

SCRUTINY COMMENTS ON MODIFICATION TO THE APPROVED MINING PLAN INCLUDING PROGRESSIVE MINE CLOSURE PLAN IN RESPECT OF DEVADARI IRON ORE MINE, ML No. 006, OVER AN EXTENT OF 100.54 HA OF FOREST LAND, SUBMITTED BY M/S JSW STEEL LIMITED, SITUATED IN LAKSHMIPURA VILLAGE, SANDUR TALUK, BALLARI DISTRICT OF KARNATAKA STATE

All the headings, subheadings should be replicated as per the standard guidelines as given in "IBM Manual on Appraisal of Mining Plan 2014"

INTRODUCTORY NOTES

1. Pg. No-5- "To update the Reserves & Resources after completion of recent exploratory drilling" to be corrected as "To update the Geological parameters and Reserves & Resources estimation of the mines based on the recent exploratory drilling carried out by M/s JSW".

3.0 DETAILS OF APPROVED MINING PLAN/SCHEME OF MINING (if any)

2. Para 3.3- Reclamation & Rehabilitation measures-The year wise afforestation proposals should also be reviewed for the period 2018-19 & 2019-20 as proposed in Sec 8.3 of the PMCP chapter of last approved mining plan.
3. Para 3.6- As mentioned above in Scrutiny comment no 1 the modification reason to be corrected as "To update the Geological parameters and Reserves & Resources estimation of the mines based on the recent exploratory drilling carried out by M/s JSW"

PART-A, 1.0 GEOLOGY AND EXPLORATION

4. Para 1.0(g& h) -The Geological index is incomplete. No lithology is shown for southern portion of the lease (ID-1,- ID2) area.
5. Para 1.0(i)- The Geological plan shows 59.79 ha in G1, 0.64 ha in G-2 and 0.84 ha in G-3 category. The area of G-1, G-2 & G-3 is not clearly demarcated on the Geological plan with distinct colours as per index. The future exploration program should be proposed accordingly to convert the G-3 & G-2 area to G-1 before end of the plan period as per Mine Lease deed condition no 11. The proposed boreholes are not clearly visible on the Geological plan. The already drilled boreholes and the proposed boreholes for the plan period (2020-21 to 2022-23) should be marked with different colours and should be clearly visible on the Geological plan.
6. Para 1.05(j)- i) The total Reserve & Resources figure given in Table 24 is not correct. It should be corrected as 23,303,841 tonnes. The G-1, G2, G-3 as given in Table No-25 is not distinctly demarcated on the Geological plan. It should be demarcated on the Geological plan with distinct colours and the colour coding to be mentioned in the index
ii) In Pg. 27 the text to be corrected as "Ore Resource tonnage has been estimated by multiplying the volume with tonnage factor of specific gravity of 3.0 for Hematitic ore $Fe \geq 45\%$ and 2.8 for siliceous Hematitic ore of $Fe \geq 35\%$."
7. Para 1.0 (k)- i) Detailed calculation of reserves/resources by cross section method-The following para in the text (Pg-28) "*In order to delineate the ore and non-ore zones, the grade or threshold value of 35 % Fe has been adopted, thus non ore above and below ore zones have been demarcated. At threshold of 35 % Fe as stipulated by IBM, the mineralized zone was demarcated within the lease hold area and the respective ore reserves are estimated*" to be corrected as "*In order to delineate the ore and non-ore zones, the threshold value of 35 % Fe (Min) for Hematitic Siliceous ore & 45 %Fe (Min) for Hematitic ore has been adopted, thus non ore above and below ore zones have been demarcated. At threshold value of 35 % Fe (Min) for Hematitic Siliceous ore & 45 %Fe (Min) for Hematitic ore as stipulated by IBM, the mineralized zone was demarcated within the lease hold area and the respective ore reserves are estimated*"
ii) Table no 27 & 28-It should be mentioned Hematitic ore ($Fe \geq 45\%$) and Hematitic siliceous ore ($Fe \geq 35\%$). The portion of the table no 27 mentioning "*Total Geological Ore ($Fe > 35\%$)-39098587*" should be deleted.
8. Para 1.0(i)-Mineral Reserves/Resources- i) The text should be corrected as "*Threshold value of $Fe \geq 45\%$ for Hematitic ore and $Fe \geq 35\%$ for Hematitic siliceous ore as per the IBM notification for threshold value*".
ii) The text should be corrected as "*Bulk density of 3 T/m³ for Hematitic ore ($Fe \geq 45\%$) and 2.8 T/m³ for Hematitic Siliceous ore ($Fe \geq 35\%$)*"
iii) The text in point no (vi) should be corrected as "Recovery factor is considered as 100 % for estimation of mineable reserves for both Hematitic iron ore and Hematitic Siliceous ore"
iii) The text in Pg. no 34 mentions "Taking into account physical characteristics and grade of the ore, a bulk density of 3T/m³ and 100 % of the ore recovery has been considered for estimating the mineable reserves. The same parameters have also been considered in the approved R& R plan". This should be corrected as "Taking into account physical characteristics and grade of the ore, a bulk density of 3T/m³ and 100 % of the ore recovery has been considered for estimating the mineable reserves for Hematitic ore and 2.8 T/m³ and 100 % of the ore recovery has been considered for estimating the mineable reserves for Hematitic Siliceous ore. For Hematitic iron ore the same parameters have been considered in the approved R&R Plan". For the bulk density considered for Hematitic Siliceous ore lab test report may be furnished in the annexure and reference to be given in this Para.
iv) -For Table no 32 -Category wise mineable Reserves as on _____ (Date) should be mentioned.

