



UAIL-MINES/ENV/118 /2020

30<sup>th</sup> May 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 1<sup>st</sup> October 2019 to 31<sup>st</sup> March 2020 for your kind perusal.

Thanking you,

Yours faithfully,  
For Utkal Alumina International Limited

*MK Jha*  
*30/05/2020*  
Mukesh Kumar Jha  
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.
2. Regional Office, CPCB, Kolkata
3. Regional Office, OSPCB, Rayagada.
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**UTKAL ALUMINA INTERNATIONAL LIMITED**

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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 October 2019 to 31st March 2020.

Sl. No.	Conditions	Compliance Status
<b>A. Specific Condition</b>		
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> .
iii.	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	In addition to as stated in Sl. No. v, to check flow of any silt and sediments, numbers of check

*Muthu*



	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 <b>Annexure- 2 &amp; Photo 1, 2, 3</b> respectively. Siltation pits are being cleaned before monsoon and the photo is attached as <b>Photo 4</b> . After measures listed in annexure-2, the run-off confluence with the nearby seasonal nallah & ultimately to River Indrāvati after moving a distance of 7 to 8 Kms, thus not affecting the quality of Indrāvati.
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.	The overburden of initial years of mining is stacked as per the approved mining scheme and within the earmarked area. Since 1.04.2016 backfilling has been started by utilizing entire quantity of overburden in the voids of the mined out area as per the proposal given in the Scheme of Mining.  Till March 2020, 65.850 ha area has been backfilled & 32.970 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 submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis. Photo of backfilled area with plantation is attached as <b>photo- 5</b> .



x.	<p>Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and temporary OB dumps to prevent run off of water and flow of sediments directly into the Kandabindha Nallah, the San River, the Indravati River and other water bodies. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted, particularly after the monsoon, and maintained properly.</p> <p>Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, topsoil dump, temporary over burden dumps and mineral dumps to prevent run off of water and flow of sediments directly into the Kandabindha Nallah, the San River, the Indravati River and other water bodies and sump capacity shall be 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.</p>	<p>Details of the measures asked in the enlisted in <b>Annexure-1</b> &amp; photos attached as <b>Photo 1 to 4</b>.</p> <p>The runoff storage capacity has been designed keeping 50% safety margin over and above peak sudden rainfall. Sump capacity is having adequate retention period to allow proper settling of silt material. The drains are being de-silted and maintained at regular intervals.</p> <p>Majority of the rain water has been channelized &amp; collected in the mine pits during monsoon is not pumped out. Rather, it is allowed to be collected at the lowest level to augment the ground water resources.</p> <p>In addition to above, a scientific study was carried out on surface runoff management by deputing NIT, Rourkela and the recommendations of the study report have been implemented and verified. The Verification report of the recommendations is attached as <b>Annexure-3</b>.</p>
xi.	<p>Dimension of the retaining wall at the toe of temporary OB dump(s) and the over burden benches within the mine to check run-off and siltation shall be based on the rain fall data</p>	<p>Dimension of the retaining wall at the toe of temporary OB dump(s) within the mine to check run-off &amp; siltation are as follows:-</p> <ul style="list-style-type: none"> <li>• height 1.00 mtr</li> <li>• width 0.80 mtr</li> <li>• length 1300.00 mtrs</li> </ul> <p>These dimensions are designed basing on the highest rainfall data.</p>
xii.	<p>Plantation shall be raised in an area of 680ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around void, roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.</p>	<p>The mining was commenced during 2012-13 and as per the approved Scheme of Mining, backfilling of mined out voids has been started from 1.04.2016. Rehabilitation over reclaimed area has been started from 2017-18. Till the end of March'2020, an area 65.850 ha is backfilled. In this backfilled area 32.970 ha has been afforested.</p> <p>However plantation is being taken up in the Mine slope including a 7.5 meter safety zone since 2012-13. Till March'2020, we have planted around 2,44,240 saplings in an area of approx. 106.8 Ha which includes safety zone around the mining lease, backfilled area, 15 mtr peripheral barrier of plateau boundary, mining lease slope area, around void, roads etc. The remaining area will be covered</p>



		<p>progressively in phase wise manner as per the Scheme of Mining.</p> <p>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 &amp; nursery are attached as <b>Photo- 6 &amp; 7</b>.</p>
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.	<p>Regular water sprinkling is done on haul roads, loading &amp; 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 <b>Photo 8 &amp; 9</b>.</p> <p>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 (October'2019 to March'2020) shows that all parameters are well within the prescribed limit.</p> <p>The result of monitored data for the period of October'2019 to March'2020 of core and buffer zone are attached as <b>Annexure- 4 &amp; 5</b>.</p>
xv.	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.	The flow rate of the small perennial nallahs, which is 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 October'2019 to March'2020 are attached as <b>Annexure 6</b> .
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 <b>Annexure-7</b> . The same is also being submitted to the Central Groundwater Authority, the Regional Director, Central Ground Water Board, the State



	Groundwater Authority, the Regional Director, Central Ground Water Board, the State Pollution Control Board and the Central Pollution Control Board.	Pollution Control Board and the Central Pollution Control Board with six monthly compliance report.
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:- <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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>.</li> <li>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.</li> </ul>
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 <b>Annexure – 8 &amp; 9</b> 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 & Indrāvati are flowing at a distant location 12 Kms & 9 Kms respectively. The following measures are being implemented and maintained.



		<ol style="list-style-type: none"> <li>1. Garland drains are constructed to check erratic flow of precipitated water.</li> <li>2. Check dams are constructed around the slopes of valley to arrest silts and sediments if any.</li> <li>3. 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 Indrāvati River. The copy of agreement is attached as <b>Annexure-10</b> .
xxi.	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	<p>As a step towards rain water harvesting, the following measures have been implemented -</p> <ul style="list-style-type: none"> <li>❖ 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.</li> <li>❖ 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.</li> <li>❖ 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.</li> </ul>
xxii.	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral within the mine lease. The mineral transportation within the mine lease shall be	Pollution testing certificate of all machinery is being verified regularly to check vehicular emission. Further emission level is kept under control by rigorous maintenance of all engines and changing of lubricants as per the recommendation of the



	carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	manufacturer. A full fledged workshop is in place for maintenance of vehicles used in mining operation.
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 daytime. Controlled blasting is being practiced to reduce ground vibrations and to arrest fly rocks and boulders.
xxiv.	Drills shall either be operated with dust extractors or equipped with water injection system.	Drilling machine with in-built vacuum cyclone dust collector & equipped with water spraying system is being used. Photo of drilling is attached as <b>Photo-10</b>
xxv.	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 fixed water sprinkling arrangement ( <b>Photo 11</b> ). Further water sprinkling by mobile water tankers is being carried out for effective dust suppression. Metal hoods are provided at transfer points in Crushing and Conveying System to restrict the dispersion of dust ( <b>Photo 12</b> ). Dry fog system is installed for suppression of dust at ROM hopper and Transfer points ( <b>Photo 13</b> ).
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 State Pollution Control Board, Odisha prior to start of production from the mine. Presently we have obtained the CTO vide letter no. 3489/IND-I-CON - 5450 dated 19.03.2020 with consent order No. 2765 which is valid up to 31.03.2022. Attached as <b>Annexure 11</b> .
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 installed. Effluent generated from workshop has been treated in oil and grease trap system. For advanced separation of oil and grease from the effluent one ETP installation is in progress. The photo of STP is attached as <b>Photo-14</b> .
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.	Complied.
xxix.	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 health examination of the workers should be drawn and followed accordingly.	Pre-placement medical examination and periodical medical examination of the workers engaged in the project are carried out regularly. Annual Schedule of PME is being made for all eligible employees as per DGMS requirement and necessary PME is carried out.
xxx.	Provision shall be made for the housing of construction Labour within the site with all 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	Work shed have been provided to the workers at the mine site having all facilities such as fuel for 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



	temporary structures to be removed after the completion of the project.	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 <b>Annexure 12</b> & copy of approval letter as <b>Annexure 13</b> . In addition to that a biodiversity study is being carried out by IUCN.
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.	Digital processing of the entire lease area using the remote sensing technique by the authorized agency from Orissa Remote Space Application Center (ORSAC), Bhubaneswar has been carried out for monitoring the land use pattern. The report has been submitted vide letter no UAIL-Mines/ENV/77/2017 dated 21.07.2017 to Ministry of Environment and Forests and its Regional Office, Bhubaneswar. The copy of the submission letter is attached as <b>Annexure- 14</b> .
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.	The same will be submitted to the Ministry of Environment & Forests 5 years in advance of final closure for approval.
<b>B. General conditions</b>		
i.	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	No change in mining technology and scope of working will be made without prior approval of the Ministry of Environment & Forests.
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	Four ambient air quality monitoring stations each have been established in both Core & Buffer Zone in



	well as in the buffer zone for RSPM, SPM, SO <sub>2</sub> & NO <sub>x</sub> 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.	consultation with the State Pollution Control Board, Odisha. Monitoring reports are attached as <b>Annexure -4 &amp; 5.</b>
iv.	Data on ambient air quality (RSPM, SPM, SO <sub>2</sub> & NO <sub>x</sub> ) 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.	The following measures are taken to control noise levels below 85 dB (A) in the work environment. <ul style="list-style-type: none"> <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> </ul> The monitored report of noise level is attached as <b>Annexure- 15.</b>
vii.	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	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 facility, however major maintenances like engine overhauling etc are being taken up outside.  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	<p>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.</p> <p>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.</p>	<p>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.</p> <p>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.</p>
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 2019-20 is attached as <b>Annexure 16</b> .
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 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.	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 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.



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 <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Complied.

MUJG  
Signature



**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 Baphilimali 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 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.	We will be abide by this condition.
2	Employment shall be made to the local people on priority and the local 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.	Employment has been given to the local peoples on priority according to the skill levels.



3	<p>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.</p>	<p>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 :</p> <p><b>Health Care :</b></p> <ul style="list-style-type: none"> <li>❖ Establishment of one full-fledged round the clock Health Centre with laboratory facility at Nuapada with regular Doctors &amp; Paramedical Staffs.</li> <li>❖ Functioning of Utkal Hospital at Osapada with specialist Doctors, IPD, Operation Theatre, ICU and equipped with modern equipments.</li> <li>❖ Engagement of one Mobile Health Care Unit (MHU) extending services to 44 remote villages from 10 strategic locations</li> <li>❖ Round the clock services extended by four Ambulances for referral Patients</li> <li>❖ Donation of one Ambulance to CHC,Kashipur</li> <li>❖ Organising Multispecialty Health Camps at Cluster level.</li> <li>❖ Creation of Health Awareness through rallies, awareness camps competitions, sanitation drives, and street plays etc.</li> <li>❖ Disinfection of drains, tube well platforms and water logging areas to guard against the spread of disease.</li> <li>❖ Organising Blood Donation Camps in collaboration with Dist. Red Cross Society</li> <li>❖ Extended Comprehensive eye care services including cataract surgery to 135 patients</li> <li>❖ Facilitated construction of 854 toilets in 16 villages in collaboration with Swachha Bharat Mission</li> <li>❖ Extending financial assistance to poor and needy people for medical treatment.</li> </ul> <p><b>Promotion of Quality Education :</b></p>
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- ❖ Setting up of Aditya Birla Public School (English Medium) to provide access to good quality education
- ❖ Conduction of special Awareness drives in organizing Prabesh Utshabs for increasing school enrolment.
- ❖ Conducting Parents Counselling Meets to reduce school dropouts.
- ❖ Running of computer literacy project in collaboration with Odisha Knowledge Corporation Ltd.
- ❖ Imparting Spoken English Classes for 350 students of class X,XI & XII of Govt. Girls High School, Dongasil in order to improve the communication skill in english
- ❖ Construction of hostel building with drinking water facility, toilet, drainage & field leveling etc at certain schools.
- ❖ Construction of Boundary walls, Class rooms, CC Roads and provision of drinking water through installation of tube wells inside school campus etc.
- ❖ Repairing and Painting of school Buildings
- ❖ Donation of land for construction of Hadiguda High School Building
- ❖ Extending financial assistance to the land loser and economically backward families and meritorious students for Higher Education under Utkal Scholarship.
- ❖ Supply of study and sports materials and financial support for school functions

**Provision of drinking water :**

- ❖ Installation of Twenty three tube wells in its peripheral villages in order to ensure supply of safe drinking water to the villagers.
- ❖ Repairing of defunct tube wells from time to time as per the request of villagers
- ❖ Setting up of three solar based water supply system at Dwimundi & Jogiparitunda villages for drinking water supply.
- ❖ Construction of Swajaldhara (Gravity flow) for supply of water in five different villages. (Dwimundi, Pandakapadar, Dhadpas, Badlijharan & Ghatiguda.



4	Rehabilitation & resettlement package if applicable shall be strictly adhered in accordance to the decision of Government.	There is no displacement in Mines lease area.
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.	Blasting is only carried out in day time only. Necessary information has been given by 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 :**

- ❖ Organizing Awareness Rallies and Prabesh Utshabs for increasing school enrolment.
- ❖ Conducting 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
- ❖ Extending financial assistance to the land loser and economically backward families and meritorious students for Higher Education under Utkal Scholarship.
- ❖ Supply of School bags, study and sports materials and financial support for school functions
- ❖ Supply of uniforms and school bags to the school as well as Anganwadi Centers.
- ❖ Supply of furnitures, first-aid boxes & solar home lights to certain schools
- ❖ Creating Education Awareness through street plays, wall writings.

**Health Care :**

- ❖ 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
- ❖ Donation of one Ambulance to CHC, Kashipur
- ❖ Installation of sixteen tube wells and one solar based water supply for ensuring



- ❖ 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
- ❖ Extending financial assistance to poor and needy people for medical treatment.

**Sustainable Livelihoods :**

- ❖ Imparted training to 140 women for enhancement of vocational skill in tailoring and applique for self-employment in collaboration with various agencies.
- ❖ Supply of improved varieties of vegetable seeds, pesticides, micronutrients and other inputs to the farmers of sixteen peripheral villages during kharif and rabi season every year in order to increase their income through commercial vegetable cultivation.
- ❖ 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.
- ❖ Ensure Irrigation facilities by construction of check dams, irrigation channels, desiltation of ponds, and mobilizing resources from Govt. deptts. for installation of river lift irrigation, micro lift irrigation and deep borewells in our peripheral villages.
- ❖ Supported farmers for orchard development through supply of mango, cashew, banana, drumstick, guava and papaya seedlings along with all other facilities like fertilizer, pesticides, irrigation, fencing and other hand holding support.
- ❖ Promoted lemon grass cultivation in 80 acres of land with 71 farmers as an alternative and attractive source of income. One oil extraction plant has also been installed.

		<ul style="list-style-type: none"> <li>❖ Livestock vaccination cum health camps have been organized in different mines peripheral villages at a regular interval of time.</li> <li>❖ 176 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.</li> </ul> <p><b>Village Infrastructure development :</b></p> <ul style="list-style-type: none"> <li>❖ With the objective of extending better amenities, we have taken proactive steps in taking up village infrastructure development initiatives in several villages. Infrastructures like CC Roads, Causeways, Culverts, Bridges, Community Centers, Street lighting, drains, steps to rivers, bus stops and protection walls etc have been constructed/renovated.</li> </ul> <p><b>Social Interventions :</b></p> <ul style="list-style-type: none"> <li>❖ Organising Block level Rural volley ball tournament by taking youths of sixteen different villages.</li> <li>❖ Extending financial support to organize Panchayat , Block as well as District level tournaments</li> <li>❖ Supply of sports materials to the youths of peripheral villages</li> <li>❖ Extending financial support for observing different puja and festivals in the villages</li> <li>❖ Organizing Various social functions such as Raja Utshab, Diwali etc in villages</li> </ul> <p>Promoting local folk dance Dhimsa by enabling the village youths to take part in different competitions.</p>
8	The project proponent should provide garland drains around the mining pit	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



	to prevent entry of rainy water. Adequate check dams shall be provided to prevent the wash out of soils etc. from mines and solid waste dumping sites to surrounding fields.	bodies at the foot hill. To check flow of any silt and sediments, numbers of check 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 and garland drains attached as <b>Annexure- 2 &amp; Photo 1, 2 &amp; 3.</b>
9	After the mining operation is over the project proponent should reclaim the mined out area with overburden, top soil followed by plantation.	From 4th year onwards i.e since 1.04.2016 backfilling has been started by utilizing entire quantity of overburden in the voids of the mined out area as per the proposal 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 March 2020, 32.970 ha area has been rehabilitated out of 62.209 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: 2608/IND-I-CON-5450/14.03.2019
11	The project proponent shall provide alternate grazing 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 International Ltd., for Baphilimali Bauxite Mines for expansion of production upto 8.5 MTPA of Bauxite over an area of 492.82 Ha at BaphiJimali in the district of Kalahandi**

<b>Sl.No.</b>	<b>Issues raised in Public Hearing</b>	<b>Compliance Status</b>
1	Allocation of funds for peripheral development	❖ We are allocating funds every year for the peripheral development of the area. 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	❖ First-Aid Center established at Mines top is extending treatment services to the villagers of mines adjacent villages. One MHU Vehicle is engaged by our company to extend treatment services to 34 remote villages of Th. Rampur block. 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. We have facilitated construction of 40 individual toilets in Durmusi with the support of RWSS deptt. Facilitated immunization programme in 26 villages in convergence with health deptt. Under Indradhanush programme. In order to ensure smooth drainage of rain water masonry drains have been constructed in the villages. Financial assistance has been given to the poor and needy persons for medical treatment.

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	<ul style="list-style-type: none"> <li>❖ 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.</li> </ul>
10	Plantation	<ul style="list-style-type: none"> <li>❖ Plantation is being taken up in the Mine slope including a 7.5 meter safety zone since 2012-13. Till March'2020, we have planted around 2, 44,240 saplings in an area of approx. 106.8 Ha. The remaining area will be covered progressively in phase wise manner as per the Scheme of Mining.</li> <li>❖ Villagers of Chirika, Durmusi and Kanarpas were supplied with 2185 mango saplings for promotion of fruit orchards in their respective villages.</li> </ul>
11	Compensation for the displaced	<ul style="list-style-type: none"> <li>❖ There is no displacement due to the project.</li> </ul>
12	Local Office and Grievance Cell	<ul style="list-style-type: none"> <li>❖ A Grievance cell has been formed by the company by taking representative from Plant &amp; Mines CSR &amp; Admn., dept. They are mostly handling all the issues relating to employment and peripheral development.</li> </ul>
13	Protection of environment	<ul style="list-style-type: none"> <li>❖ 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.</li> </ul>





**Annexure-2****DETAILS OF GARLAND DRAIN, RETAINING WALL, SETTLING POND AND CHECK DAM**

Sl. No	Type of works	Particulars		
		Length	Width (avg)	Height (avg)
01	Wall around back side of OB dump	1300 mtrs	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

14<sup>th</sup> January 2020

To

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

(Dr Rama Chandra Rout)  
Asst. Vice President- Corporate Affairs, Bhubaneswar

Copy to: Regional Office, OSPCB, Rayagada.

Encl: As Above





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



NITR/MN/HBS/2020/L/0023

Date: January 13, 2020

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

**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 m<sup>3</sup>) is very insignificant compared to that of total leasehold area during the monsoon, which is 90.07 lakh m<sup>3</sup>.

### **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 3403m<sup>3</sup> considering a maximum rainfall of 40mm per hour. The existing settling pit near the crusher of 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 (42m x 20m x 4m) to accommodate the expected runoff. A garland drain of 277m x 1m x 1m 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  $40\text{m} \times 21\text{m} \times 4\text{m}$  to accommodate  $3360 \text{ m}^3$  of runoff (Fig.2). A new settling pit of  $38\text{m} \times 20\text{m} \times 4\text{m}$  depth has been constructed to accommodate  $3040 \text{ m}^3$  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**

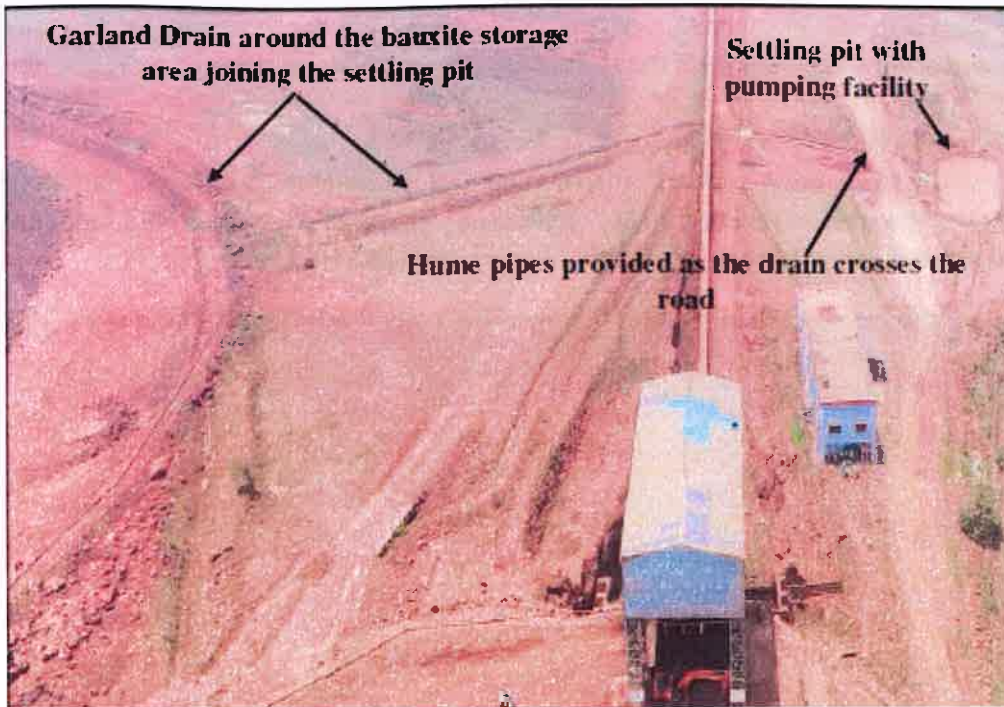
**Recommendation 3:**

The expected runoff in R3 region is 8444 m<sup>3</sup> per hour. A drain of 1170m having width and depth 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 ). Earthen 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 reconstruction 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 m<sup>3</sup> 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 x 28m x 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 m<sup>3</sup>. The quarry sump has the capacity to accommodate 1.54 Lakh m<sup>3</sup> 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 nallah. 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 m<sup>3</sup> to 1,35,000 m<sup>3</sup> 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 m<sup>3</sup> 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 damaged 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 be maintained 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 is 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 sedimentation ponds, proper fencing should be carried out. Warning signs should also be displayed near the water bodies along with their depth.

