of chemicals if any to be used in the processing plant.
 The beneficiation process in the COB plant is a wet gravity separation method and does not involve any use of chemicals.

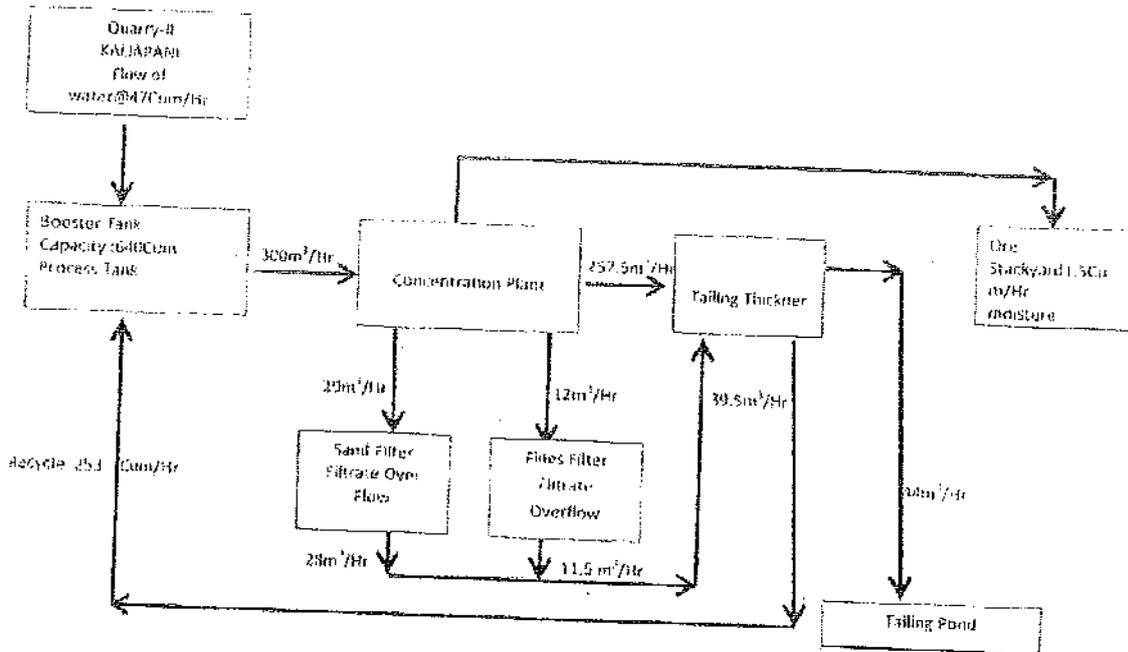
f) Specify quantity and type of chemicals to be stored on site / plant.
 Not applicable as there is no use of chemicals involved in the process.

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.

Water requirement for the project is tabulated below.

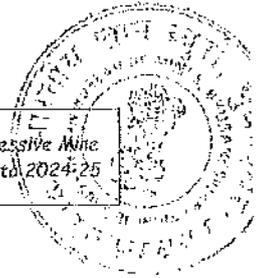
Activity	Avg. Demand (m ³ /day)	Peak Demand (m ³ /day)
Drilling & Spraying	50	65
Dust Suppression	60	75
Equipment & vehicle washing	70	70
Pit head bath	70	70
Make up water requirement COB plant	1680	1680
Green Belt	90	140
Drinking Water requirement	80	120
Total	2100	2220

FLOW SHEET OF WATER RECYCLE PROCESS C.O.B. PLANT, SOUTH KALIAPANI




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7.0 OTHER

a) Site Services

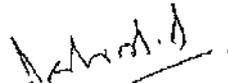
Basic infrastructure is available in the mine to facilitate the workings. They are mine offices, workshop, workshop, explosives magazine, rest shelter, first aid station, site store, V.T. centre, Time office, Canteen, laboratory, etc.

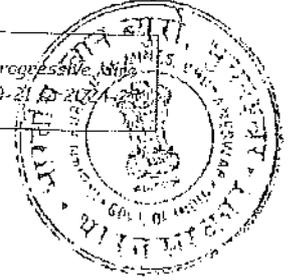
b) Employment Potential:

Considering the statutory requirement and requirement of various operational departments the estimated manpower requirement is 978, details of which is given below.

	Managerial Level		Supervisory Level		Others		Total
	Departmental Role	Contractual	Departmental Role	Contractual	Departmental Role	Contractual	
Mining Engineer	01	01	-	-	-	-	02
Mines Manager	01	-	-	-	-	-	01
Asst Mines Manager	06	04	-	-	-	-	10
Geologist	01	-	03	-	-	-	04
Mines Foreman	-	-	16	09	-	-	25
Mining Mate	-	-	15	15	-	-	30
Blaster	-	-	-	-	03	-	03
Blasting Crew	-	-	-	-	06	-	06
Surveyor	01	01	03	03	-	-	08
Doctor	-	-	-	-	02	-	02
Magazine I/C	-	-	-	-	01	-	01
Register Keeper	-	-	-	-	07	07	14
Clerical	-	-	-	-	23	10	33
Attendant	-	-	-	-	33	10	43
Workers in workshop, plant	-	-	-	-	10	40	50
Security	05	02	06	06	10	50	79
COBP	05	05	15	30	15	100	170
Others	30	20	20	20	100	1000	1190
TOTAL	50	33	78	83	215	1217	1676


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

8.1 Environment Base Line Information:

- Existing Land use pattern as on 30.06.2019:

Sl No	Heads	Existing land use in Ha. (as on 30.06.2019)
1	Area under Mining	135.785
2	Overburden Dump	120.751
3	Mineral storage & Mineral Reject ore storage	21.873
4	Infrastructure (Workshop, Admn. Building ETP, COBP etc)	10.259
5	Roads	12.082
6	Tailing pond	Nil
7	Safety Zone	(5.578) *
8	Untouched tenant land	(6.516) *
Total Land Use, excluding * as shown in the above table.		300.750

- Water regime, Quality of air, ambient noise level, flora & climatic conditions.

The water, air & noise monitoring for all seasons is being conducted by an approved agency.

- Water regime

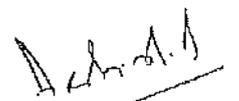
As discussed earlier, the leasehold area being in the open mouth of funnel shaped valley (Sukinda Valley). Several seasonal and perennial channels flow down from the Daitari hill range and Mahagiri Hill range to join the Damsal Nala. A few of the drainage channels emerging from Mahagiri hill range flow north and north-west through the South Kaliapani Mine Lease to join the Damsal Nala.

- Ground Water

Rainfall is the principal source of ground water, which percolates down to the water table. The weathered lateritised-bimonitised formation as well as the underlying semi weathered and fractured country rocks form the repository of ground water in the area. The nature, extension and yield potentials of the ground water reservoir are controlled by wide lithological variations, structural setup and weathering characteristics of the rock formation. The ground water generally occurs under phreatic conditions and occasionally under semiconfined to confined conditions in deeper horizons. In order to assess the quality of ground water, nine locations have been identified in and around the mining lease area. The baseline information for ground water level & quality for the year 2018-19 is given in the Annual Report on Environmental Parameters Monitoring, which is attached as Annexure 17.



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Details of Water (Surface and Ground) monitoring stations are given below.

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Administrative building of COB Plant	GW1	21° 02' 34.7"N	85° 47' 52.0"E
Tube well in front of COB Plant	GW2	21° 02' 35.2"N	85° 45' 29.5"E
Back side of COB Plant	GW3	21° 02' 35.6"N	85° 47' 53.2"E
Sukurangi Village(Dehursahi)-3	GW4	21° 02' 42.2"N	85° 48' 09.4"E
Near Sukurangi School Boundary	GW5	21° 03' 16.5"N	85° 47' 55.7"E
Sukurangi Village Chhack (Dehursahi)-1	GW6	21° 03' 25.9"N	85° 48' 09.2"E
Dehursahi (inside village)-2 Inside	GW7	21° 03' 25.4"N	85° 48' 07.3"E
Near Koiposi Market(HandiaHaata)	GW8	21° 03' 23.9"N	85° 47' 51.1"E
Koiposi Tennament (Hatting)	GW9	21° 03' 20.0"N	85° 47' 51.9"E

- Surface water:

The valley is drained by Damsal Nala which sustains perennial flow and generally follow a westerly course and finally joins with the river Brahmani. The nala and its tributaries exhibit a dendritic drainage pattern. There is no natural drainage & surface water body in the lease hold area. In order to assess the quality of surface water, four locations have been identified over Damsala Mala which is flowing on the northern side of the ML area. The locations have been identified considering the discharge point of mine discharge water. The baseline information for surface quality for the year 2018-19 is given in the Annual Report on Environmental Parameters Monitoring, which is attached as Annexure 17. Details of Surface water sampling locations are given below.

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
DamsalaNala near Gurujangpal School	SW1/SWFM1	21°03'23.16"N	85°47'28.32"E
DamsalaNala near Gurujang OMC Hatting	SW2/SWFM2	21°03'23.04"N	85°47'22.56"E
DamsalaNala near Kallapani	SW3/SWFM3	21°02'58.62"N	85°46'09.12"E
DamsalaNala near Kallapani	SW4/SWFM4	21°02'56.64"N	85°45'59.16"E
Surface Runoff Water			
Near BGR Camp-1	SRW1	21°02'27.2"N	85°46'51.4"E
Near D-Quarry BGR Camp-2	SRW2	21°02'15.5"N	85°46'58.2"E
D-Quarry new loading point	SRW3	21°02'04.1"N	85°47'05.7"E
D-Quarry new loading point front	SRW4	21°02'02.1"N	85°47'07.5"E

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- Quality of Air:

The prime objective of the ambient air quality study is to establish the existing ambient air quality in and around the mining lease area. The existing ambient air quality is monitored at six (6) locations. Monitoring is carried out for Particulate Matter (PM₁₀), Particulate Matter (PM_{2.5}), Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x) and Carbon Monoxide (CO).

The details of AAQ monitoring stations are given below.

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Near Chirigunia Colony	A1	21°02'29.52"N	85°45'28.26" E
Near OMC Office	A2	21°02'01.876"N	85°45'07.144"E
Near COB Plant (Administrative Block)	A3	21°02'34.45"N	85°47'52.62"E
D Quarry ETP	A4	21°02'47.22"N	85°46'43.02"E
F Quarry ETP	A5	21°02'28.62"N	85°48'00.18"E
Near Pump House	A6	21°03'03.84"N	85°47'04.08"E

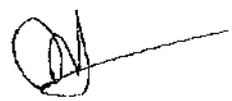
- Air Quality in Working Zone:

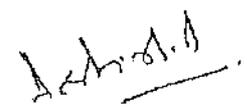
To assess the level of fugitive dust due to mining and allied activities, six (6) monitoring stations have been selected within the lease considering the activity area. Fugitive emissions monitoring are carried out once in a month on 8 hrly basis. The details of Fugitive Emission Monitoring Stations are given below.

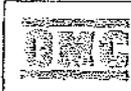
Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Near F Quarry Haul Road	F1	21°02'25.92"N	85°47'52.98"E
Near F Quarry Pump House	F2	21°02'23.07"N	85°48'03.96"E
Near BZR camp	F3	21°02'24.72"N	85°46'57.72"E
D quarry near Weigh bridge	F4	21°02'50.16"N	85°46'43.38"E
COB plant near Crusher	F5	21°02'34.62"N	85°47'47.88"E
COB plant near Storage Bin	F6	21°02'36.63"N	85°47'49.44"E

- Noise Level

Noise level monitoring is carried out in nearby areas termed as Ambient Noise Level as well as work zone area termed as Work Zone Noise Level. Six Ambient Noise Stations have been identified and is carried out for 24 hours on hourly interval once in a month. Six locations have been identified in working area within the mining lease and is measured on hourly interval for 8 hours once in a month.


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Details of Noise (Ambient & Work Zone) Monitoring Stations are given below.

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Ambient Noise			
Near Chirigunia Colony	N1	21°02'29.52"N	85°45'28.26"E
Near OMC Office	N2	21°02'01.876"N	85°45'07.144"E
Near COB Plant	N3	21°02'34.45"N	85°47'52.62"E
D Quarry ETP	N4	21°02'47.22"N	85°46'43.02"E
F Quarry ETP	N5	21°02'28.62"N	85°48'00.18"E
Near Pump House	N6	21°03'03.84"N	85°47'04.08"E
Work Zone Noise			
Quarry D	WZN1	21°02'45.09"N	85°46'49.44"E
Quarry F	WZN 2	21°02'28.62"N	85°48'5.46"E
COB Plant	WZN 3	21°02'36.63"N	85°47'49.44"E
Quarry D Haul Road	WZN 4	21°02'41.82"N	85°46'46.26"E
Quarry F Haul Road	WZN 5	21°02'25.26"N	85°48'3.07"E
BZR Camp	WZN 6	21°02'24.72"N	85°46'57.72"E

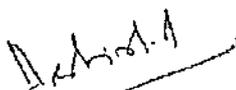
- Flora

Patches of grass lands are commonly found in forest and non-forest areas in the buffer zone of the valley. Bushy lands are common in the buffer zone. They are mostly in forests (Mahagiri and Daitary) and their immediate surroundings. In general the characteristic nature of the forest of this region is tropical deciduous. The general flora found in the area are Sal, Tendu, Mahua, Harida, Bahara, Neem, Chakunda, Mango, Jamun, Jack fruit etc.

- Climatic conditions

The study area lies in tropical region where climate is characterised by very hot summers and cool winters. Summer is typically from March to June when daily average maximum temperature ranges from a maximum of 43°C during daytime to a minimum of 16°C at night. Winter is from November to February when daily average maximum temperature during day goes up to 30°C and minimum temperature at night becomes as low as 10°C. The annual rainfall as recorded at mines is 1035.2 mm in the year 2018. The Southwest monsoon lasts from mid June to mid September and the area gets more than 75% of the annual rainfall during this period.


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Human Settlements

The demography pattern is given below.

Item	Study area, Buffer zone	Share in total population (%)
<i>Population</i>		
Total	52845	
Male	27392	51.83
Female	25453	48.17
Households	10436	19.75
SC	6252	11.83
ST	20318	38.45
Literates	26754	50.63
Working population	19949	37.75
Main workers	14740	27.89
Cultivators	4449	8.42
Agril laourers	3610	6.83
HH Industry	929	1.76
Others	5752	10.88
Marginal workers	5209	9.86

Public buildings, places of worship and monuments

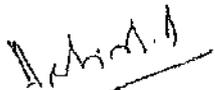
There is no place of archaeological or religious importance within 5 km of the lease.

Indicate any sanctuary is located in the vicinity of leasehold

No sanctuary is located in the vicinity of leasehold.

The Environment Plan of the mine is shown in Plate no. 14.


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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, dumping, roads, workshop, processing plant, tailing pond/dam, township etc.

The land use pattern at the end of conceptual period for the total lease area of 552.457 Ha. is given below. The conceptual plan is shown in plate no 12 and the conceptual section is shown in plate no 13.

Sl No	Heads	Area, (Ha.)		
		Existing land use (as on 30.06.2019)	Land use at the end of Review of Mining Plan	Conceptual Land Use
1	Area under Mining	135.785	227.742	255.273
2	Overburden Dump	120.751	144.484	144.484
3	Mineral storage & Mineral Reject ore storage	21.873	55.385	47.450
4	Infrastructure (Workshop, Admn. Building ETP, COBP etc)	10.259	34.1041	40.099
5	Roads	12.082	27.252	27.252
6	Tailing pond	Nil	20.000	20.000
7	Safety Zone	(5.578) *	(5.578) *	5.578
8	Untouched tenant land	(6.516) *	(6.516) *	6.516
		300.750	508.9671	552.457

Note: Excluding * as shown in the above table.

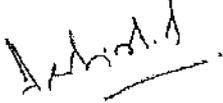
ii) Air quality

Following measures were proposed for management of air quality:-

- a. Regular water sprinkling on haul roads.
- b. Plantation along the safety zone.
- c. No overloading of tippers/ Dumpers.
- d. Provision of wet drilling in the drill machine.
- e. Provisions of dust masks to the persons exposed to dust.

Apart from the above, regular monitoring of the ambient air quality will be carried out. The results of the ambient air quality / noise quality monitoring reports as enclosed in Annexure 17 indicates that the quality parameters are within the prescribed limits.


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iii) Water quality

No further impact is envisaged on surface water resources. Mining has already intersected ground water table. Following measures are proposed for management of water quality.

- Process water from beneficiation plant and workshop will be recycled and reused.
- Domestic effluent from the mine will be discharged in septic tank/soak pit.
- Tailing pond will be made impervious.
- Garland drains will be provided around the waste dump and mineral processing area to channelise the surface runoff.
- Surface runoff will be collected in a settling pond and will be treated in ETP.
- Rainwater harvesting structures will be provided.

Apart from the above, regular monitoring of the both surface and ground water quality will be carried out. The results of surface and ground water quality monitoring reports as enclosed in Annexure 17 indicates that the quality parameters are within the prescribed limits.

iv) Noise levels

Due to operation of the HEMM & plant, ambient noise levels is likely to increase but the same will be managed through proper maintenance of the plant & machineries & use of personal protective equipments. The major noise generating sources during operation period will be from Drill machine, HEMMS, Crushers, DG sets and compressors.

Following measures are proposed for management of noise level.

- Provision of effective noise enclosures to noise generating equipments to attenuate the noise level.
- Provision of vibration isolators to air compressors and pumps in order to reduce noise generation / absorb noise.
- Proper maintenance and lubrication of machinery will be carried out to reduce noise generation.
- The DG Set will be placed inside an enclosure.
- Development of plantation around the plant area, around office buildings, township and internal roads wherever possible to attenuate noise.
- In order to reduce noise exposure levels of the workers, they will be issued with earmuffs/ ear-plugs, especially those deployed in high noise areas, such as drilling operators, workers working near crushers, compressors, pump-house, DG Set etc.

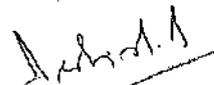
v) Vibration levels (due to blasting)

The blast induced ground vibrations will be controlled through limiting the charge per delay and use of in-hole delay by NONEL means of initiation. The blasting frequency will be limited to 3 times per week. Ground vibration monitoring will be carried out on a regular basis.

vi) Water regime

It is to be noted that the existing groundwater levels on the hill top are well below the ore-body floor, expectedly more than 130m bgl. These would therefore remain unaffected by mining operations.


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vii) Acid mine drainage
Not applicable

viii) Surface subsidence
Not applicable

ix) Socio-economics

This mining employment has greatly increased the income levels of the natives. In addition, creation of comparatively well paid jobs in the area has generated not only sizeable trade in household supplies (including vegetables, milk, food, textile, etc) but also some household employment. It has also generated demand for tertiary services like transport and repair shops. The impact of mining operations in the area on socio-economic has been a positive one. The infrastructure of the area roads, public transport P&T facilities and electricity supply, has also improved after the advent of mining operation in the area.

x) Historical monuments etc.

There are no historical monuments or places of archeological interest within 5 km radius of the lease. The environment plan of the mine is shown in plate no 14.

8.3 Progressive Reclamation Plan:

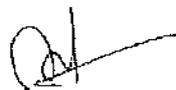
8.3.1. Mined-Out Land: Describe the proposals to be implemented for reclamation and rehabilitation of mined-out land including the manner in which the actual site of the pit will be restored for future use. The proposals may be supported with yearly plans and sections depicting yearly progress in the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

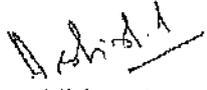
As the mineralized chrome zone still continues below the pit created at the end of 5th year, the excavation won't be backfilled. In addition to conventional opencast mining, it is proposed to carry out opencast mining by grab up to proposed depth of 60mtrs from ultimate pit limit of opencast quarry in Band I. The slopes of the dead ends of dump will be afforested with plantation.

8.3.2 Topsoil Management: The topsoil available at the site and its utilization may be described. The top-soil generated while expansion of quarry area and mining over virgin areas is estimated to be around 4.91 Lakh CuM, which will be used for concurrent afforestation over the dumps.

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

It is proposed to treat tailings generated from the existing COB plant along with the tailings from the proposed new COB plant under construction. Accordingly a site, adjacent to the F-Quarry of South Kaliapani chromite mine of size 1000m x 200m has been identified for construction of a tailing pond along with ETP. The pond will be lined with HDPE all along the pond bottom and slopes to prevent contamination of ground water. The basic engineering work of this proposed tailing pond has been completed by MECON, Ranchi.


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The location of the proposed tailing pond has been finalized on the basis of the following assumptions:-

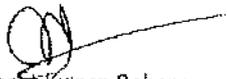
- Beyond the ultimate pit limit of Quarry - F (Band - IV).
- Topography of the area
- Minimal risk to the local community / inhabitants

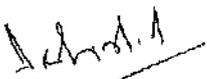
8.3.4 Acid mine drainage, if any and its mitigative measures.
Not applicable

8.3.5 Surface subsidence mitigation measures through backfilling of mine voids or by any other means and its monitoring mechanism. The information on protective measures for reclamation and rehabilitation works yearwise may be provided as per the following table.

Summary of year-wise proposal for item no. 8.3 for the FY 2015-16 to 2019-20

Items	Details	Prop. for 2020-21	Prop. for 2021-22	Prop. for 2022-23	Prop. for 2023-24	Prop. for 2024-25
Dump management	Area afforested (ha)	1 Ha				
	No of saplings planted	2500 Nos.				
	Cumulative no of plants	2500 Nos.	5000 Nos.	7500 Nos.	10000 Nos.	12500 Nos.
	Cost including watch and care during the year, Rs.	5,00,000/-	5,00,000/-	5,00,000/-	5,00,000/-	5,00,000/-
Management of worked out benches	Area available for rehabilitation (ha)	NIL	NIL	NIL	NIL	NIL
	Afforestation done (ha)	NIL	NIL	NIL	NIL	NIL
	No of saplings planted in the year	NIL	NIL	NIL	NIL	NIL
	Cumulative no of plants	NIL	NIL	NIL	NIL	NIL
	Any other method of rehabilitation (specify)	NIL	NIL	NIL	NIL	NIL
	Cost including watch and care during the year	NIL	NIL	NIL	NIL	NIL
Reclamation and Rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /stope wise	NIL	NIL	NIL	NIL	NIL
	Void filled by waste /tailings	NIL	NIL	NIL	NIL	NIL
	Afforestation on the backfilled area	NIL	NIL	NIL	NIL	NIL
	Rehabilitation by making water reservoir	NIL	NIL	NIL	NIL	NIL
	Any other means (specify)	NIL	NIL	NIL	NIL	NIL


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Items	Details	Prop. for 2020-21	Prop. for 2021-22	Prop. for 2022-23	Prop. for 2023-24	Prop. for 2024-25
Rehabilitation of waste land within lease	Area available (ha)	NIL	NIL	NIL	NIL	NIL
	Plantation carried out (within present retained ML area)	NIL	NIL	NIL	NIL	NIL
	Plantation carried out (within surrendered ML area)	NIL	NIL	NIL	NIL	NIL
	Check dams (within retained/ surrendered area)	NIL	NIL	NIL	NIL	NIL
	Method of rehabilitation	NIL	NIL	NIL	NIL	NIL
Others (specify)	Garland Drain	1100 mtrs	1100 mtrs	700 mtrs	1750 mtrs	1500 mtrs
	Retaining Wall	1200 mtrs	1300 mtrs	1300 mtrs	-	-
	Check Dam on Garland Drain	1 no	1 no	-	1 no	1 no
	Total cost for monitoring of Ambient Air Quality, water quality etc.	5,00,000/-	5,00,000/-	5,00,000/-	5,00,000/-	5,00,000/-

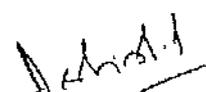
8.4 Disaster Management and Risk Assessment: This may deal with action plan for high risk accidents like landslides, subsidence flood, inundation in underground mines, fire, seismic activities, tailing dam failure etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of lessee to meet such eventualities and the assistance to be required from the local authority may also be described.

The objective of on-site disaster management plan for the mine is to in a state of perpetual readiness through training and development to immediately control and arrest any emergency situation so as to avert a full fledged disaster and the consequence of human and property damage and in the event of a disaster still occurring, to manage the same so that the risk of the damage to life and property is minimized.

OMC have a procedure for Emergency Preparedness and Responses. The salient features are elaborated as below:

- Emergency Response Organization
- Communication System
- Action on the site
- Facilities available at site
- Medical treatment for injured personnel
- Emergency Response Organization


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Following officers of the mines will be responsible for co-ordination in case emergency situated in any sections of the mine.

Person	Responsibility
Head of Department / Mine Agent	Site Controller
Mines Manager / Shift in-charge	Accident Controller / Communication Officer
Employee who gives the first information about the incident / accident	Primary Controller / Safety Officer
P & A Department (HOD)	Liaison Officer

Key Personnel and their responsibilities

Site Controller:

- The head of the department / mine agent shall have an overall responsibility for controlling the incident / accident and directing the personnel.
- To prepare a full proof plan for control of accident like, landslides, subsidence flood and other natural calamities.
- To inform statutory bodies of the State and Central Government.
- To inform communication officer about the emergency, control centre and assembly point.
- To provide all assistance and call for fire squad, security officer and other services required for removing / control of danger.
- To ensure that all necessary personnel assemble at assembly point.
- Make arrangement for medical treatment to the personnel injured seriously.

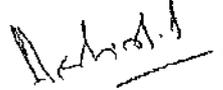
Accident Controller:

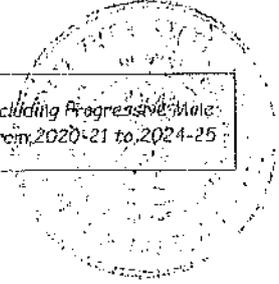
- Mines manager shall act as accident controller/ communication officer.
- Mock rehearsal of management plan prepared for accident.
- To withdraw men / machine from the affected area with priority for safety of personnel, minimize damage to the machines, environment and loss of material.
- To make a report based on the facts and figure and submit to the site controller.
- To communicate to the site in charge and make arrangement for first aid and transportation of the injured personnel.

Primary Controller:

- To inform the Accident Controller / shift in-charge from the nearest means of communication about the location and the nature of accident.
- To assist in clearing any obstruction in relief of accident.
- To carry out all instructions of accident controller.
- To provide first aid treatment and communicate to the shift in-charge.


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Capability of Lessee:

Following facilities are available at mine site:

- Public address system
- Telephone / Mobile handsets
- Runners / Messenger
- Emergency alarm
- Fire fighting equipment and accessories with trained manpower
- Full fledge hospital at a distance of 4 km from the mine.
- Training centre
- Fire tender
- Ambulance van
- Jeeps

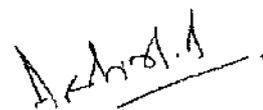
8.5 Care and maintenance during temporary discontinuance: An emergency plan for the situation of temporary discontinuance due to court order or due to statutory requirements or any other unforeseen circumstances may indicate measures of care, maintenance and monitoring of status of discontinued mining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

When the mine is temporarily discontinued due to any unforeseen circumstances the following care and maintenance shall be carried out:

- Notice to be served to all the concerned authority.
- Temporary fencing shall cover the mine entries.
- All access roads/openings to the pit / face shall be closed by parapet wall as per rule.
- Warning shall be displayed on the 'Notice Board' at appropriate places.
- Security personnel shall be posted at every danger point.
- No unauthorized person shall be allowed to enter into the mine without prior permission of the management.
- Garland drain shall be made all around the mine and dumps to prevent water flow towards mine for prevention of landslide/side fall and siltation etc.
- All men and machinery shall be withdrawn from the mine and shall be kept in a compound and safe place.



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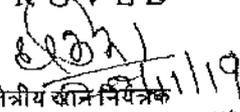
8.6 FINANCIAL ASSURANCE:

The amount calculated for the purpose of Financial Assurance based on the CCOM's Circular no. 4 dated 2006 is given below.

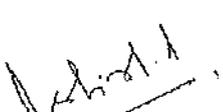
Sl No	Type of Land Use	Area of Land Use (in Ha)			The area considered as fully reclaimed and rehabilitated	Net area considered for calculation of financial assurance
		Area put into use at the start of plan period i.e. 30.06.2019	Addl Area required During Plan period upto 31.03.2025	Total Area at the end of the Plan period		
1	Excavated Area	135.785	91.957	227.742	0	227.742
2	Storage for top-soil	0	0	0	0	0
3	Overburden dump	120.751	23.733	144.484	0	144.484
4	Mineral storage / Mineral Reject ore	21.873	33.512	55.385	0	55.385
5	Infrastructure (Workshop, Admn Building, ETP, COBP etc)	10.259	23.845	34.104	0	34.104
6	Roads	12.082	15.17	27.252	0	27.252
7	Railways	0	0	0	0	0
8	Green belt	0	0	0	0	0
9	Tailing pond	0	20	20	0	20
10	Mineral separation plant	0	0	0	0	0
11	Township area	0	0	0	0	0
Total		300.750	208.217	508.967	0	508.967

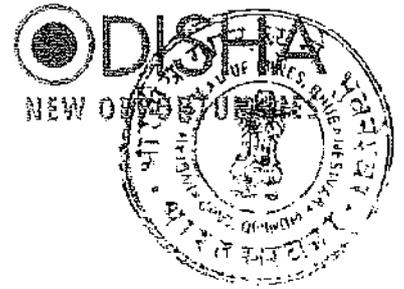
This being a Category "A" (Fully Mechanized) Mine, financial assurance for 508.967 Ha is calculated at the rate of Rs 3,00,000/- per Ha. This amounts to Rs 15,26,90,100/- (Rupees Fifteen Crores Twenty Six Lakhs Ninety Thousand and One Hundred) only. Copy of Financial assurance for an amount of Rs. 15,26,90,100/- (Rupees Fifteen Crores Twenty Six Lakhs Ninety Thousand and One Hundred only), vide Bank Guarantee no: IBG102511 of Federal Bank, copy of which is enclosed in Annexure 30.

APPROVED


 क्षेत्रीय खनिज नियंत्रक
REGIONAL CONTROLLER OF MINES
 भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
 भुवनेश्वर / BHUBANESWAR


 Subrat Kumar Behera
 Qualified Person


 A K Samantray
 Qualified Person



PART - B

9.0 CERTIFICATES / UNDERTAKINGS / CONSENTS (AS DETAILED BELOW)

A. CONSENT LETTER / UNDERTAKING / CERTIFICATE FROM THE APPLICANT

01. The Review of Mining Plan in respect of South Kaliapani Chromite Mine over an area of 552.457 Hacts in Village: Kaliapani, PO: Kalarangiatta, Dist: Jajpur, Odisha under Rule 17(2) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule, 2016 and Rule 23 of Mineral Conservation and Development Rules, 2017 has been prepared by qualified persons, Sri A K Samantray and Sri Subrat Kumar Behera.

This is to request the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar, to make any further correspondence regarding any correction of the Review of Mining Plan with the said qualified person at their addresses below.

Sri A K Samantray
Dy GM (Mining), Planning & Monitoring Cell
OMC House, Post Box No 34,
Bhubaneswar, Odisha 751001
Phone: (0674) 2393431, 2395689, 2393389
Fax: (0674) 2391629, 2396889, 2394772
Email: aksamantray@odishamining.in
Mobile No: 9937297144

Sri Subrat Kumar Behera
Manager (Geology), Planning & Monitoring Cell
OMC House, Post Box No 34,
Bhubaneswar, Odisha 751001
Phone: (0674) 2393431, 2395689, 2393389
Fax: (0674) 2391629, 2396889, 2394772
Email: beherasubrat1975@gmail.com
Mobile No: 9438478061

We hereby undertake that all modifications / updating as made in the said Review of Mining Plan by the said qualified person be deemed to have been made with our knowledge and consent and shall be acceptable on us and binding in all respects.

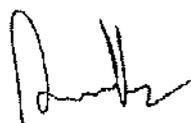
02. It is certified that the CCOM's circular No. - 2/2010 will be implemented and complied on receipt of the authenticated DGPS plan prepared by ORSAC and approved by the state government within a period of 6 months of the above.

03. It is certified that the Progressive Mine Closure Plan of South Kaliapani Chromite Mine of Odisha Mining Corporation Ltd over an area of 552.457 Hacts complies with all statutory rules, Regulations, Orders made by the Central or State Government, Statutory organization, Court etc which have been taken into consideration and wherever any specific permission is required the lessee will approach the concerned authorities.

The information furnished in the Review of Mining Plan and Progressive Mine Closure plan is true and correct to the best of my knowledge and records. It is to undertake that all the measures proposed in this Progressive Mine Closure Plan will be implemented in a time bound manner as proposed.

04. The provisions of Mines Act, Rules and Regulations made there under have been observed in the Review of Mining Plan over an area of 552.457 Hacts in Jajpur district in Odisha state belonging to South Kaliapani Chromite Mine, and where specific permissions are required, the applicant will approach the D.G.M.S. Further, standards prescribed by D.G.M.S. in respect of miners' health will be strictly implemented.

Place: Bhubaneswar
Date:


Managing Director & Nominated Owner
Odisha Mining Corporation Limited

The Odisha Mining Corporation Ltd.
(A Gold Category State PSU)

Registered Office : OMC House, Bhubaneswar-751001, India
Tel: 0674 2393431/2395689 Fax: 0674 2391629 2396889



CERTIFICATE FROM QUALIFIED PERSON

The provisions of the Mineral Conservation and Development Rules, 2017 have been observed in the preparation of the Review of Mining Plan for South Kaliapani Chromite Mine over an area of 552.457 Hacts, of M/s Odisha Mining Corporation Limited in Village: Kaliapani, P.O: Kalarangiatta, District: Jajpur of Odisha State and whenever specific permissions are required, the applicant will approach the concerned authorities of Indian Bureau of Mines.

The information furnished in the Review of Mining Plan is true and correct to the best of our knowledge.



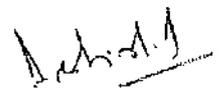
A K Samantray
Qualified Person



Subrat Kumar Behera
Qualified Person

Place: Bhubaneswar
Date: 06.11.2019

Subrat Kumar Behera
Qualified Person



A K Samantray
Qualified Person



भारत सरकार GOVERNMENT OF INDIA
 खान मंत्रालय MINISTRY OF MINES
 भारतीय खान ब्यूरो INDIAN BUREAU OF MINES
 क्षेत्रीय खान नियंत्रक के कार्यालय
 OFFICE OF THE REGIONAL CONTROLLER OF MINES



REGD. PARCEL
 Phone: 0674-2352463
 TeleFax: 0674-2352490
 E-mail: ro.bhubaneswar@ibm.gov.in
 Plot No.149, Pokhariput
 BHUBANESWAR-751020

No. MS/FM/37-ORI/BHU/2018-19 / 2461

Date: 23.01.2019

To

The Managing Director & Nominated Owner,
 M/s Odisha Mining Corporation Ltd.
 OMC House, Bhubaneswar- 751001

Sub: Approval of Review of Mining Plan of Sukrangi Chromite Mine along with Progressive Mine Closure Plan (PMCP), over an area of 382.709 ha in Jajpur district of Odisha State, submitted by M/s Odisha Mining Corporation Ltd under Rule 17 of Mineral Concession Rules, 2016.

- Ref: - i) Your letter No. 18259/OMC/PMC/18 dated 12.12.2018.
 ii) This office letter of even no. dated 13.12.2018.
 iii) This office letter of even no. dated 13.12.2018 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.
 iv) This office letter of even no. dated 28.12.2018.
 v) Your letter No. 637/OMC/PMC/19 dated 14.01.2019.

Sir,

In exercise of the power delegated to me vide Gazette Notification No. S.O. 1857(E) dated 18.05.2016, I hereby Approve the Review of Mining Plan including Progressive Mine Closure Plan of Sukrangi Chromite Mine over an area of 382.709 ha of M/s Odisha Mining Corporation Ltd in Jajpur district of Odisha State submitted under Rule 17 of Mineral Concession Rules, 2016. This approval is subject to the following conditions:

- I. The Review of Mining Plan is approved without prejudice to any other law applicable to the mine area from time to time whether made by the Central Government, State Government or any other authority and without prejudice to any order or direction from any court of competent jurisdiction.
- II. The proposals shown on the plates and/or given in the document is based on the lease map /sketch submitted by the applicant/ lessee and is applicable from the date of approval.
- III. It is clarified that the approval of aforesaid Review of Mining Plan does not in any way imply the approval of the Government in terms of any other provision of Mines & Minerals (Development & Regulation) Act, 1957, or the Mineral Concession Rules, 2016 and any other laws including Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 or the rules made there under, Mines Act, 1952 and Rule & Regulations made there under.
- IV. Indian Bureau of Mines has not undertaken verification of the mining lease boundary on the ground and does not undertake any responsibility regarding correctness of the boundaries of the leasehold shown on the ground with reference to lease map & other plans furnished by the applicant / lessee.

- V. At any stage, if it is observed that the information furnished, data incorporated in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.
- VI. If this approval conflicts with any other law or court order/ Direction under any statute, it shall be revoked immediately.
- VII. Validity of this document shall expire on 31.03.2024.
- VIII. Next Financial Assurance shall be due for submission on 31.03.2024.

Encl: - One copy of Review
of Mining Plan

भवदीय / yours faithfully,


(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

Copy for kind information to:-

1. The Director of Mines, Directorate of Mines, Government of Odisha, Heads of the Department Building, Bhubaneswar- 751001, Odisha along with one copy of Review of Mining Plan by REGISTERED PARCEL.
2. Shri Abinash Kumar Sahu, MECON Ltd, RM & Mining Section, P.o - Doranda, Ranchi - 834002.

(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

**REVIEW OF MINING PLAN
(UNDER RULE 17(2) OF MCR 2016)
&
PROGRESSIVE MINE CLOSURE PLAN
(UNDER RULE 23 OF MCDR 2017)**

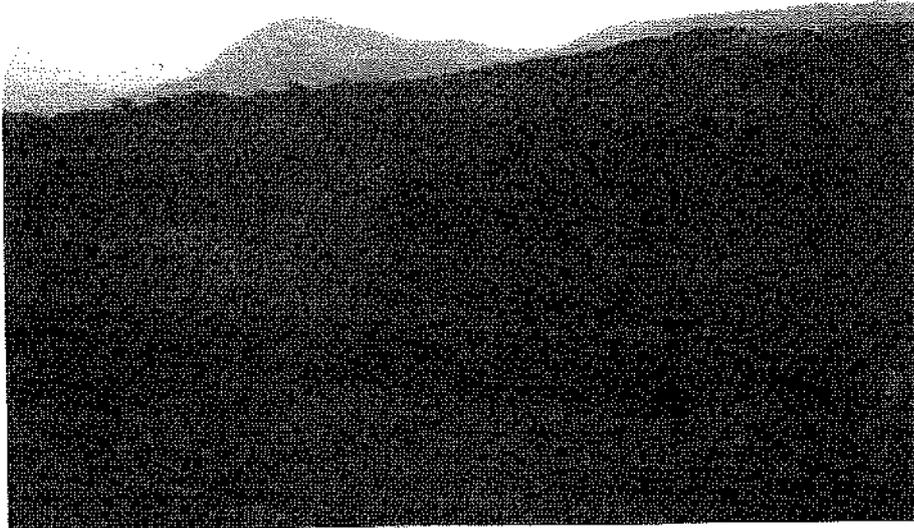


**VOLUME - I (TEXT)
IN RESPECT OF SUKRANGI LEASE
IBM REGISTRATION NUMBER - IBM/4269/2011
MINE CODE - 11ORI19008**

**LEASE AREA: 382.709 HECTARES
TOTAL FOREST AREA - 267.210 HECTARES
DIVERTED FOREST: 104.79 HECTARES, NON FOREST: 115.499 HECTARES**

**MINERAL: CHROME ORE
VILLAGE: SUKURANGI, SARUABIL, OSTAPAL, TALANGI, KAMARDA
TALUKA & P.S: SUKINDA, DISTRICT: JAJPUR, STATE: ODISHA**

**CATEGORY: FULLY MECHANISED (FM)
LEASE PERIOD: TO BE EXTENDED UP TO 19.09.2030
PLAN PERIOD: 1.4.2019 TO 31.3.2024**



**APPLICANT
ODISHA MINING CORPORATION LTD.
OMC HOUSE, BHUBANESWAR - 751001, ODISHA
E-MAIL: INFO@ODISHAMINING.COM
PHONE NO. 0674-2393431
FAX: 0674-2391629**

PREPARED BY

Qualified Person	Sunil Kumar Kar, Manager (Mining) OMC Ltd. OMC House, P.B.No. 34, Bhubaneswar, Odisha-751001	Abinash Kumar Sahu, Manager (GMMB) MECON Ltd, Doranda, Ranchi, Jharkhand - 834002
Phone	0674-2393431, 2395689, 9437523701 (M)	0651 - 2481093, 9470193717 (M)
Fax	674-2391629, 2396889, 2394772	0651 - 2482189, 2482214
E-mail	planningcellomc@gmail.com	mining@meconlimited.co.in



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.

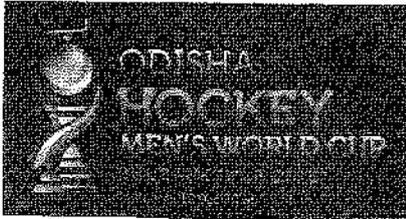


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(Sunil Kr. Kal, Mining Engineer)
(Qualified Person)


(Abinash Kr. Sahu, Geologist)
(Qualified Person)



CONSENT LETTER / UNDERTAKING / CERTIFICATE FROM THE LESSEE

1. The Review of Mining Plan in respect of Sukrangi Chromite Mine of M/s Odisha Mining Corporation Limited over an area of 382.709 hectares in village Sukrangi, Kaliapani, Taluka & PS : Sukinda in Dist., Jajpur of Odisha state submitted under Rule 17(1) of Minerals (Other than Atomic & Hydro Carbons Energy Minerals) Concession Rules, 2016 has been prepared by following QP's of M/s OMC Limited and M/s MECON Limited jointly.

This is to request the Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar to make any further correspondence regarding any correction of the Review of Mining Plan with the said qualified persons at their address as given below:

Sunil Kumar Kar Manager (Mining) M/S Odisha Mining Corporation Limited. OMC house, Post Box no.- 34, Bhubaneswar, Odisha, Pin – 751001 Tel : 0674-2393431, 2395689, 2393389, Fax : 0674-2391629, 2396889, 2394772 E-mail : planningcellomc@gmail.com	Abinash Kumar Sahu Manager (Mining) RM & Mining Division MECON Limited Ranchi – 834002, Jharkhand Tel. 0651 – 2483441, 2483645, Fax. 0651 – 2482189, 2482214 E-mail : mining@meconlimited.co.in
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- We hereby undertake that all modification / updating as made in the said Review of Mining Plan by the said qualified persons be deemed to have been made with our knowledge and consent and shall be acceptable on us and binding in all respect.
2. It is certified that the CCOM's Circular No. 2/2010 shall be complied by ORSAC, an agency authorized by the State Government.
3. It is certified that the Progressive Mine Closure Plan of Sukrangi Chromite Mine of M/s Odisha Mining Corporation Limited over an area of 382.709 hectares complies with all statutory Rules, Regulations, Orders made by the Central or State Government, Statutory Organization, Court etc., which have been taken into consideration and wherever any specific permission is required, the lessee will approach the concerned authorities.
- The information furnished in the Progressive Mine Closure Plan is true and correct to the best of our knowledge and records.
4. The provision of Mines Act, Rules and Regulations made there under have been observed in the Review of Mining Plan of Sukrangi Chromite Mine of M/s Odisha Mining Corporation Limited over an area of 382.709 hectares in Keonjhar district of Odisha State belonging to M/s Odisha Mining Corporation Limited and where specific permissions are required, the lessee will approach the DGMS. Further standards prescribed by DGMS in respect of miner's health will be strictly implemented.
5. It is to undertake that the Review of Mining Plan has been prepared for enhanced production beyond the existing EC limits but actual enhanced production from the lease area shall start only after the necessary clearances are obtained from MoEF & CC, Gol.
6. It is to undertake that all the measures proposed in this Progressive/Final Mine Closure Plan will be implemented in a time bound manner as proposed.

Place : Bhubaneswar

Date : 10.01.2019

Managing Director/Nominated Owner
M/s Odisha Mining Corporation Limited
OMC House, Bhubaneswar



ODISHA
NEW OPPORTUNITIES



Undertaking

This is to undertake that, bulk density test of grade wise ore & waste in respect of Sukrangi Chromite Mine shall be carried out within a period of six months. Necessary modifications shall be carried out in the approved Review of Mining Plan in light of the fresh Bulk density test reports, if required.

Mrs. Nirupama Das
AGM (Geology)

(Power of Attorney Holder)

M/s Odisha Mining Corporation Limited
OMC House, Bhubaneswar



CERTIFICATE FROM QUALIFIED PERSONS

The provisions of the Mineral Conservation & Development Rules 2017 have been observed in the preparation of **Review of Mining Plan for Sukrangi Chrome Ore Lease over an area of 382.709 Ha of M/s Odisha Mining Corporation Limited** in Jajpur District of Odisha State and whenever specific permissions are required, the applicant will approach the concerned authorities of Indian Bureau of Mines.

The information furnished in the mining plan is true & correct to the best of our knowledge.

Place: Bhubaneswar
Date: 10.01.2019

Name of the Qualified Person: Sunil Kumar Kar (Mining Engineer)

Place: Ranchi
Date: 10.01.2019

Name of the Qualified Person: Abinash Kumar Sahu (Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



LIST OF PLATES
(Volume-III)

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Plate No. – 4	Geological Plan
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Plate No. – 5A	Longitudinal Vertical Section
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Plate No. – 10	Environmental Plan
Plate No. – 11	Reclamation Plan
Plate No. – 12	Financial Assurance Plan
Plate No. – 13	Mine Drainage Plan


(Sunil Kr. Kar, Mining Engineer)
(Qualified Person)


(Abinash Kr. Sahu, Geologist)
(Qualified Person)

	REVIEW OF MINING PLAN SUKRANGI CHROME ORE LEASE (382.709 HA.) LESSEE: THE ODISHA MINING CORPORATION LTD.	
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LIST OF ANNEXURE

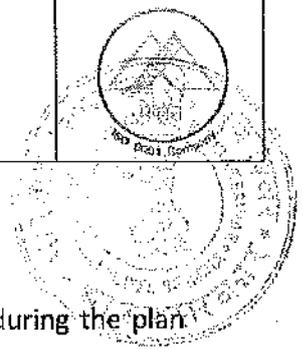
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 (Sunil Kr. Kar, Mining Engineer)
 (Qualified Person)


 (Abinash Kr. Sahu, Geologist)
 (Qualified Person)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



SUMMARY OF PROPOSALS:

Exploration:

There is proposal to drill 44 boreholes with a total meterage of 10360 m during the plan period.

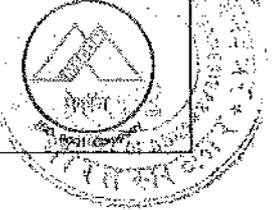
Year	BH no.	Northing	Easting	Collar RL	Core/ RC/ DTH	Meterage (m)	Inclination/Bearing
2019-20	PBH-1	2400	-200	144.0	Core	150	60/ N
	PBH-2	2200	-400	133.8	Core	400	60/ N
	PBH-3	2200	0	142.0	Core	150	60/ N
	PBH-4	2000	-600	134.0	Core	300	60/ S
	PBH-18	300	100	164.5	Core	300	60/ S33E
	PBH-19	300	200	169.3	Core	300	75/ S33E
	PBH-20	400	300	163.6	Core	250	60/ S33E
	PBH-21	300	500	176.8	Core	200	60/ S33E
	PBH-22	250	-600	165.6	Core	200	60/ S33E
	PBH-23	200	-700	168.7	Core	200	60/ S33E
	PBH-32	900	0	144.6	Core	300	60/ S33E
	PBH-33	1400	-600	147.2	Core	300	60/ S33E
	PBH-34	1400	-400	149.6	Core	300	60/ S33E
	PBH-35	1200	-600	146.3	Core	300	60/ S33E
	PBH-36	1200	-400	150.0	Core	300	60/ S33E
	PBH-37	1600	-600	140.7	Core	300	60/ S33E
	PBH-38	800	-600	149.2	Core	300	60/ S33E
	PBH-39	800	-200	146.2	Core	300	60/ S33E
	PBH-40	800	200	148.8	Core	200	60/ S33E
	2020-21	PBH-5	2000	-200	135.8	Core	400
PBH-6		2000	200	136.0	Core	150	60/ N
PBH-7		1800	-400	140.7	Core	200	90
PBH-8		1800	200	135.9	Core	400	60/ N
PBH-9		1300	200	142.0	Core	200	90
PBH-10		1200	400	143.2	Core	200	60/ S
PBH-11		1100	100	145.5	Core	200	90
PBH-12		900	400	143.5	Core	200	60/ N
PBH-28		-150	0	201.2	Core	200	65
PBH-29		-200	100	192.8	Core	200	65
PBH-30		-100	200	194.8	Core	200	55
2021-22	PBH-13	600	-100	149.3	Core	250	60/ S33E
	PBH-14	300	-600	152.5	Core	200	60/ S33E
	PBH-15	250	-400	165.8	Core	200	60/ S33E
	PBH-16	300	-200	162.6	Core	250	60/ S33E
	PBH-17	300	0	162.5	Core	300	60/ S33E
	PBH-24	0	-770	163.3	Core	200	90
	PBH-25	0	-400	172.7	Core	200	90
	PBH-26	0	0	184.3	Core	200	90
	PBH-27	0	400	187.8	Core	200	90
	PBH-41	609.5	2.4	152.9	Core	130	45/ S33E
	PBH-42	586.8	-196.3	153.5	Core	150	75/ S33E
	PBH-43	562	-394.5	155.6	Core	120	65/ S33E
	PBH-44	699.5	293.7	152.3	Core	160	45/ S33E

(Sunitl Kr. Kar) Mining Engineer

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



Excavation:

The year-wise development & production quantity for the proposed plan period is given below.

Year	Pit no.	Total tentative Excavation (Mill. CuM)	Top Soil (Cu. m)	OB/SB/IB (Mill. Cum)	ROM (Cum)		Mineral reject	ROM/Waste Ratio
					Ore (Mill. Cum)	Mineral reject (Mill. Cum)		
1	2	3	4	5	6	7	8	9
2019-20	Band -IV S	2.53	0.0	2.41 (Cr ₂ O ₃ <10%)	0.03 @ 47.07% Cr ₂ O ₃	0.08 @ 30.11% Cr ₂ O ₃	0.08	0.05
2020-21	Band -IV S	1.57	0.0	1.46 (Cr ₂ O ₃ <10%)	0.06 @ 48.43% Cr ₂ O ₃	0.05 @ 31.23% Cr ₂ O ₃	0.05	0.08
2021-22	Band -IV S	1.84	0.0	1.73 (Cr ₂ O ₃ <10%)	0.06 @ 48.44% Cr ₂ O ₃	0.05 @ 30.29% Cr ₂ O ₃	0.05	0.06
2022-23	Band -IV S	1.89	0.0	1.78 (Cr ₂ O ₃ <10%)	0.07 @ 47.38% Cr ₂ O ₃	0.04 @ 31.28% Cr ₂ O ₃	0.04	0.06
2023-24	Band -IV S	1.99	0.0	1.89 (Cr ₂ O ₃ <10%)	0.07 @ 48.70% Cr ₂ O ₃	0.03 @ 32.1% Cr ₂ O ₃	0.03	0.05

The year-wise development & production quantity in tonnes for the proposed plan period is given below.

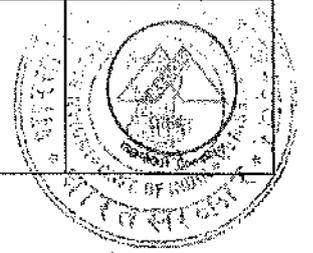
Year	ROM (+10% Cr ₂ O ₃) Production Qty., Million tonnes	Ore (+40% Cr ₂ O ₃) Production Qty., Million tonnes	Mineral Rejects(10-40% Cr ₂ O ₃) Production Qty., Million tonnes	Development Qty. Million Cu.m. (OB/IB)	Stripping Ratio (Cu.m./tons)
2019-20	0.30	0.109633	0.189660	2.41	8.03
2020-21	0.30	0.176716	0.123178	1.46	4.87
2021-22	0.30	0.197787	0.101442	1.73	5.77
2022-23	0.30	0.207656	0.091959	1.78	5.93
2023-24	0.30	0.235018	0.064142	1.89	6.30

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



Proposed Waste Dumping Programme

The details of the proposed waste dumps, their designed capacity, year-wise built with top/ bottom RL/ height attained with number of terraces are given in the table below:-

Year	Waste Dump No.	Qty. to be dumped in cubic meters	Dump Bottom mRL	Dump Top mRL	Total height (m)
2019-20	WD4	581576	193-205	225	20
	WD5	1832654	137-150	160	22
2020-21	WD5	1461090	160	170	32
2021-22	WD5	1727935	170	180	42
2022-23	WD5	1781589	180	190	52
2023-24	WD5	1888163	190	220	82

Environmental Protection Work

There is proposal for construction of settling tanks around the proposed dumps with the following details

PROPOSALS	2019-20	2020-21	2021-22	2022-23	2023-24	Total
RETAINING WALL (in m)	1165	1140	0	0	0	2305
GARLAND DRAIN (in m)	1179	1152	0	0	0	2331
SETTLING TANKS (in nos.)	6	2	0	0	0	8
PLANTATION (in ha)	14.48	5.85	7.09	4.50	4.28	36.19

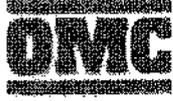
Proposed Area Utilisation:

The financial assurance calculation is given in the table below.

Sl. No.	Head	Area put on use (Ha) as on 1.10.18	Additional requirement upto 31.3.24 (Ha)	Total (Ha)	Area considered as fully reclaimed & rehabilitated (Ha)	Net area considered for calculation
1	Area under mining	27.3	16.01	43.31	0	43.31
2	Roads	6.24	-1	5.23	0	5.23
3	Infrastructure	6.22	9.86	16.08	0	16.08
4	Dumps	18.47	34.62	53.09	0	53.09
5	Mineral Storage	15.05	8.09	23.14	0	23.14
6	Railways	0	0	0	0	0
7	Township area	0	0	0	0	0
8	Tailing pond	0	0	0	0	0
9	ETP	0	1.1	1.1	0	1.1
Grand total		73.28	68.68	141.95	0	141.95

(Sunil Kr. Ray, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



INTRODUCTION

Sukrangi chromite lease of M/s OMC Ltd. is located in Jajpur Dist. of Odisha. The Sukrangi lease was executed on 20.9.1980 for a period of 20 years. Subsequently as per The Mines and Minerals (Development and Regulation) Amendment Act, 2015, Section 8A, the lease period of Sukrangi Chrome Ore lease has been extended upto 31.03.2020. The supplementary lease deed in support of the same has been enclosed as Annexure – 8A. Subsequent to the promulgation of Mineral (Mining by Government Company) Rules, 2015, the validity of lease will be further extended up to 19.09.2030. The documentary evidence in support of this (Memo. No. 6650/DM dated 25.09.2018 from Directorate of Mines, Odisha) has been enclosed as Annexure 8B.

The mine has been accorded environment clearance vide letter No. J-11015/409/2008-IA.II(M) dated 18.2.2010 for a production capacity of 1.30 lakh tonnes per annum (Copy enclosed as Annexure – 9). The copy of prescribed Terms of Reference (TOR) vide letter no. J-11015/348/2015-IA-II(M) from MoEF&CC for enhancement of production capacity from 0.13 MTPA to 0.3 MTPA has been enclosed as Annexure-10. The copy of consent to establish has been enclosed as Annexure – 11. Consent to operate have also been granted by the state pollution control board, Odisha under the Air & Water (Prevent & Control of Pollution) Act, which was valid upto 31.03.2020 (Copy enclosed as Annexure – 12).

The mine has also been accorded permission for diversion of 104.79 Ha. of forest land vide letter No F.NO-8-104/2000-FC dated 21.7.2011 (Copy enclosed as Annexure – 13). The copy of Stage-I approval letter for diversion of balance forest land of 162.42 Ha. is also enclosed as Annexure-13.

The last scheme of mining was approved by IBM for the period from 1.4.2014 to 31.3.2019 vide letter No. MS/FM/31-ORI/BHU/2013-14 dated 22.08.2014 (Copy enclosed as Annexure-14). Modification of review of mining plan for period 2018-19 under rule 17 (3) of MCR 2016, was approved by IBM vide letter no. MPM/FM/08-ORI/BHU/2018-19 dated 04.06.2018 (Copy enclosed as Annexure-14A).

The present submission is a Review of mining plan along with the progressive mine closure plan for its approval from Indian Bureau of Mines in respect of the extended period of the mining lease.

अनुमोदित
APPROVED

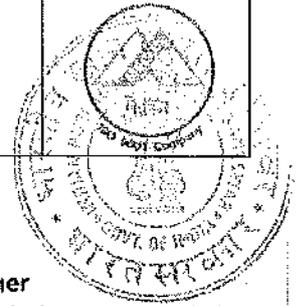
20/11/19
REGIONAL CONTROLLER OF MINES
भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
भुवनेश्वर/BHUBANESWAR

(Sunil Kr. Kar. Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



1.0 GENERAL

Shri R Vineel Krishna, IAS,
Managing Director & Nominated Owner
Odisha Mining Corporation Limited, Bhubaneswar, Odisha

Smt. Nirupama Das,
Power of Attorney Holder
Odisha Mining Corporation Limited,
Bhubaneswar - 751001, Odisha

a. Name of applicant/ lessee/ Rule 45 registration No.

A list of board of directors is enclosed as **Annexure-1**. A copy of the relevant extract from the minutes of the 416th meeting approved by Board regarding appointment of Nominated Owner of the mine is enclosed as **Annexure-2**. A copy of photo id & address proof of the nominated owner of the mine is enclosed as **Annexure-3**. A copy of the power of attorney in the name of Smt. Nirupama Das is enclosed as **Annexure-3A**. The number of state wise leases already held by the applicant/ applied for, indicating the type of minerals, areas, location etc is enclosed as **Annexure-6**.

Registration No. of OMC Ltd. under Rule 45

IBM/4269/30 ORI08087

Address

OMC House, Post Box No. 34
Bhubaneswar - 751001

District

Khurda

State

Odisha

Pin Code

751001

Phone

0674-2393431, 2395689, 2393389

Fax

0674-2391629, 2396889, 2394772

Gram

-

Telex

-

e-mail

info@orissamining.com; planningcellomc@gmail.com

b) Status of the applicant

Private Individual

No

Cooperative Association

No

Private Company

No

Public Company

No

Public Sector Undertaking

Yes

Joint Sector Undertaking

No

Other (pl.specify)

Not Applicable

Certificate of Incorporation is enclosed as **Annexure- 5**.

c) Mineral(s) which is / are include in the prospecting license (For fresh grant)

Not applicable

d) Mineral(s) which is / are include in the lease deed

Chrome Ore

e) Mineral(s) which the applicant /lessee intends to mine

Chrome Ore

(Sunil Kr. Das Mining Engineer)

(Abinash Kr Sahu Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



f) Name of Qualified Person under rule 15(1) of MCR, 2016 preparing Mining Plan:

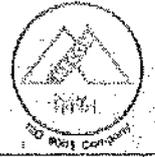
Name of the QP preparing the mining plan.	Sunil Kumar Kar, Mining Engineer	Abinash Kumar Sahu Geologist
Address	Sunil Kumar Kar, Manager (Mining) OMC House, P. B. No. 34, Bhubaneswar, Odisha - 751001.	Abinash Kumar Sahu, Manager (GMMB), Geology, Mining and Mineral Beneficiation Division, MECON Ltd, Doranda, Ranchi - 834002, Jharkhand.
Phone	0674-2393431, 2395689, 2393389	0651 - 2481093, 2483355
Fax	0674-2391629, 2396889, 2394772	0651 - 2482189, 2482214
e-mail	planningcellomc@gmail.com	mining@meconlimited.co.in
Telex	-	-
Registration No.	-	-
Date of grant / renewal	-	-
Valid upto	-	-

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



2.0 LOCATION AND ACCESSIBILITY

a) Lease Details (Existing Mine)

Name of Mine Sukrangi Chrome ore lease (Lease Area : 382.709 Ha)

Sukrangi lease is located in Jajpur district of Odisha state. It is located between 21° 02' 18.85056" & 21° 03' 46.98288" North Latitude and between 85° 47' 43.7708" & 85° 49' 21.74412" East Longitude. The location map is shown as Drawing No. MEC/Q78R/11/16/1. The lat. / long. Of all the boundary pillars are given below:-

PILLAR NO.	GEOGRAPHIC COORDINATES		UTM COORDINATES	
	LONGITUDE	LATITUDE	EAST	NORTH
1	85°47'43.77048"	21°03'25.10316"	374857.573	2328925.697
2	85°47'44.46060"	21°03'29.04012"	374878.406	2329046.6
3	85°47'45.65472"	21°03'34.76196"	374914.204	2329222.273
4	85°47'46.28184"	21°03'39.69216"	374933.444	2329373.732
5	85°47'47.60844"	21°03'46.98288"	374973.431	2329597.612
6	85°47'53.41164"	21°03'45.98496"	375140.685	2329565.669
7	85°47'57.68268"	21°03'45.29736"	375263.797	2329543.601
8	85°48'01.02888"	21°03'44.80704"	375360.256	2329527.788
9	85°48'05.74416"	21°03'43.98408"	375496.161	2329501.462
10	85°48'18.04068"	21°03'41.95512"	375850.592	2329436.414
14	85°48'33.78312"	21°03'32.30784"	376302.738	2329136.381
15	85°48'34.61580"	21°03'31.41648"	376326.567	2329108.794
16	85°48'36.36000"	21°03'28.98108"	376376.345	2329033.544
17	85°48'37.07532"	21°03'28.09980"	376396.785	2329006.29
18	85°48'40.23864"	21°03'24.23268"	376487.207	2328886.705
19	85°48'43.36884"	21°03'20.13408"	376576.613	2328760.001
21	85°48'52.34220"	21°03'08.37684"	376832.922	2328396.568
22	85°48'57.85164"	21°03'01.11924"	376990.290	2328172.236
23	85°49'01.22052"	21°02'56.70456"	377086.519	2328035.775
24	85°49'05.43324"	21°02'51.13212"	377206.854	2327863.537
25	85°49'08.52276"	21°02'47.08068"	377295.102	2327738.304
26	85°49'10.97184"	21°02'43.87920"	377365.074	2327639.343
27	85°49'11.91432"	21°02'42.65484"	377391.991	2327601.499
28	85°49'12.71856"	21°02'41.57448"	377414.966	2327568.108
29	85°49'15.91248"	21°02'37.42260"	377506.217	2327439.762
30	85°49'18.26328"	21°02'34.26720"	377573.353	2327342.241
31	85°49'20.00892"	21°02'32.00964"	377623.227	2327272.456
32	85°49'21.74412"	21°02'29.68440"	377672.792	2327200.597
33	85°49'17.79348"	21°02'29.06592"	377558.615	2327182.421
34	85°49'13.62468"	21°02'28.07232"	377438.045	2327152.758
35	85°49'08.95368"	21°02'27.11220"	377302.999	2327124.237
36	85°49'03.07416"	21°02'25.94580"	377133.019	2327089.621
37	85°48'59.66604"	21°02'25.13688"	377034.457	2327065.480
38	85°48'57.50460"	21°02'24.77472"	376971.976	2327054.812
39	85°48'53.59212"	21°02'23.95644"	376858.857	2327030.484
40	85°48'49.68180"	21°02'23.14176"	376745.790	2327006.273
41	85°48'44.31384"	21°02'22.10352"	376590.601	2326975.509
42	85°48'40.09860"	21°02'21.26472"	376468.735	2326950.623
43	85°48'39.04056"	21°02'20.94324"	376438.115	2326940.961
44	85°48'36.83880"	21°02'20.58324"	376374.479	2326930.374

Lat/long of any boundary point.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



45	85°48'35.97876"	21°02'20.38524"	376349.605	2326924.464
46	85°48'31.84056"	21°02'19.58928"	376229.971	2326900.887
47	85°48'28.28844"	21°02'18.85056"	376127.267	2326878.937
48	85°48'25.11072"	21°02'23.51328"	376036.61	2327022.984
49	85°48'22.33512"	21°02'27.64464"	375957.435	2327150.621
50	85°48'20.51172"	21°02'30.38136"	375905.427	2327235.157
51	85°48'19.65276"	21°02'31.62012"	375880.923	2327273.431
52	85°48'16.94988"	21°02'35.70648"	375803.838	2327399.665
53	85°48'12.10248"	21°02'42.98820"	375665.599	2327624.610
54	85°48'10.57968"	21°02'45.08232"	375622.128	2327689.331
55	85°48'07.97328"	21°02'49.11576"	375547.829	2327813.91
56	85°48'02.43036"	21°02'57.35076"	375389.738	2328068.319
57	85°47'55.54140"	21°03'07.48944"	375193.239	2328381.553
58	85°47'50.80416"	21°03'14.41620"	375058.103	2328595.566
59	85°47'48.80580"	21°03'17.39340"	375001.114	2328687.547
60	85°47'47.27580"	21°03'19.66068"	374957.488	2328757.588

Date of grant of lease	20.9.1980
Period/Expiry Date	As per The Mines and Minerals (Development and Regulation) Amendment Act, 2015, the lease period of Sukrangi Chrome Ore lease has been extended upto 31.03.2020. The supplementary lease deed in support of the same has been enclosed as Annexure-8A. Subsequent to the promulgation of Mineral (Mining by Government Company) Rules, 2015, the validity of lease will be further extended up to 19.09.2030.
Name of lease holder	Odisha Mining Corporation Limited
Address	OMC House, Post Box No. 34, Bhubaneswar – 751001, Odisha
Tel.	0674-2393431, 2395689, 2393389
Fax	0674-2391629, 2396889, 2394772
e-mail	planningcellomc@gmail.com, info@orissamining.com
Mobile	+919437523701

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

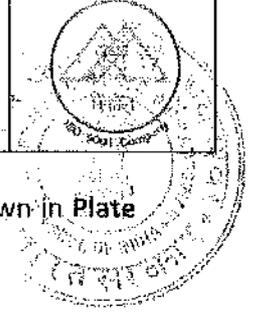
Forest (Specify)	Area, (Ha.)	Non Forest (Specify)	Area, (Ha.)
Demarcated Protected forest	14.609	Waste Land	12.825
Village Forest	252.601	Grazing Land	18.991
		Agriculture Land	80.440
Others	-	Others i.e. Hutments etc. (Specify)	3.243
Total	267.210	Total	115.499
Total lease area / applied area		382.709 Ha	
District & State		District : Jajpur, State : Odisha	
Taluka		Sukinda	
Village		Sukurangi, Saruabil, Ostapal, Talangi, Kamarda	
Whether the area falls under Coastal Regulation Zone (CRZ)? If yes, details thereof		No	

(Sunit Kr Kar Mining Engineer)

(Abinash Kr Sahu Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



Authenticated original lease plan of Sukrangi chrome Ore lease ore lease is shown in **Plate No 2.**

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

The approaches to the mine are as follows:

Rail :	Sukrangi mine lease area is connected with the nearest railhead at Jajpur – Keonjhar Road on Howrah – Bhubaneswar – Chennai line of SE railway by an all weather road of 53 km via Duburi and Tomka.
Road :	The leasehold area is linked with Daitari – Paradeep Express Highway. State Capital at Bhubaneswar and district head quarter at Jajpur Road are located at road distances of 150 km and 53 km respectively from Sukrangi leasehold area.
Air strips:	Bhubaneswar (Odisha) at a distance of 150 km

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

Sukrangi lease is located in Jajpur district of Odisha state. It is located between $21^{\circ} 02' 18.85056''$ & $21^{\circ} 03' 46.98288''$ North Latitude and between $85^{\circ} 47' 43.7708''$ & $85^{\circ} 49' 21.74412''$ East Longitude and is covered under survey of India topo sheet no. 73 G/16 or F45N16(New). Details of the GPS reading of boundary pillar co-ordinates has been given at para 2.0 (a) above.

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:

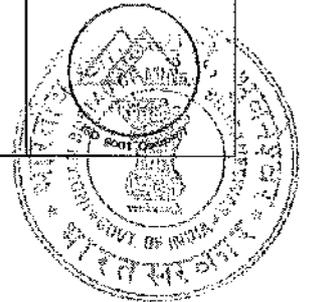
The same has been shown in the key plan as **Plate No. 1**


(Sunil Kr. Kar, Mining Engineer)


(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



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

3.1 Date and reference of earlier approved MP/ SOM:

The details of earlier approved Mining Plan/Scheme of Mining is given in the following table

Sl No.	MP/SOM/RMP	Rule	Period	Letter No.
1	Scheme of Mining	12 & 23 (B) (1) of MCDR 1988	2004-05 to 2008-09	BBS / Jaj / Cr / MS -156 Dt. 28-07-2006
2	Scheme of Mining	12 & 23 (B) (1) of MCDR 1988	2009-10 to 2013-14	MS / OTFM - MECH / 33 - ORI / BHU2009 - 10 Dt. 18-12-2009
3	Scheme of Mining	12 & 23 (B) (1) of MCDR 1988	2014-15 to 2018-19	MS / FM / 31 - ORI / BHU /2013-14Dt. 22-08-2014
4	Mod. to RMP	17 (3) of MCR 2016	2018-19	MPM/FM/08-ORI/BHU/2018-19583 Dt. 04-06-2018

Scheme of Mining for period 01.04.2014 to 31.03.2019 prepared under Rule 12 of MCDR 1988 was approved by IBM vide letter no. MS/FM/31-ORI/BHU/2013-14 dated 22.08.2014. The copy of the same has been enclosed at Annexure - 14

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

Modification of review of mining plan for period 2018-19 under rule 17 (3) of MCR 2016 for enhancement of production of ROM upto 0.3 Mtpa was carried out and the same was approved by IBM vide letter no. MPM/FM/08-ORI/BHU/2018-19 dated 04.06.2018. The copy of the same has been enclosed at Annexure - 14A.

