



UAIL-MINES/ENV/59/2023

24th November 2023

To

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

Subject: Six-Monthly Compliance status of conditions stipulated in Environment Clearance with respect to 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 Baphlimali Bauxite Mine of M/s Utkal Alumina International Ltd. having production capacity of 8.5 MTPA, 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 2023 to 30th September 2023 for your kind perusal.

Thanking you,

Yours faithfully,
For Utkal Alumina International Limited

Mukesh

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, Southeastern Region, Bhujal Bhawan, Khandagiri, BHUBANESHWAR, PIN- 751030
5. roez.bsr-mef@nic.in, mef.or@nic.in, paribesh1@ospcbboard.org, rospcb.rayagada@ospcbboard.org
6. rdser-cgwb@nic.in,

UTKAL ALUMINA INTERNATIONAL LIMITED

Plant & Off: Doraguda, Po: Kucheipadar, Dist.: Rayagada-765015, Odisha, India
Regd. Office: J-6, Jaydev Vihar, Bhubaneswar - 751013, Odisha, India.

CIN No.:U13203OR1993PLC003416

Ph.: 06865287040, Fax: 06865287100
Ph.: 0674 2360581/540 Fax: 06742360321

Website : www.hindalco.com

Email : utkal.alumina@adityabirla.com

Compliance status of conditions imposed in Environmental Clearance for enhancement of annual production capacity of 8.5 million Tonnes of bauxite by open cast mechanized method involving total mine lease area of 1388.74 Ha, F. No. J-11015/650/2007-IA. II (M) dated 19.02.2009.

Name of the Project : **Baphlimali Bauxite Mine,
M/s Utkal Alumina International Ltd.**

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

Period of compliance Report : **From 1st April 2023 to 30th September 2023.**

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 by the State Pollution Control Board, Orissa in their consent to establish have been effectively implemented.
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- I .
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 Mtrs. 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 that, 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 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	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

	protection of the catchment area of upper Indrāvati Reservoir during the course of mining operation.	ensured by regular cleaning and maintenance. There are also pumps installed in siltation ponds to pump out the collected water to the open and non-working pit area for ground water recharge. The same is also continued concurrently with the running of the mines. Details of Check Dams, garland drains & Siltation pit attached as Annexure-II & 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-II, 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 riverbank erosion and sediment flow into the river.	There is no such perennial river/nallah that 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 rainwater 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 topsoil 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.	The topsoil scrapped during on-going mining is being utilized concurrently 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 2023, 129.07 Ha area has been backfilled & 82.837 Ha has been afforested in this backfilled area. Both the activities are under continuous progress. Monitoring and management are being carried out. Compliance status is being submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar in six months. 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 Kandabindh 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 Kandabindh 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-II & photos attached as Photo 1 to 4. The runoff storage capacity has been designed to keep 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. The majority of the rainwater 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 the 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-III.
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 Mtrs • width 0.80 Mtrs • length 1300.00 Mtrs These dimensions are designed based on the highest rainfall data. As per our proposal in the approved Review of Mining Plan, Dump-I & II has already been re-handled.
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.	Mining commenced during 2012-13 and as per the approved Scheme of Mining, backfilling of mined out voids has been started from 01.04.2016. Rehabilitation over reclaimed area has been started from 2017-18. Till September 2023, an area 129.07 Ha is backfilled/reclaimed. In this backfilled area 82.837 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 (2023-24) till September'23, we have planted around 1,0,6966.0 Nos. saplings which includes safety zone around the mining lease, backfilled area, 15 Mtrs peripheral barrier of plateau

