



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. MS/OTFM/01-ORI/BHU/2018-19

Date: 10.04.2018

To

Shri Sayed Abdul Halim, Mine Owner,  
C/o- Jagannath Majumdar, Ward No-2,  
At- Hadusahi, Po- Joda,  
Dist-Keonjhar, Odisha

Sub: Approval of Review of Mining Plan of Oraghat Iron & Mn Mine along with Progressive Mine Closure Plan (PMCP), over an area of 25.847 ha in Sundargarh district of Odisha State, submitted by Shri Sayed Abdul Halim under Rule 17 of MCR, 2016.

- Ref: - i) Your letter No. Nil dated 19.03.2018.  
ii) This office letter of even no. dated 22.03.2018.  
iii) This office letter of even no. dated 22.03.2018 addressed to Director of Mines, Government of Odisha copy endorsed to you.

Sir,

This has reference to the letter cited above on the subject. The draft Review of Mining Plan along with Progressive Mine Closure Plan (PMCP) has been examined in this office based on site inspection dated 30.03.2018 by Shri S R 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 Review of Mining Plan in the light of the contents vide Annexure 1 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 Review 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 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 final 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.

Yours faithfully,

(HARKESH MEENA)

Regional controller of Mines

**Scrutiny comments on examination of Review of Mining Plan with PMCP of Oraghat Iron & Manganese Ore Mine over an area of 25.847 Ha in Sundergarh District of Odisha State of Sri Sayed Abdul Halim, Lessee**

**INTRODUCTION:**

- I. The supplementary lease deed authenticating the extension of mining lease period up to 03.06.2048 over an area of 25.847 Ha should be enclosed with the document. The details of the mining lease along with date of expiry, lessee and qualified person should be mentioned in cover page.

**Chapter 1: General**

- I. In page 4, para 1.a, the Email id, PIN Code, Phone number, Mobile number and Fax number should also be mentioned. The complete registration number should be mentioned.

**Chapter 2: Location and Accessibility**

- I. In page 5, para 2, (a, i), the reference of toposheet number and extent of the lease in latitude/longitude with reference to boundary pillars to be mentioned. In page no 5, para 2, (a, ii), email id-----Mobile No. ----- and PIN code should be furnished along with the name and address of the lessee.
- II. In page no. 5, under para 2. (b), the details of lease area should have following information in tabulated format specified below. Additionally, the area under road passing through the lease area should be mentioned.

Forest		Non-Forest	
Forest (specify)	Area (ha)	(i) waste land, (ii) grazing land, (iii) Agriculture land, (iv) others(specify)	Area (ha)

- III. In page 6, para 2 (b), the para describing the existence of public road etc. should have description of road passing through the lease area.

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

- I. From page no 9 to 14, under para 3.3, in the achievement section the reason for mine not in operation should also be mentioned.

**Chapter 4: Geology and Exploration**

- I. In page 15, under para 4.4, the name and address of the exploration/prospecting agency if any, to be clearly mentioned.
- II. In page 19, para 1(e), the number of benches as mentioned in the quarry does not correlate with actual field position. The same should be corrected.
- III. In page 20, para e (ii), 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 tabulated format.
- IV. In page 20, para e (iv), the details of the expenditure incurred in exploration till date under various headings should be shown in tabulated format.
- V. In page no. 21-22, para i, the future exploration program to be revised incorporating the followings.
  - (a) The borehole proposal in Block -III should be in 50 m grid interval fanning out from existing quarry that has the surfacial indication of manganese mineralization. The area on the right side of Block -III and above 500 N should be explored in 50 m grid interval. The exploration proposal to be modified accordingly. Boreholes have to propose over the area identified for overburden dumping and mineral stack yard in 50 m grid interval. The borehole proposal in Block-I, Block -II and remaining area should be in 100m grid interval. Accordingly, the borehole proposal to be revised in these areas.
  - (b) New 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. Need to modify proposal accordingly.
  - (c) The depth of the proposed boreholes should be around 100m and till the end of mineralization.
  - (d) The priority of drilling to be given to area proposed for development for the first five years; 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.
  - (e) The proposal for drilling under revised future exploration program should be furnished in tabular format indicating year of drilling, proposed borehole numbers, number of boreholes, section line, proposed borehole coordinates, proposed closing depth, type of drilling (Core Drilling), inclination etc.
  - (f) As per guideline of "IBM manual on appraisal of Mining Plan 2014" at least 10% of total samples to be analyzed in accordance to BIS and reports form NABL accredited/Government Laboratory. Accordingly, the proposal should be given under future exploration programme.



