

**Scrutiny Comments on Examination of Draft Review and Updation of Mining Plan in respect of Thimmappanagudi Iron ore Mine (ML No. 2549) over an area of 54.64 Ha (As per lease deed), 46.20Ha (as per CEC sketch), 36.50 (FC granted Area) located in NEB Range (Thimmappanagudi Block) forest, Muraripura Village, Sandur Taluk, Ballari District, Karnataka State, Submitted by Sri. H.G Rangan Goud for approval Under Rule 17(1) of MCR, 2016**

**GENERAL**

1. Refer Minerals (Other than Atomic and Hydro Carbons Energy Mineral) Concession (Fourth Amendment) Rules, 2021 published vide Ministry of Mines, Gazette Notification G.S.R. 775(E) dated 2<sup>nd</sup> November 2021. In accordance with Sub-Rule (2) of Rule 17 of MCR, 2021 lessee has to submit the Draft RUMP 180 days before expiry of the plan period. The document has not been submitted in stipulated time. Hence, lessee needs to pay Rs.2,000/- per day penalty for late submission.  
-In the instant case, the soft copy along with the processing fee is submitted to this office online on 11/01/2022 and it is 70 days late from the date of said Notification. You are therefore advised to pay penalty @ Rs2,000/- per day X 70 days i.e. Rs.1,40,000/- (Rupees One Lakh forty thousand Only). The penalty may be paid by Demand Draft drawn in favour of Drawing & Disbursing Officer, Indian Bureau of Mines, Bangalore.
2. No cells may be left blank. Either “Nil” or “Not applicable” may be furnished.
3. If any relevant information pertaining to the ‘calculation’ or ‘supporting information’ or ‘clarification’ may be provided as foot note in the respective table/para.
4. Wherever additional information or supporting document is given in Annexure, Annexure no may be specified in respective paras.
5. Undertaking/Consent letter from the lessee may be digitally signed by the lessee.
6. Serial Numbers of all the chapters and sub paras should be as per the prescribed format. This may be verified and maintained as per the formats issued on FAQ on New Mining Plan format vide letter No.R-11011/1/IBM-M-A-MP/2012-CCOM-Vol-II dated 08/09/2021.

**Cover Page**

7. The title of the document should be given as “Review and Updation of Mining Plan including Progressive Mine Closure Plan” submitted under Rule 17 (1) of MCR, 2016 and Under Rule 23 of MCDR, 2017.
8. The ML.Period upto 04/08/2042 given as per MMDR Act, 2015 may be corrected as “As per Supplementary lease deed”.
9. Also the ML. No. Needs to be given along with the name of the mine for better clarity. Month and Year of the document submitted may be specified at the bottom.

**Chapter 1: GENERAL INFORMATION**

10. **Para 1.1.1 Initial/Subsequent lease grant details:** The Annexure-2 contains only extended period lease deed, the initial grant lease deed may also be enclosed.
11. **Para 1.1.2 : Mining Plan Submission Criteria Details:** In this para information given in LOI Number, Date, Reasons for modification and foot note details may be deleted and to be mentioned as ‘Not Applicable’.
12. **Para 1.3:** Date of execution mentioned as 04/10/2021 which is not correct, the same may be verified and suitably corrected.
13. **Para 1.3.1:** Copy of the Approval letter of Scheme of Mining for the period 01/04/2007 to 31/03/2012 is not included in Annexure 19, the same may be provided.
14. **Para 1.3.4.5:** The CEC approval letter is said to be enclosed as Annexure 20, the same is not available in the Annexure, and needs to be enclosed.

**Chapter-2: Geology & Exploration:**

15. **Para 2.1.2:** In second table, Name of the port, Highway, Railways station and village may also be specified.

