ADITYA BIRLA

UTKAL ALUMINA

UAIL-MINES/ENV/ 118 /2021 30th November 2021

To

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

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

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

Dear Sir,

As a part of the compliance to the EC granted with respect to our 8.5 MTPA Baphlimali Bauxite Mine of M/s Utkal Alumina International Ltd. vide Ministry's letter no. J-11015/650/2007-IA.II (M) dated 19.02.2009, we are enclosing herewith six monthly compliance status for the period from 1st April 2021 to 30th September 2021 for your kind perusal.

Thanking you,

Yours faithfully,
For Utkal Alumina International Limited

MK Jha

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.
4. The Regional Director,Central Ground Water Board,South Eastern Region, Bhujal Bhawan, Khandagiri, BHUBANESHWAR, PIN- 751030
5. roez.bsr-mef@nic.in, mef.or@nic.in, paribesh1@ospcboard.org,rospcb.rayagada@ospcboard.org
6. rdser-cgwb@nic.in

Name of the Project : **Baphlimall Banxite 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 Ist April 2021 to 30th September 2021.**

Sl. No.	Conditions	Compliance Status
A. Specific Condition		
i.	All the conditions stipulated by the State Pollution Control Board, Orissa in their consent to establish shall be effectively implemented.	All the conditions stipulated in the Consent to Establish (CTE) issued by SPCB, Odisha have been implemented effectively.
ii.	The project proponent shall effectively address the concerns raised by the locals in the public hearing as well as during consideration of the project while implementing the project.	All the concerns raised in the public hearing are being implemented. The details of points raised and their compliance is attached as **Annexure-1**.
iii.	The project proponent shall develop fodder plots in the non-mineralized area in lieu of use of grazing land.	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. 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. The lowest working depth of our existing mine pit has gone up to 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). In addition to, the mined out area has been backfilled for restoration. Therefore, there is no possibility of any Ground Water Intersection thereby.
v.	The project proponent shall ensure that no natural watercourse and/or water resources are obstructed due to any mining operations. Adequate measures shall be taken while diverting seasonal channels emanating from the mine lease, during the course of mining operation.	No natural watercourse or water resources are obstructed due to mining operations. Necessary care has been taken during monsoon to divert /channelize run off water to the excavated pits, so that it does not carry any sediment to obstruct / affect the water bodies at the foot hill.
vi.	The project proponent shall take adequate environmental safeguard measures for control of rolling down of silt and sediments and protection of the catchment area of upper Indrāvati Reservoir during the course of mining operation.	In addition to as stated in Sl. No. v, 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, garland drains & Siltation pit attached as **Annexure- 2** & **Photo 1, 2, 3** respectively. Siltation pits are being cleaned before monsoon and the photo is attached as **Photo 4.** After measures listed in annexure-2, the run-off confluence with the nearby seasonal nallah & ultimately to River Indrāvati after moving a distance around 9 Km, 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 for plantation in backfilled area.
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 01.04.2016 backfilling has been started by utilizing entire quantity of overburden in the voids of the mined out area concurrently as per the proposal given in the Review of Mining Plan. Till September 2021, 86.90 ha area has been backfilled & 58.70 Ha has been afforested 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 **photo- 5.**

x.	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. 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.	Details of the measures asked in the enlisted in **Annexure-2** & photos attached as **Photo 1 to 4**. 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. However, during rain the run-off water is continuously pumped out from settling ponds to excavated pits which increases the capacity of the ponds. The settling ponds & garland drains are being de-silted and maintained at regular intervals. Majority of the rain water of the broken up area has been channelized & 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. 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 **Annexure-3.**
xi.	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	Dimension of the retaining wall at the toe of temporary OB dump(s) within the mine to check run-off & siltation are as follows:- • height 1.00 mtr • width 0.80 mtr • length 1300.00 mtrs These dimensions are designed basing on the highest rainfall data. As per our proposal in the approved Review of Mining Plan, Dump-II has already been re-handled and Dump-I is in re-handling stage.
xii.	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.	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 Septemebr'2021, an area 86.90 ha is backfilled/reclaimed. In this backfilled area 58.70 ha has been afforested/ rehabilitated. However plantation is being taken up in the Mine slope including a 7.5 meter safety zone since 2012-13. This year (2021-22) till September'2021, we have planted around 90,060 Nos. saplings which includes safety zone around the mining lease,

		backfilled area, 15 mtr peripheral barrier of plateau boundary, mining lease slope area, around void, roads, avenue plantation etc. The remaining area will be covered progressively in phase wise manner as per the Review of Mining Plan. Different native saplings are procured from Forest department in consultation with the local DFO/Agriculture Department. In addition to this nursery has been developed to germinate, preserve and cater the seedlings during the course of plantation period. Photos of plantation & nursery are attached as **Photo- 6 & 7.**
xiii.	The void left unfilled in an area of 250ha shall be converted into the water body. The higher benches of the excavated void/mine pit shall be terraced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by the local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.	We will be abide by this condition. It will be followed according to the conceptual plan.
xiv.	Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as around crushing and screening plant, loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Regular water sprinkling is done on haul roads, loading & unloading areas and material transfer points by deploying two dedicated water tankers of capacity 28 KL. Fixed water sprinkling arrangement has been provided on both sides of the arterial road and around the stock pile of 1.3 Km length. Dry fog arrangement has been provided in Crushing and screening plant. Photos of water sprinkling arrangements are attached as **Photo 8 & 9**. Regular ambient air quality monitoring is being done in the Core Zone and buffer zone comprising of four locations each. The result of the monitored air quality data (April'2021 to September'2021) shows that all parameters are well within the prescribed limit. The result of monitored data for the period of April'2021 to September'2021 of core and buffer zone are attached as **Annexure– 4 & 5**.
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 April'2021 to September'2021 are attached as **Annexure 6.**
xvi.	Regular monitoring of water quality upstream and downstream of the Khandabindha Nallah shall be carried out and record of monitored data	Regular monitoring of water quality upstream and downstream of the Khandabindha Nallah is being carried out and recorded. The results of surface water

	should be maintained and submitted to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, the Central Groundwater Authority, the Regional Director, Central Ground Water Board, the State Pollution Control Board and the Central Pollution Control Board.	quality are enclosed in **Annexure-7**. The same is also being submitted to the Central Groundwater Authority, the Regional Director, Central Ground Water Board, the State 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:- i. Rainwater harvesting is being carried out by collecting the precipitated water through a network of drainage system into the exhaust mining pit for storage and ground recharge. ii. Movement of mine faces is being carried out systematically as per mine plan following the contour lines such that the faces have self-draining slopes. Precipitated water of the adjacent area is being collected within the mined out area. iii. Concreted Weir has been constructed to arrest rain water resulting ground water recharge. Also the Surface water flow near the pit has been diverted towards the pit and this accumulation influences to recharge ground water table. Attached as **Photo-1**. iv. Arrangement has been made that the mining method and the peripheral barrier all around mining area does not allow the storm water to go outside valley areas. The water thus trapped, percolates down and recharges the ground water.
xviii.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year, pre- monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the ground water is depleted due to mining activity, necessary corrective measures shall be carried out.	Regular monitoring of ground water level and quality is being carried out in each season of the open wells/ dug wells located around the nearby villages and the data is being submitted to Regional Office, MoEF and SPCB, Bhubaneswar once in every six month with this six monthly compliance report. Two peizometric wells have been constructed inside lease area to monitor the level of ground water. The monitoring results of Ground water quality & level for post monsoon and winter season are enclosed as **Annexnre – 8 & 9** respectively.

xix.	Appropriate mitigative measures shall be taken to prevent pollution of the San River and the Indravati River in consultation with the State Pollution Control Board.	San River & Indrāvati are flowing at a distant location 12 Kms & 9 Kms respectively. The following measures are being implemented and maintained. 1. Garland drains are constructed to check erratic flow of precipitated water. 2. Check dams are constructed around the slopes of valley to arrest silts and sediments if any. 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.
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 **Annexure-10.**
xxi.	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	As a step towards rain water harvesting, the following measures have been implemented - ❖ Rainwater harvesting is being carried out by collecting the precipitated water through a network of drainage system into the exhaust mining pit for storage, it is not used for the mining purpose. Rather, it is allowed to be collected in the lowest level to augment the ground water resources gradually. ❖ Rain water from the high elevation area is collected through network of pipes and used for domestic purpose. ❖ Movement of mine faces is being carried out systematically as per mine plan following the contour lines such that the faces have self-draining slopes. Precipitated water of the adjacent area is being collected within the mined out area. ❖ In addition to this adequate numbers of Concreted Weir have been constructed to arrest rain water resulting ground water recharge. Also the Surface water flow near the pit has been diverted towards the pit and

		this accumulation influences to recharge ground water table.
xxii.	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehieles used in mining operations and in transportation of mineral within the mine lease. The mineral transportation within the mine lease shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	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 manufacturer. A full fledge 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 **Photo-10**
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 (**Photo 11**). 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 (**Photo 12**). Dry fog system is installed for suppression of dust at ROM hopper and Transfer points (**Photo 13**).
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 **Annexure 11.**
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 **Photo-14.**
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 construetion 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 temporary structures to be removed after the completion of the project.	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 coming from the integrated town ship adjacent to the alumina refinery. Domestic effluents generated are being treated in the sewage treatment plant (STP) of 75 KLD located at mines as well as discharged soak pit via septic tank constructed.
xxxi.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely; python, panther, sloth bear, wild dog etc. spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to the project site shall be effectively implemented. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	The Action Plan for conservation of wildlife i.e. Site Specific Wildlife Conservation Plan exclusively for Mining lease has been approved by PCCF (WL) & Chief wildlife Warden, Odisha vide letter No. 5608/1WL-SSP-80/2016 dated 27.06.2017 with financial forecast of Rs.670.451 Lakhs and an amount of Rs.535.715 Lakhs has been deposited in CAMPA FUND for implementation of the same. Further, as per the demand notice from the Divisional Forest Officer, Rayagada vide letter No. 4168 dated. 04.08.2017, an amount of Rs. 8,05,46,920/- has been deposited in CAMPA FUND for implementation of Regional Wildlife Management Plan. The copy of action taken to implement the Regional Wildlife management Plan is attached as **Annexure 12** & copy of approval letter as **Annexnre 13**. 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 Odisha 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/150/2020 dated 15.11.2020 to Ministry of Environment and Forests and its Regional Office, Bhubaneswar. The copy of the submission letter is attached as **Annexure- 14.**
xxxiii	A final mine closure plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final closure for approval.	The same will be submitted to the Ministry of Environment & Forests. The final mine closure plan will be submitted 2 years in advance as per MCDR 2017.

B. General conditions		
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 well as in the buffer zone for RSPM, SPM, SO2 &NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Four ambient air quality monitoring stations each have been established in both Core & Buffer Zone in consultation with the State Pollution Control Board, Odisha. Monitoring reports are attached as **Anuexure –4 & 5**.
iv.	Data on ambient air quality (RSPM, SPM, SO_2 & NOx) should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	The monitored AAQ data is being submitted to the concerned authorities along with the half yearly compliance report once in six month.
v.	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water spraying on haul roads is being practiced through water tankers. for which, provision is made to deploy 2 nos. of 28 KL capacity tankers to spray water at dust generating points such as haul roads, loading & unloading areas and material transfer points. Fixed water sprinkling arrangements has been provided on the side of the arterial road. The haulage roads are being maintained to avoid rut and pot holes.

vi.	Measures should be taken for control of noise levels below 85 dB (A) in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	The following measures are taken to control noise levels below 85 dB (A) in the work environment. • Maintenance of all machines including checking of silencers regularly, • Controlled blasting using delay detonators, installing immovable machinery on foundations and in closed rooms • Provision of earplugs/muffs to workers engaged in noise prone areas. • The HEMM operators are provided with AC close cabinets which itself is acoustic in nature. The monitored report of noise level is attached as **Annexnre- 15**.
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	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Personal protective equipment are being provided to all workers respective to the nature of the job. Initial and periodical awareness training is being imparted to all workers in the Company's Vocational Training Center located within the lease area on Safety and Health Aspects. Pre-placement medical examination and periodical medical examination as per DGMS guideline of the workers engaged in the project is being carried out and records maintained for corrective measures.
ix.	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A separate environmental management cell with suitable qualified personnel has been set up under the control of the Agent of Mines, who reports the Head of the Organization directly. The organization structure is attached **Annexure- 17**.
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	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 2021-22 will be given in the six monthly compliance for the period October 2021 to March 2022.

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

PHOTOS

PHOTO 1: Showing Check dam

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

PHOTO 3: Showing Settling Ponds

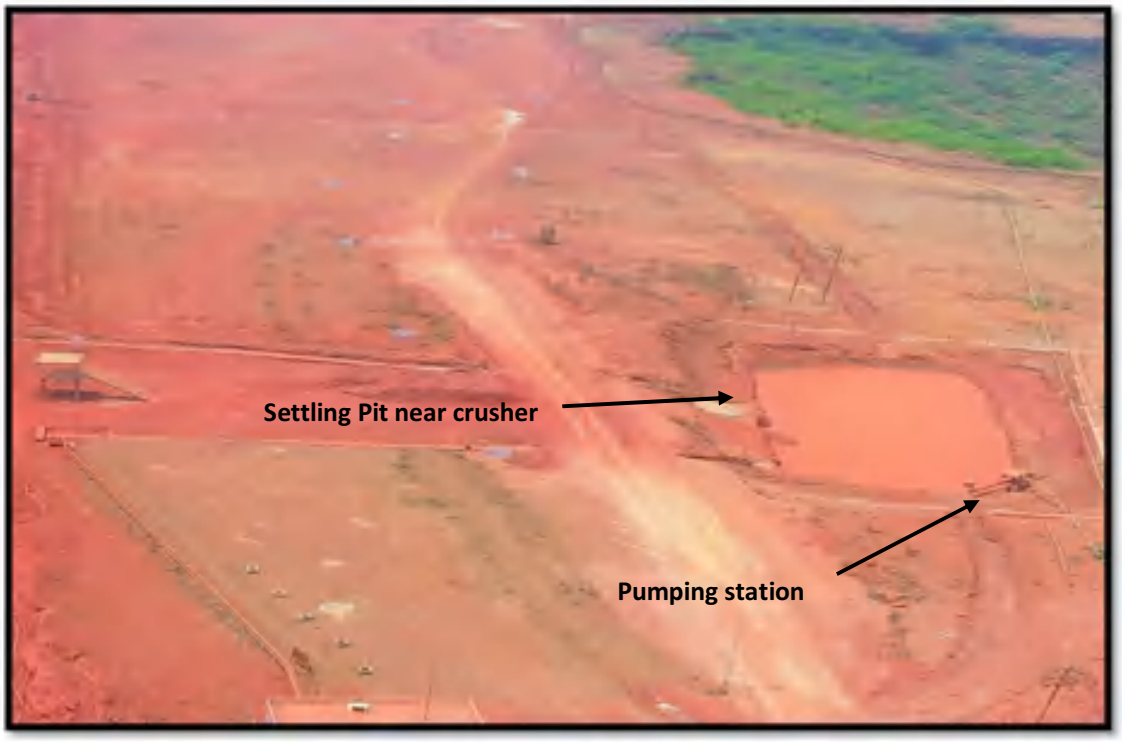

PHOTO 4: Showing Settling Pond Desilting

PHOTO 5: Showing Plantation in Backfilled area

PHOTO 6: Showing Plantation in Mine Lease

PHOTO 7: Showing Nursery inside Mine Lease

PHOTO 8: Showing 28KL Mobile sprinkler

PHOTO 9: Showing Fixed Sprinklers

PHOTO 10: Showing drilling machine with dust Extractor

PHOTO 11: Showing Fixed sprinklers in stock pile area

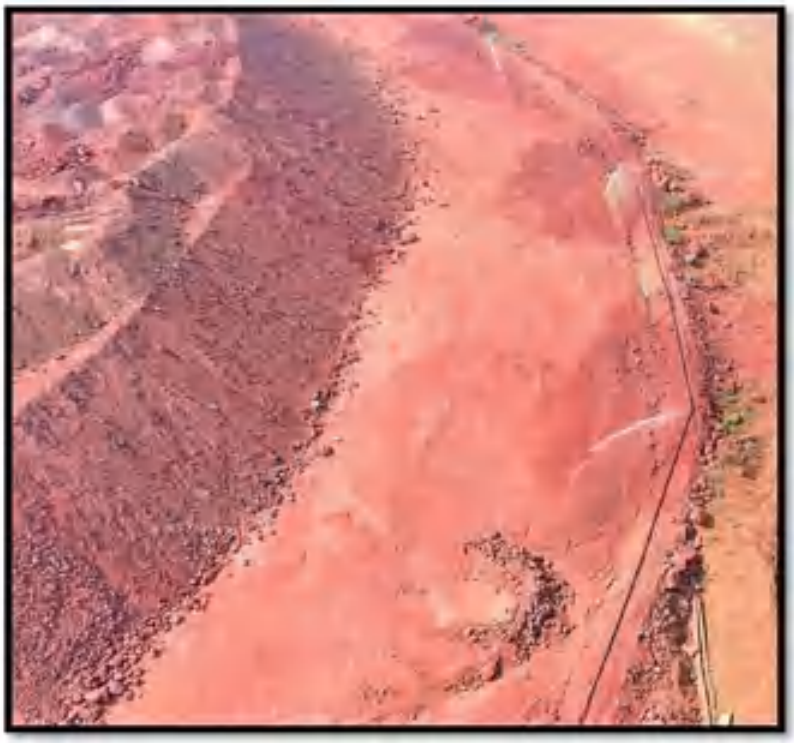

PHOTO 12: Showing Covered Long distance Conveyor

PHOTO 13: Showing Dry fog system in Fixed Crushing plant

PHOTO 14: Showing 75 KLD STP

Annexure-1

Compliance Status of the issues raised during Public Hearing

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

Sl.No.	Issues Raised in Public Hearing	Compliance Status
1	The company shall abide by all rules 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 are abiding 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	The project proponent should take sufficient care for improvement of health and education of local villagers and communication network of the areas and provide drinking water facility within its 20 km radius.	Utkal Alumina has been striving hard to create and improve healthy environment to enrich the quality of life of the community particularly the underprivileged in the vicinity by sustainable initiatives as follows : **Health Care :** ❖ During covid-19 pandemic situation/announcement has been carried out in 68 peripheral villages in order to create awareness among the villagers. During public announcement, villagers were distributed with leaflets carrying awareness massages. More than one lakhs face masks were supplied to the villagers of 45 peripheral villages including govt. officials and hospitals. To create awareness on frequent hand wash, 1030 soaps were distributed to the villagers. To ensure periphery hygienic, sodium hypochlorite solution was sprayed in public places of Rayagada, Kashipur, Tikiri, Nuapada, Dongasil, Kodipari, Gorakhpur, Sanamtikona and other villages. Fumigation has been carried out in 35 villages to ensure disinfection of the area. Around 900 migrated labor were supplied with grocery items for ten days. Awareness meetings were organized in different villages from time to time. ❖ Functioning of one full-fledged round the clock Health Centre with laboratory facility at Nuapada with regular Doctors & Paramedical Staffs. ❖ Functioning of Utkal Hospital at Osapada with specialist Doctors, IPD, Operation Theatre, ICU and well equipped modern equipment. ❖ Engagement of one Mobile Health Care Unit (MHU) extending services to 44 remote villages from 10 strategic locations ❖ Round the clock services extended by four Ambulances for referral Patients ❖ Extending financial support for maintenance of one Ambulance donated to CHC,Kashipur ❖ Extending financial assistance to the poor and needy people of peripheral villages for medical treatment. ❖ Organizing Multispecialty Health Camps at Cluster level. ❖ Creation of Health Awareness through rallies, awareness camps, competitions, sanitation drives, and street plays etc. ❖ Disinfection of drains, tube well platforms and water logging areas to guard against the spread of disease. ❖ Organizing Blood Donation Camps in collaboration with Dist. Red Cross Society

		❖ Extended Comprehensive eye care services including cataract surgery to 135 patients ❖ Facilitated construction of 854 toilets in 16 villages in collaboration with Swachha Bharat Mission ❖ Donation of one Advanced Life Support Ambulance to Rayagada District by Utkal Alumina. ❖ During second wave of Corona, total 2500 face masks were distributed to the villagers for ensuring respiratory hygiene among the public. Similarly Public announcement has been done to create awareness among the public alongwith distribution of leaflets . Sodium hypochlorite has been sprayed in the school campus of Kodipari & Tikiri to sanitize the area ❖ One Blood Donation Camp was organized. **Promotion of Quality Education** : ❖ Running Aditya Birla Public School (English Medium) to provide access to good quality education. ❖ Extending financial assistance to the land loser and economically backward families and meritorious students for Higher Education under Utkal Scholarship. ❖ Extending financial support to Kucheipadar High School. ❖ Supplied school furniture (50 sets of Desks & Benches) to Up Graded.High School, Chandragiri. ❖ Organized Special Awareness drives through Rally & Prabesh Utshabs for increasing school enrolment. ❖ Conducting Parents Counselling Meets to reduce school dropouts. ❖ Conducted computer literacy project in collaboration with Odisha Knowledge Corporation Ltd. ❖ Spoken English Classes were conducted for 350 students of class X,XI & XII of Govt. Girls High School, Dongasil in order to improve the communication skill in English. ❖ 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 ❖ Supply of study and sports materials and financial support for school functions ❖ Construction of **Provision of drinking water :** ❖ Installation of one Bore well at Tikirapada village to provide drinking water supply for the villagers. ❖ Setting up of three solar based drinking water supply system at Dwimundi, & Dongasil villages for drinking water supply. ❖ Installation of Twenty four 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 ❖ Construction of Swajaldhara (Gravity flow) for supply of water in six different villages. (Dwimundi, Pandakapadar, Dhadpas, Badlijharan, Ghatiguda & Tikirapada) ❖ Installation of solar based drinking water supply systems at Jogiparitunda and Lundrukana villages to ensure supply of safe drinking water to the villagers.
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 :** ❖ Extending financial assistance to the land loser and economically backward families and meritorious students for Higher Education under Utkal Scholarship. ❖ Supply of 50 sets of furniture (Desks & Benches) to the Upgraded High School Chandragiri. ❖ Organised Awareness Rallies and Prabesh Utshabs for increasing school enrolment. ❖ Conducted Parents Counselling Meets to reduce school dropouts. ❖ Strengthening School Management Committees ❖ Construction of Boundary walls, additional class rooms and CC Roads inside the school campus. ❖ Repairing and Painting of school Buildings ❖ Supply of Uniforms, text books, School bags, and sports materials to the peripheral schools ❖ Supply of uniforms to the childern of Anganwadi Centers. ❖ Supply of furnitures, first-aid boxes & solar home lights to the schools ❖ Creating Education Awareness through street plays, wall writings.

		Health Care : ❖ During covid-19 pandemic situation/announcement has been carried out in 20 peripheral villages in order to create awareness among the villagers. During public announcement, villagers were distributed with leaflets carrying awareness massages. More than ten thousand face masks were supplied to the villagers of 15 peripheral villages including govt. officials and hospitals. Fumigation has been carried out in five villages to ensure disinfection of the area. Awareness meetings were organized in different villages from time to time ❖ Extending treatment services to the villagers of villages lying on the foot hills of the project through First Aid center set up at Mines top. ❖ Engagement of one Mobile Health Care Unit (MHU) extending services to 30 remote villages from 8 strategic locations ❖ Round the clock services extended by one Ambulance for referral Patients ❖ Extending financial support for maintenance of one Ambulance donated to CHC,Kashipur ❖ Repairing of fifteen defunct tube wells were carried out in six villages in order to ensure regular supply of safe drinking water to the villagers. ❖ Nine dustbins were constructed in different location of Dhuturapas & Peringini villages to facilitate cleanliness of the village ❖ Construction of Masonary drains in Chandragiri & Paikakupakhal villages ❖ Extending financial assistance to poor and needy people for medical treatment. ❖ Organizing Multispecialty Health Camp at Cluster level. ❖ Creating health awareness through rallies, awareness camps, competitions, sanitation drives, and street plays etc. ❖ Disinfection of drains, tube well platforms and water logging areas to guard against the spread of disease. ❖ Conducted eye cataract surgery of 17 persons from four different villages ❖ Facilitated construction of 93 toilets in five villages in collaboration with Swachha Bharat Mission ❖ During second wave of Corona, Public announcement has been done in peripheral villages for creating awareness among the public along with distribution of leaflets . ❖ Installation of solar based drinking water supply systems at Jogiparitunda and Lundrukana villages to ensure supply of safe drinking water to the villagers.

		❖ Repairig of seven more defunct tube wells in peripheral villages to ensure regular supply of safe drinking water to the villagers. **Sustainable Livelihoods :** ❖ Supply of improved varieties of vegetable seeds, pesticides, micronutrients and other inputs like sprayer machines to the farmers of sixteen peripheral villages during kharif and rabi season every year in order to increase their income through commercial vegetable cultivation. ❖ 180 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. ❖ 64 farmers of five villages were supported for orchard development in 18.55 acres of land with saplings, fertilisers, pesticides, fencing, agri implements and irrigation facilities. ❖ 107 farmers of four different villages were supported for lemon grass cultivation in 119 acres of land. Installation of one lemon grass Oil extraction unit at Jogiparitunda village. ❖ Imparted tailoring training to 116 and applique training to 12 girls/women of mines peripheral villages. ❖ Provided Irrigation facilities by construction of check dams, irrigation channels & Water Storage Tanks. Farmers Committees were provided with Diesel Pump Sets, HDPE Pipes with Sprinklers and installation of river lift irrigation, micro lift irrigation and deep borewells in our peripheral villages. ❖ Capacity Building of farmers through different trainings, exposure visits and extending hand holding supports to the members of different farmers clubs, pani panchayats, udyan vikash samitis etc.promoted in our periphery. ❖ Livestock vaccination cum health camps have been organized in different mines peripheral villages at a regular interval of time. ❖ Women Self Help Groups of Hatikhaman, Phulapindha and Lundrukana Villages are supported for Pisciculture, Mushroom cultivation and Turmeric powder preparation activities as an Income Generation Activity. ❖ 14 nos of Girls / Women are engaged in stitching of face masks at Jogiparitunda training centre. **Village Infrastructure development :**

		❖ In order to enhance the quality of life of villagers, we have undertaken village infrastructure development jobs like Construction of Cement Concrete Roads, Causeways, Steps to river, Rest house, Boundary Walls, Culverts, Bridges, Community Centers, Street lighting, drains, bus stops and Protection Walls, Repair and renovation of village ponds etc in different peripheral villages from time to time on regular basis. **Social Interventions :** ❖ Organizing Block level rural volley ball tournament by taking youths of different villages. ❖ Extending financial support to organize Panchayat , Block as well as District level tournaments ❖ Supply of sports materials to the youths of peripheral villages ❖ Extending financial support for observing different puja and festivals in the villages ❖ Organizing Various social functions such as Raja Utshab, Diwali etc in villages ❖ Promoting local folk dance Dhimsa by enabling the village youths to take part in different competitions. ❖ Formation of five Balika Mandals (Group of adolescent girls) in five villages to address Girl Child Marriage. Developed wall writtings on prevention of girl child marriage and organized life skill trainings for adolescent girls as well as parents counselling meet to prevent early child marriage in these villages.
8	The project proponent should provide garland drains around the mining pit 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.	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. 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 **Annexure- 2** & **Photo 1, 2 & 3.**

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 September 2021, 58.70 ha area has been rehabilitated out of 86.90 ha backfilled area. Both the activities are under progress & shall meet by 100% as per the proposal within scheme period. After the mining operation is over the whole area will be reclaimed as per the conceptual plan of mining scheme.
10	The mine shall obtain necessary clearances such as Forest clearance, wild life clearance, clearance from water resources department, etc. from the appropriate authorities	Necessary clearances such as Forest clearance, wild life clearance, clearance from water resources department, etc. has been obtained from the appropriate authorities. Details of the letter no and date of approval is enlisted below. Forest Stage 2 Clearance: 8-18/2016-FC/02.02.2018 Wildlife clearance: 5608/IWL-SSP-80/2016/27.06.2017 Water Resource Department: Form K as per Rule 23-A (2) (e) & Rule 26/12.12.2018 Environment Clearance: J-11015/650/2007-IA-II(M)/19.02.2009 Consent to Establish: 14388/Ind-II-NOC-4432/16.08.2007 Consent to operate: 3489/IND-I-CON - 5450 dated 19.03.2020
11	The project proponent shall provide alternate gazing field for the cattle in consultation with the District Administration	We are developing fodder plots as grazing field for the cattle on Backfilling area gradually after reclamimg the mined out area.

