

#### UAIL-MINES/ENV/ 173 /2020

27th November 2020

To

The Addl. Principal Chief Conservator of Forest Ministry of Environment Forests & Climate Changes Govt. of India Eastern Regional office, A/3, Chandrasekharpur Bhubaneswar – 751023

Sub: Six-monthly Compliance status of conditions stipulated in Environment Clearance with respect to our Baphlimali Bauxite Mine of M/s Utkal Alumina International Limited, Rayagada, Odisha with production capacity of 8.5 MTPA.

Ref: Environment Clearance No. J-11015/650/2007-IA.II (M) dated 19.02.2009.

Dear Sir,

As a part of the compliance to the EC granted with respect to our 8.5 MTPA Baphlimali Bauxite Mine of M/s Utkal Alumina International Ltd. vide Ministry's letter no. J-11015/650/2007-IA.II (M) dated 19.02.2009, we are enclosing herewith six monthly compliance status for the period from 1st April 2020 to 30th September 2020 for your kind perusal.

Thanking you,

Yours faithfully, For Utkal Alumina International Limited

Mukesh Kumar Jha Head- Mines Baphlimali Bauxite Mine

Encl: As above

#### Copy to:

- The Member Secretary, State Pollution Control Board, Paribesh Bhawan A/118 Nilakantha Nagar Unit-VIII, Bhubaneswar -751012.
- 2. Regional Office, CPCB, Kolkata
- Regional Office, OSPCB, Rayagada.
- roez.bsr-mef@nic.in, mef.or@nic.in, paribesh1@ospcboard.org.rospcb rayagada@ospcboard.org

Name of the Project

: Baphlimali Bauxite Mine,

M/s Utkal Alumina International Ltd.

Environment Clearance No. & date : J-11015/650/2007-IA.II (M), DTD.19.02.2009.

Period of compliance Report

: From 1st April 2020 to 30th September 2020.

Sl. No.	Conditions	Compliance Status
	Specific Condition	· · · · · · · · · · · · · · · · · · ·
i.	All the conditions stipulated by the State Pollution Control Board, Orissa in their consent to establish shall be effectively implemented.	All the conditions stipulated in the Consent to Establish (CTE) issued by SPCB, Odisha have been implemented effectively.
ii.	The project proponent shall effectively address the concerns raised by the locals in the public hearing as well as during consideration of the project while implementing the project.	All the concerns raised in the public hearing are being implemented. The details of points raised and their compliance is attached as <b>Annexure-1</b> .
ili.	The project proponent shall develop fodder plots in the non-mineralized area in lieu of use of grazing land.	The entire plateau of the mining lease area consisting of ore & is capped with hard laterite which normally prevents the tree growth.
		However, plantation of fodder species in 3 Ha land has been taken into consideration at the extreme south of mining lease area. The said area has been demarcated and spreading of grass seeds is being carried out. However the same area is coming under mineralized zone and gradually the fodder plot to be developed in the back filled area after mining of the ore.
iv.	The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	Our Mining operation is restricted above the ground water table. Now the lowest working depth of our existing mine pit is around 1004 m RL, whereas the presence of ground water table has been estimated to be about 150 to 200 mtrs below/from the surface (800-850 m RL). Therefore, there is no possibility of any Ground Water Intersection thereby.
V.	The project proponent shall ensure that no natural watercourse and/or water resources are obstructed due to any mining operations. Adequate measures shall be taken while diverting seasonal channels emanating from the mine lease, during the course of mining operation.	No natural watercourse or water resources are obstructed due to mining operations. Necessary care has been taken during monsoon to divert /channelize run off water to the excavated pits, so that it does not carry any sediment to obstruct / affect the water bodies at the foot hill.
vi.	The project proponent shall take adequate environmental safeguard measures for control of	

	rolling down of silt and sediments and protection of the catchment area of upper Indrāvati Reservoir during the course of mining operation.	dams/siltation ponds have been constructed and ensured by regular cleaning and maintenance. There are also pumps installed in siltation pond to pump out the collected water to the open and non-working pit area for ground water recharge. The same is being also continued concurrently with the running of the mines.  Details of Check Dams, garland drains & Siltation pit attached as Annexure- 2 & Photo 1, 2, 3 respectively. Siltation pits are being cleaned before monsoon and the photo is attached as Photo 4.  After measures listed in annexure-2, the run-off confluence with the nearby seasonal nallah & ultimately to River Indravati after moving a distance of 7 to 8 Kms, thus not affecting the quality of Indravati.
vii.	A 3 km stretch on the upstream and 3 Km in the downstream of the river passing through the project area should be taken up by the project authorities for plantation to arrest river bank erosion and sediment flow into the river.	There is no such perennial river/nallah exists at the mining lease. However there are small natural depressions, may called as gullies, develops preferably in the rainy days during inflow/outflow of rain water at the slope of the mining lease, which is a part of project area, are being provided with check dam & plantations of indigenous species to arrest the erosion & sediment flow into the perennial nallah available at the bottom of the mining lease.
viii.	The top soil shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	Presently there is no top soil stack exist. The old top soil stack was used and already been consumed in rehabilitation purpose.  However, the top-soil scrapped during on-going mining is being utilized in the course of concurrent back-filling & plantation activities since 2017-18.
ix.	The over burden (OB) generated during the initial years of the mining operation shall be temporarily stacked at the earmarked dump site(s) only for backfilling. Backfilling shall start from the 4th year onwards of the mining operation and the entire quantity of the waste to be generated shall be backfilled. There shall be no external over burden dumps after the 8th year of the mining operation. The entire backfilled area shall be afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	backfilled & 35.250 Ha has been afforastated in this backfilled area. Both the activities are under continuous progress. Monitoring and management is being carried out. Compliance status is being

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Catch drains and siltation ponds of appropriate Details of the measures asked in the enlisted in Χ. size shall be constructed around the mine Annexure-2 & photos attached as Photo 1 to 4. working, mineral and temporary OB dumps to The runoff storage capacity has been designed prevent run off of water and flow of sediments keeping 50% safety margin over and above peak directly into the Kandabindha Nallah, the San sudden rainfall. Sump capacity is having adequate River, the Indravati River and other water retention period to allow proper settling of silt material. The drains are being de-silted and bodies. The water so collected shall be utilized for watering the mine area, roads, green belt maintained at regular intervals. development etc. The drains shall be regularly Majority of the rain water has been channelized & desilted, particularly after the monsoon, and collected in the mine pits during monsoon is not pumped out. Rather, it is allowed to be collected at maintained properly. Garland drains, settling tanks and check dams of the lowest level to augment the ground water appropriate size, gradient and length shall be resources. constructed around the mine pit, topsoil dump, In addition to above, a scientific study was carried temporary over burden dumps and mineral out on surface runoff management by deputing NIT, dumps to prevent run off of water and flow of Rourkela and the recommendations of the study report have been implemented and verified. The sediments directly into the Kandabindha Nallah, the San River, the Indravati River and other Verification report of the recommendations is water bodies and sump capacity shall be attached as Annexure-3. designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals. Dimension of the retaining wall at the toe of Dimension of the retaining wall at the toe of xi. temporary OB dump(s) and the over burden temporary OB dump(s) within the mine to check runbenches within the mine to check run-off and off & siltation are as follows:siltation shall be based on the rain fall data height 1.00 mtr width 0.80 mtr length 1300,00 mtrs These dimensions are designed basing on the highest rainfall data. The mining was commenced during 2012-13 and as xii. Plantation shall be raised in an area of 680ha per the approved Scheme of Mining, backfilling of including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and mined out voids has been started from 1.04.2016. reclaimed area, around void, roads etc. by Rehabilitation over reclaimed area has been started from 2017-18. Till the end of September'2020, an planting the native species in consultation with area 67.860 ha is backfilled. In this backfilled area the local DFO/Agriculture Department. The density of the trees should be around 2500 plants 35.250 ha has been afforested. per ha. However plantation is being taken up in the Mine slope including a 7.5 meter safety zone since 2012-13. This year (2020-21) till September'2020, we have planted around 95,600 saplings which includes safety zone around the mining lease, backfilled area, 15 mtr peripheral barrier of plateau boundary, mining lease slope area, around void, roads, avenue plantation etc. The remaining area will be covered

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		progressively in phase wise manner as per the Scheme of Mining.
		Different native saplings are procured from Forest department in consultation with the local DFO/Agriculture Department. In addition to this nursery has been developed to germinate, preserve and cater the seedlings during the course of plantation period. Photos of plantation & nursery are attached as <b>Photo- 6 &amp; 7</b> .
xiii.	The void left unfilled in an area of 250ha shall be converted into the water body. The higher benches of the excavated void/mine pit shall be terraced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by the local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.	We will be abide by this condition. It will be followed according to the conceptual plan.
xiv.	Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as around crushing and screening plant, loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Regular water sprinkling is done on haul roads, loading & unloading areas and material transfer points by deploying two dedicated water tankers of capacity 28 KL. Fixed water sprinkling arrangement has been provided on both sides of the arterial road and around the stock pile of 1.3 Km length. Dry fog arrangement has been provided in Crushing and screening plant. Photos of water sprinkling arrangements are attached as Photo 8 & 9.  Regular ambient air quality monitoring is being done in the Core Zone and buffer zone comprising of four locations each. The result of the monitored air quality data (April'2020 to September'2020) shows that all parameters are well within the prescribed limit.
XV.	Regular monitoring of the flow rate of the	The result of monitored data for the period of April'2020 to September'2020 of core and buffer zone are attached as <b>Annexure-4 &amp; 5</b> .  The flow rate of the small perennial nallahs, which is
*****	springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.	flowing near the Baphlimali hillock close to the lease boundary, is being monitored regularly and the records are maintained. The flow rate monitoring data during April'2020 to September'2020 are attached as Annexure 6.
xvi.	Regular monitoring of water quality upstream and downstream of the Khandabindha Nallah shall be carried out and record of monitored data should be maintained and submitted to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, the Central	The same is being carried out and recorded. The results of surface water quality are enclosed in Annexure-7. The same is also being submitted to the Central Groundwater Authority, the Regional Director, Central Ground Water Board, the State
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	Grandonstan Authority, the Basional Director	Pollution Control Board and the Central Pollution
	Groundwater Authority, the Regional Director, Central Ground Water Board, the State Pollution	Control Board with six monthly compliance report.
	Control Board and the Central Pollution Control	
	Board.	
xvii.	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	The following Conservation measures have been taken to augment ground water resources:  i. Rainwater harvesting is being carried out by collecting the precipitated water through a network of drainage system into the exhaust mining pit for storage and ground recharge.
		ii. Movement of mine faces is being carried out systematically as per mine plan following the contour lines such that the faces have self-draining slopes. Precipitated water of the adjacent area is being collected within the mined out area.
		iii. Concreted Weir has been constructed to arrest rain water resulting ground water recharge. Also the Surface water flow near the pit has been diverted towards the pit and this accumulation influences to recharge ground water table. Attached as <b>Photo-1</b> .
		iv. Arrangement has been made that the mining method and the peripheral barrier all around mining area does not allow the storm water to go outside valley areas. The water thus trapped, percolates down and recharges the ground water.
xviii.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year, pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the ground water is depleted due to mining activity, necessary corrective measures shall be carried out.	Regular monitoring of ground water level and quality is being carried out in each season of the open wells/ dug wells located around the nearby villages and the data is being submitted to Regional Office, MoEF and SPCB, Bhubaneswar once in every six month with this six monthly compliance report. Two peizometric wells have been constructed inside lease area to monitor the level of ground water. The monitoring results of Ground water quality & level are enclosed as Annexure – 8 & 9 respectively.
xix.	Appropriate mitigative measures shall be taken to prevent pollution of the San River and the Indravati River in consultation with the State Pollution Control Board.	San River & Indravati are flowing at a distant location 12 Kms & 9 Kms respectively. The following measures are being implemented and maintained.
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		<ol> <li>Garland drains are constructed to check erratic flow of precipitated water.</li> <li>Check dams are constructed around the slopes of valley to arrest silts and sediments if any.</li> <li>Retaining wall of height 1.5 meter has been constructed at the edge of the valley. The naked areas of the valley slopes have been covered by mass afforestation and the same will be continued till full cover.</li> </ol>
XX.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water, if any) required for the project.	There is no proposal to withdraw ground water for the project and surface water is being used for mining purpose. To this effect, an agreement was made between M/s Utkal Alumina Int. Ltd & Water Resource Dept. Govt. of Odisha for drawl of 9.0 cusec or 777600 cft/day of water from Govt. water source/ from San River upstream of Indravati River. The copy of agreement is attached as Annexure-10.
xxi.	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	As a step towards rain water harvesting, the following measures have been implemented -  Rainwater harvesting is being carried out by collecting the precipitated water through a network of drainage system into the exhaust mining pit for storage, it is not used for the mining purpose. Rather, it is allowed to be collected in the lowest level to augment the ground water resources gradually.  Rain water from the high elevation area is collected through network of pipes and used for domestic purpose.  Movement of mine faces is being carried out systematically as per mine plan following the contour lines such that the faces have self-draining slopes. Precipitated water of the adjacent area is being collected within the mined out area.  In addition to this adequate numbers of Concreted Weir have been constructed to arrest rain water resulting ground water recharge. Also the Surface water flow near the pit has been diverted towards the pit and this accumulation influences to recharge ground water table.
xxii.	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be	verified regularly to check vehicular emission.
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mineral within the mine lease. The mineral lubricants as per the recommendatransportation within the mine lease shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	is in place for
xxiii. No blasting shall be carried out after the sunset. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.  Blasting is being carried out only during its being practice ground vibrations and to arrest fly boulders.	ed to reduce
xxiv. Drills shall either be operated with dust extractors or equipped with water injection system.  Drilling machine with in-built vacuum collector & equipped with water spray being used. Photo of drilling is attached	ing system is
Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.  Stock pile area is surrounded by sprinkling arrangement (Photo 11). If sprinkling by mobile water tankers is out for effective dust suppression. Me provided at transfer points in C Conveying System to restrict the dispersion of dust at ROM hopper points (Photo 13).	Further water being carried tal hoods are rushing and ersion of dust installed for
XXVI. Consent to operate shall be obtained from the State Pollution Control Board, Orissa prior to start of production from the mine.  Consent to Operate has obtained from the Pollution Control Board, Odisha prior production from the mine. Present obtained the CTO vide letter no. 3489/5450 dated 19.03.2020 with consent or which is valid up to 31.03.2022.  Annexure 11.	or to start of ly we have IND-I-CON - der No. 2765
xxvii. Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.  Modular STP of 75 KLD has been instal generated from workshop has been treated grease trap system. For advanced separated grease from the effluent one ETP in progress. The photo of STP is attached.	tted in oil and aration of oil installation is
xxviii. The project authorities shall undertake sample survey to generate data on pre-project community health status within a radius of 1 km from proposed mine.	
Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of PME is being made for all eligible emptants.	ngaged in the all Schedule of bloyees as per
health examination of the workers should be drawn and followed accordingly.    VXX.   Provision shall be made for the housing of   Work shed have been provided to the variation of the workers should be out.	

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	necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	cooking, permanent toilets followed with septic tanks & soak pits drinking water, medical health care. Since the mining operation has already been commenced, the regular employees & executives are coming from the integrated town ship adjacent to the alumina refinery.  Domestic effluents generated are being treated in the sewage treatment plant (STP) of 75 KLD located at mines as well as discharged soak pit via septic tank constructed.
xxxi.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely; python, panther, sloth bear, wild dog etc. spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to the project site shall be effectively implemented. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	The Action Plan for conservation of wildlife i.e. Site Specific Wildlife Conservation Plan exclusively for Mining lease has been approved by PCCF (WL) & Chief wildlife Warden, Odisha vide letter No. 5608/1WL-SSP-80/2016 dated 27.06.2017 with financial forecast of Rs.670.451 Lakhs and an amount of Rs.535.715 Lakhs has been deposited in CAMPA FUND for implementation of the same. Further, as per the demand notice from the Divisional Forest Officer, Rayagada vide letter No. 4168 dated. 04.08.2017, an amount of Rs. 8,05,46,920/- has been deposited in CAMPA FUND for implementation of Regional Wildlife Management Plan. The copy of action taken to implement the Regional Wildlife management Plan is attached as Annexure 12 & copy of approval letter as Annexure 13. In addition to that a biodiversity study is being
xxxii.	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	monitoring the land use pattern. The report has been submitted vide letter no UAIL-MINES/ENV/150/2020 dated 15.11.2020 to Ministry of Environment and Forests and its Regional Office, Bhubaneswar. The copy of the submission letter is attached as Annexure-14.
xxxiii	A final mine closure plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final closure for approval.	Environment & Forests 5 years in advance of final
В.	General conditions	
î.	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	

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ii.	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	There shall be no change in the calendar plan including excavation, quantum of mineral bauxite and waste/OB generation of work without prior approval from competent authority.
iii.	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM, SPM, SO2 &NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Four ambient air quality monitoring stations each have been established in both Core & Buffer Zone in consultation with the State Pollution Control Board, Odisha. Monitoring reports are attached as Annexure -4 & 5.
iv	Data on ambient air quality (RSPM, SPM, SO <sub>2</sub> & NOx) should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	The monitored AAQ data is being submitted to the concerned authorities along with the half yearly compliance report once in six month.
V.	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water spraying on haul roads is being practiced through water tankers for which, provision is made to deploy 2 nos. of 28 KL capacity tankers to spray water at dust generating points such as haul roads, loading & unloading areas and material transfer points. Fixed water sprinkling arrangements has been provided on the side of the arterial road. The haulage roads are being maintained to avoid rut and pot holes.
vi.	Measures should be taken for control of noise levels below 85 dB (A) in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	<ul> <li>The following measures are taken to control noise levels below 85 dB (A) in the work environment.</li> <li>Maintenance of all machines including checking of silencers regularly,</li> <li>Controlled blasting using delay detonators, installing immovable machinery on foundations and in closed rooms</li> <li>Provision of earplugs/muffs to workers engaged in noise prone areas.</li> <li>The HEMM operators are provided with AC close cabinets which itself is acoustic in nature.</li> <li>The monitored report of noise level is attached as Annexure-15.</li> </ul>
vii.	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards	A full-fledged workshop is in place with the facility of Oil & grease trap arrangement. All the repair & maintenance activities are taken up in the existing
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	prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended	facility, however major maintenances like engine overhauling etc are being taken up outside.
	from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	All the used water during repair & maintenance are properly collected & treated thru oil & grease trap & reused.
		There is no outside discharge of workshop effluents.
Viii	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.  Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Personal protective equipment are being provided to all workers respective to the nature of the job. Initial and periodical awareness training is being imparted to all workers in the Company's Vocational Training Center located within the lease area on Safety and Health Aspects.  Pre-placement medical examination and periodical medical examination as per DGMS guideline of the
		workers engaged in the project is being carried out and records maintained for corrective measures.
ix.	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A separate environmental management cell with suitable qualified personnel has been set up under the control of the Agent of Mines, who reports the Head of the Organization directly.
x.	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Bhubaneswar.	Separate fund provision has been earmarked for environmental protection measures and it is not diverted for any other purpose. The expenditure incurred during the year 2020-21 shall be submitted with the six monthly report for the period October 2020 to March 2021.
xi.	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Complied.
xii.	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	We are abide by the condition and shall extend full cooperation to the officer(s) of regional office by furnishing the requisite data / information/monitoring reports during their monitoring of compliance of the stipulated conditions.
xiii.	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional 10	Six monthly compliance report is being submitted on the status of compliance of the stipulated environmental clearance conditions including results of monitored data to the Ministry of Environment

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	Office, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board. The proponent shall upload the status of compliance on their website and shall update the same periodically.	and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The status of compliance of the environmental clearance conditions, including results of monitored data is uploaded on company website periodically. The screenshot of the same is attached as Annexure-16.
xiv.	A copy of clearance letter shall be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Complied
XV.	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Complied.
xvi.	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Complied.

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PHOTOS	

**PHOTO 1: Showing Check dam** 



PHOTO 2: Showing Retaining wall & garland Drain along the Dump Slope



**PHOTO 3: Showing Settling Ponds** 





**PHOTO 4: Showing Settling Pond Desilting** 





**PHOTO 5: Showing Plantation in Backfilled area** 





**PHOTO 6: Showing Plantation in Mine Lease** 





**PHOTO 7: Showing Nursery inside Mine Lease** 

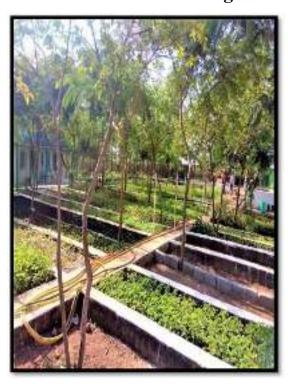




PHOTO 8: Showing 28KL Mobile sprinkler



**PHOTO 9: Showing Fixed Sprinklers** 



PHOTO 10: Showing drilling machine with dust Extractor



PHOTO 11: Showing Fixed sprinklers in stock pile area



**PHOTO 12: Showing Covered Long distance Conveyor** 



PHOTO 13: Showing Dry fog system in Fixed Crushing plant



PHOTO 14: Showing 75 KLD STP



### Annexure-1

## Compliance Status of the issues raised during Public Hearing

# Status of the issues raised in Public Hearing of the Environmental Assessment for expansion of Baphilimali Bauxite Mines of M/s. Utkal Alumina International Ltd., from 3.0 MTPY to 8.5 MTPY over an area of 1338.74 Ha at Baphlimali hill of kashipur Block in the district of Rayagada

Sl.No.	Issues Raised in Public Hearing	Compliance Status
1	The company shall abide by all rules	We are abiding by this condition.
	and regulations of State Pollution	
	Control Board/ central Pollution	
	Control Board, Forest and	
	Environment Department,	
	Government of Orissa or under	
	Environment (protection) Rules to	
	safe guard the environment and safety	
	norms and shall not violate the	
	commitments made in the EIA/EMP	
	report.	
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2	Employment shall be made to the	
	local people on priority and the local	levels.
	youths shall be imparted training to	
	suit its requirement. This facility may	
	be given to others only if suitable	
	technical man power on the higher	

	grade is not locally available. First preference for employment will be given to the victims of the project, Displaced persons & land losers.	
3	The project proponent should take sufficient care for improvement of health and education of local villagers and communication network of the areas and provide drinking water facility within its 20 km radius.	Utkal Alumina has been striving hard to create and improve healthy environment to enrich the quality of life of the community particularly the underprivileged in the vicinity by sustainable initiatives as follows:  Health Care:  During covid-19 pandemic situation/announcement has been carried out in 68 peripheral villages in order to create awareness among the villagers. During public announcement, villagers were distributed with leaflets carrying awareness massages. More than one lakhs face masks were supplied to the villagers of 45 peripheral villages including govt. officials and hospitals. To create awareness on frequent hand wash, 1030 soaps were distributed to the villagers. To ensure periphery hygienic, sodium hypochlorite solution was sprayed in public places of Rayagada, Kashipur, Tikiri, Nuapada, Dongasil, Kodipari, Gorakhpur, Sanamtikona and other villages. Fumigation has been carried out in 35 villages to ensure disinfection of the area. Around 900 migrated labor were supplied with grocery items for ten days. Awareness meetings were organized in different villages from time to time.  Functioning of one full-fledged round the clock Health Centre with laboratory facility at Nuapada with regular Doctors & Paramedical Staffs.  Functioning of Utkal Hospital at Osapada with specialist Doctors, IPD, Operation Theatre, ICU and well equipped modern equipment.  Engagement of one Mobile Health Care Unit (MHU) extending services to 44 remote villages from 10 strategic locations  Round the clock services extended by four Ambulances for referral Patients  Extending financial support for maintenance of one Ambulance donated to CHC,Kashipur

- ❖ Extending financial assistance to the poor and needy people of peripheral villages for medical treatment.
- Organizing Multispecialty Health Camps at Cluster level.
- Creation of Health Awareness through rallies, awareness camps competitions, sanitation drives, and street plays etc.
- ❖ Disinfection of drains, tube well platforms and water logging areas to guard against the spread of disease.
- Organizing Blood Donation Camps in collaboration with Dist. Red Cross Society
- \* Extended Comprehensive eye care services including cataract surgery to 135 patients
- ❖ Facilitated construction of 854 toilets in 16 villages in collaboration with Swachha Bharat Mission

#### **Promotion of Quality Education:**

- Running Aditya Birla Public School (English Medium) to provide access to good quality education.
- Extending financial assistance to the land loser and economically backward families and meritorious students for Higher Education under Utkal Scholarship.
- \* Extending financial support to Kucheipadar High School.
- Supplied school furniture (50 sets of Desks & Benches) to Up Graded. High School, Chandragiri
- ❖ Organized special Awareness drives in organizing Prabesh Utshabs for increasing school enrolment.
- Conducting Parents Counselling Meets to reduce school dropouts.
- Conducted computer literacy project in collaboration with Odisha Knowledge Corporation Ltd.
- ❖ Spoken English Classes were conducted for 350 students of class X,XI & XII of Govt. Girls High School, Dongasil in order to improve the communication skill in English.

4	Rehabilitation & resettlement package if applicable shall be strictly adhered in accordance to the decision of Government.	<ul> <li>Construction of hostel building with drinking water facility, toilet, drainage &amp; field leveling etc at certain schools.</li> <li>Construction of Boundary walls, Class rooms, CC Roads and provision of drinking water through installation of tube wells inside school campus etc.</li> <li>Repairing and Painting of school Buildings</li> <li>Donation of land for construction of Hadiguda High School Building</li> <li>Supply of study and sports materials and financial support for school functions</li> <li>Provision of drinking water:</li> <li>Installation of one Bore well at Tikirapada village to provide drinking water supply for the villagers.</li> <li>Setting up of four solar based water supply system at Dwimundi, Dongasil &amp; Jogiparitunda villages for drinking water supply.</li> <li>Installation of Twenty four tube wells in its peripheral villages in order to ensure supply of safe drinking water to the villagers.</li> <li>Repairing of defunct tube wells from time to time as per the request of villagers</li> <li>Construction of Swajaldhara (Gravity flow) for supply of water in six different villages. (Dwimundi, Pandakapadar, Dhadpas, Badlijharan, Ghatiguda &amp; Tikirapada)</li> <li>There is no displacement in Mines lease area.</li> </ul>
5	The mine shall not disturb the streams originating from the hill slopes and foothills and also no mining discharge shall be made to them.	No natural watercourse or water resources are obstructed due to mining operations. Necessary care has been taken during monsoon to divert /channelize run off water to the excavated pits, so that it does not carry any sediment to obstruct / affect the water bodies at the foot hill. There is no such perennial river/nallah exists at the ML especially in the surface plateau. However there are small natural depressions, may

		called as gullies, develops preferably in the rainy days during inflow/outflow of rain water at the slope of the ML, which is a part of project area, are being provided with check dam & plantations of indigenous species to arrest the erosion & sediment flow into the perennial nallah available at the bottom of the ML.			
6	The timing of blasting shall be intimated to the villagers in its immediate vicinity through its representatives stationed in the villages.	sirens and physical guarding through security department during blasting. Notice also has been displayed at the main entrance gate regarding the timing of blasting.			
7	The Mines shall intensify development activity in the villages lying on the foothills of the project and in its immediate vicinity i.e. 10 km radius.	Various development activities in the field of Education, Health Care, Sustainable Livelihoods, Village Infrastructure development and Social interventions has been undertaken intensively in the villages lying on the foothills of the project and it's immediate vicinity. Activities undertaken are as follows:  Education:  * Extending financial assistance to the land loser and economically backward families and meritorious students for Higher Education under Utkal Scholarship.  * Supply of 50 sets of furniture (Desks & Benches) to the Upgraded High School Chandragiri.  * Organised Awareness Rallies and Prabesh Utshabs for increasing school enrolment.  * Conducted Parents Counselling Meets to reduce school dropouts.  * Strengthening School Management Committees  * Construction of Boundary walls, additional class rooms and CC Roads inside the school campus.  * Repairing and Painting of school Buildings  * Supply of Uniforms, text books, School bags, and sports materials to the peripheral schools			

- Supply of uniforms to the childern of Anganwadi Centers.
- ❖ Supply of furnitures, first-aid boxes & solar home lights to the schools
- Creating Education Awareness through street plays, wall writings.

#### **Health Care:**

- ❖ During covid-19 pandemic situation/announcement has been carried out in 20 peripheral villages in order to create awareness among the villagers. During public announcement, villagers were distributed with leaflets carrying awareness massages. More than ten thousand face masks were supplied to the villagers of 15 peripheral villages including govt. officials and hospitals. Fumigation has been carried out in five villages to ensure disinfection of the area. Awareness meetings were organized in different villages from time to time
- \* Extending treatment services to the villagers of villages lying on the foot hills of the project through First Aid center set up at Mines top.
- ❖ Engagement of one Mobile Health Care Unit (MHU) extending services to 30 remote villages from 8 strategic locations
- \* Round the clock services extended by one Ambulance for referral Patients
- ❖ Extending financial support for maintenance of one Ambulance donated to CHC,Kashipur
- ❖ Installation of seventeen tube wells and two solar based water supply of safe drinking water to the villagers.
- \* Repairing of fifteen defunct tube wells in five different villages.
- Nine dustbins were constructed in different location of Dhuturapas & Peringini villages to facilitate cleanliness of the village
- ❖ Construction of Masonary drains in Chandragiri & Paikakupakhal villages
- **\*** Extending financial assistance to poor and needy people for medical treatment.
- Organizing Multispecialty Health Camp at Cluster level.
- Creating health awareness through rallies, awareness camps competitions, sanitation drives, and street plays etc.
- ❖ Disinfection of drains, tube well platforms and water logging areas to guard against the spread of disease.

- ❖ Conducted eye cataract surgery of 17 persons from four different villages
- ❖ Facilitated construction of 93 toilets in five villages in collaboration with Swachha Bharat Mission

#### **Sustainable Livelihoods:**

- Supply of improved varieties of vegetable seeds, pesticides, micronutrients and other inputs like sprayer machines to the farmers of sixteen peripheral villages during kharif and rabi season every year in order to increase their income through commercial vegetable cultivation.
- ❖ 213 farm families of six different villages have been supported for orchard development and 12 land less families for Goat Rearing under Project WADI in collaboration with NABARD.
- ❖ 84 farmers of five villages were supported for orchard development in 18.55 acres of land with saplings, fertilisers, pesticides, fencing, agri implements and irrigation facilities.
- ❖ 111 farmers of four different villages were supported for lemon grass cultivation in 112 acres of land. Installation of one lemon grass Oil extraction unit at Jogiparitunda village.
- ❖ Women Self Help Group of Hatikhaman Village is supported for Pisciculture as an Income Generation Activity.
- ❖ Imparted tailoring and applique training to 140 girls/women of mines peripheral villages.
- ❖ Provided Irrigation facilities by construction of check dams, irrigation channels & Water Storage Tanks. Farmers Committees were provided with Diesel Pump Sets, HDPE Pipes with Sprinklers and installation of river lift irrigation, micro lift irrigation and deep borewells in our peripheral villages.
- ❖ Capacity Building of farmers through different trainings, exposure visits and extending hand holding supports to the members of different farmers clubs, pani panchayats, udyan vikash samitis etc.promoted in our periphery.
- Livestock vaccination cum health camps have been organized in different mines peripheral villages at a regular interval of time.

		Village Infrastructure development :			
		❖ In order to enhance the quality of life of villagers, we have undertaken village infrastructure development jobs like Construction of Cement Concrete Roads, Causeways, Steps to river, Rest house, Boundary Walls, Culverts, Bridges, Community Centers, Street lighting, drains, bus stops and Protection Walls etc in different peripheral villages.			
		Social Interventions :			
		Organizing Block level rural volley ball tournament by taking youths of sixteen different villages.			
		Extending financial support to organize Panchayat, Block as well as District level tournaments			
		<ul> <li>Supply of sports materials to the youths of peripheral villages</li> </ul>			
		<ul> <li>Extending financial support for observing different puja and festivals in the villages</li> </ul>			
		<ul> <li>Organizing Various social functions such as Raja Utshab, Diwali etc in villages</li> <li>Promoting local folk dance Dhimsa by enabling the village youths to take part in different competitions.</li> </ul>			
8	The project proponent should provide	Necessary care has been taken during monsoon to divert /channelize run off water to			
	garland drains around the mining pit	the excavated pits, so that it does not carry any sediment to obstruct / affect the water			
	to prevent entry of rainy water.	bodies at the foot hill. To check flow of any silt and sediments, numbers of check			
	Adequate check dams shall be	dams/siltation ponds have been constructed and ensured by regular cleaning and			
	provided to prevent the wash out of	maintenance. There are also pumps installed in siltation pond to pump out the collected			
	soils etc. from mines and solid waste	water to the open and non-working pit area for ground water recharge. The same is			
	dumping sites to surrounding fields.	being also continued concurrently with the running of the mines.			
		Details of Check Dams and garland drains attached as Annexure- 2 & Photo 1, 2 & 3.			
9	After the mining operation is over the	From 4th year onwards i.e since 1.04.2016 backfilling has been started by utilizing			
	project proponent should reclaim the	entire quantity of overburden in the voids of the mined out area as per the proposal			

	mined out area with overburden, top soil followed by plantation.	given in the Scheme of Mining. The top-soil scrapped during on-going mining is being utilized in the course of concurrent back-filling & plantation activities. Till September 2020, 35.250 ha area has been rehabilitated out of 67.860 ha backfilled area. Both the activities are under progress & shall meet by 100% as per the proposal within scheme period. After the mining operation is over the whole area will be reclaimed as per the conceptual plan of mining scheme.
10	The mine shall obtain necessary clearances such as Forest clearance, wild life clearance, clearance from water resources department, etc. from the appropriate authorities	Necessary clearances such as Forest clearance, wild life clearance, clearance from water resources department, etc. has been obtained from the appropriate authorities. Details of the letter no and date of approval is enlisted below.  Forest Stage 2 Clearance: 8-18/2016-FC/02.02.2018  Wildlife clearance: 5608/IWL-SSP-80/2016/27.06.2017  Water Resource Department: Form K as per Rule 23-A (2) (e) & Rule 26/12.12.2018  Environment Clearance: J-11015/650/2007-IA-II(M)/19.02.2009  Consent to Establish: 14388/Ind-II-NOC-4432/16.08.2007  Consent to operate: 3489/IND-I-CON-5450/19.03.2020
11	The project proponent shall provide alternate gazing field for the cattle in consultation with the District Administration	

# Status of the issues raised in Public Hearing of the Environmental Assessment for M/s. Utkal Alumina Intem.uional Ltd., for Baphilimali Bauxite Mines for expansion of productionupto 8.5 MTPA ot Bauxite over an area of 492.82 Ha at BaphiJimali in the district of Kalahandi

Sl.No.	Issues raised in Public	Compliance Status			
	Hearing				
1	Allocation of funds for peripheral	❖ We are allocating funds every year for the peripheral development of the area.			
	development	This allocated amount is spent in the sectors like Education, Health Care,			
		Sustainable Livelihoods, Village Infrastructure development and Social			
		Interventions as per the Govt. Guidelines.			
2	Electricity	* Road side electrification is being done in different villages at the mine			
		proximity with consultation with government dept			
3	Water Supply	❖ A number of tube wells have been installed in peripheral villages like			
		Kendumundi, Kanarpas & Durmusi of Th.Rampur block of Kalahandi			
		district. Apart from this, defunct tube wells have also been repaired from time			
		to time with the support of Self Employed Mechanic of RWSS deptt.			
		Chlorination of different tube wells through the support of our MHU team has			
		been carried out every year for ensuring availability of safe drinking water.			