16. **Para 2.1.4.3:** Field occurrence and Petrological details of all the lithologies/ore types may briefly be described in this para.
17. **Para 2.1.4.4 Mode of Occurrence & Controls of Mineralization:** The details given in this para is not appropriate w.r.t. the title of this para. The same may be modified by focusing on genesis of iron ore mineralization. In general, in Sandur Schist Belt, the iron ores have been deposited through sedimentary resources followed by metamorphism, deformation leaching, oxidation by surface water percolation over a long period and re-cementation with some replacement have also played a part at places. The hematite generally occupies the top of the ridges and hillocks, which are of great magnitude. Due to weathering hematite have altered to limonite & goethite and finally to Laterite at places.
18. **Para 2.1.4.5 Extent of Weathering/ Alteration:** The details given in this para may be modified. Lateral & Vertical extent of weathered profile in the lease may be specified.
19. **Para 2.1.4.7 Extent of Mineralization:** The width range of intercalated phyllite in the iron ore may be specified.
20. **Para 2.1.4.8 Deposit Type: (i)** It is mentioned as bedded Stratiform and Tabular Deposit of regular and irregular deposit. If the deposit is of irregular in nature, to prove the mineralized area in G1 level, grid spacing should be 50m or below, hence given information may be reviewed. **(ii)** Further, there is a float ore in the lease area, the same also to be mentioned in the Deposit Type. **(iii)** Strike/Trend and Dip of the iron ore formation given in this para is not correct and not matching with the overall trend of the ore body. The same may be reviewed and corrected.
21. **Para 2.2.1.9: Sampling:** Number of samples analyzed is mentioned as 112, however as per the FORM-J information, number of samples analyzed are more than 900, the given information may be examined and suitably corrected.
22. **Para 2.2.1.10: Chemical Analysis: (i)** Only total no. of samples analyzed and radical analyzed and laboratory name may be mentioned in this para. **(ii)** The bore hole samples information may be provided in CSV/excel file which shall normally include Five files namely (a) collar file, (b) survey file and (c) Geology log file, (d) Assay file and (e) RQD File. The file formats are given below. All the bore hole data may be submitted in the below given format.

(a) Collar file

Hole_id*	Latitude	Longitude	Altitude	Max_depth	Hole_path (linear/angular)	Date of drilling

(b) Survey file for drill holes

Hole_id	Depth	Dip	Azimuth

(c) Assay file

(c) Assay file			radicals analysed				
			(specify name of radical as an example given below)				
Hole_id	Depth_from	Depth_to	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	LOI	P

(d) Geology file

Hole_id	Depth_from	Depth_to	Lithological Description

(e) Rock Quality Designation (RQD) File

Hole_id	Depth_from	Depth_to	RQD%

*\*Hole ID should tally with the surface geological plan as available in the latest approved mining plan.*

Along with the above information, graphical litho log details may be provided in plate, Form J and laboratory certificate may be provided as Annexure.

