

**SCRUTINY COMMENTS ON EXAMINATION OF MODIFICATION IN THE APPROVED MINING PLAN OF SHRENGDAG BAUXITE MINE OF M/S HINDALCO INDUSTRIES LTD., OVER AN EXTENT OF 155.81 HECTARES, LOCATED IN MOUZA/VILLAGE SHRENGDAG, KECHKI&TUIMU, UNDER GHAGHRA, BISHUNPUR& SENHA P.S OF GUMLA& LOHARDAGA DISTRICTS OF JHARKHAND STATE, SUBMITTED UNDER RULE 22(6) OF MCR, 1960.**

(1) Few pages of the copy of the lease deed enclosed as annexure-4 is not clearly legible, thereby the same should be replaced by fresh& legible copy for clarity.

(2) A copy of list of Board of Directors of M/s HINDALCO Industries Ltd., has been enclosed as annexure-6 but the full postal address, Phone/Fax and E-mail ID of none of the directors has been given, which should be furnished for more informative.

(3) The photo I.D & Permanent address proof of Shri K.N. Bhandari has been enclosed as annexure-7 but present address proof with documentary evidence has not been enclosed, which should be submitted.

(4) The chemical analysis report in support of the grade of the bauxite, grade of sub-grade and quarry waste from Sun-Tech has enclosed as annexure-9 but the NABL accreditation certificate issued in favour of Sun-Tech has already been expired on 09.01.2015, thereby a valid accreditation should be submitted for its authenticity.

(5) The excavation planning for the period from 2015-16 to 2019-20 has been computed & enclosed as annexure-11 but the location co-ordinates & the cross sections considered for the purpose is missing, which should be furnished by adding more columns in the tabular annexure. Besides, the recovery of bauxite ore is considered as 80% but the basis on which such recovery is considered should be justified with valid reasons. So, also the grade of the recoverable bauxite may be furnished supported by authenticated chemical analysis report for clarity. Likewise, the waste generation is indicated to be 20% but the basis for such generation has been considered also not mentioned, which should be furnished. It is also found that, there are more than three quarries are proposed under excavation planning during each year of the mining operations, which is not permitted, instead only one or two quarries should be proposed in such a way that, the proposed production quantities can be achieved. Accordingly, necessary corrections/modifications may also be made in connected paras in the text relevant plates.

(6)The soil analysis report of Netarhat Plateau-Kujam & Amptipani are has been enclosed as annexure-15, instead the same for Shrengdag Bauxite Mine, over an extent of 155.81ha should be submitted. Besides, the surface water analysis& noise level analysis report for the aforesaid mine may also be submitted for more informative.

(7) A copy of the already lapsed consent to operate from JSPCB & an application for renewal of CTO has been enclosed as annexure-17; instead a valid consent to operate should be submitted for ease in monitoring.

(8) Few photographs in support of alreadyreclaimed & rehabilitated area has been enclosed as annexure-20 but the location co-ordinates of such areas is missing, which should be furnished.

(9) The photo copy of the bank guarantee valid from 04.01.2014 to 31.03.2018 has been enclosed as annexure-27 but the modification document has been submitted for the period from 2015-16 to 2019-20, thereby a valid bank guarantee matching to the ensuing modification period should be submitted replacing the enclosed one for clarity.

(10) Under the heading **existence of public road/railway line, if any nearby and approximate distance**, there is a mention that, the lease is located on Netarhat, which is not correct. Therefore, the entire para should be revised accordingly. (Page No.5)

(11) The proposed status of the quarries given the scheme of mining approved for the years 2010-11, 2011-12 & 2012-13 has been furnished in the para under reference but the actual achievement status of quarries during each year of the aforesaid years has not been given, which should be furnished indicating their dimension as well as bench formation status thereof for ease in monitoring. All should be furnished in tabular form. [Para 3.3(ii)]

(12) The proposed & actual waste generation status for each year of the last approved scheme of mining has been furnished in tabular form but the name of the quarry / location co-ordinates of such waste generation is missing, which should be furnished. Accordingly, necessary corrections/modifications may also be made at other places of the modification document for clarity. (Page No.9)

(13)The proposed & actual bauxite production for each year of the last approved scheme of mining has been furnished in tabular form but the name of the quarry / location co-ordinates of such production is missing, which should be furnished. Accordingly, necessary corrections/ modifications may also be made at other places of the modification document for clarity. [Para 3.3(iii)]

(14) The proposed & actual status of plantation for each year of the last approved scheme of mining has been furnished in tabular form but the location co-ordinates of such plantation is missing, which should be furnished. Accordingly, necessary corrections/ modifications may also be made at other places of the modification document for clarity. Besides, the actual achievements in exploration, development, production, afforestation, reclamation & rehabilitation for the years 2013-14 & 2014-15 may also be furnished in connected paras of the document for ease in monitoring.[Para 3.3(iv)]

