



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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Plot No.149, Pokhariput

BHUBANESWAR-751020

No MPM/FM/10-ORI/BHU/2018-19

दिनांक / Date: 15.06.2018

To

Shri M. D. Rustagi,  
Director & Nominated Owner,  
M/s Rungta Sons (P) Limited,  
Rungta Office, Main Road, Barbil,  
Dist-Keonjhar, Odisha – 758 035.

Sub: Approval of Modification of Mining Plan of Sanindpur Iron & Bauxite Mines over an area of 147.10 ha in Sundargarh district of Odisha of M/s Rungta Sons Private Limited submitted under Rule-17 (3) of MCR, 2016

Ref: - i) Your letter no. RSPL/ED/GEO/2018-19/190 dated 04.06.2018 received on 07.06.2018.  
ii) This office letter of even no. dated 07.06.2018.  
iii) This office letter of even no. dated 07.06.2018 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 Modification of Mining Plan along with Progressive Mine Closure Plan has been examined in this office based on site inspection carried out on 09.01.2018 by Shri Sudip Ranjan Mazumdar, Senior Mining Geologist. 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 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 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.

भवदीय / yours faithfully,

  
(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

Copy for kind information and necessary action to:

1. Shri H. S. Biswal, Shri S. K. Garnaik and Shri D. K. Naik, Qualified Person, M/s Rungta Sons (P) Limited, Rungta Office, Main Road, Barbil, District-Keonjhar, Odisha-758035.

(HARKESH MEENA)  
क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

**Scrutiny comments on examination of Modification of Mining Plan with PMCP of Sanindpur Iron & Bauxite Mine over an area of 147.10 Ha in Sundergarh District of Odisha State of M/s Rungta Sons (P) Ltd**

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**GENERAL POINTS:**

1. The content of the cover page is not as per format specified in the IBM appraisal of MP 2014. The Rule under which Modification of MP and Rule under which PMCP is submitted should be mentioned. The name of the mine along with district and state should be mentioned. The period of proposals in financial year should also be mentioned. Necessary corrections to be done in the cover page of the document.
2. Sequence of paragraph and its numbering as per IBM Manual appraisal MP 2014 has not been covered in text. All the headings as mentioned in the IBM Manual appraisal MP 2014 should be furnished in all chapters in the text.
3. The CCOM circular no.2/2010 and its addendum should be implemented.
4. The certificate from QP should be as per the format and its content should be same as specified in IBM Appraisal of MP 2014. Necessary corrections to be done.
5. All the annexure and text to be properly indexed/ numbered/ paged and signed by qualified person. All the certificates/annexures should bear dated signature.
6. The reference of plate numbers as mentioned in the text is incorrect. The correct reference number of the plates and annexures should be mentioned at all places in the document.
7. The reference of page numbers in the content page should be corrected.
8. The term "processed low grade ore/subgrade" analyzing between 45% Fe to 55% Fe part of ROM should be replaced with the term "Mineral Reject" and the term "Processed Ore" analyzing above 55% Fe should be replaced with "Ore/Saleable Ore". Necessary corrections to be done at all places in the document.

**Chapter 1:**

9. In page no.07, the registration number mentioned does not match with the registration number mentioned in the cover page. Need to correct the registration number at all places of the document.

**Chapter 2: Location and Accessibility**

10. In page 8, in para 2, (a), the reference of toposheet number and extent of the lease in latitude/longitude with reference to boundary pillars also need to be mentioned.
11. In page no. 9, under para 2. (b), the area under road passing through the lease area should be mentioned. Also, the existence of public road etc. should have description of road passing through the lease area or near to it.

**Chapter 3: Details of Approved Mining Plan/Scheme of Mining (if any)**

12. In page 10, under para 3.2, the reference of period to be correctly mentioned.
13. In page 11, in the table under para 3.3.1, the total number of boreholes actual drilled from 2016-17 onwards to be mentioned.
14. In page 11 & 12, in the table under para 3.3.2 (A) & 3.3.2 (C), the cause of deviation to be further elaborated stating reasons for less production also.
15. In page no.14, under para 3.3.7, the status of wet beneficiation to be rechecked and corrected. Necessary correction to be done at all relevant places of the document.

