

Scrutiny Comments on Examination of Draft Modification to the Approved Mining Plan including Progressive Mine Closure Plan in respect of Ramanamalai Iron Ore Mine (ML No. 2296) over an area of 53.16Ha (as per CEC sketch) located in RM Block, Sandur Taluk, Ballari District, Karnataka State, submitted by M/s Veerabhadrapappa Sangappa & Company for approval Under Rule 17(3) of MCR, 2016 and Rule 23 of MCDR, 2017.

GENERAL

1. No cells may be left blank. Either “Nil” or “Not applicable” may be furnished.
2. If any relevant information pertaining to the ‘calculation’ or ‘supporting information’ or ‘clarification’ may be provided as foot note in the respective table/para.
3. Wherever additional information or supporting document is given in Annexure, Annexure no may be specified in respective paras/foot note of the table.
4. Undertaking/Consent letter from the lessee may be digitally signed by the lessee.
5. 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

6. The title of the document should be given as “Modification to the Approved Mining Plan including Progressive Mine Closure Plan” submitted under Rule 17 (3) of MCR, 2016 and Under Rule 23 of MCDR, 2017.
7. Extent as per lease deed may also be provided.
8. Date of Grant, expiry and period details may be provided after M.L. No. para
9. Category: Fully mechanized may be corrected as ‘Mechanized’ and end use of mineral captive/non-captive may be specified.
10. Month and Year of the document submitted for modification of the Mining Plan may be specified at the bottom.

Chapter 1: GENERAL INFORMATION

11. **Para 1.1: Lease Details** – extent as per lease deed may also be provided.
12. **Para 1.1.1 Initial/Subsequent lease grant details:** The annexure no. given in lease registration date column may be deleted and same may be provided in the foot note of the table.
13. **Para 1.1.2 : (i) Reasons for modification:** It is mentioned that, DMS, Bellary not sanctioned the narrow bench working. The letter of DMS may be provided as Annexure for reference and the Annexure no. may be specified in this para. **(ii) LOI number and Date** may be mentioned as ‘Not Applicable’
14. **Para 1.3: Date of execution:** The initial date of execution of the Mining Lease deed needs to be given.
15. **Para 1.3.1:** Copy of the Approval letter of Scheme of Mining for the period 2006-07 to 2020-21 is not included in Annexure 4C. All the approval letters may be provided as Annexure and Annexure no. may be specified in the foot note.
16. **Para 1.3.4.1:** Validity of Environmental Clearance may be specified in the para.
17. **Para 1.3.4.4: Land Acquisition Details:** Entire lease area is in Forest land, hence the details given in this para may be deleted and to be mentioned as ‘Not Applicable’

18. **Para 1.3.5.1:** The lease boundary co-ordinates provided are not matching with the State Govt. authenticated lease boundary co-ordinates and sketch. Same may be verified and suitably corrected.
19. **Para 1.3.6:** Sri K.S. Sangamanath, Partner is demised, however, new partnership deed has not submitted to this office so far?

Chapter-2: Geology & Exploration:

20. **Para 2.1.1:** As per key plan information, there is a first order stream existing in the lease, given information in order of stream may be reviewed and corrected suitably
21. **Para 2.1.2: (i)** From the key plan information it is observed that, there are public roads, railway track and human settlement (villages) within 5km from the lease boundary, however no details are provided, the same may be reviewed and all details as per the format may be provided. (ii) Mining leases located within 5km from the lease boundary may be provided in others. (iii) In second table, Name of the nearby village and nearest railway station may be provided.
22. **Para 2.1.4: Local Geology:**(i) During the field inspection, it is observed that there are weathered dykes/sills present in the lease area, however, in the local geological set-up the same is not defined, the same may be provided. (ii) Laterite with lumpy ore may be corrected as Lateritized Iron ore. (iii) As per the geological cross section, the local Geological sequence is soil cover → Lateritized Iron ore → weathered dyke/sill → Hematitic Iron Ore → Hematitic Silicious Iron Ore → BHQ → Shale/Phyllite, the given information in this para may be corrected as per the sequence. (iv) All the lithounits given in the sequence may be briefly explained.
23. **Para 2.1.4.2: Structure** – The information given in this para may be simplified, only structural information may be described.
24. **Para 2.1.4.3:** The lumps and fines ratio mentioned as 20:80, however in the Annual Return the reported lumps is more than 20% and in the Annual Return reported lumps and fines ratio is the product output after crushing and processing of ROM. Hence, the lumps and fines ratio mentioned may be reviewed and corrected as per lumps & fines percentage available in ROM.
25. **Para 2.1.4.4 Mode of Occurrence & Controls of Mineralization:** Threshold value details given in this para may be deleted, only genesis and control of mineralization may be described. The information given in this para 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 replacements 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.
26. **Para 2.1.4.6:** The information given in this para may be corrected suitably as per the comments given in Para 2.1.4.3
27. **Para 2.1.4.5 Extent of Weathering/ Alteration:** As observed in the field, all the litho units in the lease area have undergone deep weathering laterally as well as vertically, the same may be specified.
28. **Para 2.1.4.7 Extent of Mineralization:**The details given in this para may be simplified, only ore body dimension may be specified.
29. **Para 2.2.1:** Details of drilling given in this para is pertaining to Previous Plan Period, hence drilling details given in this para may be deleted.

30. **Para 2.2.1.2 to 2.2.1.8, 2.2.1.11 and 2.2.1.12:** It may be mentioned as 'No Proposal & Not Carried out'. This comment may also be applicable to Para 2.2.2 where no proposal and exploration not carried out.
31. **Para 2.2.2.13 Bulk Density Study:** (i) The Bulk Density of different types of iron ore and waste is already given in tabular form, to avoid the repetition, details given in running text/paragraph may be deleted. (ii) From the Bulk Density Study Report (Annexure 9) it is observed that 03 number of samples collected for each type of ore/waste, however, in this para, number of samples mentioned as 01, the same may be corrected as 03 for all the ore type and waste.
32. **Para 2.2.1.14: Area covered under exploration:** Lessee has not carried out any exploration in the plan period, hence, details given in this para may be deleted and may be mentioned as 'No exploration carried out during the plan period' and it may be mentioned as 'NA' in the cells for table.
33. **Para 2.2.2.1 Geological Mapping:** Geological Mapping may be proposed for all the years as per the format, in the foot note of the table it may be mentioned that 'update of geological map based on exploration data and mining information'.
34. **Para 2.2.2.7 Exploratory Drilling:** Graphical litholog along with grade (Fe) may be provided in Plate.
35. **Para 2.2.2.10: Chemical Analysis:** (i) Some of the columns (Name of the agency, type of agency, attachment) are deleted in the tabular format, no cells in the format of the mining plan template shall be deleted/edited. (ii) Sample details contains of rock chip samples, 2031 drill core samples details not provided. (iii) The rock chip sample data provided in Annexure 13 contains the samples collected and analyzed in the current plan period, in this para, only previous plan period exploration data should be provided. This para may be reviewed and suitably corrected with all the relevant information.
36. **Para 2.2.2.13 Bulk Density:** There is no supporting document for the bulk density study and the Bulk Density Study results given in this para are similar to the information given in para 2.2.1.13, if the study is not conducted in the previous plan period, details given in this para may be deleted and mentioned as 'Not Carried out'
37. **Para 2.2.2.14 Area Covered under exploration:** In the 2nd table, the information provided is not correct, the details of increase in G-1 area, G-2 area and its percentage may be calculated w.r.t. to the remaining area in different level of exploration (G4, G3, G2) during previous plan period and exploration carried out and upgraded (G1/G2) exploration carried out in the previous plan period.
38. **Para 2.2.3 Ore Body geometry & Grade:** (i) General strike, average strike length and width of the ore body mentioned in this para is not in line with the information provided in para 2.1.4.7 Extent of Mineralization. The same may be reviewed and corrected suitably.
39. **Para 2.2.4.1 Methodology:** (i) Resource/reserves estimated as per UNFC guidelines may be specified. (ii) In the Resource/reserves estimation method it is mentioned that, estimated by section area method/Block method, percentage of variance in calculation results by both the methods may be provided in this para. (iii) Fe grade more than 35% may be corrected as Fe 35% and above. (iii) The lumps and fines percentage mentioned as 80% lumps and 20% fines, which is not correct, the same may be verified and corrected suitably.
40. **Para 2.2.4.2 Resource Calculation:** (i) From the drilling litholog data it is observed that ore body is extending beyond 900mRL, however while calculation of resources, it is restricted to 900mRL (upto UPL depth), this may be reviewed, the resources