		boundary, mining lease slope area, around void, roads, avenue plantation etc. The remaining area will be covered progressively in a phase wise manner as per the Review of Mining Plan. Different native saplings are procured from the Forest department in consultation with the local DFO/Agriculture Department. In addition to this, nursery has been developed to germinate, preserve, and cater for the seedlings during 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 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 stockpile of 3.1 Km length. Dry fog arrangement has been provided in Crushing and screening plant. Two fog cannons were also deployed at strategic locations to suppress the fugitive dust. Photos of water sprinkling arrangements are attached as Photo 8 & 9. Ambient Air Quality is being monitored by establishing four no. of AAQ station each in core and buffer zone of mines lease. In addition to this three CAAQMS have been installed & connected to OSPCB server. The result of ambient air quality monitoring data for the period of April'23 to September'23 of Core & Buffer Zone is enclosed as Annexure-IV & V. From the test results, it is evident that all the parameters are within the prescribed standard of national ambient air quality and there is no deviation from NAAQS.
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 Baphalimali hillock close to the lease boundary, is being monitored regularly and the records are maintained. The flow rate monitoring data during April'23 to September'23 is enclosed as Annexure-VI.

xvi.	Regular monitoring of water quality upstream and downstream of the Khandabindhha Nallah shall be carried out and record of monitored data should be maintained and submitted to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, the Central Groundwater Authority, the Regional Director, Central Ground Water Board, the State Pollution Control Board and the Central Pollution Control Board.	Regular monitoring of water quality upstream and downstream of the Kandabindhha Nallah is being carried out and recorded. The results of surface water quality are enclosed in Annexure-VII . 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 mines 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 rainwater resulting in ground water recharge. Also, the Surface water flow near the pit has been diverted towards the pit and this accumulation influences on 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,	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, MoEFCC and SPCB, Bhubaneswar once in every six months with this six-monthly compliance report. Two piezometric wells have been constructed inside the lease area and three outside lease to monitor the level of ground water. The monitoring results of Ground water quality & level for post monsoon and winter season are enclosed as Annexure – VIII & IX respectively. Photograph of piezometer is attached as Photo-10.

	necessary corrective measures shall be carried out.	
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. A retaining wall of a height of 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 purposes. 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-X .
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 rainwater 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. ❖ Rainwater from the high elevation area is collected through a network of pipes and used for domestic purposes. ❖ Movement of mines 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 rainwater resulting in ground water

		recharge. Also, the Surface water flow near the pit has been diverted towards the pit and this accumulation influences on recharge ground water table.
xxii.	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral within the mine lease. The mineral transportation within the mine lease shall be 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 fledged workshop is in place for maintenance of vehicles used in mining operation.
xxiii.	No blasting shall be carried out after the sunset. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting is being carried out only during daytime. Controlled blasting is being practiced reducing ground vibrations and to arrest fly rocks and boulders.
xxiv.	Drills shall either be operated with dust extractors or equipped with water injection system.	A drilling machine with in-built vacuum cyclone dust collector & equipped with water spraying system is being used. Photo of drilling is attached as Photo-11 .
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.	Stockpile area is surrounded by fixed water sprinkling arrangement (Photo 12). 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 13). Dry fog system is installed for suppression of dust at ROM hopper and Transfer points (Photo 14).
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 was obtained from the State Pollution Control Board, Odisha prior to start of production from the mine. CTO vide letter no. 4157/IND-I-CON - 5450 dated 20.03.2023 with consent order No. 2765 which is valid up to 31.03.2027. Attached as Annexure XI .
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 to treat the domestic wastewater. The treated water has been used in green belt development and sprinkling on haul road. Effluents generated from workshop has been treated by ETP of 15 KLD capacity installed at workshop. The treated water from ETP is reused in vehicle washing. Analysis report of STP & ETP treated water is enclosed in Annexure-XII & XIII . Photographs of STP & ETP are attached as Photo-15 & 16 .
xxviii.	The project authorities shall undertake sample survey to generate data on pre-project	Complied.

