



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



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No. RMP/A/30-ORI/BHU/2019-20

दिनांक / Date: 24.10.2019

To

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

Sub: 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. 6805/OMC/PMC/19 dated 18.04.2019 received on 24.04.2019.  
ii) This office letter of even no. dated 25.04.2019.  
iii) This office letter of even no. dated 25.04.2019 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.

Sir,

This has reference to the letters cited above on the subject. The draft Review of Mining Plan along with Progressive Mine Closure Plan has been examined in this office based on site inspection carried out on 22.10.2019 by Shri Ramkishan R, Sr. Assistant Controller of Mines. The deficiencies observed are enclosed herewith as Annexure-I.

You are advised to carry out the necessary modifications in the draft Review of Mining Plan in the light of the contents vide Annexure-I and submit **three (3) firm bound and two (2) soft copies of the document text in CD in a single MS Word file (the drawing/plates should be submitted in Auto CAD compatible format and JPG format in resolution of 100x100 pixels on same CD)** with financial assurance under Rule 27 of MCDR' 2017 within 15 (fifteen) days from the date of issue of this letter for further necessary action. If the total page of annexures exceeds 50 (Fifty) then it should be submitted as separate volume. But reference of these annexures must appear in the Review of Mining Plan document. The plates are also to be submitted in separate volume.

The para-wise clarifications and the manner in which the deficiencies are attended should invariably be given while forwarding the modified copies of the Review of Mining Plan. It may be noted that no extension of time in this regard will be entertained and the Review of Mining Plan will be considered for rejection if not submitted within above due date. It may also be noted that if the deficiencies are not attended completely, the submission would be liable for rejection without further correspondence.

भवदीय / yours faithfully,

(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

Copy for kind information and necessary action to:

1. 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



10. The details of the previous/existing drilled boreholes may be annexed in the following tabulated format.

Year of drilling	Exploration Agency	Borehole No	UTM Coordinate		Collar mRL	Bottom mRL	Borehole Depth	Angle of drilling	Direction of drilling (Azimuth)	Type of drill hole (Core/RC/DTH)	No of samples collected	No of samples analyzed
			Northing	Easting								

The information of 10% of check samples analyzed from NABL laboratory regarding the above samples analyzed should be furnished with documentary evidence.

11. The G1 and G2 boundary of ore body at depth has not been defined as per the provision of MEMC Rules, 2015 (refer Part II, Point No 4). Necessary modifications to be done at all relevant places in the document like reserve resource estimation, plans and section etc.

12. The summary of exploration after complying scrutiny point no 8 may be furnished in the following tabulated format.

Ore Body	Deepest Intersection (mRL)	Explored Depth of G1 and G2 Exploration ( in mRL)	Depth of G1/ G2 Level of exploration from Surface (m)

13. The proposal for exploration under future exploration program is inadequate. The proposal may be modified to the extent that it should clearly indicate the level (in mrl) to which G2/G3 level is to be converted to G1 level in mrl for both the ore bodies. The proposed boreholes should be in grid pattern for G1 level of exploration as per exploration norms specified in MEMC Rules, 2015. The details of year wise boreholes proposed may be furnished in the format tabulated below.

Year of drilling	Section No	Proposed Borehole No	UTM Coordinate		Collar mRL	Bottom mRL	Proposed Borehole Depth	Angle of drilling	Direction of drilling (Azimuth)	Type of drill hole (Core/RC / DTH)	Purpose of Borehole
			Northing	Easting							

14. Reserves and resources should be re estimated after complying scrutiny point no 11 by cross section area method. The recovery factor in resource/reserve assessment may be derived from time series data or properly justified regarding how the estimation was made. All resources shall be assessed up to the threshold value and the resources between the threshold value and the cut-off grade should be reported separately. Parameters considered for resource/reserve estimation should be defined. The blocked resources should be properly categorized as per UNFC guidelines and justification of UNFC codes should be furnished accordingly.

15. The calculation tables regarding the figures furnished in UNFC reserves/tables should be furnished.

16. The type of waste whether it is IB or OB or SB should also be furnished. The figures furnished should be in line with the final estimated figures of UNFC table of reserve and resources.
17. The details of bulk density test reports of NABL laboratory should be furnished and enclosed to support the information furnished under page no.20
18. The basis of estimation for quantity saleable ore, mineral reject, waste quantities in total volume should be properly justified.
19. The copies of Form –I and particulars of boreholes drilled till date and recorded in Form –J as per the format specified in MCDR 2017 should be furnished and enclosed as annexures.

