

SCRUTINY COMMENTS ON EXAMINATION OF MODIFICATION IN APPROVED MINING PLAN FOR CHANPI BAUXITE MINE OF SHRI ARBIND KUMAR SINGH, OVER AN EXTENT OF 9.87 HECTARES, LOCATED IN CHANPI VILLAGE, UNDER KISKO P.S OF LOHARDAGA DISTRICT OF JHARKHAND STATE, SUBMITTED UNDER RULE 22(6) OF MCR, 1960.

(1) In the front cover, the validity of lease period is indicated to be upto 8th March 2040, which should be checked & corrected.

(2) The DGPS surveyed map/plan in compliance to CCOMs circular No.2/2010 and its addendum dated 21.09.2011 & 11.06.2014 regarding geo-reference cadastral map has not been submitted. Moreover, the undertaking submitted in compliance to the CCOM's circular No. 2/2010 is not acceptable at present.

(3) On examination of the land schedule given in 5th page of the lease deed enclosed as annexure-2, the extent of lease area is 9.90ha, whereas, the modification document has been submitted, over an extent of 9.87ha. Therefore, the mismatch in the extent of lease area should be reconciled. Besides, the demarcated lease area is stated to have been marked with red line in the lease sketch attached to the lease deed but no such red line bounded by the lease area is seen, which should be depicted for clarity.

(4) A copy of the lease deed of M/s Aluminium Corporation of India Ltd., Calcutta has been enclosed as annexure-2A but the reasons for enclosing the lease deed of other company has not been given, which should be furnished. If the aforesaid lease deed is connected with the present lessee, the same should be justified with valid reasons or otherwise detached from the document.

(5) Form J for renewal of the lease has been enclosed as annexure-3 but nothing has been given about the present renewal status, which should be furnished for clarity.

(6) The production reported during the period from 1990-91 to 2014-15 has been furnished in tabular form as annexure-6 but the topsoil & waste generation status in each year of the aforesaid period is missing, which should be furnished by adding more column right to the table for ease in monitoring.

(7) The grade of the Bauxite supplied to M/s HINDALCO Industries Ltd., during the year 2009 has been enclosed as annexure-7, which is not proper. Therefore, a fresh analysis report in support of the grade of the bauxite is required to be obtained either from Govt. Laboratory or from NABL accredited laboratory and enclose along with the modification document for clarity.

(8) Litho logs for the Rotary drilled boreholes are enclosed as annexure-8 but when such holes were drilled not indicated. Besides, no Form J for drilling such holes are received by this office so far. Moreover, no photograph in support of such drilled holes is enclosed along with the document. Therefore, the annexure may be revised accordingly.

(9) The reserves/resources calculation has been furnished in tabular form as annexure-9 but the name of the quarries/boreholes involved for the same is missing, which should be furnished by adding more columns in the tabular annexure for clarity.

(10) The excavation planning for the period from 2015-16 to 2019-20 has been computed & enclosed as annexure-10 but the length, width of benches proposed in topsoil, laterite & bauxite has not been furnished. Besides, the location co-ordinates considered for the purpose is missing, which should also be furnished by adding more columns in the tabular annexure. Moreover, 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. Besides, the percentage of waste generation has not been given, which should be furnished indicating the grade of such waste material. Moreover, the name of the quarry(s) involved in the excavation planning is missing, which may also be furnished. Accordingly, necessary corrections/modifications may also be made in connected paras in the text & relevant plates.