	community health status within a radius of 1 km from proposed mine.	
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. The annual Schedule of PME is being made for all eligible employees as per DGMS requirement and necessary PME is carried out.
xxx.	Provision shall be made for the housing of construction Labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Work sheds have been provided to the workers at the mine site having all the 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 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-XIV & copy of approval letter as Annexure-XV . 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/BBM/53/2023 dated 14.10.2023 to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar. The copy of the submission letter is attached as Annexure- XVI.
xxxiii	A final mine closure plan along with details of Corpus Fund shall be submitted to the Ministry	The same will be submitted to the Ministry of Environment & Forests. The final mine closure plan

	of Environment & Forests 5 years in advance of final closure for approval.	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.	Agreed & we shall abide by this condition.
ii.	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Agreed & we are abiding by this condition.
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, SO ₂ & NO _x monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Four ambient air quality monitoring stations each have been established in both Core & Buffer Zone in consultation with the State Pollution Control Board, Odisha. Monitoring reports are attached as Annexure – IV & V .
iv.	Data on ambient air quality (RSPM, SPM, SO ₂ & NO _x) 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 submitted to the concerned authorities along with the half yearly compliance report once in six months. The result of ambient air quality monitoring data for the period of April'23 to September'23 of Core & Buffer Zone is enclosed as Annexure-IV & V .
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 two 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 have been provided on the side of the arterial road. The haulage roads are being maintained to avoid ruts and potholes. Two fog cannons are also deployed at strategic locations to arrest the fugitive dust if any.

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 themselves are acoustic in nature. Noise level analysis report for the period April'23 to September'23 is enclosed as Annexure-XVII.
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 Effluent Treatment Plant of 15 KL/D capacity. The treated/recycled water is completely reused again in vehicle washing. All the repair & maintenance activities are taken up in the existing facility, however major maintenance like engine overhauling etc. are being taken up outside. 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 is 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 to the Head of the Organization directly. The organization structure is attached Annexure- XVIII.
x.	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Bhubaneswar.	Agreed. The funds earmarked for environmental protection are being utilized for the said purpose only. The total recurring annual expenditure during the financial year 2022-23 is Rs. 852.95 lakh and attached as Annexure XIX.
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	Noted & complied.

	authorities and the date of start of land development work.	
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 abiding 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 reports are being submitted regularly to the Ministry of Environment and Forests, it's Regional Office of the Ministry at Bhubaneswar / Central Pollution Control Board / SPCB, Odisha within stipulated time. However, as per the new notification, six monthly compliance reports are being filed on Parivesh portal. The status of compliance is being updated on the website periodically.
xiv.	A copy of clearance letter shall be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Complied
xv.	The State Pollution Control Board should display a copy of the clearance letter at the regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Complied.
xvi.	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Complied.

Annexure-I

Compliance Status of the issues raised during Public Hearing

Status of the issues raised in Public Hearing of the Environmental Assessment for expansion of Baphlimali 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 safeguard the environment and safety norms and shall not violate the commitments made in the EIA/EMP report.	We will abide by this condition.
2	Employment shall be made to the local people on priority and the local youths shall be imparted training to suit its requirement. This facility may be given to others only if suitable technical manpower 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 to create awareness among the villagers. During public announcement, villagers were distributed with leaflets carrying awareness messages. More than one lakh 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 hygiene, 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 laborers were supplied with grocery items for ten days. Awareness meetings were organized in different villages from time to time. ➤ Diarrhea Control activities such as cleaning of village surroundings, disinfection of water logging areas, chlorination of water sources, providing water cans, installation of new tube wells, distribution of halogen tablets, extending treatment services to the diarrhea affected persons through organizing health camps etc. have been carried out in Diarrhea affected villages. ➤ 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 Oshapada with specialist Doctors, IPD, Operation Theatre, ICU, and well-equipped modern equipment. ➤ Engagement of one Mobile Health Care Unit (MHU) extending services to 38 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 Swachh Bharat Mission ➤ Annual Chlorination of water sources such as tube wells, open wells, water tanks, sanitary wells etc. of all peripheral villages. ➤ 55 TB patients at Rayagada district are being supporting as Ni-Kshay Mitra under project 'TB Mukta Bharat Abhiyaan' of Govt. of India. UAIL will continue supporting this additional nutrition supplement to these persons till next one year and help them for ensuring good health and fast recovery. ➤ Creating Awareness Campaign on Sickle Cell Anemia.
--	--	--