16. In page no.14, under para 3.3.10, the status of reclamation of mine pit to be rechecked and corrected. Necessary correction to be done at all relevant places of the document.
17. In page no.16, under para 3.6, the reason for modification should be further elaborated wr.t scientific development and mineral conservation point of view, proper justification for requirement of proposed stack yard with its purpose and proposal for new dump-d. The reason no.3 is not justified since there is no change in the production capacity. Hence, necessary corrections to be done.

#### **Chapter 4: Geology and Exploration**

18. In page 21, under para 4 (c), the description of the geology of the lease area etc. may be described in detail.
19. In page no 22, the total depth covered by exploratory boreholes does not match with the total meterage of drilling as shown in table 4.1 in page no. 23. Need to recheck and correct.
20. In page no. 23, the table no 4.1, showing the borehole details should also include borehole number drilled in each year.
21. The details of already drilled bore holes indicating drilling type (Core/RC/DTH), Coordinates, Bore Hole numbers, Borehole diameter, spacing, inclination, collar RL, bore hole closing depth etc. should be given in separate table.
22. Under para 4 (f) and 4(g), the reference of rule under MCDR 2017 for preparation of surface plan and Geological plan should be referred to instead of MCDR 1988. Need to correct at all places in the document.
23. Under para 4(i), the reference of rule of MCR 1960 is incorrect. The correct rule reference under MCDR 2017 may be mentioned. The word “scheme period” may also be replaced with “modification of mining plan period”.
24. In page 24, under para 4 e (ii), the table no.4.2 showing the lease area explored under UNFC norms should be recalculated as per Part II point no.4 of MEMC Rules 2015. The justification for area considered for G1/G2/G3 etc. should be given as per MEMC rules 2015. Necessary corrections to be done at all relevant places of the document.
25. Under para 4(i), the future exploration program to be revised incorporating the followings.
  - (a) Additional core boreholes to be proposed to explore entire Mining lease area in 100m\*100m grid interval.
  - (b) Additionally, new core boreholes to be proposed in the location adjacent to existing drilled boreholes that have been either terminated in the ore zone or closed prematurely without intersecting the proposed ore zone in depth.
  - (c) The depth of the proposed core boreholes should be around 100m or till the end of mineralization/discontinuance of ore body. The proposal to be mentioned.
  - (d) The revised drilling proposal complying the above points (a/b/c) should be given in the format tabulated below.

Year	No of Boreholes	Grid Interval	Total Meterage	No. of Pits, dimensions and volume	No. of Trenches, dimensions and volume
2018-19					
2019-20					

- (e) The priority of drilling to be given in area proposed for development in 2018-19; the area proposed for overburden dumping and area proposed for mineral stack yard to

prove for non-mineralization before commencement of overburden dumping and stacking of minerals.

- (f) The details of the proposed boreholes have to be furnished in following tabular format.

Year of drilling	Section No	Proposed BH No	Northing	Easting	Collar RL	Core/RC/DTH	Proposed Depth of BH (in meter)	Inclination	Forest/ Non Forest/ Diverted Forest area	Surface Right/ Non-Surface right area	Surrendered area applied/ retained area

- (g) As per MEMC Rules 2015, check analysis of at least 10% of samples may be analyzed from third party NABL accredited/or department of science & technology (DST) / BIS recognized laboratories or government laboratories for assessing the acceptable levels of accuracy. Accordingly, the proposal should be given under future exploration programme.
26. Under para 4 (k), the total number of boreholes considered for resource estimation should be shown in tabulated format indicating borehole number, year of drilling, type of borehole, total depth of borehole, inclination etc.
27. As per MEMC Rules 2015, For General (G2) and detailed (G1) stages of exploration the depth continuity of mineralization may be considered limited to the depth up to which direct evidence of mineralization is established. The lateral extension to be considered for resource assessment shall depend on geological considerations supplemented by geological continuity by mapping or by other means and in any case shall not be more than 50% of the grid spacing of the probe points. Therefore, the projection of resources in the section line and also towards the boundary without any direct evidence of mineralization through bore hole and also extending the lateral continuity by more than 50% of the grid spacing of the borehole points is not permissible. Hence, geological sections have to be modified and section wise resources and reserves have to be reestimated and new UPL has to be drawn. The resources and reserves are to be updated in all relevant places in the text and in tables.
28. The copy of the bulk density study report enclosed as Annexure-18 to this document does not specify either the grade of ROM or the ore type/lithology for which the bulk density test was carried out. Hence, the bulk density of 2.45 T/cum for ROM is not appropriate. Therefore, fresh bulk density study should be carried out for Fe less than 45% Fe for lithology that are considered as waste and from different ore types between grades +45% Fe to 50%, +50% Fe to 55% Fe, 55% Fe to 60% Fe, 60% Fe to 65% Fe and above 65% Fe. The average bulk density for Saleable Ore (+55% Fe), Mineral Reject (+45% Fe to 55% Fe) and Waste (less than 45% Fe) should then be determined from adequate number of samples from different Fe range collected along and across geological sections representing both grade wise and ore type wise. The bulk density study may be carried out by institute of repute or from third part NABL accredited laboratory or Govt.laboratory. If the study is done through third party NABL accredited laboratory, then the scope of accreditation of the laboratory showing the bulk density testing should be enclosed with the document. The copy of the fresh bulk density study should be enclosed with the document complying the above mentioned points. The report should clearly mention the method used for determination of bulk density, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples etc.
29. In page no.32, the second paragraph justifying the average bulk density of 2.45 T/cum for ROM should be modified with the average bulk density to be obtained from fresh study for