Contd.---2/-

- (11) On examination of the MoEF clearance report, enclosed as annexure-11, it is found that, the clearance has been obtained for manual opencast mining operations, whereas, the modification document has been submitted for category-A (OTFM), thereby the document should be submitted for category-B manual working or the MoEF clearance should be obtained to work the mine by category-A(OTFM) method.
- (12) The copy of the consent to operate from Jharkhand State Pollution Control Board, enclosed as annexure-13 has already expired, thereby a valid consent to operate should be submitted.
- (13) The copy of explosive procurement license has been enclosed as annexure-14 but a copy of the blasters license for carrying out blasting operations has not been enclosed and the same should be submitted.
- (14) Few photographs of the existing quarries & dumps have been enclosed as un-numbered annexure and no photographs in support of support of existing reclamation, plantation, exploration & lease boundary pillars has been enclosed, which should be submitted and the annexure may be revised accordingly.
- (15) Dimension (L x B x D) of the void available for backfilling has not been furnished in 3rd row of the tables (five tables) & the name of the quarry(s) involved has not been given the annexure-18, which should be furnished.
- (16) The copy of the Bank Guarantee enclosed as annexure-19 is valid upto 23.06.2016, which is not matching to the excavation planning for the entire five year period of the modification; thereby a revised bank guarantee matching the proposed five year period should be submitted.
- (17) In 5th para of the introduction chapter, a reference about the NOC & CTO has been furnished but the enclosed NOC & CTO are not valid, thereby the para may be revised accordingly. (Page No.1)
- (18) In 6th para of the introduction chapter, a reference about the valid MoEF clearance has been furnished but the same is for opencast manual mining, whereas, the modification in the approved mining plan has been submitted for category-A(OTFM) mine, thereby the para may be revised accordingly. (Page No.1)
- (19) In 7th para of the introduction chapter, a mention has been made that, the mining operations are being carried out since 1990, instead the actual date of commencement should be furnished for more informative. (Page No.1)
- (20) A mention has been made that, Shri A.K. Singh has got **log experience as mine owner**, which should be corrected properly. (Para (b) of Chapter-I)
- (21) It is mention that, only the mineral bauxite has been included in the lease deed, which is not correct. On examination of the lease deed, it is found that, the lease has been executed for the minerals Bauxite & Laterite; thereby the information furnished in the para under reference should be revised accordingly. (Para (d) of Chapter-I)
- (22) The valid reasons for submission of modification in the approved mining plan under Rule 22(6) of MCR, 1960 should be furnished instead of mentioning, no modification of mining plan or scheme of mining was made earlier. (Para 3.2)
- (23) The proposed & actual achievement status of exploration during each year of the last approved mining plan period should be furnished indicating the reasons for higher/lower side deviation if any for clarity. All should be presented in tabular form and rest of the things should be erased. [Para 3.3(i)]
- (24) The proposed waste / Overburden generation status for each year of the last approved mining plan period has been furnished in two separate tables but the name of the quarry(s)/location co-ordinates/cross sections considered for waste generation in each year has not been given, which should be furnished by adding more columns right to the tables given in the pages under reference for more informative. [Para 3.3(ii)]

(25) The production proposed in each year of the last approved mining plan period and achievement thereof has been furnished in tabular form but the name of the quarry(s)/location co-ordinates/cross sections considered for production in each year has not been given, which should be furnished by adding more columns right to the table given in the para under reference for ease in monitoring. [Para 3.3(iii)]

(26) In 1st column of the 1st table, the indicated financial years are appears to be not correct, which should be checked & corrected. Besides, the extent of area proposed to be utilised for plantation in each year of the last approved mining plan period may also be furnished indicating the location co-ordinates of such plantation. Moreover, the achievements thereof on above account in each year of the last mining plan period may also be furnished and the tables may be revised suitably. Accordingly, necessary incorporations/ modifications may also be made in connected paras in the document. [Para 3.3(iv)]

(27) Under the heading **Reclamation and Rehabilitation**, the proposed status of reclamation & rehabilitation and achievements thereof in each year of the last approved mining plan period has not been clearly indicated, which should be furnished, mentioning the name of the quarry/ location co-ordinates of such activities for clarity. All should be presented in tabular form and rest of the things may be revised accordingly. [Para 3.3(v)]

(28) The waste generation proposed in each year of the last approved mining plan period and achievement thereof has been furnished in tabular form but the name of the quarry(s)/location co-ordinates/cross sections considered for waste generation in each year has not been given, which should be furnished by adding more columns right to the table given in the pages under reference. [Para 3.3(vi)]

(29) The summery of violations pointed out and manner of compliance thereof during the last five year in the mine should be given in tabular form and the para may be revised accordingly. (Para 3.4)

(30) It is found that, the mine has been suspended on 15.09.2015 but the present status of the same is missing, which should be furnished and the para may be revised accordingly.(Para 3.5)

