

SCRUTINY COMMENTS ON EXAMINATION OF MODIFICATION IN THE APPROVED MINING PLAN OF PAKHAR BAUXITE MINE OF M/S MINERALS & MINERALS LTD., OVER AN EXTENT OF 109.507 HECTARES, LOCATED IN VILLAGE & MOUZA PAKHAR, UNDER KISKO P.S OF LOHARDAGA DISTRICT OF JHARKHAND STATE, SUBMITTED UNDER RULE 22(6) OF MCR, 1960.

(1) The DGPS surveyed map/plan submitted showing UTM data instead of GPS data 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 by the applicant compliance to the CCOM's circular No. 2/2010 is not acceptable at present.

(2) The copy of the board resolution dated 02.08.2011 enclosed along with the document has been certified by Shri D.K. Kohly, Director, whereas Shri Kohly is no more with M/s HINDALCO, thereby by a fresh resolution should be submitted replacing the existing one for clarity,

(3) A copy of the list of board of directors has been enclosed as annexure-I to the document but the same has not been authenticated by the competent authority. Besides, phone/fax/e-mail ID of none of the directors has been furnished. Therefore, the list of the board of directors should be replaced / revised.

(4) A copy of the approval letter of the mining plan, dated 22.04.2008 has been enclosed as annexure-2 but the same is not clearly legible, thereby a fresh copy of the same should be submitted. Besides, it is found that, the mining plan was approved on 22.04.2008 & the lease was executed on 26.07.2008, whereas, the validity period of the mining plan is mentioned to be for the period from 2011-12 to 2015-16 in the front cover & other places of the document but no paper in support of such validity of the mining plan has been enclosed, which should be submitted.

(5) The photo copy of lease deed has been enclosed as annexure-III, but the lease map attached to the lease deed is missing, which should be submitted.

(6) In the contents for list of annexures, the land schedule is stated to be enclosed as annexure-IV but no such information/data is seen in the above referred annexure. Therefore, necessary corrections/incorporations may be made accordingly.

(7) The litho logs of the already drilled boreholes have been enclosed as annexure-IV but the boreholes are coring or non-coring type has not been specified. Moreover, no photograph of the borehole logs has been submitted. Besides, no Form J & K for drilling the boreholes has been enclosed along with the document.

(8) The excavation planning for the period from 2015-16 to 2019-20 has been computed & enclosed as annexure-IX but the length & width of benches proposed in topsoil, Aluminous laterite & bauxite has not been furnished, which may be mentioned. Besides, the location co-ordinates & the cross sections considered for the purpose are also missing, which should 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. 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 indicating the grade of such waste material. Accordingly, necessary corrections/modifications may also be made in connected paras in the text & relevant plates.

(9) The environmental monitoring data is stated to be enclosed as annexure-XII but no such annexure is seen in the enclosure side. Moreover, the analysis report for ground water & vibration level is missing, which should be submitted for more informative.

(10) The photo copy of the bank guarantee valid from 05.04.2008 to 04.04.2013 has been enclosed as annexure-XVI 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.

(11) Only two photographs of boundary pillars & one photographs each for existing quarry & reclamation has been enclosed as annexure-XVII but no photographs in support existing dump(s), rehabilitation, afforestation has been submitted, which may be enclosed. Besides, few photographs in support of existing exploration may also be submitted. In addition to the above, the location co-ordinates of already reclaimed & rehabilitated area may also be given for more informative.

(12) A copy of the explosive procurement license has not been enclosed as annexure to the document. Moreover, a copy of the blasters license also not submitted.

(13) There are 77 nos. of boreholes were proposed to be drilled during the last approved mining plan period and 108 nos. of boreholes were stated to have been drilled during the aforesaid period but the location co-ordinates of the proposed boreholes & already drilled holes are missing, which should be furnished. All should be presented in tabular form. Accordingly, corresponding incorporations/modifications may also be made at other places of the document & the relevant plates. Moreover, the reasons for deviation given in the para under reference should be checked & corrected. [Para 3.1(i)]

(14) In 1st column of the 2nd table given in the para under reference, the achievements in production for the year 2015-16 as on date has not been given, which should be furnished for more informative. [Para 3.1(ii)]