## **MINING**

20. Justification for site selection for mining during the proposed plan period should be furnished.
21. In page no.32 the chrome ore production given should be divided in two parts viz., ore and mineral reject and ROM which of both combined.
22. The justification for the percentage of ore and mineral rejects quantities furnished for the proposed years should be furnished viz., recovery of ore in ROM.
23. Excavation proposal table should be justified with back up calculation of tables showing. Section wise and mRL wise year wise excavation proposal of Ore, Mineral reject and Waste (OB/SB/IB) should be calculated showing section number, mRL considered, cross-sectional area, length of influence, volume, Bulk density and tonnage. Necessary calculation should be shown in tabular format.
24. The method of mining for different quarries proposed should be elaborated.
25. 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 present plan period workings may not be required. Tailings re-handling should be proposed in view of the extraction of mineral by opencast mining.
26. List of existing equipment with capacity with proposed new equipment should also be furnished.
27. Waste dumping is proposed out side of the lease area, which is not allowed as per the Hon'ble supreme court judgment dated 21.04.2014 in Writ Petition (Civil) No. 435 of 2012 filed by Goa Foundation vrs Union of India and Others all activities like waste dumping, stacking ore , subgrade, mineral rejects, beneficiation, depositing tailings are to be within the lease area. Further as per guidelines of IBM Mining plan manual-2014 also the disposal of waste dumping, stacking ore , subgrade, mineral rejects, beneficiation, depositing tailings are to be within the lease area. Accordingly the proposal should be modified in relevant para and other text of document and respective plans and sections.
28. The details regarding the study reports related ultimate pit slope of the proposed pits should be furnished along with relevant document enclosure.

## **Mine Drainage**

29. The water management system channeling the mine water, surface run off through check dams and protective measures in place should be described elaborately.
30. In mine drainage, the maximum depth of opencast during the review of mining plan period and at conceptual period along with ground water in mRL should be furnished in tabulated format., surface runoff etc. is to be described in detail. Need to do necessary correction.

31. Water treatment, water management of should be described in detail.

**STACKING OF MINERAL REJECT/SUB GRADE AND DISPOSAL OF WASTE:**

32. The disposal of waste and mineral reject and soil to be furnished as per table furnished in IBM Manual appraisal MP 2014. The mineral rejects that are going to be generated during the plan period for yearwise should be specified in the table with quantities that are going to be stored, blended are beneficiated.

33. The description of the existing Waste dumps/old fines dump stocks in the following table to be furnished.

**Existing Waste Dumps:**

Sl. No	Waste dump nomenclature	Location in UTM coordinates	Area occupied		Volume in Cu.m.	Quantity in (Tonnes)
			(m <sup>2</sup> )	(ha)		

**Existing Mineral rejects Dumps:**

Sl. No	Mineral reject dump nomenclature	Location in UTM coordinates	Area occupied		Volume in Cu.m.	Quantity in (Tonnes)	Grade (Fe%)
			(m <sup>2</sup> )	(ha)			

34. The proposed waste dumping furnished in tables in page no.127 a column should be added for whether it is in outside UPL or within UPL, nature of dumping whether it is permanent or temporary and also whether it is mineralized area or non-mineralized area .

35. The above should also be furnished for mineral rejects stacks.

36. The proposal for dumping may be given in tabulated format as shown below : Further, Build-up of dumps from year to year to be mentioned in text w.r.t. designed capacity of dumps, bottom and top mRL of individual terrace, dump slope, individual terrace height and slope with description of method & manner of disposal of waste should be mentioned. The method of waste dumping should be in retreating manner. The year wise buildup of dump should be described in the following table. The table is for the waste quantity which is going to be stored in dumps.

Year	Waste to be dumped (in m3)	Dump Nomenclature	Location of dumping (coordinates)	Existing and Proposed area (m2)	Proposed dumping Terrace from and to mRL.	No of terrace proposed.	Individual Terrace height	Slope of the terrace	Overall slope angle of dump

a column should be added to the above table for whether it is in outside UPL or within UPL, nature of dumping whether it is permanent or temporary and whether it is in mineralized area or non-mineralized area.