(31) The valid reasons for submission of modification in the approved mining plan under Rule 22(6) of MCR, 1960 should be furnished instead of mentioning **not applicable**.(Para 3.6)

(32) The meteorological data for January to December has been furnished in tabular form but the information/data pertains to which calendar year has not been specified. Besides, the rainfall data for last 10 years also been furnished in tabular form but the financial /calendar years has not been specified, which should be updated and the tables may be revised accordingly. (Page No.14&15)

(33)There are 15 nos. of DH boreholes are stated to have been drilled but financial years & depth of such holes are missing, which should be furnished by adding more columns in the table. Besides, the name/number of existing quarry(s) available in the lease area may also be furnished indicating their dimension for more informative. Moreover, no form J for drilling such holes has been submitted to this office so far. In the light of the above, the para may be re-drafted accordingly. [Para 1.0(e)]

(34) Under the heading **Sampling**, there is a mention that, the core samples are collected at 1.5m interval in the zone of lithology changes but the manner in which the samples are collected and analysed has not been clearly indicated, which should be discussed and the para may be revised accordingly. (Page No.18)

(35) Commencement of mining operations are mentioned to be since 1990, instead the actual date of commencement should be furnished. Moreover, the existing method of mining has not been discussed as per the heading of the para, which should be furnished mentioning the existing dimension of the quarry(s) &it's working/non-working status. In addition to the above, the existing status of dump,

reclamation & rehabilitation etc. may also be furnished. Besides, the production reported during the last approved mining plan period has been furnished in tabular form but the name of the quarry(s)/ location co-ordinates involved in the achieved production is missing, which should be furnished and the para may be revised accordingly. [Para 2.0(A)(a)]

(36) The Proposed Method of Mining furnished in the para under reference may also be revised by furnishing the proposed bench formation status both in overburden & in ore zone, dumping, reclamation & rehabilitation etc. for clarity. If the existing quarries are proposed to be developed /extended, the same may also be furnished. If the proposed workings are in the virgin area, the reasons for the same may also be furnished with valid reasons. In the light of the above, the para may be revised. [Para 2.0(A)(a)]

(37) Under the heading **Bench Design and Parameters**, there is a mention that, the height of the benches are usually kept below 6m & width 6m or larger but nothing has been mentioned about the bench formation status in soil, laterite etc., which should be discussed and the para may be revised accordingly. (Page No.26)

(38) (i) Under the heading **Insitu Tentative Excavation**, the proposed status of soil, OB/SB/IB, mineral rejects and production target for next five years have been furnished in tabular form but the location co-ordinates and the cross sections considered for excavation planning is missing in the table, which should be furnished by adding more columns. (ii) The recovery percentage of the bauxite is missing, which should be indicated. In the light of the above, the data furnished in the tabular form should be revised. Accordingly, corresponding incorporations /modifications may also be made in connected paras in the text & relevant plates. [Para 2.0(B)(I)]

(39) Re-handling of two existing dumps are proposed during the year 2017-18 in the table given in the para under reference but the location co-ordinates of such dumps are missing, which should be furnished by adding one more column right to the table. Moreover, the proposed utilisation status of the re-handled materials may also be specified. If the re-handled waste material is intended to be utilised for backfilling/reclamation, the location co-ordinates & dimension of the void proposed for backfilling may also be indicated for ease in monitoring. [Para 2.0(b)(II)]

(40) The name of the quarry(s)/location co-ordinates of the proposed workings should be furnished indicating the direction of advancement of quarry faces. Besides, the tentative dimension of the benches proposed to be made in topsoil, laterite/morrum & bauxite ore zone may also be specified. All should be presented in tabular form. In the light of the above, the information furnished in para 2.0(e) may also be revised. [Para 2.0(d)]

(41) Under the heading **Drilling & Blasting**, the drilling has been proposed by Jackhammers with bench height of 6m in bauxite ore zone, which is not practicable, thereby, the calculations of drilling & blasting furnished in the para under reference should be revised. (Page No. 31)

(42) The para is meant for conceptual mine planning, whereas, no information regarding the same has been furnished. Therefore, the excavation planning beyond the proposed modification 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 ease in monitoring. [Para 2.0(f)]