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

Review of proposals made in the last approved Scheme of Mining and actual achievement for the scheme period w.e.f 2014-15 to till date for Sukrangi Chrome ore lease is given below.

i. Exploration:

Year	Planned Exploration	Actual Exploration	Reasons for Deviation	Remarks
2014-15	22Bhs=6500m	38hs=202.20m SKG/92 to 94	Due to want of Forest Clearance over entire Lease Hold Area	Band-III Area. Form I & J enclosed as Annexure-22
2015-16	10Bhs=2600m	7Bhs=396m SKG/95 to 101	-do-	
2016-17	10Bhs=2900m	7Bhs=370m SKG/102 to 108	-do-	
2017-18	14Bhs=2550m	5 Bhs completed =291.1m SKG/109 to 113	-do-	

(Sunil Kr. Khatu Mining Engineer)

(Abinash Kr. Sahu, Geologist)

OMC	REVIEW OF MINING PLAN SUKRANGI CHROME ORE LEASE (382.709 HA.) LESSEE: THE ODISHA MINING CORPORATION LTD.	
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Year	Planned Exploration	Actual Exploration	Reasons for Deviation	Remarks
2018-19 (Till 03.01.19)	24 Nos 5500m	7 Bhs completed =1968.3m SKG/114 & SKG/TR-01 to TR-06	-do-	

Borehole Logs of all the drilled boreholes in the lease area as well as Form I (Previously Form J) & Form J (Previously Form K) of all the drilled boreholes after 01.04.2014 have been enclosed as Annexure-22

ii. Mine Development and Exploitation

Overall Targets for Chrome Ore and Waste removal Year	Ore (+40% Cr ₂ O ₃), tonnes		Mineral Reject/Sub grade (10-40% Cr ₂ O ₃), tonnes		ROM (+10% Cr ₂ O ₃), tonnes		Waste, cubic meters	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
2014-15	130669	50225.83	68740	63855	199409	114080.8	721954	264113
2015-16	129624	129500.00	82904	-	212528	129500	561784	604486
2016-17	129799	129796.65	21958	21820	151757	151616.7	500203	311055
2017-18	129953	129999.00	75686	49300	205639	179299	670526	812555

Overall Targets for Chrome Ore and Waste removal

Year	Ore, Million tonnes		Sub grade, Million cubic meters		Waste, Million cubic meters	
	Planned	Actual	Planned	Actual	Planned	Actual
2018-19 (1.4.18-30.09.18)	0.30	0.061	0.048	0.057	2.32	0.095

iii. Afforestation:

Year	No. of Saplings	
	Planned	Actual
2014-15	500	1500
2015-16	500	300
2016-17	500	200
2017-18	500	1500
2018-19 (1.4.18-30.09.18)	500	1560

(Sunil Kr. Kdr. Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
LESSEE: THE ODISHA MINING CORPORATION LTD.



iv. Land Reclamation and Rehabilitation:

No proposals made

v. Waste dump management:

Achievement against the following proposal of waste dump management with reasons for deviation

Year	Waste generated, in cubic meters	Location, along name & quantity in cu.m	Achievement	Reason for Deviation
2014-15	721954	WD1-721954	WD1-264113	Due to constraint of approach road and law and order situation dumping operation could not be carried out in the proposed WD-2/OD1/OD2 area
2015-16	561784	WD1-561784	WD1-604486	
2016-17	733888	WD2-733888	WD1-311055	
2017-18	670526	WD2-670526	WD1-812555	
2018-19 (1.4.18-30.11.18)	13453282	OD-1 & OD-2	WD1-294794	

The details of the protective measures envisaged for the dump with year wise proposed reclamation/ rehabilitation measures are given below:-

Year	Waste Dump No.	Length of garland drain, m	Length of retaining wall, m	No. of settling pits
2014-15	WD1	92	92	01
2015-16	WD1	-	-	-
2016-17	WD2	609	900	01
2017-18	WD2	-	-	-
2018-19	OD-1 & OD2	-	-	08

Achievement till 30.11.2018:

Dump name	Existing waste dump	
	Dimensions of Retaining wall (L x H x W in m)	Dimensions of Garland Drain (L x D x W in m)
WD-5 (Proposed)	1675 x 2 x 1.5	1820 x 1.5 x 1.5
WD-4 (Proposed)	710 x 2 x 1.5	710 x 1.5 x 1.5
SG Dump	370 x 2 x 1.5	370 x 1.5 x 1.5
OB DUMP-3	415 x 2 x 1.5	415 x 1.5 x 1.5

There are 17 No. of Settling Tanks constructed around the existing waste/Mineral rejects dumps. The dimension of settling tank is 4.5m x 1.8m x 1.8m.

All the above existing protective measures have been shown in Reclamation Plan in Plate No. 11

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(Abinash Kr. Sahu, Geologist)



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3.4 Give status of compliance of violations pointed out by IBM

The copy of violation letters from IBM and their compliances have been enclosed as Annexure-15.

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

Not applicable

3.6 In case the MP/SOM is submitted under rules 9 and 10 of the MCDR'88 or under rule 17(3) of the MCR'2016 for approval of modification, specify reason and justification for modification under these rules:

The present submission is a Review of Mining Plan under Rule 17(2) of MCR 2016 along with the Progressive Mine Closure Plan under Rule 23 of MCDR 2017 for its approval from Indian Bureau of Mines for the period 2019-20 to 2023-24 in respect of the extended period of the mining lease.

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PART - A

1.0 GEOLOGY AND EXPLORATION

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

i. Physiography & Drainage

The mine lease is located in funnel shaped Sukinda Valley. This valley extends from east to west with the open end facing west. The northern part of the Sukinda Valley is marked by the Daitari hill Range which rises very sharply from about 140 m above mean sea level to more than 600 mRL. There are peaks exceeding 800 mRL in the Daitari hill. At places Daitari hill is marked by very steep slopes including some bare rocky cliffs. The southern part of the valley is bounded by the Mahagiri hill range, which too is very steep and rises to more than 600 mRL. In the Mahagiri hill also there are a few bare rocky cliffs. The hills are densely forested.

The mine lease is located at the foot of the Mahagiri hill range and slopes from south-east to north-west. The south-eastern corner of the lease hold is marked by a steep hill rising up to 254 mRL. Subsequently the slope becomes gentler. The north-western corner of the lease is at about 130 mRL. In the north-western part of the lease, there is a small mound rising to 154 mRL. In general, the lease area has more or less flat topography between 140 m and 160 mRL and slopes from north to south.

There is no national park, biosphere reserve, sanctuary, habitat for migratory birds, archeological site, defense installation and airports within 10 km of the periphery of the lease area. The area does not fall in seismically active or landslide prone zone.

The area has sub-dendritic pattern of drainage. The principal drainage channel of the Sukinda valley is Damsal Nala, which flows from east to west along the length of the valley. Several seasonal and perennial channels flow down from Daitari hill range and the Mahagiri hill range to join Damsal Nala. Damsal Nala gradually bends towards the south-west and on emerging from the Sukinda valley turns south to join the Brahmani River. Damsal Nala flows through the northern part of the lease. There are also a few small seasonal drainage channels in the lease which drain into Damsal Nala.

iv. Vegetation

The area consists of Forest Land (part of Mahagiri P.F. and Undemarkated), quarries and dumps, agricultural land and perennial rivulets.

In this part of the Mahagiri P.F., the forests consists of grasslands with widely spaced mature trees, of which, Sal (*Shorea robusta*), Asan (*Terminalia tomentosa*), Mahul (*Madhuca indica*), Mango (*Mangifera indica*) and Kendu (*Diospyros melanoxylon*) are prominent.


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The forest in the core zone is classified as Northern Tropical Dry Deciduous Forests. The core zone is a part of Mahagiri P.F. In these part of the forest area, which will be broken under the present expansion programme, the average tree density is very low (about 20 - 25 trees/ha due to development of grasslands) to moderate (~ 800 trees/ha). Most of the trees are mature with height ranging from 1.5 to 15 m and girth class ranging from 0.9 m to 1.5 m. Sal (*Shorea robusta*), Dhaura (*Anogeissus latifolia*) and Asan (*Terminalia tomentosa*) are the most dominant species with Kangara (*Xylia xylocarpa*), Bahada (*Terminalia bellirica*), Kurum (*Adina cordifolia*), Jamu (*Syzygium cuminii*), Mahul (*Madhuca indica*), etc. as common associates.

v. **Climate & Rainfall of the Lease Area**

The study area lies in tropical region where climate is characterised by very hot summers and mild winters. Summer is typically from March to June when daily average maximum temperature ranges from a maximum of 39°C during daytime to a minimum of 22°C at night. Winter is from November to February when daily average maximum temperature during day time goes up to 32°C and minimum temperature at night becomes as low as 15°C.

The average annual rainfall as recorded at IMD observatory at Cuttack is 1475.3 mm. The Southwest monsoon lasts from mid June to mid September and the area gets more than 75% of the annual rainfall during this period.

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

Regional Geology

The Sukinda Ultramafic complex forms a part of the unfossiliferous metamorphosed Pre-Cambrians of peninsular India and one of the most important ultramafic complexes with huge deposit of chromite, located near the east coast of India in the tri-junction of Jajpur, Keonjhar and Dhenkanal districts in Odisha state. The chromite bearing ultramafics of Sukinda area have intruded into the Precambrian metamorphites in the form of a lopolith. The intrusive has a width of 2-5 km and extends for about 20 kms in a ENE-WSW direction from Kansa in the east to Maruabil and beyond in the west and situated between latitude 20° 57' 38" N to 21° 04' 58" N and longitude 85° 38' 36" E to 85° 52' 18" E featuring in Survey of India Toposheet No. 73 G/12, G/16, H/9 and H/13, The area is bounded by Daitari hill ranges in the north and Mahagiri hills in the south. (Plate-02).The ultramafic body is consisting essentially of magnesite rich Dunite -Peridotite with chromite bands and subordinate amount of pyroxenite which is devoid of chromite mineralization. The Pyroxenite (Photograph-04) is relatively fresh which is very prominent in the OMC leases having a sharp contact with mylonitised chert bands on the surface at some places. The Dunite-Peridotite members are highly serpentinised giving rise to a

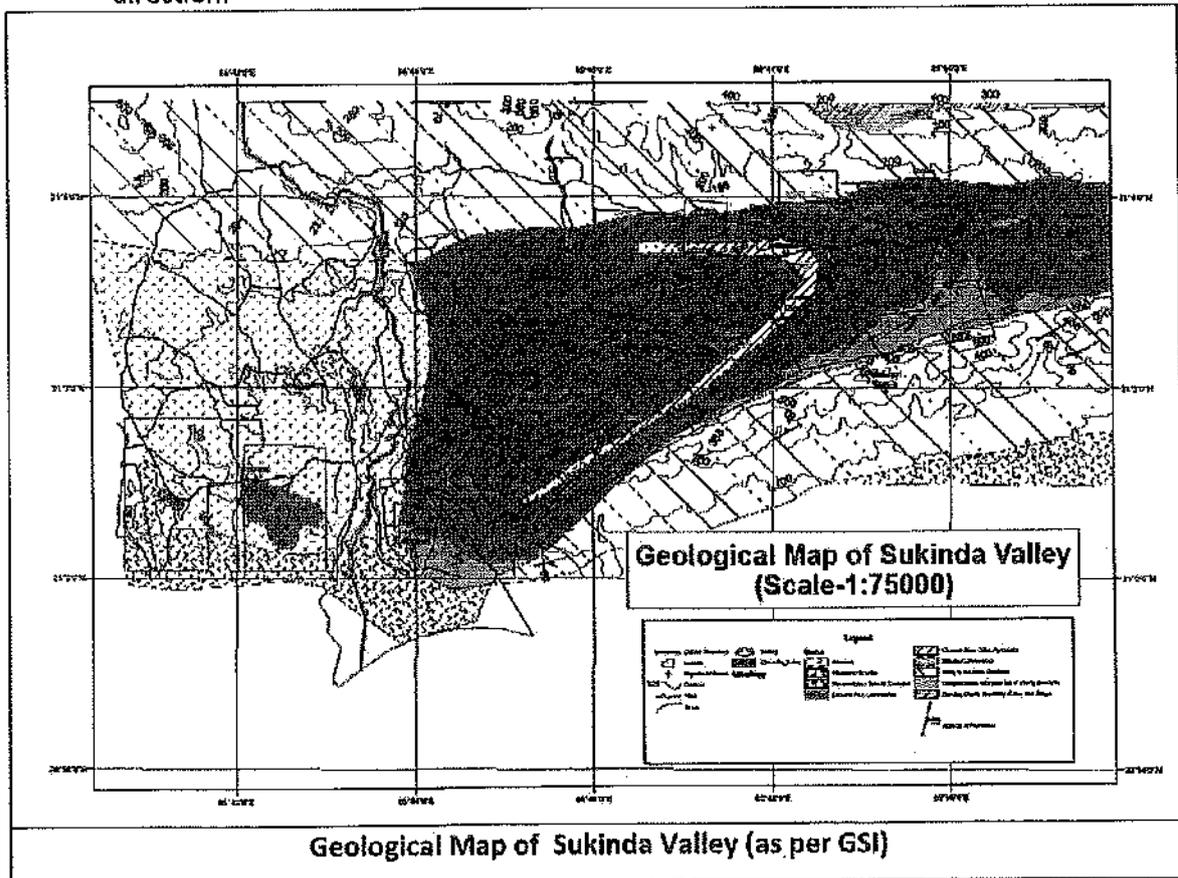


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nickeliferous laterite profile of variable thickness. Small exposures of dolerites are found in Kathapal & Bhimatangar areas. Besides, several dolerite dykes have intruded into the ultramafics, quartzites as well as the granites. This happens to be the last stage of igneous activity in the Precambrian terrain.

There are six chromite bands in the area occurring at different stratigraphic levels, out of which Band-I is the thickest and continuous for a greater distance. Band-II and Band-IV are continuous in nature but having less thickness in comparison to Band-I. However, Band-III, band-V and band-VI are not continuous in nature; these bands are prominent in some of the OMC leases. The six bands are at about 300 mtrs an average apart from each other. The maximum elevation of the area is 250 MRL & minimum is 130 MRL. The overall slope is from South-East to North-West. The Damsala nala is the main drainage system of the area flowing from west to east direction.



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REGIONAL STRATIGRAPHY

The stratigraphic succession given by K.L. Chakrabarty, T.L Chakrabarty and Tapan Mozumdar (1980) has been given below

Alluvium
Laterite (Nickeliferous at places)
Dolerite
Granite and Granite gneiss
Orthopyroxenite (Enstatite)
Ultramafic with chromite lode
Sandstone (Quartzarenite) Kolhan Group?
Conglomerate

----- **Unconformity** -----

Iron Ore Group -Banded Iron formation with inter banded Volcanic tuff and alteration production
-Quartzite with intraformational conglomerate
----- Basement not exposed -----

- 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

The Sukrangi chromite deposit forms a segment of the synclinally folded southern limb of the Sukinda ultramafic complex. Three ore bodies (i.e. Band-III, IV and V of Sukinda valley) are identified in this lease hold running parallel to each other for more than 2 K.M in strike direction. The stratigraphic sequence of the lease is as follows:

Alluvium : Brown, Ferruginous and chromiferous soil.
Laterite : Chromiferous, Ferruginous silicified limonite and chert.
Basic rocks : Dykes of Gabbro, Chrome ore bodies, altered serpentinite and Dunite.
Mahagiri Quartzite : Talus of ortho and sericite quartzites.

Chrome ore bodies:

Out of six bands encountered in the Sukinda valley, the Sukrangi M.L consists of five subparallel lodes. These are ore Band-III(S) & (N), Band-IV(S) & (N) and Band-V occupying different stratigraphic levels. They are dipping sub-vertically towards N-W with pinch and swell structure. They are suffered with drag folds and minor faults frequently.

They are alternated by limonitised and silicified rocks.

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The areal extent of the chrome ore bands occurring in the Lease area are shown in the table below.

Band	Grid extent of Mineralized Area	
V	-560E to 460E	-445N to -405N
IV-South	-780E to 595 E	33.9 N to 373N
III-South	-673E to 578 E	430N to 667N
III-North	467E to 550E	834N to 917 N
IV-North	385E to 470 E	1785N to 1915 N



BAND NO – III

The Band No. III, so called SK – I ore body of Sukrangi lease area is centrally located in the lease hold. This band is now represented by a chain of four old quarries (Quarry – F, G, H, & I). This band consists of one main ore band running about one Km in a N 50°E– S50°W strike, dipping 60° to 65° N-W. The width of the ore body exposed in the quarry sections is about 0.8 mtrs. But the maximum width recorded in DMG bore hole intersections is only 1.5 mtrs. to 2.0 mtrs. The top of the ore body is covered by a thick float zone having a width of 2 to 3 mtrs. Besides the main ore zone, two more ore bands are associated. At places there is a widening of the ore body may be due to drag effect, parallel strike joints are noticed in these out crops.

BAND-IV (SOUTH)

The Band No. IV (S), so called SK-III(S) ore body of Sukrangi is located at southern part of the lease hold. This ore body consists of three sub parallel lodes, two of which are persistent over the entire strike length of 1100 mtrs. Out of the above two persistent bands, the southern band contains Cr₂O₃ with high silica and maintains an uniformity in grade at depth, is called grey ore seam. The northern persistent band contains low to medium Cr₂O₃ with low silica and fluctuates in grade towards depth, is called brown ore seam. Both the bands are friable in nature. These ore bodies are being worked in A-C and D-E quarries. In width it ranges from 4 mtrs. and in depth it becomes thicker and range upto nearly 20 mtrs. width. This band is often faulted and juxtaposed against chert bands. The strike of the Ore body is N55°E-S55°W, dipping 50° to 70° N-Westerly and becomes almost vertical at depth. The hanging wall contact appears to have been affected by a vertical strike slip fault as noticed by the slicken sided surface. Numerous minor shear fractures are also seen within the ore body in the quarry sections filled with colored talcose material.

Besides that, the ore bodies shows pinch and swell structure both laterally and vertically. The ore body comprises of medium grained, brown friable with abundant intergranular limonite, chlorite and white cryptocrystalline silica. But at depth they become more homogeneous and free from talcose material.

BAND NO. IV (NORTH)

Band No. IV (N) / SK-II (North) ore body Sukrangi is the northern most band of the lease area. The ore band is located at about 200 mtrs. North of Damsal Nala Band-IV (S) / SK-II(S) consisting of 3 sub parallel lodes runs in NE direction beyond Sukrangi lease hold through M/s.M. L. Jain lease hold and turns towards NW following then

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northern flank of plunging fold. It passes through Tailangi lease (IDC) and then re-enters Sukrangi lease hold which is named as Band-IV (N) / SK-II (N) ore body.

BAND-IV (N) ore body consists of 2 sub parallel lodes and out of this one lode continues for a length of 200 mtrs. from NE boundary line to north boundary line of Sukrangi M.L. It is proved by putting 6nos. of boreholes. One other lode is encountered in cross sections 163 E & 213E. Out of two lodes, the northern discontinued lode contains low to medium Cr_2O_3 with high silica. The chromite lodes are mainly friable in nature with few hard lumpy patches. The ore body which continues towards east is being mined by adjoining IDC. The width of the ore bodies ranges from 3 to 7 mtrs. It consists mainly of marginal grade ore bands and few medium to high grade bands with intermittent limonite partings.

The strike of the ore body is $N 65^{\circ} E-S 65^{\circ} W$, dipping 60° to 70° towards NW, the ore body comprises of hard lumpy, spotted, grey ore and medium grained friable, brown ore.

BAND NO. V

The Band no. V ore body of Sukrangi area is southern most ore band of sukurangi area and is at the northern foot hills of Mahagiri. It consists of a single thick (max-11mt) ore band running in around $N 50 E-S 50 W$ strike for 1km. A big patch of chromite float exposure is noticed along the strike of the ore body. Two ore zones are noticed in borehole sections. The ore zones within the weathered formation are marginal to low grade (10-42% Cr_2O_3) & at lower depth in hard formation only dissemination zones of marginal grade (10-30% Cr_2O_3) are encountered. In general, the dip of the ore body is NW and become vertical at depth.

Limonite :

The limonitised rocks identified in the quarries contain green serpentines, talc and cryptocrystalline silica. At places, there are cryptocrystallines, silica crisscrossed by numerous fine veinlets of ferruginous materials. Pure limonites with very few or no grains of either chromite, serpentinite or talc are present in certain place. These are yellow to yellowish brown in colour; spongy and light in weight are found to be nickliferous. Often there is a gradational contact with the ore body when gradual increase in chrome content, the chromiferous limonite passes into the ore. Only pocket type chert with cryptocrystalline silica is present with ferruginous matrix. These chert veins may have been originated during serpentinisation or due to differential weathering.

Dykes :

The Gabbroic rocks are found north of the Band-III of Sukrangi lease. These are also found as an intrusive into Mahagiri Quartzites on the southern part of lease hold areas. These are having a typical gabbroic texture composed of subhedral crystals of Augite and Plagioclase. Few grains of hypersthene are often noticed.

STRUCTURE:

The M.L area is covered with laterite and soil for which the detail structural study is difficult. The indirect study from the limited quarry openings is most reliable to depict the evolutionary history. The structures are due to hydrothermal action but

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relicts of structure. Minor faults and drag folds are noticeable in the AC quarry. Slickensides are noticed. Minor slip planes are invariably talcose and highly sheared.

MINERALISATION:

The chromite mineralisation is only confined to the eastern part of the area and lithostratigraphic control is the only control of ore localisation. The chromite mineralisation is confined to dunite peridotite suit of rocks. The limonite of the hanging wall and footwall side of chromite is a source of nickel and cobalt. Nickel mineralisation is also partly controlled by structural behaviour governing to locie of the ore deposit.

Summarized information of the chrome ore bands present within the lease area														
Number of Regional Chrome Ore bands present within the lease area	Name of the Regional Chrome ore Band present within the lease area	Local nomenclature of the Regional ore band within the lease area	Location (Quarry Name/Pit) etc:	Length of the Chrome Ore band (m)	Width of chrome ore band (m)	Explored depth (in mRL)	Level of Exploration as per UNFC of the chrome ore bands	Strike direction. Dip direction and dip amount	Present UPL (in mRL) for opencast method of mining	Nature of chrome ore band (physical description)	Chemical analysis of chrome ore band (Grade % From/ to)	Gangue minerals associated with chrome ore band	Control of mineralization	Associated Lithology
1	III	III North	III North	115	1.5-2.0	120.32	G1	N75°W-S75°E (50-80 SW)	122	medium grained,	4.03/52.77	Limonite, Chert	Lithostratigraphic	Dunite Peridotite
		III South	III South	1400	1.5-2.0	45.97	G1	N55°E-S55°W (50-70 NW)	98	medium grained,	5.56/53.12			
2	IV	IV North	IV North	150	3-7	83.2	G1	N70°W-S70°E (50-80 SW)	116	Lumpy, medium grained,	7.29/51.07			
		IV South	IV South	1500	4-20	55.61	G1	N55°E-S55°W (50-70 NW)	98	medium grained, brown friable	2.87/62.9			
3	V	V	V	1000	11 (Max)	-7.5	G1	N 50 E-S 50 W (70-80 NW)	98	weathered Fine grained	0.26/56.2			

The resource calculation of the different bands occurring in the ML area has been done on the basis of threshold value of 10% Cr₂O₃.

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A. (i) Name of prospecting /exploration agency :

1. Odisha Mining Corporation Ltd.
2. Directorate of Mining and Geology, Govt. of Odisha
3. Maheswari Mining Pvt. Ltd
4. Thriveni Earthmovers Private Limited

(ii) Address

1. Geology Division, Odisha Mining Corporation Ltd.
OMC House, Post Box No. 34
Bhubaneswar – 751001
2. Director Geology
Bhu-Bigyan Bhawan
Bhubaneswar- 751 001
Odisha, India
3. 2,CLM lane, Raniganj-713347, District- Burdwan, West Bengal(India)
4. 22/110, Greenways Road, Fairlands Salem 636016, Tamil Nadu, India

(iii) E mail addresses and phone no.

1. M/s Odisha Mining Corporation Ltd.
E-mail : info@orissamining.com,
Phone – (0674) 2393431, 2395689, 2393389
2. Directorate of Geology
E-mail : dir.geology@orissaminerals.gov.in,
Phone : 0 674 2392374
3. Maheswari mining pvt. Ltd
Email Id- info@maheshwaree.com
Website- www.maheshwaree.com
Phone No- +913412445446, 2445210
4. Thriveni Earthmovers Private Limited
Email Id- info@thriveni.com
Website- www. thriveni.com
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- e) Details of prospecting/exploration already carried out:
i) Number of pits and trenches indicating dimensions, spacing etc along and across the strike/ foliation with reference to geological plan.

The Sukarangi chromite deposit has been explored in detail by the Directorate of Mining & Geology, Govt. of Orissa and the Orissa Mining Corporation Ltd. The details of exploration carried out is described in detail and are as below.

(a) Topographic Survey

The topographic survey of the area has been done with a contour interval of 20 m. grid lines and taking RL at 5m interval. The entire work carried by the Directorate of Mining & Geology (DGM), Govt. of Orissa.

(b) Geological Mapping

The entire lease area was covered in 1:2000 scale and surface geology was mapped by tape and compass method. The surface exposure and ore bodies in the old working are sufficient enough to prepare the exploration planning. The lease area was contoured at an interval of 2 m., by fixing 20m grid line.

(c) Exploratory Mining

In the lease, a total 28 trenches were given by DGM during their exploration period with a total 2100 CuM excavation. Out of that 9 trenches were given on SK – II ore body to trace the continuity of the grey friable ore and brown friable ore zones. Four more trenches were given in SK – I. Besides that, 15 trenches were given in the Mahagiri Base to trace the strike extension of the SK – III ore body.

(d) Core Drilling

In order to delineate subsurface geometry of various chromite lodes and to decipher the ore lodes occurring in various ore cluster extensive drilling programme has been undertaken in the Sukrangi leasehold area in a phased manner. Detailed drilling in quarry F, AC and DE have been undertaken and qualitative and quantitative reserves delineated.

(e) Deviation test

All the drill holes have been checked for deviation by digital borehole survey camera. The deviations have been measured at intervals of 30 m among the boreholes. Deviation vary from 0° to a maximum of 5°.

(f) Sampling

The drilling hole core samples have been collected to a maximum length of one meter. Disseminated zones present at parting within an ore zone were sampled separately. Drill cores were splitted longitudinally into exact halves and one half was preserved in the core box. The other half was crushed and pulverized to (-) 100 mesh size and final sample is prepared. A total no of 1368 primary samples including limonite and chert analysed during the phase – I of exploration. From the quarry faces, at intervals of 50m, wherever possible, samples were drawn from channels cut across the ore body. One samples was taken for each meter and a composite representing the entire width has also been collected. A total of 60 composite sample have been prepared to represent each three meters of vertical thickness. During phase – II, III and IV of the exploration similar norms have been adopted for the sampling for both chromite and nickliferous – limonite. In all 601 primary and 36

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composite chromite samples were collected to represent different ore zones in different drill holes. Besides 17 bulk samples have been collected from the quarry faces for chemical test. In addition to that, adequate representative samples were drawn in course of exploration. In the 1st and 2nd phases 59 and 385 numbers of samples were drawn from quarry faces.

(g) Chemical analysis

The sample of chromite ore drawn from the drill hole cores and the quarry sections have been analysed at the departmental laboratory of the DMG, Orissa at J.K Road. Ingredients for Cr₂O₃, Fe₂O₃, SiO₂, MgO and Al₂O₃ were analysed in the laboratory. Few samples have also been analysed in other laboratories to check the reliability of analytical data.

The recent chemical analysis reports of samples from NABL accredited laboratory has been enclosed as Annexure – 17.

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.**

A summary of the exploration carried out for G1/G2 areas indicating mapping, drilling (No./ spacing), sample drawn/ analyzed etc is given in the table below:-

Sukrangi lease area	Borehole data						
	No. & spacing	Max. depth	Min. Depth	Grade From/ to (% Cr ₂ O ₃)	Samples drawn and analyzed	Level of exploration	Depth (in m)
Band-IV-S (DMG-3 to 13, 16,18,22, 28, 29, 44 to 49, 50 to 69, SKG/9, 10 to 18, 25 to 44, 60,61, 86)	75 Nos (50m x 25m)	330m	13.5m	2.87/62.9	1868	G1	7204.12
Band-IV-N (SKG/19 to 24)	6 Nos	94m	18m	7.29/51.07	53	G1	344.00
Band-III-S (DMG-14,15,17,19, 24,25,26,27,32,33, 35 to 41,43 SKG/57 & 59,92 to 113)	42 Nos (100m)	180m	35.1m	5.56/53.12	302	G1	2985.40
Band-III-N (SKG/1 to 8, DMG-71)	9 Nos. (25m x 25m)	72m	21.4m	4.03/52.77	50	G1	490.90
Band-V (DMG-20,23,30,31, 34, SKG/62 to 91	34 Nos. (100m x 50m)	330m	29.95m	0.26/56.2	636	G1	7993.10
Barren area proving SKG/45 to 56 & 58	13 Nos (200m x 200m)	250m	---	---	32	G2	1495.00

The grade range in different chromite bands varies from 0.26 to 62.9% Cr₂O₃. However the resources calculation has been carried out on the basis of threshold value of 10% Cr₂O₃

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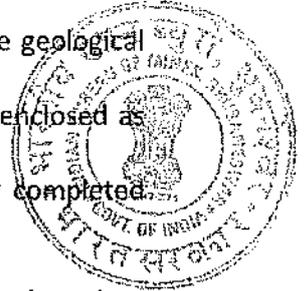
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All the above boreholes are of coring type and have been shown in the geological plan in Plate No. 4.

The relevant forms for intimation of borehole (Form I & J) have been enclosed as Annexure 22

Borehole log (Borehole Collar, Survey, Assay and Lithology) of already completed boreholes have been given at Annexure 22.



- 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).

A total of 3348 Nos. of core samples have been done analyzed for Band- III, IV & V.

The details of samples analysed is furnished in the table below

Boreholes	No of Samples	Drilling Agency	Laboratory/Accreditation
SKG-1 to 114	2035	OMC/MMPL/Thriveni	NABL accredited/Govt. Lab
DMG-3 to 72	1313	DMG	Govt. Lab of DMG, Odisha

Copy of the NABL tests report is given in annexure 17.

The sample analysis is being done at NABL accredited laboratory at present and the samples generated in future will also be tested in accordance to BIS at NABL accredited laboratory.

- iv) Expenditure incurred in various prospecting operations.

An amount of expenditure incurred in drilling operations is Rs.7593000/- (approx) and approximately Rs.800000/- was incurred in sampling and analysis. The documentary evidence in support of expenditure incurred in exploratory drilling is enclosed as Annexure-23

- 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 28(1)(a) of MCDR 1988.

The surface plan of the leasehold area is enclosed as Plate No. 3

- g) For preparation of geological plan, surface plan prepared on a scale of 1: 1000 or 1: 2000 scale specified under para 1.0 (f) of Part A of the format may be taken as the base plan. The details of exploration already carried out along with supporting data for existence of mineral, locations proposed exploration, various litho units along with structural features, mineralized/ore zone with grade variation if any may be marked on the geological plan along with other features indicated under Rule 28 (1)(b) of MCDR 1988.

The geological plan of the leasehold area showing all the above features is enclosed as Plate No. 4.



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

The geological sections of the leasehold area showing all the above features is enclosed as Plate No. 5. Transverse sections were drawn across the strike of different chromite bands with the following details

Band	Baseline orientation	Grid From/To	No. of Sections	Distance between adj. sections (m)
V	N57°E	500W-600E	12	100
IV-South	N57°E	750W-550E	27	50
III-South	N50°E	700W-550E	15	100/50
III-North	E-W	50W-25E	4	25
IV-North	N65°W	63E-213E	4	25

The ore envelopes were delineated at each section considering Cr₂O₃% threshold value of 10%. However the cut-off grade considered is 40% Cr₂O₃. The Band wise cross sectional Reserves as established is furnished in the tables below

BAND - IV SOUTH											
Section	Grade: above 40% Cr ₂ O ₃ cut-off					Grade: 10% - 40% Cr ₂ O ₃ cut-off					Grand Total Reserve (tonnes)
	Area: > 40% Cr ₂ O ₃		Reserve (tonnes): > 40% Cr ₂ O ₃			Area: 10-40% Cr ₂ O ₃		Resources: 10-40% Cr ₂ O ₃			
	111 (ABOVE UPL)	211 (BELOW UPL)	111 (ABOVE UPL)	211 (BELOW UPL)	Total	111 (ABOVE UPL)	211 (BELOW UPL)	111 (ABOVE UPL)	211 (BELOW UPL)	Total	
-750E	214.4687	809.3613	32170	121404	153575	0	0	0	0	0	153575
-700E	357.4293	1026.69	53614	154004	207618	412.26	0	61839	0	61839	269457
-650E	534.9229	214.62	80238	32193	112431	0	0	0	0	0	112431
-600E	1116.7769	193.91	167517	29087	196603	76.4466	0	11467	0	11467	208070
-550E	622.9091	62.21	93436	9332	102768	32.8482	0	4927	0	4927	107695
-500E	340.65	0	51098	0	51098	840.81	0	126122	0	126122	177219
-450E	107.794	0	16169	0	16169	0	0	0	0	0	16169
-400E	300.8747	0	45131	0	45131	0	0	0	0	0	45131
-350E	378.35	89.34	56753	13401	70154	325.51	0	48827	0	48827	118980
-300E	683.5378	77.39	102531	11609	114139	130.92	0	19638	0	19638	133777
-250E	626.778	1038.2697	94017	155740	249757	0	127.658	0	19149	19149	268906
-200E	1067.96	0	160194	0	160194	135.4393	64.11	20316	9617	29932	190126
-100E	695.32	0	104298	0	104298	0	0	0	0	0	104298
00E	475.03	268.55	71255	40283	111537	178.2811	158.33	26742	23750	50492	162029
100E	930.23	0	139535	0	139535	1032.45	0	154868	0	154868	294402
150E	1382.24	0	207336	0	207336	0	0	0	0	0	207336
200E	1172.96	0	175944	0	175944	0	0	0	0	0	175944
250E	1418.66	1239.09	212799	185864	398663	673.9088	478.05	101086	71708	172794	571456
300E	1312.78	500.4	196917	75060	271977	178.35	0	26753	0	26753	298730
350E	960.99	23.29	144149	3494	147642	198.7418	0	29811	0	29811	177453
400E	1489.72	104.76	223458	15714	239172	0	0	0	0	0	239172
450E	187.1884	0	28078	0	28078	0	0	0	0	0	28078
500E	253.33	0	38000	0	38000	661.9813	89.44	99297	13416	112713	150713
550E	185.57	0	27836	0	27836	159.49	189.06	23924	28359	52283	80118
TOTAL			2522470	847182	3369653			755616	165997	921613	4291265

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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BAND - V											
Grade: above 40% Cr2O3 cut-off						Grade: 10% - 40% Cr2O3 cut-off					Grand Total
Section	Area: > 40% Cr2O3		Reserve (tonnes): > 40% Cr2O3			Area: 10-40% Cr2O3		Resources: 10- 40% Cr2O3			
	111 (ABOVE UPL)	211 (BELOW UPL)	111 (ABOVE UPL)	211 (BELOW UPL)	Total	111 (ABOVE UPL)	211 (BELOW UPL)	111 (ABOVE UPL)	211 (BELOW UPL)	Total	
-500E	0.0	0.0	0	0	0	78.1	83.0	23421	24912	48333	48333
-350E	0.0	0.0	0	0	0	355.6	96.1	106686	28827	135513	135513
-300E	0.0	0.0	0	0	0	279.0	0.0	83702	0	83702	83702
-200E	0.0	0.0	0	0	0	315.9	0.0	94782	0	94782	94782
00E	0.0	0.0	0	0	0	853.4	2124.3	256028	637290	893318	893318
100E	0.0	0.0	0	0	0	1814.7	1612.1	544406	483627	1028033	1028033
200E	821.4	0.0	246435	0	246435	1457.8	374.1	437352	112241	549593	796028
300E	1044.2	191.7	313258	57516	370774	1235.6	656.3	370694	196884	567578	938352
400E	357.2	0.0	107148	0	107148	446.3	330.4	133880	99132	233012	340160
500E	369.8	195.1	110926	58521	169447	865.2	553.1	259547	165930	425477	594924
TOTAL			777767	116037	893804			2310498	1748843	4059341	4953145

BAND - III-SOUTH											
Grade: above 40% Cr2O3 cut-off						Grade: 10% - 40% Cr2O3 cut-off					Grand Total
Section	Area: > 40% Cr2O3		Reserve (tonnes): > 40% Cr2O3			Area: 10-40% Cr2O3		Resources: 10- 40% Cr2O3			
	111	211	111	211	Total	111	211	111	211	Total	
-650	44.7	5.1	6700.2	768.0	7468.2	12.6	11.1	1888.5	1659.0	3547.5	11016
-550	42.7	0.0	6401.4	0.0	6401.4	130.7	0.0	19600.7	0.0	19600.7	26002
-400	42.7	0.0	6401.4	0.0	6401.4	0.0	35.8	0.0	5362.9	5362.9	11764
-200	0.0	0.0	0.0	0.0	0.0	144.8	48.6	21720.4	7293.0	29013.4	29013
-100	62.7	0.0	9399.0	0.0	9399.0	99.8	0.0	14964.0	0.0	14964.0	24363
00	18.3	6.0	2746.4	901.5	3647.9	72.1	0.2	10814.3	28.2	10842.5	14490
200	0.0	11.8	0.0	1765.5	1765.5	60.8	24.9	9121.6	3730.5	12852.1	14618
250	0.0	0.0	0.0	0.0	0.0	155.4	206.1	23309.6	30912.0	54221.6	54222
300	119.6	0.0	17941.5	0.0	17941.5	0.0	0.0	0.0	0.0	0.0	17942
350	0.0	113.5	0.0	17019.0	17019.0	0.0	19.4	0.0	2911.5	2911.5	19931
450	7.9	13.5	1185.0	2017.5	3202.5	47.4	301.4	7107.0	45205.5	52312.5	55515
500	0.0	21.6	0.0	3246.0	3246.0	0.0	188.0	0.0	28204.5	28204.5	31451
550	0.0	101.6	0.0	15237.0	15237.0	0.0	45.0	0.0	6751.5	6751.5	21989
TOTAL			50775	40955	91729			108526	132059	240585	332314

BAND - III-NORTH & IV-NORTH											
Grade: above 40% Cr2O3 cut-off						Grade: 10% - 40% Cr2O3 cut-off					Grand Total
Section	Area: > 40% Cr2O3		Reserve (tonnes): > 40% Cr2O3			Area: 10-40% Cr2O3		Resources: > 40% Cr2O3			
	111	211	111	211	Total	111	211	111	211	Total	
3N-1,2,71	52.6	48.6	7890.2	7287.0	15177.2	154.0	26.2	23097.3	3934.6	27031.9	42209
3N-3,4	159.3	5.0	23899.5	756.0	24655.5	107.8	0.0	16174.5	0.0	16174.5	40830
3N-5,6	0.0	0.0	0.0	0.0	0.0	44.4	154.1	6652.5	23115.0	29767.5	29768
3N-7,8	52.4	14.0	7860.0	2092.5	9952.5	30.4	2.7	4561.0	407.3	4968.3	14921
4N-19	126.7	194.8	19008.9	29217.0	48225.9	71.4	119.6	10710.8	17938.5	28649.3	76875
4N-22	0.0	0.0	0.0	0.0	0.0	0.0	157.5	0.0	23628.7	23628.7	23629
4N-20,21	0.0	149.3	0.0	22396.6	22396.6	0.0	253.2	0.0	37978.1	37978.1	60375
4N-24	0.0	0.0	58769.6	61960.1	120729.7	0.0	138.6	0.0	20796.0	20796.0	141526
TOTAL			117428	123709	241137			61196	127798	188994	430132

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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- 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.

There is proposal to drill 44 boreholes with a total meterage of 10360 m during the plan period. The year wise details of the proposed boreholes to be drilled in different chromite bands is given in the following table. The exploration proposed exploration shall be carried out subject to the required Forest Clearances over the balance forest area within the lease hold area.

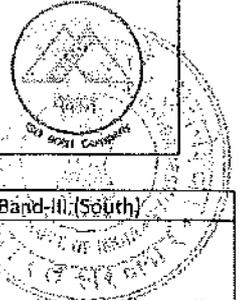
Year	BH no.	Northing	Easting	Collar RL	Core/RC/DTH	Meterage (m)	Inclination/Bearing	Forest/Diverted forest/non forest	Surface right/non surface right	Purpose of bore holes
2019-20	PBH-1	2400	-200	144.0	Core	150	60/ N	Non-Forest	Surface Right	Proving of Band-IV (North) & Barrenness
	PBH-2	2200	-400	133.8	Core	400	60/ N	Non-Forest	Surface Right	Proving Barrenness
	PBH-3	2200	0	142.0	Core	150	60/ N	Non-Forest	Surface Right	Proving of Band-IV (North) & Barrenness
	PBH-4	2000	-600	134.0	Core	300	60/ S	Non-Forest	Surface Right	Proving Barrenness
	PBH-18	300	100	164.5	Core	300	60/ S33E	Div. Forest	Surface Right	Depth proving of Band-IV (South) & Barrenness
	PBH-19	300	200	169.3	Core	300	75/ S33E	Div. Forest	Surface Right	Depth proving of Band-IV (South) & Barrenness
	PBH-20	400	300	163.6	Core	250	60/ S33E	Div. Forest	Surface Right	Depth proving of Band-IV (South)
	PBH-21	300	500	176.8	Core	200	60/ S33E	Non-Forest	Surface Right	Depth proving of Band-IV (South)
	PBH-22	250	-600	165.6	Core	200	60/ S33E	Forest	Non Surface right	Depth proving of Band-IV (South)
	PBH-23	200	-700	168.7	Core	200	60/ S33E	Forest	Non Surface right	Depth proving of Band-IV (South)
	PBH-32	900	0	144.6	Core	300	60/ S33E	Non-Forest	Non Surface right	Proving Barrenness
	PBH-33	1400	-600	147.2	Core	300	60/ S33E	Div. Forest	Non Surface right	Proving Barrenness
	PBH-34	1400	-400	149.6	Core	300	60/ S33E	Div. Forest	Non Surface right	Proving Barrenness
	PBH-35	1200	-600	146.3	Core	300	60/ S33E	Div. Forest	Non Surface right	Proving Barrenness
	PBH-36	1200	-400	150.0	Core	300	60/ S33E	Div. Forest	Non Surface right	Proving Barrenness
	PBH-37	1600	-600	140.7	Core	300	60/ S33E	Div. Forest	Non Surface right	Proving Barrenness
	PBH-38	800	-600	149.2	Core	300	60/ S33E	Non-Forest	Surface Right	Proving Barrenness
	PBH-39	800	-200	146.2	Core	300	60/ S33E	Non-Forest	Non Surface right	Proving Barrenness
	PBH-40	800	200	148.8	Core	200	60/ S33E	Non-Forest	Non Surface right	Proving Barrenness
	2020-21	PBH-5	2000	-200	135.8	Core	400	60/ N	Non-Forest	Surface Right
PBH-6		2000	200	136.0	Core	150	60/ N	Forest	Non Surface right	Proving of Band-IV (North) & Barrenness
PBH-7		1800	-400	140.7	Core	200	90	Div. Forest	Surface Right	Proving Barrenness
PBH-8		1800	200	135.3	Core	400	60/ N	Non-Forest	Surface Right	Proving of Band-IV (North) & Barrenness
PBH-9		1300	200	142.0	Core	200	90	Non-Forest	Surface Right	Proving Barrenness
PBH-10		1200	400	143.2	Core	200	60/ S	Forest	Non Surface right	Proving of Band-III (North) & Barrenness
PBH-11		1100	100	145.5	Core	200	90	Forest	Non Surface right	Proving Barrenness
PBH-12		900	400	143.5	Core	200	60/ N	Div. Forest	Non Surface right	Proving of Band-III (North) & Barrenness
PBH-28		-150	0	201.2	Core	200	65	Forest	Non Surface right	Depth persistency of Band-V
PBH-29		-200	100	192.8	Core	200	65	Div. Forest	Non Surface right	Depth persistency of Band-V
PBH-30		-100	200	194.8	Core	200	55	Div. Forest	Non Surface right	Depth persistency of Band-V
PBH-31	-150	300	187.5	Core	200	65	Div. Forest	Non Surface right	Depth persistency of Band-V	

(Sunil Kr. Kap, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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2021-22	PBH-13	600	-100	149.3	Core	250	60/S33E	Non-Forest	Surface Right	Depth proving of Band-III (South)
	PBH-14	300	-600	152.5	Core	200	60/S33E	Forest	Non Surface right	
	PBH-15	250	-400	165.8	Core	200	60/S33E	Non-Forest	Surface Right	Proving Barrenness in the intermediate zone between Band-III (South) & band-IV (South)
	PBH-16	300	-200	162.6	Core	250	60/S33E	Non-Forest	Surface Right	
	PBH-17	300	0	162.5	Core	300	60/S33E	Div. Forest	Surface Right	
	PBH-24	0	-770	163.3	Core	200	90	Non-Forest	Surface Right	Proving Barrenness
	PBH-25	0	-400	172.7	Core	200	90	Non-Forest	Surface Right	Proving Barrenness
	PBH-26	0	0	184.3	Core	200	90	Div. Forest	Surface Right	Proving Barrenness
	PBH-27	0	400	187.8	Core	200	90	Div. Forest	Surface Right	Proving Barrenness
	PBH-41	509.5	2.4	152.9	Core	130	45/S33E	Forest	Non Surface right	Depth Proving of Band-III (South)
	PBH-42	586.8	-196.3	153.5	Core	150	75/S33E	Forest	Non Surface right	Depth Proving of Band-III (South)
	PBH-43	562	-394.5	155.6	Core	120	65/S33E	Forest	Non Surface right	Depth Proving of Band-III (South)
	PBH-44	599.5	293.7	152.3	Core	160	45/S33E	Forest	Non Surface right	Depth Proving of Band-III (South)

The samples generated in future exploration programme will be analyzed in accordance to BIS at NABL accredited laboratory.

- 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.

Reserve/Resource as per last approved Mining Plan

Summary of the Category wise updated reserves /resources (As on 31.03.2018) as per last approved Modification of Review of Mining Plan is given below.

Reserves as per UNFC classification (in Mt and as on 1.3.2014)

Sl. No	Reserve Category (UNFC Classification)	Qty. (in Million Tons)	Grade (Cr ₂ O ₃ %)
1	Proved Mineral Reserves (111)	6.67	46.33%
2	Probable Mineral Reserves (112)	NIL	NA
3	Feasibility Mineral Resource (211)	3.34	30.02%
	Feasibility Mineral Resource (212)	NIL	NA
4	Remaining measured resource (331)	NIL	NA
5	Indicated Resource (332)	NIL	NA
6	Inferred Resource (333)	NIL	NA
7	Reconnaissance Resource (334)	NIL	NA

(Sunit K. Das Mining Engineer)

(Akshay K. Sahu Geologist)



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Area explored under different level of exploration according to UNFC are as under

Item of Information	Lease Area explored as per UNFC norms (In Ha.) as on Date					Remarks/ comments including reasons for not carrying out the exploration as per UNFC norms.
	Total Lease area (382.709)= A+B+C+D+E					
	G1 Level	G2 Level	G3 Level	Explored and found non-mineralized with level of exploration (Remark)	Unexplored lease area/G4	
	A	B	C	D	E	
Area as per level of Exploration	85.41	36.05	NIL	36.05(G2)	261.249 (G4)	(BARREN PROVING)
No. of BH Drilled	166	-	-	13 (G2)	-	
No. of BH considered for Resource Estimation	166	-	-	-	-	
Meterage Drilled	19017.52	-	-	1495	-	
Grid Interval	50 m x 25m to 100m x 100m	-	-	200m x 200m	-	
Scale of Mapping	1:2000	1:2000	-	1:2000	-	
Reserve estimated after above exploration as on dated 01.10.2018: 6.55 Mt						
Remaining Resource after above exploration as on dated 01.10.2018: 3.34Mt						
Total Reserve/Resource after above exploration as on dated 01.10.2018: 9.89 Mt						

The re-assessment of the reserves has been carried out at a Cr₂O₃ cut off of 10% as per the UNFC guidelines. The reserve/resource assessment was carried out in the Mine Planning software package "GEOVIA SURPAC". The following were utilized as basic input data for the preparation of geological model.

- i. Contour data of updated pit position and surface topography
- ii. Borehole logging data generated from exploration of different bands done by Directorate of Mining & Geology (DMG), Govt. Odisha and OMC.

A summary of the exploration carried out for G1/G2 areas indicating mapping, drilling (No./ spacing), sample drawn/ analyzed etc is given in the table below:-

Sukrangi lease area	Borehole data					
	No. & spacing	Max. depth	Grade From/ to	Samples drawn and analyzed	Level of exploration	Depth (in m)
Band-IV-S	75 Nos (50m x 25m)	330m	2.87/62.9% Cr ₂ O ₃	1868	G1	7204.12
Band-IV-N	6 Nos	94m	7.29/51.07% Cr ₂ O ₃	53	G1	344.00
Band-III-S	42 Nos (100m)	180m	5.56/53.12% Cr ₂ O ₃	302	G1	2985.40
Band-III-N	9 Nos. (25m x 25m)	72m	4.03/52.77% Cr ₂ O ₃	50	G1	490.90
Band-V	34 Nos. (100m x 50m)	330m	0.26/56.2% Cr ₂ O ₃	636	G1	7993.10
Barren area proving SKG/45 to 56 & 58	13 Nos (200m x 200m)	250m	---	32	G2	1495.00

(Sunil Kr. Das Mining Engineer)

(Abhinash Kr. Sahu, Geologist)



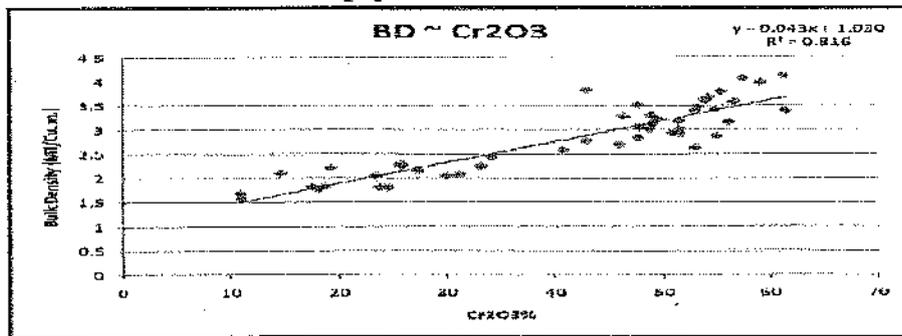
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Sixty (60) experiments were conducted for determination of bulk densities of different bands in ore & waste. The copies of test results are enclosed at Annexure-17. The samples were drawn from different ore bands in Sukrangi as well as in the adjoining South Kallapani lease. 53 sample values were subjected to regression analysis by plotting bulk density values against the Cr₂O₃% grade of each sample. The following linear regression equation was established from the X-Y scatter plot of bulk density (BD) & Cr₂O₃% value of samples.

$$y = 0.043x + 1.030 \text{ at a correlation coefficient of } 0.903$$

Where, y = Bulk density
 x = Grade in Cr₂O₃ %



The regression equation was used as tonnage factor for computation of reserves of different chromite band. On basis of the above geological works carried out, the area covered under Band-IV-S & N, Band-III-S&N and Band-V can be considered under G1 category of the geological axis as per the UNFC classification of reserves.

Parameters considered for estimation of Mineral Resources

- (a) The threshold value considered as per the IBM guidelines is 10% Cr₂O₃.
- (b) The entire data has been transferred to form a geological database in an ore body modeling software namely 'SURPAC'.

(i) Preparation of Database

Four basic files namely collar, survey, assay and litho files are required in Comma Separated Value (CSV) format for further processing by SURPAC Software.

The following files in the SURPAC format are taken as input for preparation of band wise borehole database

i. Collar file

BHID	Northing	Easting	Collar RL	Max_depth	Hole_path
------	----------	---------	-----------	-----------	-----------

ii. Survey File

BHID	Max_depth	DIP	AZIMUTH
------	-----------	-----	---------

iii. Assay File

BHID	Sample_Id	DEPTH FROM	DEPTH TO	Cr2O3%
------	-----------	------------	----------	--------

iv. Litho file

BHID	SAMP_ID	FROM	TO	LITHO
------	---------	------	----	-------

(Sunil Kr Kar Mining Engineer)

(Abhinav Kr Sahu Geologist)

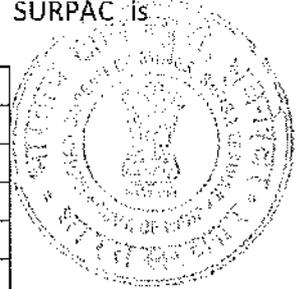


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The Band wise input data for preparation of Borehole database in SURPAC is summarized in the table below

Band	Collar File	Survey	Assay
IV-S	74	74	1822
V	35	35	636
III-S	20	20	161
III-N	9	9	50
IV-N	6	6	53



Ore type-wise litho codes used for database preparation is given below.

Ore Type-wise Litho Codes Used for Database Preparation

Sl. No.	Litho	Litho Code
1.	Chrome ore band (+10-40% Cr ₂ O ₃)	1
2.	Chrome ore band (+40% Cr ₂ O ₃)	2

(ii) Delineation of Ore Geometry and Construction of Ore Body

Preparation of Transverse Sections

Boreholes were displayed in SURPAC graphics window alongwith litho, Cr₂O₃%. Transverse sections were drawn across the strike of different chromite bands with the following details

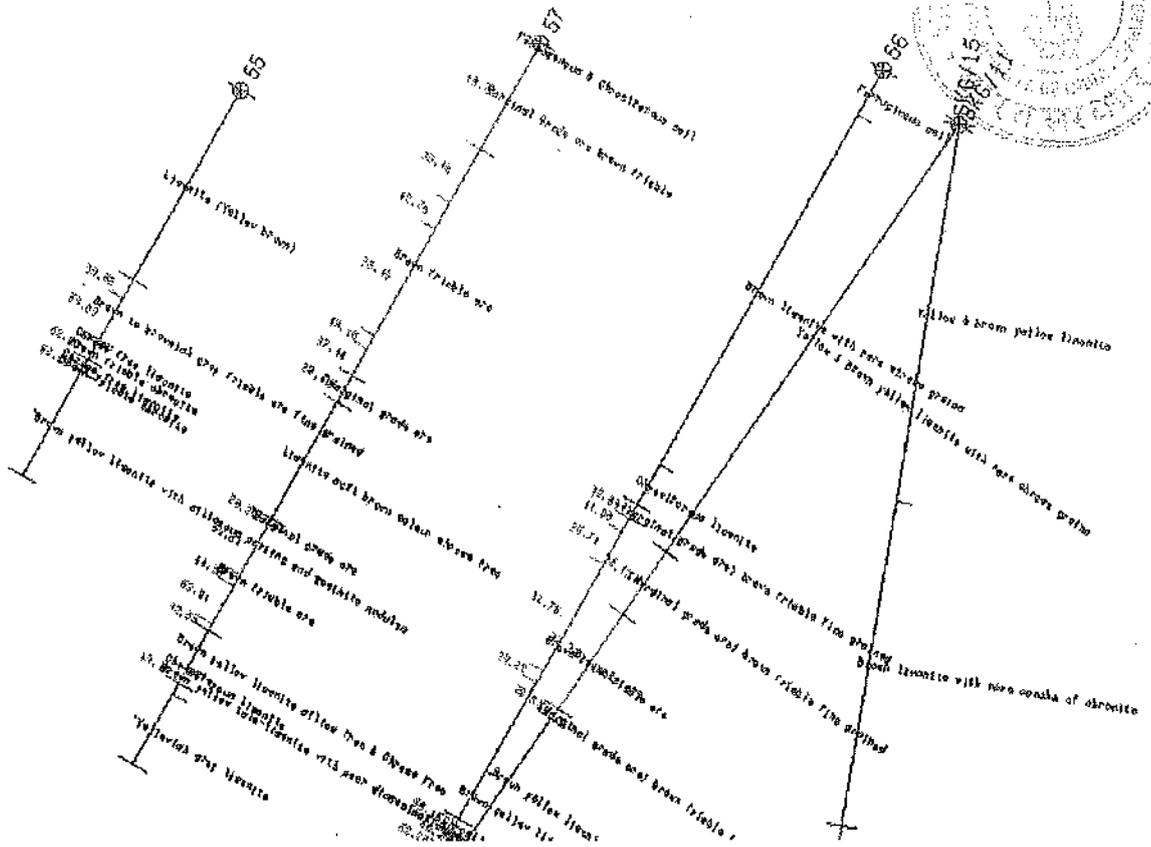
Band	Baseline orientation	Grid From/To	No. of Sections	Distance between adj. sections (m)
V	N57°E	500W-600E	12	100
IV-South	N57°E	750W-550E	27	50
III-South	N50°E	700W-550E	15	100
III-North	E-W	50W-25E	4	25
IV-North	N65°W	63E-213E	4	25

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



Borehole Display in Graphics window of SURPAC



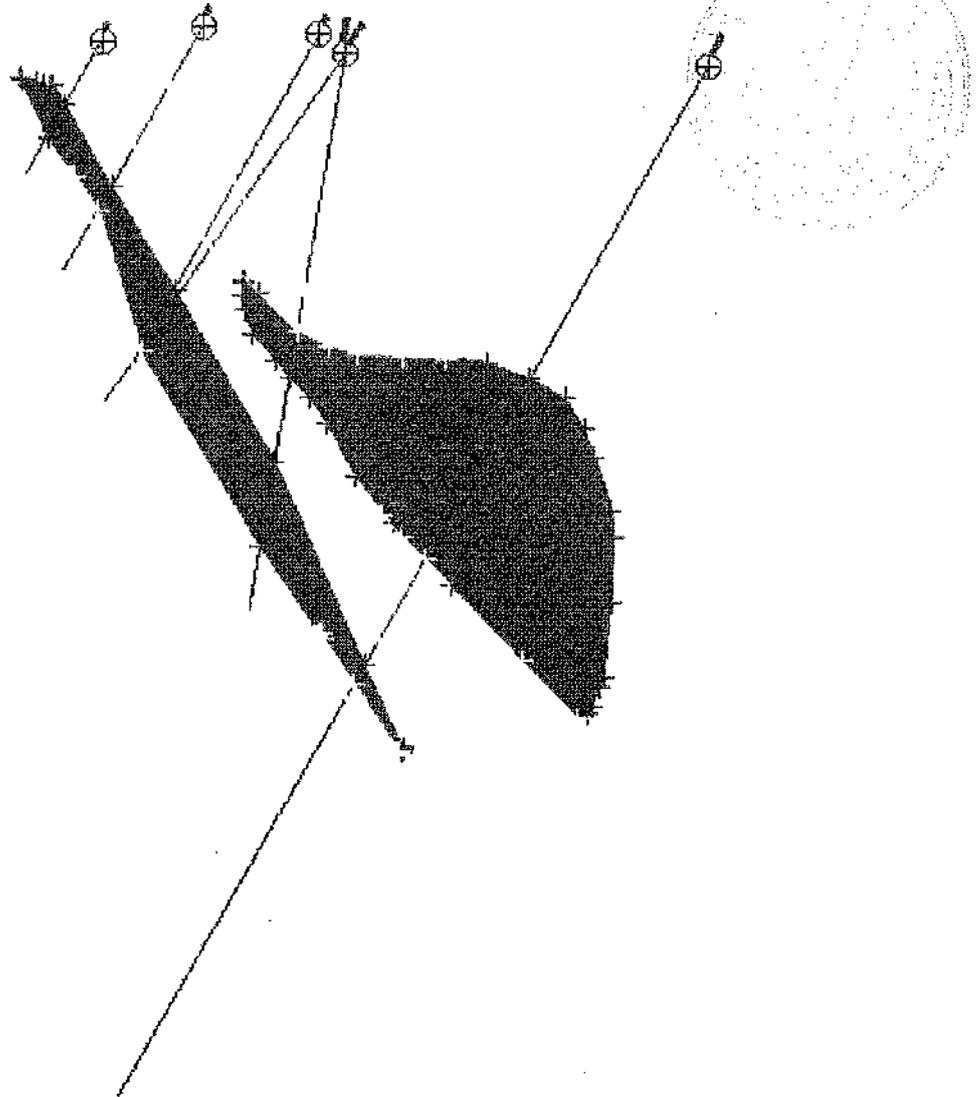
The ore envelopes were delineated at each section considering Cr₂O₃% threshold value of 10%. However the cut-off grade considered is 40% Cr₂O₃%. Two ore domains were considered for preparation of ore envelopes in the transverse sections with the following details.

Grade (Cr ₂ O ₃ %)	Ore type
10% - 40%	Mineral Rejects
More than 40%	Ore

Since the ore body continues in further down-depth direction the transverse section should have been open towards the downward directions. But for ore-body modeling in the software, closed geological domain has to be considered. Hence string sections of ore were closed considering suitable influence of the borehole intercepts of ore.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)

Ore Section delineated in SURPAC Graphics windowPreparation of Digital Terrain Model (DTM) of Surface Topography

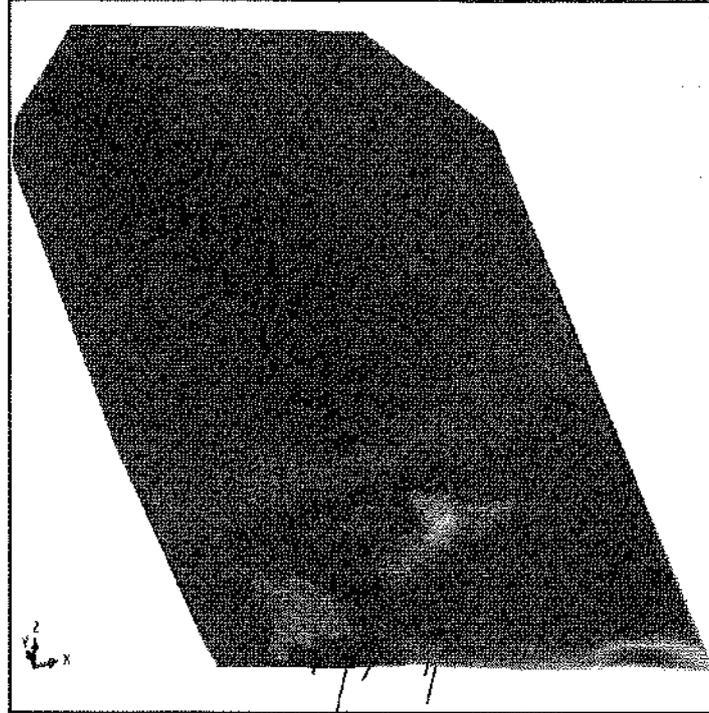
The digitized contour of updated surface plan with Z values have been transformed into digital terrain model (DTM) utilizing the principle of triangulation and wire framing of points with X, Y and Z co-ordinates. Digital terrain model is the most effective way of representing a surface in three dimensional computerized form. It is an important tool to calculate volume between two or more surfaces. The digital terrain model of surface topography with drill holes of Sukrangi deposit is shown in the figure below:-



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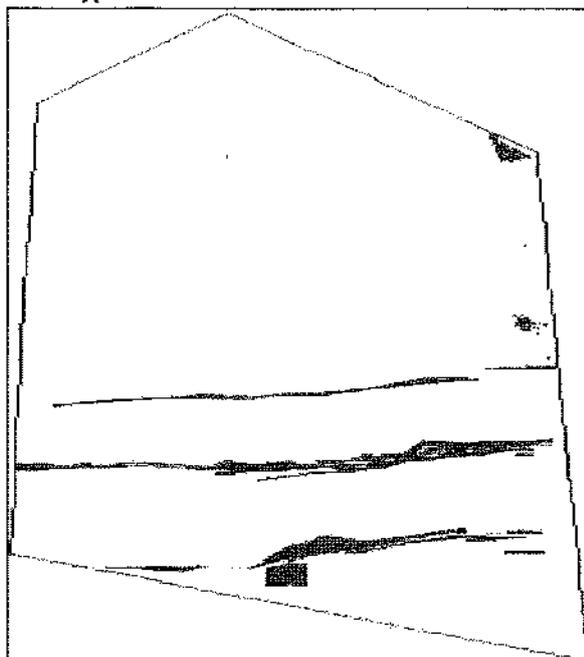
Digital Terrain Model (DTM) of Surface Topography with drill holes



3-D Solid Modeling of Ore Body

The band wise ore zones of the respective transverse cross sections have been connected/ joined to form band-wise solid ore body models. Ore type-wise 3-D solid model of Sukrangi deposit is presented in the figure below:-

Ore type-wise three dimensional solid model



(Sunil Kr. Kar. Mining Engineer)

(Abinash Kr Sahu Geologist)



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(iii) Geo-statistical analysis (Variogram modeling)

The continuity of mineralization in different directions can be well judged through analysis of variograms. In addition, the range of influence of sample in different directions can be deciphered. A variogram is evaluated with respect to sill, range and nugget effect. The variogram function is defined as follows.

$$\gamma(h) = 1/2n \sum [z(x+h) - z(x)]^2$$

where, n = Number of sample pairs at distance 'h'
 $\gamma(h)$ = Variogram value at distance 'h'
Z(x) = Assay value at point x
Z(x+h) = Assay value at point x+h

The $\gamma(h)$ is calculated for different distance pair 'h' and is plotted against distance pair. As the distance pair increases the $\gamma(h)$ value also increases and levels off after certain distance pair. The distance pair at which the $\gamma(h)$ value levels off is known as 'Range' beyond which samples become statistically independent without any correlation. This distance provides an idea of range of influence of a particular sampling point. The value of $\gamma(h)$ at which the graph levels off is known as 'sill'. This value is related to the theoretical variance of the data set. 'Nugget' is the value of $\gamma(h)$ at zero distance pair. The inherent variability of the data is represented by nugget. The deposit with zero or very low nugget effect possesses uniform grade distribution.

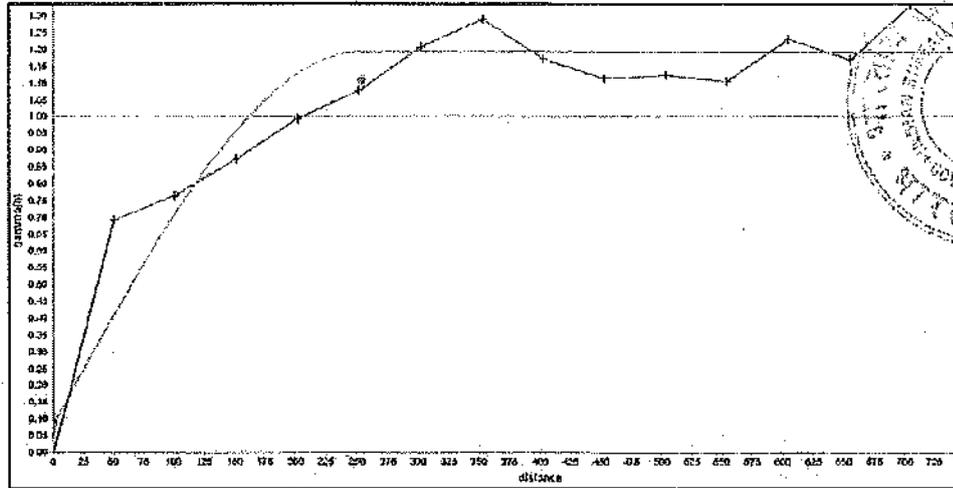
Variogram modeling has been carried out for determining the spatial variability of mineralisation & grade distribution in different directions. Composites (0.5m length) of each ore containing Cr₂O₃% were individually used for variogram modeling. In order to ascertain the variability of deposit of Sukrangi lease, composites all the samples of 0.5 m length within the leasehold were extracted & the normal variograms of composited assay data have been developed along strike & dip direction of the deposit and also along borehole depth. The fitted Variogram model along strike, dip and along the borehole direction of the deposit is shown in figures below. The variogram model parameter for the above directions is presented in the table below. Results of variogram modeling for above three directions for Sukrangi Chromite deposit is given in table below.



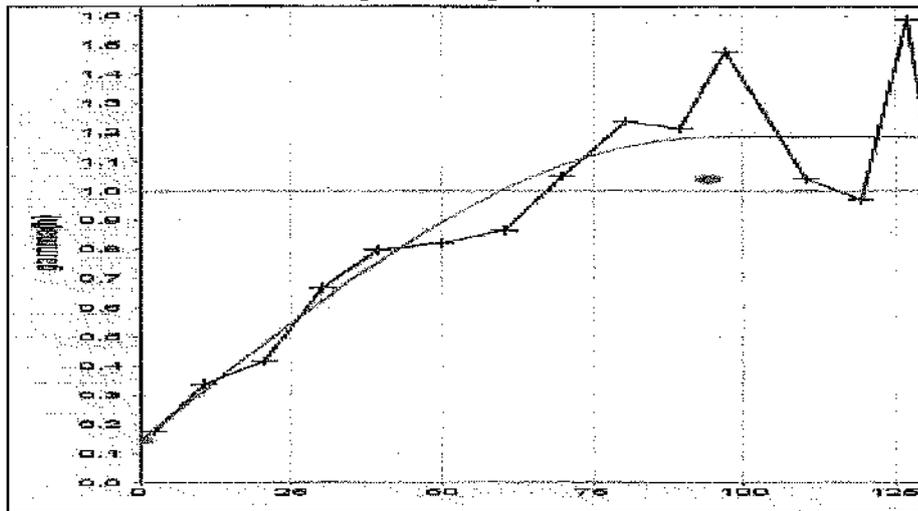
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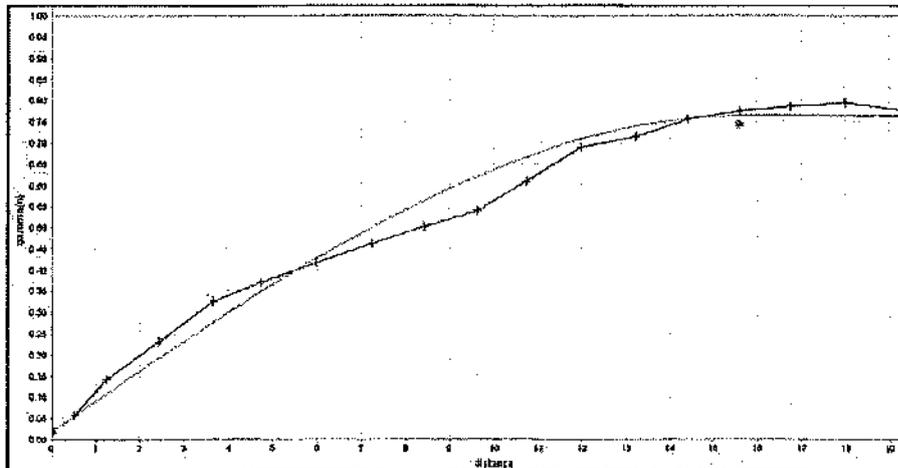
Normal Variogram along Strike direction



Normal Variogram along Dip direction



Normal Variogram along down the hole




(Sunil Kr. Kar, Mining Engineer)


(Abinash Kr. Sahu, Geologist)

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Variogram model parameters in three orthogonal directions

Sl. No.	Direction	Azimuth	Plunge	Spread	Lag	Maximum Distance
1	Along Dip Direction	0	-75	11.25	10 m	125 m
2	Along Strike direction	90	0	11.25	50 m	800 m
3	Along Borehole depth	180	-60	11.25	1 m	20 m

Results of variogram modeling in three orthogonal directions:

Sl. No.	Direction	Nugget	Sill	Range
1	Along Dip Direction	0.141996	1.039734	94.089
2	Along Strike direction	0.244677	1.105800	253.679
3	Along Borehole depth	0.019570	0.744354	15.606

Validation of Variogram

The variogram are then validated and used for further block modeling.