(15) Under the heading Reclamation, the proposed status of reclamation has not been clearly indicated but the achievements thereof for each year of the last approved mining plan period has been furnished. However, the para may be revised indicating the name of the quarry involved along with its location co-ordinates & quantity of waste materials utilised for the purpose for clarity. All should be presented in tabular form. [Para 3.1(iii)]

(16) The achievements on account of afforestation has been furnished in tabular form upto the year 2014-15 but the location co-ordinates of such plantation, extent of area covered and reasons for deviation if any for more informative. [Para 3.1 (iv)]

(17) The meteorological data from January to December has been furnished in tabular form but the data pertains to which calendar year has not specified. (Page No.10 &11)

(18) Under the heading of the para, the **local geology** of the unspecified area has been furnished, instead, the name of the area should be specified for more informative. [Para 1.0(c)]

(19) The dimension of three old quarries and new quarries are stated to be furnished but in the table the data for 10 quarries are given, thereby the para may be corrected accordingly. [Para 1.0(c)]

(20) Under the heading **Sampling & grade**, there is a mention that, the samples have been collected from the borehole logs & analysed for its suitability 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.14)

(21) Existing method of mining has not been mentioned as per the heading of the para, which should be discussed. Moreover, the existing status of dump, reclamation & rehabilitation etc. may also be furnished. Besides, 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 mentioned. 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)]

(22) Under the heading **Mining Strategy**, it is mentioned that, the mine is worked by **opencast mechanised method**, whereas, in the front cover, the document has been submitted for mining by Other Than Fully Mechanised means, thereby the para may be revised accordingly. (Page No. 21)

(23) Under the heading **Mining Method**, there is a mention that, only one bench in bauxite ore zone & one to three benches in soil, morrum and/or laterite have been proposed to be advanced simultaneously but the exact number of benches proposed in soil, morrum and/or laterite has not been clearly indicated. Besides, the height, width & length of none of the bench have been furnished. Therefore, the bench specifications/parameters in respect of all the proposed benches should be mentioned for more informative. (Page No.21)

(24) Under the heading **Bench Design and Formation**, there is a mention that, 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 in Pakharlease over an extent of 109.507ha should be specified and the para may be revised accordingly. (Page No.22)

(25) Under the heading **Insitu Tentative Excavation**, the proposed status of overburden removal, generation of waste & production target for the period from 2015-16 to 2019-20 has been furnished in tabular form but the bench/RL of the excavation planning has not been given, which should also be furnished by adding one more column in the table. Accordingly, corresponding incorporations/modifications may also be made in connected paras in the text & relevant plates. [Para 2.0(B)(l)]

(26) 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)]

(27) Detailed calculations of drilling & blasting matching to the excavation planning have not been furnished, which may be submitted. Besides, OMS & powder factor of the explosives may also be computed & furnished. (Page No. 28)

(28) 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 more informative. [Para 2.0(f)]

(29) In 2nd column of the 1st row of 1st table, there is a mention that, out of 59.10ha of area, an extent of 55.05ha has been reclaimed including 5.05ha of water reservoir but the name of the quarry(s)/location co-ordinates of such reclaimed area is missing, which should be furnished with proper plate reference. (Page No. 35)

(30) Under the heading **Reclamation & Rehabilitation**, no specific proposal for the same has been given, which should be furnished for each year indicating the name of the quarry(s)/location co-

ordinates, extent of area proposed to be reclaimed for more informative. All should be presented in tabular form. (Page No. 35)

(31) 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.36)

(32) In 3rd column of the table, there is a proposal to plant 1800 nos. of saplings during the each year of the ensuing modification period but the location co-ordinates of such plantation is missing, which should be furnished by adding one more column right to the table. (Page No. 38)

(33) The quality of water encountered in the area is missing, which should be furnished for ease in monitoring. [Para 3.0(c)]

(34) The quantities of soil & morrum proposed to be generated in each year of the ensuing modification period has been furnished in 2nd column of the 1st 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 one more column right to the table. (Para 4.0)

(35) Extent of area proposed to be reclaimed in each year during the ensuing modification period has been furnished in 2nd 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 one more column right to the table. (Para 4.0)

(36) Last two lines furnished in the para is uncalled for and must be erased to avoid any confusion and the para may be revised accordingly. [Para 4.0(c)]

(37) The grade of ROM bauxite & feed grade has been furnished but cut-off grade of the bauxite is missing, which should be furnished for more informative. (Para 5.0)