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

Sl.No.	Issues raised in Public Hearing	Compliance Status
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. ❖ Three solar based drinking water supply system has been installed in Kendumundi, Suryagarh and Durmusi Villages to provide safe drinking water to the villagers .

4	Health	❖ During COVID-19 Pandemic Situation, Public announcement has been carried out along with leaflet distribution and fixation of banners in 30 villages of three GPs in order to create awareness on COVID. Besides, 17000 face masks & 3500 soaps have been supplied to the villagers including Govt. officials, fumigation carried out in four villages. Extended financial support to Th.Rampur block for production and distribution of 60000 masks through Women Self Help Groups of this area. ❖ 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. ❖ 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. ❖ During the second wave of corona, 2000 face masks were distributed to the villagers of 34 villages. Public announcement has been carried out in 34 villages of three GPs of Th.Rampur block to create awareness on COVID ❖ One masonary drain was constructed in Brahmanichanchara Village for smooth drainage of waste water.
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. Three new CC Roads were constructed in Kendumundi Village.
8	Education	❖ In order to increase school enrolment we are organizing awareness rally and prabesh utshabs in our peripheral schools every year and supplying school bags, study materials etc. during these occasion. Similarly to reduce school drop outs parents counseling meets were organized every year. Efforts have been given for strengthening school management committees. Schools were supplied with sports materials for attracting the students towards schools. School furniture has been supplied to one of the private high school of Karlapat GP. Awareness on Education has been created among the villagers through street plays and wall writings.
9	Alternate Grazing Field	❖ Plantation of fodder species in 3 Ha land out of 5 Ha available land at the extreme south of ML area is being taken up. The said area has been demarcated and plantation of different species of grasses are being done after loosening of hard laterite and spreading of top soil.
10	Plantation	❖ Plantation is being taken up in the Mine slope including a 7.5 meter safety zone.The remaining area will be covered progressively in phase wise manner as per the Scheme of Mining.
11	Compensation for the displaced	❖ There is no displacement due to the project.

12	Local Office and Grievance Cell	❖ A Grievance cell has been formed by the company by taking representative from Plant & Mines CSR & Admn., dept. They are mostly handling all the issues relating to employment and peripheral development.
13	Protection of environment	❖ Suitable environment plan has been formulated and continuously upgraded to mitigate the impact of different components of the Environment such as air, water, soil. Conditions in different authorizations obtained from statutory authorities have been complied to restoration and betterment of environment.
14	Other Peripheral Development	❖ Under Farm based livelihood activities,160 HHs are supported for Improved Paddy Cultivation, 30 HHs for Improved Pulses Cultivation , 57 HHs for Promotion of Nutrition Gardens, 25 HHs for Integrated Vegetable Cultivation , 20 HHs for Orchard development, 20 HHs for Goat rearing, 50 HHs for Sweet Potato Cultivation, 65 HHs for millet cultivation and 50 HHs for Poultry rearing in the villages of Kendumundi, Kanarpas, Chirika, Durmusi & Suryagarh . Alongwith organizing Capacity building training for the farmers of farm based livelihood activitis. ❖ Nine Ponds were de-silted in the villages like Gopinathpur, Phatkimahul, Chingdiphas, Musajhal, Adri, Kendumundi and Rajamunda of Th.Rampur block.

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 mts	0.8 mtrs	1 mtr
02	Drain work at the back side of OB dump	1922 mtrs	2.8 mtrs	1 mtr
03	Drain work at ore stack yard	353 mtrs	2.7 mtrs	1 mtr
04	Drain work at haul road towards OB dump	1000 mtrs	2 mtrs	0.6 mtr
05	Wall beside the cave	385 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	426 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	600 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

ADITYA BIRLA

UTKAL ALUMINA

Ref: UAIL-Mines/BBM/28/2020

14th 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

RIGHT TO INFORMATION

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 Daphlimali 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,

13.01.2020

Dr. H. B. Sahu

To,
Mr. Mukesh Kumar Jha
General Manager (Mines)
Baphlimali Bauxite Mines, UAIL
At: Doraguda
Post : Kuchaipadar- 765 015
Dist.: Rayagada

फोन Phone : (0661) 2476773, फैक्स Fax : (0661) 2462022, वेबसाइट Website : www.nitrkl.ac.in

Verification Report on the Implementation of the Scientific Study of Surface and Ground Water Management nt 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^3) is very insignificant compared to that of total leasehold area during the monsoon, which is 90.07 lakh m^3.

Observation 2:

The maximum runoff likely to be generated in a single month in the monsoon is likely to be 25.51 Lakh m^3 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^3 considering a maximum rainfall of 40mm per hour. The existing settling pit near the crusherof 12 m x 8m size with a depth of 4m is inadequate to handle the runoff likely to be generated. Its size is required to be enhanced to (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 m^3/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 1800m^3 capacity each (30m x 15m x 4m) to handle the runoff.Garland drains of 545m x 1m x 1m is required to be constructed to channelize the runoff to the settling ponds. The water after settling may be allowed to flow outside since it has been found that there is no significant contamination of the water bodies downstream.

Current Status: Implemented

The existing settling pit near the mine entrance has been enhanced to 40m x 21m x 4m to accommodate 3360 m^3 of runoff (Fig.2). A new settling pit of 38m x 20m x 4m depth has been constructed to accommodate 3040 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 2nd 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^3 per hour. A drain of 1170m having width and depth of of 4m and 2m respectively is proposed to be constructed in R3 region on the western side parallel to the existing of conveyor belt to arrest the surface runoff generated within this region and channelize it to quarry 1. As the flow of runoff is towards the bauxite storage, crusher and conveyor belt, therefore there is maximum possibility of intermixing of surface runoff with that of bauxite ore. The bauxite storage site, and crusher plant and ancillary facilities are covering very small portions of the total area of R3 region. Culverts/hume pipes are required to be provided where the drain crosses the road.

Current Status: Implemented

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

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

Recommendation 4:

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

Current Status: There is no change in this region.

Recommendation 5:

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

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

Recommendations 6:

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

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

Current Status: Implemented.

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

Figure 6: Photographic view of reconstriction of the retaining wall

Figure 7: Renovated settling pits

Recommendation 7 :

A part of the runoff from this dump is flowing to the quarry. However, nearly 4500 m^3 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^3. The quarry sump has the capacity to accommodate 1.54 Lakh m^3 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 nalla. 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^3 to 1,35,000 m^3 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^3 of runoff during monsoon.

Current Status: Implemented

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

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

Figure 9b: Photographic view of the reconstructed check dam

Recommendation 10;

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

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

Recommendation 11:

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

Status: Implemented

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

Recommendation 12:

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

Status: Implemented

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

Figure 10: Fencing around the setting 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 dameic 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 aopropriate 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 tunoff from the settling pits to the Quarries.

Vast amount of plantation has been carried out op the backfilind 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)

Visiontek Consnltancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

- Infrastructure Enginering
- Water Resource Management
- Environmental & Social Study
- Surface & Sub-Surface Investigation
- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: ENVLAB/21/R-0365 Date: 03.05.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S1: Near Crusher	Sampled hy	VCSPL'S Representative
Sample Deseription	Ambient Air	Sampling Procedure	IS 5182
Sample Source	Baphlimali Mines, UAIL	Sample Received on	08.04.201, 10.04.2021, 14.04.2021, 16.04.201, 20.04.2021, 22.04.2021, 27.04.2021, 29.04.2021
Sample Condition	Gasoous Sample Solution Refrigerated	Latitude : N19°20.915′ Longitnde : E82°58.543′ Altitude : 999.74 m.	
Sampliug Date	07.04.201, 09.04.2021, 13.04.2021, 15.04.201, 19.04.2021, 21.04.2021, 26.04.2021, 28.04.2021	Test Completed on	13.04.2021 to 03.05.2021

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ag/m^3)
1	07.04.2021	68.0	38.3	11.8	18.4	0.47	5.6	BDL	BDL	BDL	BDL	BDL	BDL
2	09.04.2021	73.0	41.0	13.2	21.2	0.52	6.1	BDL	BDL	BDL	BDL	BDL	BDL
3	13.04.2021	80.0	44.7	10.4	19.7	0.55	5.8	BDL	BDL	BDL	BDL	BDL	BDL
4	15.04.2021	71.0	39.4	10.7	20.5	0.51	6.0	BDL	BDL	BDL	BDL	BDL	BDL
5	19.04.2021	66.0	37.1	9.5	17.1	0.47	6.5	BDL	BDL	BDL	BDL	BDL	BDL
6	21.04.2021	63.0	35.6	11.2	19.4	0.53	5.7	BDL	BDL	BDL	BDL	BDL	BDL
7	26.04.2021	74.0	41.2	9.7	18.7	0.44	5.3	BDL	BDL	BDL	BDL	BDL	BDL
8	28.04.2021	67.0	37.7	10.2	20.3	0.47	6.6	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		70.3	39.4	10.8	19.4	0.50	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-I	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	IS 5182 (Part-10):1999	Chemical Method	Indo Phenol Blue Method	Absorption & Desorption followed by GC analysis	Solvent extraction followed by Gas Chromtography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

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

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Visiontek Consultancy Services Pvt. Ltd. BBSR *Reviewed by*

Visiontek Consultancy Services Pvt. Ltd. BBSR *Approved by*

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhnbaneswar, Khnrda, Odisha-751024, India. Tel.: 0674-3511721
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Visiontek Consnltancy Services Pvt. Ltd.

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Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

- Infrastructure Enginering
- Water Resource Management
- Environmental & Social Study
- Surface & Sub-Surface Investigation
- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: ENVLAB/21/R-0366 **Date: 03.05.2021**

TEST REPORT

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

SAMPLE DETAILS

Sampie Location & Code	**S2: Mining Pit**	**Sampled by**	**VCSPL'S Representative**
Sample Dcscription	**Ambieut Air**	**Sampiing Procedure**	**IS 5182**
Sample Souree	**Baphlimali Mines, UAIL**	**Sample Received on**	**08.04.201, 10.04.2021, 14.04.2021, 16.04.201, 20.04.2021, 22.04.2021, 27.04.2021, 29.04.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.773' Longitude : E82°58.332' Altitude : 974.45 m.**	
Sampling Date	**07.04.201, 09.04.2021, 13.04.2021, 15.04.201, 19.04.2021, 21.04.2021, 26.04.2021, 28.04.2021**	**Test Completed on**	**13.04.2021 to 03.05.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	07.04.2021	71.0	39.7	12.3	21.8	0.46	6.7	BDL	BDL	BDL	BDL	BDL	BDL
2	09.04.2021	64.0	35.5	10.7	18.6	0.44	6.3	BDL	BDL	BDL	BDL	BDL	BDL
3	13.04.2021	69.0	38.2	11.6	22.1	0.52	5.8	BDL	BDL	BDL	BDL	BDL	BDL
4	15.04.2021	76.0	42.4	11.2	19.7	0.45	6.6	BDL	BDL	BDL	BDL	BDL	BDL
5	19.04.2021	72.0	40.1	13.4	21.4	0.42	6.1	BDL	BDL	BDL	BDL	BDL	BDL
6	21.04.2021	81.0	45.7	12.6	18.3	0.51	6.4	BDL	BDL	BDL	BDL	BDL	BDL
7	26.04.2021	73.0	41.0	10.8	18.7	0.47	5.7	BDL	BDL	BDL	BDL	BDL	BDL
8	28.04.2021	68.0	38.6	10.2	19.2	0.43	6.2	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		71.8	40.2	11.6	20.0	0.46	6.2	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) RA2017	IS 5182 (Part-6) RA2017	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 an EPM 2000 or Equivalent filter Paper		

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

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-0367 **Date: 03.05.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**S3: Near Office**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ambieot Air**	**Sampling Procedure**	**IS 5182**
Sample Sonrce	**Bapblimali Mines, UAIL**	**Sample Received on**	**08.04.201, 10.04.2021, 14.04.2021, 16.04.201, 20.04.2021, 22.04.2021, 27.04.2021, 29.04.2021**
Sampie Condition	**Gaseons Sample Solution Refrigerated**	**Latitude : N19°20.366′ Longitnde : E82°58.874′ Altitude : 955.24 m.**	
Sampling Date	**07.04.201, 09.04.2021, 13.04.2021, 15.04.201, 19.04.2021, 21.04.2021, 26.04.2021, 28.04.2021**	**Test Completed on**	**13.04.2021 to 03.05.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	07.04.2021	60.0	32.5	6.2	13.1	0.46	6.4	BDL	BDL	BDL	BDL	BDL	BDL
2	09.04.2021	56.0	30.4	5.6	10.6	0.38	5.4	BDL	BDL	BDL	BDL	BDL	BDL
3	13.04.2021	63.0	34.7	7.3	11.2	0.44	5.7	BDL	BDL	BDL	BDL	BDL	BDL
4	15.04.2021	61.0	32.0	7.8	11.7	0.47	6.2	BDL	BDL	BDL	BDL	BDL	BDL
5	19.04.2021	54.0	29.4	6.1	12.4	0.52	5.3	BDL	BDL	BDL	BDL	BDL	BDL
6	21.04.2021	58.0	31.3	5.7	9.8	0.54	5.5	BDL	BDL	BDL	BDL	BDL	BDL
7	26.04.2021	65.0	34.7	6.4	10.3	0.51	6.1	BDL	BDL	BDL	BDL	BDL	BDL
8	28.04.2021	57.0	29.8	6.8	11.6	0.48	5.8	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		59.3	31.9	6.5	11.3	0.48	5.8	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) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_x< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Visiontek Consultancy Services Pvt. Ltd. — Reviewed by

Visiontek Consultancy Services Pvt. Ltd. — Approved By

Visiontek Consultancy Services Pvt. Ltd.

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Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

- Infrastructure Enginering
- Water Resource Management
- Environmental & Social Study
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- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Expiration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: ENVLAB/21/R-0368 Date: 03.05.2021

TEST REPORT

Cnstomer Name & Address : **Haplilimali Mines, M/s Utkal Alnmina International Ltd, Tikiri, Rayagada, Odisha**

SAMPLE DETAILS

Sample Location & Code	S4: Near Weigb Bridge	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182
Sample Source	Baphiimali Mines, UAIL	Sample Received on	08.04.201, 10.04.2021, 14.04.2021, 16.04.201, 20.04.2021, 22.04.2021, 27.04.2021, 29.04.2021
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude : N19°21.079' Longitude : E82°58.775' Altitude : 993.95 m'	
Sampling Date	07.04.201, 09.04.2021, 13.04.2021, 15.04.201, 19.04.2021, 21.04.2021, 26.04.2021, 28.04.2021	Test Completed on	13.04.2021 to 03.05.2021

Sl. No.	Sampliug Date	Parameters											
		Particnlate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Snipbur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	07.04.2021	78.0	43.6	12.5	21.6	0.53	6.8	BDL	BDL	BDL	BDL	BDL	BDL
2	09.04.2021	71.0	39.2	11.8	19.7	0.49	6.2	BDL	BDL	BDL	BDL	BDL	BDL
3	13.04.2021	82.0	46.0	14.3	23.2	0.54	7.3	BDL	BDL	BDL	BDL	BDL	BDL
4	15.04.2021	77.0	43.5	12.0	20.5	0.56	6.6	BDL	BDL	BDL	BDL	BDL	BDL
5	19.04.2021	80.0	44.8	12.7	21.3	0.63	7.0	BDL	BDL	BDL	BDL	BDL	BDL
6	21.04.2021	86.0	48.6	11.3	18.8	0.58	6.4	BDL	BDL	BDL	BDL	BDL	BDL
7	26.04.2021	73.0	41.3	10.4	19.0	0.55	6.i	BDL	BDL	BDL	BDL	BDL	BDL
8	28.04.2021	79.0	44.7	11.2	18.4	0.62	6.5	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		78.3	44.0	12.0	20.3	0.56	6.6	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-I	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Visiontek Consultancy Services Pvt. Ltd. BBSR *Reviewed by*

Visiontek Consultancy Services Pvt. Ltd. BBSR *Approved by*

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
E-mail: visiontek@vcspl.org, visiontekin@gmail.com
Visit us at: www.vcspl.org

Test Report No: ENVLAB/21/R-1606 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 18.05.2021, 21.06.2021, 27.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.915´ Longitude : E82°58.543´ Altitude : 999.74 m.**	
Sampling Date	**03.05.2021, 06.05.2021, 10.05.2021, 12.05.2021, 17.05.2021, 20.06.2021, 26.05.2021, 28.05.2021**	**Test Completed on**	**10.05.2021 to 03.06.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	03.05.2021	74.0	40.4	12.2	19.3	0.51	5.4	BDL	BDL	BDL	BDL	BDL	BDL
2	06.05.2021	65.0	36.2	9.4	16.7	0.44	6.7	BDL	BDL	BDL	BDL	BDL	BDL
3	10.05.2021	73.0	40.7	8.8	17.2	0.48	6.3	BDL	BDL	BDL	BDL	BDL	BDL
4	12.05.2021	79.0	44.0	11.3	21.4	0.52	5.5	BDL	BDL	BDL	BDL	BDL	BDL
5	17.05.2021	71.0	39.3	9.1	18.6	0.46	5.1	BDL	BDL	BDL	BDL	BDL	BDL
6	20.06.2021	76.0	42.0	10.7	16.8	0.39	6.6	BDL	BDL	BDL	BDL	BDL	BDL
7	26.05.2021	69.0	38.2	12.0	21.3	0.43	7.2	BDL	BDL	BDL	BDL	BDL	BDL
8	28.05.2021	64.0	34.3	11.1	18.5	0.48	6.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		71.4	39.4	10.6	18.7	0.46	6.2	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-1607 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 18.05.2021, 21.06.2021, 27.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.773´ Longitude : E82°58.332´ Altitude : 974.45 m.**	
Sampling Date	**03.05.2021, 06.05.2021, 10.05.2021, 12.05.2021, 17.05.2021, 20.06.2021, 26.05.2021, 28.05.2021**	**Test Completed on**	**10.05.2021 to 03.06.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	03.05.2021	76.0	42.0	11.7	20.4	0.53	7.1	BDL	BDL	BDL	BDL	BDL	BDL
2	06.05.2021	83.0	46.6	13.2	22.5	0.57	6.5	BDL	BDL	BDL	BDL	BDL	BDL
3	10.05.2021	71.0	39.4	10.6	18.8	0.51	6.8	BDL	BDL	BDL	BDL	BDL	BDL
4	12.05.2021	67.0	36.8	11.4	21.2	0.48	6.2	BDL	BDL	BDL	BDL	BDL	BDL
5	17.05.2021	74.0	41.0	8.7	17.6	0.54	5.7	BDL	BDL	BDL	BDL	BDL	BDL
6	20.06.2021	79.0	45.3	9.2	19.2	0.56	7.3	BDL	BDL	BDL	BDL	BDL	BDL
7	26.05.2021	72.0	40.7	10.3	16.5	0.52	7.8	BDL	BDL	BDL	BDL	BDL	BDL
8	28.05.2021	66.0	37.2	10.8	21.0	0.49	6.1	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		73.5	41.1	10.7	19.7	0.53	6.7	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 µg/m^3, NO_X< 9 µg/m^3, O_3<4 µg/m^3, NH_3<20 µg/m^3, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 µg/m^3, BaP<0.002 ng/m^3, Pb<0.001 µg/m^3, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-1608 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**S3: Near Office**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ambient Air**	**Sampling Procedure**	**IS 5182**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 18.05.2021, 21.06.2021, 27.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.366´ Longitude : E82°58.874´ Altitude : 955.24 m.**	
Sampling Date	**03.05.2021, 06.05.2021, 10.05.2021, 12.05.2021, 17.05.2021, 20.06.2021, 26.05.2021, 28.05.2021**	**Test Completed on**	**10.05.2021 to 03.06.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	03.05.2021	55.0	28.8	7.6	13.8	0.39	5.8	BDL	BDL	BDL	BDL	BDL	BDL
2	06.05.2021	61.0	33.0	8.3	14.6	0.47	6.2	BDL	BDL	BDL	BDL	BDL	BDL
3	10.05.2021	58.0	31.5	5.4	10.6	0.51	6.6	BDL	BDL	BDL	BDL	BDL	BDL
4	12.05.2021	51.0	27.7	6.3	9.7	0.46	6.1	BDL	BDL	BDL	BDL	BDL	BDL
5	17.05.2021	63.0	34.4	6.8	11.3	0.49	5.4	BDL	BDL	BDL	BDL	BDL	BDL
6	20.06.2021	57.0	30.3	5.2	10.6	0.53	6.0	BDL	BDL	BDL	BDL	BDL	BDL
7	26.05.2021	60.0	32.6	7.0	12.3	0.44	5.3	BDL	BDL	BDL	BDL	BDL	BDL
8	28.05.2021	65.0	35.3	7.7	13.0	0.42	5.7	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		58.8	31.7	6.8	12.0	0.46	5.9	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-1609 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 18.05.2021, 21.06.2021, 27.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°21.079'** **Longitude : E82°58.775'** **Altitude : 993.95 m'**	
Sampling Date	**03.05.2021, 06.05.2021, 10.05.2021, 12.05.2021, 17.05.2021, 20.06.2021, 26.05.2021, 28.05.2021**	**Test Completed on**	**10.05.2021 to 03.06.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	03.05.2021	83.0	45.8	13.7	22.4	0.57	6.2	BDL	BDL	BDL	BDL	BDL	BDL
2	06.05.2021	75.0	41.0	11.5	18.6	0.64	6.7	BDL	BDL	BDL	BDL	BDL	BDL
3	10.05.2021	79.0	43.7	9.6	18.1	0.61	6.1	BDL	BDL	BDL	BDL	BDL	BDL
4	12.05.2021	85.0	47.2	12.3	20.7	0.56	7.4	BDL	BDL	BDL	BDL	BDL	BDL
5	17.05.2021	72.0	39.5	10.6	19.5	0.48	6.5	BDL	BDL	BDL	BDL	BDL	BDL
6	20.06.2021	80.0	43.8	12.8	21.4	0.54	7.7	BDL	BDL	BDL	BDL	BDL	BDL
7	26.05.2021	77.0	42.0	10.3	18.7	0.63	5.8	BDL	BDL	BDL	BDL	BDL	BDL
8	28.05.2021	71.0	39.6	8.7	17.3	0.58	6.3	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		77.8	42.8	11.2	19.6	0.58	6.6	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 µg/m^3, NO_X< 9 µg/m^3, O_3<4 µg/m^3, NH_3<20 µg/m^3, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 µg/m^3, BaP<0.002 ng/m^3, Pb<0.001 µg/m^3, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-2770 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**03.06.2021, 07.06.2021, 10.06.2021, 14.06.2021, 16.06.2021, 21.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.915´ Longitude : E82°58.543´ Altitude : 999.74 m.**	
Sampling Date	**02.06.2021, 05.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 22.06.2021, 24.06.2021, 28.06.2021**	**Test Completed on**	**08.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.06.2021	40.0	22.4	7.8	15.6	0.38	6.8	BDL	BDL	BDL	BDL	BDL	BDL
2	05.06.2021	53.0	28.4	9.2	16.2	0.46	5.1	BDL	BDL	BDL	BDL	BDL	BDL
3	09.06.2021	49.0	26.2	9.5	18.1	0.41	6.6	BDL	BDL	BDL	BDL	BDL	BDL
4	11.06.2021	39.0	20.1	7.1	14.3	0.33	7.1	BDL	BDL	BDL	BDL	BDL	BDL
5	15.06.2021	47.0	24.7	8.3	15.5	0.39	6.2	BDL	BDL	BDL	BDL	BDL	BDL
6	18.06.2021	51.0	28.2	9.4	19.2	0.52	5.7	BDL	BDL	BDL	BDL	BDL	BDL
7	22.06.2021	46.0	23.3	8.6	17.7	0.40	5.4	BDL	BDL	BDL	BDL	BDL	BDL
8	24.06.2021	41.0	21.7	8.0	15.8	0.38	4.8	BDL	BDL	BDL	BDL	BDL	BDL
9	28.06.2021	45.0	23.4	7.5	16.3	0.32	5.3	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		45.7	24.3	8.4	16.5	0.40	5.9	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-9 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-2771 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**03.06.2021, 07.06.2021, 10.06.2021, 14.06.2021, 16.06.2021, 21.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.773´ Longitude : E82°58.332´ Altitude : 974.45 m.**	
Sampling Date	**02.06.2021, 05.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 22.06.2021, 24.06.2021, 28.06.2021**	**Test Completed on**	**08.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.06.2021	39.0	21.7	8.7	14.8	0.42	5.4	BDL	BDL	BDL	BDL	BDL	BDL
2	05.06.2021	48.0	25.6	11.3	19.2	0.51	5.7	BDL	BDL	BDL	BDL	BDL	BDL
3	09.06.2021	42.0	22.8	10.2	20.6	0.44	6.6	BDL	BDL	BDL	BDL	BDL	BDL
4	11.06.2021	34.0	18.3	7.6	15.7	0.39	4.7	BDL	BDL	BDL	BDL	BDL	BDL
5	15.06.2021	41.0	22.2	8.1	16.3	0.46	5.2	BDL	BDL	BDL	BDL	BDL	BDL
6	18.06.2021	46.0	24.7	9.6	18.0	0.54	5.8	BDL	BDL	BDL	BDL	BDL	BDL
7	22.06.2021	32.0	18.0	7.7	15.6	0.47	5.0	BDL	BDL	BDL	BDL	BDL	BDL
8	24.06.2021	44.0	24.0	9.0	16.4	0.41	6.4	BDL	BDL	BDL	BDL	BDL	BDL
9	28.06.2021	38.0	20.6	7.3	13.7	0.37	5.3	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		40.4	22.0	8.8	16.7	0.45	5.6	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-2772 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**03.06.2021, 07.06.2021, 10.06.2021, 14.06.2021, 16.06.2021, 21.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.366′ Longitude : E82°58.874′ Altitude : 955.24 m.**	
Sampling Date	**02.06.2021, 05.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 22.06.2021, 24.06.2021, 28.06.2021**	**Test Completed on**	**08.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.06.2021	33.0	17.7	5.4	11.7	0.31	6.1	BDL	BDL	BDL	BDL	BDL	BDL
2	05.06.2021	45.0	24.2	6.2	13.2	0.35	4.8	BDL	BDL	BDL	BDL	BDL	BDL
3	09.06.2021	39.0	21.4	6.7	12.5	0.44	5.3	BDL	BDL	BDL	BDL	BDL	BDL
4	11.06.2021	32.0	17.8	4.8	10.4	0.32	5.7	BDL	BDL	BDL	BDL	BDL	BDL
5	15.06.2021	37.0	20.6	5.5	10.7	0.26	4.8	BDL	BDL	BDL	BDL	BDL	BDL
6	18.06.2021	42.0	22.2	7.2	13.8	0.35	5.7	BDL	BDL	BDL	BDL	BDL	BDL
7	22.06.2021	36.0	19.5	5.1	12.4	0.28	5.2	BDL	BDL	BDL	BDL	BDL	BDL
8	24.06.2021	39.0	21.3	5.5	11.6	0.37	6.0	BDL	BDL	BDL	BDL	BDL	BDL
9	28.06.2021	41.0	22.6	6.0	12.3	0.33	4.7	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		38.2	20.8	5.8	12.1	0.33	5.4	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-9 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-2773 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**03.06.2021, 07.06.2021, 10.06.2021, 14.06.2021, 16.06.2021, 21.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°21.079'** **Longitude : E82°58.775'** **Altitude : 993.95 m'**	
Sampling Date	**02.06.2021, 05.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 22.06.2021, 24.06.2021, 28.06.2021**	**Test Completed on**	**08.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.06.2021	48.0	25.7	8.8	17.4	0.44	6.6	BDL	BDL	BDL	BDL	BDL	BDL
2	05.06.2021	56.0	29.8	10.2	19.7	0.53	5.4	BDL	BDL	BDL	BDL	BDL	BDL
3	09.06.2021	51.0	27.4	9.1	17.7	0.47	5.8	BDL	BDL	BDL	BDL	BDL	BDL
4	11.06.2021	44.0	23.8	8.3	15.5	0.39	6.2	BDL	BDL	BDL	BDL	BDL	BDL
5	15.06.2021	49.0	26.4	8.7	18.2	0.45	7.1	BDL	BDL	BDL	BDL	BDL	BDL
6	18.06.2021	54.0	29.5	10.4	20.1	0.51	6.5	BDL	BDL	BDL	BDL	BDL	BDL
7	22.06.2021	43.0	22.8	7.8	16.4	0.48	5.7	BDL	BDL	BDL	BDL	BDL	BDL
8	24.06.2021	49.0	26.6	9.3	16.8	0.42	7.0	BDL	BDL	BDL	BDL	BDL	BDL
9	28.06.2021	42.0	22.5	8.2	15.3	0.38	6.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		48.4	26.1	9.0	17.5	0.45	6.3	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-9 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-3396 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.07.2021, 09.07.2021, 12.07.2021, 13.07.2021, 15.07.2021, 29.07.2021, 31.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.915´ Longitude : E82°58.543´ Altitude : 999.74 m.**	
Sampling Date	**02.07.2021, 08.07.2021, 09.07.2021, 12.07.2021, 14.07.2021, 28.07.2021, 30.07.2021**	**Test Completed on**	**08.07.2021 to 03.08.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.07.2021	44.0	23.8	8.1	17.1	0.44	5.2	BDL	BDL	BDL	BDL	BDL	BDL
2	08.07.2021	46.0	24.7	6.7	15.3	0.51	5.7	BDL	BDL	BDL	BDL	BDL	BDL
3	09.07.2021	42.0	22.3	6.2	14.6	0.38	6.1	BDL	BDL	BDL	BDL	BDL	BDL
4	12.07.2021	48.0	26.0	8.4	15.7	0.43	6.5	BDL	BDL	BDL	BDL	BDL	BDL
5	14.07.2021	52.0	28.0	6.8	14.8	0.40	5.4	BDL	BDL	BDL	BDL	BDL	BDL
6	28.07.2021	41.0	22.4	6.1	15.7	0.35	4.7	BDL	BDL	BDL	BDL	BDL	BDL
7	30.07.2021	49.0	26.3	7.3	16.1	0.39	6.1	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		46.0	24.8	7.1	15.6	0.41	5.7	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-7 are **Time Weighted Average.**