23. **Para 2.2.1.14: Area covered under exploration – (i)** Only Forest Permitted area considered for different level of exploration, the total lease area as per CEC may be considered for exploration. The forest permission area may be specified in the foot note of the Table. **(ii)** In the Geological Plan, it is observed that, there are no bore holes in the northern part of the ore body; however the area has been marked under G1 category. The same may be verified and suitably corrected and area under G1 level of exploration may be recalculated. All the plans, sections and in Reserve/Resources calculation, the said corrections may be updated. **(iii)** From the drill hole log it is observed that some of the boreholes are in non-mineralized zone, the area of non-mineralized zone may be calculated and specified in this para. **(iv)** Mineralized area, non-mineralized area and area to be explored in the lease may be marked on the Geological plan with polygon (area) feature.
24. **Para 2.2.2.5: Pitting –** Radical analyzed may be specified along with the average grade.
25. **Para 2.2.2.10 Chemical Analysis:** The comment given in Para 2.2.1.10 is also applicable to this para.
26. **Para 2.2.2.13 Bulk Density: (i)** In the Bulk Density Report (Annexure 9), Recovery Study and Bulk Density Study are combined. Methodology adopted for calculation of Bulk Density is not clearly mentioned. Therefore, the Bulk Density study may be carried out as per M (EMC) Rules, 2016 and SOP of CGPB and detailed study report may be enclosed. **(ii)** The Mining Plan Template (column title) is edited; the given information may be suitably corrected as per the format.
27. **Para 2.2.3 Ore Body geometry & Grade: (i)** General strike trend mentioned is not correct and in the Dip of the Ore body column, Dip value and direction may be specified. **(ii)** In the Geological Map it is observed that there are small isolated iron ore bodies in the lease area, the details of the same may be provided, also the details other iron ore bodies may be provided in local geology and extent of mineralization paras.
28. **Para 2.2.4.1 Methodology:** (i) Resource/reserves estimated as per UNFC guidelines may be specified. **(ii)** Iron ore Grade for different type of ore may be specified.
29. **Para 2.2.4.2 Resource Calculation:** Both Float ore and Reef ore are considered in the calculation of resources by sectional method with different recovery percentage. Hence, Section no. and type of ore and recovery percentage applied may be specified in the foot note of the table.
30. **Para 2.2.4.3 Mineral Resource Estimate for Conversion to Mineral Reserve:** (i) The information given is not appropriate w.r.t. title of the para, the same may be revised. In this para, it may be mentioned that Mineral reserves are estimated from geological resources by considering the level of exploration, deducting the blocked resources in safety zone & beyond Ultimate Pit limit etc. **(ii)** In this para it is mentioned as Reserve/resources estimated as on 31/12/2021. However, the information given in para 2.2.4.13 mentioned as 01/04/2021. The same may be verified and corrected. **(iii)** Reserve/resources estimated as on 01/04/2021 (as per Annual return) and Reserve/resources estimated as on 31/12/2021 may be given separately.
31. **Para 2.2.4.4: Treshold Value & Cut off Parameters: (i)** The Threshold Value & Cut Off Parameters is not clearly mentioned. Details given in this para may be modified by specifying the Threshold Value published by IBM for Hematatic Iron Ore and Cut off grade considered in the mine. **(ii)** In this para Cut off grade mentioned as 45-60%, however in the bore hole sample analysis it is observed that, there are samples analyzing 35% to 45%Fe,

which is not considered and in Mining Chapter 'No Mineral Reject' (35% to 45%Fe) is shown. These points also considered while specifying the Cut-off grade.

32. **Para 2.2.4.5: Mining Factors or Assumptions:** (i) In the Mining Factors, Overall pit slope, Ultimate Pit Depth, other mining factors if any may be provided. (ii) Ore type category mentioned may be reviewed and suitably corrected.
33. **Para 2.2.4.6: Metallurgical Factors or Assumptions:** The information given in sub-pars may be deleted, these headings not in New Mining Plan Template.
34. **Para 2.2.4.10 Classification:** The details given in this para may be simplified. Details of reserve/resources estimated by UNFC classification may be provided.
35. **Para 2.2.4.11 and Para 2.2.4.12: Calculation of Blocked Resources & Calculation of Reserves:** The comment given in may Para 2.2.4.2 may also be considered in these paras for calculation of Reserve/resources. As per EC Condition, working depth should be restricted to 60m below ground level, Accordingly Ultimate Pit limit may be drawn and reserve/resources be calculated. Below UPL if the area mineral is proved, same may be considered under blocked resources.
36. **Para 2.2.4.13:** (i) The Reserve/resources given as on 01/04/2021 should be in line with the figures given Annual return. (ii) 1.456 million tone of HSIO has been given in previous approved document dated 23/04/2021. Now the same has been in removed, entire reserve/resources given are Hematitic Iron Ore, the same may be clarified. (iii) reserve/resources as per UNFC classification as on 01/12/2021 or 01/01/2022 may also be provided by adding the separate table.
37. **Para 2.2.5: Future Exploration Proposal:** As per Rule 12(4) of amended MCDR, 2021, in the case of existing mining leases, "*Detailed exploration (G1 level) over the entire potentially mineralized area under the mining lease shall be carried out in the manner specified in the Minerals (Evidence of Mineral Contents) Rules, 2015 within a period of five years from the date of commencement of these rules.*". Hence, it is advised to propose the exploration activities as per the MEMC Rules to cover the mineralized area into G1 level. Non-mineralized area need to be proved by geological mapping, exploratory pitting/trenching and drilling if necessary.
38. **Para 2.2.5.5: Exploratory Drilling -** (i) Proposed depth of boreholes is 20m, it is very shallow, deeper holes preferably core bore holes may be proposed (ii) There is no proposal for drilling during the Year 2022-23, drilling may be proposed during the year 2022-23, (iii) In the attachment column it is mentioned as 'Nil', details of proposed boreholes may be provided in Annexure. (iv) Bore holes may also be proposed on isolated iron ore bodies which are shown on Section line G-G', L-L' and N-N' to establish the horizontal and vertical extent of the ore body. (v) In Section line D-D' in the gap area, the bore holes may be proposed. (vi) Bore holes may also be proposed in the section lines, where holes area ended in Mineralized zone i.e. where Fe 35% and above.
39. **Para 2.2.5.7: Sampling -** Tentative no. of samples going to be generated from Pits, Trenches and boreholes may be specified in this para.