4	Health	<ul> <li>During COVID-19 Pandemic Situation, Public announcement has been carried out along with leaflet distribution and fixation of banners in 30 villages of three GPs in order to create awareness on COVID. Besides, 15000 face masks &amp; 3500 soaps have been supplied to the villagers including Govt. officials, fumigation carried out in four villages. Extended financial support to Th.Rampur block for production and distribution of 60000 masks through Women Self Help Groups of this area.</li> <li>First-Aid Center established at Mines top is extending treatment services to the villagers of mines adjacent villages.</li> <li>One MHU Vehicle is engaged by our company to extend treatment services to 34 remote villages of Th. Rampur block.</li> <li>Apart from treatment services, this MHU is also conducting health awareness camps, home visits and chlorination of water sources as well as disinfection of water logging areas.</li> <li>Facilitated construction of 40 individual toilets in Durmusi with the support of RWSS deptt.</li> <li>Facilitated immunization programme in 26 villages in convergence with health deptt. Under Indradhanush programme.</li> <li>In order to ensure smooth drainage of rain water masonry drains have been constructed in the villages.</li> <li>Financial assistance has been given to the poor and needy persons for medical treatment.</li> </ul>
5	Employment	❖ Total engagement/employment 341 out of which 18 from buffer zone.
6	Protection of religious places	❖ Protection of Janadurga temple has been taken care of. No mining has been carried out in the vicinity till now and will not be done in future. Notice has also been displayed on the site.
7	Improvement of Roads	❖ Construction of Cement Concrete Roads, Causeways, Culvert, Earthen Bridges etc have been carried out in the villages like Kendumundi, Kanarpas,

		Chirika, Durmusi and Adri ( Gunjamali pada as well as harijan pada) as per		
		the request of the villagers.		
8	Education	❖ In order to increase school enrolment we are organizing awareness rally and		
		prabesh utshabs in our peripheral schools every year and supplying school		
		bags, study materials etc. during these occasion. Similarly to reduce school		
		drop outs parents counseling meets were organized every year. Efforts have		
		been given for strengthening school management committees. Schools were		
		supplied with sports materials for attracting the students towards schools.		
		School furniture has been supplied to one of the private high school of		
		Karlapat GP. Awareness on Education has been created among the villagers		
		through street plays and wall writings.		
9	Alternate Grazing Field	❖ Plantation of fodder species in 3 Ha land out of 5 Ha available land at the		
		extreme south of ML area is being taken up. The said area has been		
		demarcated and plantation of different species of grasses are being done after		
		loosening of hard laterite and spreading of top soil.		
10	Plantation	❖ Plantation is being taken up in the Mine slope including a 7.5 meter safety		
		zone since 2012-13. In 2020-21 till September'2020, we have planted around		
		84000 saplings inside & outside mine lease area. The remaining area will be		
		covered progressively in phase wise manner as per the Scheme of Mining.		
		❖ Villagers of Chirika, Durmusi and Kanarpas were supplied with 2185 mango		
		saplings for promotion of fruit orchards in their respective villages.		

11	Compensation for the displaced	There is no displacement due to the project.	
12	Local Office and Grievance Cell	❖ A Grievance cell has been formed by the company by taking representative from Plant & Mines CSR & Admn., dept. They are mostly handling all the issues relating to employment and peripheral development.	
13	Protection of environment	Suitable environment plan has been formulated and continuously upgraded to mitigate the impact of different components of the Environment such as air, water, soil. Conditions in different authorizations obtained from statutory authorities have been complied to restoration and betterment of environment.	
14	Other Peripheral Development	<ul> <li>Under Farm based livelihood activities,160 HHs were supported for improved paddy cultivation, 30 HHs for improved pulses cultivation ,57 HHs for Promotion of Nutrition Gardens ,25 HHs for Integrated vegetable cultivation , 20 HHs for orchard development, 20 HHs for Goat rearing, and 50 HHs for Poultry rearing in the villages of Kendumundi, Kanarpas, Chirika, Durmusi &amp; Suryagarh .</li> <li>Nine Ponds were de-silted in the villages like Gopinathpur, Phatkimahul, Chingdiphas, Musajhal, Adri, Kendumundi and Rajamunda of Th.Rampur block.</li> </ul>	

### Annexure-2

# $\frac{\text{DETAILS OF GARLAND DRAIN, RETAINING WALL, SETTLING POND AND}}{\text{CHECK DAM}}$

Sl. No	Type of works	Particulars		
S1. NO	Type of works	Length	Width (avg)	Height (avg)
01	Wall around back side of OB dump	1300 mts	0.8 mtrs	1 mtr
02	Drain work at the back side of OB dump	1822 mtrs	2.8 mtrs	1 mtr
03	Drain work at ore stack yard	253 mtrs	2.7 mtrs	1 mtr
04	Drain work at haul road towards OB dump	800 mtrs	2 mtrs	0.6 mtr
05	Wall beside the cave	330 mtrs	0.8 mtr	1 mtr
06	Three settling pond on back side of OB dump	40 mtrs	8 mtrs	2.2 mtrs
07	Parapet wall between service center facility to mine entrance	1501 mtrs	0.8 mtr	1 mtr
08	Check dam between crusher, ramp and haul road	76 mtrs	0.8 mtrs	1 mtr
09	Check dam across the slope from previous topsoil area towards mining pit (2 nos)	47 mtrs	0.8 mtr	1 mtr
10	Check dam across the slope near mine entrance	35 mtrs	0.8 mtr	1 mtr
11	Drain work around the crusher	306 mtr	2 mtr	1 mtr
12	Hume pipe culvert in the natural stream flowing nearby Kalahandi Pit	5 mtrs	15 mtrs	
13	Concrete drain near fixed crusher	50 mtrs	1.5 mtrs	1 mtr
14	Earthen drain near fixed crusher	520 mtrs	1.5 mtrs	1 mtr
15	Settling pond connected to concrete drain near fixed crusher	44 mtrs	20 mtrs	4 mtrs
16	Parapet wall around the safety zone area of Kalahandi Pit	500 mtrs	1.5 mtrs	2 mtrs
17	Three nos. concreted weir across the natural seasonal nallah	135 mtrs	1.2 mtrs	2.5 mtrs
19	Implementation of gabion along OB dump	60 mtrs	1 mtr	1 mtr
20	Settling pond near mine entrance	40 mtrs	21 mtrs	4 mtrs
21	Settling pond near MRSS building	38 mtrs	20 mtrs	4 mtrs
22	Two Concrete drain near MRSS	290 mtrs	1.5 mtrs	1.5 mtrs
23	Settling pond near Rayagada OB dump	46 mtrs	28 mtrs	4 mtrs
24	Check Dam over slope area North East Side (48 Nos.)	30 mtrs	2 mtrs	2 mtrs

Annexure: 3: Verification report on implementation of recommendations suggested in scientific study of surface & ground water management at Baphlimali Bauxite Mine, studied by NIT, Rourkela



Ref: UAIL-Mines/BBM/28/2020

14th January 2020

Tο

The Member secretary State Pollution Control Board, Odisha Parivesh Bhawan, A/118 Nilakanthanagar, unit- VIII Bhubaneswar- 751012

Sub: submission of verification report of NIT, Rourkela pertaining to the special condition no. 13 of CTO

Ref: (i) Consent Letter No. 2608/IND-I-CON/5450 Dt.14.03.2019, Consent Order No. 2765

(ii) Our CTO renewal online Application No. 2354845 Dt.19.12.2018

#### Dear Sir,

With reference to the special condition no. 13 of CTO and clarification raised against our CTO for renewal, we are submitting herewith the verification report of NIT, Rourkela, regarding implementation status of recommendation suggested in the technical study of surface and ground water management of our mines by NIT, Rourkela.

This is for your information and kind perusal.

Yours faithfully,

For Utkal Alumina International Limited

Asst. Vice President-Corporate Affairs, Bhubaneswar

Copy to: Regional Office, OSPCB, Rayagada.

Encl: As Above

(Dr Rama Chandra Rout)



# राष्ट्रीय प्रौद्योगिकी संस्थान NATIONAL INSTITUTE OF TECHNOLOGY राउरकेला ROURKELA - 769008, ओडिशा ODISHA



Date: January 13, 2020

NITR/MN/HBS/2020/L/0023

& Principal Investigator

**Dr. H. B. Sahu**Associate Professor
Department of Mining Engineering
NIT, Rourkela – 769 008

Subject: Verification of Implementation of the recommendation of the Scientific study of Surface and Ground Water Management at Baphlimali Bauxite Mine of M/s Utkal Alumina International Limited

Dear Sir,

Attached please find the report of the verification of implementation of the recommendations of the Scientific study of Surface and Ground Water Management at Baphlimali Bauxite Mine which was submitted in December 2016.

Thanking you and with regards.

Yours Sincerely.

Dr. H. B. Sahu

To,

Mr. Mukesh Kumar Jha General Manager (Mines) Baphlimali Bauxite Mines, UAIL

At: Doraguda

Post: Kucheipadar- 765 015

Dist.: Rayagada

# Verification Report on the Implementation of the Scientific Study of Surface and Ground Water Management at Baphlimali Bauxite Mine, UAIL





DEPARTMENT OF MINING ENGINEERING NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008 January 2020

# Verification Report on the Implementation of the Scientific Study of Surface and Ground Water Management at Baphlimali Bauxite Mine, UAIL

### 1. Background

The technical study of surface and ground water management at Baphlimali bauxite mine, UAIL; was carried out during 2015-16.As per the requirement of Consent to Operate, stipulated by State Pollution Control Board, Bhubaneswar; the verification of the implementation of the recommendation of the scientific study is required to be carried out. In light of the above, a team comprising of Prof. H. B. Sahu, Department of Mining Engineering; and Prof. Sk Md Equeenuddin, Associate Professor, Department of Earth and Atmospheric Sciences; carried out the physical verification taking into account the plans and sections, site visit and discussion with the mine officials.

### 2. OBJECTIVES OF THE PROJECT

Verification of status of implementation of the Scientific study on Surface and Ground Water Management at Baphlimali Bauxite Mine, UAIL with reference

### 3. RECOMMENDATIONS

### **Observation 1:**

It is seen that the active mining area occupies a very small space at the moment. The runoff generated from the active mining area (6.21 Lakh m³) is very insignificant compared to that of total leasehold area during the monsoon, which is 90.07 lakh m³.

### Observation 2:

The maximum runoff likely to be generated in a single month in the monsoon is likely to be 25.51 Lakh m<sup>3</sup> considering the rainfall intensity to be 349mm, which is the maximum average rainfall in this area over 12 year period.

#### Recommendation 1:

The maximum runoff likely to be generated in R1 region per hour during the monsoon is  $3403 \text{m}^3$  considering a maximum rainfall of 40mm per hour. The existing settling pit near the crusherof 12 m x 8m size with a depth of 4m is inadequate to handle the runoff likely to be generated. Its size is required to be enhanced to  $(42\text{m} \times 20\text{m} \times 4\text{m})$  to accommodate the expected runoff. A garland drain of  $277\text{m} \times 1\text{m} \times 1\text{m}$  is to be provided in the eastern boundary to channelize the runoff to the sump. The water from the sump is to be pumped to quarry 1 after settling.

#### Current Status: Implemented.

The dimensions of the existing settling pit has been enhanced to 44mx20mx4m (Fig.1) to accommodate the expected runoff during monsoon. One 50hp pump have been installed to pump out the water to quarry 1 after settling. A garland drain of 520m length has been constructed along the eastern boundary to channelize the runoff to the sump.



Figure 1: View of settling pit and pumps near the crusher

#### **Recommendation 2:**

The maximum runoff likely to be generated in R2 region during monsoon is  $6680 \text{ m}^3/\text{hr}$ . This runoff is likely to be contaminated by loading and ancillary activities. It is proposed to have two settling ponds near the mine entrance of  $1800\text{m}^3$  capacity each  $(30\text{m} \times 15\text{m} \times 4\text{m})$  to handle the runoff.Garland drains of  $545\text{m} \times 1\text{m} \times 1\text{m}$  is required to be constructed to channelize the runoff to the settling ponds. The water after settling may be allowed to flow outside since it has been found that there is no significant contamination of the water bodies downstream.

### **Current Status: Implemented**

The existing settling pit near the mine entrance has been enhanced to 40m x 21m x 4m to accommodate 3360 m³ of runoff (Fig.2). A new settling pit of 38m x 20m x 4m depth has been constructed to accommodate 3040 m³ of runoff (Fig.3). Two 75hp pumps have been installed in the 2nd settling pit to pump the runoff to Quarry 1.Two concrete garland drains of an aggregate length of 290m and earthen garland drains of 600m have been constructed in this region to channelize the runoff to these settling pits (Fig.4).



Figure 2: View of the reconstructed settling pit near the mine entrance

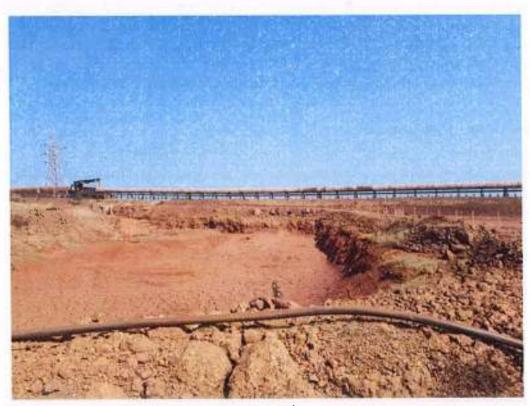


Figure 3: View of the newly constructed 2<sup>nd</sup> settling pit near the mine entrance



Figure 4: View of garland drains constructed in the R2 region

#### Recommendation 3:

The expected runoff in R3 region is 8444 m³ per hour. A drain of 1170m having width and depth of of 4m and 2m respectively is proposed to be constructed in R3 region on the western side parallel to the existing of conveyor belt to arrest the surface runoff generated within this region and channelize it to quarry 1. As the flow of runoff is towards the bauxite storage, crusher and conveyor belt, therefore there is maximum possibility of intermixing of surface runoff with that of bauxite ore. The bauxite storage site, and crusher plant and ancillary facilities are covering very small portions of the total area of R3 region. Culverts/hume pipes are required to be provided where the drain crosses the road.

### **Current Status: Implemented**

Garland drains of adequate dimensions have been constructed in this region (Fig.5). Earthern retaining wall and garland drain has been provided around the bauxite storage area to prevent the intermixing of the runoff. Hume pipe has been provided at the locations where the drains cross the road.

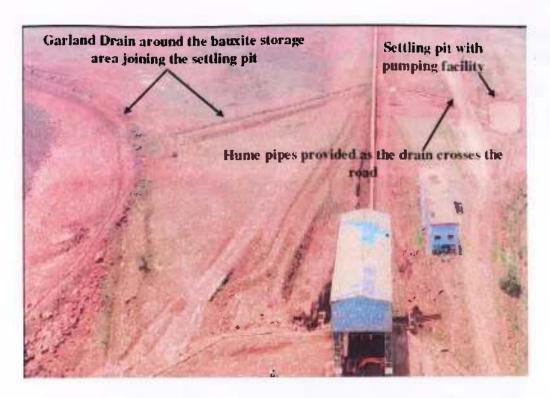


Figure 5: View of earthen retaining wall and garland drains near the bauxite storage area and crusher

#### Recommendation 4:

The regions R4, R5 and R6 regions are in virgin state. The runoff from these regions may be allowed to follow the natural topography. There are some small seasonal nallahs that are created during the monsoon, which carries the surface runoff to the nearby valleys.

Current Status: There is no change in this region.

### Recommendation 5:

Most part of R8 is in a virgin state. The runoff from this region is channelized to the valley after the settlement of suspended solids in small settling pits constructed near the boundary. A sewage treatment plant (STP) of 75KLD capacity is under construction to handle the waste water from the domestic and office areas which is adequate.

**Current Status:** The runoff from this region is settled in the settling pits. The construction of STP near the administrative building has been completed. Meanwhile, more plantations have been carried out in this region along with the establishment of a nursery. The area is now greener than before.

#### Recommendations 6:

A retaining wall has been provided below the Rayagada dump (Dump I). However, it is damaged in different locations, allowing the mixing of runoff from the virgin areas of R8 before flowing to the valley. Since the quality of runoff from virgin areas is relatively uncontaminated, it should be allowed to flow without mixing with the runoff from the dump. It

is suggested that the retaining wall around the periphery of the dump should be properly maintained to avoid the direct mixing of the runoff with that of the virgin areas.

### Current Status: Implemented.

The retaining walls have been properly maintaining with reconstruction of the damaged portions (Fig. 6). The natural runoff from the virgin areas do not mix with the runoff from the dump and flows to the valley after being settled in the renovated settling pits (Fig.7).



Figure 6: Photographic view of reconstriction of the retaining wall



Figure 7: Renovated settling pits

### Recommendation 7:

A part of the runoff from this dump is flowing to the quarry. However, nearly 4500 m³ of runoff per hour is expected to flow outside during peak monsoon period. Therefore, a sedimentation pond of 45m x 25m x 4m is proposed to be constructed below the dump. Zigzag flow pattern may be followed in the garland drains below the dumps to arrest the suspended solids before it reaches the settling pond, which will enhance the capacity of the settling pit.

### **Current Status: Implemented.**

An additional settling pit of  $46m \times 28m \times 4m$  has been constructed as per the recommendation (Fig. 8). The runoff from the dump is being channelized to the settling pit.



Figure 8: Settling pond near Rayagada dump.

### Recommendation 8:

The runoff from Kalahandi Dump (Dump II) is being channelized to Kalahandi Quarry (Quarry II). The total runoff from the quarry and the dump in monsoon is likely to be 1.34 Lakh m³. The quarry sump has the capacity to accommodate 1.54 Lakh m³ of runoff during the monsoon (120m x 80 m x 16m). It was noticed that most of the water in the mine sump percolates downward, and there is very small amount of water present in the mine even during the monsoon.

#### **Current Status:**

The Kalahandi quarry sump has adequate capacity to store the runoff generated during the monsoon.

#### Recommendation 9:

There is a seasonal nallah in R7 region. It was noted that the nallah is seasonal one and exists only during the monsoon. Three check dams have been constructed on this nallh. The dimension of the check dams varies between 50 to 60 m in length, 2m width and 1 to 1.5m in

height (Fig. 3). However, during mine visits, it was noticed that there are cracks in the bottom parts of the dams which is allowing seepage of the water to the downstream. These may be properly constructed so that they will work as permanent storage reservoirs. These have the capability to store 75,000 m³ to 1,35,000 m³ of runoff. To meet part of the mine water demand the height of the check dams may be enhanced to 4m so that it can store upto 3,60,000 m³ of runoff during monsoon.

### **Current Status: Implemented**

The existing check dams in this region have been reconstructed with repairing of the cracks that were existing the bottom part of these dams. The heights of these dams have been enhanced to 4m to accommodate the runoff likely to be generated during the monsoon. A view of the check dams before and after reconstruction has been presented in Figure 9a and 9b respectively.



Figure 9a: Photographic view of damged check dam during 2016



Figure 9b: Photographic view of the reconstructed check dam

#### Recommendation 10:

Retaining walls are required to be provided in the top soils storage and crushed bauxite storage sites, so that the natural runoff coming from the topmost part of the mine does not mix with it.

**Current status: Implemented.** Top soil dump has already been re-handled and utilized for the plantation purpose.

#### Recommendation 11:

All the existing mine sumps, garland drains, sedimentation ponds created on the surface should be de-silted before monsoon and a record of the same should bemaintained in the respective mine office. Wherever possible, the sumps may be deepened to accommodate more surface runoff quantity.

### Status: Implemented

All the existing mine sumps, garland drains, sedimentation ponds created on the surface being de-silted before monsoon and a record of the same being maintained.

#### **Recommendation 12:**

In order to avoid accidental entry of any person or cattle into the sedimentationponds, roper fencing should be carried out. Warning signs should also bedisplayed near the water bodies along with their depth.

### Status: Implemented

The sedimentation ponds have been properly fenced to prevent accidental entry of anyperson or cattle with a depth measurement scale in the middle of the pond (Fig. 10).



Figure 10: Fencing around the settling pit

#### Recommendation 13:

Plantation, grassing and soil water conservation measures like contour trenches(2ft wide x 2ft depth x continuous or staggered 2ft wide x 2ft depth x 2m length at 6m slope interval) and bund (2 ft high), agave plantation, silt arrestors, check damete should be carried out in all the external o/b dumps slopes to minimize siltationduring monsoon, otherwise the capacity of garland drain to carry the surfacerunoff will decrease and will lead to flooding and discharged to nearby areasinstead of being channelled to the sump. Proper retaining wall or gabion wall orcatch drain (1.5m x 1.5m cross section) should be provided at the toe of the OBdumps to arrest the siltation during heavy rains and these catch drains should be cleaned before onset of monsoon each year.

### Status: Implemented

Garland drains, settling tanks and check dams of appropriate size, gradient and lengthhas been constructed both around the mine pit and the over burden dump to preventun off of water and flow of sediments directly into the natural nallah and other water bodies. The garland drains are being desitted regularly before onset of monsoon.

#### Additional Observations:

During site visit the following additional observations were made:

Concrete drains of 160m length, 1.5m width and 1m depth has been provided on the side of approach road to the mine entrance.

A network of pumps and pipelines has been provided to channelize the runoff from the settling pits to the Quarries.

Vast amount of plantation has been carried out on the backfilled areas of the mine (Fig. 11).



Figure 11: Photographic view of the plantation in the backfilled areas of the mine

Dr. H. B. Sahu

Associate Professor and Head Department of Mining Engineering

Principal Investigator

Dr. Sk. Md. Equeenuddin

Associate Professor

**Dept of Earth and Atmospheric Sciences** 

Co-Principal Investigator

# **ANNEXURE: 4**

Ambient Air Quality Monitoring Report (Core Zone)

For the period April-2020 to September-2020



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0267

Date: 11.05.2020

# TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd. Tikiri, Rayagada, Odisha.

Sam	ple Location	& Code	SI:	Near Cru	sher	S	ampled b	y		VCSPL	S Repres	sentative	
Sum	ple Descripti	911	An	bient Air		S	ampling	Procedur	e	15 5182.	8.		
Sam	ple Source		Baj	phlimali M	ines, UAIL	S	ample Re	ccived or	1			,2020,21,0 ,2020,30,0	
Sam	ple Condition	1		seous Samp frigerated	ple Solution	L	atitude: ongitude Ltitude:	N19°20. : E82°58. 999.74 n	543	100			
Sam	pling Date		20.	04,2020,15 04,2020,22 04,2020,29	.04.2020,		Test Con	pleted o		04,05,20	120 to 09	.05,2020	
							Param	eters		- 50-			,:
St. No	Sampling Date	Particulate Matter as PM <sub>18</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>E1</sub> (µg/m²)	Sulphur Dioxide 21 SO <sub>2</sub> (µg/m²)	Oxides of Nitrogen as NO <sub>5</sub> (pg/m <sup>3</sup> )	^CO mg/m²	h8 <sub>im</sub> ,	*NH <sub>3</sub> µg/m <sup>1</sup>	"C <sub>t</sub> H <sub>t</sub> pg/m <sup>3</sup>	*BaP ng/m²	*Ni ng/m*	*Pb µg/m³	"As ag/m
1	13,04,2920	36.0	19.0	10.5	29.8	0.55	7.4	BDL	BDL	BDL	BDL	BDL	BDL
2	15,84,2020	45.0	25.0	12.2	21.5	0.41	6.8	BDL	BDL	BDL	BDL	BDL	BDL
3	20.04,2020	38.0	21.6	13.1	24.4	0.36	6.1	BDL	BDL	BDL	BDL	BDL	BDI
4	22.04.2020	47.0	20.0	154	25.9	0.59	5.2	BDL	BDL	BDL	BDL	BDL	DDI
5	27.04.2820	34.0	18.0	12.8	20.1	0.46	7.0	BDL	BDL	BDL.	BDL	BDL	BDI
6	29.04.2020	39.0	14.0	11.3	26.4	0.61	6.6	BD1.	BDL.	BDL.	RDT	BDL.	BDI
	Monthly Average	39.8	19.5	12.6	24.7	0,50	6.5	BDL	BDL	BDL	DDL	HDL	BDI
NAA	Q Standard	100	60	80	80	4	100	400	0.5	03.	20	1.0	06
Tes	ting Method	IS 5182: Part 23	EPA CVR-40 (pt 50) Appendix-1 BDL Values: S	15 5182 (Part-2) RA2006	IS 5182 (Part-6) RA 2006	IS \$182 (Part- 10):19 99	Chemis al Method	Indo phonol blue method	Alisarpti on & Descripti on followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	samplin Equiv:	s melbod u g en EPM eleat filter	2000 or Paper

Remarks: (All the values of PM-10, PM-2.5,SO2NOx & CO, O3 etc presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>These Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0268

Date: 11.05.2020

# **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sampl	le Location &	Code	82	: Mining P	it	Sa	impled by			VCSPL'S	Represe	entative	
Sampl	le Description	Si D	Ar	nbient Air		S	ampling Pr	rocedare		IS 5182.			
Samp	le Source		Ва	phlimali N	fines, UAIL	Sa	unple Rec	eived on		14.04.202 23.04.202			
Samp	le Condition		Ga Re	seous Sam frigerated	ple Solution	L	ougitude:	N19°20.77 E82°58.33 974.45 m.					
Samp	ling Date		20	.04,2020,15 .04,2020,22 .04,2020,25	.04.2020,	2	Test Comp	leted on		04,05,20	20 to <b>0</b> 9.0	15,2020	
			1 5.00				Parame	eters		- 4			
SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (ug/m <sup>2</sup> )	"Particul ate Matter as PM <sub>1.5</sub> (pg/m <sup>2</sup> )	Sulphur Dioxide as SO <sub>7</sub> (ag/m²)	Oxides of Nitrogen as NO <sub>8</sub> (up/m <sup>2</sup> )	*CO mg/m³	"O2 µg/m²	*NH <sub>1</sub> µg/m <sup>2</sup>	*Calls agrie <sup>2</sup>	*BaP ng/m³	"Ni ng/m"	h8/m,	"As ng/m"
1	13.04.2020	34.9	16.0	9.9	23.8	0.65	6.2	BDL	BDL	BDL	BDL	BDL	BDL
2	15.04.2020	25.0	12.0	11.4	23.6	0.58	7.5	BDI.	BDL	BDL	BDL	BDL	BDL
3	20.04.2020	31.0	19.0	10.5	19.8	0.53	7.8	BDL.	BDL	BDL	BDL	BDL	BD4.
4	22.04.2030	40.9	21.0	13.3	27.1	9.66	5.9	BDL	BDL	BDL	BDL	BDL	BDL
5	27.84.2820	26.0	14.0	12.7	23.9	0.42	6.3	BDL	BDL	BDL	BDL	BDL	BDL
6	29.84,2020	32.0	18.0	11.9	24.2	0.51	7.4	BDL	BDL	BDL	BDL	BOL	BDL
	Monthly Average	31.3	16.7	11.6	24.6	8.56	6.9	BDL	BDL	BDL	BDL	BDL	BDE
NAA	Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Test	ing Method	25 5182: Part 23	EPA CFR-40 (pt 50) Appendix -1	IS 5182 (Part-2) RA 2006	IS 5182 (Part-6) RA2006	1S 5182 (Part- 10):1509	Chemic al Blethod	Indo phenot blue method	Absorption & Description on & Description on followed by GC analysis	Solvent extraction n followed by Gos Chroma atograp by analysis	samplin Equiv	g on EPM alent filter	2000 or Paper
Test	ing Method	The state of the s	CFR-40 (pt 50) Appendix -1 BDL Value	(Part-2) RA 2006 e: SO-< 4 p	(Part-6) RA2006	(Part- 10):1999 ughe <sup>1</sup> , O <sub>5</sub>	al Stethod	phenol blue method	on & Description on followed by GC analysis	foll by Charto	n Howed Gos strom sgrap hy alysis	n llowed AA3 Gos sampling roun Equivisgrap hy	n llowed AAS method a sampling on EPM Equivalent filter agrap by

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944
Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0269

Date: 11,05,2020

# TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Samp	ple Location &	Code	83	: Near Off	ice.	Sa	mpled by			VCSPL28	Repris	entative	
Sam	ple Description		An	ablent Air		Sa	mpling Pr	ocedare		TS 5182.			
Sam	ple Source		Ви	phlimuli M	lines, UAIL	Sa	mple Reci	ived on		14.04,200 25,04,200			
Samp	ple Condition			seeus Sam frigerated	pie Solution	Le	ngitude: l	N19°20.36 (82°58.87 (55,24 m.					
Sami	pling Date		20.	04.2020, 1 04.2020, 2 04.2020, 2	4.04.2620,	7	est Comp	leted on	Į.	04,05.26	020 to 05	.05.2020	0
							Parame	eters					
SL. No	Sampling Date	Particulate Matter as PM <sub>er</sub> (µg/m <sup>3</sup> )	"Particul ute Matter au PM-s (ng/m <sup>3</sup> )	Sulphur Diuxide as SO <sub>2</sub> (ag/m²)	Oxider of Netrogen us NO <sub>X</sub> (ug/m²)	^CO mg/m²	*O <sub>2</sub>	*NH, pg/m²	°С <sub>t</sub> Нь	*Balk ag/m;	*Ni ngon*	*Ph pg/m²	*As ng/m²
1	13.84.2020	29.0	17.0	11.2	33.6	0.32	6.1	BDL	BOL	BDL	BDL	BDL	BDL
2	17.04.2020	24.0	11.0	13.3	29.8	6,49	6.9	BDL	BOL	BOL	BDL	BDL	BOL
3	20.84.2929	30.0	16.0	14.8	34.4	0.41	7.8	BDI.	BDL	BDL	BDL	BDL	BDL
4	24.94.2020	23.0	12.0	10.6	29.6	0.55	8.5	BDI.	BDIL.	BDI.	BDI.	BDI.	BDI
2	27.04.2028	34.0	19.0	11.4	30.1	0.38	7.7	BDT.	BOL	BDL	HDT.	BDI.	BDL
6	29.84.3829	29.0	20.8	12.1	31.7	0.47	6.4	BDI.	BDL	BDE	BDL	BDL	BDL
	Monthly Average	28.2	15.8	12,2	31.5	0,44	7.2	HDL.	BDL	BD1.	BDI	BDI.	BDI
NA	AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Te	sting Method	IS 5182: Part 13	EPA CFR-40 (pt 58) Appendix -1	IS 5182 (Part-2) R.4.2006	IS 5182 (Purt-6) RA2006	ts 5182 (Part- 10):1999	Chemic al Method	Indo phenot blue method	Absorption & Description followed by GC analysis	Solvent extractio n fullowed by Cas Chrom abgrap by analysis	sempl or Equi	S method ing on EPI valent filt	M 2000 er Pape

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NOx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>These Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0270

Date: 11.05.2020

# **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sampl	le Location &	Code	S4	: Near We	igh bridge	Sa	mpled by			VCSPL'S	Represe	entative	
Sampl	le Description	29.	An	nbient Air		Sa	mpling Pr	ocedare		IS 5182.			
Sampl	le Source		Ba	phlimali M	Bues, UAIL	Sa	imple Reco	eived on		16.04.202 25.04.202			
Sampl	le Condition			scous Sam frigerated	ple Solution	L	ingitude: l	N19º21.07 E82º58.77 993.95 m.					
Sampl	ling Date		22	04.2020,17 04.2020,24 04.2020,29	1.04.2020,	Т	st Comple	eted on	*.	04,05,20	20 to 09,0	15,2928	
							Parame	eters					
SL No	Sampling Date	Particulate Matter as PM <sub>.0</sub> (ag/m²)	*Particul ste Matter as PM <sub>1.5</sub> (pg/m <sup>2</sup> )	Sulphur Diexick as SO <sub>1</sub> (ag/m²)	Oxides of Nitrogen as NO <sub>2</sub> (µg/m²)	*CO reg/m²	<sup>9</sup> О <sub>х</sub>	"MH <sub>2</sub> pg/m <sup>3</sup>	*C <sub>c</sub> H <sub>c</sub> pg'm <sup>5</sup>	*BaP ng/m*	*Ni ng/m²	*Pb pg/m²	*As ng/m
1	15.04.2020	26.0	11.0	19.1	28.6	0.41	5.9	BDI.	BDL	BDL	BDI.	BDL	BDI
2	17.04.2020	29.0	14.0	11.9	23.3	0.33	7.0	BDL	BDL	BDL	BDL	RDL	BDI
3	22.04.2020	31.0	19.0	133	30.7	0.39	7.8	BDL	BDL	BDL	BDL	BDL	BDI
4	24.04.2020	28.0	12.0	12.7	25.5	0.52	6.6	BOL.	BDL	BDL	BDL	BDL	BD
5	27,04,2020	25.0	17.0	10.8	29.8	0.45	5.9	BDL	BDL	BDL	BDL	BDL	BD)
6	29,04,2020	30.0	14.0	13.6	27.3	0.37	7.5	BDL	BDL	BDE	BDL	BDL	BD.
	Tonthly Lyerage	28.2	14.5	12.1	27.5	0.41	6.8	BDL	BDL	BDL	BDL	BDL	BDI
NAA	Q Standard	100	60	80	80	4	100	400	0.5	91	20	1.0	06
Toss	ing Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix -1	IS 5182 (Part-2) RA2006	IS 5182 (Part-6) RA2006	IS 5182 (Part- 10):1999	Chemic al Method	Indo phenol blue method	Absorption & Description followed by GC nna/ysis	Solvent extractio n followed by Gas Chrom abograp by analysis	sa mptin Equiv	5 method a g on EPM alent filter	2000 o Paper

Remarks: (All the values of PM-10,PM-2.5,SO2,NOx & CO, O5 etc presented in row no 1-8 are Time Weighted Average.)