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-3397 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.07.2021, 09.07.2021, 12.07.2021, 13.07.2021, 15.07.2021, 29.07.2021, 31.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.773´ Longitude : E82°58.332´ Altitude : 974.45 m.**	
Sampling Date	**02.07.2021, 08.07.2021, 09.07.2021, 12.07.2021, 14.07.2021, 28.07.2021, 30.07.2021**	**Test Completed on**	**08.07.2021 to 03.08.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.07.2021	45.0	24.6	10.2	19.3	0.46	5.7	BDL	BDL	BDL	BDL	BDL	BDL
2	08.07.2021	50.0	27.3	8.4	17.5	0.39	6.2	BDL	BDL	BDL	BDL	BDL	BDL
3	09.07.2021	47.0	25.8	7.8	15.6	0.42	5.3	BDL	BDL	BDL	BDL	BDL	BDL
4	12.07.2021	40.0	21.7	9.2	18.2	0.37	5.6	BDL	BDL	BDL	BDL	BDL	BDL
5	14.07.2021	46.0	24.0	8.6	16.5	0.35	4.4	BDL	BDL	BDL	BDL	BDL	BDL
6	28.07.2021	37.0	20.2	6.7	14.5	0.48	5.1	BDL	BDL	BDL	BDL	BDL	BDL
7	30.07.2021	41.0	22.6	7.2	15.7	0.43	4.8	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		43.7	23.7	8.3	16.8	0.41	5.3	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 µg/m³, NO_X< 9 µg/m³, O_3<4 µg/m³, NH_3<20 µg/m³, Ni<0.01 ng/m³, As < 0.001 ng/m³, C_6H_6<0.001 µg/m³, BaP<0.002 ng/m³, Pb<0.001 µg/m³, CO-<0.1 mg/m³

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-7 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-3398 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.07.2021, 09.07.2021, 12.07.2021, 13.07.2021, 15.07.2021, 29.07.2021, 31.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°20.366´ Longitude : E82°58.874´ Altitude : 955.24 m.**	
Sampling Date	**02.07.2021, 08.07.2021, 09.07.2021, 12.07.2021, 14.07.2021, 28.07.2021, 30.07.2021**	**Test Completed on**	**08.07.2021 to 03.08.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.07.2021	38.0	20.7	6.5	13.8	0.29	5.4	BDL	BDL	BDL	BDL	BDL	BDL
2	08.07.2021	43.0	23.3	6.1	11.6	0.34	4.6	BDL	BDL	BDL	BDL	BDL	BDL
3	09.07.2021	40.0	21.6	5.7	11.3	0.37	6.1	BDL	BDL	BDL	BDL	BDL	BDL
4	12.07.2021	36.0	19.8	5.0	9.8	0.28	5.3	BDL	BDL	BDL	BDL	BDL	BDL
5	14.07.2021	44.0	23.7	6.4	12.1	0.33	6.0	BDL	BDL	BDL	BDL	BDL	BDL
6	28.07.2021	35.0	19.0	4.4	9.5	0.31	4.7	BDL	BDL	BDL	BDL	BDL	BDL
7	30.07.2021	39.0	21.4	4.8	10.7	0.26	5.1	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		39.3	21.4	5.6	11.3	0.31	5.3	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 µg/m³, NO_X< 9 µg/m³, O_3<4 µg/m³, NH_3<20 µg/m³, Ni<0.01 ng/m³, As < 0.001 ng/m³, C_6H_6<0.001 µg/m³, BaP<0.002 ng/m³, Pb<0.001 µg/m³, CO-<0.1 mg/m³

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-7 are **Time Weighted Average.**

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-3399 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.07.2021, 09.07.2021, 12.07.2021, 13.07.2021, 15.07.2021, 29.07.2021, 31.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N19°21.079'** **Longitude : E82°58.775'** **Altitude : 993.95 m'**	
Sampling Date	**02.07.2021, 08.07.2021, 09.07.2021, 12.07.2021, 14.07.2021, 28.07.2021, 30.07.2021**	**Test Completed on**	**08.07.2021 to 03.08.2021**

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.07.2021	41.0	22.7	9.6	18.5	0.41	6.2	BDL	BDL	BDL	BDL	BDL	BDL
2	08.07.2021	53.0	28.6	11.2	20.3	0.36	4.7	BDL	BDL	BDL	BDL	BDL	BDL
3	09.07.2021	47.0	25.3	8.7	16.5	0.42	5.6	BDL	BDL	BDL	BDL	BDL	BDL
4	12.07.2021	50.0	27.0	8.2	17.2	0.35	6.5	BDL	BDL	BDL	BDL	BDL	BDL
5	14.07.2021	55.0	29.7	6.4	15.7	0.46	6.3	BDL	BDL	BDL	BDL	BDL	BDL
6	28.07.2021	44.0	23.5	7.1	16.3	0.31	4.5	BDL	BDL	BDL	BDL	BDL	BDL
7	30.07.2021	39.0	21.4	6.5	15.6	0.38	5.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		47.0	25.5	8.2	17.2	0.38	5.6	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-7 are **Time Weighted Average.**

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Visiontek Consnltancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

- Infrastructure Enginering
- Water Resource Management
- Environmental & Social Study
- Surface & Sub-Surface Investigation
- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-4627 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Loeation & Code	S1: Near Crusher	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182
Sample Source	Baphlimali Mines, UAIL	Sample Received ou	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 19.08.2021, 24.08.2021, 26.08.2021
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude : N19°20.915′ Longitude : E82°58.543′ Altitude : 999.74 m.	
Sampling Date	02.08.2021, 04.08.2021, 09.08.2021, 11.08.2021, 16.08.2021, 18.08.2021, 23.08.2021, 25.08.2021	Test Completcd on	06.08.2021 to 31.08.2021

Sl. No.	Sampling Date	Parameters											
		Particnlate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.08.2021	41.0	22.7	7.6	13.8	0.38	6.4	BDL	BDL	BDL	BDL	BDL	BDL
2	04.08.2021	37.0	20.3	7.1	14.2	0.42	5.1	BDL	BDL	BDL	BDL	BDL	BDL
3	09.08.2021	45.0	25.0	6.6	14.5	0.47	5.5	BDL	BDL	BDL	BDL	BDL	BDL
4	11.08.2021	51.0	28.4	9.2	16.1	0.39	5.8	BDL	BDL	BDL	BDL	BDL	BDL
5	16.08.2021	46.0	25.4	7.3	13.7	0.44	4.4	BDL	BDL	BDL	BDL	BDL	BDL
6	18.08.2021	44.0	24.8	7.7	12.3	0.41	5.0	BDL	BDL	BDL	BDL	BDL	BDL
7	23.08.2021	49.0	27.3	8.0	14.4	0.36	6.2	BDL	BDL	BDL	BDL	BDL	BDL
8	25.08.2021	43.0	23.6	6.8	12.7	0.32	5.3	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		44.5	24.7	7.5	14.0	0.40	5.5	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		100	60	80	80	4	100	400	05	01	20	1.0	06
Testiug Method		IS 5182: Part 23	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	IS 5182 (Part-10):1999	Chemical Method	Indo Phenol Biue 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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

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- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-4628 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

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	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 19.08.2021, 24.08.2021, 26.08.2021
Sampie Condition	Gaseous Sample Soiution Refrigerated	Latitude : N19°20.773′ Longitude : E82°58.332′ Altitude : 974.45 m.	
Sampling Date	02.08.2021, 04.08.2021, 09.08.2021, 11.08.2021, 16.08.2021, 18.08.2021, 23.08.2021, 25.08.2021	Test Compieted on	06.08.2021 to 31.08.2021

Sl. No.	Sampling Date	Parameters											
		Partieulate Matter as PM_{10} ($\mu g/m^3$)	Partieuiate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.08.2021	47.0	25.8	8.7	17.5	0.42	4.8	BDL	BDL	BDL	BDL	BDL	BDL
2	04.08.2021	43.0	24.2	6.5	15.7	0.46	5.5	BDL	BDL	BDL	BDL	BDL	BDL
3	09.08.2021	52.0	28.6	9.4	19.2	0.41	6.0	BDL	BDL	BDL	BDL	BDL	BDL
4	11.08.2021	49.0	27.3	8.3	16.4	0.35	4.9	BDL	BDL	BDL	BDL	BDL	BDL
5	16.08.2021	44.0	24.7	6.7	14.2	0.44	5.6	BDL	BDL	BDL	BDL	BDL	BDL
6	18.08.2021	39.0	21.8	7.1	15.0	0.37	4.6	BDL	BDL	BDL	BDL	BDL	BDL
7	23.08.2021	46.0	25.5	6.2	12.6	0.41	5.2	BDL	BDL	BDL	BDL	BDL	BDL
8	25.08.2021	42.0	22.8	6.6	14.2	0.47	4.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		45.3	25.1	7.4	15.6	0.42	5.1	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ug/m^3, Ph<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are Time Weighted Average.

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
E-mail: visiontek@vcspl.org, visioutekin@gmail.com
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- Information Technology
- Public Health Engiuecring
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- Mineral/Sub-Soil Expioration
- Waste Management Serviees

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-4629 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

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 ou	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 19.08.2021, 24.08.2021, 26.08.2021
Sample Condition	Gaseons Sample Solution Refrigerated	Latitude : N19°20.366′ Lougitude : E82°58.874′ Altitude : 955.24 m.	
Sampling Date	02.08.2021, 04.08.2021, 09.08.2021, 11.08.2021, 16.08.2021, 18.08.2021, 23.08.2021, 25.08.2021	Test Completed on	06.08.2021 to 31.08.2021

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	02.08.2021	40.0	22.3	7.4	15.2	0.32	4.8	BDL	BDL	BDL	BDL	BDL	BDL
2	04.08.2021	37.0	20.7	5.8	12.6	0.28	5.2	BDL	BDL	BDL	BDL	BDL	BDL
3	09.08.2021	34.0	18.8	6.2	10.8	0.25	5.7	BDL	BDL	BDL	BDL	BDL	BDL
4	11.08.2021	38.0	21.0	6.6	13.2	0.31	4.6	BDL	BDL	BDL	BDL	BDL	BDL
5	16.08.2021	42.0	23.6	5.6	11.7	0.34	4.9	BDL	BDL	BDL	BDL	BDL	BDL
6	18.08.2021	36.0	19.8	5.1	12.3	0.26	5.3	BDL	BDL	BDL	BDL	BDL	BDL
7	23.08.2021	41.0	22.7	4.7	10.6	0.35	5.8	BDL	BDL	BDL	BDL	BDL	BDL
8	25.08.2021	39.0	21.4	5.2	11.3	0.31	4.7	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		38.4	21.3	5.8	12.2	0.30	5.1	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		100	60	80	80	4	100	400	05	0I	20	1.0	06
Testing Method		IS 5182: Part 23	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA20t7	IS 5182 (Part-10):1999	Chemieal 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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Ph<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Approved by

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- Mine Planning & Design
- Mineral/Sub-Soil Expluration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No Envlab/21/R-4630 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S4: Near Weigh Bridge	Sampled by	VCSPL'S Representative
Sample Descriptiou	Ambient Air	Sampling Procedure	IS 5182
Sample Source	Baphiimali Mines, UAIL	Sampie Received on	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 19.08.2021, 24.08.2021, 26.08.2021
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude : N19°21.079' Longitude : E82°58.775' Altitude : 993.95 m'	
Sampling Date	02.08.2021, 04.08.2021, 09.08.2021, 11.08.2021, 16.08.2021, 18.08.2021, 23.08.2021, 25.08.2021	Test Completed on	06.08.2021 to 31.08.2021

Sl. No.	Sampliug Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Partieulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ug/m^3)
1	02.08.2021	47.0	26.6	8.3	17.6	0.38	6.5	BDL	BDL	BDL	BDL	BDL	BDL
2	04.08.2021	42.0	23.8	6.7	16.1	0.44	5.3	BDL	BDL	BDL	BDL	BDL	BDL
3	09.08.2021	54.0	30.7	8.8	18.3	0.48	5.8	BDL	BDL	BDL	BDL	BDL	BDL
4	11.08.2021	49.0	27.2	6.5	14.8	0.42	4.7	BDL	BDL	BDL	BDL	BDL	BDL
5	16.08.2021	56.0	31.6	7.3	17.1	0.37	6.1	BDL	BDL	BDL	BDL	BDL	BDL
6	18.08.2021	43.0	24.3	7.7	15.6	0.41	5.2	BDL	BDL	BDL	BDL	BDL	BDL
7	23.08.2021	48.0	27.0	6.2	13.7	0.44	4.8	BDL	BDL	BDL	BDL	BDL	BDL
8	25.08.2021	44.0	24.8	6.5	13.2	0.41	5.5	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		47.9	27.0	7.3	15.8	0.42	5.5	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	CPCB Mannal	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	IS 5182 (Part-10):1999	Chemical Method	Indo Phenol Blue Method	Absorption & Besorption followed by GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Eqoivalent filter Paper		

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

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are Time Weighted Average.

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721

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- Water Resource Management
- Environmentai & Social Study
- Surface & Sub-Surface Investigatiou
- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engiueering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Service
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-5290 Date: 05.10.2021

TEST REPORT

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

SAMPLE DETAILS

Sampie Location & Code	S1: Near Crnsher	Sampied by	VCSPL'S Representative
Sampie Description	Ambient Air	Sampling Procednre	IS 5182
Sample Source	Baphlimali Mines, UAIL	Sample Received on	07.09.2021, 10.09.2021, 15.09.2021, 17.09.2021, 23.09.2021, 25.09.2021, 29.09.2021, 01.10.2021
Sample Condition	Gaseons Sample Soiution Refrigerated	Latitude : NI9°20.915′ Longitnde : E82°58.543′ Altitude : 999.74 m.	
Sampling Date	06.09.2021, 09.09.2021, 14.09.2021, 16.09.2021, 22.09.2021, 24.09.2021, 28.09.2021, 30.09.2021	Test Completed ou	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogeu as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ug/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	06.09.2021	48.0	26.6	6.8	12.7	0.41	5.6	BDL	BDL	BDL	BDL	BDL	BDL
2	09.09.2021	43.0	23.2	7.4	15.I	0.36	4.8	BDL	BDL	BDL	BDL	BDL	BDL
3	I4.09.2021	39.0	21.8	5.8	13.8	0.32	6.2	BDL	BDL	BDL	BDL	BDL	BDL
4	16.09.2021	47.0	26.0	7.3	15.6	0.43	5.7	BDL	BDL	BDL	BDL	BDL	BDL
5	22.09.2021	42.0	23.4	8.6	16.2	0.41	5.3	BDL	BDL	BDL	BDL	BDL	BDL
6	24.09.2021	48.0	26.8	5.8	14.7	0.32	6.1	BDL	BDL	BDL	BDL	BDL	BDL
7	28.09.2021	40.0	22.5	6.7	13.6	0.38	5.4	BDL	BDL	BDL	BDL	BDL	BDL
8	30.09.2021	39.0	21.7	7.2	14.8	0.31	6.2	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		43.3	24.0	7.0	14.6	0.37	5.7	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		I00	60	80	80	.4	100	400	05	01	20	I.0	06
Testing Method		IS 5182: Part 23	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	IS 5182 (Part-10):1999	Chemical Method	Indo Phenol Blue Method	Absorption & Desorption followed hy GC analysis	Solvent extraction followed by Gas Chromatography analysis	AAS method after sampling on EPM 2000 or Equivalent filter Paper		

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

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are Timc Weighted Average.

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Main Approved by

Piot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tei.: 0674-3511721
E-mail: visiontek@vcspl.org, visiontekin@gmail.com
Visit us at: www.vcspl.org

Test Report No: Envlab/21/R-5291

Date: 05.10.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S2: Mining Pit	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procednre	IS 5182
Sampie Source	Baphlimali Mines, UAIL	Sampie Received on	07.09.2021, 10.09.2021, 15.09.2021, 17.09.2021, 23.09.2021, 25.09.2021, 29.09.2021, 01.10.2021
Sample Condition	Gaseous Sample Solntion Refrigerated	Latitude : N19°20.773′ Longitnde : E82°58.332′ Aititude : 974.45 m.	
Sampling Date	06.09.2021, 09.09.2021, I4.09.2021, 16.09.2021, 22.09.2021, 24.09.2021, 28.09.2021, 30.09.2021	Test Completed on	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters											
		Partienlate Matter as PM_{10} ($\mu g/m^3$)	Partienlate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphnr Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ug/m^3)	Ni (og/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	06.09.2021	44.0	24.7	7.1	16.2	0.39	5.7	BDL	BDL	BDL	BDL	BDL	BDL
2	09.09.2021	49.0	27.5	8.2	18.1	0.44	6.2	BDL	BDL	BDL	BDL	BDL	BDL
3	14.09.2021	47.0	26.8	7.6	15.6	0.35	4.3	BDL	BDL	BDL	BDL	BDL	BDL
4	16.09.2021	53.0	29.6	10.2	19.5	0.47	6.5	BDL	BDL	BDL	BDL	BDL	BDL
5	22.09.2021	41.0	23.4	8.2	17.5	0.42	5.3	BDL	BDL	BDL	BDL	BDL	BDL
6	24.09.2021	46.0	25.8	6.6	14.6	0.46	5.8	BDL	BDL	BDL	BDL	BDL	BDL
7	28.09.2021	54.0	30.5	7.4	15.2	0.38	6.1	BDL	BDL	BDL	BDL	BDL	BDL
8	30.09.2021	51.0	29.0	8.5	16.7	0.42	5.4	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		48.1	27.2	8.0	16.7	0.42	5.7	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	IS 5182 (Part-10):1999	Chemical Method	Indo Pheuol 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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ng/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-i0, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Approved by

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- Water Resource Management
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- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-5292 Date: 05.10.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S3: Near Officc	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182
Sample Source	Baphlimali Mines, UAIL	Sample Received on	07.09.2021, 10.09.2021, 15.09.2021, 17.09.2021, 23.09.2021, 25.09.2021, 29.09.2021, 01.10.2021
Sample Conditiou	Gaseous Sample Solution Refrigerated	Latitude : N19°20.366′ Longitude : E82°58.874′ Aititude : 955.24 m.	
Sampling Date	06.09.2021, 09.09.2021, 14.09.2021, 16.09.2021, 22.09.2021, 24.09.2021, 28.09.2021, 30.09.2021	Test Completed on	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As (ng/m^3)
1	06.09.2021	35.0	19.8	6.4	12.1	0.35	4.4	BDL	BDL	BDL	BDL	BDL	BDL
2	09.09.2021	39.0	21.5	6.1	13.7	0.26	5.8	BDL	BDL	BDL	BDL	BDL	BDL
3	14.09.2021	42.0	23.7	5.7	9.5	0.31	6.3	BDL	BDL	BDL	BDL	BDL	BDL
4	16.09.2021	37.0	20.6	7.2	12.8	0.23	4.8	BDL	BDL	BDL	BDL	BDL	BDL
5	22.09.2021	44.0	24.4	6.4	11.2	0.32	5.4	BDL	BDL	BDL	BDL	BDL	BDL
6	24.09.2021	39.0	21.3	6.7	15.6	0.35	5.1	BDL	BDL	BDL	BDL	BDL	BDL
7	28.09.2021	45.0	25.7	5.3	12.4	0.29	5.5	BDL	BDL	BDL	BDL	BDL	BDL
8	30.09.2021	41.0	23.5	6.0	13.5	0.34	4.6	BDL	BDL	BDL	BDL	BDL	BDL
Mouthly Average		40.3	22.6	6.2	12.6	0.31	5.2	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	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	IS 5182 (Part-10):1999	Chemical Method	Indo Phenol Blue Metbod	Absorptinn & 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_2< 4 $\mu g/m^3$, NO_X< 9 $\mu g/m^3$, O_3<4 $\mu g/m^3$, NH_3<20 $\mu g/m^3$, Ni<0.01 ug/m^3, As < 0.001 ng/m^3, C_6H_6<0.001 $\mu g/m^3$, BaP<0.002 ng/m^3, Pb<0.001 $\mu g/m^3$, CO-<0.1 mg/m^3

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weigbted Average.**

Visiontek Consultancy Services Pvt. Ltd. BBSR *Reviewed by*

Visiontek Consultancy Services Pvt. Ltd. BBSR *Approved by*

Plot No.- M-22 & 23, Chandaka Iudustrial Estate, Patia, Bhubaueswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
E-mail: visioutek@vcspl.org, visiontekin@gmail.com
Visit us at: www.vcspl.org

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- Infrastructure Enginering
- Water Resource Management
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- Surface & Sub-Surface Investigatiou
- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Informatiou Technology
- Public Heaith Engioeering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No Envlab/21/R-5293 Date: 05.10.2021

TEST REPORT

Customer Name & Address : Baphlimali Miues, M/s Utkai Alumina Interuational Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Locatiou & Code	S4: Near Weigh Bridge	Sampled by	VCSPL'S Represeutative
Sample Description	Ambieut Air	Sampling Procedure	IS 5182
Sample Source	Baphlimali Mines, UAIL	Sample Received on	07.09.2021, 10.09.2021, 15.09.2021, 17.09.2021, 23.09.2021, 25.09.2021, 29.09.2021, 01.10.2021
Sample Condition	Gaseous Sample Solntion Refrigerated	Latitude : N19°21.079' Longitude : E82°58.775' Altitude : 993.95 m'	
Sampling Date	06.09.2021, 09.09.2021, 14.09.2021, 16.09.2021, 22.09.2021, 24.09.2021, 28.09.2021, 30.09.2021	Test Completed ou	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters											
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	C_6H_6 ($\mu g/m^3$)	BaP (ng/m^3)	Ni (ng/m^3)	Pb ($\mu g/m^3$)	As ($\mu g/m^3$)
1	06.09.2021	41.0	23.7	7.6	15.4	0.34	5.7	BDL	BDL	BDL	BDL	BDL	BDL
2	09.09.2021	45.0	25.8	9.2	16.7	0.41	6.1	BDL	BDL	BDL	BDL	BDL	BDL
3	14.09.2021	52.0	29.6	11.2	19.5	0.37	7.3	BDL	BDL	BDL	BDL	BDL	BDL
4	16.09.2021	47.0	27.0	8.5	15.8	0.36	6.5	BDL	BDL	BDL	BDL	BDL	BDL
5	22.09.2021	50.0	28.8	7.6	14.3	0.32	6.8	BDL	BDL	BDL	BDL	BDL	BDL
6	24.09.2021	54.0	31.0	9.5	16.3	0.42	5.4	BDL	BDL	BDL	BDL	BDL	BDL
7	28.09.2021	46.0	26.7	10.7	17.2	0.35	5.3	BDL	BDL	BDL	BDL	BDL	BDL
8	30.09.2021	53.0	31.2	9.2	15.6	0.38	6.2	BDL	BDL	BDL	BDL	BDL	BDL
Monthly Average		48.5	28.0	9.2	16.4	0.37	6.2	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard		100	60	80	80	4	100	400	05	01	20	1.0	06
Testing Metbod		IS 5182: Part 23	CPCB Manual	IS 5182 (Part-2) RA2017	IS 5182 (Part-6) RA2017	IS 5182 (Part-10):1999	Chemical Method	Indo Phenol Blue Metbod	Absorption & Desorptiou followed by GC analysis	Solvent extractlon followed by Gas Chromatography analysis	AAS metbod after sampling on EPM 2000 or Equivalent filter Paper		

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

Remarks: (All the values of PM-10, PM-2.5, SO_2, NOx & CO, O_3 etc presented in row no 1-8 are **Time Weighted Average.**

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Approved by

ANNEXURE: 5

Ambient Air Quality Monitoring Report (Buffer Zone)

Test Report No: ENVLAD/21/R-0369 Date: 03.05.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S5: Andirakanch	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Daphlimali Mines, UAIL	Sample Received on	09.04.2021, 12.04.2021, 15.04.2021, 17.04.2021, 21.04.2021, 26.04.2021, 28.04.2021, 30.04.2021
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude : N 19°19.079' Longitude : E 83°0.738' Altitude : 739.14 m.	
Sampling Date	08.04.2021, 10.04.2021, 14.04.2021, 16.04.2021, 20.04.2021, 23.04.2021, 27.04.2021, 29.04.2021	Test Completed on	14.04.2021 to 03.05.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	08.04.2021	51.0	27.7	6.4	15.5	0.42
2	10.04.2021	43.0	23.5	6.1	12.3	0.36
3	14.04.2021	47.0	25.0	5.6	11.7	0.34
4	16.04.2021	44.0	23.6	7.3	12.1	0.38
5	20.04.2021	48.0	26.0	6.4	10.8	0.41
6	23.04.2021	52.0	28.2	5.8	11.4	0.35
7	27.04.2021	57.0	29.7	6.0	11.8	0.37
8	29.04.2021	45.0	24.2	5.5	10.3	0.43
Monthly Average		48.4	26.0	6.1	12.0	0.38
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_2: 4.0 $\mu g/m^3$, NO_X: 9.0 $\mu g/m^3$

Any unusual feature during determination: Nil

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Reviewed by

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Visioutek Consultaucy Services Pvt. Ltd.