- Ore, Mineral Reject and Waste. Necessary corrections to done at all places in the document (text/tables/calculations etc.).
30. In page 33, in table no. 4.6, the section wise resources have to be recalculated as per the direction given in point no.X. Also, section wise resources should be estimated separately for Saleable Ore (+55% Fe) and Mineral Rejects in ROM (+45% Fe to 55% Fe). Also, the summary of resources in table 4.7 should show the average grade and tonnage for Saleable Ore and Mineral Reject separately. The same should be reflected in Geological sections also.
  31. In page 33, in the last paragraph it is mentioned that the grade of dump varies from 45% Fe to 55% Fe and bulk density considered is 2.45 T/cum. However, it has been stated earlier in the document that this 2.45 T/cum of BD is the average of all samples tested which also includes waste. Hence, Bulk density of 2.45T/cum is not acceptable for 45% to 55% Fe range in Dump. Hence, the average bulk density that would be determined from fresh bulk density study for Fe ranging between 45% Fe to 55% Fe should be considered for tonnage estimation for dump.
  32. In page 34, the table no 4.8 has to be recalculated with bulk density as mentioned in above point. Also, the date of survey to be mentioned for calculating volume of dump. Also, adequate justification for recovery factor considered in table 4.8 should be given.
  33. In page 34, the table no 4.9 has to be recalculated and updated as per point no.X.
  34. In page 35, in table no 4.10, the recovery factor for the year 2016-17 has to be recalculated considering production, waste generation, and total excavation for the entire year. Also, recovery factor for the year 2017-18 has to be taken into consideration. In the header row, the production for... has to be specified. Necessary corrections to be done.
  35. In page 36, in table 4.11, feasibility resources have to be reestimated as per direction given in point no.X. Also, section wise resources have to be calculated for saleable ore and mineral reject part of ROM.
  36. In page 36, in table no. 4.12, all the figures shown have to be recalculated as stated in point X.
  37. A separate table showing the section wise calculation of the mineable reserve for both Saleable Ore (+55% Fe) and Mineral reject (+45% to 55% Fe) part of ROM should be provided. The same should be reflected in Geological sections.
  38. In page 37, table no 4.13 has to be updated with recalculated figures. In table no 4.14, the quantity and average grade of Saleable Ore and Mineral reject part of ROM under different UNFC codes has to be given. Necessary correction to be done.
  39. The life of mine has to be recalculated based on reestimated reserve figures.
  40. The borehole logs of all the boreholes drilled till 2017-18 have not been furnished. Hence, 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. The year wise record of Form –I and Form-J should be submitted so that it is easily traceable.
  41. As per IBM appraisal of MP 2014, 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. But the borehole data submitted reveals that only Fe% has been analyzed except few cases where silica and alumina have been analyzed along with Fe%. Hence, complete chemical analysis for entire strata for all radicals may be undertaken for selected samples and report should be submitted.
  42. There is significant increase in reserve and resource of iron ore calculated under UNFC and submitted in the document as compared with last approved document. Justification for the same should be given. Also summary for bauxite resources should be as on 01.06.2018.

43. A Geological Study Report for estimation and reporting of Mineral Resources integrating all data of exploration, sampling and testing should be submitted as per the format specified in Part IV-A of MEMC Rules, 2015.

