

Scrutiny Comments on Examination of Draft Review and Updation of Mining Plan in respect of Venkatagiri Iron ore Mine (ML No. 2551) over an area of 21.73Ha located in Venkatagiri Village, Sandur Taluk, Ballari District, Karnataka State, Submitted by M/s Lakshmi Minerals 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 2nd 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 14/01/2022 and it is 73 days late from the date of said Notification. You are therefore advised to pay penalty @ **Rs2,000/- per day X 73 days i.e. Rs. 1,46,000/-** (Rupees One lakh forty six 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. Details of As per IBM circular no. is not required, same may be deleted
9. FM abbreviation may be expanded as ‘Fully Mechanized’
10. Lease valid period (date) may be specified

Chapter 1: GENERAL INFORMATION

11. Para 1.1 Lease Details: As per lease deed there are two ore minerals Iron and Manganese ore, hence both Iron ore and Manganese ore may be mentioned at Name of the Minerals.
12. The details of permissible Annual Production as per CEC approval letter along with CEC approval letter number and date. may be given as Para 1.3.4.5 and supporting document may be provided as Annexure

Chapter-2: Geology & Exploration

13. **Para 2.1.2:** In second table, details of mining leases within 05km from the lease boundary may be specified in Any others
14. **Para 2.1.4.3:** Field occurrence and Petrological details of all the lithologies/ore types may briefly be described in this para.
15. **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.
16. **Para 2.1.4.5 Extent of Weathering/ Alteration:** During the field inspection, it is observed that, all the litho units in the lease area are undergone weathering. The details given in this para may be modified. Lateral & Vertical extent of weathered profile in the lease may be specified.
17. **Para 2.1.4.6:** Nature/Form of Mineral: Lumps and fines ratio of iron ore may be specified in this para.
18. **Para 2.1.4.7 Extent of Mineralization:** Lateral and vertical extent of the ore body may be specified. The given information in this para may be corrected accordingly.
19. **Para 2.2.1:** Name of the exploration agency 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.
21. **Para 2.2.1.5:** For the Pit nos. TP-6 to TP13, average grade of the pit is not specified, the same may be reviewed and average grade may be provided. If sample results are not available, the pit details may be deleted in this para also in Plates. Further exploration may be proposed at these pit locations
22. **Para 2.2.1.10: Chemical Analysis:** The bore hole samples information given in Annexure (CSV/Excel file), the Annexure no. may be specified in this para. 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 2.2.1.13 Bulk Density: Bulk Density Study Results contains only Iron ore, there is no data for Waste rock/OB. Further, 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, 2015 and SOP of CGPB and detailed study report may be enclosed.
24. **Para 2.2.1.14: Area covered under exploration – (i)** From the Geological Plan, it is observed that, the entire lease area 21.73Ha not explored under G1 level, the given information in the table may be reviewed and suitably corrected. (ii) There is a non-mineralized (phyllite) zones in the lease area, the same may be marked and area details may be given in this para. All the plans, sections and in Reserve/Resources calculation, the said corrections may be updated. **(ii)** 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. **(iii)** Mineralized area, non-mineralized area and area explored under different level (G1/G2/G3/G4) exploration may be marked on the Geological plan with polygon (area) feature and area details may be given in the Geological Plan.
25. **Para 2.2.2.14:** (i) In the 2nd Table, details of area converted G1 from G2, G3 and G4 level may ne given for the plan period. The percentage of increase may be calculated w.r.t. previous plan period. The given information in this para may be reviewed and suitably corrected. (ii) The entire lease area shown as Potentially Mineralized area which is not correct, there is a phyllite exposures and in the drilling some areas also proved as non-mineralized, the same may be demarcated and mineralized and non-mineralized area may be calculated.
26. **Para 2.2.3 Ore Body geometry & Grade:** (i) The nomenclature of the ore band should be same as given in Geological Plan.
27. **Para 2.2.4.1 Methodology:** (i) Bulk Density considered for different type of ore may be specified in this para. (ii) UNFC classification details are provided in para 2.2.4.10, hence, the same may be may be deleted in this para. (iii) Recovery considered for different ore types may be specified.
28. **Para 2.2.4.2 Resource Calculation:** (i) Fe Grade range may be provided for all the sections. (ii) Recovery considered for calculation of resources may be specified in the foot note for easy reference.
29. **Para 2.2.4.3 Mineral Resources estimate for conversion of Mineral Reserves:** Factors of level of exploration, feasibility study and economic factors considered may also be specified in this para.
30. **Para 2.2.4.4: Threshold Value & Cut off Parameters :** Hematitic ore and Hematitic siliceous ore may be corrected as Hematitic Iron Ore and Hematitic Siliceous Iron Ore respectively. For Hematitic Iron ore, threshold value is 45% min, hence '+' symbol may be deleted. For Hematitic Siliceous Iron Ore threshold value is Fe 35% to <45%. The given information in this para may be reviewed and corrected suitably.