(43) In 2nd row, 2nd column of the 1st table, the ultimate pit depth has been considered as 18m but no exploration has been done upto that depth, thereby the ultimate depth of the quarry should be revised based on the existing exploration and the para may be revised accordingly. (Page No. 34)

(44) Year wise backfilling proposal has been furnished in 3rd table given in the page under reference but the quantities of waste materials required for the purpose have not been given and the same should be furnished by adding more columns right to the table. (Page No.34)

(45) Under the heading **Land Degradation /Reclamation /Afforestation**, no specific information on account of Land Degradation, Reclamation, & Afforestation by end of conceptual period has been given, which should be furnished indicating their location co-ordinates/cross sections considered for the purpose for ease in monitoring. (Page No.35)

(46) The land use after the five year plan period has been furnished in 2nd table given in the page under reference, instead the same by end of each year of the ensuing five year period is required to be given in separate tables and the para may be revised accordingly. (Page No.35)

(47) The minimum & maximum depth of water table in the area should be furnished and the para may be revised accordingly. [Para 3.0(a)]

(48) The quality of water encountered in the area has been furnished but the analysis report in support of the quality of water has not been enclosed, which should be submitted for more informative. [Para 3.0(c)]

(49) The rainfall data for the months from January to December for last 10 years has been furnished in tabular form but the data pertains to which specific calendar/financial year has not been indicated. (Page No. 39)

(50) The quantities of, OB/SB/IB proposed to be generated in each year of the ensuing five year period has been furnished in 3rd column of the table given in the para under reference but the location co-ordinates/cross sections considered for the purpose is missing, which should be furnished by adding more columns in the table. [Para 4.0(a)]

(51) Under the heading **Sub-Grade**, it is mention that, there is no generation of any sub-grade materials from the mine but the entire bauxite production cannot be of uniform grade of +44% Al₂O₃ and there must be certain quantities of low grade bauxite production along with the high grade ore. Therefore, the quantities of bendable low grade bauxite proposed to be produced in each year of the ensuing modification period should be computed & furnished. Accordingly, the information/data furnished in other places of the document may also be revised. [Para 4.0(c)]

(52) The cut-off grade of bauxite has not been furnished and the same should be mentioned for more informative. (Para 5.0)

(53) The mechanical screening facilities have been proposed to be adopted in the mine but the flow sheet for the same is missing, which should be submitted for more informative. (Para 6.0)

(54) Under the heading **Site Services**, the existing site services available in the mine has been furnished but the proposed status if any may also be furnished and the para may be revised accordingly. Para 7.0)

(55) Under the heading **Employment Potential**, a full time Mining Engineer holding degree in mining engineering & a geologist as required under Rule 42 of MCDR, 1988 and a 1st class mine manager as required under MMR, 1961 has not been proposed under employment, which should be done and the para may be revised accordingly. (Page No. 44)

(56) Under the heading **Recreation Facility**, the facilities available to the local people of the surrounding area should be furnished in detail & the para may be revised accordingly. (Page No. 74)

(57) Quarry wise extent of area proposed to be degraded in each year of the ensuing five year 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)

(58) Dimension (L x B x D) of the void available for backfilling has been furnished in 3rd row of the table has furnished in the page under reference and the name of the quarries linked in the void formation is also not given, which should be furnished. Accordingly, the information furnished for the period from 2016-17 to 2019-20 in page No. 58 to 61 may also be revised. (Para 8.3.5 of page No. 57)

(59) Updated status of bank guarantee should be furnished under the heading **Computation of financial assurance** and necessary corrections may also be made accordingly. (Page No. 63 & 64)

(60) Plate No.1 (Key Plan): The details of the deficiencies found on the plate are as follows: (i) The index reference given for road is not matching with that of the plan and the index reference given for footpath also not to be seen on the plan portion of the plate. (ii) Direction of flow of nala is missing on the plan portion of the plate. (iii) Likewise, the index reference given for forest land with density is not matching with that of the plan portion of the plate. (iv) Population of villages falling within 5km radius of the lease area has not been given, which should be furnished. (v) The index reference given for monitoring stations are not seen on the plan. (vi) 25cm long scale also not marked on the plate. In the light of the above, the plate may be revised accordingly.

