

Scrutiny Comments on examination of Draft Modifications to the Approved Mining Plan including Progressive Mine Closing Plan i.r.o. Bhomman Iron Ore Mine (ML No. 0014) over an extent of 93.60Ha of M/s JSW Steel Ltd., located in Bedara Bomminahalli, Hirekandavadi, Marijogihalli, Meghalahalli & Dindadahalli villages, Chitradurga and Holalkere Taluk, Chitradurga District of Karnataka State submitted under Rule 17(3) of MCDR, 2017.

General

1. The document submitted is in PDF format, the same should be in excel/word as per the FAQ on format of Mining Plans issued vide CCOM Circular 1/2021.
2. No cells in the excel format may be left blank, either 'no proposal', 'nil', or 'not applicable may be furnished.
3. If any relevant information pertaining to the 'calculation' or 'supporting information' or 'clarification' may be provided in foot note of the respective table/para.
4. Wherever additional information or supporting document given in Annexure, Annexure no. may be specified in respective paras

Chapter 1: GENERAL INFORMATION

5. **Para 1.1:** As per the format, Type of Lessee should be Individual/Private/PSU, accordingly the information provided in this para may be corrected.
6. **Para 1.3.4.1:** Environment Clearance is valid up to 29/07/2022, the extension of EC may be obtained well before expiry of EC and copy of the EC for extended period may be submitted. This comment is also applicable to other Statutory Clearances for para 1.3.4.2 SPCB Approvals and 1.3.4.3 Forest clearances.
7. **Para 1.3.5.1: Location of Boundary Pillar:** Boundary pillar co-ordinates given in this para are not matching with the CEC approved lease boundary plan/boundary pillar co-ordinates. All five decimal in the seconds should be provided.
8. **Para 1.3.7: Qualified Person Details as per M (OAHCEM)CR, 2016:** (i) PAN card of the QP's may also be enclosed as Annexure. (ii) Consent letter issued from lessee are not digitally signed, (iii) Declaration certificate of the QP's not digitally signed and the same may be enclosed with digital signature.

Chapter 2: GEOLOGY & EXPLORATION

9. **Para 2.1.1: Topography:** From the Key Plan submitted, it is observed that, there is a 2nd order stream existing in the lease area, hence the details given may be modified in this para suitably.
10. **Para 2.1.2** Details of Physiographic features and Infrastructures available in and around the lease/block area – (i) There is a Bhimasamudra lake within 5 km radius, the same may be mentioned. (ii) There are many villages viz. Bommanahalli, Palya, Bheemasamudra, Megalahalli, Kadlegudda, Nallikatte, Hire Kandavadi and Tanigehalli within 5 km radius of the mine, all the village names may be provided in Human Settlement information. (iii) There is main power line within 5 km radius, details may be provided. (iv) There are Mining leases around the instant Mining lease in about 5km radius, details of the same may be provided in 'Any Others'.
11. **Para 2.1.3: Regional Geology:** Regional Serigraphy of the area may be provided as an Annexure and the Annexure number may be referred in the Text or this may also be provided by inserting table in word file.