		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. ➤ Organized special Awareness drives in organizing Paribesh 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 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, Classrooms, 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 ➤ Setting up of two libraries at UG high School, Hadiguda and Saraswati Sishu Mandir, Tikiri to enhance reading, comprehension, free expression, and thereby create a strong academic foundation of students. ➤ Conducted teachers' orientation program on the methodology of teaching in Libraries developed under Pustakalya Project and on the operation of Mini Science Centers promoted in schools. Provision of drinking water: ➤ Installation of one Bore well at Tikirapada village to provide drinking water supply for the villagers. ➤ Setting up of ten solar based water supply systems at Dwimundi, Dongasil & Jogiparitunda villages for drinking water supply. ➤ Installation of Seventy-one tube wells in its peripheral villages 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 07 New tube wells, 2 Solar Based Drinking Water Projects, 1 Swajaldhara & 32 tube well repairing done in peripheral villages to ensure safe drinking water for villagers.
4	Rehabilitation & resettlement package if applicable shall be strictly adhered in accordance with the decision of Government.	There is no displacement in the 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 rainwater 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 daytime 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 its 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 and 30 sets to Paikakupakhal PUP School. ❖ Organized 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 classrooms, and CC Roads inside the school campus. ❖ Repairing and Painting of school Buildings ❖ Supply of Uniforms, textbooks, School bags, and sports materials to the peripheral schools ❖ Supply of uniforms to the children of Anganwadi Centers. ❖ Supply of furniture's, first-aid boxes & solar home lights to the schools ❖ Creating Education Awareness through street plays, wall writings. ❖ One Remedial Coaching Center is running at Paikakupakhal village by taking 35 students of that village. ❖ Repairing of roof along with veranda and Painting of one classroom at Maikanch UGME School. ❖ Setting up of three libraries at UGME School, Maikanch and Saraswati Sishu Mandir, Kashipur to enhance reading, comprehension, free expression, and thereby create a strong academic foundation of students. ❖ Established three Mini Science Centers at Govt. High Schools of Maikanch & Kashipur. ❖ Conducted teachers' orientation program on the methodology of teaching in Libraries developed under Pustakalya Project and on the operation of Mini Science Centers promoted in schools. ❖ Organized essay & drawing competition on Swachhata among the students in four different school. ❖ Running of two remedial coaching centers at Andirakanch & Paikakupakhal. Health Care: ❖ During covid-19 pandemic situation/announcement has been carried out in 20 peripheral villages to create awareness among the villagers. During public announcement, villagers were distributed with leaflets carrying awareness messages. 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 foothills of the project through First Aid center set up at Mines top. ❖ Engagement of one Mobile Health Care Unit (MHU) extending services to 30 remote villages from 8 strategic locations ❖ Round the clock services extended by one Ambulance for referral Patients ❖ Extending financial support for maintenance of one Ambulance donated to CHC, Kashipur. ❖ Installation of seventeen tube wells and two solar based water supply of safe drinking water to the villagers. ❖ Repairing of 47 defunct tube wells in five different villages. ❖ Nine dustbins were constructed in different locations of Dhuturapas & Peringini villages to facilitate cleanliness of the village. ❖ Construction of Masonry 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 by 28 people from four different villages & 19 No. of persons were provided with spectacles. ❖ Facilitated construction of 93 toilets in five villages in collaboration with Swachha Bharat Mission ❖ Established “Nirogshala” -Village Dispensary at Paikakupakhal Village to extend health treatment services to the villagers at their doorsteps. ❖ Organized blood donation camp at Nuapada club house where 80 donors donated their blood. ❖ Installation of 07 New tube wells, 2 solar based drinking water projects & 1 Swajaldhara in peripheral villages to ensure safe drinking water for the villagers. ❖ Organized Multispecialty Health Camps at Nuagaon. ❖ Ten TB patients of Kashipur block are being supported with Nutrition food baskets to help them for ensuring good health and fast recovery. ❖ 434no’s of drinking water sources of 41 villages in Kashipur block were chlorinated. ❖ Initiated 5 solar based drinking water project at Andirakanch village.
--	--	--