(15)In 1<sup>st</sup> table given in the para under reference, the proposed generation status soil & morrum and laterite for the years 2010-11 to 2012-13 has been furnished but the actual achievements thereof on the above account has not been given, which should be furnished indicating the name of the quarry / location co-ordinates for ease in monitoring. Besides, the status on the above account for the years 2013-14 & 2014-15 may also be furnished in a separate table. Accordingly, corresponding changes may also be made in the tables given in page no. 13 also. [Para 3.3(v)]

(16) The actual achievements on account of land reclamation & rehabilitation for the years 2013-14 & 2014-15 has not been given, which should be furnished in a separate table for more informative. [Para 3.3(vi)]

(17) Existing method of mining has not been mentioned as per the heading of the para, which should be discussed by furnishing the existing status of dump, reclamation & rehabilitation etc. Besides, the proposed method of mining furnished in the para under reference may also be revised by giving proposed bench formation status both in overburden & in ore zone, dumping, reclamation & rehabilitation etc. for clarity.[Para 2.0(A)(a)]

(18) Under the heading **Proposed Method of Mining**, there are many quarries are proposed to be developed during each year of the ensuing scheme of mining period, which is not permitted, instead only one or two quarries should be proposed and necessary incorporations/modifications may also be made not only in this page but also at other places of the document. Accordingly, the relevant plates may also be revised. (Page No. 28)

(19) Under the heading **Mining Strategy**, it is mentioned that, the mine is worked by OTFM method, instead the current strategy of mine working should be discussed in detail and the para may be revised accordingly. (Page No. 29)

(20) Under the heading **Mining Method**, nothing has been mentioned about the bench formation status in soil, morrum and/or laterite & bauxite, which should be furnished indicating the height, width & length each of the bench. Therefore, the bench specifications/parameters in respect of all the proposed benches should be mentioned for more informative. (Page No.29)

(21) Under the heading **Bench Design and Formation**, the height of the benches are usually kept below 6m in consonance with regulation 106 of MMR,1961, instead the height of the benches proposed to be developed should be specified and the para may be revised accordingly. (Page No.29)

(22) The excavation planning for the period from 2015-16 to 2019-20 has been furnished but the year wise advancement of quarry faces in soil-morrum, laterite & bauxite to be mentioned indicating quarry/block wise height, width & length of the benches. All should be presented in tabular form. Accordingly, necessary incorporations/modifications may also be made in connected paras in the text and all the relevant plates. [Para 2.0(C)]

(23) Detailed calculation of drilling & blasting matching to the excavation planning has not been furnished, which may be submitted. Moreover, OMS & powder factor of the explosives may also be computed & furnished. (Page No. 37 & 38)

(24) The para is meant for conceptual mine planning, whereas, no information regarding the same has been furnished. Therefore, the excavation planning beyond the proposed scheme period should be furnished on account of development, production, dumping, reclamation, rehabilitation & afforestation up to the end of the lease period. Besides, it is also found that, the occurrence of bauxite is found below the lairs of topsoil, morrum/laterite but the same has not been discussed in the refer para. Therefore, the factual information about the topsoil, morrum/laterite is required to be furnished indicating, the quantities of topsoil, morrum/laterite proposed to be generated by end of the conceptual period supported by calculations for more informative. [Para 2.0(f)]

(25) The land use pattern after the five year period has been furnished in table no.2 of the page under reference; instead the extent of area proposed to be degraded in each year of the ensuing modification period should be furnished in separate tables. Accordingly, corresponding changes may also be made at other places of the document for ease in monitoring. (Page No.45)

(26) In 2<sup>nd</sup> column of the 1<sup>st</sup> row of 2<sup>nd</sup> table, there is a mention that, out of 109.21ha of area, an extent of 99.43ha has been reclaimed & an extent of 14.27ha has been rehabilitated but the name of the quarry(s)/location co-ordinates of such activities are missing, which should be furnished with proper plate reference. Accordingly, the information furnished in table no. 3 may also be revised. (Page No. 45)

(27) Year wise plantation proposal for the ensuing modification period has been furnished in tabular form but species of plantation proposed to be planted may also be furnished by adding one more column right to the table for more informative. (Page No. 48)

(28) The rainfall data for the months from January to December has been furnished in tabular form, but calendar year for which such data pertains to has not been specified, which should be indicated for ease in monitoring. (Page No.50)

(29) Year wise generation status of soil & morrum,OB/SB/IB & mineral rejects has been furnished in 1<sup>st</sup> table given in the para under reference but name of the quarry/location co-ordinates and cross sections considered for the purpose is missing, which should be furnished by adding one more column right to the table for ease in monitoring.(Page No. 52)