12. **Para 2.1.4: Local Geology & Structure:** (i) the details given may be simplified with relevant information. (ii) Chemical Analysis of ROM given may be deleted. (iii) Lumps and fines percentage in ROM given as 23% and 77% respectively, however as per the lease deed Lumps and fines percentage in ROM mentioned is 30% and 70% respectively. Accordingly lumps and fines percentage may be corrected as 30% and 70%.
13. **Para 2.1.4.3:** (i) The information given under Lateritic Soil Cover may be reviewed, only physical characteristics of Laterite/soil cover and the thickness may be provided and other information related usage etc may be deleted. (ii) The physical characteristics of the iron ore may be given along with the information provided. (iii) During the field inspection it is observed that, the mine contains limonitic ore, blue dust along with the flacky ore, details of the type of ore available in the lease may be provided. (iv) Percentage of Lumps & Fines may be corrected as per comments given in para 2.1.4.
14. **Para 2.1.4.4: Mode of Occurrence & Controls of Mineralization-** Details given in this para may be reviewed, the information should be related to genesis of iron ore mineralization and what are the controlling factors for formation of iron ore mineralization.
15. **Para 2.1.4.5: Extent of Weathering/ Alteration-** Depth of weathering mentioned as 1-4m, however during the field visit it is observed that, the all the lithologies in the entire exposed pit is weathered. Hence the given information may be corrected.
16. **Para 2.1.4.6: Nature/Form of Mineral-** Percentage of lumps and fines may be corrected as 30% and 70%.
17. **Para 2.2.1.7: Exploratory Drilling:** May be mentioned as Not Carried out.
18. **Para 2.2.1.13: The Bulk Density Study:** (i) It is mentioned that Bulk Density is assumed based on experience in the mine. However, Bulk Density Study Report is enclosed, the same may be reviewed and rectified. (ii) Bulk Density 2.25 tonnes/m³ for iron ore and 1.8 tonnes/m³ for Hematitic Siliceous Iron Ore (HSIO) appear to be low. The Bulk Density Study may be carried out as per M(EMC) Rules, 2016 and SOP of CGPB from the NABL accredited laboratory.
19. **Para 2.2.2.14: Area Covered under Exploration:** (i) It is mentioned that, the entire Mineralized area 68.38Ha has been explored under G1 level. However, from the chemical analysis data provided for the drill holes it is observed that, most of the bore holes have ended in mineralized zone i.e. Fe greater than 45%. Further, as per the revised threshold value notification dated 25th April 2018, Threshold value of Hematitic siliceous Iron ore is 35% Fe (min). Lessee has to reassess the Resources upto the revised threshold value limit. Further as per MEMC Rule, 2015, G1 level i.e. detailed exploration means three dimensional delineation of ore body through drilling, systematic sampling. Hence, this para may be reviewed and suitably modified and further exploratory core drilling upto discontinuous of ore body may be proposed in para 2.2.6 (Future Exploration Proposal). (ii) In the 2nd table of this para, given information Area converted to G1 from G2, G3 & G4 and percentage of increase in the area under G1, G2 is given. During the plan period, no exploration activity is carried out and there is no change in the area of G1, G2 and G3. Hence, the information given in this para may be corrected suitably.
20. **Para 2.2.2.10: Chemical Analysis:** 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. If particular data is not available, the same may be mentioned as 'Not carried out'.

(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

			radicals analysed				
			(specify name of radical as an example given below)				
Hole_id	Depth_from	Depth_to	Fe	SiO ₂	Al ₂ O ₃	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 litholog details may be provided in plate.

21. **Para 2.2.4.1: Methodology:** (i) total number of cross sections drawn may be mentioned. (ii) while calculating of resources recovery percentage, 95% is considered, the same may be specified in this para.
22. **Para 2.2.4.2: RESOURCE CALCULATION:** Average grade of Fe may be mentioned in the grade column.
23. **Para 2.2.4.3: Mineral Resource Estimate for Conversion to Mineral Reserve** – (i) ore blocked in the safety zone may be specified. (ii) ore blocked in the bio-diversity & no mining zone may be specified (ii) as per EC, the ground water table is at 40m below ground level (bgl) in the core-zone and buffer zone (pre-monsoon) and 30m bgl in the core zone and 40m bgl in the buffer zone (post monsoon). As per specific condition of EC, the Mining operations shall not intersect ground water table and prior approval of the Ministry of Environment and Forests and central Ground water authority shall be obtained for mining below water table. Hence, mineral/ore below water table may be considered under blocked Resources accordingly all reserve calculation made may be re-calculated and modification may be made in the respective plates. The condition of EC on water table may be specified in this para.
24. **Para 2.2.4.4: Threshold value & Cut off Parameters:** (i) Threshold value of Iron ore may be mentioned as per Threshold value notification dated 25th April 2018. (ii) Since the iron ore of the mine is blended and Fe >45% considered as Cut of grade, details of Manganiferous iron ore may be deleted.