- (g) The year wise proposal for drilling to be shown in different contrasting color in both Geological Plan and Geological sections. The Proposed boreholes to be plotted in Geological section showing their proposed borehole Number, Collar RL and estimated closing depth at the end of borehole. The borehole to be plotted in dashed line. The color of the boreholes proposed in Geological plan should match with the plotted proposed boreholes in Geological sections.
- (h) In page 21, the year of drilling i.e., 2014-15 and 2015-16 as mentioned is incorrect and drilling interval of 50x50m does not match with borehole proposal in Geological Plan. The same should be rectified in text.
- (i) The information on the exploration proposal has to be furnished in following tables

Year	No of Boreholes	Grid Interval	Total Meterage	No. of Pits, dimensions and volume	No. of Trenches, dimensions and volume

The details of the proposed boreholes have to be furnished in following tabular format.

Year	BH No	Northing	Easting	Collar RL	Core/RC/DTH	Meteage	Inclination	Forest/Non-Forest/diverted Forest area	Surface Right/Non-Surface area	Purpose of BH

- VI. In page 22, para j (1), the total number of boreholes considered for reserve estimation should be shown in tabulated format indicating borehole number, year of drilling, type of borehole, total depth of borehole, inclination etc.
- VII. In Page 23, Para j (1), reason for not considering borehole number 7 for resource estimation should be furnished.
- VIII. In page no 24, the resources and reserves should be recalculated as per the provision of MEMC Rules, 2015 and updated in all relevant pages, tables, text etc and redefined limits of G1, G2 and G3 have to be shown on Geological Plan and section and all other relevant plans and sections. Accordingly, the Ultimate pit limit also has to be redrawn and updated in all relevant plans and sections.
- IX. The details of total lease area explored under UNFC have to be furnished in the tabular format provided below.

Total Lease Area: ..... Ha						Remarks/ comments including reasons for not carrying out the exploration as per UNFC norms
Item of Information	Lease area explored as per UNFC norms (in Ha) as on dt.....					
	Total lease area = A+B+C+D+E					
	G1 Level	G2 Level	G3 Level	Explored and found non-mineralized with level of exploration (Remarks)	Un-explored lease area	
	A	B	C	D	E	F
Area as per level of exploration						
No. of BH drilled						
No. of BH considered for Resource						
Meterage drilled						
Grid Interval						
Scale of Mapping						
Reserve estimated after above exploration as on dated: .....						
Remaining Resource after above exploration as on dated: .....						
Total Reserve / Resource after above exploration as on dated:.....						

- X. The details of extent of potentially mineralized area to be provided in tabular format provided below.