"These Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0647

Date: 10.06,2020

## **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sam	ple Location	& Code	81	: Near Cru	sher	- 3	Sampled b	y		VCSPL	'S Repre	sculative	
Sam	ple Descripti	on	An	nbient Air		- 5	sampling	Procedu	ne	IS 5182	ġ.		
Son	i Suire		Ва	phlimali M	lines, UAM	+	Sample R	cceived o	n	12.05.20	20,16.05	.2020,09. .2030,39. .2020,30.	95,2020
Sam	ple Condition	n		seous Sam frigerated	ple Solution	1	Latitude: Longitude Altitude:	E82°58	543				
Sam	pling Date		08. 15. 22.	05.2020,04 05.2020,11 05.2020,18 05.2020,25 05.2020,	.05.2020, .05.2020,		Test Cor	mpleted o	m	04.05,2	020 to 09	.06.2020	
				and the same of the same			Param	eters					
SL Ne	Sampling Dute	Particulate Matter as PM <sub>in</sub> (ug/m²)	"Particulate Matter as PM <sub>24</sub> (µg/m²)	Sulphor Dioxide as SO: (µg/m²)	Oxides of Nitregen as NO <sub>x</sub> (µg/m²)	*CO mg/m²	*On	*NH <sub>1</sub> µg/m²	*C <sub>c</sub> H <sub>c</sub> pg/m <sup>2</sup>	*DaP ng/m²	*Ni ng/m²	"Pb µg/m"	"As ng/m"
1	01.05.2020	29,0	15.0	10.8	29.5	0.62	7.2	BDL	BDL	BOL	BDL	BDL	BDL
2	04.05.2020	36.0	13.0	11.7	31.2	0.70	3.4	BDL	BDL	BDL	BDL.	BDL.	BDL
3	06,05,2026	31.0	16.0	13.9	26.3	0.84	8,8	BDL	BOL	BDL	BDL	DDL	BDL
4	11.05.2020	39.0	21.0	17.2	36.9	0.89	7.6	BDL	BDL.	BDL	BDL	BD1.	BD1.
5	15.05.2020	31.0	12.0	15.1	37.6	0.71	6.9	BDL	BDL	MDL	BbL	BDL	BDL
6	18,05,2020	29.0	15.0	14.8	30.2	0.55	5.8	BDL	BDL	BDL	BDL	BDL	BDL
T	22.05.2020	21.0	10,0	10.3	24.2	0.78	8.9	BDL	BDL	BDL	BUL	BDL	BDL
8	25.05.2020	24.0	14.0	14.4	31.5	0.71	7.4	BDL.	BDL	BDL.	BDL	BDL	BDL
9	29,05.202D	27.0	11.0	12.6	27.7	0.65	6.2	BDL	BDL	BDI,	BUL	BDL	BDL
	Monthly Average	29.7	14.1	13.4	29.5	0.72	7.5	BDL	BDL	BDL.	BDi,	BDI	BDL
NAA	Q Standard	100	60	80	80	4	100	400	0.5	01	20	L0	06
Tes	ting Method	IS 5182: Part 23	EPA CPR-40 (pt 50) Appendix-1	IS \$182 (Part-2) RA 2006	18 8182 (Pact-6) RA2006	18 5182 (Part-10) :1599	Chemical Method	Inde phrasil Idue method	Absorption & Description followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	samplin	s method a g on EPM dent filter	2000 or
		Xie.	HDL Values: 5 µp/m², Bal <sup>2</sup> <0.					j< 20 ag/n	i', Ni≪0.01 i	ig/m³, As < 6	.304 ng/m	Celled.	001

Remarks: (All the values of PM-10, PM-2.5, SO,, NOx & CO, O, etc presented in row no 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944

Formut No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0648

Date: 10.06.2020

# **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sampl	le Location &	Code	S2	: Mining F	it	S	umpled by		. 3	VCSPL	Represe	stative	
Sampl	le Description		An	nboent Air		Si	ompling Pr	ncedure	3	13 5182.	C HI SAMBED	+501c3.52+	
Sampl	le Source		Ва	phlimali A	fines, UAIL	Se	ample Reco	rived on		02.05.202 14.05.202 23.05.202	0,16.05.2	020,21.05	5.2020
Sampl	le Condition			seous Sam frigerated	ple Solution	L	ongitude: I	N19°20.7 E82°58.3: 974.45 m.	12"				111.5000
Samp	ling Date		18. 15. 22.	05.2020,06 05.2020,13 05.2020,20 05.2020,25 05.2020,	.05.2020, .05.2020,		Test Comp	deted on	76.	04.05.20	20 to 09.6	06.2020	
			· · · · · · · · · · · · · · · · · · ·				Parame	eters				u —	
SL. No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m²)	*Particulate Matter es PMac (ug/m*)	Sulphur Dioxide as SC <sub>2</sub> (ug/m <sup>2</sup> )	Oxides of Nitrogen as NO <sub>5</sub> (µg/m²)	*CO erg/m²	*O <sub>3</sub>	"NH <sub>3</sub> pg/m <sup>2</sup>	*Calle pg/m²	*BaP ng/m²	*Ni ng/m*	*Pb pg/m*	"As ag/a
1	01.05.2020	22.0	10.0	14.9	33.4	0.85	3.8	BDL	BDL	BDL	BDL	HDL.	BDI
2	06,05,2020	27.0	15.0	12.0	29.2	0.92	7.5	BDL.	BDL	BDL	BDL.	HDL	3303
3	08.05.2020	+ 19.0	11.0	16.5	31.7	0.66	9.2	BDL	BDL	BDL	BDL	BDL	BD:
4	13.05.2020	28.0	13.0	13.9	25.5	0.71	9.8	HDL	BDL.	BDL	BDL	RDL	BD
5	15.05.2020	23.0	12.0	14.5	34.9	0.77	8.6	BDI.	BDL	BDL	BDL	HDL	15 D
6	20.05,2020	31.0	17.0	18,2	31.6	0.84	7,0	BDL	DDL	BDL	BDL	DDL	BD
7	22,05,2020	29.0	14.0	16.9	36.2	0.69	7.4	BDL	BDL	DDL.	BDL	nnt.	1510
8	25.05.2020	26.0	15.0	17.7	28.4	0.83	8.2	BDL	BDL	BDL	BDL	BDL	BD
9	29.05.2020	24.0	11.0	18.2	38.1	9,67	8.9	BDL	BDI.	RDL.	BDL.	BDI.	BB
	foothly recage	25.4	13.1	15.9	31.1	0.77	8.4	BDL	BDI.	BDI.	BDI.	BDL.	80
NAA	O Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Test	ing Method	IS 5182: Part 23	EPA CFR-40 tpt 50) Appendix-1	18 5182 (Part-2) RA2006	IS 5182 (Part-6) RA7006	IS 5182 (Part-10) -1999	Chamical Method	Indo phenoi blue method	Absorption & Description followed by GC mulysis	Solvent extraction followed by Gas Chrom etograp by englysis	aamplic	i method a g on EPM stept täter	2000 o

μg/m², BaP<0.002 ag/m², Pb<0.001 μg/m², CO<0.1 aug/m²

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope,





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0649

Date: 10.06.2020

## **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkai Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sam	ple Location &	Cude	83	Near Off	ice	S	umpled by			VCSPL'S	Repres	entative	
Sam	ple Description	7	A.e.	thient Air		77.75	empling Pr	ncedure		IS 5182.		120001101	
Charles II	ple Source			NIVE HOLDS	lines, UAIL	S	ample Rec		ce*	02.05.2020 14.05.2020 23.05.2020	,16.05.2	2020,21.0	5.2020
Sam	ple Condition			seous Sam Prigorated	ple Solution	L	ongitude: )		74"				
Sam	pling Date		08. 15. 22.	05.2020, 0 05.2020, 1 05.2020, 2 05.2020, 2 05.2020, 2	3.05.2020, 0.05.2020,		Test Comp	oleteci can		64.05.202	9 to 09.	06,2020	
							Parame	eters					
SL. No	Sampling Date	Particulate Matter as PM <sub>D</sub> (µg/m <sup>3</sup> )	<sup>2</sup> Particulate Matter as PM <sub>25</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (ag/m <sup>2</sup> )	Oxides of Mirrogen as MO <sub>X</sub> (µg/m <sup>3</sup> )	*CO mg/m²	μg/m <sup>3</sup>	*NH <sub>3</sub> µ3/30 <sup>3</sup>	*C <sub>4</sub> H <sub>4</sub> pg/m <sup>3</sup>	*BaP ng/m²	*N) ag/m²	4РБ µg/m²	*As ng/m²
1	01.05.2020	35,0	20.6	17.3	30.4	0.78	8.6	EDL	BDL.	BDL	BDL	EDL	BDL
2	06.05,2020	29.0	14.9	13.8	27.0	9.69	7.1	BDL	BDI.	BDL.	BDL	BOL	BDL
3	08.05.2020	33.0	15.0	10.9	25.8	0.74	7.9	BDI.	BDI.	BDL.	BDL	BDL	BDL
4	13.05.2020	24.0	11.0	11.6	30.9	0.68	9.6	BDL.	BDL	BDL	BDL	BDL	BDL
5	15.05,2020	+ 21.0	12.0	14.2	38.6	0.80	8.4	EDL	1001	BUL	BDL	BDL	BDL
6	20.05,2020	37.0	18.0	12,1	29.5	0.59	8.7	BDL	BDI.	BDL.	BDI.	BDL	BDL
7	22.05.2020	32.0	15.0	13.3	34.7	0.65	6.6	EDL	BDL	BDL.	BDL	BDL	BDL
8	27.05.2020	30.0	14.0	10.7	26.5	0.87	7.1	BDL	DDI.	BDL.	BDL	BDL	BDL
9	29,05,2020	36.0	13.0	11.1	29.1	0.79	6.8	EDL	BDL.	BDL.	BDL	BD1.	BD1.
	Monthly Average	30.8	14.7	12.8	30.3	0.73	7.8	BDL	BDL.	BDL	BDL	BDL	BDL
NA	AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Te	sting Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5182 (Part-2) RA2016	IS 5182 (Part-6) RA3006	IS 5182 (Part-10) :1999	Chemiral Method	indo phenol bine method	Absorption & Description followed by GC analysis	Solven: extraction followed by Gas Caromat ography analysis	sampili	methed ng on EP quivalent Paper	M 2000

BDL Values: SO<sub>2</sub><4 µg/m², NO<sub>3</sub><9 µg/m², O<sub>3</sub><4 µg/m², NH<sub>2</sub><20 µg/m², Nl=0.01 µg/m², As < 0.001 µg/m², C<sub>4</sub>H<sub>2</sub><0.001 µg/m², BoP<0.001 µg/m², Pb<0.001 µg/m², CO<0.1 µg/m²

Remarks: (All the values of PM 10, PM-2.5, SO<sub>2</sub>, NOx & CO, O<sub>3</sub> etc presented in row no 1.8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC 7944 Format No.: 7.8.2/FMT/TR/06

Test Report Noc ENVLAB/20/TR-0650

Date: 10.06.2020

## **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M.'s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

eription rec dition ate	Particulate Matter as PM <sub>11</sub> (ng'm <sup>3</sup> )	Gas Refi 04.3 11.0 18.0 25.0	rigerated 05.2020,66 15.2020,13 15.2020,20 15.2020,27 15.2020,27 Sulphur Dioxide	.05.2020, .05.2020,	Sa La La Al	ongitude: 1	sived on N19*21.0 E82*58.7 993.95 m eted on		PS 5182 05,05,202 14,05,202 26,05,202 06,05,202	0,19.05.2 0,28.05.2	020,21.05 020,30.05	.2020
dition ate	Matter as FM <sub>12</sub>	Gas Refi 04.3 11.0 18.0 25.0 29.0	rigerated 05.2020,66 15.2020,13 15.2020,20 15.2020,27 15.2020,27 Sulphur Dioxide	ple Solution .05.2020, .05.2020, .05.2020, .05.2020,	La La Al	ofitude: 2 ongitude: 1 fitude: 9	N19 <sup>1</sup> 21.0 <sup>1</sup> E82 <sup>0</sup> 58.7 <sup>2</sup> 993.95 m eted on		14,05,202 26,08,202	0,19.05.2 0,28.05.2	020,21.05 020,30.05	.2020
ate opling	Matter as FM <sub>12</sub>	94.3 11.0 18.0 25.0 29.0	rigerated 05.2020,06. 15.2020,13. 05.2020,20. 05.2020,27. 15.2020. Sulphur Dioxide	.05.2020, .05.2020, .05.2020, .05.2020,	T T	ongitude: I stimde: 9 est Compl	682°58.7′ 993.95 m eted on		06.05,202	50 ta 09.0	6,2020	
opling	Matter as FM <sub>12</sub>	11.0 18.0 25.0 29.0 *Particulate Matter	05,2020,13 05,2020,20 05,2020,27 05,2020 Sulphur Dioxide	.05.2020, .05.2020, .05.2020,					06.05,202	00 ta 09.0	6,2020	
	Matter as FM <sub>12</sub>	Matter	Dioxide	Oxides of		Parame	eters					
	Matter as FM <sub>12</sub>	Matter	Dioxide	Oxides of								
	19.00	(µg/m³)	ns SO <sub>2</sub> (µg/m <sup>1</sup> )	Nitragen as NO <sub>5</sub> (ug/m <sup>3</sup> )	+C0	*O <sub>5</sub>	-NH, µg/m²	*C.H.	*RaP ng/m²	"Ni ng/m"	hit/ga_	*As ng/m²
5.2020	31.0	16.0	11.4	21.3	0.96	8.8	BDL	BDL	BDL	BDL	BDL	BDL
5.2020	25.0	12,0	12.9	15.8	0.79	7.6	BDL	BDL	BDL	BDL	BDL	BDL
5.2028	28.0	14.0	14.3	17,7	0.73	6.4	BDL	BDL	BDL	BD1.	BDL	BDL
5.2020	36.0	19.0	18.8	25.2	0.87	8.7	BDL	BDL	BOL.	HDI.	BD1.	BDL
5.2020	+ 23.0	11.0	11.7	37.9	0.82	9,5	BD1.	BDL.	BDI.	BD1.	RDL	800
5.2020	28.0	13.0	14.5	31.5	0.69	8.2	BDL	BDL	BDL	BDL.	BDL	BDL
5.2020	26.0			26.8			BDL	BDL	BDL	BDL	BBL	BDL
5.2020		100000		The second control of	10000							BDL
5.2028	27.0	12.0	13.6	25.1	0.84	6.1	BD1;	BDL	801.	BD1.	BDL	BDI
y e	28.3	14.1	13.4	26.0	6.79	8.0	BDL	BDI.	301.	RDL	801.	BDU
dard	100	60	80	80	4	100	400	0.5	01	20	1.0	06
thisd	IS 5182; Part 23	KPA (CFR-40 (pt 50) Appendix-1	IS 5182 (Part-2) RA2686	15 5152 (Part-6) RA2006	IS 5182 (Partin) 11999	Chruical Method	lada piraul Noe method	Absorption & Been ption to lowed by GC arelysis	Solvent catraction followed by Gas Chromat agraphy analysis	sampli	ng on EP9	£ 2000
5.1 5.1 9 9	1820 1820 1820 1829 srd	28.3 28.3 28.3 28.3 28.3	26.0 14.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17	10.5   10.5	100   100	100   100	8220 26.0 14.0 10.9 26.8 0.78 7.9  9220 31.0 17.0 12.4 24.5 0.62 8.4  9220 27.0 12.0 13.6 25.1 0.84 6.1  28.3 14.1 13.4 26.0 6.79 8.0  100 50 80 80 4 100  18 5182:  Part 23 Part 23 (Part-2) (Part-6) (Part-10) (Part-1	100   100   100   10.9   10.	100   100   100   10.9   10.	100   100   10.9   10	100   100   10.9   10	100   100   10.9   10.8   10

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO, O<sub>2</sub> etc presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>These Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-1758

Date : 07.07.2020

# **TEST REPORT**

Customer Name & Address

Baphlimati Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Samp	de Location à	k Code	\$1:	Near Crus	ber	Sa	mpled by			VCSPL'S	Represe	entative	
Sami	ple Descriptio	a	Am	bient Air		Sa	unpling P	rocedure		18 5182.			
0.00	ple Source		Вор	oblimali Mi	nes, UAIL	Se	ample Rec	cived on		02,86,202 16,86,202 27,86,202	20,20.06.2	2020,23.0	
Sam	ple Condition			cous Samp rigerated	le Solution	L	atitude: ongitude: htitude:	E82°58.3	543				
Sann	pling Date		12.0 19.0	16,2020,63. 16,2020,15. 16,2020,22. 16,2020,29.	06,2020, 06,2020,		Test Com			02,06,20	20 to 07.	07,2020	+
			40.0	in in the second		15	Parame	eters					
SL No	Sampling Date	Particulate Matter as PM <sub>m</sub> (µg/m <sup>2</sup> )	*Particulate Matter as PM: (pg/m²)	Sulphur Diexide as SO <sub>2</sub> (µg/m²)	Oxides of Nitrogen as NO <sub>x</sub> (pg/m <sup>2</sup> )	*CO	°О <sub>5</sub> µg/ш³	*NH, pg/m <sup>3</sup>	*C.H.; pag/m²	*BoP ng/m²	*Ni ng/m²	·Pb pg/m²	*As ng/m²
	27.27.2020	33.0	18.0	11.9	349	0.59	8.0	BDL	BDL.	BDL	BDL	BDL.	BDL
1	0L06.2020 03.06.2020	28.0	11.0	16.2	33.6	0.53	8.9	BUL	BDL	BDL	BDL	BDL	BDL
2	12.06.2020	36.0	19.0	15.7	29.2	0.62	7.3	BDL	BDL	BDL	BDL	BDL	BDL
3	15.06.2020	43.0	23.0	14.1	23.4	0.44	8.5	BDL	BDL	BDL	BDL	BDL	BDI
4	19.06.2020	32.0	19.0	14.9	26.8	0.49	7.1	BDL	BDL	BDL	EDL	BDL.	BD1
5	22.06.2020	39.0	24.0	18.8	27.9	0.57	8.8	BDL	BDL	BDL	. BDL	BDL	BDI
7	26,06,2020	27.0	15.0	16.3	30.1	0.45	7.9	BDL	BDL.	BDL	BDL	BDL	RDI
8	29,06,2020	29.0	16.0	15.7	25.2	0.63	8.6	BDL	BDL	BDL	BDL	BDL	BDT
8	Monthly Average	33.4	18.1	15.5	28.9	0.54	8.1	BDL	BDL	BDL	BDL	BDL	RDL
	AQ Standard	100	60	80	80	4	100	400	115	01	20	1.0	96
Te	sting Method	IS SIRU Part 23	EPA CFR→0 (pt S9) Appendix-1 BDI, Values	IS 5182 (Part-2) RA2006	IS 5182 (Part-6) RA 2006	IS 5182 (Part-10) :1999	Metmod	Indo pheaul blue method	Absorption & Description tollowed by GC analysis	Selvent extraction followed by Gas Chromat ography analysis	samplin Equiv	S method : ig on EPM alent filter	2000 m Paper

Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>NOx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-1759

Date: 07.97.2020

# TEST REPORT

:

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sampl	le Location &	Code	52	Mining P	ît	Sa	mpled by		2	VCSPL'S	Represe	meative	
Sampl	le Description		Ап	bient Air		Sa	umpling Pr	ocedure		IS 5182.			
Sampl	le Source		Ва	phlim <b>ali</b> M	lines, UAIL	Sa	unple Rece	ived on		02.06.202 16.06.202 27.06.202	0,20,06,2	020,23.00	
Sampl	le Condition			seous Sam frigerated	ple Solution	L	mgitude: I	819°20.7° 82°58.33 74.45 m.	12'				+
Sampl	ling Date		12.	06,2020,05 06,2020,15 06,2020,22 06,2020,29	.06.2020, .06.2020,		Test Comp	leted on		02,06,201	0 to 07.0	7.2020	
							Parame	ters		- 4			
SL No	Sampling Date	Particulate Matter as PM <sub>et</sub> (pg/m <sup>2</sup> )	*Particulate Matter as PM <sub>1.2</sub> (pg/m <sup>2</sup> )	Sulphur Dioxide us SO <sub>2</sub> (ug/m <sup>2</sup> )	Oxides of Nitrogen as NO <sub>X</sub> (ag/m <sup>3</sup> )	•co mg/m²	*O <sub>3</sub>	-NH.	*С.Н. µg/m²	*BaP ng/m²	"Ni ng/m/	*Pb µg/m²	"As ng/m
1	01.06.2020	29.0	14.0	16.1	35.9	0.79	7.1	BDL	BDL	BDL	BDL	BDI.	BDL
2	05.06.2020	24.0	11.0	17.3	30.6	0.56	6.3	BDL	BDL	RDI.	BOL	BDL	BDL
3	12,06,2020	31.0	19.0	20.1	26.1	0.52	5.8	BDL	BDL	BDL	BDL	BDL	BDL
4	15.06.2020	28.0	15.0	14.6	27.8	0.41	7.4	BDL	BDL	BDL .	BDL	BDL	BDL
5	19:06.2020	23.0	10.0	18.5	25.4	0.63	7.9	BDL	BDL	BDL.	BDL	BDL	BDI
6	22.06.2020	27.0	15.0	13.3	29.3	6.46	8.5	BDL	BDL	BDI.	BOL	BDL	BDI
7	26.06.2920	24.0	11.0	15.9	35.8	0.71	7.3	BDL	BDL	BDL	BDL	BDL	BDI
8	29.06.2020	32.0	21.0	18.7	31.2	9.67	7.9	BDL	BDL	RDL	BDL	BDL	BUL
	fanthly Average	27.3	14,5	16,8	30.3	0.60	7.3	BDL	BDL	BDL	BDL	BDL	BDL
NAA	Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Test	ing Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	28 5183 (Part-2) RA2006	15 5182 (Part-6) RA2006	IS 5182 (Part-10) :1999	Chemical Method	Inde phenol blue method	Absorption & Description followed by GC numbers	followed by Gas Chrom atograp by analysis	sam plin Equiv	s method a g on RPM sient filter	2000 or Paper

Remarks: (All the values of PM 10,PM 2.5,SC2,NOx & CO, Ox etc presented in row no 1 8 are Time Weighted Average.)



<sup>\*</sup>These Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/66

Test Report No: ENVLAB/20/TR-1760

Date: 87.07.2020

# **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sam	ple Location &	Code	S3:	Near Off	ce	Sa	mpled by			VCSPL'S	Represe	entative	
Sam	ple Description	ı	An	biest Air		Sa	ımpling Pr	ocedore		IS 5182.			
Sam	ple Source		Ba	phlimali M	lines, UAII.	Sa	mple Reco	cived on		02.06.2020 16.06.2020 27.06.2020	20.06.2	2020,23.0	
Sam	ple Condition			seous Sam frigerated	ple Solution	L	ntitude: ! nogitude: ! httude: !		4"				
Sam	pling Date		12. 19.	06,2020,05 06,2020,15 06,2020,22 06,2020,29	.06.2020, .06.2020,	1	Test Comp	oleted on	*	02,06,202	ю 10 97,	07.2020	+
							Parame	eters				,	
SL. No	Sampling Date	Particulate Matter as PPI <sub>19</sub> (pg/m <sup>3</sup> )	"Particulate Matter as PM <sub>25</sub> (µg/m <sup>1</sup> )	Sulphur Dioxide as SO <sub>2</sub> (pg/m <sup>3</sup> )	Oxides of Nitrogen us NO <sub>x</sub> (pg/m <sup>3</sup> )	w6/m³ ∗co	hM,m, O?	*NH <sub>5</sub>	*Csttle popied*	-BaP ng/m²	*Ni ng/m³	"Ph pg/m"	"As ng/m."
1	01,05,2020	28.0	14.0	19.1	31.6	0.63	9.3	BOL	BDL.	RDL	SDL	BOL	BOL
2	05,06,2020	21.9	10.0	14.7	29.5	0.53	5.6	DDL	BDL	BDI.	BDL	BDL.	BDL
3	12.05.2020	26.0	14.0	13.3	17.2	0.57	6.7	BDL	BDL	DDL	BDL	BDL	BD1.
4	15.05.2020	30.0	16.0	15.2	23.1	0.48	8.2	DDL	BDL	BDL	BDL	BDL	BDL
5	19,95,2020	23.9	13.0	163	28.8	0.44	7.9	BDL	BDL.	BDL	BDL	BDL.	BOL
6	22.05.2020	28.9	11.0	13.1	27.7	0.53	8.4	BDL	BDI.	BDL .	BDL	BDI.	BDI.
7	26.05.2020	25.0	12.0	129	26.1	0.69	8.9	BDL	BDL	BDL.	BDI.	BDI.	BD1.
8	29.05.2020	32.8	17.0	11.7	31.9	0.56	9.4	BDL	BDL.	BDL.	BDL	BDL	BDL
	Monthly Average	26.6	13.4	14.5	27.0	0,55	8.1	BDL	BDL	BDL	BDL	BDL	BOL
NA.	AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Te	sting Method	IS 5182: Part 25	EPA CFR-40 (pt 50) Appendix-1	18 5182 (Part-2) RA 2006	18 5182 (Part-6) RA2006	18 5182 (Part-10) :1999	Chemical Method	lindo phenoi biue method	Absorption & Description followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	earmpli or E	3 method og on EP quivalent Poper	M 2000 filter
		-			g/m³, NO <sub>2</sub> < 9 ², Pb<0.001 p			45< 28 pg/	m³, Nistl.01	ing/m², As-	: II.001 n	g/m³, C <sub>s</sub> F	<0.001

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>; NCx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>These Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

NABL ACCREDITED

Test Report No: ENVLAB/20/TR-1761

Date: 07.07.2020

# TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

e Location &	Code	84:	Near Wei	gh bridge	Sa	mpled by			VCSPL'S	Represe	ntative	
e Description		Am	bieut Air		Sa	anpling Pr	ecedure		18 5182.			
e Source		Вир	ddinali M	ines, UAII.	Sa	mple Rece	ived on		16.86.202	0,18,06.2	020,24.0	
e Condition		1 0000000		de Solution	Le	ngitude: I	82°58.7	75"				
ing Date		11.0 17.0	6,2028,15, 6,2028,23.	06,2020, 06,2020,					04,96,202	0 to 07.0	7.2020	6
						Parame	ters					
Sampling Date	Partscalute Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	"Particulate Matter as PM <sub>1,0</sub> (jug/m <sup>1</sup> )	Sulphur Dioxide in SO <sub>2</sub> (ug/m <sup>3</sup> )	Oxides of Nitrogen in NO <sub>2</sub> (rg/m <sup>1</sup> )	"co	, Oz	hМ,аг <sub>3</sub> ,ИН <sup>2</sup>	*C.H <sub>e</sub> pg/m²	* BoP ng/m*	ut/m,	*Ph pg/m²	*As ng/m
03.06.2020	24.0	11.9	13.3	27.1	8.73	7.1	BDI.	BDI.	RDL	801.	SDI.	BDI
05.06.2020					Annual State of the Control of the C		DDL	DDL	DDI.	BDL		BDI
11.06.2020	34.0	18.0			0.52	6.3	BDL	BDL	BDL	BDL	BDL	DDI
15.06.2020	27.0	15.0	12,4	28.8	8,69	6.7	BDL.	BDL	BDL.	BDL	BDL	BDI
17.06.2020	28.0	13.0	10.2	23.9	0.78	5.8	ED1.	BDL	SDL.	BDL.	BDL	BDI
23.06.2020	* 32.0	20.0	11.1	30.1	0.52	7.3	BOL	BDL	BDI .	BDL.	BDI,	BDI
25.06.2020	35.0	18.0	11.7	26.5	0.61	8.1	BDL	BDL	BDL	BDL	BDL	BDI
30.06.2020	33.0	21.0	12.9	28.1	8,49	7.9	BDL	BDI.	BDL.	BDL	BDL	BDI
Ionthly verage	30.3	16.1	12.1	26.3	0.62	6.9	BDL	BDI,	BDI.	BOL	BDL.	BOI
Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
ng Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5183 (Puri-2) RA2096	IS 5182 (Part-6) RA2006	IS 5182 (Purt10) :1999	Chemical Mcthod	Indo phenol blue method	Absorption & Description followed by GC analysis	Solvent extraction followed by Gus Chimenat ugraphy analysis	sampli or Equi	ing on EPI valent filts	1 200) er Pape
	e Source e Source e Condition ing Date  Sampling Date  03.06.2020 11.06.2020 11.06.2020 23.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020 25.06.2020	Exampling Date Matter as PM <sub>10</sub> (µg/m²) 03.06.2020 24.0 05.06.2020 29.0 11.06.2020 27.0 17.06.2020 28.0 23.06.2020 32.0 25.06.2020 33.0 100 100 100 100 100 100 100 100 100 1	E Description Am  e Source Bag  e Condition Gas Ref    03.0	Example   Particulate   Purticulate   Sulphur	Example   Exam	e Source Baphlimali Mines, UAII. Sa e Source Baphlimali Mines, UAII. Sa c Condition Gasecus Sample Solution Refrigerated AI  03.06.2029,05.06.2029, 11.06.2020, 11.06.2020, 15.06.2020, 17.06.2020,23.06.2020, 17.06.2020,23.06.2020, 25.0	Condition	Condition	Condition	Complete   Condition   Con	Condition	Exempling   Particulate   Sampling   Particulate   Sampling   Particulate   Sampling   Particulate   Sampling   Particulate   Sampling   Particulate   Sampling   S

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NOx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)

"These Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

:

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/86

NABL ACCREDITED

Test Report No: ENVLAB/20/TR-3144

Date: 05.08.2020

# **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

ple Location	& Code	51:	Near Crus	sher	5	Sampled by				VCSPL'S Representative				
ple Bescriptio	on	Ап	ibient Air		S	ampling	Procedur	rc .	IS 5182.					
ple Source		Ba	philmali M	ines, IIAII.	8	ample Re	ecived or		07.07.2020,09.07.2020,14.07.20 16.07.2020.21.07.2020,23.07.20 28.07.2020.30.07.2020.					
ple Condition				ale Solution	1	angitude	: E82°58.	543						
pling Date		13, 20	07,2 <mark>0</mark> 20,15. 07,2 <b>0</b> 20,22	07.2020, 07.2020,		edonose in Door.	and the control		07.07.20	)20 to 05.	08,2020			
						Param	eters	A result						
Sampling Date	Particulate Matter as PM <sub>10</sub> (112/m <sup>2</sup> )	"Particulate Matter as PM <sub>13</sub> (payer)	Sulphur Dioxide as SO <sub>2</sub> (penies <sup>2</sup> )	Oxides of Nitragen as NO <sub>8</sub> (pp/m <sup>2</sup> )	*CO mg/m²	k8,m <sub>1</sub>	'NH,	*CaH, jug/re*	*BaP ng/m²	"Ni ng/m <sup>3</sup>	*Ph µg/m³	*As ng/m		
05.07.2028	21.0	11.0	12.5	31.8	8.45	6.2	BDL	BDL	BDL	BDL	BDL	BDL		
08.07.2020	28.0	14.0	11.7	25.9	0.31	7.1	BDL	BDI.	BDL	BDL	BDL.	BDL		
13.07.2020	31.0	18.0	13.8	39.6	0.39	7.3	BDL.	BDL.	BDI.	BDL	BDL	BDL		
15.67.2020	28.0	13.9	15.5	314	0.55	6.5	BDL	BDL	BDL	BDL	BDL	BDL		
20.07.2820	. 32.0	21.0	12.4	29.8	0.47	81	DDL	BDL	BDL	DDL	BDL	BDL		
22.07,2020	33.0	16.0	11.9	24.6	0.63	7.8	BDL	BDL	DDL.	DDL	DDL	EDL		
27.07.2020	24.0	10.0	14.2	23.2	0.59	6.4	BDL	BDL	BDL	BDL	BDL	BDL		
29.67.2626	37.0	25.0	13.1	20.7	0.41	8.7	HDL	BDL	BDL	BDL	BDL	BDL		
Monthly Average	29.8	16.0	13.1	27.6	0,48	7.3	BDL	BDL	BDI.	RDL	BDL	BDL		
Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06		
ting Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5182 (Part-2) RA2006	IS 5182 (Part-6) RA2006	IS 5182 (Part-10) :1569	Chemical Method	Indo phenol blue method	toBowed by GC	Chromat ography	samplio	g an EPM	2000 nr		
	ple Bescription ple Source ple Condition pling Date  Sampling Date  65.07.2020 65.07.2020 15.07.2020 20.07.2020 20.07.2020 20.07.2020 20.07.2020 Womthly Average Q Standard	Sampling   Particulate   Matter as   PMp (129/m²)	Particulate	Particulate   Particulate	Particulate   Particulate	Description   Ambient Air   S	Description   Ambient Air   Sampling   Description   Baphlimali Mines, UAII.   Sample Reserve   Baphlimali Mines, UAII.   Sample Reserve   Description   Refrigerated   Refrigerated   Altitude: Description   Des	Date   Particulate   Particu	Date   Particulate   Particu	Delication   Ambient Air   Sampling Procedure   18 5182   07.07.20   16.07.20   18.07.	Date   Description   Ambient Air   Sampling Procedure   IS 5182.   07.07.2020.09.07.   16.07.2020.09.07.   16.07.2020.29.07.   16.07.2020.29.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   28.07.2020.30.07.   20.07.2020.20.0.0.07.   20.07.2020.20.0.07.   20.07.2020.20.0.07.   20.07.2020.20.0.07.   20.07.2020.20.0.07.   20.07.2020.20.0.07.   20.07.2020.20.0.07.   20.07.2020.20.0.07.   20.07.2020.20.0.07.   20.07.2020.0.	Delication   Ambient Air   Sampling Procedure   IS 5182		

BDL Values: SO-< 4 ag/m², NO-< 5 µg/m², O/<4 µg/m², NH-< 20 µg/m², Ni<0.01 ng/m², As < 0.001 ng/m², C<sub>2</sub>H<sub>2</sub><0.001 µg/m², RaP<0.002 ng/m², Ph<0.001 µg/m², CO-<0.1 mg/m²

Remarks: (All the values of PM-10, PW-2.5, SO,, NOx & CO, O<sub>3</sub> atc presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>These Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-3145

Date: 05.08.2020

# TEST REPORT

:

Customer Name & Address

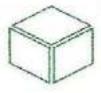
Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

e Location &	Code	S2:	Mining P	St	Sa	mpled by		à	VCSPL'S	Represe	ntative			
e Description		Am	ibient Air		Sa	mpling Pr	ocedure		IS 5182,					
e Source		Вар	phlimali M	lines, UAIL	Sa	mple Rece	ived on		07.07,2020,09,07.2020,14.07.2 16.07,2020,21.07,2020,23.07.2 28.07,2020,30.07,2020					
e Condition				ple Solution	L	ngitude: E	82°58.33							
ing Date		13.	07.2020,15 07.2020,22	397.2020, 397.2020,		Test Comp	leted on		67,67,202	0 to 05.8	8.2020			
				Visi		Parame	ters							
Sampling Date	Particulate Matter av PM <sub>m</sub> (pg/m <sup>2</sup> )	"Particulate Matter in PM <sub>2</sub> , (pg/m <sup>2</sup> )	Suipher Dinzide as SO <sub>1</sub> (ng/m²)	Oxides of Naregen as NO <sub>x</sub> (pg/m²)	*CO mg/m²	,02	"NH- pg/m²	-CHL pg/m²	*BaP oppins*	-Ni ng/m³	•Pt.	"At ng/m		
06.07.2020	36.0	19.0	15.2	27.7	0.43	83	DDL.	DDL	DDL	BDL	BDL	BDI		
					0.56	8.5	BDL	BDL	BDL	BDL	BDL	BDI		
		designation of the contract of			0.51	7.4	BDL	BDL	BDL	BDL	BDL	BDI		
15.07.2020	32.8	17.0	19.8	31.5	0.62	7.9	BDL	BDL	BDL	BDL	BDL	BDI		
20.07.2020	29.8	18.0	12.6	30.8	0.73	6.6	BDL	BDL	BDL	BDL	BDL	BDI		
22.07.2020	35.8	23.0	14.4	24.2	0.59	7.5	BDL	BDL	BDL	BDL	BDL	BD		
THE STREET WAS A STREET OF THE STREET		50 S S S S S S S S S S S S S S S S S S S	100 CO CO		0.44		the second of the party of the		A STATE OF THE PARTY OF THE PAR		Annual Color and Section	BDI		
The second second second second second	39.0	35.9	15.5	26.3	0.51	7.3	BDI.	BDT.	BDT.	BDL	BDL	RDI		
fouthly verage	31.6	18.3	14.1	29.8	0.55	7,7	BDL	EDL	BDL	BDL	BDL	BDI		
Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06		
ing Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	18 5(82 (Part-2) RA2006	IS 5182 (Part-6) RA 2006	IS 5182 (Part-10) :1999	Chemical Method	Indo phenol blue method	di Description foilowed by GC analysis	followed by Gas Chrom ategrap by analysis	Equiv:	g on FPM de <b>n</b> t filter	2000 o Paper		
	e Description e Source e Condition ing Date  Sampling Date  06.07.2020 08.07.2020 13.07.2020 20.07.2020 22.07.2020 27.07.2020 29.07.2020 (onthly verage Q Standard	Sampling Particulate Matter as Philos (pg/m²)  06.07.2020 35.0  15.07.2020 32.8  20.07.2020 33.8  27.07.2020 33.8  27.07.2020 30.0  29.07.2020 39.0  (outhly verage Q Standard 1000	Bay   Bay	Baphlimali Marker   Baphlima   Baphlim	Baphtimali Mines, UAIL	Baphtimali Mines, UAIL   Sa	Baphtimali Mines, UAIL   Sampling Properties	Baphlimali Mines, UAIL   Sample Received on	Example   Exam	Example   Exam	Example   Baphtimali Mines, UAIL   Sample Received on   07.07.2020.p9.07.2	Exampling   Procedure   Estist   Esti		

Remarks: (All the values of PM-10,PM-2.5,SO,,NOx & CO, O<sub>s</sub> etc presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>These Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified) NASL ACCREDITED

Certificate No.: TC-794-Format No.: 7.8.2/FMT/TRAK

Test Report No: ENVLAB/20/TR-3146

Date: 05.08.2020

# **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sam	ple Location &	Code	83:	Near Offi	ice	Sa	mpled by			VCSPL'S Representative					
Sam	ple Description		Am	bient Air		St	mpling Pr	ocedure		IS 5182,					
Samp	ple Source		Baj	ablimati M	lines, UAIL	Sa	mple Rece	ived on		07.07.2020,13.07,2020,14.07.20 26.07.2020,21.07,2020,27.07.20 28.07.2020,03.08.2020.					
Sam	ple Condition	ple Solution	L	ongitude: Ł	(19°20.36 (82°58.87 (55,24 m.										
Sam	pling Date		13.7 20.5	07,2020,10 07,2020,17 07,2020,24 07,2020,31	.07.2020, .07.2020,		Test Comp	leted on	-	87.87.202	0 to 05,	08,2020			
							Parame	ters							
SL. No	Sampling Date	Particulate Matter as PM <sub>10</sub> (up/m <sup>2</sup> )	"Particulate Matter as PM <sub>2.5</sub> (sq./m")	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>5</sub> (pg/m <sup>3</sup> )	.со	*O <sub>5</sub>	*NH <sub>3</sub> µg/m²	^С <sub>s</sub> H <sub>s</sub> µg/m³	*BaP ng/m²	*Ni ng/m²	*Pb µg/m²	*As ng/m		
1	06.07.2020	41.0	27.0	18.2	28.1	0.77	8.7	DDL	DOL	DDL	DDL	BDL	DDL		
2	10.67.2020	32.0	20.0	16.9	35.5	0.71	9.6	BDL	BDL	BOL	BDL	EDL	BDL		
3	13.07.2020	22.0	15.0	13.4	31.4	0.63	9.1	EDL	RDL	BDL	EDL	BDL	BUL		
4	17.07.2020	35.0	18.0	15.1	38.9	0.55	8.8	BDL	BBL	BDL	EDL	BDL	BDL		
5	20.07.2020	27.0	14.0	14.9	23.3	0.73	8.5	BDL	BDL	BDL	BDL	BDL	BDI		
6	24.67.2020	31.0	18.0	17.5	34.8	0.66	7.9	BDL	BDL	BDL	BDL	BDL	BDL		
7.	27.67.2020	25.0	15.9	13.6	36.1	0.62	87	BUL	H191.	BDL	BOL	BDL.	BUL		
8	31.07.2828	36.0	23.9	14.4	30.5	0.48	9.3	BDL	BDL	BDL	BDL	BDI.	BDI		
	Monthly Average	32.4	18.8	15.5	31.3	0.64	8.8	RDL	BDL	RDL	RDF	EDL	BUL		
NA	AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06		
Te	sting Method	EFA CFR-40 (pt 58) Appendix-1	IS 5182 (Part-2) RA2006	15 5152 (Part-6) RA2006	IS 5182 (Past-10) :1999	Chemical Method	indu plenol blue method	Absorption  & Description followed by GC analysis	Solvent extraction followed by Gas Circumst ography analysis	sampli or B	s muited ag en KP quivalent Paper	M 2000 filter			

Remarks: (All the values of PM 10, PM-2.5, SO., NOx & CO, O., etc presented in row no 1-3 are Time Weighted Average.)



