

**INDIAN BUREAU OF MINES
MINERALS DEVELOPEMMENT AND REGULATION DIVISION**

**MCDR inspection REPORT
Ranchi regional office**

Mine file No : JHK/LOH/BX/248/RRO

Mine code : 07JHK12009

- (i) Name of the Inspecting : **C001**) **N.K.CHATERJI**
Officer and ID No.
- (ii) Designation : Assistant Mining Geologis
- (iii) Accompanying mine : S/SRI BASUDEB GANGOPADHYAY, G.M(GEO), VICTOR BASU, MA
Official with
Designation
- (iv) Date of Inspection : 22/08/2018
- (v) Prev.inspection date : 10/10/2017

PART-I : GENERAL INFORMATION

1. (a) **Mine Name** : **HISRI EXTENSION (19.58 H)**
- (b) **Registration NO.** : **IBM/935/2011**
- (c) **Category** : **A Fully Mechanised**
- (d) **Type of Working** : **Opencast**
- (e) **Postal address**
- State : **JHARKHAND**
- District : **LOHARDAGA**
- Village : **HISRI**
- Taluka : **LOHARDAGA**
- Post office :
- Pin Code :
- FAX No. : **033-22883964**
- E-mail : **N.A.**
- Phone : **06526-295526/27, 294611,**
- (f) **Police Station** : **KISKO**
- (g) **First opening date** : **10/10/1951**
- (h) **Weekly day of rest** : **FRI**
2. **Address for correspondance** : **VILL.- HISRI,**
P.O.- BAGRU HILL,
DISTT.- LOHARDAGA (JHK)
3. (a) **Lease Number** : **BHR0266**
- (b) **Lease area** : **14.55**
- (c) **Period of lease** : **15**
- (d) **Date of Expiry** : **18/07/1996**
4. **Mineral worked** : **BAUXITE** **Main**

5. Name and Address of the

Lessee : M/S HINDALCO INDUSTRIES LTD.
 AT - COURT ROAD,
 LOHARDAGA, LOHARDAGA
 JHARKHAND
 Phone:06526-22401112, 224446 & 224016.
 FAX :06526-224112 & 224445

Owner : A.K AGRAWAL
 M/S HINDALCO INDUSTRIES
 LTD. CENTURY BHAWAN, 3rd
 FLOOR, Dr. ANNIE BASANT
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 LOHARDAGA (JHK) LOHARDAGA
 JHARKHAND
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Geologist
 Name : BASUDEV GANGOPADHYAY, Full Time
 Qualification : M.TECH (APPLIED GEOLOGY), I.S.M. DHANBAD
 Appointment/ : 01/11/2017
 Termination date

Manager
 Name : AJAY KUMAR PANDEY
 Qualification : B.E. (MINING), ISM, DHANBAD
 Appointment/ : 28/08/2014
 Termination date

6. Date of approval of Mining	:	Existing rule 11 MCDR1988	13/01/1994
Plan/Scheme of Mining		Renewal under rule 24 MCR1960	18/12/1995
		Renewal under rule 24 MCR1960	20/05/2006
		Mining Scheme rule 12 MCDR1988	06/10/2010
		Modif.of approved Mining Plan	06/10/2010
		FMCP under 23C(1)	05/08/2014
		MP modif under MCR 1960	23/12/2015

PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

Exploration :

Sl.No.	Item	Proposals	Actual work	Remarks
1a	Backlog of previous year	There was proposal for 13 nos. of infilling BHs to be given during the approved plan period 2015-16 (05 nos.) and 2016-17 (08 nos.), as per modification of approved Mining Plan dated 23.12.2015 valid for the plan period 2015-16 to 2019-20.	No exploration was carried out during the period 2015-16 and 2016-17. All the proposed 13 BHs have been drilled during 2018-19. Hence no backlog of exploration existed as on date of inspection.	--
1b	Exploration over lease area for geological axis 1 or 2	There was proposal for 13 nos. of infilling BHs to be given at a grid interval of 45m X 45m during the approved plan period 2015-16 and 2016-17, as per modification of approved Mining Plan dated 23.12.2015.	Entire lease area has been explored in detail and systematically by core drilling at a regular grid interval of 45m x 45m. The entire estimated reserves have been put under proved category. No boreholes drilled during the year 2015-16 and 2016-17 by the lessee. The proposed 13 nos. of BHs have been drilled during the current year of 2018-19. Altogether 96 nos. of BHs have been drilled with min.depth of 4.7m, max. depth of 22.10m and av. depth of 16.67m. Total metrage drilled is 1061.2m.	Total area covered under exploration is 14.55 Ha.
1c	Exploration Agencies and Expenditure in lakh rupees during the year	No proposal in the last approved document.	The exploration has been carried out outsourced agency. Expenditure incurred detail is not available.	--

1d	Balance area to be explored to bring Geological axis in 1 or 2	During the approved plan period from 2015-16 to 2019-20, additional 13 nos. of infilling boreholes have been proposed.	The entire lease area has been explored in detail and systematically by core drilling at a regular grid interval of 45m x 45m to bring the Geological axis in 1. The entire estimated reserves shall be put under proved category.	--
1e	Balance reserve as on 01/04/20	As per modification of approved MP dated 23.12.2015, Reserve/Resource as on 01.04.2015. i. Proved (111): 852382.25 MT; and ii. Pre-feasibility Resource (221): 206901.94 MT.	After deducting the production during 2015-16 (64488 MT), 2016-17 (98608 MT) and 2017-18 (90001 MT), the Reserve/Resource position as on 01.04.2018 is as given below:- i. Reserve (111): 599285 MT; and ii. Pre-feasibility Resource (221): 206901.94 MT.	--