Nature of area	Block and Surface area	Location	Forest area	Non forest area	Remarks
Potentially Mineralized area					
Total					

- XI. In page no. 25, the method of reserve estimation may be further elaborated and justified with supporting documents w.r.t (1) recovery factor (2) Bulk density and (3) Length of influence considered in reserve and resource estimation. Necessary supporting documents to be furnished with respect to bulk density and recovery factor considered for iron and manganese ore.
- XII. The Mineral resources of iron and manganese have to be furnished in following table.
- | Level of Exploration      | Resources in million tons | Grade |
|---------------------------|---------------------------|-------|
| G1 - Detailed exploration |                           |       |
| G2 - General Exploration  |                           |       |
| G3 - Prospecting          |                           |       |
| G4- Reconnaissance        |                           |       |
- XIII. From page 26-30, in all the tables the reserve/ resources of iron ore under G1, G2 and G3 category of UNFC has to be re-estimated as per MEMC Rules, 2015 and described in point no. X and correct reserve/resource figures to be furnished.
- XIV. From page 27-30, proper justification of reserve and resources of manganese ore as per the provision of MEMC Rules, 2015 has to be furnished and calculated as per the provision of MEMC Rules, 2015 and as explained in point no X.
- XV. From page 31-32, the justification of UNFC has to be revised considering the present non-availability of forest clearance, Environment Clearance and limited Exploration over the entire lease area. In Page 33, the reserves/resources shown in the table has to be revised as per the revised justification of UNFC and revised UNFC boundaries. Also, the date has to be mentioned as "Resources/reserves calculated as on..... (date)..... In the table provided the quantity and grade of iron ore and manganese ore and mineral rejects at different categories of UNFC code should be mentioned. Necessary corrections to be made accordingly.
- XVI. From page no. 35 (a) to 35 (i), in all the tables the resources and reserves figures has to be reassessed as per the provision of MEMC Rules. 2015.

## Chapter 2: MINING

- I. In page no. 37, the table showing details of the existing quarries to be rechecked as per field observation and necessary corrections to be made.
- II. In page no 37, the table showing details of the existing dumps is incorrect w.r.t to number of dumps, location of dump (coordinates) etc. that does not correlate with location of dump and fines stack yard shown in surface plan. The necessary corrections to be done in the table.
- III. In page 40, para b (i), the Insitu Tentative Excavation figs should be furnished in following format in both Cubic meter and in tonnes. Also as mentioned it has been mentioned the ROM as High Grade Ore. Standalone high grade ore should not be mines selectively. Instead excavation proposal has to be revised.

Year	Pit no.	Total tentative Excavation (Cum)	Top Soil (Cu m)	OB/SB/IB (Cum)	ROM (Cu m)		Mineral reject	ROM/Waste Ratio
					Ore (Cum)*	Mineral reject (Cum)		
1	2	3	4	5	6	7	8	9
I								
II								
III								
IV								
V								

- IV. In page 40, in last paragraph, the reserve between 45-58% Fe should be termed as Mineral reject. Also, as described in the last paragraph, the cut off grade of ROM should be +55% Fe instead of +58% Fe. Accordingly, necessary correction to be made.
- V. In page 41, the table provided should be corrected with (1) the term subgrade to be replaced by Mineral rejects and the quantity calculated for mineral reject should be furnished. The total ROM figure should also be provided in tones. The recovery of saleable ore and mineral rejects to be recalculated and furnished.
- VI. Refer page no. 42 to 46, the tables showing the development proposals should also incorporate the following additional information.

(1) Location of development in UTM coordinates at the end of year, Top bench RL at the end of each year, Benches considered for development with RL, Direction of development of benches in Pit, Dimension of the Pit at the end of the year (Length x Breadth x Depth) to be furnished in tabulated format. The term "non-saleable" ore should be replaced with mineral reject and its quantity should be furnished. The total ROM quantity in tones should be furnished in all the summary tables.

VII. In page 40, it has been mentioned that iron ore fines of +55% Fe will be consumed for production of steel whereas the calculation shown in page 46 (1) under year wise development table. Need to correct information in both the pages and in table.

VIII. In page no. 47, the drilling and blasting to be further elaborated. Village and hutments are there within the mining lease area. Blasting induced vibration study by any scientific institution to be proposed immediately after opening of the mine and accordingly optimum charge per delay and most suitable drilling and blasting design along with initiation/firing patten should be considered.