<sup>\*</sup>These Parameter not In our NABL Scope.



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944
Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-3147

Date: 05.06.2020

# TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sampl	le Location &	Ceda	\$4;	Near Weig	gh bridge	Sa	mpled by			VCSPL/S Representative					
Sampl	le Description		Am	bient Air		Sa	mpling Pr	ocedure		IS 5182.					
Sampl	le Source		Bap	hlimali M	Sa	mple Rece	ived on		09.07.2020.13.07.2020.16.07.202 20.07.2020.23.07.2020.27.07.202 30.07.2020.63.08.2020.						
Sampl	le Condition			eous Samp rigerated	ole Solution	Le	ngitude: I	019°21.0° 082°58.7° 093.95 m.	75"						
Sampl	ling Date		15.0 22.0	7,2020,10, 7,2020,17, 7,2020,24, 7,2020,31,	.07.2020, .07.2020,	r	est Compl	ened on		. 09.07.2020 to 05.08.2020					
							Parame	ters					-1150		
SL Ne	Sampling Date	Particidate Matter as PM <sub>10</sub> (ag/m <sup>3</sup> )	"Particulate Matter as PM <sub>p</sub> , (pg/m <sup>*</sup> )	Sulphur Dioxide as SO <sub>2</sub> (ag/m <sup>2</sup> )	Oxides of Mirrogen as NO <sub>x</sub> (µg/m²)	nt8/ur₂ ∗CO	*Ο <sub>1</sub> μg/m³	*NH <sub>1</sub> µg/m³	*CsH4 µg/to²	"BaP ng/m"	"Ni ag/ar"	ър, ъръ	'As rg/m		
1	08.07,2020	22.0	11.0	14.8	36.9	0.79	8.2	BDL	BDL	BDL	DDL	DDL	DOL		
2	19.07.2020	24.0	13.0	16.1	33.4	0.58	7,4	EDL	BDL	BDL	BDL	BDL	BDI		
3	15.07.2020	29.0	17.0	15.4	30.5	0.69	7.9	EDL	EUL	BDL	BDL	BDL	BUI		
4	17.07.2020	25.0	16.0	15.7	32.2	0.65	8.6	BDL	EDL	BDL	EDL	BDL	BD		
.5	22.07.2028	27.0	13.0	17.9	25.9	0.77	7.5	BDL	BDL	BDI.	BDL	BDL	BD		
6	24.67.2820	23.0	11.0	14.6	27.5	0.81	6.8	BDL	BDL	BDL	BDL	BDL	BDI		
7	29.67.2020	30.0	10,0	12.9	32.1	0.84	7.4	HOL	BOL	BUL	BDL.	BUL	1907		
8	31.07,2020	26.0	14.0	14.0	34.9	0.76	7.9	BDL	BDL	BDL	BDL	BDL	BDI		
	douthly Average	25,8	13.9	15,2	31.7	8.74	7.7	BDL	BUL	RDL	BDL	RDL	BDI		
NAA	Q Standard	100	60	80	80	4	100	400	05	01	28	1.0	06		
Test	ing Method	18 5182; Pari 23	EPA CFR=0 (pt 50) Appendix-;	IS 5182 (Purt-2) RA2006	IS 5182 (Part-6) RA2006	1S 5182 (Part10) :1999	Chemic≄l Methed	blue	Absorption  & Description followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	sampli or Equi	S methoding on RP rolent filt	vi 2000 c: Pupe		

Remarks: (All the values of PM 10,PM 2.5,SO<sub>3</sub>,NOx & CO, O<sub>3</sub> etc presented in row no 1.8 are Time Weighted Average.)

\*These Parameter not In our NABL Scope.





(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 45001:2018 Certified)

Certificate No.: TC-7944

NABL ACCREDITED

Format No.: VCSPL/FMT/055

Date: 02.09.2020

Test Report No: ENVLAB/20/TR-3602

# TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S1; Near Crusher	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	15 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.08.2020,06.68.2020,11.08.2020 13.08.2020,18.08.2020,20.68.2020 25.08.2020,27.08.2020,01.09.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915° Longitude: E82°58.543° Altitude: 999.74 m.	
Sampling Date	03.08.2020,05.08.2020, 10.08.2020,12.08.2020, 17.08.2020,19.08.2020, 24.08.2020,26.08.2020, 31.08.2020.	Test Completed on	04.08.2020 to 02.09.2020

							Paran	eters					
SL No	Sampling Date	Particulate Matter us PM <sub>in</sub> (µg/m²)	*Particulate Matter as PM <sub>18</sub> (ag/m²)	Sulpher Dioxide as SO <sub>2</sub> (ug/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>2</sup> )	ma∖as, •Co	*O, µg/m*	*NH <sub>2</sub> pg/m²	°C,H, ug/m²	*BaP ng/m²	"Ni ngm"	*Pb µgʻni*	"As bg/m²
1	03,08,2020	33.0	18.0	9.8	21.5	0.45	8.3	BDL	BDL	BDL	BDI.	BDL	BDL
2	05.08.2020	25.0	11.0	13.6	30.2	0.69	7.1	BDL	BDL	BDL	BDI.	BDL	BOL
5	10.08.2020	31,0	14.0	11.5	35.4	0.56	6.9	BDL.	BOL	BDT.	BDL	BDI.	RDL
4	12,05,2020	260)	10.6	12.9	31.9	0.47	6.5	BD1.	BDL	BDL	BDL.	BDL.	BDL.
5	17,08,2020	21.0	11.0	10.4	33.7	0.34	7.2	BDL	BDf.	BDL	EDL	BD1.	BDL
6	19,08,2020	+30,0	15.0	14.5	35.1	0.51	8.4	BDL	BDL	BDL .	BDL	BDL	BDL
7	24,08,2020	22.0	11.0	11.3	32.9	0.52	7.9	BDL	BDL	BOL	BDL	BDL	BDL
8	26,08,2020	20.0	14.0	10.9	26.5	0.49	9.3	BDL	BDL	BDL.	BDL	BDL.	BDL
9	31,08,2026	23.0	16.0	12.4	29.7	0.66	8.5	BDL.	BDL	BDL.	RDL.	BDI.	BD1.
	Monthly Average	25.7	13,3	11.9	30,8	0,52	7.8	BDL.	BDL	BDL	BDI.	BDL	BDL
NAA	Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Testing Method		IS 5182: Part 23	EPA CTR-40 (pt 50) Appendix-1	IS 5182 (Part 2) RA2006	IS 5182 (Pari-6) RA2006	IS 5182 (Part-10) :1999	Chemical Method	Indo phesol blue method	Absorption & Description on followed by GC modysis	Solvent extraction fedlowed by Gas Chromat ography mudysis	AA5 method after samp on EPM 2000 or Equiva filter Paper		

BDL Values: SOz 4 pg/m², NOc 5 p.g/m², Oc 4 p.g/m², NHc 20 p.g/m², Ni 4.01 ng/m², As < 0.001 ng/m², C<sub>c</sub>H<sub>c</sub><0.001 µg'm', BaP<0.002 ng/m', Pb<0.001 µg/m', CO<0.1 mg/m'

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NOx & CO, O<sub>3</sub> etc presented in row no 1-9 are Time Weighted Average.

\*These Parameter not in our NABL Scope.

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> NABL ACCREDITED Certificate No.: TC-7944 Format No.: VCSPL/FMT/958

> > Authorized Signatory

Date: 02.09.2020

Test Report No: ENVLAB/20/TR-3603

# TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S2: Mining Pit	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	1S 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.08.2020,06.08.2020,11.08.2020 13.08.2020,18.08.2020,20.08.2020 25.08.2020,27.08.2020,01.09.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773° Longitude: R82°58.332° Altitude: 974.45 m.	
Sampling Date	03.08.2020,05.08.2020, 10.08.2020,12.08.2020, 17.08.2020,19.08.2020, 24.08.2020,26.08.2020, 31.08.2020.	Test Completed on	04.98.2020 to 02.09.2020

	110	1			10						_	
						Param	eters	,				
Sampling Date	Particulate Matter us PM <sub>10</sub> (µg/m²)	*Particulate Matter as PM <sub>2.5</sub> (ag/m³)	Sulphur Diexide as SO <sub>2</sub> (µg/m²)	Oxides of Nitrogen as NO <sub>X</sub> (µg/m²)	wa <sub>jm</sub> •co	*O <sub>5</sub> µg/m³	°NH <sub>3</sub> µg/m¹	*C.H. ugm`	°B«P na/m³	*Ni ng/m²	*P5 	"As ng/m"
03.05.2020	36,0	21.0	12.5	27.5	0.16	8.9	BDL	BDL	BDL	BDL	BDL	BDL
05.08.2020	34.0	18.0	13.9	30.2	0.69	8.2	BDL	BDL	BDL	BDL	BDL	BDL
10.08,2020	28.0	13.0	12.7	38.8	0.64		BDL	BDL	BDL	BDL	BDL	BDL.
12.08.2020	33.0	16.0	13.3	34.4	0.71	7.1	BDL	BDL	BDL	BDL	BDL	BDF
17.08.2020	25.8	12.0	11.4	36.1	0.35	8.6	BDL	BDL	BDI.	BDL	BDL	BDL
19.08.2020	21.0	14.0	16.8	39.9	0.62	7.7	BDL	BDL	BDL .	BDL	BDL	BDL
24.08.2020	25.0	17.0	14.2	31.7	8.76	8.1	BDL	BDL	BDL	BDL	BDL	BDL
26.08.2029	28.0	15.0	15.4	34.1	0.59	8.4	BDL	BDL	BDL	BDL	BDL	BDL
31.68.2020	26.0	13.0	10.9	25.3	8.57	9.2	BDL	BDL	BDI.	BDT.	BDI.	BD1.
Monthly Average	28,9	15.4	13.5	33,1	0,65	8.1	BDL	BDL	BDL	BDL	BDL	BDL
Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
ting Method	IS S1821 Part 25	EPA CFR 40 (pt 50) Appendix 1	IS 5182 (Part-2) RA 2006	IS 5182 (Part-6) RA2006	IS 5182 (Part-10) :1999	Chemical Method	Inda phenol blue method	Absorption & University on & University on followed by GC analysis	Solvens extraction followed by Gus Chromat egraphy unalysis	on EPM	2000 er E	quivalent
	03.08.2020 05.08.2020 10.08.2020 12.08.2020 17.08.2020 24.08.2020 24.08.2020 26.08.2020 31.08.2020 Monthly Average	Date Matter as PM <sub>10</sub> (µg/m²)  03.08.2020 36.0  05.08.2020 34.0  10.08.2020 28.0  12.08.2020 28.0  17.08.2020 28.0  19.08.2020 28.0  24.08.2020 28.0  26.08.2020 28.0  Monthly 28.9  Average 28.9  O Standard 100  fing Method IS \$1821	Date Matter as PM <sub>10</sub> as PM <sub>12</sub> (ag/m <sup>2</sup> ) (ag/m <sup>2</sup> ) (ag/m <sup>2</sup> )  03.05.2020 36.0 21.0 05.08.2020 34.0 18.0 19.08.2020 28.0 13.0 15.0 17.08.2020 29.8 12.0 19.08.2020 29.8 12.0 24.08.2020 28.0 17.0 26.08.2020 28.0 17.0 26.08.2020 28.0 17.0 26.08.2020 28.0 15.0 31.08.2020 28.0 15.0 31.08.2020 26.0 13.0 Monthly Average 28.9 15.4 (p. 50)	Dute   Matter   Matter   ns PM <sub>10</sub>   ns PM <sub>10</sub>   ns PM <sub>10</sub>   ns PM <sub>20</sub>   ns SO <sub>2</sub>   (ng/m <sup>2</sup> )   (ng/	Dute   Matter   Matter   ns PM <sub>10</sub>   ns PM <sub>20</sub>   ns SO <sub>2</sub>   ns NO <sub>N</sub>   (ng/m <sup>2</sup> )   (ng/m	Dute   Matter   Matter   Dioxide   Nitrogen   as PM <sub>10</sub>   (ag/m²)   (ag/m²	Sampling   Date   Matter   Matter   Dioxide   Sulphur   Dioxide   Sulphur   Dioxide   Sulphur   Dioxide   Sulphur   Dioxide   Sulphur   Dioxide   Sulphur   Sulphur	Date   Matter   Matter   Bisside   Nitrogen   as PM <sub>10</sub>   as PM <sub>10</sub>   as PM <sub>10</sub>   as SO <sub>2</sub>   as SO <sub>2</sub>   as SO <sub>3</sub>   as SO <sub>4</sub>   as SO <sub>2</sub>   as SO <sub>3</sub>   as SO <sub>4</sub>   as S	Sampling Date   Matter   Mat	Particulate   Matter ns PM <sub>10</sub>   (ag/m²)   (	Particulate   Particulate   Matter   Institute   Matter   Institute   Matter   Institute   Institute	Particulate   Matter   Matte

BDE Values: 5O<sub>2</sub>< 4 µg/m², NO<sub>2</sub>< 9 µg/m², O<sub>4</sub><4 µg/m², NH<sub>4</sub>< 20 µg/m², Ni<0.01 ng/m², As < 0.001 ng/m², C.H<sub>4</sub><0.001 µg/m², BaP<0.002 ng/m², Pb<0.001 µg/m², CO<0.1 mg/m²

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NOx & CO, O<sub>3</sub> etc presented in row no 1 9 are Time Weighted Average.

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NASL ACCREDITED

Certificate No.: TC-7944

Format No.: YCSPL/FWT7055

Test Report No: ENVLAB/20/TR-3604

Date: 02.09.2020

# TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S3: Near Office	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.08.2020,10.08.2020,11.08.2020 17.08.2020,18.08.2020,24.08.2020 25.08.2020,31.08.2020,01.09.2020
Sample Condition	Gaseous Sanaple Solution Refrigerated	Latitude: N19°20.366° Longitude: E82°58.874° Altitude: 955.24 m.	
Sampling Date	03.08.2020,07.08.2020, 10.06.2020,14.08.2020, 17.08.2020,21.08.2020, 24.08.2020,28.08,2020, 31.08.2020.	Test Completed on	04.08.2020 to 02.09.2020

							Param	eters					
SL No	Sampling Date	Particulate Matter as PM <sub>30</sub> (ug/m <sup>2</sup> )	"Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>2</sup> )	Sulphur Dioxide as SO <sub>2</sub> (ng/m²)	Oxides of Nitrogen as NO <sub>3</sub> (µg/m <sup>3</sup> )	*CD mg/m²	tegin,	+NH2 μg/ga²	*C <sub>c</sub> H <sub>6</sub> µg/m³	*BaP ng/m²	oNi mg/m²	118,00 <sub>7</sub> •54	"As ng/m"
1	03,08,2020	23.0	14.0	13.2	29.1	0.33	7.6	BDL	BDL	BDL	BDL	BDL	BDL
2	47.08.2020	25.0	15.0	15.7	35.8	0.49	8.8	BDL	BDL	BDL	BDL	BDL	BDL
5	10.08.2020	32.0	19.0	16.3	23.3	0.38	8.4	BDL.	BDT.	BDL	BDL	BDL	BDL
4	14.03.2020	28.0	11.0	11.4	27.8	0.41	9,1	BDL.	BDL	BDL	BDL	BDL	BD(
5	17.08.2020	24.0	15.0	14.9	24.9	0.56	7.2	BDL	BDL	BDf	BDL.	BDL	BDL
6	21.08.2020	* 28.0	14.0	16.2	26.2	0.47	6.7	BDL	BDL	BDL .	BDL	BUL	BDL
7	24.08.2020	36.0	18.0	12.7	25.8	0.63	8.1	BDL	BDL	BDL	BDL.	BDL	EDL
8	28.08.2020	22.0	13.0	13.4	21.6	0.58	7.9	BDL.	BDL	BDL	BDL	BDL	BDL
9	31.08,2020	19.0	11.0	15.2	37.4	0.45	7.3	BDL	BDI.	HOL	BDL	BDI.	BDI.
	Monthly Average	26.3	14.4	14.3	26.9	0.48	7.9	BDL	BDL	BDL	BDL	BDL	BDL
NAA	Q Standard	100	60	80	80	4	190	400	05	01	20	1.0	06
Testing Method		IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5182 (Pari-2) RA2006	IS 5182 (Part-6) RA2866	IS 5182 (Part-10) :1999.	Clemind Method	Indo pheroil blue method	Absorption & Description fedienced by GC manalysis	Solvent extraction followed by Gus Chromat ograpay analysis	on EPM.	thod after 2000 or E filter Pape	quivalen

BDL Values: SO₂<4 µg/m², NO₂<9 µg/m², O₂<4 µg/m², NH₂<20 µg/m², Ni<0.01 µg/m², As < 0.001 µg/m², C.H.<0.001 µg/m², CO < 0.1 mg/m², Ni<0.01 µg/m², As < 0.001 µg/m², CO < 0.1 mg/m² (CO < 0.1 mg/m²). Ni<0.001 µg/m², As < 0.001 µg/m², Co < 0.1 mg/m² (CO < 0.1 mg/m²). Ni<0.001 µg/m² (CO < 0.1 mg/m²).

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Certificate No.: TC-7944 Format No.: VCSPL/FMT/MSS

Authorized Signatory

Test Report No: ENVLAB/20/TR-3605

Date: 02.09.2020

# TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd. Tikiri, Rayagada, Odisha

Sample Location & Code	S4: Near Weigh Bridge	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	06.98,2620,10,08,2020,13,08,2020 17,08,2020,20,08,2020,24,08,2020 27,08,2020,31,08,2020,01,09,2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.079° Longitude: E82°58.775° Altitude: 993.95 m.	
Sampling Date	65.08,2020,07,08,2820, 12.08,2020,14.08,2020, 19.08,2020,21,08,2020, 26.08,2020,28,08,2020, 31.08,2020.	Test Completed on	06.08.2020 to 02.09.2020

							Param	eters					
SI. No	Sampling Date	Particulate Matter as PM <sub>20</sub> (ag/m <sup>3</sup> )	*Particulate Matter as PM <sub>c5</sub> (ng/m²)	Sulphur Diexids as SO <sub>2</sub> (ag/m³)	Oxides of Nitrogen as NO <sub>5</sub> (sig/m <sup>3</sup> )	*CO mg/m³	*O <sub>3</sub> µg/m³	*NH <sub>3</sub> µg/m³	°CcHs µg/m³	*BaP ag/m	*Ni ng/m³	*Pb µg/m³	"As ng/m"
1	05.98.2020	27.0	13.0	13.9	24.1	0.53	9.3	BDL	BDL	BDI.	BDI.	BDL	BDI.
2	07.08.2020	34.0	20.0	16.1	32.2	0.67	8.4	BDI.	BDL	BDL	BD1.	BD1.	BDL.
3	12.08.2020	29.0	16.0	14.7	25.9	0.71	8.1	BDI.	BDL.	BDL.	EDI	BDI	BDL
4	14.08.2020	36.0	19.0	13.8	31.0	0.65	8.9	BDL.	BD1.	BDI.	BDL	BDI.	BOL
5	19.09.2020	38.0	21.0	16.2	30.7	13,49	7.4	SDL	BDL	BDL	BDL	BDL	BDL
6	21.98.2028	+35.0	23.0	14.9	36.2	0.85	3.5	BDL	BDL	BDL .	BDL	BDL	BDL
7	26.08.2020	24.0	13.0	17.3	30.2	B.61	9.7	BDL	BUL	BDL	BDL	BDL	BDL
8	28.0%.2020	27.0	15.0	14.5	27.7	0.55	8.3	BDI.	BDL.	BDI.	BDL	BDL	BDL
9	31.66.2020	25.0	14.0	11.9	24.8	0.79	7.6	BDL.	BDL.	BDL.	RDL	RDI.	BDI.
	Monthly Average	30.5	17.1	14.7	29.2	0,65	8.5	BDL	BDL	BDL	BDL	BDL	BOL
NA	Q Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Tes	iting Method	IS 5182; Part 23	EPA CFR-40 (pt 50) Appendix-1	15 5182 (Part-2) RA2006	18 5182 (Part-6) RA2006	18 5182 (Part-16) :1999 .	Classical Method	Indo placant blus method	Absorpti on & Descripti on fullowed by GC analysis	Solvent extraction followed by Gas Chromot ography analysis	on EPM	thed after 2000 or Ed litter Pape	quivalent
		Y	BDL Values: pg/m², BaP«	SO <sub>2</sub> ≈ 4 μg 0.002 ng/m	m, NO <sub>2</sub> <9 , Pb<0.001;	ng/m², O <sub>c</sub>	4 pg/m², Ni 40.1 mg/m²	f <sub>5</sub> < 20 µg/	m', Niette	l ng/m², As	< 0.001 ng	glm <sup>3</sup> , C <sub>c</sub> H <sub>c</sub>	190.00

Remarks: (All the values of PM-10, PM-2.5,50<sub>2</sub>, NOx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.

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Certificate No.: TC-7944

Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4003 Date: 03.10.2020

### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S1: Near Crusher	S1: Near Crusher Sampled by			
Sample Description	Ambient Air	Sampling Procedure	IS 5182.		
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.09.2020,05.09.2020,08.09.2020 10.09.2020,15.09.2020,17.09.2020 22.09.2020,24.09.2020,29.09.2020		
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915′ Longitude: E82°58.543′ Altitude: 999.74 m.			
Sampling Date	02.09.2020,04.09.2020, 07.09.2020,09.09.2020, 14.09.2020,16.09.2020, 21.09.2020,23.09.2020, 28.09.2020.	Test Completed on	03.09.2020 to 03.10.2020		

	Sampling Date	Parameters												
SL No		Particulate Matter as PM <sub>10</sub> (µg/m³)	*Particulate Matter as PM <sub>2.5</sub> (µg/m³)	Sulphur Dioxide as SO <sub>2</sub> (µg/m³)	Oxides of Nitrogen as NO <sub>X</sub> (µg/m³)	*CO mg/m³	*Ο <sub>3</sub> μg/m³	*NH <sub>3</sub> µg/m³	*C <sub>6</sub> H <sub>6</sub> μg/m³	*BaP ng/m³	*Ni ng/m³	*Pb μg/m³	*As ng/m³	
1	02.09.2020	29.0	17.0	11.4	32.4	0.41	7.4	BDL	BDL	BDL	BDL	BDL	BDL	
2	04.09.2020	42.0	12.0	14.3	26.8	0.35	8.8	BDL	BDL	BDL	BDL	BDL	BDL	
3	07.09.2020	38.0	19.0	15.2	30.5	0.39	9.3	BDL	BDL	BDL	BDL	BDL	BDL	
4	09.09.2020	31.0	14.0	10.8	38.7	0.52	8.4	BDL	BDL	BDL	BDL	BDL	BDL	
5	14.09.2020	26.0	13.0	11.6	34.2	0.63	7.9	BDL	BDL	BDL	BDL	BDL	BDL	
6	16.09.2020	34.0	18.0	13.3	29.9	0.54	8.8	BDL	BDL	BDL	BDL	BDL	BDL	
7	21.09.2020	26.0	15.0	12.7	38.8	0.33	8.1	BDL	BDL	BDL	BDL	BDL	BDL	
8	23.09.2020	18.0	10.0	16.8	34.6	0.39	9.2	BDL	BDL	BDL	BDL	BDL	BDL	
9	28.09.2020	22.0	12.0	11.7	31.5	0.57	7.9	BDL	BDL	BDL	BDL	BDL	BDL	
	Monthly Average	29.6	14.4	13.1	33.0	0.46	8.4	BDL	BDL	BDL	BDL	BDL	BDL	
NAA	AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06	
Testing Method		IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5182 (Part-2) RA2006	IS 5182 (Part-6) RA2006	IS 5182 (Part-10) :1999	Chemical Method	Indo phenol blue method	Absorpti on & Desorpti on followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper			
			DDI Valara	. CO . 1	/3 NO < 0		ν Δ Δ	T < 20/	•		s < 0.001 ng/m³ C H < 0.001			

BDL Values:  $SO_2 < 4 \mu g/m^3$ ,  $NO_X < 9 \mu g/m^3$ ,  $O_3 < 4 \mu g/m^3$ ,  $NH_3 < 20 \mu g/m^3$ ,  $Ni < 0.01 ng/m^3$ ,  $As < 0.001 ng/m^3$ ,  $C_6H_6 < 0.001 \mu g/m^3$ ,  $BaP < 0.002 ng/m^3$ ,  $Pb < 0.001 \mu g/m^3$ ,  $CO < 0.1 mg/m^3$ 

\*These Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>,NOx & CO, O<sub>3</sub> etc presented in row no 1-9 are Time Weighted Average.

#### Remarks:

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Authorized Signatory



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 45001:2018 Certified)

NAB L ACCREDITED Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4004 Date: 03.10.2020

### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	ample Location & Code S2: Mining Pit		VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.09.2020,05.09.2020,08.09.2020 10.09.2020,15.09.2020,17.09.2020 22.09.2020,24.09.2020,29.09.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773′ Longitude: E82°58.332′ Altitude: 974.45 m.	
Sampling Date	02.09.2020,04.09.2020, 07.09.2020,09.09.2020, 14.09.2020,16.09.2020, 21.09.2020,23.09.2020, 28.09.2020.	Test Completed on	03.09.2020 to 03.10.2020

						Paran	neters					
Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m³)	*Particulate Matter as PM <sub>2.5</sub> (µg/m³)	Sulphur Dioxide as SO <sub>2</sub> (µg/m³)	Oxides of Nitrogen as NO <sub>X</sub> (µg/m³)	*CO mg/m³	*O <sub>3</sub> μg/m³	*NH <sub>3</sub> µg/m <sup>3</sup>	*С <sub>6</sub> Н <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m³	*Ni ng/m³	*Pb µg/m³	*As ng/m³
02.09.2020	24.0	11.0	11.6	28.8	0.77	7.3	BDL	BDL	BDL	BDL	BDL	BDL
04.09.2020	28.0	15.0	17.8	34.6	0.59	8.5	BDL	BDL	BDL	BDL	BDL	BDL
07.09.2020	19.0	13.0	14.5	40.2	0.62	7.9	BDL	BDL	BDL	BDL	BDL	BDL
09.09.2020	32.0	14.0	16.1	35.5	0.74	9.2	BDL	BDL	BDL	BDL	BDL	BDL
14.09.2020	25.0	13.0	19.8	39.1	0.53	8.3	BDL	BDL	BDL	BDL	BDL	BDL
16.09.2020	27.0	16.0	15.6	37.4	0.41	8.6	BDL	BDL	BDL	BDL	BDL	BDL
21.09.2020	21.0	14.0	13.1	32.5	0.55	7.4	BDL	BDL	BDL	BDL	BDL	BDL
23.09.2020	17.0	12.0	14.7	33.3	0.51	6.9	BDL	BDL	BDL	BDL	BDL	BDL
28.09.2020	29.0	10.0	13.6	36.5	0.49	6.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average	24.7	13.1	15.2	35.3	0.58	7.8	BDL	BDL	BDL	BDL	BDL	BDL
AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
sting Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5182 (Part-2) RA2006	IS 5182 (Part-6) RA2006	IS 5182 (Part-10) :1999	Chemical Method	Indo phenol blue method	Absorpti on & Desorpti on followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	on EPM	2000 or E	quivalent
	Date  02.09.2020 04.09.2020 07.09.2020 09.09.2020 14.09.2020 21.09.2020 23.09.2020 28.09.2020 Monthly Average	Date     Matter as PM <sub>10</sub> (μg/m³)       02.09.2020     24.0       04.09.2020     28.0       07.09.2020     19.0       09.09.2020     32.0       14.09.2020     25.0       16.09.2020     27.0       21.09.2020     21.0       23.09.2020     17.0       28.09.2020     29.0       Monthly Average     24.7       AQ Standard     100	Date         Matter as PM <sub>10</sub> (μg/m³)         Matter as PM <sub>2.5</sub> (μg/m³)           02.09.2020         24.0         11.0           04.09.2020         28.0         15.0           07.09.2020         19.0         13.0           09.09.2020         32.0         14.0           14.09.2020         25.0         13.0           16.09.2020         27.0         16.0           21.09.2020         21.0         14.0           23.09.2020         17.0         12.0           28.09.2020         29.0         10.0           Monthly Average         24.7         13.1           AQ Standard         100         60           sting Method         IS 5182: Part 23         EPA CFR-40 (pt 50) Appendix-1	Date         Matter as PM₁0 (µg/m³)         Matter as PM2.5 (µg/m³)         Dioxide as SO₂ (µg/m³)           02.09.2020         24.0         11.0         11.6           04.09.2020         28.0         15.0         17.8           07.09.2020         19.0         13.0         14.5           09.09.2020         32.0         14.0         16.1           14.09.2020         25.0         13.0         19.8           16.09.2020         27.0         16.0         15.6           21.09.2020         21.0         14.0         13.1           23.09.2020         17.0         12.0         14.7           28.09.2020         29.0         10.0         13.6           Monthly Average         24.7         13.1         15.2           AQ Standard         100         60         80	Date         Matter as PM₁0 (µg/m³)         Matter as PM2.5 (µg/m³)         Dioxide as SO2 (µg/m³)         Nitrogen as NOx (µg/m³)           02.09.2020         24.0         11.0         11.6         28.8           04.09.2020         28.0         15.0         17.8         34.6           07.09.2020         19.0         13.0         14.5         40.2           09.09.2020         32.0         14.0         16.1         35.5           14.09.2020         25.0         13.0         19.8         39.1           16.09.2020         27.0         16.0         15.6         37.4           21.09.2020         21.0         14.0         13.1         32.5           23.09.2020         17.0         12.0         14.7         33.3           28.09.2020         29.0         10.0         13.6         36.5           Monthly Average         24.7         13.1         15.2         35.3           AQ Standard         100         60         80         80           sting Method         IS 5182: Part 23         (pt 50) Appendix-1         RA2006         RA2006	Date         Matter as PM <sub>10</sub> (μg/m³)         Matter as PM <sub>2.5</sub> (μg/m³)         Dioxide as SO <sub>2</sub> (μg/m³)         Nitrogen as NO <sub>X</sub> (μg/m³)         *CO mg/m³           02.09.2020         24.0         11.0         11.6         28.8         0.77           04.09.2020         28.0         15.0         17.8         34.6         0.59           07.09.2020         19.0         13.0         14.5         40.2         0.62           09.09.2020         32.0         14.0         16.1         35.5         0.74           14.09.2020         25.0         13.0         19.8         39.1         0.53           16.09.2020         27.0         16.0         15.6         37.4         0.41           21.09.2020         21.0         14.0         13.1         32.5         0.55           23.09.2020         17.0         12.0         14.7         33.3         0.51           28.09.2020         29.0         10.0         13.6         36.5         0.49           Monthly Average         24.7         13.1         15.2         35.3         0.58           AQ Standard         100         60         80         80         4           Sting Method         18 5182         (pt 50	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Sampling Date   Particulate Matter as PM <sub>10</sub> (µg/m³)   Particulate Matter as PM <sub>10</sub> (µg/m³)   Particulate Matter as PM <sub>2.5</sub> (µg/m³)   Particulate Particulate Matter as PM <sub>2.5</sub> (µg/m³)   Particulate Particulate Matter as PM <sub>2.5</sub> (µg/m³)   Particulate P	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Sampling Date   Particulate Matter as PM <sub>10</sub> (μg/m³)   Particulate Matter as PM <sub>2.5</sub> (μg/m³)   Particulate As PM <sub>2.</sub>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

BDL Values:  $SO_2 < 4 \,\mu g/m^3$ ,  $NO_X < 9 \,\mu g/m^3$ ,  $O_3 < 4 \,\mu g/m^3$ ,  $NH_3 < 20 \,\mu g/m^3$ ,  $Ni < 0.01 \,n g/m^3$ ,  $As < 0.001 \,n g/m^3$ ,  $C_6H_6 < 0.001 \,\mu g/m^3$ , BaP<0.002  $n g/m^3$ , Pb<0.001  $\mu g/m^3$ , CO-<0.1  $n g/m^3$ Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>,NOx & CO, O<sub>3</sub> etc presented in row no 1-9 are Time Weighted Average.

\*These Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

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Authorized Signatory

Plot No.-M-22&23, Chandaka Industrial Estate, Patia, Bhubaneswar-751024, Dist-Khurda, Odisha Tel.: 7752017905 E-mail: visiontek@vcspl.org, visiontekin@gmail.com, visiontekin@yahoo.co.in, Visit us at: www.vcspl.org



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> Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4005 Date: 03.10.2020

#### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

sample Location & Code S3: Near Office		Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.09.2020,05.09.2020,08.09.2020 12.09.2020,15.09.2020,19.09.2020 22.09.2020,26.09.2020,01.10.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.366′ Longitude: E82°58.874′ Altitude: 955.24 m.	
Sampling Date	02.09.2020,04.09.2020, 07.09.2020,11.09.2020, 14.09.2020,18.09.2020, 21.09.2020,25.09.2020, 30.09.2020.	Test Completed on	03.09.2020 to 03.10.2020

			_				Param	neters					
SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m³)	*Particulate Matter as PM <sub>2.5</sub> (µg/m³)	Sulphur Dioxide as SO <sub>2</sub> (µg/m³)	Oxides of Nitrogen as NO <sub>X</sub> (µg/m³)	*CO mg/m³	*O <sub>3</sub> µg/m³	*NH <sub>3</sub> μg/m³	*С <sub>6</sub> Н <sub>6</sub> µg/m³	*BaP ng/m³	*Ni ng/m³	*Pb μg/m³	*As ng/m³
1	02.09.2020	22.0	19.0	18.2	24.4	0.31	7.9	BDL	BDL	BDL	BDL	BDL	BDL
2	04.09.2020	29.0	17.0	15.1	27.9	0.47	8.7	BDL	BDL	BDL	BDL	BDL	BDL
3	07.09.2020	35.0	16.0	17.3	35.1	0.66	9.0	BDL	BDL	BDL	BDL	BDL	BDL
4	11.09.2020	26.0	12.0	19.4	33.3	0.59	8.3	BDL	BDL	BDL	BDL	BDL	BDL
5	14.09.2020	28.0	13.0	13.5	37.4	0.51	8.5	BDL	BDL	BDL	BDL	BDL	BDL
6	18.09.2020	36.0	18.0	16.8	30.5	0.43	9.2	BDL	BDL	BDL	BDL	BDL	BDL
7	21.09.2020	31.0	19.0	17.4	28.9	0.72	7.8	BDL	BDL	BDL	BDL	BDL	BDL
8	25.09.2020	28.0	14.0	17.9	24.4	0.68	9.6	BDL	BDL	BDL	BDL	BDL	BDL
9	30.09.2020	37.0	16.0	14.7	31.5	0.43	8.9	BDL	BDL	BDL	BDL	BDL	BDL
	Monthly Average	30.2	16.0	16.7	30.4	0.53	8.7	BDL	BDL	BDL	BDL	BDL	BDL
NAA	AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Test	ting Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5182 (Part-2) RA2006	IS 5182 (Part-6) RA2006	IS 5182 (Part-10) :1999	Chemical Method	Indo phenol blue method	Absorpti on & Desorpti on followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	on EPM	thod after 2000 or Ed Tilter Pape	quivalent

BDL Values:  $SO_2 < 4 \mu g/m^3$ ,  $NO_X < 9 \mu g/m^3$ ,  $O_3 < 4 \mu g/m^3$ ,  $NH_3 < 20 \mu g/m^3$ ,  $Ni < 0.01 ng/m^3$ ,  $As < 0.001 ng/m^3$ ,  $C_6H_6 < 0.001 \mu g/m^3$ ,  $BaP < 0.002 ng/m^3$ ,  $Pb < 0.001 \mu g/m^3$ ,  $CO < 0.1 mg/m^3$ 

\*These Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>,NOx & CO, O<sub>3</sub> etc presented in row no 1-9 are Time Weighted Average.