1f	General remarks of inspecting officers on geology, exploration etc	The Aluminium ore of the lease area was predominantly Gibbsite (Tri hydrate). The Ore is overlain by Laterite and underlain by Lithomargic clay. Both the Laterite and Ore body have variable thickness. The laterite of the area has become soft & fragile due to weathering and was mixed with Morrum. The Laterite of the area contained less Iron. There was proposal of exploration by giving 13 nos. of core drilling during 2015-16 and 2016-17.	The bauxite in the area is both boehmitic and gibbsitic and is found suitable for low temperature and low pressure leaching by American Bayers process. Entire lease area has been explored in detail and systematically by core drilling at a regular grid interval of 45m x 45m. The entire estimated reserves have been put under proved category. No boreholes drilled during the year 2015-16 and 2016-17 by the lessee. The proposed 13 nos. of BHs have been drilled during the current year of 2018-19.	Altogether 96 nos. of BHs have been drilled with min. depth of 4.7m, max. depth of 22.10m and av. depth of 16.67m. Total metrage drilled is 1061.2m. Total area covered under exploration is 14.55 Ha.
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Development :

Sl.No.	Item	Proposals	Actual work	Remarks
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2a	Location of development w.r.t.lease area	During 2017-18, it was proposed to work in Quarry no. 4 and during current year i.e 2018-19, it has been proposed to work in Quarry no. 5 with 0.84 Ha area to be excavated. The proposed dimension of excavation during 2017-18 in Quarry no. 4 was 185m X 95m X 14m and during 2018-19 it is 91m X 78m X 11m in Quarry no. 5.	Mining work was going on as per the proposal made in the approved document in quarry no. 5. The dimension of present working in Quarry no. 5 is 90m X 45m X 11m. The dimension of Quarry no. 4 was 200m X 120m X 9-10m.	The mine commenced its operation from 21.03.2012 i.e during 2012-13. The mine was in operation on date of inspection.
2b	Separate benches in topsoil, overburden and minerals (Rule 15)	Separate benches in Overburden (Laterite) and Ore were proposed to be developed. During 2017-18, it was proposed to develop 01 bench in Soil, 02 benches in Overburden and 2 benches in Bauxite. During 2018-19, it has been proposed to develop 01 bench in Soil, 02 benches in Overburden and 4 benches in Bauxite. The dimension of benches have been proposed to be of 5m X 6m in OB and 6m X 6m in Bauxite.	Separate benches in Soil, Overburden (Laterite) and Bauxite were developed in quarry no. 4 and quarry no. 5 as per proposal within stipulated bench dimension. Total 5 benches were developed in Quarry no. 4, 01 bench in Top soil, 02 benches in OB (Laterite) and 02 benches in Ore. In quarry no. 5 also separate benches in Top soil, OB and Bauxite, with one bench in each horizon, were in progress.	--

2c	Stripping ratio or ore to OB ratio	As per approved modification of Mining Plan dated 23.12.2015, the overall stripping ratio during the period 2015-16 to 2019-20 was proposed to be 1:0.36. During 2017-18, the proposed Ore to Ore ratio was 1:0.42.	During the year 2017-18 the Ore to OB/Waste ratio was 1:0.52. The production during 2017-18 was 90001 MT and quantity of OB/Waste generation for the same period was 46929 cu.m.	--
2d	Quantity of topsoil generation in m3	As per Modification of approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, the proposed year wise Top Soil and Morrum generation during the period under review was as given below:- i. 2015-16: 12668 cu.m; ii. 2016-17: 4965 cu.m; iii. 2017-18: 16871 cu.m; iv. 2018-19: 4784 cu.m; v. 2019-20: 7700 cu.m.	The year wise top soil generation during last five years is as given below:- i. 2013-14: 630 cu.m; ii. 2014-15: 390 cu.m; iii. 2015-16: 4500 cu.m; iv. 2016-17: 4250 cu.m and v. 2017-18: 4200 cu.m.	--

2e	Quantity of overburden generation in m ³	<p>The proposed OB generation as given in the approved document for the period 2015-16 to 2019-20 was given as 178687 cu.m. The year wise proposed OB generation is as given below:-</p> <p>i. 2015-16: 35214 cu.m; ii. 2016-17: 23383 cu.m;</p> <p>iii. 2017-18: 42242 cu.m; iv. 2018-19: 37956 cu.m; and v. 2019-20: 39892 cu.m.</p>	<p>About 401242 MT of OB/Waste generation has been reported since opening of the mine on 21.03.2012. The OB/Waste generation figure for the last six years was as given below:-</p> <p>i. 2012-13: 115676 MT; ii. 2013-14: 15141 MT; iii. 2014-15: 21827 MT; iv. 2015-16: 28616 MT; v. 2016-17: 144896 MT; and vi. 2017-18: 75086 MT.</p>	--
2f	General remarks of inspecting officers on development of pit w.r.t. type of deposit etc	<p>As per Modification of approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, there was proposal to develop Quarry no. 2(A), 2(B), 3,4,5 and 6. The deposit was of blanket type with predominantly Gibbsitic (Trihydrate). The dimension of proposed excavation in Quarry no. 4 was 185m X 95m X 14m and during 2018-19 it is 91m X 78m X 11m in Quarry no. 5.</p>	<p>The lessee had developed six (06) quarries in the lease area. Quarry no. 1 and 3 develop on the Northern part of lease, Quarry no. 5 and Quarry no. 1A developed on NE part of lease, Quarry no. 2A and Quarry no. 4 developed on the Southern part of lease. As per proposal the development work was in progress in Quarry no. 5 on the date of inspection. The dimension of quarries are given at para no. 2(a). The dimension of present quarries are given at para no. 2(a).</p>	<p>Other than quarry no. 4 and 5 all other quarries have been backfilled.</p>

Exploitation:

Sl.No.	Item	Propasals	Actual work	Remarks
3a	Number of pit proposed for production	As per Modification of approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, quarry no. 4 and 5 were proposed to be developed for production during the plan period 2017-18 and 2018-19 respectively.	The production during 2017-18 was achieved from quarry no. 4 and that during 2018-19 (as on date of inspection) the excavation/production in quarry no. 5 was under progress as per proposal of Hisri New Bauxite Mine.	--
3b	Quantity of ROM mineral production proposed	As per approved modification of Mining Plan dated 23.12.2015, during the plan period of 2015-16 to 2019-20, it was proposed to produce 496793 MT of Bauxite ore from the mine. The year wise proposed production schedule is given below:- i. 2015-16: 99087 MT; ii. 2016-17: 99316 MT; iii. 2017-18: 99904 MT; iv. 2018-19: 99026 MT; v. 2019-20: 99458 MT.	The quantity of ROM mineral production during last few years is given below:- i. 2010-11: Nil; ii. 2011-12: Nil; iii. 2012-13: 99651 MT; iv. 2013-14: 93813 MT; v. 2014-15: 54529 MT; vi. 2015-16: 64488 MT; vii. 2016-17: 98608 MT; and viii. 2017-18: 90001 MT.	--
3c	Recovery of saleable/usable mineral from ROM production	The recovery of saleable Bauxite ore was proposed to be around 90% of total ROM.	In actual practice the recovery varied from 80-85% of total ROM production during 2017-18.	--

3d	Quantity of mineral reject generation	The proposed year wise Minereal reject generation during the approved plan period of 2015-16 to 2019-20 as per modification of Mining Plan dated 23.12.2015 is given below:- i. 2015-16: 5477 cu.m; ii. 2016-17: 5490 cu.m; iii. 2017-18: 5523 cu.m; iv. 2018-19: 5474 cu.m; and v. 2019-20: 5498 cu.m.	The mineral reject generation for the last five years as reported from the mine is given below:- i. 2013-14: 946 MT; ii. 2014-15: 550 MT; iii. 2015-16: 660 MT; iv. 2016-17: 968 MT; and v. 2017-18: 950 MT.	--
3e	Grade of mineral rejects generation and threshold value declared.	As per modification of approved Mining Plan dated 23.12.2015, about 10% of total ROM was proposed to be under Reject category of under size material.	The under size material of total ROM generated has been considered as Mineral Reject. The chemical analysis of Reject material is available and av. Al ₂ O ₃ content has been reported to be around 28.35%. The Threshold value of Bauxite is Al ₂ O ₃ - 30% with SiO ₂ - < 5%. The av. grade of ore produced is >40% Al ₂ O ₃ .	--
3f	Quantity of sub grade mineral generation.	There was no proposal for Sub-grade mineral generation in the last Modification of approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20.	No sub-grade Bauxite production has been reported so far from the mine. However, whatever sub-grade materials were generated from the mine were blended with high grade material before dispatch, maintaining the requisite grade. Thus mineral wastage was avoided and ascertaining mineral conservation aspect.	--

3g	Grade of sub grade mineral generation	There was no proposal for Sub-grade mineral generation during the plan period 2015-16 to 2019-20, hence grade of the same is not applicable.	Not applicable as there was no sub-grade generation reported from the mine during 2015-16 to 2018-19 (upto August, 2018, as on date of inspection).	--
3h	Manual / Mechanised method adopted for segregating from ROM	Mechanical crushing and screening is proposed in the Modification in approved Mining Plan dated 23.12.2015.	The ore produced from the mine is crushed by two jaw type crushers to 100-130 mm size, located in Bagru lease, and crushed ore taken by a 900 mm wide belt conveyor to the 450 t ropeway loading bunker. The crushed and screened ore is loaded into 0.9 t buckets of the mono - cable ropeway to Lohardaga railway siding.	--
3i	Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects.	There was no proposal in the Modification in approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, regarding analysis or beneficiation study for sub-grade mineral and reject material.	No mineral processing is done within the lease area. The ore is transported from the quarry by dumpers to the crushing plant. The ore is crushed by two jaw type crushers to 100-130 mm size and crushed ore taken by a 900 mm wide belt conveyor to the 450 t ropeway loading bunker. The crushed and screened ore is loaded into 0.9 t buckets of the mono -cable ropeway to Lohardaga railway siding for onward despatch.	--

3j Provision of drilling and blasting in mineral benches	There is proposal for drilling by 115 mm dia drill and blasting by slurry explosives in mineral bench in the Modification of approved Mining Plan valid for the plan period 2015-16 to 2019-20. The Burden and Spacing in OB and Ore has been proposed to be 2.5m and 3m respectively in a staggered pattern.	The drilling and blasting as proposed in the approved document is being practiced in the mine with Burden and Spacing as 2.5m and 3m respectively.	--
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- 3k Provision of mining machineries in mineral benches As per Modification in approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, there was proposal to use following machineries in mineral benches:-
i. Wagon drill (115 mm dia): 1 no.;
ii. Auger drill (8" dia): 1 no.;
iii. Compressor (450 cfm): 1 no.;
iv. Excavator (0.9 cu.m): 1 no.;
v. Excavator (1.5 cu.m): 1 no.;
vi. Excavator (1.7 cu.m): 1 no.;
vii. Dumper (25 MT): 3 nos.;
viii. Dumper (32 MT): 1 no.
- During 2017-18 and 2018-19 (upto the date of inspection), following machineries were in use in mineral benches:-
i. Wagon drill (115mm dia): 2 nos.;
ii. Air Compressor (200 cfm): 2 nos.;
iii. Excavator: 3 nos. (0.9 cu.m, 1.2 cu.m & 1.8 cu.m);
iv. Dumper (25 MT): 5 nos;
v. Dumper (16 MT): 1 no.(contractual).
No Tipper was used as it was not necessary. Trucks were used for transporatation of Bauxite from mine to stack yard at Lohardaga.
- 31 Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM As per approved proposal, the bench dimension was proposed to be kept at 5m X 6 in OB and that in Bauxite at 6m X 6m. The proposed bench dimension was found to be suitable with the proposed 'A'-OTFM category of opencast mining.
- The height and width of benches have been maitained at 1.5-2.5m X 3-3.5m respectively in OB and 3.5-4m X 4m respectively in Ore, which is suitable with the proposed method of mining.