IX. In page no. 47, in waste disposal, it has been mentioned that there is number of existing waste dumps whereas only one dump has been marked in surface plan and observed in field. Necessary corrections to be made in waste disposal.

X. In page 48, first paragraph should be recheck and corrected with respect to the information provided that salient parameters of proposed mine working at the end of plan period should be furnished. Here, only excavation from Quarry 1 from block -I has been proposed from 2018-19 to 2022-23 whereas the information after merging of three blocks have been provided. Necessary correction to be done in the text and table provided. Also, in table the location (coordinates) has to be rechecked again for its correctness.

XI. In page 48, para e, 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.

XII. In page 49, the layout of faces to be shown in the following tabulated format.

Name of Pit	Description	1st Year	2nd year'	3rd year	4th Year	5th Year
	Face RL					
	Length of Face					
	Direction of advancement					
	Length of advancement					

XIII. 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.

XIV. In page 49, the life of mine has to be recalculated providing all the details. Conceptual Mine planning up to the end of lease period taking into consideration the present available reserves and resources. Also, the demonstrated reserve of iron ore as mentioned 1333880MT need to be justified. The following format may be used for showing the detail calculation for life of mine

Total available Reserve and Resource	
Production during five years	
Balance reserve and resource for conceptual period	
Average production per annum	
No of years production will be carried out during conceptual period	
Life of Mine	

XV. In page 53, para ix describing extent of mechanization comes under underground mining. Hence, the information provided under this heading such as drilling and blasting etc. from page 53 to 59 can be placed earlier.

XVI. Ultimate pit limit should be depicted on all relevant plans & sections.

XVII. Justification for site selection for first five year mining may be furnished.

XVIII. Handling of ROM produced from the mine to be dealt properly till its end use.

XIX. Stripping ratio to be rechecked.

XX. The safety zone area of 7.5 meter which has been disturbed at places should be restored with back to normal ground condition with back filling and plantation should be proposed along the safety zone.

**Chapter 3: Mine Drainage**

- I. In page 60, para 3.b, 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 4: STACKING OF MINERAL REJECT/SUB GRADE AND DISPOSAL OF WASTE:**

- I. In page no.62, the nature and quantity of top soil and mineral reject to be disposed off to be described along description of with overburden / waste. The information on top soil and mineral rejects to be provided in following format.

Year	Top Soil (cum)		Overburden		Mineral Rejects	
	Reuse/spreading	Storage	Backfilling	Storage	Blending	Beneficiation

- II. 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.
- III. In page 63, para c, 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)	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

- IV. In page 65, the table showing the year wise construction of retaining wall, garland drain and settling tank should have specific proposal up to 5th year. Details of year wise proposal for construction of retaining wall, garland drain, settling tank etc. to be given with their location. The length of the retaining wall proposed for construction is also insufficient. Necessary modifications to be made.
- V. 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.
- VI. In page 65, para d, the term “subgrade “to be replaced by “Mineral Rejects”. The production of Mineral rejects to be mentioned under this heading. Also, the area need to be proved for its barrenness before stacking of mineral rejects. Accordingly necessary correction to be made.

**Chapter 5: USE OF MINERAL AND MINERAL REJECT**

- I. In page 66, para a1, the size specification mentioned as 18%. Instead it should be 18mm. Necessary corrections to be made.
- II. In page no. 67, para e, the term subgrade to be replaced with mineral rejects. There is production of mineral reject as shown in table in page 40. Hence, the para should be rechecked and properly explained.

**Chapter 6: PROCESSING OF ROM AND MINERAL REJECTS**

- I. In page 68, in para 6 (b), a material balance chart with a flow sheet or schematic diagram of the processing procedure in screen plant indicating feed, product, recovery, and its grade at each stage of processing should be shown.

**Chapter 8: PROGRESSIVE MINE CLOSURE PLAN**

- I. In page 73, the description of human settlements to be corrected. The village and human settlement is within the lease area. Accordingly, necessary provisions to be made.
- II. In page 77, the table 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.

