

# **Scrutiny comments of Review of Mining Plan of Jindal chromite Mine of M/s Jindal Stainless Ltd submitted under Rule 17 of MCR, 2016**

## **General**

1. The existing lease period of the aforesaid mining lease is valid till 03.01.2022, hence the earlier approved document expires on 03.01.2022. Therefore, the instant document is to be submit as Modification of Mining Plan incorporating plan proposal for the period from 04.01.2022 to 31.03.2022 as first year and subsequent four year from 2022-23 to 2025-26 with conceptual plan for the extension lease period.
2. At every places of the document the Review of Mining Plan to be replaced as Modification of Mining Plan.
3. As the lease is valid till 03.01.2022, the current status of extension of mining lease to be submitted.
4. The document should be prepared as per the mining plan template format provided in CCOM circular No.01/2021 dated 07.06.2021. No alteration/deletion/change in format of the mining plan template is allowed. Any additional information may be submitted as annexure only if required.
5. All the information in the various table columns of different chapters as per the prescribed format in the template should be furnished. No column/rows should be left blank. If not applicable, it was written as not applicable.
6. The final soft copies of the document shall be digitally signed by the Qualified Person and Nominated owner.
7. The document should preferably be submitted in excel(.xls)/word format. The plates/plans are to be submitted in .kml/.kmz/.shp format. A few sections may be submitted in .pdf format as indicated in the CCOM Circular 1/2021. All the annexures shall be submitted in soft copy.
8. The final copies of the text document to be submitted in 3 (three) hard bound copies in A4 size printable paper. The consents and certificates by the Lease holders/Qualified Person and copy of bank Guarantee shall be attached in hard copy of document. Three hard bound copies of plates/plans were also submitted. The plates/plans are to be output of AutoCAD software.
9. List of plates and annexures should be properly indexed with page nos. and in case of plates the scale should also be mentioned.

## **CHAPTER-1: GENERAL INFORMATION**

1. Para 1.1 & 1.2: The total lease area of 89.00 ha shows as forest area where as in the earlier approved document as well as in the cover page of present submission it is mentioned the forest area -24.24 ha and non-forest area -64.76 ha. The same to be rectified and correct information to be submitted.
2. Para 1.2: The khasra number was left blank. Para 1.1.1: The Lease period mentioned is not correct, the same to be rectified.

3. Para 1.3.2 & 1.3.3: Left blank, all the places if not applicable, then fill as not applicable.
4. Para 1.3.4.1 : The EC capacity should be in tonne. Para 1.3.4.2: The validity of consent to operate expired from 31.03.2018. Fresh valid CTO details to be filled. The CTO capacity should be in tonne.
5. Para 1.3.4.4: In land acquisition details, the amount paid was left blank. The same may be filled as nil or zero if no payment is made.
6. Para 1.3.5: Correct toposheet number may be filled. Para 1.3.5.1: All boundary pillar coordinates to be furnished.

## **CHAPTER-2: GEOLOGY AND EXPLORATION:**

7. The proposed Bore Holes should be in light of provision of Rule 12(4) of MCDR, 2017 to prove the lease area in G1 level.
8. All the proposed Bore Holes should be marked in section. Year wise proposed Bore Holes should be shown in different colour.
9. The depth of ore-body estimated as shown in Geological section is not supported by BoreHoles. The profiles of ore body should be revised based on Borehole data and accordingly reserve/resource should be re-estimated.
10. All the UNFC codes furnished in Geological Plan/sections as per MEMC Rule,2015.
11. Para 2.1.2: There was no nallah within the lease area. The information to be submitted in the 2nd column of the table. Further the information regarding public roads and human settlement within 5km of lease area is not furnished.
12. Para 2.1.3: The information regarding details of chrome ore bands present in sukinda belt may be furnished.
13. Para 2.1.4.1: The details of the ore band present in the lease area with geological features to be furnished.
14. Para 2.1.4.2: The information regarding strike length, width, dipping of ore body and extent of depth present to be furnished.
15. Para 2.1.4.7: The grade of ore occurred with percentage of lump and fines generated to be furnished.
16. Para 2.1.4.8: The strike direction of the ore body to be given. Para 2.2.1.1: The scale shows 1.430555556, the same may be corrected.
17. Para 2.2.1.2: The drone survey spacing, total km, latitude and longitude left blank. Para 2.2.1.4: Geochemical Survey: The analysis report to be submitted as annexure and area covered also filled.
18. Para 2.2.1.7: Exploratory Drilling: The Log sheet of each bore holes to be submitted in csv/excel files as annexure. Para 2.2.1.9: Sampling: In the number of samples analyzed it was written 4.275 ha. The same may be rectified.
19. Para 2.2.1.10: Chemical Analysis: The chemical analysis of samples to be submitted in CSV files which include collar file, survey file, geology log file and RQD file as annexure.