37. The above should also be furnished for mineral rejects stacks also.
38. The proposed waste and mineral rejects quantities that are going to be handled during the proposed plan period should be furnished with proper justification like present waste dumps, mineral rejects stacks holding capacities. The proposed dump heights should not be more than 60 m in height otherwise supported by a scientific study conducted by a reputed institute. The report should be enclosed.

#### **USE OF MINERAL and MINERAL REJECT**

39. Describe briefly the requirement of end-use industry specifically in terms of physical and chemical composition of the mineral.
40. Give details of processes adopted to upgrade the ROM with in lease area including mineral reject if any to suit the user requirements in terms of physical and chemical compositions viz., like beneficiation processes adopted and also efforts for complete utilization of ROM produced from mines by blending of mineral, in mineral conservation point of view.

#### **PROCESSING OF ROM AND MINERAL REJECTS**

41. The material balance chart to be furnished. The ROM feed grade and tonnage with recovery%, grade and tonnage of product at each stage of processing may be shown in the flow sheet along with block diagram both for existing and the proposed plant.
42. The flow sheets, diagrams, of the existing and proposed plants should be furnished. Necessary legible flow sheets and diagram should be submitted.
43. The different output product sizes of different process practiced should be elaborated.
44. The proposed plant whether it will installed and operated during the proposed plan period or in future should be furnished. The study report of existing and proposed processing should be enclosed.
45. In the flow sheet it is mentioned as tailings grade is 11% Cr<sub>2</sub>O<sub>3</sub>, so it is a mineral reject and needs to be properly accounted and its management should be properly addressed.
46. The study report regarding the tailings pond design should be enclosed.
47. The quality of tailings disposed should be furnished in terms of physical and chemical composition of the material to be disposed at tailings site.

#### **OTHERS**

48. Information in respect to the proposed manpower both on departmental role and contractual has to be mentioned separately in the text for managerial level, supervisory level and others.

#### **PROGRESSIVE MINE CLOSURE PLAN**

49. Existing base line information to be furnished on the basis of environment monitoring parameter carried out. The environment monitoring data of last one year to be enclosed for ready reference.

#### **PLATES (General):**

1. All the plans should be prepared over an area of 552.457 ha only. The area that is going to be acquired for waste dumping is shown on plans. It should be removed. Necessary corrections and modifications should be in relevant plans sections.

2. The plans and sections to be submitted as per the scale relaxations specified in approval letter by IBM and the part plans and sections should be prepared on 1:1000 scale.
3. Show a scale of the plan at least twenty-five centimeters long and suitably sub-divided. The conventions provided under the Metalliferous Mines Regulations, 1961, shall be used in preparing all plans and sections. All plans and sections should comply with the provisions of Rule 32 of MCDR 2017. The plans and sections submitted should bear the certificate that - the plans and sections are prepared based on the lease map authenticated by the state government. All plans and sections should be signed with date by Qualified Person. Date of observation of Magnetic meridian should be shown in all plans.
4. Along with local grid coordinates, UTM coordinates should also be provided in the grid lines and latitude/longitude coordinates should be mentioned adjacent to boundary pillars in all plans and sections.
5. The UPL has to be redrawn based on provision of UNFC boundaries as per MEMC Rules 2015 and should be shown in red color in all relevant plans and sections.
6. The existing and proposed bench positions clearly with mRL to be mentioned in the all plans and sections.
7. Date of survey should be given on plan and sections and the same should be signed by with date. Grid Lines to be shown in all sections - Geological Sections, Development Sections, Conceptual sections, Dump sections etc.
8. The lithology should be shown in all relevant sections.
9. Year wise development part plan and sections should be submitted in the scale of 1:1000
10. With reference to CCOM Circular No 2/2010, the geo-referenced mining leases map superimposed on latest high-resolution satellite data has not been submitted over the lease area by certifying the lease area over the plan. Lessee has submitted but it is not superimposed on satellite image.
11. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager, Mining Engineer and Mining Geologist

**Key Plan:**

12. The key plan should incorporate all features as mentioned Rule 32 5 (a) of MCDR 2017 and all features should be shown in index as well.
13. Approach road to lease area should be shown in key plan. The Latitude/longitude of the extreme ML pillar coordinates should be marked in key plan. Wind rose diagram should be depicted.