(30) Under the heading **Sub-Grade Mineral**, the generation status of sub-grade materials proposed to be generated in each year of the ensuing modification period should be furnished & the para may be revised accordingly. (Page No. 53)

(31)The average grade of the ROM bauxite is indicated to be 42.98% Al<sub>2</sub>O<sub>3</sub> contains but no chemical analysis report in support of such grade has been enclosed, which should be furnished for clarity.(Para 5.0)

(32) The screening facilities proposed to be adopted in the mine have been discussed but the flow sheet for the same is missing, which should be submitted for more informative. Accordingly, necessary incorporations/ modifications may also be made in para 6.0 of the document. (Page No. 55)

(33) Under the heading **Site Services**, the existing site services available in the mine has been furnished but the proposed status for the same is missing, which may also be given for more informative. (Page No. 57)

(34) The relative humidity status from January to December has been furnished in tabular form but calendar year for which such data pertains to has not been specified, which should be indicated for ease in monitoring. (Page No.60)

(35) Under the heading **Recreation Facility**, the facilities proposed to be available to the local people of the surrounding area should be furnished & rest of things should be erased. (Page No. 64)

(36) Quarry wise extent of area proposed to be degraded in each year of the ensuing modification period should be furnished. Besides, quarry wise reclamation, rehabilitation, restoration & afforestation for each year may also be furnished. All should be furnished in tabular form and rest of the things should be erased. (Para 8.3.1)

(37) The name, address & phone/Fax of the contact person, who will be responsible to deal with the matter arises during emergency has been furnished but, nearest fire station, Hospital and police station have not been given, which should be furnished for more informative. (Para 1.4 at page No. 75)

(38) In 6<sup>th</sup> column of the 1<sup>st</sup> row of the table given in the para under reference, an extent of 36.20ha of area has been considered as fully reclaimed & rehabilitated but no supporting evidence for the same has been furnished, which should be submitted to validate the claim made on the above account. (Para 8.6)

(39) Plate-1 (Key Plan): The details of the deficiencies found on the plate are as follows: (i)The index reference given for lease area is not matching with that of the plan portion of the plate. (ii) The index reference given for forest land with density is not matching with that of the plan. (iii) Direction of flow of nala is also missing on the plan portion of the plate.

(40) Authenticated Lease Area Plan: (i) The plate has not been named /numbered as per the contents for list of plate. (ii) The legend given for original lease area is not matching with that of the plan portion of the plate. (iii) Similar index reference has been given for item nos. 3,4 & 5 of the legend given in the plan, which is not correct, instead different colour codes of above items should be furnished for ease in monitoring.

(41) Plate-3 (Surface Plan): (i) During the filed visit, it is found that, at certain places of Shrengdag Quarry-1, Kechki Quarry-2 & Tuimu Quarry-2 have been extended upto 7.5m safety barrier, which should be reclaimed and photographs in support of such reclamation should be enclosed, while submitting modified copies. (ii) Date of survey of the area has not been mentioned on this plate, thereby updated status of the land degradation as on date of submission of the document should be furnished. (iii) Besides, Surveyors signature is missing on the plate, which should be signed by a competent surveyor. In the light of the above, all other relevant plates may also be revised.

(42) Plate-4 (Geological Plan): The index reference is missing for certain features depicted on the plan, which should be furnished and the plate may be revised accordingly.

(43) Plate-4A (Geological Section): The geological sections drawn for certain sections are not matching with that of geological plan. Therefore, all the geological sections drawn should be checked with the location shown geological plan & ensure that, all the sections are matching with that of the plan.

(44) Plates-5A & 5B (Development Plan 2015-16): There are two separate plates depicting excavation planning for the year 2015-16 has been submitted, instead the proposal should be marked in a single plate. Accordingly, necessary modifications/incorporations may be made not only on this plate but also on the plates submitted showing the development plan for the period from 2016-17 to 2019-20.

(45) Plates-7A & 7B (Development Plan 2016-17): The excavation planning has been proposed in three locations, which is not permitted, instead only one or two quarries should be proposed. Besides, the proposed status of plantation and rehabilitation measures is missing, which should be depicted. Accordingly, necessary modifications/incorporations may be made in the development plans & sections submitted for the period from 2016-17 to 2019-20.

(46) Plate-15(Environment Plan): Certain existing features available within 500 meter radius of the lease area have not been marked and the same should be depicted for clarity.

(47) Plate-16 (Environment Management Plan): The proposed backfilling for the years 2015-16 & 2019-20 has been given with similar index reference and also for the years 2016-17 & 2017-18 with another index, which is not correct; thereby the colour code for proposed reclamation/backfilling for the aforesaid years should be revised accordingly.