(61) Plate No. 3 (Surface Plan): (i) The land classification given in front cover of the document on account of agricultural land & waste land have not been marked with different colour codes, which should be done. (ii) At least three permanent ground control points situated outside the lease area have not been selected and latitude & longitude of these ground control points also not furnished, which should be done. Besides, these ground control stations need to be linked with the boundary pillars. (iii) Moreover, 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 accordingly.

(62) Plate No.5 (Development Plan 2015-16): Different litho units given for soil, laterite, bauxite and lithomarge on the development sections are not matching with that of the plan. Moreover, the dump sections for the proposed dump also not drawn. Accordingly, the plate submitted showing the development plan & sections for the years 2016-17 to 2019-20 and other relevant plates including the geological sections should also be revised.

(63) Plate No.10 (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.

GEOLOGY PART

TEXT:

1. The Geo-referenced mining lease map prepared using DGPS shall be superimposed on Geo-referenced vectorised cadastral map. The same shall have to be submitted in compliance to CCOM's circular no. 2/2010, dated 06.04.2010 and its addendum dated 21.09.2011 & 11.06.2014. The above map will be base for preparation of all statutory plans as required under Rule-28 of MCDR, 1988.

2. Cover page: The validity of lease period needs to be corrected as per Section 8A(6) of Mines and Minerals (Development & Regulation) Amendment Act, 2015. The supporting document in support of the same from the State Govt. has also to be submitted.

3. Introduction: First para: Date of approval letter may be corrected. The last para needs to be corrected as per modification on the cover page (Ref. Sec 8A(6) of MM (D & R) Amendment Act, 2015).

Chapter-1, General

a) Name of the applicant/lessee:- Mobile number of lessee may also be given.

b) Status of applicant:- The para needs to be corrected.

c) Minerals which are included in the lease deed:- In addition of Bauxite, Laterite should also be stated as per lease deed document.

Chapter-II, Location and Accessibility:-

a) Lease details:- Latitude/Longitude of any boundary point has not been given as per guideline.

The pin given for mine needs to be corrected.

Phone & Fax no. need not be given under the subheading.

Toposheet number with latitude and longitude- The key plan(plate no. 1) shows two toposheetnumber which part is 73A/10 and which part is 73A/11 need to be clarified on plate no. 1.

The latitude/longitude of Boundary Pillar mentioned in the para does not match with annexure 12 (NOC from JSP(B)also not with the B.P co-ordinates (page no.6).

Lease period expiry date- validity of lease period need to be corrected as per cover page.

Name of lease holders - Mob. No. of lease holder may also be given.

b) Detail of applied area / lease area with location map: The type of land should be given as per format given in guideline.

The type of road running from mine to Lohardaga (22kms) may be given. The siding used by lessee has not been mentioned.

c) General location map: In the key plan (Plate no. 1): the minimum two latitude & longitude co-ordinates should be given for proper reference. Other nearby leases should also be given with proper colour index. The latitude & longitude of the ML area shown on the plan.

Photographs of B.P 11 & 12 should be incorporated along with the document.

In the enclosed area plan (plate no. 2) The access road has not been shown with approaching major location both ends of the road. In the plan 3 different colour code have been used but in the index of the plan 2 colour code have been given. The same may be corrected. The B.P co-ordinates for B.P no. 4,6,8,11,12 & 13 given in page no. 6 does not match with annexure 22.

Chapter-III- DETAILS OF APPROVED MINING PLAN/SCHEME OF MINING:

Review of earlier approved proposal:

i) **Exploration status-** 15 coring type bore holes were given during 2014-15 as has been mentioned in the para. The borehole log submitted is incomplete as it does not contain location of bore hole in latitude/longitude co-ordinates. Collar R.L of bore hole, date of initiation and completion of bore hole, complete chemical analysis of each lithounit encountered during drilling, thickness of each horizon etc. separately. What is layer depth, the same needs to be clarified. The BH log needs to be revised and submitted. Form J, for notice of sinking B.H., has not been incorporated in the document. The same needs to be incorporated in the document with a copy endorsed to this office for record.

ii) **Mine Development:** It should be excavation. Deviation: Sentence needs to be corrected.

iii) **Afforestation:** The year shown in the table should be corrected.

iv) **Land reclamation and rehabilitation:** Status- Location of 5 dumps should be mentioned with their dimension.

v) **Waste Management:** The information has been repeated, it has already furnished under Mine development para.