		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 to increase their income through commercial vegetable cultivation. ❖ 213 farm families of six different villages have been supported for orchard development and 12 land less families for Goat Rearing under Project WADI in collaboration with NABARD. ❖ 84 farmers of five villages supported orchard development in 18.55 acres of land with saplings, fertilizers, pesticides, fencing, Agri implements and irrigation facilities. ❖ Women Self Help Group of Hatikhaman Village is supported for Pisciculture as an Income Generation Activity. ❖ Imparted tailoring and applique training to 181 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, solar based irrigations 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, producers' groups etc. Promoted in our periphery. ❖ Livestock vaccination cum health camps have been organized in different mines peripheral villages at a regular interval of time. ❖ Production of applique materials at Nuagaon. Formation of a Producer group by taking 30 women Producers. ❖ The tailoring training center of Paikakupakhal developed as a small garment manufacturing Unit under Project Sakasham -II. Orders received from different vendors of Rayagada to earn their livelihood. ❖ Initiated Agro Forestry project and Suryadaya project to engage women members of Paikakupakhal. Apart from this, Organizing different awareness program as well as capacity building training for the members of both the project. ❖ Villagers of Andirakanch & Paikakupakhal were supplied with 2575 mango & 1115 Cashew saplings for promotion of fruit orchards in their respective villages.
--	--	--

		❖ 125 farmers of eight different villages supported lemon grass cultivation in 198.19 acres of land. Installation of two lemon grass Oil extraction units at Jogiparitunda & Nuagaon villages. ❖ Supplied 9297 fruit bearing plants. Village Infrastructure development: In order to enhance the quality of life of villagers, we have undertaken village infrastructure development jobs like Construction of Cement Concrete Roads, Causeways, Steps to river, Rest house, Boundary Walls, Culverts, Bridges, Community Centers, Street lighting, drains, bus stops and Protection Walls etc. in different peripheral villages. Social Interventions: ❖ Organizing Block level rural volleyball tournament by taking youths of sixteen 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 Utsab, Diwali etc. in villages ❖ Promoting local folk dance Dhimsa by enabling the village youths to take part in different competitions. ❖ Avenue plantation has been done in 5 K.M of both side road from Jogiparitunda to Lundrukana Chowk ❖ Observation of Independence Day at Suryodaya project cite by taking both the project members (Agroforestry & Suryodaya) ❖ Organized one volleyball tournament & one Cricket tournament at Paikakupakhal village
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 ponds to pump out the collected water to the open and non-working pit area for ground water recharge. The same is also continued concurrently with the running of the mines.

9	After the mining operation is over the project proponent should reclaim the mined-out area with overburden, topsoil 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 topsoil scrapped during on-going mining is being utilized during concurrent backfilling & plantation activities. Till September 2023, 129.07 Ha area has been backfilled & 82.837 Ha has been afforested in this backfilled area. Both the activities are under progress & shall meet by 100% as per the proposal within the 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, wildlife clearance, clearance from water resources department, etc. from the appropriate authorities	Necessary clearances such as Forest clearance, wildlife 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: Agreement with Harabhangi Irrigation Division, Adava, Gajapati on 21.12.2021 valid up to 17.01.2025 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: 4157/IND-I-CON - 5450 dated 20.03.2023 with consent order No. 2765 which is valid up to 31.03.2027
11	The project proponent shall provide alternate grazing field for the cattle in consultation with the District Administration	

Status of the issues raised in Public Hearing of the Environmental Assessment for M/s. Utkal Alumina International Ltd., for Baphlimali Bauxite Mines for expansion of production up to 8.5 MTPA of Bauxite over an area of 492.82 Ha at Baphlimali 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	Roadside electrification is being done in different villages at the mine proximity with consultation with government dept..
3	Water Supply	Thirteen tube wells and five solar based drinking water supply system have been installed in peripheral villages like Kendumundi, Kanarpas, Suryagarh & Durmusi of Th.Rampur block of Kalahandi district. Apart from this, defunct tube wells have also been repaired from time to time with the support of Self-Employed Mechanic of RWSS deptt. Chlorination of different tube wells through the support of our MHU team has been carried out every year for ensuring availability of safe drinking water.
4	Health	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 to create awareness on COVID. Besides, 15000 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. Diarrhea Control activities such as cleaning of village surroundings, disinfection of water logging areas, chlorination of water sources, providing water cans, installation of new tube wells, distribution of halogen tablets, extending treatment services to the diarrhea affected persons through organizing health camps etc. have been carried out in Diarrhea affected villages. 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 dept.