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Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

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- Water Resource Managemeot
- Environmental & Soeial Study
- Surface & Sub-Surface Investigation
- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Oesign
- Mineral/Sob-Soil Exploration
- Waste Mauagement Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: ENVLAD/2I/R-0370 Date: 03.05.2021

TEST REPORT

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

SAMPLE DETAILS

Sampie Location & Code	S6: Paiknpakbal	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procednre	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received ou	09.04.2021, 12.04.2021, 15.04.2021, 17.04.2021, 2I.04.2021, 26.04.2021, 28.04.2021, 30.04.2021
Sample Condition	Gaseous Sample Solntion Refrigerated	Latitude :N 19°20.197' Longitnde :E 82°59.589' Altitude : 874.17 m	
Sampling Date	08.04.2021, 10.04.2021, 14.04.2021, 16.04.2021, 20.04.2021, 23.04.2021, 27.04.2021, 29.04.2021	Test Completed ou	14.04.2021 to 03.05.2021

Sl. No.	Sampiing Date	Parameters				
		Particolate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Snlphnr Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	08.04.2021	54.0	28.3	7.1	14.6	0.33
2	10.04.2021	46.0	24.5	6.4	12.8	0.29
3	14.04.2021	42.0	22.7	5.3	12.3	0.31
4	.16.04.2021	39.0	20.1	5.7	13.5	0.25
5	20.04.2021	44.0	23.6	6.6	11.3	0.29
6	23.04.2021	49.0	26.2	6.3	12.0	0.32
7	27.04.2021	51.0	27.0	5.8	10.7	0.31
8	29.04.2021	47.0	25.3	5.2	11.2	0.34
Monthly Average		46.5	24.7	6.I	12.3	0.31
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Metbod		Gravimetric IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-I	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jaeob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999
Remarks: Detection limit for SO_2: 4.0 $\mu g/m^3$, NO_x : 9.0 $\mu g/m^3$						
Any uuusual feature dnring determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are Time Weighted Average.)

Visioutek Consultancy Services Pvt. Ltd. — Reviewed by

Visioutek Consultancy Services Pvt. Ltd. — Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
E-mail: visiontek@vcspl.org, visiontekin@gmail.com
Visit us at: www.vcspl.org

Test Report No: ENVLAB/21/R-0371 Date: 03.05.2021

TEST REPORT

Customer Name & Address : **Baphlimah Mines, M/s Utkai Alumina Interuationai Ltd, Tikiri, Rayagada, Odisha**

SAMPLE DETAILS

Sample Location & Code	**S7: Adri**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ambieot Air**	**Sampling Procedure**	**IS 5182.**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**09.04.2021, 12.04.2021, 15.04.2021, 17.04.2021, 21.04.2021, 26.04.2021, 28.04.2021, 30.04.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°21.928' Longitude : E 82°56.705' Altitude : 691.90 m**	
Sampling Date	**08.04.2021, 10.04.2021, 14.04.2021, 16.04.2021, 20.04.2021, 23.04.2021, 27.04.2021, 29.04.2021**	**Test Completed on**	**14.04.2021 to 03.05.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Partienlate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	08.04.2021	45.0	23.6	6.6	13.8	0.35
2	10.04.2021	42.0	22.1	7.3	15.1	0.37
3	14.04.2021	47.0	25.0	5.8	12.6	0.31
4	.16.04.2021	41.0	21.4	6.1	11.7	0.33
5	20.04.2021	46.0	24.0	6.5	12.2	0.41
6	23.04.2021	50.0	26.2	6.0	10.6	0.36
7	27.04.2021	43.0	22.7	5.6	10.3	0.38
8	29.04.2021	49.0	26.1	6.2	11.7	0.34
Monthly Average		45.4	23.9	6.3	12.3	0.36
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetrie IS 5182: Part 23	Gravimetric EPA CFR-40 (pt 50) Appendix-I	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hocbheiser Method IS 5182 (Part-6) RA2006	Non Oispersive Infrared Method IS 5182 (Part-10):1999
Remarks: Detection limit for SO_2: 4.0 $\mu g/m^3$, NO_X: 9.0 $\mu g/m^3$						
Any nnusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visioutek Consultancy Services Pvt. Ltd. — *Reviewed by*

Visioutek Consultancy Services Pvt. Ltd. — *Approved by*

Test Report No: ENVLAB/21/R-0372 Date: 03.05.2021

TEST REPORT

Customer Name & Address : Baphlimail Mines, M/s Utkal Aiumiua Iuteruatiuual Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Proeedure	IS 5182.
Sample Sonrce	Baphlimali MIne, UAIL	Sample Received ou	09.04.2021, 12.04.2021, 15.04.202I, 17.04.2021, 21.04.2021, 26.04.202I, 28.04.2021, 30.04.2021
Sample Condition	Gaseons Sample Solution Refrigerated	Latitude : N 19°23.107' Longitude : E 82°59.22I' Altitude : 656.54 m	
Sampling Date	08.04.2021, 10.04.202I, 14.04.2021, 16.04.2021, 20.04.202I, 23.04.2021, 27.04.2021, 29.04.2021	Test Completed ou	14.04.202I to 03.05.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Snlphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	08.04.2021	48.0	25.7	6.3	11.4	0.39
2	10.04.2021	52.0	28.3	6.7	13.8	0.35
3	14.04.2021	46.0	24.6	5.6	11.5	0.42
4	16.04.2021	51.0	27.2	7.1	14.1	0.33
5	20.04.2021	44.0	23.8	6.4	10.7	0.37
6	23.04.2021	47.0	25.1	5.8	12.3	0.26
7	27.04.2021	50.0	26.8	5.2	11.0	0.32
8	29.04.2021	42.0	22.6	6.0	12.4	0.31
Mouthly Average		47.5	25.5	6.i	12.2	0.34
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_2: 4.0 $\mu g/m^3$, NO_x : 9.0 $\mu g/m^3$						
Any uuusual feature duriug determiuatiou: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Approved by

Test Report No: ENVLAB/21/R-1610 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.05.2021, 10.05.2021, 12.05.2021, 14.05.2021, 20.05.2021, 24.05.2021, 28.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°19.079'** **Longitude : E 83°0.738'** **Altitude : 739.14 m.**	
Sampling Date	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 19.05.2021, 21.05.2021, 27.05.2021, 29.05.2021**	**Test Completed on**	**07.05.2021 to 02.06.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	04.05.2021	48.0	26.6	5.7	10.8	0.37
2	07.05.2021	52.0	28.8	6.2	13.4	0.31
3	11.05.2021	46.0	25.3	4.8	11.2	0.34
4	13.05.2021	42.0	23.5	5.5	10.7	0.32
5	19.05.2021	50.0	27.7	6.1	12.6	0.39
6	21.05.2021	54.0	29.3	5.3	13.1	0.33
7	27.05.2021	49.0	26.8	5.0	11.5	0.35
8	29.05.2021	53.0	29.5	5.4	12.0	0.41
Monthly Average		49.3	27.2	5.5	11.9	0.35
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM-$_{10}$, PM-$_{2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-1611 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.05.2021, 10.05.2021, 12.05.2021, 14.05.2021, 20.05.2021, 24.05.2021, 28.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude :N 19°20.197' Longitude :E 82°59.589' Altitude : 874.17 m**	
Sampling Date	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 19.05.2021, 21.05.2021, 27.05.2021, 29.05.2021**	**Test Completed on**	**07.05.2021 to 02.06.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	04.05.2021	51.0	27.7	6.7	13.4	0.36
2	07.05.2021	45.0	24.4	5.5	11.7	0.42
3	11.05.2021	48.0	25.8	4.8	10.6	0.38
4	13.05.2021	42.0	22.6	5.3	12.4	0.33
5	19.05.2021	47.0	25.3	6.1	10.7	0.37
6	21.05.2021	53.0	28.8	6.8	11.5	0.29
7	27.05.2021	56.0	30.5	5.4	10.0	0.33
8	29.05.2021	49.0	26.6	4.7	9.5	0.36
Monthly Average		48.9	26.5	5.7	11.2	0.36
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM-$_{10}$, PM-$_{2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-1612 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.05.2021, 10.05.2021, 12.05.2021, 14.05.2021, 20.05.2021, 24.05.2021, 28.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°21.928' Longitude : E 82°56.705' Altitude : 691.90 m**	
Sampling Date	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 19.05.2021, 21.05.2021, 27.05.2021, 29.05.2021**	**Test Completed on**	**07.05.2021 to 02.06.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	04.05.2021	47.0	25.7	5.5	11.6	0.28
2	07.05.2021	40.0	21.4	5.9	12.3	0.34
3	11.05.2021	45.0	24.8	6.4	10.8	0.37
4	13.05.2021	48.0	26.2	6.8	13.5	0.42
5	19.05.2021	52.0	28.5	6.3	11.7	0.35
6	21.05.2021	55.0	29.7	5.7	11.2	0.39
7	27.05.2021	49.0	26.3	5.3	9.6	0.33
8	29.05.2021	43.0	22.8	5.5	10.3	0.36
Monthly Average		47.4	25.7	5.9	11.4	0.36
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM-$_{10}$, PM-$_{2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-1613 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**05.05.2021, 10.05.2021, 12.05.2021, 14.05.2021, 20.05.2021, 24.05.2021, 28.05.2021, 31.05.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°23.107'** **Longitude : E 82°59.221'** **Altitude : 656.54 m**	
Sampling Date	**04.05.2021, 07.05.2021, 11.05.2021, 13.05.2021, 19.05.2021, 21.05.2021, 27.05.2021, 29.05.2021**	**Test Completed on**	**07.05.2021 to 02.06.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	04.05.2021	45.0	24.5	5.4	11.7	0.43
2	07.05.2021	49.0	26.3	6.2	14.3	0.38
3	11.05.2021	52.0	28.7	5.1	10.8	0.41
4	13.05.2021	47.0	25.2	5.7	13.5	0.29
5	19.05.2021	43.0	23.6	4.8	9.6	0.35
6	21.05.2021	46.0	24.8	5.3	11.4	0.30
7	27.05.2021	42.0	22.3	5.5	12.0	0.37
8	29.05.2021	48.0	26.0	6.4	11.8	0.34
Monthly Average		46.5	25.2	5.6	11.9	0.36
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM-$_{10}$, PM-$_{2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-2774 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**02.06.2021, 07.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 24.06.2021, 28.06.2021, 30.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°19.079' Longitude : E 83°0.738' Altitude : 739.14 m.**	
Sampling Date	**01.06.2021, 04.06.2021, 08.06.2021, 10.06.2021, 14.06.2021, 17.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**	**Test Completed on**	**07.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	01.06.2021	33.0	18.2	4.6	9.4	0.26
2	04.06.2021	42.0	22.6	5.8	11.2	0.30
3	08.06.2021	51.0	27.4	6.3	12.2	0.35
4	10.06.2021	40.0	21.7	5.0	9.8	0.28
5	14.06.2021	34.0	18.5	4.4	10.2	0.21
6	17.06.2021	45.0	24.2	5.7	12.5	0.27
7	23.06.2021	39.0	21.6	4.3	11.8	0.23
8	25.06.2021	47.0	25.7	6.1	13.3	0.25
9	29.06.2021	41.0	22.3	5.2	12.7	0.31
Monthly Average		41.3	22.5	5.3	11.5	0.27
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-2775 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**02.06.2021, 07.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 24.06.2021, 28.06.2021, 30.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude :N 19°20.197' Longitude :E 82°59.589' Altitude : 874.17 m**	
Sampling Date	**01.06.2021, 04.06.2021, 08.06.2021, 10.06.2021, 14.06.2021, 17.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**	**Test Completed on**	**07.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	01.06.2021	40.0	20.8	5.1	10.8	0.23
2	04.06.2021	48.0	25.4	6.5	13.1	0.34
3	08.06.2021	53.0	27.7	6.1	11.6	0.31
4	10.06.2021	46.0	24.2	5.2	11.2	0.26
5	14.06.2021	37.0	19.6	4.6	9.8	0.22
6	17.06.2021	44.0	23.1	5.7	10.7	0.27
7	23.06.2021	39.0	20.5	6.0	10.3	0.21
8	25.06.2021	42.0	21.7	5.3	9.6	0.28
9	29.06.2021	36.0	19.0	5.7	10.2	0.26
Monthly Average		42.8	22.4	5.6	10.8	0.26
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-2776 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**S7: Adri**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ambient Air**	**Sampling Procedure**	**IS 5182.**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**02.06.2021, 07.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 24.06.2021, 28.06.2021, 30.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°21.928' Longitude : E 82°56.705' Altitude : 691.90 m**	
Sampling Date	**01.06.2021, 04.06.2021, 08.06.2021, 10.06.2021, 14.06.2021, 17.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**	**Test Completed on**	**07.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	01.06.2021	37.0	20.2	4.4	10.4	0.21
2	04.06.2021	41.0	22.6	6.2	11.8	0.28
3	08.06.2021	48.0	25.8	5.7	9.6	0.36
4	10.06.2021	39.0	21.3	5.2	10.3	0.31
5	14.06.2021	34.0	18.4	4.3	9.7	0.25
6	17.06.2021	42.0	22.7	5.6	10.8	0.42
7	23.06.2021	35.0	19.0	5.1	11.2	0.34
8	25.06.2021	38.0	20.5	6.7	12.4	0.28
9	29.06.2021	33.0	17.8	5.5	10.7	0.33
Monthly Average		38.6	20.9	5.4	10.8	0.31
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-2777 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**S8: Chandragiri**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ambient Air**	**Sampling Procedure**	**IS 5182.**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**02.06.2021, 07.06.2021, 09.06.2021, 11.06.2021, 15.06.2021, 18.06.2021, 24.06.2021, 28.06.2021, 30.06.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°23.107' Longitude : E 82°59.221' Altitude : 656.54 m**	
Sampling Date	**01.06.2021, 04.06.2021, 08.06.2021, 10.06.2021, 14.06.2021, 17.06.2021, 23.06.2021, 25.06.2021, 29.06.2021**	**Test Completed on**	**07.06.2021 to 02.07.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	01.06.2021	35.0	18.8	4.7	9.4	0.27
2	04.06.2021	39.0	20.7	5.5	10.6	0.34
3	08.06.2021	47.0	25.0	6.3	13.2	0.38
4	10.06.2021	40.0	21.4	5.0	11.1	0.31
5	14.06.2021	33.0	17.8	5.4	10.3	0.24
6	17.06.2021	42.0	22.7	6.1	12.4	0.29
7	23.06.2021	34.0	18.2	4.7	10.8	0.32
8	25.06.2021	38.0	20.5	5.2	9.6	0.26
9	29.06.2021	43.0	23.0	5.6	10.2	0.30
Monthly Average		39.0	20.9	5.4	10.8	0.30
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-3400 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**02.07.2021, 06.07.2021, 08.07.2021, 14.07.2021, 16.07.2021, 20.07.2021, 23.07.2021, 27.07.2021, 30.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°19.079' Longitude : E 83°0.738' Altitude : 739.14 m.**	
Sampling Date	**01.07.2021, 05.07.2021, 07.07.2021, 13.07.2021, 15.07.2021, 19.07.2021, 22.07.2021, 26.07.2021, 29.07.2021**	**Test Completed on**	**07.07.2021 to 02.08.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	01.07.2021	38.0	20.5	5.1	10.7	0.31
2	05.07.2021	35.0	19.0	4.3	10.2	0.28
3	07.07.2021	47.0	25.0	5.5	11.6	0.23
4	13.07.2021	40.0	21.7	4.6	12.1	0.27
5	15.07.2021	44.0	23.3	5.3	10.8	0.32
6	19.07.2021	39.0	20.6	BDL	9.7	0.23
7	22.07.2021	45.0	24.0	4.8	11.4	0.26
8	26.07.2021	43.0	22.8	5.7	12.3	0.29
9	29.07.2021	36.0	19.5	BDL	10.6	0.25
Monthly Average		**40.8**	**21.8**	**5.0**	**11.0**	**0.27**
CPCB, New Delhi AAQ Standard		**100**	**60**	**80**	**80**	**4**
Testing Method		**Gravimetric IS 5182: Part 23**	**CPCB Manual**	**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_2: 4.0 $\mu g/m^3$, NO_X: 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-3401 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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**	**02.07.2021, 06.07.2021, 08.07.2021, 14.07.2021, 16.07.2021, 20.07.2021, 23.07.2021, 27.07.2021, 30.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude :N 19°20.197' Longitude :E 82°59.589' Altitude : 874.17 m**	
Sampling Date	**01.07.2021, 05.07.2021, 07.07.2021, 13.07.2021, 15.07.2021, 19.07.2021, 22.07.2021, 26.07.2021, 29.07.2021**	**Test Completed on**	**07.07.2021 to 02.08.2021**

Sl. No.	**Sampling Date**	**Parameters**				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	**Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)**	**Sulphur Dioxide as SO_2 ($\mu g/m^3$)**	**Oxides of Nitrogen as NOx ($\mu g/m^3$)**	**CO (mg/m^3)**
1	**01.07.2021**	**41.0**	**21.7**	**5.5**	**9.7**	**0.21**
2	**05.07.2021**	**37.0**	**20.3**	**5.1**	**10.4**	**0.25**
3	**07.07.2021**	**43.0**	**23.5**	**6.4**	**12.3**	**0.32**
4	**13.07.2021**	**39.0**	**21.4**	**4.8**	**9.6**	**0.24**
5	**15.07.2021**	**45.0**	**24.7**	**5.6**	**10.5**	**0.28**
6	**19.07.2021**	**42.0**	**22.0**	**6.1**	**12.3**	**0.22**
7	**22.07.2021**	**38.0**	**19.3**	**5.3**	**11.0**	**0.30**
8	**26.07.2021**	**35.0**	**18.4**	**4.7**	**9.5**	**0.18**
9	**29.07.2021**	**40.0**	**21.2**	**5.0**	**10.3**	**0.24**
Monthly Average		**40.0**	**21.4**	**5.4**	**10.6**	**0.25**
CPCB, New Delhi AAQ Standard		**100**	**60**	**80**	**80**	**4**
Testing Method		**Gravimetric IS 5182: Part 23**	**CPCB Manual**	**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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: ENVLAB/21/R-3402 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**S7: Adri**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ambient Air**	**Sampling Procedure**	**IS 5182.**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**02.07.2021, 06.07.2021, 08.07.2021, 14.07.2021, 16.07.2021, 20.07.2021, 23.07.2021, 27.07.2021, 30.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°21.928'** **Longitude : E 82°56.705'** **Altitude : 691.90 m**	
Sampling Date	**01.07.2021, 05.07.2021, 07.07.2021, 13.07.2021, 15.07.2021, 19.07.2021, 22.07.2021, 26.07.2021, 29.07.2021**	**Test Completed on**	**07.07.2021 to 02.08.2021**

Sl. No.	**Sampling Date**	**Parameters**				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	**Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)**	**Sulphur Dioxide as SO_2 ($\mu g/m^3$)**	**Oxides of Nitrogen as NOx ($\mu g/m^3$)**	**CO (mg/m^3)**
1	**01.07.2021**	**44.0**	**23.7**	**5.7**	**11.5**	**0.24**
2	**05.07.2021**	**39.0**	**20.4**	**4.8**	**10.4**	**0.29**
3	**07.07.2021**	**47.0**	**25.0**	**5.4**	**11.2**	**0.32**
4	**13.07.2021**	**41.0**	**21.8**	**6.2**	**12.7**	**0.27**
5	**15.07.2021**	**45.0**	**24.0**	**5.8**	**10.3**	**0.36**
6	**19.07.2021**	**38.0**	**20.3**	**5.1**	**9.7**	**0.29**
7	**22.07.2021**	**46.0**	**24.6**	**6.0**	**12.3**	**0.31**
8	**26.07.2021**	**37.0**	**19.7**	**5.3**	**11.5**	**0.33**
9	**29.07.2021**	**41.0**	**21.2**	**4.6**	**9.4**	**0.37**
Monthly Average		**42.0**	**22.3**	**5.4**	**11.0**	**0.31**
CPCB, New Delhi AAQ Standard		**100**	**60**	**80**	**80**	**4**
Testing Method		**Gravimetric IS 5182: Part 23**	**CPCB Manual**	**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_2: 4.0 $\mu g/m^3$, NO_X: 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-3403 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**S8: Chandragiri**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ambient Air**	**Sampling Procedure**	**IS 5182.**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**02.07.2021, 06.07.2021, 08.07.2021, 14.07.2021, 16.07.2021, 20.07.2021, 23.07.2021, 27.07.2021, 30.07.2021**
Sample Condition	**Gaseous Sample Solution Refrigerated**	**Latitude : N 19°23.107' Longitude : E 82°59.221' Altitude : 656.54 m**	
Sampling Date	**01.07.2021, 05.07.2021, 07.07.2021, 13.07.2021, 15.07.2021, 19.07.2021, 22.07.2021, 26.07.2021, 29.07.2021**	**Test Completed on**	**07.07.2021 to 02.08.2021**

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	01.07.2021	37.0	19.7	5.1	10.3	0.31
2	05.07.2021	41.0	21.5	5.8	11.8	0.28
3	07.07.2021	34.0	17.8	5.3	10.6	0.32
4	13.07.2021	38.0	19.6	4.6	9.5	0.25
5	15.07.2021	43.0	22.4	6.5	12.7	0.28
6	19.07.2021	40.0	20.3	5.7	11.5	0.31
7	22.07.2021	36.0	18.7	5.0	11.3	0.23
8	26.07.2021	42.0	21.8	6.1	12.2	0.29
9	29.07.2021	35.0	18.4	5.5	9.7	0.34
Monthly Average		**38.4**	**20.0**	**5.5**	**11.1**	**0.29**
CPCB, New Delhi AAQ Standard		**100**	**60**	**80**	**80**	**4**
Testing Method		**Gravimetric IS 5182: Part 23**	**CPCB Manual**	**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_2: 4.0 $\mu g/m^3$, NO_X: 9.0 $\mu g/m^3$						
Any unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-9 are **Time Weighted Average.**)

Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Approved by

Visiontek Consultancy Services Pvt. Ltd. BBSR

Test Report No: Envlab/21/R-4631 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S5: Andirakanch	Sampled by	VCSPL'S Reprcsentative
Sample Description	Ambient Air	Sampling Procednre	IS 5182.
Sample Sonrce	Baphlimali Mines, UAIL	Sample Received on	04.08.2021, 06.08.2021, 11.08.2021, 13.08.2021, 18.08.2021, 21.08.2021, 25.08.2021, 27.08.2021
Sample Condition	Gaseous Sample Solntion Refrigerated	Latitude : N 19°19.079' Longitude : E 83°0.738' Altitnde : 739.14 m.	
Sampling Date	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 20.08.2021, 24.08.2021, 26.08.2021	Test Completed on	09.08.2021 to 31.08.2021

Sl. No.	Sampling Date	Parameters				
		Partieulate Matter as PM_{10} ($\mu g/m^3$)	Partienlate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphnr Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	03.08.2021	41.0	22.3	4.6	10.4	0.27
2	05.08.2021	34.0	18.5	5.3	12.1	0.30
3	10.08.2021	39.0	21.6	5.2	10.6	0.25
4	12.08.2021	36.0	19.5	4.7	9.8	0.22
5	17.08.2021	38.0	20.7	4.5	9.6	0.26
6	20.08.2021	42.0	22.3	5.1	10.7	0.21
7	24.08.2021	37.0	19.8	4.4	9.3	0.25
8	26.08.2021	40.0	21.2	5.5	11.2	0.24
Monthly Average		38.4	20.7	4.9	10.5	0.25
CPCB, New Delbi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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-I0):I999
Remarks: Detection limit for SO_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any unusual feature dnring determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. Reviewed by

Visiontek Consultancy Services Pvt. Ltd. Approved by

Test Report No: Envlab/21/R-4632 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S6: Paikupakhal	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Sonree	Baphlimali Mines, UAIL	Sample Received on	04.08.2021, 06.08.2021, 11.08.2021, 13.08.2021, 18.08.2021, 21.08.2021, 25.08.2021, 27.08.2021
Sample Condition	Gaseous Sample Solution Refrigerated	Latitnde :N 19°20.197' Longitude :E 82°59.589' Altitude : 874.17 m	
Sampling Date	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 20.08.2021, 24.08.2021, 26.08.2021	Test Completed on	09.08.2021 to 31.08.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particnlate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Snlphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogeu as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	03.08.2021	46.0	24.5	4.8	10.3	0.19
2	05.08.2021	39.0	20.3	5.3	11.7	0.22
3	10.08.2021	42.0	22.7	5.7	I1.2	0.23
4	12.08.2021	44.0	24.2	4.5	9.8	0.18
5	17.08.202I	38.0	21.0	5.5	10.6	0.24
6	20.08.2021	41.0	22.3	5.2	9.7	0.25
7	24.08.2021	36.0	19.7	6.1	11.4	0.21
8	26.08.2021	39.0	21.2	4.6	9.5	0.26
Monthly Average		40.6	22.0	5.2	10.5	0.22
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X: 9.0 $\mu g/m^3$						
Any unusual featurc during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. Reviewed by

