



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/03-ORI/BHU/2018-19

Date: 10.04.2018

To

Shri Susil Kumar Padhee,  
Mine Owner, At – Balibandha,  
P.o- Sambalpur, Dist – Sambalpur,  
Odisha – 768001

Sub: Approval of Review of Mining Plan of Gurubeda Iron Mine along with Progressive Mine Closure Plan (PMCP), over an area of 49.776 ha in Keonjhar district of Odisha State, submitted by Shri S C Padhee under Rule 17 of MCR, 2016.

- Ref: - i) Your letter No. SCP/NIL/17-18 dated 19.03.2018.  
ii) This office letter of even no. dated 23.03.2018.  
iii) This office letter of even no. dated 23.03.2018 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 31.03.2018 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 Gurubeda Iron Ore Mine over an area of 49.776 Ha in Keonjhar District of Odisha State of Sri S.C. Padhee, Lessee**

**INTRODUCTION:**

- I. The expiry of the mining lease is mentioned as 21.09.2032 instead of 21.09.2022. The same should be corrected and the copy of supplementary lease deed should be enclosed. 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, Mobile number and Fax number should also be mentioned. The registration number mentioned is incorrect. Need to provide correct registration number.

**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, iii), email id-----and Mobile No. ----- should be furnished along with the name and address of the lessee.

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

- I. From page no 10 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 22, 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. In page 22, para e (iii), the detail of the samples drawn for analysis should be mentioned. In page 22, para e (iv), the details of the expenditure incurred in exploration till date under various headings should be shown in tabulated format.
- II. In page no. 21-22, para i, the future exploration program to be revised incorporating the followings.
  - (a) New boreholes to be proposed in the location adjacent to existing drilled boreholes that have been terminated either in the ore zone or closed prematurely without intersecting the proposed ore zone in depth. Boreholes have to propose over the area identified for overburden dumping and mineral stack yard.
  - (b) Apart from year wise exploration proposal as mentioned and after complying point VII (a), few additional boreholes should be proposed in these locations:

Proposed BH Coordinates								
SL	Northing	Easting	SL	Northing	Easting	SL	Northing	Easting
1	550 S	100 E	8	550 S	800 E	15	200 S	600 E
2	550 S	200 E	9	550 S	900 E	16	100 S	100 E
3	550 S	300 E	10	300 S	50 E	17	100 S	50 E
4	550 S	400 E	11	300 S	150 E	18	350 S	300 E
5	550 S	500 E	12	300 S	250 E	19	350 S	200 E
6	550 S	600 E	13	300 S	400 E			
7	550 S	700 E	14	300 S	600 E			

- (c) The depth of the proposed boreholes should be around 100 m 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, backfilling and area proposed for mineral stack yard to prove for non-mineralization before commencement of overburden dumping, backfilling 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) 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

- III. In page 25, 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.
- IV. The resources and reserves shall be calculated as per the provision of MEMC Rules, 2015. The length of influence considered should not be more than 100 m. accordingly; the UNFC boundaries of G1, G2 and G3 have to be re-drawn on Geological Plan and section and all other relevant plans and sections. The Ultimate pit limit also has to be redrawn and updated in all relevant plans and sections. Detail calculation of reserve/resource section wise as shown in tables in page no 29 (a) & 29 (b) to be revised accordingly.
- V. 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.....					
	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: .....						

The potentially mineralized area to be provided in tabular format provided below.

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

- VI. In page no. 26, 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 ore.
- VII. The Mineral resources of iron ore 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		

- VIII. In page 28, the justification of UNFC has to be revised considering the present non-availability of forest clearance, Environment Clearance and Exploration over the entire lease area.
- IX. In Page 29, in the table provided the quantity and grade of iron ore and mineral rejects at different categories of UNFC code should be mentioned. the date has to be mentioned as "Resources/reserves calculated as on..... (date).....Necessary corrections to be made accordingly.
- X. The mine was not in operation since September 2009. But there is difference in reserve and resource estimated between the earlier scheme of mining approved for the period 2013-14 to 2017-18 and current review of mining plan submitted for the period 2018-19 to 2022-23. This difference in reserve and resource when there was no mine operation should be justified.