		Facilitated immunization programme in 26 villages in convergence with health deptt. Under Indradhanush programme. In order to ensure smooth drainage of rainwater masonry drains have been constructed in the villages. Financial assistance has been given to the poor and needy people for medical treatment. 50 TB patients at Kalahandi district are being supporting as Ni-Kshay Mitra under project 'TB Mukht Bharat Abhiyaan' of Govt. of India. UAIL will continue supporting this additional nutrition supplement to these persons till next one year and help them for ensuring good health and fast recovery. Six New Tube well installed in rural remote areas to ensure safe drinking water for villagers. Organized multi-specialty health camp based on the disease pattern or symptom identified by the Mobile Health Unit. Almost 656 patients attended this camp. Organized Pathapranta Natak (Street Plays) named "Amo Jibana Amo Hatara" and developed wall writings on Preventive measures of Diarrhoea and Open Defecation free Villages in 9 villages of Mines Kalahandi One Nirogshala, (Village Dispensary) and Ambulance for Patient transport was launched at Gopinathpur of Th.Rampur block, Kalahandi district to provide healthcare services at the doorsteps.Launching of one Ambulance service at Gopinathpur village. Seven Cataract Patients were operated on in Junagarh. And twenty-five eye patients were supplied with spectacles to address their low vision. 301no's of drinking water sources of 34 villages in Th. Rampur block were chlorinated.
5	Employment	Total engagement/employment 341 out of which 18 from buffer zone.
6	Protection of religious places	Protection of Janadurga temple has been taken care of. No mining has been carried out in the vicinity till now and will not be done in future. Notice has also been displayed on the site.
7	Improvement of Roads	Construction of Cement Concrete Roads, Causeways, Culvert, Earthen Bridges etc have been carried out in the villages like Kendumundi, Kanarpas, Chirika, Durmusi and Adri (Gunjamali pada as well as harijan pada) as per the request of the villagers.
8	Education	In order to increase school enrolment, we are organizing an awareness rally and Paribesh utshabs in our peripheral schools every year and supplying school bags, study materials etc. during this occasion. Similarly, to reduce school dropouts' parents counseling meets were organized every year. Efforts have been made to strengthen school management committees. Schools were supplied with sports materials for attracting the students to schools. School furniture has been supplied to one of the private high schools of Karlapat GP. Awareness on Education has been created among the villagers through street plays and wall writings. Established one Mini Science Center and one Library at Govt. High School, Adri. Organized essay & drawing competition on Swachhata among the students of Adri UGHS.

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 topsoil.
10	Plantation	This year (2022-23) till the end of FY'23, we have planted around 100,291 Nos. saplings which includes safety zone around the mining lease, backfilled area, 15 Mtrs peripheral barrier of plateau boundary, mining lease slope area, around void, roads, avenue plantation etc. The remaining area will be covered progressively in a phase wise manner as per the Scheme of Mining. Villagers of Chirika, Durmusi and Kanarpas were supplied with 2185 mango saplings for promotion of fruit orchards in their respective villages. Villagers of Suryagarh & Adri were supplied with 2470 mango & 1040 Cashew saplings for promotion of fruit orchards in their respective villages.
11	Compensation for the displaced	There is no displacement due to the project.
12	Local Office and Grievance Cell	A Grievance cell has been formed by the company by taking representative from Plant & Mines CSR & Admin., dept. They are mostly handling all the issues relating to employment and peripheral development.
13	Protection of environment	A 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 were supported for improved paddy cultivation, 30 HHs for improved pulses cultivation, 57 HHs for Promotion of Nutrition Gardens, 25 HHs for Integrated vegetable cultivation, 20 HHs for orchard development, 20 HHs for Goat rearing, and 50 HHs for Poultry rearing in the villages of Kendumundi, Kanarpas, Chirika, Durmusi & Suryagarh. Nine Ponds were de-silted in the villages like Gopinathpur, Phatkimahul, Chingdiphass, Musajhal, Adri, Kendumundi and Rajamunda of Th.Rampur block. Provided skill development training on Light Motor Vehicle Driving to 60 unemployed youths of 10 different peripheral villages. Promoted lemongrass cultivation in 50 acres of land with 27 farmers of 7 villages. Also Organizing Exposure visit & Capacity building training for the farmers. One oil extraction unit has been established at Gunjamalipada of Adri village. Promoted Project Sambhab in 42 acres of land with 70 farmers of 4 village