3m	Total area covered under excavation/pits	As per Modification of approved Mining Plan, there was proposal to excavate 4.0 Ha area during the plan period 2015-16 to 2019-20. During the plan period 2017-18 and 2018-19, there was proposal to excavate 0.84 Ha and 0.71 Ha respectively.	During 2017-18, about 1.054 Ha area was covered under excavation. During current year, upto the date of inspection, 0.468 Ha area has been covered under excavation. As on date of inspection a cumulative of about 4.452 Ha area has been covered under excavation.	--
3n	Ore to OB ratio for the pit/mine during the year.	As per approved modification of Mining Plan dated 23.12.2015, the overall Ore to OB ratio during the period 2015-16 to 2019-20 was proposed to be 1:0.36. During 2017-18, the proposed Ore to Ore ratio was 1:0.42.	During the year 2017-18 the Ore to OB/Waste ratio was 1:0.52. The production during 2017-18 was 90001 MT and quantity of OB/Waste generation for the same period was 46929 cu.m.	--

3o	Total area put in use under different heads at the end of year	As per Modification in approved Mining Plan valid for the plan period 2015-16 to 2019-20, the total area put to be used at the end of 2019-20, was as follow :- i. Quarry- 5.49 Ha (Reclaimed area: 4.79 Ha); ii. Road- 0.13 Ha; iii. Green belt: 0.48 iv. Total area put to be used: 6.10 Ha; and v. Total unused area: 8.45 Ha out of total retained area of 14.55 Ha.	Upto 2017-18, the total area put to use was as under:- i. Quarry- 4.452 Ha; ii. Backfilled area: 2.448 Ha; iii. Reclaimed area: 1.38 Ha; iv. Rehabilitated Area: 1.38 Ha; v. Road- 0.13 Ha; vi. Green belt: 1.467 Ha. vii. Total area put to use: 6.049 Ha; and viii. Total unused area: 8.501 Ha out of total retained lease area of 14.55 Ha.	As on date of inspection, the total area put to use is as under:- i. Quarry- 4.802 Ha; ii. Backfilled area: 2.905 Ha; iii. Reclaimed area: 1.563 Ha; iv. Rehabilitated Area: 1.563 Ha; v. Road- 0.13 Ha; vi. Green belt: 1.563 Ha.
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3p	Production of ROM mineral during the last five year period as applicable	As per approved modification of Mining Plan dated 23.12.2015, during the plan period of 2015-16 to 2019-20, it was proposed to produce 496793 MT of Bauxite ore from the mine. The year wise proposed production schedule is given below:- i. 2015-16: 99087 MT; ii. 2016-17: 99316 MT; iii. 2017-18: 99904 MT; iv. 2018-19: 99026 MT; v. 2019-20: 99458 MT.	The quantity of ROM mineral production during last few years is given below:- i. 2010-11: Nil; ii. 2011-12: Nil; iii. 2012-13: 99651 MT; iv. 2013-14: 93813 MT; v. 2014-15: 54529 MT; vi. 2015-16: 64488 MT; vii. 2016-17: 98608 MT; and viii. 2017-18: 90001 MT.	--
3q	General remarks of inspecting officers on method of mining etc.	As per approved document, the mine was proposed to be operated by opencast method under 'A'-OTFM category with bench dimension of 5m X 6m in OB and 6m X 6m in Bauxite.	As per approved Modification of Mining Plan, 'A'-OTFM method of mining was adopted in the mine within stipulated bench dimension. In actual practice the height and width of benches were maintained at 3-4m X 3-3.5m respectively both in Ore and OB which was suitable with the proposed method of mining.	--

Solid Waste Management - Dumping:

Sl.No.	Item	Propasals	Actual work	Remarks
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4a	Separate dumping of topsoil, OB and mineral rejects (Rule 32,33)	No proposal of separate dumping of top soil, OB and mineral reject. There is proposal for concurrent backfilling of OB and mineral rejects in the mined out areas followed by spreading of top-soil over it.	Concurrent backfilling of the mined out areas by OB and mineral rejects is under progress.	^--
4b	Location of topsoil, OB and mineral reject dumps	Not applicable as there is no proposal of separate dumping of top soil, OB and mineral reject in the lease area.	No Top soil/OB/Mineral reject is there within the lease area since concurrent backfilling is going on.	--
4c	Number of dumps within lease area and outside of lease area	No such proposal is there in the approved document.	There is no waste dump within the lease area.	--
4d	Location of dumps w.r.t. ultimate pit limit (Rule 16)	Not applicable as no dump has been propopsed in the last approved Modification in Mining Plan dated 23.12.2015.	Not applicable.	--
4e	Number of active and alive dumps.	No such proposal is available in the last approved Modification in Mining Plan dated 23.12.2015.	There is no active and alive dumps within the lease area.	--
4f	Number of dead dumps.	No such proposal is available.	There is no dead dump within the lease area.	--

4g	Number of dumps established.	There is no such proposal of dump establishment in the approved document dated 23.12.2015 valid for the plan period 2015-16 to 2019-20.	No dump has been established as there is no external dump within the lease area.	--
4h	Whether Retaining wall or garland drain all along dumps are there.	Not applicable since no dump existed within the lease area due to concurrent backfilling.	Not applicable.	--
4i	Length of Retaining wall or garland drain all along dumps	Not applicable.	Not applicable.	--
4j	Number of settling ponds	No such proposal is there in the last approved Modification in Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20.	No settling pond has been created within the lease area.	--
4k	Specific comments of inspecting officer on waste dump management	Simultaneous backfilling has been proposed. There is no proposal on waste dump management in the modification of approved mining plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20.	No external dump exists within the lease area. Concurrent backfilling by OB and waste materials over the mined out areas followed by topsoil spreading is in practice in the mine. About 2.905 Ha area has been covered under backfilling as on date of inspection.	--