25. **Para 2.2.4.7: Cost & Revenue Factors:** (i) Summary of the feasibility on Cost & Revenue Factors may be provided. In the feasibility report enclosed, it is observed that on Rs. 43/- per ton shown as profit, the same may be reviewed with current ASP of iron ore.
26. **Para 2.2.4.10: Classification:** The condition of EC on water table may also be specified Pre-feasibility Mineral Resources (221).
27. **Para 2.2.4.11: Calculation of blocked resources:** (i) In para 2.2.4.5, it is mentioned that 95% of area considered for calculation, however in the given table of this para it is observed that 95% considered in the resources quantity is not in the area. Hence same may be reviewed and suitably modified. (ii) Average grade of Fe radical may be given under grade column.
28. **Para 2.2.4.12: Calculation of Reserves:** Comment given in para 2.2.4.3 may be considered while calculating the Reserves. Accordingly UPL may be redrawn and Reserves may be re-calculated. Comment given in para 2.2.4.11 may also be considered while calculating the reserves.
29. **Para 2.2.4.11: Reserve/Resources :** (i) All reserves and resources should be given as on 01/04/2021 as per Annual Return (ii) reserves and resources updated may be given by adding a separate table. (iii) Mineral Manganiferous Iron Ore (MIO) may be deleted from the reserves and resources table.
30. **Para 2.2.5.2 to 2.2.5.4:** If no exploration proposals in Para 2.2.5.2 to 2.2.5.4, the same may be specified.
31. **Para 2.2.5.5: Exploratory Drilling:** (i) It was proposed to drill 10 nos. and 09 nos. of Boreholes during the year 2021-22 and 2022-23 respectively in the Approved Mining Plan for the year, however no drilling is carried out/commenced yet. Also no drilling is proposed during the said years. Hence, drilling may be proposed in the year 2021-22 and 2022-23. (ii) Out of proposed 25 bore holes in the year 2023-24, only 05 bore holes depth is more than 100m. The bore hole may be proposed up to non-mineralized zone. (iii) The comment given under Para 2.2.2.14 may also be considered and suitably boreholes may be proposed where the boreholes are ended in mineralized zone to delineate the ore body 3-dimensionally. (iv) Both RC/Core drilling is proposed, since depth of the ore body is more than 100m and to get representative meter-wise sample, core drilling may be proposed.

Chapter 3: MINERAL BENEFICIATION / PROCESSING

32. **Para 3.1: Mineralogy of the ROM ore/ Mineral:** (i) the details of High Siliceous Iron Ore may also be provided. (ii) Details of gangue minerals may be provided and (iii) if any Mineralogical study is carried out, the report may be enclosed as Annexure and Annexure no. may be referred in this para.
33. **Para 3.3: Crushing Section:** There are no proposals for crushing of ROM, the same may be specified in para 3.3.1 and 3.3.2.
34. **Para 3.5.1: Screening and Classification:** Flow chart showing Process of screening may be provided as Annexure and annexure no. may be specified in this para.
35. **Para 3.9: Overall water requirement of mining and mineral processing:** (i) Source of water supply mentioned as nearby boreholes, details of bore holes are within the lease/out side the lease may be provided. (ii) The chemical analysis of water may also be enclosed as Annexure.

Chapter 4: MINING OPERATIONS

36. **Para 4.2.1.2.1: Dump Details:** (i) there two additional inactive dumps at grid location E.631626, N.1571070 and E.631580, N.1571241 the details of these dumps may also be provided in this para.