(38) 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. (Para 6.0)

(39) Under the heading **Site Services**, the existing site services available has been furnished but the proposed status for the same has not been furnished, which should be furnished. (Para 7.0)

(40) 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, which should be updated accordingly. (Page No. 51)

(41) Under the heading **Recreation Facility**, the facilities available to the local people of the surrounding area should be furnished & rest of things should be erased. (Page No. 54)

(42) 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 & afforestation for each year of the aforesaid period may also be furnished. All should be furnished in tabular form and rest of the things should be erased. (Para 8.3.1)

(43) Dimension (L x B x D) of the void available for backfilling should be furnished, quarry wise in 3rd row of the tables furnished in the pages under reference. (Page No. 59 to 63)

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(44) The name, address & phone/Fax of the contact person, who will be responsible to deal with the matter arises during emergency should be furnished. Besides, nearest fire station, Hospital and police station may also be indicated. (Para 1.4 at page No. 64)

(45) 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. 65)

(46) 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. (ii) Direction of flow of nalais missing on the plan portion of the plate, which should be marked. (iii) The index reference given for forest land with density is also not matching with that of the plan. (iv) Population of the villages falling within 5km radius of the lease area has not been furnished.

(47) Plate-2 (Area Plan): The area plan submitted along with the document has not been authenticated by the State DMG, therefore, not acceptable in its present form. Besides, a plan enclosed as plate No. 15 showing the area held by M/s Minerals & Minerals Ltd., has been signed by someone else for M/s Minerals & Minerals Ltd., which also cannot be considered as authenticated lease map. Therefore, an authenticated map signed only by the competent authority of State DMG, Jharkhand should be submitted.

(48) Plate No. 3 (Surface Plan): (i) The pillar co-ordinates of all the lease boundary pillars has been furnished in tabular form but the numbering of the pillar nos. P-12, P-16, P-18, P-19, P-20, P-21, P-70, P-78, P-79 & P-80 are missing on the plate, which should be indicated. (ii) There is only one ground control point (GCP) has been selected within the leasehold area, which has been connected to boundary pillar nos. P-69 & P-71, instead, at least three permanent ground control points situated outside the lease area should be selected and latitude & longitude of these ground control points may be furnished. Besides, these ground control stations need to be linked with the boundary pillars. (iii) Surveyor's signature is missing on the plan, which should be signed by a competent surveyor. (iv) During the field visit, it is found that, a new quarry has been developed across the gridlines 200S & 600E but the same has not been depicted on this plate and all the relevant plates submitted along with the document may also be revised accordingly.

(49) Plate No.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.

(50) Plate No.5 (Development Plan & Section 2015-16): There are two quarries such as Q-K7 & Q-K8 has been proposed under excavation panning, instead any one of the quarry should be proposed since bauxite reserves have already established near the quarries where ultimate pit limit has been drawn. Therefore, the excavation planning for rest four years may also be revised restricting the excavation planning in a single quarry only. Accordingly, necessary incorporations/ modifications may be made in the text & all the relevant plates may also be revised.

(51) Plate No.10 (Environment Plan): Certain existing features available within 500 meter radius of the lease area have not been clearly marked and the same should be depicted. Moreover, Bagru bauxite mine of M/s HINDALCO Industries has been marked on this plate, which is far from reality. Therefore, the plate should be revised accordingly.

GEOLOGY PART

TEXT:

1. The Geo-referenced mining lease map shall be the base for preparation of all statutory plans as required under Rule-28 of MCDR, 1988.

2. Cover page: i. Present status of extension of lease may be spelt in context to MMDR amendment 2015 with supporting document.

ii. The lease area given may be reconciled properly with the lease deed. In the lease deed the area has been given as 270.59 Acres which comes to 109.5038 Hc as per conversion table.

3. CHAPTER- I- GENERAL:

(a) Name of applicant/lessee: i. IBM Registration no. is missing.

ii. The designation of Nominated owner should be given correctly.

iii. Date of grant of lease furnished is not correct. 26.07.2008 is the date of execution. Date of grant of lease should be furnished.

iv. The extended lease period as mentioned should be supported with relevant document.

v. Name of lease holder: The designation of Nominated owner should be given correctly.