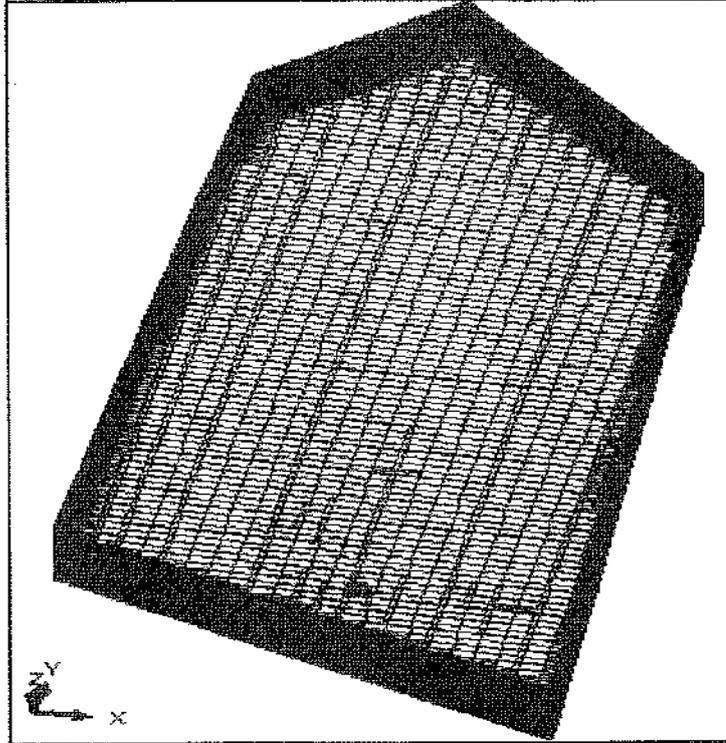
(iv) Block Modeling

The entire deposit is divided into no. of judiciously chosen sub-blocks for proper estimation of grade and quantity, keeping in view of the structural discontinuity of the deposit, extent etc. The estimated blocks in the block model has been used for optimum pit generation, mine planning and production scheduling.

- **Selection of Block Size**
Considering the accuracy desired, borehole spacing and mining constraints, a unit block of 1 m × 2 m × 1 m has been considered, in X × Y × Z directions, for block wise grade estimation.
- **Development of Block Model**
In order to cover the entire extent of Sukrangi chrome ore deposit in three dimensions, a dummy block model with unit block sizes as indicated above have been generated. An constrained block model is shown in the figure below:-


(Sunil Kr. Kar, Mining Engineer)


(Abinash Kr. Sahu, Geologist)

Block model constrained by lease boundary

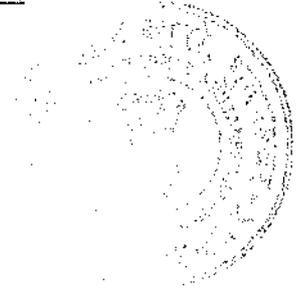
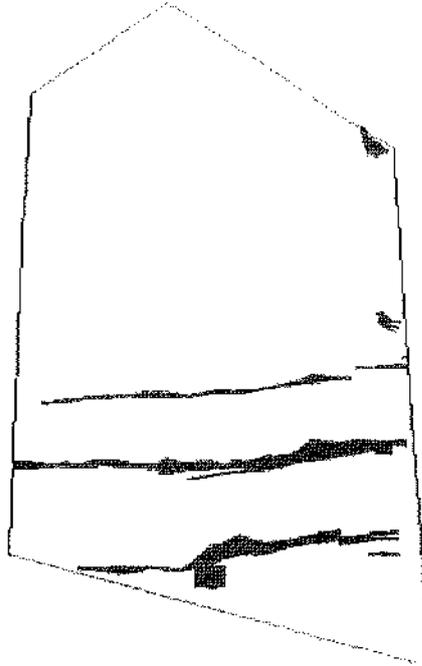
- **Addition of Attributes**
Attributes are the properties of individual block such as $\text{Cr}_2\text{O}_3\%$, specific gravity, ore type etc. These attributes were added in the dummy block model using suitable technique.
- **Application of Constraints**
Constraints are the logical combination of spatial operators and objects such as DTM of surface contour, solid model of ore zone, block etc. with which the block model can be enveloped/ intersected with respect to inside/ outside and above/ below their spatial position. *The block model developed for Sukrangi chrome ore deposit has been constrained with the surface DTM and updated pit positions, mining lease boundary, statutory safety barriers, individual quarry boundaries as well as ore type-wise 3-D solid models as developed and discussed in the preceding paragraphs.* In this way, the blocks have been enveloped within ore zone boundary and surface topography for the purpose of grade interpolation and reserves estimation.



(Sunil Kr. Kar, Mining Engineer)

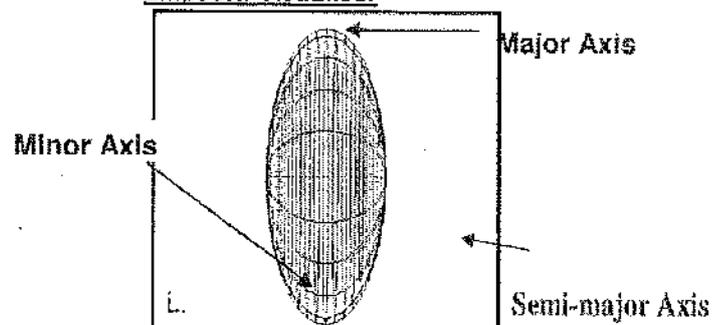


(Abinash Kr. Sahu, Geologist)

Block model constrained by 3D wireframe solid model

- **Block model estimation**

Block model estimation parameters such as anisotropic ratio, search distances etc. were derived from the results of variogram analysis discussed in previous para. Sukrangi chrome ore deposit is uniform in mineralisation. It is not erratic in behaviour. The coefficient of variation of grades in all the ores are low indicating uniform grade distribution and the deposit has also been explored at almost uniform grid along dip and strike direction, the globally accepted technique of Inverse Square Distance (ISD) method has been used for ore reserve estimation for different ore types. The parameters for reserve estimation have been derived from the statistical and geo-statistical analysis done previously. A search ellipsoid as indicated below has been used to select samples for assigning grade to the blocks. The axial parameters and its search orientation were derived from the results of geo-statistical analysis.

Ellipsoid Visualiser

The tonnage factor for conversion of volume of solid into ore tonnage has been derived from the regression equation as described earlier.



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2.9 Estimation of Reserve and Quality

For estimation resources the following parameters have been considered:-

Measured resources: -

- The entire exploratory drill holes with grid spacing of 50m X 50m & below has been considered as G1 category and has been categorized under 331 as per UNFC code.

The Mineral Resources estimated according to different UNFC Level of exploration is given in the table below

Level of exploration	Resources in Million Tons	Grade
G1 - Detailed exploration	10.01	35.92% Cr ₂ O ₃
G2 - General Exploration	Nil	Nil
G3 - Prospecting	Nil	Nil
G4 - Reconnaissance	Nil	Nil

The details of the reserves/ resources established at 10% Cr₂O₃ cut off for Sukrangi deposit as on 31.1.2014 is given in table below.

Resource type	Total tonnage at cut-off (+10% Cr ₂ O ₃), million tons	Remarks
Measured mineral resources (331)	10.01/ 35.92% Cr ₂ O ₃	All bands

Resource type	Total tonnage at cut-off (+40% Cr ₂ O ₃), million tons	Remarks
Measured mineral resources (331)	4.60/ 47.81% Cr ₂ O ₃	All bands

The Measured resources under different bands are given below:

BAND/GRADE	>10% Cr ₂ O ₃	10%-40% Cr ₂ O ₃	>40% Cr ₂ O ₃
IVS	4291265	921613	3369653
V	4953145	4059341	893804
IIIS	332314	240585	91729
IIIN & IVN	430132	188994	241137
TOTAL	10006856	5410533	4596323

The band wise mineable reserves/non mineable resource established on the basis of ultimate pit is shown under

BAND/UNFC	111 (ABOVE UPL)	211 (BELOW UPL)
IVS	3278086	1013179
V	3088265	1864880
IIIS	159301	173013
IIIN & IVN	178624	251507
TOTAL	6704276	3302580

(Sunil Kr. Kar./Mining Engineer)

(Abhinav Kr Sahu Geologist)



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The total Measured resources under mineable and non-mineable portions are (In Million Tons):-

Total tonnage	Mineable	Non Mineable		
		Stat.barriers	Below economic opencast UPL	Total
10.01/ 35.92% Cr ₂ O ₃	6.67/ 46.33% Cr ₂ O ₃	0.04/27.84% Cr ₂ O ₃	3.30/29.44% Cr ₂ O ₃	3.34/30.02% Cr ₂ O ₃

Feasibility Study was then carried out as enclosed in Annexure -24 and the reserves/ resources classified thereafter (in Million Tons) for the G1 areas comprising of Band-IV-S&N, Band-III-S&N and Band-V are given below:-

Depletion of Reserve:

The depletion of reserves on account of production of ROM for the period 01.04.2018 to 30.09.2018 is as follows

Period	Production (M tones)
01.04.2018-30.09.2018	0.118

1) 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)

Category wise updated reserve with grade

Category wise updated reserves with grade are given below.

Reserves as per UNFC classification (in Mt and as on 30.09.2018)

Sl. No	Reserve Category (UNFC Classification)	Qty. (In Million Tons)	Grade (Cr ₂ O ₃ ,%)
1	Proved Mineral Reserves (111)	6.55	46.33%
2	Probable Mineral Reserves (112)	NIL	NA
3	Feasibility Mineral Resource (211)	3.34	30.02%
	Feasibility Mineral Resource (212)	NIL	NA
4	Remaining measured resource (331)	NIL	NA
5	Indicated Resource (332)	NIL	NA
6	Inferred Resource (333)	NIL	NA
7	Reconnaissance Resource (334)	NIL	NA

(Sunit Kr Kar Mining Engineer)

(Ahinash Kr. Sahu. Geologist)



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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.

The Sukrangi Chromite mines comes under Category-A (Fully Mechanized category) as per the IBM guideline. The deposit is worked by opencast mining method with formation of benches. Working benches are kept 6 m high and minimum 11 m wide. The conventional mining method deploys use of 115 mm diameter drills and blasting with low density (LD) cartridge explosives. 15-25 t capacity dumper/ tipper with matching capacity hydraulic excavators/ loaders for loading and transportation of ore to sale plots and transportation of waste/ mineral reject materials to their respective dumps/ stock yards have been envisaged in this scheme of mining. In general the strata is very soft however, occasional drilling & blasting is being carried out in the hard strata only for improved fragmentation and as per the requirement of the customers. For the purpose of carrying out drilling, 115 mm diameter down the hole (DTH) blast-hole drills are deployed. The drilling pattern for 115 mm diameter holes is at a burden of 3.5m and spacing of 4.0m. The bench height has been kept at 6 m. Therefore keeping into account the factor for mineral reject drilling & extra drilling to take care of hole collapse, the depth of the hole is around 6.5 m. Around 2.5-4 cubic meters bucket capacity hydraulic excavators (diesel powered) is being used in conjunction with 15-25t dumpers. The ROM is being segregated at the mining face itself as ore / mineral reject depending into the content of Cr_2O_3 in it. If the Cr_2O_3 content in the ore is more than 40% it is being considered into direct ore, if the Cr_2O_3 content in the ore is in between 10-40% it is being considered as mineral reject. Accordingly the ore is being stacked into their respective stacking plots. Waste & mineral reject materials generated is being transported to their respective dumping/ stacking locations. Front end loader of around 1.5-3.0 cubic meters bucket capacity is being deployed to load the ore/ beneficiable grade ore from the respective stacking plots. Regular sampling of the ore at mine face itself is being carried out for on-face segregation of ore/ beneficiable grade ore & mineral reject. As per the permission granted by DGMS under regulation 106(2)(b), the bench configurations adopted at Sukrangi chromite mine is given below:-

Sl. No.	Parameters	Existing pit
1.	Quarry Size (L x W x D)	1136 m x 300 m x 59 m
2.	Top Bench RL	212 mRL
3.	Bottom Bench RL	153 mRL
4.	Location co-ordinates	-535E to 607E -92N to 286N
5.	Maximum Bench Height	6 m
6.	Minimum Bench Width	11m
7.	No. of benches in ore	3
8.	No. of benches in waste	9
9.	Bench slope	65 deg.
10.	Ultimate pit slope angle	< 25 deg.
11.	UPL RL	98 mRL

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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

Year	Pit no.	Total tentative Excavation (Mill. CuM)	Top Soil (Cu. m)	OB/SB/IB (Mill. Cum)	ROM (Cum)		Mineral reject	ROM/Waste Ratio
					Ore (Mill. Cum)	Mineral reject (Mill. Cum)		
1	2	3	4	5	6	7	8	9
2019-20	Band -IV S	2.53	0.0	2.41 (Cr ₂ O ₃ <10%)	0.03 @ 47.07% Cr ₂ O ₃	0.08 @ 30.11% Cr ₂ O ₃	0.08	0.05
2020-21	Band -IV S	1.57	0.0	1.46 (Cr ₂ O ₃ <10%)	0.06 @ 48.43% Cr ₂ O ₃	0.05 @ 31.23% Cr ₂ O ₃	0.05	0.08
2021-22	Band -IV S	1.84	0.0	1.73 (Cr ₂ O ₃ <10%)	0.06 @ 48.44% Cr ₂ O ₃	0.05 @ 30.29% Cr ₂ O ₃	0.05	0.06
2022-23	Band -IV S	1.89	0.0	1.78 (Cr ₂ O ₃ <10%)	0.07 @ 47.38% Cr ₂ O ₃	0.04 @ 31.28% Cr ₂ O ₃	0.04	0.06
2023-24	Band -IV S	1.99	0.0	1.89 (Cr ₂ O ₃ <10%)	0.07 @ 48.70% Cr ₂ O ₃	0.03 @ 32.1% Cr ₂ O ₃	0.03	0.05

- Bulk density of ore is considered to be 3 t/m³.
- Bulk density of Mineral reject is considered to be 2.3 t/m³.
- Bulk density of waste is considered to be 1.4 t/m³.

However regression equation was used while computing ore tonnage.

The year-wise development & production quantity in tonnes for the proposed plan period is given below.

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BHUBANESWAR

Year	ROM (+10% Cr ₂ O ₃) Production Qty., Million tonnes	Ore (+40% Cr ₂ O ₃) Production Qty., Million tonnes	Mineral Rejects(10-40% Cr ₂ O ₃) Production Qty., Million tonnes	Development Qty. Million Cu.m. (OB/IB)	Stripping Ratio (Cu.m./tons)
2019-20	0.30	0.109633	0.189660	2.41	8.03
2020-21	0.30	0.176716	0.123178	1.46	4.87
2021-22	0.30	0.197787	0.101442	1.73	5.77
2022-23	0.30	0.207656	0.091959	1.78	5.93
2023-24	0.30	0.235018	0.064142	1.89	6.30

In view of increased market demand of chromite ore in charge-chrome and ferrochrome industries, an annual production of 0.3 MT per annum has been envisaged.

(Sunit Kr. Kar. Mining Engineer)

(Abinash Kr. Sahu. Geologist)



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The proposed expansion shall provide an opportunity of continuing direct and indirect employment among local populace. Considering the aspects, namely meeting a bulk of the internal and external demand, need for earning revenue to state exchequer, continuing direct and indirect employment among public and economic development of a predominantly backward region of the country, continuation of mining operation in enhanced capacity in Sukrangi mining lease, is essential.

The bulk density for tonnage conversion has been arrived by the regression study as described earlier in Chapter 1 (j) of Part – A.

The following linear regression equation was established from the X-Y scatter plot of bulk density (BD) & Cr₂O₃% value of samples.

$$y = 0.043 x + 1.030 \text{ at a correlation coefficient of } 0.903$$

Where, y = Bulk density
 x = Grade in Cr₂O₃ %

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

The quantity of waste to be re-handled during the plan period is as per the following table

Year	Dump no.	Yearwise Handling (m ³)	Estimated recovery	Reject (m ³)	Purpose of rehandling	Extent of rehandling	Grade of rehandling
2019-20	OB Dump-1	85383	0	0	Lateral expansion of pit	435.74E to 565.5E 272.5N to 325.5N	(Cr ₂ O ₃ <10%)
2020-21	OB Dump-1	3327	0	0	Lateral expansion of pit	455E to 565.5E 272.5N to 325.5N	(Cr ₂ O ₃ <10%)
2021-22	NIL	NIL	NIL	NIL	NIL	NIL	NIL
2022-23	OB Dump-1	6932	0	0	Lateral expansion of pit	467E to 576.2E 348N to 394.2N	(Cr ₂ O ₃ <10%)
2023-24	NIL	NIL	NIL	NIL	NIL	NIL	NIL

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

The year wise pit development & production plans at the end of FY 2019-20 to 2023-24 are shown in Plate no.-6A to 6E. The composite development plan of the mine is shown in Plate no.- 6F. The Composite development sections of the pit are shown in Plate no.-7.

(Smit Kr. Kar. Mining Engineer)

(Abhinav Kr. Sahu Geologist)



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The pit configuration for proposed production and development in tabular format is given below

Year	2019-20	2020-21	2021-22	2022-23	2023-24
No. of benches in ore	4	3	2	5	7
No. of benches in Waste	7	8	9	6	7
Direction of advancement	Laterally towards north and south	Laterally due North and downwards	Laterally due South and downwards	Laterally due North and downwards	Laterally due South and downwards
Bench slope ,deg	65	65	65	65	65
Quarry slope , deg	22	20	20	22	21
Top RL	212	212	212	212	206
Bottom RL	152	146	140	134	128

The calculations of sectional reserves for year wise production of ore, Mineral rejects and waste quantity is furnished in tabular format below

2019-20						
Cross-sections	Ore (>40% Cr2O3)		Mineral Reject (10%-40% Cr2O3)		Waste (<10% Cr2O3)	
	A=area (m2)	Tonnage =Ax50x3.0	A=area (m2)	Tonnage =Ax50x2.3	A=area (m2)	volume (m ³) =Ax50
-500E	45.59	6838.22	467.24	53732.22	1498.38	74919
-450E	7.79	1168.70	98.97	11381.64	985.86	49293
-400E	61.19	9178.73	0.00	0.00	1362.85	68143
-350E	0.00	0.00	66.23	7616.50	1459.78	72989
-300E	25.20	3780.00	30.34	3488.78	982.10	49105
-250E	11.79	1768.74	0.00	0.00	889.94	44497
-200E	71.97	10795.95	0.00	0.00	1410.51	70526
-100E	35.30	5294.73	0.00	0.00	2735.36	136768
00E	30.11	4516.37	9.40	1080.73	2452.21	122611
100E	73.80	11070.00	219.62	25255.95	2285.45	114272
150E	42.18	6327.45	0.00	0.00	2735.64	136782
200E	41.14	6170.85	0.00	0.00	2897.42	144871
250E	26.07	3910.61	65.80	7567.56	2929.23	146461
300E	24.28	3642.30	22.83	2625.07	2826.47	141324
350E	39.40	5910.30	49.71	5717.11	2952.74	147637
400E	43.80	6570.45	0.00	0.00	3973.74	198687
450E	61.88	9282.60	0.00	0.00	3829.06	191453
500E	48.48	7272.45	465.97	53586.40	4190.84	209542
550E	40.90	6134.40	153.11	17607.76	4811.66	240583
Total	730.89	109632.85	1649.22	189659.73	47209.24	2360462

(Sunil Kr Kar Mining Engineer)

(Abhinash Kr Sahu Geologist)



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LESSEE: THE ODISHA MINING CORPORATION LTD.



2020-21						
Cross-sections	Ore (>40% Cr2O3)		Mineral Reject (10%-40% Cr2O3)		Waste (<10% Cr2O3)	
	A=area (m2)	Tonnage =Ax50x3.0	A=area (m2)	Tonnage =Ax50x2.3	A=area (m2)	Vol., m ³ =Ax50
-550E	80.52	12077.42	0.00	0.00	1373.41	68671
-500E	40.43	6063.96	165.58	19041.93	1524.30	76215
-450E	49.51	7426.71	75.42	8673.43	1647.12	82356
-400E	0.00	0.00	0.00	0.00	1329.24	66462
-350E	0.00	0.00	81.29	9347.80	1811.32	90566
-300E	76.39	11458.20	45.27	5206.42	1543.05	77153
-250E	52.02	7802.25	0.00	0.00	1426.68	71334
-200E	82.74	12411.69	0.00	0.00	1579.93	78997
-100E	65.26	9789.12	0.00	0.00	1615.34	80767
00E	46.66	6999.49	19.94	2292.69	1388.79	69440
100E	57.42	8612.64	254.08	29219.42	1251.02	62551
150E	90.70	13604.77	0.00	0.00	1511.45	75572
200E	53.23	7984.99	0.00	0.00	1277.32	63866
250E	34.22	5133.34	88.30	10154.71	1217.91	60895
300E	74.59	11188.63	70.08	8059.15	1249.17	62459
350E	128.17	19225.34	87.89	10107.55	1498.32	74916
400E	115.22	17283.51	0.00	0.00	1244.11	62205
450E	114.34	17151.38	0.00	0.00	1266.58	63334
500E	16.68	2502.24	183.26	21074.82	1531.59	76579
550E	0.00	0.00	0.00	0.00	964.60	48230
Total	1178.10	176715.69	1071.11	123177.91	28251.35	1412568

2021-22						
Cross-sections	Ore (>40% Cr2O3)		Mineral Reject (10%-40% Cr2O3)		Waste (<10% Cr2O3)	
	A=area (m2)	Tonnage =Ax50x3.0	A=area (m2)	Tonnage =Ax50x2.3	A=area (m2)	Vol., m ³ =Ax50
-500E	61.59	9238.45	121.99	14029.13	1316.83	65842
-450E	0.00	0.00	188.26	21650.08	1230.48	61524
-400E	56.97	8545.45	0.00	0.00	1313.67	65683
-350E	0.00	0.00	79.54	9147.43	2601.75	130087
-300E	0.00	0.00	0.00	0.00	1917.87	95893
-250E	0.00	0.00	0.00	0.00	1494.82	74741
-200E	126.14	18920.33	0.00	0.00	1862.15	93107
-100E	104.90	15735.72	0.00	0.00	1931.20	96560
00E	43.87	6579.88	20.38	2343.23	2283.88	114194
100E	98.79	14817.90	93.96	10805.53	2132.24	106612
150E	116.92	17537.82	0.00	0.00	1981.87	99093
200E	83.68	12552.68	0.00	0.00	1789.17	89459
250E	32.37	4855.11	133.50	15352.98	1947.09	97355
300E	111.58	16736.65	84.77	9748.43	1980.92	99046
350E	115.00	17250.13	67.76	7791.85	1916.28	95814
400E	229.95	34492.67	0.00	0.00	1633.87	81693
450E	118.38	17757.32	0.00	0.00	1594.39	79719
500E	18.44	2765.97	91.94	10572.62	1901.21	95061
550E	0.00	0.00	0.00	0.00	289.89	14494
Total	1318.57	197786.07	882.10	101441.28	33119.57	1655978

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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2022-23						
Cross-sections	Ore (>40% Cr ₂ O ₃)		Mineral Reject (10%-40% Cr ₂ O ₃)		Waste (<10% Cr ₂ O ₃)	
	A=area (m ²)	Tonnage =Ax50x3.0	A=area (m ²)	Tonnage =Ax50x2.3	A=area (m ²)	Vol., m ³ =Ax50
-600E	41.70	6255.56	0.00	0.00	280.77	14039
-550E	57.24	8586.05	0.00	0.00	1597.43	79871
-500E	69.85	10477.29	98.22	11295.14	1563.43	78171
-450E	0.00	0.00	92.98	10692.44	1615.71	80785
-400E	45.72	6858.20	0.00	0.00	1743.50	87175
-350E	0.00	0.00	100.94	11608.46	1838.33	91917
-300E	72.16	10823.42	0.00	0.00	1782.07	89104
-250E	56.87	8530.85	0.00	0.00	1596.32	79816
-200E	0.00	0.00	0.00	0.00	1453.85	72692
-100E	0.00	0.00	0.00	0.00	1749.92	87496
00E	48.45	7266.78	24.81	2853.30	1742.11	87106
100E	95.68	14351.66	150.22	17275.82	1704.95	85247
150E	110.29	16543.50	0.00	0.00	1801.48	90074
200E	121.55	18232.02	0.00	0.00	1745.90	87295
250E	42.30	6345.03	106.58	12256.71	1772.91	88646
300E	169.13	25369.53	88.81	10213.42	1727.44	86372
350E	138.00	20700.66	35.86	4123.60	1937.57	96879
400E	186.27	27941.00	0.00	0.00	1826.21	91310
450E	116.03	17404.34	0.00	0.00	1725.67	86284
500E	13.13	1969.68	101.21	11639.55	1924.06	96203
550E	0.00	0.00	0.00	0.00	1241.89	62094
Total	1384.37	207655.53	799.64	91958.42	34371.54	1718577

2023-24						
Cross-sections	Ore (>40% Cr ₂ O ₃)		Mineral Reject (10%-40% Cr ₂ O ₃)		Waste (<10% Cr ₂ O ₃)	
	A=area (m ²)	Tonnage =Ax50x3.0	A=area (m ²)	Tonnage =Ax50x2.3	A=area (m ²)	Vol., m ³ =Ax50
-600E	22.94	3440.57	0.00	0.00	965.43	48272
-550E	80.49	12073.86	13.74	1579.79	1656.43	82821
-500E	33.13	4968.95	164.75	18946.22	1255.19	62760
-450E	0.00	0.00	182.59	20997.42	1503.17	75158
-400E	38.08	5711.64	0.00	0.00	1607.14	80357
-350E	0.00	0.00	0.00	0.00	0.00	0
-300E	78.60	11789.90	0.00	0.00	1945.25	97262
-250E	159.56	23934.33	0.00	0.00	2296.98	114849
-200E	140.69	21103.05	0.00	0.00	2082.47	104123
-100E	129.03	19354.04	0.00	0.00	2187.63	109381
00E	0.00	0.00	0.00	0.00	2322.42	116121
100E	0.00	0.00	0.00	0.00	1929.25	96462
150E	0.00	0.00	0.00	0.00	1584.67	79234
200E	0.00	0.00	0.00	0.00	2286.25	114312
250E	53.71	8055.86	167.56	19269.54	2213.61	110681
300E	242.04	36305.37	26.46	3042.51	1984.71	99235
350E	135.42	20313.68	2.66	305.57	1902.03	95101
400E	248.85	37327.22	0.00	0.00	1867.21	93360
450E	204.26	30639.00	0.00	0.00	2113.08	105654
500E	0.00	0.00	0.00	0.00	2213.30	110665
550E	0.00	0.00	0.00	0.00	925.81	46291
Total	1566.78	235017.44	557.75	64141.04	36842.02	1842101

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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

The Sukrangi Chromite mines comes under Category-A (Fully Mechanized category) as per the IBM guideline. The deposit is worked by opencast mining method with formation of benches. Working benches are kept 6 m high and minimum 11 m wide. The conventional mining method deploys use of 115 mm diameter drills and blasting with low density (LD) cartridge explosives. 15-25 t capacity dumper/ tipper with matching capacity hydraulic excavators/ loaders for loading and transportation of ore to sale plots and transportation of waste/ mineral reject materials to their respective dumps/ stock yards have been envisaged in this scheme of mining.

In general the stratum is very soft however, occasional drilling & blasting is being carried out in the hard strata only for improved fragmentation and as per the requirement of the customers. For the purpose of carrying out drilling, 115 mm diameter down the hole (DTH) blast-hole drills are deployed. The drilling pattern for 115 mm diameter holes is at a burden of 3.5m and spacing of 4.0m. The bench height has been kept at 6 m. Therefore keeping into account the factor for mineral reject drilling & extra drilling to take care of hole collapse, the depth of the hole is around 6.5 m.

Around 2.5-4.0 cubic meters bucket capacity hydraulic excavators (diesel powered) is being used in conjunction with 15-25t dumpers. The ROM is being segregated at the mining face itself as ore / mineral reject depending into the content of Cr_2O_3 in it. If the Cr_2O_3 content in the ore is more than 40% it is being considered into direct ore if the Cr_2O_3 content in the ore is in between 10-40% it is being considered as mineral reject ore. Accordingly the ore is being stacked into their respective stacking plots. Waste & mineral reject materials generated is being transported to their respective dumping/ stacking locations. Front end loader of around 1.5-3.0 cubic meters bucket capacity is being deployed to load the ore/ mineral reject from the respective stacking plots.

Regular sampling of the ore at mine face itself is being carried out for on-face segregation of ore/ mineral reject. As per the permission granted by DGMS under regulation 106(2)(b), the bench configurations adopted at Sukrangi chromite mine is given below:-

Sl. No.	Parameters	Existing pit
1.	Quarry Size (L x W x D)	1136 m x 290 m x 80 m
2.	Top Bench RL	212 mRL
3.	Bottom Bench RL	153 mRL
4.	Maximum Bench Height	6 m
5.	Minimum Bench Width	11m
6.	No. of benches in ore	8
7.	No. of benches in waste	9
8.	Bench slope	65 deg.
9.	Ultimate pit slope angle	< 25 deg.
10.	UPL RL	98 mRL

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(Abinash Kr. Sahu, Geologist)



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Summary of proposed yearwise development:

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Name of Quarry	Band-IV S				
Height of Bench, m	6	6	6	6	6
Working width of Bench, m	6-11	6-11	6-11	6-11	6-11
Location co-ordinates of the proposed quarry	-550E to 610E -100N to 340N	-580E to 610E -100N to 350N	-580E to 610E -100N to 350N	-615E to 610E -100N to 395N	-620E to 610E -125N to 395N
Benches considered for development	176-152	164-146	158-140	164-134	170-128
Direction of Advancement	Laterally towards north and south	Laterally due North and downwards	Laterally due South and downwards	Laterally due North and downwards	Laterally due South and downwards
Gradient of haul road	1:16	1:16	1:16	1:16	1:16
Bench slope ,deg	65	65	65	65	65
Quarry slope , deg	22	20	20	22	21

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

The year wise pit development plans and sections for the period 2019-20 to 2023-24 are shown in Plate no.6A to 6E and Plate no.7 respectively. The composite development plan is enclosed as plateno.6F. The surface plan of the mine is shown as Plate. No. 3.

The development of mining operations in this mining plan period is envisaged in the existing quarry of Sukrangi mine. Sukrangi mine is designed to excavate 0.3 mt/yr. Presently the top bench is at 212 mRL and the bottom bench is at 153 mRL. In 2019-20 the top benches will be laterally widened and properly developed to excavate the ore. In this period, the mine will be deepened till 152 mRL. The benches are kept 6m high and 11m wide and bank slope angle is maintained at 65 deg. In 2020-21, the benches will be pushed towards northern side and deepened till 146 mRL to achieve the target. In 2021-22, the benches will be pushed in the southern direction till 140mRL. In 2022-23, the mine will go down to 134 mRL to meet the desired target. In 2023-24, the pit will advance further and reach upto 128 mRL.

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(Abinash Kr. Sahu, Geologist)



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The year wise excavation planning and waste dump management is summarized below:

	Particulars	2019-20
Excavation Proposal	Name of Quarry	Band-IV S
	Average Length of face,m	2500
	Working width of Bench, m	6-11
	Height of Bench, m	6
	Location co-ordinates of the proposed quarry	-550E to 610E -100N to 340N
	Benches considered for development ,mrl	176-152
	Direction of Advancement	Laterally towards north and south
	Gradient of haul road	1:16
	Bench slope ,deg	65
	Quarry slope , deg	22
Waste dump Proposal	Name of Waste Dump	WD4 & WD5
	Location co-ordinates of the waste dump	30E to 635E (WD4) -642N to -443N (WD4) -750E to -125E (WD5) 997N to 1710N (WD4)
	Dimension of Waste Dump (L x B x H) In m	587 x 160 x 30 (WD4) 679 x 543 x22(WD5)
	RL of Waste Dump	193-225 (WD4) 144-160 (WD5)
	Quantity of Waste Dumped , m3	581576 (WD4) 1832654 (WD5)
	Particulars	2020-21
Excavation Proposal	Name of Quarry	Band-IV S
	Average Length of face,m	2840
	Working width of Bench, m	6-11
	Height of Bench, m	6
	Location co-ordinates of the proposed quarry	-580E to 610E -100N to 350N
	Benches considered for development ,mrl	164-146
	Direction of Advancement	Laterally due North and downwards
	Gradient of haul road	1:16
	Bench slope ,deg	65
	Quarry slope , deg	20
Waste dump Proposal	Name of Waste Dump	WD5
	Location co-ordinates of the waste dump	-750E to -125E 997N to 1710N
	Dimension of Waste Dump (L x B x H) In m	679 x 543 x32
	RL of Waste Dump	144-170
	Quantity of Waste Dumped , m3	1461090

(Sunil Kr. Kar Mining Engineer)

(Abinash Kr. Sahu. Geologist)



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	Particulars	2021-22
Excavation Proposal	Name of Quarry	Band-IV S
	Average Length of face,m	2600
	Working width of Bench, m	6-11
	Height of Bench, m	6
	Location co-ordinates of the proposed quarry	-580E to 610E -100N to 350N
	Benches considered for development ,mrl	158-140
	Direction of Advancement	Laterally due South and downwards
	Gradient of haul road	1:16
	Bench slope ,deg	65
	Quarry slope , deg	20
Waste dump Proposal	Name of Waste Dump	WD5
	Location co-ordinates of the waste dump	-750E to -125E 997N to 1710N
	Dimension of Waste Dump (L x B x H) in m	679 x 543 x42
	RL of Waste Dump	144-180
	Quantity of Waste Dumped , m3	1727935

	Particulars	2022-23
Excavation Proposal	Name of Quarry	Band-IV S
	Average Length of face,m	2656
	Working width of Bench, m	6-11
	Height of Bench, m	6
	Location co-ordinates of the proposed quarry	-615E to 610E -100N to 395N
	Benches considered for development ,mrl	164-134
	Direction of Advancement	Laterally due North and downwards
	Gradient of haul road	1:16
	Bench slope ,deg	65
	Quarry slope , deg	22
Waste dump Proposal	Name of Waste Dump	WDS
	Location co-ordinates of the waste dump	-750E to -125E 997N to 1710N
	Dimension of Waste Dump (L x B x H) in m	679 x 543 x52
	RL of Waste Dump	144-190
	Quantity of Waste Dumped , m3	1781589

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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	Particulars	2023-24
Excavation Proposal	Name of Quarry	Band-IV 5
	Average Length of face, m	2806
	Working width of Bench, m	6-11
	Height of Bench, m	6
	Location co-ordinates of the proposed quarry	-620E to 610E -125N to 395N
	Benches considered for development, mrl	170-128
	Direction of Advancement	Laterally due South and downwards
	Gradient of haul road	1:16
	Bench slope, deg	65
	Quarry slope, deg	21
Waste dump Proposal	Name of Waste Dump	WD5
	Location co-ordinates of the waste dump	-750E to -125E 997N to 1710N
	Dimension of Waste Dump (L x B x H) in m	679 x 543 x 82
	RL of Waste Dump	144-220
	Quantity of Waste Dumped, m ³	1888163

The surface plan of the mine is shown as **Plate No. 3**. Considering the constraints like safety zone for the nala and village roads passing through the lease area; the mining operations are to be planned in an optimized manner so that the non-mineralised area for dumping the waste is continuously available.

The proposed waste dumps i.e. WD4 and WD5 shall be formed by retreating method of dumping in order to facilitate its early reclamation. WD4 will be spread over an area of 5.85 ha with an approximate capacity of 0.5 M.cu.m., WD5 with capacity of 8.7 M.cu.m. over an area of 26.28 ha.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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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.

The Sukrangi chromite mine comes under Category-A (Fully mechanized category) as per the IBM guidelines. The conceptual plan of Sukrangi lease has been prepared on the basis of the life of deposit. Conceptual mining plan has been prepared following the guidelines of IBM, keeping in view the present knowledge of the deposit, topography of the area, surface drainage pattern, mineable reserves available, mining technology and selection of the sites for waste disposal within the lease area etc.

From the six bands of chromite encountered in the Sukinda Valley the Sukrangi area consists of three sub parallel lodes. They are Band No. III, IV and V occupying different stratigraphic level. They are dipping sub – vertically towards N – W with pinch and swell structure.

(i) Band No – III

Chromite band No. III, of Sukrangi lease is the northern-most band. The average width of this band as exposed in the quarry section is around 1m and at places the maximum width observed is around 2.5m. The insitu ore body exposed in the quarries, within this band is brown, friable and medium grained.

(ii) Band – IV

The south flank of Chromite band No. IV is centrally located in the Sukrangi lease. This band consists of two lodes, out of which the southern lode of this band contains high Cr_2O_3 with high silica and maintains uniformity in grade at depth. The northern lode of this band contains low to medium Cr_2O_3 with low silica and fluctuates in grade towards depth. Both the lodes are friable in nature. In width, it ranges from 5m to 12m at surface and in depth it becomes thicker and ranges to around 21m wide. The strike direction of the ore body is N 55 deg. dipping at 50 deg. to 70 deg. towards North-West and becomes almost vertical at depth. Besides that, the ore bodies show pinch and swell structure both laterally and vertically. The ore body comprises of medium-grained friable ore with abundant inter-granular limonite, chlorite to massive colored talc and white crypto-crystalline silica, but at depth they become more homogenous and free from talcose material.

(iii) Band – V

Chromite band No. V consists of a single thick ore band running at the strike direction of N 55 deg. W for around 300 m. The dip is not clear in the exposed outcrop. Few trenches were driven across the trend of the ore body and the maximum exposed width of this ore body is recorded to be 11 m.

As per the geological ore body model prepared in the 'ore body modeling' software, the extent of the main lode characterized as band No. IV-S extends upto -44 mRL. On formulation of the ultimate pit upto -44 mRL keeping into consideration the lease

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boundary & safety zone of 7.5m, the stripping ratio arrived comes to a figure of around 17.7 cubic meters per tonne of ore. Therefore, on the basis of the existing cost of mining, processing cost of beneficiable grade chromite, overheads & sale price of the mineral the ultimate pit level has been optimized and accordingly the floor level of the optimized ultimate pit was fixed at 98 mRL. The stripping ratio achievable at this level is around 5.68 cubic meters per tonne of ore. The bench parameters considered for finalizing the ultimate pit limit taking into consideration the permission granted by DGMS under regulation 106 (2)(b) of the Metalliferous Mines Regulations 1961 for deep hole drilling & blasting with deployment of HEMM are given below:-

Ultimate pit parameters	
Bench height, m	6
Bench width, m	6
Bank slope angle, deg	65
Overall pit slope angle, deg	25
Ultimate pit extents	-600N to 1858N -800E to 530E
Lowest RL	98mRL

In line to the ultimate pit designed for the main lode i.e. IV-S, ultimate pits have been finalized for all the remaining lodes i.e. band IV-N, band-III-N&S and band -V.

The quantity of ore, mineral rejects and waste generated in the ultimate pit stage has been tabulated below:

Ultimate pit stage	
Total excavation, m ³	48497255
Total waste generation, m ³	44235409
Mineral rejects generation, t	1929388
Top soil generation, m ³	342951
Ultimate pit extents	-600N to 1858N -800E to 530E
Proposal of expansion, if any	underground mining is proposed.

Life of Mine: The mine life of Sukrangi lease is around 22 years at the proposed exploitation rate of 0.30 Mt of ROM ore per year considering the proved reserves only.

Disposal of mineral rejects: The mineral reject material generated will be stacked as external dumps at the ear – marked places. A total of 1.92 Million tonnes of mineral reject material will be generated up to the conceptual stage. The sequence of generation of mineral reject materials is given in the table 4.1.

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Table 4.1 (Mineral reject generation upto Conceptual period)

Year	Mineral reject
	Qty., tonnes
Block year_19-24	570381
Year_24-41	1324906
Total	1895287

The stacks will be stacked as external dumps in the form of terraces with its individual terrace height as 20 m and in two lifts .

Waste Disposal: The waste generated during the course of mining operations will be stacked as external dumps. All the lodes continue to exist almost vertically at deeper levels. Though there is positive NPV to a depth of around -44 mRL in the main ore band No. IV-S (which is currently under production), but the stripping ratio achieved to the tune of 17.7 cubic meters per tonne to ore, poses a great problem for external dumping of waste. Accordingly, the economic pit limit has been fixed at 98 mRL at a stripping ratio of 5.68 cubic meters per tonne of ore, so that the area available at surface can be utilized for safe dumping. The selection of the dump sites for external dumping is on the basis of following criteria.

- All dump sites have been located outside the mineralized zone beyond ultimate pit limit.
- Topography features have been taken into account, particularly in the context of water drainage.
- The DGMS permission under regulation 106(2)(b) of the Metalliferous Mines Regulations 1961.

The sequence of generation of waste materials from all the lode bands existing within Sukrangi lease is given in table 4.2a.

Table 4.2a (Waste generation upto Conceptual period)

Year	Qty., cubic meters
Block year_19-24	9.27
Year_24-41	34.965
Total	44.235

Therefore, out of - 44.235 million cubic meters of waste proposed to be generated from the Sukrangi lease upto conceptual stage, only 17.85 million cubic meters can be accommodated inside the Sukrangi lease. The balance 26.385 million cubic meters needs to be further accommodated outside the lease hold area of Sukrangi lease during the conceptual period. Permission for the same will be duly acquired from the respective statutory agencies and subsequently the mining plan will be again modified. The waste during the scheme period will be dumped as external dumps at the respective destinations as shown in the table below. The detailed holding capacities of the respective dumps are given below:-



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Table 4.2b (Waste dumping plan inside ML area up to Conceptual period)

Waste Dump Destination	Waste Quantity, cubic meters	Bottom RL	Top RL
WD4	581576	190	225
WD5	12871706	130	240
WD2	1130752	170	220
WD1	3201837	132	192
WD3	60359	135	150
Total	17846230		



The existing Waste Dump WD1 shall be partly rehandled at the conceptual stage for ultimate pit configuration.

The height & width of individual terraces will be 20 m with bank slope angle of 37° of individual lift for a total number of 3 lifts. The dumps will be compacted and afforested on the terraces as well as along the slopes after spreading a layer of top soil over it before rehabilitation. The location of these dumps is marked on conceptual plan. Dumps will be afforested to check against wash off and guarded with retaining walls at their toes along the lower contours. Following the retaining wall a garland drain will be developed for carrying water to the natural drainage system ultimately leading into the natural drainage pattern of the area. All the waste dumps will be rehabilitated on conceptual period by adequate plantation at the rate of 300 trees per hectare along the slopes as well as terraces so as to avoid any wash off. A total of 29000 saplings will be planted over the refuse dumps for their stabilization.

A total of 3,42,951 m³ of topsoil will be generated from the freshly broken area which will be utilized for concurrent afforestation over the dumps & also for avenue plantation due to very low shelf life of the lateritic soils. The phase-wise generation of topsoil is given in table 4.4.

(Table 4.4) Top soil generation

Year	Top Soil Generation, In cu. m
2019-Conceptual period	342951

Exploration: There is proposal to drill 44 boreholes with a total meterage of 10360 m during the plan period. The year wise details of the proposed boreholes to be drilled in different chromite bands is given in para 1.0 (j). The proposed exploration shall be carried out subject to the required Forest Clearances over the balance forest area within the lease hold area.

Environmental monitoring: Noise, air, water and other environmental parameters will be monitored periodically to have a close check on the environmental pollution. Spraying of water on haul roads, dust arrester suppression system on drills, prevention of vibration by utilization of minimum quantity of explosive per delay and followed by control blasting technique, massive plantation along road and other areas will be taken up to restrict the nuisance caused by mining activities.

(Sunil Kr. Kanungo Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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The land use pattern at the end of conceptual period on the basis of current level of exploration data with proposed exploitation by opencast method only is given below in the following table. The conceptual plan is shown in Plate No. 8.

The land use pattern at various stages upto conceptual period is shown in the table below:

Sl. No.	Heads	Area, (Ha.)		
		Existing land use	Land use at the end of 2019-24	Conceptual land use
1	Excavated area	27.3	43.31	141.09
2	Waste Dump	18.47	53.09	67.98
3	Mineral storage	15.05	23.14	18.91
4	Infrastructure (including ETP)	6.22	17.18	17.18
5	Roads	6.24	5.23	1.0596
6	Safety Zone *	53.31	53.31	53.31
7	Untouched land (Tenant, Village Road & Nala)	256.12	187.45	83.55
	Total	382.709	382.709	382.709

* includes (i) 7.5 m wide all along the ML area. (ii) 100m on either side of Damsal nala (iii) 10m on either side of the village road and (iv) additional safety zone area on southern boundary of the ML.
Source: Plate-V of FDP

Studies will be conducted for underground development of the ore deposit. All necessary studies required for developing an underground mine in soft strata will be carried out followed with acquisition of permissions from the concerned statutory agencies for opening the mine by underground method. The post mining land use thereafter is given below:

Post mining land use	Area, Ha.
Partly backfilled and afforested mined out voids	209.0702
Other afforested area	89.072
Roads	1.0596
Remaining untouched areas	83.5522
Total	382.709

The excavated area will be partly backfilled from the existing waste dumps prevailing over the lease at that time and all proposed underground mine openings will be properly plugged from the surface. The top area of the pit will be fenced to prevent any inadvertent movement of persons into the area. The infrastructure built up will be de-commissioned and the total area covered under refuse dumps, mineral storage and infrastructure will be afforested by plantation of a total no. of 29000 saplings. At the post mining stage the area will have partly backfilled mined out voids surrounded from all the sides by plantation and dense avenue plantation.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)

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B. UNDERGROUND MINING

Not applicable

C. Extent of Mechanization

The detail statement of the existing and proposed extent of Mechanisation is given below:

Sl No	Machinery	Capacity	Existing fleet, nos.	Proposed fleet nos.	Additional requirement along with capacity
1	Excavator	3.5 Cum	2	3	1 (2.5-4 Cum)
2	Tipper/Dumper	15-25 Tonne	12	13	1 (25-30 tonne)
3	Dozer	80 D	1	1	NIL
4	Drilling Machine with compressor	100 mm dia	1	2	1 (115-150 mm and 450 cfm)
5	Water tanker	9 KL	3	3	NIL
6	DG Set	10 KVA	1	1	NIL
7	Loader, 1.5-3.0 cubic meters	1.5-3.0 Cum	0	2	2
8	Ambulance		0	1	1
9	Road Grader		0	1	1

The details of the calculations for major HEMM are given below:

Drill fleet calculation:

Drill diameter, mm	115-150
Height of bench, m	6
mineral reject drilling @10%	0.6
Length of hole, m	6.6
burden, m	3.5
spacing, m	4
Volume of ore to be broken / hole, m ³	92.4
volume of maximum excavation, m ³	2537140
30% of exacation to be drilled	761142
No. of holes to be drilled	8237
Meterage of drilling to be required, m	54367.28571
Speed of drill, m/hr	15
No. of working days	300
efficiency	80%
no. of shift	3
meterage of drilling per year	64800
No. of drills required	0.8390
Total	1+1(Stand by)= 2

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Excavator calculation	
Bucket capacity, cu.metre	3.5
Time per swing (cycle time), sec	35
Fill factor	0.9
Swell factor	0.7
Production efficiency	0.9
Output/shovel/hour	204.12
Output/shovel/day	3674.16
Volume of maximum excavation, m3	2537140
Volume of maximum excavation/day, m3	8457.133333
No. of excavators required	2.3018
Total	2+1 (standby) = 3

Dumper fleet calculation

Truck capacity	35
Bucket capacity of shovel, m3	3.5
Fill factor	0.9
Swell factor	0.7
tonnage factor, t/m3	3
tonnage per pass of shovel	6.62
No. of passes of shovel	5.29
	6 (approx.)
dumper cycle time	
distance. Km	2.5
Time per swing (cycle time) of shovel, sec	35
Loading time, sec	210
hauling time, sec	600
unloading time, sec	90
returning time, sec	450
spotting time, sec	60
dumper cycle time, sec	1410
no. of dumpers	5.2
no. of dumpers per excavator	6
	=6*2+3
total dumpers	(standby) =15

2



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It has been planned to operate the Sukrangi Chromite Mines with the proposed fleet of mining machineries as mentioned below:

Proposed Fleet of Major HEMM & Auxiliary Mining Equipment

HEMM	Proposed Fleet, Nos.
Hydraulic Excavator, 2.5 – 4 cubic meters	3
Loader, 1.5-3.0 cubic meters	2
Dumper, 25-30 t	15
Drill, 115-150mm	2
Compressor, 450cfm	2
Dozer, D-155 Equivalent (for mine/ dump/ stockpiles)	1
Explosive van, 1t	1
Water tanker, 10 KL	3
Ambulance	1
Road grader	1

The blast design configuration for Sukrangi mines is given below:-

	ore	waste
Total excavation, tonnes	300000	3138499
30% of the rock requires blasting	0.3	0
total excavation requiring blasting	90000	627700
Drill diameter, mm	150	150
burden, m	3.5	3.5
spacing, m	4	4
Height of bench, m	6	6
Sub grade drilling @10%	0.6	0.6
Length of hole, m	6.6	6.6
Volume of ore to be broken / hole, m ³	92.4	92.4
stemming	3	3
charge length	3.6	3.6
explosive density, gm/cc	1.1	1.1
loading density, kg/m	6	6
total explosive charge /hole	21.6	21.6
density, tonnes/m ³	3	1.30
yield/hole, tonne	277.2	120.12
total holes/year	325	5226
total no. of holes blasted per day	3	44
amount of explosive blasted per day,kg	58	940.61
quantity of material blasted per day, tonnes	563	3923.12
powder factor, ton/kg	9.6	4.17
drilling pattern	staggered	
initiation system	electric detonator/DF/nonel/	
firing pattern	wide v-cut	

(Sunil Kr Kar Mining Engineer)

(Abinash Kr Sahu Geologist)

	REVIEW OF MINING PLAN SUKRANGI CHROME ORE LEASE (382.709 HA.) LESSEE: THE ODISHA MINING CORPORATION LTD.	
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3.0 MINE DRAINAGE

- a) **Minimum and maximum depth of water table based on observations from nearby wells and water bodies**
Site elevation, working depth and ground water table

Site elevation : 129 – 254 (in m AMSL)				
	Existing Pit		Ultimate pit	
Quarry	Adjoining GL	Pit level (in m AMSL)	Adjoining GL	Pit level (in m AMSL)
Sukrangi	160-215	153	152 - 164	98
Ground water level : 155 – 195 m AMSL (max. 5 – 10 m bgl)				

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

Maximum and minimum depth of workings of existing quarry, at the end of proposed scheme period is given below.

Depth	Existing Quarries	At the end of plan period i.e. 31.03.2024	Ultimate Pit Level
Bottommost Bench RL	153 mRL	128 mRL	98 mRL

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

The water table in the lease area exists at 134 mRL as observed in the nearby wells and water bodies. Hence the bottom RL at the end of the present plan period will be at 128 mRL.

Considering the future requirement of treatment of mine water for Hexavalent Chromium, there is proposal for construction of ETP (Effluent Treatment Plant) inside the Sukrangi Chrome ore lease at the earmarked place. The location of the proposed ETP has been shown in Reclamation Plan in Plate No 11. The capacity and other ancillary pumping arrangements for the proposed ETP shall be finalized after relevant study from reputed agency. Till the commissioning of New ETP, the mine water encountered shall be treated in the ETP of the adjacent South Kaliapani Mines located at Quarry F. the proposed ETP shall be commissioned in the year 2019-20 after finalization of necessary study report.

The Mine Drainage Plan in respect of Sukrangi Lease has been shown in Plate-13.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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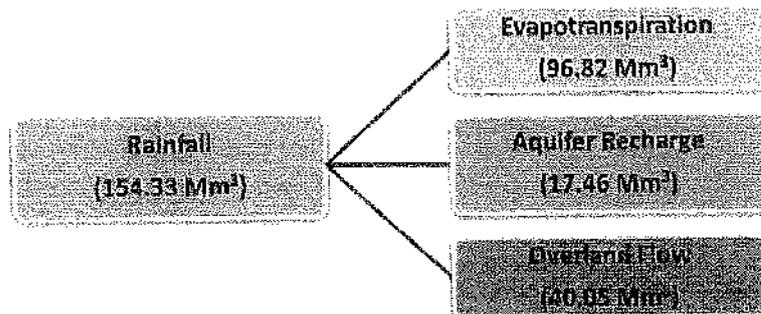
- d) Describe regional and local drainage pattern. Also indicate annual rain fall, catchments area, and likely quantity of rain water to flow through the lease area, arrangement for arresting solid wash off etc.

The area has sub-dendritic pattern of drainage. The principal drainage channel of the Sukinda valley is Damsal Nala, which flows from east to west along the length of the valley. Several seasonal and perennial channels flow down from Daitari hill range and the Mahagiri hill range to join Damsal Nala. Damsal Nala gradually bends towards the south-west and on emerging from the Sukinda valley turns south to join the Brahmani River. Damsal Nala flows through the northern part of the lease. There are also a few small seasonal drainage channels in the lease which drain into Damsal Nala.

The average annual rainfall as recorded at IMD observatory at Cuttack is 1475.3 mm. The Southwest monsoon lasts from mid June to mid September and the area gets more than 75% of the annual rainfall during this period.

Rainfall (1475.3 mm) = Actual Evapotranspiration (925.5 mm) + Moisture surplus (549.8 mm)

The soil moisture surplus (549.8 mm) is an aggregate of (i) surface run-off and (ii) sub-surface ground water storage as aquifer recharge. Considering a monsoon surface run-off coefficient of 0.35 for this type of area, total monsoon run off discharge is calculated to be 382.865 mm which results in 166.395 mm (water head) annual aquifer recharge. Annual water balance in the sub-water shed is summarised below



As such, industrial water requirement of Sukurangi mine will be met from treated mine discharge of adjacent South Kallapani lease.

NOC for ground water withdrawal to M/s Sukurangi Chromite Mine of OMC Ltd for 1060 m³/day i.e. 60 m³/day of ground water through one existing and one proposed bore well and 1000 m³/day through dewatering of mine seepage has already been granted.

(Sunil Kr. Kar Mining Engineer)

(Abinash Kr. Sahu, Geologist)



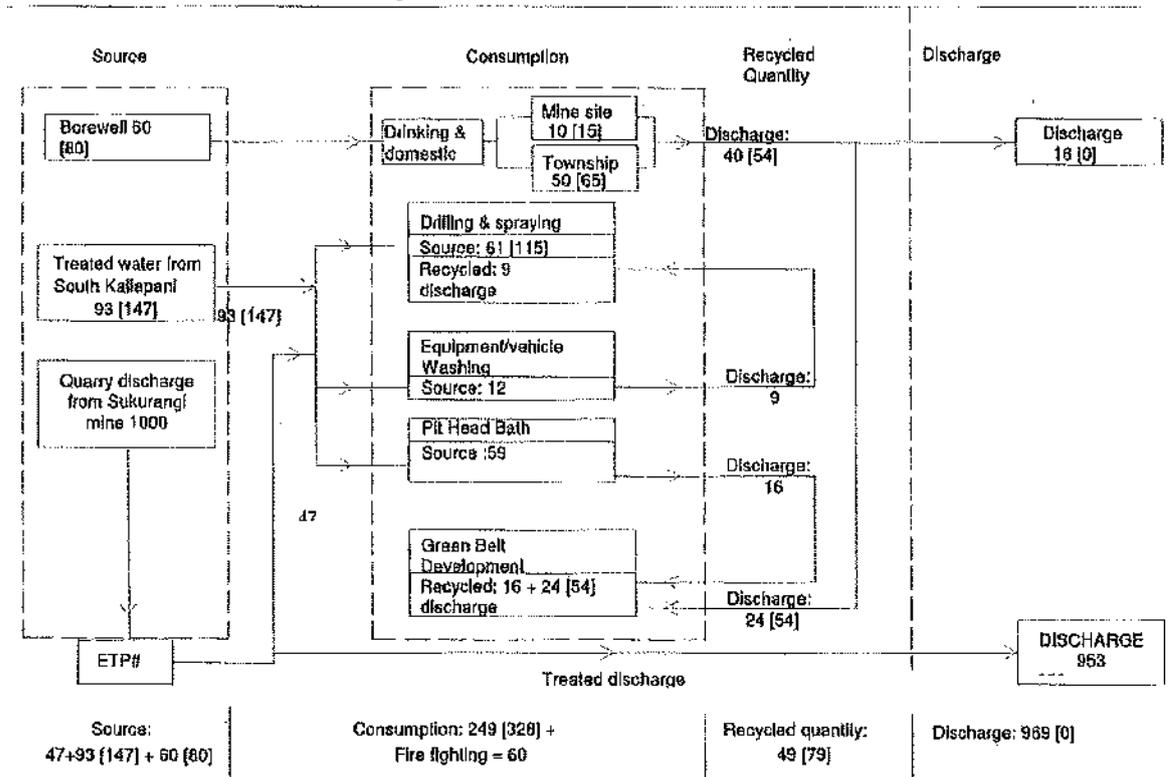
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Water requirement for the project in expansion phase is given the following table

Parameters	(Peak demand) m ³ / day	(Av. demand) m ³ / day
Drilling & spraying	115	70
Equipment / vehicle washing	59	59
Pit head bath	20	20
Green belt	54	40
Drinking water (mine site and Colony)	80	60
Total	328	249

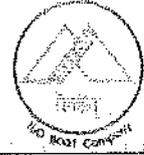
The water balance chart is given below



1. Figures are in m³/d
 2. Figures given outside [] are peak daily water demand and inside [] are average daily water demand.
- # Mine discharge water from Sukurangi mines will be treated in adjacent South Kallapani lease of OMC



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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.

Study shall be conducted for analysis of serpentine and nickeliferrous limonite generated during mining for their future use on the basis of their physical and chemical properties. The analysis report of serpentine and nickeliferrous limonite Has been enclosed as Annexure-17.

The mine waste and mineral reject mineral generated during the course of mining operations will be handled separately. These materials will be dumped at their respective ear marked places inside Sukrangi lease only. The dumps shall be formed by retreating method of dumping so as to facilitate early reclamation. Year wise total quantity of waste proposed to be generated is given below:-

Year	Pit	Disposal of Top Soil (m ³)		Disposal of waste (m ³)		Disposal of Mineral rejects (m ³)	
		Reuse/spreading	Storage	Backfilling	Storage	Blending	Storage
2019-20	Band-IV S	6494.50	NIL	NIL	2414230	NIL	82461
2020-21	Band-IV S	40852.10	NIL	NIL	1461090	NIL	53556
2021-22	Band-IV S	26016.84	NIL	NIL	1727935	NIL	44105
2022-23	Band-IV S	63099.52	NIL	NIL	1781589	NIL	39982
2023-24	Band-IV S	10957.88	NIL	NIL	1888163	NIL	27888
Total		147420.84	NIL	NIL	9273007	NIL	247992

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.

The generated waste will be disposed off at its ear marked place and the same has been shown yearwise in Plate No. 9A to 9E. The area will be first explored for the underneath ore band, if any. Borehole proposal has been made (PBH-33 to 37) in the first year of plan period in the proposed dump area for barren proving. Proposal for the same has already been made on the chapter of exploration. Thereafter, the forest diversion of the said land, if falling under forest land will be acquired. If the area is falling over tenant/ revenue land, surface right permission of the said area will be taken. A parapet wall & garland drain will be constructed all around the periphery. The dump will extend to its periphery first and then retreat backwards in order to facilitate early reclamation of at least its slopes.

The location co-ordinates of the proposed dump are given below:

Dump no.	Proposed waste dump		
	Location Co-ordinates	Dimensions (L x B x H in m)	Top RL (mRL)
WD4	30E to 635E / -642N to -443N	587 x 160 x 30	225
WD5	-750E to -125E / 997N to 1710N	679 x 543 x 82	220

(Sunil Kr. Kar. Mine Engineer)

(Abinash Kr. Sahu. Geologist)



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

The location and details of the existing dump area given below:

Dump	Existing waste dump		
	Location Co-ordinates	Dimensions (L x B x H in m)	Top RL (m)
WD-1	-90N to -400N; -90E to -770E	680 x 380x 40	220.9
OB DUMP-1	180N to 550N; 430E to 650E	280 x 110 x 23	183
OB DUMP-3	-20N to -150N; 280E to 430E	134 x120 x 14	200

The location and details of the existing and proposed Mineral rejects/ Sub grade dump are given below: Dump	Mineral rejects/ Sub grade dump			
	Location Co-ordinates	Dimensions (L x B x H in m)	Existing Top RL (m)	Proposed Top RL (m)
Sub grade dump-1	391N to 518N; 108 E to 349E	237 x 123x 10	160.9-180.8	188 (1 st terrace)
Sub grade dump-2	-101N to 27N; 435E to 536E	127 x 95x 7	183.8-190.71	No proposal of dumping
Sub grade dump-3	407N to 496N; 357E to 461E	100 x 82 x 8	162.3-171.3	179.3(1 st terrace) 188 (2 nd terrace)

In the end of the period Subgrade dump-1 and Subgrade dump-3 will be merged to accommodate the total quantity.

The existing protective measures are detailed below

Dump	Existing waste dump	
	Dimensions of Retaining wall (in m)	Dimensions of Garland Drain (in m)
WD-1	1675 x2x1.5	1820 x 1.5x 1.5
WD4 (Proposed)	710 x 2 x 1.5	710 x 1.5x 1.5
SG Dump	370 x 2 x 1.5	370 x 1.5x 1.5
OB DUMP-3	415x 2 x 1.5	415 x 1.5x 1.5

There are 17 No. of Settling Tanks constructed around the existing waste/Mineral rejects dumps. The dimension of settling tanks is 4.5m x 1.8m x 1.8m.

All the above existing protective measures have been shown in Reclamation Plan in Plate No. 11

All the dumps will be formed by retreating method of dumping, so as to facilitate early reclamation. The height of the individual terrace will be 10 m and the maximum height of the dump will be limited to 60 m. The bank slope angle considered for designing the dump is

(Signature)
 (Sushil K. Das, Mining Engineer)

(Signature)
 (Ajit K. Sahu, Geologist)



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37 degrees and the overall slope angle of the dumps are below 25 degrees. The details of the proposed waste dumps, their designed capacity, year-wise built with top/ bottom RL/ height attained with number of terraces are given in the table below:-

Year	Waste Dump No.	Qty. to be dumped in cubic meters	Dump Bottom mRL	Dump Top mRL	Total height (m)	Terrace height
2019-20	WD4	581576	193-205	225	20	1st terrace- 10 m 2nd terrace – 10 m
	WD5	1832654	137-150	160	22	1st terrace- 10 m 2nd terrace – 10 m
2020-21	WD5	1461090	160	170	32	1st terrace- 10 m 2nd terrace – 10 m 3 RD terrace-10 m
2021-22	WD5	1727935	170	180	42	1st terrace- 10 m 2nd terrace – 10 m 3 RD terrace-10 m 4 th terrace-10 m
2022-23	WD5	1781589	180	190	52	1st terrace- 10 m 2nd terrace – 10 m 3 RD terrace-10 m 4 th terrace-10 m 5 th terrace-10m
2023-24	WD5	1888163	190	220	82	1st terrace- 10 m 2nd terrace – 10 m 3 RD terrace-10 m 4 th terrace-10 m 5 th terrace-10m 6 ^h terrace-10 m 7 th terrace-10m 8 th terrace-10 m

The location co-ordinates of the proposed dump are given below:

Dump no.	Proposed waste dump		
	Location Co-ordinates	Dimensions (L x B x H in m)	Top RL (mRL)
WD4	30E to 635E -642N to -443N	587 x 160 x 30	225
WD5	-750E to -125E 997N to 1710N	679 x 543 x 82	220

(Sumil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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The existing dumps will come within the conceptual pit and accordingly these dumps will be re-handled at the ultimate stage.

The details of the protective measures envisaged for the dump with year wise proposed reclamation/ rehabilitation measures are given below:-

PROPOSALS	2019-20	2020-21	2021-22	2022-23	2023-24	Total
RETAINING WALL (in m)	1165	1140	0	0	0	2305
GARLAND DRAIN (in m)	1179	1152	0	0	0	2331
SETTLING TANKS (in nos.)	6	2	0	0	0	8
PLANTATION (in ha)	14.48	5.85	7.09	4.50	4.28	36.19

There is proposal for construction of settling tanks around the proposed dumps with the following details

Settling Tank	Dump	Dimension	Year
ST-1	WD4	4.5m x 1.8m x 1.8m.	2019-20
ST-2	WD4	4.5m x 1.8m x 1.8m.	2019-20
ST-3	WD5	4.5m x 1.8m x 1.8m.	2019-20
ST-4	WD5	4.5m x 1.8m x 1.8m.	2019-20
ST-5	WD5	4.5m x 1.8m x 1.8m.	2019-20
ST-6	WD5	4.5m x 1.8m x 1.8m.	2019-20
ST-7	WD5	4.5m x 1.8m x 1.8m.	2020-21
ST-8	WD5	4.5m x 1.8m x 1.8m.	2020-21

The settling tanks will be located at the outlet of the garland drains. It will be of three compartments to arrest the suspended solids followed with the chamber to arrest any oil particles. The last chamber shall contain the clean water which will be ultimately discharged.

The protective measures constructed for the waste dump shall be periodically subjected to repair work for maintenance of the same in good condition.

Besides, it is also proposed to stabilize the existing dead waste dumps with bio-degradable coir geo textile made of coconut fibre or husk. It facilitates new vegetation by absorbing water and preventing topsoil from drying out. Seeding or plantation is done after blanketing the coir matting on the dump slope. They provide dump soil good support allowing natural vegetation to become established. The Figure 3.1 shows the typical coir matting in dump slopes. The Figure 3.2 shows the process of coir matt blanketing on the dump slopes. First the dump soil slopes are maintained properly. The seeding is done next. After that the coir matt are placed on the dump with proper anchor. Then the seedling will soon cover the dump with vegetation which stabilizes the dump mats and sowing seeds.



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5.0 USE OF MINERAL AND MINERAL REJECT

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

The ore mined will be supplied in the open market to the manufacturers of ferro chrome. The physical & chemical specifications required by the buyers are given below:-

Fines (-10mm), Chips (+10-25mm) & Lumps (+25-100mm)
Grade- +30% Cr_2O_3

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

No intermediate industry involved for up-gradation of mineral.

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

The ore mined will be supplied in the open market to the manufacturers of ferro chrome. The physical & chemical specifications required by the buyers are given below:-

Fines (-10mm), Chips (+10-25mm) & Lumps (+25-100mm)
Grade- +40% Cr_2O_3

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

The physical & chemical specifications required by the buyers are given below:-

Fines (-10mm), Chips (+10-25mm) & Lumps (+25-100mm)
Grade- +40% Cr_2O_3

- d) **Give detail of processes adopted to upgrade the ROM to suit the user requirements.**

The ROM recovered are configured into two parts, direct ore (+40% Cr_2O_3), mineral reject (+10-40% Cr_2O_3) and rejects (below 10% Cr_2O_3). The process adopted to upgrade beneficiable grade ore is given in chapter 6.0 to follow.

- e) **The useable mineral recovered from ROM may not be directly used in any industry and may need intermediate process to suit the user industry in terms of physical and chemical compositions.**

The ROM recovered are configured into two parts, direct ore (+40% Cr_2O_3), mineral reject (+10-40% Cr_2O_3) and rejects/waste (below 10% Cr_2O_3). The direct ore is directly sold in market. The, the mineral rejects will be stacked and the rejects will be disposed in external dumps.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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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.

The ROM is being segregated at the mining face itself as ore / mineral reject on the basis of blast hole sampling depending upon the content of Cr_2O_3 in it.

The ROM recovered are configured into two parts, direct ore (+40% Cr_2O_3), mineral reject (+10-40% Cr_2O_3) and waste (below 10% Cr_2O_3). The direct ore is directly sold in market. The, the mineral reject will be stacked and the waste will be disposed in external dumps.

- 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.

