



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. MPM/A/06-ORI/BHU/2021-22

Date: 15.07.2021

सेवामे

Shri K N Bhandari, Nominated Owner,
M/s Hindalco Industries Ltd,
J-6, Jaydev Vihar, Bhubaneswar-751013

विषय: Approval of modification of Mining Plan of Maliparbat Bauxite Mine along with Progressive Mine Closure Plan (PMCP), over an area of 268.110 ha in Koraput district of Odisha State, submitted by M/s Hindalco Industries Ltd under Rule 17(3) of MCR, 2016.

- संदर्भ: - i) Your letter No. HIL/SEM/IBM/2021-22/35 dated Nil received on 22.06.2021.
ii) This office letter of even no. dated 22.06.2021.
iii) This office letter of even no. dated 22.06.2021 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.

महोदय,

This has reference to the letter cited above on the subject. The draft modification of Mining Plan along with Progressive Mine Closure Plan (PMCP) has been examined in this office based on site inspection carried out on 02.07.2021 by Shri Ramkishan R, Senior 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 modification 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 or JPG format in resolution of 100x100 pixels on same CD)** with financial assurance under Rule 27 of MCDR 2017 of the Modification of Mining Plan 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 modification 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 modification of Mining Plan. It may be noted that no extension of time in this regard will be entertained and the modification 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.

Yours faithfully,

(हरकेश मीमा)

क्षेत्रीय खान नियंत्रक

Copy for kind information and further necessary action to Shri S.C. Nayak, M/s MINESKETCH Consultants (P) Ltd, Flat No-205, Bhagwan Tower, Cuttack Road, Bhubaneswar-751006.

(हरकेश मीना)

क्षेत्रीय खान नियंत्रक

Scrutiny comment on Modification of Review Mining Plan including PMCP in respect of Maliparbat Bauxite Mine of M/s HindalcoLtd.

GENERAL:

1. All the certificates/annexures should bear dated signature. IBM Registration number, Mine code should be mentioned on cover page.
2. The details regarding the mine lease lapse and revival if any busy state government with supporting documents should be furnished in introduction.
3. Name of the document should be as modification of review of mining plan.
4. In the review of earlier approved mining plan, the reasons for deviation against the proposed viz., year-wise exploration, production, reclamation rehabilitation & environment management should be furnished. The achievement against the proposal of afforestation, reclamation and backfilling should be rechecked. The reasons for deviations should be rechecked.
5. The reasons for modification of the document should be properly justified under para 3.6.

GEOLOGY AND EXPLORATION:

6. The information of drilled BH to be submitted as per following format and enclosed as annexure:

S.No.	Year	BH Id	Easting	Northing	Collar RL	Inclination	BH Depth	Type of BH	No. of samples collected and analyzed.
1									

Besides the details of number samples which were analyzed in the NABL accredited laboratory should also be furnished.

7. The bauxite mineralization zone should be marked including the aluminous laterite type bauxite considering Al₂O₃-20% (Min.). Necessary changes should be done in relevant plans and sections and also text part of the document.
8. It is observed that G1 level of exploration over entire area has not been proposed. Further, within the G1 explored areas, proposal should be furnished to intersect ore body at depth, if any considering the continuity of boreholes in adjacent sections. The depth of the boreholes proposed should be considered considering the lateral and depth wise continuity of ore body in geological cross-sections and till the end of mineralization intersecting the ore body at depth. The exploration proposal should be completed by 2021-22. The grid spacing for G1 level of exploration for iron ore should be as per the exploration norms defined in Part III of MEMC Rules 2015. Need to do necessary corrections at all relevant places and modify exploration proposal accordingly.
9. The year wise exploration proposal should be modified as per above scrutiny point and the year should be mentioned in financial year. The exploration proposal has not been submitted as per the format specified in IBM Appraisal of MP 2014. Further, the details of individual proposed boreholes should be furnished in following tabulated format. Need to do necessary corrections.