### Chapter 5: MINING

44. Under Chapter 2 (A), the brief description of the existing as well as proposed method for excavation with all design parameters indicating on plans /sections should be mentioned that includes ROM production per annum, separate description of drilling, blasting, loading and hauling etc. The description of the existing pits/dumps/Mineral reject stacks/ fines or lump stocks in the following table to be furnished.

**Existing Pits:**

Location	Size of Pit (in m)		Surface area covered (in Ha)	Top RL (m)	Bottom RI (m)	No of benches	Present Status
	Length	Breadth					

**Existing Dumps:**

Name of the dump	Location	Length (max) in m	Breadth (max) in m	Area occupied		Grade
				(m <sup>2</sup> )	(ha)	

**Existing Mineral Reject Stacks:**

Sl.No	Name of the Stack	Location	Area (in Ha)	Quantity (in tones)

**Existing stocks of lump/fines:**

Sl.No	Size of lump/fines	Quantity (MT)	Grade (Fe%)

45. Dump re-handling (for the purpose of recovery of mineral) should be submitted in format specified in IBM Appraisal of MP 2014. Tentative tonnage of the saleable material may be arrived by computing approximate bulk density and recovery factor as these data are variable and may be established on time series.
46. In page no 40, the proposal to install beneficiation plant of capacity 500 TPH within the lease for beneficiation of low grade iron ore to be rechecked and necessary correction to be done, if required.
47. In page no 41, the insitu tentative excavation figs should be furnished in following format in both Cubic meter and in tones in separate tables.
48. In page 42, in table no. 5.2, in the header row of the table, the term “55% Fe processed Ore” to be replaced with “Saleable Ore” and the term “45% to 55% Fe processed low grade” to be replaced with the term “ Mineral Rejects”. Necessary corrections to be done at all places of text, tables, flow sheets etc. Processing of wet beneficiation should be shown in separate table.
49. In page 44 & 45, in the material balance chart the recovery factor at each stage of processing should be mentioned in the flowchart. The justification for the recovery factor should also be given. Necessary corrections to be done at all places of the document.

50. The excavation proposal for the year 2018-19 and 2019-20 should be given in the following format separately for each year.

Particular for the year:.....		
Bench Geometry	Height (in m)	
	Width (in m)	
	Individual bench slope angle	
Road Design	Gradient of Haul Road	
	Ramp gradient	
	Berm Height	
Quarry Development	Location of Development	
	Sections considered for development	
	Benches considered for development with RL	
	Length of proposed benches (in m)	
	Direction of advancement	
	Dimension of the quarry at the end of the year including existing benches	
	Overall quarry slope angle	
	Production of Saleable ore (in MT)	
	Generation of Mineral rejects ore from quarry (in MT)	
	Production of ROM (Ore +Mineral Reject) in MT	
	Total Generation of waste (in MT)	

51. In page 76, it has been mentioned that in the mine overburden/waste material comprises of laterite, lateritic soil, BHQ, BHJ, shale etc. It is evident from the drawing no. 5A' (Development Section for 2018-19) that the sections considered for development has well defined Ore and OB/waste boundary in which the volume of OB could be well calculated. Thus in table 5.6 and 5.7 (tentative quarry development for the year 2018-19 and 2019-20 respectively) showing area of cross section of OB as "Nil" should be rechecked and recalculated. Section wise volume and tonnage of Ore and volume of OB has to be recalculated. Necessary corrections to be done in the table and at all relevant places of the document.
52. Handling of the extension of the Dump B in North-west side for development of benches in 2018-19 should be properly described.
53. Refer drawing No. 5B showing development for quarry and dump for the year 2019-20. It should be noted that the area proposal for proposed site for Dump-D should be revised as no dump proposal should be given over the Bauxite Ore. Dump design should be modified accordingly and same should be updated in all relevant places of text, tables and in plates.
54. Refer drawing no 5B and 5B', the Development plan and sections for 2019-20 w.r.t to development of New Pit has to be revised. There is no mineralization proved through boreholes along the section W-700. Therefore development of New Pit may be restricted upto section W-650 considering the 50m influence of ore zone proved in section W-600. Accordingly, necessary corrections to be done in all plan, sections, text and in calculations.
55. In page 56, refer table 5.8, the sections considered for development are W-400, W-500, W-600 & W-700. Referring the development section for the year 2019-20 in drawing no.5B',



The production proposed as per table 5.8 is not matching with the lithology shown in Geological section as well as in Development sections. Ore is planned to be excavated from section W-500 only and in all other sections OB/waste material will be encountered during development as per proposal. Hence, in table 5.8, the volume of Ore, OB/waste material and their tonnage has to be reestimated. Necessary corrections to be done at all relevant portions.