31. **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 clearly mentioned and grade may be deleted.
32. **Para 2.2.4.11 and Para 2.2.4.12:** (i) For Calculation of Blocked Resources & Calculation of Reserves, some section line influence are more than 50m and are considered under G1 level, however, this comes under G2, accordingly the UNFC code given may be corrected. (ii) calculation of Hematitic Iron ore and Hematitic Siliceous Iron ore to be separated with title of ore type. (iii) Float ore reserves are given in Para 2.2.4.12, however, float ore calculations are not given in Resource Calculation, the same may be reviewed and suitably corrected. (iv) As per EC Condition, the mining operations should not intersect ground water table, 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.
33. **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) Total Mineral Resources is 86,08,325 tonnes and Total Mineral Resources given Para 2.2.4.2 is 79,26,405 tonnes, the figures are not tallying. The same may be verified and corrected. (iii) Fe grade may be given in range or average grade may be specified. (iv) Updated Reserve/Resources as on 01/01/2022 may be provided in this para by adding additional table. If any exploration carried out and Reserve/Resources updated after 01/04/2021, the same may be briefly explained before providing the updated Reserve/Resources.
34. **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.
35. **Para 2.2.5.1 Geological Mapping:** (i) Area details may be provided for all the years. (ii) The information given in the foot note of the table is irrelevant, same may be deleted. In the foot note it may be mentioned that updation of geological map based on exploration work and mine pit information.
36. There are no proposal of Pitting and trenching, large part of the area covered with float ore and it is not explored in detail, Pitting/trenching may be proposed to in the float ore area, if necessary few bore hole to check any ore body beneath the float ore.
37. **Para 2.2.5.5:** Exploratory Drilling - **(i)** Only 04 boreholes proposed for the plan period, however, from the Geological map it is observed that, there are gaps in exploration, hence additional bore holes may be proposed to prove the entire mineralized area in G1 level. Bore holes may also be proposed in the section lines, where holes area ended in Mineralized zone i.e. where Fe 35% and above. **(ii)** In

North East Band-1, boreholes may be proposed on section line A-A' and D-D' where no boreholes were drilled/proposed. **(iii)** In North East Band 2, bore holes may be proposed on section line A1-A1' and D-D' to C-C' to check the strike extension of the ore body **(iv)** Details of the proposed boreholes may be given as Annexure and Annexure no. may be specified in Attachment column. **(v)** In the type of borehole, RC drilling is proposed, for getting them to maximize sample recovery and ensure representative nature of the samples, core drilling may be proposed.

- 38. 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

- 39. Para 3.1: Mineralogy of the ROM Ore/ Mineral** - (i) Approximate Mineral percentage Valuable Mineral name Hematite is mentioned as 90%, which is not correct. The average grade is less than 60%, the hematite percentage in the ROM is also to be less, the given information may be reviewed and suitably corrected.
- 40. Para 3.3.1:** Product size is mentioned as 40mm; however in the flowchart it is mentioned as -40mm, the same may be verified and corrected.
- 41. Para 3.5.3 Product Quality:** Different Product size range and grade may be specified in this para.
- 42. Para 3.9:** Details of Source of water, usage for domestic usage, dust suspension, plantation, mining activities etc. may be specified in this para
- 43. Para 3.10:** Annexure no. of flow chart of Crushing and Screening may be specified in any other.

Chapter -4: MINING METHOD (OPENCAST)

- 44. Para 4.2.1.2: (i)** Dump Id of Waste Dump (D-1) and Sub-grade dump (D-2) is not shown on Plan. All the dumps should be clearly demarcated on plans and dump ID may be given. **(ii)** Height of the dump D-1 mentioned as 120m, as per the Surface Plan details, the height is not correct; the same may be verified and suitably corrected. **(iii)** As per EC condition, maximum height of the dump should be 30m, having 3 stages each of height stage should not exceed 10m.
- 45. 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.
- 46. Para 4.2.2.1 Bench Parameters: (i)** Bench dimension in OB is given, however number of benches in OB is not specified, the same may be specified. **(ii)** Over all pit slope and Depth of water table range is given, the same may be deleted average figure may be given. **(iii)** Maximum depth of working may be given in mRL. **(iv)** As per EC Condition, Mine working should be restricted above water table level, hence, maximum depth working may be proposed and ultimate pit level may be drawn accordingly. **(v)** In the section line B-B', there is proposal of mining in the eastern band, which is located in the slopes and there is not connection with Pit ID-A, hence new nomenclature may be given for this pit and all the details may be provided by

inserting the additional rows in the table. **(vi)** Number of benches Mineral given is not correct w.r.t. Production plans and section, the same may be reviewed, only pit-wise proposed working benches nos. during the year may be provided.