Para 3.4: Give status of compliance of violations pointed out by IBM: The table should comprise of type of letter issued i.e. violation letter/show cause notice/violation cum show cause notice. The last column should be "Date of reply" & not "date of compliance letter". The copy of last letter No. BIH/LOH/BX/237/RRO, dt. 15.09.2015 has not been enclosed in the document.

Para 3.5: Details of Suspension Order: Copy of Suspension Order should also be enclosed in the document.

Part A. 1.0 Geology & Exploration: (a) Brief description of topography, drainage pattern etc.:

Topography: The para needs to be corrected, as the RL given does not match with the plan.

Drainage: The source of water in the area should be spelt along with source of drinking water.

Vegetation: On which side of the ML area the forest exists should be spelt clearly with type of forest land & its name.

Climate: The data furnished as on date should be given. The four season data with maximum and minimum temp. should be given.

b) Regional Geology: Minor corrections are required in the para.

c) Detailed description of geology: Local Geology:- The first para needs correction in respect of length & width as well as minimum & maximum elevation of the lease area, which do not match with submitted plan. In the third para it has been mentioned that laterite profile is underlain by lithomergic clay. The same may be clarified. The bauxite zone thickness given as 5-18 m. needs to be corrected.

d) Complete chemical analysis of Bauxite with TiO₂, P₂O₅ & V₂O₅ should be submitted supported with NABL accredited laboratory result. Both mineralogical & chemical analysis report needs to be submitted.

e) Details of prospecting/exploration: The BH location given in the table do not match with plan. The GPS coordinates for B.H. given should be incorporated. For sampling & analysis, refer Part-A, Item no 1(e) of Universal format for mining plan/scheme of mining including PMCP.

In absence of depth of particular horizon i.e. depth of soil, laterite, bauxite etc. separately along with its chemical analysis (Ref. Annexure 8), assessment of resource/reserve based on sections shall not be feasible. The above information needs to be incorporated in the document. The weighted av. Of Al₂O₃ in bauxite has not been furnished but the same has been mentioned in the last line of the para. The weighted av. Of Al₂O₃ & its derivation process may be spelt.

The expenditure incurred in prospecting operation has not been furnished.

The grid wise (100mx1000m & 50m x 50m) no. of BH given with max., min, av. & total meterage drilled should be given. A concise table showing BH No., total depth of hole, total recovery length, thickness of Bx encountered & its complete chemical analysis showing all radicals including TiO₂, P₂O₅, V₂O₅ should be incorporated in its document.

f) Surface Plan: (i) The G.C.Ps have not been shown on the plan.

ii) The BH locations have not been marked on the plan.

iii) OB dump as on 01.04.2013, 31.05.2014, what does it indicate, may be explained.

iv) All the dumps should be numbered for proper reference.

v) In Quarry no. 3, OB for backfilling has been shown, the reason for the same may be clarified as already 4 dumps exist in the lease area.

vi) The plan has not been prepared based on DGPS surveyed map as arbitrary local grid has been given instead of international UTM grid value.

g) Geological Plan: (i) Item no. (i), (iii), (iv), (v) & (vi) mentioned above should be taken care of.

ii) Area exploited under different level of exploration have not been marked on the geological plan. Based on which zone of reserve/resource categorization have not been marked. Basis for drawing UPL leaving some portion as SE corwel of lease, is not clear. The same may be clarified.

iii) In context to this office letter No. BIH/LOH/BX/237/RRO, dt. 15.09.2015 through which violation letter was issued, it was replied vide party's letter No. AKS/CHANPI/IBM/013, dt.21.12.15 that Q No. 2 has been backfilled & reclaimed along North of dump. But present geological plan does not show any backfilling except in Quarry No. 3. The same needs to be clarified.