ANNEXURE-II

DETAILS OF GARLAND DRAIN, RETAINING WALL, SETTLING POND AND CHECK DAM

Sl. No	Type of works	Particulars		
		Length	Width (avg)	Height (avg)
01	Wall around back side of OB dump	1300 mtrs	0.8 mtrs	1 mtr
02	Drain work at the back side of OB dump	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-III

Verification report on implementation of recommendations suggested in scientific study of surface & ground water management at Baphlimali Bauxite

Mine, studied by NIT, Rourkela



Ref: UAIL-Mines/BBM/28/2020

14th January 2020

To

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

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

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

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

Dear Sir,

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

This is for your information and kind perusal.

Yours faithfully,

For Utkal Alumina International Limited

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

Copy to: Regional Office, OSPCB, Rayagada.

Encl: As Above



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



NITR/MN/HBS/2020/L/0023

Date: January 13, 2020

Dr. H. B. Sahu

Associate Professor

Department of Mining Engineering

NIT, Rourkela – 769 008

& Principal Investigator

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

Dear Sir,

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

Thanking you and with regards.

Yours Sincerely,

Dr. H. B. Sahu

To,

Mr. Mukesh Kumar Jha

General Manager (Mines)

Baphlimali Bauxite Mines, UAIL

At: Doraguda

Post : Kucheipadar- 765 015

Dist.: Rayagada

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



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

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

1. Background

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

2. OBJECTIVES OF THE PROJECT

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

3. RECOMMENDATIONS

Observation 1:

It is seen that the active mining area occupies a very small space at the moment. The runoff generated from the active mining area (6.21 Lakh m^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 3403 m^3 considering a maximum rainfall of 40mm per hour. The existing settling pit near the crusher of 12 m x 8m size with a depth of 4m is inadequate to handle the runoff likely to be generated. Its size is required to be enhanced to (42m x 20m x 4m) to accommodate the expected runoff. A garland drain of 277m x 1m x 1m is to be provided in the eastern boundary to channelize the runoff to the sump. The water from the sump is to be pumped to quarry 1 after settling.

Current Status: Implemented.

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



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

Recommendation 2:

The maximum runoff likely to be generated in R2 region during monsoon is 6680 m³/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 1800m³ 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 m³ of runoff (Fig.2). A new settling pit of 38m x 20m x 4m depth has been constructed to accommodate 3040 m³ of runoff (Fig.3). Two 75hp pumps have been installed in the 2nd settling pit to pump the runoff to Quarry 1. Two concrete garland drains of an aggregate length of 290m and earthen garland drains of 600m have been constructed in this region to channelize the runoff to these settling pits (Fig.4).



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



Figure 3: View of the newly constructed 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 m³ per hour. A drain of 1170m having width and depth of 4m and 2m respectively is proposed to be constructed in R3 region on the western side parallel to the existing conveyor belt to arrest the surface runoff generated within this region and channelize it to quarry 1. As the flow of runoff is towards the bauxite storage, crusher and conveyor belt, therefore there is maximum possibility of intermixing of surface runoff with that of bauxite ore. The bauxite storage site, and crusher plant and ancillary facilities are covering very small portions of the total area of R3 region. Culverts/hume pipes are required to be provided where the drain crosses the road.

Current Status: Implemented

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



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

Recommendation 4:

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

Current Status: There is no change in this region.

Recommendation 5:

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

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

Recommendations 6:

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

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

Current Status: Implemented.