47. **Para 4.2.2.2: Year Wise Opencast Development:** **(i)** The comments given in Para 4.2.2.1 may be considered wherever it is applicable. **(ii)** Both Hematitic Iron Ore (HIO) and Hematitic Siliceous Iron Ore (HSIO) given combinedly, however Bulk Density of these ore types are different. Hence, calculation details may be provided in separate table. **(iii)** Details given in Production Associated Mineral may be deleted. **(iv)** If there is no mineral reject Recovery percentage may be specified as 100%. **(v)** The Mining Plan format is edited, OB to Ore ratio may be provided as per the format. **(vi)** Detailed Year-wise Development calculations along with minimum and maximum bench height details may be provided in Annexure also on Production & Development Plan. **(vii)** In the 2nd Table, details of Pit located in the slope (eastern ore band) may also be provided.
48. **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.
49. **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.
50. **Para 4.3.4:** Combined quantity of HIO and HSIO may be also be provided in this para.
51. **Para 4.4 Machine Calculation:** Material handling per day, per shift and per hour not tallying with total proposed quantity (given in para 4.3.2) be handled per Year. Only ROM is considered in calculation, the same may be verified and suitably modified in all the calculations of sub-paras of para 4.4.
52. **Para 4.4.2:** Bucket fill factor mentioned in this para is high, the same may be given as 0.7 and accordingly all calculations may be modified.
53. **Para 4.4.4 Drill Machine Requirement:** It is mentioned as 'No proposal', however details of drilling proposal given. The same may be reviewed and corrected.
54. **Para 4.5.2:** Type of Explosive and Type of Explosives used / to be used details are not provided in this para, same may be provided.
55. **Para 4.6.1: Managerial:** Details given in Particulars column is not correct, the same may be reviewed and suitably corrected.
56. **Para 4.6.5:** There is no proposal for unskilled worker, same may be proposed.
57. **Para 4.6.6:** proposed Material to be handled per shift is not correct, same may be corrected as per Total material handling information given in para 4.3.2
58. **Para 4.6.7:** Only details of Supervision Manpower may be given in this para, remaining viz. semiskilled worker, driver, operator etc may be deleted. As per the format, (-) Shortage / (+) Excess details of supervisory manpower may also be provided.

59. **4.7.1: Existing Dump:** No details provided in this para, all the details of existing dump in the lease area may be provided as per the format.
60. **4.7.2: New Dump:** (i) In the foot note of the Table, it may be specified that, the proposed dumps are on existing dump. (ii) Dump proposals may be reviewed w.r.t. EC condition, maximum height of the bench should be 30m, having 3 terraces each of terrace height should not exceed 10m, accordingly the Dump location and height may be proposed.
61. **Para 4.7.3: Existing Stack:** Processed ROM stack exists in the lease area, however, no information provided in the cells and no proposals mentioned. This para may be reviewed all the details of existing stack may be provided as per the format.
62. **4.7.4: New Stack:** No Proposals given in this Para, if any proposal to Stack the mineral, details may be provided.
63. **Use of Minerals:** (i) Direct Selling through e-auction may be specified in Proposed Use of Mineral. (ii) Fe grade range and average grade may be provided in Chemical Specification.

CHAPTER-5: SUSTAINABLE MINING

64. **Para 5.1:** Compliance of Vishakha Committee Mentioned as 'Not Applicable', for the statement justification may be provided.
65. **Para 5.2: CSR Initiatives:** Keeping in view the main objective of reinvesting the benefits derived from the extraction of minerals as per Sustainable Mining and SDF Implementations, It is advised to review the 'Nil' proposals made under sub paras 5.2.1.6: Efforts made towards Providing Hygiene & Sanitation to Local Communities & 5.2.1.10: Any other steps taken for improving the Socio-Economic Standard of Local communities.
66. **Para 5.2.1.14: Water & recycled use:** for the year 2022-2023, 6.29% of total water recycled out of 17KLD of total water consumption as stated may be verified for its correctness.

CHAPTER-6: PROGRESSIVE MINE CLOSURE PLAN

67. **Para 6.1 Status of Land:** Area under dumps may be reviewed w.r.t. the details given in Para 4.2.1.2.1 and suitably corrected.
68. **Para 6.2.2.2 Protective measures:** No Proposal of Retaining Wall and Garland Drain given for the plan period, however, there is a Proposal of construction of 135m retaining wall and 140m garland drain during the year 2021-22, the proposed work is not carried out. Hence, it is advised to propose the construction of retaining wall and garland drain for the plan period. Further, it may be proposed to maintenance of the existing Retaining Wall and Garland Drain maintenance in the foot note of the Table. If any new dump proposal, Retaining Wall and Garland Drain may be proposed along the toe of the dumps.