-For Table no 33 -Resources and Reserves in Tonnes as on _____(Date) should be mentioned. The average Fe grade column to be merged for both Reserve & Resource and 57.73 % to be mentioned in the merged column for Hematitic ore and 38.28 % in the merged column for Hematitic Siliceous ore.

2.0 MINING

9. Para 2.0(a)- i) The total area under Existing pit details-Table No 34 is given as 52.01 ha whereas in the later part of the document existing area under mining (Table 56, 71 & 76) is given as 50.99 ha. This should be checked and correct figures to be provided in all relevant part of text, annexures and plate.
 ii) Also the nomenclature of the existing pit as given in the surface plan should also be added in table no 34.

Existing pit no	Extent (in Ha)	Top mRL	Bottom mRL	No of Benches	Avg. Height	Avg. Width	UTM co-ordinates (Northing Easting)
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iii) All the features(existing pit details, existing dump & stock details) should be checked accordingly and to be clearly demarcated with Nomenclature as per table 34 & 35 in surface plan and other related plates. The features should also be updated in plate index.

iv) The dimension and other details as given in Table no 36 for Pit number 1 & table no 34 have different figures. It should be checked and authentic figures to be provided in all relevant portions of the text, annexures & plates.

10. Para 2.0(b)- i) In-situ tentative excavation- For the year 2022-23, the year wise working details figures as given in Table No 38,39 & 45 are not matching. The OB is given as 577280 tons in Table 39 whereas it is given as 564600 tons in Table 45. This should be checked and corrections to be incorporated in all relevant portion of text, tables, annexures & plates.
11. Para 2.0(c): i) The details as given in the text (Pg-39) under the Para "Production & development in 2022-23" is not as per the production and development details as given in Table no 45. The stripping ratio, Waste tonnage, level of workings etc. figures are not matching. All the details under this Para for individual year to be specifically checked w.r.t the figures given in Table 38, 39,43, 44 & 45 and corrections to be incorporated in all related portion of the text, tables, annexures & plates.
12. ii) Table no 41 & 42 to be also checked w.r.t the aforementioned scrutiny comments and corrections to be incorporated in all related portion of the text, tables, annexures & plates.
13. Para 2.0(d)- The waste quantity is mentioned as 0.577 million tonnes whereas as already mentioned in the above scrutiny comment it is calculated as 564600 tonnes(0.564) million tonnes in Table 45. The entire calculations under Table 46,47,48,49 & 50 needs to be checked and corrections to be incorporated in this Para.
14. Para 2.0(e)-It is mentioned "*Ore zone is excavated and loaded by excavators into dumpers and transported to crushing/Screening plant to reduce the ROM into fines*" which should be corrected as "*Ore zone is excavated and loaded by excavators into dumpers and transported to crushing/Screening plant to reduce the ROM into lumps and fines in the ratio of 30:70*".
15. Para 2.0(f)- Pg No. 54- i) The life of mine is mentioned as "35' years which is not correct as per the production capacity and the estimated mineable reserves. It should be corrected as 32 years.
 ii) Disposal of waste dumps- Under this Para it is mentioned "In this plan period, the waste generation will be about 1.171 MT and 6.52 Ha area ". The figures are not correct. The total waste generation for the plan period is coming as 948194 tonnes (0.948 million tonnes) as per the year wise break up provided in Table 43, 44 & 45. Accordingly, the total waste generation figures for the plan period and the dumping area requirement in this Para should be specifically reviewed w.r.t the aforementioned scrutiny comment 10 & 11 and corrections to be incorporated in all related portion of the text, tables, annexures & plates.
 iii) Subgrade ore- It is mentioned " As per the Plant requirement..... as shown in the production and development plan". The Para should be corrected as "As per the plant requirement Hematitic siliceous ore will be blended with the Hematitic ore to the extent possible and the balance quantity of Hematitic Siliceous ore will be stored separately in the demarcated area as shown in the Production & development plan".
 iv) Backfilling of voids- As already mentioned above the waste quantity for the year 2022-23 needs to be checked and corrected. The year also need to be corrected from 2020-23 to 2022-23. The corrections to be incorporated in all relevant portion of text, tables, Annexures and plates.
- v) Land use pattern-(Table no 56)-The Existing, Plan period and the conceptual period land use should be rechecked w.r.t the aforementioned scrutiny comments in Mining Chapter and corrections to be incorporated in related text, tables, Annexures & plates.