**Surface Plan:**

14. UTM coordinates to be mentioned along with local coordinates along the grid lines. The features shown in the index is not distinguishably shown in the plan. Diverted forest area to be shown in the plan as well as marked in the index of the map. The UPL should be shown over the plan and in index. Necessary corrections to be done.
15. Surface right area and forest, non -forest area, diverted forest area should be shown
16. Few boundary pillars should be correlated with some permanent ground features giving distance and bearing/direction. Nomenclature of the existing waste and mineral reject dumps along with fines stack should be mentioned.



17. The Surface Plan should be prepared to satisfy the provision as laid down rule 32 (1) (a) of MCDR'2017.

**Geological Plan & Section:**

18. In the Geological plan, the UTM coordinates should be mentioned along with local coordinates along the grid lines. The part plan and sections should cover the entire lease area. The sections should cover entire lease area.
19. Geological Plan should be updated with revised boreholes proposal as mentioned under future exploration program. The redefined UNFC boundaries and UPL along with UNFC code should be prominently shown in Geological Plan and sections. Necessary corrections to be done in all the sections.
20. The proposed boreholes to be plotted in dotted lines in Geological sections along with proposed borehole number, RL and proposed closing depth at the bottom of the borehole. The year wise proposal for drilling to be shown in different contrasting color in both Geological Plan and Geological sections. The year wise color of the boreholes proposed in Geological plan should match with the plotted proposed boreholes in Geological sections.
21. The color of the UPL should be same in all plans and sections. In the Geological sections, the revised UPL and benches should be drawn properly. In Geological Plan, longitudinal section line to be shown and a longitudinal section to be submitted.
22. The Geological Plan should be prepared to satisfy the provision as laid down rule 32 (1) (b), (c) and (d) of MCDR'2017.

**Development plan & Section:**

23. Quarry name, existing and proposed bench profiles, waste dump, backfilling proposal, mineral reject dumps etc. to be shown in the development plans and sections.
24. The lithology of the area should be clearly shown in year wise development plan and sections in the area proposed for development.
25. Each year development proposal for different blocks should be shown separately in different color. The UPL may be redefined and benching pattern of existing and proposed to be made in all development plans and sections. The UPL should be shown in Red color which should contrast to the year wise development proposal color shown in development plan and sections. The existing and the proposed quarry positions year wise should be properly demarcated.
26. The RL of the benches should be clearly shown in year wise development plan and sections. The profile of development sections should match with the contour of the respective plans.
27. Development sections should be equally spaced in the proposed development year wise plan and accordingly the respective sections should be submitted.

**CONCEPTUAL PLAN SECTIONS**

28. The conceptual plan should depict workings keeping in view of the validity of the lease period as proposed in the text. Conceptual longitudinal and T- sections representing the entire lease area should be submitted. dumps are shown in the mined out land i.e mining quarries. Whether it is backfilled or dumped should be clarified.

**Environment plan:**

29. The Environment Plan as prepared should be satisfy the provision as laid down rule 32 (5) (b) of MCDR'2017.
30. The proposed environment protective measures to be shown in environment plan. The drainage pattern of the lease area also to be shown on the plan. Air, water and noise monitoring stations to be shown in the plan. Wind rose diagram should be shown with predominate wind direction

**Reclamation plan**

31. Reclamation plan should be submitted as per IBM appraisal of mining plan describing 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, protective measures etc,

**FA Plan/PMCP**

32. The area under different heads of FA table should be properly shown in different hatching with present area and additional area in FA plan. The FA table should be furnished.

**ANNEXURES**

33. All the annexure to be properly numbered/paged and relevant annexure to be signed by Geologist/surveyor/QP etc. It is observed that many of the annexures are not legible. A legible copy of same to be enclosed.
34. Copy of bank guarantee should be enclosed. Photographs of boundary pillars should be enclosed.
35. Copy of quality of air, water, soil, noise and other environmental a parameters monitoring report of the last year should be enclosed.
36. The copy of the qualification & experience certificate in respect of the QP to be enclosed as per Rule 15 of MCR, 2016

*A. Arshif*  
22/10/19