20. Para 2.2.1.11: Petrology & Mineralogical Studies: The study report should be submitted in a single PDF file with date of study and signature of the agency carried out the same.
21. Para 2.2.1.13: Bulk Density Study: The bulk density of mineral reject of Band-VI not furnished. Further, the bulk density study report of mineral reject and waste not submitted. The same to be submitted as annexure.
22. Para 2.2.1.14: Area Covered under Exploration: The area proved as non-mineralised and area to be explored left blank. The total area is also filled as Nil. The same to be corrected.
23. Para 2.2.2.1: Geological Mapping: The scale shows 1.430555556, the same may be corrected.
24. Para 2.2.2.7: Exploratory Drilling: The name of exploration agency left blank for the year 2004-07 and the meterage does not match with the earlier approved document. The Log sheet of each bore holes to be submitted in csv/excel files as annexure.
25. Para 2.2.2.10: The information furnished is the same as in para 2.2.1.10. Para 2.2.2.14: Area covered under Exploration: The potential mineralized area to be filled.
26. Para 2.2.3: Ore Body Geometry and Grade: The strike direction of the ore body is not correct. The correct strike direction and dip direction to be furnished.
27. Para 3.2.5.2 & 2.2.5.4: Threshold value & Cut off parameter: The cut off grade of chromite is mentioned 40% and 32%, which is contradictory. Para 2.2.5.6: Market assessment: The description seems incomplete.
28. Para 2.2.6.5: Exploratory Drilling: The exploration proposal should be modified and give an exploration proposal to explore the entire lease area into G1 category as per MEMC Rule, 2015.
29. Geology & Exploration Underground: The summary of previous exploration should be nil as the underground working has not been commenced till date. Only reserve estimation of Band-VI and future exploration proposal may be given.

### **Chapter-3: Mineral Beneficiation:**

30. The size, capacity of tailing pond, toxic effect of tailing and process adopted to neutralize the same should be clearly described.
31. The water balance chart as mentioned not submitted in annexure. The flow sheet of beneficiation plant is not legible.

### **Chapter-4: Mining Operation:**

32. The profile of benches in development plan not proposed correctly in view of scientific development. Direction of advance may be marked clearly.
33. Benches proposed in development plan are not matching with development sections. In the view of above, yearwise tentative excavation also not matched. It may be rechecked and corrected.
34. Para 4.2.1.1: Pits: The depth of the pit is mentioned as 8m, correct pit dimension to be given. Pit status left blank and to be corrected.

35. Para 4.2.1.2.1: Dumps & Stack: The dump status left blank and in type of dump waste or mineral reject to be furnished. The location of dump-2 not given. The dump capacity submitted in lakh Cum, the same should be in tonnes.
36. Para 4.2.1.2.1 & 4.7.3: Stack Details: The mineral reject and ore stack details not matched with the earlier document.
37. Para 4.2.2.1: Bench Parameter: The bench design should be justified and as per MMR, 1961. The copy of approval from DGMS for mining operation under regulation 106 of MMR should be submitted.
38. Para 4.3: Material Handling Summary: The beneficiation study report and slope stability study report not submitted as annexure. Para 4.7.4: New stack: Year wise stacking proposal of mineral reject not given.
39. Detail calculation table for production like section wise calculation details should be enclosed as annexure.
40. It was proposed for extension of Dump-1 during proposed plan period. Before dumping in fresh area the same should be explored as non-mineralised.