56. The layout of mine workings should also include the following parameters (1) Bottom RL (2) Total No of Benches (3). Bench Height and (4) Bench Width. Accordingly, necessary information in tabulated format may be provided for mine workings.
57. The layout of mine faces to be shown in the following tabulated format.

Name of Pit	Description	2018-19	2019-20
	Face RL		
	Length of Face		
	Direction of advancement		
	Length of advancement		

58. In page 49, the sites for disposal of overburden/waste along with ground preparation prior to disposal of waste, reject etc. has not been mentioned. The information on proving the area for barrenness (devoid of ore through exploration) should be properly described. Necessary correction to be made.
59. The life of mine has to be recalculated providing all the details. The following format may be used for showing the detail calculation for life of mine

Total available Mineable Reserve	
Production during 2018-19 & 2019--20	
Balance reserve for conceptual period	
Average production per annum	
No of years production will be carried out during conceptual period	
Life of Mine	

### Chapter 6: Mine Drainage

60. In page 74, para 6.2, the information pertaining to maximum depth of workings may be provided in the tabular format below.

Name of the Quarry	Existing depth in mRL		At the end of plan period (mRL)		At the end of conceptual period (mRL)	
	Top	Bottom	Top	Bottom	Top	Bottom

### Chapter 7: STACKING OF MINERAL REJECT/SUB GRADE AND DISPOSAL OF WASTE:

61. In page 63, para b, the proposed dumping ground within the lease area be proved for presence or absence of mineral and be outside the UPL. The area proposed for overburden dumping shall be proved for its non-mineralization through exploration. Accordingly, the priority of drilling has to be proposed so that the area is proved to be barren before overburden dumping. The same should also be described under the paragraph. Necessary modification to be done in the text accordingly.

62. In page 77, para 7.2, 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 year wise buildup of dump should be described.

Year	Total waste to be dumped (in m3)	Dump No	Location of disposal	Average height of the dump (in m)	Area to be dumped (in m2)	RL up to which dumping to be done	No of terrace	Terrace height	Slope of the terrace

Also, the proposal for proposed site for Dump-D should be revised. No dump proposal should be given over the Bauxite Ore. Dump design should be modified accordingly and same should be updated in all relevant places of text, tables and in plates. Additionally, proper justification may be given for the requirement of new dump D.

63. A separate table should be shown showing the year wise construction of retaining wall, garland drain and settling tank having specific proposal up to the end of plan period. Details of year wise proposal for construction of retaining wall, garland drain, settling tank etc. to be given with their location. Necessary modifications to be made.
64. Before the proposed area is put in use for waste disposal, the area should be proved for non-mineralization. Also the site preparation works such as construction of retaining wall, check dam, plantation around proposed dump must be carried out and be completed well in advance. The area identified for waste disposal should be demarcated in relevant plans and sections.

### **Chapter 9: PROCESSING OF ROM AND MINERAL REJECTS**

65. In page 87, para 9.2, the material balance chart to be revised. The term low grade to be replaced with Mineral rejects. Wet beneficiation may be inserted suitably.
66. In page 90, the size fraction of the product generated from the beneficiation plant to be rechecked w.r.t fines and corrected.

### **Chapter 11: PROGRESSIVE MINE CLOSURE PLAN**

67. In page 111, table no 11.14, showing year wise proposal of plantation should also include the information on location of plantation. Accordingly, a column should be inserted in the table showing the proposed year wise plantation location.
68. The year wise proposal of PMCP is inadequate with respect to plantation over safety zone, construction and maintenance of garland drain around proposed dump, retaining wall, number of check dams for construction and maintenance etc. Necessary corrections to be made accordingly.
69. Environment baseline information may be elaborated.
70. Financial assurance has not been submitted. Amount of financial assurance should be calculated as per rule 27(1) of MCDR-2017 and should be submitted accordingly.

### **ANNEXURES**

- i) All the previously drilled borehole logs should be enclosed in format with the document. The lithology of the borehole logs should match with the lithology shown in Geological sections.