## Chapter 2: MINING

- I. In page 34, Para b (i), the Insitu Tentative Excavation figs should be furnished in following format in both cubic meter and in tones in separate table. Mineral Reject (IB) to be corrected. If the IB is interburden waste than it should be included in OB quantity and the stripping ratio should be re-calculated accordingly.

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)		
I	2	5	4	5	6	7	8	9
II								
III								
IV								
V								

- II. Since there is no justification for production enhancement w.r.t previous approved scheme of mining and also the present production proposal for ensuing five years is more than the Proved (111) and probable Mineral reserve (121 & 122), therefore the production proposal may be kept same as per the previous scheme of mining.
- III. In page 35, the reserve between 45-58% Fe should be termed as "Mineral reject". Also, as described, the cutoff grade of ROM should be +55% Fe instead of +58% Fe. Accordingly, necessary correction to be made.
- IV. In page 35, in the table provided total ROM should be equal to summation of Saleable Ore and Mineral Rejects. Accordingly, the recovery of saleable ore and mineral rejects should be calculated. Necessary correction to be made in the table.
- V. In page 36, for dump rehandling the information should be provided in the following tabular format only and the same should be described in text.

### Estimated available material (Cum)

Dump identification/no	Yearwise handling (Cum)	Estimated recovery of saleable material (Cum) *	Reject (Cum)

- VI. In page 36-37, the description of year wise development plan does not match with the proposal shown in the development plan. There is no discussion on the proposal for 2019-20. Moreover the plate reference number, direction of development is not correct and reference of the development sections are not marked over the development plan. All the necessary correction to be made in text, plan and sections. Entire lease boundary to be shown in development plan.
- (1) Refer page no. 38 to 41, the tables showing the development proposals should also incorporate the following additional information - 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 and Dimension of the Pit at the end of the year (Length x Breadth x Depth) to be furnished in tabulated format.

The total ROM (Saleable Ore and Mineral Reject) quantity in tones for each year should be furnished in all the summary tables. The term Subgrade should be replaced with Mineral rejects.

VII. In page 43, 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.

VIII. In page 43, 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					

IX. In page 43, 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.

X. In page 44, the life of mine has to be recalculated providing all the details taking into account the average production rate. Conceptual Mine planning to be done till the end of lease period only.

XI. In page 44-45, conceptual planning should be corrected. Conceptual planning should be done till the end of lease period only. Accordingly, necessary corrections to be made in relevant portion of text, calculations and plates.

XII. In page 47, 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 47 to 51 can be placed earlier at relevant places.

XIII. In page no. 56, the proposal for backfilling should be further elaborated. The iron ore should be fully extracted and then the area should be proved barren through exploratory borehole before commencement of back filling. Hence, exploration proposal to be prepared accordingly prioritizing year wise area for exploration. The lithologs of the already drilled bore holes have not been enclosed with the current document. Therefore, the lithologs of all previously drilled boreholes should be enclosed and match with information provided in the geological sections and development sections. Necessary corrections and modifications to be done accordingly.

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

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

XVI. Stripping ratio to be rechecked.

XVII. The safety zone area of 7.5 meter which has been disturbed at places along the Northern lease boundary 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 52, 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)	
	Top	Bottom	Top	Bottom

### Chapter 4: STACKING OF MINERAL REJECT/SUB GRADE AND DISPOSAL OF WASTE:

I. In page no.54, in the table the term subgrade may be replaced with mineral rejects.

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 55, 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 58, 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 58, 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 no. 59-60, para e, the term subgrade to be replaced with mineral rejects. In page 60, the reference of year 2013-14 has been proposed. The same should be corrected.