iv) The lat. Co-ord. for B.P. 12 should be checked & corrected.

v) Date of survey has not been mentioned.

h) Geological Section (i) All the sections should be reconciled properly with the plan i.r.o. top & bottom RL of dump, quarry no, position of road, RL of benches, location of greenbelt etc.

ii) The UNFC code for area considered for different categories of reserve/resource estimation have not been marked.

iii) Some more dump section required to be submitted for better representation of dump.

j) Reserve/Resource as per UNFC: Reserve/Resource as per UNFC w.r.t. threshold value has not been incorporated. Level of exploration: The co-ordinates given in the table do not match with the Geol. Plan. In the given table the figure for area covered needs to be checked & corrected as entire lease area can not be taken under G1 category because 7.5 m. safety barrier has to be left. Further without proper B.H. log, demarcation of area covered under G1 level is not possible. Bifurcation of no. of B.Hs based on grid interval/spacing should be given in the table. "Av. Thickness in m." what does it indicate may be explained.

The feasibility report should be submitted in proper format & not in a sketchy manner. The reserve/resource figure may be given under para no. (l) below.

k) Calculation of reserve/resource: The size of mineralized zone need to be mentioned in the para along with calculation of bulk density.

Grade:- The basis for arriving at grade of ore (Al_2O_3 -40% & SiO_2 -3.64%) needs to be clarified as no chem. Analysis report as per norm has been incorporated in the document.

Page no. 21: Depletion in reserve: The production during 2011-12 needs to be checked & corrected from Annual Return submitted by the party. The heading of the table should be measured mineral resources, Pg. no. 21. The total reserve calculated as per Annexure-9 is to be checked through soft copy (for sectional area & length influence). In Annexure 9, the UNFC code for different categories of resource should be given. It will be convenient if particular block is marked on the section like abcd, efgh etc. to understand the range of sectional area considered for calculation.

Page no. 22: The table showing measured mineral reserve needs to be reconciled properly with Annexure-9. The UNFC code for every category of reserve/resource should be given in the table. The necessity of calculating balance reserve as on 01/04/2015 after depleting the production during 2010-11 to 2014-15 is not clear. Since the available balance reserve has not been taken into consideration for further calculation of a Reserve/Resource as on 01/04/2015. The sectional length of influence as given in Annexure-9 needs to be rechecked.

l) Mineral reserve/resource: Feasibility study need not be repeated under the para.

2.0 Mining: (b) Yearewise tentative excavation: **I) Insitu tentative excavation :** The chemical analysis of mineral reject shown in the table of insitu tentative excavation should be given.

II) Dump rehandling: the dump no. has not been given in the geological plan as well as yearwise development plan. The height of the dump as given in the table does not match with geological section. The same need to be reconciled properly.

(c) Individual yearwise development: Existing development plan/section needs to be incorporated.

Bench development: Q4 has not been marked on the development plan. Quarry wise RL of benches needs to be given. The RL given for yearwise development do not match with sections. The laterite excavation should be removed from the table of yearwise bench development. In all the development sections, the heading should be corrected. The development sections should be reconciled properly with plan.

2(e): Drilling & Blasting: The para& calculation part for OB removal & Bauxite production need to be recasted due to limitation in j.h drilling. The derivation of powder factor need to be elaborated.

2(f): Conceptual mining plan: Land use pattern after plan period: No dump area has been shown in the table but the development plan for year 2019-20 shows existence of dump. The same may be rectified. Further, land use after conceptual period shown in the table do not match with conceptual plan. The same needs to be corrected.

Reclamation & Rehabilitation: The Reclamation & Rehabilitation proposal and dump rehandling proposal as intimated vide party's letter no. AKS/CHANPI/IBM/013, dated 21.12.2015 in reply to this office letter no. IBM/LOH/BX/237/RRO, dated 15.09.2015, has not been incorporated in the ensuing document.

8.6: Financial Assurance: Calculation table showing dump area as nil but Financial Assurance plan shows existence of dump. The same needs to be clarified.

General: 1. All the tables should be numbered for ease of reference.
2. All the plans must bear date of survey.

Plate B: The consent letter/certificate/undertaking has not been submitted as per guideline.

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