Not applicable

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

Not applicable

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

Not applicable

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

Not applicable

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

Approx. consumption of ferrous sulphate & alum per shift comes to around 150kg and 30kg respectively.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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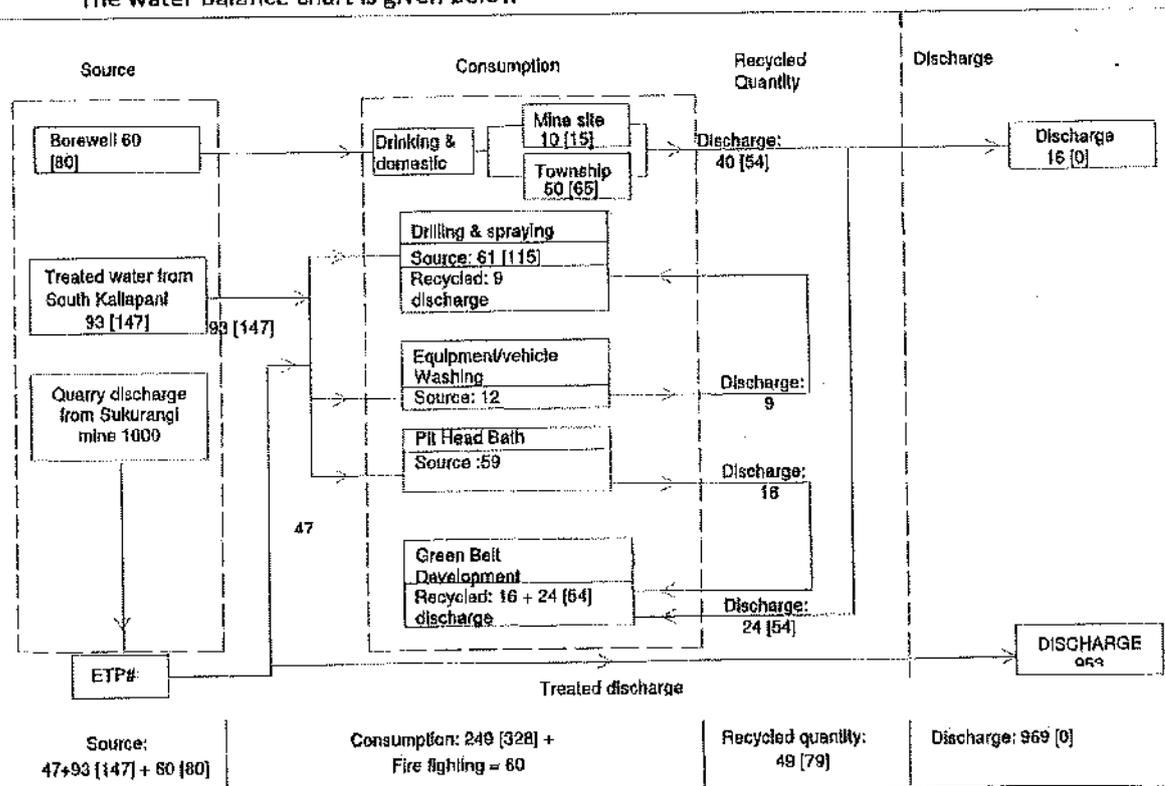


- g) Indicate quantity (cum per day) of water required for mining and processing and sources of supply of water, disposal of water and extent of recycling. Water balance chart may be given.

Water requirement for the project in expansion phase is given the following table

Parameters	(Peak demand) m ³ / day	(Av. demand) m ³ / day
Drilling & spraying	115	70
Equipment / vehicle washing	59	59
Pit head bath	20	20
Green belt	54	40
Drinking water (mine site and Colony)	80	60
Total	328	249

The water balance chart is given below



1. Figures are in m³/d
 2. Figures given outside [] are peak daily water demand and inside [] are average daily water demand.
- # Mine discharge water from Sukurangi mines will be treated in adjacent South Kallapani lease of OMC



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7.0 OTHER
a) Site Services

Basic infrastructure is available in the mine to facilitate the workings. They are mine offices, workshop, garage, explosives magazine, rest shelter, first aid station, site store, V.T. centre, Time office, Canteen, laboratory, etc.

b) Employment Potential:

The proposed manpower requirement under departmental and contractual heads for two shift operation for Production up to 0.3 Million Tonnes ROM from Sukrangi Lease is given below

Departmental

Sl. No	Manpower	Category	Proposed	Existing	Additional Requirement
1	Mines Manager	Exec	01	01	0
2	Graduate Mining Engineer	Exec	03	01	02
3	Diploma Mining Engineer	Exec	03	00	03
4	Geologist	Exec	02	02	0
5	Surveyor	Exec	02	02	0
6	Other Technical Supervisor staff	Sup	07	04	03
7	Mining Foreman	Sup	3	3	0
8	Mining Mate	Sup	8	5	03
9	Water sprinkler operator	HS	02+01	3	0
10	Explosive Van Operator	HS	01	0	01
11	Ambulance Van Operator	HS	03+01	1	03
12	Mechanical Helper	SS	05+01 (Semi Skilled)	04	02
13	Mechanical Engineer	Exec	01	01	0
14	Mechanical foreman	Sup	01+01	0	02
15	Electrical Engineer	Exec	01	0	01
16	Electrician	S	02	01	01
17	Other above ground staff	SS	38	38	0
	Total		87	66	21

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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Contractual

Sl. No	Manpower	Category	Proposed	Existing	Additional Requirement
1	Graduate Mining Engineer	Exec	01	0	01
2	Diploma in Mining Engineer	Exec	02	01	01
3	Other Technical Supervisory staff	Sup	05	05	0
4	Mining foreman	Sup	02	02	0
5	Mining Mate	Sup	04	01	03
6	Excavator operator	HS	06+01	6	1
7	Dumper operator	HS	26+02	28	0
8	Dozer Operator	HS	02+01	02	01
9	Drilling Operator	HS	04+01	01	07
10	Drilling Helper	SS	08+01 (Semi Skilled)	02	07
11	Loader Operator	HS	04	0	04
12	Water sprinkler Operator	HS	04+01	03	02
13	Road Grader Operator	HS	02+01	0	03
14	Mechanical Helper	SS	11+01	11	01
15	Clerical staff	Sup	10	02	08
16	Mechanical Engineer	Exec	02	0	02
17	Mechanical foreman	Sup	04	01	03
18	Electrical Engineer	Exec	01	0	01
19	Electrician	S	01+01	00	02
	Total Strengths		109	65	44

- Exec – Executive
- Sup – Supervisor
- HS – Highly Skilled
- S – Skilled
- SS – Semi Skilled

Already one graduate mining engineer & one geologist has been appointed for the Sukrangi mines as Mining Engr. & Geologist under rule 42 of MCDR 1988 meeting the prescribed qualifications i.e. Graduation in Mining Engg. with 5 years of experience in supervisory capacity & Post graduation in Geology with 5 years of professional experience respectively.

(Sunil Kr. Kar) Mining Engineer

(Abinash Kr. Sahu, Geologist)

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

8.1 Environment Base line information:

Existing land use pattern

The land use pattern at various stages is shown in the table below:

Sl. No.	Heads	Area, (Ha.)		
		Existing land use	Land use at the end of 2019-24	Conceptual land use
1	Excavated area	27.3	43.31	141.09
2	Waste Dump	18.47	53.09	67.98
3	Mineral storage	15.05	23.14	18.91
4	Infrastructure (including ETP)	6.22	17.18	17.18
5	Roads	6.24	5.23	1.0596
6	Safety Zone *	53.31	53.31	53.31
7	Untouched land (Tenant, Village Road & Nala)	256.12	187.45	83.55
	Total	382.709	382.709	382.709

* Includes (i) 7.5 m wide all along the ML area. (ii) 100m on either side of Damsal nala (iii) 10m on either side of the village road and (iv) additional safety zone area on southern boundary of the ML. Source: Plate-V of FDP

Environmental Monitoring & Analysis Work of OMC includes monitoring & analysis of Air Environment, Water Environment, Land Environment such as Ambient Air Quality, Work Zone Air Quality, Noise Level, Water Quality, Waste Water Quality, Vehicular Emission and Soil Quality. Apart from these, various other activities such as suggestions to control the pollution, conducting various kinds of audits are also a part of this programme.

The location and schedule of environmental monitoring stations have been furnished below

Sl. No.	Particulars	Frequency of Monitoring	No. of Stations
1.	Ambient Air Quality (AAQ)	Weekly Twice	6
2.	Fugitive Emission (FE)	Monthly Once	6
3.	Ambient Noise Level Survey (NL)	Monthly Once	6
4.	Work Zone Noise Level Survey (WZNL)	Monthly Once	3
5.	Surface Water Quality (SWQ)	Monthly Once	3
6.	Surface Water Flow Measurement (SWFM)	Monthly Once	3
7.	Meteorological Monitoring (MM)	Hourly Basis	1
8.	Ground Water Quality (Cr ¹⁸)	Monthly once	13
9.	Ground Water Quality (GWQ)	Quarterly Once	5
10.	Ground Water Quality Level Monitoring (SWLM)	Quarterly Once	4

(Sunil Kr. Mishra, Mining Engineer)

(Abhinav Kr. Sahu, Geologist)



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Table No. 2.1: Details of AAC Monitoring Stations

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Transit House	A1	21°02'43.02"N	85°48'17.88"E
Sukrangi Hospital	A2	21°02'47.01"N	85°48'22.44"E
Saruabil Village	A3	21°03'25.86"N	85°48'38.04"E
Sukrangi Hatting	A4	21°03'09.12"N	85°48'42.96"E
Sukrangi School	A5	21°03'14.28"N	85°47'57.96"E
Ostapal Village	A6	21°03'43.08"N	85°47'56.16"E

Table No. 2.2: Details of Fugitive Emission Monitoring Stations

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Quarry Pit	FE1	21°02'59.04"N	85°48'51.03"E
Near Crèche	FE2	21°02'46.98"N	85°48'30.78"E
Haul Road (DE Quarry)	FE3	21°02'40.68"N	85°48'29.34"E
Haul Road (AC Quarry)	FE4	21°02'34.02"N	85°48'28.32"E
Stack Yard	FE5	21°02'53.82"N	85°48'39.06"E
Dump	FE6	21°02'31.74"N	85°48'41.22"E

Table No. 2.3: Details of Noise (Ambient & Work Zone) Monitoring Stations

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Ambient Noise			
Transit House	N1	21°02'43.02"N	85°48'17.88"E
Sukrangi Hospital	N2	21°02'47.01"N	85°48'22.44"E
Saruabil Village	N3	21°03'25.86"N	85°48'38.04"E
Sukrangi Hatting	N4	21°03'09.12"N	85°48'42.96"E
Sukrangi School	N5	21°03'14.28"N	85°47'57.96"E
Ostapal Village	N6	21°03'43.08"N	85°47'56.16"E
Work Zone Noise			
Drilling Site	WZNL1	21°02'51.04"N	85°48'45.42"E
Excavator Loading Point	WZNL2	21°02'47.46"N	85°48'42.42"E
Dumping Area	WZNL3	21°02'31.74"N	85°48'41.22"E

Table No. 2.4: Details of Water Sampling Stations

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Surface Water Quality/Surface Water Flow Measurement			
Damsala Nala near Talangi	SW1/SWFM1	21°03'31.92"N	85°48'31.62"E
Damsala Nala near Saruabil	SW2/SWFM2	21°03'30.66"N	85°48'05.82"E
Damsala Nala near Ostapal	SW3/SWFM3	21°03'30.12"N	85°47'41.94"E
Ground Water Quality/Ground Water Level measurement			
Ostapal village (bore well)	GWQ1/GWLM1	21°03'57.9"N	85°48'07.2"E
Talangi village (bore well)	GWQ2	21°03'34.8"N	85°48'19.9"E
Saruabil village (bore well)	GWQ3/GWLM2	21°03'23.9"N	85°48'13.6"E
Batters Hatting (bore well)	GWQ4/GWLM3	21°03'08.5"N	85°48'40.7"E
Sukrangi village (bore well)	GWQ5/GWLM4	21°02'45.2"N	85°48'42.1"E

(Smil Ke Kar Mining Engineer)

(Ahinash Kr. Sahu, Geologist)



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Table No. 2.5: Details of Meteorological Monitoring Stations

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Near D – Quarry	M1	21°02'45.0" N	85°46'42.0" E

Table No. 2.6: Details of Ground Water Sampling Stations for Cr⁶⁺

Station Details	Station Code	GPS Coordinates	
		Latitude	Longitude
Saruabli Village(Near Batra Hatting)	GW1	21°03'27.7" N	85°48'34.9" E
Near Batra Hatting	GW2	21°03'10.8" N	85°48'39.3" E
Near Suk-Gate-2(Batra Hatting)	GW3	21°03'15.8" N	85°48'37.4" E
Batra Hatting	GW4	21°03'08.5" N	85°48'37.4" E
Saruabli (Nuasahi)	GW5	21°02'41.6" N	85°48'10.1" E
Saruabli (Nuasahi)	GW6	21°03'26.1" N	85°48'14.2" E
Saruabli (Nuasahi)	GW7	21°03'25.4" N	85°48'07.3" E
Saruabli(Nuasahi)	GW8	21°03'23.2" N	85°48'06.1" E
Koiposi Tarament	GW9	21°03'23.9" N	85°47'51.1" E
Koiposi Tarament	GW10	21°03'20.0" N	85°47'51.9" E
Koiposi Near Parking yard	GW11	21°03'16.5" N	85°47'55.7" E
Koiposilabour Hatting	GW12	21°03'21.8" N	85°47'47.2" E
Sukurangi Camp in-front of transit house	GW13	21°02'41.6" N	85°48'17.8" E

Water regime

The area has sub-dendritic pattern of drainage. The principal drainage channel of the Sukinda valley is Damsal Nala, which flows from east to west along the length of the valley. Several seasonal and perennial channels flow down from Daitari hill range and the Mahagiri hill range to join Damsal Nala. Damsal Nala gradually bends towards the south-west and on emerging from the Sukinda valley turns south to join the Brahmani River. Damsal Nala flows through the northern part of the lease. There are also a few small seasonal drainage channels in the lease which drain into Damsal Nala.

Quality of ambient noise level

Table No. 3.5: Summarized Results of Noise Monitoring

Station name	Station no.	Date of Survey	Results in dB(A)					
			Day (0600-2200hr)			Night (2200-0600hr)		
			Max.	Min.	Avg ⁺	Max.	Min.	Avg ⁺
Transit House	N1	03.11.2018	59.0	36.1	51.68	39.1	BDL	33.87
Sukurangi	N2	05.11.2018	60.2	36.6	48.13	40.8	BDL	32.56
Saruabli Village	N3	06.11.2018	63.7	40.4	50.46	40.2	BDL	34.66
Sukurangi Hatting	N4	08.11.2018	61.7	37.1	50.63	42.3	BDL	36.15
Sukurangi School	N5	09.11.2018	60.9	35.4	47.31	39.1	BDL	34.55
Ostapal Village	N6	10.11.2018	63.5	41.7	52.16	44.5	BDL	37.25

⁺Logarithmic Averages, BDL Limit: 30dB (A)M Values In dB (A).



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Quality of Water

Table No. 3.7 : Results of Surface Water Analysis.

Parameters	Unit	SW1	SW2	SW3
		02.11.2018	02.11.2018	02.11.2018
Color	Hazen	<5	<5	<5
Odour	Unobjectionable	U/O	U/O	U/O
Suspended Solids	mg/l	78	82	84
Turbidity	NTU	25	27	24
pH value	---	7.76	7.23	7.54
Temperature	°C	10	09	11
Oil & Grease	mg/l	<5	<5	<5
Ammonia nitrogen(as N)	mg/l	0.042	0.038	0.046
Total Kj. Nitrogen(as NH ₃)	mg/l	5.2	5.4	4.2
Total Hardness (as CaCO ₃)	mg/l	82	80	87
Iron (as Fe)	mg/l	0.28	0.34	0.42
Chloride (as Cl)	mg/l	28	26	38
Fluoride (as F)	mg/l	<0.05	<0.05	<0.05
Total Dissolved Solids	mg/l	108	124	98
Calcium (as Ca)	mg/l	27.6	25.4	28.9
Magnesium (as Mg)	mg/l	9.8	9.2	9.6
Copper(as Cu)	mg/l	<0.03	<0.03	<0.03
Nickel (as Ni)	mg/l	0.044	0.040	0.038
Manganese (as Mn)	mg/l	<0.05	<0.05	<0.05
Sulfate (as SO ₄)	mg/l	35	46	38
Nitrate (as NO ₃)	mg/l	0.040	0.044	0.050
Sulfide (as S)	mg/l	<0.1	<0.1	<0.1
Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	<0.001	<0.001	<0.001
Mercury (as Hg)	mg/l	<0.001	<0.001	<0.001
Vanadium	mg/l	<0.01	<0.01	<0.01
Cadmium (as Cd)	mg/l	<0.003	<0.003	<0.003
Chromium(VI)	mg/l	0.042	0.038	0.036
Total Chromium	mg/l	0.078	0.072	0.068
Selenium (as Se)	mg/l	<0.001	<0.001	<0.001
Arsenic (as As)	mg/l	<0.001	<0.001	<0.001
Cyanide (as CN)	mg/l	ND	ND	ND
Lead (as Pb)	mg/l	<0.01	<0.01	<0.01
Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05
Anionic Detergent as MBAS	mg/l	<0.01	<0.01	<0.01
Alkalinity (as CaCO ₃)	mg/l	60	62	68
Free Ammonia (N)	mg/l	0.32	0.40	0.44
Bioassay Test	%	96	95	96
Coli form Organism	MPN/100ml	242	238	192
Total Residual Chlorine	mg/l	ND	ND	ND
Nitrate Nitrogen	mg/l	6.8	7.2	8.2
Dissolved Oxygen as O ₂	mg/l	8.2	7.9	7.6
BOD 3 days at 27°C	mg/l	5.2	6.4	5.8
COD	mg/l	12.6	15.8	14.2
Electrical Conductivity(EC)	µmhos/cm	174	207	159
Phosphate	mg/l	0.59	0.44	0.52

Notes: U/O-Unobjectionable

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



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Table No. 3.9(b): GWQ- General Parameters Concerning substances Undesirable in Excessive Amounts

Parameters	Unit	Norms		GWQ1	GWQ2	GWQ3	GWQ4	GWQ5
		Acceptable Limit	Permissible Limit					
Aluminium, <i>max</i>	mg/l	0.25	0.2	<0.01	<0.01	<0.01	<0.01	<0.01
Anionic Detergents, <i>max</i>	mg/l	0.2	1.0	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, <i>max</i>	mg/l	0.7	No relaxation	ND	ND	ND	ND	ND
Boron, <i>max</i>	mg/l	0.5	1.0	0.5	0.5	0.5	0.5	0.5
Calcium, <i>max</i>	mg/l	75	700	34.6	32.6	30.8	26.4	12.7
Chloride, <i>max</i>	mg/l	250	1000	11.2	16.9	17.4	10.1	14.7
Copper, <i>max</i>	mg/l	0.35	1.5	<0.03	<0.03	<0.03	<0.03	<0.03
Fluoride, <i>max</i>	mg/l	1.0	1.5	<0.001	<0.001	<0.001	<0.001	<0.001
Free Residual Chlorine, <i>min</i>	mg/l	0.2	1.0	ND	ND	ND	ND	ND
Iron, <i>max</i>	mg/l	0.3	No relaxation	0.27	0.18	0.25	0.21	0.21
Magnesium, <i>max</i>	mg/l	30	100	19.6	9.7	11.7	13.1	10.6
Manganese, <i>max</i>	mg/l	0.1	0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Mineral Oil, <i>max</i>	mg/l	0.5	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate, <i>max</i>	mg/l	45	No relaxation	3.7	3.6	4.1	2.9	3.3
Phenolic Compound, <i>max</i>	mg/l	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium, <i>max</i>	mg/l	0.01	No relaxation	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate, <i>max</i>	mg/l	200	100	20	21	16	26	24
Suphate, <i>max</i>	mg/l	0.35	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1
Total Alkalinity, <i>max</i>	mg/l	200	600	80	91	124	88	74
Total Hardness, <i>max</i>	mg/l	200	600	190	153	233	188	202
Zinc, <i>max</i>	mg/l	5	15	0.26	0.23	0.28	0.21	0.31

Table No. 3.9(c): GWQ - Parameters Concerning Toxic Substances

Parameters	Unit	Norms		GWQ1	GWQ2	GWQ3	GWQ4	GWQ5
		Acceptable Limit	Permissible Limit					
Cadmium, <i>max</i>	mg/l	0.003	No relaxation	<0.003	<0.003	<0.003	<0.003	<0.003
Cyanide, <i>max</i>	mg/l	0.05	No relaxation	ND	ND	ND	ND	ND
Lead, <i>max</i>	mg/l	0.01	No relaxation	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury, <i>max</i>	mg/l	0.001	No relaxation	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, <i>max</i>	mg/l	0.07	No relaxation	ND	ND	ND	ND	ND
Nickel, <i>max</i>	mg/l	0.02	No relaxation	<0.05	<0.05	<0.05	<0.05	<0.05
Polychlorinated biphenyls, <i>max</i>	mg/l	0.0005	No relaxation	ND	ND	ND	ND	ND
Polynuclear aromatic hydrocarbons (as PAH), <i>max</i>	mg/l	0.0001	No relaxation	ND	ND	ND	ND	ND
Total Arsenic, <i>max</i>	mg/l	0.01	0.05	<0.001	<0.001	<0.001	<0.001	<0.001
Total Chromium, <i>max</i>	mg/l	0.05	No relaxation	0.018	0.026	0.031	0.034	0.038
Hexavalent Chromium	mg/l	\$	\$	0.010	0.014	0.006	0.018	0.010

Table No. 3.11: Result of Ground Water Quality (Cr⁶⁺)

Sl. no.	Location	Cr ⁶⁺ Conc. (mg/l)
1.	Saruabil Village (Near Batra Hatting)	0.012
2.	Near Batra Hatting	0.014
3.	Near Suk Gate-2	0.008
4.	Batra Hatting	0.016
5.	Saruabil (Nuasahi)	0.010
6.	Saruabil (Nuasahi)	0.018
7.	Saruabil (Nuasahi)	0.016
8.	Saruabil (Nuasahi)	0.014
9.	Koiposi Terament	0.006
10.	Koiposi Tennameri	0.014
11.	Koiposi Near Parking yard	0.010
12.	Koiposi labour Hatting	0.016
13.	Sukurangi Camp In-front of transit house	0.018

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Quality of air

Table No.3.3 (a): Summarized Results of Ambient Air Quality

Sl. No.	Location Name	Station Code	PM ₁₀			PM _{2.5}		
			Max.	Min.	Avg.	Max.	Min.	Avg.
1.	Transit House	A1	87	66	77.78	41	23	41.00
2.	Sukurangi Hospital	A2	77	48	63.33	39	27	31.56
3.	Saruabli Village	A3	84	55	71.88	36	20	28.75
4.	Sukurangi Hatting	A4	72	42	57.88	28	16	21.63
5.	Sukurangi School	A5	79	63	70.75	34	22	27.25
6.	Ostapal Village	A6	75	67	71.38	38	23	29.25
CPCB Std.			100 µg/m ³			60 µg/m ³		

Table No. 3.3(b): Summarized Results of Ambient Air Quality

Sl. No.	Location Name	Station Code	SO ₂			NO ₂		
			Max.	Min.	Avg.	Max.	Min.	Avg.
1.	Transit House	A1	7.9	5.8	6.62	13.9	10.3	12.33
2.	Sukurangi Hospital	A2	7.0	4.6	5.73	14.6	9.6	11.41
3.	Saruabli Village	A3	7.5	5.1	6.26	13.2	10.3	11.78
4.	Sukurangi Hatting	A4	6.2	4.3	5.34	12.7	9.4	10.74
5.	Sukurangi School	A5	7.1	5.8	6.46	12.8	10.4	11.98
6.	Ostapal Village	A6	7.6	5.9	6.80	12.9	10.8	11.90
CPCB Std.			80 µg/m ³			80 µg/m ³		

Table No. 3.3(c): Summarized Results of Ambient Air Quality

Sl. No.	Location Name	Station Code	CO		
			Max.	Min.	Avg.
1.	Transit House	A1	BDL	BDL	BDL
2.	Sukurangi Hospital	A2	BDL	BDL	BDL
3.	Saruabli Village	A3	BDL	BDL	BDL
4.	Sukurangi Hatting	A4	BDL	BDL	BDL
5.	Sukurangi School	A5	BDL	BDL	BDL
6.	Ostapal Village	A6	BDL	BDL	BDL
CPCB Std.			4 mg/m ³		

Note: BDL value for CO is 11 mg/m³

The same is enclosed as Annexure – 19.

Flora and Fauna

Flora

The area consists of Forest Land (part of Mahagiri P.F. and Undemarkated), quarries and dumps, agricultural land and perennial rivulets.

In this part of the Mahagiri P.F., the forests consists of grasslands with widely spaced mature trees, of which, Sal (*Shorea robusta*), Asan (*Terminalia tomentosa*), Mahul (*Madhuca indica*), Mango (*Mangifera indica*) and Kendu (*Diospyros melanoxylon*) are prominent.

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Fauna

There are a number of forest stretches in the study area. The forest patches away from human habitations in difficult terrain are good grounds for wild animals found in the study area.

Climatic conditions

The lease area lies in tropical region where climate is characterized by very hot summers and mild winters. Summer is typically from March to June when daily average maximum temperature ranges from a maximum of 39°C during daytime to a minimum of 22°C at night. Winter is from November to February when daily average maximum temperature during day time goes up to 32°C and minimum temperature at night becomes as low as 15°C. The average annual rainfall as recorded at IMD observatory at Cuttack is 1475.3 mm. The Southwest monsoon lasts from mid June to mid September and the area gets more than 75% of the annual rainfall during this period.

Human settlements

Demographic pattern of the study area

Sl. No.	Item	Study area buffer zone	Share in total population (%)
1.0	Population		
1.1	Total	50953	
1.2	Male	26516	52.04
1.3	Female	24437	47.96
2.0	Households	10118	19.86
3.1	SC	6055	11.88
3.2	ST	20451	40.14
4.0	Literates	25456	49.96
5.0	Working population	19450	38.17
5.1	Main workers	14311	28.09
	Cultivators	3988	7.83
	Agril laourers	3367	6.61
	HH Industry	992	1.95
	Others	5964	11.70
5.2	Marginal workers	5139	10.09

Public buildings, places of worship and monuments

There is no place of archaeological or religious importance within 5 km of the lease.

Indicate any sanctuary is located in the vicinity of leasehold

No sanctuary is located in the vicinity of leasehold

Environment plan of the mine is shown in drawing no. MEC/Q78R/11/16/13.

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- 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, dumping, roads, workshop, processing plant, tailing pond/dam, township etc.

The land use in stages is given below:-

Sl. No.	Heads	Area, (Ha.)		
		Existing land use	Land use at the end of 2019-24	Conceptual land use
1	Excavated area	27.3	43.31	141.09
2	Waste Dump	18.47	53.09	67.98
3	Mineral storage	15.05	23.14	18.91
4	Infrastructure (including ETP)	6.22	17.18	17.18
5	Roads	6.24	5.23	1.0596
6	Safety Zone *	53.31	53.31	53.31
7	Untouched land (Tenant, Village Road & Nala)	256.12	187.45	83.55
	Total	382.709	382.709	382.709

* Includes (i) 7.5 m wide all along the ML area. (ii) 100m on either side of Damsal nala (iii) 10m on either side of the village road and (iv) additional safety zone area on southern boundary of the ML.
Source: Plate-V of FDP

ii) Air quality

Following measures were proposed for management of air quality:-

- Water sprinkling on haul roads.
- Dense plantation along the safety zone.
- No overloading of tippers/ Dumpers.
- Provision of wet drilling in the drill machine.
- Provisions of dust masks to the persons exposed to dust.

Apart from the above, regular monitoring of the ambient air quality as per the statutes will be strictly followed.

- A project specific guideline will be established to maintain air quality. The guideline will include applicable project standards, mitigation measures, control techniques, regular monitoring programmes etc. It will be ensured that all workers meet the requirements specified in the guideline through a programme of periodic audits and inspections.
- Management plans specific to a particular job will be developed prior to the commencement of work where air quality issues are expected. Job-specific training will be conducted to maintain air quality.

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- Provision of dust masks for use by workers undertaking a dust generating activity will be ensured.
- Controlled loading and unloading will be ensured.

General measures proposed for HEMMS:

- HEMMS will undergo regular maintenance;
- HEMMS will be operated as per manufacturers' guidelines;
- HEMMS will be replaced when condition and/or performance deteriorates to an unacceptable level; and
- where appropriate, idling of engines will be avoided
- Specialist training will be provided to the operators of the HEMMS to ensure compliance with the applicable requirements.
- General aspects of air quality management will be included in induction training to be provided to all employees.
- A periodic review (based on interaction with workers, local communities of activities etc.) will be undertaken by OMC to identify the significant dust generation sources/activities, if any. The action plan will be chalked out to mitigate the emission from dust generation sources/activities

Haulage /Transfer/Crushing & Screening:

- All transportation will be undertaken along pre-designated routes
- Cleaning of haul roads on regular basis and permanent water spraying arrangement;
- Water spraying during loading/unloading of ore;
- Regular water spraying on haul roads, overburden dump and mineral stacks;
- Provision of dust extractor and water spraying in drills and other equipments where possible.
- Sufficient time lag between movement of two truck to allow settling of dust
- All vehicle to comply the emission norms
- Water sprays at transfer points
- Enclosure and water spraying at crushing/screening points

Dumping:

- Minimization of drop height when loading/ unloading and dumping
- Modification of operations during dry/windy conditions (e.g. dump in more sheltered locations during high wind periods)
- Dumps will be stabilized by planting grass/trees;

Drilling and blasting

- Water injection during drilling
- Blasting during favorable dispersion conditions (typically during the day time)

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iii) **Water quality**

During expansion phase, excess mine and settling pond water will be generated and will have to be pumped out and drained into Damsal Nallah and thus may further deteriorate the water quality in terms of Chromium.

In view of the above it is advisable that an Effluent Treatment Plant (ETP) to be installed using Ferrous Sulphate or Sodium bi-sulphite to treat the hexavalent chromium. After treatment the water from mine pits and surface drainage water getting collected in catch pit ponds to be discharged into Damsal Nallah after meeting the statutory norms.

iv) **Noise levels**

Controlling Noise Level of Machineries-Engineering Controls

Noise radiates from most machinery as both air-borne and as structure-borne sound. Following management measures will be adopted to control noise levels:

- Provision of sound-insulated chambers for workers deployed on machines producing higher levels of noise like dozers, drills, etc.
- Selection of new low-noise equipment from the manufactures failing which use of additional retrofits if available.
- Enclosing crusher units in covered buildings.
- Providing silencers or enclosures for noise generating machines such as DG sets, compressors, etc.
- **Attenuation of Structure-Borne Sound** : Preventing transmission of vibration from machines to the load-bearing structure can considerably reduce structure-borne sound:
 - Large heavy machines should be mounted on foundations which are completely separated from buildings or other structures.
 - Placing other machines on a stable foundation and where possible using an elastic separation such as rubber blocks or steel springs.
 - Severely vibrating machines may require separate foundations and isolation joints between floor slabs to prevent propagation of structure-borne noise.
- **Attenuation by Using Absorbents**: Hard surfaces on the ceiling, floor and walls of an enclosed processing plant or workshop will reflect back nearly all the sound reaching them. Noise absorbents will absorb and reduce noise.
- **Sound Insulated Rooms** : Cabins (at Plants/Workshop etc) should be constructed of materials with good sound attenuation properties and ideally will have:
 - Double glazed windows - (two 6 mm glass panes with 50 mm air space can give 10 dB(A) attenuation).
 - Ventilation openings with attenuators such as acoustic louvers.
 - An adequate air conditioning system, to avoid doors being left open.
- Green belt (7.5 m wide) shall be developed all along the four block boundaries to attenuate noise.

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Controlling Flying Rocks

- Blasting will be performed strictly as per the guidelines specified under blasting technology.
- Overcharging will be avoided.
- The charge per delay will be minimized and preferably more number of delays will be used per blasts.
- Blasting operations will be carried out only during day time as per mine safety guidelines.
- A safe distance of about 500 m from center of blasting will be maintained.
- During blasting, other activities in the immediate vicinity will be temporarily stopped.
- Drilling parameters like over burden, depth, diameter and spacing will be properly designed to give proper blast.

Use of Protective equipment- Administrative Control

- As part of a hearing protection OMC shall consider:
 - The need for hearing protectors;
 - Defining hearing protector areas;
 - Selection of hearing protectors
 - Issuing of hearing protection to individuals;
 - Cleaning, maintenance and replacement of hearing protectors;
 - Training and education of people wearing hearing protectors.
- Provision of job rotation in noisy areas that will reduce personal exposure.
- Planned plant maintenance specifically for noise control.
- Setting targets for noise levels in existing work areas.
- Training on noise impact and consequences
- Including Noise aspects in work agreements with contractors.

v) Vibration levels (due to blasting)

Due attention will be given to the following factors:

- All provisions of Metalliferous Mines Regulations will be followed.
- Quantity of explosive blasted will be decided as per USBM equation and trial blasting results.
- Controlled blasting with proper spacing, burden and stemming will be maintained.
- Blasting time: Blasting will be done in day time during the shift change over period as per requirement.
- Warning: Before blasting is done, warning sound shall be given and placards/flags will be displayed so that people can move to safe places.
- Secondary blasting will be totally avoided.

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vi) Water regime

Water management (including storm water discharge) shall be carried out through a network of garland drains and catch pits) salient features of the drainage management scheme are as follows:

- The overall drainage planning will be done in such a manner that the existing pre-mining drainage conditions should be maintained to the extent possible, so that run off distribution is not affected.
- All water courses shall be restored to their original courses and directed to new courses that will sustain themselves in the future without maintenance.
- Water accumulated in voids shall be used as source of water to help maintaining the water table.
- Garland drains shall be constructed around the external dumps. The garland drains shall be routed through settling tanks to settle out suspended solids in the storm water. The clarified water is reused for green belt development.
- Stone pitching shall be made at suitable places to regulate water flow.
- The settling tank and drains are cleaned periodically, especially during monsoons.
- Dumpers shall be washed in a designated area and the effluents shall be routed through drains to a settling pit, which has a oil & grease trap. The clarified water is reused for green belt development.

Depending upon the drainage pattern of the area where the dump is located, retaining walls, garland drain with settling tanks will be provided in all the dumps. The quantum of work envisaged for construction of drains, retaining walls and settling tanks are given in table 4.1.

(Table 4.1) Steps for water quality management

PROPOSALS	2019-20	2020-21	Total
RETAINING WALL (in m)	1165	1140	2305
GARLAND DRAIN (in m)	1179	1152	2331
SETTLING TANKS (in nos.)	6	2	8

vii) Acid mine drainage
Not applicable

viii) Surface subsidence
Not applicable

ix) Socio-economics

The mining employment has greatly increased the income levels of the natives. In addition, creation of comparatively well paid jobs in the area has generated not only sizeable trade in household supplies (including vegetables, milk, food, textile, etc) but also some household employment. It has also generated demand for tertiary services

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like transport and repair shops. The impact of mining operations in the area on socio-economic has been a positive one. The infrastructure of the area roads, public transport and electricity supply, has also improved after the advent of mining operation in the area.

x) **Historical monuments etc.**

There are no historical monuments or places of archeological interest within 5 km radius of the lease.

8.3 **Progressive Reclamation Plan :**

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".**

As the mineralized chrome zone still continues below the pit created at the end of 5th year, the excavation won't be backfilled. However, the slopes of the proposed matured dump will be afforested with plantation @ 500 saplings per year. Similarly, the existing dump will also be afforested with plantation of 1500 Nos. of saplings.

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

The year wise details of topsoil generation and its management has been furnished in the table below

Year	Pit	Disposal of Top Soil (m ³)	
		Reuse/spreading	Storage
2019-20	Band-IV S	6494.50	NIL
2020-21	Band-IV S	40852.10	NIL
2021-22	Band-IV S	26016.84	NIL
2022-23	Band-IV S	63099.52	NIL
2023-24	Band-IV S	10957.88	NIL
Total		147420.84	NIL

The topsoil generated will be used for plantation purpose.

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

Since there is no Mineral processing plant existing in the ML area, hence no tailing generation is envisaged in the lease.

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

Not applicable

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8.3.5 Surface subsidence mitigation measures through backfilling of mine voids or by any other means and its monitoring mechanism. The information on protective measures for reclamation and rehabilitation works year wise may be provided as per the following table.

Items	Details	2019-20	2020-21	2021-22	2022-23	2023-24
Dump management	Area afforested (ha)	14.48	5.85	7.09	4.50	4.28
	No of saplings planted	20000	8000	9000	6000	5000
	Cumulative no of plants	40500	48500	57500	63500	68500
	Cost including watch and care during the year (INR)	3000000	1200000	1350000	900000	750000
Management of worked out benches	Area available for rehabilitation (ha)	NIL	NIL	NIL	NIL	NIL
	Afforestation done(ha)	NIL	NIL	NIL	NIL	NIL
	No of saplings planted in the year	NIL	NIL	NIL	NIL	NIL
	Cumulative no of plants	NIL	NIL	NIL	NIL	NIL
	Any other method of rehabilitation (specify)	NIL	NIL	NIL	NIL	NIL
	Cost Including watch and care during the year	NIL	NIL	NIL	NIL	NIL
Reclamation and Rehabilitation by backfilling	Void available for Backfilling (L x B x D) pit wise /slope wise	NIL	NIL	NIL	NIL	NIL
	Void filled by waste /tailings	NIL	NIL	NIL	NIL	NIL
	Afforestation on the backfilled area	NIL	NIL	NIL	NIL	NIL
	Rehabilitation by making water reservoir	NIL	NIL	NIL	NIL	NIL
	Any other means (specify)	NIL	NIL	NIL	NIL	NIL

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Items	Details	2019-20	2020-21	2021-22	2022-23	2023-24
Rehabilitati on of waste land within lease	Area available (ha)	NIL	NIL	NIL	NIL	NIL
	Plantation carried out (within present retained ML area)	NIL	NIL	NIL	NIL	NIL
	Plantation carried out (within surrendered ML area)	NIL	NIL	NIL	NIL	NIL
	Check dams (within retained/ surrendered area)	NIL	NIL	NIL	NIL	NIL
	Method of rehabilitation	NIL	NIL	NIL	NIL	NIL
Others (specify)	Total no of saplings planted outside lease area	NIL	NIL	NIL	NIL	NIL
	Total cost including watch and care	NIL	NIL	NIL	NIL	NIL
	Total cost for monitoring of Ambient Air Quality, water quality etc. (INR)	10 Lakhs	10 Lakhs	10 Lakhs	10 Lakhs	10 Lakhs
	Retaining Wall	1165 m	1140 m	maintenance	maintenance	maintenance
	Garland Drain	1179 m	1152 m	maintenance	maintenance	maintenance
	Settling Tank	6 Nos.	2 Nos.	maintenance	maintenance	maintenance
	Cost towards construction of settling tank, and maintenance of garland drain & retaining wall around WD-4 & WDS (INR)	81 Lakhs	81 Lakhs	9 Lakhs	9 Lakhs	9 Lakhs

The reclamation plan is shown in Plate No. 11.

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8.4 **Disaster Management and Risk Assessment:** This may deal with action plan for high risk accidents like landslides, subsidence flood, inundation in underground mines, fire, seismic activities, talling dam failure etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of lessee to meet such eventualities and the assistance to be required from the local authority may also be described.

The objective of on-site disaster management plan for the mine is to be in a state of perpetual readiness through training and development to immediately control and arrest any emergency situation so as to avert a full-fledged disaster and the consequence of human and property damage and in the event of a disaster still occurring, to manage the same so that the risk of the damage to life and property is minimized.

Key elements of a disaster management plan are.

- i. Risk Identification
- ii. Preventive measures for potential risks.
- iii. Defining the responsibility at different levels to tackle the hazard situation & establishing an effective communication channel for flow of information.
- iv. Action plan for handling the emergency situation i.e. on-site & off-site.
- v. establishing emergency response centres.

i. **Risk Identification**

Following risks have been identified for Sukrangi chrome ore lease.

1. Surface fire.
2. Failure of slope in the bench & dumps.
3. Fly rock from blasting operations
4. Possible accidents due to HEMM

1. **Code of Practice in Case of Fire at Mines**

Source of Fire:-

- i) HEMM
- ii) Oil & Lubricant Room.
- iii) Diesel Pump/storage area
- iv) Electrical equipment/substations

Line of Action:-

- i. Any person notices any sign of fire shall start shouting FIRE, FIRE to seek assistance and also immediately take steps to give warning by blowing the siren continuously and take steps to extinguish the fire by using appliances available near the site.
- ii. **Duties of Mine Official:** - The Mine officials receiving the warning shall forthwith inform following on Phone.
 - Firefighting station – for sending fire-fighting team.
 - Security main gate – to inform senior person and to prevent un authorized entry.
 - Shift Engineer – to manage with available resources till then.
 - Mines Manager – for overall supervision and control.



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After giving information reach the spot, remove Man & Machinery and take steps to tackle the fire in accordance with the fire fighting instructions. Inform at security office to get Ambulance if required.

iii. **Duties of Fire Fighting Team:** - On receiving warning the team shall reach the site of fire and depending on its nature, class and extent shall take steps to extinguish it and rescue persons if involved in fire.

iv. **Duties of Mines Manager:** -

- On receipt of information about fire the Manager shall forthwith rush to the spot and assess the extent of fire. He shall supervise the fire fighting operation and make necessary arrangement for medical aid to affected person, if any.
- Inform to senior officials and statutory bodies

2. **Failure of slope in the bench & dumps.**

Bench & dump slope stability depends upon the physic-mechanical properties of the rock such as UCS, coefficient of internal friction, angle of repose, cohesion etc., presence of water, water pressure, joint spacing & orientation, type of rock etc. Joint mapping & its stereo plotting shall be carried out to determine the possibility of failure and type of failure, if any.

Dump slope failure occurs mainly due to accumulation of water in dumping areas, formation of gullies in the dump slopes, improper terracing/dumping etc.

The well-developed drainage system over the lease area ensures that storm water does not accumulate in the lease area and therefore hydrostatic pressure remains at a low level. Geo-technical investigation & slope stability analysis and inspection of bench slopes shall be carried out.

Line of Action

- i) In the advent of slope failure following personnel shall be immediately informed.
 - a. Shift incharge : to manage the situation within available resources.
 - b. Security main gate – to inform senior person and to prevent un-authorized entry.
 - c. Mines Manager – for overall supervision and control.
 - d. Nearby Hospital – for providing medical aids

After giving information reach the spot, remove Man & Machinery and take steps to tackle the situation in accordance with the safety instructions. Inform at security office to get Ambulance if required.

3. **Fly rock from blasting operation**

Main reason of fly rock due to blasting is Improper blast design i.e less stemming, inadequate burden & spacing, high charge concentration, improper delay, presence of geological discontinuities such as joints, faults, muds etc.

Following measures shall be taken to prevent accident due to fly rock.


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- Blasting operation shall be carried out under the supervision of assistant manager/manager (Blasting)
- Code of signaling should be strictly followed during blasting.
- Proper blast design
- Controlled blasting should be adopted.
- No person other than required for blasting shall be allowed to enter the mines during blasting.

4. **Possible accidents due to HEMM**

Following safety measures shall be taken to prevent an accident due to HEMM.

a. **General Safety Procedures During Dumper/Tipper Operation**

- Before moving the dumper/tipper, always give a warning signal. Sound the following code horn before moving the vehicle:
 - Moving forward - 2 beeps
 - Moving backward - 3 beeps
- During operation of dumper/tipper, always keep the cabin doors closed.
- During night, always use dipper while approaching an oncoming vehicle.

b. **Safety procedures during travelling of dumper/tipper**

- Operate the dumper/tipper in reverse only if there is a clear view of the area behind the vehicle or with the assistance of an authorized spotter. Give an audible warning signal before reversing a dumper/tipper.
- Where there are no separate lanes for two-way traffic, give way to the oncoming dumper/tipper cautiously.
- As far as possible, avoid turning the dumper/tipper on a slope. It may cause the machine to roll over or slip sideways.
- As far as possible, do not reverse loaded dumper/tippers on gradient.
- Before starting up or down a grade, select a transmission gear range that will ensure safe driving and provide control of the vehicle under all conditions.
- Negotiate downhill gradients in low gear so that minimum of braking is required.
- Do not shift gears or run the dumper/tipper in neutral on steep down slopes.
- Do not drive dumper/tipper over sharp stones and boulders.
- If any stone or boulder is found on the road, inform the spotter or incharge to get it removed to avoid any damage to the machine components.

c. **Safety Procedures During Operation**

- Always press the accelerator pedal gradually so as to achieve smooth acceleration.
- Do not operate the steering wheel fast. This may overturn the dumper/tipper.

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- Do not brake suddenly.
- Avoid fanning the treadle by partial, intermittent applications while using service brakes as this may cause reduction in air pressure level to dangerous limits. So use service brakes sparingly and only when necessary.
- Use the right gear and speed to match load conditions.
- Before engaging the transmission from neutral to forward or reverse, ensure that the engine is at idle speed. Before shifting the gear from forward to reverse or reverse to forward, apply brakes to completely stop the dumper/tipper, otherwise the transmission may get damaged.
- Shift the gears from one to five one by one, otherwise the transmission may get damaged.
- Use retarder brake sparingly as excessive use of retarder brake heats up the transmission. Retarder brake should not be applied for more than 30 seconds at a time.
- Do not use dump brakes while the dumper/tipper is in motion.
- Except in case of emergency, use parking brake only for parking the dumper/tipper.
- Never take the dumper/tipper too close to an overhang or an unsafe edge that may collapse.
- Pull into the loading area with caution. Remain at a safe distance while dumper/tipper ahead of you is being loaded.
- When approaching loading equipment, sound the audible warning signal and do not attempt to pass the loading equipment unless there is a proper audible signal in reply.
- Avoid backing over rocks at the shovel and dump areas.
- For loading, place the dumper/tipper on a level ground.
- When the dumper/tipper is being loaded, stay in the dumper/tipper cab or sufficiently far enough from dumper/tipper to avoid being struck by flying fragments.
- When the dumper/tipper is being loaded, do not take your head out of the cab window.
- Ensure that the dumper/tipper is not overloaded and the material is not loaded in such a way so as to project horizontally beyond the sides of its body.
- Do not drive nose-to-tail particularly behind a vehicle with twin rear wheels, from which a stone piece wedged between tyres may fly back into the windscreen of your vehicle. Maintain a distance of 50 feet on level ground and 100 feet on a ramp from the vehicle in front of you.
- If the lights at the crusher hopper are on (indicating that the material should not be dumped into it), do not unload the dumper/tipper.
- While raising the dumper/tipper body, release the accelerator pedal slowly just before the body reaches the desired position.
- After dumping the material, move the dumper/tipper only after completely lowering the dump body.

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
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- Never turn front wheels, particularly on loaded dumper/tippers unless the dumper/tipper has some fore or aft movement. Such stress can literally shear the tread from the carcass.

d. **Safety Procedures During Dumping/Tipping**

The operator should take the following precautions during tipping on stockpiles and dumping of overburden:

- While doing the first tipping, it should be done at a distance of 3 meter from the edge.
- On entering a tipping/dumping area, the operator should visually check the general area of the tip, especially in the dumping area.
- Backing visibility is available only to the driver's side of the dumper/tipper. So make sure that there are no personnel or any obstructions on the other side.
- All care should be taken regarding the positioning of the dumper/tipper's rear wheels at the tipping face. A dumper/tipper should not back up to an area that has not been visually inspected by the operator.
- If a spotter is present, follow his signals.
- Be especially careful of soft edges and cracks.
- When dumping in an area where no berm is present (e.g. construction of a new haul road where material would be laid down in layers), material should be tipped short of any edge.
- Dumper/tippers tipping over the berm should back up squarely to the berm.
- After positioning the dumper/tipper for tipping, the operator should raise the hoist only after making sure that the dumper/tipper is stationary and on a level ground, transmission is in neutral and dumping brakes are applied.
- As soon as the material has been dumped out from the dumper/tipper, release dump brake, shift transmission into 1st or 2nd forward gear and at the same time depress the accelerator pedal to move away from the dump area slowly and carefully.
- As the dumper/tipper starts moving, pull the hoist control lever all the way down to lower the dump body.
- During these operations, do not stop anywhere for unnecessary reasons and the operator must always remain in the cabin.
- If at any time the operator considers the operation unsafe, it should be immediately reported to the manager or the in charge.

e. **Safety Procedures While Parking**

- When not in use, move the dumper/tipper and park it at a proper parking place.
- While parking the dumper/tipper at the workshop or work site, do not park in a haphazard way.
- When parking the machine, park it in a safe place outside the working area or in the specified place. It should be parked on flat, firm ground where there is no danger of rock falls or landslides. Ensure that the gear is in neutral

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
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position before stopping the engine. Make sure that the dump body is in down position. Apply parking brakes. While leaving the operator's seat, switch off the engine and all the electrical accessories that are not in use, remove the ignition key and lock the cabin.

- While parking the dumper/tipper always apply parking brakes.
- Do not stop or park on a haul road unless unavoidable. If you must stop, move dumper/tipper to a safe place. If this is impossible, adequately fence the area with big enough boulders to caution other operators.
- If a disabled dumper/tipper is to be left on a haul road, apply parking brake and block the wheels securely. Adequately fence the area with big enough boulders to caution other operators.
- Never park the dumper/tipper on slopes.
- If the conditions are such that the dumper/tipper has to be parked on a slope, apply parking brakes, steer the wheels away from center and block the wheels securely.
- As far as possible, park the machine on a level ground. Correct level of lubricants is indicated only if the machine is parked on a level ground.

Fixing the Responsibility & establishing communication channel

Following officers of the mines will be responsible for co-ordination in case of emergency situation in any part of the mine.

Person	Responsibility
Head of Department / Mine Agent	Site Controller
Mines Manager / Shift in-charge	Accident Controller / Communication Officer
Employee who gives the first information about the incident / accident	Primary Controller
P & A Department (HOD)	Liaison Officer

Key Personnel and their responsibilities

Site Controller:

- The head of the department / mine agent shall have an overall responsibility for controlling the incident / accident and directing the personnel.
- To prepare a full proof plan for control of accident like, slope failure, fire, fly rock, flood and other natural calamities.
- To inform statutory bodies of the State and Central Government.
- To inform communication officer about the emergency, control centre and assembly point.
- To provide all assistance and call for fire squad, security officer and other services required for removing / control of danger.
- To ensure that all necessary personnel assemble at assembly point.
- Make arrangement for medical treatment to the personnel injured seriously.

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(Abinash Kr. Sahu, Geologist)



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SUKRANGI CHROME ORE LEASE (382.709 HA.)
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Accident Controller:

- Mines manager shall act as accident controller/ communication officer.
- Mock rehearsal of management plan prepared for accident.
- To withdraw men / machine from the affected area with priority for safety of personnel, minimize damage to the machines, environment and loss of material.
- To make a report based on the facts and figure and submit to the site controller.
- To communicate to the site in charge and make arrangement for first aid and transportation of the injured personnel.

Primary Controller:

- To inform the Accident Controller / shift in-charge from the nearest means of communication about the location and the nature of accident.
- To assist in clearing any obstruction in relief of accident.
- To carry out all instructions of accident controller.
- To provide first aid treatment and communicate to the shift in-charge.

List of contact persons & their contact nos. In case of any emergency is given below.

Name	Designation	Contact Nos.
Shri Bijaya Kumar Behera	Regional Manager	+919438501275
Shri Mayadhar Patra.	Manager (Mines)	+919437224265

Emergency Control Centers

The emergency control center is the place from where the operations to handle the emergency will be directed and coordinated. The site main controller, key personnel and the senior officers of the fire and police services will attend it. The center will be equipped to receive and transit information and directions from and to the incident controller and other areas of the works, as well as outside.

Emergency control centers will therefore contain the following:

- (a) In-charge of external telephone;
- (b) An adequate of internal telephones;
- (c) A plan of the works, to show:
 - (i) Areas where there are large inventories of hazardous materials, if any;
 - (ii) Sources of safety equipment;
 - (iii) The fire-fighting system.
 - (iv) Site entrance and roadways, including up-to-date information on roadworks;
 - (v) Assembly points;
 - (vi) The location of the mines in relation to the surrounding community;

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(Abinash Kr. Sahu, Geologist)



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SUKRANGI CHROME ORE LEASE (382.709 HA.)
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- (d) Notepads, pens and pencils;
(e) A nominal roll of employees;
(f) A list of key personnel, with addresses, telephone numbers, etc. The emergency control center should be sited in an area of minimum risk.

Role of the Police

The police normally assume the overall control of an emergency, with a senior officer designated as emergency coordinating officer. Normal duties of the police during an emergency include protecting life and property and controlling traffic movements. The functions include controlling bystanders, evacuating the public, identifying the dead and dealing with casualties and informing relatives of dead or injured.

Role of the Fire Authorities

The control of a fire is normally the responsibility of the senior fire brigade officer who would take over the handling of the fire from the site incident controller on arrival at the site. The senior fire brigade officer may also have a similar responsibility for other events, such as explosions and toxic releases. Fire authorities having major hazard works in their area should have familiarized themselves with the location on site of all stores of flammable materials, water and foam supply points and fire-fighting equipments.

Role of the Health authorities

Health authorities, including doctors, surgeons, hospitals, ambulances and so on, have a vital part to play following a major accident and they should form an integral part of any emergency plan. For major fires, injuries will be the result of the effects of thermal radiation to a varying degree and the knowledge and experience to handle this in all, but extreme, cases may be generally available in most hospitals.

Capability of Lessee:

Following facilities are available at mine site:

- Telephone / Mobile handsets
- Runners / Messenger
- Emergency alarm
- Fire fighting equipment and accessories with trained manpower
- Training centre
- Fire extinguishers
- Dispensary & Ambulance van
- Jeeps

(Sunil Kr. Kar, Mining Engineer)

(Abinash Kr. Sabu, Geologist)



REVIEW OF MINING PLAN
SUKRANGI CHROME ORE LEASE (382.709 HA.)
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8.5 Care and maintenance during temporary discontinuance: An emergency plan for the situation of temporary discontinuance due to court order or due to statutory requirements or any other unforeseen circumstances may indicate measures of care, maintenance and monitoring of status of discontinued mining operations expected to re-open in near future.

When the mine is temporarily discontinued due to any unforeseen circumstances, the following care and maintenance shall be carried out:

- Notice to be served to all the concerned authority.
- Temporary fencing shall cover the mine entries.
- All access roads/openings to the pit / face shall be closed by parapet wall as per rule.
- Warning shall be displayed on the 'Notice Board' at appropriate places.
- Security personnel shall be posted at every danger point.
- No unauthorized person shall be allowed to enter into the mine without prior permission of the management.
- Garland drain shall be made all around the mine and dumps to prevent water flow towards mine for prevention of landslide/side fall and siltation etc.
- All men and machinery shall be withdrawn from the mine and shall be kept in a compound and safe place.

APPROVED
23/11/19

REGIONAL CONTROLLER OF MINES
क्षेत्रीय खान नियंत्रक
अध्यायीय खान अयुक्त

8.6 FINANCIAL ASSURANCE:

The financial assurance calculation is given in the table below.

Sl. No.	Head	Area put on use (Ha) as on 1.10.18	Additional requirement upto 31.3.24 (Ha)	Total (Ha)	Area considered as fully reclaimed & rehabilitated (Ha)	Net area considered for calculation
1	Area under mining	27.3	16.01	43.31	0	43.31
2	Roads	6.24	-1	5.23	0	5.23
3	Infrastructure	6.22	9.86	16.08	0	16.08
4	Dumps	18.47	34.62	53.09	0	53.09
5	Mineral Storage	15.05	8.09	23.14	0	23.14
6	Railways	0	0	0	0	0
7	Township area	0	0	0	0	0
8	Tailing pond	0	0	0	0	0
9	ETP	0	1.1	1.1	0	1.1
Grand total		73.28	68.68	141.95	0	141.95

The total financial assurance upto 31.3.24 will be Rs. 4,25,85,000/- @ Rs.3,00,000/- per hectare.

Financial Assurance plan for Sukrangi chrome Ore Lease is given in Plate No.-12.

(Sumil Kr. Kar, Mining Engineer)

(Abinash Kr. Sahu, Geologist)



OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT:- GHATAKULA, NUAPADA, CUTTACK 753010

Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfo.cuttackforestdivision@yahoo.com

No 2113 /5F(Forest Diversion) 12 /2018

Dated, Cuttack the 02 th April, 2022

To

The Executive Director (F&E),
M/S Odisha Mining Corporation Ltd,
OMC House, Bhubaneswar-751001.

Sub:- Diversion of 168.948 ha of forest land adjacent to South-Kaliapani Mines of OMC for dumping of overburden of South-Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd.-Demand on CA Scheme reg.

Ref:- Memo No. 1237 dt. 23.03.2022 of the Regional Chief Conservator of Forests, Angul Circle to your address.

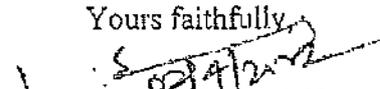
Sir,

In inviting a reference to the letters cited above on the captioned subject, it is to inform you that, as per the condition No. xi & xii stipulated in stage -I approval order of MoEF & CC, Govt. of India, 02 nos. of schemes have been approved by Regional Chief Conservator of Forests, Angul Circle Angul on the current wage rate Rs. 315/- per Manday. The approved schemes are enclosed herewith for your information.

Besides, you are requested to submit the point wise compliance of conditions stipulated in stage -I approval order to this office for onward transmission.

SI No.	Condition No.	Particulars	Financial outlay
1	v & (xi)	Scheme for Stabilization and reclamation of OB dump area by appropriate grading/ benching, in accordance with the approved scheme, so as to endure that angle of repose at any given place is less than 28.	Rs 86,01,10,500.00
2	(xii) & (xiii)	Scheme for Muck/silt disposal and construction of retaining wall and garland drain to avoid its rolling down.	Rs 2;35,57,300.00

Yours faithfully


Divisional Forest Officer
Cuttack Forest Division

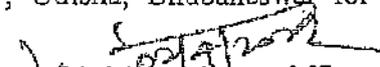
Memo No. 2114 dt 02.04.2022

Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information and necessary action with reference to his Memo No. 1235 dt. 23.03.2022.


Divisional Forest Officer
Cuttack Forest Division

Memo No. 2115 dt 02.04.2022

Copy forwarded to the Principal Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the PCCF & HoFF, Odisha, Bhubaneswar for information and necessary action.


Divisional Forest Officer
Cuttack Forest Division.

M/CF&SI
8
13/4/22


13-04-2022

A 

SCHEME FOR
STABILIZATION AND RECLAMATION OF OB
DUMP AREA BY APPROPRIATE
GRADING/BENCHING, IN ACCORDANCE WITH
THE APPROVED SCHEME, SO AS TO ENSURE
THAT ANGLES OF REPOSE AT ANY GIVEN
PLACE IS LESS THAN 28⁰

IN
168.948 HA OF FOREST LAND PROPOSED FOR
DIVERSION FOR DUMPING OF OVER BURDEN
OF SOUTH-KALIAPANI AND SUKURANGI
CHROMITE MINES
UNDER CUTTACK FOREST DIVISION

M/S ODISHA MINING CORPORATION LTD.
(A GOVT.OF ODISHA UNDERTAKING)
OMC HOUSE, BHUBANESWAR-751001

(As per condition No. (v) and (xi) of the stage-I Forest Clearance granted by MoEF & CC vide letter No. 8-
19/2019-FC dt. 15.10.2019)

(ON ONE TIME COST NORM BASIS)

STABILIZATION AND RECLAMATION OF OB DUMP AREA

1. INTRODUCTION.

Government of India in the Ministry of Environment, Forest and Climate Change has granted Stage-I Forest Clearance vide letter F.No. 8-19/2019-FC, Dt. 15.10.2019 over 168.948 ha for dumping of overburden to be generated from South-Kaliapani and Sukuarngi Chromite Mines of OMC Ltd. Stage-I Forest Clearance has been communicated by State Govt. vide letter no. No. 10F (Cons) 89/16 19650/F&E dt. 19.10.2019.

Condition No. (v) and (xi) of the additional condition imposed by the State Govt. is read as given under:

“(v) It is reported the area is required for 17 years. State Government may prepare and submit a plan for stabilization and reclamation of OB dump area.

“(xi) The User Agency shall stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place are less than 28°”.

In order to comply the observation, a comprehensive scheme is prepared for implementation of the same within 168.948 ha of forest area. PCCF (N) vide letter dt. 08.11.2021 and 01.12.2021 has issued one-time Cost Norm for Compensatory Afforestation. As per the para-2 of the said guideline Compensatory Afforestation to be prepared on “one time cost norm basis” by delinking the CA scheme to wage rate revision and material cost escalation for easy of doing business. The scheme has been prepared considering the Base Norm as Rs. 315/- and computed the Matrix.

2.0 Present Scenario:

In South-Kaliapani Chromite Mines the tentative volume of overburden to be generated by opencast mining at the conceptual stage has been assessed as 100.90 million M³ (in-situ) for production of 15.01 million ton of mineable chrome ore basing on the present level of geological inputs & economics of mining. The conceptual pit area will cover 315.74 ha out of total lease area of 552.457 ha. Out of 174.99 ha available for OB dump in the ML, 95.31 ha has been occupied by existing dump. Hence, around 79.68 ha virgin area available for OB dump will accommodate only 35.17 million M³ (in-situ) excluding free area of 100 m strip from the quarry edge and maximum dump height of 100m etc. There is no space left to dump balance 65.73 million M³ (in-situ) of OB within the ML to continue mining up to the conceptual pit limit.

Similarly OB generation from the ML at conceptual period has been assessed at 45.825 million M³ to produce 5.23 million ton of chrome ore. The area available for OB dump is 20.258 ha which can accommodate 17.85 million M³ excluding free area of 100 m strip from the quarry edge and maximum dump height of 100m. The land for 27.975 million M³ of OB dumping within Sukurangi ML area is not available.

Therefore, production of 9.79 million tons of chrome ore from South-Kaliapani and 3.189 million tons of chrome ore from Sukurangi cannot be achieved without utilizing 168.948 ha of forest area.

3.0 Salient points of waste management:

- For the management of dump it is suggested to have terrace at every 20 m height from the floor at same contour.
- Ultimate height 80 m
- Inward slope is to be provided so that rain water will move towards dump side. It will prevent of rain water flow from terrace to lower contour through the walls of the dump and forming gullies / rain cuts and rolling down of waste materials.
- Towards the inner side of terrace, half concrete open pipes are installed to collect rainwater and not allowing penetrating to inside the dump.
- Crated Boulder retaining wall of 2m height (0.5m below ground + 1.5m above the ground) X 1.0m wide will be constructed around the dump.
- It aims to check any roll down waste from the dump.
- At regular intervals clear openings are provided at the bottom to allow water to pass out and join the Garland drains.
- Constructed guard wall is of loose boulders.
- Garland drains around the dump will be constructed.
- At the end of the garland drain settling tanks of 15mx10mx1m deep is constructed to allow settling of carried materials.
- Slope of each terrace to be maintained <28°.
- Over all slope shall be <28°.

Anticipated fallout.

A. Failure of Dumps:

Three types of Dump Failure may occur in the present type of dump. These are

- Slope Failure.
- Toe failure
- Base failure.

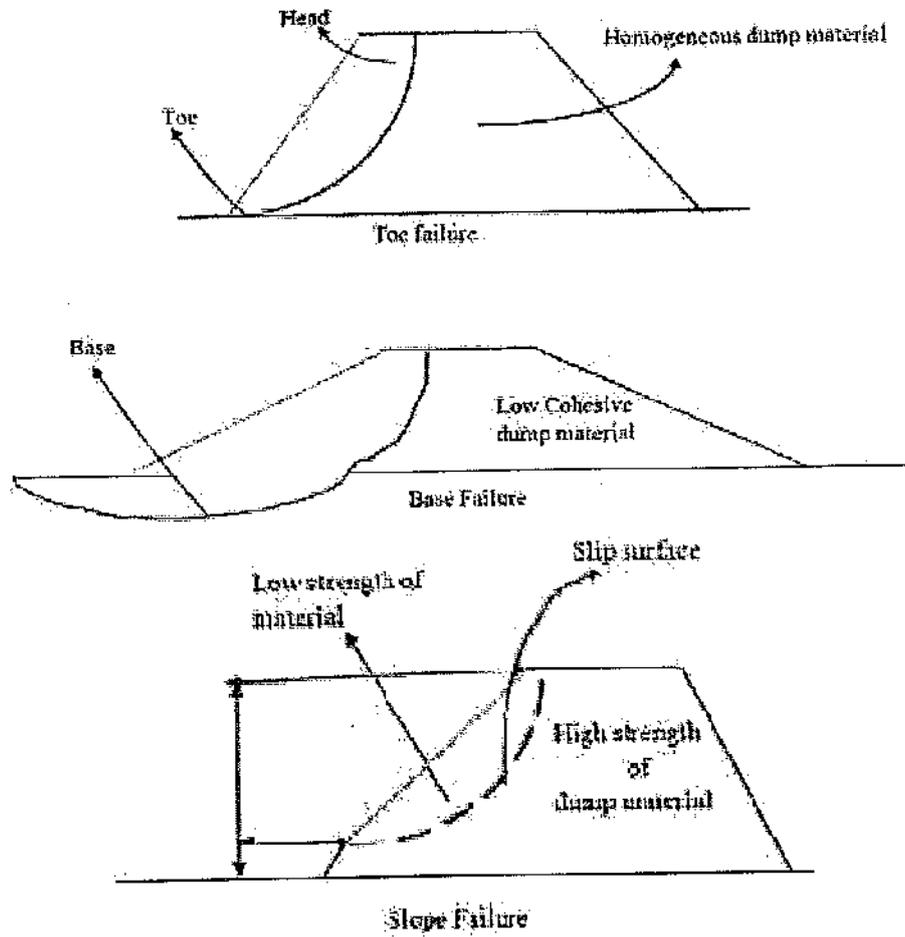


Figure 1 Dump failure line of slip.

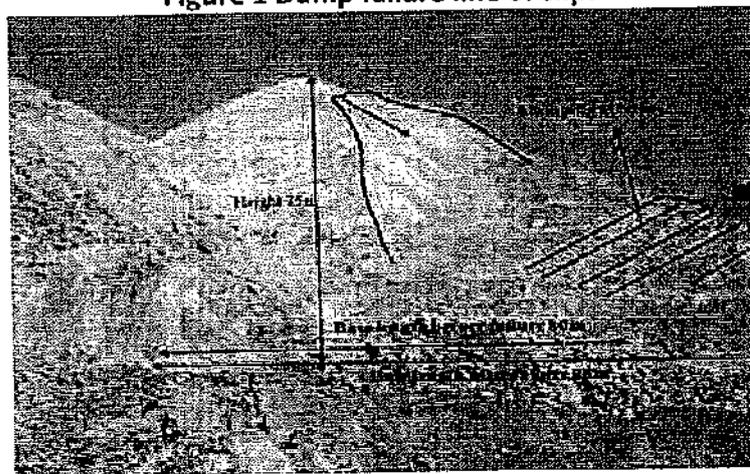


Figure 4 DUMP FAILURE SITUATION.

Reasons for failure:

i. Ground water and surface water flow condition plays a critical role on the stability of dump slope. Frictional strength is reduced as the height of dump is raised, due to presence of water. The pore water pressure reduces the normal stress acting on material. The cohesive strength of weak geo-material will be further reduced due to presence of pore water pressure. Waste dump placed in a loose state, shear failure is often followed by static static liquefaction which is complete loss of strength. The flow of water may enhance the seepage force, leading to formation and migration of tension crack.

ii. Erosion also plays an important role in affecting the stability by surface weathering, ground water or surface water seepage, toe erosion and slope modification, ground water or surface runoff. Erosion changes the waste dump slope geometry and morphological character. The weathering and attrition of material at the toe of a potential slide reduce the restraining force that may destabilize the slope. Erosion of void filling materials, or zone of percolation can efficiently decrease cohesion among grain boundaries. The cohesion strength notable reduce the rock mass shear strength. The decrease in shear strength may allow movement of dump slope along weak plane. In addition localized erosion may also result in increase permeability and ground water flow along the slope. This may lead to failure due to formation of gully and deep flow channels in dump.

iii. Other affecting parameters are

- Gradient of the Seam,
- Ground Water Regime
- Nature of Over burden Rock
- Presence of clay and Soil layers and their properties.
- Angle of Repose of the broken Over burden rock
- Cohesion of the Over burden Rock materials
- Height of OB Dump in one stretch
- Ultimate Height and Slope of Waste Dump
- Dump Stability Parameters Strip/Cut Width and Depth.

B. Dust pollution due to wind/whorl wind:

The average wind speed as noticed in post monsoon is 2.25m/s with a maximum speed of 6.13m/s. In winter the average speed is 1.31m/s with a maximum speed of 5.61m/s. This wind

speed has a capacity to pick up heavy dust from dry surface of dump, ore stack & sub grade stack.

C. Loss of life & property.

Failure of dump may cause loss of life & property. May put occupational hazards to workman.

Summary of prescription on Benching & Grading:

- Bench height: 20m,
- Bench Width: 20m
- Number of Benches: 4
- Over all slope: $<28^{\circ}$.
- Slope of each terrace: $<28^{\circ}$.

4.0 Stabilization of Over Burden Dump:

After the declaration of dead of the Over Burden dump, the same shall be covered by means of plantation.

4.1 By grass seeding: Grass seeding over 161.048 ha of Over Burden dump will be carried out before planting tall trees to stabilize Over Burden dump.

4.2 By Planting Tall trees: Plantation over 161.048 ha will be carried out after the dump is declared dead. The details of plantation is given as under:

4.2.1 Planting & post-planting operations: Block Plantation over 161.048 ha will be carried out @ 1600 plants/Ha. All planting & post planting measures like casualty replacement, soil working, manuring, fire protection etc. will be undertaken as given in Cost norm for Block plantation with 1600 seedlings furnished as **Annexure-IV**.

While taking up plantation, the following vital points shall be taken up for consideration.

- ❖ Care to be taken to raise healthy seedlings of minimum 60 cm height. 10% extra seedlings are to be raised for replacement of casualty.
- ❖ Pitting shall invariably be done during November-February i.e., before onset of monsoon. If possible the soil of upper portion and lower portion of pit should be placed separately in specific direction so that while planting the pits will be filled with top-soil first.
- ❖ Planting shall be done on the onset of monsoon to get full benefit of monsoon rain and should not be delayed.
- ❖ Basal dose of 50 grams of NPK and 5 grams of Chlorpyrifos dust per plant should be applied at the time of planting carefully by mixing with top-soil so that the roots of seedlings do not come in direct contact with fertilizer.
- ❖ In case of any mortality of planted seedlings, it should be replaced with good seedlings as soon as possible for better success rate.
- ❖ Complete weeding in proper time will be done. Strip weeding will not be permitted.
- ❖ Soil-working and application of 2nd dose fertilizer of 50 gms NPK/plant should be done in time

Since the area is provided with barbed wire fence, watch & ward will be easier. Watchers may be engaged in weeding in problematic areas along with watch & ward.

