

**SCRUTINY COMMENTS ON EXAMINATION OF MINING SCHEME IN RESPECT APPANAHALLI IRON ORE MINE (ML.NO-2594) OF M/S TUNGABHADRA MINERALS PVT. LTD, FOR AN AREA OF 196.46 HA (197.65 HA AS PER CEC SKETCH) SITUATED IN BALLARI- DISTRICT OF KARNATAKA STATE:--**

1. **Cover page:** -- Nature of land should be checked and corrected w.r.t. FC and EC. Other-wise, necessary relevant documentary proof should be appended in support of part of ML area falls under non-forest.
2. **Introduction:** -- Reasons for delay in submission of SOM document has not been discussed.
3. **Para 2(b):**-- Necessary documentary proof should be enclosed in support of 12.79 Ha of non-forest area.
4. **Para 3.2** :-- Copy of approval letter of Modified Mining Plan has not been enclosed.
5. **Para 3.3:---** (i) Reasons for not resumption of mining operations have not been mentioned. Further, review of any production & development for year 2015-16 has not been discussed. (ii) Proposed development for year 2014-15 should be checked and corrected as 46393 tonnes at Table no- 7. (iii) Proposals of R & R measures and Indicative cost summary table should as per approved R & R plan. Further, reasons for delay in implementation of approved R & R plan have not been discussed.
6. **Para 3.4:**-- Violation letter issued by IBM for non-submission of MRs/ARs has not been discussed with copies of Violation letter and compliance report.

**Part-A**

**Geology & Exploration:--**

7. **Para 1(c)** :-- The average grade of iron ore and Lumps to fines ratio may also be mentioned. Further, presence float iron ore at Block-A has not been discussed.
8. **Para 1(i):**-- Lateral extent of area covered under G-1, G-2 and G-3 level of exploration and total mineralized area should be mentioned. As discussed during site inspection, exploration should be proposed to convert G-3 & G-2 level of exploration area/resources into G-1 and confirm the strike continuity ore bodies if any, as per the time schedule of the ministry of mines (i.e. **Entire prospecting/exploration work within present SOM period**). The grid spacing of Core/RC boreholes may be 100m or closer (G-1 level) as per Minerals (Evidence of Mineral Contents) Rules 2015 depending upon the nature/type of deposits and accordingly proposal should be given in tabular format of "Universal Format". The inclined boreholes may be proposed against the dip direction and Trial pits may be proposed in float iron ore area. Further, the proposed expenditure likely to be incurred towards exploration should also be mentioned.
9. **Para 1(j):**-- (i) Reserves and resources as per last approved Modified MP document dated 20/03/2013 may be mentioned. Now, re-assessment of reserves and resources should be made as per Minerals (Evidence of Mineral Contents) Rules 2015.

(ii) For G-2 and G-1 stages of exploration, depth continuity of mineralization may be limited to depth of Core/RC boreholes and depth of existing pit.

(iii) As per Minerals (Evidence of Mineral Contents) Rules 2015, BHs spacing should be 100m, 200m, 400m or closure for G-1(Proved) G-2(Probable) and G-3 (Inferred Resources) respectively. The lateral extension to be considered may depend on geological considerations supplemented by geological continuity by mapping or by other means and in any case shall not be more than 50% of the grid spacing of the probe points. Therefore, 333 resources should only be assessed between sections A1-A1' to A7-A7' considering boreholes spacing.

(iv) The cut-off grade of estimation of reserves and resources of Iron ore should be as per threshold value limit of +45% Fe.

**10. Para 1(k):--** The tonnage conversion formula should be checked and corrected w.r.t. enclosed calculation table.

**11. Para 1(l):--** The necessary correction should be made as per re-assessment of reserves and resources. Mine production should be envisaged from the area where reserves are estimated & categorized under proved (111) and probable (121 & 122) mineral reserves category.