69. **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

70. The area utilized under Retaining wall, Garland Drain, Weigh Bridge, Silt Settling pond and Crushing & Screening Plant are not shown in Land area utilization. The same may be shown; the area details may be updated accordingly in the Year-wise proposals.
71. Revised bank guarantee as per the Mineral Conservation and Development (Amendment) Rules, 2021 needs to be submitted.

CHAPTER-8: REVIEW OF PREVIOUS PROPOSALS

72. **Para 8.2.1 Exploration:** (i) Achievement in G-axis up gradation during the plan period may be given along Deviation details. (ii) Reasons for deviation cells are merged, the same may be unmerged and details may be provided.
73. **Para 8.2.2:** (i) Generated waste while ROM recovery may be specified. (ii) Reasons for deviation cells are merged, the same may be unmerged and details may be provided.
74. **Para 8.2.8.3 Afforestation:** (i) Deviation percentage may be specified. (ii) Achievement details for Retaining wall and Garland drain may be mentioned as 'zero'.

Plates – Hardcopy

75. All the plans should be updated as per the scrutiny comments wherever applicable.
76. **Surface Plan:** (i) Waste Dump ID and Pit ID may be mentioned (ii) Pit and dump area may be clearly demarcated on the plan. (iii) UTM Grid line type may be shown as broken line in dark grey colour to easily distinguish from section lines (This comment is applicable to all the plans).
77. **Geological Plan:** (i) Symbology /colour code given for RC and DTH drilling looks similar, different symbol and color may be given for RC and DTH bore holes. (ii) Strike and Dip of the ore body/other lithologies may be provided. (iii) The Proposed Pitting/trenching and bore holes may be updated as per the comment given in Future exploration. (iv) 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.
78. **Geological Cross Section:** (i) There are three iron ore bands in the lease area, the ore band name may be specified in the Geological cross section. (ii) In some sections resources (333) given beyond the drilled depth, the same may be explored in detail

by deep drilling and may be converted into G1 level. Accordingly drill hole may be proposed. (iii) The grade given in the Geological Index may be reviewed for its correctness and rectified.

- 79. Production & Development Plan:** (i) In Production Development Section, Geological information has been provided; however, the no geological information shown on Production & Development Plan. The same may be reviewed all the litho units/ore bodies may be shown on Production & Development Plan. (ii) Dump boundaries may be clearly demarcated on the plan. (iii) Year-wise exploration activity (pitting, trenching & drilling locations) may be shown on the plan. (ii) Proposed R & R activity and Plantation location information (UTM grid) may be provided in tabular form. (iii) Section-wise Production & Development calculation may be provided in tabular form. (iv) Ultimate Pit boundary is not shown; the same may be drawn on the plan.
- 80. 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.
- 81. Dump Management Sections:** (i) Waste Dump Height proposed for the next plan period is more than 30m, as per EC condition, maximum height of the dump should 30m. (ii) There is a backfilling proposal in the next plan period, which is not required in the Plan Period. Hence Dump/backfilling proposal given for next plan period may be deleted, only dumps of the plan period may be given and the dump height should be restricted 30m.
- 82. Progressive Mine Closure Plan:** Year-wise R & R structures may be dimensions and plantation proposal details along with location details (UTM grid) may be provided in tabular form.
- 83. Conceptual Plan:** (i) In the cross section, dump height proposed is more than 30m, the dump height may be restricted to 30m, accordingly the plan may be modified. (ii) Plan Period mentioned is not correct, same may be corrected upto the Mining lease Period.
- 84.** In the Financial Assurance Plan, the area utilized under Retaining wall, Garland Drain, Weigh Bridge, Silt Settling pond and Crushing & Screening Plant are not shown in Land area utilization. The same may be shown; the land area utilization details given in tabular form may be updated accordingly. In the others it mentioned as 50m safety zone, which is not correct, the same may be verified and corrected suitably as per the information given in text.

Plates soft copy (kml file)

- 85.** 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.

- 86. All the plans may also be updated in softcopy (.kml/.shp) as per the comments given in Plates (Hardcopy) and in text.

ANNEXURE:

- 87. 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.
- 88. Undertaking/Consent letter from the lessee may be digitally signed by the lessee.
- 89. Copy of Valid Bank Guarantee for the entire plan period as per the amended MCDR Rule 2021 needs to be submitted.
- 90. Annexure 12, Date of Drilling may be Specified. Radical Analysed mentioned as Fe2O3, the same may be verified and corrected.
- 91. 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.