- III. The year wise proposal of PMCP is inadequate with respect to reclamation and rehabilitation of the back filled area, 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.
- IV. In page no. 79, the proposal for construction of retaining wall and garland drain is not adequate and should be furnished till end of fifth year. Necessary correction to be made accordingly.
- V. Environment baseline information may be elaborated.
- VI. 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.

#### **GENERAL**

- I. The copy of power of attorney holder in favor of Shri Kamala Kanta Samal should be enclosed with the document.
- II. The Plan showing the granted Mining Lease area is not signed by Collector. The same should be signed from Collector/Competent Authority.
- III. The term 'subgrade ore' may be replaced with "Mineral Rejects" at all places in the document.
- IV. All the annexure and text to be properly indexed/ numbered/ paged and signed by qualified person. All the certificates/annexures should bear dated signature.
- V. Sequence of para 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.
- VI. The CCOM circular no.2/2010 and its addendum should be implemented.
- VII. 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.
- VIII. The reference of page numbers in the content page should be corrected.
- IX. The certificate from qualified person should be signed with date by qualified person.

#### **ANNEXURES**

- i) The copy of supplementary lease deed of the mining lease area of 25.847 Ha extended till 06.06.2048 should be enclosed with the document.
- ii) Few photographs showing Land use of the lease area/applied area, environmental status of the area should be enclosed.
- iii) Photo Identity Card of Lessee with permanent address proof duly signed by lessee.
- iv) Few photographs showing Land use of the lease area, environmental status of the area.
- v) The suspension order issued by DFO vide his letter no .854 dated 15.02.10 and order issued by DDM koirra on 07.09.10 should be enclosed with the document.
- vi) The copy of power of attorney holder in favor of Shri Kamala Kanta Samal should be enclosed with the document.
- vii) All the previously drilled borehole logs should be enclosed in format with the document.
- viii) Prefeasibility report should be enclosed with the document instead of feasibility report.

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

- i) Show a scale of the plan at least twenty-five centimeters long and suitably sub-divided;
- ii) The Lease Map showing the Granted ML area should be certified by state government/competent authority.
- iii) The conventions provided under the Metalliferous Mines Regulations, 1961, shall be used in preparing all plans and sections
- iv) All plans and sections should comply with the provisions of Rule 32 of MCDR 2017.
- v) 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.
- vi) All plans and sections should be signed with date by Qualified Person.
- vii) 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.
- viii) 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.
- ix) The proposed bench mRL to be mentioned in the all plans and sections.



- x) Date of survey should be given on plan and sections and the same should be signed with date.
- xi) Grid Lines to be shown in all sections - Geological Sections, Development Sections, Conceptual sections, Dump sections etc.
- xii) The lithology should be shown in all relevant sections.

**Key Plan:**

- i) Predominant wind direction may be shown with Wind rose diagram in key plan.
- ii) Approach road to lease area should be shown in key plan.

**Lease Plan/DGPS Map:**

The Plan showing the granted Mining Lease area is not signed by Collector. Also, the DGPS map is not authenticated by state government. Need to submit authenticate lease map from state government.

**Surface Plan:**

- i) Few pillars may be correlated with some permanent ground features giving distance and bearing/direction.
- ii) Top and bottom RL of Pits shown in Surface Plan should be mentioned.
- iii) UTM coordinates to be mentioned along with local coordinates along the grid lines.
- iv) The UTM coordinates should also be provided in tabulated format.
- v) The UPL as shown in the index has not been marked over the plan.
- vi) Safety zone demarcation line should be shown in index.