Visiontek Consultancy Services Pvt. Ltd. Approved

Test Report No: Envlab/21/R-4633 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S7: Adri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procednre	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.08.2021, 06.08.2021, 11.08.2021, 13.08.2021, 18.08.2021, 21.08.2021, 25.08.2021, 27.08.2021
Sample Condition	Gaseous Sample Solution Refrigerated	Latitnde : N 19°21.928' Longitude : E 82°56.705' Altitude : 691.90 m	
Sampling Date	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 20.08.2021, 24.08.2021, 26.08.2021	Test Completed on	09.08.2021 to 31.08.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particnlate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	03.08.2021	37.0	20.2	5.5	9.8	0.22
2	05.08.2021	33.0	17.7	5.1	10.3	0.26
3	10.08.2021	40.0	21.6	5.7	11.6	0.29
4	12.08.2021	36.0	19.5	4.8	9.4	0.25
5	17.08.2021	41.0	22.3	5.2	I0.7	0.23
6	20.08.2021	39.0	2I.5	4.5	I0.1	0.27
7	24.08.2021	43.0	23.6	5.4	11.2	0.32
8	26.08.2021	46.0	25.2	4.7	9.6	0.28
Monthly Average		39.4	21.5	5.1	10.3	0.27
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hocbheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999
Remarks: Detection limit for SO_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any nnnsual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. — *Reviewed by*

Visiontek Consultancy Services Pvt. Ltd. — *Approved by*

Test Report No: Envlab/21/R-4634 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procednre	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	04.08.2021, 06.08.2021, 11.08.2021, 13.08.2021, 18.08.2021, 21.08.2021, 25.08.2021, 27.08.2021
Sample Condition	Gaseons Sample Solution Refrigerated	Latitude : N 19°23.107' Longitude : E 82°59.221' Altitude : 656.54 m	
Sampling Date	03.08.2021, 05.08.2021, 10.08.2021, 12.08.2021, 17.08.2021, 20.08.2021, 24.08.2021, 26.08.2021	Test Completed on	09.08.2021 to 31.08.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	03.08.2021	40.0	22.2	4.7	9.6	0.25
2	05.08.2021	36.0	19.4	5.2	12.1	0.22
3	10.08.2021	42.0	23.5	4.9	10.7	0.27
4	12.08.2021	37.0	19.7	5.5	11.3	0.21
5	17.08.2021	35.0	18.8	4.6	9.5	0.26
6	20.08.2021	39.0	21.3	5.8	11.2	0.23
7	24.08.2021	33.0	18.6	5.2	10.4	0.19
8	26.08.2021	38.0	20.7	5.5	10.8	0.24
Monthly Average		37.5	20.5	5.2	10.7	0.23
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Bispersive Infrared Method IS 5182 (Part-I0):1999
Remarks: Detection limit for SO_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any nnusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. — Reviewed by

Visiontek Consultancy Services Pvt. Ltd. — Approved by

Test Report No: Envlab/21/R-5294 Date: 05.10.2021

TEST REPORT

Cnstomer Name & Address : Baphlimali Mines, M/s Utkai Alnmina International Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sampie Loeation & Code	S5: Andirakanch	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procednre	IS 5182.
Sample Sonrce	Baphlimali Mines, UAIL	Sample Received on	08.09.2021, 10.09.2021, 14.09.2021, 16.09.2021, 21.09.2021, 24.09.2021, 28.09.2021, 30.09.2021
Sample Condition	Gaseons Sample Solution Refrigerated	Latitnde : N 19°19.079' Longitude : E 83°0.738' Altitude : 739.14 m.	
Sampling Date	07.09.2021, 09.09.2021, 13.09.2021, 15.09.2021, 20.09.2021, 23.09.2021, 27.09.2021, 29.09.2021	Test Completed on	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	07.09.2021	33.0	18.1	4.8	9.5	0.24
2	09.09.2021	37.0	20.4	5.7	11.3	0.21
3	13.09.2021	32.0	17.7	4.6	10.2	0.25
4	15.09.2021	39.0	21.6	6.2	12.3	0.19
5	20.09.2021	43.0	23.8	6.8	11.4	0.22
6	23.09.2021	48.0	25.7	5.3	10.3	0.27
7	27.09.2021	38.0	20.6	4.8	9.7	0.23
8	29.09.2021	44.0	23.4	6.1	11.5	0.31
Monthly Average		39.3	21.4	5.5	10.8	0.24
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetrie IS 5182: Part 23	CPCB Mannai	Improved West & Geake Metbod IS 5182 (Part-2) RA2006	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999
Remarks: Deteetion limit for SO_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any nnusnai feature dnring determiuation: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. BSR *Reviewed by*

Visiontek Consultancy Services Pvt. Ltd. BSR *Approved by*

Test Report No: Envlab/21/R-5295

Date: 05.10.2021

TEST REPORT

Cnstomer Name & Address : Baphlimali Mines, M/s Utkal Alnmina Internationai Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Location & Code	S6: Paiknpakhal	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procednre	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	08.09.2021, 10.09.2021, 14.09.2021, 16.09.2021, 21.09.2021, 24.09.2021, 28.09.2021, 30.09.2021
Sample Condition	Gascous Sample Solution Refrigerated	Latitude :N 19°20.197' Longitude :E 82°59.589' Altitude : 874.17 m	
Sampling Date	07.09.2021, 09.09.2021, 13.09.2021, 15.09.2021, 20.09.2021, 23.09.2021, 27.09.2021, 29.09.2021	Test Completed on	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphnr Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	07.09.2021	37.0	20.2	5.4	11.2	0.21
2	09.09.2021	41.0	22.8	4.8	9.6	0.24
3	13.09.2021	34.0	19.0	4.3	10.3	0.19
4	15.09.2021	39.0	21.3	5.1	10.7	0.22
5	20.09.2021	44.0	24.4	6.2	12.1	0.26
6	23.09.2021	40.0	22.1	5.7	11.6	0.21
7	27.09.2021	47.0	26.2	6.6	10.7	0.25
8	29.09.2021	42.0	22.6	6.0	12.2	0.28
Monthiy Average		40.5	22.3	5.5	11.1	0.23
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Metbod		Gravimetric IS 5182: Part 23	CPCB Manual	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_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Any nansnal feature during determinatiou: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visioutek Consultancy Services Pvt. Ltd. RBSR *Reviewed by*

Visioutek Consultancy Services Pvt. Ltd. RBSR *Approved by*

Test Report No: Envlab/21/R-5296

Date: 05.10.2021

TEST REPORT

Cnstomer Name & Address : Baphlimaii Mines, M/s Utkal Alnmina Internationai Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Loeation & Code	S7: Adri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Procedure	IS 5182.
Sample Source	Baphlimali Mines, UAIL	Sample Received on	08.09.2021, 10.09.2021, 14.09.2021, 16.09.2021, 21.09.2021, 24.09.2021, 28.09.2021, 30.09.2021
Sample Condition	Gaseous Sample Solntion Refrigerated	Latitude : N 19°21.928' Longitude : E 82°56.705' Altitnde : 691.90 m	
Sampling Date	07.09.2021, 09.09.2021, 13.09.2021, 15.09.2021, 20.09.2021, 23.09.2021, 27.09.2021, 29.09.2021	Test Completed on	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters				
		Partieulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Snlphnr Dioxidc as SO_2 ($\mu g/m^3$)	Oxides of Nitrogen as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	07.09.2021	35.0	19.2	4.6	10.7	0.19
2	09.09.2021	41.0	22.5	5.4	11.3	0.23
3	13.09.2021	37.0	20.7	5.0	10.4	0.26
4	15.09.2021	40.0	22.3	6.3	12.7	0.29
5	20.09.2021	46.0	25.1	5.7	11.2	0.21
6	23.09.2021	42.0	23.3	4.8	9.6	0.24
7	27.09.2021	51.0	27.8	6.1	10.3	0.23
8	29.09.2021	47.0	25.6	5.6	11.5	0.27
Monthly Average		42.4	23.3	5.4	11.0	0.24
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetric IS 5182: Part 23	CPCB Manual	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hoehheiser Method IS 5182 (Part-6) RA2006	Non Dispersive Infrared Method IS 5182 (Part-10):1999
Remarks: Detection limit for SO_2: 4.0 $\mu g/m^3$, NO_X : 9.0 $\mu g/m^3$						
Auy unusual feature during determination: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

Visiontek Consultancy Services Pvt. Ltd. BBSR Approved by

Visioutek Cousultaucy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

- Infrastructure Euginering
- Water Resource Mauagement
- Environmental & Social Study
- Surface & Sub-Surface Iuvestigation
- Quality Control & Project Management
- Renewahle Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-5297 Date: 05.10.2021

TEST REPORT

Cnstomer Name & Address : Baphiimali Mines, M/s Utkal Ainmina International Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Location & Code	S8: Chandragiri	Sampled by	VCSPL'S Representative
Sample Description	Ambient Air	Sampling Proeednre	IS 5182.
Sample Source	Baphiimali Mines, UAIL	Sample Received on	08.09.2021, 10.09.2021, 14.09.2021, 16.09.2021, 21.09.2021, 24.09.2021, 28.09.2021, 30.09.2021
Sample Condition	Gaseous Sample Solution Refrigerated	Latitude : N 19°23.107' Longitude : E 82°59.221' Altitnde : 656.54 m	
Sampling Date	07.09.2021, 09.09.2021, 13.09.2021, 15.09.2021, 20.09.2021, 23.09.2021, 27.09.2021, 29.09.2021	Test Completed on	10.09.2021 to 04.10.2021

Sl. No.	Sampling Date	Parameters				
		Particulate Matter as PM_{10} ($\mu g/m^3$)	Particulate Matter as $PM_{2.5}$ ($\mu g/m^3$)	Sulphur Dioxide as SO_2 ($\mu g/m^3$)	Oxides of Nitrogeu as NOx ($\mu g/m^3$)	CO (mg/m^3)
1	07.09.2021	38.0	20.6	5.5	11.2	0.23
2	09.09.2021	43.0	21.7	6.7	13.3	0.27
3	13.09.2021	36.0	19.5	5.1	11.5	0.20
4	15.09.2021	41.0	22.2	6.3	12.3	0.28
5	20.09.2021	45.0	24.3	4.8	10.4	0.31
6	23.09.2021	42.0	22.7	5.4	10.7	0.25
7	27.09.2021	47.0	25.3	5.7	9.6	0.22
8	29.09.2021	41.0	21.6	6.1	11.5	0.27
Monthly Average		41.6	22.2	5.7	11.3	0.25
CPCB, New Delhi AAQ Standard		100	60	80	80	4
Testing Method		Gravimetrie IS 5182: Part 23	CPCB Maunal	Improved West & Geake Method IS 5182 (Part-2) RA2006	Modified Jacob & Hoehheiser Metbod IS 5182 (Part-6) RA2006	Non Dispersive Infrared Metbod IS 5182 (Part-10):1999
Remarks: Detection limit for SO_2: 4.0 $\mu g/m^3$, NO_X: 9.0 $\mu g/m^3$						
Any nausnal feature during determiuation: Nil						

Remarks: (All the values of PM_{-10}, $PM_{-2.5}$, SO_2, NOx & CO presented in row no 1-8 are **Time Weighted Average.**)

Visiontek Consultancy Services Pvt. Ltd. BBSR Reviewed by

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Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
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ANNEXURE: 6

Stream Flow rate monitoring report

Test Report No: ENVLAB/21/R-0381

Date: 03.05.2021

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	Snrface Water	Sampling Procedure	NA
Sample Source	Bapblimali Mines, UAIL	Sample Received oo	NA

SL. No	Date of Sampling	Stream Location	GPS Co-ordinate	Stream Flow (m^3/br)	Stream flow (Cusec)
1	26.04.2021	Paikupakhala Nala	Latitnde: N19°20.056' Longitode: E82°59.776' Altitude: 823.26 m.	840.0	8.24
2	26.04.2021	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	3600.0	35.32
3	26.04.2021	Cbandragiri Nala	Latitude: N19°23.078' Longitudé: E83°0.248' Altitude: 660.50 m.	9000,0	88.29
4	26.04.2021	Misbripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	4320.0	42.38

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Test Report No: ENVLAB/21/R-1628 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**Stream flow**	**Sampled by**	**VCSPL'S Representative**
Sample Name	**Surface Water**	**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^3/hr)	Stream flow (Cusec)
1	10.05.2021	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	630.0	6.18
2	10.05.2021	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	2610.0	25.60
3	10.05.2021	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	8928.0	87.58
4	10.05.2021	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	3182.4	31.22

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Test Report No: Envlab/21/R-2788 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**WTP-1: WTP Inlet WTP-2: WTP Outlet**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Waste Water**	**Sampling Procedure**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**21.06.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**		
Sampling Date	**18.06.2021**	**Test Completed on**	**28.06.2021**

Sl. No	Parameters	Units	Standards as per IS 2296-Class B (Outdoor bathing)	Test methods	WTP-1	WTP-2
1	pH value	--	6.5-8.5	APHA 4500H^+ B	7.15	7.37
2	Temperature	^0C	Shall not exceed 5°C above the receiving water	IS 3025 (Part-9)	25.4	25.6
3	Total Suspended solids	mg/l, max	--	APHA 2540 D	118.0	34.0
4	Oil & Grease	mg/l, max	--	IS 3025 (Part-39)	5.6	ND
5	Biochemical Oxygen Demand (BOD)	mg/l, max	3.0	APHA 5220 B	22.0	2.0
6	Chemical Oxygen Demand (COD)	mg/l, max	--	APHA 5210 B	128.0	18.0
7	Ammonical Nitrogen (as N)	mg/l, max	--	APHA 4500 NH3 C	3.9	1.12
8	Total Kjeldahl Nitrogen	mg/l, max	--	APHA 4500 Norg B	5.8	2.7
9	Free Ammonia as NH_3	mg/l, max	--	By Calculation	0.032	ND
10	Nitrate as NO_3	mg/l, max	--	APHA 4500 NO3- B	2.8	0.93
11	Dissolved Phosphates as P	mg/l, max	--	APHA 4500 P D	2.24	0.84
12	Fluoride as F	mg/l, max	1.5	APHA 4500 F- C	0.67	<0.1
13	Phenolic Compounds as C_6H_5OH	mg/l, max	0.005	APHA 5530 C	<0.05	<0.05
14	Cyanide as CN	mg/l, max	0.02	APHA 4500 CN^-B	<0.01	<0.01
15	Hexavalent Chromium as Cr^{+6}	mg/l, max	--	APHA 3500 Cr B	<0.01	<0.01
16	Mercury as Hg	mg/l, max	--	APHA 3112B	<0.002	<0.002
17	Arsenic as As	mg/l, max	0.2	APHA 3500 As B	<0.004	<0.004
18	Lead as Pb	mg/l, max	--	APHA 3111 B	<0.01	<0.01
19	Cadmium as Cd	mg/l, max	--	APHA 3111 B	<0.01	<0.01
20	Total Chromium as Cr	mg/l, max	--	APHA 3111 B	<0.05	<0.05
21	Copper as Cu	mg/l, max	--	APHA 3111Cu B	<0.02	<0.02
22	Zinc as Zn	mg/l, max	--	APHA 3111 B	<0.01	<0.01
23	Selenium as Se	mg/l, max	--	APHA 3500 Se C	<0.001	<0.001
24	Nickel as Ni	mg/l, max	--	APHA 3111 B	<0.1	<0.1
25	Manganese as Mn	mg/l, max	--	APHA 3111 Mn B	0.19	<0.1
26	Iron as Fe	mg/l, max	--	APHA 3111 Fe B	0.74	0.14
27	Vanadium as V	mg/l, max	--	APHA 3500 V B	<0.5	<0.5
28	Faecal Coliform	MPN/100ml	--	APHA 9221 E	170	40

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Test Report No: ENVLAB/21/R-3415 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**Stream flow**	**Sampled by**	**VCSPL'S Representative**
Sample Name	**Surface Water**	**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^3/hr)	Stream flow (Cusec)
1	12.07.2021	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	4410.0	43.3
2	12.07.2021	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	21120.0	207.2
3	12.07.2021	Chandragiri Nala	Latitude: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	38640.0	379.1
4	12.07.2021	Mishripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	7586.4	74.4

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Test Report No: ENVLAB/21/R-4641 Date: 06.09.2021

TEST REPORT

Cnstomer Name & Address : Baphlimali Mines, M/s Utkai Alnmina Internationai Ltd, Tikiri, Rayagada

SAMPLE DETAILS

Sample Location & Code	Stream flow	Sampled by	VCSPL'S Representative
Sample Name	Surface Water	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^3/hr)	Stream flow (Cusec)
1	10.08.2021	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	3948.0	38.7
2	10.08.2021	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	14916.0	146.3
3	10.08.2021	Chandragiri Nala	Latitnde: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	61320.0	601.5
4	10.08.2021	Misbripada Nala	Latitude: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	30258.0	296.8

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Test Report No: Envlab/21/R-5304

Date: 05.10.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	Stream flow	Sampled by	VCSPL'S Representative
Sample Name	Surface Water	Sampling Procednre	NA
Sample Source	Bapblimali Mines, UAIL	Sample Reccived on	NA

SL. No	Date of Sampling	Stream Location	GPS Co-ordiuate	Stream Flow (m^3/br)	Stream flow (Cusec)
1	20.09.2021	Paikupakhala Nala	Latitude: N19°20.056' Longitude: E82°59.776' Altitude: 823.26 m.	432.0	4.2
2	20.09.2021	Near Dandabada Nala	Latitude: N19°22.940' Longitude: E82°57.515' Altitude: 698.30 m.	1728.0	17.0
3	20.09.2021	Chandragiri Nala	Latitnde: N19°23.078' Longitude: E83°0.248' Altitude: 660.50 m.	5292.0	51.9
4	20.09.2021	Mishripada Nata	Latitnde: N19°22.829' Longitude: E82°59.268' Altitude: 637.95 m.	1296.0	12.7

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ANNEXURE: 7

Surface Water Quality Analysis Result

Visiontek Consultancy Services Pvt. Ltd.

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- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Enviab/21/R- 0377

Date: 03.05.2021

TEST REPORT

Customer Name & Address : Baphlimali Mines, M/s Utkal Aiumina 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	Snrface Water	Sampling Proccdure	APHA 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	22.04.2021
Sample Coudition	Sealed Plastic & Sterilized Giass Bottle	Latitude : N 19°17.015' Longitude : E 83°0.879'' Altitude : 707.14 m.	Latitude : N 19°16.602' Longitude : E 82°59.812' Altitude : 725.73 m.
Sampling Date	21.04.2021	Test Completed on	29.04.2011

Sl. No	Parameters	Units	Staudards as per IS 2296-Class C	Test metbods	SW-1	SW-2
1	Color	Hazen, max	300	APHA 2120 B	5	10
2	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H⁺B	7.13	7.37
4	Suspended Solids	mg/l, max	–	APHA 2540 D	62.0	91.0
5	Total dissolved solids	mg/l, max	1500	APHA 2540 C	189.0	274.0
6	Temperature	^{0}c	--	–	25.8	26.4
7	Conductivity	µs/cm	--	APHA 2510 C	297.0	429.0
8	Ammonical Nitrogen (as NH_4-N)	mg/l, max	–	APHA4500 NH_3B	1.36	3.4
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N_{ORG}B	2.92	5.2
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Free Ammonia (as NH_3)	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	1.6	3.24
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
15	Fluoride (as F)	mg/l, max	1.5	APHA 4500 F D	0.54	1.12
16	Hexavalent Chromium (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
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	5.8	5.3
19	Sulphide (as S)	mg/l, max	–	APHA 4500 S^{2-} F	<0.05	<0.05
20	Nitrate (as NO_3)	mg/l, max	50	APHA4500NO_3B	2.7	3.15
21	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
22	Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
23	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% sarvival of fish after 96 hrs in 100% effluent	IS 6582	92%	88%
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.35	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 3111 B	12.0	40.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
29	Mercury (as Hg)	mg/l, max	--	APHA 3111 B	<0.002	<0.002
30	Nickel (as Ni)	mg/l, max	--	APHA 3500As B	<0.1	<0.1
31	Arsenic (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
32	Total Chromium (as TCr)	mg/l, max	--	IS3025(P44)1993	<0.05	<0.05
33	Biochemical Oxygeu Demand (as BOD at 27^{0}C For 3 days)	mg/l, max	3.0	APHA 4500 P D	2.2	2.6
34	Dissolved Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.72	1.4
Any unusual feature observed during determination					Nil	

Reviewed by

Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
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Soil Lab
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&
Microbiology Lab

Test Report No: Envlab/21/R-0378

Date: 03.05.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	SW3: Kandahiudha(Up Stream) SW4: Kandahindha(Down Stream	Sampled by	VCSPL'S Representative
Sample Description	Surface Water	Sampling Procedure	APHA 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	22.04.2011
Sample Condition	Sealed Plastic & Sterilized Glass Bottle	Latitude : N 19°22.014' Longitude :E 83°04.658' Altitude : 769.01 m	Latitude : N 19°23.078' Longitude : E 83°0.248' Altitude : 660.50 m
Sampling Date	21.04.2011	Test Completed on	29.04.2011

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	10
2	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.18	7.42
4	Suspended Solids	mg/l, max	--	APHA 2540 D	50.0	88.0
5	Total dissolved solids	mg/l, max	1500	APHA 2540 C	247.0	326.0
6	Temperature	^0c	--	--	25.5	26.2
7	Conductivity	µs/cm	--	APHA 2510 C	416.0	511.0
8	Ammonical Nitrogen (as NH_4-N)	mg/l, max	--	APHA4500 NH_3B	2.2	4.2
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500$N_{ORG}B$	3.1	5.6
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Free Ammonia (as NH_3)	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	1.23	2.93
14	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
15	Fluoride (as F)	mg/l, max	1.5	APHA 4500 F D	0.73	0.96
16	Hexavalent Chromium (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
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	5.5
19	Sulphide (as S)	mg/l, max	--	APHA 4500 S^{2-} F	<0.05	<0.05
20	Nitrate (as NO_3)	mg/l, max	50	APHA4500NO_3B	2.63	3.4
21	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
22	Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
23	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs in 100% effluent	IS 6582	93%	89%
25	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.33	0.67
26	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
27	Chemical Oxygen Demand (as COD)	mg/l, max	--	APHA 3111 B	14.0	36.0
28	Lead (as Pb)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
29	Mercury (as Hg)	mg/l, max	--	APHA 3111 B	<0.002	<0.002
30	Nickel (as Ni)	mg/l, max	--	APHA 3500As-B	<0.1	<0.1
31	Arsenic (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
32	Total Chromium (as TCr)	mg/l, max	--	IS3025(P44)1993	<0.05	<0.05
33	Biochemical Oxygeo Demand (as BOD at 27°C For 3 days)	mg/l, max	3.0	APHA 4500 P D	1.9	2.4
34	Dissolved Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.53	1.14
Any unusual feature observed during determination						

Reviewed by

Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India . Tel.: 0674-3511721

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Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-1618 **Date: 04.06.2021**

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**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**12.05.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**	**Latitude : N 19°17.015'** **Longitude : E 83°0.879''** **Altitude : 707.14 m.**	**Latitude : N 19°16.602'** **Longitude : E 82°59.812'** **Altitude : 725.73 m.**
Sampling Date	**11.05.2021**	**Test Completed on**	**21.05.2021**

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	**5**	**15**
2	**Odour**	--	**Agreeable**	APHA 2150 B	**Agreeable**	**Agreeable**
3	**pH value**	--	**6.5-8.5**	APHA 4500 H^+B	**7.08**	**7.44**
4	**Suspended Solids**	mg/l, max	--	APHA 2540 D	**57.0**	**86.0**
5	**Total dissolved solids**	mg/l, max	**1500**	APHA 2540 C	**177.0**	**294.0**
6	**Temperature**	^{0}c	--	--	**26.0**	**26.7**
7	**Conductivity**	µs/cm	--	APHA 2510 C	**284.0**	**480.0**
8	**Ammonical Nitrogen (as NH_4-N)**	mg/l, max	--	APHA4500 NH_3B	**1.27**	**3.1**
9	**Total Kjeldahl Nitrogen (as N)**	mg/l, max	--	APHA4500N_{ORG}B	**2.6**	**4.8**
10	**Oil & Grease**	mg/l, max	**0.1**	APHA 5220 B	**ND**	**ND**
11	**Free Ammonia (as NH_3)**	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	**1.24**	**2.92**
14	**Copper (as Cu)**	mg/l, max	**1.5**	APHA 3111Cu B	**<0.02**	**<0.02**
15	**Fluoride (as F)**	mg/l, max	**1.5**	APHA 4500 F^-D	**0.48**	**0.95**
16	**Hexavalent Chromium (as Cr^{+6})**	mg/l, max	**0.05**	APHA 3500 Cr B	**<0.01**	**<0.01**
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**	**5.4**
19	**Sulphide (as S)**	mg/l, max	--	APHA 4500 S^{2-} F	**<0.05**	**<0.05**
20	**Nitrate (as NO_3)**	mg/l, max	**50**	APHA4500NO_3^-B	**2.5**	**2.76**
21	**Phenolic Compound (as C_6H_5OH)**	mg/l, max	--	APHA 5530 C	**<0.05**	**<0.05**
22	**Selenium (as S)**	mg/l, max	**0.05**	APHA 3500 Se C	**<0.001**	**<0.001**
23	**Manganese (as Mn)**	mg/l, max	--	APHA 3111 B	**<0.05**	**<0.05**
24	**Bio-assay Test**	mg/l, max	**90% survival of fish after 96 hrs in 100% effluent**	IS 6582	**94%**	**89%**
25	**Zinc (as Zn)**	mg/l, max	**15**	APHA 3111 B	**0.37**	**0.55**
26	**Cadmium**	mg/l, max	**0.01**	APHA 3111 B	**<0.01**	**<0.01**
27	**Chemical Oxygen Demand (as COD)**	mg/l, max	--	APHA 3111 B	**10.0**	**34.0**
28	**Lead (as Pb)**	mg/l, max	**0.1**	APHA 3112 B	**<0.01**	**<0.01**
29	**Mercury (as Hg)**	mg/l, max	--	APHA 3111 B	**<0.002**	**<0.002**
30	**Nickel (as Ni)**	mg/l, max	--	APHA 3500As B	**<0.1**	**<0.1**
31	**Arsenic (as As)**	mg/l, max	**0.2**	APHA 3111 B	**<0.004**	**<0.004**
32	**Total Chromium (as TCr)**	mg/l, max	--	IS3025(P44)1993	**<0.05**	**<0.05**
33	**Biochemical Oxygen Demand (as BOD at 27^0C For 3 days)**	mg/l, max	**3.0**	APHA 4500 P D	**2.0**	**2.5**
34	**Dissolved Phosphate (as PO_4)**	mg/l, max	--	APHA 3111 B	**0.78**	**1.23**
Any unusual feature observed during determination				**Nil**		

Reviewed by

Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
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Test Report No: Envlab/21/R-1619 **Date: 04.06.2021**

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**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**12.05.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**	**Latitude : N 19°22.014' Longitude :E 83°04.658' Altitude : 769.01 m**	**Latitude : N 19°23.078' Longitude : E 83°0.248' Altitude : 660.50 m**
Sampling Date	**11.05.2021**	**Test Completed on**	**21.05.2021**