37. **Para 4.2.1.2.2: Stack Details:** (i) Stack ID given in this para are not matching with the plans. Stack ID needs to be maintained same in plans/sections and text. (ii) In the Type of Stack of mineral, details of Lumps stack, fines stack and ROM stack may also be provided and foot note of the table.
38. **Para 4.2.1.3: Details of Stabilized Dumps:** No information is provided in this para, details of stabilized dumps within the lease area may be provided.
39. **Para 4.2.2.1: Bench Parameters:** (i) Maximum Depth of working may be given in w.r.t. mRL (ii) Depth of water table may be given w.r.t. mRL. (ii) Year-wise Production and Development Sections for the five year period is given in one plan, the separate cross-sections should be provided for each Year.
40. **Para 4.2.2.2: Year-wise Opencast Development:** (i) Along with Iron ore, there is also a HSIO Production, Detailed Calculation of year-wise & section-wise Production & Development may be given in Production & Development Plan or same may be enclosed as Annexure. (ii) Production and Development proposal may restricted above 30 to 40 bgl as per the EC condition, accordingly calculations may be updated. (iii) It is observed that, Recovery is shown as 95%, however calculation shows 100% recovery, if recovery percentage is applied in volume, the same may be specified in foot note of the table. (iv) Production is given as 1 million tonne; quantity produced during the period from April to September 2021 may be mentioned in the foot note. (v) OB to Ore ratio calculated ton/ton, same may be specified at the foot note of the table.
41. **Para 4.3: Material Handling Summary:** (i) Hydrological Study Report – The Annexure no. referred is not matching with the enclosure, the same may be corrected. (ii) Slope Stability Study Report given in Annexure contains only for Mine pit/benches, the slope stability report for dumps may also be provided. (iv) From the enclosed bulk density study report (Annexure 9) it is observed that, volume/quantity of the sample collected and studied is less, to get a representative sample and appropriate result, the volume of the pit should be at least 1 CBM. Bulk Density given for iron ore and HSIO is very low, hence bulk density study may be conducted afresh and report may be submitted. The report should contain the details of sample location, sample type, photograph of the pit where sample collected and methodology adopted for Bulk Density Study.
42. **Para 4.3.2: INSITU MINING:** Production for the year 2021-22 is given by depleting the quantity of ROM produced from 1st April 2021 to 30th September 2021. The proposed production of ROM may be given 1 million tonne for the Year 2021-22 and the quantity produced till 30/09/2021 may be provided at foot note of the table. This comment is also applicable to para 4.3.4 - Calculation Summary.
43. **Para 4.5.2 Blasting & Explosive Requirement in Mineral / Ore:** Details not provided in this para, need to be mentioned as no proposal.
44. **Para 4.7.4: New Stack:** There are no proposals for new stacks. However, the existing 11 no. of stacks locations were not in the proposals of the previously approved document. Hence, some area may be proposed for new stack (Temporary) at suitable locations to avoid the deviations in the proposal.
45. **Para 4.9: Use of Minerals:** (i) Captive use in Own Industry is proposed, however the lease is Non-Captive, hence the same may be rectified as 'Direct Selling through E-Auction'. (ii) In chemical specification column, average of all the major radicals analysed for the Iron ore may be provided.

CHAPTER-5: SUSTAINABLE MINING

46. **Para 5.1:** (i) It should be specifically mentioned under this Para "Sustainable Mining and SDF implementations during the plan period will be carried out in accordance with Rule 35 of MCDR 2017". (ii) Compliance of Vishakha Committee Guidelines for prevention of women harassment at

workplace: The company guidelines for prevention of women harassment at place may be given and supporting document may be enclosed as Annexure.

47. **Para 5.2: CSR INITIATIVES** : No proposals given under sub-paras 5.2.1.2: Area for Water Storage & Recharge Facility; 5.2.1.4: Efforts made towards providing transport to Local Communities; 5.2.1.6: Efforts Made towards Providing Hygiene & Sanitation to Local Communities; 5.2.1.7: Efforts Made towards Skill Development Programs to Local Communities; 5.2.1.11: Adoption of ODF; 5.2.1.12: Awareness Program among Mine Workers for Swatchata. The same may be reviewed and proposals may be given. This comment will also be applicable to proposals for the year 2022-23, 2023-24 and 2024-25.

Chapter 6: PROGRESSIVE MINE CLOSURE PLAN

48. **Para 6.2.3.2: Year Wise Proposal:** 100 Number of plants are proposed per year, which is very less, the same may be reviewed at least 500 no. of plants may be proposed per year.
49. **Para 6.2.9: Topsoil Management:** No information provided in this para. During the inspection it is observed that top soil generated has been stored at section line II' & HH' (near BCD 10 bore hole location point. details of the same may be provided in this para.
50. **Para 6.2.2.2 and 6.2.2.3:** There are no proposals for the Retaining wall and garland drain, same may be reviewed and proposals may be given along the toe of the waste dumps where Retaining wall and garland drain construction not done.