Year of drilling	Section No	Proposed BH no	Core/RC/DTH	Northing	Easting	Collar RL	Borehole Inclination	Proposed Depth	Forest area/ Non forest area/ diverted forest area	Area having surface right/ non-surface right area

10. Recovery and bulk density considered for resource estimation both for ore and mineral reject/sub grade of different grade range considered should be properly justified with documentary evidence (from NABL accredited laboratory) for bauxite and aluminous laterite type bauxite. Bulk density should be taken separately (as per lab reports) for material +40%Al₂O₃ -7% SiO₂, +30-40%Al₂O₃ - 7% SiO₂ and +20%Al₂O₃ etc.,

11. The reserves and resources of bauxite should be reported separately between the threshold value and the cut-off grade and above cut-off grade in UNFC table for both bauxite and aluminous laterite type bauxite. The reserves and resources should be estimated as per the threshold notification on 25/04/2018 by taking threshold value of 7% (Max) The quantities of material above threshold vale for both types of bauxite i.e., aluminous laterite and bauxite above UPL should be taken in to reserves category. Cut off grade should be mentioned in terms of total silica content (%).
12. The cross sections should be drawn from boundary to boundary of lease area on the Geological plan with equal interval. Accordingly relevant plans and sections should be modified. The calculation tables should be furnished in the text.
13. Backup calculation table by cross section area method for aluminous laterite should also be furnished.
14. 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 or Form J&K as per MCDR,1988 should be enclosed as annexures.
15. As the entire lease area has not been explored under G1 level exploration, so pre-feasibility report should be prepared and accordingly UNFC categorization of reserves/resources should be carried out. The justification for UNFC categorization for all the categorized reserves and resources in final table should be furnished in the tabulated format as specified in the UNFC guidelines by giving proper justification for each point mentioned.
16. Separate table for bauxite and aluminous laterite should be furnished for reserves/resources.

MINING:

17. The location of proposed for mining should be properly justified. Total excavation quantity considered for calculation of machinery should be checked and rectified.
18. The production table should be IBM mining plan manual format and two separate tables one for figures in cu.m. and one for figures in tonnes should be furnished. Bulk densities considered for different type of material should be properly justified.
19. The type of waste rock that is going to be generated during the proposed plan period should be elaborated like whether it is OB/IB/SB and nomenclature of waste rock should also be mentioned.
20. The stripping ratio calculation should be reviewed by considering the waste quantity only. Rectify the same. Excavation proposals should be proposed so that concurrent backfilling can be done during the proposed plan periods.
21. Geological Section wise of proposed ROM excavation quantity in for every year shall be provided. Sections may be equally spaced so that the entire area proposed for excavation may cover. The total excavation, OB/IB/waste, Ore, Mineral reject should be matched with section wise calculations and recover factors considered.
22. Existing and proposed equipment/machinery with quantity and capacity should be furnished.
23. The conceptual land use should be rechecked considering the possibilities of reclamation and rehabilitation of mined out land and accordingly the land use pattern at the end of the conceptual plan period should be furnished. Need to rectify the same in relevant parts of text and drawings. Conceptual plan should be prepared till the end of lease period.
24. In the conceptual planning it is mentioned as mineral rejects/subgrade will be backfilled. It should be mentioned as stored instead backfilled in mined out areas for future use. The grade mentioned for mineral reject/subgrade including aluminous laterite should be checked and corrected.
25. Conceptual Mine planning should be modified taking into consideration of the revised production from in-situ excavations, 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 conceptual period should be at the end of lease validity period. Life of the mine should be calculated based on the established as on date mineral reserves only.

26. Considering the topography of the lease area, it appears that the slope is towards East. Hence, a mine drainage plan to be submitted showing catchment area, flow direction of the water, location of final discharge, arrangement for arresting of solid waste etc. showing retaining wall, garland drain, settling tank, check dam etc.