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**	**10**
2	**Odour**	--	**Agreeable**	APHA 2150 B	**Agreeable**	**Agreeable**
3	**pH value**	--	**6.5-8.5**	APHA 4500 H^+B	**7.26**	**7.57**
4	**Suspended Solids**	mg/l, max	--	APHA 2540 D	**61.0**	**93.0**
5	**Total dissolved solids**	mg/l, max	**1500**	APHA 2540 C	**229.0**	**307.0**
6	**Temperature**	^{0}C	--	--	**25.7**	**26.1**
7	**Conductivity**	µs/cm	--	APHA 2510 C	**378.0**	**497.0**
8	**Ammonical Nitrogen (as NH_4-N)**	mg/l, max	--	APHA4500 NH_3B	**1.9**	**3.8**
9	**Total Kjeldahl Nitrogen (as N)**	mg/l, max	--	APHA4500N_{ORG}B	**3.3**	**5.2**
10	**Oil & Grease**	mg/l, max	**0.1**	APHA 5220 B	**ND**	**ND**
11	**Free Ammonia (as NH_3)**	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**	**2.78**
14	**Copper (as Cu)**	mg/l, max	**1.5**	APHA 3111Cu B	**<0.02**	**<0.02**
15	**Fluoride (as F)**	mg/l, max	**1.5**	APHA 4500 F^-D	**0.67**	**0.88**
16	**Hexavalent Chromium (as Cr^{+6})**	mg/l, max	**0.05**	APHA 3500 Cr B	**<0.01**	**<0.01**
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**	**5.7**
19	**Sulphide (as S)**	mg/l, max	--	APHA 4500 S^{2-} F	**<0.05**	**<0.05**
20	**Nitrate (as NO_3)**	mg/l, max	**50**	APHA4500NO_3^-B	**2.48**	**3.1**
21	**Phenolic Compound (as C_6H_5OH)**	mg/l, max	--	APHA 5530 C	**<0.05**	**<0.05**
22	**Selenium (as S)**	mg/l, max	**0.05**	APHA 3500 Se C	**<0.001**	**<0.001**
23	**Manganese (as Mn)**	mg/l, max	--	APHA 3111 B	**<0.05**	**<0.05**
24	**Bio-assay Test**	mg/l, max	**90% survival of fish after 96 hrs in 100% effluent**	IS 6582	**95%**	**90%**
25	**Zinc (as Zn)**	mg/l, max	**15**	APHA 3111 B	**0.29**	**0.62**
26	**Cadmium**	mg/l, max	**0.01**	APHA 3111 B	**<0.01**	**<0.01**
27	**Chemical Oxygen Demand (as COD)**	mg/l, max	--	APHA 3111 B	**16.0**	**32.0**
28	**Lead (as Pb)**	mg/l, max	**0.1**	APHA 3112 B	**<0.01**	**<0.01**
29	**Mercury (as Hg)**	mg/l, max	--	APHA 3111 B	**<0.002**	**<0.002**
30	**Nickel (as Ni)**	mg/l, max	--	APHA 3500As B	**<0.1**	**<0.1**
31	**Arsenic (as As)**	mg/l, max	**0.2**	APHA 3111 B	**<0.004**	**<0.004**
32	**Total Chromium (as TCr)**	mg/l, max	--	IS3025(P44)1993	**<0.05**	**<0.05**
33	**Biochemical Oxygen Demand (as BOD at 27^0C For 3 days)**	mg/l, max	**3.0**	APHA 4500 P D	**1.8**	**2.2**
34	**Dissolved Phosphate (as PO_4)**	mg/l, max	--	APHA 3111 B	**0.61**	**0.96**
Any unusual feature observed during determination				**Nil**		

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- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services: Environment Lab, Food Lab, Material Lab, Soil Lab, Mineral Lab & Microbiology Lab

Test Report No: Envlab/21/R-2785 **Date: 05.07.2021**

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**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**21.06.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**	**Latitude : N 19°17.015' Longitude : E 83°0.879'' Altitude : 707.14 m.**	**Latitude : N 19°16.602' Longitude : E 82°59.812' Altitude : 725.73 m.**
Sampling Date	**18.06.2021**	**Test Completed on**	**28.06.2021**

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	30
2	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	6.97	7.28
4	Suspended Solids	mg/l, max	--	APHA 2540 D	62.0	81.0
5	Total dissolved solids	mg/l, max	1500	APHA 2540 C	192.0	320.0
6	Temperature	^{0}c	--	--	24.6	25.1
7	Conductivity	µs/cm	--	APHA 2510 C	313.4	514.8
8	Ammonical Nitrogen (as NH_4-N)	mg/l, max	--	APHA4500 NH_3B	1.5	3.4
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500$N_{ORG}B$	2.8	5.3
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	5.6	5.1
12	Biochemical Oxygen Demand (as BOD at 27^{0}C For 3 days)	mg/l, max	3.0	APHA 4500 P D	2.1	2.4
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	APHA 3111 B	14.0	30.0
14	Free Ammonia (as NH_3)	mg/l, max	--	--	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	APHA 4500 Cl B	ND	ND
16	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	1.13	3.1
17	Fluoride (as F)	mg/l, max	1.5	APHA 4500 F^-D	0.53	0.86
18	Hexavalent Chromium (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
19	Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
20	Sulphide (as S)	mg/l, max	--	APHA 4500 S^{2-} F	<0.05	<0.05
21	Nitrate (as NO_3)	mg/l, max	50	APHA4500NO_3^-B	2.37	2.62
22	Dissolved Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.67	1.34
23	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs in 100% effluent	IS 6582	93%	91%
25	Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.38	0.56
29	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	APHA 3111 B	<0.002	<0.002
32	Nickel (as Ni)	mg/l, max	--	APHA 3500As B	<0.1	<0.1
33	Arsenic (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
34	Total Chromium (as TCr)	mg/l, max	--	IS3025(P44)1993	<0.05	<0.05
Any unusual feature observed during determination				Nil		

RPeviewed by

Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India Tel.: 0674-3511721
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Test Report No: Envlab/21/R-2786 **Date: 05.07.2021**

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**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**21.06.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**	**Latitude : N 19°22.014' Longitude :E 83°04.658' Altitude : 769.01 m**	**Latitude : N 19°23.078' Longitude : E 83°0.248' Altitude : 660.50 m**
Sampling Date	**18.06.2021**	**Test Completed on**	**28.06.2021**

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	25
2	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.13	7.45
4	Suspended Solids	mg/l, max	--	APHA 2540 D	54.0	89.0
5	Total dissolved solids	mg/l, max	1500	APHA 2540 C	254.0	338.0
6	Temperature	^{0}c	--	--	25.3	25.5
7	Conductivity	µs/cm	--	APHA 2510 C	402.7	543.3
8	Ammonical Nitrogen (as NH_4-N)	mg/l, max	--	APHA4500 NH_3B	2.4	3.5
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500$N_{ORG}B$	4.1	5.4
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	5.7	5.4
12	Biochemical Oxygen Demand (as BOD at 27^{0}C For 3 days)	mg/l, max	3.0	APHA 4500 P D	1.9	2.3
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	APHA 3111 B	18.0	28.0
14	Free Ammonia (as NH_3)	mg/l, max	--	--	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	APHA 4500 Cl B	ND	ND
16	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	1.42	2.93
17	Fluoride (as F)	mg/l, max	1.5	APHA 4500 F^-D	0.61	0.92
18	Hexavalent Chromium (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
19	Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
20	Sulphide (as S)	mg/l, max	--	APHA 4500 S^{2-} F	<0.05	<0.05
21	Nitrate (as NO_3)	mg/l, max	50	APHA4500NO_3^-B	2.26	2.85
22	Dissolved Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.74	1.22
23	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs in 100% effluent	IS 6582	96%	93%
25	Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.31	0.65
29	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	APHA 3111 B	<0.002	<0.002
32	Nickel (as Ni)	mg/l, max	--	APHA 3500As B	<0.1	<0.1
33	Arsenic (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
34	Total Chromium (as T.Cr)	mg/l, max	--	IS3025(P44)1993	<0.05	<0.05
Any unusual feature observed during determination				Nil		

Reviewed by

Approved by

Test Report No: Envlab/21/R-3411 **Date: 05.08.2021**

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**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**13.07.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**	**Latitude : N 19°17.015'** **Longitude : E 83°0.879''** **Altitude : 707.14 m.**	**Latitude : N 19°16.602'** **Longitude : E 82°59.812'** **Altitude : 725.73 m.**
Sampling Date	**12.07.2021**	**Test Completed on**	**21.07.2021**

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**	**30**
2	**Odour**	--	**Agreeable**	APHA 2150 B	**Agreeable**	**Agreeable**
3	**pH value**	--	**6.5-8.5**	APHA 4500 H^+B	**7.14**	**7.36**
4	**Suspended Solids**	mg/l, max	**--**	APHA 2540 D	**54.0**	**76.0**
5	**Total dissolved solids**	mg/l, max	**1500**	APHA 2540 C	**183.0**	**307.0**
6	**Temperature**	^{0}C	**--**	--	**23.8**	**25.3**
7	**Conductivity**	µs/cm	**--**	APHA 2510 C	**297.3**	**493.8**
8	**Ammonical Nitrogen (as NH_4-N)**	mg/l, max	**--**	APHA4500 NH_3B	**1.3**	**3.2**
9	**Total Kjeldahl Nitrogen (as N)**	mg/l, max	**--**	APHA4500N_{ORG}B	**2.3**	**4.6**
10	**Oil & Grease**	mg/l, max	**0.1**	APHA 5220 B	**ND**	**ND**
11	**Dissolved Oxygen (as DO)**	mg/l, min	**4**	APHA 4500 O C	**5.7**	**5.0**
12	**Biochemical Oxygen Demand (as BOD at 27^0C For 3 days)**	mg/l, max	**3.0**	APHA 4500 P D	**2.0**	**2.3**
13	**Chemical Oxygen Demand (as COD)**	mg/l, max	**--**	APHA 3111 B	**12.0**	**24.0**
14	**Free Ammonia (as NH_3)**	mg/l, max	**--**	--	**ND**	**ND**
15	**Total Residual Chlorine (as RFC)**	mg/l, min	**--**	APHA 4500 Cl B	**ND**	**ND**
16	**Iron (as Fe)**	mg/l, max	**50**	APHA 3500 Fe B	**0.94**	**2.86**
17	**Fluoride (as F)**	mg/l, max	**1.5**	APHA 4500 F^-D	**0.48**	**0.77**
18	**Hexavalent Chromium (as Cr^{+6})**	mg/l, max	**0.05**	APHA 3500 Cr B	**<0.01**	**<0.01**
19	**Cyanide (as CN)**	mg/l, max	**0.05**	APHA 4500 CN E	**<0.01**	**<0.01**
20	**Sulphide (as S)**	mg/l, max	**--**	APHA 4500 S^{2-} F	**<0.05**	**<0.05**
21	**Nitrate (as NO_3)**	mg/l, max	**50**	APHA4500NO_3^-B	**2.41**	**2.68**
22	**Dissolved Phosphate (as PO_4)**	mg/l, max	**--**	APHA 3111 B	**0.57**	**1.26**
23	**Phenolic Compound (as C_6H_5OH)**	mg/l, max	**--**	APHA 5530 C	**<0.05**	**<0.05**
24	**Bio-assay Test**	mg/l, max	**90% survival of fish after 96 hrs in 100% effluent**	IS 6582	**92%**	**90%**
25	**Selenium (as S)**	mg/l, max	**0.05**	APHA 3500 Se C	**<0.001**	**<0.001**
26	**Manganese (as Mn)**	mg/l, max	**--**	APHA 3111 B	**<0.05**	**<0.05**
27	**Copper (as Cu)**	mg/l, max	**1.5**	APHA 3111Cu B	**<0.02**	**<0.02**
28	**Zinc (as Zn)**	mg/l, max	**15**	APHA 3111 B	**0.3**	**0.52**
29	**Cadmium**	mg/l, max	**0.01**	APHA 3111 B	**<0.01**	**<0.01**
30	**Lead (as Pb)**	mg/l, max	**0.1**	APHA 3112 B	**<0.01**	**<0.01**
31	**Mercury (as Hg)**	mg/l, max	**--**	APHA 3111 B	**<0.002**	**<0.002**
32	**Nickel (as Ni)**	mg/l, max	**--**	APHA 3500As B	**<0.1**	**<0.1**
33	**Arsenic (as As)**	mg/l, max	**0.2**	APHA 3111 B	**<0.004**	**<0.004**
34	**Total Chromium (as TCr)**	mg/l, max	**--**	IS3025(P44)1993	**<0.05**	**<0.05**
Any unusual feature observed during determination				**Nil**		

RPeviewed by **Approved by**

Test Report No: Envlab/21/R-3412 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**SW3: Khandabindha(Up Stream) SW4: Khandabindha(Down Stream**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Surface Water**	**Sampling Procedure**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**13.07.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**	**Latitude : N 19°22.014' Longitude :E 83°04.658' Altitude : 769.01 m**	**Latitude : N 19°23.078' Longitude : E 83°0.248' Altitude : 660.50 m**
Sampling Date	**12.07.2021**	**Test Completed on**	**21.07.2021**

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**	**30**
2	**Odour**	--	**Agreeable**	APHA 2150 B	**Agreeable**	**Agreeable**
3	**pH value**	--	**6.5-8.5**	APHA 4500 H^+B	**7.05**	**7.41**
4	**Suspended Solids**	mg/l, max	--	APHA 2540 D	**59.0**	**87.0**
5	**Total dissolved solids**	mg/l, max	**1500**	APHA 2540 C	**241.0**	**346.0**
6	**Temperature**	^0C	--	--	**24.7**	**25.6**
7	**Conductivity**	µs/cm	--	APHA 2510 C	**389.6**	**557.5**
8	**Ammonical Nitrogen (as NH_4-N)**	mg/l, max	--	APHA4500 NH_3B	**2.6**	**3.8**
9	**Total Kjeldahl Nitrogen (as N)**	mg/l, max	--	APHA4500$N_{ORG}B$	**3.8**	**5.5**
10	**Oil & Grease**	mg/l, max	**0.1**	APHA 5220 B	**ND**	**ND**
11	**Dissolved Oxygen (as DO)**	mg/l, min	**4**	APHA 4500 O C	**5.5**	**5.6**
12	**Biochemical Oxygen Demand (as BOD at 27^0C For 3 days)**	mg/l, max	**3.0**	APHA 4500 P D	**1.9**	**2.2**
13	**Chemical Oxygen Demand (as COD)**	mg/l, max	--	APHA 3111 B	**14.0**	**26.0**
14	**Free Ammonia (as NH_3)**	mg/l, max	--	--	**ND**	**ND**
15	**Total Residual Chlorine (as RFC)**	mg/l, min	--	APHA 4500 Cl B	**ND**	**ND**
16	**Iron (as Fe)**	mg/l, max	**50**	APHA 3500 Fe B	**1.35**	**3.12**
17	**Fluoride (as F)**	mg/l, max	**1.5**	APHA 4500 F^-D	**0.56**	**0.86**
18	**Hexavalent Chromium (as Cr^{+6})**	mg/l, max	**0.05**	APHA 3500 Cr B	**<0.01**	**<0.01**
19	**Cyanide (as CN)**	mg/l, max	**0.05**	APHA 4500 CN E	**<0.01**	**<0.01**
20	**Sulphide (as S)**	mg/l, max	--	APHA 4500 S^{2-} F	**<0.05**	**<0.05**
21	**Nitrate (as NO_3)**	mg/l, max	**50**	APHA4500NO_3^-B	**1.93**	**2.72**
22	**Dissolved Phosphate (as PO_4)**	mg/l, max	--	APHA 3111 B	**0.82**	**1.37**
23	**Phenolic Compound (as C_6H_5OH)**	mg/l, max	--	APHA 5530 C	**<0.05**	**<0.05**
24	**Bio-assay Test**	mg/l, max	**90% survival of fish after 96 hrs in 100% effluent**	IS 6582	**94%**	**93%**
25	**Selenium (as S)**	mg/l, max	**0.05**	APHA 3500 Se C	**<0.001**	**<0.001**
26	**Manganese (as Mn)**	mg/l, max	--	APHA 3111 B	**<0.05**	**<0.05**
27	**Copper (as Cu)**	mg/l, max	**1.5**	APHA 3111Cu B	**<0.02**	**<0.02**
28	**Zinc (as Zn)**	mg/l, max	**15**	APHA 3111 B	**0.33**	**0.62**
29	**Cadmium**	mg/l, max	**0.01**	APHA 3111 B	**<0.01**	**<0.01**
30	**Lead (as Pb)**	mg/l, max	**0.1**	APHA 3112 B	**<0.01**	**<0.01**
31	**Mercury (as Hg)**	mg/l, max	--	APHA 3111 B	**<0.002**	**<0.002**
32	**Nickel (as Ni)**	mg/l, max	--	APHA 3500As B	**<0.1**	**<0.1**
33	**Arsenic (as As)**	mg/l, max	**0.2**	APHA 3111 B	**<0.004**	**<0.004**
34	**Total Chromium (as TCr)**	mg/l, max	--	IS3025(P44)1993	**<0.05**	**<0.05**
Any unusual feature observed during determination				**Nil**		

Reviewed by

Approved by

Visiontek Consnltancy Services Pvt. Ltd.

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- Waste Management Services

Laboratory Services
Environment Lab
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Material Lab
Soil Lab
Mineral Lab
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Microbiology Lab

Test Report No: Envlab/21/R-4639 Date: 06.09.2021

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	APHA 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	11.08.2021
Sample Condition	Sealed Plastic & Sterilized Glass Bottle	Latitnde : N 19°17.015' Longitude : E 83°0.879'' Altitude : 707.14 m.	Latitude : N 19°16.602' Longitude : E 82°59.812' Altitude : 725.73 m.
Sampling Date	10.08.2021	Test Completed on	18.08.2021

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	20	50
2	Odonr	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	6.92	7.28
4	Suspended Solids	mg/l, max	--	APHA 2540 D	61.0	84.0
5	Total dissolved solids	mg/l, max	1500	APHA 2540 C	195.0	322.0
6	Temperature	^{0}c	--	--	23.5	25.1
7	Condnctivity	µs/cm	--	APHA 2510 C	308.5	503.7
8	Ammonieal Nitrogen (as NH_4-N)	mg/l, max	--	APHA4500 NH_3B	0.94	2.8
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500 $N_{ORG}B$	1.7	3.5
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	5.5	5.1
12	Biochemical Oxygen Demand (as BOD at 27^{0}C For 3 days)	mg/l, max	3.0	APHA 4500 P D	1.8	2.2
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	APHA 3111 B	10.0	20.0
14	Free Ammonia (as NH_3)	mg/l, max	--	--	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	APHA 4500 Cl B	ND	ND
16	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	0.83	2.57
17	Flnoride (as F)	mg/l, max	1.5	APHA 4500 F D	0.54	0.72
18	Hexavalent Chromium (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
19	Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
20	Sulphide (as S)	mg/l, max	--	APHA 4500 S^{2-} F	<0.05	<0.05
21	Nitrate (as NO_3)	mg/l, max	50	APHA4500 NO_3^-B	2.62	2.95
22	Dissolved Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.53	1.12
23	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs in 100% effluent	IS 6582	94%	91%
25	Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.36	0.57
29	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	APHA 3111 B	<0.002	<0.002
32	Nickel (as Ni)	mg/l, max	--	APHA 3500As B	<0.1	<0.1
33	Arsenic (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
34	Total Chromium (as TCr)	mg/l, max	--	IS3025(P44)1993	<0.05	<0.05
Any unusual feature observed during determination					Nil	

Reviewed by

Approved by

Plot No.- M-22 & 23, Chandaka Industrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India, Tel.: 0674-3511721
E-mail: visioutek@vcspl.org, visiontekin@gmail.com
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- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-4340 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	SW3: Khandabindha (Up Stream) SW4: Khandabindha (Down Stream	Sampied by	VCSPL'S Representative
Sample Description	Surface Water	Sampling Procedure	APHA 1060
Sample Source	Baphiimaii Mines, UAIL	Sample Received on	11.08.2021
Sampie Condition	Seaied Plastic & Sterilized Glass Bottie	Latitude : N 19°22.014' Longitude :E 83°04.658' Altitude : 769.01 m	Latitude : N 19°23.078' Longitude : E 83°0.248' Altitude : 660.50 m
Sampiing Date	10.08.2021	Test Compieted on	18.08.2021

Sl. No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-3	SW-4
1	Coior	Hazen, max	300	APHA 2120 B	20	40
2	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.13	7.46
4	Snspended Solids	mg/l, max	--	APHA 2540 D	56.0	81.0
5	Total dissoived soiids	mg/l, max	1500	APHA 2540 C	263.0	374.0
6	Temperature	^{0}c	--	--	24.2	24.7
7	Conductivity	µs/cm	--	APHA 2510 C	411.2	581.6
8	Ammouical Nitrogen (as NH_4-N)	mg/l, max	--	APHA4500 NH_3B	2.3	4.1
9	Totai Kjeldahi Nitrogen (as N)	mg/l, max	--	APHA4500N_{ORG}B	3.3	6.2
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Dissoived Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	5.4	4.9
12	Biochemical Oxygen Demand (as BOD at 27^{0}C For 3 days)	mg/l, max	3.0	APHA 4500 P D	2.1	2.4
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	APHA 3111 B	16.0	28.0
14	Free Ammonia (as NH_3)	mg/l, max	--	--	ND	ND
15	Total Residuai Chiorine (as RFC)	mg/l, min	--	APHA 4500 Cl B	ND	ND
16	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	1.4	2.94
17	Fiuoride (as F)	mg/l, max	1.5	APHA 4500 F^-D	0.63	0.91
18	Hexavaient Chromium (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
19	Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
20	Sulphide (as S)	mg/l, max	--	APHA 4500 S^{2-} F	<0.05	<0.05
21	Nitrate (as NO_3)	mg/l, max	50	APHA4500NO_3^-B	2.16	2.8
22	Dissolved Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.74	1.45
23	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs in 100% effluent	IS 6582	95%	92%
25	Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.61	0.66
29	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	APHA 3111 B	<0.002	<0.002
32	Nickel (as Ni)	mg/l, max	--	APHA 3500As B	<0.1	<0.1
33	Arsenie (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
34	Total Chrominm (as TCr)	mg/i, max	--	IS3025(P44)1993	<0.05	<0.05
Any unusual feature observed during determination						

Reviewed by

Approved by

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- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R- 5302

Date: 05.10.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	SW1: Sana River (Up Stream) SW2: Sana River (Down Stream)	Sampied by	VCSPL'S Representative
Sample Description	Surface Water	Sampiing Procedure	APHA 1060
Sampie Source	Baphiimali Mines, UAIL	Sample Reeeived on	21.09.2021
Sample Condition	Sealed Piastic & Steriiized Glass Bottle	Latitude : N 19°17.015' Longitude : E 83°0.879'' Altitude : 707.14 m.	Latitude : N 19°16.602' Longitude : E 82°59.812' Altitude : 725.73 m.
Sampling Date	20.09.2021	Test Compieted on	28.09.2021

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	15	40
2	Odour	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.11	7.37
4	Suspended Solids	mg/l, max	--	APHA 2540 D	67.0	88.0
5	Total dissolved solids	mg/l, max	1500	APHA 2540 C	213.0	309.0
6	Temperature	^{0}c	--	--	24.6	25.3
7	Conductivity	µs/cm	--	APHA 2510 C	332.3	483.5
8	Ammonicai Nitrogen (as NH_4-N)	mg/l, max	--	APHA4500 NH_3B	0.6	2.2
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500$N_{ORG}B$	1.5	3.1
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	5.7	5.4
12	Biochemical Oxygen Demand (as BOD at 27^{0}C For 3 days)	mg/l, max	3.0	APHA 4500 P D	1.6	2.0
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	APHA 3111 B	12.0	18.0
14	Free Ammonia (as NH_3)	mg/l, max	--	--	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	APHA 4500 Ci B	ND	ND
16	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	0.74	2.3
17	Fiuoride (as F)	mg/l, max	1.5	APHA 4500 F^-D	0.58	0.77
18	Hexavalent Chrominm (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
19	Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
20	Sulphide (as S)	mg/l, max	--	APHA 4500 S^{2-} F	<0.05	<0.05
21	Nitrate (as NO_3)	mg/l, max	50	APHA4500NO_3^-B	2.3	2.7
22	Dissoived Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.62	0.87
23	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs in 100% effluent	IS 6582	96%	90%
25	Selenium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	APHA 3111 B	0.29	0.46
29	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
31	Mercury (as Hg)	mg/i, max	--	APHA 3111 B	<0.002	<0.002
32	Nickel (as Ni)	mg/l, max	--	APHA 3500As B	<0.1	<0.1
33	Arsenic (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
34	Totalc hromium (as TCr)	mg/l, max	--	IS3025(P44)1993	<0.05	<0.05
Any unusual feature observed during determination						

Reviewed by

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- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soii Exploration
- Waste Maoagement Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-5303

Date: 05.10.2021

TEST REPORT

Cnstomer Name & Address : Baphlimali Mines, M/s Utkai Alnmina International Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Location & Code	SW3: Khandabindha (Up Stream) SW4: Khandabindha (Down Stream	Sampled by	VCSPL'S Representative
Sampie Description	Surface Water	Sampling Procedure	APHA 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	21.09.2021
Sample Condition	Sealed Plastic & Sterilized Glass Bottle	Latitude : N 19°22.014' Longitude :E 83°04.658' Altitude : 769.01 m	Latitude : N 19°23.078' Longltude : E 83°0.248' Altitude : 660.50 m
Sampling Date	20.09.2021	Test Completed on	28.09.2021