#### **Mining:--**

**12. Para 2(a) :--** Existing pits dimension and numbers of benches developed have not been mentioned.

**13. Para 2(b):--** (i) There should not be any proposal for year 2015-16 as the financial year completed. (ii) The Ore to waste ratio should be arrived based on the volume of excavation data. (iii) It is proposed to utilize sub-grade ore (45 to 55 % Fe) with proper blending at para 5 and feasibility report. Therefore, generation of sub-grade ore may also be considered as saleable ore and may be reflected under ore column of table. However, total annual production proposal should not exceed CEC's limit of **0.075 MTPA**. (iv) Intercalated waste (below threshold value) of 10 % may be reflected under OB/SB/IB column. (v) Year-wise production in tonnes may also be mentioned below standard table for easy reference.

**14. Para 2(e):--** (i) Proposals of Dumping **in earlier float worked area** should be properly justified as per approved R & R plan (Fig 3.4 & Fig 3.5) due to constraints of suitable space for disposal and unbroken/virgin forest area cannot be utilized. (ii) Mine production should be envisaged from the area where reserves are estimated & categorized under proved (111) and probable (121 & 122) mineral reserves category. (iii) Accordingly, all necessary modifications should be made in all relevant sub-para of this chapter.

**15. Para 2 (f):--** (i) Conceptual mining planning upto end of lease period (i.e. upto **18/08/2030**) has not been discussed in text part as per existing procedure taking into consideration of present available reserves and resources, describing the excavation, recovery of ROM, quantity of generation & disposal of waste (as per approved R & R plan), backfilling of voids, afforestation and other environmental protective measures as per approved R & R plan etc. (ii) Table of existing land use pattern and land use pattern at end of leased period may also be incorporated.

16. **Para 3(d)**:-- The possibility of rain water accumulation in existing pits has not been discussed.

17. **Para 4 (a)**:-- (i) Utilization of sub-grade ore (45 to 55 % Fe) with proper blending as per proposals at para 5 , feasibility report has not been presented at table No-20 (ii) There should not any proposal for year 2015-16

18. **Para 4 (b)**:-- Proposals of Dumping in earlier float worked area should be properly justify as per approved R & R plan (Fig 3.4 & Fig 3.5) due to constrains of suitable space of disposal and unbroken/virgin forest area cannot utilized.

19 **Para 6 (b)**:-- Documentary proof regarding studies are being conducted by the Institute of Minerals and Material Technology, Bhubaneshwar, for upgradation of low-grade ore /BHQ, has not been appended.

20 **Para 6 (d)**:-- Proposals of Dumping in earlier float worked area as per approved R & R plan may be mentioned.

### **PMCP**

21. **Para 8.2(i)** :-- Additional dump area need not be required due to proposal of dumping in **in earlier float worked area** as per approved R & R plan. Further, unbroken/virgin forest area cannot utilize for mining and allied activities. Accordingly, table no-26 should be reconciled.

22. **Para 8.3.1** :-- Proposals of dumping in earlier float worked area as per approved R & R plan should be clearly mentioned.

23. **Para 8.3.5** :-- Table of year-wise summary of protective measures for reclamation rehabilitation works should be properly reflected with incorporating (ii) Maintenance of existing environmental protective measures as per approved R & R plan and (iii) proposals for completion of environmental protective measures **within ML** as per approved R & R plan. (ii) The proposals of construction of retaining wall, garland-drain etc for new dump management for 1<sup>st</sup> year onwards.

24. **Para 8.6**:-- (i) Additional dump area need not be required due to proposal of dumping in earlier float worked area as per approved R & R plan. Further, unbroken/virgin forest area cannot utilize for mining and allied activities. Accordingly, table no-33 should be reconciled. (ii) Grand total of column No- B is also not matching. (iii) Net area considered for calculation should be reconciled in text and table.

### **Part-B:--**

25. An additional undertaking from lessee stating the time-bound implementation of CEC approved Reclamation & Rehabilitation Plan and monitoring / maintenance of protective measures already implemented, may also be incorporated under para 9.