### **CHAPTER-3: MINERAL BENEFICIATION/PROCESSING**

40. **Para 3.1: Mineralogy of the ROM Ore/ Mineral -** (i) Valuable Mineral name may be specified as Hematite. (ii) Approximate Mineral given as 95% and gangue mineral given as only 5%, which need to be verified and corrected.
41. **Para 3.2:** Complete chemical analysis of other radicals MgO, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, LOI etc may also be provided.
42. **Para 3.3: Crushing Section:** In para 3.3.1: primary crushing, the product size is 0-90(mm, however in para 3.3.2: secondary crushing ,feed size is mentioned as -100 (mm) which may be verified and corrected.
43. **Para 3.5.1:** Under para 3.5.1, Screening and classification, feed size is given as 100mm which may be verified for its correctness. Also in column Product Quality, Lumps and fines Product size and avg. grade of the iron ore may be specified. Flow chart of crushing & screening may be enclosed as annexure and same may be referred under these paras.

44. **Para 3.9:** Source of water, it is specified as Bore wells, whether the bore wells are located inside the lease or outside the lease may be specified.
45. **Para 3.10:** The enclosed Flow sheet is not in order. Flow chart showing detailed of process of different size of crushing, feed size, Product size and screening may be provided as Annexure.

#### **Chapter -4: MINING METHOD (OPENCAST)**

46. **Para 4.2.1.1: (i)** Working Pit – 1: In dimension column, the width is mentioned as 220m, as per Surface Plan information looks to be around 120m. **(ii)** In Old Working Pit, the length is mentioned as 384m, as per Surface Plan information looks to be around 250m. Dimensions mentioned may be verified and corrected accordingly.
47. **Para 4.2.1.2.2:** In the Type of stack column, details of stack ROM/lumps/fines/Mineral reject/sub-grade etc details may be provided.
48. **Para 4.2.2.1 Bench Parameters:** Section lines drawn are parallel to the proposed face of benches which will not give the correct picture of the bench height and width, It is therefore advised to draw the sections lines perpendicular to the bench faces or also provide longitudinal sections at 50m where production & Development is proposed during the plan period which may also be used for calculation for arriving at quantity of Ore burden and ROM including intercalated waste.
49. **Para 4.2.2.2: Year Wise Opencast Development:** As per EC Condition, working depth should be restricted to 60m below ground level. The ultimate Pit level may be drawn and a production & development may be proposed accordingly.
50. **Para 4.3.1: (i)** Slope Stability study of the Mine pit/benches and dump may be undertaken and study report may be enclosed. **(ii)** Hydrological Study undertaken if any, its report may be enclosed. **(iii)** Bulk Density Study may be undertaken and Report may be enclosed.
51. **Para 4.3.2: Insitu Mining: (i)** The given information may be modified as per the comments given in para 4.2.2.2 **(ii)** The calculation may be made with OB to Ore Ratio. **(iii)** Avg. grade of iron ore is provided, grade range needs to be provided.
52. **Para 4.3.3:** Dump Working is proposed, however there is no salable ore recovery in the dump working, hence the given information may be deleted and may be mentioned as 'No Proposal'.
53. **Para 4.6.6:** In others column, no proposal is given, security guard and other workers may be proposed here.
54. **Para 4.6.7:** As per the proposal Total no. of Average daily employment is 39 per shift, however it is mentioned as 30, the same may corrected after updating the figures at para 4.6.6.
55. **Para 4.6.8 Supervision:** No details provided in this para, details may be provided as per the format.
56. **Para 4.7.2: (i)** New dump proposals are in working pit, the area has to be explored fully in G1 level, before commencement of dumping. If the mineral exists below proposed dumping area, it should be purely on temporary basis, accordingly same may be specified in the foot note of the table.
57. **Para 4.7.4:** Location details of new stack may be provided in UTM grid.