4. CHAPTER-II- LOCATION AND ACCESSIBILITY:

a) Lease Details:

i. Date of grant of lease(Lease Period/Expiry date): i. Date of grant of lease furnished is not correct. 26.07.2008 is the date of execution. Date of grant of lease should be furnished.

ii. The extended lease period as mentioned should be supported with relevant document.

iii. Name of lease holder: The designation of Nominated owner should be given correctly.

b) Details of applied/lease area with location map:

i. The authenticated lease map does not bear original signature, it is a photocopy. Plot no. 762 and 825(P) as shown on the village map but has not been included in the ML deed. Demarcation line between plot no. 747 & 749 has not been shown.

ii. The details of lease area should be furnished in the prescribed format as given in the guideline.

iii. Existence of public road/railway line if any(Location and approach): The distance of lease area from the village Pakhar has not been furnished. The type of road (Metalled/Non-Metalled/Seasonal etc.) from lease area to village and railway siding (Richughuta& Tori) should also be mentioned under the para. The distance of the mine from Lohardaga may also be spelt with type of road.

iv. Whether Power Grid existing or not along with its distance from the mine/lease has not been mentioned.

v. Topo Sheet no. with Lat& Long of Boundary Pillars:

(a) The item has not been furnished. The table showing latitude & Longitude of all boundary pillars has to be furnished in the text.

(b) 86 nos. of boundary pillars have been shown in the Area Plan, Surface Plan, Geological Plan, Development Plan etc. whereas 105 nos. of boundary pillars have been shown in the Geo-referenced Mining Lease Plan (Plate III of DGPS report). The same may be reconciled properly.

(c) The numbering of boundary pillars marked on the Plans (Area Plan, Surface Plan, Geological Plan etc.) should be as per Ministry of Mines Notification no. G.S.R. 710(E), dated 08.10.2014, item no. 4.(j). The manner of construction and upkeep of boundary pillars should be in accordance to item no. 4 of G.S.R. No. 710(E), dated 08.10.2014 (Ministry of Mines

Notification).

(d) Boundary pillars should be given on both ends of the road crossing through the lease area and photographs of the same should be incorporated in the document along with the photograph of present Pillar no. 2, 85, 62, 61, 59, 40, 29, 27 & 24.

(e) The Geo-referenced lease map should be reconciled properly with the authenticated lease map/cadastral Map & Area Plan.

c) General Location Map: i. The Key Plan (Plate no. 1) does not bear Latitude and Longitude of the lease area. The access road to the lease area has also not been marked on the plan.

ii. The Area plan does not show type of land with access road. The access road should indicate major location on either end of the road.

iii. No. 6 lease has been marked in the Index but not shown on the Key Plan.

iv. The Surface Plan and Geological plan must show type of land existing in the lease area.

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

Para 3.3: Review of earlier approved proposal (if any) in respect of exploration, excavation, reclamation etc.:-

i. Exploration: Page no. 8-9: Copy of Form-J, notice of sinking of borehole under Rule-47 of MCDR, 1988 should be enclosed in the submitted document and a copy of the same may be sent to this office for office record.

A concise BH log sheet of all the boreholes giving BH no., total depth of hole, recovery length, thickness of bauxite encountered (layer wise if exists), av. analysis of Bauxite with range.(e.g Al_2O_3 - 42.3 - 45.6%, SiO_2 - 2.3 - 3.1% etc.)and location of boreholes, may be submitted separately as Annexure.

Give bifurcation of grid wise boreholes drilled with maximum, minimum, average & total meterage drilled so far.

ii. Excavation: The sub-heading " Proposal as per the approved Scheme of Mining Plan" needs to be corrected as no approved scheme of mining exists. The para needs to be re-casted as the figure given for proposed Bauxite production and removal of waste including soil does not match with the approved Mining Plan. Further, under the para the proposed bench dimension is also to be spelt in brief.

The proposed generation of waste shown in the table should be reconciled properly with the approved Mining Plan dated 22.04.2008.

The justification submitted for higher production is not proper.

iii. Reclamation: The Proposed backfilling area was 7.49 Hc during the five (05) year plan period (2011-12 to 2015-16) and achievement is 8.36 Hc during 2011-12 to 2014-15. The justification for deviation has not been given.

The proposal and achievement for Control of dust, Noise and Vibration need to be explained properly. Nothing has been spelt about Extent of mechanization, Drilling & Blasting.