**Status: Implemented**

The sedimentation ponds have been properly fenced to prevent accidental entry of any person 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 dametc 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 desilted 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**

  
12.07.2020  
**Dr. H. B. Sahu**  
Associate Professor and Head  
Department of Mining Engineering  
Principal Investigator

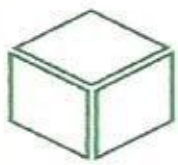
  
13-07-2020  
**Dr. Sk. Md. Equeenuddin**  
Associate Professor  
Dept of Earth and Atmospheric Sciences  
Co-Principal Investigator

**ANNEXURE: 4**

**Ambient Air Quality Monitoring Report (Core Zone)**

**for the period October 2019 to March 2020**





# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-5363

Date : 04.11.2019

## TEST REPORT

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

Sample Location & Code	SI: Near Crusher	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.10.2019,05.10.2019,08.10.2019 10.10.2019,15.10.2019,17.10.2019 22.10.2019,24.10.2019,29.10.2019
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915' Longitude: E82°58.543' Altitude: 999.74 m.	
Sampling Date	02.10.2019,04.10.2019, 07.10.2019,09.10.2019, 14.10.2019,16.10.2019, 21.10.2019,23.10.2019, 28.10.2019.	Test Completed on	04.10.2019 to 02.11.2019

Sl. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP µg/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.10.2019	52.0	28.0	9.8	23.9	0.44	7.2	BDL	BDL	BDL	BDL	BDL	BDL
2	04.10.2019	33.0	14.0	10.6	26.7	0.55	5.9	BDL	BDL	BDL	BDL	BDL	BDL
3	07.10.2019	40.0	20.0	8.5	17.4	0.62	5.4	BDL	BDL	BDL	BDL	BDL	BDL
4	09.10.2019	38.0	17.0	11.2	25.5	0.39	6.6	BDL	BDL	BDL	BDL	BDL	BDL
5	14.10.2019	35.0	18.0	9.9	21.2	0.42	6.4	BDL	BDL	BDL	BDL	BDL	BDL
6	16.10.2019	43.0	19.0	9.1	24.4	0.50	8.0	BDL	BDL	BDL	*BDL	BDL	BDL
7	21.10.2019	39.0	21.0	10.4	30.4	0.66	7.1	BDL	BDL	BDL	BDL	BDL	BDL
8	23.10.2019	41.0	26.0	10.8	27.8	0.37	5.3	BDL	BDL	BDL	BDL	BDL	BDL
9	28.10.2019	36.0	20.0	8.9	20.6	0.41	6.8	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		39.7	20.3	9.9	24.2	0.48	6.5	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		100	60	80	80	4	100	400	05	01	20	01	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):19 99	Chemical Method	Indo phenol blue method	Absorpti on & Desorpti on followed by GC analysis	Solvent extraction followed by Gas Chromato graphy analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

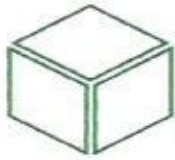
BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub><4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 ng/m<sup>3</sup>, As < 0.001 µg/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 µg/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

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 1-8 are Time Weighted Average.)

\* This parameters not in our NABL scope.



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

Test Report No: ENVLAB/19/TR-5364

Date : 04.11.2019

## 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	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.10.2019,05.10.2019,08.10.2019 12.10.2019,15.10.2019,17.10.2019 22.10.2019,26.10.2019,29.10.2019
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773' Longitude: E82°58.332' Altitude: 974.45 m.	
Sampling Date	02.10.2019,04.10.2019, 07.10.2019,11.10.2019, 14.10.2019,16.10.2019, 21.10.2019,25.10.2019, 28.10.2019.	Test Completed on	04.10.2019 to 02.11.2019

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.10.2019	36.0	21.0	11.7	26.9	0.59	7.1	BDL	BDL	BDL	BDL	BDL	BDL
2	04.10.2019	39.0	30.0	10.9	23.3	0.71	6.6	BDL	BDL	BDL	BDL	BDL	BDL
3	07.10.2019	32.0	19.0	12.4	30.7	0.37	6.2	BDL	BDL	BDL	BDL	BDL	BDL
4	11.10.2019	40.0	22.0	9.8	26.2	0.48	7.8	BDL	BDL	BDL	BDL	BDL	BDL
5	14.10.2019	46.0	31.0	10.6	31.1	0.52	8.1	BDL	BDL	BDL	BDL	BDL	BDL
6	16.10.2019	38.0	18.0	11.0	34.6	0.78	7.2	BDL	BDL	BDL	BDL	BDL	BDL
7	21.10.2019	31.0	14.0	10.1	29.7	0.66	8.9	BDL	BDL	BDL	BDL	BDL	BDL
8	25.10.2019	42.0	23.0	12.7	24.1	0.59	8.5	BDL	BDL	BDL	BDL	BDL	BDL
9	28.10.2019	34.0	19.0	8.2	20.8	0.70	6.9	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		37.6	21.2	10.8	27.5	0.60	7.5	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		100	60	80	80	4	100	400	05	01	20	01	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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub><4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 ng/m<sup>3</sup>, As < 0.001 ng/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 ng/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

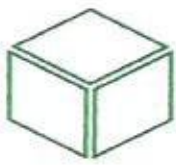
Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NO<sub>x</sub> & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)

\* This parameters not in our NABL scope.



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

Test Report No: ENVLAB/19/TR-5365

Date : 04.11.2019

## TEST REPORT

Customer Name & Address

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

Sample Location & Code	S3: Near Office	Sampled by	VCSP/LS Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.10.2019,05.10.2019,08.10.2019 12.10.2019,15.10.2019,19.10.2019 22.10.2019,26.10.2019,31.10.2019
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.366' Longitude: E82°58.874' Altitude: 955.24 m.	
Sampling Date	02.10.2019,04.10.2019, 07.10.2019,11.10.2019, 14.10.2019,18.10.2019, 21.10.2019,25.10.2019, 30.10.2019.	Test Completed on	04.10.2019 to 02.11.2019

### Parameters

Sl. No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni µg/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As µg/m <sup>3</sup>
1	02.10.2019	41.0	22.0	9.8	17.9	0.77	5.5	BDL	BDL	BDL	BDL	BDL	BDL
2	04.10.2019	33.0	16.0	9.3	23.3	0.50	6.3	BDL	BDL	BDL	BDL	BDL	BDL
3	07.10.2019	35.0	11.0	11.4	26.8	0.63	5.7	BDL	BDL	BDL	BDL	BDL	BDL
4	11.10.2019	40.0	19.0	10.2	31.5	0.51	6.9	BDL	BDL	BDL	BDL	BDL	BDL
5	14.10.2019	27.0	12.0	10.5	33.7	0.46	7.1	BDL	BDL	BDL	BDL	BDL	BDL
6	18.10.2019	33.0	19.0	11.0	29.2	0.53	5.8	BDL	BDL	BDL	BDL	BDL	BDL
7	21.10.2019	39.0	21.0	11.4	21.7	0.39	7.3	BDL	BDL	BDL	BDL	BDL	BDL
8	25.10.2019	42.0	23.0	9.9	25.5	0.42	7.9	BDL	BDL	BDL	BDL	BDL	BDL
9	30.10.2019	37.0	18.0	10.5	28.4	0.74	6.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		36.3	17.9	10.4	26.4	0.55	6.5	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		100	60	80	80	4	100	400	05	01	20	01	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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPDM 2000 or Equivalent filter Paper		

BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub><4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 µg/m<sup>3</sup>, As < 0.001 µg/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 ng/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

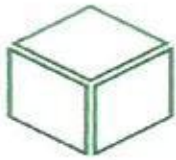
Remarks: (All the values of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)

\* This parameters not in our NABL scope.



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

Test Report No: ENVLAB/19/TR-5366

Date : 04.11.2019

## 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	03.10.2019,05.10.2019,10.10.2019 12.10.2019,17.10.2019,19.10.2019 24.10.2019,26.10.2019,31.10.2019
Sample Condition	Gaseous sample solution refrigerated	Latitude: N19°21.079' Longitude: E82°58.775' Altitude: 993.95 m.	
Sampling Date	02.10.2019,04.10.2019, 09.10.2019,11.10.2019, 16.10.2019,18.10.2019, 23.10.2019,25.10.2019, 30.10.2019.	Test Completed on	04.10.2019 to 02.11.2019

### Parameters

Sl. No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.10.2019	45.0	29.0	12.9	27.1	0.69	6.7	BDL	BDL	BDL	BDL	BDL	BDL
2	04.10.2019	31.0	17.0	13.3	36.5	0.45	5.4	BDL	BDL	BDL	BDL	BDL	BDL
3	09.10.2019	35.0	21.0	10.4	29.1	0.52	7.8	BDL	BDL	BDL	BDL	BDL	BDL
4	11.10.2019	30.0	18.0	12.7	28.5	0.60	6.1	BDL	BDL	BDL	BDL	BDL	BDL
5	16.10.2019	27.0	14.0	14.3	31.9	0.63	6.5	BDL	BDL	BDL	BDL	BDL	BDL
6	18.10.2019	33.0	17.0	10.8	21.2	0.75	7.3	BDL	BDL	BDL	BDL	BDL	BDL
7	23.10.2019	39.0	16.0	12.0	33.1	0.71	9.2	BDL	BDL	BDL	BDL	BDL	BDL
8	25.10.2019	32.0	19.0	10.9	25.6	0.39	7.1	BDL	BDL	BDL	BDL	BDL	BDL
9	30.10.2019	37.0	22.0	11.2	31.4	0.51	7.3	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		34.3	19.2	12.1	29.4	0.58	7.0	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		100	60	80	80	4	100	400	05	01	20	01	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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatogram analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub>< 4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 ng/m<sup>3</sup>, As < 0.001 ng/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 ng/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

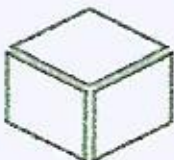
Remarks: (All the values of PM-10,PM-2.5,SO<sub>2</sub>,NO<sub>x</sub> & CO, O<sub>3</sub> etc presented in row no 1-8 are Time Weighted Average.)

\* This parameters not in our NABL Scope.



Authorized Signatory





# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-6368

Date : 07.12.2019

## 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	IS 5182.
Sample Source	Baphlimali Mines, UAIL.	Sample Received on	02.11.2019,05.11.2019,09.11.2019 12.11.2019,16.11.2019,19.11.2019 23.11.2019,28.11.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915' Longitude: E82°58.543' Altitude: 999.74 m.	
Sampling Date	01.11.2019,04.11.2019, 08.11.2019,11.11.2019, 15.11.2019,18.11.2019, 22.11.2019,27.11.2019.	Test Completed on	03.11.2019 to 04.12.2019

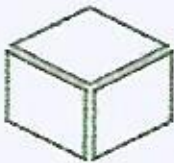
SL No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	Pb µg/m <sup>3</sup>	As ng/m <sup>3</sup>
1	01.11.2019	37.0	15.0	11.9	25.8	0.52	7.5	BDL	BDL	BDL	BDL	BDL	BDL
2	04.11.2019	40.0	18.0	12.5	28.2	0.61	5.9	BDL	BDL	BDL	BDL	BDL	BDL
3	08.11.2019	29.0	12.0	10.8	32.9	0.50	7.0	BDL	BDL	BDL	BDL	BDL	BDL
4	11.11.2019	39.0	15.0	11.9	25.2	0.60	6.8	BDL	BDL	BDL	BDL	BDL	BDL
5	15.11.2019	36.0	20.0	10.0	24.9	0.57	6.2	BDL	BDL	BDL	BDL	BDL	BDL
6	18.11.2019	39.0	19.0	12.1	23.2	0.60	5.9	BDL	BDL	BDL	BDL	BDL	BDL
7	22.11.2019	36.0	16.0	9.7	29.0	0.65	6.5	BDL	BDL	BDL	BDL	BDL	BDL
8	27.11.2019	40.0	19.0	13.0	31.8	0.55	5.5	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		37.0	16.8	11.5	27.6	0.57	6.4	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

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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/19/TR-6369

Date : 07.12.2019

## TEST REPORT

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

Sample Location & Code	S2: Mining Pit	Sampled by	VCSP/LS Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	02.11.2019,07.11.2019,09.11.2019 14.11.2019,16.11.2019,21.11.2019 23.11.2019,28.11.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773' Longitude: E82°58.332' Altitude: 974.45 m.	
Sampling Date	01.11.2019,06.11.2019, 08.11.2019,13.11.2019, 15.11.2019,20.11.2019, 22.11.2019,27.11.2019.	Test Completed on	03.11.2019 to 04.12.2019

SL. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	01.11.2019	30.0	14.0	13.3	30.4	0.78	8.5	BDL	BDL	BDL	BDL	BDL	BDL
2	06.11.2019	34.0	19.0	9.8	26.9	0.62	7.0	BDL	BDL	BDL	BDL	BDL	BDL
3	08.11.2019	29.0	15.0	12.5	24.5	0.51	7.6	BDL	BDL	BDL	BDL	BDL	BDL
4	13.11.2019	41.0	24.0	11.7	22.9	0.86	8.2	BDL	BDL	BDL	BDL	BDL	BDL
5	15.11.2019	32.0	18.0	11.1	28.8	0.69	6.9	BDL	BDL	BDL	BDL	BDL	BDL
6	20.11.2019	31.0	16.0	12.6	25.4	0.57	7.4	BDL	BDL	BDL	BDL	BDL	BDL
7	22.11.2019	35.0	14.0	13.7	30.2	0.62	8.8	BDL	BDL	BDL	BDL	BDL	BDL
8	27.11.2019	37.0	18.0	10.8	34.9	0.70	7.5	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		33.6	17.3	11.9	28.0	0.67	7.7	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

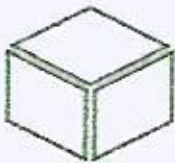
BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub><4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 ng/m<sup>3</sup>, As < 0.001 ng/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 ng/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

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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/19/TR-6370

Date : 07.12.2019

## 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	02.11.2019,07.11.2019,09.11.2019 14.11.2019,16.11.2019,21.11.2019 26.11.2019,30.11.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.366' Longitude: E82°58.874' Altitude: 955.24 m.	
Sampling Date	01.11.2019,06.11.2019, 08.11.2019,13.11.2019, 15.11.2019,20.11.2019, 25.11.2019,29.11.2019.	Test Completed on	03.11.2019 to 04.12.2019

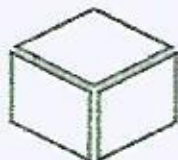
SL. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	01.11.2019	32.0	16.0	9.8	19.5	0.57	8.2	BDL	BDL	BDL	BDL	BDL	BDL
2	06.11.2019	25.0	13.0	12.5	23.6	0.51	7.4	BDL	BDL	BDL	BDL	BDL	BDL
3	08.11.2019	22.0	14.0	11.7	30.8	0.68	7.1	BDL	BDL	BDL	BDL	BDL	BDL
4	13.11.2019	26.0	16.0	13.3	32.9	0.72	8.0	BDL	BDL	BDL	BDL	BDL	BDL
5	15.11.2019	32.0	19.0	10.9	34.1	0.49	6.9	BDL	BDL	BDL	BDL	BDL	BDL
6	20.11.2019	37.0	26.0	14.4	30.5	0.52	6.7	BDL	BDL	BDL	BDL	BDL	BDL
7	25.11.2019	28.0	18.0	13.5	35.8	0.64	8.8	BDL	BDL	BDL	BDL	BDL	BDL
8	29.11.2019	36.0	20.0	11.2	31.6	0.74	7.9	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		29.8	17.8	12.2	29.9	0.61	7.6	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-6371

Date : 07.12.2019

## 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	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL.	Sample Received on	05.11.2019,07.11.2019,12.11.2019 14.11.2019,19.11.2019,21.11.2019 26.11.2019,30.11.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.079' Longitude: E82°58.775' Altitude: 993.95 m.	
Sampling Date	04.11.2019,06.11.2019, 11.11.2019,13.11.2019, 18.11.2019,20.11.2019, 25.11.2019,29.11.2019.	Test Completed on	06.11.2019 to 04.12.2019

SL. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	04.11.2019	38.0	11.0	12.4	28.6	0.61	7.4	BDL	BDL	BDL	BDL	BDL	BDL
2	06.11.2019	35.0	17.0	8.8	21.7	0.54	6.8	BDL	BDL	BDL	BDL	BDL	BDL
3	11.11.2019	43.0	21.0	9.6	19.8	0.47	6.0	BDL	BDL	BDL	BDL	BDL	BDL
4	13.11.2019	40.0	19.0	11.4	25.5	0.50	7.7	BDL	BDL	BDL	BDL	BDL	BDL
5	18.11.2019	34.0	14.0	10.8	30.8	0.68	8.5	BDL	BDL	BDL	BDL	BDL	BDL
6	20.11.2019	47.0	22.0	10.1	23.9	0.73	6.9	BDL	BDL	BDL	BDL	BDL	BDL
7	25.11.2019	38.0	15.0	12.9	37.3	0.49	7.1	BDL	BDL	BDL	BDL	BDL	BDL
8	29.11.2019	32.0	18.0	10.5	31.7	0.65	8.2	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		38.4	17.1	10.8	27.4	0.58	7.3	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

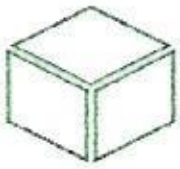
BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub><4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 ng/m<sup>3</sup>, As < 0.001 ng/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 ng/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-6878

Date : 06.01.2020

## 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	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.12.2019,05.12.2019,10.12.2019 12.12.2019,16.12.2019,19.12.2019 24.12.2019,28.12.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915' Longitude: E82°58.543' Altitude: 999.74 m.	
Sampling Date	02.12.2019,04.12.2019, 09.12.2019,11.12.2019, 15.12.2019,18.12.2019, 23.12.2019,27.12.2019.	Test Completed on	04.12.2019 to 31.12.2019

### Parameters

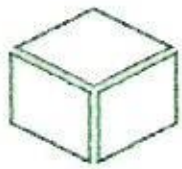
SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	Pb µg/m <sup>3</sup>	As ng/m <sup>3</sup>
1	02.12.2019	39.0	20.0	10.6	28.7	0.62	7.2	BDL	BDL	BDL	BDL	BDL	BDL
2	04.12.2019	44.0	21.0	12.4	29.1	0.61	6.9	BDL	BDL	BDL	BDL	BDL	BDL
3	09.12.2019	34.0	17.0	11.8	30.6	0.59	6.4	BDL	BDL	BDL	BDL	BDL	BDL
4	11.12.2019	38.0	19.0	12.3	32.4	0.58	6.5	BDL	BDL	BDL	BDL	BDL	BDL
5	15.12.2019	40.0	20.0	11.7	28.3	0.62	6.9	BDL	BDL	BDL	BDL	BDL	BDL
6	18.12.2019	32.0	16.0	12.4	29.4	0.63	6.8	BDL	BDL	BDL	BDL	BDL	BDL
7	23.12.2019	38.0	18.0	11.6	28.5	0.64	7.1	BDL	BDL	BDL	BDL	BDL	BDL
8	27.12.2019	42.0	20.0	11.4	27.8	0.58	6.9	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		38.4	18.9	11.8	29.4	0.6	6.8	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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):19 99	Chemical Method	Indo phenol blue method	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

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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/19/TR-6879

Date : 06.01.2020

## 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	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.12.2019,05.12.2019,10.12.2019 12.12.2019,17.12.2019,19.12.2019 24.12.2019,28.12.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773' Longitude: E82°58.332' Altitude: 974.45 m.	
Sampling Date	02.12.2019,04.12.2019, 09.12.2019,11.12.2019, 16.12.2019,18.12.2019, 23.12.2019,27.12.2019.	Test Completed on	04.12.2019 to 31.12.2019