4.0 STACKING OF MINERAL REJECT/SUBGRADE MATERIAL AND DISPOSAL OF WASTE

16. Para 4.0 (a):-i) The waste figure under the backfilling column in Table No 57 for the year 2022-23 is given as "577280" tonnes whereas in Table no 45 it is given as "564600" tonnes. This needs to be checked and corrected.

ii) Para 4.0(b)- The average stripping ratio, total waste quantity to be handled in the plan period(2020-21 to 2022-23) to be given specifically. The portion "For the proposed production capacity of 1.165 MTPA, average stripping ratio.....will be 4.913 MT which will be sufficient for the plan period"needs to be corrected. It is mentioned 1.395MT quantity have been backfilled in the area in first two years. So balance quantity remaining for backfilling is (5.534 -1.395) = 4.139 MT. The corrections should be incorporated accordingly in this Para. It is to be also mentioned specifically that the proposed backfilling area is devoid of ore as mentioned in the dump management plan-Plate no 12.

iii)Para 4.0 (c)- The waste quantity for the year 2022-23 as mentioned in Table no 59 to be checked and corrected as mentioned above. It is mentioned in Table-53(Pg-61) under ID/EID-1(Geotextile) that plantation will be done in this area. Accordingly, the proposal for Geotextile/coir matting & plantation for EID-1 for the balance area of 6.7 ha as per the R&R plan should also be proposed in Table 60.

5.0 (USE OF MINERAL AND MINERAL REJECT)

17. i)Para 5.0(a)-Table 61 to be corrected as mentioned below.

Name of theCompany	Chemical Specification	Physical specifications
M/s JSW Steel Ltd.	Fe>=45%	Lumps 10-40 mm and Fines 0-10 mm

ii) Para 5.0(e)-The portion "However, all ROM of +35 % Fe will either be sent directly through blending or will be stacked separately" is to be deleted from this Para.

6.0 PROCESSING OF ROM AND MINERAL REJECT

18. Para 6.0-(b)- The portion "In future, 10-40 mm (C-ore) may further be processed into 0-10 mm (fines) by using Tertiary crusher.....This will be done after getting all the necessary permissions from the concerned government authorities" should be deleted from this Para.

8.0 PROGRESSIVE MINE CLOSURE PLAN-

19. Para 8.1.1- Existing land use pattern- The area under different headings should be rechecked w.r.t the aforementioned scrutiny comments of Mining (2.0),Stacking of Mineral reject/Sub grade material and disposal of waste(4.0) and corrections to be incorporated.

20. Para 8.2: - The Land use under different headings in Table no 67 should be rechecked w.r.t the aforementioned scrutiny comments of Mining (2.0), Stacking of Mineral reject/Sub grade material and disposal of waste (4.0) and corrections to be incorporated

21. Para 8.3.1- Mined out land- The figures given for total waste quantity for the plan period and the area for backfilling mentioned in this para are not correct as already detailed above in Scrutiny comment no 13 and needs to be corrected. In the Plantation proposal as given in Table No 73, the proposal for plantation for EID-1 for the balance area of 6.7 ha as per the R&R plan should also be proposed as already mentioned above in scrutiny comment no 16. The afforestation details year-wise for the plan period (2020-21 to 2022-23) should be demarcated in the Reclamation plate with distinct colours and indexed and also to be given in Tabular format.

22. Para 8.3.5- In Table no 74- It is mentioned "Actual position as on 04.05.2020' which should be updated to 25.07.2020 as per the date of survey given in the attached plates. The proposal for Geotextile/coir matting & plantation for EID-1 for the balance area of 6.7 should be worked out as given in aforementioned scrutiny comment 16 & 21 and accordingly year-wise proposal details may be included in the dump management in Table 74 &75. The area under Reclamation & Rehabilitation by backfilling should be rechecked w.r.t the aforementioned scrutiny comment no 16.