#### **Chapter 4: MINING OPERATIONS(U/G)**

41. The memorandum for joint mining, scope of work and statutory permissions to be submitted as annexures.
42. The location (lat, Long), cross section of opening, inclination stating & ending level of shaft/adit to be furnished and shown in plan & sections.
43. The details of linear and vertical development meterage in ore and waste to be submitted in annexure.
44. Justification should be furnished for location of entry points to the mines viz., decline, adit and shaft etc. as per the study report and RL of collar of entry points in relation to higher flood level.
45. Based on the scientific study conducted, the size of stopes along with crown pillar & sill pillar, sequence of stoping & backfilling and other proposed design parameters should be described. The stage wise sequence of backfilling should be furnished in text and shown in longitudinal and transverse sections.
46. In proposed year wise/ level wise extent of development, the proposal of vertical developments are to be furnished with RL. The calculation of quantity ore and waste in development and stopes to be mined out are not furnished considering the length, width, height and recovery factor. Therefore year wise quantity of ROM production is not justified. Considering all the parameters section wise/level wise calculation should be furnished.
47. The reinforcement of underground development/excavations like drives, cross cuts, shafts, decline, stope blocks etc. should be elaborated in detail under strata control. The SSR (systematic support rules) as per MMR 1961 should be furnished in a summarized form and the document should be enclosed as annexure. The geotechnical study reports related to the strata control should also be enclosed as annexure.

48. In sublevel stoping method of mining it should be ensure that the longitudinal stopes are to developed cover the entire width of ore body. Therefore longitudinal stopes should be proposed in such way that entire width of ore body should be covered for maximum recovery of ore in view of conservation of mineral.
49. In Subsidence management, instrument used, monitoring points to be marked on plan, frequency subsidence monitoring, monitoring to be properly recorded have to be proposed. Further in safety aspects it is to be elaborated the 7.5m safety barrier along mine lease boundary and whether there is any presence of old working/water logged areas within the area or within 60m distance from boundary.
50. Conceptual Mine planning upto the end of lease period taking into consideration the present available reserves and resources describing the ROM excavation, Disposal of waste, stowing/backfilling, surface subsidence, reclamation and rehabilitation showing on a plan with few relevant sections.
51. In pursuant to the order dated 14.01.2020 passed by MoM, GoI, consequent up on the order dated 08.01.2020 of the Hon'ble Apex Court passed in W.P.(C) No. 114/2014, the lessee shall carryout "re-grassing in mining area after closure of mines". Accordingly it should be discussed during conceptual period
52. From Sl. No.41 to 51, if adequate space not available in format, the same to be furnished in annexure.
53. Para 4.2.2.2: METHOD & SEQUENCE OF STOPPING: The method & sequence of stopping not clearly described. The stoping method and sequence should be clearly mentioned.
54. Para 4.2.2.1: Mode of entry: In text the adit size mentioned as 4.5x3.5 m , whereas in development plan it shows 5x5m. The same to be corrected. The design should be as per the study report.
55. Para 4.2.2.3: SUPPORT OF THE WORKING: The copy of approved SSR is to be submit as annexure.
56. Para4.4: Machine Calculation: The machine calculation for underground working not carried out correctly/completely. Para 4.5.2: Blasting & Explosive Requirement in Mineral / Ore: Explosive Requirement not furnished.
57. Para 4.7: Waste Management: The existing dump should be same as in opencast working. The yearwise dumping and stacking proposal to be given in new dump/stack.

#### **Chapter 5: SUSTAINABLE MINING:**

58. Year wise proposal to be given in all aspects for development of community around the lease area. Para 5.2.1.13: Efforts for green energy: The Green energy consumption to be filled in percentage.

#### **Chapter 6: PROGRESSIVE MINE CLOSURE PLAN**

59. Para 6.1: Status of Land: The area under mining operation is furnished zero. The same is not correct. Para 6.2.2.2: Protective measures: Retaining wall and garland drains to be proposed for construction/maintenance all around the existing as well as proposed waste dump/mineral reject dump.

60. Para 6.2.3: Green Belt Development: Plantation proposal to be given over the dead dump as well as in exhausted benches. Para 6.2.6: Recreational Facility: Total Expenditure Incurred (up to last five year block) is furnished as Rs. 929600/-. In cumulative work done as on date it is furnished nil. The same is contradictory.
61. Para 6.2.10: TAILINGS DAM MANAGEMENT: The tailing dam design not submitted. The same should be submitted as annexure.
62. Para 6.2.11: LAND USE OF LEASE AREA AT THE EXPIRY OF LEASE PERIOD (CONCEPTUAL STAGE): The total area is greater than lease area.

#### **Chapter 7: FINANCIAL ASSURANCE/ PERFORMANCE SURETY**

63. The FA area is not calculated correctly. The same to be modified considering to total area degraded in mining and allied activity and proposed area Relevant rules of MCDR, 2017 should be quoted under FA amount calculation. FA should be submitted. The validity of the BG and details of BG should be furnished.