#### **CHAPTER-5: SUSTAINABLE MINING**

58. **Para 5.2.1.13: Efforts for green energy:** The Green energy consumption (% of total) given as 52.2 may be verified for its correctness as it is the percentage of total of 1305 Kwh of total energy consumption.

## CHAPTER-6: PROGRESSIVE MINE CLOSURE PLAN

59. In many paras it is observed that, there are no proposals and 'zero' and 'nil' is mentioned in the cells. However, 'No Proposal' may be specified in front of the sub-para titles itself.
60. **Para 6.1:** In the foot note, date on which the Status of land extent is considered under various activities may be specified.
61. **Para 6.2.11: Land Use of Lease Area at the Expiry of Lease Period:** The Area details given in various activities may be verified for its correctness. In the foot note of the table it may be it committed to undertake fencing of mine pits, regrassification of dumps and top OB benches, utility service area etc.

## CHAPTER-7- FINANCIAL ASSURANCE/PERFORMANCE SURETY:

62. Revised bank guarantee as per the Mineral Conservation and Development (Amendment) Rules, 2021 needs to be submitted. Also the details given under Performance security are not understood. May be clarified.

### Plates - Hardcopy

63. All the plans should be updated as per the scrutiny comments wherever applicable.
64. CEC Sketch enclosed does not contain the lease boundary pillar co-ordinates, DGPS Surveyed, State Govt. authenticated lease boundary sketch along with lease boundary pillar co-ordinates may be provided. If there is any change in the lease boundary pillar co-ordinates, all the plans & Section may be suitably updated.
65. **Surface Plan:** (i) Boundary of MML (M/s. KSMCL) overlapped may be shown in different color. (ii) FC not granted area is not given in Index, same may specified in Index or may be given in the non FC area. (iii) Line thickness of the contours may be reduced. (iv) Surrendered area given in Index, however same is not shown on the plan. The said corrections may also be updated on all the plans wherever it is applicable.
66. **Geological Plan :** (i) Symbology /colour code given in Geological Index are not matching with the details in the Geological Plan, the same may be reviewed in all the plans and suitably corrected. (ii) Strike and Dip of the ore body/other lithologies may be provided. (iii) The rectangular and square shaped of Iron ore bodies drawn on section line G-G' and N-M', generally it won't occurs in these shapes, the same may be corrected with Geological mapping information. (iv) There are mapable size waste rocks (phyllite) in between the main iron ore body, the same may be updated in Geological Plan and cross section. (v) Proposed bore holes, pits and trenches may be shown on the Geological Plan. (iv) Southern part of the ore body between section line AA' & DD' the area is not fully explored, however dumping is done and further dumping is proposed. This area needs to be explored by drilling before commencement of dumping; accordingly boreholes may be proposed in this area. (v) Mineralized/non-mineralized area and area explored under G1/G2/G3/G4 may be marked on the plan and area details may be given in tabular form. (vi) Sharp links in the UPL and G1 exploration boundaries may be smoothed. (vii) Geological Plan and Sections should also be signed by Geologist.
67. **Geological Cross Sections:** (i) Year-wise Development lines drawn on Geological Sections may be deleted, the same may be shown on Production & Development Plan. (ii) All the drilled boreholes are vertical; hence the angle 90 degree given in section may be deleted. (iii) In some of the Geological Sections, details are not matching with the surface geological plan; the same may be verified and suitably corrected. (iii) Proposed bore holes and pits/trenches may be shown in green color. (iv) Geological Index is not matching, the same may be corrected. (v) Drilled Trail Pit mentioned in Index is not clear; the same may be verified and corrected.
68. Graphical Litho logs may be prepared for Bore holes and pits. Boreholes may be proposed at the locations where boreholes are ended in mineralized zone.