may be calculated upto the depth of mineral content established by drilling. This comment is applicable to all the paras/tables where Reserve/resources calculated. The geological sections may be updated accordingly. (ii) For Iron ore, the grade of ore mentioned as +45%, the same may be corrected and average grade of Iron ore in each section may be provided. For Hematitic Silicious Iron ore also average grade may be provided. (iii) In G3 scale exploration, the grade details not provided, the same may be provided.

41. **Para 2.2.4.3 Mineral Resource Estimate for Conversion to Mineral Reserve:**(i) In addition to the information given in the 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 that, reserves are brought to G1 level, which is not correct, there are reserves in 122 category (i.e. G2 level), hence this line may be deleted or suitably modified. (iii) Hematitic silicious ore mentioned may be corrected as Hematitic silicious Iron (HSIO) ore and grade of HSIO should be Fe 35% to <45%, the same may be corrected.
42. **Para 2.2.4.4: Threshold Value & Cut off Parameters:**(i) The Threshold Value mentioned for Iron ore may be corrected as Fe 45% and above. (ii) Cut Off Parameters considered for the mine is not mentioned in this para, the same may be provided.
43. **Para 2.2.4.5: Mining Factors or Assumptions:**(i) In the Mining Factors, Overall pit slope, bench slope, Ultimate Pit Depth, other mining factors if any may be provided. (ii) Lumps and fines ratio and recovery factor of iron ore may be provided.
44. **Para 2.2.4.10 Classification:** The details given in this para may be simplified. Detail of reserve/resources estimated by UNFC classification may be provided.
45. **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 865mRL, beyond 865mRL/below UPL if the mineral is proved, same may be considered under blocked resources.
46. **Para 2.2.4.13:** (i) In addition to the Reserves resources given as on 01/01/2022, the Reserve/resources may also be provided as on 01/04/2021, this should be inline with the figures given in Annual return. (ii) In the Grade column, average grade may be provided.
47. **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 needs to be proved by geological mapping, exploratory pitting/trenching and drilling if necessary.
48. **Para 2.2.5.5: Exploratory Drilling:** From the litholog sheet, it is observed that many drill holes are ended in mineralized zone i.e. Fe >35%, hence it is advised to propose additional boreholes where the bore holes are ended in mineralized zone. (ii) From the geological cross sections, it is observed that, the proposed boreholes are ending in mineralized zone, hence it is advised to propose deeper boreholes, the proposed boreholes should reach non-mineralized zone.
49. **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

50. **Para 3.1: Mineralogy of the ROM Ore/ Mineral** -**(i)** Valuable Mineral name in ROM may be specified as Hematite, Goethite & Limonite. **(ii)** Approximate Mineral percentage given as 99% and gangue mineral given as only 0 to 1%, however, The average Fe content in the Hematitic Iron Ore is about 58%, this shows ROM contains more gangue mineral. The information given in this para need to be verified and corrected suitably.
51. **Para 3.2:** Complete chemical analysis of other radicals MgO, Al₂O₃, SiO₂, LOI etc. may also be provided.
52. **Para 3.3.2 to 3.4.2 and 3.5.3 to 3.6.6:** Where no crushing/screening/processing activity is not proposed, it may be mentioned as 'No Proposal'
53. **Para 3.10:**The Annexure no. 15 flow chart of crushing and screening may be given in Others.