#### **CHAPTER-8: REVIEW OF PREVIOUS PROPOSALS**

64. Para 8.2.1: Exploration: The achievement meterage not matched with earlier approved document. Para 8.2.2: Mine Development (Opencast/ Underground/ Both/ Dump Mining): The reason of closure to be furnished. The yearwise review of proposal to be given.
65. The proposals and achievement furnished under para 8.1.2 regarding SDF and CSR expenditure needs to be reviewed and rectified properly.

#### **Annexure**

1. Singed copy of form-I & J to be submitted.
2. Environmental monitoring reports should be submitted.
3. Surveyor certificate should be enclosed.
4. All the lithologs with chemical analysis of the all the exploration work carried out till date should be submitted.
5. Any other annexures as referred in the text should be submitted.
6. Bank guarantee as per MCDR, 2017
7. Copy of surface right granted letter.
8. Mining plan at a glance as per format attached.
9. Certificate from qualified person regarding authenticity of information submitted is to be attached.
10. The Geotechnical study report should be submitted in a single pdf file.

#### **Plates**

11. Magnetic Meridian and date of observation should be given on all relevant plans. Date of survey should be given on all plans and sections and signature should bear date of signature. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager, Mining Engineer and Mining Geologist as per provisions of MCDR, 2017 and MMR, 1961. All plans & sections prepared should follow the conventions mentioned under MMR 1961. All plans and sections shall show a scale a scale of the plan at least twenty five centimeters long and suitably subdivided.

12. All plans and sections should be prepared on UTM grid.
13. All the plans should be submitted as hard copies and also soft copy of all plans and sections in KML/KMZ/SHP should also be submitted which were geo-referenced.
14. Progressive Mine closure plan and sections should be submitted.
15. Key Plan: The key plan should incorporate all features as mentioned Rule 32(5) (a) of MCDR 2017. The prominent wind direction to be shown by rose diagram in key plan and other relevant plans. The approach road to the lease area should be shown with Co-ordinates of extremity of lease area. The adjoining mining leases, roads, villages , reserve forest boundary, predominant wind direction, within 5km should be prominently shown.
16. The lease plan submitted is not legible, a legible copy of the same to be submitted.
17. Surface Plan: All the boundary pillar coordinates to be given UTM . All the updated boundaries of Waste dump, Mineral reject dumps to be shown on the plan. Surface right area to be shown on the plan with different type of land schedules. All the features have not been shown in the index. Common boundary with other lessees should be shown on the plan. The Surface Plan should be prepared to satisfy the provision as laid down rule 32 (1) (a) of MCDR'2017.
18. Geological Plan & Section: (i) part geological plan and sections should be prepared on same scale i.e. 1:2000 (ii) Geo structural information has not been furnished adequately. (iii) Limit of estimation should be as per MEMC rule 2015. (iv) All the geological information to be furnished on geological plan and section based on drilled BH, exposed pit, trial pits etc with their configuration profile (dimensions) like depth. Section lines with nomenclature should be highlighted on the plan. The litho sequence should be shown as per the borehole logs data in the sections. The sections should be prepared on the same scale as prepared for plan. Proposed boreholes should be shown yearwise in different colour. Proposed boreholes should be shown in dotted line. The sections are to be in regular interval. The Geological Plan should be prepared to satisfy the provision as laid down rule 32 (1) (b), (c) and (d) of MCDR'2017.
19. Development plan & Section: (i) present pit profile configuration of benches with UPL to be shown with red color and proposed development benches of each year with some other color. All development section to be submitted for which development is proposed. The proposed yearwise development area boundaries should be clearly depicted. (ii) The layout of the haul road for present and future excavation proposal should be properly addressed in line with safe movement of fleet of the machinery.(iii) The proposed and existing bench mRL to be shown clearly over year wise development plan and sections. (iv)Geological information to be furnished on development plan and sections like litho units. v) Year wise mining plan proposals should be submitted in softy copy in the format of .kml or .shp file along with document. vi) It was proposed to develop the quarry-2 during the year the year 2023-24 the same not shown in development plan..
20. Progressive Mine Closure plan and sections: All revised year wise proposals as per comments in PMCP chapter to be depicted on the plan and sections.