Sl. No	Parameters	Units	Standards as per IS 2296-Class C	Test methods	SW-3	SW-4
I	Color	Hazen, max	300	APHA 2120 B	10	30
2	Odonr	--	Agreeable	APHA 2150 B	Agreeable	Agreeable
3	pH valne	--	6.5-8.5	APHA 4500 H^+B	6.86	7.41
4	Suspended Solids	mg/l, max	--	APHA 2540 D	59.0	83.0
5	Total dissolved solids	mg/l, max	1500	APHA 2540 C	248.0	355.0
6	Temperatnre	^{0}c	--	--	24.8	27.2
7	Conductivity	µs/cm	--	APHA 2510 C	389.7	554.6
8	Ammonlcal Nitrogen (as NH_4-N)	mg/l, max	--	APHA4500 NH_3B	1.9	3.5
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	APHA4500N_{ORG}B	2.8	4.6
10	Oil & Grease	mg/l, max	0.1	APHA 5220 B	ND	ND
11	Dissoived Oxygen (as DO)	mg/l, min	4	APHA 4500 O C	5.6	5.2
12	Biochemical Oxygen Demand (as BOD at 27^{0}C For 3 days)	mg/l, max	3.0	APHA 4500 P D	2.0	2.2
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	APHA 3111 B	14.0	22.0
14	Free Ammonia (as NH_3)	mg/l, max	--	--	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	APHA 4500 Cl B	ND	ND
16	Iron (as Fe)	mg/l, max	50	APHA 3500 Fe B	1.14	2.52
17	Fluoride (as F)	mg/l, max	1.5	APHA 4500 F D	0.59	0.84
18	Hexavaient Chromium (as Cr^{+6})	mg/l, max	0.05	APHA 3500 Cr B	<0.01	<0.01
19	Cyanide (as CN)	mg/l, max	0.05	APHA 4500 CN E	<0.01	<0.01
20	Snlphide (as S)	mg/l, max	--	APHA 4500 S^{2-} F	<0.05	<0.05
21	Nitrate (as NO_3)	mg/l, max	50	APHA4500NO_3^-B	1.83	2.4
22	Dissolved Phosphate (as PO_4)	mg/l, max	--	APHA 3111 B	0.66	1.23
23	Phenolic Compound (as C_6H_5OH)	mg/l, max	--	APHA 5530 C	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs in 100% effluent	IS 6582	94%	89%
25	Seienium (as S)	mg/l, max	0.05	APHA 3500 Se C	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	APHA 3111 B	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	APHA 3111Cu B	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	I5	APHA 3111 B	0.53	0.62
29	Cadmium	mg/l, max	0.01	APHA 3111 B	<0.01	<0.01
30	Lead (as Ph)	mg/l, max	0.1	APHA 3112 B	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	APHA 3111 B	<0.002	<0.002
32	Nickel (as Ni)	mg/l, max	--	APHA 3500As B	<0.1	<0.1
33	Arsenic (as As)	mg/l, max	0.2	APHA 3111 B	<0.004	<0.004
34	Total Chromium (as TCr)	mg/l, max	--	IS3025(P44)1993	<0.05	<0.05
Any nuisance feature observed during determination					Nil	

Prepared by

Approved by

ANNEXURE: 8

Ground Water Quality Analysis Report

Test Report No: ENVLAB/21/R-1626 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**GW1: Paikupakhal GW2: Andirakanch**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ground Water**	**Sampling Procedure**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**11.05.2021**
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	**10.05.2021**	**Test Completed on**	**20.05.2021**

Sl. No	Parameters	Unit	Standard as per IS 10500:2012, Amnd. 2015 & 2018	Test methods	GW-1	GW-2
Organoleptic & Physical Parameters						
1	Color	Hazen	5	APHA 2120 B,C	<1.0	<1.0
2	Odour	--	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.28	7.13
4	Turbidity	NTU, max	1.0	APHA 2130 B	1.4	1.2
5	Total Dissolved Solids	mg/l	500	APHA 2540 C	321.0	292.0
6	Temperature	^{0}C	-	--	25.6	25.0
7	Conductivity	µS/cm	-	APHA 2510 C	502.0	463.0
General Parameters Concerning Substances Undesirable in Excessive Amounts						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	42.4	39.6
9	Chloride (as Cl)	mg/l, max	250	APHA 4500Cl^- B	39.5	35.0
10	Copper (as Cu)	mg/l, max	0.05	APHA 3111B,C	<0.02	<0.02
11	Fluoride (as F)	mg/l, max	1.0	APHA 4500F^-C	0.54	0.39
12	Free residual Chlorine	mg/l , min	0.2	APHA 4500Cl B	0.3	0.3
13	Iron (as Fe)	mg/l, max	1.0	APHA 3500Fe B	0.26	0.23
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	7.8	6.6
15	Manganese (as Mn)	mg/l, max	0.1	APHA 3500Mn B	<0.05	<0.05
16	Mineral oil	mg/l, max	0.5	APHA 5220 B	<0.02	<0.02
17	Acidity	mg/l, max	-	APHA 2310 B	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	APHA 5530 B,C	<0.05	<0.05
19	Selenium(as Se)	mg/l, max	0.01	APHA 3114B	<0.001	<0.001
20	Sulphate (as SO_4)	mg/l, max	200	APHA 4500SO_4^{2-}B	18.4	14.6
21	Total Alkalinity	mg/l, max	200	APHA 2320 B	124.0	92.0
22	Total Hardness	mg/l, max	200	APHA 2340 C	138.0	126.0
23	Zinc(as Zn)	mg/l, max	5.0	APHA 3111B,C	0.29	0.22
Parameters Concerning Toxic Substances						
24	Cadmium (as Cd)	mg/l, max	0.003	APHA 3111B,C	<0.01	<0.01
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	<0.01	<0.01
27	Mercury (as Hg)	mg/l, max	0.001	APHA 3500 Hg	<0.002	<0.002
28	Total arsenic	mg/l, max	0.01	APHA 3114B	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	APHA 6630 B	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY						
30	Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APHA 9221 B	<1.1	<1.1
Any unusual feature observed during determination						NIL

Reviewed by

Approved by

Test Report No: ENVLAB/21/R-1627 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	**GW3: Malligaon GW4: Kendumundi**	**Sampled by**	**VCSPL'S Representative**
Sample Description	**Ground Water**	**Sampling Procedure**	**APHA 1060**
Sample Source	**Baphlimali Mines, UAIL**	**Sample Received on**	**11.05.2021**
Sample Condition	**Sealed Plastic & Sterilized Glass Bottle**	**Latitude: N19°21.359´ Longitude: E82°59.889´ Altitude: 699.82 m.**	--
Sampling Date	**10.05.2021**	**Test Completed on**	**20.05.2021**

Sl. No	Parameters	Unit	Standard as per IS 10500:2012, Amnd. 2015 & 2018	Test methods	GW-3	GW-4
Organoleptic & Physical Parameters						
1	Color	Hazen	5	APHA 2120 B,C	<1.0	<1.0
2	Odour	--	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.41	7.36
4	Turbidity	NTU, max	1.0	APHA 2130 B	0.8	1.1
5	Total Dissolved Solids	mg/l	500	APHA 2540 C	185.0	238.0
6	Temperature	^{0}C	-	--	25.3	26.1
7	Conductivity	µS/cm	-	APHA 2510 C	294.0	382.0
General Parameters Concerning Substances Undesirable in Excessive Amounts						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	28.6	34.2
9	Chloride (as Cl)	mg/l, max	250	APHA 4500Cl^- B	27.5	29.0
10	Copper (as Cu)	mg/l, max	0.05	APHA 3111B,C	<0.02	<0.02
11	Fluoride (as F)	mg/l, max	1.0	APHA 4500F^-C	0.23	0.31
12	Free residual Chlorine	mg/l , min	0.2	APHA 4500Cl B	0.3	0.3
13	Iron (as Fe)	mg/l, max	1.0	APHA 3500Fe B	0.18	0.20
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	9.4	8.4
15	Manganese (as Mn)	mg/l, max	0.1	APHA 3500Mn B	<0.05	<0.05
16	Mineral oil	mg/l, max	0.5	APHA 5220 B	<0.02	<0.02
17	Acidity	mg/l, max	-	APHA 2310 B	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	APHA 5530 B,C	<0.05	<0.05
19	Selenium(as Se)	mg/l, max	0.01	APHA 3114B	<0.001	<0.001
20	Sulphate (as SO_4)	mg/l, max	200	APHA 4500SO_4^{2-}B	12.7	12.3
21	Total Alkalinity	mg/l, max	200	APHA 2320 B	106.0	116.0
22	Total Hardness	mg/l, max	200	APHA 2340 C	110.0	120.0
23	Zinc(as Zn)	mg/l, max	5.0	APHA 3111B,C	0.19	0.27
Parameters Concerning Toxic Substances						
24	Cadmium (as Cd)	mg/l, max	0.003	APHA 3111B,C	<0.01	<0.01
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	<0.01	<0.01
27	Mercury (as Hg)	mg/l, max	0.001	APHA 3500 Hg	<0.002	<0.002
28	Total arsenic	mg/l, max	0.01	APHA 3114B	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	APHA 6630 B	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY						
30	Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APHA 9221 B	<1.1	<1.1
Any unusual feature observed during determination						NIL

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- Mineral/Snb-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-4648

Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	GW1: Paikupakhal GW2: Andirakanch	Sampled hy	VCSPL'S Representative
Sample Description	Ground Water	Sampling Procedure	APHA 1060
Sample Source	Baphlimali Mines, UAIL	Sample Received on	13.08.2021
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.
Sampiing Date	12.08.2021	Test Completed on	20.08.2021

Sl. No	Parameters	Unit	Standard as per IS 10500:2012, Amnd. 2015 & 2018	Test methods	GW-1	GW-2
Organoleptic & Physical Parameters						
1	Color	Hazen	5	APHA 2120 B,C	<1.0	<1.0
2	Odour	--	Agreeable	APHA 2120 B	Agreeable	Agreeahle
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.31	7.15
4	Turbidity	NTU, max	1.0	APHA 2130 B	1.1	1.5
5	Total Dissolved Soiids	mg/l	500	APHA 2540 C	342.0	320.0
6	Temperature	^{0}C	-	--	24.8	25.3
7	Conductivity	µS/cm	-	APHA 2510 C	537.0	494.0
General Parameters Concerning Substances Undesirable in Excessive Amounts						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	45.2	37.4
9	Chloride (as Ci)	mg/l, max	250	APHA 4500Cl^- B	37.5	38.0
10	Copper (as Cu)	mg/l, max	0.05	APHA 3111B,C	<0.02	<0.02
11	Fluoride (as F)	mg/i, max	1.0	APHA 4500F^-C	0.48	0.41
12	Free residual Chlorine	mg/l , min	0.2	APHA 4500Cl B	0.3	0.3
13	Iron (as Fe)	mg/l, max	1.0	APHA 3500Fe B	0.29	0.25
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	6.6	4.5
15	Manganese (as Mn)	mg/l, max	0.1	APHA 3500Mn B	<0.05	<0.05
16	Minerai oil	mg/l, max	0.5	APHA 5220 B	<0.02	<0.02
17	Acidity	mg/l, max	-	APHA 2310 B	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	APHA 5530 B,C	<0.05	<0.05
19	Selenium(as Se)	mg/l, max	0.01	APHA 3114B	<0.001	<0.001
20	Sulphate (as SO_4)	mg/l, max	200	APHA 4500SO_4^{2-}B	17.1	15.4
21	Total Alkalinity	mg/l, max	200	APHA 2320 B	118.0	104.0
22	Total Hardness	mg/i, max	200	APHA 2340 C	140.0	112.0
23	Zinc(as Zn)	mg/i, max	5.0	APHA 3111B,C	0.34	0.26
Parameters Concerning Toxic Substances						
24	Cadmium (as Cd)	mg/l, max	0.003	APHA 3111B,C	<0.01	<0.01
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	<0.01	<0.01
27	Mercury (as Hg)	mg/l, max	0.001	APHA 3500 Hg	<0.002	<0.002
28	Total arsenic	mg/l, max	0.01	APHA 3114B	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	APHA 6630 B	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY						
30	Total Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APHA 9221 B	<1.1	<1.1
Any unusual feature observed during determination					NIL	

Reviewed by

Approved by

Plot No.- M-22 & 23, Chandaka Indnstrial Estate, Patia, Bhubaneswar, Khurda, Odisha-751024, India. Tel.: 0674-3511721
E-mail: visiontek@vcspl.org, visiontekin@gmail.com
Visit us at: www.vcspl.org

Visiontek Consnltancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

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- Water Resource Management
- Environmental & Social Study
- Surface & Sub-Surface Investigation
- Quality Control & Project Management
- Renewable Energy
- Agricultural Development
- Information Technology
- Public Health Engineering
- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services
Environment Lab
Food Lab
Material Lab
Soil Lab
Mineral Lab
&
Microbiology Lab

Test Report No: Envlab/21/R-4649 Date: 06.09.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Location & Code	GW3: Malligaon GW4: Kendumundi	Sampled by	VCSPL'S Representative
Sample Description	Ground Water	Sampiing Procedure	APHA 1060
Sample Source	Baphlimali Mines, UAIL	Sampie Received on	13.08.2021
Sample Condition	Sealed Piastic & Sterilized Giass Bottle	Latitude: N19°21.359′ Longitnde: E82°59.889′ Altitude: 699.82 m.	--
Sampling Date	12.08.2021	Test Compieted on	20.08.2021

Sl. No	Parameters	Unit	Standard as per IS 10500:2012, Amnd. 2015 & 2018	Test methods	GW-3	GW-4
Organoleptic & Physical Parameters						
1	Color	Hazen	5	APHA 2120 B,C	<1.0	<1.0
2	Odour	--	Agreeable	APHA 2120 B	Agreeable	Agreeable
3	pH value	--	6.5-8.5	APHA 4500 H^+B	7.26	7.3
4	Turbidity	NTU, max	1.0	APHA 2130 B	1.3	1.4
5	Total Dissolved Soiids	mg/l	500	APHA 2540 C	197.0	257.0
6	Temperature	^{0}C	-	--	25.5	25.2
7	Conductivity	µS/cm	-	APHA 2510 C	312.0	405.0
General Parameters Concerning Substances Undesirable in Excessive Amounts						
8	Calcium (as Ca)	mg/l, max	75	APHA 3500Ca B	34.6	32
9	Chloride (as Ci)	mg/l, max	250	APHA 4500Cl^-B	24.5	31.5
10	Copper (as Cu)	mg/l, max	0.05	APHA 3111B,C	<0.02	<0.02
11	Fluoride (as F)	mg/l, max	1.0	APHA 4500F^-C	0.26	0.35
12	Free residual Chlorine	mg/l , min	0.2	APHA 4500Cl B	0.3	0.3
13	Iron (as Fe)	mg/i, max	1.0	APHA 3500Fe B	0.22	0.24
14	Magnesium (as Mg)	mg/l, max	30	APHA 3500Mg,B	9.6	7.3
15	Manganese (as Mn)	mg/l, max	0.1	APHA 3500Mn B	<0.05	<0.05
16	Mineral oil	mg/l, max	0.5	APHA 5220 B	<0.02	<0.02
17	Acidity	mg/l, max	-	APHA 2310 B	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	APHA 5530 B,C	<0.05	<0.05
19	Selenium(as Se)	mg/l, max	0.01	APHA 3114B	<0.001	<0.001
20	Sulphate (as SO_4)	mg/i, max	200	APHA 4500SO_4^{2-}B	11.8	12.7
21	Totai Aikalinity	mg/l, max	200	APHA 2320 B	110.0	102.0
22	Totai Hardness	mg/l, max	200	APHA 2340 C	126.0	110.0
23	Zinc(as Zn)	mg/l, max	5.0	APHA 3111B,C	0.21	0.28
Parameters Concerning Toxic Substances						
24	Cadmium (as Cd)	mg/l, max	0.003	APHA 3111B,C	<0.01	<0.01
25	Cyanide (as CN)	mg/l, max	0.05	APHA 4500CN^-C,D	<0.01	<0.01
26	Lead (as Pb)	mg/i, max	0.01	APHA 3111B,C	<0.01	<0.01
27	Mercury (as Hg)	mg/i, max	0.001	APHA 3500 Hg	<0.002	<0.002
28	Total arsenic	mg/l, max	0.01	APHA 3114B	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	APHA 6630 B	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY						
30	Totai Coli forms	MPN/100ml	Shall not be detected in any 100 ml sample	APHA 9221 B	<1.1	<1.1
Any nnusual feature observed during determination					NIL	

Reviewed by

Approved by

ANNEXURE: 9

Ground Water Level Monitoring Report

Test Report No: ENVLAB/21/R-1629 **Date: 04.06.2021**

TEST REPORT

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

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	10.05.2021	Paikupakhal (Buffer Zone)	3.6	Latitude: N19°20.197´ Longitude: E82°59.589´ Altitude: 874.17 m.
2	10.05.2021	Andirakanch (Buffer Zone)	4.1	Latitude: N19°19.079´ Longitude: E83°00.738´ Altitude: 739.45 m.
3	10.05.2021	Malligaon (Buffer Zone)	3.3	Latitude: N19°21.359´ Longitude: E82°59.889´ Altitude: 699.82 m.
4	10.05.2021	Kendumundi (Buffer Zone)	3.8	NA
5	10.05.2021	Near Dump Yard (Core Zone)	>104	NA
6	10.05.2021	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 availibility of ground water.

Reviewed by

Approved by

Test Report No: Envlab/21/R-4650

Date: 06.09.2021

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	Gronnd Water Level	Sampling Proeedure	NA
Sample Source	Baphlimali Mines, UAIL	Sample Received on	NA

SL. No	Date of Sampling	Name of the Loeation	Water Level (meter)	GPS Coordinate
1	12.08.2021	Paikupakhal (Buffer Zone)	2.9	Latitnde: N19°20.197′ Longitude: E82°59.589′ Altitude: 874.17 m.
2	12.08.2021	Andirakanch (Buffer Zone)	3.4	Latitude: N19°19.079′ Lougitnde: E83°00.738′ Altitude: 739.45 m.
3	12.08.2021	Malligaon (Buffer Zone)	2.8	Latitude: N19°21.359′ Longitude: E82°59.889′ Altitude: 699.82 m.
4	12.08.2021	Kendnmundi (Bnffer Zone)	3.1	NA
5	12.08.2021	Near Dump Yard (Core Zone)	>104	NA
6	12.08.2021	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 availibility of ground water.

Visiontek Consultancy Services Pvt. Ltd. Reviewed by

Visiontek Consultancy Services Pvt. Ltd. Approved by

Annexure-10

Surface Water Withdrawal Agreement

ଓଡ଼ିଶା 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 12th 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 is successors and assigns (hereinafter called 'the Government') of the third part:

N. NAGESH

ANNEXURE: 11

Consent to Operate

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 disoharge of sewage and trade effluent under section 25/26 of Weter (PCP) Act, 1974 and for existing / new operation of the plant under seotion 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 ef Air (Prevention & Controt 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 tha 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 14.03.2010.

Details of Products Manufactured

Sl. No	Product	Quantity
01.	*Bauxite*	*5.3 MTPA*

This consent order is valid fcr the specified eutlets, 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.

A. **Discharge permitted through the following outlet subject to the standard**

Outlet No.	Description of outlet	Point of discharge	Quantity of discharge KL/br	Pre-scribed Standard				
				pH	TSS (mg/l)	Oil & Grease (mg/l)	BOD (mg/l)	COD (mg/l)
01.	Mine drainage water/ surface runoffs/ other wastewater.	On land/inland surface water body	60	5.5-9.0	100	10	--	--

B. **Emission permitted through the following stack subject to the prescribed standard**

Chimney Stack No.	Description of Stack	Stack height (m)	Quantity of emission	Prescribed Standard			
				PM (mg/Nm^3)	SO_2	NO_x	

C. **Disposal of solid waste permitted in the following manner**

Sl. No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site(TPD)	Quantity to be reused off site(TPD)	Quantity disposed off (TPO)	Description of disposal site.
01	Top soil & over burden	As per approved mining plan	--	--	--	As per approved mining plan

D. GENERAL CONDITIONS FOR ALL UNITS

1 The consent is given by the Board in consideration of the particulars given in the application. Any change or alteration or deviation made in actual practice from the particulars furnished in the application will also be the ground liable for review/variation/revocation of the consent order under section 27 of the Act of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.

2 The industry would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / and products / manufacturing process or quantity /quality of the effluent rate of emission / air pollution control equipment / system etc.

3 The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.

4 The application shall comply with and carry out the directives/orders issued by the Board in this consent order and at all subsequent times without any negligence on his part. In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law/Act.

5 The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.

6 The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.

7 This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.

8 The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.

9 An inspection book shall be opened and made available to Board's Officers during the visit to the factory.

10 The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.

11 Meters must be affixed at the entrance of the water supply connection so that such meters are easily accessible for inspection and maintenance and for other purposes of the Act provided that the place where it is affixed shall in no case be at a point before which water has been taped by the consumer for utilization for any purposes whatsoever.

12 Separate meters with necessary pipe-line for assessing the quantity of water used for each of the purposes mentioned below:

a) Industrial cooling, spraying in mine pits or boiler feed.

b) Domestic purpose

c) Process

13 The applicant shall display suitable caution board at the face where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.

14 Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.

15 The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.

16 The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.

17 Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed with sides and bottom made impervious.

18 The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.

19 The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.

20 If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the industry must adopt alternate satisfactory treatment and disposal measures.

21 The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.

22 The effluent treatment units and disposal measures shall become operative at the time of commencement of production.

23 The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Act or Rules made therein.

24 The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.

25 The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.

26 No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.

27 The liquid effluent arising out of the operation of the air pollution control equipment shall be treated in the manner and to ion of standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 (as amended).

28 The stack monitoring system employed dy the applicant shall be opened for inspection to this Board at any time.

29 There shall not be any fugitive or episodal discharge from the premises.

30 In case of such episodal discharge/emissions the industry shall take immediate action to bring down the emission within the limits prescribed dy the Board in conditions/stop the operation of the plant. Report of such accidental discharge /emission shall be brought to the notice of the Board within 24 hours of occurrence.

31 The applicant shall keep the premises of the industrial plant and air pollution control equipments clean and make all hoods, pipes, valves stacks/chimneys leak proof. The air pollution control equipments, location, inspection chambers, sampling port holes shall be made easily accessible at all times.

32 Any upset condition in nay of the plant/plants of the factory which is likely to result in increased effluent discharge/emission of air pollutants and / or result in violation of the standards mentioned above shall be reported to the Headquarters and Regional Office of the Board by fax / speed post within 24 hours of its occurrence.

33 The industry has to ensure that minimum three varieties of trees are planted at the density of not less than 1000 trees per acre. The trees may be planted along boundaries of the industries or industrial premises. This plantation is stipulated over and above the bulk plantation of trees in that area.

34 The solid waste such as sweeping, wastage packages, empty containers residues, sludge including that from air pollution control equipments collected within the premises of the industrial plants shall be disposed off scientifically to the satisfaction of the Board, so as no to cause fugitive emission, dust problems through leaching etc., of any kind.

35 All solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by :
- i) Land fill in case of inert material, care being taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
- ii) Controlled incineration, wherever possible in case of combustible organic material,
- iii) Composting, in case of bio-degradable material.

36 Any toxic material shall be detoxicated if possible, otherwise de sealed in steel drums and buried in protected areas after obtaining approval of this Board in writing. The detoxication or sealing and burying shall be carried out in the presence of Board's authorized persons only. Letter of authorization shall be obtained for handling and disposal of hazardous wastes.

37 If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard, vary all or any of such condition and thereupon the applicant shall be bound to comply with the conditions so varied.

38 The applicant, his/heirs/legal representatives or assignees shall have no claim whatsoever to the condition or renewal of this consent after the expiry period of this consent.

39 The Board reserves the right to review, impose additional conditions or condition, revoke change or alter the terms and conditions of this consent.

40 Notwithstanding anything contained in this conditional letter of consent, the Board hereby reserves to it the right and power under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Act by the Board.

41 The conditions imposed as above shall continue to de in force until revoked under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 A of Air (Prevention & Control of Pollution) Act, 1981.

42 In case the consent fee is revised upward during this period, the industry shall pay the differential fees to the Board (for the remaining years) to keep the consent order in force. If they fail to pay the amount within the period stipulated by the Board the consent order will be revoked without prior notice.

43 The Board reserves the right to revoke/refuse consent to operate at any time during period for which consent is granted in case any violation is observed and to modify/ stipulate additional conditions as deemed appropriate.

GENERAL CONDITIONS FOR UNITS WITH INVESTMENT OF MORE THAN Rs 50 CRORES, AND 17 CATEGORIES OF HIGHLY POLLUTING INDUSTRIES (RED A).

1 The applicant shall analyse the emissions every month for the parameters indicated in TABLE B & C as mentioned in this order and shall furnish the report thereof to the Board by the 10th of the succeeding month.

2 The applicant shall provide and maintain at his own cost three ambient air quality monitoring stations for monitoring Suspended Particulate Matter, Sulphor Dioxide, Oxides of Nitrogen, Hydro-Carbon, Carbon-Monixide and monitor the same once in a day/week/fortnight/month. The data collected shall be maintained in a register and a monthly extract be furnished to the Board.

3. The applicant shall provide and maintain at his own cost a meteorological station to collect the data on wind velocity, direction, temperature, humidity, rainfall, etc. and the daily reading shall be recorded and the extract sent to the Board once in a month.

4 The applicant shall forward the following information to the Member Secretary, State Pollution Control Board, Odisha, Bhubaneswar regularly.
- a. Report of analysis of stack monitoring, ambient air quality monitoring meteorological data as required every month.
- b. Progress on planting of trees quarterly.

5 The applicant shall install mechanical composite sampling equipment and continuous flow measuring / recording devices on the effluent drains of trade as well as domestic effluent. A record of daily discharge shall be maintained.

6 The following information shall be forwarded to the Member Secretary on or before 10th of every month

a Performance / progress of the treatment plant.
b Monthly statement of daily discharge of domestic and/or trade effluent.

7 **Non-compliance with effluent limitations**

a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.

i) Causes of non-compliance

i) A description of the non-compliance discharge including its impact on the receiving waters

ii) Anticipated time of continuance of non-compliance if expected to continue or if such condition had been corrected the duration or period of non-compliance.

iii) Steps taken by the applicant to reduce and eliminate the non-complying discharge and

iv) Steps to be taken by the applicant too prevent this condition of non-compliance.

d) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster.

8 The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board.

9 The addition of various treatment chemicals should be done only with mechanical dosers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalies arbitrarily and utilizing pipes for stirring etc. should not be resorted to.

10 In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for.

Rotation of crops

Change of point of application of effluent on land

A portion of land kept fallow

11 The adoption of these would avoid soil becoming sick or sterile, the industry may ensure this in consultation with the Agriculture Department.

12 It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royals in the surrounding areas as a result of discharge of sewage or trade effluent if any.

13 Proper housekeeping shall be maintained by a dedicated team.

14 The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately.

E. SPECIAL CONDITIONS:

1. Mining operation is subject to availability of all other statutory clearances.
2. This consent order is subject to availability of approved mining scheme from IBM, Govt. of India.
3. Drills shall either be operated with dust extractors or equipped with water injection system to minimize dust generation in the work environment.
4. Controlled blasting shall be practiced to minimize generation of dust and fly rocks. No blasting shall be carried out after the sunset.
5. Regular water sprinkling shall be carried out at different sources of generation of fugitive dust. Water sprinkling shall be carried out on haul roads at desired interval and should always be in wet condition. Haulage roads shall be devoid of ruts and potholes and shall be maintained to avoid generation of dust during movement of vehicles.
6. Mineral handling plant (crusher & screening plant) shall be provided with adequate number of high efficiency dust extraction system or dust suppression system preferably dry fog system. Loading the unloading areas including all the transfer points shall also have efficient dust suppression arrangements. These shall be maintained and operated.
7. Fog canons shall be deployed at load & unloading areas to suppress fugitive dust.
8. Fixed type water sprinklers shall be provided at ore stockpile areas and alongside entire haul roads.
9. Transportation of the ore from the mine pit to the Refinery unit shall be done through closed conveyer system instead of transportation through roads.
10. Three continuous real time Ambient Air Quality Monitoring Stetions shall be established in core zone & buffer zone with data transfer facility to SPCB server and location of these stations shall be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets in consultation with the Regional Officer, State Pollution Control Board.
11. The CAAQMS shall be properly maintained and calibrated from time to time to ensure that spurious data are not transmitted to the SPCB server.
12. Ambient air quality of the mine shall meet the standards prescribed for industrial area.
13. The Mine drainage water if any shall be adequately treated before disposal to outside environment. The discharge quality shall meet the prescribed standard as steted in Part-A of the consent order. No untreated wastewater generated from the mine shall be discharged to outside under any cimumstances.
14. Check dams and check weirs shall be constructed at appropriate places of the mine lease area to prevent direct flow of runoff to nearby water bodies. The surface run off

water from the existing runoff management system shall meet the prescribed standards as stated in of Part A of the consent order.