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

- I. In page 61, 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 46, 68 and 75, in the table, the difference between the data provided in columns "Total Area" and "Total area at conceptual period" need to be explained as the conceptual plan is period up to end of lease period and review of plan period also ends within the expiry of lease period. Necessary correction to be made at relevant places.
- II. The year wise proposal for PMCP is inadequate with respect to reclamation and rehabilitation of 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. Also, 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.
- III. Environment baseline information may be elaborated.
- IV. In page number 82, Organization chart to be furnished under Emergency Plan/Disaster Management with contact details, if any. The mobile number of person responsible should be provided along with landline number.
- V. 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 Points

- I. All the annexure and text to be properly indexed/ numbered/ paged and signed by qualified person. All the certificates/annexures should bear dated signature.
- II. 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.
- III. The CCOM circular no.2/2010 and its addendum should be implemented.
- IV. The term "subgrade ore" may be replaced with "Mineral Rejects" at all places in the document.
- V. 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 document.
- VI. The reference of page numbers in in content page should be corrected.
- VII. The certificate from qualified person should be signed with date by qualified person.



## **ANNEXURES**

- i) Few photographs showing Land use of the lease area/applied area, environmental status of the area should be enclosed.
- ii) Photo Identity Card of Lessee with permanent address proof duly signed by lessee.
- iii) Few photographs showing Land use of the lease area, environmental status of the area.
- iv) All the previously drilled borehole logs should be enclosed in relevant format with the document. The lithology shown in the borehole log should match with the lithology shown in geological sections.
- v) 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. The lithogy should be shown in all relevant sections.

## **Key Plan:**

- i) Predominant wind direction may be shown with Wind rose diagram in key plan. Approach road to lease area should be shown in key plan.
- ii) The features as mentioned in the index of key plan are not very prominent / legible in the map. Need to submit the map where features are prominent. The limit of 5 km radius zone should be properly referred in the plan.

## **Lease Plan/DGPS Map**

- i) The Mining Lease area as per lease plan is 49.773 Ha whereas the lease area as per DGPS survey is 49.0843 Ha and the present review of mining plan has been submitted over an area of 49.776 ha. The boundary pillar coordinates as mentioned in surface plan is DGPS surveyed coordinates. Hence, need to submit the 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) The UTM coordinates should also be provided in tabulated format.
- iv) Safety zone demarcation line should be shown in index.
- v) The line showing area for future exploration and mining should be omitted.

## **Geological Plan & Section:**

- i) In geological plan, the UTM coordinates should be mentioned along with local coordinates along the grid lines. Geological Plan should be updated with revised boreholes proposal as mentioned under future exploration program.
- ii) The line showing area for future exploration and mining should be omitted.
- iii) All the lithology within and outside the UPL to be shown in the Geological sections. Necessary corrections to be done in all the sections.

- iv) 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, explored area, unexplored area, forest and non-forest area to be shown in Geological Plan and sections.
- v) 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.
- vi) 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.
- vii) The index of Geological features should be same in both Geological Plan and Geological sections.
- viii) In Geological Plan, cross section lines and longitudinal section line to be shown. A longitudinal section of the lease area should be shown.
- ix) In Geological section, the description of the Reserve category and UNFC code should be corrected.
- x) In Geological sections, accurate/exact reference/nomenclature of cross-section as shown in Geological Plan should be shown.

**Development plan & Section:**

- i) The cross-section number considered for development should be marked on year wise development plan.
- ii) The direction of development does not match with the description in the text. Quarry name, proposed waste dump-3 to be shown in the development plans.
- iii) The lithology of the area to be shown in year wise development plan and sections.
- iv) 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 RL of the benches should be clearly shown in year wise development plan and sections.
- v) Separate dump plan and sections with RL should be submitted separately at a larger scale.
- vi) In the development sections the UNFC codes should be mentioned instead of G1/G2 etc.
- vii) 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. 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) 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. Year wise progress of dumping, afforestation using different color 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.