23. Para 8.6: Table No 65-Financial assurance-The area put on use at start, additional area requirement during plan period, Total Area, Area considered as fully reclaimed & rehabilitated & Net area considered for calculation, should be recalculated as per the aforementioned scrutiny comment related to Mining(2.0), Disposal of Waste(4.0),& Progressive mine closure plan(8.0) chapters & Table 76 should be corrected accordingly. The corrections also need to be incorporated in all relevant portions of the document & plates.

24. Para 10- PLATES:

a) It should be ensured that all attached plates are prepared as per the content & scale specifications, of Rule 31 & 32 of MCDR 2017.

b) Surface Plan (Plate no. 3):The corrections as mentioned in aforementioned scrutiny comment no 9 should be incorporated.

c) Geological Plan& Cross Sections (Plate no. 4, 5A, 5B, 5C):The plates should be checked and all corrections to be specifically incorporated w.r.t aforementioned scrutiny comment related to Geology and Exploration chapter (1.0)The area of G-1, G-2 & G-3 is not clearly demarcated on the Geological plan with distinct colours as per index. The proposed boreholes are not clearly visible on the Geological plan. The already drilled boreholes and the proposed boreholes for the plan period (2020-21 to 2022-23) should be marked with different colours and should be clearly visible on the Geological plan. It should be ensured that Lithology of borehole logs and section should be similar.

- d) Production & Development Plan (Plate No.6A-6C)-i)These plates should be corrected as per the aforementioned scrutiny comments for Mining(2.0), Disposal of Waste (4.0), & Progressive Mine Closure plan(8.0) chapters.
- i)Plate 6A (2020-21)-The proposed environmental protective measures as shown in plate no-6A(Table 60,61 & plantation table) is not matching with the environmental protective measures and afforestation figures given for the year 2020-21 in the text in Table 60(Pg. 58-59 of text) & table 75(Pg-87). This should be checked and corrected.
- ii) Plate 6B (2021-22)-The proposed environmental protective measures as shown in plate no-6B (Table 60,61,73 & plantation table) is not matching with the environmental protective measures and afforestation figures given for the year 2021-22 in the text in Table 60(Pg. 58-59 of text) & table 75(Pg-87). Also, for D5 section the proposed quantity that can be accommodated for waste dump is 169000 tons whereas the actual waste quantity which is to be backfilled is 215780 tonnes as given in Table 44(Pg.45) of text. Therefor the waste quantity cannot be accommodated in the mentioned section D-5. This should be checked and corrected..
- iii) Plate 6C (2022-23)- The proposed environmental protective measures as shown in plate no-6C (Table 60,61,73 & plantation table) is not matching with the environmental protective measures and afforestation figures given for the year 2022-23 in the text in Table 60(Pg. 58-59 of text) & table 75(Pg-87). This should be checked and corrected.
- e) Production & Development Section (Plate No-7)- The production and development section prepared (Plate-7) is not correct. Individual year-wise section(separately for 2020-21,2021-22 & 2022-23) should be prepared w.r.t the aforementioned production & development plan for the respective year.
- f) Reclamation plan(Plate no 8)- The proposed Engineering measures year wise for the plan period (2020-21 to 2022-23) as given in Table 60,61 & 73 of Plate no 8 is not matching with the environmental protective measures as given in the text in Table 60(Pg. 58-59 of text). The year-wise afforestation proposals should also be depicted on the Reclamation plan as mentioned above in scrutiny comment no 21.Theplate should be prepared at scale of 1:2000.
- g) Environment Plan (Plate No.9)- The plan has not been prepared with contour interval of 5m, in accordance with rule 32(5) b of MCDR 2017. The Plate should be prepared accordingly.
- h) Conceptual plan & sections (Plate No.10& 10 A): The plate should be checked w.r.t the aforementioned scrutiny comment no 15 and correctionsto be incorporated.
- i) Financial Area Assurance Plan (Plate no. 11): The plates should be corrected as per the aforementioned scrutiny no 23 and corrections to be incorporated.

25. Para 11-ANNEXURES

- a) The Lithology and the analysis data given for each of the 46 drilled boreholes in Form-J-(Annexure-15 B) should be signed by Geologist as per the format in MCDR 2017.
- b) The corrections in the Feasibility study report should be incorporated w.r.t the aforementioned scrutiny comment no for Geology (1.0) & Mining (2.0) chapters etc.
- c) All the other corrections/additions as mentioned in the above scrutiny comments should also be added/corrected.
- d) All the annexures to be properly numbered/ paged and accordingly page no range to be given in list of annexures and relevant annexure to be signed by QP. All the annexures should be legible.