Sl.No.	Item	Propasals	Actual work	Remarks
5a	Status of part or full extraction of mineral from mined out area before starting backfilling.	As per modification in approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, simultaneous backfilling on mined out areas has been proposed.	Simultaneous backfilling is in practice. During 2017-18 about 0.91 Ha area has been backfilled in quarry no. 3.	--
5b	Area under backfilling of mined out area	As per approved proposal, about 4.715 Ha area was proposed to backfilled in quarry no. 1, 2A, 3, 4 & 5 during the plan period 2015-16 to 2019-20. The year wise backfilling proposal during 2015-16 to 2019-20 as per approved modification of Mining plan dated 23.12.2015 is as given below:- i. 2015-16: 1.415 Ha; ii. 2016-17: 0.9 Ha; iii. 2017-18: 0.85 HA; iv. 2018-19: 0.84 Ha; and v. 2019-20: 0.71 Ha.	During 2017-18 about 0.91 Ha area has been backfilled in quarry no. 3 and as on date of inspection, a cumulative of about 2.905 Ha area has been backfilled within the lease area in quarry no. 1, 2A, & 3.	--

5c	Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32)	As per Modification of approved Mining Plan there is proposal for concurrent spreading of top soil over backfilled area after mining full thickness of Bauxite.	Topsoil generated during the mining operation was utilised over the backfilled areas by spreading it over the reclaimed areas.	--
5d	Total area fully reclaimed and rehabilitated	As per approved document, about 4.715 Ha area was proposed to be backfilled/reclaimed/rehabilitated during the plan period 2015-16 to 2019-20.	During 2017-18 about 0.91 Ha area has been backfilled, about 0.18 Ha area has been covered under top soil spreading (reclaimed) and 0.828 Ha area has been covered under rehabilitation (plantation over backfilled area) in quarry no. 3. As on date of inspection, a cumulative of about 2.905 Ha area has been backfilled in quarry no. 1, 2A, & 3, about 1.563 Ha area has been covered under top soil spreading (reclaimed) and 1.563 Ha area has been covered under rehabilitation (plantation).	--
5e	General remarks of inspecting officers on backfilling and reclamation etc.	As per Modification of approved Mining Plan dated 23.12.2015 valid for the plan period 2015-16 to 2019-20, there was proposal of backfilling of about 4.715 Ha of void area was proposed to be backfilled/reclaimed/rehabilitated during the plan period.	As on date of inspection, a cumulative of about 2.905 Ha area has been backfilled in quarry no. 1, 2A, & 3, about 1.563 Ha area has been covered under top soil spreading (reclaimed) and 1.563 Ha area has been covered under rehabilitation (plantation).	--

Progressive Mine Clousre Plan:

Sl.No.	Item	Propasals	Actual work	Remarks
6a	Whether Annual report on PMCP submitted on time and correctly. Rule 23 E(2).	No such proposal was there in the approved Modification of Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20.	The Annual Report on PMCP under Rule- 26(2) of MCDR, 2017 has been submitted by the lessee for the period 2017-18.	--
6b	Area available for rehabilitation (ha) .	As per modification in approved Mining Plan, about 0.4 Ha area has been proposed for rehabilitation through formation of green belt during the approved plan period 2015-16 to 2019-20. The year wise area to be rehabilitated through formation of green belt is given below:- i. 2015-16: 0.08 Ha; ii. 2016-17: 0.08 Ha; iii. 2017-18: 0.08 Ha; iv. 2018-19: 0.08 Ha; v. 2019-20: 0.08 Ha The proposed cumulative area to be rehabilitated at the end of 2019-20 is 0.48 Ha.	During 2017-18 about 0.828 Ha area has been covered under rehabilitation through plantation over backfilled area in quarry no. 3. As on date of inspection, a cumulative of about 1.563 Ha area has been covered under rehabilitation through plantation over backfilled area.	--

6c	afforestation done (ha).	As per approved proposal, 3920 nos. of plantation were to be done over the backfilled area during the plan period 2015-16 to 2019-20 covering 2.133 Ha area. The year wise plantation schedule is given below:-	During last five years 4501 nos. of plantation have been done covering 1.467 Ha area. The year wise plantation done and area covered within lease area during last five years is given below:-	--
		<ul style="list-style-type: none"> i. 2015-16: 450 nos.(0.22 Ha); ii. 2016-17: 620 nos.(0.32 Ha); iii. 2017-18: 690 nos.(0.37 Ha); iv. 2018-19: 900 nos.(0.49 Ha); and v. 2019-20: 1260 nos.(0.72 Ha). 	<ul style="list-style-type: none"> i. 2013-14: Nil; ii. 2014-15: 125 nos. (0.062 Ha); iii. 2015-16: 50 nos.(0.025 Ha); iv. 2016-17: 2471 nos.(0.552 Ha); and v. 2017-18: 1855 nos.(0.828 Ha). 	