69. Geological Plan and Sections may also be signed by Geologist.
70. **Production & Development Plan:** (i) Section lines are drawn parallel to the face movement of benches, which leads to wrong calculation in Production & Development. Hence, it is advised also to draw a section line across the benches and these section lines may be considered while calculating the Production & Development volume. (ii) Year-wise exploration activity (pitting, trenching & drilling locations) may be shown on the plan. (iii) Proposed R & R activity and Plantation location information (UTM grid) may be provided in tabular form. (iv) Section-wise Production & Development calculation may be provided in tabular form. (v) Ultimate Pit boundary is not shown; the same may be drawn on the plan.
71. **Production & Development Sections:** (i) Cross section may also be prepared for the section line going to be drawn across the benches. (ii) UPL needs to be drawn on the cross sections. (iii) Symbology & color code in index are not tallying with the cross section; the same may be verified and corrected.
72. **Progressive Mine Closure Plan:** Year-wise R & R structures dimensions and plantation proposal details may be provided in tabular form.
73. **Conceptual Plan:** (i) The conceptual Plan is period upto Year 2032, which is not correct. The plan should be prepared upto the period end of Mining Lease period i.e. upto 04/08/2042. (ii) Details given in the plan is not in order, the same may be verified and suitably corrected in line with proposal in the text.
74. Financial Assurance Plan is not furnished; the same may be prepared and enclosed.

**Plates soft copy (kml file)**

75. Plates provided in .kml file format are not in order. Each map (**Geological Plan, Surface Plan, Production & Development Plan, Progressive Mine Closure Plan etc**) should contain lease boundary, surface feature information etc details. All the features should contain basic attribute data which is required to identify the layer/proposal etc. The .kml files submitted should be corrected suitably and submitted with all layer information as per legend given in hard copy in shape file / kml file format.
76. The Production & Development Plan are given combined for five year in one kml file. Year-wise proposals may be given in separate file.
77. Many features given in hard copy of the plates are missing in kml file. The same may be verified, the details may be updated in kml file.
78. In some plans, the ore body, dumps etc drawn outside the lease boundary. The same may be reviewed and corrected.
79. All the plans may also be updated in softcopy (.kml/.shp) as per the comments given in Plates (Hardcopy) and in text.

**ANNEXURE:**

80. The numbering of annexure has not been sequentially maintained as per the format. Numbering of annexure to be specifically maintained as per the format. Any additional annexure enclosed may be followed after annexure no 18 with corresponding details. All the annexure as mentioned in above scrutiny comments of different chapters to be enclosed. Also, corrections in the annexure, as mentioned above in scrutiny comments of different chapters to be incorporated and corrected annexure to be enclosed.
81. Undertaking/Consent letter from the lessee may be digitally signed by the lessee.
82. Copy of Valid Bank Guarantee for the entire plan period as per the amended MCDR Rule 2021 needs to be submitted.
83. All the annexure to be properly numbered/ paged and relevant annexure to be signed by QP. The Page no range should be accordingly given in list of Annexure. All the annexure should be legible.

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