#### Remarks:

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NABL ACCREDITED
Certificate No.: TC-7944
Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4006 Date: 03.10.2020

### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	ample Location & Code S4: Near Weigh Bridge		VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.09.2020,05.09.2020,10.09.2020 12.09.2020,17.09.2020,19.09.2020 24.09.2020,26.09.2020,01.10.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.079′ Longitude: E82°58.775′ Altitude: 993.95 m.	
Sampling Date	02.09.2020,04.09.2020, 09.09.2020,11.09.2020, 16.09.2020,18.09.2020, 23.09.2020,25.09.2020, 30.09.2020.	Test Completed on	03.09.2020 to 03.10.2020

							Param	neters					
SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m³)	*Particulate Matter as PM <sub>2.5</sub> (µg/m³)	Sulphur Dioxide as SO <sub>2</sub> (µg/m³)	Oxides of Nitrogen as NO <sub>X</sub> (µg/m³)	*CO mg/m³	*О <sub>3</sub> µg/m³	*NH <sub>3</sub> μg/m³	*C <sub>6</sub> H <sub>6</sub> μg/m³	*BaP ng/m³	*Ni ng/m³	*Pb µg/m³	*As ng/m³
1	02.09.2020	18.0	12.0	10.9	27.6	0.59	7.1	BDL	BDL	BDL	BDL	BDL	BDL
2	04.09.2020	15.0	10.0	12.7	31.4	0.41	6.5	BDL	BDL	BDL	BDL	BDL	BDL
3	09.09.2020	23.0	16.0	13.6	18.8	0.37	7.8	BDL	BDL	BDL	BDL	BDL	BDL
4	11.09.2020	26.0	14.0	11.8	27.3	0.45	8.6	BDL	BDL	BDL	BDL	BDL	BDL
5	16.09.2020	19.0	17.0	11.4	25.5	0.53	9.3	BDL	BDL	BDL	BDL	BDL	BDL
6	18.09.2020	31.0	20.0	10.6	29.2	0.61	8.1	BDL	BDL	BDL	BDL	BDL	BDL
7	23.09.2020	27.0	14.0	12.7	21.6	0.34	9.3	BDL	BDL	BDL	BDL	BDL	BDL
8	25.09.2020	18.0	10.0	13.9	27.4	0.48	8.7	BDL	BDL	BDL	BDL	BDL	BDL
9	30.09.2020	29.0	11.0	15.2	26.3	0.59	8.3	BDL	BDL	BDL	BDL	BDL	BDL
	Monthly Average	22.9	13.8	12.5	26.1	0.49	8.2	BDL	BDL	BDL	BDL	BDL	BDL
NAA	AQ Standard	100	60	80	80	4	100	400	05	01	20	1.0	06
Tes	ting Method	IS 5182: Part 23	EPA CFR-40 (pt 50) Appendix-1	IS 5182 (Part-2) RA2006	IS 5182 (Part-6) RA2006	IS 5182 (Part-10) :1999	Chemical Method	Indo phenol blue method	Absorpti on & Desorpti on followed by GC analysis	Solvent extraction followed by Gas Chromat ography analysis	on EPM	thod after 2000 or Ed filter Pape	quivalent
ļ			DDY Y/ I		/ 3 NO . O		4 / 3 277	l	· •			. 2	

BDL Values:  $SO_2 < 4 \mu g/m^3$ ,  $NO_X < 9 \mu g/m^3$ ,  $O_3 < 4 \mu g/m^3$ ,  $NH_3 < 20 \mu g/m^3$ ,  $Ni < 0.01 ng/m^3$ ,  $As < 0.001 ng/m^3$ ,  $C_6H_6 < 0.001 \mu g/m^3$ ,  $BaP < 0.002 ng/m^3$ ,  $Pb < 0.001 \mu g/m^3$ ,  $CO < 0.1 mg/m^3$ 

Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>,NOx & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.

These Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

#### Remarks:

#### TERMS AND CONDITION:-

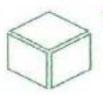
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### **ANNEXURE: 5**

Ambient Air Quality Monitoring Report (Buffer Zone)

For the period April-2020 to September-2020



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944
Formut No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0271

Date: 11.05,2020

### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S5: Andirakanch	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
iample Source Baphlimali Mines, UAIL		Sample Received on	17.04.2020,19.04.2020,22.04.2020 24.04.2020,29.04.2020,01.05.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079° Longitude: E83°0.738° Altitude: 739.14 m.	
Sampling Date	16.04.2020,18.04.2020, 21.04.2020,23.04.2020, 28.04.2020,28.04.2020,	Test Completed on	04.05.2020 to 09.05.2020

		executive vector		Paran	neters	
SL. No	Sampling Date	Particulate Matter as PM <sub>20</sub> (p.g/m <sup>2</sup> )	"Particulate Matter as PM <sub>2.5</sub> (μη/m")	Sulphur Diexide as SO <sub>2</sub> (µg/m <sup>5</sup> )	Oxides of Nitrogen as NO <sub>X</sub> (pg/m²)	"Carbon Monoxide us CO (mg/m")
1	16.04.2020	57.0	32.0	7.2	16.7	0.29
2	18.04.2920	52.0	23,0	6.2	21.4	8.37
3	21.04.2020	50.0	29.0	7.1	14.8	0.25
4	23.04.2920	47.0	21.0	5.9	12.2	0.4
5	28.04.2020	59.0	25.0	8.3	19.7	0.32
6	30.04.2920	63.0	33.6	7.5	16.4	9.41
Mo	onthly Average	54.7	27.2	7.6	16.9	0.34
CPO	CB, New Delhi AAQ Standard	100	60	80	80	4
33	Testing Method	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geske Method IS 5182 (Part-2) RA 2005	Modified Jacob & Hochbeiser Method IS 5182 (Part-6) RA 2006	Non Dispersive Infrared Method IS 5182 (Part-10): 1999
		1	Remarks: Detect Any unusual featur	ид/m <sup>1</sup> , NO <sub>X</sub> : 9.0 µд/m <sup>2</sup> эл:	Nil	

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7,8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0272

Date: 11.05.2020

### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S6: Paikupakhal	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182,
Sample Source	Baphlimali Mines, UAIL	Sample Received on	17.04.2020,19.04.2020,22.04.2020 24.04.2020,29.04.2020,01.05.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20,197' Longlaude: E82°59,589' Alfitude: 874,17 m.	
Sampling Date	16.04.2020,18.04.2020, 21.04.2020,23.04.2020, 28.04.2020,28.04.2020,	Test Completed on	04.05.2020 to 09.05.2020

200				Paran	ieters -	
SL No	Sampling Date	Particulate Matter as PM <sub>er</sub> (µg/m²)	*Particulate Matter as PM <sub>2.5</sub> (ag/m²)	Sulphur Dinxide as SO <sub>1</sub> (µg/m²)	Oxides of Nitrogen as NO <sub>4</sub> (ag/m <sup>2</sup> )	Carbon Monoxide ns CO (mg/m <sup>3</sup> )
1	16.04,2920	44.0	18.0	7.3	19.7	0.29
2	18.04.2020	51.8	23.0	5.8	15.3	0.32
3	21.04.2020	53.0	26.0	8.1	18.2	0.36
4	23.04,2020	47.0	19.0	8.6	20.3	0.47
5	28,04,2020	55.0	24.0	9.3	19.1	0.39
6	30.04.2020	43.0	22.0	8.8	14.4	0.24
Mo	onthly Average	48.5	22.0	8,0	17.8 .	0.35
CPO	CB, New Delhi AAQ Standard	100	60	80	80	4
35	Toxilug Method	Gravinnstrie ES 5182: Part 23	Gravimetrie EPA CFR-40 (pt 50) Appendix-I	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochhelser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method 15 5182 (Part-10):1999
	J			for limit for SO <sub>2</sub> : 4.0 ) to thering determination	щут <sup>3</sup> , NO <sub>N</sub> : 9.0 µg/m <sup>3</sup>	Nil

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8,2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0273

Date: 11.05,2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayngada, Odisha.

Sample Location & Code	S7: Adri	Sampled by	VCSPL'S Representative
Sample Description Ambient Air		Sampling Procedure	15.5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	17.04,2020,19.04,2020,22.04,2020 24.04,2020,29.04,2020,01.05,2020
Sample Condition	Gascous Sample Solution Refrigerated	Latitude: N19°21.928' Lorgitude: E82°56.705' Altitude: 691.90 m.	
Sampling Date	16.04.2020,18.04.2020, 21.04.2020,23.04.2020, 28.04.2020,28.04.2020.	Test Completed on	04.05,2020 To 09.05,2020

				Paran	ieters	
SL. No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>2</sup> )	*Purticulate Matter as PM <sub>1.6</sub> (µg/m²)	Sulphur Dioxide us SO <sub>2</sub> (µg/m <sup>2</sup> )	Oxides of Nitrogen us NO <sub>X</sub> (µg/m²)	"Carbun Menoxide as CO (mg/m²)
1.	16.04.2020	67.0	40.0	5.2	14.4	0.45
2	18,94,2020	55.0	31.0	7.8	16.7	0.27
3	21.04.2020	62.0	29.0	6.6	15.5	0.51
4	23.04.2020	50.0	33/0	7,5	13.3	0.4
5	28,04,2020	59.0	35.0	6.9	17.7	0.31
6	20.04,2020	49.0	30.0	8.8	158	0.33
M	onthly Average	57.0	33.0	7.1	15,6	0,38
CP(	CB, New Dolh: AAQ Standard	100	60	80	80	4
Testing Method 15,5182: Part 23		Gravimetric EPA CFR-40 (pt 50) Appendix-1	EPA & Geslec Method IS (pt 50) BA2006		Nan Dispersive Infeared Method IS 5182 (Part-10):1999	
				ion limit for SO <sub>2</sub> : 4.9 ; re during determination	дд/ж². NO.; 9.8 дд/m² m:	NII

Remarks: (All the values of PM-10,PM-2,5,50,,NOx & CO presented in row no 1 8 arc Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001;2015, ISO 14001;2015 & OHSAS 18001;2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0274

Date: 11.05,2020

### TEST REPORT

Customer Namo & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	58: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	TS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	17,04,2820,19,04,2820,22,04,2020 24,04,2820,29,04,2820,01,05,2020
Sample Candition	Gaseous sample solution refrigerated	Longitude: N19°23.107' Longitude: E82°59.221' Allitude: 656.54 m.	
Sampling Date	16.04.2020,18.04.2020, 21.04.2020,23.04.2020, 28.04.2020,28.04.2020.	Test Completed on	04.05.2020 To 09.05.2020

SL. No				Param	eters	
	Sampling Dute	Particulate Matter 25 PM <sub>19</sub> (pg/m <sup>2</sup> )	*Particulate Matter as PM <sub>LS</sub> (µg/m²)	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitragen us NO <sub>N</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide us CO (sog/m²)
1	16.04.2020	51.0	21,0	6.3	15.2	9.47
2	16.04.2020	45.0	27.0	7.5	19.3	0.33
3	21.04.2020	51.0	33.0	5.6	17.1	0.51
4	23.04.2020	57.0	36.8	4.9	11.9	0.36
5	28.04.2020	48.0	30.0	8.2	14.5	0.45
6	30.04.2020	42.0	28.0	6.6	18.7	0.39
Mo	oathly Average	49,5	29,2	6,5	16,1	0.42
CPC	B, New Delhi AAQ Standard	100	60	80	80	4
Testing Method B 5182: Part 23		Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geoke Method IS 5182 (Purt-2) RA2006	Modified Jacob & Huchheiser Method 18 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999	
				on limit for SO2: 4.0 p a during determination	иg/m² , NO x : 9.0 µg/m³	Nii

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0651

Date: 10.06,2020

### TEST REPORT

Customer Name & Address

Baphlimali Mises, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S5: Andirakanch	Sampled by	VCSPL'S Representative
Sample Description	Ambient Akr	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UALL	Sample Received on	03.05.2020,06.05.2020,08.05.2020 13.05.2020,15.06.7020,20.08.2020 22.05.2020,27.05.2020,29.05.2020
Sample Condition	Gascous Sample Solution Refrigerated	Latitude: N19"19.079" Longitude: E83"0.738" Altitude: 739.14 m.	
Sampling Date	02.05.2020,05.05.2020, 07.05.2020,12.05.2020, 14.05.2020,19.05.2020, 21.05.2020,26.05.2020, 28.05.2020,	Test Completed on	+ 64.05.2020 to 05.06,2020

				Paran	neters	
SL. No	Sampling Date	Particulate Matter as PM <sub>e</sub> (µg/m <sup>2</sup> )	"Particulate Matter as PM <sub>25</sub> (pg/m <sup>2</sup> )	Sulphur Diexide as SO <sub>1</sub> (ug/m <sup>2</sup> )	Oxides of Nitrogen as NO <sub>X</sub> (pg/m <sup>2</sup> )	"Carbon Monoside as CO (mg/m²)
1	02.05.2020	60.0	35.0	7.4	16.2	0.55
2	05.05.2020	54.0	32.0	7.8	16.8	0.84
3	07.05.2020	62.0	25.0	8.2	21.8	0.74
4	12,05,2020	53.0	32.0	8.8	18.0	0.78
5	14,05,2020	64.0	31.0	10.2	22.3	0.62
6	19.05.2020	50.0	25.0	8.2	18.2	0.49
7	21.05.2020	63.0	35.0	9.4	21.2	0.63
H	26.05.2020	42.0	28.0	10.2	20,6	0.77
9	28.05.2020	66.0	32,0	6.5	16.2	0.85
Mo	onthly Average	58.2	31.2	8.5	19.0	0.70
CPC	OB, New Delhi AAQ Standard	100	60	80	80	4
Testing Method Gravimetric 18 5182: Part 23		Grammetric EPA CPR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Purt-6) RA2006	Non Dispersive Infrares Method 18 5182 (Part-10):1999	
				ion limst for SO;: 4.0 ; re during determination	яд'm <sup>3</sup> , NO <sub>1</sub> : 9.0 µg/m <sup>2</sup> эп:	501

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NOx & CO presented in row no 1-8 are Time Weighted Average.)

"This Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0652

Date : 10.05.2020

### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S6: Paikupakhal	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, U/II.	Sample Received on	03.05.2020,06.05.2020,08.05.2020 13.05.2020,15.05.2020,20.05.2020 22.05.2020,27.05.2020,29.05.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197° Longitude: E82°59.589° Altitude: 874.17 m.	
Sampling Date	02.05.2020,05.05.2020, 07.05.2020,12.05.2020, 14.05.2020,19.05.2020, 21.05.2020,26.05.2020, 28.05.2020.	Test Campleted on	" (14,05,2020 to 05,06,2020

	Sampling Date	Parameters					
SI No		Particulate Matter as PM <sub>10</sub> (ug/m²)	*Particulate Matter as PM <sub>1.5</sub> (up/m <sup>2</sup> )	Sulphur Diexide as SO <sub>2</sub> (ug/m²)	Oxides of Nitrogen as NO <sub>x</sub> (µg/m²)	<sup>a</sup> Carbon Monocide as CO (mg/m <sup>2</sup> )	
1	02.05.3020	42.0	27.0	6.2	16,4	0.71	
2	05.05.2020	59.0	24.0	5.5	11.3	0.69	
3	07.05.2020	56.0	28.0	7.9	19.5	0.54	
4	12.05,2020	51.0	27.0	7.2	14.3	0,77	
5	14.05.2020	47.0	22.0	8.0	17.7	0.82	
6	19.05.2020	62.0	33.0	9.8	20.4	0.63	
	21405,2020	68,0	25.0	6.5	14.2	. 0.56	
8	26.05.2020	62.0	38.0	8.4	18.5	0.79	
9	28.06,2320	55.0	29.0	7.5	15.8	0.62	
Me	onthly Average	54.7	28.1	7.5	16.5	0.68	
CPO	CB, New Delhi AAQ Standard	100	60	80	80	4	
Testing Method Gravitustric Testing Method US 5182: Part 23		LS 5182:	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved Wes: & Geake Method 18 5182 (Part-2) 8 A 2006	Modified Jacob & Hachhelser Method IS 5182 (Part 6) RA2066	Non Dispersive Infrared Method IS 5182 (Part-10):1999	
			Remarks: : Detert	ion limit for SO <sub>2</sub> 4.0 p re during determination	μχ/m², Νελχ : 9.0 μμ/m² on:	Nil	

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NOx & CO presented in row no 1-8 are Time Weighted Average.)

\*This Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8,2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0653

Date: 10.06,2020

### TEST REPORT

Customer Name & Address

Baphtimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S7: Adei	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphamali Mines, UAIL	Sample Received on	03.05.2020,06.05,2020,08.05.2020 13.05.2020,15.05.2020,20.05.2020 22.05.2020,27.05.2020,29.05.2020
Sample Condition	Gascous Sample Solution Refrigerated	Latitude: N19°21,928° Longitude: E82°56,705° Altitude: 691,90 m.	
Sampling Date	02.05.2020,05.05.2020, 07.05.2020,12.05.2020, 14.05.2020,19.05.2020, 21.05.2020,26.05.2020, 28.05.2020.	Test Completed on	04.05.2020) to 05.06,2020

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>st</sub> (µg/m²)	"Particulate Matter as PM <sub>25</sub> (p.p/m <sup>3</sup> )	Sulphur Dioxide us SO <sub>1</sub> (µg/m <sup>2</sup> )	Oxides of Nitzegen as NO <sub>V</sub> (µg/m²)	*Corbon Monoside as CO (mg/m²)
1	02,05,2620	53.0	31.0	5.8	13.4	0.55
2	03,05,2020	47.0	29.0	7.3	19.3	0.47
3	07.05.2020	56.0	32.9	8.9	25.2	0.69
4	12,05,2020	49.0	27.0	5.5	20.8	0.65
5	14.05.2020	61.0	32.0	8.8	23.5	0.53
4	19.05.2020	54.0	27.0	6.7	16.9	, 0.86
7	21.05.2020	48.0	25.0	7.3	21.8	0.81
1	26.05.2020	44.0	19.0	7.8	15,6	0.72
9	28.05:1020	55.0	21.0	5.2	19.1	0.61
M	onthly Average	51.9	26.8	7.0	19.1	0.65
	B, New Delhi AAQ Standard	100	60	80	80	4.
	Testing Method	Gravimetrie 25 5182: Part 23	Gravimente EPA CPR-40 (pt 59) Appendix-1	Improved West & Geale Method IS 5182 (Part-2) RA2094	Modifier Jacob & Hochheiser Method IS 5182 (Part-6) RA 2006	Non Dispaisive infrared Method ES 5182 (Part-10):1999
			1841 VCUCCOCOCCOCCOCCOCCCCCCCCCCCCCCCCCCCCCC	ion limit for SO <sub>2</sub> : 4.0 p re during determination	ng/m <sup>1</sup> , NO <sub>X</sub> : 9.0 pg/m <sup>1</sup> on:	Nil

Remarks: (All the values of PM-10,PM-2.5,SO,,NOx & CO presented in row no 1-8 are Time Weighted Average.)

\*This Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-0654

Date: 10.05,2020

### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

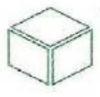
Sample Location & Code	88: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.05.2020,06.05.2020,08.05.2020 13.05.2020,15.05.2020,20.05.2020 22.05.2020,27.05.2020,29.05.2039
Sample Cundition	Gaseous sample solution refrigerated	Latitude: N19'23.107' Longitude: E82'59,221' Alfitude: 656.54 m.	
Sampling Date	02.05.2020,05.05.2020, 07.05.2020,12:05,2020, 14.05.2020,19.05.2020, 21.05.2020,25.05.2020, 28.05.2020,	Test Completed on	04,05,2020 to 05,06,2020

		Parameters					
Sl.	Sampling Date	Particulate Matter as PM <sub>10</sub> (ugim <sup>3</sup> )	*Particulate Matter as PM <sub>2.6</sub> (ug/m <sup>3</sup> )	Sulphur Dieside as SO <sub>2</sub> (µg/m <sup>2</sup> )	Caides of Nitrogen us NOv (µg/m²)	"Carbon Monuside as CO (mg/m")	
-1	02.05.2020	54.0	34.0	5.7	14.2	0.51	
2	05,05,2020	46.0	26.0	5.2	17.2	0.43	
3	07.05.2026	45.0	32.0	5.8	13.5	0.45	
1	12.05.3030	52.0	30.0	7.7	18.1	6.52	
3	14.05.2020	55.0	35.0	9.3	23.6	. 0.61	
6 9	19.05.2020	45.0	29.0	8.5	21.4	0.59	
7	21.05.2020	57.0	41.0	7.1	19.5	0.48	
8	26,05,2020	60.0	33.0	6.2	15.5	0.55	
9	28,05.2030	53.0	27.0	-8.1	19.5	0.47	
Mi	onthly Average	52.7	31.6	7.2	18.1	0.51	
CPC	B, New Dolhi AAQ Stamlard	100	60	80	80	4	
Testing Method IS SI		Gravimetric IN 5182: Part 23	Gravimetrie EPA CYR-40 (pt 50) Approxix-1	Improved West & Grake Method IS \$182 (Part-2) BA2006	Modified Jacob & Hochhelser Method 18 5182 (Part-6) RA2006	Non Dispersive infrared Method 18 8182 (Part-10):1999	
			THE RESERVE AND ADDRESS OF THE PARTY AND	Soo Hadt for SQ <sub>2</sub> : 4.0 ; re-during determination	gg/m², NO <sub>X</sub> : #0 µg/m² on:	Na	

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-1762

Date: 07,07,2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S5: Andirakanch	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	18 5182.
Sample Source Baphlimali Mines,		Sample Received on	03.06.2020,05.06.2020,10.06.2020 13.06.2020,17.06.2020,19.06.2020 24.06.2020,27.06.2020.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19*19.079* Longitude: E83*0.738* Ažūtude: 739.14 m.	
Sampling Date	92.06.2020,04.06.2020, 99.06.2020,12.06.2020, 16.06.2020,18.06.2020, 23.06.2020,26.06.2020.	Test Completed on	" 03,06,2020 to 06,07,2020

		Parameters					
SI <sub>x</sub> No	Sampling Date	Particulate Matter as PM <sub>10</sub> (100/m²)	"Particulate Matter as PM <sub>0.5</sub> (µg/m²)	Sulphur Diaxide as SO <sub>2</sub> (µg/m²)	Oxides of Nitrogen as NO <sub>2</sub> (ng/m²)	*Carbon Monoxide ns CO (mg/m²)	
1.	02.06.2020	53.0	32.0	7.1	15.9	0.46	
2	04.96.2920	11.66	39.0	8.4	17.7	0.46	
3	09.86.2020	59.0	24.0	7.3	183	0.39	
4	12,06,2020	52.0	276	7.9	15.2	0.56	
5	16.06.2020	58.0	26.0	8.8	16.9	0.61	
6	18.06.2020	49.0	23.0	7.9	74.4	0.43	
7	23,86.2020	54.0	31.0	8.1	19.9	0.59	
8	26.06.2020	45.0	23.0	7.6	154	0.52	
Mo	nthly Average	54.5	28.1	7.9	16.7	0,51	
CPO	B, New Delhi AAQ Standard	100	60	80	80	4	
Testing Method IS 5182: Part 23		IS 5182:	Gravissetric Improves EPA & Geske 6 CFR-40 (pt 50) RA20 Appendix-1		Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5132 (Part-10):1999	
			Remarks: : Detect	ion limit for SO <sub>2</sub> : 4.0 re during determinate	μη/m <sup>8</sup> , NO <sub>2</sub> : 9.0 μη/m <sup>2</sup>	NII	

Remarks: (All the values of PM-10,PM-2.5,SD<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMF/TR/06

Test Report No: ENVLAB/20/TR-1763

Date: 07.07.2020

### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd., Tikiri, Rayagada, Odisha.

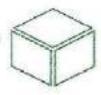
Sample Location & Code	S6: Paikupakhal	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	18 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.06.2020,05.06.2020,10.06.2020 13.06.2020,17.06.2020,19.06.2020 24.06.2020,27.06.2020.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19º20.197' Longitude: E82º59.589' Altitude: 874.17 m.	
Sampling Date	02.06.2020,04.06.2020, 09.06.2020,12.06.2020, 16.06.2020,18.06.2020, 23.06.2020,26.06.2020,	Test Completed on	- 93,96,2020 to 86,07,2020

	Sampling Date	Parameters .					
SL No		Particulate Matter as PMm (agin <sup>2</sup> )	*Particulate Madter as PM <sub>1.5</sub> (µg/er*)	Sulphur Dioxide as SO <sub>2</sub> (µg/m²)	Oxides of Nitrogen as NO <sub>3</sub> (agree)	* Carbon Monoxide as CO (mg/m <sup>2</sup> )	
1	02.06.2020	43.0	21.0	9.9	17.7	0.55	
2	04.06.2020	51.0	29.0	7.6	15.9	0.42	
3	09.06.2020	47.0	26.0	7.8	18.8	0.47	
4	12.06.2020	56.0	31.0	9.3	21.2	0.63	
5	16,06,2020	59.0	33.0	9.8	19.8	0.59	
6	18.06.2020	41.0	22.0	7.2	153	0.47	
7	23.06.2020	59.0	28.0	9.3	23.4	0.56	
8	26.06.2020	47.0	19.0	8.7	18.6	0.65	
Me	onthly Average	49.3	26.1	8,3	18,8	0.54	
CP	CB, New Delhi AAQ Standard	100	60	80	80	4	
Testing Method S 5182: Part 23		Gravimetric EPA CFR-40 (pt 59) Appendix-1	Improved West & Genke Method 18 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method 15 5182 (Part-6) RA2006	Non Dispersive Infrared Method 18 5182 (Part-10):1999		
				ion limit for SO <sub>2</sub> : 4.0 producing determination	μη/m², ΝΟ <sub>χ</sub> : 9.0 μη/m² sn:	Nil	

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



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(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944
Format No.: 7.8,2/FMT/TR/06

Test Report No: ENVLAB/20/TR-1764

Date: 07.07.2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S7: Adri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	18 5182.
Sample Source Baphilmad Mines, UA		Sample Received on	03.06,2020,05,06,2020,10,06,2020 13.06,2020,17,06,2020,19,06,2020 24,06,2020,27,06,2020.
Sample Condition	Gascous Sample Solution Refrigerated	Latitude: N19°21.928° Longitude: E82°56.705° Altitude: 691.90 m.	
Sampling Date	02.06.2020,04.06.2020, 09.06.2020,12.06.2020, 16.06.2020,18.06.2020, 23.06.2020,26.06.2020.	Test Completed on	03.06.2020 to 96.07.2620

SL. No	Sampling Date	Parameters					
		Particulate Matter as PM <sub>1</sub> , (ug/ts <sup>2</sup> )	*Particulate Matter 2s PM <sub>2.3</sub> (pa/m <sup>2</sup> )	Sulphur Diexide as SO <sub>2</sub> (pg/m²)	Oxides of Nitrogen as NO <sub>X</sub> (ug/tm <sup>2</sup> )	*Carbon Monoxide as CO (mg/m²)	
1	02.06.2020	65.9	38.0	8.2	18.8	0.48	
2	04.06.2020	58.0	31.0	8.8	23.6	0.57	
3	09.06.2020	51.0	29.0	9.4	24.2	0.61	
4	12.06.2020	(3),0	40.0	10.9	26.9	0.68	
5	16.06.2020	54.0	34.0	8.5	19.7	0.59	
6	18.86.2020	52.0	29.6	9.3	20.5	0.53	
7	23.06.2020	61.0	34.0	7.9	17.2	0.46	
8	26.86,2020	68.0	38:0	9.7	25.1	0.69	
M	onthly Average	59.8	33.0	9.1	22.0	0.58	
CPO	CB, New Delbi AAQ Standard	108	60	80	80	4	
Testing Method IS 51		Graviandric ES 5182: Part 23	Gravimetric RPA CPR-40 (pt 50) Appandix-1	Improved West & Geake Method IS 5192 (Part-2) RA2096	Modified Jacob & Hothleiser Method BS 5182 (Part-6) RA2006	Non Dispersive Infrarec Method IS 5182 (Part-10): 1599	
			Remarks: Detect	ion limit for SO <sub>5</sub> : 4.0 re during determination	ид/m² , NO <sub>X</sub> ; 9.0 µд/m² жи:	Nil	

Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NOx & CO presented in row no 1-8 are Time Weighted Average.).

"This Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-1765

Date: 07.07.2829

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd., Tikiri, Rayagada, Odisha.

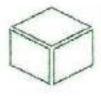
Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL/S Representative
Sample Description Ambient Air		Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.06.2020.05.06.2020.10.86.2020 13.06.2020.17.06.2020.19.06.2020 24.06.2020,27.06.2020.
Sample Condition	Gaseous sample solution refrigerated	Latitude: N19°23,187' Longitude: E82°59,221' Altitude: 656,54 m.	
Sampling Date	02,06,2020,04.05,2020, 09.06,2020,12.06,2020, 16.06,2020,18.06,2020, 23.06,2020,26.06,2020,	Test Completed on	03.06.2020 to 06.07.2020

SL, No		Parameters				
	Sampling Date	Particulate Matter as PM <sub>(C</sub> (ps/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (ng/m²)	Sulptor Dioxide 28 SO <sub>2</sub> (100/m <sup>2</sup> )	Oxides of Nitrogen as NO <sub>3</sub> (µg/m²)	*Carbon Monoxide #8 CO (mg/m*)
1	02.06.2020	43.0	22.0	7.9	14,7	0.33
2	84.06.2020	48.0	25.0	8,5	18.1	9.47
3	89.06.2020	52.0	29.0	6.3	14.4	0.41
4	12.06.2020	47.0	23.0	8.8	17.5	0.46
5	16.86.2600	53.0	33.0	7.5	16.1	0.28
6	18.66.2020	41.0	21.0	7.9	13.3	0.52
7	23.06.2020	52.0	25.0	8.9	15.2	0.45
8	26.06.2020	58.0	31.0	8.4	17.1	0.39
M	onthly Average	49,3	25.8	8.0	15.8	0.45
CPC	CB, New Delhi AAQ Standard	100	60	80	80	4
	Testing Method	Gravimetric IS 5182: Par: 23	Gravinetric EPA CFR-49 (pt 50) Appendix-1	Improved West & Cooke Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochhelser Method BS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999
		10 4	Remarks: Detect	ion limit for SO <sub>2</sub> : 4.0 pre during determinate	рд/m², NO <sub>5</sub> : 9.0 рд/m² m:	Nil

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/96

Test Report No: ENVLAB/20/TR-3148

Date: 05.08.2020

### TEST REPORT

Customer Name & Address

Bapblimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

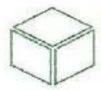
Sample Location & Code	S5: Audirakauch	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	08.07.2020,10.07.2020,15.07.2020 17.07.2020,22.07.2020,24,07.2020 29.07.2020,31.07.2020
Sample Condition	Gascous Sample Solution Refrigerated	Latitude: N19°19.079° Longitude: E83°0.738° Altitude: 739.14 m.	
97.97.2020,09.07.202 14.07.2020,16.07.202 21.07.2020,23.07.202 28.07.2024,20.07.202		Test Completed on	08.07.2020 to 04.08.2020

SL. No	Sampling Date	Parameters				
		Particulate Matter us PM <sub>20</sub> (180/m²)	*Particulate Matter as PM <sub>2.5</sub> (ag/or <sup>2</sup> )	Sulphur Dioxide as SO; (189/m²)	Oxides of Nitragen as NO <sub>5</sub> (ag/m <sup>2</sup> )	"Carbon Monoxide as CO (mg/m")
1	07.07.2020	58.0	36.0	7.3	15.6	0.42
2	09.07.2020	64.0	41.0	6.9	13.2	9.55
3	14.07.2020	47.0	29.6	7.1	18.1	0.45
4	16.07.2020	52.0	31.0	8.2	21.4	0.31
5	21.07.2020	59.0	36.0	8.0	25.3	0.29
6	23.07.2020	50.0	30.0	7.6	19.5	0.38
7	28.07.2020	66.0	39.0	8.9	20.7	0.40
8	30.07.2020	61.0	32.0	7.6	16.3	0.25
īvi i	inthly Average	57.1	34.3	7.7	18.8	0.38
CP	CB, New Delhi AAQ Standard	100	60	88	80	4
Testing Method Gravimetric ES 5182: Part 23		ES 5182;	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2086	Modified Jacob & Hochheiser Method ES 5182 (Part 6) RA2006	Non Dispersive Infrared Blethood IS 5182 (Part-19):1999
	Remarks: Detection limit for SO <sub>2</sub> : 4.0 µg/m <sup>2</sup> , NO <sub>2</sub> : 9.0 µg/s Any unusual feature during determination:					Nil

Remarks: (All the values of PM-10,PM-2,5,SO<sub>3</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>&</sup>quot;This Parameter not In our NABL Scope.



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-3149

Date: 05.08.2020

### TEST REPORT

Customer Name & Address

Baphlimati Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

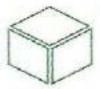
Sample Location & Code	S6: Paikupakhal	Sampled by	VCSPL'S Representative	
Sample Description	Ambient Air	Sampling Procedure	IS 5182.	
Sample Source	Baphlimali Mines, UAU.	Sample Received on	08.07.2020,10.07.2020,15.07.202 17.07.2020,22.07.2020,24.07.202 29.07.2020,31.07.2020,	
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197° Longitude: E82°59.589° Altitude: 874.17 m.		
Sampling Date	07.07,2620,09,07,2920, 14.07,2620,16.07,2920, 21.07,2620,23,07,2020, 28.07,2620,30,07,2020,	Test Completed on -	08.07.2020 to 04.08.2020	

	Sampling Date	l'arameters					
SL. No		Particulate Matter as PM <sub>10</sub> (ag/m²)	*Particulate Matter as PM <sub>25</sub> (µg/m²)	Salphur Dioxide as SO <sub>2</sub> (pp/m <sup>3</sup> )	Onides of Nitrogen as NO <sub>X</sub> (µp/m <sup>3</sup> )	*Carbon Monoxide us CO (mg/m*)	
1	07.07.2026	53.0	34.0	7.6	15.3	0.66	
2	09.07.2020	45.0	21.0	8.4	17.9	2.00	
3	14.07.2020	52.0	28.0	7.2	12.6	0.53	
4	16.07.2020	56.0	35.0	5.9	16.3	0.31	
5	21.07.2020	57.0	31.0	8	20.2	9.57	
6	23.07.2020	47.0	24.0	10.4	23.3	0.32	
7	28.07.2020	61.0	33.0	R4	13.9	0.43	
8	30.87.2020	52.0	26.0	7.5	17.5	0.59	
Mig	nthly Average	52.9	29,0	8.1	17.1	0.49	
	CB, New Delhi AAQ Standard	100	60	80	80	4	
Testing Method Cravimetric 18 5182: Part 23		Gravimetric EPA CFR-46 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Nun Dispersir e Infrared Method 15:5182 (Part-10):1999		
	515.5 AVWW-7		Remarks: : Detect	ion limit for 50;: 4.6 re during determination	ug/m², ΝΟ <sub>χ</sub> : 9.6 μg/m² on:	Nil	

Remarks: (All the values of PM-10,PM-2.5,SO2,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NASL Scope.



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/05

Test Report No: ENVLAB/20/TR-3150

Date: 05.08.2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

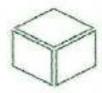
Sample Location & Code	S7: Adri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	08.07,2020,10.07,2020,15.07,2020 17.07,2020,22.07,2020,24.07,2020 29.07,2020,31.07,2020
Sample Condition	Gascous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56,705' Altitude: 691.90 m.	3.0% (1.0% (0.0% (
Sampling Date	07.07.2020,09.07.2020, 14.07.2020,16.07.2020, 21.07.3020,23,07.3020, 28.07.2020,30.07.2020,	Test Completed on	08.07.2020 to 04.08.2020

SL. No		Parameters				
	Sampling Date	Particulate Matter as PM <sub>20</sub> (ug/m <sup>2</sup> )	*Particulate Matter as PM <sub>2</sub> , (µg/m²)	Sulphur Dorride as SO <sub>2</sub> (ag/m <sup>2</sup> )	Oxides of Nitrogen les NO <sub>X</sub> (ug/m <sup>2</sup> )	"Carbon Monoxide as CO (mg/m²)
1	07.07.2820	52.0	29.0	7.3	18.9	0.64
2	09.07.2920	48.0	25.0	6.5	15.6	0.18
3	14.07.2020	43.0	27.0	7.2	18.1	0.54
4	16.07.2020	51.0	30.0	8.9	17.5	0.62
5	21.07.2020	48.0	26.0	7.5	15.8	0.55
6	23.07.2020	52.0	27.0	5.8	19.3	0.46
7	* 28.07.2020	51.0	26.0	7.6	14.8	0.38
8	30.07.2820	46.0	21.0	8.1	16.6	0.46
M	onthly Average	46.9	26.4	7.5	17.1	0,46
CP	D, New Delhi AAQ Standard	100	60	80	80	4
Testing Method Es 5182: Part 23			Gravimetric EPA CFR-40 (pt 50) Appendix-1	improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hechbeiser Method IS 5182 (Part-6) RA2086	Non Dispersive Infrared Method IS 5182 (Part-10):1999
		/2	Remarks: Defect	ion limit for SO <sub>2</sub> : 4.0 p to during determination	agim <sup>3</sup> , NO <sub>5</sub> : 9.0 µg/m <sup>2</sup> on:	NU

Remarks: (All the values of PM-10,PM-2.5,SO2,NOx & CO presented in row no 1-8 are Time Weighted Average.)



<sup>\*</sup>This Parameter not in our NABL Scope.