### Annexures:

26. Affidavit of the lessee at Annexure-XI should be on stamp paper.
27. **Annexure-XVI**:-- The calculation table of reserves and resources estimation should be reconciled as per scrutiny comments at para 1(j).
28. **Annexure XVII**:--Revised/modified reserves and resources figures may be incorporated.
29. **Feasibility Study Report**:-- (i) Future exploration proposal should be modified as per scrutiny comments at para 1(i). (ii) Revised/modified reserves and resources figures may be incorporated at para 3.(iii) **Para 4**:-- Table of In-situ excavation should be modified as per scrutiny comments at para 2(b). (iv) **Economic Evaluation chapter**:-- Budget for proposed mining should be revised based on payment of 30% of royalty to District Mineral Foundation and 2 % of royalty to National Mineral Exploration Trust. Accordingly, the economic viability of the project may be interpreted.
30. **Annexure-XIX**:--- (i) The calculation table of Production and development should be reconciled as per scrutiny comments at para 2(b) and 2(e ). (ii) There should not be any proposal for year 2015-16, as the financial year completed.
31. **Annexure-XIX**:--- Proper justifications have not been given for submission of earlier old environmental monitoring data and authenticity of the data.

### Plates:

32. **Plate No-3A & B (Surface Plan)**:--(i) Earlier float worked area as per approved R & R plan, should be properly marked. (ii) Exiting sub-grade ore dumps should be checked and corrected. (iii) Non-forest area if any, (proved by supporting documents) should also be marked.
33. **Plate No 4 A & B (Geological Plan)** :-- (i) Lateral extent of area covered under G-1,G-2 and G-3 level of exploration should be modified as per scrutiny comments para 1(j). (ii)The proposed exploration should be shown as per scrutiny comments at para 1(i).
34. **Plate No 5A & B (Geological sections)** :-- (i) The proposed boreholes locations (dotted lines) should also be marked as per scrutiny comments at para 1(i). (ii) The depth projection of different categories of reserves and resources should be modified as per as per scrutiny comments para 1(j).
35. **Plate No-6A to 6E (Year-wise Development and production plan)**:-- (i) Proposed development & production as well as wastes disposal proposals should be modified as per scrutiny comments at para 2(b) and 2(e ). (ii) Requirement of sub-grade stack area should be revised as per text part. (iii) There should not be any proposal for year 2015-16 as the financial year completed.
36. **Plate no 7 (Working sections)**:-- (i) The depth projection of different categories of reserves and resources should be modified as per as per scrutiny comments para 1(j). (ii) Mine production should be envisaged from the area where reserves are estimated & categorized under proved (111) and probable (121 &122) mineral reserves category. (iii) There should not be any proposal for year 2015-16 as the financial year completed.

**37. Plate No-8A & B (Conceptual Plan & Section):**-- (i) Necessary correction should be incorporated in table and plan as per scrutiny comments at para 2(f). (ii) Existing land use pattern may also be incorporated in index table of conceptual plan.

**38. Plate No-9 (Environmental plan ):**-- (i) All existing surface features viz. retaining wall, garland drains, completed R & R measures of the adjoining area within 500 meters of the boundary of the lease area, should be shown. (ii) Contour lines should be at five meter intervals. (iii) Environmental monitoring station including Water monitoring station at water discharge point of ML boundary should also be shown. (iv) Incorporated Table of villages & co-ordinates of BPs may not be necessary.

**39. Plate No-10A & B (Reclamation Plan):**-- (i) Proposals should be end of present SOM period only. (ii) Water monitoring station at water discharge of ML boundary should also be proposed. (iii) The conceptual land use plan table should be removed in index. (iv) Proposals of Year-wise afforestation and other environmental protection measures within ML should be properly highlighted in plan.

**40. Plate No-11 (F.A. Plan):**-- (i) Plan may show only outlines of the existing working, dumps, stacks, etc. covering all the items under the financial assurance table and at the end of 5 year plan period in different colour for the purpose of computation of the areas required to be used in that period to verify the financial assurance (ii) Incorporated F.A. table should be as per F.A. table at para 8.6

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