Chapter 7: FINANCIAL ASSURANCE/ PERFORMANCE SURETY

51. The existing performance security is Rs. 35,57,72,798/- for **61.27 MMT** iron ore and is valid upto 17.11.2024, now the total resources reported is 66.61 million tonne, the difference amount of performance security may be paid to State Government when it is reviewed.

Chapter 8: REVIEW OF PREVIOUS PROPOSALS

52. **Para 8.1.1:** Lease area utilization: Sl. No. wise reasons for deviation may be provided.
53. **Para 8.2.2: Mine Development (Opencast/ Dump Mining):** (i) Reason for deviation of production is not appropriate. Vide no. DMG/MLS/PE/16/2020-21 dated 22/02/2021 DMG, State Government of Karnataka revised the capping and 1 million tonne production allowed to Bhomman iron ore mine of JSW Limited. Hence, reasons given may be reviewed and suitably corrected. This comment is also applicable to para 8.2.6 (ii) Ore production achieved about 84 %, however large deviation about 92% observed in waste generation, correct reason for deviation may be given.
54. **Para 8.2.2.2: Excavation:** During the inspection is observed that, there is a large deviation in the lateral extent of the bench movement between section line F-F' and H-H', the UTM grid co-ordinates and reasons for deviation in proposed development may be given.

Plates Hard copy:

55. All plans and sections should be signed with date by certified surveyor, Qualified Person, Geologist, Mining Engineer as per provisions of MCDR 2017.
56. Lease Boundary Pillar Co-ordinates (latitude and longitude) may be provided in all the Plans.

57. Plans and sections should be suitably updated as per comments given in the text.
58. **Plate no. 3 Geological Plan:** (i) The total G2 area under Bio Diversity zone may be specified under level of exploration given in the plan. (ii) Between section lines I to M, at western part, there are no bore holes, however the area has been shown under G1 level of exploration and the same may be reviewed and suitably corrected in calculation of Reserves/resources, plans, section and text. (iii) Manganiferous iron ore shown may be reviewed and suitably corrected as per the comments given in the text.
59. **Plate no. 4a and 4b:** Geological Cross sections may be revised as per comments given in para 2.2.4.3.
60. **Plate 5 Production and Development Plan:** (i) Bore hole lithology index given is not shown in plan, hence same may be deleted. (ii) Proposed hopper point of DHPC area covers safety zone, there should not be any proposal in the safety zone, and accordingly proposed area may be modified. (iii) Weigh bridge may be proposed near hopper point of DHPC. (iv) No. of proposed plants per year may be mentioned on the plan where afforestation given. (v) Proposal for construction of retaining wall and garland drain may be made at dump located near boundary pillar no. LBS9. (vi) Waste dump section starting point co-ordinate and ending point co-ordinate may be provided for easy reference. (vii) There is waste dump at western side between section line G & I, the bench movement has been shown covering this dump during the year 2023-24, the details of this dump may be furnished in text highlighting if any restriction in the handling of this dump from the authorities. If any restrictions the proposals, the proposals may be modified suitably.
61. **Plate 6 Production and Development Sections :** (i) Sections given are combined for the plan period, section may be given separately for each year. (ii) Sections A-A' to F-F1, the area blocked under Bio Diversity given under Reserves (122) category, the same should be shown under blocked resources (211 or 222) category. (iii) Sections may be modified along with Ultimate Pit limit, Proved pit slope, Probable pit slope and feasible pit slope may revised as per the comment given in para 2.2.4.3.

Plates Softcopy (kml file)

62. All the plans in softcopy (shp/kml files) need to be updated as per the comments given in the text part also in plates hardcopy.
63. The plans submitted in kml format are a simple cartography map does not contain any attribute data. Much information given in hard copy is not available in kml file. The features (point, line & polygon) should contain the attribute information, for example (i) Point feature – Bore hole should contain information of Proposed/Drilled borehole, Type of bore hole (RC/Core/DTH), Depth of drilling, collar RL etc. (ii) Line feature – Road, power line, streams etc should contain basic information and (iii) Polygon features – Dump, Pit, lease boundary, safety zone, infrastructure should contain details which are given in text. if we click on any point/polygon the details should be there. Accordingly all the plans in the kml files should be updated.

Annexure

64. All additional Annexure referred in the scrutiny/comments may be provided.