(An Enviro Engineering Consulting Cell)
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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/TR-3151

Date: 05,08,2020

### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	de Description Ambient Air Sampling		15 5182,
Sample Source	Baphlimali Mines, UAIL	Sample Received on	08.07.2020,10.07.2020,15.07.2020 17.07.2020,22.07.2020,24.07.2020 29.07.2020,31.07.2020
Sample Condition	Gascous sample solution rearigerated	Latitude: N19°23.107' Loogitude: E82°59.221' Altitude: 656.54 m.	
Sampling Date	07.07.2020.09.07.2020, 14.07.2020.16.07.2020, 21.07.2020.23.07.2020, 28.07.2020.30.07.2020.	Test Completed on	08,07,2020 to 04,08,2020

	Sampling Date		Parameters				
SL. No		Particulate Matter 2s PM <sub>10</sub> (pg/m²)	"Particulate Matter as Pbl <sub>es</sub> (ag/m <sup>2</sup> )	Sulphur Dinxide as SO <sub>2</sub> (ug/m²)	Oxides of Nitrogen as NO <sub>X</sub> (µg/m²)	"Carbon Monoxide ns CO (mg/m²)	
1	07.97.2020	53.0	23.0	8.7	19.8	0.41	
2	09.07.2020	42.0	25.0	7.9	23.4	0.54	
3	14.67.2020	58.0	34.0	8.9	17.2	0.52	
4	16.07,2020	55.0	31.0	7.7	20.8	6.61	
5	21/07/2020	60.0	37.0	9.0	16.9	0.68	
6	23.07.2020	47.0	28.0	10.1	21 .	0.66	
.7	28.07.2020	59.0	32.0	7.2	18.4	0.75	
5	30.07.2020	74.0	39.0	8,1	22.9	0.52	
31	onthly Average	56.0	32.4	8.3	20.1	0.59	
CPC	B, New Delhi AAQ Standard	100	60	80	\$0	4	
Testing Method		Gravimetric IS 5182: Part 23	EPA Improved West Hochkeiser Met		Nashified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method 18 5182 (Part-19):1959	
			Remarks: Detect	ion limit for SO <sub>2</sub> : 4.6 re during determination	ng/m², NO <sub>X</sub> : 9.0 ng/m² oni	Nil	

Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NOx & CO presented in row no 1-8 are Time Weighted Average.)

"This Parameter not in our NABL Scope.





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 45001:2018 Certified)

NARI. ACCREDITED

Certificate No.: TC-7944

Format No.: VCSPL/FMT/ISS

Test Report No: ENVLAB/20/TR-3606

Date: 02.09,2020

### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S5: Andirakaneh	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5183.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.68.2020.05.08,2020,07.08.2020 12.68.2020,14.08.2020,19.08.2020 21.08.2020,26.08.2020,28.06.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19,079° Longitude: E83°0,738° Altitude: 739,14 m.	
Sampling Date	01.08.2020,04.08.2020, 06.08.2020,11.08.2020, 13.08.2020,18.08.2020 20.08.2020,25.08.2020 27.08.2020,	Test Completed on	03.08.2020 to 01.09.2020

25				Param	eters	
SE No	Sampling Date	Particulate Matter as PM <sub>50</sub> (µg/m <sup>2</sup> )	*Particulate Matter as PM <sub>25</sub> (ag/m²)	Sulphur Dioxide an SO <sub>2</sub> (ag/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>X</sub> (µg/m²)	*Carbon Monoxide as CO (mg/m²)
1 2	91.98.2020	53.0	28.0	8.5	17.3	0.32
2	04.08.2020	61.0	35.0	7.3	24.9	0.45
3	05.08.2020	16.0	23.0	8.9	21.6	0.39
4	11.08.2020	49.4	31.0	9.6	34.8	0.33
5	13.69.2020	52.0	28.0	3.8	20.5	0.49
6	18.66.2020	57.0	33.0	7.9	26,2	0.62
7	20.08.2020	60.0	36.0	8.5	23.1	0.41
8	25.69.2620	-17.0	21.0	6.4	15.4	0.35
9	27.68.2628	51.0	27.0	9.7	19.3	0.39
	Monthly Average	52.9	29.1	8.4	21.5	0.42
CPC	B, New Delhi AAQ Standard	100	60	80	80	4
Testing Method		Gravimetrie IS 5182: Part 23	Gravimetric Improved West Modified Jacob & EPA & Gealse Hochheiser Method (pt 50) IS 5182 (Part-5) RA 2006 Appendix-1 RA 2006		Hechheiser Method IS 5182 (Part-6)	Non Dispersive Infrared Method 18 5182 (Part- 10):1999
				tion limit for SO <sub>2</sub> : 4.0 re during determinat	μg/m², NΩ <sub>N</sub> : 9.0 μg/m² ions	Nil

Remarks: (All the values of PM-10, PM-2.5, SO2, NOx & CO, O3 etc presented in row no 1-9 are Time Weighted Average.

\*These Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

#### Remarks:

#### TERMS AND CONDITIONS-

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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: KNVLAB/20/TR-3607

Date: 02.09.2020

### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S6: Paikupakhal	Sampled by	VCSPL'S Representative	
Sample Description	Ambient Air	Sampling Procedure	IS 5182.	
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.08.2020,05.08.2020,07.08.2020 12.08.2020,14.08.2020,19.08.2020 21.08.2020,26.08.2020,28.08.2020	
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20,197' Longitude: E82°59,589' Altitude: 874,17 m.		
Sampling Date	01.08.2020,04.08.2020, 06.08.2020,11.08.2020, 13.08.2020,18.08.2020 20.08.2020,25.08.2020 27.08.2020.	Test Completed on	03,08,2020 to 01,09,2020	

22				Param	eters	*
No.	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m²)	"Particulate Matter as PM <sub>1.9</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO: (ug/m²)	Oxides of Nitrogen as NO <sub>8</sub> (ug/m <sup>2</sup> )	*Carbon Monoxide as CO (mg/m²)
1	01.08.2020	44.0	23.0	7.3	18.2	8.49
2	84.89.2820	51.0	25.0	8.4	21.4	0.37
3	06.08.2020	47.0	21.0	9.2	20.8	0.42
4	11,99,2020	59.0	28.0	7.6	17.7	0.59
5	13.09.2020	48.0	25.4	6.8	15.2	0.64
6	18,05,2020	43.0	29.9	7.1	16.9	0.31
7	20.09.2020	55.0	31.0	8.5	19.1	0.36
9	25.09.2020	51.0	26.0	7.9	23.3	0.48
9	27.08.2020	41.8	22.0	6.6	26.7	0.35
	Monthly Average	48.8	25.6	7.7	19.6	0.45
CPC	CB, New Delhi AAQ Standard	100	60	80	80	4
Testing Method		Gravineetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Gealu Niethod IS 5182 (Part-2) RA2006	ModRed Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part- 10):1999
			Remarks: : Detect Any unusual featu	tion limit for SO <sub>2</sub> : 4.0 re during determinat	μg/m², NO <sub>x</sub> : 9.0 μg/m² lon:	NII

Remarks: (All the values of PM-10, PM-2.5, SO2, NOx & CO, O3 etc presented in row no 1-9 are Time Weighted Average.

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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-3608

Date: 02.09,2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tilóri, Rayagada, Odisha

Sample Location & Code	S7: Adri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	18.5182.
Sample Source	Baphlimeli Mines, UAII.	Sample Received on	03.08.2020,05.08.2020,07.08.2020 12.08.2020,14.08.2020,19.08.2020 21.08.2020,26.08.2020,28.08.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56.705' Altitude: 691.90 m.	Maria de la companya
Sampling Date	01.08.2020,04.08.2020, 06.08.2020,11.08.2020, 13.08.2020,18.08.2020 20.08.2020,25.08.2020 27.08.2020.	Test Completed on	03,08,2020 to 01,09,2020

35-				Param	eters	
SL. No	Sampling Date	Particulate Matter as PM <sub>re</sub> (pg/m²)	"Particulate Matter as PM <sub>20</sub> (µg/m <sup>1</sup> )	Sulphur Dioxide as SO <sub>1</sub> (pg/m²)	Oxides of Nitrogen as NO <sub>A</sub> (pg/m <sup>3</sup> )	*Enrhou Monovide as CO (mg/m²)
1	01.08.2020	67.0	39.0	9.6	13.1	6.37
2	94.08,2020	59.0	31.0	8.5	19.8	0.33
3	96.08.2020	72.0	36.0	9.2	28.2	0.31
4	11.08.2020	53.0	24.0	7.4	21.6	6.44
5	13.08,2020	48.0	29.0	7.9	27.7	6.39
6	18.08.2020	63.0	38.0	8.8	25.9	0.53
7	20.03.2020	51.0	35.0	8,1	23.3	0.49
8	25.08.2020	58.0	32.0	8.9	15.4	0.27
9	27.88,2620	47.0	26.0	9.5	20.8	0.26
	Monthly Average	57.6	32.2	8.7	23.3	0.38
CPC	B, New Delhi AAQ Standard	100	60	80	80	4
Testing Method		Gravimetrie 18-5182: Part 23	Gravimetrie EPA CFR-40 (pt 50) Appendix-1	improsed West & Genke Method 18 5182 (Part-2) RA2006	Modified Jacob & Hechheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part- 10):1999
			Remarks: : Detect Any unusual featu	tion limit for SO <sub>2</sub> : 4.0 re during determinat	pg/m², NO <sub>N</sub> : 9.0 pg/m² son:	NI

Remarks: (All the values of PM-10, PM-2.5, SO2, NOx & CO, O3 etc presented in row no 1-9 are Time Weighted Average.

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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-3609

Date: 02,09,2020

### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.08.2020,05.08,2020,07.08.2020 12.08.2020,14.08.2020,19.08.2020 21.08.2020,26.08.2020,28.08.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°23.107° Longitude: E82°59.221° Altitude: 656.54 m.	
Sampling Date	01.88.2920.04.08.2020, 06.08.2020.11.08.2020, 13.08.2020.18.09.2020 20.08.2920.25.08.2020 27.08.2020.	Test Completed on	83.08.2020 to 01.09.2020

100				Param	eters	
SI. No	Sampling Date	Particulate Matter as PM <sub>11</sub> (µg/m²)	*Particulate Matter as PM <sub>25</sub> (µg/m²)	Sulphur Dioxide as SO <sub>2</sub> (µg/m²)	Oxides of Nitrogen as NO <sub>X</sub> (µg/m²)	"Carbon Monoxide as CO (mg/m²)
1	61.68.2020	59.0	31.0	3.8	18.2	0.66
2	04.08.2020	54.0	29.0	10.1	21.6	0.48
3	06.08.2020	45.0	20.0	8.7	17.3	0.43
4	11.03,2020	61.0	33.0	9.9	18.8	0.57
5	13.08.2020	48,0	29.0	10.3	17.4	0.61
6	18.08.2020	57.0	31.0	9.4	19.6	0.46
7	20.08.2020	52.0	29.0	8.5	22.7	0.37
2	25.08.2020	44.0	23.0	9.5	15.2	0.59
9	27.08.2020	58.0	25.0	7.6	16.3	0.49
	Monthly Average	53.1	27.8	9.2	18.6	0,52
CPC	B, New Delhi AAQ Standard	100	60	80	.80	4
Testing Method		Gravimetric 18 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geals: Method IS 5182 (Part-2) RA2006	ModBled Jacob & Hochheiser Method IS 5182 (Part-6) RA 2006	Non Dispersive Infrared Method IS 5182 (Part- 10):1999
				tion limit for SG <sub>2</sub> : 4.0 re during determinat	μη/m², ΝΟ <sub>Ν</sub> : 9.0 μη/m² ion:	Nil

Remarks: (All the values of PM-10, PM-2.5, SO2, NOx & CO, O3 etc presented in row no 1-9 are Time Weighted Average.

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> Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4007 Date: 03.10.2020

### **TEST REPORT**

**Customer Name & Address** : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S5: Andirakanch	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source Baphlimali Mines, UAIL		Sample Received on	02.09.2020,04.09.2020,09.09.2020 11.09.2020,16.09.2020,18.09.2020 23.09.2020,25.09.2020,30.09.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079′ Longitude: E83°0.738′ Altitude: 739.14 m.	
Sampling Date	01.09.2020,03.09.2020, 08.09.2020,10.09.2020, 15.09.2020,17.09.2020 22.09.2020,24.09.2020 29.09.2020.	Test Completed on	02.09.2020 to 03.10.2020

~~				Param	neters	
SL.	Sampling Date	Particulate Matter	*Particulate	Sulphur Dioxide	Oxides of Nitrogen	*Carbon Monoxide
No	r 8	as PM <sub>10</sub>	Matter as PM <sub>2.5</sub>	as SO <sub>2</sub>	as NO <sub>X</sub>	as CO
		$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	(mg/m <sup>3</sup> )
1	01.09.2020	49.0	26.0	6.6	13.7	0.61
2	03.09.2020	57.0	32.0	7.2	15.2	0.57
3	08.09.2020	42.0	28.0	5.4	19.8	0.43
4	10.09.2020	49.0	24.0	6.9	15.4	0.31
5	15.09.2020	51.0	34.0	8.1	21.9	0.52
6	17.09.2020	56.0	31.0	5.5	16.8	0.77
7	22.09.2020	47.0	26.0	7.9	14.4	0.61
8	24.09.2020	40.0	21.0	6.8	17.3	0.39
9	29.09.2020	52.0	29.0	7.3	20.1	0.52
	Monthly Average	49.2	27.9	6.9	17.2	0.53
CPO	CB, New Delhi AAQ Standard	100	60	80	80	4
	Testing Method	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part- 10):1999
		1	Remarks: : Detect	ion limit for SO <sub>2</sub> : 4.0 re during determinat	$\mu$ g/m <sup>3</sup> , NO <sub>X</sub> : 9.0 $\mu$ g/m <sup>3</sup> ion:	Nil

Remarks: (All the values of PM-10, PM-2.5, SO2, NOx & CO, O3 etc presented in row no 1-9 are Time Weighted Average.

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Certificate No.: TC-7944
Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4008 Date: 03.10.2020

### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S6: Paikupakhal	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	02.09.2020,04.09.2020,09.09.2020 11.09.2020,16.09.2020,18.09.2020 23.09.2020,25.09.2020,30.09.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197′ Longitude: E82°59.589′ Altitude: 874.17 m.	
Sampling Date	01.09.2020,03.09.2020, 08.09.2020,10.09.2020, 15.09.2020,17.09.2020 22.09.2020,24.09.2020 29.09.2020.	Test Completed on	02.09.2020 to 03.10.2020

~~		Parameters				
SL.	Sampling Date	Particulate Matter	*Particulate	Sulphur Dioxide	Oxides of Nitrogen	*Carbon Monoxide
No	1 0	as PM <sub>10</sub>	Matter as PM <sub>2.5</sub>	as SO <sub>2</sub>	as NO <sub>X</sub>	as CO
		$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	(mg/m <sup>3</sup> )
1	01.09.2020	56.0	36.0	5.1	14.3	0.44
2	03.09.2020	50.0	30.0	8.8	17.4	0.39
3	08.09.2020	61.0	45.0	7.6	19.5	0.52
4	10.09.2020	48.0	31.0	9.2	22.2	0.66
5	15.09.2020	52.0	32.0	7.7	16.6	0.71
6	17.09.2020	59.0	26.0	11.3	20.4	0.46
7	22.09.2020	67.0	44.0	9.7	19.1	0.39
8	24.09.2020	53.0	36.0	8.4	15.7	0.56
9	29.09.2020	59.0	37.0	8.9	17.2	0.54
	Monthly Average	56.1	35.2	8.5	18.0	0.52
CPO	CB, New Delhi AAQ Standard	100	60	80	80	4
	Testing Method	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part- 10):1999
			Remarks: : Detect	tion limit for SO <sub>2</sub> : 4.0 re during determinat	μg/m³, NO <sub>X</sub> : 9.0 μg/m³ ion:	Nil

Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>,NO<sub>x</sub> & CO, O<sub>3</sub> etc presented in row no 1-9 are Time Weighted Average.

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Certificate No.: TC-7944
Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4009 Date: 03.10.2020

### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S7: Adri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	02.09.2020,04.09.2020,09.09.2020 11.09.2020,16.09.2020,18.09.2020 23.09.2020,25.09.2020,30.09.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928′ Longitude: E82°56.705′ Altitude: 691.90 m.	
Sampling Date	01.09.2020,03.09.2020, 08.09.2020,10.09.2020, 15.09.2020,17.09.2020 22.09.2020,24.09.2020 29.09.2020.	Test Completed on	02.09.2020 to 03.10.2020

~~		Parameters				
SL.	Sampling Date	Particulate Matter	*Particulate	Sulphur Dioxide	Oxides of Nitrogen	*Carbon Monoxide
No	r 8	as PM <sub>10</sub>	Matter as PM <sub>2.5</sub>	as SO <sub>2</sub>	as NO <sub>X</sub>	as CO
		$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	(mg/m <sup>3</sup> )
1	01.09.2020	45.0	24.0	7.8	16.4	0.69
2	03.09.2020	50.0	28.0	5.9	13.3	0.51
3	08.09.2020	65.0	38.0	6.2	19.5	0.29
4	10.09.2020	51.0	32.0	6.8	20.3	0.31
5	15.09.2020	56.0	35.0	8.1	23.4	0.45
6	17.09.2020	48.0	28.0	8.9	16.7	0.48
7	22.09.2020	42.0	25.0	9.4	19.8	0.53
8	24.09.2020	57.0	29.0	7.6	22,2	0.47
9	29.09.2020	53.0	22.0	5.9	15.5	0.53
	Monthly Average	51.9	29.0	7.4	18.6	0.47
CPO	CB, New Delhi AAQ Standard	100	60	80	80	4
	Testing Method	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part- 10):1999
		1	Remarks: : Detect		μg/m³, NO <sub>X</sub> : 9.0 μg/m³ ion:	Nil

Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>,NO<sub>x</sub> & CO, O<sub>3</sub> etc presented in row no 1-9 are Time Weighted Average.

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> Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/TR-4010 Date: 03.10.2020

### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	02.09.2020,04.09.2020,09.09.2020 11.09.2020,16.09.2020,18.09.2020 23.09.2020,25.09.2020,30.09.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°23.107′ Longitude: E82°59.221′ Altitude: 656.54 m.	
Sampling Date	01.09.2020,03.09.2020, 08.09.2020,10.09.2020, 15.09.2020,17.09.2020 22.09.2020,24.09.2020 29.09.2020.	Test Completed on	02.09.2020 to 03.10.2020

~~		Parameters				
SL.	Sampling Date	Particulate Matter	*Particulate	Sulphur Dioxide	Oxides of Nitrogen	*Carbon Monoxide
No	1 0	as PM <sub>10</sub>	Matter as PM <sub>2.5</sub>	as SO <sub>2</sub>	as NO <sub>X</sub>	as CO
		$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	$(\mu g/m^3)$	(mg/m <sup>3</sup> )
1	01.09.2020	42.0	28.0	9.8	23.6	0.43
2	03.09.2020	44.0	25.0	7.3	18.4	0.49
3	08.09.2020	50.0	24.0	8.6	20.3	0.62
4	10.09.2020	56.0	33.0	8.2	25.9	0.55
5	15.09.2020	49.0	29.0	7.4	16.7	0.57
6	17.09.2020	41.0	25.0	9.7	23.2	0.41
7	22.09.2020	53.0	27.0	9.2	27.5	0.68
8	24.09.2020	49.0	26.0	8.8	20.4	0.75
9	29.09.2020	43.0	21.0	8.4	17.1	0.57
	Monthly Average	47.4	26.4	8.6	21.5	0.56
CPO	CB, New Delhi AAQ Standard	100	60	80	80	4
	Testing Method	Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-1	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part- 10):1999
Remarks: : Detection lim Any unusual feature duri						Nil

Remarks: (All the values of PM-10, PM-2.5,SO<sub>2</sub>,NO<sub>x</sub> & CO, O<sub>3</sub> etc presented in row no 1-9 are Time Weighted Average.

\*\*\* End Report\*\*\*



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<sup>\*</sup>These Parameter not in our NABL Scope.

### **ANNEXURE: 6**

# Stream Flow Rate Monitoring Report For the period April-2020 to September-2020



(An Enviro Engineering Consulting Cell)
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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/20/R-6281

Date: 11.05.2029

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Kayagada, Odisha.

Sample Location & Code	*Stream flow	Sampled by	VCSPL'S Representative
Sample Name		Sampling Procedure	NA.
Sample Source	Baphlimuli Mines, UAIL	Sample Received on	NA.

Si No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>3</sup> /hr)	Stream flow (Cosec)
1	17.04.2020	Paikupakhala Nala	Latitude: N19°20.056′ Longitude: E82°59,776′ Altitude: 823.26 m.	5,400	52.97
2	17.04.2020	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	40,500	397.29
3.	17.04,2028	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248 Altitude: 660.50 m.	90,000	882.87
4	17.04,2020	Mishripada Nala	Latitude: N19°22.829° Longitude: E82°59.268° Altitude: 637.95 m.	11,520 -	113,97

<sup>\*</sup>This parameter not in our NABL Scope





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

NABL ACCREDITED

Certificate No.: TC-7944
Format No.: 7.8.2/FMT/TR/06

Test Report No; ENVLAB/20/R-0670

Date: 10.06.2020

### **TEST REPORT**

Customer Name & Address

 Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	*Stream flow	Sampled by	VCSPL'S Representative
Sample Name		Sampling Procedure	NA
Sample Source	Baphlimali Mines, UAII.	Sample Received on	NA

SL., No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>2</sup> /hr)	Stream flow (Cusec)
i	22,05,2020	Paikupakhala Nala	Latitude: N19°20.056° Langitude: E82°59.776° Altitude: 823.26 m.	1,440	14.13
2	22.05.2020	Near Dandabada Nala	Latitude: N19°22,940° Longitude: E82°57.515° Altitude: 698,30 m.	15,000	147.14
5.	22.05.2020	Chandragiri Nata	Latitude: N19°23.078° Loogitude: R83'0.248° Altitude: 660.50 m.	36,690	353.15
4	22,05,2020	Mishripada Nala	Latitude: N19°22.829° Longitude: E82°59.268° Altitude: 637.95 m.	4,800	47,09

<sup>\*</sup>This parameter not in our NABL Scope





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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/96

Test Report No: ENVLAB/20/R-1772

Date: 07J07.2020

#### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	*Stream flow	Sampled by	VCSPL'S Representative
Sample Name		Sampling Procedure	NA NA
Sample Source	Baphlimati Mines, UAIL	Sample Received on	NA

SL. No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m²/hr)	Stream flow (Cusec)
1	17.06.2020	Paikupakhala Nala	Latitude: N19°26.056° Langitude: E82°59.776° Altitude: 823.26 m.	7,200	70.63
2	17,06,2020	Near Dandabada Nala	Latitude: N19°22.940° Longitude: E82°57,515° Altitude: 698.30 m.	72,000	706,30
3	17,06,2020	Chandragiri Nata	Latitude: N19°23.078° Longitude: E83°0.248° Altitude: 660.50 m.	1,15,400	1132.03
д	17,06,2820	Mishripada Nala	Latitude: N19*22.829* Langitude: E82*59.268* Altitude: 637.95 m.	18,920	107.12

<sup>\*</sup>This parameter not in our NABL Scope





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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/11006

NABL ACCREDITED

Test Report No: ENVLAB/20/R-3158

Date: 05.08.2020

#### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd,

Tikiri, Rayagada, Odisha.

Sample Location & Code	*Stream flow	Sampled by	VCSPL'S Representative	
Sample Name		Sampling Procedure	NA	
Sample Searce	Raphlimali Mines, UAH	Sample Received on	NA	

SL. No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>3y</sup> hr)	Stream flow (Cusec)
t	27.07.2020	Paikupakhala Nala	Latitude: N19°20.056° Longitude: £82°59.776° Altitude: 823.26 m.	7,200	78,63
2	27.07.2020	Near Dandabada Nala	Latitude: N19°22,940° Longitude: ESZ°57,515° Altitude: 698,30 m.	39,300	391,40
3	27.07.2020	Chandragiri Nala	Lutitude: N19°23.078° Longitude: E83°0,248° Altitude: 660.50 m.	86,400	847.55
4	-27.07.2028	Mishripada Nala	Latitude: N19°22.829° Longitude: R82°59.268° Altitude: 637.95 m.	18,240	178.93

<sup>\*</sup>This parameter not in our NABL Scope





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Certificate No.: TC-7944

Format No.: VCSPL/FMT/058

NABL

Test Report No: ENVLAB/20/R-3627

Date: 02.09.2020

#### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Location & Code	*Stream flow	Sampled by	VCSPL'S Representative	
Sample Name		Sampling Procedure	NA .	
Sample Source	Baphlimali Mines, UAIL	Sample Received on	NA.	

SI., No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>3</sup> /hr)	Stream flow (Cusec)
1	21.08.2020	Paikupakhala Nala	Latitude: N19°20.056° Longitude: E82°59.776° Altitude: 823.26 m.	13,440	131.84
2	21,06,2020	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57,515' Altitude: 698.30 m.	33,000	323.72
3	21.08.2020	Chandragiri Nala	Latitude: N19°23.078° Longitude: E83°0.248° Altitude: 660.50 m.	1,94,400	1907.00
4	21.08,2020	Mishripada Nala	Latitude: N19°22.829' Longitude: F82°59.268' Altitude: 637.95 m.	22,080	216.60

<sup>\*</sup>This parameter not in our NABL Scope

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> Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/R-4017 Date: 03.10.2020

#### **TEST REPORT**

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

#### **SAMPLE DETAILS**

Sample Location & Code	*Stream flow	Sampled by	VCSPL'S Representative
Sample Name		Sampling Procedure	NA
Sample Source	Baphlimali Mines, UAIL	Sample Received on	NA

SL. No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m³/hr)	Stream flow (Cusec)
1	18.09.2020	Paikupakhala Nala	Latitude: N19°20.056′ Longitude: E82°59.776′ Altitude: 823.26 m.	1,440	14.13
2	18.09.2020	Near Dandabada Nala	Latitude: N19°22.940′ Longitude: E82°57.515′ Altitude: 698.30 m.	14,400	141.26
3	18.09.2020	Chandragiri Nala	Latitude: N19°23.078′ Longitude: E83°0.248′ Altitude: 660.50 m.	43,200	423.78
4	18.09.2020	Mishripada Nala	Latitude: N19°22.829′ Longitude: E82°59.268′ Altitude: 637.95 m.	4,320	42.38

<sup>\*</sup>This parameter not in our NABL Scope

\*\*\* End Report\*\*\*



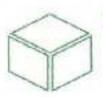
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### **ANNEXURE: 7**

Surface Water Quality Analysis Report
For the period April-2020 to September-2020



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(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

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Certificate No.: TC-7944

Format No.: 7.8,2/FMT/TR/06

Test Report No: Envlab/20/R-0279

Date: 11.05.2020

#### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.05.2020
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Lutitude: N19°17.015' Longitude: E83°0.879' Ahitude: 707.14 m.	Latitude: N19°16.602° Longitude: E82°59.812° Abitude: 725.73 m.
Sampling Date	17.04.2020	Test Completed on	11,85,2920

Sl. No	Parameters	Units	Standards as per 1S 2296-Class C	Test methods	· sw-r	SW-2
1	*Color	Hazen, max	300	APHA 2120 B	10.0	15.0
2	*Odour	-	Agreeable	AFHA 2150 B	Agreeable	Agreeable
3	pH value	-	6,5-8.5	APHA 4500 H'B	7.29	8,48
4	Suspended Solids( as SS)	mgA, max	-	APHA 2540 D	46.0	78.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	264.0	331.0
6	*Temperature	°c	-	-	27,0	27.0
7	Conductivity	µs/cm	-	APHA 2510 C	437.0	547.0
8	Ammonical Nitrogen (as NH <sub>I</sub> -N)	mg/l, max	- 00	APHA4500 NH <sub>3</sub> B	2,90	3,51
9	Total Kjeldahl Nitrogen (as N)	mg/l, mex	-	APHA4500N <sub>GRO</sub> B	4.14	5,66
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max	-	-	ND	ND
12	"Total Residual Chlorine (as RFC)	mg/l, min	-	APHA 4500 CLB	ND	ND
13	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	2.33	3.64
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111 Cu H	< 0.05	< 0.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 F.D	0.54	1.27
16	"Hexavalent Chromium (as Cr*6)	mg/l, max	0.05	APHA 3500 C// B	< 0.05	< 0.05
17	*Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	< 0.01	<0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	6.4	5,8
19	*Sulphide (as S)	mg/l, max	-	APITA 4500 ST F	<0.005	< 0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	50	APHA45XINO2B	3,13	5.06
21	*Phenolic Compound (as C4H5OH)	mg/l, max	-	A₽BA 5530 C	<0.001	< 0.001
22	*Selenium (as S)	mg/l, max	0.05	APIIA 3500 Se C	< 0.01	< 0.01
23	Manganese (as Mn)	mg/l, max		APEA SILLE	<0.1	<0.1
24	*Bio-assay Test	mg/l, mux	90% Survival of fish after 96 hrs in 100% effluent	IS 6582	95,0	90.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.37	1.13
26	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	-	APHA 5220 B	\$00 P	29.0



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Any	unusual feature observed during dete-	Nil				
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	_	APHA 4500 P D	1.21	2,14
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	mg/l, max	3	I83025(P-44)1993 RA 2003	2.4	2.8
32	Total Chromium (as TCr)	mg/l, max	-	APHA 3111 B	<0,1	< 0.1
31	*Arsenic (as As)	mg/l, max	0,2	APHA 3500 As B	<0.005	< 0.005
30	Nickel (as Ni)	mg/l, max	-	APHA 3111 B	<0,1	<0.1
29	Mercury (as Hg)	mg/l, max	-	APHA 3112 B	<0.004	<0.004
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1

<sup>&</sup>quot;This parameter not in our NABL Scope

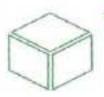
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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlub/20/R-0280

Date: 11.05,2020

#### **TEST REPORT**

Customer Name & Address

 Baphlimati Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisba.

Sample Location & Code	SW3: Kandahindha (Up Stream) SW4: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04,05,2020
Sample Condition	Sealed Plastic & Sterilized Class Bottle	Latitude: N19°22.014" Longitude: E83°04.658" Altitude: 769.01 m.	Latitude: N19°23.078 Longitude: F83°0.248' Altitude: 660,50 m.
Sampling Date	17,04,2020	Test Completed on	11.05.2020
		110 110 110 110 110 110 110 110 110 110	

SL. No	Parameters	Units	Standards as per 18 2296-Class C	Test methods	- SW-3	SW-4
1	*Color	Hazen, max	300	APIIA 2120 B	10.0	25.0
2	*Odour	-	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	-	6.5-8.5	APHA 4500 H°H	7.62	8.18
4	Suspended Solids( as SS)	mg/l, max	-	APHA 2540 D	40.0	48,0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	216.0	285.0
6	*Temperature	°c	-	-	28.0	27.0
7	Conductivity	µs/cm	-	APHA 2510 C	319.0	456.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/L max		APHA4500 NILB	1.65	3.78
9	Total Kjeldahl Nitrogen (as N)	mg/l, max		APHA4500NosoB	2,27	4.63
10	Oil & Grease	mg/l, max	0.1	APILA 5220 B	ND	ND
11	"Free Ammonia (as NH <sub>3</sub> )	mg/l, max	-	-	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min	-	APHA 4500 CLB	ND	ND
13	Iron (as Fc)	mg/L max	50	APHA 3500 Fe B	0.57	1.81
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	< 0.05	< 0.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 FT3	0.43	0,90
16	*Hexavalent Chromium (as Cr*6)	mg/l, max	0.05	APITA 3500 CFB	<0.05	< 0.05
17	*Cyanide (as CN)	пқ/І, шах	0,05	APHA 4500 CN E	< 0.01	< 0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O'C	6.4	5,6
19	*Sulphide (as S)	mg/l, max		APHA 4500 ST F	< 0.005	<0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	50	APHA4500NO <sub>3</sub> Ti	1.92	2.74
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l, max	-	APEIA 5530 C	<0.001	<0.001
22	*Selenium (as S)	mg/l, max	0.05	APHA 3500 8± C	<0.01	< 0.01
23	Manganese (as Mn)	mg/l, max	-	APGA JULB	< 0.1	<0.1
24	*Bio-assay Test	mg/l, max	90% Survival of fish after 96 hrs in 100% effluent	TS 6582	94.0	88.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.43	16,0
26	Cadmium	mg/l, max	0.01	APEA MILE	<0.01	< 8.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	-	APHA 5220 B	23,00	41.0



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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Any	unusual feature observed during dete	rmination			N	il
14	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	-	APHA 4500 P D	0.46	0,95
3.5	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2.0	2.7
32	Total Chromium (as TCr)	mg'l, max	-	APHA 3111 B	<0.1	<0.1
31	*Arsenic (as As)	mg/l, max	0.2	APHA 3500 As B	< 0.005	< 0.005
30	Nickel (as Ni)	mg/l, max	Art.	APHA 3111 B	<0.1	< 0.1
29	Mercury (as Hg)	mg/l, max	-	APHA 3112 B	< 0.004	<0.064
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 S	< 0.1	< 0.1

<sup>\*</sup>This parameter not in our NABI. Scope

#### Remarks:

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Certificate No.: TC-7944

Formst No.: 7.8.2/FMT/TR/06

Test Report Nm Envlab/20/R-0659

Date: 10.06.2020

#### TEST REPORT

Customer Name & Address

 Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	SW1; Sana River (Up Stream) SW2; Sana River (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	1S 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	23.05.2020
Sample Condition	Scaled Plastic & Sterilized Glass Bettle	Latitude: N19"17.015" Longitude: FX3"0.879" Altitude: 707.14 m.	Latitude: N19*16.602* Longitude: F82*59.812* Altitude: 725.73 m.
Sampling Date	22.05.2020	Test Completed on	39.65.2020

SL No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-1	SW-2
1	*Color	Hazen, max	300	APHA 2120 B	10.0	15.0
2	*Odeur		Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value		6.5-8.5	APHA 4500 H°B	7.85	8.31
4	Suspended Solids( as SS)	mg/l, max	1950	APTIA 2510 D	72.0	90.0
5	Total dissolved solids(as TDS)	mg/L max	1500	APHA 2540 C	324.0	359.0
6	*Temperature	o <sub>C</sub>	**		25.0	25.0
7	Conductivity	µs/cm	***	APHA 2510/C	518.0	574.0
8	Ammonical Nitrogen (as NH <sub>2</sub> -N)	mg/l, max		APHA4500 NH <sub>3</sub> H	4.54	4.96
9	Total Kjeldahl Nitrogen (as N)	mg/l, max		APHA4500NongB	5.07	5.51
10	Oil & Grease	mg/L max	0.1	APHA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max		-	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min	4	APHA 4500 CLB	ND	ND
13	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	2.91	3.29
14	Copper (as Cu)	mg/l, max	1.5	APHA STITCE B	< 0.05	<3.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 FTD	0.85	1.52
16	*Hexavalent Chromium (as Cr*6)	mg/l, max	0.05	APHA 3500 Cr.B	<0.05	<0.35
17	*Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	< 0.01	< 0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	6.1	5.8
19	*Sulphide (as S)	mg/l, max		APHA 4500 S <sup>2</sup> F	<0.005	<0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	+ 50	APHA/1500NQ, B	3.77	4.47
21	*Phenolic Compound (as C <sub>4</sub> H <sub>5</sub> OH)	mg/L max	44	APITA 5530 C	<0.001	<0.001
22	*Selenium (as S) -	mg/l, max	0.05	APHA 3500 Se C	< 9.01	< 0.01
23	Manganese (as Mn)	mg/l, max	44	APHA 3111 B	< 0.1	< 0.1
24	<sup>6</sup> Bin-assuy Test	mg/l, max	90% Survival of fish after 96 hrs in 100% offluent	18 5582	92.0	93.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3 II B	0.73	0.92
26	Cadmium	mg/l, max	0.01	APHA 3111 D	< 0.01	< 0.01
27	Chemical Oxygen Demand (as COD)	Carlotte Control of the Control		APSIA 5220 B	21.0	44.0





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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

2.8	Lead (as Pb)	mg/l, max	0.1	APHA YITER	< 0.1	< 0.1
29	Mercury (as Hg)	mg/l, max	-	APRA 3112 B	< 0.004	< 0.004
30	Nickel (as Ni)	mg/l, max	160	APHA JULI B	< 9.1	<0.1
31	"Arsenic (as As)	mg/l, max	0.2	APHA 3500 Av B	< 0.005	< 0.005
32	Total Chromium (as TCr)	mg/l, max		APHA 3111 B	< 0.1	< 0.1
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	rag/l, mas	3	ES3C25(P-44)1903 EA 2/803	2,5	2.9
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	-	APHA 4500 P D	1.61	1.87
Any	unusual feature observed during dete	N	ii.			