## **GEOLOGY PART**

1. Undertaking with regards to maintenance of boundary pillars as per GSR no 710(E) dated 8.10.2014 may be enclosed.
- 2.P-22,f&g,Scale of Surface plan and Geological plan may be checked.
- 3.P-23J, Area explored under different level of exploration not marked on Geological plan with UNFC code.
- 4.Co-ordinates of boundary pillars given are seems to be outside lease bouandry.
- 5.Location of mined out areas(p-12) may be checked as it goes outside the lease area.Striping ratio (P-13) where Proposed ratio is cum:tonne and achived ratio is Tonne:tonne may be justified.P-14, total of proposed waste during 2010-11 to 2012-13 is given as 1503715 t may be corrected. Actual land reclamation and rehabilitation carried during 2013-14 and 2014-15 may also be given.
6. P-15,In review of Year 2013-14 &2014-15: Production up to march 2015, Quantity of waste generation, area reclaimed and rehabilitated and total plantation carried during 2013-15 may be given in tabular form.
7. P-22,Sample analysis of four sample enclosed without name of mine 23.11.2013 .whereas 50 bore holes were drilled during 2013-14 &2014-15.Therefore latest sample analysis from NAB laboratory may be enclosed with name of mine written on analysis report.And the boreholes drilled during 2013-14&2014-15 not shown on Geological and development sections.
8. Latest Sample analysis report from NABL may be enclosed.
9. As present guidelines the tonnage factor and recovery factor are to be established through field test.
10. Updated CTO from pollution control may be enclosed.
11. Item 'J' Reserve and resources as per UNFC with respect to the threshold value not furnished in tabular form. Area not marked on Geological plan under Different levels of exploration and and UNFC code as required.Reserve may be estimated as on 01.04.2015.

Reserve calculated as per Annx-8, average thickness and influence area do not match with geological plan& section and borehole data.

12. Reserve given in page -27 do not match with Annex-8.  
P-26, Under G1-196 samples drawn and analysed and under G-2 -08sample drawn and analysed, but analysis report not enclosed.
13. Calculation of powder factors for O B, and Bauxite may be furnished .
- 14.P-44; Land use pattern existing - 76.61ha,  
After 5 years plan period after (production of 1295729tonnes) - 109.21ha  
After life of the mine i,e one year(production of 56213 tonnes)- 122.98ha

May be justified.

15. Ambient air quality monitoring ofShrengdag mine may be enclosed replacing Jalim&Sanaiaand shrengdag 'B; mines.
16. All the correction should be made in the PMCP as per above scrutiny as and where required.
17. There are hutments within lease area.Therefore ground vibration and noise level study may be attached.

**PLAN & SECTION**

1. All plan & section should be prepared as per rule 27(1)(ii) of MCDR 1988 showing a scale of the plan at least twenty five centimeters long and suitably sub-divided as per rule 27 of MCDR1988.

2.i) Colour scheme of plan and section do not match.

ii) Plan and section do not match

iii) Index colour does not match with features on plan and section.

iv) Date of last survey and signature of surveyor are missing in plates.

v) Top and Bottom R. L. in quarry and benches are missing.

**2. Plate no.-1. (Key plan).**

One more longitude co-ordinate required.

**3. Plate no.-III( surface plan plan).**

Surface plan prepared on 1:4000, permission letter from competent authority may be enclosed. Signature of surveyor is missing. Index colour scheme does not match with features on plate.

**4. Plate no.-4&4A. (Geological Plan and Section)**

Scale of Geological section prepared on 1:2000 but written 1:4000. 50 new bore holes shown on plan but not on sections. Thickness of lithounits in section do not match with borehole data. Old borehole shown on sections but missing on plan. Signature of surveyor is missing.

**5. Plate no.-5,5A&6 ,7,7A,8( Year wise development plan and section)**

Plan and section do not match. 50 new bore holes shown on plan but not on sections. Thickness of lithounits in section do not match with borehole data. Old borehole shown on sections but missing on plan. Signature of surveyor is missing. one section may be drawn 300-400w passing through SBHA 29 &48.

**6. Plate no.-9,9A,10,11,11B,12,13,13A,&14( Year wise development plan and section)**

Plan and section do not match. 50 new bore holes shown on plan but not on sections. Thickness of lithounits in section do not match with bore hole data. Old borehole shown on sections but missing on plan. Signature of surveyor is missing. Bench shown on safety zone. one section required between 0-100w.

**7. Plate no.-15.16.17**

Scrutiny comments made in aforesaid paras may be taken care of.

**All the pages of annexures enclosed with the document should be attested by the RQP.**

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