6d	No. of saplings planted during the year	<p>As per modification of approved Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, there was proposal for 1590 nos. of plantation to be done over an area of 0.87 Ha during 2017-18 and 2018-19. The year wise no. of saplings to be planted with area covered is given below:-</p> <p>i. 2017-18: 690 nos. (0.37 Ha);</p> <p>ii. 2018-19: 900 nos. (0.49 Ha).</p>	<p>The year wise plantation done and area covered within lease area during the years is given below:-</p> <p>i. 2017-18: 1855 nos. (0.828 Ha) with 80% survival rate;</p> <p>ii. 2018-19: Report not finalised yet.</p>	--
6e	Cumulative no. of plants	<p>There was no proposal for cumulative number of plants in the approved Modification of Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20. However, as per approved proposal, 3920 nos. of plantation were to be done over backfilled area, during the plan period 2015-16 to 2019-20, covering 2.133 Ha area.</p>	<p>On cumulative basis about 4501 nos. of plantation have been done covering 1.467 Ha area. The year wise plantation done and area covered has already been given at para no. 6(c).</p>	--

6f	Any other method of rehabilitation	As per modification inapproved Mining Plan dated 23.12.2015, There was no other proposal for rehabilitation during the plan period 2015-16 to 2019-20.	Not applicable.	--
6g	Cost incurred on watch and care during the year	No proposal have been made in the approved document on the cost incurred on watch and care.	Information not available with regards to cost incurred on watch and care during the year.`	--
6h	Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling (L x B x D	As per approved proposal, about 4.715 Ha area was proposed to backfilled in quarry no. 1, 2A, 3, 4 & 5 during the plan period of 2015-16 to 2019-20. As per available plan, a void area of about 165m X 45m X 14m were proposed to be backfilled during 2017-18.	During 2017-18 about 0.91 Ha area has been backfilled in quarry no. 3 and as on date of inspection, a cumulative of about 2.905 Ha area has been backfilled within the lease area in quarry no. 1, 2A, & 3. Approximate dimension of backfilled area is 165m X 45m X 14m.	--

6i	Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings	There was proposal for 4.715 Ha of backfilling in the last Modification of approved Mining Plan for the plan period 2015-16 to 2019-20, by using about 178687 cu.m of OB/Waste material.	As on date of inspection about 2.905 Ha area was backfilled and during 2017-18 about 0.91 Ha area has been backfilled in quarry no. 3. The quantity of material used for backfilling is not available.	--
6j	Compliance on reclamation and rehabilitation by backfilling (iii) Afforestation on backfilled area	Proposed afforestation during the plan period 2015-16 to 2019-20 was 3920 trees covering 2.133 Ha of backfilled area.	On cumulative basis about 4501 nos. of plantation have been done covering 1.467 Ha area. The year wise plantation done and area covered has already been given at para no. 6(c). During 2017-18 about 1855 nos. of plantation has been reported covering 0.828 Ha of backfilled area having about 70% survival rate.	--
6k	Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir	No proposal has been made in the last approved document dated 23.12.2015.	Not applicable.	--
6l	Compliance on reclamation and rehabilitation by backfilling (v) any other specific means.	Besides plantation no other proposal have been made in the last approved document.	Not applicable.	--
6m	Compliance of rehabilitation of waste land within lease (i) afforestation	No separate proposal for rehabilitation of waste land has been made in the last approved document.	The lease includes 0.23 Ha of Waste land. No separate information on rehabilitation of waste land is available.	--

6n	Compliance of rehabilitation of waste land within lease (ii)Area rehabilitation (ha)	No proposal has been made in the approved document.	Not applicable.	--
6o	Compliance of rehabilitation of waste land within lease (iii)Method of rehabilitation	No proposal has been made in the approved document.	Not applicable.	--
6p	Compliance of environmental monitoring (core zone and buffer zone)	As per approved modification in Mining Plan dated 23.12.2015, regular monitoring of water, air, soil and noise within the lease area and core zone have been proposed.	As reported, regular monitoring of air, water and noise are being carried out by the lessee within lease and core zone and are within permissible limit.	--

6q	General remarks of inspecting officers on PMCP compliance and progressive closure operations etc.	It has been proposed in the Modification of approved Mining plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, that, about 5.49 Ha area will be covered under excavation upto the plan period 2019-20 of which 4.715 Ha area will be backfilled during the plan period. Further, during 2015-16 to 2019-20, green belt will cover about 0.4 Ha area, about 0.13 Ha area has been proposed to be covered under road.	As on date of inspection, a cumulative of about 4.802 Ha area was covered under excavation, of which 4.802 Ha area has been be backfilled. Out of the backfilled area of 4.802 Ha, 1.563 Ha area has been reclaimed and rehabilitated through plantation over it. About 0.13 Ha area has been covered under road.	--
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Mineral Conservation:

Sl.No.	Item	Propasals	Actual work	Remarks
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7a	ROM Mineral dispatch or grade-wise sorting within lease area	The entire bauxite ore produced from the mine is meant for captive consumption at Muri / Renukut plant of M/s Hindalco Ind. Ltd. The size specification of ore is (+) 10mm to (-) 200 mm.	Bauxite of this mine is pre-dominantly Bohemitic i.e Trihydrate($Al_2O_3 \cdot 3H_2O$). The year wise dispatch figure for last six years was as given below:- i. 2012-13: 94693 MT(Grade:< 40% Al_2O_3); ii. 2013-14: 92150 MT(Grade:< 40% Al_2O_3); iii. 2014-15: 60852 MT(Grade:< 40% Al_2O_3); iv. 2015-16: 20773 MT(Grade: < 40% Al_2O_3); v. 2016-17: 99955 MT(Grade: <40% Al_2O_3); & vi. 2017-18: 99677 MT(Grade: <40% Al_2O_3)	Gibbsitic ore are also associated with Bohemite. The mine commenced its operation from 21.03.2012 i.e during 2012-13. The mine was in operation on date of inspection.
7b	Method of grade-wise mineral sorting i.e. manual or mechanical.	Manual method of sorting of ROM has been proposed in the last approved modification of approved Mining Plan dated 23.12.2015. Mechanical screening has also been proposed in the approved document.	Manual Grade wise sorting is done within the lease. The ore produced from the mine is crushed by two jaw type crushers to 100-130 mm size and crushed ore taken by a 900 mm wide belt conveyor to the 450 MT ropeway loading bunker. The crushed and screened ore is loaded into 0.9 MT buckets of the mono -cable ropeway to Lohardaga railway siding.	--
7c	Different grade of mineral sorted out at mines.	No specific proposal was there in the Modification of approved Mining Plan.	Generally two types of ore stack are made within the mine site. One was of 40-45% Al_2O_3 grade material and the other of below 40% Al_2O_3 grade material. The low grade ore is blended with high grade material in appropriate calibrated proportion before dispatch to maintain the required grade to be dispatched to consignee.	--