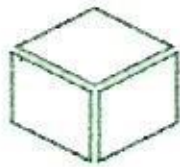
SL. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.12.2019	35.0	18.0	12.6	30.1	0.72	8.1	BDL	BDL	BDL	BDL	BDL	BDL
2	04.12.2019	39.0	20.0	12.4	32.5	0.71	8.4	BDL	BDL	BDL	BDL	BDL	BDL
3	09.12.2019	42.0	21.0	11.9	29.4	0.69	7.9	BDL	BDL	BDL	BDL	BDL	BDL
4	11.12.2019	44.0	22.0	12.8	30.6	0.65	7.8	BDL	BDL	BDL	BDL	BDL	BDL
5	16.12.2019	37.0	19.0	13.4	31.2	0.73	8.2	BDL	BDL	BDL	BDL	BDL	BDL
6	18.12.2019	36.0	18.0	12.8	32.5	0.72	7.6	BDL	BDL	BDL	BDL	BDL	BDL
7	23.12.2019	32.0	16.0	13.3	30.6	0.74	8.4	BDL	BDL	BDL	BDL	BDL	BDL
8	27.12.2019	35.0	18.0	13.1	29.3	0.76	7.6	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		37.5	19.0	12.8	30.8	0.72	8.0	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

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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/19/TR-6880

Date : 06.01.2020

## TEST REPORT

Customer Name & Address :

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

Sample Location & Code	S3: Near Office	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.12.2019,07.12.2019,10.12.2019 14.12.2019,17.12.2019,21.12.2019 24.12.2019,31.12.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.366' Longitude: E82°58.874' Altitude: 955.24 m.	
Sampling Date	02.12.2019,06.12.2019, 09.12.2019,13.12.2019, 16.12.2019,20.12.2019, 23.12.2019,30.12.2019.	Test Completed on	04.12.2019 to 04.01.2020

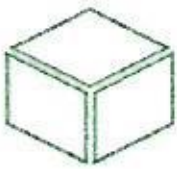
Sl. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.12.2019	32.0	16.0	13.4	30.6	0.58	7.7	BDL	BDL	BDL	BDL	BDL	BDL
2	06.12.2019	34.0	17.0	12.6	31.9	0.63	7.3	BDL	BDL	BDL	BDL	BDL	BDL
3	09.12.2019	36.0	18.0	13.1	29.8	0.61	7.9	BDL	BDL	BDL	BDL	BDL	BDL
4	13.12.2019	29.0	15.0	12.2	31.6	0.72	8.1	BDL	BDL	BDL	BDL	BDL	BDL
5	16.12.2019	33.0	17.0	12.6	32.4	0.76	8.6	BDL	BDL	BDL	BDL	BDL	BDL
6	20.12.2019	32.0	16.0	12.7	31.3	0.75	8.1	BDL	BDL	BDL	BDL	BDL	BDL
7	23.12.2019	36.0	18.0	12.8	30.5	0.67	8.3	BDL	BDL	BDL	BDL	BDL	BDL
8	30.12.2019	31.0	16.0	13.1	30.7	0.64	7.9	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		32.9	16.6	12.8	31.1	0.67	8.0	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

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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/19/TR-6881

Date : 06.01.2020

## 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	05.12.2019,07.12.2019,12.12.2019 14.12.2019,19.12.2019,21.12.2019 28.12.2019,31.12.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.079' Longitude: E82°58.775' Altitude: 993.95 m.	
Sampling Date	04.12.2019,06.12.2019, 11.12.2019,13.12.2019, 18.12.2019,20.12.2019, 27.12.2019,30.12.2019.	Test Completed on	06.12.2019 to 04.01.2020

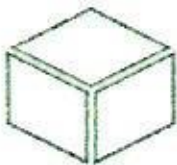
Sl. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	04.12.2019	40.0	20.0	11.3	30.3	0.61	7.9	BDL	BDL	BDL	BDL	BDL	BDL
2	06.12.2019	39.0	20.0	10.8	31.4	0.59	6.8	BDL	BDL	BDL	BDL	BDL	BDL
3	11.12.2019	45.0	23.0	12.1	29.5	0.63	7.6	BDL	BDL	BDL	BDL	BDL	BDL
4	13.12.2019	37.0	18.0	11.6	28.4	0.65	7.4	BDL	BDL	BDL	BDL	BDL	BDL
5	18.12.2019	41.0	20.0	12.4	26.9	0.61	8.2	BDL	BDL	BDL	BDL	BDL	BDL
6	20.12.2019	38.0	19.0	10.8	29.4	0.58	7.6	BDL	BDL	BDL	BDL	BDL	BDL
7	27.12.2019	43.0	22.0	11.1	28.1	0.62	7.3	BDL	BDL	BDL	BDL	BDL	BDL
8	30.12.2019	40.0	20.0	10.9	27.6	0.66	8.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		40.4	20.3	11.4	29.0	0.62	7.7	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
		BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>											

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-7328

Date : 06.02.2020

## 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	IS 5182.
Sample Source	Baphlimali Mines, UAII.	Sample Received on	03.01.2020,07.01.2020,11.01.2020 14.01.2020,17.01.2020,21.01.2020 24.01.2020,30.01.2020,01.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915' Longitude: E82°58.543' Altitude: 999.74 m.	
Sampling Date	02.01.2020,06.01.2020, 10.01.2020,13.01.2020, 16.01.2020,20.01.2020, 23.01.2020,29.01.2020, 31.01.2020.	Test Completed on	04.01.2020 to 05.02.2020

SL No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	Pb µg/m <sup>3</sup>	As ng/m <sup>3</sup>
1	02.01.2020	28.0	15.0	14.3	31.4	0.77	8.3	BDL	BDL	BDL	BDL	BDL	BDL
2	06.01.2020	32.0	18.0	10.9	25.9	0.44	6.2	BDL	BDL	BDL	BDL	BDL	BDL
3	10.01.2020	35.0	20.0	11.1	23.7	0.52	7.9	BDL	BDL	BDL	BDL	BDL	BDL
4	13.01.2020	43.0	26.0	12.4	30.2	0.56	9.1	BDL	BDL	BDL	BDL	BDL	BDL
5	16.01.2020	31.0	16.0	12.7	31.5	0.69	9.6	BDL	BDL	BDL	BDL	BDL	BDL
6	20.01.2020	37.0	19.0	13.6	26.6	0.62	6.8	BDL	BDL	BDL	BDL	BDL	BDL
7	23.01.2020	44.0	21.0	13.1	21.7	0.47	7.9	BDL	BDL	BDL	BDL	BDL	BDL
8	29.01.2020	35.0	24.0	14.8	33.9	0.53	5.8	BDL	BDL	BDL	BDL	BDL	BDL
9	31.01.2020	31.0	17.0	10.3	23.3	0.60	8.3	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		35.1	19.5	12.6	27.4	0.58	7.8	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper			

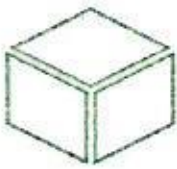
BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub><4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 ng/m<sup>3</sup>, As < 0.001 ng/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 ng/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-7329

Date : 06.02.2020

## 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	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.01.2020,07.01.2020,11.01.2020 14.01.2020,17.01.2020,21.01.2020 24.01.2020,30.01.2020,01.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773' Longitude: E82°58.332' Altitude: 974.45 m.	
Sampling Date	02.01.2020,06.01.2020, 10.01.2020,13.01.2020, 16.01.2020,20.01.2020, 23.01.2020,29.01.2020, 31.01.2020.	Test Completed on	04.01.2020 to 05.02.2020

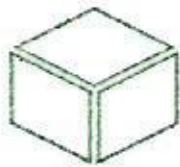
SL. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.01.2020	29.0	17.0	10.2	27.6	0.54	8.6	BDL	BDL	BDL	BDL	BDL	BDL
2	06.01.2020	32.0	15.0	12.8	21.6	0.69	9.4	BDL	BDL	BDL	BDL	BDL	BDL
3	10.01.2020	37.0	18.0	13.6	33.3	0.41	9.9	BDL	BDL	BDL	BDL	BDL	BDL
4	13.01.2020	41.0	23.0	11.4	38.8	0.32	7.4	BDL	BDL	BDL	BDL	BDL	BDL
5	16.01.2020	36.0	17.0	15.7	29.0	0.56	8.1	BDL	BDL	BDL	BDL	BDL	BDL
6	20.01.2020	40.0	21.0	10.9	35.6	0.42	9.9	BDL	BDL	BDL	BDL	BDL	BDL
7	23.01.2020	33.0	17.0	14.8	27.2	0.59	5.5	BDL	BDL	BDL	BDL	BDL	BDL
8	29.01.2020	29.0	13.0	12.7	31.8	0.66	6.7	BDL	BDL	BDL	BDL	BDL	BDL
9	31.01.2020	32.0	14.0	14.9	37.5	0.71	7.2	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		34.3	17.2	13.0	31.4	0.54	8.1	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-7330

Date : 06.02.2020

## 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	03.01.2020,07.01.2020,11.01.2020 14.01.2020,17.01.2020,21.01.2020 24.01.2020,30.01.2020,01.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.366' Longitude: E82°58.874' Altitude: 955.24 m.	
Sampling Date	02.01.2020,06.01.2020, 10.01.2020,13.01.2020, 16.01.2020,20.01.2020, 23.01.2020,29.01.2020, 31.01.2020.	Test Completed on	04.01.2020 to 05.02.2020

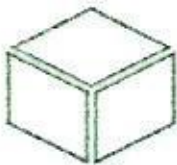
SL. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.01.2020	37.0	20.0	9.4	22.2	0.49	8.9	BDL	BDL	BDL	BDL	BDL	BDL
2	06.01.2020	29.0	13.0	13.6	27.6	0.38	5.6	BDL	BDL	BDL	BDL	BDL	BDL
3	10.01.2020	25.0	16.0	10.9	23.9	0.42	7.2	BDL	BDL	BDL	BDL	BDL	BDL
4	13.01.2020	22.0	12.0	13.7	34.8	0.61	9.1	BDL	BDL	BDL	BDL	BDL	BDL
5	16.01.2020	30.0	15.0	11.3	40.1	0.55	6.3	BDL	BDL	BDL	BDL	BDL	BDL
6	20.01.2020	28.0	14.0	12.9	37.4	0.69	8.5	BDL	BDL	BDL	BDL	BDL	BDL
7	23.01.2020	21.0	10.0	10.8	26.2	0.53	7.0	BDL	BDL	BDL	BDL	BDL	BDL
8	29.01.2020	28.0	13.0	11.5	29.6	0.44	9.2	BDL	BDL	BDL	BDL	BDL	BDL
9	31.01.2020	32.0	19.0	13.1	33.8	0.56	5.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		28.0	14.7	11.9	30.6	0.52	7.5	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-7331

Date : 06.02.2020

## TEST REPORT

Customer Name & Address : Baphimali 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	Baphimali Mines, UAIL	Sample Received on	03.01.2020,07.01.2020,11.01.2020 14.01.2020,17.01.2020,21.01.2020 24.01.2020,30.01.2020,01.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.079' Longitude: E82°58.775' Altitude: 993.95 m.	
Sampling Date	02.01.2020,06.01.2020, 10.01.2020,13.01.2020, 16.01.2020,20.01.2020, 23.01.2020,29.01.2020, 31.01.2020.	Test Completed on	04.01.2020 to 05.02.2020

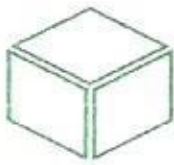
SL No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.01.2020	31.0	19.0	12.4	23.9	0.51	6.2	BDL	BDL	BDL	BDL	BDL	BDL
2	06.01.2020	26.0	14.0	10.2	26.2	0.44	7.9	BDL	BDL	BDL	BDL	BDL	BDL
3	10.01.2020	34.0	20.0	9.9	21.4	0.36	8.5	BDL	BDL	BDL	BDL	BDL	BDL
4	13.01.2020	30.0	17.0	13.7	39.9	0.70	8.1	BDL	BDL	BDL	BDL	BDL	BDL
5	16.01.2020	38.0	16.0	12.5	32.2	0.59	5.2	BDL	BDL	BDL	BDL	BDL	BDL
6	20.01.2020	43.0	22.0	12.9	26.3	0.47	7.0	BDL	BDL	BDL	BDL	BDL	BDL
7	23.01.2020	29.0	14.0	14.7	31.7	0.50	6.4	BDL	BDL	BDL	BDL	BDL	BDL
8	29.01.2020	34.0	21.0	13.6	30.5	0.39	5.9	BDL	BDL	BDL	BDL	BDL	BDL
9	31.01.2020	36.0	17.0	11.9	34.2	0.48	6.7	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		33.4	17.8	12.3	29.6	0.49	6.9	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-8591

Date : 07.03.2020

## TEST REPORT

Customer Name & Address

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

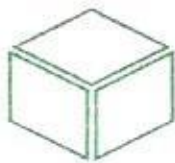
Sample Location & Code	SI: Near Crusher	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL.	Sample Received on	02.02.2020,05.02.2020,09.02.2020 11.02.2020,15.02.2020,19.02.2020 23.02.2020,25.02.2020,29.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915' Longitude: E82°58.543' Altitude: 999.74 m.	
Sampling Date	01.02.2020,04.02.2020, 08.02.2020,10.02.2020, 14.02.2020,18.02.2020, 22.02.2020,24.02.2020, 28.02.2020.	Test Completed on	03.02.2020 to 06.03.2020

Sl. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	01.02.2020	41.0	20.0	11.9	23.4	0.49	6.9	BDL	BDL	BDL	BDL	BDL	BDL
2	04.02.2020	33.0	16.0	12.5	25.6	0.51	5.6	BDL	BDL	BDL	BDL	BDL	BDL
3	08.02.2020	40.0	19.0	9.6	29.7	0.47	6.7	BDL	BDL	BDL	BDL	BDL	BDL
4	10.02.2020	38.0	18.0	10.8	26.0	0.54	6.1	BDL	BDL	BDL	BDL	BDL	BDL
5	14.02.2020	28.0	13.0	9.7	23.5	0.52	6.5	BDL	BDL	BDL	BDL	BDL	BDL
6	18.02.2020	35.0	17.0	11.2	22.6	0.58	5.3	BDL	BDL	BDL	BDL	BDL	BDL
7	22.02.2020	28.0	13.0	8.4	27.8	0.62	5.9	BDL	BDL	BDL	BDL	BDL	BDL
8	24.02.2020	31.0	15.0	12.4	30.4	0.51	5.4	BDL	BDL	BDL	BDL	BDL	BDL
9	28.02.2020	23.0	11.0	9.8	23.5	0.54	5.2	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		33.0	15.8	10.7	25.8	0.53	6.0	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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):19 99	Chemical Method	Indo phenol blue method	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper			
		BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>											

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.





# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-8592

Date : 07.03.2020

## TEST REPORT

Customer Name & Address

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

Sample Location & Code	S2: Mining Pit	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	02.02.2020,07.02.2020,09.02.2020 13.02.2020,15.02.2020,21.02.2020 23.02.2020,27.02.2020,29.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773' Longitude: E82°58.332' Altitude: 974.45 m.	
Sampling Date	01.02.2020,06.02.2020, 08.02.2020,12.02.2020, 14.02.2020,20.02.2020, 22.02.2020,26.02.2020, 28.02.2020.	Test Completed on	03.02.2020 to 06.03.2020

Sl. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	01.02.2020	28.0	14.0	12.8	29.8	0.71	7.9	BDL	BDL	BDL	BDL	BDL	BDL
2	06.02.2020	32.0	16.0	9.7	26.9	0.55	7.5	BDL	BDL	BDL	BDL	BDL	BDL
3	08.02.2020	30.0	15.0	12.1	23.5	0.45	8.1	BDL	BDL	BDL	BDL	BDL	BDL
4	12.02.2020	35.0	18.0	11.5	21.7	0.68	6.5	BDL	BDL	BDL	BDL	BDL	BDL
5	14.02.2020	30.0	15.0	10.8	26.5	0.52	7.9	BDL	BDL	BDL	BDL	BDL	BDL
6	20.02.2020	27.0	14.0	11.7	24.3	0.51	7.3	BDL	BDL	BDL	BDL	BDL	BDL
7	22.02.2020	30.0	15.0	12.7	29.6	0.56	8.2	BDL	BDL	BDL	BDL	BDL	BDL
8	26.02.2020	35.0	18.0	10.2	32.1	0.61	7.1	BDL	BDL	BDL	BDL	BDL	BDL
9	28.02.2020	31.0	16.0	10.9	28.2	0.53	6.8	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		30.9	15.7	11.4	27.0	0.57	7.5	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

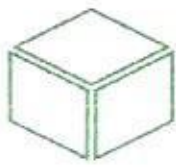
BDL Values: SO<sub>2</sub>< 4 µg/m<sup>3</sup>, NO<sub>x</sub>< 9 µg/m<sup>3</sup>, O<sub>3</sub><4 µg/m<sup>3</sup>, NH<sub>3</sub>< 20 µg/m<sup>3</sup>, Ni<0.01 ng/m<sup>3</sup>, As < 0.001 ng/m<sup>3</sup>, C<sub>6</sub>H<sub>6</sub><0.001 µg/m<sup>3</sup>, BaP<0.002 ng/m<sup>3</sup>, Pb<0.001 µg/m<sup>3</sup>, CO<0.1 mg/m<sup>3</sup>

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-8593

Date : 07.03.2020

## TEST REPORT

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

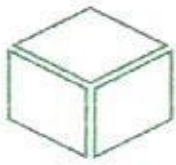
Sample Location & Code	S3: Near Office	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	02.02.2020,07.02.2020,09.02.2020 13.02.2020,15.02.2020,21.02.2020 23.02.2020,27.02.2020,29.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.366' Longitude: E82°58.874' Altitude: 955.24 m.	
Sampling Date	01.02.2020, 06.02.2020, 08.02.2020, 12.02.2020, 14.02.2020, 20.02.2020, 22.02.2020, 26.02.2020, 28.02.2020.	Test Completed on	03.02.2020 to 06.03.2020

Sl. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	01.02.2020	31.0	16.0	10.6	20.4	0.56	7.2	BDL	BDL	BDL	BDL	BDL	BDL
2	06.02.2020	26.0	23.0	11.2	24.5	0.48	6.4	BDL	BDL	BDL	BDL	BDL	BDL
3	08.02.2020	28.0	14.0	13.6	29.2	0.59	6.1	BDL	BDL	BDL	BDL	BDL	BDL
4	12.02.2020	26.0	13.0	12.8	26.8	0.63	7.3	BDL	BDL	BDL	BDL	BDL	BDL
5	14.02.2020	29.0	15.0	10.4	33.4	0.59	6.8	BDL	BDL	BDL	BDL	BDL	BDL
6	20.02.2020	22.0	12.0	12.7	28.6	0.52	7.3	BDL	BDL	BDL	BDL	BDL	BDL
7	22.02.2020	26.0	14.0	13.2	31.6	0.61	7.8	BDL	BDL	BDL	BDL	BDL	BDL
8	26.02.2020	28.0	15.0	9.5	22.7	0.52	6.4	BDL	BDL	BDL	BDL	BDL	BDL
9	28.02.2020	23.0	14.0	11.1	34.8	0.48	6.9	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		26.5	15.1	11.6	28.0	0.55	6.9	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
		BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>											

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.





# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-8594

Date : 07.03.2020

## 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	VCSP/LS Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	05.02.2020,07.02.2020,11.02.2020 13.02.2020,19.02.2020,21.02.2020 25.02.2020,27.02.2020,01.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.079' Longitude: E82°58.775' Altitude: 993.95 m.	
Sampling Date	04.02.2020,06.02.2020, 10.02.2020,12.02.2020, 18.02.2020,20.02.2020, 24.02.2020,26.02.2020, 29.02.2020.	Test Completed on	06.02.2020 to 06.03.2020

SL. No	Sampling Date	Parameters											
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	04.02.2020	30.0	15.0	8.6	18.4	0.58	6.5	BDL	BDL	BDL	BDL	BDL	BDL
2	06.02.2020	35.0	17.0	10.2	17.5	0.43	5.9	BDL	BDL	BDL	BDL	BDL	BDL
3	10.02.2020	38.0	19.0	9.5	23.4	0.52	7.3	BDL	BDL	BDL	BDL	BDL	BDL
4	12.02.2020	32.0	16.0	10.1	29.7	0.61	7.8	BDL	BDL	BDL	BDL	BDL	BDL
5	18.02.2020	44.0	21.0	11.1	22.4	0.48	5.4	BDL	BDL	BDL	BDL	BDL	BDL
6	20.02.2020	34.0	16.0	12.9	35.2	0.52	6.5	BDL	BDL	BDL	BDL	BDL	BDL
7	24.02.2020	26.0	13.0	10.8	30.4	0.58	7.2	BDL	BDL	BDL	BDL	BDL	BDL
8	26.02.2020	29.0	15.0	9.6	28.6	0.41	8.1	BDL	BDL	BDL	BDL	BDL	BDL
9	29.02.2020	30.0	15.0	8.6	18.4	0.58	6.5	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		33.8	16.7	10.4	25.7	0.52	6.9	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on FPM 2000 or Equivalent filter Paper		
BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO<0.1 mg/m <sup>3</sup>													

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.