<sup>\*</sup>This parameter not in our NABL Scope

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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Fest Report No: Envlab/20/R-0660

Date: 10.06,2020

#### TEST REPORT

Customer Name & Address

 Baphlimali Mines, M's Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	SW1: Kandahindha (Up Stream) SW2: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Precidence	1S 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	23.05,2020
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Longitude: N19°22.014° Longitude: E83°04.658° Altitude: 769.01 m.	Latitude: N19°23,078' Longitude: E83°0,248' Altitude: 660,50 m.
Sampling Date	22.05.2020	Test Completed on	30.05,2020

SI. No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-3	SW-4
1	*Color	Hazen, max	300	APEA 2T20 II	10.0	20.0
2	*Odour	-	Agreeable	APEA 2150 B	Agreeable	Agreeable
3	pH value		6.5-8.5	APEA 4500 H'B	7.69	7.94
4	Suspended Solids( as SS)	mg/l, max	-	APEA 2540 D	56.0	70.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APRIA 2540 C	227.0	296.0
6	*Temperature	000	-	-	26.0	26.0
7	Conductivity	µs/cm	-	APEA 2510 C	368.0	462.0
8	Ammonical Nitrogen (as NH <sub>a</sub> -N)	mg/L max	-	APEA4500 NH,B	1.61	3.92
9	Total Kjeldahl Nitrogen (as N)	rogA, max	-	APEA4500NomB	1.98	4.51
10	Oil & Grease	mg/L max	0.1	APEA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max	-	-	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/L min	-	APEIA 4500 CEB	ND	ND
13	Iron (as Fe)	mg/L max	50	APEA 3500 Fe B	0.66	1,71
14	Copper (as Cu)	mgA, max	1.5	APEA 31110x 3	<0.05	< 0.05
15	*Fluoride (as F)	mg/L max	1.5	APEA 4500 FD	0.53	0.87
16	*Hexavalent Chromium (as Cr-b)	mg/L max	0.05	APEIA 5500 Cr.B.	< 0.05	< 0.05
17	*Cyanide (as CN)	mg/L max	0.05	APEA 4500 CN E	< 0.01	10.0>
18	Dissolved Oxygen (as DO)	mg/L min	4	APEA ASSUDE:	6.4	5.9
19	*Sulphide (as S)	mg/l, max	-	APEA 4500 8° F	< 0.005	< 0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	- 50	APPIA4500NOvB	1.92	2.74
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L max		APEIA 5530 C	< 0.001	< 0.001
22	*Selenium (as S) +	при плах	0.05	APEA 3500 Se C	< 0.01	< 0.01
23	Manganese (as Mn)	mg/L, max	-	APEA SILLE	<0.1	<0.1
24	*Bio-assay Test	аздА, гэах	90% Survival of fish after 96 hrs in 100% effluent	15-0792	94.0	92.0
25	Zinc (as Zn)	mg/L, max	15	APEA SELLE	0.33	0.64
26	Cadmium	mg/l, max	0.01	APEA SELLT	< 0.01	< 0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	-	APEA 5220 B	26.0	54.0





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28	Lead (as Ph)	mg/l, max	0.1	APHA 2111 B	< 0.1	<0.1
29	Mercury (as Hg)	mg/l, max	100	APHA 3112 B	< 0.004	< 0.004
30	Nickel (as Ni)	rng/l, max	(4)	APHA 2111 B	< 0.1	< 0.1
31	"Arsenic (as As)	mg/l, max	0.2	APHA 3500 Ax B	< 0.005	< 0.005
32	Total Chromium (as TCr)	mg/L max		APHA 2111 B	<0.1	< 0.1
33	Biochemical Osygen Demand (as BOD at 27 <sup>3</sup> C For 3 days)	rng/l, max	3	IS3025(P-44)(993 RA 2003	2.4	2.9
34	<sup>6</sup> Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	44	APHA 4300 P D	0.47	0.89
Any unusual feature observed during determination						il

\*This parameter not in our NABL Scope

#### Numarkee

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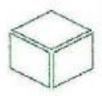
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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/20/R-1770

Date: 07.07.2020

#### TEST REPORT

Customer Name & Address

 Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	13.06.2020
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Latitude: N19°17.015' Longitude: E83°0.879' Altitude: 787.14 m.	Lotitude: N19°16.602° Longitude: E82°59.812° Altitude: 725.73 m.
Sampling Date	12.06.2020	Test Completed on *	19.06.2020

SL No	Parameters	Units	Standards as per 18 2296-Class C	Test methods	SW-1	SW-2
1	*Color	Hazen, max	300	APHA 2120 B	10.0	15.0
2	*Odour		Agreeable	APHA 2150 B	Agrecable	Agreeable
3	pH value	-	6,5-8,5	APHA 4500 H'B	7.45	8.31
4	Suspended Solids( as SS)	mg/l, max	-	APHA 2540 D	52.0	80.0
5	Total dissolved solids(as TDS)	mg/L, max	1500	APHA 2540 C	289.0	377.0
6	*Temperature	°e	-	**	27.0	27.0
7	Conductivity	µs/cm	_	APRA 2510 C	466.0	613.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/L max	·+·:	APRAMSO NH <sub>2</sub> B	3,67	5.04
9	Total Kjeldahl Nitrogen (as N)	mg/L max	-	APHA4500N.m.B	4.35	5,52
10	Oil & Grease	rog/l, max	0.1	APHA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>5</sub> )	mg/L, max	2	-	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min	**	APEA 4500 CFB	ND	ND
13	Iron (as Fe)	mgA, max	50	APHA 3500 Fe B	2.78	3.98
14	Copper (as Cu)	mg/l, max	1.5	APEA3111CvB	<0.05	<0.05
15	*Fluoride (as F)	mg/L max	1.5	APEA 4500 FD	0.63	1.48
16	*Hexavalent Chromium (as Cr**)	mg/l, max	0.05	APHA 3500 CFB	< 0.05	< 0.05
17	*Cyanide (as CN)	mg/l, max	0.05	APEA 4500 CN E	<0.01	< 0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O.C	6.5	5.4
19	*Sulphide (as S)	mg/l, max	-	APHA 4500 85 F	< 0.005	< 0.005
20	*Nitrate (as NO <sub>5</sub> )	mg/l, max	50	APEA4500NO, B	3,62	5.49
21	"Phenolic Compound (as C,H,OH)	mg/l, max	-	APEA 5530 C	<0.001	<0.001
22	*Selenium (ás S)	mgA, max	0.05	APEA 3500 SeC	<0.01	< 0.01
23	Manganese (as Mn)	mg/l, max	_	APEA 3111 B	<0.1	<0.1
24	*Bio-assay Test	mg/L max	90% Survival of fish after 96 hrs in 100% effluent	IS 6582	94.0	92.0
25	Ziue (as Zn)	тдЛ, тах	15	APBA 3111 B	0.26	1.37
26	Cadmium	mg/l, max	0.01	APHA 3111 B		-
27	Chemical Oxygen Demand (as COD)	mg/l, max	· ·	APRA 5220 B	11,650	V1500



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34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	544	APTEA 4500 P D	1.58	2,34
33	Biochemical Oxygen Demand (as BOD at 27 <sup>4</sup> C For 3 days)	mg/l, max	3	IS3025(P-44)1593 RA 2003	2.1	2.6
32	Total Chromium (as TCr)	mg/l, max	-	APHA 3111 B	<0.1	<0.1
31	*Arsenic (as As)	mg/l, max	0.2	APHA 3500 As B	< 0.005	<0.005
30	Nickel (as Ni)	mg/l, max		APHA 3111 B	<0.1	<0.1
29	Mercury (as Hg)	mg/l, max	-	APHA 3112 B	< 0.004	<0.004
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1

<sup>\*</sup>This parameter not in our NABL Scope

#### Remarks

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Certificate No.: TC-7944 Former No.: 7.8.2/4/MT/TR/06

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Test Report No: Envlab/20/R-1771

Date: 07.07.2020

#### TEST REPORT

Castomer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

Sample Location & Code	SW3: Kandahindha (Up Stream) SW4: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	13,06,2020
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Latitude: N19°22.014' Langitude: F83°04.658' Altitude: 769.01 m.	Latitude: N19°23.078 Lougitude: E83°0.248° Altitude: 660.50 m.
Sampling Date	12.06.2029	Test Completed on	19.06,2020

SI. No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-3	SW-4
1	*Color	Hazen, max	300	APEA 2120 B	15.0	25.0
2	*Odour		Agreeable	APEA 2150 B	Agreeable	Agreeable
3	pH value	- 2	6,5-8,5	APEA 4500 H'B	7.39	8.06
4	Suspended Solids( as SS)	mg/L max		APEA 2540 D	54.0	78.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APEA 2540 C	224.0	321.0
6	*Temperature	°c		-	27.0	27.0
7	Conductivity	ps/cm	-	APPIA 2510 C	349.0	470.0
8	Ammonical Nitrogen (as NH <sub>c</sub> N)	mg/L max	-	APRIA4500 NH <sub>0</sub> B	1.47	3.71
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	-	APSIA4500N <sub>masB</sub>	2.81	4.94
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND.
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max		-	ND	ND
12	"Total Residual Chlorine (as RFC)	mg/l, min	-	APHA 4800 CLB	ND	ND
13	Iron (as Fe)	mg/l, max	50	APHA 3000 Fe B	0.68	1.43
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111 Cn B	< 0.05	< 0.05
15	*Fluoride (as F)	mg/l, max	1,5	APITA 4500 PTD	0.35	0.74
16	"Hexavalent Chromium (as Cr16)	mg/L max	0.05	APHA 3500 C/B	<0.05	<0.05
17	*Cyanide (as CN)	mg/l, max	0.05	APHA-4500 CN E	< 0.01	< 0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	6.6	5.9
19	"Sulphide (as S)	mg/l, max	-	APHA 4300 S <sup>2</sup> F	<0.005	<0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	50	APHA4500NO, B	2.19	3,41
21	*Phenolic Compound (as C <sub>5</sub> H <sub>5</sub> OH)	mg/L max	-	APHA 5520 C	<0.001	<0.001
22	*Selenium (as S)	mg/l, max	0.05	APHA 3900 Se C	<0.01	<0.01
23	Manganese (as Mn)	mg/l, max		APHA 3111 B	<0.1	<0.1
21	*Bio-assay Test	mg/l, mere	90% Survival of fish after 96 hrs in 100% effluent	IS 5582	96.0	0,08
25	Zinc (as Za)	mg/l, max	15	APHA 3111 B	0.31	0.77
26	Cadmium	mg/l, mms	0.01	APBA 3111 B	<0.01	<0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	-	APHA 5220 B	19.90	VISE OF



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		mg/l, max	0.1	APHA SHI B	< 0.1	<0.1
28	Lead (as Pb)	The second secon		APHA 3112 B	<0.004	<0.004
29	Mercury (as Hg)	mg/l, max	-			<0.1
30	Nickel (as Ni)	mg/l, max		APHA 3111 B	<0.1	-
31	"Arsenic (as As)	mg/l, max	0.2	APHA 3500 As B	< 0.005	<0.005
32	Total Chromium (as TCr)	mg/l, max		APIEA 3111 B	< 0.1	<0.1
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	mg/l, max	3	IS3025(P+44)1993 RA 2003	2.4	2.9
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	-	APHA 4500 P.D	0.37	1.13
kno	unusual feature observed during dete	rmination			3	iii

<sup>\*</sup>This parameter not in our NABL Scope

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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/66

Date: 05.08.2020

Test Report No: Eavlab/20/R-3156

#### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

#### SAMPLE DICTAILS

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	28.07.2020
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Latitude: N19°17.015' Langitude: E83°0.879' Altitude: 707.14 m.	Latitude: N19/16.602* Longitude: E82°59.812* Altitude: 725.73 m.
Sampling Date	27,07,2020	Test Completed on "	04.08.2020

SL No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-1	SW-2
1	*Color	Hazen, mex	300	APHA 2120 II	. 10.0	15.0
2	*Odon:	-	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	<del>2</del>	6.5-8.5	APHA 4500 H'B	7.31	8.14
4	Suspended Solids( as SS)	mg/l, max	-	APITA 2549 D	44,0	72.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	276.0	351.0
6	*Temperature	°c	-	-	28,0	28,0
7	Conductivity	us/cm	-	APILA 2510 C	449.0	574.0
8	Ammonical Nitrogen (as NH <sub>c</sub> -N)	mg/l, max	_	A9HA4300 NH;B	3.11	5.23
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	-	APHA4509N <sub>oos</sub> B	3.89	5.72
10	Oil & Grease	mg/l, max	0.1	APRA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max	_	**	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/L min	-	APRIA 4500 C13	ND	ND
13	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	2.41	4.36
14	Copper (as Cu)	mg/l, max	1.5	APHA MITTOLB	< 0.05	<0.05
15	*Fluoride (as F)	mg/l, max	1.5	APRA 4500 FD	0.49	1.71
16	*Hexavalent Chromium (as Cr <sup>46</sup> )	mg/l, max	0.05	APHA 2500 Cr B	< 0.05	< 0.05
17	*Cyanide (as CN)	mg/l, max	0,05	APHA 4500 CN E	< 0.01	< 0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O.C.	6.6	5.7
19	*Sulphide (as S)	mg/l, max	-	AFIIA 4500 8° F	< 0.005	< 0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/Lmex	50	APHA4500NOyB	3.13	5.88
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l, max		APHA 5530 C	< 0.001	< 0.001
22	*Selenium (as S)	mg/l, max	0.05	APHA 3500 80 C	<0.01	< 0.81
23	Manganese (as Mn)	mg/L max	-	APHA 3111 B	<0.1	<0.1
24	*Bio-assay Test	туЛ, пах	90% Survival of fish after 96 hrs in 100% effluent	18 6582	95.0	91.10
25	Zinc (as Zn)	mg/l, max	15	APHA 2111 B	0.19	1,59
26	Cadmium	meyi, mex	9.01	APBA 2111 B	<0.01	<0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	-	APIJA 5220 B	PRINTE	43,0



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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Any	unusual feature observed during dete	rmination			N	il
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	120	APHA 4500 P D	1.32	1.95
33	Biochemical Oxygen Demand (as BOD at 27 <sup>6</sup> C For 3 days)	mgA, max	3	J85025(F-44)1993 RA 2003	1.6	2.9
32	Total Chromium (as TCr)	mg/l, max	-	APHA 3111 B	< 0.1	<0.1
31	*Arsenic (as As)	mg/l, max	0.2	APRA 3500 As B	<0.005	<0.005
30	Nickel (as Ni)	mg/l, max	-	APHA 3111 B	<0.1	<0.1
29	Mercury (as Hg)	mg/l, max		APHA 3112 B	< 0.004	< 0.004
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	>0.1	<0.1

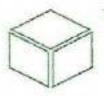
<sup>\*</sup>This parameter not in our MABL Scope

#### Remarks

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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/20/R-3157

Date: 05.08,2020

#### TEST REPORT

Customer Name & Address

 Baphlimali Mines, M/s Utkal Alumina International Ltd. Tikiri, Rayagada, Odisha.

Sample Location & Code	SW3: Kandabindha (Up Stream) SW4: Kandabindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlingli Mines, UAIL	Sample Received on	28,07,2020
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Lutitude: N19°22.014° Loogitade: E83°04.658° Altitude: 769.01 m.	Latitude: N19°23.078° Longitude: E83°0.248° Altitude: 660.50 m.
Sampling Date	27,07,2020	Test Completed on	04,08,2020

SL No	Parameters	Units	Standards as per 15 2296-Class C	Test methods	SW-3	SW-4
1	*Color	Hazen, max	300	APHA 2120 B	15.0	20.0
2	*Odour		Agreeable	APHA 21,50 B	Agreeable	Agreeable
3	pH value	G4	6.5-8.5	APHA 4500 H'B	7.52	8.17
4	Suspended Solids( as SS)	mg/l, max	-	APEIA 2510 IS	73.0	84.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	245,0	296.0
6	*Temperature	c	-	111	28.0	28.0
7	Conductivity	µs/cm	<u> </u>	APHA 2510 C	373.0	488.0
8	Ammonical Nitrogen (as NH <sub>2</sub> -N)	mg/l, max	-	APHA4500 NH-B	1.73	3.39
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	-	APHA4500NomB	2.44	4.22
10	Oil & Grease	mg/l, max	0,1	APHA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max	-	2	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min	-	APHA 4500 CLB	ND	ND
13	Iron (as Fc)	mg/l, max	50	APHA 3500 Fe B	0.85	1.57
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	< 0.05	< 0.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 FD	0.41	0.89
10	*Hexavalent Chromium (as Cr 1)	mg/i, max	0.05	APIIA JOURTED	<0.05	<0.05
17	*Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	< 0.01	<0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	6.3	6.0
19	*Sulphide (as S)	mg/l, max *	-	APIIA 4500 S <sup>5</sup> F	< 0.005	<0.005
20	*Nitrate (as NO <sub>3</sub> )	тул, тах	50	APHA4500NO, B	2,59	3.17
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l, max		APHA 5530 C	< 0.001	<0.001
22	*Selenium (as S)	mg/L, man	0.05	API A 3500 Sec	<0.01	<0.01
23	Manganese (as Mn)	mg/l, max	+	APEA 3111 B	< 0.1	< 0.1
24	*Bio-assay Test	mg/l, max	90% Survival of fish after 96 hrs in 100% effluent	DS 6587	94.0	92.0
25	Tine (us Tn)	mg/l max	15	APPLA SELLER	0.47	0,91
26	Cadmium	mg/l, max	0.01	APEA 3ULB	<0.01	<0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	-	APHA 5320 B	25.91510	17,49,0



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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Any	unusual feature observed during dete	rmination			N	ii .
34	"Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	-	APHA 4500 P D	0.55	1,37
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	mg/l, max	3	183025(P-44)1953 RA 2003	2.9	2.6
32	Total Chromium (as TCr)	mg/L max	-	APILA 3: 11 B	<0,1	< 0.1
31	*Arsenic (as As)	mg/l, max	0.2	APHA 3500 As B	<0.005	<0.005
30	Nickel (as Ni)	mg/l, max	-	APHA 3: 11 B	<0.1	<0.I
29	Mercury (as Hg)	mg/l, max	#	APHA 3112 B	< 0.004	< 0.004
28	Lead (as Pb)	mg/l, max	0.1	APHA 311LB	<0.1	<0.1

<sup>\*</sup>This parameter not in our NABI Scope

#### Remarks.

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Certificate No.: TC-7944

Format No.: VCSPL/FMT/055

Test Report No: Envinb/20/R-3614

Date: 02.09.2020

#### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Location & Code	SWI: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	24.08.2020
Sample Condition	Sealed Plastic & Sterilized Glass Buttle	Latitude: N19°17.015° Longitude: E83°0.879° Altitude: 707.14 m.	Latitude: N19°16.602° Longitude: E82°59.812° Altitude: 725.73 m.
Sampling Date	21.08.2020	Test Completed on	31.08.2020

SL No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-1	SW-2
1	*Color	Hazen, max	300	APITA 2120 B	10.0	20.0
2	*Odour	-	Agreeable	APMA 2150 B	Agreeable	Agreeable
3	pH value		6.5-8.5	APHA 4500 HTB	7.44	8,37
4	Suspended Solids( as SS)	mg/l, max		APHA 2540 D	28,0	70.0
5	Total dissolved solids(as TDS)	mg/l, mex	1500	APHA 2540 C	254.0	339.0
5	*Temperature	°c		-	27.0	27.0
7	Conductivity	µs/cm		APHA 2510 C	445.0	536,0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	-	APHA4500 NH <sub>3</sub> B	2.21	4.88
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	-	APHA4500NeedD	3.37	5.15
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max		-	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min	-	APHA 4500 CLB	ND	ND
13	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	2.13	3,48
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	< 0.05	< 0.05
15	*Fluoride (ns F)	mg/l, max	1.5	APHA 4500 FTD	0.37	1.09
16	*Hexavalent Chromium (as Cr*6)	mg/l, max	0.05	APHA 3500 Cr B	<0.05	< 0.05
17	*Cyanide (as CN)	mg/l, max	0.05	APSIA 4500 CN B	< 0.01	< 0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	6.7	5.5
19	*Sulphide (as S)	mg/l, max		APEIA 4500 S <sup>2</sup> - F	< 0.005	<0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	50	APTIA 4500NO3-B	2.55	4.13
21	*Phenolic Compound (as C6H6OH) .	mg/l, max	-	APHA:5530 C	<0.001	<0.001
22	*Selenium (as S)	mg/l, max	0.05	APHA 3500 SelC	<0.01	<0.01
23	Manganese (as Mn)	mg/l, max	-	APHA 3111 B	<0.1	<0.1
24	*Bio-assay Test	mg/l, max	90% Survival of fish after 96 hrs in 100% effluent	18 6582	95,0	90.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.39	0.89
26	Cadmium	mg/l, max	0.01	APHA 3111 B	< 0.01	< 0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	-	APHA 5220 B	15,0	43,0
28	Lead (as Ph)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1

Committed For Better Environment



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NABL ACCREDITED

Certificate No.: 1 C-7944 Format No.: VCSPL/FMT/055

Anv	unusual feature observed during deter	rmination			N	111
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	24	APHA 45XFP ()	0.84	1.56
33	Biochemical Oxygen Demand (as BOD at 27 °C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2,1	2,7
32	Total Chromium (as TCr)	mg/l, max	77.	APHA 3111 B	<0.1	1.0>
31	*Arsenic (as As)	mg/l, max	0.2	APEIA 3500 As E	<0.005	<0.005
30	Nickel (as Ni)	mg/l, max	2	APHA 3111 B	<0.1	<0.1
29	Mercury (as Hg)	mg/l, max	42	APHA 3112 B	<0.004	<0.004

<sup>\*</sup>This parameter not in our NABL Scope



\*\*\* End Report\*\*\*

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NABL ACCREDITED Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Date: 02.09.2020

Test Report No: Euvlah/20/R-3615

#### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd. Tikiri, Rayagada, Odisha

Sample Location & Code	SW3: Kandahindha(Up Stream) SW4: Kandahindha(Down Stream)	Sampled by	VCSPL'S Representative
-	Surface Water	Sampling Procedure	IS 1060
Sample description	Surface Water	Sample Received on	24.08,2020
Sample Source		Latitude: N19°22.014'	Latitude: N19°23.078'
Sample Condition	Sealed Plastic & Sterilized Glass Bottle	Longitude: E83°04.658' Altitude: 769.01 m.	Longitude: E83°0.248° Altitude: 660.50 m.
Sampling Date	21.98.2020	Test Completed on	31,08,2020

SI.	Parameters	Units	Standards as per 18 2296-Class C	Test methods	SW-3	SW-4
No		Hazen, max	300	APHA 2120 B	10,0	20.0
1	*Color	I lazen, max	Agreeable	APHA 2150 B	Agreeable	Agreeable
2	*Odonr		6.5-8.5	APHA 4500 IFIS	7.31	7.92
3	pH value	mg/l, max	-	APHA 254010	52.0	74.0
4	Suspended Solids (as SS)	The second secon	1500	APHA 2540 C	211.0	318.0
5	Total dissolved solids(as TDS)	mg/L, max	1500	-	27.0	27.0
6	*Temperature			APHA 2510 C	326.0	477.0
7	Conductivity	ия/сти	44	APTIA4500 NH/B	1.94	4,31
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max		APHA4500N <sub>ang</sub> B	2.29	5,67
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	0.1	APHA \$220 B	ND	ND
10	Oil & Grease	mg/l, max		_	. ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max		API IA 45/30 CLB	ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min	50	APHA 3500 % B	1.43	2.27
13	Iron (as Fe)	mg/L max	400	APEA 3111CuB	<0.05	< 0.05
14	Copper (as Cu)	mg/l, max	1.5	APHA 4500 FD	0.26	0.78
15	*Fluoride (as F)	mg/l, max	1.5	APHA 3500 Cr B	<0.05	<0.05
16	*Hexavalent Chromium (as Cr*6)	mg/_, max	0.05	APHA 4500 CNB	<0.01	< 0.01
17	*Cyanide (as CN)	mg/l, max	0.05	APHA 4500 O C	6.4	5.8
18	(00)	mg/l, min	4	APHA 4500 5 <sup>3</sup> F	<0.005	< 0.005
19		mg/l, max		APILA 45/00/03-B		3.92
20	5125 5	mg/l, max	50	APHA SSSUC	<0.001	<0.00
21	THE CONTRACTOR	mg/l, max		APITA 3500 Se C	< 0.01	<0.01
22		mg/l, max	0.05	APILA 3111 B	<0.1	<0.1
23		mg/l, max	90% Survival of	75900223550000	1	-
24		mg/l, max	figh after	IS 6582	93,0	90.0
		mg/l, max	15	APHA 3111 B	0,32	0.80
25		mu/l, max		APHA 3111 B	<0.01	<0.0
20	6 Cadmium	-		APUA 5220 H	12.0	35.0
2	and the same of th	mg/l, max		APHA 3111B	<0.1	<0.1
2	8 Lead (as Pb)	11.291, 11.21.				



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NABL ACCREDITED Certificate No.: TC-7944

Format No.: VCSPL/FMT/055

Anv	unusual feature observed during deter	rmination			N	i)
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	1199	APEA 4500 P.D.	0.46	1.33
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	mg/L, max	3	IS3025(P-44)1993 RA-2003	1.7	2,5
32	Total Chromium (as TCr)	mg/l, max	-	APIIA 3111.B	<0.1	<0.1
31	*Arsenic (as As)	mg/l, max	0.2	APHA 3500 Ac B	<0.005	<0.005
30	Nickel (as Ni)	mg/l, max	-	APHA 3111 B	<0.1	<0.1
29	Mercury (as Hg)	mg/l, max	_	APHA 3112/B	< 0.004	< 0.884

<sup>\*</sup>This parameter not in our NABL Scope



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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: Envlab/20/R-4015 Date: 03.10.2020

#### TEST REPORT

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha **Customer Name & Address** 

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VCSPL'S Representative	
Sample description	Surface Water	Sampling Procedure	IS 1060	
Sample Source	Baphlimali Mines, UAIL	Sample Received on	19.09.2020	
Sample Condition	Sealed Plastic & Sterilized Glass Bottle	Latitude: N19°17.015′ Longitude: E83°0.879′ Altitude: 707.14 m.	Latitude: N19°16.602′ Longitude: E82°59.812′ Altitude: 725.73 m.	
Sampling Date	18.09.2020	Test Completed on	26.09.2020	

Sl. No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-1	SW-2
1	*Color	Hazen, max	300	APHA 2120 B	10.0	20.0
2	*Odour		Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value		6.5-8.5	APHA 4500 H <sup>+</sup> B	6.49	7.63
4	Suspended Solids( as SS)	mg/l, max		APHA 2540 D	36.0	80.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	221.0	296.0
6	*Temperature	<sup>0</sup> c			27.0	27.0
7	Conductivity	μs/cm		APHA 2510 C	373.0	489.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max		APHA4500 NH <sub>3</sub> B	1.73	3.17
9	Total Kjeldahl Nitrogen (as N)	mg/l, max		APHA4500N <sub>ORG</sub> B	2.26	4.86
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max			ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min		APHA 4500 Cl B	ND	ND
13	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	1.95	3.41
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.05	<0.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 F D	0.41	1.28
16	*Hexavalent Chromium (as Cr <sup>+6</sup> )	mg/l, max	0.05	APHA 3500 Cr B	<0.05	<0.05
17	*Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	6.6	5.4
19	*Sulphide (as S)	mg/l, max		APHA 4500 S <sup>2-</sup> F	<0.005	< 0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	50	APHA 4500NO3-B	2.32	4.55
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l, max		APHA 5530 C	<0.001	<0.001
22	*Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.01	<0.01
23	Manganese (as Mn)	mg/l, max		APHA 3111 B	<0.1	<0.1
24	*Bio-assay Test	mg/l, max	90% Survival of fish after 96 hrs in 100% effluent	IS 6582	94.0	91.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.25	0.74
26	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max		APHA 5220 B	14.0	57.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1





Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

29	Mercury (as Hg)	mg/l, max		APHA 3112 B	<0.004	<0.004
30	Nickel (as Ni)	mg/l, max		APHA 3111 B	<0.1	<0.1
31	*Arsenic (as As)	mg/l, max	0.2	APHA 3500 As B	< 0.005	< 0.005
32	Total Chromium (as TCr)	mg/l, max		APHA 3111 B	<0.1	<0.1
33	Biochemical Oxygen Demand (as BOD at 27 <sup>o</sup> C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	1.8	2.9
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max		APHA 4500 P D	0.69	1.78
Any	Any unusual feature observed during determination					il

<sup>\*</sup>This parameter not in our NABL Scope



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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: Envlab/20/R-4016 Date: 03.10.2020

#### TEST REPORT

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha **Customer Name & Address** 

Sample Location & Code	SW3: Kandahindha(Up Stream) SW4: Kandahindha(Down Stream)	Sampled by	VCSPL'S Representative	
Sample description	Surface Water	Sampling Procedure	IS 1060	
Sample Source	Baphlimali Mines, UAIL	Sample Received on	19.09.2020	
Sample Condition	Sealed Plastic & Sterilized Glass Bottle	Latitude: N19°22.014′ Longitude:E83°04.658′ Altitude: 769.01 m.	Latitude: N19°23.078′ Longitude: E83°0.248′ Altitude: 660.50 m.	
Sampling Date	18.09.2020	Test Completed on	26.09.2020	

Sl. No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-3	SW-4
1	*Color	Hazen, max	300	APHA 2120 B	10.0	20.0
2	*Odour		Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value		6.5-8.5	APHA 4500 H <sup>+</sup> B	6.93	7.32
4	Suspended Solids( as SS)	mg/l, max		APHA 2540 D	34.0	74.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	185.0	262.0
6	*Temperature	<sup>0</sup> c			27.0	27.0
7	Conductivity	μs/cm		APHA 2510 C	311.0	436.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max		APHA4500 NH <sub>3</sub> B	1.73	4.41
9	Total Kjeldahl Nitrogen (as N)	mg/l, max		$APHA4500N_{ORG}B$	2.84	5.22
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	*Free Ammonia (as NH <sub>3</sub> )	mg/l, max			ND	ND
12	*Total Residual Chlorine (as RFC)	mg/l, min		APHA 4500 Cl B	ND	ND
13	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	1.59	2.95
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.05	<0.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 FD	0.31	0.64
16	*Hexavalent Chromium (as Cr <sup>+6</sup> )	mg/l, max	0.05	APHA 3500 Cr B	<0.05	<0.05
17	*Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
18	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	6.2	5.7
19	*Sulphide (as S)	mg/l, max		APHA 4500 S <sup>2-</sup> F	<0.005	< 0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	50	APHA 4500NO3-B	2.12	4.07
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l, max		APHA 5530 C	<0.001	<0.001
22	*Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.01	<0.01
23	Manganese (as Mn)	mg/l, max		APHA 3111 B	<0.1	<0.1
24	*Bio-assay Test	mg/l, max	90% Survival of fish after 96 hrs in 100% effluent	IS 6582	94.0	92.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.41	0.92
26	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max		APHA 5220 B	13.0	47.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1





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29	Mercury (as Hg)	mg/l, max		APHA 3112 B	<0.004	<0.004
30	Nickel (as Ni)	mg/l, max		APHA 3111 B	<0.1	<0.1
31	*Arsenic (as As)	mg/l, max	0.2	APHA 3500 As B	< 0.005	< 0.005
32	Total Chromium (as TCr)	mg/l, max		APHA 3111 B	<0.1	<0.1
33	Biochemical Oxygen Demand (as BOD at 27 <sup>0</sup> C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2.2	2.8
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max		APHA 4500 P D	0.42	1.64
Any	Any unusual feature observed during determination					il

<sup>\*</sup>This parameter not in our NABL Scope



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# ANNEXURE: 8 Ground Water Quality Analysis Report For the period Pre-Monsoon & Monsoon



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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: Enviah/20/R-0561

Date : 10.06,2020

#### **TEST REPORT**

Customer Name & Address

 Baphlimali Mines, M/s Utkal Alumina International Ltd., Tikiri, Rayagada, Odisha.

SAMPL	100	TAIR	TA	TT 42
SOLVERS TO THE	Alice	1.5	1.1%	11.55

Sample l	Location & Code	GW1: Palkep GW2: Andira		Sampled by		VCSPL'S Representati	tite
Sample :	description	Ground Wate		Sampling Proced	ure	18 1060	
Sample !	CHICAGO CONTRACTOR CON	Baphlimali Mi		Sample Received		23,05,2020	
	Condition	Sealed Plastic Glass Bottle	ENSONWELL STREET	Latitude: N19°. Longitude: E82°! Altitude: 874.1	20.197 59.589	Latitude: N19° Longitude: E83° Altitude: 739/	00.738
Samplin	g Date	22,05,2020		Test Completed	on	30,05,2020	
Sl. No	Paran	neters	Unit	Requirement Destrable lim(t (IS:10500:2012)	Test methods	GW-1	GW-2
Organol	eptic & Physical Para	ameters					
1	*Color		Hazen, max	5	APHA 2120/B,C.	<1.0	<1.0
2	*Ddor		The state of the s	Agreeable	APHA 2120 B	Agrecable	Agreeable
3	pH value			6.5-8.5	APHA 4500 H B	7.80	8,13
4	Turbidity		NTU ,max	1.0	APHA 2130/B	0.47	0.78
5	Total Dissolved So	fids (as TDS)	mg/l	500	APHA 3540 C	317.0	280.0
6	*Temperature		°C			26.0	26.0
7	Conductivity	0.000	pS/cm		APRA 2530-C	505.0	467.0
General	Parameters Concern	ing Substances Uni	lesicable in Exce	ssive Amounts	te Single Control of		3-22
8	Calcium (as Ca)	0.78.1.100000000000000000000000000000000	mg/l, max	75	APHA 3500Cn B	49.6	52.8
9	Chloride (as Cl)		mg/l, max	250	APHA 4500CLB	40.2	44.6
10	Copper (as Cu)		mg/l, max	0.05	APHA 3111R.C	r33.05	<0.05
11	*Fluoride (as F)		ung/l, max	1.0	APHA 4500PT	0.61	0.45
12	*Free residual Chi	orine	mg/l, min	0.2	APHA 4500CLB	0.2	.0.2
13	Iron (as Fe)		mg/l, max	0.3	APSIA 3500Fe B	0.22	0.25
14	Magnesium (as M;	2)	mg/l, max	30	APHA 3500Mg,B	10.6	14.6
15	Manganese (as Mr	1)	mg/l, max	0.1	APNA 3500Mn B	40.05	<0.05
16	*Mineral oil		mg/l. max	0.5	APHA 5020 B	< 0.02	< 0.02
17	Acidity	Carrendostavi	mg/l, max		APRA ZEJO B	1.29	1.14
18	*Phenolic compou	nds (as C <sub>4</sub> H <sub>2</sub> OH)	mg/l, max	0.001	APHA 5510 B,C	<0.001	<0.001
19	*Selenium (as Se)		mg/l, max	0.01	APRA 3114B	< 0.005	<0.005
20	*Sulphate (as SO <sub>4</sub> :		тел, так	200	APHA 4500SO, 319	12.9	13.4
21	Total Alkalinity		mg/l, max	200	APHA 2320 B	133.0	160.0
2.2	Total Hardonss	(3.5)	туЛ, так	200	APHA 2340 C	168.0	192.0
2.3	Zinc( as Zn)	Variation in	тел, так	5.0	AFRA 3111B,C	0,39	0.48
	ers Concerning Toxi	c Substances	OFFICE OF THE OFFI				2000
24	Cadmium (as Cd)		mg/l, max	0.063	APHA 3111B.C	<0.003	<0.003
25	*Cyanide (as Cn)		mg/l, max	0.05	APRA 4500CNC,		<0.01
25	Lend (as Pb)		mg/l, max	0.01	APUA STUBIC	<0.005	<0.005
27	Mercury (as Hg)		mg/l, max	0.601	APHA 3500 Hz	<0.0006	< 0.0005
28	*Total arsenic		mg/l, max	0.01	APSIA 3114B	100.0>	<0.001
2.9	*Pesticide		mg/l, max	0.0005	APHA 6630 B	< 0.0001	< 0.0001





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30	<sup>a</sup> Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APHA 9221 B	Absent	Absen
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\*This Parameter not in our NABL Scope.