15. Retention wall shall be constructed at the toe of temporary topsoil dump and OB dump. Garland drain shall be constructed around topsoil dumps & over burden dumps terminating at settling pit to provent runoff of water and flow of sediments directly into nearby water bodies. No untroated surface runoff shall be released to nearby water body. Garland drain and sedimentation pit shall be desilted as and when requirod and after monsoon.

16. Domestic effiuents shall be treated in a sewage treatment plant (STP) and or shall be discharged to soak pit via septic tank constructed as BIS specification. The treated wastewater quality of STP shall remain within the following standards and shall be used for plantation:

i.	pH	-	6.6 -g.0
ii.	TSS	-	<100 mg/l
iii.	BOD	-	30 mg/l
iv.	Fecal Coiitorm	-	<1000 MPN/100 ml.

17. ETP shall be operated at all time for workshop and wastewater generatod during mining operation. The quaiity of the treated wastewater shall conform to the following standard and shall be completely reused for vehicle and floor washing:

pH	-	6.5 -6.6
TSS	-	60 mg/l
Oil & grease	-	10 mg/l

18. Appropriate mitigative measuras shall be taken to prevent pollution of the nearby water bodies.

19. Regular monitoring of water quality of upstream and downstream of surface water bodies existed if any within 5 Km shall be carried out once in every month and rocord shall be maintained and submitted to the State Pollution Control Board once in every year. Monitoring shall be carried out through MoEF & CC accredited laboratory.

20. Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly.

21. Top soil and OB shall be stacked properly with adequate measures at earmarked sites. The top soil and OB should be used for reclamation and rohabilitation of the mined out areas.

22. The reclamation programme for the mined out area through concurrent backfilling shall be done followed by plantation. Monitoring and management or rehabilitated areas shall continue until the vegetetion becomes seff-sustaining.

23. The mine shall take necessary action for compliance with the air and wafer quality standards as stipulated in this order.
24. Adequato measuros snali be takeri for control of noise levels in the work environment of the mine area so that noise levels at tho boundary line of ML area shall not exceed 75 dB(A) during day time (6 AM to 10 PM) and 70 dB(A) during night time (10 PM to 6 AM).
25. IP cameras shall be installed at major dust prone areas of the mine such as mine quarry, mineral stockyards, haul roads, trensportation roads, mineral handling plants etc. and they shall be conneoted SPCB server.
26. Plantation of trees shall be underfaken in the colony/ township, over top soil dumps, OB dumps, backfilling araa, along the side of haul road and in other aroas of the mines not being utilized for mining activities. The mine shall take up avenue plantation and piantatign in nearby village areas in consultation with DFO/Horticulture Department. The annual plantation details shall be submitted to the Board by 30th April every year.
27. A copy of the annual return (annual return submitted to IBM, Govt. of India/ Diroctorate of Mines, Govt. of Odisha) shall be submitted to this Board every year.
28. The environmental statement report for the financial year ending 31st March shall be submitted to the Board in form -V on or before 30th September every year.

MEMBER SECRETARY
STATE POLLUTION CONTROL BOARD, ODISHA

To,

SRI SURYAKANTA MISHRA, DIRECTOR
DAPHLIMALI DAUXITE MINES OF
M/S. UTKAL ALUMINA INTERNATIONAL LIMITED,
AT: OORAGUDA, PO: KUCHEIPAOAR,
DIST: RAYAGADA, PIN-765 015

Memo No._____/Dated _____/.
Copy forwarded to :

i) Regional Officer, State Pollution Control Bcard, **Rayagada,**
ii) District Collector, **Rayagsda,**
iii) Director of Mines, Govt. of Odisna, Bhubaneswar,
iv) Director, Environment -cum-Special Secretary, F & E. Deptt. Govt. of Odisha, Bhubaneswar
v) D.F.O **Rayagada,**
vi) Deputy Director of Mines, **Koraput**
vii) Chief Env. Engineer(C) (Hazardous waste mariagement cell)
viii) Sr. Env. Scientist(L-II), Central Lab. SPCB, Bhubaneswar
ix) Concent Register

CHIEF ENV. ENOINEER (M)
STATE POLLUTION CONTROL BOARD, ODISHA

GENERAL STANDARDS FOR DISCHARGE OF ENVIRGNMENTAL POLLUTANTS

GENERAL STANDARDS FGR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART –A : EFFLUENTS

Sl.No.	Parametera	Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
1.	Colour & odour	Colourless/Odourless as far es practible	———	See 6 of Annex-1	See 6 bf Annex-1
2.	Suseendod Solids (mg/l)	100	600	200	For process wastewater – 100 b. For cooling water effluent 10% above total susbendod matter of influent.
3.	Particular size of SS	Shall pass 850	———	———	
5.	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	Shall not exceod 5°C above the recolving water temperature	———	———	Snall not exceed 5°C above the receiving wator temperature
7.	Oil & Grease mg/l max.	10	20	10	20
5.	Total residual onlorine	1.0	———	———	1.0
9.	Ammonical nitrogen (as N) mg/l max.	60	60	———	50
10.	Total Kajeldahl nitrogen (as NH_3) mg/1 max.	100	———	———	100
11.	Free ammonia (as NH_3) mg/1 max.	5.0	———	———	5.0
12.	Biochemical Oxygen Demand (5 deys at (20°C) mg/1 max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/1 max.	250	———	———	250
14.	Arsenic (as As) mg/1 max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg) mg/1 max.	0.01	0.01	———	0.001
16.	Lead (as pb) mg/1 max.	01.	1.0	———	2.0

17	Cardmium (as Cd) mg/1 max.	2.0	1.0	——	2.0
18.	Hexavalent Chromium (as Cr + 6) mg/l max.	0.1	2.0	------	1.0
19.	Total Chromium (as Cr) mg/l max.	2.0	2.0	------	2.0
20.	Copper (as Cu) mg/l max.	3.0	3.0	——	3.0
21	Zinc (as Zn) mg/l max.	5.0	15	------	15
22.	Selenium (as Sc) mg/l max	0.05	0.05	——	0.05
23.	Nickel (as Nil) mg/l max.	3.0	3.0	------	5.0
24.	Cyanide (as CN) mg/l max.	0.2	2.0	0.2	0.02
25.	Fluoride (as F) mg/l max.	2.0	15	------	15
26.	Dissolved Phosphates (as P) mg/l mex.	5.0	------	------	——
27.	Sulphide (as S) mg/l max.	2.0	------	------	5.0
28.	Phennetic compounds as (C_6H_5OH) mg/l max.	1.0	5.0	------	5.0
29.	Radioactive materials a. Alpha emitter micro curie/ml. b. Beta emitter micro curie/ml.	10^7 10^6	10^7 10^8	10^8 10^7	10^7 10^8
30.	Bio-assay tost	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 90 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
31	Manganese (as Mn)	2 mg/l	2 mg/l	——	2 mg/l
32.	Iron (Fe)	3 mg/l	3 mg/l	------	3 mg/l
33.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	------	0.2 mg/l
34.	Nitrate Nitrogen	10 mg/l	------	------	20 mg/l

NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutants	Time Weighed Average	Concentrate of Ambient Air		Methods of Measurement
			Industrial Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual *	50	20	-Improved west and Gaeke
		24 Hours **	80	80	- Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual *	40	30	- Modified Jacob & Hochheiser (Na-Arsenite)
		24 Hours **	80	80	- Chemiluminescence
3.	Particulate Matter (size less than 10µm) or $PM_{10}\mu g/m^3$	Annual *	60	60	-Gravimetric - TOEM
		24 Hours **	100	100	- Beta Attenuation
4.	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$ $\mu g/m^3$	Annual *	40	40	-Gravimetric - TOEM
		24 Hours **	60	60	- Beta Attenuation
5.	Ozone (O_3) $\mu g/m^3$	8 Hours **	100	100	- UV Phdtometric - Chemiluminescence
		1 Hours **	180	180	- Chemical Method
6.	Lead (Pb) $\mu g/m^3$	Annual *	0.50	0.50	-AAS/ICP methcd after sampling on EMP 2000 or equivalent filter paper. - ED-XRF using Teflon filter
		24 Hours **	1.0	1.0	
7.	Carbon Monoxide (CO) mg/m^3	8 Hours **	02	02	- Non Dispersive Infra Red (NDIR) Spectroscopy
		1 Hours **	04	04	
8.	Ammonia (NH_3) $\mu g/m^3$	Annual*	100	100	-Chemiluminescence - Indophenol Blue Method
		24 Hours**	400	400	
9.	Benzene (C_6H_6) $\mu g/m^3$	Annul *	05	05	-Gas Chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP)-Particulate phase only, ng/m^3	Annual*	01	01	-Solvent extraction followed hy HPLC/GC analysis
11.	Arsenic (As), ng/m^3	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni),ng/m^3	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

** Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Annexure-12

ACTION PLAN TAKEN FOR IMPLEMENTATION OF SITE SPECIFIC WILDLIFE MANAGEMENT PLAN					
Sl. No.	Item	Unit	Total	Rate (Rs)	Total (Rs)
1	**Soil & Moisture Conservation Measures**				
	a) Construction of loose boulder Check dam across the seasonal [illegible] drainage line and semi perennial nala [illegible] along the slope area of the lease				
	1 mtr span	Nos.	50	[illegible]	[illegible]
	2 mtr span	Nos.	40	7131	[illegible]
	3 mtr span	Nos.	20	14820	[illegible]
				(A) Total	888440
	b) Contour Bunding	LS			100000
				(B) Total	100000
2	**Fire Protection Measures**				
	Provision for a fire watch tower on North-west side of the lease near the boundary	LS	1		500000
				(C) Total	500000
	Deployment of a fire fighting squad consisting of 5 members with provision of vehicle etc. as per [illegible] [illegible] for five fire months [illegible]	Year	10	350000	3500000
				(D) Total	3500000
3	**Prevention of fall & entry to mining pits by wild animals.**				
	Construction of balance [illegible] stone masonry [illegible] [illegible] @ 4.00 lacs per km [illegible] along the boundary [illegible]	Km	10	400000	4000000
				(E) Total	4000000
4	**Development of Green Belt.** Green Belt through following method in [illegible] of 7.5 mtr width over a length of [illegible] inside the non forest land				
	[illegible] with Gap Plantation @ 400 plants per ha	Ha	8.25	38806	320150
	Block Plantation @ 1600 plants per ha	Ha	8.25	286421	2362973
				(F) Total	2683123
5	Cost of one [illegible] Model SUV (SCORPIO S 10) vehicle to be handed over to the DFO, [illegible]	No.	1	1600000	1600000
				(G) Total	1600000
6	**Interventions for regulating impact of mining activities.** Interventions for regulating light, water, air, noise pollution, dust [illegible] & waste management will be carried out at the project unit as per the approved environmental management plan.	Implementation at the project unit according to the approved EMP			
				Grand Total (A+B+C+D+E+F+G)	13471563

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS
(WILDLIFE) & CHIEF WILDLIFE WARDEN, ODISHA
BDA APARTMENT, 5th FLOOR, PRAKRUTI BHAWAN, NILAKANTHA NAGAR, BBSR-12
Ph. No.0674-2564587, FAX No.0674-2565062
[illegible]

No. 5648 /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

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

Sir,

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

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
	Grand Total:	**₹670.451 lakh**

ANNEXURE: 14

Submission of Digital processing of Mine lease area

Report

ADITYA BIRLA

UTKAL ALUMINA

UAIL-MINES/ENV/150/2020

15th September 2020

To

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

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

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

Thanking you,

Yours faithfully,
For Utkal Alumina International Limited

MK Jha
15/09/2020

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, OSPCB, Rayagada.
3. roez.bsr-mef@nic.in. mef.or@nic.in. paribesh1@ospcboard.org,rospcb.rayagada@oapcboard.org

ANNEXURE: 15

Trade wise Noise Monitoring Report

Test Report No.: Envlab/21/R-0383 Date: 03.05.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Code	N1 – N7	Sampled By	VCSPL'S Representative
Sample Name	Noise	Sampliug Procedure	IEC 61672-1(2002-05) Class-I
Sample Source	Noise Level (Core Zone)	Sample Rcceived On	NA
Sample Coudition	NA	Test Completed On	NA

SL. No	Sampliug Locatlou	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Drilling Operation	28.04.2021	72.2	56.4
02	Loader Operatlon	23.04.2021	69.4	53.2
03	Shovel Operation	26.04.2021	73.4	54.4
04	Dumper Operatlon	21.04.2021	70.1	51.7
05	Crusher Operation	19.04.2021	72.5	53.2
06	Workshop Area	27.04.2021	69.2	50.8
07	Mlddle of Quarry	29.04.2021	71.5	52.4
Standard as per Noise Rule 2000				
Industrial Area			75	70
Any feature observed during determination			Nil	

Visiontek Consultancy Services Pvt. Ltd. Reviewed by

Visiontek Consultancy Services Pvt. Ltd. Approved By

Test Report No.: Envlab/21/R-0384

Date : 03.05.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Code	N1 – N4	Sampled By	VCSPL'S Represcotative
Sample Name	Noise	Sampliog Procedure	IEC 61672-1(2002-05) Class-I
Sample Source	Noise Level (Buffer Zone)	Sample Received On	NA
Sample Conditiou	NA	Test Completed On	NA

SL. No	Sampling Locatiou	Date of Monitorlng	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, uight tlme (10.00pm to 06.00am)
01	Village Paikopakhal	08.04.2021	46.6	35.8
02	Village Andlrakaneh	16.04.2021	50.7	39.2
03	Village ADRI	20.04.202i	53.8	38.5
04	Village Chandraglri	27.04.201	48.3	34.1
Standard as per Noise Rule 2000				
Residential Area			55	45
Any feature observed during determination			Nil	

Reviewed by

Approved by

Test Report No.: Envlab/21/R-1631 **Date: 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Drilling Operation	03.05.2021	69.8	53.7
02	Loader Operation	10.05.2021	71.5	55.4
03	Shovel Operation	07.05.2021	70.7	52.8
04	Dumper Operation	27.05.2021	68.6	49.7
05	Crusher Operation	04.05.2021	73.2	54.5
06	Workshop Area	20.05.2021	71.4	51.7
07	Middle of Quarry	26.05.2021	73.6	51.2
Standard as per Noise Rule 2000				
Industrial Area			75	70
Any feature observed during determination			Nil	

Reviewed by

Approved by

Test Report No.: Envlab/21/R-1632 **Date : 04.06.2021**

TEST REPORT

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

SAMPLE DETAILS

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

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	06.05.2021	47.6	36.7
02	Village Andirakanch	13.05.2021	49.8	38.5
03	Village ADRI	28.05.2021	52.4	41.3
04	Village Chandragiri	19.05.2021	50.5	39.6
Standard as per Noise Rule 2000				
Residential Area			55	45
Any feature observed during determination			**Nil**	

Reviewed by

Approved by

Test Report No.: Envlab/21/R-2783 **Date: 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Drilling Operation	05.06.2021	70.4	50.7
02	Loader Operation	02.06.2021	67.3	51.2
03	Shovel Operation	09.06.2021	68.8	50.4
04	Dumper Operation	11.06.2021	71.2	53.2
05	Crusher Operation	15.06.2021	70.4	55.0
06	Workshop Area	18.06.2021	69.5	49.8
07	Middle of Quarry	22.06.2021	67.2	47.6
Standard as per Noise Rule 2000				
Industrial Area			75	70
Any feature observed during determination			Nil	

Reviewed by

Approved by

Test Report No.: Envlab/21/R-2784 **Date : 05.07.2021**

TEST REPORT

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

SAMPLE DETAILS

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

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	04.06.2021	48.2	35.3
02	Village Andirakanch	10.06.2021	47.8	37.1
03	Village ADRI	25.06.2021	50.4	38.6
04	Village Chandragiri	17.06.2021	51.3	40.2
Standard as per Noise Rule 2000				
Residential Area			**55**	**45**
Any feature observed during determination			**Nil**	

Reviewed by

Approved by

Test Report No.: Envlab/21/R-3409 **Date: 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Drilling Operation	08.07.2021	71.6	50.7
02	Loader Operation	12.07.2021	66.5	49.8
03	Shovel Operation	14.07.2021	69.3	52.3
04	Dumper Operation	02.07.2021	70.7	51.6
05	Crusher Operation	09.07.2021	71.6	53.5
06	Workshop Area	28.07.2021	67.3	49.7
07	Middle of Quarry	30.07.2021	69.8	46.4
Standard as per Noise Rule 2000				
Industrial Area			75	70
Any feature observed during determination			**Nil**	

Reviewed by

Approved by

Test Report No.: Envlab/21/R-3410 **Date : 05.08.2021**

TEST REPORT

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

SAMPLE DETAILS

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

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	05.07.2021	50.4	39.2
02	Village Andirakanch	07.07.2021	46.8	36.5
03	Village ADRI	01.07.2021	47.6	36.2
04	Village Chandragiri	13.07.2021	49.5	38.8
Standard as per Noise Rule 2000				
Residential Area			55	45
Any feature observed during determination			**Nil**	

Reviewed by

Approved by

Test Report No.: Envlab/21/R-4652

Date: 06.09.2021

TEST REPORT

Customer Name & Address : Baphlimali Miues, M/s Utkal Alumiua Interuational Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

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

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Drilling Operatiou	02.08.2021	69.8	51.2
02	Loader Operatiou	11.08.2021	65.2	53.4
03	Shovel Operation	09.08.2021	70.4	53.7
04	Dumper Operation	04.08.2021	72.2	50.2
05	Crusher Operation	16.08.2021	70.7	54.1
06	Workshop Area	05.08.2021	68.2	47.8
07	Middle of Quarry	18.08.2021	67.4	48.2
Standard as per Noise Rnle 2000				
Industrial Area			75	70
Any feature observed during determination			Nil	

Visiontek Consultancy Services Pvt. Ltd. — Reviewed by

Visiontek Consultancy Services Pvt. Ltd. — Approved by

Test Report No.: Envlab/21/R-4653

Date : 06.09.2021

TEST REPORT

Cnstomer Name & Address : Baphlimali Mines, M/s Utkal Alnmiua Iuternational Ltd, Tikiri, Rayagada, Odisha

SAMPLE DETAILS

Sample Code	N1 – N4	Sampled By	VCSPL'S Representative
Sample Name	Noise	Sampling Procedure	IEC 61672-1(2002-05) Class-1
Sample Source	Noise Level (Buffer Zone)	Sample Received On	NA
Sample Conditiou	NA	Test Completed On	NA

SL. No	Sampling Loeatiou	Date of Mouitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	03.08.2021	52.2	40.7
02	Village Andirakanch	10.08.2021	49.3	34.6
03	Village ADRI	17.08.2021	46.6	37.2
04	Village Chandragiri	20.08.2021	48.4	35.7
Standard as per Noise Rule 2000				
Residential Area			55	45
Any feature observed duriug determination			Nii	

Visiontek Consultancy Services Pvt. Ltd.
Reviewed by

Visiontek Consultancy Services Pvt. Ltd.
Approved by

Test Report No.: Envlab/21/R-5308

Date: 05.10.2021

TEST REPORT

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

SAMPLE DETAILS

Sample Code	N1 – N7	Sampled By	VCSPL'S Represcntative
Sample Name	Noise	Sampling Procednre	IEC 61672-1(2002-05) Class-I
Sample Source	Noise Level (Core Zone)	Sample Received On	NA
Sample Condition	NA	Tcst Completed On	NA

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Drilliug Operation	06.09.2021	73.4	54.7
02	Loader Operation	14.09.2021	68.6	51.8
03	Shovel Operation	22.09.2021	69.2	55.2
04	Dumper Operation	09.09.2021	70.4	51.7
05	Crnsher Operation	16.09.2021	71.5	53.3
06	Workshop Area	24.09.2021	69.3	50.4
07	Middle of Qnarry	28.09.2021	68.6	51.2
Standard as per Noise Rule 2000				
Indnstrial Area			75	70
Any featnre observed during determination			Nii	

Reviewed by

Approved by

Test Rcport No.: Envlab/21/R-5309

Date : 05.10.2021

TEST REPORT

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

SAMPLE DETAILS

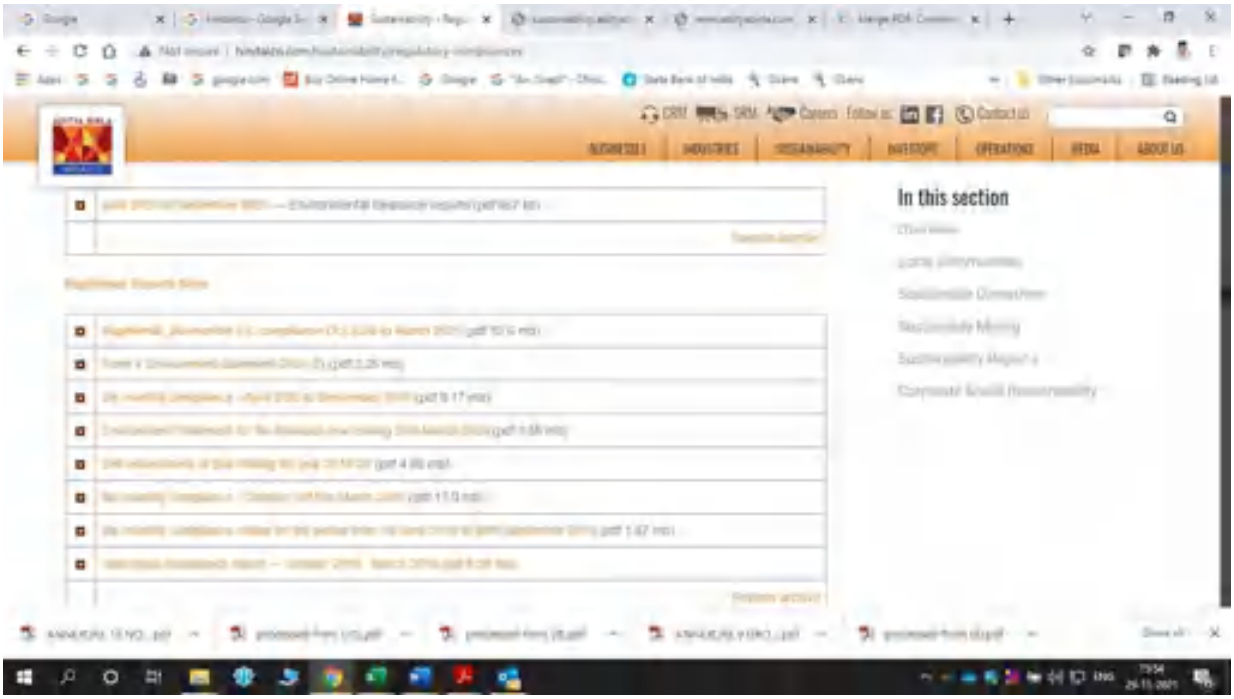
Sample Code	N1 – N4	Sampled By	VCSPL'S Representative
Sample Name	Noise	Sampling Procedure	IEC 61672-1(2002-05) Class-I
Sample Source	Noise Level (Buffer Zone)	Sample Received On	NA
Sample Condition	NA	Test Completed On	NA

SL. No	Sampling Location	Date of Monitoring	Noise level dB (A) Leq, day time (6.00am to 10.00pm)	Noise level dB (A) Leq, night time (10.00pm to 06.00am)
01	Village Paikupakhal	07.09.2021	51.6	43.2
02	Village Andirakanch	13.09.2021	48.8	35.7
03	Village ADRI	09.09.2021	48.1	36.8
04	Village Chandragiri	15.09.2021	49.5	36.3
Standard as per Noise Rule 2000				
Residential Area			55	45
Any featnre observed duriug determinatiou			Nii	

Visioutek Consultancy Services Pvt. Ltd. BBSR Reviewed By

Visioutek Consultancy Services Pvt. Ltd. BBSR Approved by

ANNEXURE 16 SCREENSHOT OF COMPANY WEBSITE SHOWING UPLOADED SIX MONTHLY EC COMPLIANCE



Annexure - 18

ADITYA BIRLA

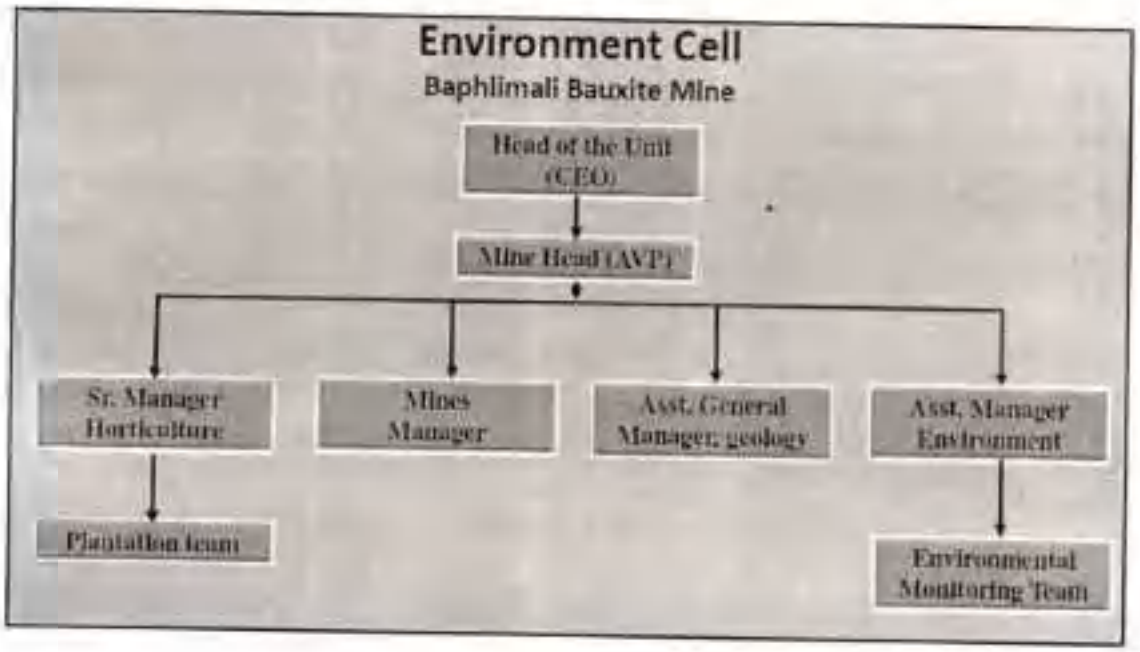
UTKAL ALUMINA

OFFICE ORDER

Date: 29.05.2021

According to the Environment clearance condition & to look after the compliances with respect to environment, an environmental cell at Baphlimali Bauxite Mine of M/s Utkal Alumina International Limited has been constituted.

The name & designations of the Environment Cell members with organization structure is enlisted below.



Thanking You

For Utkal Alumina International Limited

MK Jha

Mukesh Kumar Jha

Head- Baphlimali Bauxite Mine