Para 3.4: Status of compliance of violation: Status of compliance of violation should be furnished in tabular form supported with Annexure containing copy of violation letter, Show Cause Notice etc. and copy of their reply letter submitted. Under the Annexure no. XV, violation letter dated 02.09.2013 is incomplete. The same should be rectified.

6. PART-A

1.0. Geology and Exploration:

a) Brief description of topography, drainage pattern, vegetation etc:

- (i) Topography: The para consists of topography of Pakharplateau, nothing has been spelt about topography of the lease area. The same may be explained in detail.
- (ii) Drainage : The Ghaghranalla and Harupnalla as mentioned in the last para has not been shown on the Key Plan(Plate no. 1). The distance of North Koelriver from Pakhar plateau may be given.
- (iii) Climate: The data as on the climatological data has been furnished should be mentioned. The maximum temperature during Winter season may be given. The maximum & minimum temperature during Summer season has not been furnished.

b) Brief description of Regional Geology: The generalized stratigraphic succession of the area given needs to be reconciled with that given in earlier approved Mining Plan. The name of System, Series, Formation etc. should be given with proper heading.

c) Detailed description of Geology of the lease area:

Local Geology: The first para needs to be rectified as no escarpment has been shown in the Plans and shape of leasehold area is not rectangular as mentioned. Size of the ore deposit may be given. When Base has not been established then Basaltic/Doleritic body should not be shown at the base of the general section. The thickness of different litho unit given in the General Section does not match with Para 2.(C).

In the third para as mentioned, the southern scarp has not been shown in Plate no. 4.

The first line of fourth para is not clear, the same may be clarified. To which HINDALCO's plant the material of Pakhar Bauxite mine (109.504 Hc) is sent may be spelt with its av. Grade. The specification of plant may also be spelt briefly with capacity of plant (both previous and present), input requirement with grade, output obtained with grade, year of commissioning, year of modification etc.

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d) Name of prospecting/exploration agency: Name of exploration agency who had carried out exploration work in the lease area with its required details may be submitted. If exploration had been carried out by the lessee himself then the exploration equipment such as drilling rig with its make and number available with the lessee may be given in this para. The exploration in the lease area was carried out by some external agency and not by Lessee. The para may be rectified.

e) Details of prospecting/exploration already carried out: The old quarries have been formed in Southern portion of the lease also and not only in Northern and Western part. The same may be rectified.

i) Number of Pits & Trenches: Old quarry 4, as mentioned in the table showing dimension of different quarries, has not been shown on the Geological Plan. Location of Quarry K2, K3, K4, K5as given in the table do not match with the Geological Plan. The quarry K7 as shown on the Geological Plan has not been incorporated in the referred table.

ii) Number of boreholes: The grid wise no. of B.H given with maximum, minimum, average and total meterage drilled should be given. A table showing concise BH log of all the 107 nos. of boreholes giving BH no. total depth of hole, total recovery length, thickness of Bauxite encountered and its complete analysis report showing all radicals including P_2O_5 , V_2O_5 & TiO_2 may be enclosed as Annexure as a component of Annexure-V.

iii) Details of sample analysis: None of the enclosed analysis report in Annexure-V have been supported with chemical analysis from NABL accredited laboratory. Complete chemical analysis of Ore/Mineral should be furnished including that of TiO_2 , P_2O_5 & V_2O_5 . The type of Bauxite occurring in the lease area may be spelt clearly.

The enclosed BH log in Annexure-V should be given in a systematic manner (according to the BH no.) and not in a haphazard manner for ease of reference.

At least for 10% of total samples may be analyzed in accordance to BIS and reports from NABL accredited /Government laboratory (Ref. Universal format for MP/SoM).

On the basis of single sample analysis from NABL accredited laboratory (Annexure-VIII) the grade of Bauxite in the entire lease area can not be assessed.

iv) The Expenditure incurred in prospecting operation, has not been furnished.

f) Surface Plan (Plate no. 3): (i) The numbering of boundary pillars marked on the Plan should be as per Ministry of Mines Notification no. G.S.R. 710(E), dated 08.10.2014, item no. 4.(j). The manner of construction and upkeep of boundary pillars should be in accordance to item no. 4 of G.S.R. No. 710(E), dated 08.10.2014 (Ministry of Mines Notification).