Authorized Signatory





Test Report No: ENVLAB/19/TR-9417

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	S1: Near Crusher	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.03.2020,05.03.2020,10.03.2020 12.03.2020,17.03.2020,19.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.915' Longitude: E82°58.543' Altitude: 999.74 m.	
Sampling Date	02.03.2020,04.03.2020, 09.03.2020,11.03.2020, 16.03.2020,18.03.2020	Test Completed on	03.03.2020 to 21.03.2020

### Parameters

SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.03.2020	42.0	17.0	13.3	29.3	0.41	6.5	BDL	BDL	BDL	BDL	BDL	BDL
2	04.03.2020	37.0	14.0	10.8	27.5	0.66	5.9	BDL	BDL	BDL	BDL	BDL	BDL
3	09.03.2020	43.0	20.0	11.5	32.4	0.49	8.1	BDL	BDL	BDL	BDL	BDL	BDL
4	11.03.2020	35.0	21.0	12.1	29.8	0.74	7.5	BDL	BDL	BDL	BDL	BDL	BDL
5	16.03.2020	30.0	18.0	10.3	34.1	0.59	6.9	BDL	BDL	BDL	BDL	BDL	BDL
6	18.03.2020	27.0	13.0	9.8	27.9	0.40	6.7	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		35.7	17.2	11.3	30.2	0.55	6.9	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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):19 99	Chemical Method	Indo phenol blue method	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
		BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO-<0.1 mg/m <sup>3</sup>											

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 1-8 are **Time Weighted Average**.)

\*These Parameter not in our NABL Scope.

  
Prepared by



  
Verified by





Test Report No: ENVLAB/19/TR-9418

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	S2: Mining Pit	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.03.2020,05.03.2020,10.03.2020 14.03.2020,17.03.2020,21.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.773' Longitude: E82°58.332' Altitude: 974.45 m.	
Sampling Date	02.03.2020,04.03.2020, 09.03.2020,13.03.2020, 16.03.2020,20.03.2020.	Test Completed on	03.03.2020 to 21.03.2020

### Parameters

SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.03.2020	33.0	12.0	9.4	24.1	0.54	7.3	BDL	BDL	BDL	BDL	BDL	BDL
2	04.03.2020	36.0	15.0	10.7	30.8	0.61	6.8	BDL	BDL	BDL	BDL	BDL	BDL
3	09.03.2020	41.0	16.0	11.3	28.1	0.43	6.7	BDL	BDL	BDL	BDL	BDL	BDL
4	12.03.2020	29.0	14.0	15.1	34.2	0.39	6.9	BDL	BDL	BDL	BDL	BDL	BDL
5	16.03.2020	34.0	15.0	13.3	29.0	0.68	7.5	BDL	BDL	BDL	BDL	BDL	BDL
6	20.03.2020	30.0	13.0	10.2	25.5	0.58	6.3	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		33.8	14.2	11.7	28.6	0.51	6.9	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
		BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO-<0.1 mg/m <sup>3</sup>											

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 1-8 are **Time Weighted Average.**)

\*These Parameter not in our NABL Scope.

  
Prepared by



  
Verified by







Test Report No: ENVLAB/19/TR-9419

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	S3: Near Office	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.03.2020,07.03.2020,10.03.2020 14.03.2020,17.03.2020,21.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.366' Longitude: E82°58.874' Altitude: 955.24 m.	
Sampling Date	02.03.2020, 06.03.2020, 09.03.2020, 13.03.2020, 16.03.2020, 20.03.2020.	Test Completed on	03.03.2020 to 21.03.2020

### Parameters

SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	02.03.2020	21.0	11.0	8.8	17.3	0.33	6.6	BDL	BDL	BDL	BDL	BDL	BDL
2	06.03.2020	26.0	13.0	9.6	25.9	0.42	7.9	BDL	BDL	BDL	BDL	BDL	BDL
3	09.03.2020	40.0	18.0	10.4	24.1	0.55	6.6	BDL	BDL	BDL	BDL	BDL	BDL
4	13.03.2020	33.0	12.0	12.9	30.7	0.59	7.1	BDL	BDL	BDL	BDL	BDL	BDL
5	16.03.2020	36.0	13.0	10.4	28.5	0.44	8.5	BDL	BDL	BDL	BDL	BDL	BDL
6	20.03.2020	28.0	12.0	11.8	28.8	0.49	7.1	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		30.7	13.2	10.7	25.9	0.47	7.3	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
		BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO-<0.1 mg/m <sup>3</sup>											

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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.

  
Prepared by



  
Verified by





Test Report No: ENVLAB/19/TR-9420

Date : 04.04.2020

## 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	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	05.03.2020,07.03.2020,12.03.2020 14.03.2020,19.03.2020,21.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.079' Longitude: E82°58.775' Altitude: 993.95 m.	
Sampling Date	04.03.2020,06.03.2020, 11.03.2020,13.03.2020, 18.03.2020,20.03.2020.	Test Completed on	05.03.2020 to 21.03.2020

### Parameters

SL No	Sampling Date	Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*CO mg/m <sup>3</sup>	*O <sub>3</sub> µg/m <sup>3</sup>	*NH <sub>3</sub> µg/m <sup>3</sup>	*C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	*BaP ng/m <sup>3</sup>	*Ni ng/m <sup>3</sup>	*Pb µg/m <sup>3</sup>	*As ng/m <sup>3</sup>
1	04.03.2020	33.0	16.0	10.8	20.1	0.48	6.1	BDL	BDL	BDL	BDL	BDL	BDL
2	06.03.2020	28.0	11.0	11.4	23.3	0.37	6.9	BDL	BDL	BDL	BDL	BDL	BDL
3	11.03.2020	31.0	15.0	11.9	25.9	0.46	7.3	BDL	BDL	BDL	BDL	BDL	BDL
4	13.03.2020	30.0	13.0	10.7	28.4	0.62	8.5	BDL	BDL	BDL	BDL	BDL	BDL
5	18.03.2020	29.0	14.0	13.6	21.4	0.35	7.0	BDL	BDL	BDL	BDL	BDL	BDL
6	20.03.2020	36.0	11.0	12.2	25.7	0.58	6.6	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		31.2	13.3	11.8	24.1	0.48	7.1	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ 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	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		
		BDL Values: SO <sub>2</sub> < 4 µg/m <sup>3</sup> , NO <sub>x</sub> < 9 µg/m <sup>3</sup> , O <sub>3</sub> <4 µg/m <sup>3</sup> , NH <sub>3</sub> < 20 µg/m <sup>3</sup> , Ni<0.01 ng/m <sup>3</sup> , As < 0.001 ng/m <sup>3</sup> , C <sub>6</sub> H <sub>6</sub> <0.001 µg/m <sup>3</sup> , BaP<0.002 ng/m <sup>3</sup> , Pb<0.001 µg/m <sup>3</sup> , CO-<0.1 mg/m <sup>3</sup>											

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 1-8 are **Time Weighted Average**.)

\*These Parameter not in our NABL Scope.

  
Prepared by



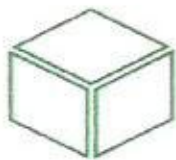
  
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**ANNEXURE: 5**

**Ambient Air Quality Monitoring Report (Buffer  
Zone) for the period October 2019 to March 2020**





# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-5367

Date : 04.11.2019

## 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	03.10.2019,05.10.2019,08.10.2019 10.10.2019,17.10.2019,19.10.2019 24.10.2019,26.10.2019,29.10.2019
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079' Longitude: E83°0.738' Altitude: 739.14 m.	
Sampling Date	02.10.2019,04.10.2019, 07.10.2019,09.10.2019, 16.10.2019,18.10.2019, 23.10.2019,25.10.2019, 28.10.2019	Test Completed on	04.10.2019 to 02.11.2019

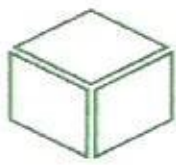
Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	* Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	* Carbon Mono-oxide as CO (mg/m <sup>3</sup> )
1	02.10.2019	61.0	36.0	7.2	19.4	0.53
2	04.10.2019	56.0	30.0	8.9	23.6	0.48
3	07.10.2019	60.0	42.0	8.1	17.7	0.41
4	09.10.2019	52.0	29.0	7.6	15.3	0.32
5	16.10.2019	59.0	37.0	9.0	20.8	0.59
6	18.10.2019	63.0	41.0	6.6	14.9	0.52
7	23.10.2019	61.0	35.0	7.3	18.2	0.66
8	25.10.2019	43.0	19.0	8.4	21.5	0.59
9	28.10.2019	64.0	33.0	7.7	23.3	0.45
Monthly Average		57.7	33.6	7.9	19.4	0.51
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:						Nil

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

\* This parameter not in our NABL Scope.



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NABL ACCREDITED

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

Test Report No: ENVLAB/19/TR-5368

Date : 04.11.2019

## TEST REPORT

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

Sample Location & Code	S6: Paikupakhali	Sampled by	VCSPI'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL.	Sample Received on	03.10.2019,05.10.2019,08.10.2019 10.10.2019,17.10.2019,19.10.2019 24.10.2019,26.10.2019,29.10.2019
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.	
Sampling Date	02.10.2019,04.10.2019, 07.10.2019,09.10.2019, 16.10.2019,18.10.2019, 23.10.2019,25.10.2019, 28.10.2019.	Test Completed on	04.10.2019 to 02.11.2019

Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	* Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	* Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	02.10.2019	62.0	43.0	6.9	17.7	0.55
2	04.10.2019	59.0	32.0	9.2	26.2	0.42
3	07.10.2019	60.0	38.0	9.7	30.3	0.45
4	09.10.2019	56.0	30.0	7.4	15.9	0.61
5	16.10.2019	51.0	35.0	8.1	21.4	0.37
6	18.10.2019	57.0	26.0	8.7	25.5	0.49
7	23.10.2019	64.0	38.0	7.6	19.3	0.52
8	25.10.2019	40.0	26.0	9.0	28.4	0.60
9	28.10.2019	47.0	31.0	8.2	26.9	0.54
Monthly Average		55.1	33.2	8.3	23.5	0.51
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

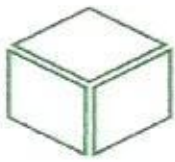
Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NO<sub>x</sub> & CO presented in row no 1-8 are Time Weighted Average.)

\* This parameters not in our NABL Scope.



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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/TR-5369

Date : 04.11.2019

## TEST REPORT

Customer Name & Address :

Baphimali 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	Baphimali Mines, UAIL.	Sample Received on	02.10.2019,04.10.2019,11.10.2019 13.10.2019,16.10.2019,18.10.2019 23.10.2019,25.10.2019,30.10.2019
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56.705' Altitude: 691.90 m.	
Sampling Date	01.10.2019, 03.10.2019, 10.10.2019, 12.10.2019, 15.10.2019, 17.10.2019, 22.10.2019, 24.10.2019, 29.10.2019.	Test Completed on	03.10.2019 To 02.11.2019

Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	* Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	* Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	01.10.2019	49.0	26.0	8.1	20.6	0.43
2	03.10.2019	52.0	31.0	7.9	15.4	0.32
3	10.10.2019	43.0	27.0	7.5	17.7	0.51
4	12.10.2019	59.0	36.0	9.3	23.9	0.59
5	15.10.2019	50.0	29.0	8.5	20.2	0.45
6	17.10.2019	61.0	32.0	9.8	26.7	0.61
7	22.10.2019	48.0	28.0	7.0	19.3	0.53
8	24.10.2019	58.0	33.0	8.8	28.0	0.50
9	29.10.2019	53.0	36.0	9.4	33.2	0.42
Monthly Average		52.6	30.9	8.5	22.8	0.48
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup>				
		Any unusual feature during determination:				Nil

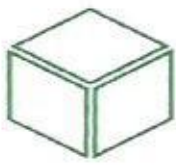
Remarks: (All the values of PM-10, PM-2.5, SO<sub>2</sub>, NO<sub>x</sub> & CO presented in row no 1-8 are Time Weighted Average.)

\* This parameters not in our NABL scope.



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

Test Report No: ENVLAB/19/TR-5370

Date : 04.11.2019

## TEST REPORT

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

Sample Location & Code	S8: Chandragiri	Sampled by	VCSPI/S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	02.10.2019,04.10.2019,11.10.2019 13.10.2019,16.10.2019,18.10.2019 23.10.2019,25.10.2019,30.10.2019
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°23.107' Longitude: E82°59.221' Altitude: 656.54 m.	
Sampling Date	01.10.2019, 03.10.2019, 10.10.2019, 12.10.2019, 15.10.2019, 17.10.2019, 22.10.2019, 24.10.2019, 29.10.2019.	Test Completed on	03.10.2019 To 02.11.2019

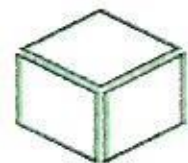
Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	01.10.2019	46.0	28.0	7.1	16.9	0.44
2	03.10.2019	55.0	31.0	6.8	14.4	0.51
3	10.10.2019	42.0	24.0	9.0	24.4	0.62
4	12.10.2019	59.0	34.0	8.4	20.9	0.48
5	15.10.2019	67.0	32.0	6.8	17.7	0.51
6	17.10.2019	47.0	29.0	7.3	21.9	0.39
7	22.10.2019	51.0	34.0	8.0	24.4	0.63
8	24.10.2019	43.0	25.0	8.5	28.7	0.48
9	29.10.2019	56.0	31.0	6.7	18.7	0.37
Monthly Average		51.8	29.8	7.6	20.9	0.49
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:						Nil

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

\* This parameters not in our NABL scope.



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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/TR-6372

Date : 07.12.2019

## 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	02.11.2019,05.11.2019,07.11.2019 12.11.2019,14.11.2019,19.11.2019 21.11.2019,26.11.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079' Longitude: E83°0.738' Altitude: 739.14 m.	
Sampling Date	01.11.2019,04.11.2019, 06.11.2019,11.11.2019, 13.11.2019,18.11.2019, 20.11.2019,25.11.2019.	Test Completed on	03.11.2019 to 30.11.2019

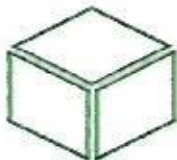
SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	01.11.2019	47.0	22.0	6.9	17.5	0.47
2	04.11.2019	37.0	25.0	7.5	20.2	0.40
3	06.11.2019	42.0	18.0	8.7	16.4	0.51
4	11.11.2019	51.0	27.0	8.0	21.5	0.62
5	13.11.2019	45.0	25.0	6.6	13.3	0.47
6	18.11.2019	49.0	31.0	7.5	17.9	0.40
7	20.11.2019	40.0	23.0	7.2	15.4	0.35
8	25.11.2019	48.0	29.0	9.3	21.8	0.61
<b>Monthly Average</b>		<b>44.9</b>	<b>25.1</b>	<b>7.7</b>	<b>18.0</b>	<b>0.48</b>
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:						Nil

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

\*This Parameter not in our NABL Scope.







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NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/TR-6373

Date : 07.12.2019

## 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	02.11.2019,05.11.2019,07.11.2019 12.11.2019,14.11.2019,19.11.2019 21.11.2019,26.11.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.	
Sampling Date	01.11.2019,04.11.2019, 06.11.2019,11.11.2019, 13.11.2019,18.11.2019, 20.11.2019,25.11.2019,	Test Completed on	03.11.2019 to 30.11.2019

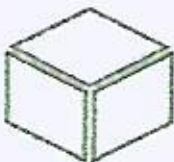
SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	01.11.2019	34.0	23.0	7.7	18.9	0.37
2	04.11.2019	43.0	26.0	6.9	14.4	0.28
3	06.11.2019	49.0	35.0	6.2	15.2	0.42
4	11.11.2019	50.0	32.0	7.0	17.1	0.66
5	13.11.2019	42.0	28.0	7.4	14.8	0.39
6	18.11.2019	46.0	33.0	6.8	19.3	0.47
7	20.11.2019	40.0	27.0	6.4	15.7	0.32
8	25.11.2019	37.0	21.0	8.2	23.3	0.55
<b>Monthly Average</b>		<b>42.6</b>	<b>28.1</b>	<b>7.1</b>	<b>17.3</b>	<b>0.43</b>
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

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

\*This Parameter not in our NABL Scope.







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NABL ACCREDITED

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

Test Report No: ENVLAB/19/TR-6374

Date : 07.12.2019

## 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	03.11.2019,06.11.2019,08.11.2019 13.11.2019,17.11.2019,20.11.2019 22.11.2019,29.11.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56.705' Altitude: 691.90 m.	
Sampling Date	02.11.2019,05.11.2019, 07.11.2019,12.11.2019, 16.11.2019,19.11.2019, 21.11.2019,28.11.2019.	Test Completed on	04.11.2019 to 04.12.2019

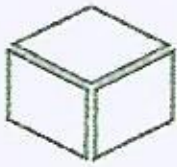
SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	02.11.2019	47.0	30.0	5.8	16.4	0.44
2	05.11.2019	41.0	19.0	6.3	13.8	0.61
3	07.11.2019	54.0	32.0	7.2	19.5	0.48
4	12.11.2019	48.0	29.0	7.8	14.2	0.40
5	16.11.2019	57.0	23.0	8.5	20.8	0.45
6	19.11.2019	42.0	20.0	9.6	26.2	0.57
7	21.11.2019	38.0	23.0	8.7	17.8	0.36
8	28.11.2019	56.0	38.0	7.1	15.5	0.52
Monthly Average		47.9	26.8	7.6	18.0	0.48
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

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

\*This Parameter not in our NABL Scope.







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NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/TR-6375

Date : 07.12.2019

## TEST REPORT

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

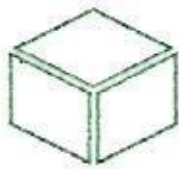
Sample Location & Code	S8: Chandragiri	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.11.2019,06.11.2019,08.11.2019 13.11.2019,17.11.2019,20.11.2019 22.11.2019,29.11.2019.
Sample Condition	Gaseous sample solution refrigerated	Latitude: N19°23.107' Longitude: E82°59.221' Altitude: 656.54 m.	
Sampling Date	02.11.2019,05.11.2019, 07.11.2019,12.11.2019, 16.11.2019,19.11.2019, 21.11.2019,28.11.2019.	Test Completed on	04.11.2019 to 04.12.2019

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	02.11.2019	32.0	19.0	6.2	14.9	0.45
2	05.11.2019	41.0	24.0	7.1	17.1	0.52
3	07.11.2019	35.0	20.0	6.6	15.2	0.47
4	12.11.2019	39.0	25.0	6.3	16.8	0.42
5	16.11.2019	41.0	21.0	7.8	21.2	0.51
6	19.11.2019	38.0	26.0	5.9	14.3	0.62
7	21.11.2019	44.0	30.0	7.4	20.5	0.46
8	28.11.2019	35.0	27.0	7.0	17.9	0.55
Monthly Average		38.1	24.0	6.8	17.2	0.50
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

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

\*This Parameter not in our NABL Scope.





# Visiontek Consultancy Services Pvt. Ltd.

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NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/TR-6882

Date : 06.01.2020

## 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	03.12.2019,07.12.2019,10.12.2019 17.12.2019,21.12.2019,24.12.2019 28.12.2019,31.12.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079' Longitude: E83°0.738' Altitude: 739.14 m.	
Sampling Date	02.12.2019,06.12.2019, 09.12.2019,16.12.2019, 20.12.2019,23.12.2019, 27.12.2019,30.12.2019.	Test Completed on	04.12.2019 to 03.01.2020

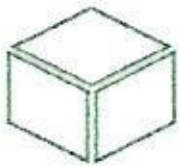
Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	02.12.2019	51.0	27.0	7.3	15.2	0.52
2	06.12.2019	56.0	30.0	8.1	19.7	0.69
3	09.12.2019	45.0	26.0	7.8	14.3	0.43
4	16.12.2019	53.0	23.0	8.3	16.2	0.55
5	20.12.2019	49.0	18.0	6.9	17.8	0.60
6	23.12.2019	61.0	34.0	7.5	14.3	0.37
7	27.12.2019	55.0	29.0	8.2	20.8	0.52
8	30.12.2019	50.0	24.0	10.6	23.5	0.49
<b>Monthly Average</b>		<b>52.5</b>	<b>26.4</b>	<b>8.1</b>	<b>17.7</b>	<b>0.52</b>
CPCB, New Delhi AAQ Standard		<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>4</b>
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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:				Nil

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

\*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: ENVLAB/19/TR-6883

Date : 06.01.2020

## TEST REPORT

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

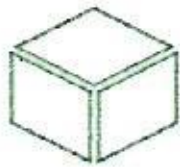
Sample Location & Code	S6: Paikupakhal	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.12.2019,07.12.2019,14.12.2019 17.12.2019,21.12.2019,24.12.2019 28.12.2019,31.12.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.	
Sampling Date	02.12.2019,06.12.2019, 13.12.2019,16.12.2019, 20.12.2019,23.12.2019, 27.12.2019,30.12.2019,	Test Completed on	04.12.2019 to 04.01.2020

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	02.12.2019	44.0	22.0	7.9	19.3	0.49
2	06.12.2019	48.0	24.0	7.1	18.4	0.51
3	13.12.2019	41.0	21.0	6.5	17.5	0.47
4	16.12.2019	47.0	24.0	7.4	16.9	0.49
5	20.12.2019	46.0	23.0	7.6	17.5	0.48
6	23.12.2019	42.0	21.0	7.3	18.3	0.52
7	27.12.2019	48.0	24.0	7.7	17.9	0.49
8	30.12.2019	46.0	23.0	7.5	18.1	0.46
<b>Monthly Average</b>		<b>45.3</b>	<b>22.8</b>	<b>7.4</b>	<b>18.0</b>	<b>0.49</b>
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:				Nil

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

\*This Parameter not in our NABL Scope.