4.2.2 Spacing: The spacing adopted for the plantation in gaps is 2.5 mtr X 2.5 mtr. Alignment and pit marking should be done carefully in slopes so that the horizontal distance between plants in a row remains 2.5 mtrs and not the distance measured along the slope.

4.2.3 Species: Although indigenous species are to be preferred in the plantation, considering adverse soil & moisture conditions we may go for hardy exotic species where required so that the plants are able to survive. Considering the topography, soil and moisture availability of the plantation area, the following species will be planted.

Name of species	Common name	Remarks
<i>Acacia auriculiformis</i>	Acacia	In rocky exposed areas
<i>Azadirachta indica</i>	Neem	In well drained soil
<i>Derris indica</i>	Karanja	In area with good soil depth
<i>Emblica officinalis</i>	Amla	In area with soil depth
<i>Cassia siamea</i>	Chakunda	In rocky and exposed areas
<i>Dalbergiasissoo</i>	Sissoo	In lower areas with good soil depth
<i>Gmelina arborea</i>	Gambhari	In lower areas with good soil depth
<i>Dendrocalamus strictus</i>	Salia bamboo	In lower areas with good soil depth healthy seedlings from rhizomes may be planted
<i>Zizyphus mauritania</i>	Ber	In rocky areas with low soil depth
<i>Simarubaglauca</i>	Simaruba	In rocky areas with low soil depth

5.0. Monitoring & Evaluation.

The implementation & its maintenance will be evaluated by the authority of the User Agency regularly. The Divisional Forest Officer, Cuttack Forest Division may be kept informed from time to time as required.

6.0 Implementing Agency.

This prescription is to be implemented by the user agency.

7.0 Financial Forecast

Financial Forecast for the measures proposed like development of created boulder masonry and excavation of garland drain has been considered in separate schemes under this stage-I approval and attached herewith. So, no additional cost for the same has been proposed in this scheme.

Financial Forest for the measures like Terracing of OB dump, earthen drain within the slope of OB dump, grass seeding on OB dump and plantation on OB dump area has been proposed in this scheme. The detail of financial forecast for scheme is given as under:

FINANCIAL FORECAST

Sl. No.	Particulars of interventions	Financial involvement (Rs)
1	Terracing of OB dump over a length of 1610480 sqmt @ Rs.357/sqmt (Annexure-I).	57,49,41,360.00
2	Excavation of earthen drain of 16120 cum over a slope length of 80524 mtr in every 100 meter within the slope of proposed OB dump (Annexure-II)	69,93,420.20
3	Cost for sowing of grass seeds over 161.048 ha @ Rs. 26095/- ha (Annexure-III).	42,02,547.56
4	Maintenance of grass seed @ (10 mandays for period of six month). Total 1800 mandays (180 x 10) for six months 1800 x Rs. 315.00 = 5,67,000.00	5,67,000.00
Sub-Total:		58,67,04,327.76
Inspection, monitoring and evaluation @15% of the total project cost		8,80,05,649.16
Sub-Total:		67,47,09,976.92
Price escalation @20%		13,49,41,995.38
Total		80,96,51,972.30
5	Block plantation (1600 plants/ha) over 161.048 ha of OB dump area @ Rs. 312305/Ha (Annexure-IV). Rs. 3,13,313.00/-	5,02,96,095.64 5,04,58,512
Grand Total		85,99,48,067.94 Or Say 85,99,48,100.00

(Rupees eighty five Crore ninety nine lakh forty eight thousand one hundred) only

86,01,10,500/-

Divisional Forest Officer

Cuttack Forest Division

Approved for Rs. 86,01,10,500/- (Rupees eighty six crore one lakh ten thousand & five hundred).

(Signature)
22/3/22

Regional Chief Conservator
of Forests, Angul Circle.

1

Annexure-I

Engagement of HEMM (Heavy earth mining machineries) in dump slope for terracing

1. Location- over burden dump- work efficiency of HEMM machine per hour-3.5 Sqm on the dump. (Average height of the terrace-20 mt)
2. Rate of engagement of HEMM Machine Rs. 1250/hr
3. Terracing cost at OB dump/sqm- Rs. 1250/3.5=Rs. **357.14 or say 357.00**
4. In our OB dump average slope length=80524 mtr
5. Average height of terrace 20 mt.
6. Total terrace area in sqm= 80524 x 20=16,10,480 sqm

Annexure-II

Excavation of earthen drain in every 100 meter within the slope of proposed OB dump

A: E/W Excavation by Mechanical Means

1. In our OB dump average slope length=80524 mtr
2. Total no. of drain required within 80524 mtr slope length= 80524/100=806 nos.
3. Average height of terrace 20 mt.
4. E/W excavation by mechanical means for one drain= 20m x 1m x1 m=20 Cum
5. Total volume to be excavated for 806 nos. of drain=806 x 20=16120 cum
6. Taking Rs. 47.60/Cum, total cost for excavation of 16120 cum of earthen material
= **Rs.7, 67,312.00**

B: Providing crate boulder

1. Crate boulder pitching within earthen drain: 16120 x 0.5 x 0.5= 4030 Cum
2. Considering Rs. 1544.94/Cum, the cost of boulder pitching within earthen drain=4030 x 1544.94= **Rs 62,26,108.20**

Total Cost = 7, 67,312.00 + 62, 26,108.20 = Rs 69, 93,420.20

Annexure-III

Estimate for sowing of grass seeds per ha.

Cost of broadcasting of grass seeds per ha. Labour rate Rs.315.00/- per day				
Sl. No.	Purpose	No. of Labour/quantity of materials	Rate (in Rs.)	Amount in Rs.
1	Spreading of good top soil	03 Nos	315.00/- Labour	945.00
2	Adding FYM and good earth	2 TL FYM 2TL Good earth	500/TL FYM 500/TL Good earth	2000.00
3	Cost of grass seed 500 Kg/per ha		40/Kg	20000.00
4	Broad casting	10 nos	315.00/-Labour	3150.00
Total				26095.00

COMPENSATORY AFFORESTATION SCHEME FOR BLOCK PLANTATION

Sl. No.	Item of Works	Period of execution	Mandays	Labour Cost @ Rs.315/-	Material Cost	Total in Rs.
1	2	3	4	5	6	7
Pre-Planting Operation (0th Year)						
1	Survey, Demarcation and Pillar Posting	Nov/Dec	2	630.00	0	630.00
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	315.00	100	415.00
3	Site preparation (Cleaning & removal of debris)	Nov/Dec	12	3,780.00	0	3,780.00
4	Creation of 4.00mt wide Inspection Path	Feb/Mar	1	315.00	0	315.00
5	Alignment and stacking of pits	Feb/Mar	2	630.00	0	630.00
6	Digging of pits (45 cm x 45 cm x 45 cm) in hard & gravelly soil	Feb/Mar	64	20,160.00	0	20,160.00
7	Construction of Temporary Labour Shed, Drinking water facility and First Aid etc.	Jan/Mar	0	0.00	3500	3,500.00
	Total:-		82	25,830.00	3,600.00	29,430.00
8	Monitoring, Evaluation, Learning, Documentation & any other Contingency up to 5% of the total cost.					1472
	Grand Total:-					30,902.00
1st Year/ Planting Year						
1	Refilling of pits by altering the dugout soil of the pits, application of Organic compounds/ CDM/ FYM & mixing the same properly.	Jun/July	12	3,780.00	8,000.00	11,780.00
2	Transportation of 18 months old polypot seedlings in hired truck/ tractor from the Permanent/ Mega nursery to planting site including loading & unloading. (Average lead of 10 Rkm) & stacking the seedlings @ Rs.6/- per Seedling. (1100 nos.)	July/Aug	0	0.00	10,560.00	10,560.00
3	Watering the polypot seedlings at planting site	July/Aug	3	945.00	0.00	945.00
4	Conveyance of polypot seedlings on head load from the stacking site to individual dug out pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil properly around the planted seedlings.	July/Aug	36	11,340.00	0.00	11,340.00

	Cost of Fertilizer & Insecticide:- (a) NPK / Bio-fertilizer @50 gms/ plant as basal dose = 50 kg @ Rs.30/- per kg = Rs.1500.00 (b) Urea/ Vermicompost/ Mo Khata/ any other fertilizer in two subsequent doses @ Rs.750.00 (c) Insecticide/ Bio-pesticide @ 5 gms/ plant = 5 kg @ Rs/150/- per kg = Rs.750.00	July/Aug	0	0.00	4,800.00	4,800.00
5						
6	Casualty Replacement @ 10% (100 nos.)	July/Aug	4	1,260.00	0.00	1,260.00
7	1st Weeding & Manuring	Aug/Sept	15	4,725.00	0.00	4,725.00
8	2nd Weeding, Soil working (1mt. Diametre around the plants) and Manuring	Oct/Nov	20	6,300.00	0.00	6,300.00
9	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path.	Feb/Mar	3	945.00	0.00	945.00
10	Watch & Ward including watering as per requirement	Aug-Mar	12	3,780.00	0.00	3,780.00
	Total:-		105	33075	23360	56,435.00
11	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					2,822.00
	Grand Total:-					59257
2nd Year Maintenance						
1	Transportation of 100 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedling.	Jul	0	0.00	960.00	960.00
2	Casualty Replacement @ 10%	Jul	4	1,260.00	0.00	1,260.00
3	Cost of Fertilizer & Insecticide:- (a) Cost of Insecticide/ Bio-pesticid @ 5 gms/ plant = 0.5 kg @ Rs.150/- per kg = Rs.75/- (b) Urea/ NPK/ Bio-fertilizer/ Vermicompost/ Mo Khata/ any other fertilizer @ Rs.2800/-	Aug/Sept	0	0.00	4,606.00	4,606.00
4	Weeding (Complete weeding), Manuring & Soil working (1mt. Diametre around the plants)	Sept/Oct	20	6,300.00	0.00	6,300.00
5	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5,670.00	0.00	5,670.00
7	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.				1,000.00	1,000.00
	Total:-		45	14175	6,566.00	20741

8	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					1037
Grand Total:-						21778
3rd Year Maintenance						
1	Cost of fertilizer (Urea/ NPK/ Bio-fertilizer/ Vermicompost/ Mo Khata/ any other fertilizer)	Sept/Oct	0	0.00	4,486.00	4,486.00
2	Weeding , Manuring & Soil working (1mt. Diametre around the plants)	Sept/Oct	20	6,300.00	0.00	6,300.00
3	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
4	Watch & Ward including watering as per requirement	Apr-Mar	18	5,670.00	0.00	5,670.00
5	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.	Apr-Mar			1,000.00	1,000.00
Total:-			41	12,915.00	5,486.00	18,401.00
6	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					920
Grand Total:-						19,321.00
4th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
Total:-			21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
Grand Total:-						6,946.00
5th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
Total:-			21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
Grand Total:-						6,946.00
6th Year Maintenance						

1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	5	1,575.00	0.00	1,575.00
3	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		26	8,190.00	0	8,190.00
4	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					410
	Grand Total:-					8,600.00
7th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00
8th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00
9th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00
10th Year Maintenance						

1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00

TOTAL COST FOR 1 HA.							
Sl. No.	Year	No. person days	Labour Cost @ Rs.315/-	Material Cost (Rs.)	Monitoring Evaluation, Learning, Documentation and other Contingency (5%) of (4+5)	Cost of Seedlings @ Rs.50.31 per seedlings	Total Cost (Rs.)
1	0th year	82	25830	3600	1472	0	30,902.00
2	1st year	105	33075	23360	2,822.00	88545.6	1,47,802.60
3	2nd year	45	14175	6566	1037	8049.6	29,827.60
4	3rd year	41	12915	5486	920	0	19,321.00
5	4th year	21	6615	0	331	0	6,946.00
6	5th year	21	6615	0	331	0	6,946.00
7	6th year	26	8190	0	410	0	8,600.00
8	7th year	21	6615	0	331	0	6,946.00
9	8th year	21	6615	0	331	0	6,946.00
10	9th year	21	6615	0	331	0	6,946.00
11	10th year	21	6615	0	331	0	6,946.00
	Total:-	425	1,33,875.00	39,012.00	8,647.00	96,595.20	2,78,129.20

Matrix for Model-I-B Conventional CA Plantation (AR) 1600 plants per Ha.

In Rupees

Matrix for Model-I A Conventional CA Plantation (AR) 1600 plants

Sl. No.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (10 Years)
	Base Norm	30902	147803	29828	19321	6946	6946	8600	6946	6946	6946	6946											278129
1	2021-22	30902	155193	32885	22366	8443	8865	11325	9774	10262	10776	11314											312305
2	2022-23		32447	162932	34529	23485	8865	9308	12101	10262	10776	11314	11880										327920
3	2023-24			34089	171100	36256	24659	9308	9774	12706	10776	11314	11880	12474									344316
4	2024-25				35773	179655	38058	25892	9774	10262	13341	11314	11880	12474	13698								361532
5	2025-26					37562	188638	39972	27187	10262	10776	14008	11880	12474	13098	13753							379609
6	2026-27						39440	198070	41970	28546	10776	11314	14709	12474	13098	13753	14440						398589
7	2027-28							41412	207973	44069	29973	11314	11880	15444	13098	13753	14440	15162					418518
8	2028-29								43482	218372	46272	31472	11880	12474	16217	13753	14440	15162	15920				439444
9	2029-30								45656	229290	47939	48586	33045	12474	13098	17027	14440	15162	15920	16716			461417
10	2030-31											240755	51015	34698	13098	13753	17879	15162	15920	16716	17552		484487


 DIVISIONAL FOREST OFFICER
 CUTTACK FOREST DIVISION

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
 GHATAKULA, NUAPADA, MADHUPATNA, CUTTACK-753010.
 E-mail ld-dfo.cuttackforestdivision@yahoo.com, Fax-0671-2347611

No. 69 /5F (Mining) 12/2018
 Dated, Cuttack 02nd January, 2020.

To

The Executive Director (F & E),
 OMC Ltd., OMC House,
 Bhubaneswar-01

Sub:

Proposal for diversion of forest land over an area of 168.948 Ha. for over burden dump for South-Kaliapani & Sukurangi Chromite Mines of the OMC Ltd.

Ref:

(i) No. 5-No. 8-19/ 2019-FC dt. 15.10.2019 of Govt. of India, MoEF & CC, New Delhi.
 (ii) Letter No. 10 F(Cons) 89/16 19650/ F & E, dt. 19.10.2019 of Forest & Environment Department, Govt. of Odisha.

Sir,

With reference to the letter cited above on the captioned subject, it is to inform that the Govt. of India, MoEF & CC vide letter under reference have accorded Stage-I clearance for over burden dump for South-Kaliapani & Sukurangi Chromite Mines of the OMC Ltd over an area of 168.948 Ha. forest land for diversion, subject to compliance of 26 nos. of conditions imposed by Govt. of India & 08 nos of additional conditions imposed by State Government, Govt. of Odisha.

In this connection, for compliance of Condition No. vi of the Stage-I clearance, it is requested to pay the Net Present Value (NPV) of Forest area proposed to be diverted, as per the orders of Hon'ble Supreme Court of India dt. 28.03.2008, 24.04.2008 & 09.05.2008 in Writ Petition (Civil) No. 202/ 1195 & the Guidelines issued vide letter No. 5-3/ 2007-FC dt. 05.02.2009 in this regard.

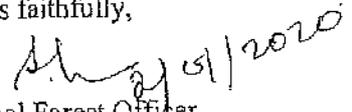
The NPV amount is calculated below:-

- (i) The Forest area proposed for diversion- 168.948 Ha.
- (ii) Eco- Value Class-I, canopy density of vegetation less than 0.4
- (iii) The NPV to be paid @ Rs. 07,30,000/- per Ha.=168. 948 Ha. X 7,30,000/-
 = Rs. 12,33,32,040/-

(Rupees Twelve Crore thirty three lakh thirty two thousand forty) only.

So, you are requested to make arrangements for payment of the above amount through e-payment module & submit the receipt of the deposition as evidence with UTR No. & date to this office for reference & record. Further, it is requested to furnish an undertaking to pay the additional amount of NPV if so determined as per final decision of the Hon'ble Supreme Court of India. Demand will be raised for Compensatory Afforestation after receipt of the approved scheme for CA from the competent authority.

Yours faithfully,


 Divisional Forest Officer,
 Cuttack Forest Division
 (P.T.O.)

Memo No. 70 dt. 2.01.2020

Copy submitted to the Principal Chief Conservator of Forests, (Forest Diversion & Nodal Officer, FC Act), O/o- the PCCF, Odisha, Bhubaneswar for favour of kind information & necessary action with reference to No. 10F (Cons) 89/ 16 19650/F &E DT. 19.10.2019 of Govt. of Odisha, F & E Deptt.

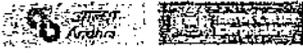
[Signature]
21/01/2020
Divisional Forest Officer,
Cuttack Forest Division

Memo No. 71 dt. 02.01.2020

Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information & necessary action with reference to Memo No. 19652/F &E, dt. 19.10.2019 of Govt. of Odisha, F & E Deptt.

[Signature]
21/01/2020
Divisional Forest Officer,
Cuttack Forest Division

AGENCY COPY

यूनियन बैंक Union Bank
of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 29-12-2021

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908254
MoEF/SG File No.	8-19/2019-FC
Location.	ORRISA
Address.	OMC House Khordha
Amount(in Rs)	137185776/-

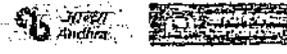
Amount In Words :Thirteen Crore Seventy-One Lakh Eighty-Five Thousand Seven Hundred and Seventy-Six Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825832908254 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

यूनियन बैंक Union Bank
of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 29-12-2021

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908254
MoEF/SG File No.	8-19/2019-FC
Location.	ORRISA
Address:	OMC House Khordha
Amount(in Rs)	137185776/-

Amount In Words :Thirteen Crore Seventy-One Lakh Eighty-Five Thousand Seven Hundred and Seventy-Six Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825832908254 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

After making successful payment, User Agencies may send a line of confirmation through
Email: helpdeskampa@corpbank.co.in

Note:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to
Email: cb0371@unionbankofindia.com

UTR
UBIN09037101493362



As Provided by F & F Section

S. Mohapatra
01/01/2022

S. Mohapatra
Dy. General Manager (Fin)

Sl No.	Particulars	Amount deposited
1	NPV	12,33,32,040/-
2	RWLMP	1,38,53,736/-
	Total	13,71,85,776



Annexure-VII

UNDERTAKING

I, Dr. Suman Krishna Sit, General Manager (Geology), Authorized Signatory of Odisha Mining Corporation Limited do hereby undertake to deposit the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India pertaining to diversion of 168.948 ha of forest land adjacent to South Kaliapani Chromite Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines of OMC Ltd.

(Dr. Suman Krishna Sit)
General Manager (Geo)
Authorized signatory
Odisha Mining Corporation Ltd.

Suman Krishna Sit
General Manager(Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

Odisha Mining Corporation Ltd.

(A Gold Category State PSU)

Registered Office : OMC House, Bhubaneswar - 751001, India

Tel : 0674-2377400/2377401, Fax : 0674-2396889, 2391629, www.omcltd.in

CIN : U13100OR1956SGC000313



Schedule I--Form No. 39-A (Revised)



ମୌଳିକ ଭାଗୀଦାରୀ
ଆକା ସଂ: ହାମପୁର
ଆକା ନମ୍ବର ୧୪୧

ଚଳାଏକ
ଚଳାଏକ ନମ୍ବର
ତାରିଖ
୧୪୧
ଜଳାପାତ୍ରୀ

କର୍ମଚାରୀଙ୍କ ନାମ
ଓ
ଖୋଲାବତ ବା ଖତିଆର ନମ୍ବର
} ବିକାଶ କୁଳାବ - ୧

୧ । ଖତିଆରର କ୍ରମିକ ନମ୍ବର
} ୧୧/୧

୨ । ପ୍ରକାଶ ନାମ, ପିତାଙ୍କ ନାମ,
ଜାତି ଓ ବାସସ୍ଥାନ
} ଜଣାଲ ବ କଲିକତା ବିଭାଗ, ବିକାଶକର୍ମଚାରୀ ମାଗି
କଲମପୁ ସମ୍ପର୍କୀ ଜଳାପାତ୍ରୀ, ତାରିଖ ୧୯୫୩
ଫେବୃଆରୀ

୩ । ସ୍ୱରୂପ }

Binding Space

କ୍ର.ନମ୍ବର	ଖତିଆର	ସେକ୍ସ	ଦିଆର ସେକ୍ସ ଓ ଅନ୍ୟାନ୍ୟ ସେକ୍ସ, ଯଦି କିଛି ଥାଏ	ମୋଡ଼	୫ । କ୍ରମବର୍ତ୍ତୀୟ ଖତିଆର ବିବରଣୀ
୪ । ଚଳାଏକ					

୬ । ବିଶେଷ ଉପଦାନ, ଯଦି କିଛି ଥାଏ

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କଲିକତା ବିଭାଗ: ୧୧/୨୦୨୦ ରୁ ଜିଲ୍ଲା ସାହାଯ୍ୟ ଆମ୍ବର ୬/ ୧୨/୧୧୦୩୧୧୯୯ ଚଳାଏକ
ଆମ୍ବର: ଖତିଆର ୨୩/୧/୨୦୨୨ ରୁ ଆମ୍ବର: ଖାମ୍ବ: ୧୧୧୨ ମୁଖ୍ୟ ମାଲିଆମ୍ବର ୯-୪୯୦,
ମୁଖ୍ୟ: ୪୪/୧୪୯୧ ୯୪-୪୧୨୦ ମୋଡ଼ ଉତ୍ତରା ୯ ୧୨-୦୪୦ ବିଭାଗ "ସଫଳ" କ୍ରମାବଳ
କଲିକତା: ୧୧/୧୦୦୦ ଖାମ୍ବିଲ । (କମ୍ପ୍ୟୁଟର ଅଭିଭାବନା ସାହାଯ୍ୟ କଲିକତା ବିଭାଗ)
ଧନ ସ୍ୱାଗତୀ ଚଳାଏକ ବାଣୀ କଲିକତା)
୧୨/୧/୨୨

ପୁସ୍ତକ ନାମ ଏବଂ ସଂସ୍କରଣ ସମ୍ବନ୍ଧରେ	ବିଷୟ	ବିଷୟର ବିସ୍ତୃତ ବିବରଣୀ ଏବଂ ପୃଷ୍ଠାଂକ	ପ୍ରକାର				ମୋଟ
			କୋ:	କ. ପି:	ସଂଖ୍ୟା	ମୂଲ୍ୟ	
୧	୨	୩	୧୦		୧୧		୧୨
me/ezm	୨୫୦				୫	୪୫	
୪୪/୧୪୪	୦୫୦				୪	୪୨	
					୧୨	୦୪	

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୨୫୫

Binding Space

GOVERNMENT OF ODISHA

FOREST, ENVIRONMENT & CLIMATE CHANGE DEPARTMENT

NOTIFICATION

No.FE-DIV-FLD-0008-2022- 14650 /FE&CC, Date 22.08.2022

10F (Cons) 77/2019

In exercise of the powers conferred under Section-33 of the Odisha Forest Act, 1972 (Odisha Act 14 of 1972), the State Government do hereby declare that the following land situated in Village-Bhataguda under Thuamul Rampur Tahasil in the District of Kalahandi identified, mutated and transferred in favour of Forest, Environment & Climate Change Department for the purpose of raising Compensatory Afforestation thereon against proposed diversion of 168.948 ha of forest land adjacent to South Kaliapani Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines of M/s OMC Ltd. in Odisha vide In-principle/ Stage-I approval of Government of India, Ministry of Environment, Forests & Climate Change (FC Division), New Delhi communicated in letter F.No.8-19/2019-FC, dt.15.10.2019 under Section-2 of the Forest (Conservation) Act, 1980, the limits of which are specified below and the area of which is 4.875 ha (12.05 Ac), shall be Protected Forest with effect from the date of issue of the Notification and shall be known as "Bhataguda-A Protected Forest".

Forest Block:

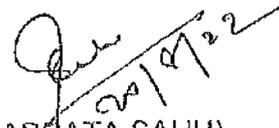
Name of the Protected Forest	:	Bhataguda-A
Area in Ha	:	4.875 ha
Area in Acres	:	12.05 acres
Name of the Village	:	Bhataguda
Name of the Police Station	:	Thuamul Rampur
Name of the Tahasil	:	Thuamul Rampur
Name of the Sub-Division	:	Bhawanipatna
Name of the District	:	Kalahandi



Land Schedule:

Village	Khata No.	Plot No.	Kissam	Total area in Ac.	Boundary description			
					North	South	East	West
Bhataguda	11/1	31/153	Patita	6.46	Plot No. 31 (P)	Plot No. 30, 31 (P)	Plot No. 44/154	Plot No. 31 (P)
		44/154		5.59	Plot No. 44 (P)	Plot No. 30, 44 (P)	Plot No. 44 (P)	Plot No. 31/153
Total				12.05 Ac or 4.875 ha				

By Order of the Governor


 (SATYABRATA SAHU)

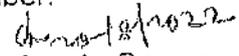
Additional Chief Secretary to Government

By e-mail: deputydirectorpp@rediffmail.com

Memo No. 14651 / FE&CC, Date 22.08.2022

Copy forwarded to the Director of Printing, Stationery and Publication, Odisha Cuttack for publication in an extra-ordinary issue of the Odisha Gazette and supply 10 copies of printed notification each to Forest, Environment & Climate Change Department/ Revenue & Disaster Management / Director of Land Records and Survey, Odisha, Cuttack/ Collector, Kalahandi/ DFO, Kalahandi (S) Division/ Tahasildar, Thuamul Rampur, Dist.-Kalahandi.

2. The Notification is statutory and may be assigned SRO number.


 OSD-cum-Special Secretary to Government

Memo No. 14652 / FE&CC, Date 22.08.22

Copy forwarded to the Assistant Inspector General of Forests, Govt. of India, Ministry of Environment, Forests and Climate Change, (F.C. Division), Indira Paryavaran Bhawan, Jor Bagh, Allganj Road, New Delhi-110003/ Deputy Director General of Forests (Central), Govt. of India, MoEF&CC, Integrated Regional Office, A/3, Chandrasekharpur,

P.T.O.



Bhubaneswar-23 for information and necessary action.

Dr. J. P. Singh

OSD-cum-Special Secretary to Government

Memo No. 14653 / FE&CC, Date 22.08.22

Copy forwarded to the Revenue & Disaster Management Department/ Director of Land Records and Survey, Odisha, Cuttack/ RDC (ND) Sambalpur / Collector, Kalahandi/ Tahasildar-Thuamul Rampur, Dist.-Kalahandi for information and necessary action.

Dr. J. P. Singh

OSD-cum-Special Secretary to Government

Memo No. 14654 / FE&CC, Date 22.08.22

Copy forwarded to the Principal Chief Conservator of Forests & HoFF, Odisha, Bhubaneswar/ Chief Conservator of Forests (Forest Diversion & Nodal Officer) FC Act, O/o the PCCF, Odisha/ Regional Chief Conservator of Forests, Bhawanipatna Circle/ Divisional Forest Officer, Kalahandi (South) Division for information and necessary action.

Dr. J. P. Singh

OSD-cum-Special Secretary to Government

Memo No. 14655 / FE&CC, Date 22.08.22

Copy forwarded to the Head State Portal, IT Centre, Odisha Secretariat, Bhubaneswar for information and necessary action/ (5 spare copies for G.F).

Dr. J. P. Singh

OSD-cum-Special Secretary to Government

Memo No. 14656 / FE&CC, Date 22.08.22

Copy forwarded to the Under Secretary to Government, Office Establishment Section, FE&CC Department for information and necessary action with reference to their letter No.21646/F&E Dt. 22.11.2016.

Dr. J. P. Singh

OSD-cum-Special Secretary to Government

ଝଟିଆନ

ମୋଟା ତରୁବାଦୀ
 ଗାଆ ପୁରୀପୁର ଗ୍ରାମପଞ୍ଚାୟତ
 ଗାଆ ନମ୍ବର ୧୫୮

ଫେରିଲ ପୁରୀପୁର ଗ୍ରାମପଞ୍ଚାୟତ
 ଫେରିଲ ନମ୍ବର ୧୫୮
 ବିଷୟ ଜମାଦାରୀ

ଝଟିଆନର ନାମ }
 ଓ } ଚନ୍ଦ୍ରମା ସୁଶୀଳା-୧
 ଝେଡ଼ୁଆଟ ବା ଝଟିଆନ ନମ୍ବର }

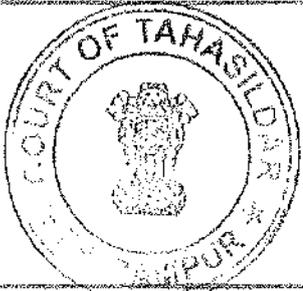
1 । ଝଟିଆନର ହୁମିଲ ନମ୍ବର } ୧୫/୭

2 । ପ୍ରତ୍ୟେକ ଗାଆ, ପିତାଙ୍କ ଗାଆ, ଗାଈ ଓ ବାସସ୍ଥାନ }
 ଜିଲ୍ଲାକୁ ତା'ପରିଦେଶ କିଲ୍ଲାମ ମାଗାଟି ତ
 ବିଜଳାୟ ଅଧିକାରୀଙ୍କୁ ଜାଲିଆଦି ଦିଆ
 ବିଜଳାୟ ।

3 । ସ୍ତମ୍ଭ

Binding Space	କରକର	ଝଟିଆ	ସେକ୍ସ	ନିହାର ସେକ୍ସ ଓ ଅନ୍ୟାନ୍ୟ ସେକ୍ସ ଉଚିତ ବିଧି ଅନୁସାରେ	ମୋଟ	5 । ହୁମିଲର ନାମ ଓ ଝଟିଆର ବିବରଣୀ
	4 । ସେକ୍ସ					

6 । ବିକେର ସବୁବିଧୀ, ଉଚିତ ବିଧି ଅନୁସାରେ



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GOVERNMENT OF ODISHA

FOREST, ENVIRONMENT & CLIMATE CHANGE DEPARTMENT

NOTIFICATION

No.FE-DIV-FLD-0008-2022/ 14657 /FE&CC Date 22.08.2022

10F (Cons) 77/2019

In exercise of the powers conferred under Section 33 of the Odisha Forest Act, 1972 (Odisha Act 14 of 1972), the State Government do hereby declare that the following land situated in Village--Tarapadar under Thuamul Rampur Tahasil in the District of Kalahandi identified, mutated and transferred in favour of Forest, Environment & Climate Change Department for the purpose of raising Compensatory Afforestation thereon against proposed diversion of 168.948 ha of forest land adjacent to South Kaliapani Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines of M/s OMC Ltd. vide In-principle/ Stage-I approval of Government of India, Ministry of Environment, Forests & Climate Change (FC Division), New Delhi communicated in letter F.No.8-19/2019-FC, dt.15.10.2019 under Section-2 of the Forest (Conservation) Act, 1980, the limits of which are specified below and the area of which is 164.073 ha (405.43 Ac) shall be Protected Forest with effect from the date of issue of the Notification and shall be known as "Tarapadar Protected Forest".

Forest Block:

Name of the Protected Forest : Tarapadar
 Area in Ha : 164.073
 Area in Acres : 405.43
 Name of the Village : Tarapadar
 Name of the Police Station : Thuamul Rampur
 Name of the Tahasil : Thuamul Rampur
 Name of the Sub-Division : Bhawanipatna
 Name of the District : Kalahandi

Land Schedule:

Village	Khata No.	Plot No.	Kissam	Total area (Ac)	Boundary description				Patch
					North	South	East	West	
Tarapadar	15/2	1/ 251 /262	Dangar	56.63	Pokresh	Plot No. 21/252	Plot No. 42/ 253 /263 & 1 (P)	Pokresh, Jagatipadar & Pudapadar	Patch- 1



P.T.O.

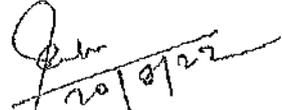
		21/ 252	28.09	Plot No. 1/251 /262	Plot No. 159/254/ 264	Plot No. 21(P)	Pudapadar	
		42/ 253 /263	32.78	Pokresh & Nunresh	Plot No. 42(P)	Plot No. 42(P)	Plot No. 1/ 251 /262	
		159/ 254 /264	48.21	Plot No. 21/252	Plot No. 162/ 255 /265	Plot No. 162/ 255 /265 & 159(P)	Pudapadar	
		162/ 255 /265	52.68	Plot No. 162(P) & 159/254 /264	Pudapadar & Birbafola	Plot No. 163/266	Pudapadar & Birbafola	
		163/ 266	54.89	Plot No. 163(P)	Birbafola	Plot No. 205/ 258 /268 & 206/ 259 /269	Plot No. 162/ 255 /265	
		205/ 258 /268	22.59	Plot No. 205(P)	Plot No. 206/ 259 /269	Plot No. 205(P)	Plot No. 163/266	
		206/ 259 /269	17.29	Plot No. 205/ 258 /268	Birbafola	Plot No. 206(P)	Plot No. 163/267	
		186/ 210 /271	53.56	Plot No. 210 (P) & Nunresh	Plot No. 187/ 256/ 267	Plot No. 210(P) & Tala- Ambapadar	Plot No. 209	Patch- II
		187/ 256 /267	27.92	Plot No. 186/ 210 /271	Plot No. 208/270	Chulbari	Plot No. 187(P)	

P.T.O.



		208 /270		10.79	Plot No. 187/256 /267	Plot No. 208(P)	Chulbari	Plot No. 208(P)	
Total				405.43 Ac or 164.073 ha					

By Order of the Governor


(SATYABRATA SAHU)

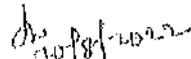
Additional Chief Secretary to Government

By e-mail: deputydirectorpp@rediffmail.com

Memo No. 14658 / FE&CC, Date 22.08.22

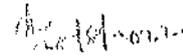
Copy forwarded to the Director of Printing, Stationery and Publication, Odisha Cuttack for publication in an extra-ordinary issue of the Odisha Gazette and supply 10 copies of printed notification each to FE&CC Deptt./ Director of Land Records and Surveys, Odisha, Cuttack/ Collector, Kalahandi/ DFO, Kalahandi (S) Forest Division/ Tahasildar, Thuamul Rampur Tahasil, Kalahandi.

2. The Notification is statutory and may be assigned SRO number.


OSD-cum-Special Secretary to Government

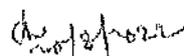
Memo No. 14659 / FE&CC, Date 22.08.22

Copy forwarded to the Assistant Inspector General of Forests, Govt. of India, Ministry of Environment, Forests and Climate Change, (F.C. Division), Indira Paryavaran Bhawan, Jor Bagh, Aliganj Road, New Delhi-110003/ Deputy Director General of Forests (Central), Govt. of India, MoEF&CC, Integrated Regional Office, A/3, Chandrasekharpur, Bhubaneswar-23 for information and necessary action.


OSD-cum-Special Secretary to Government

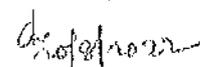
Memo No. 14660 / FE&CC, Date 22.08.22

Copy forwarded to the Revenue & Disaster Management Department/ Director of Land Records and Survey, Odisha, Cuttack/ RDC (ND) Sambalpur / Collector, Kalahandi/ Tahasildar-Thuamul Rampur, Dist.-Kalahandi for information and necessary action.


OSD-cum-Special Secretary to Government

Memo No. 14661 / FE&CC, Date 22.08.22

Copy forwarded to the Principal Chief Conservator of Forests & HoFF, Odisha/ Chief Conservator of Forests (Forest Diversion & Nodal Officer) FC Act, O/o the PCCF, Odisha/ Regional Chief Conservator of Forests, Bhawanipatna Circle/ Divisional Forest Officer, Kalahandi (South) Division for information and necessary action.


OSD-cum-Special Secretary to Government

P. T. O.

Memo No. 14662 / FE&CC, Date 22.08.22

Copy forwarded to the Head State Portal, IT Centre, Odisha Secretariat, Bhubaneswar for information and necessary action/ (5 spare copies for G.F).

[Signature]

OSD-cum-Special Secretary to Government

Memo No. 14663 / FE&CC, Date 22.08.22

Copy forwarded to the Under Secretary to Government, Office Establishment Section, FE&CC Department for information and necessary action with reference to their letter No.21646/F&E Dt. 22.11.2016.

[Signature]

OSD-cum-Special Secretary to Government

1

2



OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS & HoFF, ODISHA
ARANYA BHAWAN, BHUBANESWAR

Memo No. 2295- /9F(MG)- 374/2018
Dated, Bhubaneswar, the 07 February, 2022

To

The Divisional Forest Officer,
Cuttack/ Kalahandi (South) Forest Division

Sub: Diversion of 168.948 ha of forest land adjacent to South Kaliapani Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd

Ref: This office Memo No. 19257 (2) dated 07.11.2019.

In continuation to this office Memo on the subject cited above, it is to say that the financial outlay for the Compensatory Afforestation scheme (Bald Hill Plantation) over an area of 164.073 ha of non-forest land identified in village Tarapadar of Thuamul Rampur Tahasil under Kalahandi (South) Forest Division pertaining to the above project amounting to Rs.10,20,77,000/- (Rupees Ten crore twenty lakhs seventy seven thousand) only has been technically approved by the PCCF (FD & NO, FC Act). In this context, the approved financial outlay for Compensatory Afforestation scheme over 164.073 ha of non-forest land is enclosed herewith for information and necessary action.

In view of the above, you are requested to raise demand to the user agency for payment of the approved amount through web portal of the MoEF & CC and submit the deposit particulars of the amount paid in Adhoc-CAMPA in 12 point CAMPA format for taking further necessary action at this end.

Encl: As above

Conservator of Forests (Nodal)

Memo No. /Dt.

Copy forwarded to the Regional Chief Conservator of Forests, Angul / Bhawanipatna Circle for information and necessary action.

Conservator of Forests (Nodal)

Memo No. /Dt.

Copy forwarded to the Managing Director, OMC Ltd, OMC House, Bhubaneswar or information and necessary action.

Conservator of Forests (Nodal)

(12)

Financial Outlay for **Compensatory Afforestation Scheme (Bald Hill Plantation)** over **164.073 ha** of non-forest land identified in village Tarapadar of Thuamul-Rampur Tahasil in Kalahandi District against forest land to be diverted for overburden dump of **South Kaliapani and Sukurangi Chromite Mines** by **M/s OMC Ltd** in **Cuttack Forest Division**

(Wage Rate @ Rs.315/- per MD)

Sl. No.	Description	Amount (Rs.)
1.	Cost of Bald Hill Plantation @ 1600 plants per ha with 18 months old seedling over 164.073 ha @ Rs.4,30,100.37 per ha without provision of fencing with 10 years maintenance	7,05,67,858.00
2.	Add Escalation Cost (20%)	1,41,13,572.00
	Total	8,46,81,430.00
3.	Cost of Angle Iron & Chain Link wire mesh fencing over 10.371 Kms @ Rs.1677.32 per RMT with 10 years maintenance (As per approved one-time cost norm for CA)	1,73,95,486.00
	Grand Total	10,20,76,916.00 Or rounded off to 10,20,77,000.00

(Rupees Ten crore twenty lakhs seventy seven thousand) only

Approved

Approved
11/12/22

Principal Chief Conservator of Forests
Forest Diversion & Nodal Officer, FC Act

AGENCY COPY

यूनियन बैंक  Union Bank of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 14-02-2022

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908013
MoEF/SG File No.	B-19/2019-FC
Location.	ORRISA
Address.	OMC House Khordha
Amount(in Rs)	102077000/-

Amount in Words :Ten Crore Twenty Lakh Seventy-Seven Thousand Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825832908013 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

यूनियन बैंक  Union Bank of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 14-02-2022

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908013
MoEF/SG File No.	8-49/2019-FC
Location.	ORRISA
Address:	OMC House Khordha
Amount(in Rs)	102077000/-

Amount in Words :Ten Crore Twenty Lakh Seventy-Seven Thousand Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825832908013 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

After making successful payment, User Agencies may send a line of confirmation through Email: helpdeskcampa@corpbank.co.in

Note:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to Email: cb0371@unlonbankofindia.com

Handwritten Signature
14/02/2022
DR. Sandhya Mishra
Addl. G.M.(F&E)
OMC Ltd.

Handwritten Signature
14/02/2022
S. Mohapatra
Dy. General Manager (Fin)

UBIN0922045029408



17/10/22



STATE FOREST DEPARTMENT, ODISHA
OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS & B&F
PLOT NO. 6/12, ARANYA BHAWAN, CHANDRASUKHAPUR
BHUBANESWAR - 751023

E-mail : nodal.pccf@odisha.gov.in nodal.pccf.dfo@odisha.gov.in

Memo No. 2295 dated 07.02.2022

Principal Forest Officer
Cuttack Forest Division

Subject: Diversion of 168.948 ha of forest land adjacent to South Kaliapani Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines of M/s OMC Ltd under Cuttack Forest Division - Revised Financial outlay of CA Scheme @ Rs 326/- per manday regarding.

Reference to this office Memo No. 2295 dated 07.02.2022

In reference to this office memo on the subject cited above, it is to inform you that the revised financial outlay for Compensatory Afforestation Scheme (Bald Hill Plantation) over an area of 168.948 ha i.e. 164.073 ha of non-forest land identified in village Tarapadar & 4.875 ha of forest land identified in village Bhataguda both under Thummul-Rampur Tahasil in Kalahandi (South) Forest division pertaining to the above project has been approved by the J.J. & Nodal Officer, FC Act for Rs 11,43,65,300/- (Rupees eleven crores forty three thousand five hundred and three hundred) only at prevailing wage rate of Rs. 326/- per manday as has been enclosed.

You are requested to raise demand on the user agency for payment of the differential cost of Rs. 12,00,00,000/- of MoF & CC and submit the deposit particulars of the amount paid.

Further you are also requested to furnish the statement of funds towards compensatory afforestation reported by the user agency in the prescribed CAMPA format duly signed by you to ensure the updated Stage-I compliance.

Encl - Revised financial outlay

[Signature]
Conservator of Forests (Nodal)

Memo No. 2295 dated 07.02.2022

For information of the Principal Chief Conservator of Forests, Angul Circle for information & necessary action with reference to Memo No. 2295 dated 07.02.2022 of DFO, Cuttack Forest Division

[Signature]
Conservator of Forests (Nodal)

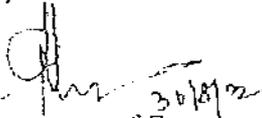
Financial Outlay for Compensatory Afforestation Scheme (Bald Hill Plantation) over 168,946 ha i.e. 164,073 ha of non-forest land identified in village Tarapadar & 4,875 ha non-forest land identified in village Bhataguda both under Thuamul-Rampal Tahasil in Kalahandi (South) Forest Division against forest land to be diverted for overburden dump of South Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd in Cutack Forest Division

(Wage Rate @ Rs.326/- per MD)

Sl. No.	Description	Amount (Rs.)
1.	Cost of Bald Hill Plantation @ 1600 plants per ha with 18 months old seedling over 164,073 ha @ Rs.4,69,664.58 per ha without provision of fencing with 10 years maintenance	7,70,59,277.00
2.	Cost of Bald Hill Plantation @ 1600 plants per ha with 18 months old seedling over 4,875 ha @ Rs.4,69,664.58 per ha without provision of fencing & with 10 years maintenance	22,89,615.00
3.	Cost of L.BCD of size 10'X10'X5' @ Rs.8944.16 per structure for 10 nos. over 4,875 ha	89,442.00
	Total	7,94,38,334.00
4.	Add Escalation Cost (20%)	1,58,87,666.00
	Total	9,53,26,000.00
5.	Cost of Angle Iron & Chain Link wire mesh fencing over 10.371 Kms - 0.98 Kms around plantation sites of Tarapadar and Bhataguda @ Rs.1677.32 per RMT with 10 years maintenance (As per approved one-time cost norm for CA)	1,90,39,259.00
	Grand Total	11,43,65,259.00
		Or rounded off to
		11,43,65,300.00

(Rupees Eleven crore forty three lakhs sixty five thousand and three hundred) only

Approved



Chief Conservator of Forests
Forest Diversion & Nodal Officer, FC Act

Chief Conservator of Forests
(Forest Diversion & Nodal Officer, FC Act)
O/o PCCF & HoFF, Odisha, Bhubaneswar.

135572/2022/F & E

OFFICE OF THE DIVISIONAL FOREST OFFICER, CUTTACK FOREST DIVISION

AT:- GHATAKULA, NUAPADA, CUTTACK 753010

Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfo.cuttack@odisha.gov.in

No 5947/5F (Forest Diversion) 12/2018Dated, Cuttack the 08th September, 2022.

To

The Managing Director,
Odisha Mining Corporation Ltd.,
Odisha Mining Corporation House,
Bhubaneswar.

Sub: - Diversion of 168.948 ha of forest land adjacent to South-Kaliapani Mines of OMC for dumping of overburden of South-Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd.-Demand on CA Scheme reg.

Ref: - Memo No.17135 dt.03.09.2022 of the Conservator of Forests (Nodal), O/o-PCCF & HoFF, Bhubaneswar to your address.

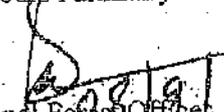
Sir,

In inviting a reference to the memo cited above on the captioned subject, it is to inform you that, the financial outlay for Compensatory Afforestation Scheme (Bald Hill Plantation) over an area of 168.948 ha i.e. 164.073 ha of non-forest land identified in village Tarapadar & 4.875 ha non-forest land identified in village Bhatguda both under Thuamul-Rampur Tahasil in Kalahandi(South) Forest division pertaining to the above project has been approved by the Chief Conservator of Forest (Forest Diversion & Nodal Officer, FC Act) for Rs.11,43,65,300/- (Rupees Eleven Crore Forty-Three Lakhs Sixty-Five Thousand Three Hundred) only at prevailing wage rate of Rs.326/- per man day with 10 years maintenance.

In view of above, it is requested to make arrangement to deposit the differential amount Rs.1,22,88,300.00 (Rupees One Crore Twenty-Two Lakh Eighty-Eight Thousand Three Hundred) (Rs.11,43,65,300.00 - Rs.10,20,77,000.00) only with the Adhoc body of Compensatory Afforestation Fund Management & Planning Authority (CAMPA) through e- payment module & submit the receipt of the deposition to this office for ready reference.

Encl: - As above.

Yours Faithfully


Divisional Forest Officer
Cuttack Forest Division

Copy for kind information to:

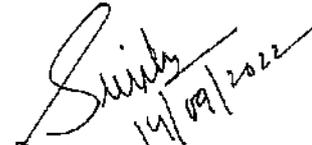
- (i) The Chief Conservator of Forests (Nodal), O/o- the Principal Chief Conservator of Forests & HoFF, Odisha, Bhubaneswar.
- (ii) The Regional Chief Conservator of Forests, Angul Circle.
- (iii) The Divisional Forest Officer, Kalahandi South Division.

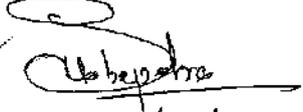
AGENCY COPY	
 	
NEFT / RTGS CHALLAN for CAMPA Funds	
Date : 14-09-2022	
Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908378
MoEF/SG File No.	8-19/2019-FC
Location.	ORRISA
Address.	OMC House Khordha
Amount(in Rs)	12288300/-
Amount in Words :One Crore Twenty-Two Lakh Eighty-Eight Thousand Three Hundred Rupees Only	
NEFT/RTGS to be made as per following details;	
Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	150825832908378 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003
• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only	

BANK COPY	
 	
NEFT / RTGS CHALLAN for CAMPA Funds	
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• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only	

After making successful payment, User Agencies may send a line of confirmation through
Email: helpdeskampa@corpbank.co.in

Note:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to
Email: cb0371@unionbankofindia.com

C/S

 14/09/2022
 Dr. Sandhya Mishra
 Addl. G.M. (F&E)
 OMC Ltd.



 15/09/2022
 S. Mohapatra
 ny General Manager (Fin)

UBINK 22258016654

SCHEME FOR
STABILIZATION AND RECLAMATION OF OB
DUMP AREA BY APPROPRIATE
GRADING/BENCHING, IN ACCORDANCE WITH
THE APPROVED SCHEME, SO AS TO ENSURE
THAT ANGLES OF REPOSE AT ANY GIVEN
PLACE IS LESS THAN 28°

IN
168.948 HA OF FOREST LAND PROPOSED FOR
DIVERSION FOR DUMPING OF OVER BURDEN
OF SOUTH-KALIAPANI AND SUKURANGI
CHROMITE MINES
UNDER CUTTACK FOREST DIVISION

M/S ODISHA MINING CORPORATION LTD.
(A GOVT.OF ODISHA UNDERTAKING)
OMC HOUSE, BHUBANESWAR-751001

(As per condition No. (v) and (xi) of the stage-I Forest Clearance granted by MoEF & CC vide letter No. 8-
19/2019-FC dt. 15.10.2019)

(ON ONE TIME COST NORM BASIS)

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT:- GHATAKULA, NUAPADA, CUTTACK 753010
Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfo.cuttackforest.division@yahoo.com

No 2113 /SF(Forest Diversion) 12 /2018
Dated, Cuttack the 02 th April, 2022

Handwritten notes:
11/4/22

To
The Executive Director (F&E),
M/S Odisha Mining Corporation Ltd,
OMC House, Bhubaneswar-751001.

Sub:- Diversion of 168.948 ha of forest land adjacent to South-Kaliapani Mines of OMC for dumping of overburden of South-Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd.-Demand on CA Scheme reg.

Ref:- Memo No. 1237 dt. 23.03.2022 of the Regional Chief Conservator of Forests, Angul Circle to your address.

Sir,
In inviting a reference to the letters cited above on the captioned subject, it is to inform you that, as per the condition No. xi & xii stipulated in stage -I approval order of MoEF & CC, Govt. of India, 02 nos. of schemes have been approved by Regional Chief Conservator of Forests, Angul Circle Angul on the current wage rate Rs. 315/- per Manday. The approved schemes are enclosed herewith for your information.

Handwritten notes:
7/11/22
13/4/22

Handwritten notes:
13-04-2022

Besides, you are requested to submit the point wise compliance of conditions stipulated in stage -I approval order to this office for onward transmission.

SI No.	Condition No.	Particulars	Financial outlay
1	v & (xi)	Scheme for Stabilization and reclamation of OB dump area by appropriate grading/ benching, in accordance with the approved scheme, so as to endure that angle of repose at any given place is less than 28.	Rs 86,01,10,500.00
2	(xii) &(xiii)	Scheme for Muck/silt disposal and construction of retaining wall and garland drain to avoid its rolling down.	Rs 2;35,57,300.00

Yours faithfully

Signature
Divisional Forest Officer
Cuttack Forest Division

Memo No. 2114 dt 02.04.2022

Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information and necessary action with reference to his Memo No. 1235 dt. 23.03.2022.

Signature
Divisional Forest Officer
Cuttack Forest Division

Memo No. 2116 dt 02.04.2022

Copy forwarded to the Principal Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the PCCF & HoFF, Odisha, Bhubaneswar for information and necessary action.

Signature
Divisional Forest Officer
Cuttack Forest Division.

STABILIZATION AND RECLAMATION OF OB DUMP AREA

1. INTRODUCTION.

Government of India in the Ministry of Environment, Forest and Climate Change has granted Stage-I Forest Clearance vide letter F.No. 8-19/2019-FC, Dt. 15.10.2019 over 168.948 ha for dumping of overburden to be generated from South-Kaliapani and Sukuarngi Chromite Mines of OMC Ltd. Stage-I Forest Clearance has been communicated by State Govt. vide letter no. No. 10F (Cons) 89/16 19650/F&E dt. 19.10.2019.

Condition No. (v) and (xi) of the additional condition imposed by the State Govt. is read as given under:

“(v) It is reported the area is required for 17 years. State Government may prepare and submit a plan for stabilization and reclamation of OB dump area.

“(xi) The User Agency shall stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place are less than 28°”.

In order to comply the observation, a comprehensive scheme is prepared for implementation of the same within 168.948 ha of forest area. PCCF (N) vide letter dt. 08.11.2021 and 01.12.2021 has issued one-time Cost Norm for Compensatory Afforestation. As per the para-2 of the said guideline Compensatory Afforestation to be prepared on “one time cost norm basis” by delinking the CA scheme to wage rate revision and material cost escalation for easy of doing business. The scheme has been prepared considering the Base Norm as Rs. 315/- and computed the Matrix.

2.0 Present Scenario:

In South-Kaliapani Chromite Mines the tentative volume of overburden to be generated by opencast mining at the conceptual stage has been assessed as 100.90 million M³ (in-situ) for production of 15.01 million ton of mineable chrome ore basing on the present level of geological inputs & economics of mining. The conceptual pit area will cover 315.74 ha out of total lease area of 552.457 ha. Out of 174.99 ha available for OB dump in the ML, 95.31 ha has been occupied by existing dump. Hence, around 79.68 ha virgin area available for OB dump will accommodate only 35.17 million M³ (in-situ) excluding free area of 100 m strip from the quarry edge and maximum dump height of 100m etc. There is no space left to dump balance 65.73 million M³ (in-situ) of OB within the ML to continue mining up to the conceptual pit limit.

Similarly OB generation from the ML at conceptual period has been assessed at 45.825 million M³ to produce 5.23 million ton of chrome ore. The area available for OB dump is 20.258 ha which can accommodate 17.85 million M³ excluding free area of 100 m strip from the quarry edge and maximum dump height of 100m. The land for 27.975 million M³ of OB dumping within Sukurangi ML area is not available.

Therefore, production of 9.79 million tons of chrome ore from South-Kaliapani and 3.189 million tons of chrome ore from Sukurangi cannot be achieved without utilizing 168.948 ha of forest area.

3.0 Salient points of waste management:

- For the management of dump it is suggested to have terrace at every 20 m height from the floor at same contour.
- Ultimate height 80 m
- Inward slope is to be provided so that rain water will move towards dump side. It will prevent of rain water flow from terrace to lower contour through the walls of the dump and forming gullies / rain cuts and rolling down of waste materials.
- Towards the inner side of terrace, half concrete open pipes are installed to collect rainwater and not allowing penetrating to inside the dump.
- Crated Boulder retaining wall of 2m height (0.5m below ground + 1.5m above the ground) X 1.0m wide will be constructed around the dump.
- It aims to check any roll down waste from the dump.
- At regular intervals clear openings are provided at the bottom to allow water to pass out and join the Garland drains.
- Constructed guard wall is of loose boulders.
- Garland drains around the dump will be constructed.
- At the end of the garland drain settling tanks of 15mx10mx1m deep is constructed to allow settling of carried materials.
- Slope of each terrace to be maintained <28⁰.
- Over all slope shall be <28⁰.

Anticipated fallout.

A. Failure of Dumps:

Three types of Dump Failure may occur in the present type of dump. These are

- Slope Failure.
- Toe failure
- Base failure.

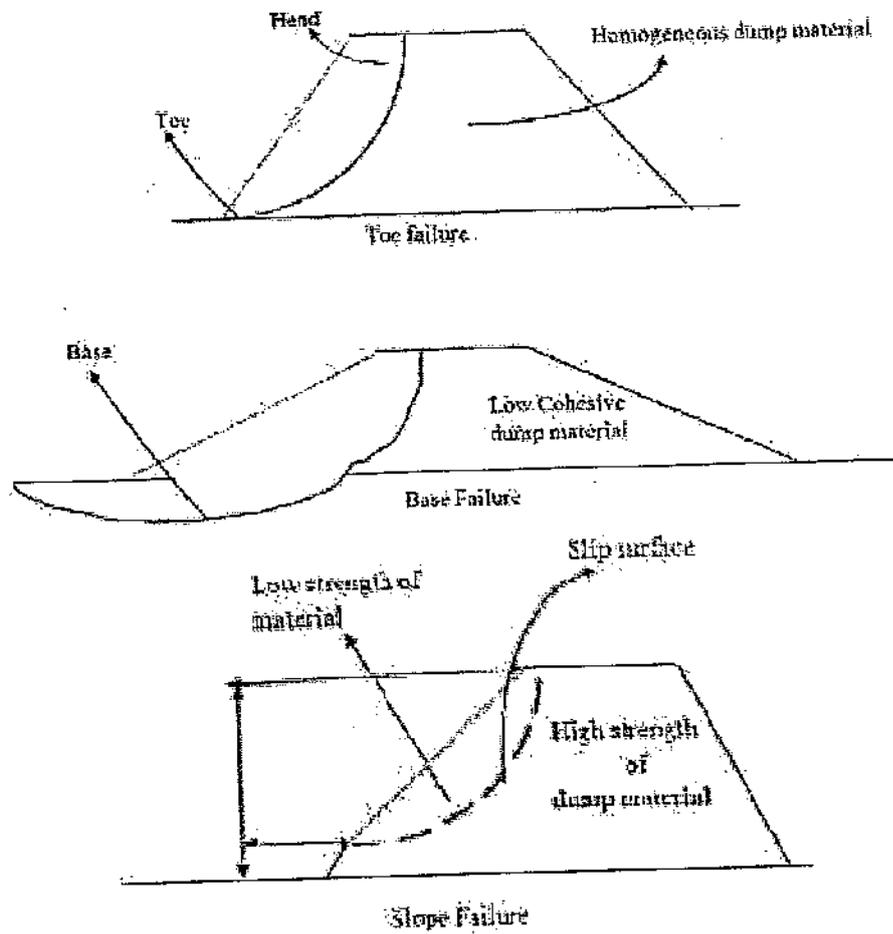


Figure 1 Dump failure line of slip.



Figure 4 DUMP FAILURE SITUATION.

Reasons for failure:

i. Ground water and surface water flow condition plays a critical role on the stability of dump slope. Frictional strength is reduced as the height of dump is raised, due to presence of water. The pore water pressure reduces the normal stress acting on material. The cohesive strength of weak geo-material will be further reduced due to presence of pore water pressure. Waste dump placed in a loose state, shear failure is often followed by static static liquefaction which is complete loss of strength. The flow of water may enhance the seepage force, leading to formation and migration of tension crack.

ii. Erosion also plays an important role in affecting the stability by surface weathering, ground water or surface water seepage, toe erosion and slope modification, ground water or surface runoff. Erosion changes the waste dump slope geometry and morphological character. The weathering and attrition of material at the toe of a potential slide reduce the restraining force that may destabilize the slope. Erosion of void filling materials, or zone of percolation can efficiently decrease cohesion among grain boundaries. The cohesion strength notable reduce the rock mass shear strength. The decrease in shear strength may allow movement of dump slope along weak plane. In addition localized erosion may also result in increase permeability and ground water flow along the slope. This may lead to failure due to formation of gully and deep flow channels in dump.

iii. Other affecting parameters are

- Gradient of the Seam,
- Ground Water Regime
- Nature of Over burden Rock
- Presence of clay and Soil layers and their properties.
- Angle of Repose of the broken Over burden rock
- Cohesion of the Over burden Rock materials
- Height of OB Dump in one stretch
- Ultimate Height and Slope of Waste Dump
- Dump Stability Parameters Strip/Cut Width and Depth.

B. Dust pollution due to wind/whorl wind:

The average wind speed as noticed in post monsoon is 2.25m/s with a maximum speed of 6.13m/s. In winter the average speed is 1.31m/s with a maximum speed of 5.61m/s. This wind

speed has a capacity to pick up heavy dust from dry surface of dump, ore stack & sub grade stack.

C. Loss of life & property.

Failure of dump may cause loss of life & property. May put occupational hazards to workman.

Summary of prescription on Benching & Grading:

- Bench height: 20m,
- Bench Width: 20m
- Number of Benches: 4
- Over all slope: $<28^{\circ}$.
- Slope of each terrace: $<28^{\circ}$.

4.0 Stabilization of Over Burden Dump:

After the declaration of dead of the Over Burden dump, the same shall be covered by means of plantation.

4.1 **By grass seeding:** Grass seeding over 161.048 ha of Over Burden dump will be carried out before planting tall trees to stabilize Over Burden dump.

4.2 **By Planting Tall trees:** Plantation over 161.048 ha will be carried out after the dump is declared dead. The details of plantation is given as under:

4.2.1 **Planting & post-planting operations:** Block Plantation over 161.048 ha will be carried out @ 1600 plants/Ha. All planting & post planting measures like casualty replacement, soil working, manuring, fire protection etc. will be undertaken as given in Cost norm for Block plantation with 1600 seedlings furnished as **Annexure-IV**.

While taking up plantation, the following vital points shall be taken up for consideration.

- ❖ Care to be taken to raise healthy seedlings of minimum 60 cm height. 10% extra seedlings are to be raised for replacement of casualty.
- ❖ Pitting shall invariably be done during November-February i.e., before onset of monsoon. If possible the soil of upper portion and lower portion of pit should be placed separately in specific direction so that while planting the pits will be filled with top-soil first.
- ❖ Planting shall be done on the onset of monsoon to get full benefit of monsoon rain and should not be delayed.
- ❖ Basal dose of 50 grams of NPK and 5 grams of Chlorpyrifos dust per plant should be applied at the time of planting carefully by mixing with top-soil so that the roots of seedlings do not come in direct contact with fertilizer.
- ❖ In case of any mortality of planted seedlings, it should be replaced with good seedlings as soon as possible for better success rate.
- ❖ Complete weeding in proper time will be done. Strip weeding will not be permitted.
- ❖ Soil-working and application of 2nd dose fertilizer of 50 gms NPK/plant should be done in time

Since the area is provided with barbed wire fence, watch & ward will be easier. Watchers may be engaged in weeding in problematic areas along with watch & ward.

4.2.2 Spacing: The spacing adopted for the plantation in gaps is 2.5 mtr X 2.5 mtr. Alignment and pit marking should be done carefully in slopes so that the horizontal distance between plants in a row remains 2.5 mtrs and not the distance measured along the slope.

4.2.3 Species: Although indigenous species are to be preferred in the plantation, considering adverse soil & moisture conditions we may go for hardy exotic species where required so that the plants are able to survive. Considering the topography, soil and moisture availability of the plantation area, the following species will be planted.

Name of species	Common name	Remarks
<i>Acacia auriculiformis</i>	Acacia	In rocky exposed areas
<i>Azadirachta indica</i>	Neem	In well drained soil
<i>Derris indica</i>	Karanja	In area with good soil depth
<i>Emblia officinalis</i>	Amla	In area with soil depth
<i>Cassia siamea</i>	Chakunda	In rocky and exposed areas
<i>Dalbergia sissoo</i>	Sissoo	In lower areas with good soil depth
<i>Gmelina arborea</i>	Gambhari	In lower areas with good soil depth
<i>Dendrocalamus strictus</i>	Salia bamboo	In lower areas with good soil depth healthy seedlings from rhizomes may be planted
<i>Zizyphus mauritania</i>	Ber	In rocky areas with low soil depth
<i>Simarubaglauca</i>	Simaruba	In rocky areas with low soil depth

5.0. Monitoring & Evaluation.

The implementation & its maintenance will be evaluated by the authority of the User Agency regularly. The Divisional Forest Officer, Cuttack Forest Division may be kept informed from time to time as required.

6.0 Implementing Agency.

This prescription is to be implemented by the user agency.

7.0 Financial Forecast

Financial Forecast for the measures proposed like development of created boulder masonry and excavation of garland drain has been considered in separate schemes under this stage-I approval and attached herewith. So, no additional cost for the same has been proposed in this scheme.

Financial Forest for the measures like Terracing of OB dump, earthen drain within the slope of OB dump, grass seeding on OB dump and plantation on OB dump area has been proposed in this scheme. The detail of financial forecast for scheme is given as under:

FINANCIAL FORECAST

Sl. No.	Particulars of Interventions	Financial involvement (Rs)
1	Terracing of OB dump over a length of 1610480 sqmt @ Rs.357/sqmt (Annexure-I).	57,49,41,350.00
2	Excavation of earthen drain of 16120 cum over a slope length of 80524 mtr in every 100 meter within the slope of proposed OB dump (Annexure-II)	69,93,420.20
3	Cost for sowing of grass seeds over 161.048 ha @ Rs. 26095/- ha (Annexure-III).	42,02,547.56
4	Maintenance of grass seed @ (10 mandays for period of six month). Total 1800 mandays (180 x 10) for six months 1800 x Rs. 315.00 = 5,67,000.00	5,67,000.00
Sub-Total:		58,67,04,327.76
Inspection, monitoring and evaluation @15% of the total project cost		8,80,05,649.16
Sub-Total:		67,47,09,976.92
Price escalation @20%		13,49,41,995.38
Total		80,96,51,972.30
5	Block plantation (1600 plants/ha) over 161.048 ha of OB dump area @ Rs. 312305/Ha (Annexure-IV). Ds. 3,13,313.50/-	5,02,96,095.64 5,04,58,514
Grand Total		85,99,48,067.94 Or Say 85,99,48,100.00

(Rupees eighty five Crore ninety nine lakh forty eight thousand one hundred) only

86,01,10,500/-

Divisional Forest Officer

Cuttack Forest Division

Approved for Rs. 86,01,10,500/- (Rupees eighty six crore one lakh ten thousand and five hundred).

[Signature]
22/3/22

Regional Chief Conservator
of Forests, Angul Circle.

Annexure-I

Engagement of HEMM (Heavy earth mining machineries) in dump slope for terracing

1. Location- over burden dump- work efficiency of HEMM machine per hour-3.5 Sqm on the dump. (Average height of the terrace-20 mt)
2. Rate of engagement of HEMM Machine Rs. 1250/hr
3. Terracing cost at OB dump/sqm- Rs. 1250/3.5=Rs. 357.14 or say 357.00
4. In our OB dump average slope length=80524 mtr
5. Average height of terrace 20 mt.
6. Total terrace area in sqm= 80524 x 20=16,10,480 sqm

Annexure-II

Excavation of earthen drain in every 100 meter within the slope of proposed OB dump**A: E/W Excavation by Mechanical Means**

1. In our OB dump average slope length=80524 mtr
2. Total no. of drain required within 80524 mtr slope length= 80524/100=806 nos.
3. Average height of terrace 20 mt.
4. E/W excavation by mechanical means for one drain= 20m x 1m x1 m=20 Cum
5. Total volume to be excavated for 806 nos. of drain=806 x 20=16120 cum
6. Taking Rs. 47.60/Cum, total cost for excavation of 16120 cum of earthen material
= Rs.7, 67,312.00

B: Providing crate boulder

1. Crate boulder pitching within earthen drain: 16120 x 0.5 x 0.5= 4030 Cum
2. Considering Rs. 1544.94/Cum, the cost of boulder pitching within earthen drain=4030 x 1544.94= Rs 62,26,108.20

Total Cost = 7, 67,312.00 + 62, 26,108.20 = Rs 69, 93,420.20

Annexure-III

Estimate for sowing of grass seeds per ha.

Cost of broadcasting of grass seeds per ha. Labour rate Rs.315.00/- per day				
Sl. No.	Purpose	No. of Labour/quantity of materials	Rate (in Rs.)	Amount in Rs.
1	Spreading of good top soil	03 Nos	315.00/- Labour	945.00
2	Adding FYM and good earth	2 TL FYM	500/TL FYM	2000.00
		2TL Good earth	500/TL Good earth	
3	Cost of grass seed 500 Kg/per ha		40/Kg	20000.00
4	Broad casting	10 nos	315.00/-Labour	3150.00
Total				26095.00

COMPENSATORY AFFORESTATION SCHEME FOR BLOCK PLANTATION

Sl. No.	Item of Works	Period of execution	Mandays	Labour Cost @ Rs.315/-	Material Cost	Total in Rs.
1	2	3	4	5	6	7
Pre-Planting Operation (0th Year)						
1	Survey, Demarcation and Pillar Posting	Nov/Dec	2	630.00	0	630.00
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	315.00	100	415.00
3	Site preparation (Cleaning & removal of debris)	Nov/Dec	12	3,780.00	0	3,780.00
4	Creation of 4.00mt wide Inspection Path	Feb/Mar	1	315.00	0	315.00
5	Alignment and stacking of pits	Feb/Mar	2	630.00	0	630.00
6	Digging of pits (45 cm x 45 cm x 45 cm) in hard & gravelly soil	Feb/Mar	64	20,160.00	0	20,160.00
7	Construction of Temporary Labour Shed, Drinking water facility and First Aid etc.	Jan/Mar	0	0.00	3500	3,500.00
	Total:-		82	25,830.00	3,600.00	29,430.00
8	Monitoring, Evaluation, Learning, Documentation & any other Contingency up to 5% of the total cost.					1472
	Grand Total:-					30,902.00
1st Year/ Planting Year						
1	Refilling of pits by altering the dugout soil of the pits, application of Organic compounds/ CDM/ FYM & mixing the same properly.	Jun/July	12	3,780.00	8,000.00	11,780.00
2	Transportation of 18 months old polypot seedlings in hired truck/ tractor from the Permanent/ Mega nursery to planting site including loading & unloading. (Average lead of 10 Rkm) & stacking the seedlings @ Rs.6/- per Seedling. (1100 nos.)	July/Aug	0	0.00	10,560.00	10,560.00
3	Watering the polypot seedlings at planting site	July/Aug	3	945.00	0.00	945.00
4	Conveyance of polypot seedlings on head load from the stacking site to individual dug out pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil properly around the planted seedlings.	July/Aug	36	11,340.00	0.00	11,340.00

5	Cost of Fertilizer & Insecticide:- (a) NPK / Bio-fertilizer @50 gms/ plant as basal dose = 50 kg @ Rs.30/- per kg = Rs.1500.00 (b) Urea/ Vermicompost/ Mo Khata/ any other fertilizer in two subsequent doses @ Rs.750.00 (c) Insecticide/ Bio-pesticide @ 5 gms/ plant = 5 kg @ Rs/150/- per kg = Rs.750.00	July/Aug	0	0.00	4,800.00	4,800.00
6	Casualty Replacement @ 10% (100 nos.)	July/Aug	4	1,260.00	0.00	1,260.00
7	1st Weeding & Manuring	Aug/Sept	15	4,725.00	0.00	4,725.00
8	2nd Weeding, Soil working (1mt. Diametre around the plants) and Manuring	Oct/Nov	20	6,300.00	0.00	6,300.00
9	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path.	Feb/Mar	3	945.00	0.00	945.00
10	Watch & Ward including watering as per requirement	Aug-Mar	12	3,780.00	0.00	3,780.00
	Total:-		105	33075	23360	56,435.00
11	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					2,822.00
	Grand Total:-					59257
2nd Year Maintenance						
1	Transportation of 100 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedling.	Jul	0	0.00	960.00	960.00
2	Casualty Replacement @ 10%	Jul	4	1,260.00	0.00	1,260.00
3	Cost of Fertilizer & Insecticide:- (a) Cost of Insecticide/ Bio-pesticid @ 5 gms/ plant = 0.5 kg @ Rs.150/- per kg = Rs.75/- (b) Urea/ NPK/ Bio-fertilizer/ Vermicompost/ Mo Khata/ any other fertilizer @ Rs.2800/-	Aug/Sept	0	0.00	4,606.00	4,606.00
4	Weeding (Complete weeding), Manuring & Soil working (1mt. Diametre around the plants)	Sept/Oct	20	6,300.00	0.00	6,300.00
5	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5,670.00	0.00	5,670.00
7	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.				1,000.00	1,000.00
	Total:-		45	14175	6,566.00	20741

8	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					1037
Grand Total:-						21778
3rd Year Maintenance						
1	Cost of fertilizer (Urea/ NPK/ Bio-fertilizer/ Vermicompost/ Mo Khata/ any other fertilizer)	Sept/Oct	0	0.00	4,486.00	4,486.00
2	Weeding , Manuring & Soil working (1mt. Diametre around the plants)	Sept/Oct	20	6,300.00	0.00	6,300.00
3	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
4	Watch & Ward including watering as per requirement	Apr-Mar	18	5,670.00	0.00	5,670.00
5	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.	Apr-Mar			1,000.00	1,000.00
Total:-			41	12,915.00	5,486.00	18,401.00
6	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					920
Grand Total:-						19,321.00
4th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
Total:-			21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
Grand Total:-						6,946.00
5th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
Total:-			21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
Grand Total:-						6,946.00
6th Year Maintenance						

1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	5	1,575.00	0.00	1,575.00
3	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		26	8,190.00	0	8,190.00
4	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					410
	Grand Total:-					8,600.00
7th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00
8th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path.	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00
9th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00
10th Year Maintenance						

1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	945.00	0.00	945.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,670.00	0.00	5,670.00
	Total:-		21	6,615.00	0	6,615.00
3	Monitoring, Evaluation, Learning, Documentation & any other Contingency upto 5% of the total cost.					331
	Grand Total:-					6,946.00

TOTAL COST FOR 1 HA.							
Sl. No.	Year	No. person days	Labour Cost @ Rs.315/-	Material Cost (Rs.)	Monitoring Evaluation, Learning, Documentation and other Contingency (5%) of (4+5)	Cost of Seedlings @ Rs.50.31 per seedlings	Total Cost (Rs.)
1	0th year	82	25830	3600	1472	0	30,902.00
2	1st year	105	33075	23360	2,822.00	88545.6	1,47,802.60
3	2nd year	45	14175	6566	1037	8049.6	29,827.60
4	3rd year	41	12915	5486	920	0	19,321.00
5	4th year	21	6615	0	331	0	6,946.00
6	5th year	21	6615	0	331	0	6,946.00
7	6th year	26	8190	0	410	0	8,600.00
8	7th year	21	6615	0	331	0	6,946.00
9	8th year	21	6615	0	331	0	6,946.00
10	9th year	21	6615	0	331	0	6,946.00
11	10th year	21	6615	0	331	0	6,946.00
	Total:-	425	1,33,875.00	39,012.00	8,647.00	96,595.20	2,78,129.20

Matrix for Model-I-B Conventional CA Plantation (AR) 1600 plants per Ha.