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

27. Threshold value of the bauxite mentioned in page no.53 should be rechecked.
28. 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. The waste that is going to be stored in waste dumps and backfilling purpose should be furnished.
29. The waste dumping proposals area and mineral rejects stacking area proposed should be of non mineralized area. If it is mineralized area then it should be justified properly with re-handling proposal. Sufficient exploration proposal should be given prior disposal of the same.
30. In Para 4a, the nature and quantity of top soil, overburden / waste and Mineral Reject to be disposed of have not been furnished in the following format.

Year	Top Soil (cum)		Waste (cum)				Mineral Rejects (tones)			
	Reuse/spreading	storage	Total generation	Backfilling	Storage (dumping)	Utilization	Total generation	Blending	Storage	Beneficiation

31. The mineral rejects such as aluminous laterite type bauxite should be disposed in earmarked place for future use rather than backfilling. If there is a space constraints, then proper justification should be furnished to store separately in a earmarked place. It should be proposed that The aluminous laterite removed from the mine should be systematically and scientifically stacked in the mined out areas along with proper documentation. the records of grade and quantity of the stored material viz., aluminous laterite should be systematically maintained for future reference. It should also be proposed to update the plan and sections depicting the stacked/stored area for future reference.
32. The year wise buildup of waste dumps has not been described in detail. The information should be furnished in the following table.

Year	Waste Generation (in m3)	Waste Dumped (in m3)	Dump Name	Location of Dump (coordinates)	Existing or new dump	Top RL of the Dump	No of terrace proposed.	Individual Terrace height	Slope of the terrace	Overall slope angle of dump

33. The quantity of mineral rejects of aluminous laterite type bauxite and bauxite should be reported separately with disposal methodology. Unusable ore/mineral rejects should be stacked separately in an area earmarked for the purpose. The OB/waste material obtained during the mining operation shall not allowed to be mixed with materials above threshold values of mineral stacked. Both should be separately stacked/dumped/backfilled modify the proposals accordingly.
34. The nature and types of waste/mineral rejects (aluminous laterite type bauxite and bauxite in between threshold and cut off grade) that is going to be disposed during the plan period should be described.
35. The location of dumping/stacking of waste and mineral reject should be proposed in the non mineralized area with due justification of proven area of non-mineralization.
36. Existing as well as proposed protective measures like retaining wall, garland drain, check dams etc., should be furnished in tabular format with details of location, length, dimensions etc., a separate table should be given showing the year wise construction of retaining wall, garland drain and settling tank having specific proposal. Details of year wise proposal for construction of retaining wall, garland drain, settling tank etc. to be given with their location.

PROCESSING OF ROM AND MINERAL REJECTS

37. The plant requirement is -150 mm but the ROM produced from the mines is not mentioned any specific size and also crushing/screening is not proposed. Justify the same.
38. 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 processing plant.
39. In page no.58 it is mentioned as bauxite below 30% Al₂O₃ not exists in the ML area which should be rechecked.

OTHERS

40. 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:

41. All the paragraphs have not been addressed in detail under PMCP chapter as per IBM Manual Appraisal MP 2014. The present land use pattern should be furnished as per the format of FA table of different heads.
42. In FA table the different heads should be kept as per the format specified in IBM manual appraisal 2014. The area under different heads of FA table should be properly shown in different hatching with present area and additional area in FA plan. Need to do necessary corrections at all relevant places. Year wise mining plan proposals and land use pattern should be submitted in softy copy in the format of .kml or .shp file along with document. Need to do necessary corrections.
43. Copy of the bank guarantee e should be enclosed.