# Visiontek Consultancy Services Pvt. Ltd.

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NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/TR-6884

Date : 06.01.2020

## 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	04.12.2019,06.12.2019,11.12.2019 13.12.2019,18.12.2019,20.12.2019 25.12.2019,27.12.2019.
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56.705' Altitude: 691.90 m.	
Sampling Date	03.12.2019,05.12.2019, 10.12.2019,12.12.2019, 17.12.2019,19.12.2019, 24.12.2019,26.12.2019.	Test Completed on	05.12.2019 To 31.12.2019

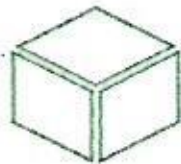
SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.12.2019	50.0	25.0	6.7	19.0	0.46
2	05.12.2019	59.0	30.0	7.9	20.1	0.62
3	10.12.2019	52.0	26.0	8.1	21.3	0.56
4	12.12.2019	53.0	27.0	8.4	20.5	0.57
5	17.12.2019	48.0	24.0	9.6	22.3	0.54
6	19.12.2019	58.0	29.0	7.4	24.2	0.52
7	24.12.2019	54.0	27.0	8.2	20.6	0.49
8	26.12.2019	56.0	28.0	8.4	19.5	0.53
Monthly Average		53.8	27.0	8.1	20.9	0.54
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:						Nil

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

\*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: ENVLAB/19/TR-6885

Date : 06.01.2020

## TEST REPORT

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

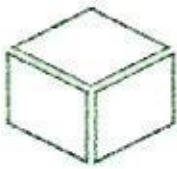
Sample Location & Code	S8: Chandragiri	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.12.2019,06.12.2019,11.12.2019 13.12.2019,18.12.2019,20.12.2019 25.12.2019,27.12.2019.
Sample Condition	Gaseous sample solution refrigerated	Latitude: N19°23.107' Longitude: E82°59.221' Altitude: 656.54 m.	
Sampling Date	03.12.2019,05.12.2019, 10.12.2019,12.12.2019, 17.12.2019,19.12.2019, 24.12.2019,26.12.2019.	Test Completed on	05.12.2019 to 31.12.2019

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.12.2019	38.0	20.0	7.2	18.1	0.49
2	05.12.2019	43.0	23.0	6.9	17.9	0.52
3	10.12.2019	36.0	19.0	6.8	17.6	0.53
4	12.12.2019	40.0	21.0	7.1	18.2	0.51
5	17.12.2019	46.0	24.0	7.4	17.6	0.54
6	19.12.2019	47.0	25.0	7.6	17.3	0.52
7	24.12.2019	43.0	23.0	7.4	17.0	0.56
8	26.12.2019	48.0	25.0	7.3	17.3	0.58
<b>Monthly Average</b>		<b>42.6</b>	<b>22.5</b>	<b>7.2</b>	<b>17.6</b>	<b>0.53</b>
<b>CPCB, New Delhi AAQ Standard</b>		<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>4</b>
<b>Testing Method</b>		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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:						Nil

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

\*This Parameter not in our NABL Scope.





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

Test Report No: ENVLAB/19/TR-7332

Date : 06.02.2020

## TEST REPORT

Customer Name & Address : Bapthimali 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	Bapthimali Mines, UAIL	Sample Received on	03.01.2020,07.01.2020,11.01.2020 14.01.2020,17.01.2020,21.01.2020 24.01.2020,30.01.2020,01.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079' Longitude: E83°0.738' Altitude: 739.14 m.	
Sampling Date	02.01.2020,06.01.2020, 10.01.2020,13.01.2020, 16.01.2020,20.01.2020, 23.01.2020,29.01.2020, 31.01.2020.	Test Completed on	04.01.2020 to 05.02.2020

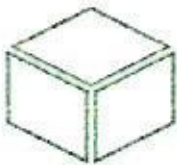
SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	02.01.2020	48.0	27.0	9.3	24.3	0.65
2	06.01.2020	59.0	33.0	8.1	17.5	0.71
3	10.01.2020	51.0	29.0	9.6	20.8	0.56
4	13.01.2020	56.0	26.0	7.3	14.3	0.44
5	16.01.2020	62.0	38.0	7.9	19.5	0.51
6	20.01.2020	49.0	25.0	10.2	26.1	0.49
7	23.01.2020	60.0	34.0	8.8	18.7	0.69
8	29.01.2020	65.0	31.0	7.7	15.2	0.77
9	31.01.2020	53.0	28.0	8.4	20.9	0.60
<b>Monthly Average</b>		<b>55.9</b>	<b>30.1</b>	<b>8.6</b>	<b>19.7</b>	<b>0.60</b>
CPCB, 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) RA2005	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999
		Remarks : Detection limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:				Nil

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

\*This Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/19/TR-7333

Date : 06.02.2020

## TEST REPORT

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

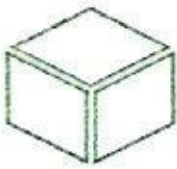
Sample Location & Code	S6: Paikupakhali	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	03.01.2020,07.01.2020,11.01.2020 14.01.2020,17.01.2020,21.01.2020 24.01.2020,30.01.2020,01.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.	
Sampling Date	02.01.2020,06.01.2020, 10.01.2020,13.01.2020, 16.01.2020,20.01.2020, 23.01.2020,29.01.2020, 31.01.2020.	Test Completed on	04.01.2020 to 05.02.2020

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	02.01.2020	59.0	26.0	8.6	17.1	0.44
2	06.01.2020	42.0	23.0	9.2	20.8	0.61
3	10.01.2020	51.0	27.0	7.8	15.2	0.51
4	13.01.2020	64.0	30.0	8.8	19.5	0.55
5	16.01.2020	53.0	28.0	6.3	14.1	0.69
6	20.01.2020	47.0	22.0	7.9	16.7	0.62
7	23.01.2020	52.0	29.0	10.1	27.4	0.50
8	29.01.2020	63.0	33.0	9.4	24.8	0.71
9	31.01.2020	54.0	30.0	8.1	20.5	0.54
<b>Monthly Average</b>		<b>53.9</b>	<b>27.6</b>	<b>8.4</b>	<b>19.6</b>	<b>0.57</b>
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup>				
		Any unusual feature during determination:				Nil

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

\*This Parameter not in our NABL Scope.





# Visiontek Consultancy Services Pvt. Ltd.

(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/FMI/TR/06

Test Report No: ENVLAB/19/TR-7334

Date : 06.02.2020

## 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	04.01.2020,08.01.2020,10.01.2020 14.01.2020,18.01.2020,22.01.2020 25.01.2020,26.01.2020,31.01.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56.705' Altitude: 691.90 m.	
Sampling Date	03.01.2020,07.01.2020, 09.01.2020,14.01.2020, 17.01.2020,21.01.2020, 24.01.2020,25.01.2020, 30.01.2020.	Test Completed on	05.01.2020 To 05.02.2020

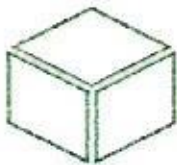
SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.01.2020	62.0	37.0	8.2	16.2	0.53
2	07.01.2020	52.0	28.0	6.1	13.4	0.44
3	09.01.2020	47.0	23.0	6.9	17.5	0.60
4	14.01.2020	59.0	32.0	7.4	16.9	0.51
5	17.01.2020	65.0	40.0	9.2	20.1	0.49
6	21.01.2020	60.0	36.0	6.6	14.5	0.62
7	24.01.2020	49.0	23.0	7.0	19.7	0.37
8	25.01.2020	58.0	28.0	8.9	21.2	0.45
9	30.01.2020	65.0	33.0	7.8	14.6	0.58
<b>Monthly Average</b>		<b>57.4</b>	<b>31.1</b>	<b>7.6</b>	<b>17.1</b>	<b>0.51</b>
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:				Nil

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

\*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: ENVLAB/19/TR-7335

Date : 06.02.2020

## TEST REPORT

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

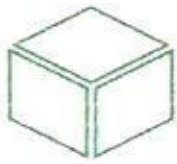
Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphimali Mines, UAIL	Sample Received on	04.01.2020,08.01.2020,10.01.2020 15.01.2020,18.01.2020,22.01.2020 25.01.2020,26.01.2020,31.01.2020
Sample Condition	Gaseous sample solution refrigerated	Latitude: N19°23.107' Longitude: E82°59.221' Altitude: 656.54 m.	
Sampling Date	03.01.2020,07.01.2020, 09.01.2020,14.01.2020, 17.01.2020,21.01.2020, 24.01.2020,25.01.2020, 30.01.2020.	Test Completed on	05.01.2020 to 05.02.2020

SL No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.01.2020	44.0	25.0	8.9	15.9	0.32
2	07.01.2020	35.0	21.0	10.7	18.2	0.41
3	09.01.2020	49.0	19.0	9.0	16.4	0.50
4	14.01.2020	52.0	31.0	8.5	13.0	0.37
5	17.01.2020	60.0	37.0	9.9	23.2	0.42
6	21.01.2020	51.0	23.0	8.8	20.8	0.49
7	24.01.2020	49.0	18.0	9.3	25.7	0.61
8	25.01.2020	44.0	21.0	7.9	14.9	0.48
9	30.01.2020	57.0	28.0	8.6	20.2	0.65
<b>Monthly Average</b>		<b>49.0</b>	<b>24.8</b>	<b>9.1</b>	<b>18.7</b>	<b>0.47</b>
<b>CPCB, New Delhi AAQ Standard</b>		<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>4</b>
<b>Testing Method</b>		<b>Gravimetric IS 5182: Part 23</b>	<b>Gravimetric EPA CFR-40 (pt 50) Appendix-1</b>	<b>Improved West &amp; Geake Method IS 5182 (Part-2) RA2006</b>	<b>Modified Jacob &amp; Hochheiser Method IS 5182 (Part-6) RA2006</b>	<b>Non Dispersive Infrared Method IS 5182 (Part-10):1999</b>
		<b>Remarks : Detection limit for SO<sub>2</sub>: 4.0 µg/m<sup>3</sup>, NO<sub>x</sub>: 9.0 µg/m<sup>3</sup></b>				<b>Nil</b>
		<b>Any unusual feature during determination:</b>				<b>Nil</b>

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

\*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: ENVLAB/19/TR-8595

Date : 07.03.2020

## 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	02.02.2020,05.02.2020,07.02.2020 11.02.2020,13.02.2020,19.02.2020 21.02.2020,26.02.2020,28.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079' Longitude: E83°0.738' Altitude: 739.14 m.	
Sampling Date	01.02.2020,04.02.2020, 06.02.2020,10.02.2020, 12.02.2020,18.02.2020, 20.02.2020,25.02.2020, 27.02.2020.	Test Completed on	03.02.2020 to 05.03.2020

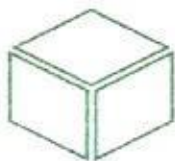
Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	01.02.2020	43.0	22.0	8.5	22.4	0.57
2	04.02.2020	55.0	28.0	7.8	16.8	0.68
3	06.02.2020	49.0	25.0	9.1	21.5	0.51
4	10.02.2020	53.0	27.0	7.4	13.4	0.42
5	12.02.2020	59.0	30.0	8.1	18.6	0.53
6	18.02.2020	44.0	22.0	9.8	23.4	0.43
7	20.02.2020	58.0	29.0	8.3	14.6	0.65
8	25.02.2020	62.0	31.0	7.2	18.7	0.52
9	27.02.2020	51.0	25.0	8.1	13.6	0.56
<b>Monthly Average</b>		<b>52.7</b>	<b>26.6</b>	<b>8.3</b>	<b>18.1</b>	<b>0.54</b>
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-I	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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 0.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

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

\*This Parameter not in our NABL Scope.







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NABL ACCREDITED

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

Test Report No: ENVLAB/19/TR-8596

Date : 07.03.2020

## TEST REPORT

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

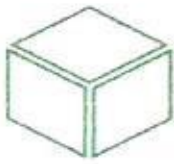
Sample Location & Code	S6: Paikupakhali	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL.	Sample Received on	02.02.2020,05.02.2020,07.02.2020 11.02.2020,13.02.2020,19.02.2020 21.02.2020,26.02.2020,28.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.	
Sampling Date	01.02.2020,04.02.2020, 06.02.2020,10.02.2020, 12.02.2020,18.02.2020, 20.02.2020,25.02.2020, 27.02.2020.	Test Completed on	03.02.2020 to 04.03.2020

Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	01.02.2020	55.0	28.0	8.3	18.3	0.41
2	04.02.2020	45.0	23.0	6.8	21.4	0.55
3	06.02.2020	52.0	26.0	7.2	16.5	0.46
4	10.02.2020	41.0	21.0	8.5	18.7	0.52
5	12.02.2020	56.0	28.0	6.1	13.9	0.63
6	18.02.2020	49.0	25.0	7.2	15.5	0.58
7	20.02.2020	53.0	27.0	9.8	23.5	0.52
8	25.02.2020	59.0	30.0	8.3	21.8	0.58
9	27.02.2020	46.0	23.0	7.4	18.6	0.49
<b>Monthly Average</b>		<b>50.7</b>	<b>25.7</b>	<b>7.7</b>	<b>18.7</b>	<b>0.53</b>
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

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

\*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: ENVLAB/19/TR-8597

Date : 07.03.2020

## 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	04.02.2020,06.02.2020,08.02.2020 12.02.2020,16.02.2020,20.02.2020 22.02.2020,27.02.2020,29.02.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56.705' Altitude: 691.90 m.	
Sampling Date	03.02.2020,05.02.2020, 07.02.2020,11.02.2020, 15.02.2020,19.02.2020, 21.02.2020,26.02.2020, 28.02.2020.	Test Completed on	05.02.2020 To 05.03.2020

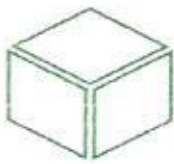
Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.02.2020	59.0	30.0	7.8	15.8	0.49
2	05.02.2020	45.0	23.0	5.9	12.4	0.42
3	07.02.2020	51.0	26.0	6.5	16.5	0.52
4	11.02.2020	58.0	30.0	6.8	17.1	0.49
5	15.02.2020	62.0	31.0	8.3	19.3	0.45
6	19.02.2020	55.0	28.0	5.2	13.5	0.58
7	21.02.2020	48.0	24.0	6.1	18.4	0.35
8	26.02.2020	55.0	28.0	7.5	20.3	0.41
9	28.02.2020	62.0	31.0	6.7	13.7	0.55
Monthly Average		55.0	27.9	6.8	16.3	0.47
CPCB, 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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

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

\*This Parameter not in our NABL Scope.







# Visiontek Consultancy Services Pvt. Ltd.

(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/FMI/TR/06

Test Report No: ENVLAB/19/TR-8598

Date : 07.03.2020

## 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	04.02.2020,06.02.2020,08.02.2020 12.02.2020,16.02.2020,18.02.2020 22.02.2020,27.02.2020,29.02.2020
Sample Condition	Gaseous sample solution refrigerated	Latitude: N19°23.107' Longitude: E82°59.221' Altitude: 656.54 m.	
Sampling Date	03.02.2020,05.02.2020, 07.02.2020,11.02.2020, 15.02.2020,17.02.2020, 21.02.2020,26.02.2020, 28.02.2020.	Test Completed on	05.02.2020 to 05.03.2020

Sl. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.02.2020	43.0	22.0	8.5	14.8	0.28
2	05.02.2020	33.0	17.0	9.8	16.3	0.35
3	07.02.2020	45.0	23.0	8.3	12.7	0.42
4	11.02.2020	49.0	25.0	8.1	12.4	0.3
5	15.02.2020	55.0	28.0	9.2	20.5	0.35
6	19.02.2020	49.0	25.0	8.1	18.7	0.45
7	21.02.2020	45.0	23.0	8.5	21.6	0.51
8	26.02.2020	42.0	21.0	7.3	13.4	0.42
9	28.02.2020	53.0	27.0	8.1	19.5	0.47
Monthly Average		46.0	23.4	8.4	16.7	0.39
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-I	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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: Nil						

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

\*This Parameter not in our NABL Scope.





# Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)



ISO 9001 : 2008

ISO 14001: 2015

OHSAS 45001: 2018

Test Report No: ENVLAB/19/TR-9421

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	S5: Andirakanch	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.03.2020,06.03.2020,13.03.2020 15.03.2020,18.03.2020,20.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°19.079' Longitude: E83°0.738' Altitude: 739.14 m.	
Sampling Date	03.03.2020,05.03.2020, 12.03.2020,14.03.2020, 17.03.2020,19.03.2020	Test Completed on	04.03.2020 to 21.03.2020

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.03.2020	54.0	28.0	7.5	14.8	0.52
2	05.03.2020	58.0	29.0	6.8	15.3	0.54
3	12.03.2020	52.0	26.0	7.1	18.8	0.52
4	14.03.2020	49.0	25.0	7.3	14.9	0.38
5	17.03.2020	58.0	30.0	7.6	16.5	0.48
6	19.03.2020	53.0	27.0	6.5	21.4	0.64
<b>Monthly Average</b>		<b>54.0</b>	<b>27.5</b>	<b>7.1</b>	<b>16.9</b>	<b>0.51</b>
CPCB, New Delhi AAQ Standard		<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>4</b>
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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:				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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.

  
Prepared by



  
Verified by







Test Report No: ENVLAB/19/TR-9422

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	S6: Paikupakhal	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.03.2020,06.03.2020,13.03.2020 15.03.2020,18.03.2020,20.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.	
Sampling Date	03.03.2020,05.03.2020, 12.03.2020,14.03.2020, 17.03.2020,19.03.2020,	Test Completed on	04.03.2020 to 21.03.2020

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.03.2020	53.0	27.0	9.1	18.6	0.43
2	05.03.2020	57.0	29.0	8.7	20.1	0.54
3	12.03.2020	64.0	32.0	6.9	16.6	0.51
4	14.03.2020	58.0	29.0	7.8	19.8	0.49
5	17.03.2020	63.0	32.0	7.9	21.2	0.43
6	19.03.2020	54.0	27.0	6.6	14.2	0.47
<b>Monthly Average</b>		<b>58.2</b>	<b>29.3</b>	<b>7.8</b>	<b>18.4</b>	<b>0.48</b>
CPCB, New Delhi AAQ Standard		<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>4</b>
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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination: 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 1-8 are **Time Weighted Average**.)

\*These Parameter not in our NABL Scope.

  
Prepared by



  
Verified by





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ISO 9001 : 2008

ISO 14001: 2015

OHSAS 45001: 2018

Test Report No: ENVLAB/19/TR-9423

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	S7: Adri	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.03.2020,06.03.2020,14.03.2020 15.03.2020,18.03.2020,20.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°21.928' Longitude: E82°56.705' Altitude: 691.90 m.	
Sampling Date	03.03.2020,05.03.2020, 12.03.2020,14.03.2020, 17.03.2020,19.03.2020.	Test Completed on	04.03.2020 To 21.03.2020

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.03.2020	48.0	25.0	8.1	18.3	0.49
2	05.03.2020	52.0	26.0	7.5	15.3	0.64
3	12.03.2020	51.0	27.0	7.9	14.8	0.58
4	14.03.2020	48.0	25.0	6.8	17.9	0.64
5	17.03.2020	41.0	22.0	7.3	17.3	0.30
6	19.03.2020	56.0	29.0	9.1	19.8	0.46
<b>Monthly Average</b>		<b>49.3</b>	<b>25.7</b>	<b>7.8</b>	<b>17.2</b>	<b>0.52</b>
CPCB, New Delhi AAQ Standard		<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>4</b>
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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:				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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.