In Rupees

Matrix for Model-I-A Conventional CA Plantation (AR) 1600 plants

Sl. No.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (10 Years)
	Base Norm	30902	147803	29828	19321	6946	6946	8600	6946	6946	6946	6946											278129
1	2021-22	30902	155193	32885	22366	8443	8865	11525	9774	10262	10776	11314											312305
2	2022-23		32447	16292	34529	23485	8865	9308	12101	10262	10776	11314	11880										327920
3	2023-24			34069	171100	36256	24659	9308	9774	12706	10776	11314	11880	12474									344316
4	2024-25				35773	179655	38068	25802	9774	10262	13341	11314	11880	12474	13098								361532
5	2025-26					37562	188638	39972	27187	10262	10776	14008	11880	12474	13098	13753	14440						379609
6	2026-27						39449	198070	41970	28546	10776	11314	14709	15444	13098	13753	14440	15162					398589
7	2027-28							41412	207973	44069	29973	11314	11880	15444	13098	13753	14440	15162	15920				418518
8	2028-29							43482		218372	46772	31472	11880	12474	13098	13753	14440	15162	15920	16716			439444
9	2029-30									45856	229390	48586	33045	12474	13098	13753	14440	15162	15920	16716			461417
10	2030-31										47939	240755	51015	34698	13098	13753	14440	15162	15920	16716	17532		484487


 DIVISIONAL FOREST OFFICER
 CUTTACK FOREST DIVISION

SCHEME FOR
MUCK/SILT DISPOSAL AND CONSTRUCTION OF
RETAINING WALL AND GARLAND DRAIN TO
AVOID ITS ROLLING DOWN

IN

168.948 HA OF FOREST LAND PROPOSED FOR
DIVERSION FOR DUMPING OF OVER BURDEN
OF SOUTH-KALIAPANI AND SUKURANGI
CHROMITE MINES

UNDER

CUTTACK FOREST DIVISION

M/S ODISHA MINING CORPORATION LTD.

(A GOVT.OF ODISHA UNDERTAKING)

OMC HOUSE, BHUBANESWAR-751001

(As per condition No. (xii) and (xiii) of the stage-I Forest Clearance granted by MoEF & CC vide letter No. 8-19/2019-FC dt. 15.10.2019)

(ON ONE TIME COST NORM BASIS)

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT:- GHATAKULA, NUAPADA, CUTTACK 753010

Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfo.cuttackforest.division@yahoo.com

No 2113 /5F(Forest Diversion) 12 /2018

Dated, Cuttack the 02 th April, 2022

To

The Executive Director (F&E),
M/S Odisha Mining Corporation Ltd,
OMC House, Bhubaneswar-751001.

Advison
11/4/22

11/4/22

Sub:- Diversion of 168.948 ha of forest land adjacent to South-Kaliapani Mines of OMC for dumping of overburden of South-Kaliapani and Sukurangi Chromite Mines by M/s OMC Ltd.-Demand on CA Scheme reg.

Ref:- Memo No. 1237 dt. 23.03.2022 of the Regional Chief Conservator of Forests, Angul Circle to your address.

Sir,

In inviting a reference to the letters cited above on the captioned subject, it is to inform you that, as per the condition No. xi & xii stipulated in stage -I approval order of MoEF & CC, Govt. of India, 02 nos. of schemes have been approved by Regional Chief Conservator of Forests, Angul Circle Angul on the current wage rate Rs. 315/- per Manday. The approved schemes are enclosed herewith for your information.

Besides, you are requested to submit the point wise compliance of conditions stipulated in stage -I approval order to this office for onward transmission.

M/C/E/S/E
13/4/22

13-04-2022

SI No.	Condition No.	Particulars	Financial outlay
1	v & (xi)	Scheme for Stabilization and reclamation of OB dump area by appropriate grading/ benching, in accordance with the approved scheme, so as to endure that angle of repose at any given place is less than 28.	Rs 86,01,10,500.00
2	(xii) & (xiii)	Scheme for Muck/silt disposal and construction of retaining wall and garland drain to avoid its rolling down.	Rs 2,35,57,300.00

Yours faithfully

S. 02/4/2022
Divisional Forest Officer
Cuttack Forest Division

Memo No. 2114 dt 02.04.2022

Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information and necessary action with reference to his Memo No. 1235 dt. 23.03.2022.

S. 02/4/2022
Divisional Forest Officer
Cuttack Forest Division

Memo No. 2115 dt 02.04.2022

Copy forwarded to the Principal Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the PCCF & HoFF, Odisha, Bhubaneswar for information and necessary action.

S. 02/4/2022
Divisional Forest Officer
Cuttack Forest Division.

1. INTRODUCTION.

Government of India in the Ministry of Environment, Forest and Climate Change has granted Stage-I Forest Clearance vide letter F.No. 8-19/2019-FC, Dt. 15.10.2019 over 168.948 ha for dumping of overburden to be generated from South-Kaliapani and Sukuarngi Chromite Mines of OMC Ltd. Stage-I Forest Clearance has been communicated by State Govt. vide letter no. No. 10F (Cons) 89/16 19650/F&E dt. 19.10.2019 to comply the conditions stipulated therein.

Condition No. (xii) and (xiii) of the condition imposed by MoEF & CC is read as under:

"(xii) The User Agency shall carry out muck/silt disposal at pre-designated sites in such a manner so as to avoid its rolling down;

(xiii) The dumping area for muck/silt disposal shall be stabilized and reclaimed by planting suitable species by the User Agency at the cost of project under the supervision of State Forest Department. Retaining wall and terracing shall be carried out to hold the dumping material in place. Stabilization and reclamation of such dumping sites shall be completed before handing over the same to the State Forest Department in a time bound manner as per plan."

In compliance to the above conditions, a comprehensive scheme is prepared for implementation within 168.948 ha of forest area in accordance with the Cost Norm for Compensatory Afforestation circulated by PCCF (N) vide letter dt. 08.11.2021 and 01.12.2021. As per the para-2 of the said guideline, Compensatory Afforestation is to be prepared on "one time cost norm basis" by delinking the CA scheme to wage rate revision and material cost escalation for easy of doing business. The scheme has been prepared considering the Base Norm as Rs. 315/- and computed the Matrix.

2.0 Present Scenario:

In South-Kaliapani Chromite Mines, the tentative volume of overburden to be generated by opencast mining at the conceptual stage has been assessed as 100.9 million M³ (in-situ) for production of 15.01 million ton of mineable chrome ore basing on the present level of geological inputs & economics of mining. The conceptual pit area will cover 315.74 ha out of total lease area of 552.457 ha. Out of 174.99 ha available for OB dump in the ML, 95.31 ha has been occupied by existing dump. Hence, around 79.68 ha virgin area available for OB dump will accommodate only 35.17 million M³ (in-situ) excluding free area of 100 m strip from the quarry edge and maximum dump height of 100m etc. There is no space left to dump balance 65.73 million M³ (in-situ) of OB within the ML to continue mining up to the conceptual pit limit.

Similarly, OB generation from the ML at conceptual period has been assessed at 45.825 million M³ to produce 5.23 million ton of chrome ore. The area available for OB dump is 20.258 ha which

can accommodate 17.85 million M³ excluding free area of 100 m strip from the quarry edge and maximum dump height of 100m. The land for 27.975 million M³ of OB dumping within Sukurangi ML area is not available. Therefore, production of 9.79 million tons of chrome ore from South Kaliapani and 3.189 million tons of chrome ore from Sukurangi cannot be achieved without utilizing 168.948 ha of forest area.

2. LOCATION:

The proposed area over 168.948 ha is situated within the latitudes 21°00'49.64"-21°01'56.93" N and Longitudes 85° 46'25.97"-85°48'03.19" E in the survey of India Topo sheet bearing No. F 45 N16. The area exhibits an undulated topography with varying elevations from 100 mtr to 368 mtr above mean sea level (AMSL).

3. OBJECTIVE OF THE SCHEME:

The objectives of the proposed scheme are as follows:

1. To comply condition No. (xii) and (xiii) of the Stage-I approval of GoI, MoEF & CC.
2. Prevention of erosion of loose materials from OB dump & erosion of muck/silt generated during construction of road.
3. Prevention of obstruction of natural water sources.
4. Proper Management of overburden materials so as to prevent siltation in the streams
5. Prevention of overflow of eroded soils from the lease areas to the cultivable lands, natural streams and inhabitations.

4. PROPOSED METHODOLOGY

To achieve the above objectives it has been proposed to take up both biological and structural works for soil and water conservation. The vegetative measures are to be adopted mostly in the upper reaches & around O.B. dumping sites whereas the structural works are suggested in the lower reaches such as in the drain & critical points around O.B. dumps. As per the current practice, retaining wall and garland drain will be constructed in Eastern, Western and Southern boundary of the lease area.

It has been proposed to construct 3765 mtr of crated boulder masonry around the proposed OB dump area. The masonry will be constructed by using wire mesh and small size R.R. Stones. The height of the masonry structure will be 1mt and the width 1m. The work will be executed with an estimated cost of Rs 1, 48, 56,200/- (Annexure-I). This will prevent roll down of the muck/silt generated during construction activity.

It has also been proposed to dig out 3765 mtr long Garland drain inside the ML area to protect the excavated material being washed out and allowing storm water through the drain into water exit points. The estimated cost of construction of garland drain including cost of surface cutting and blasting comes to **Rs 14, 88,200/- (Annexure-II)**.

A connecting road over a length of 2 Km will be constructed from South-Kaliapani Chromite Mines to proposed site. On either side of the road grass seeding will be carryout to avoid soil erosion. Effective area for grass seeding will be around 1 ha. The estimated cost of grass seeding comes to **Rs 26095/- (Annexure-II)**.

5. INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above Mitigative measures, intensive inspection and technical guidance from concerned technical wing is required. Sufficient fuel/ conveyance charges for technical experts shall be provided by the user agency for proper execution of these programmes. Budgetary provision of 15% of the total project cost has been earmarked on this score.

6. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency having specialized departments headed by qualified persons with outsourced man and machinery. To facilitate this, the user agency shall establish its own executing and supervision cells along with required infrastructural facilities. In order to maintain the quality of work, in-house supervision through competent personnel shall be provided. The entire work shall be carried out in coordination with the Forest Department.

7. REQUIREMENT OF FUNDS

The total cost of the implementation of mitigative measures will be **Rs 2, 35, 57,300/- (Rupees two crore thirty five lakhs fifty seven thousand three hundred)** only for implementation of the above mitigation measures, the above expenditure will be made over the next ten years period. Therefore, budget provision will be kept by the user agency for implementation of the above mitigation measures over a period of next ten years. This budget will be subject to increase in amount considering the increase in materials and labour charges. The tentative expenditure planned for the implementation of mitigative measures is given in the following table:-

FINANCIAL FORECAST

Sl. No.	Particulars of interventions	Financial involvement (Rs)
1	Development of crated boulder masonry wall over a length of 3765.00 mtr (Annexure-I)	1,48,56,200.00
2	Excavation of garland drain over a length of 3765.00 mtr (Annexure-II).	14,88,200.00
3	Grass seeding over 1 ha (Annexure-III)	26,095.00
3	Desiltation work of Garland drain twice in a year (on lump sum)	5,00,000.00
4	Maintenance of retaining wall (on lump sum)	2,00,000.00
Sub-Total:		1,70,70,495.00
Inspection, monitoring and evaluation @15% of the total project cost		25,60,574.25
Total		1,96,31,069.25
Price escalation @20%		39,26,213.85
Grand Total		2,35,57,283.10 Or say Rs 2,35,57,300.00

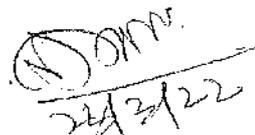
(Rupees two crore thirty five lakhs fifty seven thousand three hundred) only

EXECUTING AGENCY

The work shall be taken up by the User Agency as per condition no. (xii) and (xiii) of the Stage-I grant order.


Divisional Forest Officer
Cuttack Forest Division

Approved for Rs. 2,35,97,300/-


24/3/22
Regional Chief Conservator
of Forests, Angul Circle

**Development of crated boulder masonry near proposed OB dump
(Length of the wall = 3765.00 mtr.)**

- 1) E/W excavation by mechanical means.
 Qty. 3765 m x 2m x 0.3 = 2259 Cum
 Taking Qty. 80% = 1807.20 Cum @ Rs. 66.39 = Rs. 1,19,980.01
- 2) Blasting.
 Taking 20% of Qty item (1) = 451.80 Cum @ Rs. 430.26 = Rs. 1,94,391.47
- 3) Providing crate boulder.
 Bottom layer: 3765 m x 1.5m x 1.00 = 5647.50 Cum
 Second layer: 3765 m x 1.00m x 1.00m = 3765.00 Cum
 9412.50 Cum
 @ Rs. 1544.94/Cum = Rs. 1,45,41,747.75
 Rs 1,48,56,119.23
Say Rs. 1,48,56,200.00

Excavation of Earthen drain (Garland drain) near proposed OB dump

- 1) E/W excavation by mechanical means.
 3765 m x 2.00 x 1.5 = 11295 Cum
 Taking 80% of above = 9036.00 Cum @ Rs. 57.13/Cum = Rs. 5,16,226.68
- 2) Blasting. 20% of Item (1) = 2259 Cum @ Rs. 430.26/Cum = Rs. 9,71,957.34
 Rs. 14,88,184.02
Say Rs. 14,88,200.00

Estimate for sowing of grass seeds per ha.

Cost of broadcasting of grass seeds per ha. Labour rate Rs.315.00/- per day				
Sl. No.	Purpose	No. of Labour/ quantity of materials	Rate (in Rs.)	Amount in Rs.
1	Spreading of good top soil	03 Nos	315.00/- Labour	945.00
2	Adding FYM and good earth	2 TL FYM	500/TL FYM	2000.00
		2TL Good earth	500/TL Good earth	
3	Cost of grass seed 500 Kg/per ha		40/Kg	20000.00
4	Broad casting	10 nos	315.00/-Labour	3150.00
			Total	26095.00



Annexure-XIII

UNDERTAKING

I, Dr. Suman Krishna Sit, General Manager (Geology), Authorized Signatory of Odisha Mining Corporation Limited do hereby undertake to stabilize and reclaim dumping sites before handing over the same to the State Forest Dept. pertaining to diversion of 168.948 ha of forest land adjacent to South Kaliapani Chromite Mines of OMC for dumping of overburden of South Kaliapani and Sukurangi Chromite Mines of OMC Ltd.

(Dr. Suman Krishna Sit)
General Manager (Geo)
Authorized signatory
Odisha Mining Corporation Ltd.
Suman Krishna Sit
General Manager(Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

Odisha Mining Corporation Ltd.

(A Gold Category State PSU)

Registered Office : OMC House, Bhubaneswar - 751001, India

Tel : 0674-2377400/2377401, Fax : 0674-2396889, 2391629, www.omcltd.in

CIN : U13100OR1956SGC000313

PROFORMA FOR VERIFICATION OF DEPOSITS IN COMPENSATORY AFFORESTATION FUND

1.	Name of Office	Bhubaneswar
2.	State/District/Forest Division to which the proposal relates	Odisha/ Jajpur/ Cuttack Forest Division
3.	Name of User Agency, nature of proposal	M/s Odisha Mining Corporation Limited (A Govt. of Odisha Undertaking),
4.	Nature and category of proposal	Mining
5.	Proposal number	South Kaliapani Sukurangi overburden dump
6.	Extent of forest area involved	168.948 Hectare
7.	Whether original or extension	Original
8.	If extension of lease, please clarify if proposal involves additional forest area and if so, specify	NA
9.	Date of 1 st Stage clearance	F.No. 8-19/2019-FC dated.15.10.2019 for 168.948 ha.
10.	Extent of CAMPA charges, head wise viz.:	
	(a) Compensatory Afforestation	Rs. 11,43,65,300/- (10,20,77,000/- + 1,22,88,300/-)
	(b) Additional Compensatory Afforestation	Nil
	(c) Penal Compensatory Afforestation	Nil
	(d) Catchment Area Treatment	Nil
	(e) Wildlife Management Plan	
	i) Site Specific Wildlife Conservation Plan	Rs. 6,27,66,518/- (1,91,14,080/- + 5,42,500/- + Rs. 98,00,000/- + Rs. 3,33,09,938/-)
	ii) Regional Wildlife Management Plan	Rs. 1,38,53,736/-
	(f) Additional charges for diversion of area failing under notified/protected areas	Nil
	(g) Net Present Value	Rs. 12,33,32,040/-
	(h) Any other charges/levies (Please specify)	
	i) Penal NPV	Nil
	ii) Safety Zone	Nil
	iii) 1.5 times Safety Zone	Nil
	iv) Scheme on mitigative measures to minimize soil erosion and choking of streams	-
	v) Scheme on gap planting and SMC measures	Nil
	vi) Scheme on planting adequate drought hardy plant species and showing of seeds to arrest soil erosion	-
	Total	Rs. 31,43,17,594/-



COLLECTORATE: JAJPUR

Ph. 06728-222001 (O), 222330 (R), Fax – 222087

E-mail: dm-jajpur@nic.in, Website: www.jajpur.nic.in

(ST & SC Dev. Section)

ANNEXURE: - XV

No. 2258 / Date. 14/11/18

To

The Divisional Forest Officer,
Cuttack Forest Division, Ghatakul,
Nuapara, Cuttack.

Sub:

Issuance of Certificate under Forest Right Act, 2006 in favour of Executive Director, (F & E) for dumping of over burden generated from South Kaliapani and Sukurangi Chromite Mines of OMC Ltd. under Sukinda Tahasil.

Ref:

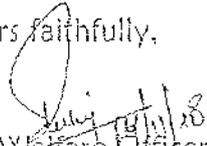
Letter No.5939 dt. 20.04.2018 of Executive Director (F & E) OMC Ltd.

Sir,

In inviting a reference to the letter on the captioned subject cited above, I am directed to enclose herewith the model certificate [168.948 ha] in Form-II for projects under non-liner projects under Forest Rights Act, 2006 in favour of Executive Director, (F & E) for dumping of over burden generated from South Kaliapani and Sukurangi Chromite Mines of OMC Ltd. under Sukinda Tahasil for taking further action at your end.

Yours faithfully,

Encl: As above


District Welfare Officer,
Jajpur

Memo No. 2259 / Date 14/11/18

Copy forwarded to the Executive Director, (F & E), OMC Ltd. for information and necessary action.


District Welfare Officer,
Jajpur

LEK

FORM-II
(for projects other than linear projects)
Government of Odisha
Office of the District Collector, Jajpur

No. 2257

Date. 14/11/18

TO WHOMSOEVER IT MAY CONCERN

In compliance of the Ministry of Environment and Forests (MoEF), Government of India's letter No.11-9/98-FC (pt.) dated 3rd August 2009 wherein the MoEF issued guidelines on submission of evidence for having initiated and completed the process of settlement of rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Forest Rights) Act, 2006 ('FRA' for short) on the forest land proposed to be diverted for non-forest purposes, it is certified that 168.948 hectares of forest land proposed to be diverted in favour of M/S Odisha Mining Corporation Ltd. for Kakudia, Garamian and Giringamali under Sukinda block of Jajpur district falls within jurisdiction of South Kaliapani and Sukurungi Chromite Mines of OMC Ltd. under Sukinda Tahasil.

It is further certified that:

- (a) the complete process for identification and settlement of rights under the FRA has been carried out for the entire 168.948 hectares of forest land proposed for diversion. A copy of records of all consultation and meetings of Forest Rights Committee, Gram Sabha (s), Sub-Division Level Committee and the District Level Committee are enclosed as Annexure- A to Annexure-C.
- (b) the proposal for such diversion (with full details of the project and its implementations, in vernacular/local language) have been placed before each concerned Gram Sabha of forest-dwellers, who are eligible under FRA;
- (c) the each of concerned Gram Sabhas, has certified that all formalities/processes under the FRA have been carried out, and that they have given their consent to the proposed diversion and the

(6)5

compensation and ameliorative measures, if any, having understood the purpose and details of proposed diversion. A copy of the certificate issued by the Gram Sabha of Kakudia, Garamian & Giringamali village is enclosed (as mentioned above).

(d) the discussion and decisions on such proposals had taken place only when there was a quorum of minimum 50% of the members of the Gram Sabha present;

(e) the diversion of forest land for facilities managed by the Government as required under section 3 (2) of the FRA have been completed and the Gram Sabhas have given their consent to it;

(f) the rights of Primitive Tribal Groups and Pre-Agricultural Communities, where applicable have been specifically safeguarded as per Section 3 (1) (e) of the FRA.

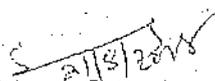
Encl: As above

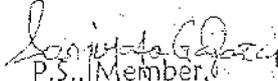

(Ranjan Kumar Dash)
Collector & District Magistrate,
Jajpur

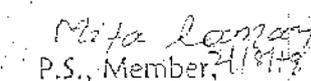
16/3
them in odiya vernacular. Further, it is seen the people present in the Gram Sabha had agreed and have given their written consent with recommendation for diversion of forest land of above extent for non-forest use by the M/s. OMC Ltd. The above area have been verified by the Revenue Inspector, Kankadapal for determining the possession of actual extent of Forest land by the individuals and communities for giving safeguard and recognition of Forest Rights Act- 2006. Moreover, it was found that no individual and community are in possession of the above scheduled land. The same has been confirmed by the Revenue Inspector, Kankadapal through Tahasildar, Sukinda.

Hence the committee unanimously decided to send the diversion proposal of above said land for use of non forest purpose by M/s OMC Ltd. for the above mines to District Level Committee.

The Meeting ended with vote of thanks to the Chair.


21/8/18
ACF, Cuttack


P.S., Member,
Ampoloba, PS


P.S., Member,
Gobardhanpur, PS


P.S., Member,
Trijanga, PS


21/08/18
District Welfare Officer
Jajpur


21/8/18
Sub-Collector-Cum-Chairman, SDLC
Jajpur

Memo No. 1722 / Date. 23/08/18

Copy forwarded to all members for information and necessary action.


21/8/18
Sub-Collector-Cum-Chairman, SDLC
Jajpur

Memo No. 1723 / Date. 23/08/18

Copy to Tahasildar, Sukinda/BDO, Sukinda for information and necessary action.

Copy to the Dy. G.M. (Geo) F & E, OMC Ltd. Bhubaneswar for information and necessary action.


21/8/18
Sub-Collector-Cum-Chairman, SDLC
Jajpur

Memo No. 1724 / Date. 23/08/18

Copy submitted to the Collector, Jajpur for favour of kind information.


21/8/18
Sub-Collector-Cum-Chairman, SDLC
Jajpur

612

PROCEEDING OF THE DISTRICT LEVEL COMMITTEE MEETING ON DIVERSION OF
FOREST LAND FOR USE OF NON-FOREST PURPOSE UNDER ST & OTHER
TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT,
2006 HELD ON 09.10.2018 AT 04.00 PM IN THE RESIDENTIAL OFFICE OF
COLLECTOR

* * * * *

The District Level Committee was convened on 09.10.2018 for conferment of Forest Right to the ST and Other Traditional Forest Dwellers and diversion of forest land for use of non-forest purpose by M/s. OMC LTD. & M/s. GAIL (India) Ltd. The Collector-cum-Chairman presided over the meeting. The following members of the committee were present.

1. S.M.P. Rehman, DFO, Cuttack
2. Ms. Surekha Naik, Z.P. Member, Zone No. 11
3. Smt. Sumati Baske, Z.P. Member, Zone No. 17
4. Ms. Sarojini Raj, Z.P. Member, Zone No. 39
5. Sri Biswajit Dash, Block Development Officer, Danagadi
6. Smt. Chetna Sethy, OWS, District Welfare Officer, Jajpur
7. Smt. Bidyulata Mohapatra, ADWO, Jajpur
8. Sri Rabindra Nath Paul, WEO, Danagadi,
9. Sri Santosh Kumar Pati, WEO, Sukinda
10. Sri Bijoy Kumar Behera, Regional Manager, OMC, Ltd.
11. Sri Mathura Bari, DGM, GAIL (India) Ltd.

At the outset the Chairman welcomed all members present in the meeting and appraised the members about aim and objectives of the meeting and advised District Welfare Officer, Jajpur to initiate the Agenda wise discussion.

Then District Welfare Officer, Jajpur initiated the agenda wise discussion as follows.

Agenda-1 Approval of individual claims for issuance of titles.

Initiating the discussion the Collector-cum-Chairman of DLC wanted to know about the status of the verification report prepared by the team in respect of claims. The District Welfare Officer expressed that, after the physical verification of the claims by the revenue and forest officials, 277 individual claim cases were found eligible covering a total area measuring Ac. 27.34 Dec. of the following villages for homestead purpose only recommended by SDLC. Further, the District Welfare Officer intimated before the Committee that, those individual claims has also been recommended by

(6/11)
Sub-Divisional Level Committee after due verification and rectification of the case records prepared by the Tahasildar, Sukinda which was held on 21.08.2018. Some of the case records were randomly verified by D.F.O, Cuttack. The DFO suggested that the sketch map of case records should be prepared in future after getting GPS reading by the team. The village wise Title deeds to be distributed to the families is as follows for which respective Tahasildars have submitted the case records.

Name of the Tahasil	Name of the Village	No. of RoRs	Area covered (as per revise case record)
Sukinda	Kharadiha	107	Ac. 10.49
	Ambasara	123	Ac. 12.22
Danagadi	Ankurapal	47	Ac.4.63
	Total	277	Ac. 27.34

The committee unanimously approved for vesting of Individual Forest Rights title with respect to 277 Forest Dwellers, who were found eligible.

Agenda-2 Diversion of forest land for use of non-forest purpose by M/s. OMC Ltd.

Initiating the discussion the DWO apprised before the committee that, the Committee members that a Palli Sabha was convened in Kakudia, Garamian & Giringamali village under Ransol and Kankadapal GP on 20th, 21st & 22nd of June 2017 for diversion of Forest Land for use of non-forest purpose in connection with dumping of over burden generated from South Kaliapani and Sukarangi Chromite Mines of M/s. OMC Ltd., as per the guidelines of Forest Rights Act, 2006. The Palli Sabha of above Villages of Ransol and Kankadapal GP has conclusively decided and recommended the proposal for diversion of forest land measuring 168.948 ha. for use of non-forest purpose by M/s. OMC ltd. for dumping yard. As per the report of R.I., Kankadapal GP, the user agency has applied for diversion of 168.948 ha. of forest land under the South Kaliapani and Sukarangi Chromite Mines for use of non-forest purpose. The land schedule report, sabik and hal records of the proposed area were placed for scrutiny and discussion in the Palli Sabha convened at above villages. The DWO apprised the committee that as per the Palli Sabha proceedings the total

(610)

proposed area of the User Agency is 168.948 ha. The Palli Sabha members present during the meeting have agreed and given their written consent with recommendation for diversion of forest land of 168.948 ha. for non-forest use by M/s. OMC Ltd. The Gram Sabha has also clarified that no individual and community belonging to the Scheduled Tribe Category or any Primitive Vulnerable Tribal Groups are residing or occupationally dependent on the proposed diversion area. The same has been confirmed by the report of R.I., Kankadapal GP.

The Chairman of the committee also instructed the user agency to find out compensatory aforestation land, against the proposed diversion area. The user agency then complied that Ac. 164.073 ha. of non forest revenue land of mouza- Tarapur under Th. Rampur Tahasil of Kalahandi Dist. has kept for evidence of CA land against this diversion proposal.

Finally, the committee unanimously decided to approve the diversion proposal of 164.948 ha. for use of non-forest purpose by M/s. OMC Ltd. for dumping of over burdened generated from South Kaliapani and Sukarangi Chromite Mines as per the provisions of FRA, 2006.

Agenda No. 3 Diversion of Forest land for use of non-forest purpose by M/s GAIL (India) Ltd.

The DWO apprised before the committee that, the Gram Sabha of Balipasi under Sukinda Tahasil has recommended the proposal for diversion of Forest Land measuring Ac. 2.40 Dec. (for use of non-forest purpose by M/s. GAIL (India) Ltd. in connection with construction of IP2 (Intermediate Pigging) station cum tap off for 12" spurline for Bhubaneswar/Cuttack on 36" Dhamara-Anugul-Bokaro Gas pipeline before the SDLC & DLC for approval. The detailed village wise position is given below.

Sl. No.	Name of the Tahasil	Name of the Village	Area
1	2	3	4
1.	Sukinda	Balipasi	Ac. 2.40

On verification of the Grama Sabha proceedings forwarded by Block Development Officer, Sukinda it is revealed that detail discussion was made in the Gram Sava/Palli Sava regarding Forest Right Act., 2006 and its provision and the same

was explained to them in odiya vernacular. Further, it is seen the people present in the Gram Sabha have agreed and given their written consent with recommendation for diversion of the forest land of above extent for non-forest use by M/s. GAIL (India) Ltd. The above areas has been verified by the Revenue Inspector, Haripur for determining the possession of land by any claimant under Forest Rights Act- 2006. Moreover, it was found that no individual and community are in possession of the above scheduled land. The same has been confirmed by the Revenue Inspector, Haripur through Tahasildar, Sukinda. The ACF, Cuttack clarify that as this project is a linear Project and size of land is below one hectare, there is no need for reserve of land for afforestation purposes.

Further, the said proposal was also approved by the SDLC giving proper safeguard to the individuals and community claims as per Section 3 (1) (i) & 3(1)(e), 3(2) under Forest Rights Act, 2006 and recommended to DLC for approval. The detail elaborate discussion was made on the recommendation of the SDLC and the District Level Committee approved the Diversion of Forest Land for use of Non-Forest purpose by M/s. GAIL (India) Ltd.

The committee resolved to submit certificate in favour of M/s. GAIL (India) Ltd. for diversion of the above forest area by the Collector as Chairman of District Level Committee on Forest Rights Act, 2006.

Agenda No. 4 Rectification of 60 nos of FRA Title distributed in the Village Talangi and Balipada

The DWO apprised before the Committee for rectification of 60 nos of FRA Titles of village Talangi and Balipada, submitted by Tahasildar Sukinda vide letter No. 1171 dt. 25.07.2018. The DWO intimated all the members that at the time of preparation of FRA Titles due to some typographical error the Khata No. in these 60 nos. of titles were wrongly entered instead of correct hal-Khata No. This was pointed out by land acquisition authorities at the time of SIA study for implementation of R&R policy.

Further the Chairman and other member of the Committee allowed to make correction in these 60 nos. of Titles and for seizure of the old title deeds from the tenants before distributing the new titles by the Tahasildar Sukinda.

The Meeting ended with vote of thanks to the Chair and the members present.

Collector-cum-Chairman,
Talangi

Memo No. 2098 /Date. 10/10/18

Copy forwarded to all members for information and necessary action.

lsc
Collector-cum-Chairman,
Jajpur *25/10/18*

Memo No. 2099 /Date. 10/10/18

Copy forwarded to Dy. G.M. (Geo) F & E, OMC Ltd. Bhubaneswar/DGM, GAIL (India) Ltd for information and necessary action.

lsc
Collector-cum-Chairman,
Jajpur *25/10/18*

Memo No. 2100 /Date. 10/10/18

Copy forwarded to the P.D., DRDA, Jajpur/ Sub-Collector, Jajpur/ Block Development Officer, Sukinda & Danagadi/ Tahasildar, Sukinda & Danagadi for information and necessary action.

lsc
Collector-cum-Chairman,
Jajpur *25/10/18*

Memo No. 2101 /Date. 10/10/18

Copy forwarded to the Director, ST-cum-Special Secretary to Govt., ST & SC Development Department, Odisha, Bhubaneswar for information and necessary action.

lsc
Collector-cum-Chairman,
Jajpur *25/10/18*

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GRAM SABHA RESOLUTION FOR USE OF FOREST LAND FOR NON-FOREST PURPOSE

Gram Panchayat : Ransol
Village : Kakudia
Place : Kakudia Pala Mandap
Time : 11.00 AM Date : 20.06.2018

As per letter no. 18 Dated 13.06.2018 of the Block Development Officer, Sukinda, Palli Sabha was held today under Forest Rights Act 2006 to consider the use of forest land over 168.948 hectares in Forest Block No. 27 for non-forest purpose. The following officers and adult voters of Kakudia Revenue village attended the meeting.

Officers present: -

1. Sarapanch, Ransol Gram Panchayat
2. Welfare Extension Officer
3. Revenue Supervisor, Kankadapal
4. Forest Guard, Ransol
5. Executive Officer, Ransol Gram Panchayat

The Sarapanch, Ransol Gram Panchayat, presided over the meeting. The Sarapanch thanked the villagers present in the meeting as the meeting had the required quorum. The Sarapanch explained that the purpose of calling the present Gram Sabha is to consider the proposed use of 168.948 hectare forest land in Forest Block 27 for dumping of overburden of South Kaliapani and Sukurangi Mines of Odisha Mining Corporation Ltd.

The Welfare Extension Officer, Sukinda, explained the purpose of this meeting. He explained in detail to the villagers present in the meeting about the power conferred to the Gram Sabha regarding the individual rights, community rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. Then he explained in the meeting the detailed particulars and location of the proposed land through a map.

Field Inspection Report of the Revenue Supervisor, Kankadapal, in this matter was placed in the meeting. The area over 168.948 hectare applied by OMC Ltd. for use as overburden dump of South Kaliapani and Sukurangi Mines is forest land and is within Forest Block 27.

From the report of the Revenue Supervisor, Kankadapal, it is seen that nobody belonging to Scheduled Tribe or other traditional forest dweller category is inhabiting in the said forest land of 168.948 hectare in Forest Block 27. Nobody is depending in this area for bonafide livelihood needs, agriculture or any other traditional job in this area. Nobody claimed in the meeting any individual right or community right.

The proposal for use of the forest land for non-forest purpose of overburden dump of South Kaliapani and Sukurangi mines of OMC Ltd was discussed in detail from different angles in the meeting. Views of the villagers were called for about impact of the proposed project on livelihood of the villagers. The villagers were requested to furnish their views on the proposed project considering the interest of Scheduled Tribes and Other Traditional Forest Dwellers as per the provision of Forest Rights Act 2006.

From the discussion it was known that nobody belonging to Scheduled Tribe or other traditional forest dweller category is inhabiting, depending in this area for bonafide livelihood needs, agriculture, collection of minor forest produce, or any other traditional job either individually or as a community in this proposed project area. The villagers present in the Gram Sabha expressed that they have no objection if 168.948 ha. forest land of Forest Block 27 near Kakudia village is used as overburden dump of South Kaliapani and Sukurangi mines.

Hence, the Gram Sabha took unanimous decision to approve the proposal of using 168.948 ha. forest land near Kakudia for non-forest purpose as overburden dump of South Kaliapani and Sukurangi mines.

The meeting ended after the Sarapanch, Ransol GP, thanked the officers and villagers present in the meeting.

Sd/-
Sarapanch
Ransol G.P

Sd/-
Revenue Supervisor
Sukinda Tahasil

Sd/-
Forest Guard
Ransol Section

Sd/-
Executive Officer
Ransol G.P

Sd/-
Welfare Extension Officer
Sukinda Block

ଗ୍ରାମପଞ୍ଚାୟତ କାର୍ଯ୍ୟାଳୟ, ରାଂସୋଳ

ପତ୍ର ସଂଖ୍ୟା : ୧୫୩/୨୦୧୮

ତା: ୨୦/୦୮/୧୮

ପ୍ରାପ୍ତେଷୁ,

ମଣ୍ଡଳ ଉନ୍ନୟନ ଅଧିକାରୀ

ସୁକିନ୍ଦା ଗ୍ରାମ ପଞ୍ଚାୟତ ସମିତି, ସୁକିନ୍ଦା

ବିଷୟ: ଓଡ଼ିଶା ଖଣିନିଗମ ର (ଓ.ଏମ୍.ସି) ଦକ୍ଷିଣ କାଳିଆପାଣି ଓ ସୁକୁରଝି ଖଣିର ଓଢ଼ର ବଡ଼ନ୍ ତମ୍ବିଙ୍ ନିମନ୍ତେ ଫରେଷ୍ଟ ବୁକ ୨୭ ଅକ୍ଟର୍ଗତ ୧୭୮.୯୪୮ ହେକ୍ଟର ଜଙ୍ଗଲ କିସମ ଜମିକୁ ଅଣଜଙ୍ଗଲ କିସମ ଜମିରେ ରୂପାନ୍ତରିତ କରିବା ନିମନ୍ତେ ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା ।

ମହାଶୟ,

ଯାଜପୁର ଜିଲ୍ଲା ମଣ୍ଡଳ ଅଧିକାରୀ ଏବଂ ମଣ୍ଡଳ ଉନ୍ନୟନ ଅଧିକାରୀ ସୁକିନ୍ଦା ଙ୍ଗ ନିର୍ଦ୍ଦେଶ ଅନୁଯାୟୀ ରାଂସୋଳ ଗ୍ରାମ ପଞ୍ଚାୟତ ଅକ୍ଟର୍ଗତ କାକୁଡ଼ିଆ ରଜସ୍ୱ ଗ୍ରାମ ନିକଟରେ ଥିବା ଓଡ଼ିଶା ଖଣିନିଗମର (ଓ.ଏମ୍.ସି) ଦକ୍ଷିଣ କାଳିଆପାଣି ଓ ସୁକୁରଝି ଖଣିର ଓଢ଼ର ବଡ଼ନ୍ ତମ୍ବିଙ୍ ନିମନ୍ତେ ଫରେଷ୍ଟ ବୁକ ୨୭ ଅକ୍ଟର୍ଗତ ୧୭୮.୯୪୮ ହେକ୍ଟର ଜଙ୍ଗଲ କିସମ ଜମିକୁ ଅଣଜଙ୍ଗଲ କିସମ ରେ ରୂପାନ୍ତରିତ କରି ବ୍ୟବହାର କରିବା ପାଇଁ ରାଂସୋଳ ଗ୍ରାମ ପଞ୍ଚାୟତ ତରଫରୁ ପଲ୍ଲୀସଭା ପାଇଁ ନୋଟିସ ସଂଖ୍ୟା- ୧୩୯୨, ତା - ୧୩.୦୭.୨୦୧୮ ରିଖ ଅନୁଯାୟୀ ଏବଂ ଡେଙ୍ଗୁରା ମାଧ୍ୟମରେ କାକୁଡ଼ିଆ ରଜସ୍ୱ ଗ୍ରାମର ସର୍ବସାଧାରଣଙ୍କୁ ଜଣାଇ ଦିଆଯାଇଥିଲା । ତା-୨୦.୦୭.୨୦୧୮ ରିଖ ଦିବା ୧୧.୦୦ ଘଟିକା ସମୟରେ ଏକ ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା କାକୁଡ଼ିଆ ରଜସ୍ୱ ଗ୍ରାମର ପାଲ୍ଲୀମଣ୍ଡପ ଠାରେ ଶାନ୍ତି ଶୃଙ୍ଖଳାର ସହିତ ସମାପନ ହୋଇଥିଲା । ଉକ୍ତ ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା ସମ୍ବନ୍ଧୀୟ ସମସ୍ତ ନିମ୍ନଲିଖିତ ବିବରଣୀ ଆପଣଙ୍କର ଗୋଚରାର୍ଥେ ପ୍ରଦାନ କରୁଅଛୁ ।

- ୧. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭାର ବିଷୟ ବିବରଣୀ
- ୨. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭାର ଭିତ୍ତି ଓ ଚିତ୍ର
- ୩. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭାର ସ୍ଥିର ଚିତ୍ର
- ୪. ଡେଙ୍ଗୁରା ଦେଇଥିବା ବ୍ୟକ୍ତିଙ୍କର ରସିଦ
- ୫. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା ରେ ଉପସ୍ଥିତ ଥିବା ସମସ୍ତ ଗ୍ରାମବାସୀଙ୍କର ଦସ୍ତଖତ


 ସରପଞ୍ଚ, ରାଂସୋଳ
 Sarpanch
 Ramsoal G.P

ଦିର୍ଘଳି ଜିରାମା ଜମିର ଅଭାବଜନିତ ବ୍ୟବସ୍ଥାକୁ ନିମନ୍ତେ ଗ୍ରାମ ସ୍ୱତ୍ୱ

ଗ୍ରାମ ପର୍ଯ୍ୟାୟ : ଗ୍ରାମ ଚୟାଳି
ପଞ୍ଚାୟତ ଗ୍ରାମ : ଜାଜୁଡିଆ
ସ୍ଥାନ : ଜାଜୁଡିଆ ଯାକୁ ମଞ୍ଜୁର

ଦା. ୨୦.୦୦. ୨୦୧୮ ସ୍ୱାମୀ ଶ୍ରୀମତୀ ୧୧.୦୦.୧୮.

ଅପ୍ୟ ଜନିତ ଅଧିକାର ଆଣି ୨୦୦୭ ଅନୁସାରେ ଜାଜୁ
ନିର୍ଦ୍ଦେଶ ଉପରେ କୁଳ ନଂ ୨୨ ମଧ୍ୟ ୧୦୮.୧୮୮ ଚୟାଳି
ଜିରାମା ଜମିର ଅଭାବଜନିତ ବ୍ୟବସ୍ଥାକୁ ନିମନ୍ତେ ମଞ୍ଜୁର
ଅଧିକାରୀ ସୁଜାତା ଯି. ବି. ସଂଖ୍ୟା ୧୮ ଓ ୧୯.୦୦.୨୦୧୮
ଅନୁସାରେ ଉକ୍ତ ପଞ୍ଚାୟତ ପଞ୍ଜିକୃତ ହୋଇଥିଲା ଯାହା
ପଞ୍ଚାୟତ ନିମ୍ନ ସ୍ୱାଧିକାରୀ ଚାପାଧିକାରୀ ଓ ଜାଜୁଡିଆ
ଗ୍ରାମ ଗ୍ରାମ ସ୍ୱାଧିକାରୀ ଚାପାଧିକାରୀ ଚାପାଧିକାରୀ ଥିଲେ
ଉପସ୍ଥିତ ପଦାଧିକାରୀ :

- ୧. ସୁବ୍ରତ, ଗ୍ରାମ ଚୟାଳି ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
- ୨. ମନଜି ସଂପ୍ରଦାୟ ଅଧିକାରୀ
- ୩. ଗ୍ରାମ ସ୍ୱାଧିକାରୀ, ଜାଜୁଡିଆ
- ୪. ବନଗୁରୀ, ଗ୍ରାମ ଚୟାଳି
- ୫. ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଜାଜୁଡିଆ ଅଧିକାରୀ, ଗ୍ରାମ ଚୟାଳି ଗ୍ରାମ ପର୍ଯ୍ୟାୟ

ସ୍ୱର୍ଗ ପ୍ରାପ୍ତ ସୁବ୍ରତ, ଗ୍ରାମ ଚୟାଳି ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ସମ୍ପ୍ରଦାୟ ଗୁଡ଼ିକ ସଂପ୍ରଦାୟ ଥିଲା । ସମ୍ପ୍ରଦାୟ ସୁବ୍ରତ
ମଞ୍ଜୁର ଥିଲା । ସମ୍ପ୍ରଦାୟ ଗୁଡ଼ିକ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଅଧିକାରୀ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ଅନୁକୂଳ ଏହି ସମ୍ପ୍ରଦାୟ ଗୁଡ଼ିକ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ଓ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ବିଧିବିଧାନ ଓ ପଦାଧିକାରୀ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ଓ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ଦିର୍ଘଳି ଅଭାବଜନିତ ବ୍ୟବସ୍ଥାକୁ ନିମନ୍ତେ ସୁଜାତା ଯି. ବି. ଯା

ଓଡ଼ିଶା ପଞ୍ଜିକୃତ ଅଧିକାରୀ ସୁଜାତା
ସମ୍ପ୍ରଦାୟ ଗୁଡ଼ିକ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ
ବିଧିବିଧାନ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ ଗ୍ରାମ ପର୍ଯ୍ୟାୟ

୨୦୦୭ ମୁଦ୍ରାକର୍ମ ଗ୍ରାମ ସ୍ୱତନ୍ତ୍ରତା ଦିଆଯାଉଥିବା ସ୍ୱପନା
 ସ୍ୱପନାକର୍ତ୍ତା କର୍ମର ଉପରେ କର୍ମକ୍ରମ ଲାଗୁଥିଲେ । ଉପରୋକ୍ତ
 ସମସ୍ତ ଜନସାଧାରଣଙ୍କୁ ତହିଁ ସୁଧାକର୍ତ୍ତା ସମସ୍ତ ଦେଖାକରି
 ବ୍ୟକ୍ତିତ୍ୱକୁ କୃତ୍ୱାନ୍ତ ଦିଆଯାଉଥିଲା । ଅଧିକ ଅନୁସୂଚିତ ଜନତ
 ଓକି ଅନ୍ୟାନ୍ୟ ଚାଗୁକାର୍ଯ୍ୟ କରବାସ୍ତା ମାନଙ୍କର (ଜଣକ
 ଅଧିକାର) ସ୍ୱୀକୃତି ଆହୁନ ୨୦୦୭ ଅନୁଚାଳନା କୁଳୀ
 ଅନୁସୂଚିତ ଜନଜାତି ଓକି ଅନ୍ୟ ଚାଗୁକାର୍ଯ୍ୟ କରବାସ୍ତାମାନ
 ଉପରେ କାର୍ଯ୍ୟକାରୀ କମଳିଗତ ଅଧିକାର ଘୋଷଣା
 ଅଧିକାର ଓକି ଘୋଷଣାକରି ଜଣକ ସୁଧାକ ଅଧିକାର
 ସୁଧାକରେ ଉପରୋକ୍ତ ଜନସାଧାରଣ ମାନଙ୍କୁ କର୍ମକ୍ରମ ଉପରେ
 କୃତ୍ୱାନ୍ତ ଦିଆଯାଉଥିଲା । ଦିଶିତରୁ ଉପରୋକ୍ତ ଜନସାଧାରଣଙ୍କୁ
 ଏହି କର୍ମକୁ କର୍ମକ୍ରମ କରବାସ୍ତା ଉପରେ କାର୍ଯ୍ୟକାରୀ ମାନ
 ମଧ୍ୟମରେ ଏହି ଘୋଷଣାକରି ଉପରୋକ୍ତ ସୁଧାକରେ ସହ
 ଅଧିକାର କରାଗଲା ।

ତାତକାଳୀନ ଉପରୋକ୍ତ କର୍ମକ୍ରମ, କାର୍ଯ୍ୟକାରୀ ଓକି ସ୍ୱାଗତ
 ଏହି କର୍ମକ୍ରମରେ କରାଯାଉଥିବା କର୍ମକ୍ରମ ଉପରେ କର୍ମକ୍ରମ
 ଉପରେ ଘୋଷଣାକରି ଉପରୋକ୍ତ କରାଯାଉଥିଲା । ତହିଁରୁ ଅଧିକରଣ
 ଉପରେ ଘୋଷଣା କରାଯାଉଛି ଓ ସୁଧାକରେ ଅଧିକ କର୍ମକ୍ରମ ଓ ଉପ
 ଏକା କାର୍ଯ୍ୟକାରୀ ଆବେଦନ କରାଯିବା ଉପରେ ଉପରୋକ୍ତ ସୁଧା
 ଜଣକ କର୍ମକ୍ରମ ଅନୁକ୍ରମ ଅଧିକ ଓକି ଏହି କର୍ମକ୍ରମକୁ
 ଉପରେ ଅଧିକରଣ ଅଧିକ ।

ଉପରୋକ୍ତ କର୍ମକ୍ରମ, କାର୍ଯ୍ୟକାରୀ ଓକି ଉପରୋକ୍ତ କର୍ମକ୍ରମ
 କରାଗଲା ତେ, ତହିଁରୁ କାର୍ଯ୍ୟକାରୀ ମାନଙ୍କୁ ଉପରେ ଉପରୋକ୍ତ କର୍ମକ୍ରମ
 କର୍ମକ୍ରମ ଉପରେ ଜଣକ କର୍ମକ୍ରମ ଉପରେ ଉପରୋକ୍ତ କର୍ମକ୍ରମ
 ଘୋଷଣାକରି ଅନୁସୂଚିତ ଜନଜାତି କର୍ମକ୍ରମ ଅନ୍ୟାନ୍ୟ ଚାଗୁକାର୍ଯ୍ୟ କରବାସ୍ତା
 କର୍ମକ୍ରମ କରାଗଲା । କର୍ମକ୍ରମ କରବାସ୍ତା କର୍ମକ୍ରମ କରବାସ୍ତା କର୍ମକ୍ରମ
 କର୍ମକ୍ରମ ଅନ୍ୟ ଘୋଷଣାକରି ଚାଗୁକାର୍ଯ୍ୟ କର୍ମକ୍ରମ କରବାସ୍ତା । ଉପରେ
 ସହରେ ଘୋଷଣାକରି କର୍ମକ୍ରମ କରବାସ୍ତା ଘୋଷଣାକରି ଉପରୋକ୍ତ
 କରାଯାଉଥିଲା ।

ଉପରୋକ୍ତ ଗ୍ରାମ ସ୍ୱତନ୍ତ୍ରତା ତହିଁରୁ ଅଧିକ କର୍ମକ୍ରମ ଉପରେ ଘୋଷଣା
 କରାଯାଉଛି ଓ ସୁଧାକରେ ଅଧିକ କର୍ମକ୍ରମ ଓ ଉପରେ ଏକା କର୍ମକ୍ରମ
 କରାଯାଉଛି ଜଣକ କର୍ମକ୍ରମ କରବାସ୍ତା କରବାସ୍ତା କରବାସ୍ତା କରବାସ୍ତା

ଦିବ୍ୟଲ୍ କୀର୍ତ୍ତନମ୍ ପମିତ୍ ସ୍ଵାମିନାମ୍ ସ୍ଵାମିନାମ୍ ସ୍ଵାମିନାମ୍ ସ୍ଵାମିନାମ୍ ସ୍ଵାମିନାମ୍
ଗ୍ରାମ ପଞ୍ଚାୟତ: ଗାଁଠିଆଳି
ଗ୍ରାମ: କାମାକ୍ଷିଆ
ସ୍ଵାମି: କାମାକ୍ଷିଆ ପାଲ୍ ମଧୁଗ

୩୩
ତା: ୨୦.୦୩.୨୦୧୮ ପୂର୍ବୀକ୍ ୧୧-୧୧

ଦେଶୀୟ ଗ୍ରାମବାସୀଙ୍କ ସ୍ଵାଗତ:-

Mathuraj Hembrom

Greetanjali Mahantir

ଠିକଣା/ପଞ୍ଚାୟତ

କାମାକ୍ଷି ମହାନ୍ତି

୪ ମିସିନି
କାମାକ୍ଷି ମହାନ୍ତି

୪ ମିସିନି
କାମାକ୍ଷି ମହାନ୍ତି
କାମାକ୍ଷି ମହାନ୍ତି
କାମାକ୍ଷି ମହାନ୍ତି

୪ ମିସିନି
କାମାକ୍ଷି ମହାନ୍ତି

୪ ମିସିନି
କାମାକ୍ଷି ମହାନ୍ତି
କାମାକ୍ଷି ମହାନ୍ତି

୪ ମିସିନି
କାମାକ୍ଷି ମହାନ୍ତି

କାମାକ୍ଷି ମହାନ୍ତି
କାମାକ୍ଷି ମହାନ୍ତି

Rangabati Pradhan

କାମାକ୍ଷି ମହାନ୍ତି

କାମାକ୍ଷି ମହାନ୍ତି

କାମାକ୍ଷି ମହାନ୍ତି

LTA

କାମାକ୍ଷି ମହାନ୍ତି

କାମାକ୍ଷି ମହାନ୍ତି
କାମାକ୍ଷି ମହାନ୍ତି
କାମାକ୍ଷି ମହାନ୍ତି



୮୮

କମଳା ମହାନ୍ତି
ପ୍ରଫୁଲ୍ଲା କୁମାରୀ ମହାନ୍ତି

Padmanava Mahanta

Sudhanshu Sekhar Mahanta

ଅନିଲ ମହାନ୍ତି

Chandran Mahanta

Biswantra Mahanta

Purna Ch Mahanta

Tilachan Mahanta

Arati Mahanta

ବିନୟ ମହାନ୍ତି

କାମଳା କାନ୍ତ ମହାନ୍ତି

ରମ୍ୟା ମହାନ୍ତି

ସୁଧାଂଶୁ ମହାନ୍ତି

ଅନିଲ ମହାନ୍ତି

Suren Chandra

Sande Tomic

ଅନିଲ ମହାନ୍ତି

ଶ୍ରୀମତୀ ମହାନ୍ତି

Rasaba Prakashan

କାମଳା ମହାନ୍ତି

Khajacwar Mahanta

Jayashree
Sarapanon
Rural O.P

ମୁକ୍ତ ଲଗା ପ୍ରଧାନ
କି/ ର ବି ପ୍ରଧାନ

କୃଷି କର୍ମୀ

କୃଷି ବିଭାଗ
କୃଷି ପ୍ରଧାନ

LTA
କୃଷି କର୍ମୀ କୃଷି

କର୍ମୀ କାର୍ଯ୍ୟ

LTA
କୃଷି କର୍ମୀ କୃଷି
କୃଷି କର୍ମୀ କାର୍ଯ୍ୟ

କୃଷି ବିଭାଗ
କାର୍ଯ୍ୟ କାର୍ଯ୍ୟ
କୃଷି କର୍ମୀ ପ୍ରଧାନ
କାର୍ଯ୍ୟ କର୍ମୀ
କାର୍ଯ୍ୟ କର୍ମୀ

କାର୍ଯ୍ୟ କର୍ମୀ
କାର୍ଯ୍ୟ କର୍ମୀ

LTA
କାର୍ଯ୍ୟ ପ୍ରଧାନ

କାର୍ଯ୍ୟ ପ୍ରଧାନ

LTA
କାର୍ଯ୍ୟ କର୍ମୀ

କାର୍ଯ୍ୟ କର୍ମୀ

LTA
କାର୍ଯ୍ୟ କର୍ମୀ

LTA
କାର୍ଯ୍ୟ କର୍ମୀ
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LTA
କାର୍ଯ୍ୟ କର୍ମୀ

କାର୍ଯ୍ୟ କର୍ମୀ
କାର୍ଯ୍ୟ କର୍ମୀ

Jagatandha Mohanta
 Sabita Mohanta
 Bechi Mahanta Mohanta
 ସୁକାନ୍ତି ମହାନ୍ତି
 ଦାଶରଥୀ ମହାନ୍ତି
 ସୁକାନ୍ତି ମହାନ୍ତି
 Madhaba chandka Mohanta
 Anita Mohanta

ଜିତେନ୍ଦ୍ର କୁମାରୀ

ଜିତେନ୍ଦ୍ର ମହାନ୍ତି
 ସୁକୁମାରୀ ମହାନ୍ତି
 Jyotikishor Mohanta

ସୁକୁମାରୀ ମହାନ୍ତି
 ଦିନାବନ୍ଧୁ ମହାନ୍ତି
 Dina bandhu Mohanta
 ଦିନାବନ୍ଧୁ ମହାନ୍ତି
 ଶ୍ରୀ ପଦ୍ମାବତୀ ମହାନ୍ତି
 ଦିନାବନ୍ଧୁ ମହାନ୍ତି

ଜୟନ୍ତୀ ମହାନ୍ତି
 ରାମଚନ୍ଦ୍ର ମହାନ୍ତି
 Rasindharath Mohanta
 ରାମଚନ୍ଦ୍ର ମହାନ୍ତି
 ସୁକୁମାରୀ ମହାନ୍ତି

 LTI
 ମହାନ୍ତି ମହାନ୍ତି

ରାମଚନ୍ଦ୍ର ମହାନ୍ତି

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 ରାମଚନ୍ଦ୍ର ମହାନ୍ତି

 LTI
 ମହାନ୍ତି ମହାନ୍ତି


 Rasindharath
 Mohanta

ଉତ୍ତମା ଚନ୍ଦ୍ର ମହାନ୍ତି
Uttama Mohanta
Jaladhar Mohanta
ଉତ୍ତମା ଚନ୍ଦ୍ର ମହାନ୍ତି

LTD
Mina Mohakud

LTD Jyoti Mohakud

LTD Endra Mohakud

LTD
Sachu Mohakud

ଉତ୍ତମା ଚନ୍ଦ୍ର ମହାନ୍ତି

LTD
Uthanaswami Mohakud

LTD
Sapani Prngua
ଉତ୍ତମା ଚନ୍ଦ୍ର ମହାନ୍ତି

Bharata Prngua

LTD
Monju Prngua

ଉତ୍ତମା ଚନ୍ଦ୍ର ମହାନ୍ତି

LTD
Bharata Tamsoi

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Sampurna
Ranch G.P.

Hembati Munda

ଉତ୍କଳ ସମ୍ମିଳିତ



Lti Nitima Munda



Lti' Mingari party



Lti Lalmeti party



Lti Simanti Tamsoi



Lti Gyangabani party



Lti Balama party

Mangal Sany party

ଉତ୍କଳ ସମ୍ମିଳିତ



Lti Rasika Hembati

ଉତ୍କଳ ସମ୍ମିଳିତ

Birajani Hembati

Purnadai Kishor party

S. Leekar party

ଉତ୍କଳ ସମ୍ମିଳିତ

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SARAKHON
Kambal 3/4

ମୁଖ୍ୟାଳୟ

Jatin Hembram

Durgadhar Hembram

Sukanti Hembram

Lachhman Hembram

Dharmendra Hembram

[Signature]
Sarpanti
Kansal C.S



Lti
panca mohakud



Lti
Sumitra Mohakud
ସୁମିତ୍ରା ମହାକୂଦ



Lti
parabati mohakud
ପରାବତୀ ମହାକୂଦ



Lti
Mangali Mohakud
ମଙ୍ଗଳା ମହାକୂଦ



Lti
Sibani Mohakud
ଅଧିରାମ ମହାକୂଦ



Lti
Harish Tripathy



Lti
Bajari Tripathy
ଲାଜତା ହେମବରମ



Lti
Manika Hembram
Buddhiram Punty



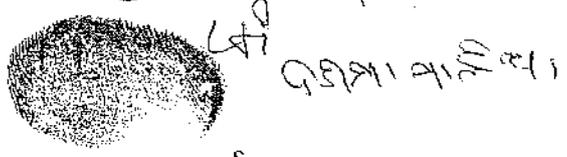
Lti
Jema Punty



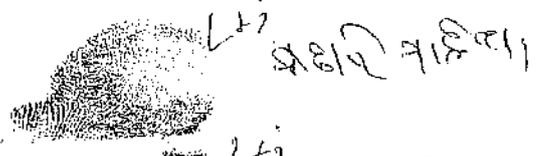
Lti
Sambhunath Punty
ସମ୍ଭରନାଥ ପୁଣ୍ଡା

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Subodh
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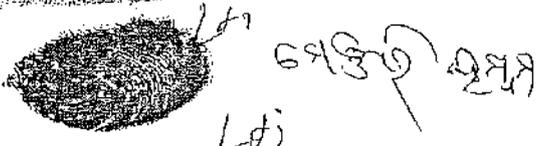
Saragi Paitia



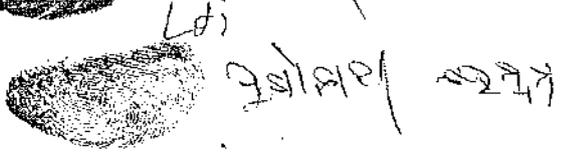
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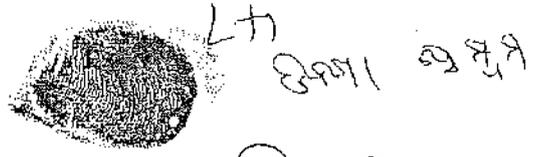
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Lti ବେଢ଼ିକା ବ୍ରହ୍ମ



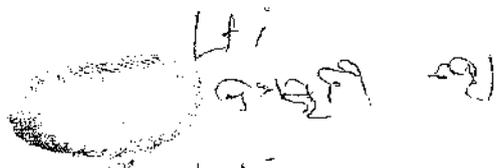
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Lti ବରମା ବ୍ରହ୍ମ

ବ୍ରହ୍ମ ବ୍ରହ୍ମ

Moham Kambhary



Lti ବ୍ରହ୍ମ ବ୍ରହ୍ମ

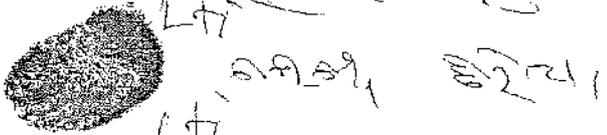


Lti ବ୍ରହ୍ମ ବ୍ରହ୍ମ

ବ୍ରହ୍ମ ବ୍ରହ୍ମ

Ladho Banya

ବ୍ରହ୍ମ ବ୍ରହ୍ମ



Lti ବରମା ବ୍ରହ୍ମ



Lti ବରମା ବ୍ରହ୍ମ

Laxmikanda Mahakud

Bimoy Mahakud

Lti ବରମା ବ୍ରହ୍ମ

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Safarwan
Rajshahi



Lti ରମାକାହାଁ ହୁଁଁଁଁଁଁ

ମୁକ୍ତି ହୁଁଁଁଁଁଁ

Mohana Kalyan Tanya



Lti ଦଶା ହୁଁଁଁଁଁଁ



Lti ରମାକାହାଁ ହୁଁଁଁଁଁ

କ୍ଷେ ସମାହାଁ ହୁଁଁଁଁଁ

କ୍ଷେ ସମାହାଁ ହୁଁଁଁଁଁ



Lti ବିନାହାଁ ହୁଁଁଁଁଁ



Lti Biswaruth tembaram

Balaram tembaram

ସୁକମାହାଁ ହୁଁଁଁଁଁ



Lti ବାସନା ହୁଁଁଁଁଁଁ



Lti ବାସନା ହୁଁଁଁଁଁଁ



Lti ବାସନା ହୁଁଁଁଁଁଁ



Lti ସୁକମାହାଁ ହୁଁଁଁଁଁ

ସୁକମାହାଁ ହୁଁଁଁଁଁ

ସୁକମାହାଁ ହୁଁଁଁଁଁ

[Signature]
SARASWATI
KOLKATA



Lti Sabdarci Hembram

সাকলানী সী হেমব্রাম

Sivar Hembram



Lti সুবর্তী হেমব্রাম



Lti হাদেসু হেমব্রাম



Lti স্বকনক হেমব্রাম

Suresh Hembram



Lti সায়ুচী হেমব্রাম

Sonatan Pengua



Lti তুলিয়া বীজুয়া



Lti সায়ুচী বীজুয়া



Lti বক বীজুয়া



Lti Nath বীজুয়া



Lti স্বকনকসুনা বীজুয়া



Lti চান্দু বীজুয়া



Lti Murabari Pengua

মিস্ট্রী হেমব্রাম

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SAHATAN PINRUA Buddhism Dharma

 LTH Sabadhi Tamiya

 LTH Nandini Hembrom

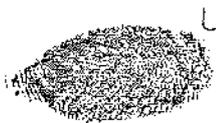
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उत्तम ६ उत्तम

 LTH वसुधा वसुधा

 LTH सुख सुख

 LTH प्राण सुख

 LTH प्राण सुख

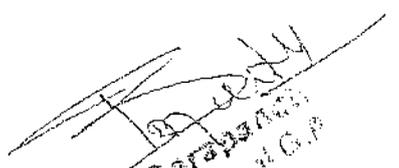
 LTH वसुधा सुख

उत्तम सुख /
Sukumati Tamiya

उत्तम सुख

 LTH सुख सुख

Matani Roshni
Bhanjakishor Tamiya


Sardar
Rana G.P.



LTI
Moe'ic mozan champa



LTI
manax janka



LTI
sukurmani janka

ନାକର ପତ୍ରିକା

ମାକାଳ ହର କାଳୀ



LTI
sumitaa Tsuya

Biswanath Thuya

ମାକାଳ ହର କାଳୀ



LTI
ସୁନି ସୁନା

ସାକାଳି ମାକାଳୀ

କରମାଳି ମାକାଳୀ

କରମାଳି ମାକାଳୀ

Binoti mahanta



LTI
Keatki maluku



LTI
Pratap mahanta

~~Identity~~
STAMPED
KAMAL G.P.

ଶ୍ରୀମତୀ ସତ୍ୟଜିତା

ଗୋବିନ୍ଦା ସାହୁ

Rudheswar Mohanta

Jagiree Mohanta.

ପ୍ରକାଶକ/ସମ୍ପାଦକ

 LTI - Nedumani Mohanta.

 LTI - Anjan Champia.

 LTI - Chandu Champia.

ପ୍ରକାଶକ/ସମ୍ପାଦକ

 LTI - Guren Champia.

 LTI - Ramesh Munda.

 LTI - Nisha Munda.

 LTI - Teelasi Munda.

 LTI - Charan Munda.

 LTI - Manje Munda.

ପ୍ରକାଶକ/ସମ୍ପାଦକ


Srapanch
Ramesh G.P

ଅମରତ ଚନ୍ଦ୍ର



LT¹ Trilachan Dohari



LT¹ Banjari Banya

ବିନୋଦ ଦେବୀ

Minetti Dohari

Binod Dehary

ରୁପାଶା ମହାନ୍ତା

Rupashah Mahanta

ସଞ୍ଜେଇ ମହାନ୍ତା

Sanjeel Mohanta

ବୁଧାଶା ମହାନ୍ତା

Budhasan Mahanta



LT¹ Chandrachuda prantya



LT¹ Sakumari Mohanta

Sambassi Mohanta



LT¹ - Minankhi Mohanta



LT¹ Kabila Mohanta



LT¹ - Sanjei Mohanta

~~Sanjei Mohanta~~
~~Sakumari Mohanta~~
~~Rupashah Mahanta~~



Lti Santarasan Pradhan

ନିରଞ୍ଜନ ପ୍ରଧାନ



Lti ଜଗନ୍ନିକା ପ୍ରଧାନ

Jagannika Pradhan

ଜଗନ୍ନିକା ପ୍ରଧାନ

Nilamalaha Pradhan

ନିଳମାଳହା ପ୍ରଧାନ



Lti Padmaswati Pradhan

ପଦ୍ମସ୍ଵାମୀ ପ୍ରଧାନ

Makarika Pradhan



Lti ପୂର୍ଣ୍ଣିମା ପ୍ରଧାନ

ପୂର୍ଣ୍ଣିମା ପ୍ରଧାନ



Lti Nadara Pradhan

ନାଦାରା ପ୍ରଧାନ

ନିରଞ୍ଜନା ପ୍ରଧାନ

ନିରଞ୍ଜନା ପ୍ରଧାନ

Hirabati Nehari

ହିରାବତୀ ନେହରୀ

[Signature]
Sampada
Kandha

parina pradhan

Tekina pradhan

परीना प्रधान
तेकिना प्रधान

Purnachandra pradhan

पूर्णचंद्रा प्रधान

parvkhita pradhan

पार्वखिता प्रधान



Lti

Naranga pradhan

चौधुरी बसिक

चौधुरी बसिक



Lti

Malika Dehuni

शुभचंद्रा प्रधान

शुभचंद्रा प्रधान



Lti

Sahedey pradhan

साहेदेय प्रधान

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Kamudini pradhan



Lti

Naragana pradhan



Lti

Satrugan pradhan

खिरीस बायपा

Tinea

Koushalya Tinea

बायपा

Badkaram Hembaram

M. Tinea

बायपा बायपा

M. Hembaram



बायपा बायपा



बायपा बायपा



बायपा बायपा

बायपा बायपा



बायपा बायपा

Gurucharan Tinea

बायपा बायपा

Kanda Tinea



Sukadev Tinea

बायपा बायपा

बायपा बायपा Hembaram

बायपा बायपा

Khageswar Hembaram

Elhagiraoti, Baiपा

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Kamala Tidia
Krushna Tidia
ମୟୂରା ତିଡ଼ିଆ

Parash Kumar Bagan
Mainka Das

Rama Chatter
ରାମା ଚଟ୍ଟର

Sauv Pustya
ସାଉଁ ପୁଷ୍ଟା

Makalal chempia
ମକାଲାଲ ଚେମ୍ପିଆ

Bhagyabai Bai'pai
ଭାଗ୍ୟାବାଇ ବାପା
ଅକ୍ଷୟ ପ୍ରାଧ୍ୟକ୍ଷ

ଜୀମିତୀ ଚାଟ୍ଟର
ଜୀମିତୀ ଚାଟ୍ଟର

 Lt. Nirasha Chatter
ନିରାଶା ଚଟ୍ଟର

 Lt. Sumita Ranjha
ସୁମିତା ରାଞ୍ଜହା
ପରମ ଡାକ୍ତରୀ

 Lt. Jema Bapat
ଜେମା ବାପାଟ


Rajendra C.P.