**Geological Plan & Section:**

- i) In geological plan, the UTM coordinates should be mentioned along with local coordinates along the grid lines.
- ii) 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 2022-23.
- iii) The redefined UNFC boundaries and UPL along with UNFC code to be shown in Geological Plan and sections.
- iv) All the lithology within and outside the UPL to be shown in the Geological sections. Necessary corrections to be done in all the sections.
- v) UNFC boundaries to be drawn in both Geological Plan and Sections as per MEMC Rules, 2015. The redefined UNFC boundaries and UPL along with UNFC code to be shown in Geological Plan and sections.
- vi) In the Geological Plan UNFC boundaries, UNFC codes, explored area, unexplored area, forest area, non-forest area should be shown in contrasting colors.
- vii) 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.
- viii) 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.
- ix) The index of Geological features should be same in both Geological Plan and Geological sections.
- x) In Geological Plan, cross section lines and longitudinal section line to be shown.
- xi) A longitudinal section of the lease area should be shown.
- xii) The UTM and latitude /longitude of ML boundary pillars should be mentioned in Geological Plan.
- xiii) In Geological section, the description of the Reserve category and UNFC code should be corrected.
- xiv) In Geological sections, the UNFC boundaries have to be revised as per the provision of MEMC Rules, 2015 and as mentioned in point no.x.
- xv) In Geological sections, accurate/exact reference of cross-section as shown in Geological Plan should be shown.
- xvi) In the Geological sections, the revised UPL and benches should be drawn properly. The UNFC boundary/code should be properly shown.



#### **Development plan & Section:**

- i) Individual year wise development plan and sections to be submitted.
- ii) The cross-section number considered for development should be marked on year wise development plan.
- iii) The direction of development does not match with the description in the text.
- iv) Quarry name, proposed waste dump, mineral stack yard etc. to be shown in the development plans.
- v) The lithology of the area should be clearly shown in year wise development plan and sections in the area proposed for development.
- vi) 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.
- vii) The RL of the benches should be clearly shown in year wise development plan and sections.
- viii) Separate dump plan and sections with RL should be submitted separately at a larger scale.
- ix) The term 'proposed mineral stack yard' is not clear. It should be made specific whether the proposal is for stacking of mineral rejects or fines etc.
- x) The term "subgrade stack yard" should not be used. Instead the term "Mineral rejects" should be used, if any.
- xi) In the development sections the UNFC codes should be mentioned instead of G1/G2 etc.
- xii) Year wise development plan and sections should show the entire lease boundary along with section numbers mentioned in the plan.

#### **Dump plan & section:**

- i) The year wise buildup of dump should be shown in 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 sec

#### **Environment plan:**

- i) The Environment Plan as prepared should be satisfy the provision as laid down rule 32(5) (b) of MCDR2017.
- ii) The adjoining area within 60m of boundary of the lease area to be plotted. The particulars with regard to items (ii), (iv) and (v) of Rule 32(5) (b) shall be applicable only up to sixty meters beyond the boundary of lease area. The same should be demarcated in Environment plan. The adjoining area within 500 m of boundary of the lease area is not properly demarcated. The same should be corrected. The information on adjacent mine as available may be shown within the 500m of boundary of the lease area.
- iii) The contour values at 5m interval are not prominent. Necessary corrections to be made.
- iv) 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.
- v) Air, water and noise monitoring stations to be shown in the plan.
- vi) Predominant wind direction may be shown with Wind rose diagram in key plan.

#### **Reclamation Plan:**

- i. Reclamation Plan has not been submitted. Reclamation plan should be prepared as per guidelines mentioned in point no 8.3.1 of PMCP as mentioned in proposed universal format for mining plan /scheme of mining including progressive mine closure plan.
- ii. Year wise progress of dumping, afforestation using different colour codes for easy understanding may be shown.

#### **Conceptual plan:**

- i. Conceptual plan and section should be prepared 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 etc. Hence, necessary correction should be done in conceptual plan and section.
- ii. Conceptual plan may be prepared considering the direct evidence of host rock. One longitudinal section may also be submitted. Direction of run off from the area based on surface contours may be shown on the plan and the sections.