Manda  
Prepared by



Puja Mohanty  
Verified by







# Visiontek Consultancy Services Pvt. Ltd.

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ISO 9001 : 2008

ISO 14001: 2015

OHSAS 45001: 2018

Test Report No: ENVLAB/19/TR-9424

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	S8: Chandragiri	Sampled by	VC SPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.03.2020,06.03.2020,13.03.2020 15.03.2020,18.03.2020,20.03.2020
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude: N19°23.107' Longitude: E82°59.221' Altitude: 656.54 m.	
Sampling Date	03.03.2020,05.03.2020, 12.03.2020,14.03.2020, 17.03.2020,19.03.2020.	Test Completed on	04.03.2020 to 21.03.2020

SL. No	Sampling Date	Parameters				
		Particulate Matter as PM <sub>10</sub> (µg/m <sup>3</sup> )	*Particulate Matter as PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	Oxides of Nitrogen as NO <sub>x</sub> (µg/m <sup>3</sup> )	*Carbon Monoxide as CO (mg/m <sup>3</sup> )
1	03.03.2020	53.0	23.0	7.5	15.5	0.34
2	05.03.2020	47.0	29.0	7.9	17.8	0.40
3	12.03.2020	58.0	32.0	8.7	21.2	0.56
4	14.03.2020	53.0	29.0	7.2	16.7	0.37
5	17.03.2020	65.0	33.0	8.8	19.2	0.42
6	19.03.2020	56.0	25.0	8.5	23.8	0.65
<b>Monthly Average</b>		<b>55.3</b>	<b>28.5</b>	<b>8.1</b>	<b>19.0</b>	<b>0.46</b>
CPCB, New Delhi AAQ Standard		<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>4</b>
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 limit for SO <sub>2</sub> : 4.0 µg/m <sup>3</sup> , NO <sub>x</sub> : 9.0 µg/m <sup>3</sup> Any unusual feature during determination:				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 1-8 are Time Weighted Average.)

\*These Parameter not in our NABL Scope.

Manda  
Prepared by



Puja Mohanty  
Verified by

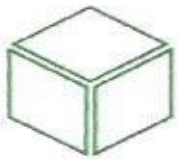


**ANNEXURE: 6**

**Stream Flow rate monitoring report for the period**

**October 2019 to March 2020**





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

Test Report No: ENVLAB/19/R-5380

Date : 04.11.2019

## TEST REPORT

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

### SAMPLE DETAILS

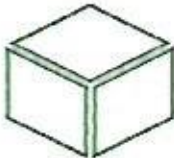
Sample Location & Code	* Stream flow	Sampled by	VCSP1.7S Representative
Sample Name		Sampling Procedure	NA
Sample Source	Baphimali Mines, UAIL	Sample Received on	NA

Sl. No.	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>3</sup> /hr)	Stream flow (Cusec)
1	15.10.2019	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	5,880	57.680
2	15.10.2019	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	21,000	206.002
3	15.10.2019	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	59,000	578.768
4	15.10.2019	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	19,800	194.231

\* This parameter not in our NABL scope.



Authorized Signatory



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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/R-6387

Date : 07.12.2019

## TEST REPORT

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

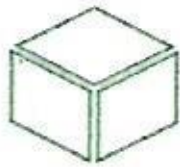
### SAMPLE DETAILS

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

SL. No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>3</sup> /hr)	Stream flow (Cusec)
1	13.11.2019	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	1,440	14.13
2	13.11.2019	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	14,400	141.26
3	13.11.2019	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	24,000	235.43
4	13.11.2019	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	2,400	25.54







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

Test Report No: ENVLAB/19/R-6892

Date : 06.01.2020

## TEST REPORT

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

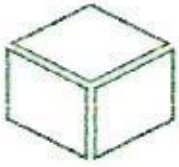
### SAMPLE DETAILS

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 (m <sup>3</sup> /hr)	Stream flow (Cusec)
1	16.12.2019	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	1,500	14.71
2	16.12.2019	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	9,450	92.70
3	16.12.2019	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	18,000	176.57
4	16.12.2019	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	2,880	28.25

\*This parameter not in our NABL Scope





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

Test Report No: ENVLAB/19/R-7342

Date : 06.02.2020

## TEST REPORT

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

### SAMPLE DETAILS

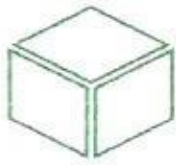
Sample Location & Code	*Stream flow	Sampled by	VCSPL'S Representative
Sample Name		Sampling Procedure	NA
Sample Source	Baphimali Mines, UAIL.	Sample Received on	NA

SL. No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>3</sup> /hr)	Stream flow (Cusec)
1	13.01.2020	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	2,520	24.72
2	13.01.2020	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	12,690	124.48
3	13.01.2020	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	18,000	176.57
4	13.01.2020	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	2,304	22.60

\*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: ENVLAB/19/R-8610

Date : 07.03.2020

## TEST REPORT

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

### SAMPLE DETAILS

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

Sl. No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m <sup>3</sup> /hr)	Stream flow (Cusec)
1	14.02.2020	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	2,400	23.54
2	14.02.2020	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	10,500	103.00
3	14.02.2020	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	17,550	172.16
4	14.02.2020	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	1,740	17.07

\*This parameter not in our NABL Scope





Test Report No: ENVLAB/19/R-9431

Date : 04.04.2020

## 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 (m <sup>3</sup> /hr)	Stream flow (Cusec)
1	16.03.2020	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	3,360	32.96
2	16.03.2020	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	16,200	158.92
3	16.03.2020	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	1,08,000	1059.44
4	16.03.2020	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	8,640	84.75

\*This parameter not in our NABL Scope

  
Prepared by





Verified by

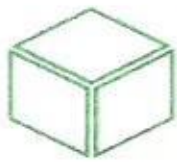




**ANNEXURE: 7**

**Surface Water Quality Analysis for the period**

**October 2019 to March 2020**



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NABL ACCREDITED

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

Test Report No: Enylab/19/R-5375

Date : 04.11.2019

## TEST REPORT

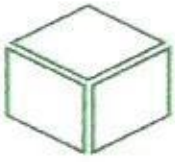
Customer Name & Address : Baphimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VCSP/LS Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphimali Mines, UAIL	Sample Received on	16.10.2019
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	15.10.2019	Test Completed on	22.10.2019

Sl. No	Parameters	SW1	SW2	Units	Standards as per IS 2296- Class C	Test methods
1	*Color	10.0	15.0	Hazen, max	300	APHA 2120 B
2	*Odour	Agreeable	Agreeable	--	Agreeable	APHA 2150 B
3	pH value	7.63	7.40	--	6.5-8.5	APHA 4500 H <sup>+</sup> B
4	Suspended Solids( as SS)	70.0	58.0	mg/l, max	--	APHA 2540 D
5	Total Dissolved Solids (as TDS)	233.0	188.0	mg/l, max	1500	APHA 2540 C
6	*Temperature	27.0	26.0	°c	--	--
7	Conductivity	384.0	310.0	µs/cm	--	APHA 2510 C
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	1.59	1.08	mg/l, max	--	APHA 4500 NH <sub>4</sub> B *
9	Total Kjeldahl Nitrogen (as N)	2.07	1.64	mg/l, max	--	APHA 4500 N <sub>org</sub> B
10	Oil & Grease	ND	ND	mg/l, max	0.1	APHA 5220 B
11	Free Ammonia (as NH <sub>3</sub> )	ND	ND	mg/l, max	--	--
12	*Total Residual Chlorine (as RFC)	ND	ND	mg/l, min	--	APHA 4500 Cl B
13	Iron (as Fe)	0.42	0.25	mg/l, max	50	APHA 3500 Fe B
14	Copper (as Cu)	<0.05	<0.05	mg/l, max	1.5	APHA 3111 Cu B
15	*Fluoride (as F)	0.61	0.44	mg/l, max	1.5	APHA 4500 F D
16	Hexavalent Chromium (as Cr <sup>VI</sup> )	<0.05	<0.05	mg/l, max	0.05	APHA 3500 Cr B
17	*Cyanide (as CN)	<0.01	<0.01	mg/l, max	0.05	APHA 4500 CN E
18	Dissolved Oxygen (as DO)	6.4	5.8	mg/l, min	4	APHA 4500 O C
19	Sulphide (as S)	<0.005	<0.005	mg/l, max	--	APHA 4500 S <sup>2-</sup> F
20	*Nitrate (as NO <sub>3</sub> )	1.77	1.21	mg/l, max	50	APHA 4500 NO <sub>3</sub> B
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	<0.001	<0.001	mg/l, max	--	APHA 5530 C
22	*Selenium (as S)	<0.01	<0.01	mg/l, max	0.05	APHA 3500 Se C
23	Manganese (as Mn)	<0.1	<0.1	mg/l, max	--	APHA 3111 B
24	Bio-assay Test	92.0	90.0	mg/l, max	90% survival of fish after 96 hrs in 100% effluent Water	IS 6582
25	Zinc (as Zn)	0.11	0.23	mg/l, max	15	APHA 3111 G
26	Cadmium	<0.01	<0.01	mg/l, max	0.01	APHA 3111 B
27	Chemical Oxygen Demand (as COD)	28.0	22.0	mg/l, max	--	APHA 5220 B

Authorized Signature



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28	Lead (as Pb)	<0.1	<0.1	mg/l, max	0.1	APHA 3111 B
29	Mercury (as Hg)	<0.004	<0.004	mg/l, max	--	APHA 3112 B
30	Nickel (as Ni)	<0.1	<0.1	mg/l, max	--	APHA 3111 B
31	*Arsenic (as As)	<0.005	<0.005	mg/l, max	0.2	APHA 3500 As B
32	Total Chromium (as TCr)	<0.1	<0.1	mg/l, max	--	APHA 3111 B
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	2.1	2.6	mg/l, max	3	IS3025 (P-44)1993 RA 2003
34	*Dissolved Phosphate (as PO <sub>4</sub> )	<0.05	<0.05	mg/l, max	--	APHA 4500 P D
Any unusual feature observed during determination						Nil

\* This parameters not in our NABL Scope.

**Remarks:**

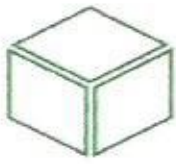
**TERMS AND CONDITION:-**

1. The Test result is relevant only to the item tested.
2. This report shall not be reproduced in full or part without written approval of Visiontek consultancy services (P) Ltd
3. The laboratory is not responsible for the authenticity of photocopied test report.
4. The test item will not be retained for more than 15 days from the date of issue of test report except in case as required by applicable regulations.
5. The laboratory's responsibility under this report is limited to, proven willful negligence.



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NABL ACCREDITED

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

Test Report No: Envlab/19/R-5376

Date : 04.11.2019

## TEST REPORT

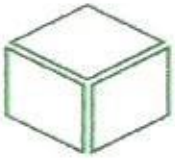
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

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	16.10.2019
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	15.10.2019	Test Completed on	22.10.2019

Sl. No	Parameters	SW3	SW4	Units	Standards as per IS 2296- Class C	Test methods
1	*Color	10.0	15.0	Hazen, max	300	APHA 2120 B
2	*Odour	Agreeable	Agreeable	--	Agreeable	APHA 2150 B
3	pH value	7.33	7.78	--	6.5-8.5	APHA 4500 H <sup>+</sup> B
4	Suspended Solids( as SS)	82.0	74.0	mg/l, max	--	APHA 2540 D
5	Total Dissolved Solids (as TDS)	218.0	180.0	mg/l, max	1500	APHA 2540 C
6	*Temperature	27.0	26.0	°c	--	--
7	Conductivity	352.0	289.0	µs/cm	--	APHA 2510 C
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	1.89	0.96	mg/l, max	--	APHA 4500 NH <sub>4</sub> B
9	Total Kjeldahl Nitrogen (as N)	2.24	1.17	mg/l, max	--	APHA 4500 N <sub>total</sub> B
10	Oil & Grease	ND	ND	mg/l, max	0.1	APHA 5220 B
11	Free Ammonia (as NH <sub>3</sub> )	ND	ND	mg/l, max	--	--
12	*Total Residual Chlorine (as RFC)	ND	ND	mg/l, min	--	APHA 4500 Cl <sub>2</sub> B
13	Iron (as Fe)	0.62	0.39	mg/l, max	50	APHA 3500 Fe B
14	Copper (as Cu)	<0.05	<0.05	mg/l, max	1.5	APHA 3111 Cu B
15	*Fluoride (as F)	0.41	0.58	mg/l, max	1.5	APHA 4500 F D
16	Hexavalent Chromium (as Cr <sup>6+</sup> )	<0.05	<0.05	mg/l, max	0.05	APHA 3500 Cr <sub>6</sub> B
17	*Cyanide (as CN)	<0.01	<0.01	mg/l, max	0.05	APHA 4500 CN E
18	Dissolved Oxygen (as DO)	6.9	5.8	mg/l, min	4	APHA 4500 O C
19	Sulphide (as S)	<0.005	<0.005	mg/l, max	--	APHA 4500 S <sup>2-</sup> F
20	*Nitrate (as NO <sub>3</sub> )	1.55	1.21	mg/l, max	50	APHA 4500 NO <sub>3</sub> B
21	*Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH).	<0.001	<0.001	mg/l, max	--	APHA 5530 C
22	*Selenium (as S)	<0.01	<0.01	mg/l, max	0.05	APHA 3500 Se C
23	Manganese (as Mn)	<0.1	<0.1	mg/l, max	--	APHA 3111 B
24	Bio-assay Test	96.0	93.0	mg/l, max	90% survival of fish after 96 hrs in 100% effluent Water	IS 6587
25	Zinc (as Zn)	0.18	0.14	mg/l, max	15	APHA 3111 B
26	Cadmium	<0.01	<0.01	mg/l, max	0.01	APHA 3111 B
27	Chemical Oxygen Demand (as COD)	33.0	19.0	mg/l, max	--	APHA 5220 B

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28	Lead (as Pb)	<0.1	<0.1	mg/l, max	0.1	APHA 3111 B
29	Mercury (as Hg)	<0.004	<0.004	mg/l, max	--	APHA 3112 B
30	Nickel (as Ni)	<0.1	<0.1	mg/l, max	--	APHA 3111 B
31	*Arsenic (as As)	<0.005	<0.005	mg/l, max	0.2	APHA 3500 As B
32	Total Chromium (as TCr)	<0.1	<0.1	mg/l, max	--	APHA 3111 B
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	2.6	2.3	mg/l, max	3	IS3025 (P-44)1993 RA 2003
34	*Dissolved Phosphate (as PO <sub>4</sub> )	0.19	0.12	mg/l, max	--	APHA 4500 P D
Any unusual feature observed during determination						Nil

\* This parameters not in our NABL scope.

**Remarks:**

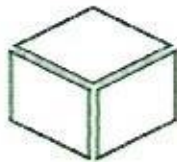
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Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-6380

Date : 07.12.2019

## TEST REPORT

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

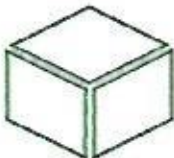
### SAMPLE DETAILS

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	14.11.2019
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	13.11.2019	Test Completed on	22.11.2019

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	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H <sup>+</sup> B	7.74	8.29
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	68.0	96.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	214.0	251.0
6	Temperature	°C	--	--	25.0	25.0
7	Conductivity	µs/cm	--	APHA 2510 C	354.0	406.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>3</sub> B	2.19	3.10
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>ORG</sub> B	2.56	2.77
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	0.69	1.07
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	0.93	1.38
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	5.5
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	APHA4500NO <sub>3</sub> B	1.58	2.71
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	0.27	0.33
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	19.0	26.0







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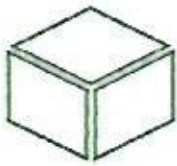
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
29	Mercury (as Hg)	mg/l, max	--	APHA 3112 B	<0.004	<0.004
30	Nickel (as Ni)	mg/l, max	--	APHA 3111 B	<0.1	<0.1
31	Arsenic (as As)	mg/l, max	0.2	APHA 3500 As B	<0.005	<0.005
32	Total Chromium (as TCr)	mg/l, max	--	APHA 3111 B	<0.1	<0.1
33	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2.5	2.9
34	Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	--	APHA 4500 P D	0.34	0.55
Any unusual feature observed during determination					Nil	

**Remarks:**

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Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-6381

Date : 07.12.2019

## TEST REPORT

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

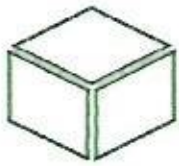
### SAMPLE DETAILS

Sample Location & Code	SW1: Kandahindha (Up Stream) SW2: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	14.11.2019
Sample Condition	Scaled 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	13.11.2019	Test Completed on	22.11.2019

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	5.0	10.0
2	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H <sup>+</sup> B	7.42	7.81
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	44.0	82.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	201.0	232.0
6	Temperature	°C	--	--	25.0	25.0
7	Conductivity	µs/cm	--	APHA 2510 C	326.0	388.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>4</sub> B	1.58	1.89
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500 N <sub>total</sub> B	1.30	1.46
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	1.13	1.47
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111 Cu B	<0.05	<0.05
15	Fluoride (as F)	mg/l, max	1.5	APHA 4500 FD	0.81	1.19
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	6.4	5.9
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	APHA4500 NO <sub>3</sub> B	0.96	1.33
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	90.0	92.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.20	0.26
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	17.0







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28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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°C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2.2	2.7
34	Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	--	APHA 4500 P D	0.49	0.60
Any unusual feature observed during determination					Nil	

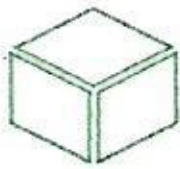
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Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-6890

Date : 06.01.2020

## TEST REPORT

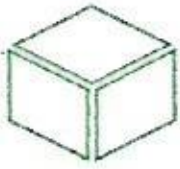
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VCSPIL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	17.12.2019
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	16.12.2019	Test Completed on	25.12.2019

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	*Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H <sup>T</sup> B	7.59	7.94
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	80.0	84.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	237.0	288.0
6	*Temperature	°C	--	--	23.0	23.0
7	Conductivity	µs/cm	--	APHA 2510 C	391.0	476.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>3</sub> B	2.52	2.87
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>org</sub> B	3.13	3.53
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	1.33	1.74
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	0.72	0.95
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	5.9	6.2
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	APHA4500NO <sub>3</sub> B	1.77	3.08
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	95.0	92.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.21	0.29
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	23.0	38.0

  
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28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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°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	0.29	0.76
Any unusual feature observed during determination					Nil	

\*This parameter not in our NABL Scope

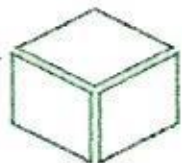
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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-6891

Date : 06.01.2020

## TEST REPORT

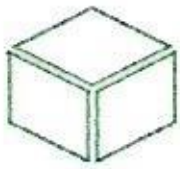
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sample Location & Code	SW1: Kandahindha (Up Stream) SW2: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	17.12.2019
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	16.12.2019	Test Completed on	25.12.2019

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	10.0
2	*Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H <sup>+</sup> B	7.64	8.06
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	38.0	56.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	175.0	216.0
6	*Temperature	°c	--	--	23.0	22.0
7	Conductivity	µs/cm	--	APHA 2510 C	287.0	354.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>3</sub> B	1.23	2.06
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>org</sub> B	1.85	2.22
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	0.74	1.19
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	0.58	1.31
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	6.0	6.1
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	APHA4500NO <sub>3</sub> B	1.22	1.61
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	90.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.13	0.21
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	18.0	24.0





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28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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°C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2.0	2.5
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	--	APHA 4500 P D	0.62	0.78
Any unusual feature observed during determination					Nil	

\*This parameter not in our NABL Scope

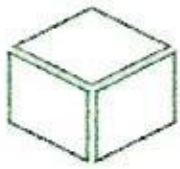
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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-7340

Date : 06.02.2020

## TEST REPORT

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

### SAMPLE DETAILS

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	14.01.2020
Sample Condition	Scaled 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	13.01.2020	Test Completed on	20.01.2020

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	*Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H'B	7.44	8.13
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	46.0	78.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	261.0	270.0
6	*Temperature	°c	--	--	23.0	22.0
7	Conductivity	µs/cm	--	APHA 2510 C	429.0	443.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>3</sub> B	2.92	3.59
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>org</sub> B	4.41	4.06
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	1.85	2.29
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	0.61	1.22
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	6.1	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	APHA4500NO <sub>3</sub> B	2.49	2.66
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	93.0	90.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.33	0.72
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	29.0	44.0





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28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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	2.6	2.7
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	–	APHA 4500 P D	0.96	2.19
Any unusual feature observed during determination					Nil	

\*This parameter not in our NABL Scope

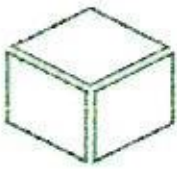
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Test Report No: Envlab/19/R-7341

Date : 06.02.2020

## TEST REPORT

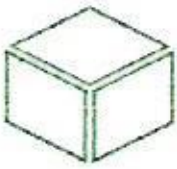
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sample Location & Code	SW1: Kandahindha (Up Stream) SW2: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	14.01.2020
Sample Condition	Scaled 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	13.01.2020	Test Completed on	20.01.2020

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	15.0	20.0
2	*Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 ITB	7.79	8.24
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	46.0	72.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	252.0	279.0
6	*Temperature	°C	--	--	22.0	22.0
7	Conductivity	µs/cm	--	APHA 2510 C	419.0	464.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>3</sub> B	1.89	2.46
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>org</sub> B	2.31	3.27
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	1.14	1.63
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	0.29	0.82
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	5.9
19	*Sulphide (as S)	mg/l, max	--	APHA 4500 S <sup>2-</sup> P	<0.005	<0.005
20	*Nitrate (as NO <sub>3</sub> )	mg/l, max	50	APHA4500NO <sub>3</sub> B	2.23	2.91
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	96.0	93.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.36	0.57
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	23.0	32.0





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28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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°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	0.45	0.83
Any unusual feature observed during determination					Nil	