ଉତ୍ତର - ତା ୨୦/୦୬/୧୫

ଉତ୍ତର ଓଡ଼ିଶା, ଯୁକ୍ତ ଶ୍ରୀ ମନ୍ତ୍ରଣାଳୟ, ବି-ସ୍ୱଳ୍ପ
 ବିଭାଗୀୟ, ଧା- କାଳିଆପାଣି, ବି- ମାଙ୍ଗୁଳ ନଗର
 ଜାକ୍ୱେଟିଆ ହାକିମ୍ ପ୍ରାମ ସଂସ୍ଥାରେ PPT ନଟା ହେ.
 କରୁଣା କର୍ମୀ ଥିବା କରୁଣା କର୍ମୀ କୁ ଦୁନାହିଁ
 କରୁଣା କର୍ମୀ ତା ୨୦/୦୬/୧୫ PPT ବିଲ ସମାପ୍ତ PPT.
 କରୁଣା କର୍ମୀ ନାହିଁ ମାତ୍ର ମାତ୍ର ନିକଟରେ ମନୁଷ୍ୟ
 ଅନୁଭୂତ ସଂସ୍ଥାରେ ପ୍ରାମ ନିମନ୍ତେ ଜାକ୍ୱେଟିଆ
 ପ୍ରାମରେ କେନ୍ଦ୍ରରେ ଦେଇ, କେନ୍ଦ୍ରରେ ପ୍ରାମ୍ୟ କାର୍ଯ୍ୟକ୍ରମ
 ଟ ୫୦୦.୦୦ (ପାଞ୍ଚଶହ ଟଙ୍କା) ମାତ୍ର ସହଯୋଗ ଦାନ
 କରୁଣା କର୍ମୀ କୁ ହିତରେ କେନ୍ଦ୍ରରେ ଦେଇ, ମାତ୍ର କାର୍ଯ୍ୟକ୍ରମ
 କର୍ମରେ ଆସିବ।

LT9 06
 Mangul
 Nagar

Passed for Payment of
 Rs. 500/- (Five hundred only)


 M. S. Das
 Secretary

GRAM SABHA RESOLUTION FOR USE OF FOREST LAND FOR NON-FOREST PURPOSE

Gram Panchayat : Kankadapal
Village : Garamian
Place : Community Hall campus of Garamian village
Time : 11.00 AM Date : 21.06.2018

As per letter no. 18 Dated 13.06.2018 of the Block Development Officer, Sukinda, Palli Sabha was held today under Forest Rights Act 2006 to consider the use of forest land over 168.948 hectares in Forest Block No. 27 for non-forest purpose. The following officers and adult voters of Garamian Revenue village attended the meeting.

Officers present: -

1. Sarapanch, Kankadapal Gram Panchayat
2. Welfare Extension Officer
3. Revenue Supervisor, Kankadapal
4. Forest Guard, Sukinda
5. Executive Officer, Kankadapal Gram Panchayat

The Sarapanch, Kankadapal Gram Panchayat, presided over the meeting. The Sarapanch thanked the villagers present in the meeting as the meeting had the required quorum. The Sarapanch explained that the purpose of calling the present Gram Sabha is to consider the proposed use of 168.948 hectare forest land in Forest Block 27 for dumping of overburden of South Kaliapani and Sukurangi Mines of Odisha Mining Corporation Ltd.

The Welfare Extension Officer, Sukiinda, explained the purpose of this meeting. He explained in detail to the villagers present in the meeting about the power conferred to the Gram Sabha regarding the individual rights, community rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. Then he explained in the meeting the detailed particulars and location of the proposed land through a map.

Field Inspection Report of the Revenue Supervisor, Kankadapal, in this matter was placed in the meeting. The area over 168.948 hectare applied by OMC Ltd. for use as overburden dump of South Kaliapani and Sukurangi Mines is forest land and is within Forest Block 27.

From the report of the Revenue Supervisor, Kankadapal, it is seen that nobody belonging to Scheduled Tribe or other traditional forest dweller category is inhabiting in the said forest land of 168.948 hectare in Forest Block 27. Nobody is depending in this area for bonafide livelihood needs, agriculture or any other traditional job in this area. Nobody claimed in the meeting any individual right or community right.

The proposal for use of the forest land for non-forest purpose of overburden dump of South Kaliapani and Sukurangi mines of OMC Ltd was discussed in detail from different angles in the meeting. Views of the villagers were called for about impact of the proposed project on livelihood of the villagers. The villagers were requested to furnish their views on the proposed project considering the interest of Scheduled Tribes and Other Traditional Forest Dwellers as per the provision of Forest Rights Act 2006.

From the discussion it was known that nobody belonging to Scheduled Tribe or other traditional forest dweller category is inhabiting, depending in this area for bonafide livelihood needs, agriculture, collection of minor forest produce, or any other traditional job either individually or as a community in this proposed project area. The villagers present in the Gram Sabha expressed that they have no objection if 168.948 ha. forest land of Forest Block 27 near Garamian village is used as overburden dump of South Kaliapani and Sukurangi mines.

Hence, the Gram Sabha took unanimous decision to approve the proposal of using 168.948 ha. forest land near Garamian for non-forest purpose as overburden dump of South Kaliapani and Sukurangi mines.

The meeting ended after the Sarapanch, Kankadapal GP, thanked the officers and villagers present in the meeting.

Sd/-
Sarapanch
Kankadapal G.P

Sd/-
Revenue Supervisor
Sukinda Tahasil

Sd/-
Forest Guard
Sukinda Section

Sd/-
Executive Officer
Kankadapal G.P

Sd/-
Welfare Extension Officer
Sukinda Block

ଦଳଲ୍ କ୍ଷୀୟା ଦମିଶ୍ ଧକା ଦଳଲ୍ ଦମଦମାନ୍ କମଳକ୍ଷି ଶ୍ରୀମତୀ

ଶ୍ରୀମ ଚୈତନ୍ୟ : କାଳିଦାସ
ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ

ସ୍ଥାନ: ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ ମନ୍ତ୍ରଣାଳୟ

ତା: ୩୧.୦୭.୨୦୧୮ ପୂର୍ଣ୍ଣିମା ୧୧.୦୦ଟା

ଦୁଇଦିନ ଶ୍ରୀମତୀଙ୍କ ସ୍ମାରକ

ମଙ୍ଗଳାକାନ୍ତ ଚନ୍ଦ୍ରଶେଖର

ଶ୍ରୀମତୀ ମୁଖ୍ୟ

ଉପାଧିକାରୀ

୨୧୦୦୨ ମୁଖ୍ୟ ମନ୍ତ୍ରଣା

Nirmala Lohar

ଶ୍ରୀମତୀଙ୍କ ମନ୍ତ୍ରଣା

Narmada Pradhan



LTI 04 Kailash Pradhan.

ଶ୍ରୀମତୀ ମୁଖ୍ୟ

ଉପାଧିକାରୀ

ଶ୍ରୀମତୀଙ୍କ ମନ୍ତ୍ରଣା

Sabita Mohanta
Sarapada
Kankadapa



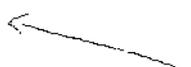
LTI 04 Sarapada

କାଳିଦାସ

Kabita Dehuri

Kanak Lata Dehuri

LTI OF Ganga Badana.

- ୧ - ମୁକ୍ତ କିରୀଟ ଦେହୁଡ଼ୀ
- ୨ -  ପ୍ରତୀକେତ୍ୟପ୍ରଧାନ
- ୩ - 
- ୪ -  ଶିଶିଆରି ପ୍ରଧାନ
- ୫ -  ଚନ୍ଦନା ପ୍ରଧାନ ମାଣ୍ଡୁ ପ୍ରଧାନ
- ୬ -  ମୋହନ ପ୍ରଧାନ
- ୭ -  ମନନା ପ୍ରଧାନ
- ୮ - ସନ୍ଧ୍ୟାନନ ପ୍ରଧାନ
- ୯ -  ଚର୍ଚ୍ଚିତ ପ୍ରଧାନ
- ୧୦ - ସିନାତନପ୍ରଧାନ

ସଂକଳନାଦି ପ୍ରକାର

- ୧୩ -  ନାୟକ ଦେହୁଡ଼ୀ
- ୧୪ - Alakha Dehury
- ୧୫ - ମାଣ୍ଡୁ ପ୍ରଧାନ
- ୧୬ -  ଶ୍ରୀ ପ୍ରଧାନ
- ୧୭ - ଚୋବିଟ ପ୍ରଧାନ
- ୧୮ - Baita Pradhon
- ୧୯ - Nisarpama Dehury

୨୦ - ମାଣ୍ଡୁ ଦେହୁଡ଼ୀ

୨୧ -  ଶୁକଳି ଦେହୁଡ଼ୀ

୨୨ -  ଅନ୍ତର୍ଗତ ମାଣ୍ଡୁଆ ଦେହୁଡ଼ୀ

୨୩ -  ବାଲ୍ୟୀ ଦେହୁଡ଼ୀ

୨୪ -  ଦାକ୍ଷିଣୀ ଦେହୁଡ଼ୀ

୨୫ -  କଞ୍ଚୁ ଦେହୁଡ଼ୀ

୨୬ -  ସୁନ୍ଦରୀ ଦେହୁଡ଼ୀ

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୨୯ -  ସିନ୍ଧୁକ ପ୍ରଧାନ

Sabita Mohanta

Sarapada
Karkote

- २० प्रसिद्ध कवि कृत

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- १८ - [Redacted] कवि काव्य
- १९ - [Redacted] कवि काव्य
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Sarabha Mishra
 Sarabha
 Kankadoo



ବିପିଣୀ ଦେବତ୍ରୀ



କଳିଙ୍ଗାକୁମାରୀ ଦେବତ୍ରୀ



ସୁବାସି ଦେବତ୍ରୀ

30 - ଜୁନୁନା ଦେବତ୍ରୀ

31 - ଜଗନ୍ନାଥ ଦାସ

32 - ଜିଣା ବଦରୀ

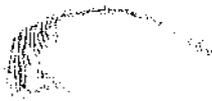
33 - ଗମ୍ଭୀ ବଦରୀ

34 - ଗଜାଜି କୁମାର ଭବନୀ

35 - ବ୍ରଜକା ଭବନୀ

36 - ବିଶ୍ୱାସୀ ଦେବତ୍ରୀ

37 -  ଶୁକ୍ର ବାରି ମୁଖା

38 -  ଶିଳ୍ପୀ ଗାନ୍ଧୀ ପ୍ରଧାନ

39 -  ଗଜାନ ପ୍ରଧାନ

30 -  ବ୍ରଜୀ ପ୍ରଧାନ

31 -  ମାଧୀ ପ୍ରଧାନ

32 -  ବ୍ରଜକା ପ୍ରଧାନ

33 - ଶରଣ ପ୍ରଧାନ

34 - Chandana pradhan

35 -  ବାଞ୍ଚା ପ୍ରଧାନ

36 -  ସୁଜା ପ୍ରଧାନ

Sabita Mohanta
Sarapani
Kankadul

33 - padakha padhan

34 -  ମାୟାଧର ପ୍ରଧାନ

3W -  ସମ୍ବନ୍ଧି ପ୍ରଧାନ

10 -  ବାବୁରୀ ଦେବୁଶୀ

1E -  ସୁକାନ୍ତି ଦେବୁଶୀ

19 - ବିନୟନ ଦେବୁଶୀ

1M - ବାବୁ ପ୍ରଧାନ

1N - ବିନାବିତି ପ୍ରଧାନ

1X -  ଜାତିକ ପ୍ରଧାନ

1S - ମାୟାଧର ପ୍ରଧାନ

13 - Golekha padhan

1T - ପ୍ରତିମା ପ୍ରଧାନ

1W -  ସୁଜାତା ପ୍ରଧାନ

10 - ସତୀବିପ୍ରଧାନ

12 - Pranamali padhan

19 - ନନ୍ଦିନୀ ପ୍ରଧାନ

1M -  ବ୍ରଜବନ ଦେବୁଶୀ

1N - ସୁମନ୍ତ ଦେବୁଶୀ

1X - ଉତ୍ତରାଦେବୁଶୀ

1S - ମେଘନା ଦେବୁଶୀ

13 -  ସାମୁଏଲ ଦେବୁଶୀ

1T - ଗୋବିନ୍ଦଚନ୍ଦ୍ର ଦେବୁଶୀ

1C - ଜାତିକ ଦେବୁଶୀ

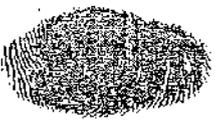
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Sarita mika

Sarepa
Kankar

- ୧ - ନରାୟଣ ଦେବପୁତ୍ର
- ୧୦୨ -  ଦେବପୁତ୍ର
- ୧୦୩ -  ସୁଜାନ୍ତି ଦେବପୁତ୍ର
- ୧୦୪ - ବିନି ବିଦେହୀ
- ୧୦୫ -  ଦେବପୁତ୍ର
- ୧୦୬ - ରଞ୍ଜିତା ଦେବପୁତ୍ର
- ୧୦୭ - ବାହୁ ଦେବପୁତ୍ର
- ୧୦୮ - ମାଳା ସୁଧା
- ୧୦୯ - କାଳକ୍ରମା
- ୧୧୦ - Endu Dehury
- ୧୧୧ - ପୁତ୍ରସୁଧା ଦେବପୁତ୍ର
- ୧୧୨ - ବନ୍ଦନା ପ୍ରଧାନ
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- ୧୨୧ -  ଦେବପୁତ୍ର ପ୍ରଧାନ
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- ୧୨୪ - ବିକାଶ ପ୍ରଧାନ

Sabita Incharita
 Sarapani
 Kanusode G.P

- ୧୫ - କିଶୋରୀ ପ୍ରଧାନ
- ୧୬ - ମୁକ୍ତମୁଖୀ ପ୍ରଧାନ
- ୧୭ - ଜାନ୍ତା ପ୍ରଧାନ
- ୧୮ -  ଜାସନ୍ତି ପ୍ରଧାନ
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- ୨୦ -  କଳାବତୀ ପ୍ରଧାନ
- ୨୧ -

Gabita mahanta
 333333
 Mansarovar

ಶ್ರವಣ

Koera Gogara
Baidhar Mahakud
ಬೌದ್ಧಾಧಿವಿಧಿ
Mahendra Gogara
Renuka en enaku

ಬೌದ್ಧಧರ್ಮ
ಶ್ರೀ ಶಾಸ್ತ್ರ
ಗಣನೀಯಾಶಾಸ್ತ್ರ
ದೇವತೆಗಳ ಕಥೆ
ಕೆಲವು ಮಹಾ
ಪುಸ್ತಕಗಳಿಗಾಗಿ
ಕುಳಿಸಿ ಕೊಡಿ
ಕೆಲವು ಮಹಾ
ಕಥೆಗಳಿಗಾಗಿ

ಶ್ರೀಮಹಾ ಕಥೆ

ಕುಳಿಸಿ ಕೊಡಿ

ಕುಳಿಸಿ ಕೊಡಿ

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ಕುಳಿಸಿ ಕೊಡಿ

Sasita Mohanta
Sarpanch
Kankadoli G.P.

ଶିକ୍ଷକ
 ବିଦ୍ୟାଳୟ ବିଦ୍ୟାଳୟ
 ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ
 ପଣ୍ଡା ଶ୍ରୀମତୀ
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 ବିଦ୍ୟାଳୟ ଶ୍ରୀମତୀ
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ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ
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 ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ
 ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ

Sabita Manojit
 Serapanon
 Kankardol G P



ବିଲିଆ ବଦରୀ



ମୟା ବନ୍ଦ୍ୟ



ମୟା ବନ୍ଦ୍ୟ



ବନମାଳି ବନ୍ଦ୍ୟ



ରାଜିନ ଲାଲାୟ



ସନ ଯୁକ୍ତ



ହାନ ଯୁକ୍ତ



ମାଟେରୀୟା ଲାଆ



ହେନାଲି ସଠ



ହୀନ ସ୍ଵର ସଠ



ହୀନ ସଠ



ହୀନ ସଠ



ବେନେଟୁ ବନ୍ଦ୍ୟ



ବିକାସ ବନ୍ଦ୍ୟ



ସ୍ଵର ବନ୍ଦ୍ୟ



ବିକାସ ସ୍ଵ



ସ୍ଵର ବନ୍ଦ୍ୟ



ସମ୍ପଦା ଲାଲାୟ



ବନ୍ଦ୍ୟ ଲାଲାୟ

Sarapat
Sarapat
Banskota

ସୁକୁମାରୀ

ସୁକୁମାରୀ

ସୁକୁମାରୀ

mevhe magrawe -

mevhe magrawe

mevhe magrawe



Laxmi Dehury -

ସୁକୁମାରୀ

ସୁକୁମାରୀ

ସୁକୁମାରୀ



Gopala Munda

ସୁକୁମାରୀ

ସୁକୁମାରୀ

Ganeswar Dehury -

ସୁକୁମାରୀ



Ganeswar Dehury

ସୁକୁମାରୀ

ସୁକୁମାରୀ

Sabita Dasgupta
Sripada
Kankajuri

ଅନ୍ତର୍ଗତ ମୁଦ୍ରା

ଫାଲ୍‌ଗୁନ ୧୯୩୧

ଫାଲ୍‌ଗୁନ ୧୯୩୧

ଫାଲ୍‌ଗୁନ ୧୯୩୧

ଫାଲ୍‌ଗୁନ ଜାମୁନା -

Ba. Buxram Jamuna -

Tulasi Mohanty



— Hara. Gajrai -

ଫାଲ୍‌ଗୁନ ୧୯୩୧

Ranjana Gajrai

Shamara Gajrai

ଫାଲ୍‌ଗୁନ ୧୯୩୧ -

Pandaba Gajrai

Nanta Kanta

ଫାଲ୍‌ଗୁନ ୧୯୩୧

Meri Chandu

ଫାଲ୍‌ଗୁନ ୧୯୩୧



— Bela Mata Munda

ଫାଲ୍‌ଗୁନ ୧୯୩୧



— Atima Badama

ଫାଲ୍‌ଗୁନ ୧୯୩୧

ଫାଲ୍‌ଗୁନ ୧୯୩୧

Uddhaba Dehury

Sabita Mohanta
Sarapani
Kankadum

ଶ୍ରୀମତୀ/ଶ୍ରୀ ଗଣେ

୧୫୫



Indira Gandhi -

ଶ୍ରୀମତୀ ଶ୍ରୀ
ଇନ୍ଦିରା ଗାନ୍ଧୀ



Sumi Gandhi -

Rani Kumbhari
ସୁମି ଗାନ୍ଧୀ



Bhama Kherkar -

ଭାମା କେରକର

Trilokhama Bandara -

ତ୍ରିଲୋକା ବାନ୍ଦାରା

Sabita Mahanta
ସାବିତା ମହାନ୍ତ
କରକାନ୍ତ



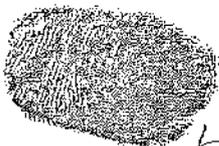
Bipin Pradhan -

LPI



Karak Dehuni

LPI



Orila Pradhan

LPI



Abhinay Pradhan

LPI

କାର୍ତ୍ତବୀର ପ୍ରଧାନ



- LTI of Natha Munda -

କାଳିଆ ମୁଣ୍ଡା -

କିନ୍ତୁ ମୁଣ୍ଡା -

Motei Munda -

ବଳିଆ ମୁଣ୍ଡା -



LTI of Chalish Munda -



LTI of Samu Bhadra -

Deputy Inspector NAYAK

ବାବାଜି ମୁଣ୍ଡା -

କାଳିଆ ମୁଣ୍ଡା

କାଳିଆ ମୁଣ୍ଡା
କାଳିଆ ମୁଣ୍ଡା

Sabeta munda
Sara...
Kank...

କାର୍ତ୍ତବୀର ପ୍ରଧାନ

କାଳିଆ ମୁଣ୍ଡା -

ଅକାଳିଆ ମୁଣ୍ଡା -



LTI of Suru Munda -



LTI of Prulashi Munda -

Keshab Achary

କେଶବ ଅଚ୍ୟାର୍ଯ୍ୟ -

Radha Badra -

ରାଧା ବାଦ୍ରା -

ରାଧା ବାଦ୍ରା -

ରାଧା ବାଦ୍ରା



Hi Sumantra Munda -

ହି ସୁମନ୍ତ୍ରା ମୁନ୍ଦା -

ହି ସୁମନ୍ତ୍ରା ମୁନ୍ଦା

ହି ସୁମନ୍ତ୍ରା ମୁନ୍ଦା



LTI Shubana Munda -

ଶୁଭନା ମୁନ୍ଦା

ଶୁଭନା ମୁନ୍ଦା -

Sabita Mahanta

Sabita Mahanta
Kankajuri

LTI

Tizia Pradhan

ତିଆ ପ୍ରାଧନ

ତିଆ ପ୍ରାଧନ

LTI

Malli Pradhan



ସଂସ୍କୃତ ରାଜ୍ୟ ଅଧିକାରୀ
Prachin Laloo Dehuri
ପ୍ରାଚୀନ ରାଜ୍ୟ ଅଧିକାରୀ



LTI of Gargi Meenda



LTI of Betraie Meenda



LTI of Baedhara Meenda



LTI of Gage Meenda

ମୁଖ୍ୟ ଶାସ୍ତ୍ରୀ
ଅଧ୍ୟକ୍ଷ ସଂସ୍କୃତ ମଠ -
Anasua Dehuri

Sabita Mohanta
Sarapanch
Kankadnal

ସଂସ୍କୃତ ଶାସ୍ତ୍ରୀ



LTI of Talasi Dehuri
ସଂସ୍କୃତ ଶାସ୍ତ୍ରୀ

ଅଧ୍ୟକ୍ଷ ସଂସ୍କୃତ ମଠ -

ଦେବୀ ମାତା ସଂସ୍କୃତ -



LTI of Sani Bena
ଶ୍ରୀମତୀ ସଂସ୍କୃତ



LTI of Grandhiram Gaganai

Sukadher Pradhan

ଶ୍ରୀ ପ୍ରଧାନ ପ୍ରଧାନ

ସମସ୍ତଙ୍କୁ ସ୍ୱାଗତ

Kunu Dehuri



LTI Tikuna Dehuri

ଅନନ୍ତ Dehuri

ଅତି ପ୍ରଧାନ

Subas Mahakud



LTI Tulasi Samad

ଭାରତୀୟ ସମାଜ

Tulu Munda

ନୀତି ସମାଜ

Sabita Mohanta
Sarapat
Kankadol



LTI Sina Jagarai

ବିଜ୍ଞାନ ସମାଜ

Pradhan Badara

ନୂତନ ସମାଜ



LTI Dadu Hembram

ସମାଜ ସମାଜ

ସାହିତ୍ୟ ସମାଜ

ଅନୁମୋଦିତ ଚକ୍ରପୁସ୍ତକ -



ୱାଟି ଅଂଶୁରା ସାମନ୍ତ -

Chakradhara Pradhan -

ନୀଳମଣି ଚକ୍ରପୁସ୍ତକ -

ସ୍ଵାମୀ ମହା -

କାଶ୍ୟାପୀ ପୁସ୍ତକ -



ୱାଟି ଅଂଶୁରା ସାମନ୍ତ -

ନୀଳମଣି ଚକ୍ରପୁସ୍ତକ -

କାଶ୍ୟାପୀ ପୁସ୍ତକ -

Dewyodhan Samad

Pradeep Maharama -

Sabit-mahant

Swami of
Kankardih



ୱାଟି ଅଂଶୁରା ସାମନ୍ତ -

Akshya Pradhan -

ଚକ୍ରପୁସ୍ତକ ନୀଳମଣି -

କାଶ୍ୟାପୀ ପୁସ୍ତକ

ନୀଳମଣି ଚକ୍ରପୁସ୍ତକ -

କାଶ୍ୟାପୀ ପୁସ୍ତକ

Mishra Munde -

କୃଷ୍ଣକାନ୍ତ ବନହା -

ବିନିମା ଦୁମହାଣୀ -



LTI of Vinayak Mahapatra -

ସତ୍ୟ ମୁଣ୍ଡା -

ସତ୍ୟ ବନହା -

Satya Munda -



LTI of Kuni Munda -

କାନ୍ତ ବାବାହାର -

Khettabahu Mahapatra -

କାନ୍ତ ବନହା -



LTI of Suresh Munda -

ବିନୟ ମହାପାତ୍ର -

ବିନୟ ମହାପାତ୍ର -

କାନ୍ତ ପ୍ରଧାନ -

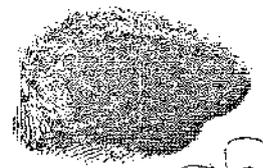
ଆଶା ବାମନା -



LTI of Rajamati Munda -

କାନ୍ତ ମୁଣ୍ଡା -

କାନ୍ତ ମୁଣ୍ଡା -



LTI of Tara Gajapati -

ସୁନିଲ ବନହା -

ସୁନିଲ ବନହା

Sunil Munda

Saubita Mahanta

Signature

ଶ୍ରୀ ରଘୁପତି ସମ୍ପ୍ରାଦାୟ

ସୁକ୍ଷ୍ମ ସମ୍ପ୍ରାଦାୟ

Milu Maharana

manasi munda

Rajesh Munda

Babi Mahakud



LTI Mayama Bodarna

କାହାଣୀ ସେନା -

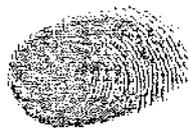
Sarbata Mohant

Sanskrit
Kankar...

ସାମାଜିକ ସେନା -



LTI Shikhar Jyotsna



LTI Sitari Munda

ଶ୍ରୀମତୀ ସମ୍ପ୍ରାଦାୟ -



LTI Narindra Hembram

ସୁକ୍ଷ୍ମ ସମ୍ପ୍ରାଦାୟ



LTI Madhu Pradhan

Kamini Pradhan -

ସୁକ୍ଷ୍ମ ସମ୍ପ୍ରାଦାୟ -

କଣ୍ଠ ସ୍ୱରା -

କମଳ ସମ୍ପ୍ରଦାୟ

ଅନନ୍ତ ଚନ୍ଦ୍ର ମହାପାତ୍ର
କାମଳା ସମ୍ପ୍ରଦାୟ -
କାମଳା ସାହିତ୍ୟ



LTI of Hira Munda -

ପୁସ୍ତକ ସମ୍ପ୍ରଦାୟ -

କୋରା ଚିତ୍ର -

ସୂକ୍ଷ୍ମ ପ୍ରଧାନ
କାମ ପୁସ୍ତକ

Soubhita Mohanta
Sarapanca
Kankadul



RTI of Surendra Dehury

କୃଷି ଚିତ୍ର

କାମା ସ୍ୱରା



LTI of Bhanumati Dehury

ସୁକ୍ଷ୍ମ ସେଠା
ପ୍ରତିମା ପ୍ରଧାନ

Rath Soy

Budhan Singh Gagrai

୨୦୧୧ ୨୧୫୧

Buku maharana



LTI Kesha Manda



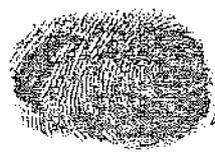
LTI Jema Harsdahi



LTI Dhaniram Samad

୨୦୧୧ ୨୧୫୧

Tulsa Hambraamba
Lili Moharana



LTI Mili Munda

Sabita Mohant
Sarsa
Kankal G.



LTI Smita Manda

Prasanna Pradhan

୨୦୧୧ ୨୧୫୧

Natka Bodasa

Tulasi Pradhan

୨୦୧୧ ୨୧୫୧

George Saei -



LTI Tulasi Munda -

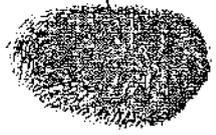
୨୦୧୧ ୨୧୫୧

Mohanteng Hambraamba

ଉତ୍ତରୀୟା ମୁଦା

କିମ୍ବଦନ୍ତୀ -

କାଉଁରୀ ମା ମୁଦା



Gurubari Jameda



L.R. - Sankar Munda -

କଲିକତା ଶାଖା

ରାମେଶ୍ୱରୀ ମୁଦା -

Kamala - munda -

ଅକ୍ଷୟ ମୁଦା -

କାଉଁରୀ ମା ମୁଦା

କାଉଁରୀ ମା ମୁଦା

Soubita - munda

Serap...
Kantadasi...



L.R. of Gurubari Munda -

Umi Gagarai

କାଉଁରୀ ମା ମୁଦା

Sankar Gagarai -

କାଉଁରୀ ମା ମୁଦା

କାଉଁରୀ ମା ମୁଦା



- L.R. of Tezra Gagarai



LTD of Chandala Dewa.

କଟକରୁ ଦେହୁରୀ
ଶାନ୍ତିପ୍ରସାଦ



LTD of Bhimaben Pradhan.

Mahati Pradhan.

Kuntala Pradhan

ସୋନିଆ ବାସିନୀ

ହରିନାଥ ପ୍ରଧାନ

ସୁନିତା ପ୍ରଧାନ

Anita Pradhan

ଭୂଷି ଦେହୁରୀ

ଅକ୍ଷୟ ପ୍ରଧାନ

Surbita Mahanta
Satapatna
Kantakal

ଉତ୍କଳିଆପୁତ୍ରୀ

Awati Pradhan

Nirmala Pradhan



LTD of Purna chandna Pradhan.

ଜାନକୀ ପ୍ରଧାନ

ଶ୍ରୀମତୀ ପ୍ରଧାନ

କାନ୍ତଳକ୍ଷ୍ମୀ ପ୍ରଧାନ

ନିଜାମୁଦ୍ଦିନ ପ୍ରଧାନ

ସୁକୁମାରୀ ଦେହୁରୀ

ଆନନ୍ଦାକ୍ଷରୀ ଦେହୁରୀ

ସୁକୁମାରୀ

Ramesh Chandra Naik



LTD of Laxmi Behara

କଟକରୁ ଶାନ୍ତିପ୍ରସାଦ

କଟକରୁ ଶାନ୍ତିପ୍ରସାଦ

କଟକରୁ ଶାନ୍ତିପ୍ରସାଦ

सुरेश देहुरी
Suresh Dehuri

LT9 of Tula Dehuri

Gobardhan Dehuri

गोबिन्ध देहुरी

ଅନୁସୂଚି ପ୍ରଧାନ

ଅନାମି ଡେହୁରୀ

ଶ୍ରୀକାନ୍ତ ଡେହୁରୀ

RABI PRADHAN



LT9 of Pranila Dehuri

ପିତମ୍ବର ନାୟକ

ଅନୁସୂଚି ପ୍ରଧାନ

ନିଜାମତ ଡେହୁରୀ

ନିଜାମତ ଡେହୁରୀ

ନିଜାମତ ଡେହୁରୀ

Dehuri Nizamata

Ranjan Pradhan

ଅନୁସୂଚି ପ୍ରଧାନ



LT1 of Dabor Maw.

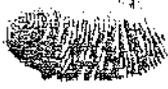


LT9 of Kunz Dehuri

Sabita Mohan

Sabita Mohan
Sankar Mohan

ଶ୍ରୀମତୀ ସୁମତୀ ଶ୍ରୀମତୀ
ଜି. ସୁମତୀ
BLSwanath Munda
ଗୋଲକପୁର ଗ୍ରାମ
ଝାଡ଼ି ଗଡ଼ଜାତ

ATI of Paduka Dehury.


(ମାମ) ବାବୁ

 - pelanga badra.
ଗାନ୍ଧୀ ୩୩୦୦

ଶ୍ରୀମତୀ ସୁମତୀ -

 (Kanchana Hembram)

ସୋମ ବିହାରୀ
ମାମ ଗ୍ରାମ

 ATI of Jangarai Apelkeli

Sabita mchandi
Sarapanoh
Kankadpal G e

Sanjanta Badora

ମାମ ଗ୍ରାମ
ଗୋଲକପୁର ଗ୍ରାମ -

 ATI Jaripal Gagarai.
ଜି. ସୁମତୀ

Naren Munda



LTP of Mangafa Munda.

ଶ୍ରୀ ଶ୍ରୀ ଚନ୍ଦ୍ର

Koushikachandora Sahoo

Amiya Pradhan

କିଶୋର ଦେବଦାସ



LTP of Saroja Pradhan.

ଶ୍ରୀ ଶ୍ରୀ ଚନ୍ଦ୍ର
Jillim Jirky -
ରବିଚାନ୍ଦ୍ର ମୂର୍ତ୍ତି

ସୁଧାଂଶୁ ପ୍ରଧାନ

ସୁଧାଂଶୁ



LTP of Anou Hasda

ଶ୍ରୀ ଶ୍ରୀ ଚନ୍ଦ୍ର

Sahas Patra

ପ୍ରଧାନ କାରିଗିରି

Shankar munda

ଶ୍ରୀ ଶ୍ରୀ ଚନ୍ଦ୍ର



LTP of Mamata Majhi

Mamata Majhi Sahoo



LTP of Batama Behera

Sahaja Mahanta
Sarapenchi
Kankodal G.O

Ramakanta Dehuri

ମାଧୁରୀ ରଥ
ବ୍ୟକ୍ତି ମାଧୁରୀ

ସୁଜାତା ରଥ
ମାଧୁରୀ ରଥ

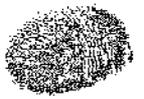
Taru Laman



LT1 Anama Lagaria

Gitanjali Moharana

ସୁଜାତା ରଥ



LT1 Phala Menda

ବ୍ୟକ୍ତି ରଥ

Birub Dehuri

Khageswar Dehuri

ସୁଜାତା ରଥ

ରାମକାନ୍ତ ରଥ -

ମାଧୁରୀ ରଥ ରଥ -

ରଥ ରଥ

Niranjan Pandhan

Sabita Mohanta
Sarapani
Kankada

Himal Jethwa -

ବିଜୁଳୀ ଭୂଷଣ ନାୟକ -

ମାଳତୀ ବନବତୀ -

କାମ୍ୟାମ୍ବିକା ପାଣି

Kamanga Pradhan -

 LTI of Kousa Pillai.

 LTI of Baidani Party

 LTI of Para Pingua.

Sabita Mchanta

Barapada
Candrapur

ଭୂଷଣ ମାଳବିକା

Tulasi Munda

କୋଇଲୀ ନାୟକ

 LTI of Bani Munda

ସୁକୁମାର ମହା

 LTI Dhano Boudua.

 LTI of Mace Munda

ବିଜୁଳୀ ଭୂଷଣ -

Bemmelci Prothman.

Asanta Klemar Dehury

Anbuja Dehury



Lti of masuro party



Lti of Manguli Singh Party -
Manguli Lohar.

ଜାତୀୟ ମାସୁରୀ ପାର୍ଟି
ମାଣ୍ଡୁଲି ଲୋହର

ମାଣ୍ଡୁଲି ଲୋହର



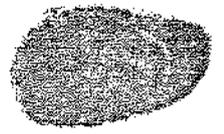
Lti of Padini Bari

ପାଦିନୀ ବାରି

ପାଦିନୀ ବାରି

Sarabanta Mohanta

Sarabanta
Kankadna B.S.



Lti of Dambaru Murda

Ratna Pasad Membram

Lti of Indira Gayatri

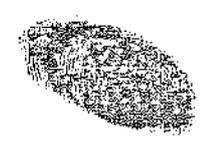


ରତନା ପାସାଦ ମେମ୍ବରମ
ଇନ୍ଦିରା ଗାୟତ୍ରୀ
Lti of Somi Murda



ନାରିକା ମୁରଦା

Lti of Narika Murda



ନାରିକା ମୁରଦା

ଉପର ଦୁଇଭାଗ

୧୫୩



Lata of Laxmi Budele

ଶାନ୍ତି ଦେବୁରୀ

Jiban Kumar Dehuri

Tretha Dehuri

Tejulu Bera

ପ୍ରମିଳା ପ୍ରଧାନ

ସୁଲତା ଦେବୁରୀ-

Udaya Purty

ନିରାଳ ଦେବୁରୀ

Sindu Pradhan



Danda Purty

ସମିତା ଦେବୁରୀ

Sabita Mohanta

Sarapani
Kankadhal



Lata Sudansu Dehuri

ଉଷାକା ଶାନ୍ତିକା

ଜୟନ୍ତୀ ଦେବୁରୀ



Lata Binati Dehuri

Gokha Dehuri



Lata Sumi Munda



Lata Laxmi Munda



Lata of Ananta Dehuri

ଓଡ଼ିଆ ପ୍ରଧାନ

ପାଠକର ପୂର୍ଣ୍ଣ

ସିଦ୍ଧ ପୁସ୍ତକ -

ସ୍ୱାଧୀନତା ସଂଗ୍ରହ -

Jambhantam Jambhantam -



LTI of Kain Bodara.



LTI of Ratani Ho

କୋଇଲି ପତ୍ରାଂଶୁ -

କାମି କନ୍ଦା -



LTI of Jena Bodra

Subita Mishra

Sarapani
Kankad...

କାମୁଡ଼ା ସୂତ୍ର

ଫୁଲଗା ଫୁଲ



LTI of Babuli Triu

TIKINA LTI



LTI of Jandak Triu

କମଳାକାନ୍ତ ପାଠକ -



LTI of Ganga Purty

Tura Munda.



LTI of Arjeem Barci



LTI of DutiKa Munda

ଅମୃତ ବେହରୀ

ବେହରୀ ବନ୍ଧୁ

Basant Dehury

 Lt. of Kuni Bari

ବିଶ୍ୱାସୀ ବାବୁ

 Lt. of Gurubani Murra

Balarozma Badara

Ditendra Lohara -

ବିଶ୍ୱାସୀ ବାବୁ

 Lt. of Pitambar Munda

ଅମୃତ ବେହରୀ

Mithun Badara

ବିଶ୍ୱାସୀ ବାବୁ

Sabita Mahanta

Sonapatna
Kankadool

 Lt. of Nandani Munda

Lt. of Sambani Gajjar

ବିଶ୍ୱାସୀ ବାବୁ

ଅମୃତ ବେହରୀ

Sambanath Bardua

 Lt. of Rukhu Lohara

ଉତ୍ତର - ଡା

ଉତ୍ତର ଓଡ଼ିଶା ସ୍ୱାଧୀନତା ସମିତିରୁ ମାଗୁଛି,
 ବି - ଶୁଣୁ ମାଗୁଛି, ଚିରିକୋମାଟାକି, ଧା. - ସୁଜିତା
 ଜି - ଲାଗୁଥିବା ଆଦି ଚିରିକୋମାଟାକି ଓ ଗରାବିଧା
 ଶାନ୍ତ ସ୍ଥାନରେ ଜିଲ୍ଲାକୁ ଜମିକୁ ଅବା ଜମିକୁ
 ଦମିକୁ ଦୁଃଖୀର କରାଣିକା ମିମନ୍ତେ ଡା ୨୧. ୦୧. ୨୦
 ଓ ଡା ୨୨. ୦୧. ୨୦ ରିମରେ ମନୁଷ୍ୟ ସହ
 ଓ ଅନୁକୂଳ ଚିନ୍ତା ବିଚାରରେ ଜନ ସାଧାରଣ
 କର୍ତ୍ତୃ ଅବସ୍ଥାରେ ମିମନ୍ତେ ଚିରିକୋମାଟାକିରେ
 ପ୍ରାୟ ୧୦୦୦.୦୦ (ଏକ ହଜାର ଶହ ଟଙ୍କା)
 ସହାୟ, ଜାକଡ଼ିମାକ କର୍ତ୍ତୃ କୁହେଲେ ଚିରିକୋ
 ଚିରିକୋମାଟାକିରେ ଜମିରେ ଆସିବ।

Received for payment of Rs. 1000/-
 (one thousand only)

Sabita Mohanta
 Sarapanch
 Kankadal G.P.



LTS of
 Mangulic
 Nayak.

Recd & Cancelled.

GRAM SABHA RESOLUTION FOR USE OF FOREST LAND FOR NON-FOREST PURPOSE

Gram Panchayat : Kankadapal
Village : Giringamali
Place : Village Mandap compound
Time : 11.00 AM Date : 22.06.2018

As per letter no. 18 Dated 13.06.2018 of the Block Development Officer, Sukinda, Palli Sabha was held today under Forest Rights Act 2006 to consider the use of forest land over 168.948 hectares in Forest Block No. 27 for non-forest purpose. The following officers and adult voters of Giringamali Revenue village attended the meeting.

Officers present -

1. Sarapanch, Kankadapal Gram Panchayat
2. Welfare Extension Officer
3. Revenue Supervisor, Kankadapal
4. Forest Guard, Sukinda
5. Executive Officer, Kankadapal Gram Panchayat

The Sarapanch, Kankadapal Gram Panchayat, presided over the meeting. The Sarapanch thanked the villagers present in the meeting as the meeting had the required quorum. The Sarapanch explained that the purpose of calling the present Gram Sabha is to consider the proposed use of 168.948 hectare forest land in Forest Block 27 for dumping of overburden of South Kaliapani and Sukurangi Mines of Odisha Mining Corporation Ltd.

The Welfare Extension Officer, Sukinda, explained the purpose of this meeting. He explained in detail to the villagers present in the meeting about the power conferred to the Gram Sabha regarding the individual rights, community rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. Then he explained in the meeting the detailed particulars and location of the proposed land through a map.

Field Inspection Report of the Revenue Supervisor, Kankadapal, in this matter was placed in the meeting. The area over 168.948 hectare applied by OMC Ltd. for use as overburden dump of South Kaliapani and Sukurangi Mines is forest land and is within Forest Block 27.

From the report of the Revenue Supervisor, Kankadapal, it is seen that nobody belonging to Scheduled Tribe or other traditional forest dweller category is inhabiting in the said forest land of 168.948 hectare in Forest Block 27. Nobody is depending in this area for bonafide livelihood needs, agriculture or any other traditional job in this area. Nobody claimed in the meeting any individual right or community right.

The proposal for use of the forest land for non-forest purpose of overburden dump of South Kaliapani and Sukurangi mines of OMC Ltd was discussed in detail from different angles in the meeting. Views of the villagers were called for about impact of the proposed project on livelihood of the villagers. The villagers were requested to furnish their views on the proposed project considering the interest of Scheduled Tribes and Other Traditional Forest Dwellers as per the provision of Forest Rights Act 2006.

From the discussion it was known that nobody belonging to Scheduled Tribe or other traditional forest dweller category is inhabiting, depending in this area for bonafide livelihood needs, agriculture, collection of minor forest produce, or any other traditional job either individually or as a community in this proposed project area. The villagers present in the Gram Sabha expressed that they have no objection if 168.948 ha. forest land of Forest Block 27 near Giringamali village is used as overburden dump of South Kaliapani and Sukurangi mines.

Hence, the Gram Sabha took unanimous decision to approve the proposal of using 168.948 ha. forest land near Giringamali for non-forest purpose as overburden dump of South Kaliapani and Sukurangi mines.

The meeting ended after the Sarapanch, Kankadapal GP, thanked the officers and villagers present in the meeting.

Sd/-
Sarapanch
Kankadapal G.P

Sd/-
Revenue Supervisor
Sukinda Tahasil

Sd/-
Forest Guard
Sukinda Section

Sd/-
Executive Officer
Kankadapal G.P

Sd/-
Welfare Extension Officer
Sukinda Block

ଗ୍ରାମପଞ୍ଚାୟତ କାର୍ଯ୍ୟାଳୟ, କାଙ୍କଡ଼ପାଳ

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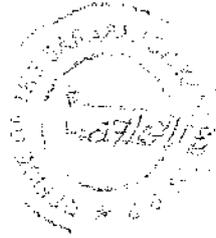
ପତ୍ର ସଂଖ୍ୟା : _____/୨୦୧୮

ତା: ୨୭/୦୭/୨୦୧୮

ପ୍ରାପ୍ତେଷୁ,

ମଣ୍ଡଳ ଉନ୍ନୟନ ଅଧିକାରୀ

ସୁକିମା ଗ୍ରାମ ପଞ୍ଚାୟତ ସମିତି, ସୁକିମା



ବିଷୟ: ଓଡ଼ିଶା ଖଣିନିଗମ ର (ଓ.ଏମ୍.ସି) ଦକ୍ଷିଣ କାଳିଆପାଣି ଓ ସୁକୁରଙ୍ଗି ଖଣିର ଓଭର ବଡ଼ନ୍ ତମିଙ୍ଗ ନିମନ୍ତେ ଫରେଷ୍ଟ ବୁକ ୨୭ ଅକ୍ଟର୍ଗତ ୧୬୮.୯୪୮ ହେକ୍ଟର ଜଙ୍ଗଲ କିସମ ଜମିକୁ ଅଣଜଙ୍ଗଲ କିସମ ଜମିରେ ରୂପାନ୍ତରିତ କରିବା ନିମନ୍ତେ ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା ।

ମହାଶୟ,

ଯାକପୁର ଜିଲ୍ଲା ମଣ୍ଡଳ ଅଧିକାରୀ ଏବଂ ମଣ୍ଡଳ ଉନ୍ନୟନ ଅଧିକାରୀ ସୁକିମା କି ଦିବ୍ୟ ଅନୁଯାୟୀ କାଙ୍କଡ଼ପାଳ ଗ୍ରାମ ପଞ୍ଚାୟତ ଅନ୍ତର୍ଗତ ଗରାମିଆଁ ଏବଂ ଗିରିଙ୍ଗାମାଳି ରଜସ୍ୱ ଗ୍ରାମ ନିକଟରେ ଥିବା ଓଡ଼ିଶା ଖଣିନିଗମର (ଓ.ଏମ୍.ସି) ଦକ୍ଷିଣ କାଳିଆପାଣି ଓ ସୁକୁରଙ୍ଗି ଖଣିର ଓଭର ବଡ଼ନ୍ ତମିଙ୍ଗ ନିମନ୍ତେ ଫରେଷ୍ଟ ବୁକ ୨୭ ଅକ୍ଟର୍ଗତ ୧୬୮.୯୪୮ ହେକ୍ଟର ଜଙ୍ଗଲ କିସମ ଜମିକୁ ଅଣଜଙ୍ଗଲ କିସମ ରେ ରୂପାନ୍ତରିତ କରି ବ୍ୟବହାର କରିବା ପାଇଁ କାଙ୍କଡ଼ପାଳ ଗ୍ରାମ ପଞ୍ଚାୟତ ତରଫରୁ ପଲ୍ଲୀସଭା ପାଇଁ ନୋଟିସ ସଂଖ୍ୟା - ୧୮, ତା- ୧୩.୦୭.୧୮ ରିଖ ଧନୁଆୟା ଏବଂ ତେଜୁରା ମାଧ୍ୟମରେ ଗରାମିଆଁ ଏବଂ ଗିରିଙ୍ଗାମାଳି ରଜସ୍ୱ ଗ୍ରାମର ସର୍ବସାଧାରଣଙ୍କୁ ଡକାଇ ଦିଆଯାଇଥିଲା । ତା-୨୧.୦୭.୨୦୧୮ ଓ ୨୨.୦୭.୨୦୧୮ ରିଖ ଦିନ ୧୧.୦୦ ଘଟିକା ମଧ୍ୟାହ୍ନରେ ଏକ ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା ଗରାମିଆଁ ଏବଂ ଗିରିଙ୍ଗାମାଳି ରଜସ୍ୱ ଗ୍ରାମର ଗ୍ରାମମଣ୍ଡପ ଠାରେ ଶାନ୍ତି ଶୃଙ୍ଖଳାର ସହିତ ସମାପନ ହୋଇଥିଲା । ଉକ୍ତ ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା ମନୁଷ୍ୟ ସମସ୍ତ ନିମ୍ନ ଲିଖିତ ବିବରଣୀ ଆପଣଙ୍କର ଘୋଟଣାପୂର୍ବ ପ୍ରଦାନ କରୁଅଛି ।

- ୧. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭାର ବିଷୟ ବବରଣୀ
- ୨. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭାର ଭିଡ଼ିଓ ଚିତ୍ର
- ୩. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭାର ସ୍ଥିର ଚିତ୍ର
- ୪. ତେଜୁରା ଦେଇଥିବା ବ୍ୟକ୍ତିଙ୍କର ରସିଦ୍
- ୫. ଗ୍ରାମସଭା/ପଲ୍ଲୀସଭା ରେ ଉପସ୍ଥିତ ଥିବା ସମସ୍ତ ଗ୍ରାମବାସୀଙ୍କର ଦସ୍ତଖତ

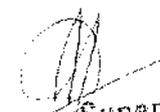
Subeta...
ସରପଞ୍ଚ, କାଙ୍କଡ଼ପାଳ

ପାଠ୍ୟପୁସ୍ତକ ଓ ଶିକ୍ଷା ବିଭାଗର ଆଦେଶାନୁସାରେ କାର୍ଯ୍ୟ ପାଇଁ ।
 ତଦନୁସାରେ ଶିକ୍ଷା ବିଭାଗର ଦ୍ଵାରା ପଠାଯାଇଥିବା ଓ
 ସ୍ଵାଧୀନତା ଦିନର ଉତ୍ସବ ପାଳନ କରିବା ପାଇଁ ଉଦ୍ଦେଶ୍ୟରେ
 ବିଭିନ୍ନ ପାଠ୍ୟପୁସ୍ତକ ଓ ଶିକ୍ଷା ବିଭାଗର ଦ୍ଵାରା ପଠାଯାଇଥିବା
 ଆଦେଶ ୧୦୮-୧୪୮ ଦ୍ଵାରା ଦିଆଯାଇଥିବା ଅନୁସାରେ
 କାର୍ଯ୍ୟକ୍ରମ ପ୍ରସ୍ତୁତ କରାଯାଇଥିବା ଓ ତଦନୁସାରେ
 ଆବଶ୍ୟକୀୟ ପଦକ୍ଷେପ ଗ୍ରହଣ କରାଯାଇଥିବାରୁ
 ଉପରୋକ୍ତ ପଦକ୍ଷେପ ଗ୍ରହଣ କରିବାକୁ ଅନୁରୋଧ କରାଯାଉଅଛି ।

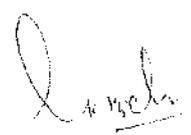
ଏହି ଆଦେଶ ସମ୍ବନ୍ଧରେ ପଠାଯାଇଥିବା ଓ ସ୍ଵାଧୀନତା
 ଦିନର ଉତ୍ସବ ପାଳନ କରିବା ପାଇଁ ଉଦ୍ଦେଶ୍ୟରେ
 ବିଭିନ୍ନ ପାଠ୍ୟପୁସ୍ତକ ଓ ଶିକ୍ଷା ବିଭାଗର ଦ୍ଵାରା
 ପଠାଯାଇଥିବା ଆଦେଶ ୧୦୮-୧୪୮ ଦ୍ଵାରା
 ଦିଆଯାଇଥିବା ଅନୁସାରେ କାର୍ଯ୍ୟକ୍ରମ
 ପ୍ରସ୍ତୁତ କରାଯାଇଥିବା ଓ ତଦନୁସାରେ
 ଆବଶ୍ୟକୀୟ ପଦକ୍ଷେପ ଗ୍ରହଣ କରାଯାଇଥିବାରୁ
 ଉପରୋକ୍ତ ପଦକ୍ଷେପ ଗ୍ରହଣ କରିବାକୁ ଅନୁରୋଧ କରାଯାଉଅଛି ।

ତଦନୁସାରେ କାର୍ଯ୍ୟକ୍ରମ ପ୍ରସ୍ତୁତ କରାଯାଇଥିବା ଓ ତଦନୁସାରେ
 ଆବଶ୍ୟକୀୟ ପଦକ୍ଷେପ ଗ୍ରହଣ କରାଯାଇଥିବାରୁ
 ଉପରୋକ୍ତ ପଦକ୍ଷେପ ଗ୍ରହଣ କରିବାକୁ ଅନୁରୋଧ କରାଯାଉଅଛି ।

Sabita Mohanta
 Sarapancha
 Kankadopal G.P


 Revenue Supervisor
 Sukinda Tahasil

Sudanta Nayak, P.O.
 Sukinda Section, Forest Guard


 Executive Officer
 Kankadopal G.P


 22.6.18
 District Education Officer
 SORINDA BLOCK

ଦିଅନ୍ତି କୌଣସି ଦମିତ୍ ଅଧକାରକୁ ବ୍ୟବହାର କରାନ୍ତି ପ୍ରାମାଣ୍ୟତା: ୧୩

ଗ୍ରାମ ପଞ୍ଚାୟତ: ଜାଣିବ ତାଙ୍କ
ଗ୍ରାମ : ବିଶିଷ୍ଟାମାଳି
ସ୍ଥାନ : ଗ୍ରାମ୍ୟ ମହୁଡ଼ା ପରିସର
ତା: ୨୨.୦.୨୦୧୮ ପୂର୍ବରୁ ୧୧.୦୦ ଡ.

ଦ୍ରବିଡ଼ ଗ୍ରାମସାମିତି ସଭା:

ମୁର ମହାନ୍ତି

ମଧୁସୂଦନା ଜିତାମାଳା

ମାନ୍ୟ ସି ବିଶ୍ୱା

Sangram Parstej

ଅମିତା କୁମାରୀ

ରାମା ଦାମା



Rajani Pradhan

ମୁନି ମହାନ୍ତି

ରାଜେନ୍ଦ୍ରା ସେନା

ରାଜେନ୍ଦ୍ରା ଦାସ



Sabi Mahanta

Sabi Mahanta

Sarapanch
Kankadai

Rajendra Pringia



Suneel Chandra



Govind Munda

ଅରୁଣ ଚମ୍ପା

Arjun Chandra

Mouka Mahanta

|| ଶ୍ରୀ ଶ୍ରୀ ||

LTI of Chandu Munda.

|| ଶ୍ରୀ ଶ୍ରୀ ||

Mouka Mahanta

LTI Santi Timia

|| ଶ୍ରୀ ଶ୍ରୀ ||

|| ଶ୍ରୀ ଶ୍ରୀ ||

|| ଶ୍ରୀ ଶ୍ରୀ ||

Netama Pengua

Mouka Mahanta & Saratha Pengua

Sabeta Mahanta
Sarapanon
Kankadpai

|| ଶ୍ରୀ ଶ୍ରୀ ||

|| ଶ୍ରୀ ଶ୍ରୀ ||

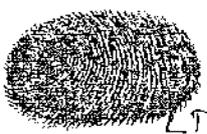
|| ଶ୍ରୀ ଶ୍ରୀ ||
pendora Dehuri

Mouka Mahanta
Muntala Dehuri

|| ଶ୍ରୀ ଶ୍ରୀ ||

ପଦ୍ମିନୀ ମହାନ୍ତି

ସୁନ୍ଦରୀ ମହାନ୍ତି



Dukhabandhu mahanta

LTI

ଓପନି ଓପନକର

ଶେଫଳୀ ମହାନ୍ତି

ଶିଳା ମହାନ୍ତି

ପତି ଚରଣ

ଶୋକମୟ ମହାନ୍ତି



Rega munda

ଚନ୍ଦ୍ରମାଳିକା ପ୍ରଧାନ



champa pradhan

ରାଧିକା ମହାନ୍ତି

ରାଧିକା ମହାନ୍ତି

ସୁକାନ୍ତି ଚିନ୍ତା

Lalita Pradhan

ଶାନ୍ତି ମହାନ୍ତି

Sukura munda

କାମଳା ମହାନ୍ତି

Sabeta Mahanta
Sarapanch
Kankadai G

Sousmāta Mohanta.

ଶାନ୍ତନୁପୁତ୍ର ମହାନ୍ତି

Sambunath Mohanta

Tansa Mohanta

Tethu Mohanta

ଭୈରବୀ ମହାନ୍ତି

Sebati Mohanta

Syikashna Mohanta

Rachandra Mohanta

ଦେବୀ ମହାନ୍ତି

ବିଭୀଷଣ ମହାନ୍ତି

Dilipa Mohanta

Rajani Mohanta

Damayanti Mohanta

Sasita Mohanta
Sarpanti
Kankadai G.

ଶୁକା ମହାନ୍ତି

Raghunath Mohanta

Preeta Mohanta

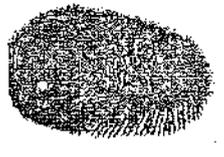
Rumudini Mohanta

Prakash Kumar Mohanta

Narmayan Pingua

Madhusudan Mahanta
ପଞ୍ଚମାଳା ମହାନ୍ତି

କାଟୋଜି ଦେବୁରୀ
ବିକାଳ ନାଥ



LTI of Putti Mahanta
ଜେମା ମହାନ୍ତି

ମାଳି ଦାସ



LTI of Chandan Chandra
ଚନ୍ଦ୍ରାଚାରଣ ମହାନ୍ତି

ଦିବା ଦେବୁରୀ



LTI of Benga Dehuri

ମିନା ମୁଣ୍ଡା -



LTI of Ramsingh Mahanta

Sukuman Mahanta

ଶ୍ରୀକ ସାହୁ

ଚୋକାଳା ମହାନ୍ତି

Sabita Mahanta



LTI of Sumitra Munda

Sarapani
Kankubai

ଶ୍ରୀକାନ୍ତ ମହାନ୍ତି

ପ୍ରଧାନ ମୁଣ୍ଡା

ମାଳତୀ ଦେବୁରୀ



LTI of Binoy Munda

ସିଦ୍ଧାନ୍ତ ମହାନ୍ତି

କଳାହୀ ମହାନ୍ତି



LTI of Drampati Munda.

ଭାଲିମ୍ବ ମହାନ୍ତି

ସମାଜ୍ୟ ମହାନ୍ତି

ମାମିନା ମହାନ୍ତି

Chandrabhawan Mahanta



LTI of Arjuna Timia

ମାମତା ମହାନ୍ତି

Mamata Mahanta

କାମଲି ଦେବୁ



LTI of Kamali Dehuri



LTI of Nabagyan Mahanta.



LTI of Bahula purty

ସମାଜ୍ୟ ସୁଶ୍ରୀ



LTI of Sama Munda.

ସମାଜ୍ୟ ସୁଶ୍ରୀ

ଚୁଟାଲି ଅପରାଜିତା

chhotu mahanta

Toni Mahakuda



LTI of Patanti Dehuri.

Sasita Mahanta
Sarapani
Kankadool G.

Jamal Kumar Mahanta

LTI of Nanak Munda

Sudarsan Pinguor

ସାମାନ୍ୟ ମହାବଳ

ଉତ୍କଳ ସାହିତ୍ୟ

ବିଷୟମାନଙ୍କ ସମ୍ବନ୍ଧ

LTI of Mani Hingra

ମାତୃଭାଷା ମହାବଳ

ଉତ୍କଳ ସାହିତ୍ୟ

ବିଷୟମାନଙ୍କ ସମ୍ବନ୍ଧ

LTI of Sibani Pongua

Sabita Mahanta

Sarapani
Kankadoli C.O.

ଫୁଲ ମହାବଳ

LTI of Sanswati Mahakud.

Budhadev Mahanta

LTI of Singami Munda

ଫୁଲ ମହାବଳ

Santan Pingua
କେଳି କେଡ଼ି



LTI of Mecha Banora..

Manguti Pingua

ଦସନା ମାଣ୍ଡା

ଦମଦମ ମେଞ୍ଚୁଆ



LTI of Erorerkerce Pingua

କେର କେରୁଆ



କୃଷକେଡ଼ି ପ୍ରଧାନ

କୃଷିକା କୃଷୀ -



LTI of Kanak Champa.

କାକି ମାଣ୍ଡା

କୃଷକା କୃଷୀ
କୃଷିକା କୃଷୀ

Sabita Mohanta
Sarpanch
Kankadinal G.P.

Sona Pingua
ମାଣ୍ଡା ମାଣ୍ଡା



LTI of Gani Pingua

ମାଣ୍ଡା ମାଣ୍ଡା



LTI of Rajendra Pingua

Rabindra Munda

ନିଲମ୍ବରୀ ସମ୍ବନ୍ଧ

ନିଲମ୍ବରୀ ନିଲମ୍ବରୀ

Parju Dehuay

ରଞ୍ଜିତୀ ସଞ୍ଜିତୀ

morchuspingun

ରଞ୍ଜିତୀ ନିଲମ୍ବରୀ



LTI Menja mahakud



LTI Mani senku

ରଞ୍ଜିତୀ ସଞ୍ଜିତୀ



Routa Bankera

Bahuna munda

ରଞ୍ଜିତୀ ସଞ୍ଜିତୀ

ରଞ୍ଜିତୀ ନିଲମ୍ବରୀ



LTI Kunti Bawa

Radhika champia

Mushasam Pradhan

ନିଲମ୍ବରୀ



LTI Gagabandhu Pansury -

Sabita Mahanta

Sarapani Kankadoli

GICEDTJALI MOHANEOL

ଭାରତ କିଶୋର ମହାନ୍ତି

କଂପ୍ୟୁଟର ମହାନ୍ତି

NICERONJON MOHANTA



LT1 Sarbeswar Mahanta

Hanhan Mahanta

Rosmita Mohanta

Daitari Mahanta



LT1 Siva Mahanta

ସିଦ୍ଧାନ୍ତ ମହାନ୍ତି

ଶିବ ମହାନ୍ତି

Keshabati Pradhan

Biswanatha Pradhan

Prasanna Mohanta

ବିନୟ ମହାନ୍ତି

Sabita Mohanta

Sarepta
Kanka...



LT1 Jena Mahanta

ଉତ୍କଳ ମହାନ୍ତି

Gowinda Mohanta

Gomingsingh Mahanta

গোমিংসিংহ মহান্ত

০৩৭০ ২৩/১



LTI of Pala Pingua



LTI of Baci Mahanta

বাসন্তী কামর মহান্ত

Basanti Kamur Mahanta

বাসন্তী কামর

Aruna Mahanta



LTI of Ramakanta Mahanta

রামকান্ত মহান্ত

Saratan Mahanta

Sabita Mahanta

Sarapani Mahanta
Kankard...



LTI of Sukamata Pingua



LTI of Kuni Dehuni



LTI of Nurupati Mahanta

Laxmi Champa

লাক্ষ্মী চম্পা

লাক্ষ্মী চম্পা



LTI of Sushila Pingua

সুশীলা পিঙ্গু

ବେମା ବିଜୁଆ

ସୁଭୋଧ ସୁଭୁ

ବାବାଜୀ ବିଜୁଆ

LTI of Chandra Hembram,
Sambhurnath Meherata,

ସୁଭାଷି ବିଜୁଆ

Bhajanwar Akhoy



LTI of Saita Pradhan

Minati Pradhan

Laxmi Pringua



LTI of Sukarameni Party

ସୁକରମେନି ପାର୍ଟି

ପୁସ୍ପା ଦେବୀ

Puspa Dehary

Sabita Mohanta

Sarapatra
Kankana



LTI of Labanga Pradhan



LTI of Manu Munda

ମନୁ ମୁଣ୍ଡା



LTI of Rama Pringua



LTI of Gurubani Munda

Saracwati Pradhan

Chotuna Mahanta

ଚିତୁନା ମହାନ୍ତ

କାଳୀଚର ଚଉଧୁରୀ

Kalichar Choudhary

Maheswar Mahanta



LTI of Srimati Mahanta

ଶ୍ରୀମତୀ ମହାନ୍ତ

ସ୍ତ୍ରୀମତୀ ମହାନ୍ତ



LTI of Neta Mahanta

ନେତା ମହାନ୍ତ



LTI of Sreerendha Mahanta

Sabitra Mahanta
Santipada
Kandapa 9 -

Jharana Mahanta

ଜହରଣା ମହାନ୍ତ

ପ୍ରଦୀପ ମହାନ୍ତ



LTI of Pllanga Sunde

Bhagabati Mahanta

ଭଗବାତୀ ମହାନ୍ତ

ପ୍ରସିଦ୍ଧା ମହାନ୍ତ

କାଳୀଚର ଚଉଧୁରୀ

Parameswar Mohanta

କୃଷ୍ଣ ମହାନ୍ତି

ପ୍ରମୋଦ ମହାନ୍ତି

Boundaban Hemram

ଚନ୍ଦ୍ର କୁମାର



LTI of Tribu Maada

ସୁକୁମେଇ ମହାନ୍ତି

ଗୋବିନ୍ଦ ମହାନ୍ତି

Sukomei Mohanta

ନୀଳମଣି ମହାନ୍ତି

ଗୋବିନ୍ଦ ମହାନ୍ତି

Sarata Mohanta

ଗୋବିନ୍ଦ ମହାନ୍ତି

Surama Mohanta

Kallesh Mohanta

LTI OF Jaiadhar Pradhan

ଜ୍ଞାନୀ ମହାନ୍ତି

Jyotsnani Mohanta

ରଞ୍ଜନୀ ମହାନ୍ତି

ନିର୍ମଳା ମହାନ୍ତି

ପ୍ରମୋଦ ମହାନ୍ତି

Pranta Mahanta

Beukanta Mahanta

ଧୀରଜୀ ମହାନ୍ତି

ରଞ୍ଜନୀ ମହାନ୍ତି

Labita Mohanta

Sarapatna Kankadesa

Prateep Mahanta

ପ୍ରୀତି ସମ୍ପାଦନା -
କବି ସମ୍ପ୍ରଦାୟ

କବି ସମ୍ପ୍ରଦାୟ

Balabharata Mahanta

କବି ସମ୍ପ୍ରଦାୟ

କବି ସମ୍ପ୍ରଦାୟ -

Bharati Mahanta

Kanaka Dehury

Devasen Padhan

Bipin Mahanta

Tirthabasi Mahanta

Hrushikesh Mahanta

କବି ସମ୍ପ୍ରଦାୟ

କବି ସମ୍ପ୍ରଦାୟ

କବି ସମ୍ପ୍ରଦାୟ

Kalyana Mahanta

କବି ସମ୍ପ୍ରଦାୟ

Badyadhar Mahanta -

Kanchankala Mahanta

କବି ସମ୍ପ୍ରଦାୟ

meerakhi mahanta

କବି ସମ୍ପ୍ରଦାୟ

Kanaka Dehury -

Kanaka Mahanta

Sabita Mahanta
Sapason
Kankadai B

Sunita Mohanta

Manoj Mohanta

ଜଗନ୍ନାଥ ମହାନ୍ତ

Jagendra Mohanta



SI of Mali Mahanta

Smt. Rupali Aparajita

ଶ୍ରୀମତୀ ରୁପାଳୀ

ଅପାରଜିତା

Rupali Mohanta



SI of Prasad Nayak

ପ୍ରସାଦ ନାୟକ

Mali Mohanta



SI of Uli Dehuri

Sabita Mohanta
Sarapani
Kankadal G.P.

Niranjan Pradhan

ପ୍ରଧାନ

ନିରଞ୍ଜନ ପ୍ରଧାନ

Sri Kanta munda

କାନ୍ତା ମୁନ୍ଦା

Sasireba mahanta



Lata Galadhare Mahanta

Bayn Dehary

ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ

Rajendra Panda,

Lilimari Pradhan

Allaha Dehure

Ananda munda

Sota Dehure

ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ

ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ

Jayanti mahanta

ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ

Sarpanti munda

Balima mohakud

ଶ୍ରୀମତୀ ଶ୍ରୀମତୀ

Raju Sai

Anita mahanta

Sankar Mahanta

Padmabati mahanta

Sabita Mahanta
Sarpanti
Kankadul

Sunil Kumar Mahanta

Geetanjali Mahanta

Manoj Kumar -

Manoj Kumar -

Manoj Kumar

Mukta Paray

Mukta Paray

Sasmita Munda

Akshaya Dehury

Akshaya Dehury

Akshaya Dehury

Ganga Hemram

Gopi Hanaga

Namita Dehury

Namita Dehury

Babji Mahanta

Saila Pradhan

Ranjit Naik

Bonati Behera

Bonati Behera

Bonati Behera

Sabeta Mahanta
Sarapani
Kankadal

ଶ୍ରୀମତୀ ସୁଷମା

ଶ୍ରୀମତୀ ସୁଷମା



LT OF Pechi Nayak



LT OF Ksheni Nayak

Sasmita Dehuri



LT OF Rasika Pradhan

Anica Mohakud.

ଶ୍ରୀମତୀ ସୁଷମା
ଶ୍ରୀମତୀ ସୁଷମା

ଶ୍ରୀମତୀ ସୁଷମା

Demayanti Behera

Prabata Mohanta.