(ii) Two series of BH has been shown on the Plan (PBH & PBH-C) the same may be explained. Further, since boreholes have already been given, the nomenclature should be changed.

(iii) Two dumps have been encircled with dotted lines, what does it indicate should be shown in the Index of the Plan.

(iv) Three ground control points have not been shown on the plan.

g) Geological Plan(Plate no. 4): (i) Item no. (i) to (iv) mentioned above in Surface Plan may also be taken care of in this plan.

(ii) There are 43 nos. of (-)ve boreholes in the lease area out of 107 nos. of total boreholes that comes to about 40%. In view of that one intermediate borehole is required in such case where a (+)ve BH is juxtaposed by a (-)ve BH on 100m grid interval. Thus the influence area considered for Measured Mineral Resource should be revised as 50m (25m on all side of B.H) and 10m (from quarry face) respectively. Accordingly the Proved (G1 level) zone should be revised on the Geological Plan/Sections. Based on revised influence area the reserve/resource calculation should be re-casted at Annexure no. VI.

(iii) Dump no. has not been marked of the Geological Plan.

h) Geological Sections (Plate no. 4A): The UNFC code of area considered for different categories of reserve/resource estimation may also be marked on geological cross section.

All the sections except A-A', B-B' should be reconciled properly with the plan in respect of location of road and its safety barrier, RL of benches as well as quarry, no. of quarry, dump no. and its RL(top & bottom), reclaimed area etc. Both top and bottom RL of all the existing features should be given properly.

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i) Future exploration programme: The no. of BH mentioned in the para does not match with para no. (e)(ii) above on page no. 14 of the text. The para does not speak about future requirement of exploration in the lease area. The same may be spelt clearly. For future exploration program proposal, para no. (g)(ii) above may be referred.

j) Reserve Resource as per UNFC: The reserve furnished in the table has not been clarified whether it is Mineable or Insitu.

The table showing different categories of reserve/resource may be placed under item no. (L/1) below.

The Reserve figure given for sub-grade/aluminous laterite should be put under Resource category and not under Proved (111) category. Further, area covered under exploration for calculation of resource in context to threshold value may also be given.

On the basis of BH and available existing quarry, the different level of exploration carried out in the area should be incorporated in a tabular form under the para. The table should include Co-ordinates, Area covered, No. of BH, Spacing of BH, No. of samples drawn/analysed, Range of thickness of Bauxite, Grade of Bauxite & Level of exploration.

k) Detail calculation of reserves/resources:

Method of estimation of reserve: The first para need to be corrected in respect of no. of BHs. The purpose of drawing fourteen Geological Section is not clear as the Reserve/Resource has not been calculated by Cross Sectional Area method. The same may be clarified.

Measured Mineral Resource based on BH influence: The grid wise (100m X 100m & 50m X 50m) influence area of + ve BH need to be given in a tabular form under the para as a component of Annexure- VI in conformable to para no. (g)(ii) above.

Para 2. As per present guideline the tonnage factor and recovery factor are to be established through field test.

As per change in para no. (g)(ii) above regarding influence area, the table showing measured mineral resource shall be changed.

Mineable Reserve: While calculating the Mineable reserve, the factors of Mining loss, Recovery percentage etc have not been taken into account.

Anticipated life of mine: The same may be changed in context to para no. (g)(ii) above.

l) Mineral Reserve/Resource: (i) The table showing resource with respect to level of exploration may be modifiedslightly by including a column of area covered under level of exploration.

(ii) The table showing Reserve/Resource should be placed under this para as a last item after detailing all above items.

ANNEXURES:

- i. The Consent letter/Undertaking/Certificate from the applicant has not been submitted as per Part-B of the "Proposed Universal Format For Mining Plan/Scheme of Mining Including Progressive Mine Closure Plan".
- ii. Annexure-VI: Numbering should be given for three different tables along with page no. The table showing Details of calculation of Reserve and Resource must bear UNFC code of the Measured Mineral Resource. In the second table, heading should be corrected with UNFC code and in the third table UNFC code should be mentioned.
- iii. NABL accreditation certificate in respect of ECO VENTURES PVT. LTD has not been incorporated in the document.

GENERAL:

1. All the tables given in the document should be numbered for proper reference.
2. All the Plans must bear date of survey.

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