Chapter -4: MINING METHOD (OPENCAST)

54. **Para 4.1:** In Method of Mining both Manual and Mechanized given, the same may be corrected as Mechanized.
55. **Para 4.2.1.2 Dump Details:** Average height of the dump is mentioned as 60m, as per the Surface Plan information, the given information is not correct. The same may be reviewed and suitably corrected.
56. **Para 4.2.1.2.2 Stack Details:** During field inspection it is observed that, there are temporary mineral stacks (Lumps & Fines) in the lease area, the same has not been provided in this para. All the stack details may be provided.
57. **Para 4.2.2.1 Bench Parameters:**(i) Depth of Water Table may be provided in mRL. (ii) Maximum depth of working may also be provided in mRL for ready reference with plans and sections. (iii) Pit ID column cells and Depth of water table cells are merged, the same may be unmerged, details may be provided in all the cells. This comment is also applicable para 4.2.2.2 where cells are merged.
58. **Para 4.2.2.2: Year Wise Opencast Development:**(i) Top soil may be included while calculating the OB to Ore Ratio. (ii) OB to Ore ratio may be provided as per the format. (iii) Section-wise, detailed calculation of Production & Development may be provided in Annexure and in Production & Development Plan
59. **Para 4.3.1:** Slope Stability study report enclosed is carried out in the year 2016 only for the pit, further only top 9 benches considered for the study. Hence, it is advised to carry out the slope stability study of the Pit and waste dump and study report may be enclosed.
60. **Para 4.3.2: Insitu Mining:** **(i)** Top soil quantity may also be included in the waste. **(ii)** The calculation may be made with OB to Ore Ratio.
61. **Para 4.3.3: Dump Workings:** It may be mentioned as 'No Proposal'.
62. **Para 4.4 Machine Calculation:** Material handling per shift and per day mentioned is not correct, it should be calculated w.r.t. maximum material quantity proposed to be handled per year. The same may be verified and the details given in this para corrected suitably.
63. **Para 4.4.2: Shovel/Excavator Requirement:** (i) Swell factor mentioned as 1.3, the swell factor should be less than one, accordingly given information may be corrected. (ii) Machine utilization factor should be given in percentage. (iii) Number of excavators may be provided in round figure.
64. **Para 4.4.3 Dumper requirement:** Effective shift hour may be mentioned.
65. **Para 4.6.6:** (i) In this para, total number of persons engaged per shift/per day is mentioned as 111 nos., however, as per the given information in para 4.6.1 to 4.6.5,

the total no. of persons per day is 109, the same may be verified and suitably corrected. (ii) Material to be handled may be corrected as per the comments given in para 4.4.

66. **Para 4.6.7: Supervision:** Shortage and excess details of Supervisory man power mentioned as nil, details may be provided as per the format.
67. **Para 4.7.1 Existing Dump:** For the plan period, dumping is proposed on existing dump, as per EC condition, the maximum height of the dump shall not exceed 30m, each stage of the dump preferably of 10m, the height of the dump should be maintained as per EC condition. Further, since, the dump proposed is located on slope, it is advised to carry out the slope stability study.
68. **Para 4.7.3 Existing Stack:** Nil information provided; existing stack details may be provided.
69. **Para 4.7.4: (i)** Year-wise new stack details may be provided separately as per the format. (ii) From the production & development plan it is observed that, large area of the new stack has been shown all along the proposed working area which may hamper the scientific & systematic development if the mineral is unsold for long period. Hence, it is advised to earmark an area where there is no production & development during the plan period.

CHAPTER-5: SUSTAINABLE MINING

70. **Para 5.2.1.13: Efforts for green energy:** No information is provided under this para. Total energy consumption (KWh) and % of total green energy consumption needs to be given. During the site inspection it is observed number of solar panels are installed near to the mine office and other places.
71. **Para 5.2.1.14: Water and recycled use:** Under this para it is mentioned as nil which is incorrect. Total water consumption in the mine for all the activities like domestic, plantation, sprinkling of water on haulage roads etc., may be given and if any water is recycled, its % of total consumption needs to be given.
72. Also the details of cumulative work done / measures taken under various paras may be given by adding year on year numbers given in respective paras.