7d	Any beneficiation process at mines .	No proposal of mineral beneficiation has been made in the last approved document.	No mineral beneficiation process is carried out at mine site other than crushing and sizing by the two jaw type crushers located in adjacent Bagru lease of same lessee.	--
7e	General remarks of inspecting officer on Mineral conservation and beneficiation issues	It has been proposed in the approved Modification of Mining Plan that, low grade Bauxite will be hand sorted and suitably blended to meet the metal grade requirement. Mechanical screening of the fraction above 1" size has also been proposed.	The mineral conservation aspect was skillfully maintained by the lessee by deploying suitable nos. of persons for sorting , sizing etc. The labour employment for last six years was as given below:- i. 2012-13: 65 nos.; ii. 2013-14: 17 nos; iii. 2014-15: 98 nos; iv. 2015-16: 124 nos.; v. 2016-17: 111 nos.; and vi. 2017-18: 66 nos.	--

Environment:

Sl.No.	Item	Propasals	Actual work	Remarks
8a	Separate removal and utilization of topsoil (Rule 32)	As per approved modification in Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, the topsoil removed during the mining has to be utilised by spreading over the backfilled areas of quarry no. 1, 2A, & 3.	The topsoil removed during the mining operation has been spread over backfilled areas of being spread over the backfilled areas of quarry no. 1, 2A, & 3, as per the propsal made in the approved document.	--

8b	Concurrent use or storage of topsoil	As per approved document, there was proposal for spreading of top soil over backfilled area after mining full thickness of Bauxite.	Simultaneous spreading of top soil over backfilled is being carried out. During 2017-18, about 0.18 Ha area was reclaimed (top soil spreading done) and as on date of inspection a cumulative of about 1.563 Ha area has been covered under top soil spreading.	--
8c	Separate dumps for overburden, waste rock, rejects and fines (Rule 33)	As per approved modification of Mining plan dated 23.12.2015, there is no proposal for creation of external dump. It was proposed that, entire OB/Waste material will be used for concurrent backfilling of the worked out quarries.	Almost entire quantity OB/waste generated from the mine (401242 MT) during the mining operation was concurrently backfilled in the mined out areas.	--

8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	As per Modification of approved Mining Plan dated 23.12.2015, the OB/Waste material has been proposed to be used for restoration of land to its near original position. There was proposal for 4.715 Ha of backfilling by using 178687 cu.m of OB/Waste material. During 2017-18 and 2018-19, it is proposed to use 42242 cu.m and 37956 cu.m respectively of OB/Waste material for backfilling of 0.85 Ha and 0.84 Ha respectively of mined out area.	During 2017-18 about 0.91 Ha area has been backfilled in quarry no. 3 and as on date of inspection, a cumulative of about 2.905 Ha area has been backfilled within the lease area in quarry no. 1, 2A, & 3. Upto 2017-18, about 401242 MT of OB/Waste material has been used for backfilling of mined out area.	--
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8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	Phase wise restoration, reclamation and rehabilitation of land have been proposed in the Modification of approved Mining Plan dated 23.12.2015. As per approved proposal, about 4.715 Ha area was proposed to backfilled/reclaimed in quarry no. 1, 2A, 3, 4 & 5 and 0.4 Ha area has been proposed to be rehabilitated through creation of green belt during the plan period 2015-16 to 2019-20.	During 2017-18 about 0.91 Ha area has been backfilled, about 0.18 Ha area has been covered under top soil spreading (reclaimed) and 0.828 Ha area has been covered under rehabilitation (plantation over backfilled area) in quarry no. 3. As on date of inspection, a cumulative of about 2.905 Ha area has been backfilled in quarry no. 1, 2A, & 3, about 1.563 Ha area has been covered under top soil spreading (reclaimed) and 1.563 Ha area has been covered under rehabilitation (plantation).	--
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8f	Baseline information on existence of plantation and additional plantation done (Rule 41)	No existing plantation has been reported in the approved modification in Mining Plan dated 23.12.2015. It was proposed that 3920 nos. of plantation were to be done over backfilled area, during the plan period 2015-16 to 2019-20, covering 2.133 Ha area. During 2017-18 and 2018-19, about 690 and 900 nos. respectively of plantation have been proposed over an area of 0.37 Ha and 0.5 Ha respectively.	Within 500m of lease area, forest exists with 0.3 tree density. As reported by the mine official, the year wise plantation done during last five years over backfilled area is as given below:- i. 2013-14: Nil; ii. 2014-15: 125 nos. (0.062 Ha); iii. 2015-16: 50 nos.(0.025 Ha); iv. 2016-17: 2471 nos.(0.552 Ha); and v. 2017-18: 1855 nos.(0.828 Ha).	--
8g	Survival rate	No such proposal is available in the approved document.	About 70% survival rate has been reported by the party during 2017-18.	--
8h	Water sprinkling on roads to control airborne dust	There is proposal for water sprinkling on roads in the approved document.	Water sprinkling is done in the haul roads from time to time to suppress the air borne dust during transportaton.	--

8i	General remarks of inspecting officer on aesthetic beauty in and around mines area	As per approved modification of Mining Plan dated 23.12.2015, valid for the plan period 2015-16 to 2019-20, there is proposal of 3920 nos. of plantation over backfilled area covering 2.133 Ha area during the plan period to maintain the aesthetic beauty in and around the lease area.	The aesthetic beauty in and around the mine area is being maintained by simultaneous backfilling and plantation done by the lessee over backfilled area. Further, a gentle gradient is being maintained after backfilling of the mined out area.	--
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Compliance of Rule 45:

Sl.No.	Item	Propasals	Actual work	Remarks
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9a	Status of submission of Monthly and Annual returns	The information furnished in Annual Return for the year 2017-18 covered Part-I of General information about mine and labour employment, Part-II about Employment & wages, Part-IIA about Capital Structure, Part-III consists of Consumption of materials, Part-IV about Consumption of explosives, Part-V consists of General Geology & Mining under various sections, Part-VI about Production, Dispatch & Stock and finally Part-VII consists of Cost of production.	Party had submitted the Monthly return regularly during the year 2017-18. They had also submitted the Annual Return for the year 2017-18 within stipulated time. In both type of returns, all the fields were filled up with required information.	--
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9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	Since the mine is 'A'-OTFM category mine, a Whole time Mining Engineer and a whole time Geologist are to be appointed as per Rule-55(3) with due intimation of the same in Form-H under Rule-46 of MCDR, 2017. The name of ME and Geologist employed during 2017-18 were given in the Annual Return of 2017-18.	The name of full time Mining Engineer submitted in the Annual return for the year 2017-18 was not present during the inspection as he has left the organization. For non-employment of full time Mining Engineer (ME), violation of Rule-55(1)(3)(i) of MCDR, 2017 was pointed out to the lessee in the form of Violation letter, issued vide this office letter no. JHK/LOH/BX/248/RRO dated 24.08.2018. The name of Geologist furnished in the Annual Return of 2017-18 was present during inspection.	The statutory personnel employed in Hisri New Bauxite mine are Sri Ajay Kumar Pandey mines manager, Sri Basudev Gangopadhyay Geologist.
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	The land use pattern given in the Annual Return for the year 2017-18 was as under:- i. Area under quarry: 3.2 Ha; ii. Reclaimed/Rehabilitated: 2.44 Ha; iii. Dump area: 0.12 Ha; iv. Infrastructure & Road: Nil; and v. Work done under PMCP: 0.910 Ha.	Upto 2017-18, the total area put to use was as under:- i. Quarry- 4.452 Ha; ii. Backfilled area: 2.448 Ha; iii. Reclaimed area: 1.38 Ha; iv. Rehabilitated Area: 1.38 Ha; v. Road- 0.13 Ha; vi. Green belt: 1.467 Ha. vii. Total area put to use: 6.049 Ha; and viii. Total unused area: 8.501 Ha out of total retained lease area of 14.55 Ha.	--
9d	Scrutiny of Annual return on afforestation	In Part-V, item no. 4.4 of the Annual Return for the year 2017-18, the plantation done has been given as 1855 with 80% survival rate.	The information furnished found to be correct as during the period under review (2017-18), about 1855 plantation have been done over backfilled area with 75-80% survival rate.	--

9e	Scrutiny of Annual return on mineral reject generation (Grade and quantity)	In Part-V, Sec 4 of the Annual Return (2017-18), the information on Mineral Reject generation was Nil.	The mineral reject generation for the last five years as reported from the mine is given below:- i. 2013-14: 946 MT; ii. 2014-15: 550 MT; iii. 2015-16: 660 MT; iv. 2016-17: 968 MT; and v. 2017-18: 950 MT.	--
9f	Scrutiny of Annual return on ROM stock and/or graded ore	In Part VI, item no. 1 & 2(A), of the Annual Return (2017-18), the ROM stock (opening balance) and Closing stock were shown as below:- i. Opening stock- <40% Al2O3: 42664.190 MT; ii. Closing Stock- <40% Al2O3: 32987.260 MT.	The figure given for Opening and Closing stocks were in conformable with the figure furnished through Monthly Returns.	--
9g	Scrutiny of Annual return on sale value, Ex. Mine price and production cost	The sale value, ex-mine price and production cost were shown Part-VI and VII of the Annual Return for the year 2017-18.	In Part-VI, item no. 2 of the Annual Return 2017-18, the Ex-Mine price was shown as Rs. 1054.59/-, in Part-VI, item no. 4, the Sale value was shown as Nil as it is a captive mine of M/s HINDALCO and cost of production during 2017-18 was shown as Rs. 1054.59/- per MT in Part-VII of the Annual Return.	--
9h	Scrutiny of Annual return on fixed assets	The value of Fixed Assets was given as Rs. 278554834 in Part-IIA of the A.R for the year 2017-18, under Capital structure.	The value of Fixed Assets of the lessee for the year 2017-18 as shown as Rs. 278554834/- furnished in Part-IIA of the A.R, under Capital structure has been verified.	--

9k	Scrutiny of Annual return on mining machineries	In Part-V, Sec 5/6/8/9 of the Annual Return 2017-18, the machineries used were as follow:- i. Shovel (0.9 cu.m): 2 nos.; ii. Shovel (1.9 cu.m): 1 no.; iii. Dumper (25 MT): 5 nos.; iv. Tipper (7 cu.m): 1 no.; v. Air compressor (450 cfm): 1 no.	During 2017-18 and 2018-19 (upto the date of inspection), following machineries were in use in mineral benches:- i. Wagon drill (115mm dia): 2 nos.; ii. Air Compressor (200 cfm): 2 nos.; iii. Excavator: 3 nos. (0.9 cu.m, 1.2 cu.m & 1.8 cu.m); iv. Dumper (25 MT): 5 nos; v. Dumper (16 MT): 1 no.(contractual). No Tipper was used as it was not necessary. Trucks were used for transporatation of Bauxite from mine to stack yard at Lohardaga.	--
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Details of violations observed during current inspection and compliance position of violation pointed out

Violation observed			Show cause position		
Rule NO.	Issued on	Compliance on	Rule NO.	Issued on	Compliance on
MCDR17 Rule 33	24/08/2018				
MCDR17 Rule 35(2)	24/08/2018				
MCDR17 Rule 55(1)(3)	24/08/2018				

Date :

(N.K.CHATERJI)

Indian Bureau of Mines