**PLATES (General):**

- i) Show a scale of the plan at least twenty-five centimeters long and suitably sub-divided;
- ii) The conventions provided under the Metalliferous Mines Regulations, 1961, shall be used in preparing all plans and sections
- iii) All plans and sections should comply with the provisions of Rule 32 of MCDR 2017.
- iv) 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.
- v) All plans and sections should be signed with date by Qualified Person.
- vi) 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.
- vii) 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.
- viii) The proposed bench mRL to be mentioned in the all plans and sections.
- ix) Date of survey should be given on plan and sections and the same should be signed by with date.
- x) Grid Lines to be shown in all sections - Geological Sections, Development Sections, Conceptual sections, Dump sections etc.
- xi) The lithology should be shown in all relevant sections.
- xii) Date of observation of Magnetic meridian should be shown in all plans.

**Key Plan:**

- i) The key plan should incorporate all features as mentioned Rule 32 5 (a) of MCDR 2017.
- ii) the adjoining area lying preferably within five kilometers thereof should be shown in key plan;
- iii) Approach road to lease area should be shown in key plan.
- iv) All the features shown in key plan should be referred in Index.
- v) The Latitude/longitude of the extreme ML pillar coordinates should be marked in key plan.

**Surface Plan:**

- i) UTM coordinates to be mentioned along with local coordinates along the grid lines.
- ii) The UTM coordinates and latitude/longitude of boundary pillars should also be provided in tabulated format.
- iii) The UPL as shown in the index has not been marked over the plan.
- iv) Surrender area applied and area retained should be properly shown in the plan and the same should be marked in index.
- v) All the features have not been shown in the index. The same should be corrected.
- vi) Diverted forest area to be shown in the plan as well as marked in the index of the map.

**Geological Plan & Section:**

- i) The Geological plan should show the surface geology.
- ii) Surrender area applied and area retained should be properly shown in the plan and the same should be marked in index.
- iii) In the Geological plan, the UTM coordinates should be mentioned along with local coordinates along the grid lines.
- iv) Geological Plan should be updated with revised boreholes proposal as mentioned under future exploration program. The year wise borehole proposal should be corrected showing the proposal for the plan period 2018-19 to 2019-20.

- v) The redefined UNFC boundaries and UPL along with UNFC code to be shown in Geological Plan and sections.
- vi) All the lithology within and outside the UPL to be shown in the Geological sections. Necessary corrections to be done in all the sections.
- vii) Geological sections should be revised. Particularly the resources/reserves should not be projected in the section if it is not proved through borehole. Necessary corrections to be done in Geological sections, calculations, text, tables etc.
- viii) UNFC boundaries to be redrawn in both Geological Plan and Sections as per MEMC Rules, 2015.
- ix) The proposed boreholes to be plotted in dotted lines in Geological sections along with Collar Id, RL and proposed closing depth at the bottom of the borehole and also at the end of already drilled boreholes.
- x) 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.
- xi) The index of Geological features should be same in both Geological Plan and Geological sections.
- xii) In Geological Plan, longitudinal section line to be shown and a longitudinal section to be submitted.
- xiii) In the Geological sections, the revised UPL and benches should be drawn properly.

**Development plan & Section:**

- i) Quarry name, proposed waste dump, mineral stack yard etc. to be shown in the development plans.
- ii) The lithology of the area should be clearly shown in year wise development plan and sections in the area proposed for development.
- iii) Each year development proposal for different blocks should be shown separately in different color. The UPL may be redefined and benching pattern to be made in all development plans and sections. The UPL should be shown in Red colour which should contrast to the year wise development proposal color shown in development plan and sections.
- iv) The RL of the benches should be clearly shown in year wise development plan and sections.
- v) In the development sections the blank portion within the UPL should be properly defined with lithology. Necessary corrections to be done at all relevant places.

**Dump plan & section:**

- i) Separate dump plan and sections should be submitted showing the year wise buildup of dump along the section with RL. The index of the dump section should be properly shown showing the year wise buildup proposal.
- ii) The grid coordinates should be shown in the X-axis of the dump sections.

**Environment plan:**

- i) The Environment Plan as prepared should be satisfy the provision as laid down rule 32(5) (b) of MCDR2017.
- ii) 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.
- iii) Air, water and noise monitoring stations to be shown in the plan.