CHAPTER-6: PROGRESSIVE MINE CLOSURE PLAN

73. 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.
74. **Para 6.1:** In the foot note, date on which the Status of land extent is considered under various activities may be specified. Also Stabilized waste dump Rehabilitated is given as 0 Ha, which is not correct. Part of the dump slopes stabilized by plantation and coir matting needs to be given.
75. **Para 6.2.2.2.2: Retaining Wall:** Both Easting to Northing co-ordinates may be provided in location (from & To) column of proposed construction of retaining wall. Same is applicable for para 6.2.2.2.3: Garland drains.
76. **Para 6.2.6.3:** Afforestation outside the lease area proposed to be carried out cannot be considered as recreational facility. Development of parks in schools or other areas may be within or outside area will be appropriate for this purpose.
77. **Para 6.2.9.1: Topsoil Management:** Cumulative work done as on date given as nil is incorrect. Topsoil generated in the past, its utilization and stored details may be given along with the expenditure incurred till date.
78. **Para 6.2.9.2: Year wise proposal:** Estimated expenditure for excavating and storing of topsoil may be given.

79. **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:

80. The details given under area put to use for 'others' and reduction of its extent year on year is not understood. All the details needs to be given for better understanding and calculation of applicable Financial Assurance.
81. Revised bank guarantee as per the Mineral Conservation and Development (Amendment) Rules, 2021 needs to be submitted.

CHAPTER 8: REVIEW OF PREVIOUS PROPOSALS:

82. Under this chapter review of the proposals made in the last plan approved only needs to be given and in the instant case it is for the year 2021-2022 (till date). Review made for earlier period may be deleted.

CHAPTER 9: IMPACT ASSESSMENT :

83. At the beginning of the chapter itself it may be mentioned as " NOT APPLICABLE"

Plates – Hardcopy

84. All the plans should be updated as per the scrutiny comments wherever applicable.
85. Surface Plan: As per CEC sketch, the total area is 53.16Ha and as per lease deed, FC and EC the total lease area 51Ha, hence, for easy reference, non-FC area of 2.16Ha may be demarcated on the Surface plan also on other plans.
86. Geological Plan: (i) Mineralized area and non-mineralized area may be demarcated on the plan and area details may be given in tabular form. (ii) Strike and dip of the formations may be given in the geological plan. (iii) Hatching given for the geological lithounits looks prominent and it subdued the other information of the map, hence, the lithounits may be filled with light color without hatching. (iv) The line showing 51Ha given Index is not visible on the plans, in if CEC sketch/area considered for preparation of all the plans, in all the plans,
87. Geological Cross Section may be updated as per the comments given in para 2.4.2.2
88. Production and Development Plan: (i) Section-wise production and development calculation may be provided on the plan. (ii) Temporary Mineral stack areas may be modified as per the comments given in para 4.7.4. (iii) Proposed Retaining wall, garland drain and plantation location (UTM grid) may be provided on the plan.
89. Production & Development Sections: (i) The vertical depth of the sections may be extended as per the comments given in Geological Section. (ii) Ultimate Pit boundary is not demarcated on the plan; the same may be drawn on the plan.
90. Progressive Mine Closure Plan: Year-wise Proposed Retaining wall and Garland may be shown on the Plan

Plates soft copy (shape file)

91. All the plans may also be updated in softcopy (.kml/.shp) as per the comments given in Plates (Hardcopy) and in text.
92. Lease boundary and safety zone are combined in single shape file, the same may be separated.

- 93. Proposed Plantation information given in line feature, the same may be provided in Area feature along with year of proposal and area details in attribute data.
- 94. Bench number may be provided in Attribute data of the benches.
- 95. All the features should contain basic data (attribute data) for analysis purpose, accordingly shape files may be updated.

ANNEXURE:

- 96. 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.
- 97. Undertaking/Consent letter from the lessee may be digitally signed by the lessee.
- 98. Copy of Valid Bank Guarantee for the entire plan period as per the amended MCDR Rule 2021 needs to be submitted.
- 99. 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.