\*This parameter not in our NABL Scope

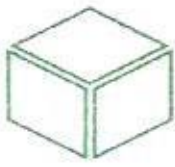
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Test Report No: Envlab/19/R-8603

Date : 07.03.2020

## TEST REPORT

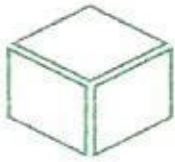
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

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	13.02.2020
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	12.02.2020	Test Completed on	19.02.2020

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	7.52	8.54
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	60.0	84.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	278.0	313.0
6	*Temperature	°C	--	--	23.0	23.0
7	Conductivity	µs/cm	--	APHA 2510 C	455.0	515.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>4</sub> B	3.16	3.70
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>org</sub> B	4.69	5.13
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	2.46	3.18
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111 Cu B	<0.05	<0.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 FD	0.79	1.41
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 <sup>o</sup> C	6.3	5.5
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	APHA4500NO <sub>3</sub> B	3.32	4.19
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	0.48	0.80





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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	17.0	32.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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°C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2.9	3.1
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	--	APHA 4500 P D	1.35	1.78
Any unusual feature observed during determination					Nil	

\*This parameter not in our NABL Scope

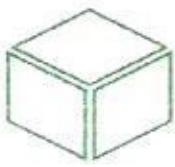
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Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-8604

Date : 07.03.2020

## TEST REPORT

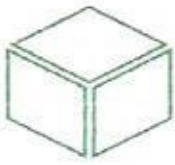
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sample Location & Code	SW1: Kandahindha (Up Stream) SW2: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	13.02.2020
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	12.02.2020	Test Completed on	19.02.2020

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	7.44	8.08
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	34.0	57.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	204.0	261.0
6	*Temperature	°c	--	--	23.0	24.0
7	Conductivity	µs/cm	--	APHA 2510 C	328.0	429.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>4</sub> B	1.43	3.46
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500NonrB	1.90	4.09
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	0.79	1.52
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	0.29	0.82
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	6.3	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	APHA4500NO <sub>3</sub> B	1.74	2.59
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	95.0	90.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.19	0.48





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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	20.0	37.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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°C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	1.9	2.5
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	--	APHA 4500 P D	0.29	0.74
Any unusual feature observed during determination					Nil	

\*This parameter not in our NABL Scope

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Test Report No: Envlab/19/R-9429

Date : 04.04.2020

## TEST REPORT

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

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampled by	VC SPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	14.03.2020
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	13.03.2020	Test Completed on	20.03.2020

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	*Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H <sup>+</sup> B	7.69	8.21
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	48.0	62.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	315.0	377.0
6	*Temperature	<sup>0</sup> c	--	--	27.0	27.0
7	Conductivity	µs/cm	--	APHA 2510 C	518.0	580.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>3</sub> B	3.59	4.57
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>ORG</sub> B	4.12	5.41
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	2.61	3.63
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	0.52	1.23
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	6.5	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	APHA4500NO <sub>3</sub> B	2.84	3.96
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	93.0	91.0
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.33	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	18.0	38.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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



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OHSAS 45001: 2018


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°C For 3 days)	mg/l, max	3	IS3025(P-44)1993 RA 2003	2.6	2.8
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	--	APHA 4500 P D	1.17	1.91
Any unusual feature observed during determination					Nil	

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Test Report No: Envlab/19/R-9430

Date : 04.04.2020

## TEST REPORT

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

### SAMPLE DETAILS

Sample Location & Code	SW1: Kandahindha (Up Stream) SW2: Kandahindha (Down Stream)	Sampled by	VCSPL'S Representative
Sample description	Surface Water	Sampling Procedure	IS 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	14.03.2020
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	13.03.2020	Test Completed on	20.03.2020

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	15.0	20.0
2	*Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H <sup>+</sup> B	7.31	8.34
4	Suspended Solids( as SS)	mg/l, max	--	APHA 2540 D	40.0	66.0
5	Total dissolved solids(as TDS)	mg/l, max	1500	APHA 2540 C	258.0	321.0
6	*Temperature	°C	--	--	27.0	27.0
7	Conductivity	µs/cm	--	APHA 2510 C	413.0	524.0
8	Ammonical Nitrogen (as NH <sub>4</sub> -N)	mg/l, max	--	APHA4500 NH <sub>3</sub> B	1.59	3.82
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N <sub>ORG</sub> B	1.84	4.53
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	0.85	1.34
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111 Cu B	<0.05	<0.05
15	*Fluoride (as F)	mg/l, max	1.5	APHA 4500 FD	0.42	0.74
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	6.4	5.5
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	APHA4500NO <sub>3</sub> B	2.14	3.27
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	0.22	0.58
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	30.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3111 B	<0.1	<0.1
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



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OHSAS 45001: 2018

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	2.1	2.8
34	*Dissolved Phosphate (as PO <sub>4</sub> )	mg/l, max	--	APHA 4500 P D	0.61	0.96
Any unusual feature observed during determination					Nil	

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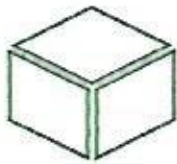
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**ANNEXURE: 8**

**Ground Water Quality Analysis Report for the  
period Post-monsoon & Winter**



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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-6382

Date : 07.12.2019

## TEST REPORT

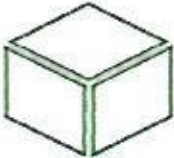
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sl. No	Parameters	Unit	Requirement Desirable limit (IS:10500:2012)	Test methods	GW-1	GW-2
<b>Organoleptic &amp; Physical Parameters</b>						
1	Color	Hazen, max	5	APHA 2120 B,C	<1.0	<1.0
2	Odor	--	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H*B	7.39	7.55
4	Turbidity	NTU, max	1.0	APHA 2130 B	0.71	0.38
5	Total Dissolved Solids (as TDS)	mg/l	500	APHA 2540 C	278.0	253.0
6	Temperature	°C	-	-	25.0	25.0
7	Conductivity	µS/cm	-	APHA 2510 C	457.0	415.0
<b>General Parameters Concerning Substances Undesirable in Excessive Amounts</b>						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	41.6	54.4
9	Chloride (as Cl)	mg/l, max	250	APHA 4500Cl B	47.5	47.0
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 4500F C	0.61	0.31
12	Free residual Chlorine	mg/l, min	0.2	APHA 4500Cl B	0.2	0.2
13	Iron (as Fe)	mg/l, max	0.3	APHA 3500Fe B	0.21	0.28
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	12.6	9.7
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	1.22	1.03
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 4500SO <sub>4</sub> B <sub>0</sub>	11.6	8.4
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	176.0
23	Zinc (as Zn)	mg/l, max	5.0	APHA 3111B,C	0.73	0.49
<b>Parameters Concerning Toxic Substances</b>						
24	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 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	APHA 3500 Hg	<0.0005	<0.0005
28	Total arsenic	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







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Format No.: 7.8.2/FMT/IR/06

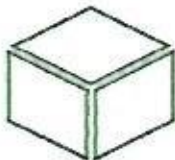
BACTERIOLOGICAL QUALITY						
30	Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APHA 9221 B	Absent	Absent
Any unusual feature observed during determination				Nil		

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Authorized Signatory



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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: Envlab/19/R-6383

Date : 07.12.2019

## TEST REPORT

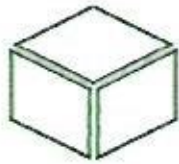
Customer Name & Address : Baphimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sample Location & Code	GW3: Malligaon GW4: Kendumundi	Sampled by	VCSPL'S Representative			
Sample description	Ground Water	Sampling Procedure	IS 1060			
Sample Source	Baphimali Mines, UAIL	Sample Received on	12.11.2019			
Sample Condition	Scaled Plastic & Sterilized Glass Bottle	Latitude: N19°21.359' Longitude: E82°59.889' Altitude: 699.82 m.	NA			
Sampling Date	11.11.2019	Test Completed on	20.11.2019			
Sl. No	Parameters	Unit	Requirement Desirable limit (IS:10500:2012)	Test methods	GW-3	GW-4
<b>Organoleptic &amp; Physical Parameters</b>						
1	Color	Hazen, max	5	APHA 2120 B,C	<1.0	5.0
2	Odor	--	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H <sup>+</sup> B	7.47	7.88
4	Turbidity	NTU, max	1.0	APHA 2130 B	0.63	0.92
5	Total Dissolved Solids (as TDS)	mg/l	500	APHA 2540 C	184.0	223.0
6	Temperature	°C	-	-	31.0	26.0
7	Conductivity	µS/cm	-	APHA 2510 C	296.0	358.0
<b>General Parameters Concerning Substances Undesirable in Excessive Amounts</b>						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	32.0	43.2
9	Chloride (as Cl)	mg/l, max	250	APHA 4500Cl B	23.5	34.0
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 4500F C	<0.05	0.55
12	Free residual Chlorine	mg/l, min	0.2	APHA 4500Cl B	0.3	0.2
13	Iron (as Fe)	mg/l, max	0.3	APHA 3500Fe B	<0.1	0.21
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg.B	12.6	10.7
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	1.14	1.27
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 4500SO <sub>4</sub> <sup>2-</sup> B	6.7	12.8
21	Total Alkalinity	mg/l, max	200	APHA 2320 B	120.0	128.0
22	Total Hardness	mg/l, max	200	APHA 2340 C	132.0	152.0
23	Zinc (as Zn)	mg/l, max	5.0	APHA 3111B,C	0.11	0.18
<b>Parameters Concerning Toxic Substances</b>						
24	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	0.001	APHA 3500 Hg	<0.0005	<0.0005
28	Total arsenic	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

  
 Visiontek Consultancy Services Pvt. Ltd.  
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Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

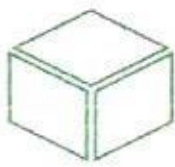
BACTERIOLOGICAL QUALITY						
30	Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APHA 9221 B	Absent	Absent
Any unusual feature observed during determination				Nil		

**Remarks:**

**TERMS AND CONDITION:-**

1. The Test result is relevant only to the item tested.
2. This report shall not be reproduced in full or part without written approval of Visiontek consultancy services.(P) Ltd
3. The laboratory is not responsible for the authenticity of photocopied test report.
4. The test item will not be retained for more than 15 days from the date of issue of test report except in case as required by applicable regulations.
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/06

Test Report No: Envlab/19/R-8605

Date : 07.03.2020

## TEST REPORT

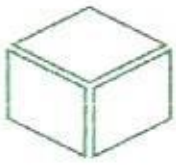
Customer Name & Address : Baphlimali Mines, M/s Utkal Alumina International Ltd,  
Tikiri, Rayagada, Odisha.

### SAMPLE DETAILS

Sample Location & Code	GW1: Paikupakhil GW2: Andirakanch	Sampled by	VCSPL'S Representative			
Sample description	Ground Water	Sampling Procedure	IS 1060			
Sample Source	Baphlimali Mines, UAIL	Sample Received on	15.02.2020			
Sample Condition	Sealed 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	14.02.2020	Test Completed on	22.02.2020			
Sl. No	Parameters	Unit	Requirement Desirable limit (IS:10500:2012)	Test methods	GW-1	GW-2
<b>Organoleptic &amp; Physical Parameters</b>						
1	*Color	Hazen, max	5	APHA 2120 B,C	<1.0	<1.0
2	*Odor	--	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H'B	7.43	7.92
4	Turbidity	NTU ,max	1.0	APHA 2130 B	0.58	0.43
5	Total Dissolved Solids (as TDS)	mg/l	500	APHA 2540 C	294.0	261.0
6	*Temperature	°C	-	-	24.0	24.0
7	Conductivity	µS/cm	-	APHA 2510 C	470.0	429.0
<b>General Parameters Concerning Substances Undesirable in Excessive Amounts</b>						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	46.4	44.8
9	Chloride (as Cl)	mg/l, max	250	APHA 4500Cl'B	52.7	37.5
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 4500F'C	0.78	0.57
12	*Free residual Chlorine	mg/l, min	0.2	APHA 4500Cl B	0.2	0.2
13	Iron (as Fe)	mg/l, max	0.3	APHA 3500Fe B	0.17	0.22
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	15.6	12.6
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	1.17	1.10
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 4500SO <sub>4</sub> 'B	14.4	11.6
21	Total Alkalinity	mg/l, max	200	APHA 2320 B	156.0	140.0
22	Total Hardness	mg/l, max	200	APHA 2340 C	180.0	164.0
23	Zinc (as Zn)	mg/l, max	5.0	APHA 3114B,C	0.84	0.62
<b>Parameters Concerning Toxic Substances</b>						
24	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 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	APHA 3500 Hg	<0.0005	<0.0005
28	*Total arsenic	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

Authorized Signatory





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Format No.: 7.8.2/FMT/TR/06

BACTERIOLOGICAL QUALITY						
30	*Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APIA 9221 B	Absent	Absent
Any unusual feature observed during determination				Nil		

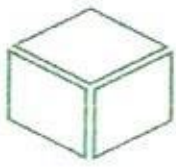
\*This Parameter not in our NABL Scope.

**Remarks:**

**TERMS AND CONDITION:-**

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NABL ACCREDITED

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

Test Report No: Envlab/19/R-8606

Date : 07.03.2020

## TEST REPORT

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

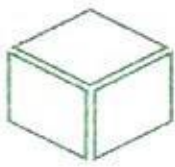
### SAMPLE DETAILS

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	15.02.2020
Sample Condition	Sealed Plastic & Sterilized Glass Bottle	Latitude: N19°21.359' Longitude: E82°59.889' Altitude: 699.82 m.	NA
Sampling Date	14.02.2020	Test Completed on	22.02.2020

Sl. No	Parameters	Unit	Requirement Desirable limit (IS:10500:2012)	Test methods	GW-3	GW-4
<b>Organoleptic &amp; Physical Parameters</b>						
1	*Color	Hazen, max	5	APHA 2120 B,C	<1.0	5.0
2	*Odor	--	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H'B	7.27	7.49
4	Turbidity	NTU, max	1.0	APHA 2130 B	0.55	0.73
5	Total Dissolved Solids (as TDS)	mg/l	500	APHA 2540 C	193.0	236.0
6	*Temperature	°C	-	-	25.0	24.0
7	Conductivity	µS/cm	-	APHA 2510 C	310.0	385.0
<b>General Parameters Concerning Substances Undesirable in Excessive Amounts</b>						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	43.2	32.0
9	Chloride (as Cl)	mg/l, max	250	APHA 4500Cl B	31.5	37.3
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 4500F C	<0.05	0.12
12	*Free residual Chlorine	mg/l, min	0.2	APHA 4500Cl B	0.3	0.2
13	Iron (as Fe)	mg/l, max	0.3	APHA 3500Fe B	<0.1	0.14
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	11.7	10.7
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	1.23	<1.0
18	*Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OII)	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 4500SO <sub>4</sub> B	8.3	7.1
21	Total Alkalinity	mg/l, max	200	APHA 2320 B	136.0	116.0
22	Total Hardness	mg/l, max	200	APHA 2340 C	156.0	124.0
23	Zinc (as Zn)	mg/l, max	5.0	APHA 3111B,C	0.19	0.23
<b>Parameters Concerning Toxic Substances</b>						
24	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 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	APHA 3500 Hg	<0.0005	<0.0005
28	*Total arsenic	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

Visiontek Consultancy Services Pvt. Ltd.  
 Authorized Signatory





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

BACTERIOLOGICAL QUALITY						
30	*Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APIA 9221 B	Absent	Absent
Any unusual feature observed during determination				Nil		

\*This Parameter not in our NABL Scope.

**Remarks:**

**TERMS AND CONDITION:-**

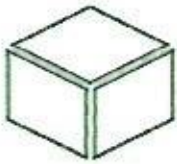
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5. The laboratory's responsibility under this report is limited to, proven willful negligence.



**ANNEXURE: 9**

**Ground Water Level Monitoring Report for the  
period Post-monsoon & Winter**





# Visiontek Consultancy Services Pvt. Ltd.

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NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/18/R-6384

Date : 07.12.2019

## TEST REPORT

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

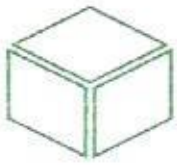
### SAMPLE DETAILS

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	11.11.2019	Paikupakhal (Buffer Zone)	7.2	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.
2	11.11.2019	Andirakanch (Buffer Zone)	6.7	Latitude: N19°19.079' Longitude: E83°00.738' Altitude: 739.45 m.
3	11.11.2019	Malligaon (Buffer Zone)	7.9	Latitude: N19°21.359' Longitude: E82°59.889' Altitude: 699.82 m.
4	11.11.2019	Kendumundi (Buffer Zone)	5.5	NA
5	11.11.2019	Near Dump Yard (Core Zone)	>113	NA
6	11.11.2019	Near Check Post (Core Zone)	>108	NA

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





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NABL ACCREDITED

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

Test Report No: ENVLAB/18/R-8607

Date : 07.03.2020

## 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	14.02.2020	Paikupakhali (Buffer Zone)	7.8	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.
2	14.02.2020	Andirakanch (Buffer Zone)	8.2	Latitude: N19°19.079' Longitude: E83°00.738' Altitude: 739.45 m.
3	14.02.2020	Malligaon (Buffer Zone)	6.3	Latitude: N19°21.359' Longitude: E82°59.889' Altitude: 699.82 m.
4	14.02.2020	Kendumundi (Buffer Zone)	6.7	NA
5	14.02.2020	Near Dump Yard (Core Zone)	>104	NA
6	14.02.2020	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







उड़ीसा ORISSA

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 12<sup>th</sup> day of December Two 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 (Hereinafter called the 'Applicant') of the First part.

AND

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



*Nagesh*  
N. NAGESH









**CONSENT ORDER**  
BAPHLIMALI BAUXITE MINES OF UTKAL ALUMINA 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. 19.03.2020

**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**

Sl. 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.

## Annexure-12

ACTION PLAN TAKEN FOR IMPLEMENTATION OF SITE SPECIFIC WILDLIFE MANAGEMENT PLAN						
Sl. No.	Item	Unit	Total	Rate (Rs)	Total (Rs)	
<b>Soil &amp; Moisture Conservation Measures</b>						
1	a) Construction of loose boulder Check dam across the seasonal nala, drainage line and semi perennial nala occurring along the sloppy area of the lease.					
	1 mtr span	Nos.	60	3600	216000	
	2 mtr span	Nos.	40	7113	284520	
	3 mtr span	Nos.	26	14920	387920	
<b>(A) Total</b>					<b>888440</b>	
	b) Contour Bonding	LS			300000	
<b>(B) Total</b>					<b>300000</b>	
<b>Fire Protection Measures</b>						
2	Provision for a fire watch tower on North-west side of the lease near the boundary.	LS	1		500000	
	<b>(C) Total</b>					<b>500000</b>
	Deployment of a fire fighting squad consisting of 5 members with provision of vehicle etc. as per approved cost norm of CWLW, Odisha for five fire months @ 3.50 lacs per annum. 3.50 lacs x 10 years.	Year	10	350000	3500000	
<b>(D) Total</b>					<b>3500000</b>	
<b>Prevention of fall &amp; entry to mining pits by wild animals.</b>						
3	Construction of balance RR. Stone masonry $\frac{1000+17300}{1}$ 1 mtr @ 4.00 lacs per km.	Km	10	400000	4000000	
	Where necessary along the boundary for 10km.					
<b>(E) Total</b>					<b>4000000</b>	
<b>Development of Green Belt.</b>						
Green Belt through following method in safety zone of 7.5 mtr width over a length of 22km inside the non-forest land						
4	ANR practices with Gap Plantation @ 400 plants per ha	Ha	8.25	38806	320150	
	Block Plantation @ 1600 plants per ha	Ha	8.25	286421	2362973	
<b>(F) Total</b>					<b>2683123</b>	
5	Cost of one latest Model SUV (SCORPIO S-10) vehicle to be handed over to the DFO, Rayagoda	No.	1	1600000	1600000	
	<b>(G) Total</b>					<b>1600000</b>
6	Interventions for regulating impact of mining activities.	Implementation at the project cost according to the approved EMP.				
	Interventions for regulating light, water, air, noise pollution, dump stabilisation & waste management will be carried out at the project cost as per the approved environmental management plan.					
<b>Grand Total (A+B+C+D+E+F+G)</b>					<b>13471563</b>	

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS  
(WILDLIFE) & CHIEF WILDLIFE WARDEN, ODISHA  
BDA APARTMENT, 5<sup>TH</sup> FLOOR, PRAKRUTI BHAWAN, NILAKANTHA NAGAR, BBSR-12  
Ph. No.0674-2564587, FAX No.0674-2565062  
(Website:odishawildlife.org, E. mail: odishawildlife@gmail.com)

No. 5608 /1WL-SSP-80/2016  
Dated, Bhubaneswar, the 27 Jun, 2017

To

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

**Subj: Proposal for diversion of 233.343 ha. of DLC forest land including safety zone of 10.283 ha in village Paik-kupaknai, Dnukurapas and Karanj-kupaknai under Kasipur Tahsil of Rayagada District within total mining lease area of 1388.74 ha for bauxite mining in their Baphilmali 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 Baphilmali 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.