PLATES (GENERAL):

1. Magnetic Meridian and date of observation should be given on all relevant plans. Date of survey should be given on all plans and sections and signature should bear date of signature. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager, Mining Engineer and Mining Geologist as per provisions of MCDR, 2017 and MMR, 1961. All plans & sections prepared should follow the conventions mentioned under MMR 1961. All plans and sections shall show a scale a scale of the plan at least twenty five centimeters long and suitably subdivided.
2. Authenticated lease plan submitted by state government is not legible. So legible copy of the same should be submitted.
3. **KEY PLAN:** The key plan should incorporate all features as mentioned Rule 32 5 (a) of MCDR 2017. The prominent wind direction to be shown by rose diagram in key plan and other relevant plans. The approach road to the lease area should be shown with Co-ordinates of extremity of lease area.
4. **SURFACE PLAN:** All the boundary pillar coordinates to be given UTM too. All the updated boundaries of Fines stack, Waste dump, Mineral reject dumps to be shown on the plan. Surface right area to be shown on the plan with different type of land schedules. All the features have not been shown in the index. Common boundary with other lessees if any should be shown on the plan. The Surface Plan should be prepared to satisfy the provision as laid down rule 32 (1) (a) of MCDR'2017.
5. **DGPS PLAN:** With reference to CCOM Circular No 2/2010 The Geo-referenced mining lease map prepared using DGPS shall be superimposed on Geo-referenced vectorised cadastral map should be submitted.
6. **GEOLOGICAL PLAN & SECTION:** (i) Geological information to be highlighted in geological plan and section. All drilled BH, quarries and trial pits to be shown with red color and BH nomenclature with black color. (ii) Geo structural information has not been furnished adequately. (iii) Limit of estimation should be as per MEMC rule 2015. (iv) The redefined UNFC boundaries and UPL to be shown in Geological Plan and sections. (v) All the geological information to be furnished on geological plan and section based on drilled BH, exposed pit, trial pits etc with their configuration profile (dimensions) like depth. Section lines with nomenclature should be highlighted on the plan. The litho sequence should be shown as per the borehole logs data in the sections. The sections should be prepared on the same

area should be clearly demarcated on the Geological plan. Plan and section should be drawn on same scale. The Geological Plan should be prepared to satisfy the provision as laid down rule 32 (1) (b), (c) and (d) of MCDR'2017.

7. **DEVELOPMENT PLAN & SECTION:** (i) present pit profile configuration with UPL to be shown with red color and proposed development of each year with some other color. All development section to be submitted for which development is proposed. (ii) The layout of the haul road for present and future excavation proposal should be properly addressed in line with safe movement of fleet of the machinery. The proposed and existing haul road to be depicted on the development plan. (iii) The proposed and existing bench mRL to be shown clearly over year wise development plan and sections. (iv) Geological information to be furnished on development plan and sections like litho units. v) Year wise mining plan proposals should be submitted in softy copy in the format of .kml or .shp file along with document. Need to do necessary corrections.
8. **RECLAMATION PLAN:** All revised year wise proposals as per comments in PMCP chapter to be depicted on the plan including the red mud proposals..
9. **ENVIRONMENT PLAN:** The Environment Plan as prepared should be satisfy the provision as laid down rule 32 (5) (b) of MCDR'2017. Wind rose diagram should be depicted.
10. **Financial Assurance Area Plan:** The area degraded due to mining and allied activity to be considered in FA calculation. It should be re-calculated and submitted accordingly.

ANNEXURES:

11. Copy of quality of air, water, soil, noise and other environmental a parameters monitoring report of the last year should be enclosed.
12. 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.
13. Few boundary pillar photographs should be enclosed.
14. The copy of the qualification & experience certificate in respect of the QP to be enclosed as per Rule 15 of MCR, 2016.
15. The details of all the BH to be annexed year wise BH wise. The lithology of the borehole logs should be signed by geologist and match with the lithology shown in Geological sections. The submitted lithology is not legible. Legible copy of the same should be submitted.
16. Copy of EC, FC, CTO etc. to be enclosed. Environment monitoring data to be enclosed at least for last one year. Copy of surface right order. Certificate of surveyor. Approval letters of last MP/SOMs.
17. Recovery test, bulk density test reports carried out in NABL laboratory should be enclosed.
18. Copy of bank guarantee should be enclosed. Photographs of boundary pillars should be enclosed.

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A. Dalvi
7/2/21.