Prilla Mohanta

Prarekushna Mohanta

ଶ୍ରୀମତୀ ସୁଷମା

ଶ୍ରୀମତୀ ସୁଷମା
Pritha Pusty

ଶ୍ରୀମତୀ ସୁଷମା

Suresh Samad

Sarbata Mohanta
Sarapa
Kandakara

କୋଷ୍ଠିକ ମହାନ୍ତି

କୋଷ୍ଠିକ ମହାନ୍ତି



LTI of K.R. Samant Mahanta

Sambani Digi

କୋଷ୍ଠିକ ମହାନ୍ତି

କୋଷ୍ଠିକ ମହାନ୍ତି

କୋଷ୍ଠିକ ମହାନ୍ତି

କୋଷ୍ଠିକ ମହାନ୍ତି



LTI of Gora Tripathy

କୋଷ୍ଠିକ ମହାନ୍ତି

Maha Mahanta

Jabita Mahanta

କୋଷ୍ଠିକ ମହାନ୍ତି

Sudipa Bapatra

Tura Tera



LTI of M. K. Mahanta

Govinda Munda



LTI of Debaki Parthy

Bisu Parthy

minati Pingua

१/१७। १/७

Hadibandha mahanta

२१/१७। १/१७

Kadar Munda

Sumitra Badhan

Kabita mahanta

१/१७। १/१७

Orpa bandha mahanta

LT OF Sukura mahanta

panchadev pradhan

Rayanta Dehury -

manjil munda

Sasmita Mahanta

Sesera mahanta

Sabita mahanta

SARANI
KANKAL

LT OF Kuanzi gandua munda

१/१७। १/१७

Ramesh munda -

Giridhari mehera

Durga ch munda

Bartan Kumar Alakala

Nanesh mahanta

Badani Mehury

Sushant Mahanta
Kalabati Pradhan

ଶୁଶାନ୍ତ ମହାନ୍ତ
କାଳାବତୀ ପ୍ରଧାନ

Gopi Munda

ଗୋପୀ ମୁନ୍ଦା

Deepak Kumar Mahanta

Satyaprakash Mahanta

Subash Chandra Mahanta

ସୁଭାଷ ଚନ୍ଦ୍ର ମହାନ୍ତ



LTS OF Hema Mahanta

Satyaban Mahanta



LTS OF Sabitri Mahanta

ସାତ୍ୟବାନ ମହାନ୍ତ

ଶାନ୍ତି ମହାନ୍ତ

Sabita Mahanta

Satyabrata Mahanta

Sarabhi Mahanta

ସାରାଭୀ ମହାନ୍ତ

Samal Mahanta

Aranna munda
ଅରାଣ୍ଣା ମୁଣ୍ଡା
Chakradhara munda



LT1

ଶ୍ରୀ ରେଣୁ ମହାନ୍ତି
କର୍ମ ମହାନ୍ତି
ସୁ(ର) ବି(କ) ମହାନ୍ତି



LT1 OF Kerc Saira

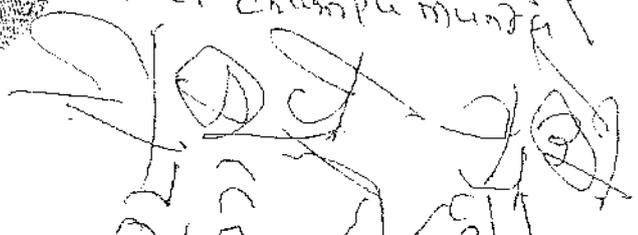
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ନାନ୍ଦି ମୁଣ୍ଡା
ନାମୁ ମୁଣ୍ଡା
ନାମୁ ମୁଣ୍ଡା

ଦେବା ବାଙ୍କିରା

ଦେବା ବାଙ୍କିରା
Dena Bankira

Sabita Mahanta
Sarapani
Kankadasi

ଶୋଭାଙ୍କି ଚନ୍ଦ୍ରା ମହାନ୍ତି
LT1 of Champa munda



Padmabati Mahanta
Lakshmi Mahanta
Jasmati Mahanta



LT1 OF Rajani munda

Sita Mohanta



Chakradhara Munda

Sankara Potari Mohanta

Sita munda

Mansingh Sirkha

ଶ୍ରୀ ମୁଖା

ଶ୍ରୀ ମୁଖା

Beswanath munda

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ଶ୍ରୀ ମୁଖା

Gouranga Munda

Dalajobinda Mohanta

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ଶ୍ରୀ ମୁଖା

Sabita Mohanta
Sarapani
Kankadai G.O.



LT of Anjana Munda



LT Belasani Mohanta



LT of maha munda

Kaila Kanda munda

ଶ୍ରୀ ମୁଖା

Pratima Mohanta

ଶ୍ରୀ ମୁଖା

ଶ୍ରୀ ମୁଖା

~~Prashanta~~
Om Prashanta

Prashanta ke mahanta
mitrasen mahanta
ॐ नमो भगवते वासुदेवाय

LT1 OF RASA MAHANTA
Chetrasen mahanta -

LT1 OF SURENDRA MAHANTA
Narendra mahanta

LT1 OF PITABASA MAHANTA
Raja Pradhan

ॐ नमो भगवते वासुदेवाय

Sarata Pradhan

ॐ नमो भगवते वासुदेवाय

Sankhata mahanta

Geltanjari mahanta

Sabita Mahanta
Sarapatil
Kankab...

LT1 OF LAXMAN MAHANTA

Maharaja Mahanta

ॐ नमो भगवते वासुदेवाय

Bayana Mahanta

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- 3) ...
- 4) Samatana manala
- 5) ...
- 6) ...
- 7) Kautika Party
- 8) ...
- 9) Gresh Party
- 10) Kaira party
- 11) ...
- 12) ...
- 13) ...
- 14) Balca Party
- 15) Basen party
- 16) ...
- 17) Bijay Hembaram
- 18) ...
- 19) Shyamendras party
- 20) ...
- 21) ...
- 22) ...
- 23) Chandra manala

Sabeta mahanta
Sarpanch
Kankadoli G.O

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11/11/11

Sabita Mehta
Saraswati
Kankadai B o

Sabitri Mohanta
Lipika Sundari Mahanta
Sanjukta Mohanta

 Lt. A/a Mohanta

 Lt. Georci Mohanta

Babita Mahanta

 Lt. malini mahanta

 Lt. Lamoni mahanta

ମିଳିତୀ ସମିତି

କାନ୍ତଳା ସମିତି

 Lt. Euhouton Mohanta
Anjali Mohanta

 Lt. Lata Mohanta

କଳିଙ୍ଗୀ ସମିତି

 Lt. Gopepa mahanta

 Lt. pana mahanta.
Annapurna Mahanta

Sabita Mohanta
Sarpanch
Kankadul G.O

 Lt. pramilla mahanta

 Lt. Meha mahanta
ମିଳିତୀ ସମିତି

Rabindrakumar Mahanta

ରବିନ୍ଦ୍ର କୁମାର ମହାନ୍ତ

୧୯୯୯

Hemanta Mahanta



L.T. of Parameswar Mahanta

Jishuarchy Mahanta

Narendray Mahanta

ନୀରଂଦ୍ର ମହାନ୍ତ

Nitamanani Mahanta



L.T. of Bhola Mahanta

ଭୋଳା ମହାନ୍ତ



L.T. of Tuni Mahanta

Jayachidhi Mahanta

ଜୟଚିଦ୍ଧି ମହାନ୍ତ

Doona Mahanta



L.T. of Kalandi Mahanta

Nilambro Mahanta

ନିଲମ୍ବ୍ର ମହାନ୍ତ

Gadadhar Mahanta

ଗଦାଧର ମହାନ୍ତ

Lakmi Dhar Mahanta

Sabita Mahanta

ସବିତା ମହାନ୍ତ

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Sabita Mohantra
Saraswati
Kankadai C =

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ସୁଧାକର ମହାନ୍ତ

Ramod Ky Mahanta

ଶ୍ରୀରାମ ଚନ୍ଦ୍ର ମହାନ୍ତ

Kruni Mahanta

Sujit Mahanta



LTI Nishal Mahanta

ସୁନୀଲ ମହାନ୍ତ

ସାମୁଏଲ ମହାନ୍ତ



LTI of Alizepa Mahanta



LTI of Parahari Mahanta

Aekha Mahanta



LTI of Rashmi Mahanta

Panesh Mahanta



LTI of Kamala Mahanta

Suresh Mahanta

Rekha mahi Mahanta

ଚନ୍ଦ୍ରମୋହନ ମହାନ୍ତ

ଶ୍ରୀମତୀ ମହାନ୍ତ

Chandromah Mahanta

Geeta Nand Mahanta

Ail Khe Mahanta

ସୁନୀଲ ମହାନ୍ତ

Sabita Mahanta
Sarapani
Kankad...



LTI of Abhishek Mahanta



LTI of Champa Mahanta

Akhila Pradhun
Pravakar Mohanta

Dillip Kumar Mohanta

ଅକ୍ଷୟ କୁମାର ମହାନ୍ତି

ଉତ୍ତମ ମହାନ୍ତି
ମନୋଜୟ ମହାନ୍ତି

Bhagirathi Mohanta

ଭଗିରଥୀ ମହାନ୍ତି

Renzaranz Mohanta

ରଞ୍ଜରାଜ ମହାନ୍ତି



R. J. Madamunda

ଉଷାକାନ୍ତ ପ୍ରଧାନ

Usharanz Mohanta



L. J. Mangali Mohanta

ଲକ୍ଷ୍ମୀ ପ୍ରଧାନ

ସୁକ୍ଷ୍ମା ପ୍ରଧାନ

Mishra Pradhan

Mamata Pradhan

ମମତା ପ୍ରଧାନ

ଉପାଧ୍ୟକ୍ଷା ପ୍ରଧାନ

ଉପାଧ୍ୟକ୍ଷ ପ୍ରଧାନ

ମମତା ପ୍ରଧାନ

Mamata Pradhan

ଉପାଧ୍ୟକ୍ଷ ପ୍ରଧାନ

ଉପାଧ୍ୟକ୍ଷ ପ୍ରଧାନ

Sabita Mohanta
Sarapani
Kankadpai G. P.

Remakanta Mohanta,
Buddhaditya Pradhan



L.T. Jena Mohanta

ଶ୍ରୀମତୀ ସମ୍ପ୍ରଦାୟ

Lakshminarayana

ଶ୍ରୀମତୀ ସମ୍ପ୍ରଦାୟ
ଶ୍ରୀମତୀ ସମ୍ପ୍ରଦାୟ

Bhopal Mohants
Makunda Mohanta



L.T. Pasupati Mohanta
Jagabandhu Mohanta
Sanda Mohanta
ଭୟାଳୀ ମହାନ୍ତ
Bhayaalhi Mohanta



L.T. Ratha Pradhan



L.T. Ratana Pradhan



L.T. Dusia Pradhan

ଶ୍ରୀମତୀ ସମ୍ପ୍ରଦାୟ
ଶ୍ରୀମତୀ ସମ୍ପ୍ରଦାୟ



L.T. Jaganmohan Pradhan

Jena Munda
Jaganmohan Mohanta
Pabitra Mohanta

Sabeta Mohanta
Sarepatra
Kankadpal

1) श्री केशव महाराज साहू 

2) DRAMANI MAHANTA

श्री केशव साहू 

3) श्री केशव साहू 

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Shyamahakur

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श्री केशव साहू

श्री केशव साहू 


Sabita Mahanta
Sahupada
Kankadga

Bidyadhas mahanta

Raghnath Mahanta

Tankadhara Mahanta

Padma Lochan Mahanta

ସୁଧୀରନ ମହାନ୍ତି

ରାମଚନ୍ଦ୍ର ସାହୁ

Surat CH mahanta

Golokha Mahanta

Subash CH Mahanta

ବିକ୍ରମ ମହାନ୍ତି

Alham mahanta

ସମ୍ବଳ ମହାନ୍ତି

Jaganath mahanta

ନରସିଂହ ମହାନ୍ତି

ନରସିଂହ ମହାନ୍ତି

Ganomath mahanta

Basant Kumar mahanta.

Mamata mahanta

Charn Prabhat mahanta

ସୁଧୀରନ ମହାନ୍ତି

Sukumar Pragna

Kulamani Dehuri.

Sabitra mahanta.
Saraswati
Kankada P. S.

Maya munda

ସୁମିତ୍ରା ମେମ୍ବରାମ୍

Padest mohanta
Wahni wawa maha

Jhara ch mahanta

ଲିପିକା ମହାନ୍ତି

ସମାଜ ସମାଜ
ସମାଜ ସମାଜ

Chandramani Mahanta



LT1 OF Sambhujeth mahanta

Sumitra Membramb



LT1 OF Pitambar mahanta

Babuti mahanta

ସମାଜ ସମାଜ



LT1 OF Lemba munda

Kandna munda

ସମାଜ ସମାଜ

Sabeta mahanta
Sardar
Kandna munda

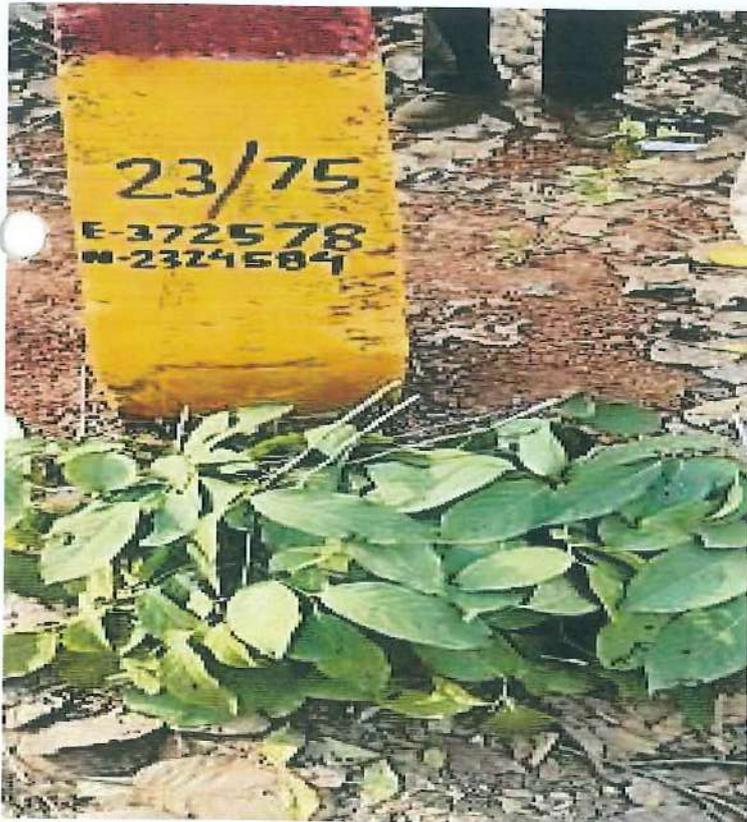


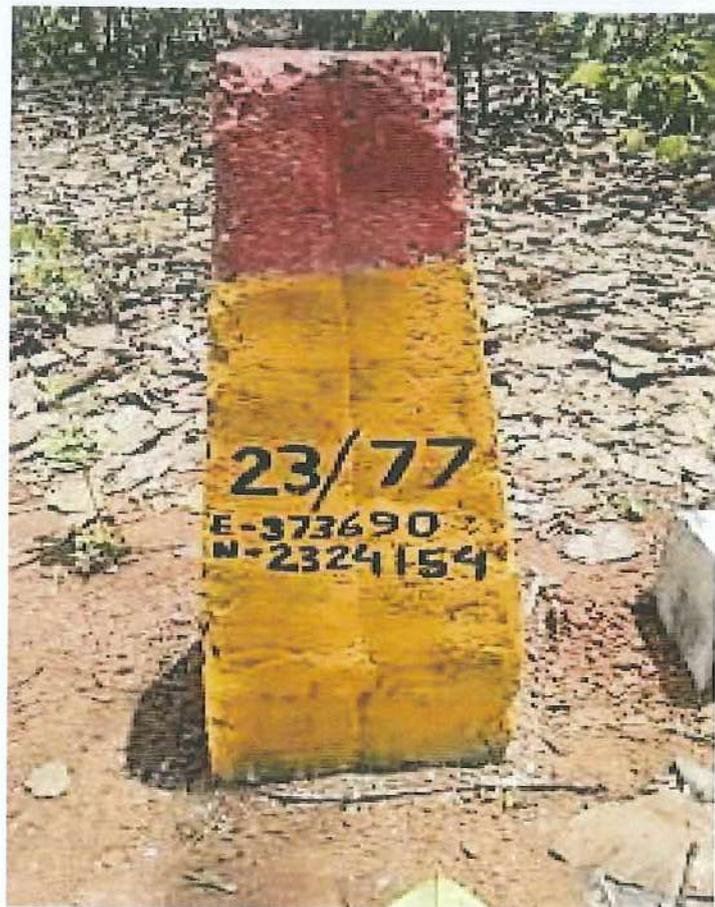
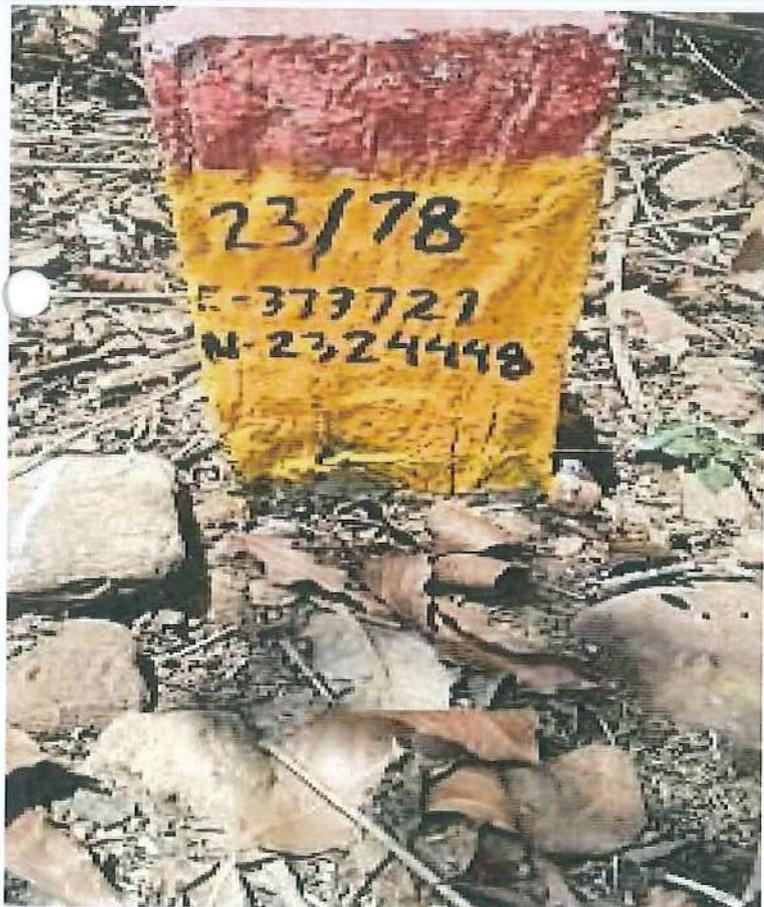
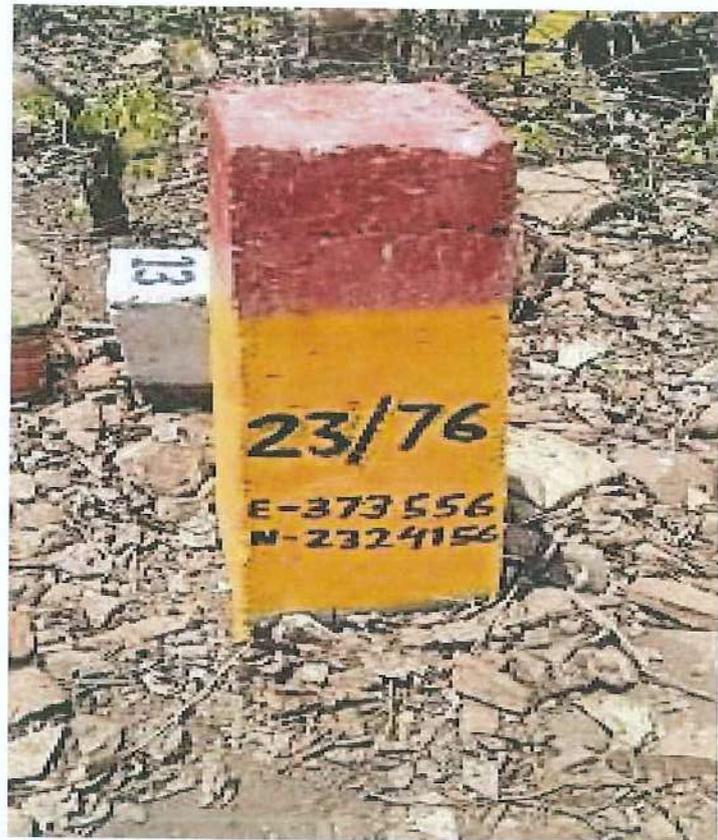
- Babuli munda

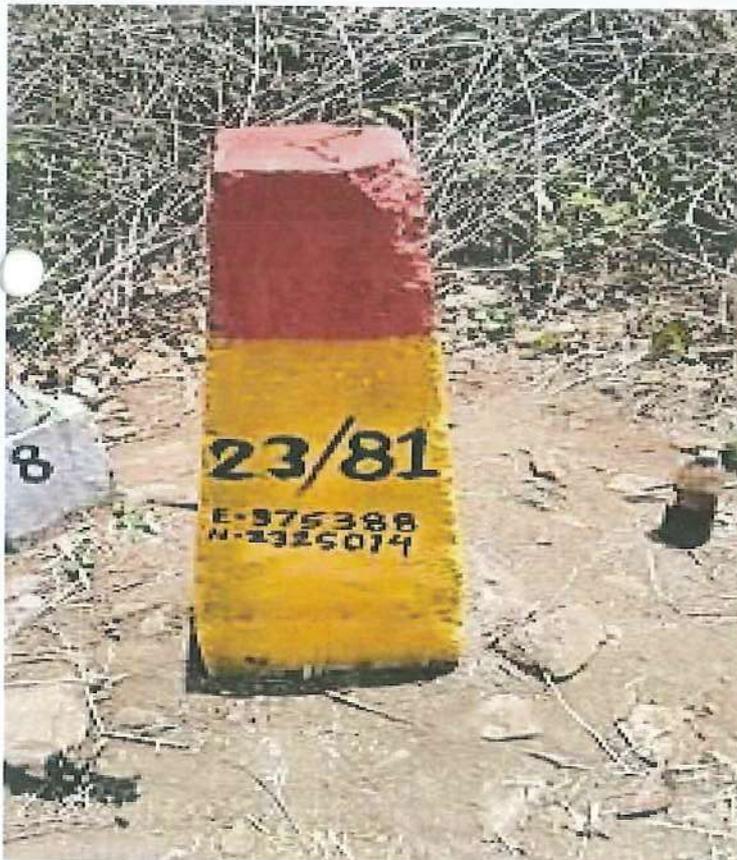
LT1

Sabhadra Dehara

Photographs showing different types of pillars.







F.No.5-1/2007-FC
Government of India
Ministry of Environment & Forests
(F.C. Division)

Paryavaran Bhawan.
 C.G.O. Complex, Lodi Road.
 New Delhi-110510.
 Dated: 11th December, 2008

To
 All Principal Secretary (Forests),
 All States.

Sub: Clarification on payment towards cutting, felling, logging and transportation charges of project affected trees in addition to Compensatory Afforestation (CA) and Net Present Value (NPV) under the Forest (Conservation) Act, 1980.

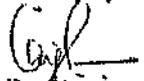
Sir,

I am directed to refer to various communications received from different State / UT Governments and different User / Project Implementing Agencies on the subject cited above seeking clarification on payment towards cutting, felling, logging and transportation charges of trees to the State Forest Departments in addition to Compensatory Afforestation (CA) and Net Present Value (NPV).

In this connection, I am directed to say that the matter has been examined in the Ministry in terms of various orders of Hon'ble Supreme Court of India and other relevant Acts / Rules / Guidelines on the subject including the Hon'ble Supreme Court's judgment dated 28.03.2008, and to inform that the User / Project Implementing Agencies are not required to pay the cost of trees to the State Forest Departments but are required to make payment towards cutting, felling, logging and transportation charges of project affected trees to the State Forest Departments in addition to Compensatory Afforestation (CA) and Net Present Value (NPV). The guidelines issued vide our letter no.5-1/98-FC. (Pt-II) dated 29.03.2005 (copy enclosed) are relevant and in force. These contain detailed procedure in this regard.

It is also requested to bring this to the knowledge of all concerned.

Yours faithfully,


 (C.D. Singh)

Sr. Assistant Inspector General of Forests

Copy to:

1. The Principal Chief Conservator of Forests, All States.
2. The Nodal Officer (FCA), Forest Department, All States.
3. The Chief Conservator of Forests (Central), Regional Office, All Regions.
4. The User Agency / Directorate General Border Roads, New Delhi with reference to their letter no.21831/F/C/DGBR/64/TP (Plg) dated 05.11.2008.
5. Monitoring Cell
6. Guard File.


 (C.D. Singh)
 Sr. Assistant Inspector General of Forests

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
GHATAKULA, NUAPADA, MADHUPATNA, CUTTACK-753010.
E-mail ld-dfo.cuttackforestdivision@yahoo.com, Fax-0671-2347611

No. 66 /SF (Mining) 12/2018
Dated, Cuttack 02nd January, 2020.

To

The Executive Director (F & E),
OMC Ltd., OMC House,
Bhubaneswar-01

Sub: Proposal for diversion of forest land over an area of 168.948 Ha. for over burden dump for South-Kaliapani & Sukurangi Chromite Mines of the OMC Ltd.

Ref: (i) No. 5-No. 8-19/2019-FC dt. 15.10.2019 of Govt. of India, MoEF & CC, New Delhi.
(ii) Letter No. 10 F(Cons) 89/16 19650/ F & E, dt. 19.10.2019 of Forest & Environment Department, Govt. of Odisha.

Sir,

With reference to the letter cited above on the captioned subject, it is to inform that the Govt. of India, MoEF & CC vide letter under reference have accorded Stage-I clearance for over burden dump for South-Kaliapani & Sukurangi Chromite Mines of the OMC Ltd over an area of 168.948 Ha. forest land for diversion, subject to compliance of 26 nos. of conditions imposed by Govt. of India & 08 nos of additional conditions imposed by State Government, Govt. of Odisha.

In this connection, for compliance of additional Condition No. (c) imposed by State Government, Govt. of Odisha, it is requested to pay the Regional Wildlife Management Plan @ Rs. 82,000/- (Rupees Eighty two thousand) only per hectare for the mining lease area, as calculated below:-

- (i) Total Mining Lease Area- 168.948 Ha.
- (ii) Amount required to be paid @ Rs. 82,000/- per Ha. – Rs. 1,38,53,736/-

Hence, you are requested to make arrangement for payment of the above amount Rs. 1,38,53,736/- (Rupees One crore thirty eight lakh fifty three thousand seven hundred thirty six) only towards cost of Regional Wildlife Management Plan over 168.948 Ha. of M.L. area over burden dump for South-Kaliapani Chromite Mines & Sukurangi Chromite Mines of M/S OMC Ltd. through RTGS in favour of Ad-hoc Body of Compensatory Afforestation Fund Management & Planning Authority (CAMPA) through the e-payment module and submit required evidence in respect of the payment to this office for reference and onward transmission.

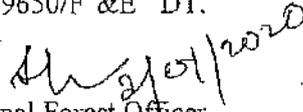
Yours faithfully

Sh. 2/01/2020
Divisional Forest Officer
Cuttack Forest Division.

PTO

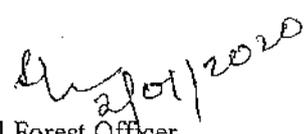
Memo No. 67 /dt 02.01.2020

Copy submitted to the Principal Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o- the PCCF, Odisha, Bhubaneswar for favour of kind information & necessary action with reference to No. 10F (Cons) 89/ 16 19650/F &E DT. 19.10.2019 of Govt. of Odisha, F & E Deptt.


Divisional Forest Officer
Cutback Forest Division

Memo No. 68 /dt 02.01.2020

Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information & necessary action with reference to Memo No. 19652/ F &E, dt. 19.10.2019 of Govt. of Odisha, F & E Deptt.


Divisional Forest Officer
Cutback Forest Division

AGENCY COPY

यूनियन बैंक Union Bank of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 29-12-2021

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908254
MoEF/SG File No.	8-19/2019-FC
Location.	ORRISA
Address.	OMC House Khordha
Amount(in Rs)	137185776/-

Amount in Words :Thirteen Crore Seventy-One Lakh Eighty-Five Thousand Seven Hundred and Seventy-Six Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825832908254 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

यूनियन बैंक Union Bank of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 29-12-2021

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5832908254
MoEF/SG File No.	8-19/2019-FC
Location.	ORRISA
Address:	OMC House Khordha
Amount(in Rs)	137185776/-

Amount in Words :Thirteen Crore Seventy-One Lakh Eighty-Five Thousand Seven Hundred and Seventy-Six Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825832908254 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

After making successful payment, User Agencies may send a line of confirmation through Email: helpdeskampa@corpbank.co.in

Note:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to Email: cb0371@unionbankofindia.com

UTR
UBIN122001493362



As Provided by F & F Section

S. Mohapatra
01/01/2022

S. Mohapatra
Dy. General Manager (Fin)

Sl No.	Particulars	Amount deposited
1	NPV	12,33,32,040/-
2	RWLMP	1,38,53,736/-
	Total	13,71,85,776

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)
& CHIEF WILDLIFE WARDEN, ODISHA, BDA APARTMENT, 5TH FLOOR,
PRAKRUTI BHAWAN, NILAKANTHA NAGAR, BHUBANESWAR
Ph. No.0674-2564587, FAX No.0674-2565062
(Website:odishawildlife.org, E. mail: odishawildlife@gmail.com)

Memo No. 5911 /1 WL(C) SSP-351/2012
Dated, Bhubaneswar, the 26 July, 2013

To

The Chief Conservator of Forests,
Forest Diversion & Nodal Officer, F.C. Act,
O/o the Principal Chief Conservator of Forests, Odisha,
Bhubaneswar

Sub: *Approval of Site specific Wildlife Conservation Plan of South Kaliapani Chromite Mines of M/s OMC Ltd. located in village(s) Kaliapani, Gurujangpal, Sukurangi and Saruabil, Tehsil- Sukinda, Dist.- Jajpur, Odisha*

I am directed to inform you that the Site Specific Wildlife Conservation Plan of South Kaliapani Chromite Ore Mining Project of M/s OMC Ltd. located in village(s) Kaliapani, Gurujangpal, Sukurangi and Saruabil, Tehsil- Sukinda, Dist.- Jajpur has been approved by the Principal Chief Conservator of Forests (WL) & Chief Wildlife Warden, Odisha with financial forecast of ₹2,01,14,080/- (Rupees two crore one lakh fourteen thousand eighty) only for the following activities.

- | | |
|--|----------------|
| 1. For activities to be implemented by M/s OMC Ltd. in project area – | ₹10,00,000/- |
| 2. For activities to be implemented by the DFO, Cuttack Divn. in project impact area – | ₹1,91,14,080/- |

TOTAL: ₹2,01,14,080/-

Various activities in the lease hold area will be executed by the User Agency under the guidance of the Divisional Forest Officer, Cuttack Divn. A sum of ₹1,91,14,080/- only may be deposited with the Divisional Forest Officer, Cuttack Divn. under CAMPA for implementation of various activities within the project impact area. The User Agency may be advised to note the following conditions for future compliance.

1. The plan at the instance of the forest department may be reviewed/revised during the course of implementation, if the same is warranted for the unforeseen/unavoidable reasons and the same will be accepted and followed by the User Agency & financial implications will be born by it.
2. The project proponent has to prepare and submit the Conservation Plan for the next 10 years of their lease period (balance period for which forest land remains diverted) at least one year before the expiry of the present Conservation Plan and deposit the outlay amount upon its approval. In case of delay, the project operation will be automatically stopped.

Encl: Two nos. of approved site specific WL Conservation Plan

DMC(E)
DFO
24/7/13

24/7/13

Chief Conservator of Forests (WL)

Memo No. /date
Copy forwarded to the Divisional Forest Officer, Cuttack Division for information and necessary action with reference to memo No.1692 dt 18.4.2013 of the Regional Chief Conservator of Forests, Angul Circle.

Encl: One no. of approved site specific WL Conservation Plan

J. C. Behera
20/7/13

Chief Conservator of Forests (WL)

Memo No. 5913 /date 20-07-2013
Copy forwarded to the Regional Chief Conservator of Forests, Angul Circle for information and necessary action with reference to his memo No.1691 dt 18.4.2013.

J. C. Behera
20/7/13

Chief Conservator of Forests (WL)

Memo No. 5914 /date 20-07-2013
Copy forwarded to the Additional Secretary to Government of Odisha, F & E Deptt., Bhubaneswar for favour of Information.

J. C. Behera
20/7/13

Chief Conservator of Forests (WL)

Memo No. 5915 /date 20-07-2013
Copy forwarded to the Manager (Geo) F&E, the Odisha Mining Corporation Ltd., OMC House, Bhubaneswar-751001 for information and necessary action.

Encl: One no. of approved site specific WL Conservation Plan

J. C. Behera
20/7/13

Chief Conservator of Forests (WL)

102
10/11/2014

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION

GHATAKULA: NUAPARA: CUTTACK-753010

FAX 0671-2347611 E.mail.dfo.cuttack forest division @ yahoo.com

Memo No. 10573 /5F.(Misc.)

Dated, Cuttack, the 3/ Th December, 2013.

To

The Sr. Manager (Geo.),
Power of Attorney Holder,
O.M.C House,
Bhubaneswar- 751001

Sub: - Approval of Site specific Wildlife Conservation plan of South Kaliapani Chromite Mines of M/S OMC Ltd. located in village (s) Kaliapani, Gurujangpal, Sukurangi and Saruabil Tahasil-Sukinda, Dist-Jajpur, Odisha.

Ref: Memo no. 5915 dt.20.07.2013 of the Chief Conservator of Forests(WL), O/O the Principal Chief Conservator of Forests, (Wildlife) & Chief Wildlife Warden Odisha, Bhubaneswar.

Sir,

With reference to the memo cited above it is to inform you that the Site Specific Conservation of South Kaliapani Chromite Ore Mining Project of M/S OMC Ltd. located in village Kaliapani, Gurujangpal, Sukurangi and Saruabil, Tehsil-Sukinda, Dist-Jajpur has been approved by the Principal Chief Conservator of Forests, (Wildlife) & Chief Wildlife Warden, Odisha with financial forecast of Rs. 2,01,14,080/- (Rupees Two Crores one lakh fourteen thousand eighty) only for the following activities :

1. For activities to be implemented by M/S OMC Ltd. in the project area.	Rs.10,00,000/-
2. For activities to be implemented by the DFO, Cuttack Division by Forest Deptt. in project impact area.	Rs.1,91,14,080/-
Total	<u>Rs.2,01,14,080/-</u>

Hence, you are requested to deposit the amount of Rs.1,91,14,080/- (Rupees One Crore ninety one lakh fourteen thousand eighty) only with the Ad-hoc Body of Compensatory Afforestation Fund Management and Planning Authority (CAMPA) through RTGS/NEFT mode in either of the Bank as detailed below and submit the receipt in original as a token of evidence: -

1. Corporation Bank, Lodhi Complex Branch, New Delhi-110003 (RTGS/IFSC No. CORP0000371, SB Account No. SB01025222).
2. Union Bank of India, Sundar Nagar, New Delhi-110003 (RTGS/IFSC No. UBIN0534498 SB Account No.344902010105428).

Further you are requested to submit an Undertaking to the conditions imposed in the memo no. 5915 dt.20.07.2013 of the Chief Conservator of Forests(WL) , O/O the Principal Chief Conservator of Forests, (Wildlife) & Chief Wildlife Warden ; Odisha, Bhubaneswar for future compliance.

Yours Faithfully,


Divisional Forest Officer
Cuttack Forest Division





Odisha Mining Corporation Limited

(A GOLD CATEGORY STATE PSU)

No. ¹⁴⁸⁶...../OMC/F&E/2014

January 31th, 2014

To

The Divisional Forest Officer
Cuttack Division
Dist: Cuttack

Sub: Submission of RTGS receipt (Original) in support of deposit of Site Specific Wildlife Conservation Plan in respect of South Kaliapani Chromite Mines of OMC Ltd.

Ref: Your Letter No.10573/5F (Misc), dt. 31.12.2013.

Sir,

In response to the demand vide letter under reference towards deposit of Rs. 1,91,14,080.00 (Rupees one crore ninety one lac fourteen thousand eighty) only, OMC has deposited the said fund through RTGS mode in the State CAMPA A/c No. 344902010105428, Union Bank of India, Sunder Nagar, New Delhi-110003, IFSC Code No.-UBIN0534498. The original copy of the RTGS receipt (bearing No.-UTR ANDBH 14022232398 dt.22.01.2014) issued by Andhra Bank, OMC Campus Branch, Bhubaneswar in support of the deposit is enclosed herewith for kind reference and record.

Yours faithfully

Encl: As above

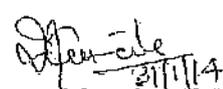
Sr.Manager (Geo) F&E

Memo No. ¹⁴⁸⁷...../OMC/F&E/2014

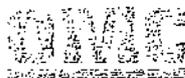
January 31st, 2014

Copy forwarded to Addl. Principal Chief Conservator of Forest (Nodal), Aranya Bhawan Chandrasekharapur, Bhubaneswar/ Regional Chief Conservator of Forest, Angul, for kind information and necessary action.

Copy forwarded to AGM (Fin), HO/ RM, J.K.Road for kind information and necessary action.


Sr.Manager (Geo), F&E

epc



ISO: 9001:2000 Certified

Office: ORMHICORP, Bhubaneswar

Tel: +0674-2535324 (Dir), (EPABX), 2393401, 2395689, 2393389
Fax: (+0674) 2535324, 2391629, 2395389, 2390972, 2394772

The Orissa Mining Corporation Ltd.

(A Government of Orissa Undertaking)

OMC HOUSE, BHUBANESWAR-751001

RTGS FUNDS TRANSFER APPLICATION FORM

Date: 22.01.2014

Andhra Bank, OMC Campus Branch.

Applicant (Remitter) Details:

Account Title	ORISSA MINING CORPORATION LIMITED, BHUBANESWAR
Debit Account No.	105911011000001
Account Type	CURRENT ACCOUNT

Beneficiary Details:

Beneficiary Name	COMPENSATORY AFFORESTATION FUND MANAGEMENT AND PLANNING AUTHORITY (CAMPA)
Credit Account No.	344902010105428
Centre(Location)	NEW DELHI
Bank	UNION BANK OF INDIA
Branch	SUNDER NAGAR
Account Type	
IFSC Code	UBIN0534498
Contact No.	9437919676

Remittance Details:

Amount(in figures)	Rs. 1,91,14,080/- ✓
Amount (in words)	Rupees ONE CRORE NINETY ONE LAC FOURTEEN THOUSAND EIGHTY only.
Remarks/narration	Immediate transfer of fund vide Ch. No. 183120 DT.22.01.2014 ON AB,OMC

Please remit the amount as per the aforesaid details, by debiting my/our Account for the amount of remittance plus your charges.

I/we declare that I/we are authorized to request for the Andhra Bank RTGS facility and all the persons authorized to operate the above mentioned Accounts are also authorized, as per the present mode of operation, to present the RTGS Funds Transfer Application Form to Andhra Bank, OMC Campus Branch, Bhubaneswar.

I/we undertake to keep AB OMC Campus Branch informed of any changes in the mode of operation of any of the above Accounts.

I/we hereby confirmed having read the terms and conditions pertaining to Andhra Bank RTGS facility on http://www.andhrabank.com/wholesale/sme/popup_rtg.htm (hereinafter the "Terms and Conditions") and agree that OMC LTD, Bhubaneswar (entity's name) use of the Andhra Bank RTGS facility shall be subject to and be governed by the Terms and Conditions.

I/we are aware of the fees and/or other charges which are currently to be levied by Andhra Bank for providing access to or allowing the use of the Andhra Bank RTGS facility. I/we further, undertake to keep ourselves aware of any revision made by Andhra Bank of the fees and/or other charges levied for providing access to or allowing the use of the Andhra Bank RTGS facility. I/we are aware that the same shall be notified to us by hosting the same on http://www.andhrabank.com/wholesale/sme/real_time_gross_settlement_fees.htm.

Yours sincerely,

[Handwritten Signature]

Stamp and signature of Authorized Signatory

N. K. Khuntia

For Bank's Accountant

ANDBH14022232398

Mar

Debit authorized by	<i>[Handwritten Signature]</i>
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E06

OFFICE OF THE
DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION,
AT:- GHATAKULA: NUAPADA: CUTTACK-753 010
E.Mail: dfo.cuttackforesdivision@yahoo.com

Memo No. 4716 /SF(Misc)/2016
Dated, Cuttack the 13th May, 2016

To

The Dy. General Manager (Geo),
Odisha Mining Corporation Ltd.
Bhubaneswar-751001

Sub :-

Diversion of 279.351 hectares forest land including 2.790 hectares for Safety Zone in addition to 146.047 hectares for forest land already within total Mining Lease area of 552.457 hectares for Chromite Ore Mining in Jajpur district by M/s. Odisha Mining Corporation Ltd. during 1st renewal of mining lease period. Short realization of cost for site specific wildlife conservation plan - reg.

Ref:-

Memo No. 21520/F&E dt. 04.12.2015 of govt. of Odisha. F & E Deptt.

Sir,

With reference to the above correspondence it is to inform that the cost of Site Specific Wildlife Conservation Plan has been prepared and approved during 2013 at the prevailing wage rate @ Rs. 150/- .. Accordingly the approved cost has been deposited by M/S OMC Ltd. The objection has been raised by audit regarding short realization of the cost since the wage rate has been increased from Rs. 150/- to Rs.200/- per man-day. So you are requested to make payment of the differential amount of Rs. 5,42,500/- for compliance of audit objection.

Hence you are requested to make arrangement for payment of the differential cost for implementation SSWLCP amounting to Rs. 5,42,500/- (Rupees Five Lakhs Forty two thousand Five hundred) only with the Ad-hoc Body of Compensatory Afforestation Fund Management and Planning Authority (CAMPA) through RTGS /NEFT mode in Bank as detailed below and submit the receipt in original as a token of evidence :-

Corporation Bank, Lodhi Complex Branch, New Delhi-110003 (RTGS /IFSC No. CORP0000371. S.B Account No.SB01025222).

Yours faithfully,


13/5/2016
Divisional Forest Officer,
Cuttack Forest Division.

Memo No. 4717 /dt. 13-05-2016.

Copy forwarded to the Addl. Principal Chief Conservator of Forests [Forest Diversion & Nodal Officer, FC Act], O/o the PCCF, Odisha for favour of kind information and necessary action.


13/5/2016
Divisional Forest Officer,
Cuttack Forest Division.

Memo No. 4718 /dt. 13-05-2016

Copy forwarded to the Regional Chief Conservator of Forests, Angul for favour of kind information and necessary action


13/5/2016
Divisional Forest Officer,
Cuttack Forest Division

Su (E&E)
Df
16/5



Odisha Mining Corporation Limited

(A GOLD CATEGORY STATE PSU)
No. 7742/OMC/F&E/2016
7742 27th May, 2016

1608

To
The Divisional Forest Officer
Cuttack Forest Division
At. Ghatakula, Nuapada,
Cuttack-753010

Sub: Payment of differential amount against Short realization of cost for site specific wildlife conservation Plan pertaining to South Kaliapani Chromite Mines of OMC Ltd. Reg.

Ref: Memo No. 4716/5F(Misc)/2016, dtd. 13th May, 2016

Sir,

In response to the demand raised vide letter under reference towards deposit for payment of differential amount against Short realization of cost for site specific wildlife conservation Plan pertaining South Kaliapani Chromite Mines of OMC Ltd . OMC has deposited Rs.5,42,500/- (Rupees five lakh fourtytwo thousand five hundred) only through RTGS mode in the State Specific CAMPA Account, Corporation Bank, Lodhi Road, New Delhi-110003, IFSC No. CORP0000371, Saving Bank A/c. No. SB01025222. The original copy of the counterfoil of RTGS deposits (bearing No. ANDBR52016052500239450, dtd. 25.05.2016) issued by Andhra Bank, OMC Campus Branch, Bhubaneswar in support of the deposit is enclosed herewith for kind reference and record.

Yours faithfully,

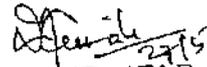
Encl: As above

7743
Memo No...../OMC/F&E/2016

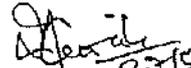
Copy forwarded to Addl. Secretary to Govt., Forest & Environment Deptt, Govt. of Odisha, Bhubaneswar for kind information and necessary action.

Copy forwarded to Addl. Principal Chief Conservator of Forest (Nodal), Aranya Bhawan, Chandrasekharpur, Bhubaneswar/Regional Chief Conservator of Forest, Angul for kind information and necessary action.

Copy forwarded to AGM(Fin), HO/RM, J.K.Road for kind information and necessary action.


Sr. Manager (Geo) F&E

Date: 27/5/16


Sr. Manager (Geo) F&E

etc

Fund Transfer Receipt

Date:25/05/16 4:38 PM

Transaction Details

Account Number	105911011000001
Transaction Id	S62265983
Transaction Srl No.	1
Transaction Date	25/05/16
Transaction Amount	INR 5,42,500.00
Original Amount	-
Original Currency	-
Conversion Rate	-
Transaction Type	DR
Cheque Number	191964
Transaction Description	RTGS/ANDBR52016052500239450/ADHOC
Transaction Balance	BODY CAMPA
Transaction Memo	INR 10,61,90,659.51
	-

Save Print
Back

Signature
 25/05/2016 4:38 PM
 Transaction Details





OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE) &
CHIEF WILDLIFE WARDEN, ODISHA

Department of Forest and Environment, Government of Odisha

No. 8426 / 7WL-FD & WLC-159/2020
Dated, Bhubaneswar the 16 Oct, 2020

To

✓ The Executive Director (F&E),
The Odisha Mining Corporation Ltd.,
OMC House, Bhubaneswar - 751001

Sub: *Sukurangi Chromite Mining Project of M/s The Odisha Mining Corporation Ltd. located in Village(s) Sukurangi, Saruabil and village limits of Ostapal, Kamarda and Talangi, Tahsil Sukinda, District Jajpur, Odisha - Approval of Site Specific Wildlife Conservation Plan*

Sir,

A site specific wildlife conservation plan at a cost of ₹154.00 lakh was earlier approved and communicated to you in this office memo No.4418 dt 21.07.2009 in connection with diversion of 104.79 ha (originally proposed 132.94 ha) of forest land for the above mining project. Now, the user agency has informed that in connection with grant of Environment Clearance, they have been advised by the EAC in their meeting held on 28.05.2020 to revise the site specific wildlife conservation plan by including all of the ten Scheduled-I species available in the core/buffer zone of the project.

In compliance to above, the site specific wildlife conservation plan approved for Sukurangi Chromite Mines is revised after incorporating certain additional interventions with cost worked out on the existing minimum wage rate of ₹303.40 per manday.

2. Accordingly, this additional site specific wildlife conservation plan in respect of the above project is approved by the undersigned with financial forecast of ₹576.5288 lakh (Rupees five crore seventy-six lakh fifty-two thousand eight hundred eighty) only for the following activities.

(a) For activities to be implemented in project area by the user agency:	₹181.0218 lakh
(b) For activities to be implemented by in project impact area by DFO, Cuttack Division:	₹395.5070 lakh
Grand Total:	₹576.5288 lakh

2. Various activities in the lease hold area will be executed by the Project proponent under the guidance of the Divisional Forest Officer, Cuttack division. A sum of ₹297.5070 lakh only (after adjusting the amount of ₹98.00 lakh only already deposited) may be deposited in the State CAMPA fund for the purpose for implementation of various activities within the project impact area by the Forest Department as envisaged in the plan.

3. The User Agency may be advised to note the following conditions for future compliance.

- This Plan may be revisited after 5 years and the User Agency will give undertaking to contribute towards the revised cost of the conservation plan till the project period, if any.
- The project proponent has to prepare and submit the Conservation Plan for the next 10 years at least one year before the expiry of the present Conservation Plan and deposit the outlay amount upon its approval. In case of delay, it will be dealt as per law for violations of Forest Conservation Act, 1980 and Environment (Protection) Act, 1986.

P.T.O.

PRAKASH CHAWAN, PLOT NO.1459, SAHEED NAGAR, BHUBANESWAR- 751007

Phone: 0674-2567750 Website: www.wildlife.odisha.gov.in Email: odishawildlife@gmail.com

- The project proponent has to give an undertaking to bear the differential cost in case of enhancement of wage rate at the time of implementation of this plan.

Yours faithfully

**Encl: Copy of approved
site specific WL Conservation Plan
(2 sets)**


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

Memo No. 8427 / date 16/10/2020

Copy forwarded for information and necessary action to the -

1. Special Secretary to Government of Odisha, F & E Department, Bhubaneswar
2. Principal CCF, Odisha with reference to memo No.2973 dt 02.09.2020 of RCCF, Angul Circle.
3. Regional Chief Conservator of Forests, Angul Circle with reference to his memo No.2971 dt 02.09.2020
4. Divisional Forest Officer, Cuttack Division alongwith a copy of the approved site specific wildlife conservation plan with reference to memo No.2972 dt 02.09.2020 of RCCF, Angul Circle.


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
GHATAKULA: NUAPARA: CUTTACK

Memo No. 3355

Dated, Cuttack 24-7-09

To

The General Manager (Forest & Environment)
M/S O.M.C.Ltd. Bhubaneswar.

Sub:

(i) Diversion of 104.79 ha. (Originally proposed 132.94 ha.) of Forest land for Chromite mining in Sukrangi Chromite mines of M/S Orissa Mining Corporation (O.M.C) Limited in District Jajpur, Orissa.

(ii) Approval of site specific Wildlife Conservation Plan of Chromite Mining in Sukrangi Chromite Mines of M/S Orissa Mining Corporation (O.M.C) Limited.

Ref:-

Memo No. 4415 dt.21.7.2009 of Conservator of Forests (Wildlife), O/O the Pr.C.C.F(Wildlife) and Chief Wild Life Warden, Orissa, Bhubaneswar to this office endorsing copy to you vide his memo no.4418 of even date.

Dear Sir,

With reference to the subject cited above, this is to inform you that the site specific Wild life Conservation Plan in respect of Sukrangi Chromite mines of M/S O.M.C.Ltd. has been approved by P.C.C.F (W.L) and Chief Wild life Warden Orissa with financial outlay of Rs.154 lakhs for the following activities:

(1) For activities to be implemented by User Agency-	Rs. 56.00 Lakhs
(2) For activities to be implemented by the DFO, Cuttack-	Rs. 98.00 Lakhs
Total	Rs.154.00 Lakhs

Hence you are requested to make payment of Rs.98,00,000/- (Rupees Ninety Eight Lakhs) only towards cost of site specific Wildlife Conservation Plan in respect of Sukrangi Chromite mines of M/S Orissa Mining Corporation (O.M.C) Limited in Jajpur Dist. through Bank Draft if favour of "Compensatory Afforestation Fund (CAF)-Orissa, Account No.C.A-1585 in Corporation Bank, Lodhi Road, New Delhi".

The Bank Drafts amounting to Rs. 98,00,000/- (Rupees Ninety Eight Lakhs) only may be submitted to this office immediately for onward transmission.

Yours Faithfully,

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No. _____ /Dt.

Copy forwarded to the Conservator of Forests, Angul Circle, Angul for favour of kind information with reference to memo no. 4417 dt.21.07.2009 of the Conservator of Forests (Wildlife), O/O the Pr.C.C.F (Wildlife) and Chief Wild Life Warden, Orissa, Bhubaneswar to his address.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No. _____ /Dt.

Copy forwarded to the Chief Conservator of Forests, Forest Diversion and Nodal Officer, F.C Act, O/O the P.C.C.F, Orissa Bhubaneswar for favour of kind information and necessary action with reference to memo no.4415 dt.21.07.2009 of the Conservator of Forests (Wildlife), O/O the Pr.C.C.F (Wildlife) and Chief Wild Life Warden, Orissa, Bhubaneswar to his address.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION



The Orissa Mining Corporation Ltd.

(A Government of Orissa Undertaking)
OMC HOUSE, BHUBANESWAR -751001



No. 14542/OMC/F&E/09

Date: 27/08/09

To

The Divisional Forest Officer,
Cuttack Forest Division,
Ghatakula, Nuapara,
Cuttack.

Sub: Payment towards cost of implementation of Wild Life Management Plan in respect of Sukrangi Chromite Mines of OMC Ltd.

Ref: DFO office letter memo No.3355 dt.24.07.09 & No.3604 dt.06.08.09 & this office L.No. 12578/OMC/F&E/09 dated 27.7.09.

Sir,

In inviting a kind reference to the above cited letters and subject, we are depositing herewith a sum of Rs.98,00,000/- (Rupees Ninety Eight lakhs) only towards implementation of Scheme of Site Specific Conservation in respect of Sukrangi Chromite mining lease of OMC in Jajpur district through Demand Draft in favour of CAF, Orissa, A/C No.CA-1585 in Corporation Bank, Lodhi Road, New Delhi. The details are as follows:

- Issuing Branch: Andhra Bank, BBSR
- Drawee Branch: CAF, Orissa, A/C No.CA-1585 in Corporation Bank, Lodhi Road, New Delhi.
- Amount: Rs. 98,00,000/- (Rupees Ninety Eight lakh) only.
- Demand Draft No.: No.495472 dtd.26.08.09.

Yours faithfully,

Sd/-

Dy.General Manager(G)F&E

Encl: Demand Draft in original.

Memo No. 14543/OMC/F&E/09

Date: 27/08/09

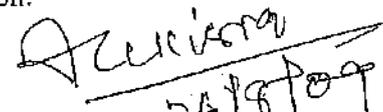
Copy submitted to the PCCF (WL) and Chief Wild Life Warden, 5th Floor, BDA Apartment, Prakruti Bhawan, Nilakantha Nagar, Nayapalli, Bhubaneswar - 12. He is requested to approve the Site Specific Conservation Plan of Sukrangi mines of OMC Ltd.

Copy to the Chief Conservator of Forests (Nodal), O/o PCCF, Aranya Bhawan, Chandrasekharpur, Bhubaneswar - 23 for kind information.

Copy to Conservator of Forests, Angul Circle, Angul for kind information & necessary action.

Copy to the Regional Manager, OMC Ltd., J.K.Road for information and necessary action.

Copy to the Manager (A/C), OMC Ltd., HO for information.


Dy.General Manager(G)F&E

o/c

3

आंध्र बैंक ANDHRA BANK

Net Over INR 98,00,000.00

रकम	दिनांक	पंजा	दस्ता
01	01	01	01

[1069] हिजा नाम पर O.M. CAMPUS

26-08-2009

On Demand Pay

COMPENSATORY ATTORNEY STATION FUND (GAF) OHISSA
AZO NO. CA 585 IN CORPN BANK LODHI RD
₹ 98,00,000/-

₹ 98,00,000/-

Forty Eight Lakh only

आंध्र बैंक ANDHRA BANK

₹ 98,00,000.00

For Value Received

[079] AB/D/S/EM/ACE CENTRE NEW DELHI

495472

For Andhra Bank

Counter signed
R-1398
16

495472 000010000

26/11
09

Scanned

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT:- GHATAKULA, NUAPADA, CUTTACK 753010
Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfo.cuttackforestdivision@yahoo.com

No. 8172 /SF (Forest Division) 11/2018
Dated, Cuttack the 25th November, 2021

*Admission
Addl. Dy*

03/12/21

To
The Executive Director (F & E)
Odisha Mining Corporation Ltd.,
OMC House, Bhubaneswar-751001

Sub:-
Diversion of balance forest land of 162.42 ha including 24.150 ha of forest land to be maintained safety zone (as per Sabik settlement record as on 25.10.1980 and after 25.10.1980) excluding the 104.79 ha forest land already diverted pertaining to total ML area of 382.709 ha of Sukurangi Chromite Mines of M/s Odisha Mining Corporation Ltd spread over village like Kamarda, Ostapal, Saruabil, Sukurangi, Tailangi and Forest Block No. 27 of Mahagiri DPF in Sukinda Tahasil of Jajpur District under Cuttack Forest Division, Odisha during extended period of mining lease up to 31.03.2020, as per MMDR Amendment Act, 2015-Site Specific Wildlife Conservation Plan-reg.

- Ref:-
(i) Letter No. 8426 Dt. 16.10.2020 of the PCCF (WL) & CWLW, Odisha, Bhubaneswar.
(ii) This office Letter No. 9224 Dt. 19.10.2020.
(iii) File No. FC-11/43/2021- (FC) dt. 22.03.2021 of GoI, MoEF & CC.
(iv) File No. 8-22/2018- (FC) dt. 12.10.2021 of GoI, MoEF & CC.
(v) Memo No. 19991 F&E dt. 16.11.2021 of Govt. of Odisha, Forest, Environment & CC.
(vi) Memo No. 19686 dt. 18.11.2021 of Conservator of Forests (Nodal) O/c the PCCF & HoFF, Odisha.

Sir,
With reference to the letter cited above on the captioned subject, it is to inform you that, the Site Specific Wildlife Conservation Plan of the above project has been approved by the Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha with financial forecast of Rs.576.5288 Lakh (Rupees Five Crore Seventy-Six Lakh Fifty-Two Thousand Eight Hundred Eighty) only for the following activities. The same has been communicated to you vide his Letter No. 8426/7WL-FD & Wlc-159/2020 Dt. 16.10.2020, which may be referred to

a) For activities to be implemented in Project area by the User Agency	Rs.181.0218 Lakh
b) For activities to be implemented in project impact area by DFO, Cuttack Division	Rs395.5070 Lakh
Grand Total	Rs.576.5288 Lakh

Previously, you had deposited Rs 98,00,000.00 (rupees Ninety-eight lakh) only towards Site Specific Wildlife Conservation Plan on dt. 26.08.2009, vide D.D No. 495472. Besides, the Govt. of India, MoEF & CC has allowed to adjust Rs 1.45.42,942.00 (rupees one crore forty-five lakh forty-two thousand nine hundred forty two) only, the excess deposit towards Regional Wildlife Management Plan vide letter under reference (iv). As per the guideline of MoEF & CC, Govt. of India under reference (iii), the user agency to deposit the compensatory levies in full as estimated for implementation of Wildlife management Plan.

P.T.O.

26/11/21

- a. Cost of approved SSWLCP- Rs 5,76,52,880.00
- b. Previously deposited - Rs 98,00,000.00
- c. Excess amount adjusted -Rs 1,45,42,942.00

Amount to be deposited i.e. Rs 3,33,09,938.00 (Rs 5,76,52,880.00- Rs 98,00,000.00 -Rs 1,45,42,942.00) (rupees three crore thirty-three lakh nine thousand nine hundred thirty eight)

Hence, you are requested to deposit an amount of Rs 3,33,09,938.00 (rupees three crore thirty-three lakh nine thousand nine hundred thirty eight) only in Adhoc CAMPA account through e-payment mode only and submit the original documents against the deposit to this office at an earliest.

Further, it is requested to submit the undertaking against Item No. 3 of the Letter No. 8426/7WL-FD & Wic-159/2020 Dt. 16.10.2020 of the PCCF (WL) & CWLW, Odisha, Bhubaneswar for further follow up action.

Yours faithfully,

Divisional Forest Officer
Cuttack Forest Division

2021

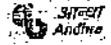
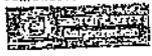
Copy submitted for kind information to:

1. The Principal Chief Conservator of Forests (Wildlife)
& Chief Wildlife Warden, Odisha, Bhubaneswar.
2. The Regional Chief Conservator of Forests, Angul Circle, Angul.

Sukumarji

AGENCY COPY

यूनियन बैंक ऑफ इंडिया  Union Bank of India

NEFT / RTGS CHALLAN for CAMPA Funds
Date : 18-12-2021

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5884710701
MoEF/SG File No.	8-22/2016-FC
Location.	ORRISA
Address.	OMC House Khordha
Amount(In Rs)	33309938/-

Amount in Words : Three Crore Thirty-Three Lakh Nine Thousand Nine Hundred and Thirty-Eight Rupees Only

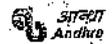
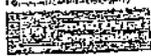
NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825884710701 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11, CGO Complex, Phase I, Lodhi Road, New Delhi -110003

• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

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• This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

After making successful payment, User Agencies may send a line of confirmation through
Email: helpdeskcampa@corpbank.co.in

Note: After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to
Email: cb0371@unionbankofindia.com

V.T.R
UBIN 321358136793



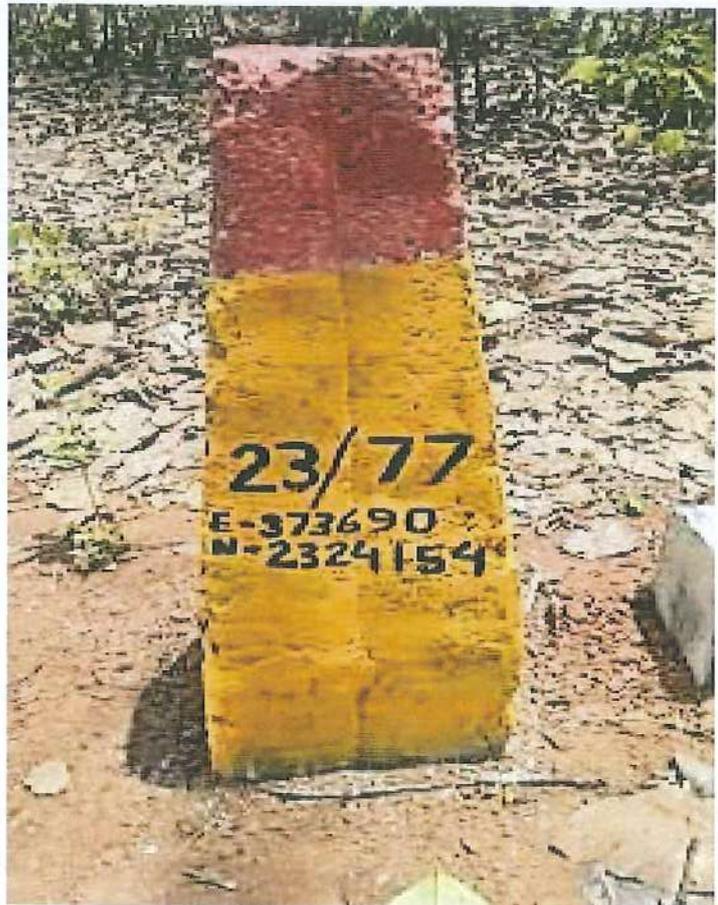
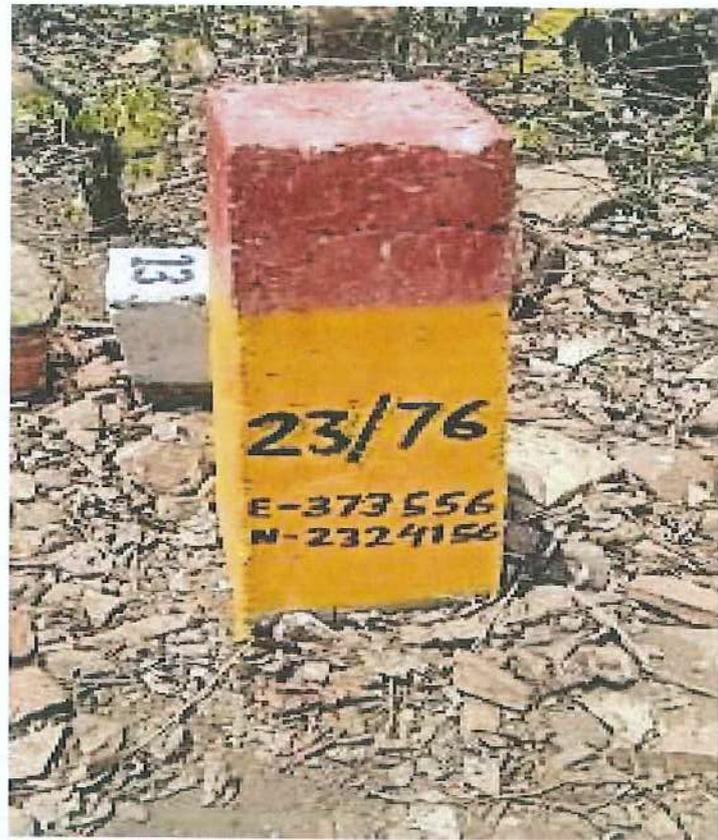
Phulch
Anabeta Bhatia
Manager (CAM)

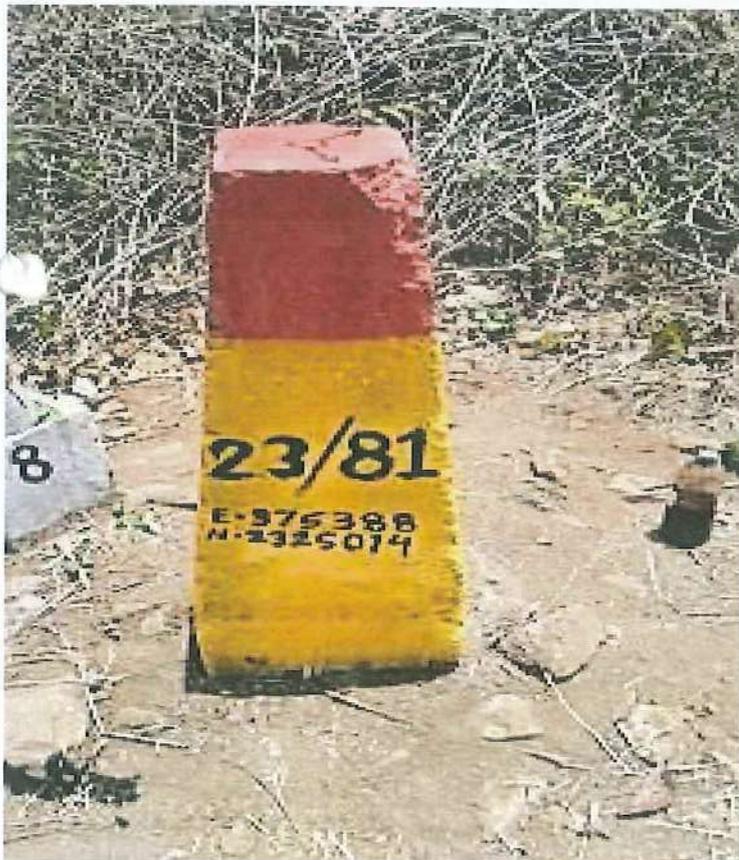
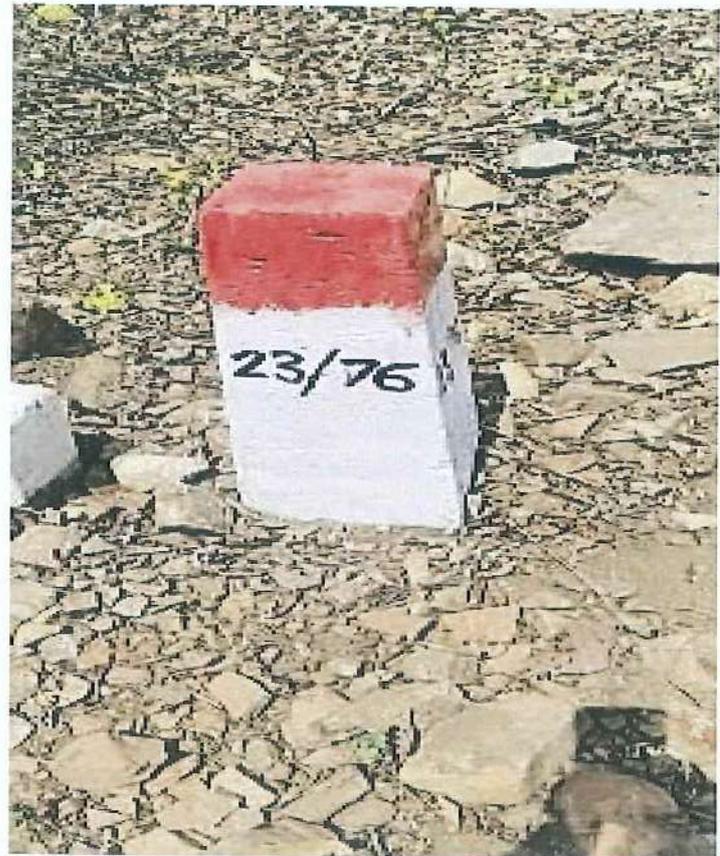
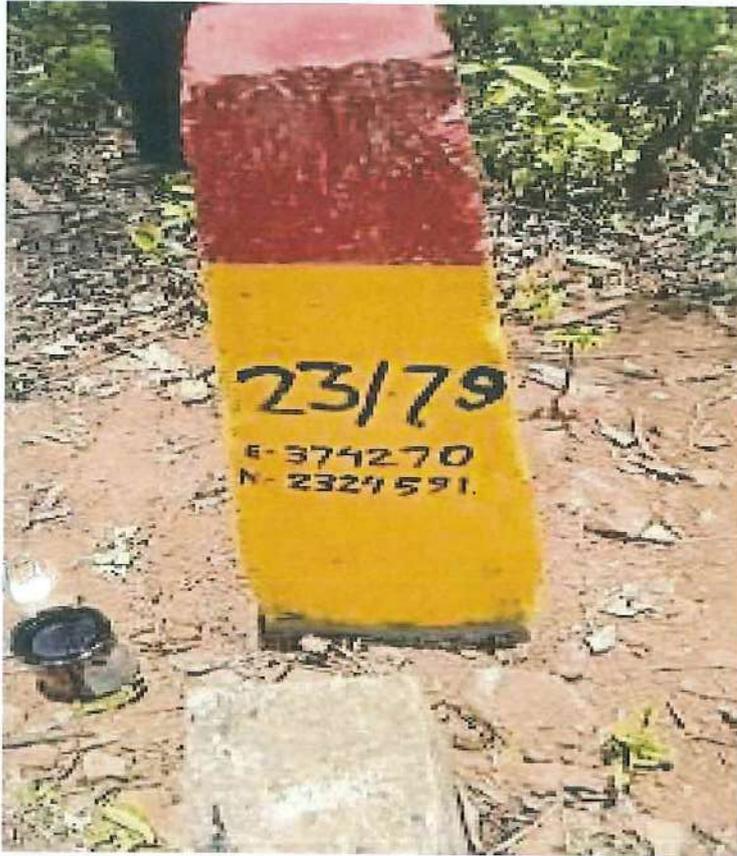
As Provided by F & E Section

U. Bhatia
S. V. Bhatia
Dy. General Manager (FI)

Photographs showing different types of pillars.







IMPACT AREA OF SOUTH KALIAPANI & SUKURANGI CHROMITE MINES SHOWING PROPOSED OB DUMP AREA