2. The Site Specific Wildlife Conservation Plan in respect of the above project has been approved by the undersigned with financial forecast of **₹670.451 lakh** (Rupees six crore seventy lakh forty-five thousand one hundred) only for the following activities.

a.	For activities to be implemented by the user agency in project area	₹134.736 lakh
b.	For activities to be implemented by DFO, Rayagada Division in project impact area	₹226.622 lakh
c.	For activities to be implemented by DFO, Kalahandi South Division in project impact area	₹309.093 lakh
<b>Grand Total:</b>		<b>₹670.451 lakh</b>





o/c.

UAIL-Mines/ENV/ 77/2017

Date: 21.07.2017

To,

**The Addl. Principal Chief Conservator of Forest (C)  
MoEF & Climate Change, Govt. of India  
Eastern Regional Office, A/3, Chandrasekhar  
Bhubaneswar-751023**

Subject: Submission of Compliance Report for the special condition no.xxxii laid down in the Environmental clearance vide Letter No. J-11015/650/2007-IA.II (M) dated 19<sup>th</sup> February 2009 for 8.5 MTPA bauxite mining.

Dear Sir,


Please find enclosed herewith the **Report for Digital Processing of the Baphlimali Bauxite Mining lease area using remote sensing technique for monitoring the land use pattern** carried out by M/s Intelogix Technologies, Bhubaneswar with reference to the special condition no.xxxii laid down in the Environmental clearance Letter No. J-11015/650/2007-IA.II (M) dated 19<sup>th</sup> February 2009 for 8.5 MTPA bauxite mining.

This is for your kind information and necessary compliance of the special condition.

Thanking you

Yours faithfully,

For **UTKAL ALUMINA INTERNATIONAL LIMITED.**

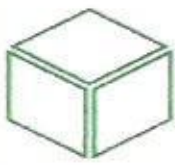
  
Biswaranjan Kumar Padhi  
Asst. Vice President - Mines



**ANNEXURE: 15**

**Trade wise Noise Monitoring Report for the period**

**October 2019 to March 2020**



# Visiontek Consultancy Services Pvt. Ltd.

(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/19/R-5382

Date : 04.11.2019

## TEST REPORT

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

Sample Type : Trade Wise Noise Level

Sl. No.	Date of Monitoring	Location	Name of the Operator	Day Time (6.00 AM to 10.00 PM)			
				Time	* Noise Level in dB (A) at 1m distance from Operator head	* Noise Level in dB (A) at 10m distance from Operator head	* Noise Level in dB (A) at 15m distance from Operator head
A. For Operator Working in the Cabin							
1	30.10.2019	Drilling Operation	Ajit Kr Mohanta	10.05 am	77.0	---	---
2	16.10.2019	Loader Operation	Rahul Kumar Khosla	10.15 am	74.4	---	---
3	09.10.2019	Shovel Operation	Kailash Nayak	10.10 am	78.1	---	---
4	25.10.2019	Dumper Operation	B.K.Kullu	9.50 am	73.8	---	---
B. For Operator Working without Cabin							
5	23.10.2019	Crusher Operation	Sanatana Samal	10.10 am	72.9	70.5	66.8
6	28.10.2019	Workshop Area	Kameswar Gouda	9.50 am	79.0	74.8	64.3
7	18.10.2019	Middle of Quarry	Mintu Das	10.25 am	78.1	75.6	61.5

Note: Noise Level are measured at a distance of 1m from the operator's head in his usual working posture.

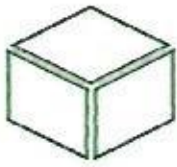
Noise Level Standard : 85dB(A) as per DGMS circular no.18 (Tech) 1975.

\* This parameter not in our NABL scope.



Authorized Signatory





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NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMI/TR/06

Test Report No: ENVLAB/19/R-6389

Date : 07.12.2019

## TEST REPORT

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

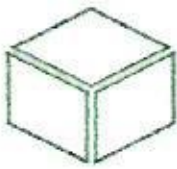
Sample Type : Trade Wise Noise Level

Sl. No.	Date of Monitoring	Location	Name of the Operator	Day Time (6.00 AM to 10.00 PM)			
				Time	Noise Level in dB (A) at 1m distance from Operator head	Noise Level in dB (A) at 10m distance from Operator head	Noise Level in dB (A) at 15m distance from Operator head
<b>A. For Operator Working in the Cabin</b>							
1	06.11.2019	Drilling Operation	Biswanath Nayak	9.20 am	70.9	---	---
2	21.11.2019	Loader Operation	Ranjit Routrey	10.30 am	74.5	---	---
3	27.11.2019	Shovel Operation	Kailash Ch Mohanty	9.50 am	77.3	---	---
4	14.11.2019	Dumper Operation	Sanjay Kr Nayak	10.10 am	71.7	---	---
<b>B. For Operator Working without Cabin</b>							
5	08.11.2019	Crusher Operation	Purnedra Bagh	10.15 am	70.2	66.3	61.2
6	20.11.2019	Workshop Area	Pratap Moharana	10.00 am	79.8	73.0	69.5
7	22.11.2019	Middle of Quarry	Mintu Dash	10.35 am	78.1	75.7	71.9

Note: Noise Level are measured at a distance of 1m from the operator's head in his usual working posture.

Noise Level Standard : 85dB(A) as per DGMS circular no.18 (Tech) 1975.





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NABL ACCREDITED

Certificate No.: TC-7944

Format No.: 7.8.2/FMT/TR/06

Test Report No: ENVLAB/19/R-6894

Date : 06.01.2020

## TEST REPORT

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

Sample Type : Trade Wise Noise Level

Sl. No.	Date of Monitoring	Location	Name of the Operator	Day Time (6.00 AM to 10.00 PM)			
				Time	*Noise Level in dB (A) at 1m distance from Operator head	*Noise Level in dB (A) at 10m distance from Operator head	*Noise Level in dB (A) at 15m distance from Operator head
<b>A. For Operator Working in the Cabin</b>							
1	09.12.2019	Drilling Operation	Surendra Giri	9.40 am	73.2	----	----
2	18.12.2019	Loader Operation	Abhimanyu Samadaray	10.10 am	69.9	----	----
3	13.12.2019	Shovel Operation	C.H Naidu	10.00 am	71.5	----	----
4	06.12.2019	Dumper Operation	Gajendra Dalei	10.20 am	75.9	----	----
<b>B. For Operator Working without Cabin</b>							
5	04.12.2019	Crusher Operation	Sanatana Samal	10.05 am	74.4	63.8	59.9
6	11.12.2019	Workshop Area	Kameswara Gouda	10.20 am	75.9	70.5	62.3
7	20.12.2019	Middle of Quarry	Jaydeb Das	10.15 am	77.7	72.3	68.8

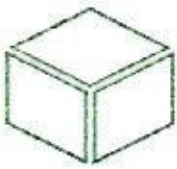
Note: Noise Level are measured at a distance of 1m from the operator's head in his usual working posture.

Noise Level Standard : 85dB(A) as per DGMS circular no.18 (Tech) 1975.

\*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: ENVIAB/19/R-7344

Date : 06.02.2020

## TEST REPORT

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

Sample Type : Trade Wise Noise Level

Sl. No.	Date of Monitoring	Location	Name of the Operator	Day Time (6.00 AM to 10.00 PM)			
				Time	*Noise Level in dB (A) at 1m distance from Operator head	*Noise Level in dB (A) at 10m distance from Operator head	*Noise Level in dB (A) at 15m distance from Operator head
<b>A. For Operator Working in the Cabin</b>							
1	23.01.2020	Drilling Operation	Gupta Challan	9.55 am	78.4	----	----
2	20.01.2020	Loader Operation	Madan Sethi	10.15 am	72.2	----	----
3	13.01.2020	Shovel Operation	Dillip Sahoo	10.20 am	75.7	----	----
4	24.01.2020	Dumper Operation	Khageswara Sahoo	10.10 am	70.6	----	----
<b>B. For Operator Working without Cabin</b>							
5	10.01.2020	Crusher Operation	Dillip Sahoo	9.45 am	77.8	65.2	61.3
6	17.01.2020	Workshop Area	Pratap Maharana	10.00 am	71.2	68.9	58.8
7	29.01.2020	Middle of Quarry	Sajan Kumar	10.25 am	73.9	70.1	66.2

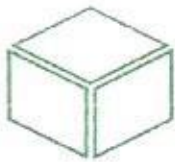
Note: Noise Level are measured at a distance of 1m from the operator's head in his usual working posture.

Noise Level Standard : 85dB(A) as per DGMS circular no.18 (Tech) 1975.

\*This parameter not in our NABL Scope







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NABL ACCREDITED

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

Test Report No: ENVLAB/19/R-8612

Date : 07.03.2020

## TEST REPORT

Customer Name & Address : Bapdimali Mines, M/s Utkal Alumina International Ltd,  
Thuri, Rayagada, Odisha.

Sample Type : Trade Wise Noise Level

Sl. No.	Date of Monitoring	Location	Name of the Operator	Day Time (6.00 AM to 10.00 PM)			
				Time	*Noise Level in dB (A) at 1m distance from Operator head	*Noise Level in dB (A) at 10m distance from Operator head	*Noise Level in dB (A) at 15m distance from Operator head
<b>A. For Operator Working in the Cabin</b>							
1	04.02.2020	Drilling Operation	Biswanath Nayak	10.15 am	73.3	----	----
2	08.02.2020	Loader Operation	Lingaraj Sahoo	10.20 am	70.9	----	----
3	14.02.2020	Shovel Operation	Ranjan Sahoo	10.00 am	75.4	----	----
4	12.02.2020	Dumper Operation	Sanjay Kr Nayak	9.40 am	76.8	----	----
<b>B. For Operator Working without Cabin</b>							
5	06.02.2020	Crusher Operation	Dilip Nayak	10.30 am	73.4	70.1	70.9
6	17.02.2020	Workshop Area	Kameshwara Gouda	10.10 am	75.2	69.2	73.4
7	10.02.2020	Middle of Quarry	Jaydeb Das	10.15 am	77.8	67.5	69.3

Note: Noise Level are measured at a distance of 1m from the operator's head in his usual working posture.

Noise Level Standard : 85dB(A) as per DGAs circular no.18 (Tech) 1975.

\*This parameter not in our NABL Scope

  
 P. K. Sahoo  
 Authorised Signatory



Test Report No: ENVLAB/19/R-9433

Date : 04.04.2020

## TEST REPORT

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

Sample Type : Trade Wise Noise Level

Sl. No.	Date of Monitoring	Location	Name of the Operator	Day Time (6.00 AM to 10.00 PM)			
				Time	*Noise Level in dB (A) at 1m distance from Operator head	*Noise Level in dB (A) at 10m distance from Operator head	*Noise Level in dB (A) at 15m distance from Operator head
<b>A. For Operator Working in the Cabin</b>							
1	13.03.2020	Drilling Operation	Rajendra Nayak	10.00 am	76.2	----	----
2	16.03.2020	Loader Operation	Lalit Dudu	10.10 am	73.5	----	----
3	18.03.2020	Shovel Operation	Bhagirathi Jena	9.50 am	71.1	----	----
4	09.03.2020	Dumper Operation	Rajkumar Bramha	10.15 am	74.9	----	----
<b>B. For Operator Working without Cabin</b>							
5	04.03.2020	Crusher Operation	Gupta Naik	10.25 am	74.2	67.5	73.2
6	19.03.2020	Workshop Area	Sanjay Biswas	9.55 am	79.7	70.1	70.4
7	20.03.2020	Middle of Quarry	Sukudeba Sahu	10.10 am	73.3	68.8	71.8

Note: Noise Level are measured at a distance of 1m from the operator's head in his usual working posture.

Noise Level Standard : 85dB(A) as per DGMS circular no.18 (Tech) 1975.

\*This parameter not in our NABL Scope

  
Prepared by



  
Verified by



<b><u>Expenditure on Environment &amp; Pollution Control</u></b> <b><u>Baphlimali Bauxite Mine</u></b> <b><u>Period : 2018-19</u></b>		
<b>Period 2019-20</b>		
<b>Sl. No.</b>	<b>Particulars of Environment Expenditure</b>	<b>Amount (Rs.)</b>
1	Air Pollution Control Measure	2,86,26,950.00
2	Plantation & Horticulture	14,34,168.00
3	Envt Monitoring	27,22,458.00
4	Envt Awareness & Health	4,83,238.00
5	Study reports related to Eenvt. Management	1,58,500.00
6	Others	53,78,560.20
	<b>Total</b>	<b>3,88,03,874.20</b>



# **PHOTOS**

**PHOTO 1: Showing Check dam**

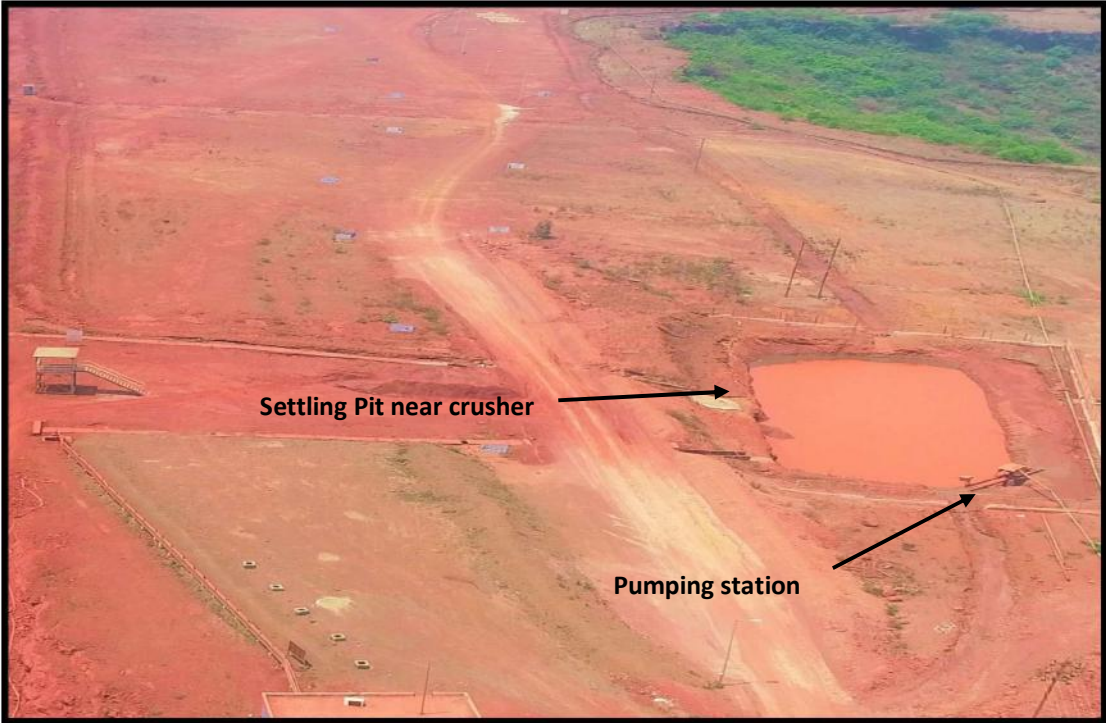


**PHOTO 2: Showing Retaining wall & garland Drain along the Dump Slope**





**PHOTO 3: Showing Settling Ponds**





**PHOTO 4: Showing Settling Pond Desilting**



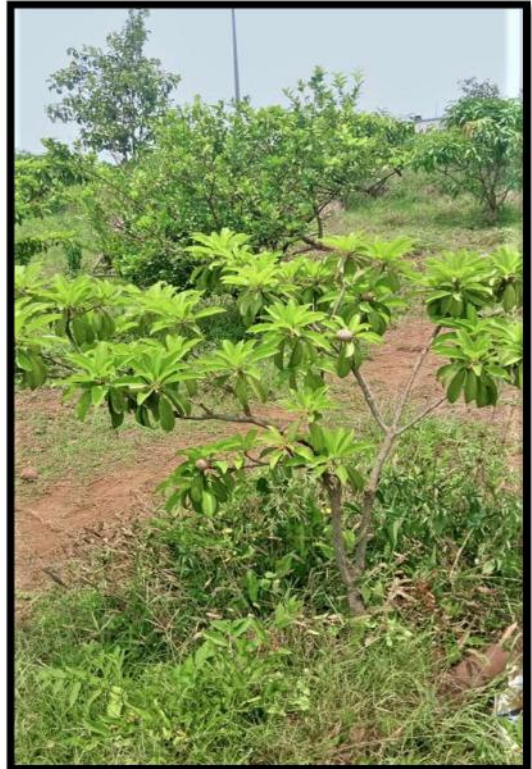
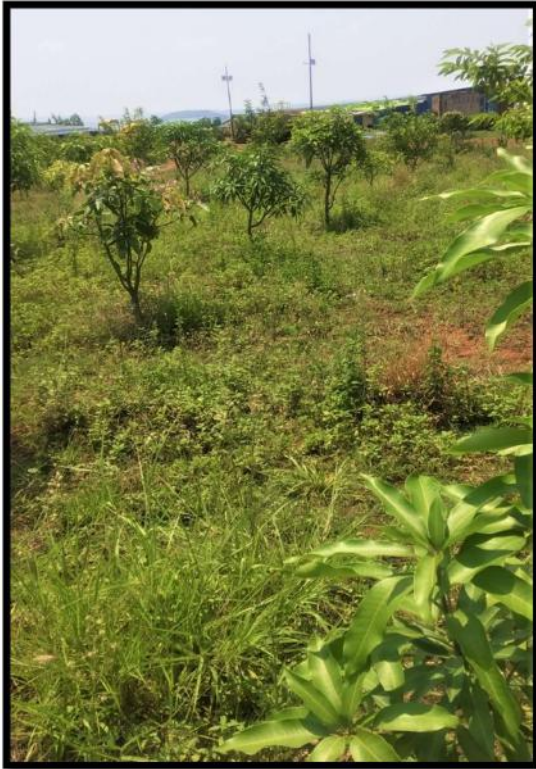


**PHOTO 5: Showing Plantation in Backfilled area**

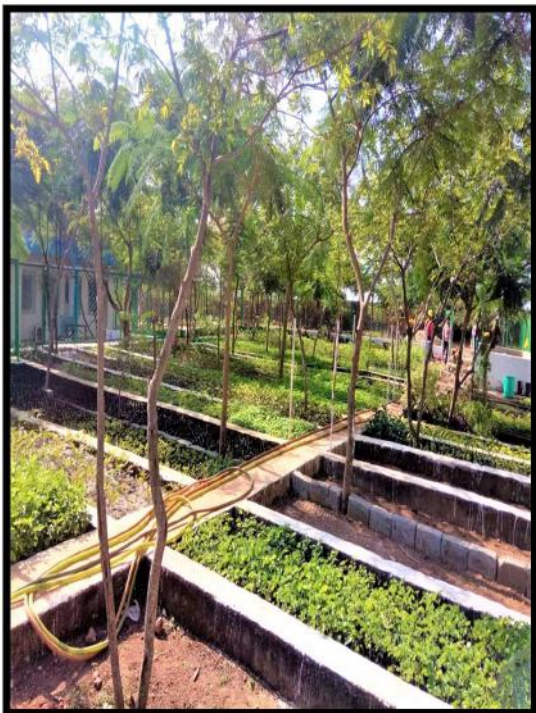




**PHOTO 6: Showing Plantation in Mine Lease**



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





**PHOTO 8: Showing 28KL Mobile sprinkler**



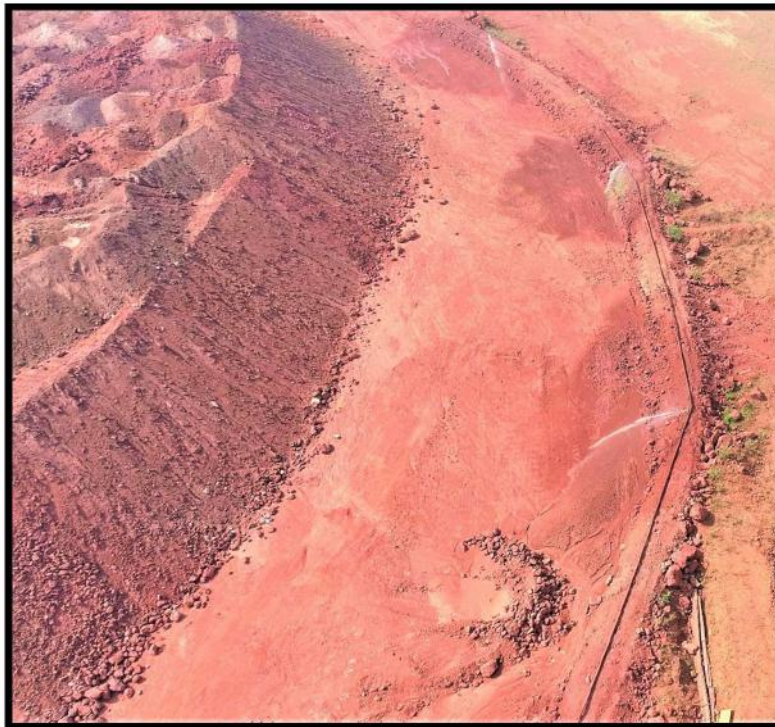
**PHOTO 9: Showing Fixed Sprinklers**



**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**