#### Monarke

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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/20/R 0663

Date: 10.06.2020

#### TEST REPORT

Customer Name & Address

 Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

54	м	PL	$\mathbf{E}1$	DE:	FAI	1.8

Sample	Location & Code	GW3: Mallig GW4: Kendu	aon mund:	Sampled by		VCSPL'S Representat	tive
Sample	description	Ground Wate	r	Sampling Proced	ere	IS 1060	
Sample	Source	Baphlimali Mi	nes, UAII.	Sample Received	on	23,05,2020	
Sample	Condition	Scaled Plastic Glass Bottle	& Sterilized	Latitude: N19°2 Longitude: E82°5 Altitude: 699.8	19,889	NA	
Samplin	g Date	22.05,2020		Test Completed of	on.	30,05,2020	
Sl. No	Paran	neters	Unix	Requirement Destrable limit (18:10500:2012)	Test methods	GW-3	GW-4
Organol	eptic & Physical Para	ameters					
1	*Color		Hazen, max	5	APHA 2120 B,C	<1.0	5.0
2	*Odor			Agreeable	APHA 2120 B	Agrecable	Agreeable
3	pH value		44	6.5-8.5	APHA 4500 H B	7.78	7.62
4	Turbidity	H0000000000000000000000000000000000000	NTU max	1.0	APHA ZTIO H	0.67	0.48
5	Total Dissolved So	filds (as TDS)	mg/l	500	APHA 2540 C	219.0	273.0
6	*Temperature	11.000,000,000	"C		*	26.0	26.0
7	Conductivity		pS/cm		APHA 2510 C	354.0	444.0
General	Paranteters Concern	ing Substances Unr	lesirable in Exce	saive Amounts	2000-008003	200	
S	Calcium (as Ca)		mg/l, max	75	APHA 3500Ca B	46.4	44.8
9	Chloride (as Cl)		mg/l, max	250	APHA 4500CT B	37.9	40.1
10	Copper (as Cu)		mg/l, max	0.05	APBA TITUEC	< 0.05	<0.05
11	*Fluoride (as F)		mg/l, max	1.0	APHA 4500FC	< 0.05	0.23
12	*Free residual Chi	orine	mg/l, min	0.2	APHA (500CLB	0.3	.0.3
13	Iron (as Fe)		mg/l, max	0.3	APITA 3500Fe B	0.09	0.20
14	Magneshum (as M;	g)	mg/l, max	30	APHA 3500Mg,E	13.6	11.7
15	Manganese (as Mr		mg/L max	0.1	APSIA 3500Mn E	40.05	<0.05
16	*Mineral oil		mg/L max	0.5	APHA 5220 B	< 0.02	< 0.02
17	Acidity		mg/l, max		APHA 23/0 B	1.41	<1.0
18	*Phenolic compou	nds (as C.H.OH)	mg/l. max	0.601	APHA 5520 B,C	< 0.001	< 0.001
19	*Selenium (as Se)		mg/L max	0.01	APHA 31148	< 0.005	< 0.005
20	*Sulphate (as SO <sub>4</sub>		mg/L max	200	APHA 4500000, E	11.8	10.4
21	Total Alkalinity		mg/l, max	200	APHA 2720 B	140.0	126.0
22	Total Hardoess		mg/l, max	200	APHA 2340 C	172.0	160.0
2.3	Zinc( as Zn)		mg/l, max	5.0	APHA 3111B.C	0.28	0.37
	ters Concerning Toxi	e Substances					337
24	Cadmium (as Cd)		mg/L max	0.003	APHA 311 B.C	< 0.003	<0.003
25	*Cyanide (as Cn)		mg/l. max	0.05	APSIA 4500CN C.B	< 0.01	<0.01
26	Lead (as Po)		mg/l, max	0.01	APHA JIIIB.C	< 0.005	< 0.005
27	Mercury (as Hg)		mg/l. max	0.001	APSIA 3500 Hg	<0,0005	< 0.0005
28	*Total arsenic		mg/L max	0.01	APEIA D114B	<0.001	<0.001
29	*Pesticide		rog/L mass	0.0005	APHA 6630 B	<0.0001	< 0.8801





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	30	*Tetal Cell forms	MPN/100ml	Shall not be detected in any 100 ml sample	APH 9721 B	Absent	Absent
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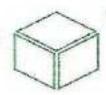
\*This Parameter not in our NASL Scope.

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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: Envlab/20/R-3616

Date: 02.09.2020

#### **TEST REPORT**

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada,

Sample Location & Code	GW1: Paikupakhal GW2: Andirakanch	Sampled by	VCSPL'S Representative
Sample description	Ground Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	25.08.2020
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Latitude: N19°20.197" Longitude: E82°59.589 Altitude: 874.17 m.	Latitude: N19°19.079 Longitude; E83°00,738° Altitude: 739.45 m.
Sampling Date	24,08,2020	Test Completed on	02.09.2020

SI. No	Parameters	Unit	Requirement Desirable limit (IS:10500:2012)	Test methods	GW-1	GW-2
Огран	oleptie & Physical Parameters					
1	*Color	Hazen, max	5	APHA 2120 B,C	<1.0	<1.0
2	'Odor	-	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	-	6,5-6,5	APHA 4500 H°B	8.22	7.96
4	Turbidity	NTU anax	1.0	APHA 2130 B	0.26	0,61
5	Total Dissolved Solids (as TDS)	mg/l	500	APHA 2540 C	314,0	274,0
6	*Temperature	10	-		27.0	27.0
7	Conductivity	µS/cm	-	APHA 2510 C	476.0	421.0
Gener	al Parameters Concerning Substances		Excessive Amounts			
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	46.4	52.8
9	Chloride (as Cl)	mg/i, max	250	APHA 4500Cl*B	29.1	38.3
10	Copper ( as Cu)	mg/l, mux	0.05	APHA 3111B.C	< 0.05	< 0.05
11	*Fluoride (as F)	mg/l, max	1.0	APHA 4500FC	0.42	0.58
12	*Free residual Chlorine	mg/l, min	0.2	APHA 4500C B	0.3	6.3
13	Iron (as Fc)	mg/l, max	0.3	APHA 3500Fe B	0.17	0.21
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	9.7	12.6
15	Manganese (as Mu)	mg/i, max	0.1	APHA 3500Mn B	<0.05	<0.05
16	*Mineral oil	mg/l, max	0.5	APHA 5220 B	<0.02	< 0.02
17	Acidity	mg/l, max		APHA 2310 B	<1.0	1.12
18	*Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l, max	0.001	APHA 5530 B,C	<0.001	<0.001
19	*Selenium (as Se)	mg/l, max	0.01	APHA 3114B	< 0.005	< 0.005
20	*Sulphate (as SO <sub>4)</sub>	mg/l, max	200	APHA 4500\$O, 3 B	14.2	17,9
21	Total Alkalinity	mg/l, max	- 200	APHA 2320 B	140.0	132.0
22	Total Hardness	mg/l, max	200	APHA 2340 C	156.0	184.0
25	Zinc( as Zn)	mg/i, max	5.0	APHA 3111B.C	0.32	0.41
Paran	neters Concerning Toxic Substances			1		
34	Cadmium (as Cd)	mg/l, max	0.003	APHA 3111B,C	<0.003	<0.003
25	*Cyanide (as Cn)	mg/l, max	0.05	APILA 4500CN C.D	<0.01	<0.01
26	Lead (as Pb)	mg/l, max	0.01	APHA 3111B,C	< 0.005	< 0.005
27	Mercury (as Hg)	mg/l, max	0.001	APILA 3500 Lg	< 0.0005	< 0.0005
28	*Total arsenic	mg/l, max	0.01	APHA 3114B	< 0.001	< 0.001
29	*Pestleide	mg/l, max	0.0005	APH A 6630 B	< 0.0001	<0.0001





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30	*Total Coli forms	MPN/100ml	Shall not be desected in any 100 ml sample	APHA 9221 B	<1.1	<1.1
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<sup>\*</sup>This Parameter not in our NABL Scope.

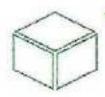


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Certificate No.: TC-7944 Formut No.: VCSPL/FMT/055

Date: 02.09.2020

Test Report No: Envlab/20/R-3617

#### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada,

Sample Location & Code	GW3: Malligaon GW4: Kendumundi	Sampled by	VCSPL'S Representative
Sample description	Ground Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	25.08.2020
Sample Condition	Sealed Physic & Sterilized Glass Bottle	Latitude: N19°21.359° Longitude: E82°59.889° Altitude: 699.82 m.	NA
Sampling Date	24.08.2020	Test Completed on	02.09.2020

SI. No	Parameters	Unit	Requirement Desirable limit (IS:10500:2012)	Test methods	GW-3	GW-4
Organ	oleptic & Physical Parameters					
1	*Color	Hazen, max	5	APHA 2120 B.C	<1.0	5.0
2	*Oder	-	Agreeable	APHA 2120 B	Agrecable	Agrecable
3	pH value		6.5-8.5	APHA 4500 H*B	7.52	8.19
4	Turbidity	NTU max	1.0	APHA 2130 B	0.44	0.63
5	Total Dissolved Solids (as TDS)	mg/l	500	APHA 2540 C	174.0	280.0
6	*Temperature	°C			27.0	27.0
7	Conductivity	uS/cm		APHA 2510 C	286.0	479.0
Gener	al Parameters Concerning Substances	Undesirable in l	Excessive Amounts	and the second second		
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	40.0	46,4
9	Chloride (as Cl)	mg/l, max	250	APHA 4500CT B	28.4	36.9
10	Copper (as Cu)	mg/l, max	0.05	APHA 3111B,C	< 0.05	< 0.05
11	*Fluoride (as F)	mg/L max	1.0	APHA 4500FC	0,14	0,49
12	*Free residual Chlorine	mg/l, min	0.2	APHA 4500CLB	0,3	0.3
13	Iron (as Fc)	mg/l, max	0.3	APHA 3500Fe B	0.12	0.23
14	Magnesium (as Mg)	mg/L max	30	APHA 3500Mg,B	11.7	14.6
15	Manganese (as Mn)	mg/l, max	0.1	APHA 3500Mn B	< 0.05	<0.05
16	*Mineral oil	mg/l, max	0.5	APHA 5220 B	< 0.02	<0.02
17	Acidity	mg/l, max		APHA 2310 B	<1.0	<1.0
18	*Phenolic compounds (as C <sub>4</sub> H <sub>5</sub> OH)	mg/l, max	8.001	APHA 5530 B.C	-:0.001	<0.001
19	*Selenium (as Se)	mg/l, max	0.01	APHA 3114B	<0.005	<0,005
28	*Sulphate (as SO <sub>0</sub>	mg/l, max	200	APHA 4500SO <sub>2</sub> <sup>3</sup> B	10.4	15.7
21	Total Alkalinity	mg/l, max	- 200	APHA 2320 B	112.0	144.0
22	Total Hardness	mg/l, max	200	APHA 2340 C	148.0	176.0
2.5	Zinc( as Zn)	mg/l, max	5.0	APHA 3111B,C	0.17	0.56
Paren	neters Concerning Toxic Substances					
34	Cadmium (as Cd)	mg/l, max	0,003	APHA 3111B,C	<0.003	<0.003
25	*Cyanide (as Cn)	mg/l, max	0.05	APHA 4500CNC,D	<0.01	<0.01
26	Lead (as Pb)	mg/l, max	0.01	APHA 3111B,C	<0.005	<0.005
27	Mercury (as Hg)	mg/l, max	160.0	APHA 3500 Hg	< 0.0005	< 0.0005
28	*Total aryenic	mg/l, max	0.01	APHA 3114B	<0.001	<0.001
29	*Pesticide	mg/l, max	0.0005	APHA 6630 B	<0.0001	<:0.0001





(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 45001:2018 Certified)

> Certificate No.: TC-7944 Format No.: VCSPL/FMT/05

30 *Total Coli forms MPN/100ml detected in 100 ml san	may APHA 9221 B	⊲.1	<1.1
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<sup>\*</sup>This Parameter not in our NABL Scope.



\*\*\* End Report\*\*\*

#### Remark

#### TERMS AND CONDITIONS

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- 3. The behermony in not responsible for the nethanticity of photocopied test report,
- 4. The next bear will not be remined for more than 15 days from the date of issue of our report course in case as required by applicable regulations.
- 5. The inhomosy's responsibility under this report is limited to; proven will'all negligence

# ANNEXURE: 9 Ground Water Level Monitoring Report For the period Pre-Monsoon & Monsoon



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/86

NABL ACCREDITED

Test Report No: ENVLAB/20/R-0663

Date: 10.06.2020

#### TEST REPORT

Customer Name & Address

Baphilmail Mines, M/s Utkal Alumina International Ltd,

Tikiri, Rayagada, Odisha.

#### SAMPLE DETAILS

Sample Location & Code		Sampled by	VCSPL'S Representative
Sample Name	*Ground Water Level	Sampling Procedure	NA.
Sample Source	Baphiimali Mines, UAIL	Sample Received un	NΛ

SL. No	Date of Sampling	Name of the Location	Water Level (moter)	GPS Countinate
1	22.05.2620	Paikupakhal (Buffer Zone)	6.9	Latitude: N19°20.197 Longitude: E82'59.589 Attitude: 874.17 m.
2	22.05.2020	Andirakanch (Buffer Zone)	7.5	Latitude: N19°19.079 Longitude: E83°00.738 Altitude: 739.45 m.
3	22.05.2020	Malligeon (Buffer Zone)	6.0	Latitude: N19°21,359 Longitude: E82°59,889 Altitude: 699,82 m.
4	22.05.2020	Kendumundi (Buffer Zone)	5.5	NA ,
5	22.05.2020	Near Dump Yard (Core Zone)	>104	NA.
6	22.05.2020	Near Check Post (Core Zone)	>104	NA

Note: Monitoring of ground water level and quality not done in the mining lease area due to non availability of ground water.

\*This parameter not in our NABL Scope





(An Enviro Engineering Consulting Cell)
(ISO 9001;2015, ISO 14001;2015 & OHSAS 45001;2018 Certified)

Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Test Report No: ENVLAB/20/R-3618

Date: 02.09.2020

#### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Location & Code	-	Sampled by	VCSPL'S Representative
Sample Name	*Ground Water Level	Sampling Procedure	NA
Sample Source	Baphlimali Mines, UAIL	Sample Received on	NA:

SL. No	Date of Sampling	Name of the Location	Water Level (meter)	GPS Coordinate
1	24.08.2020	Paikupakhal (Buffer Zone)	2,13 *	Latitude: N19°20.197° Longitude: E82°59.589° Altitude: 874.17 m.
2	24.08.2020	Andirakanch (Buffer Zone)	2.44	Latitude: N19°19.079° Longitude: E83°00.738° Altitude: 739.45 m.
3	24,08,2020	Malligaon (Buffer Zone)	0,91	Latitude: , N19°21.359° Longitude: E82°59,889° Altitude: 699.82 m.
4	24.08.2020	Kendamundi (Buffer Zone)	2.74	N4
5	24.08.2020	Near Dump Yard (Core Zone)	>f04	NA.
6	24.08.2020	Near Check Post (Core Zone)	>104	NA

Note: Monitoring of ground water level and quality not done in the mining lease area due to non availability of ground water.

\*This parameter not in our NABL Scope

\*\*\* End Report\*\*\*



#### Remarks

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- The laboratory's responsibility under this report is limited to, proven willful negligence.



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B 355792

#### 'FORM 'K'

[See rule 23-A (2) (e) & rule 26]

### AGREEMENT FOR SUPPLY OF WATER FOR THE PURPOSE OF INDUSTRIAL/COMMERCIAL USE

THIS AGREEMENT is made on the 1.2. day of Description thousand Eighteen (2018) BETWEEN Shri. Narisetty Nagesh son of Prakasiah Narisetty by profession Chief Executive Officer (CEO), permanent resident of C2,Do-68-2, Leela Manor, Balajinagar, Siripuram Junction, Siripuram, Vishakhapatnam, Andhra Pradesh, PIN-530003, presently residing at "A" type building, Oshapada Residential Campus, M/s. Utkal Alumina International Ltd., Ps. Doraguda, Dist-Rayagada, Pin-765015, the authorized representative of M/s Utkal Alumina International Limited, having its plant at Doraguda (Hereigafter called the "Applicant") of the First part.

#### AND

Shri B. Sankarnarayan, son of Late B. Kashinath, resident of villege Goda Govindpur P.S. K. Nuagaon, District Ganjam, Qdisha by profession Executive Engineer, Harabhangi Irrigation Division, Adava, Dist-Gajapati, Qdisha (hereinafter referred to as the 'Sureties') of the second part: AND the Governor of Orissa which expression unless repugnant to the context, shall include is successors and assigns (hereinafter called 'the Government') of the third part;



MINAGESH



Page 1 of 11



# CONSENT ORDER BAPHLIMALI BALLYER MINES OF LTRAIL ALL-MINA INT. LTD.

Page 1 of 12

BY REGD. POST WITH AD

## STATE POLLUTION CONTROL BOARD, ODISHA

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012 Phone-2561909, Fax: 2562822, 2560955

#### CONSENT ORDER

No. 3489

/ IND-I-CON- 5450

Dt. 19.03.20201

#### CONSENT ORDER NO. 2765

Sub: Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.

Ref: Your online application No. 2354845 Dated 20.12.2018 and Letter No. UAIL-Mines/BMM/2019 dated 15.11.2019 & Online reply dated 14.1.2020

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry: BAPHLIMALI BAUXITE MINES OF M/S. UTKAL ALUMINA INTERNATIONAL LTD.

Name of the Occupier & Designation: SRI SURYAKANTA MISHRA, DIRECTOR.

Address: VILL: PAIKKUPAKHAL, PO: MAIKANCH, DIST: RAYAGADA

This consent order is valid for the period up to 31.03.2022 from the date of issue of this order.

This consent order supersedes the earlier consent orders issued vide letter No. 2608 dated 14.03.2019.

#### Details of Products Manufactured

SI. No	Product	Quantity
01.	Bauxite	5.3 MTPA

This consent order is valid for the specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

N	Hem	unit	Total	Rate (Rs)	Total (Re)
3		SETHER!			
	Soil & Moisture Conservation Measures or Construction of roose housing Chart stars across the	-			
	session rate strongs line and suri perential rate occurring along the alogoy area of the lense				
	1 nor space	Nes	50	3600	234000
	2 mo spen	Non	40	7119	284520
	3 00 (par	Nin.	-26	14920	387920
				(A) Total	E88442
	tig Contains Renating	15			300000
				(8) Tertail	300000
	Fire Perturber Measures				
	Provision for a fire watch tower on feath west size of the least main the boundary.	15	2		500000
				(C) Total	100000
2	Deployment of a fire lighting sound simulating of 5 members with provision of outside etc. As per approved cost norm of CNUAL Costons for five five meetins of 5.50 Mes per appears. 3.50 Mes a 10 years.	Year	30	150000	3500000
	THE R. P. LEWIS CO., LANSING, MICH.			(D) Tetal	2100000
	Provention of fall & entry to mining pits by wild animals				
2	Construction of belonce MA Stone masonary	(n	10	400000	A080000
	John a musclary away the boundary for 10km.	-	_	(E) Tama?	4000000
	Development of Green Balt. Green Bun through following method in safety rome of 2 length of 22km route the non-forest and	S mer wis	Ite over a		
	AND practices with Gap Plantetion @ 400 practs per ha	40	9.25	38806	320550
	Brook Partition @ 1900 press per ha	Yes	8.25	286423	2112173
				(K) Yorki	2683123
	Cout of one lacest Model SUV (SCONPIO 5:10) vehicle to be handed over to the DFO, Spragoda	No	-1	1500000	1600906
				(G) Total	1800000
	intersections for regulating impact of mining activities. Intercections for regulating fight, water, an incre- portation, themp manifestion & waste management will be perfect but at the present sets as per the appropriate	ingle pure	regration at 1 refing to 114 a	the project cost	

### OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE) & CHIEF WILDLIFE WARDEN, ODISHA

BDA APARTHENT, 5<sup>74</sup> FLOOR, PRAKRUTI BHAWAN, NILAKARTHA NAGAR, 8858-12 Ph. No.6674-2564587, FAX No.0674-2565062 (Withday infolyweith org. E. mail. odickawkitik@gmail.com)

> No. 5648 /1WL-SSP-80/2016 Dated Bhubaneswar, the 2.7 Jun, 2017

To

The Asst. Vice President, Mines, M/s Utkal Alumina International Ltd., 3-6, Jayadev Vihar, Bhubaneswar - 751013

Sub:

Proposal for diversion of 233.343 ha. of DLC forest land including safety zone of 10.283 ha in village Faik-Rupakhal, Unuturapas and Karanj-Kupakhal under Kasipur Tahsil of Rayagada District within total mining lease area of 1388.74 ha for bauxite mining in their Baphilimali Bauxite Mines in Kalahandi and Rayagada Districts of Odisha by M/s Utkal Alumina International Ltd. - Approval of Site Specific Wildlife Conservation Plan

Sir,

It is to inform you that you have to implement a Site Specific Wildlife Conservation Plan for your Baphilimali Bauxite Mines in Kalahandi and Rayagada Districts to address the impact on wildlife within the surrounding area and the recommendation of State Govt. for implementation of such a plan while forwarding the above diversion proposal to Govt. of India, MoEF&CC vide their letter No.12569/F&E dt 11.07.2016.

 The Site Specific Wildlife Conservation Plan in respect of the above project has been approved by the undersigned with financial forecast of t670.451 lakh (Rupees six crore seventy lakh forty-five thousand one hundred) only for the following activities.

	Grand Total:	7670,451 lakh
c.	For activities to be implemented by DFO, Kalahandi South Division in project impact area	₹309.093 lakh
b.	For activities to be implemented by DFO, Rayagada Division in project impact area	₹226,622 lakh
ō.	For activities to be implemented by the user agency in project area	₹134.736 lakh



# UAIL-MINES/ENV/150/2020

15th September 2020

To

The Addl, Principal Chief Conservator of Forest Ministry of Environment Forests & Climate Changes Govt. of India Eastern Regional office, A/3, Chandrasekharpur Bhubaneswar - 751023

Digital processing of the entire lease area using remote sensing technique for monitoring Sub: land use pattern with respect to our Baphlimali Bauxite Mine of M/s Utkal Alumina International Limited, Rayagada, Odisha with production capacity of 8.5 MTPA.

Environment Clearance No. J-11015/650/2007-IA.II (M) dated 19.02.2009.

Dear-Sir,

As a part of the compliance to the condition no. XXXII of the EC granted with respect to our 8.5 MTPA Baphlimali Bauxite Mine of M/s Utkal Alumina International Ltd. vide Ministry's letter no. J-11015/650/2007-IA.II (M) dated 19.02.2009, we are enclosing herewith the land use report and the land use map of lease area for your kind perusal,

Thanking you,

Yours faithfully,

For Utkal Alumina International Limited

09 3020

Head- Mines

Baphlimali Bauxite Mine

Encl: As above

#### Copy to:

- 1. The Member Secretary, State Pollution Control Board, Paribesh Bhawan A/118 Nilakantha Nagar Unit-VIII, Bhubaneswar -751012.
- Regional Office, OSPCB, Rayagada.
- roez bsr-mef@nic.in, mef.or@nic.in, peribesh1@cspcbcard.org rospcb rayagada@ospcbcard.org

# **ANNEXURE: 15**

# **Noise Monitoring Report**

For the period April-2020 to Seprember-2020



(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)

Certificate No.: TC-7944 Format No.: 7,8,2/FMT/TR/06

NABL ACCREDITED

Test Report No.: Enviab/20/R-0283

Date: 11.05.2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkai Alumina International Ltd, Tikiri, Rayagada, Odisha,

SAMPLE DETAILS

STATE OF LAND			
Sample Code	N1-N4	Sampled By	VCSPL'S Representative
Sample Name	*Noise	Sampling Procedure	TEC 61672-1(2002-05) Class-I.
Sample Source	Noise Level (Core Zone)	Sample Received On	NA.
Sample Condition	NA	Test Completed On	NA NA

SL. No	Sampling Location	Date of Monitoring	Noise level dB " (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10,00pm to 06,00am)
01	Drilling Operation	24.04.2020	71.5	63.3
02	Loader Operation	22.04.2020	70,8	60,8
63	Shovel Operation	27,04,2020	69.3	64.9
0.4	Dumper Operation	17.04.2020	73,6	61.4
05	Crusher Operation	15.04.2020	71.0	63.2
66	Workshop Area	29,04,2020	74.4	59.4
07	Middle of Quarry	20.04,2020	72.9	60.6
itandard	as per Noise Rule 2000			
	Industrial Area		75	70
	Residential Area		55	45
iny feati	re observed during determinat	ion	ħ.	THE STATE OF THE S
tight, To the con-				

<sup>\*</sup>This Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

#### Remarks:

#### TERMS AND CONDITIONS

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Authorized Signatury



(An Enviro Engineering Consulting Cell) (ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified) NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No.: Envlab/28/R-0284

Date: 11.05.2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

#### SAMPLE DETAILS

Sample Code	NLN4	Sampled By	VCSPL'S Representative
Sample Name	*Noise	Sampling Procedure	IEC 61672-1(2002-05) Class-L
Sample Source	Noise Level (Buffer Zone)	Sample Received On	NA
Sample Condition	NA	Test Completed On	NA.

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	16.84,2020	52.2	42,3
02	Village Andirokanch	23.04.2020	53.5	48.7
03	Village ADRI	28,04,2020	50.7	39.8
04	Village Chandragiri	30.04,2020	54.1	41.7
Standard	as per Noise Rule 2000			
	Industrial Area		75	70
	Residential Area		55	45
Any feat	ire observed during determinat	ion	N	10

<sup>\*</sup>This Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

#### Remarks

TERMS AND CONDITIONS

1. The Tint result is relevant only to the item tested.

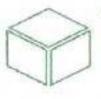
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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No.: Envlab/20/R-0672

Date: 10.06,2620

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd,

Tikiri, Rayagada, Odisha.

#### SAMPLE DETAILS

Sample Code	N1-N4	Sampled By	VCSPL/S Representative
Sample Name	*Noise	Sampling Procedure	IEC 61672-1(3002-05) Class-l.
Sample Source	Noise Level (Core Zone)	Sample Received On	NA.
Sample Condition	NA	Test Completed On	NA.

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.06am)
01	Drilling Operation	18.05.2020	73.2	66.2
02	Loader Operation	04.08.2020	68.5	62.5
0.3	Shovel Operation	15.05.2020	71,7	60,1
04	Dumper Operation	06.06.2020	72.8	63.3
05	Crusher Operation	01.05.2020	73.1	65.9
06	Workshop Area	08.05.2020	70,5	61.3
07	Middle of Quarry	11.08,2020	71.6	60.9
Standard	as per Noise Rule 2000			
	* Industrial Area		75	70
	Residential Area		55	45
Any feati	are observed during determinat	ion	N	Ú.

<sup>\*</sup>This Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No.: Envlob/20/lt-0673

Date: 10.06.2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd,

Tikiri, Rayagada, Odisha.

#### SAMPLE DETAILS

Sample Code	N1-N4	Sampled By	VCSPL'S Representative
Sample Name	*Noise	Sampling Procedure	H: C 61672 1(2002 05) Class-L
Sample Source	Noise Level (Buffer Zone)	Sample Received On	NA
Sample Condition	NA NA	Test Completed On	NA .

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (5.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhul	11.05.2020	53.7	40.2
02	Village Andirakanch	19.05.2020	54,1	43.9
03	Village ADRI	22.05.2020	49.3	41.2
84	Village Chandragiri	26.05.2020	52.5	40.6
Standard	as per Noise Rule 2000			
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Industrial Area		75	70
	Residential Area		55	45
Any feat	are observed during determinat	ion	N	1

<sup>\*</sup>This Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

#### Mamorke.

TERMS AND CONDITIONS

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- 3. The laboratory is our responsible for the authenticity of photocopied test report.
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- 5. The laboratory's responsibility uncor this report is limited to proven willful negligator.





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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/96

Test Report No.: Envlab/20/R-1774

Date: 07,07,2020

### TEST REPORT

Customer Name & Address

: Baphlimali Mines, M/s Utkal Alumina International Ltd. Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Name and Address of the Party o			
Sample Code	N1-N4	Sampled By	VCSPL'S Representative
Sample Name	*Noise	Sampling Procedure	IEC 61672-1(2002-05) Class-L
Sample Source	Noise Level (Core Zone)	Sample Received On	NA NA
Sample Condition	NA.	Test Completed On	NA.

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time- (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
61	Drilling Operation	03.06.2020	73.9	66.8
02	Loader Operation	10.06.2020	72.2	65.5
03	Shovel Operation	01.06,2020	70.4	60.2
04	Dumper Operation	05.06,2020	74.1	62.7
0.5	Crusher Operation	12.06.2020	73.5	64.4
06	Workshop Area	17.06,2020	70.3	61.9
07	Middle of Quarry	22.06.2020	73.8	65.8
Standard	as per Noise Rule 2000	1		
	Industrial Area		75	70
	Residential Area		55	45
Any feat	ire observed during determinat	tion	,	T .

<sup>&</sup>quot;This Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

TERMS AND CONDITION:-

- 1. The Fost result is relevant only to the item torood.
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4. The laboratory remains preparation for the authoritory of photocopied less report.

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5. The laboratory's responsibility under this report is limited to; proven willful negligence.





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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/86

Test Report No.: Envlab/20/R-1775

Date: 07.07.2020

### TEST REPORT

Customer Name & Address

 Baphilmali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha.

#### SAMPLE DETAILS

Sample Code	NI-N4	Sampled By	VCSPL'S Representative
Sample Name	*Naise	Sampling Procedure	IEC 61672-1(2002-05) Class-f.
Sample Source	Noise Level (Buffer Zone)	Sample Received On	NA.
Sample Condition	NA NA	Test Completed Ou	NA.

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	02.06.2020	50.9	41.7
02	Village Andirakanch	04.06,2020	51.2	42.1
03	Village ADRI	16.06,2828	53,6	40.5
0-1	Village Chandragiri	18.06,2020	53,2	38.8
Standard	as per Noise Rule 2000			
Industrial Area		.75	70	
Residential Area		55	45	
Any feat	are observed during determina	tion	N	a
		there.		.07

<sup>\*</sup>This Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

#### Remarks

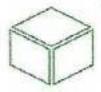
#### YERMS AND CONDITIONS-

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- 3. The laboratory is not respensible for the authenticity of phenocopied test report.
- 4. The feet from will not be retained for more than 10 days from the date of issue of test report except as case as required by applicable regulations.

5. The laboratory's responsibility under falls report is limited to; proven willful negligence.

Page No 1 of 1





(An Enviro Engineering Consulting Cell)
(ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified)



Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No.: Envlab/20/R-3160

Date: 05.08.2020

### **TEST REPORT**

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd.,

Tikiri, Rayagada, Odisha.

#### SAMPLE DETAILS

Sample Code	N1-N4	Sampled By	VCSPL'S Representative
Sample Name	*Noise	Sampling Procedure	IEC 61672-1(2002-05) Class-L
Sample Source	Noise Level (Core Zone)	Sample Received On	NA.
Sample Condition	NA	Test Completed On	NA.

\$1. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10,00pm to 06,00mm)
01	Drilling Operation	16.07.2020	70.2	64.9
02	Loader Operation	21.07.2020	73.9	61.2
0.3	Shovel Operation	08.07.2020	68.7	64.7
04	Dumper Operation	27,07,2020	71.3	60.5
05	Crusher Operation	10.07.2020	72,4	63,1
65	Workshop Area	11.07.2020	73,7	66,2
07	Middle of Quarry	31.07.2020	70,2	64.9
Standard	l as per Noise Rule 2000			
-	Industrial Area		75	* 70
	Residential Area		55	45
Any feat	ne observed daving determina	ilan	i	ei .
-	and the second of the second			

<sup>\*</sup>This Parameter not in our NABL Scope.

\*\*\* End Report\*\*\*

#### Remarks:

TERMS AND CONDITIONS

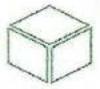
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4. The test ited will not be expired for more than 15 days from the date of issue of us, report accept in case as required by applicable regulations.

5. The laboratory's responsibility under this report is limited to, proven willful registerior.





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Certificate No.: TC-7944 Format No.: 7.8.2/FMT/TR/06

Test Report No.: Envlab/20/R-3161

Date: 05.08.2020

### TEST REPORT

Customer Name & Address

Baphlimali Mines, M/s Utkal Alumina International Ltd,

Tikiri, Rayagada, Odisha.

#### SAMPLE DETAILS

Sample Code	N1-N4	Sampled By	VCSPL/S Representative
Sample Name	"Noise	Sampling Procedure	IEC 61672-1(2002-05) Class-I.
Sample Source	Noise Level (Buffer Zone)	Sample Received On	NA.
Sample Condition	NA NA	Test Completed On	NA

St No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq. day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikogalchal	14.07.2020	53.4	42.6
62	Village Audir akanch	03.07.2020	52.7	41,9
03	Village ADRI	29.07,2020	51.2	43.5
04	Village Chandragiri	18.07.2020	54.0	41.7
Standard	as per Noise Rule 2000			
Industrial Area		75	70	
Residential Area		55	45	
Any feat	ire observed during determina	tion	1	(1)

<sup>\*</sup>This Parameter not in our NABL Scope.

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#### Romarks.

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4. The test item will not be retained for some than 15 days from the date of issue of test report except in case as required by applicable regulations.

The Schemony's responsibility under this report is limited to; proven wallful negligence.

Page No 1 of 1



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(ISO 9001:2015, ISO 14001:2015 & OHSAS 45001:2018 Certified)



Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Date: 02.09.2020

Test Report No.: Envlab/20/R-3629

# TEST REPORT

Customer Name & Address: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

#### SAMPLE DETAILS

Sample Code	N1 N7	Sampled By	VCSPL'S Representative
Sample Name	*Noise	Sampling Procedure	IEC 61672-1(2002-05) Class L.
Sample Source	Noise Level (Core Zone)	Sample Received On	NA .
Sample Condition	NA.	Test Completed On	NA

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Drilling Operation	67,08,2020	73.6	67,7
02	Loader Operation	12.08.2020	71.2	63.5
03	Shovel Operation	10.08.2020	70.5	62.9
04	Dumper Operation	19,08,2020	69.8	64,4
05	Crusher Operation	03.08.2020	73.9	61.5
06	Workshop Area	21.08.2020	71.7	64,3
07	Middle of Quarry	65.08.2028	73.1	62.8
Standard	as per Noise Rule 2000			
	Industrial Area		75	70
	Residential Area		55	45
Any feat	are observed during determinat	lion		ai .

<sup>\*</sup>This Parameter not in our NABL Scope.

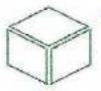
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#### Remarks:

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- 5. The belonging a responsibility rector this report is limited to proven willful negligence.





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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Date: 02.09.2020

Test Report No.: Envlab/20/R-3630

## TEST REPORT

Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

#### SAMPLE DETAILS

Sample Code	N1-N4	Sampled By	VCSPL*S Representative
Sample Name	*Noise	Sampling Procedure	TEC 61672-1(2002-05) Class I.
Sample Source	Noise Level (Core Zone)	Sample Received On	NA
Sample Condition	NA	Test Completed On	NA .

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	06,08,2020	52,9	43.1
02	Village Andirakanch	11.08.2020	50.6	40.2
03	Village ADRI	18.08,2020	54.3	42.4
04	Village Chandragiri	25.08.2020	52.7	43.6
Standard	as per Noise Rule 2000			
	Industrial Area		75	70
Residential Area		55 45		
Any feat	ure observed during determinat	tion		(II

<sup>\*</sup>This Parameter not in our NABL Scope.

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#### Remarks

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Certificate No.: TC-7944 Format No.: VCSPL/FMT/055

Date: 03.10,2020

### **TEST REPORT**

Customer Name & Address: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

#### **SAMPLE DETAILS**

Test Report No.: Envlab/20/R-4019

Sample Code	N1-N7	Sampled By	VCSPL'S Representative
Sample Name	*Noise	Sampling Procedure	IEC 61672-1(2002-05) Class-I.
Sample Source	Noise Level (Core Zone)	Sample Received On	NA
<b>Sample Condition</b>	NA	Test Completed On	NA

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)	
01	<b>Drilling Operation</b>	09.09.2020	70.2	64.4	
02	<b>Loader Operation</b>	04.09.2020	68.5	66.9	
03	<b>Shovel Operation</b>	07.09.2020	73.1	63.2	
04	<b>Dumper Operation</b>	11.09.2020	74.4	62.1	
05	<b>Crusher Operation</b>	02.09.2020	71.2	63.9	
06	Workshop Area	16.09.2020	69.8	65.5	
07	Middle of Quarry	14.09.2020	72.6	61.3	
Standard as per Noise Rule 2000					
Industrial Area			75	70	
Residential Area			55	45	
Any feature observed during determination		Nil			

<sup>\*</sup>This Parameter not in our NABL Scope.

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Format No.: VCSPL/FMT/055

Test Report No.: Envlab/20/R-4020 Date : 03.10.2020

### TEST REPORT

Customer Name & Address: Baphlimali Mines, M/s Utkal Alumina International Ltd, Tikiri, Rayagada, Odisha

#### **SAMPLE DETAILS**

Sample Code	N1-N4	Sampled By	VCSPL'S Representative
Sample Name	*Noise	<b>Sampling Procedure</b>	IEC 61672-1(2002-05) Class-I.
Sample Source	Noise Level (Core Zone)	Sample Received On	NA
Sample Condition	NA	<b>Test Completed On</b>	NA

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)	
01	Village Paikupakhal	03.09.2020	53.6	42.4	
02	Village Andirakanch	10.09.2020	54.1	43.9	
03	Village ADRI	17.09.2020	52.5	40.5	
04	Village Chandragiri	24.09.2020	53.3	44.1	
Standard	as per Noise Rule 2000				
	Industrial Area		75	70	
Residential Area			55 45		
Any feature observed during determination			Nil		

<sup>\*</sup>This Parameter not in our NABL Scope.

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#### **ANNEXURE 16**