21. Conceptual plan and sections: the plan and sections should be prepared taking into consideration of the production from in-situ excavations, available reserves and resources describing the excavation, Disposal of waste, backfilling of voids, reclamation and rehabilitation measures, end of lease period etc.
22. Environment plan: The Environment Plan as prepared should be satisfy the provision as laid down rule 32 (5) (b) of MCDR' 2017. Wind rose diagram should be depicted.
23. Financial Assurance Area Plan: The existing and additional area requirement should be separately hatched on the plan with FA table.
24. A transverse section or sections of the workings through the shaft or shafts and main adits indicating clearly the strike and dip of the vein, lode, reef, mineral bed or deposit at different points, and such sections of the strata sunk or driven through in the mine or proved by boreholes, as may be available is to be submit.
25. Cross-sectional view of adit design, Ore drive/waste drive with drilling pattern to be submitted.
26. Longitudinal section of stope to be submitted with rib pillar and crown pillar dimensions.
27. Geological Longitudinal Section of Band –VI to be submitted.
28. Underground ventilation plan & section to be submitted.
29. All other plans as required for underground mine to be submitted as per MCDR, 2017.



## MINING PLAN/REVIEW OF MINING PLAN AT GLANCE

1	Name of the lessee	
2	IBM Registration no	
3	Address of lessee	
4	Name of Mine	
5	Mine code	
6	Lease area in hect.	
7	Forest area	
8	Name of Mineral	
9	Lease period from to	
10	Plan proposal period-	
11	Mineral Reserve (111 ,121 &122) in tonnes	111-
		121
		122
		122
		Total
12	Mineral Resources (211, 221,222, 331, 332, 333&334) in tonnes	211
		221
		222
		331
		332
		333
		334
		Total
13	Total (reserve +resource) in tonne	
14	Reserve estimation as on	Date
15	Explored area in ha	G1
		G2
		G3
		Explored and found Non-mineralised area
		Un-explored area
		Total
16	Exploration proposal Year wise	1 <sup>st</sup> year
		2 <sup>nd</sup> year

	<b>No. of Bore Holes</b>	3 <sup>rd</sup> year	
		4 <sup>th</sup> year	
		5 <sup>th</sup> year	
17	<b>Production proposal ROM in tonnes</b>	1 <sup>st</sup> year	
		2 <sup>nd</sup> year	
		3 <sup>rd</sup> year	
		4 <sup>th</sup> year	
		5 <sup>th</sup> year	
18	<b>OB/Waste handling proposal CUM</b>	1 <sup>st</sup> year	
		2 <sup>nd</sup> year	
		3 <sup>rd</sup> year	
		4 <sup>th</sup> year	
		5 <sup>th</sup> year	
19	<b>Present EC permission in tonnes</b>		
20	<b>Present Forest clearance area in ha</b>		
21	<b>Plantation proposal in five years in numbers</b>	1 <sup>st</sup> Year:	
		2 <sup>nd</sup> Year:	
		3 <sup>rd</sup> Year:	
		4 <sup>th</sup> Year:	
		5 <sup>th</sup> Year:	
		<b>Total Plantation -</b>	
22	<b>Plantation area proposal in five years (ha)</b>	1 <sup>st</sup> Year:	
		2 <sup>nd</sup> Year:	
		3 <sup>rd</sup> Year:	
		4 <sup>th</sup> Year:	
		5 <sup>th</sup> Year:	
		<b>Total Plantation -</b>	
23	<b>Back filling proposal in hectares in five years (year wise)</b>	1 <sup>st</sup> Year:	
		2 <sup>nd</sup> Year:	
		3 <sup>rd</sup> Year:	
		4 <sup>th</sup> Year:	
		5 <sup>th</sup> Year:	
24	<b>Check Dams numbers in five years (year wise)</b>	1 <sup>st</sup> Year:	
		2 <sup>nd</sup> Year:	
		3 <sup>rd</sup> Year:	
		4 <sup>th</sup> Year:	
		5 <sup>th</sup> Year:	
25	<b>Garland drain in meters five years (year wise)</b>	1 <sup>st</sup> Year:	
		2 <sup>nd</sup> Year:	
		3 <sup>rd</sup> Year:	
		4 <sup>th</sup> Year:	
		5 <sup>th</sup> Year:	
26	<b>Settling ponds (Numbers) (year</b>	1 <sup>st</sup> Year:	
		2 <sup>nd</sup> Year:	

	wise)	3 <sup>rd</sup> Year:	
		4 <sup>th</sup> Year:	
		5 <sup>th</sup> Year:	
27	<b>Total Area put to use in mining and allied activity at end of five year in ha.</b>		
28	<b>Bank Guarantee Amount Rs</b>		
29	<b>Validity of BG up to</b>		