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



Figure 6: Photographic view of reconstruction of the retaining wall



Figure 7: Renovated settling pits

Recommendation 7:

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

Current Status: Implemented.

An additional settling pit of 46m 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 m³. The quarry sump has the capacity to accommodate 1.54 Lakh m³ of runoff during the monsoon (120m x 80 m x 16m). It was noticed that most of the water in the mine sump percolates downward, and there is very small amount of water present in the mine even during the monsoon.

Current Status:

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

Recommendation 9:

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

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

Current Status: Implemented

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



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



Figure 9b: Photographic view of the reconstructed check dam

Recommendation 10:

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

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

Recommendation 11:

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

Status: Implemented

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

Recommendation 12:

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

Status: Implemented

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



Figure 10: Fencing around the settling pit

Recommendation 13:

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

Status: Implemented

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

Additional Observations:

During site visit the following additional observations were made:

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

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

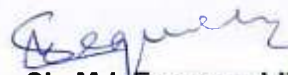
Vast amount of plantation has been carried out on the backfilled areas of the mine (Fig. 11).



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


12.07.2020

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


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



Visiontek Consultancy 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 Engineering
- 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/23-24/TR-10452

Date: 22.11.2023

ANNEXURE-IV

Ambient Air Quality (AAQ) Monitoring Results

Period: April'23 - September'23 (Monthly Average Values)

(Core Zone)

AAQ-S1: Mining Pit (N19°20.773' E82°58.332')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	O ₃ µg/m ³
Apr-23	62.4	33.3	13.3	22.6	0.6	7.2
May-23	60.6	32.3	12.1	21.5	0.5	7.1
Jun-23	60.7	32.7	13.3	22.0	0.5	7.1
Jul-23	33.8	18.7	11.0	20.2	0.5	6.8
Aug-23	31.7	17.4	10.0	18.6	0.5	6.4
Sep-23	29.8	15.5	10.8	19.2	0.5	6.1
Six Monthly Average	46.5	25.0	11.7	20.7	0.5	6.8
AAQ-S2: Near Crusher (N19°20.915' E82°58.543')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	O ₃ µg/m ³
Apr-23	62.6	34.4	13.9	23.4	0.5	7.2
May-23	62.2	33.4	12.9	22.1	0.5	6.3
Jun-23	61.7	33.3	13.3	22.5	0.5	6.2
Jul-23	39.5	21.4	11.8	21.7	0.5	6.5
Aug-23	37.8	19.8	10.9	20.5	0.5	5.5
Sep-23	30.0	13.4	11.2	20.3	0.5	5.5
Six Monthly Average	49.0	25.9	12.3	21.7	0.5	6.2
AAQ-S3: Near Weigh Bridge (N19°21.079' E82°58.775')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	O ₃ µg/m ³
Apr-23	63.8	34.7	15.2	23.8	0.6	7.6
May-23	62.5	33.1	14.1	22.7	0.5	6.7
Jun-23	63.8	34.2	15.4	23.7	0.5	6.4
Jul-23	38.1	21.0	12.1	21.9	0.5	6.3
Aug-23	35.6	19.8	10.9	21.0	0.5	6.1
Sep-23	30.6	15.7	11.6	21.7	0.5	6.1
Six Monthly Average	49.1	26.4	13.2	22.5	0.5	6.5

Note: No deviation from the NAAQS is observed and all the values are within the standard prescribed under National Ambient Air Quality Standards (NAAQS)





Visiontek Consultancy 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/CTCB & SPCB-A Grade

- Infrastructure Engineering
- 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/23-24/TR-10453

Date: 22.11.2023

ANNEXURE-IV

Ambient Air Quality (AAQ) Monitoring Results

Period: April'23 - September'23 (Monthly Average Values)

(Core Zone)

AAQ-S4: Near Admin Office (N19°20.366' E82°58.874')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	O ₃ µg/m ³
Apr-23	62.5	32.9	12.4	22.0	0.5	7.2
May-23	59.2	31.7	11.5	21.0	0.5	6.4
Jun-23	59.1	31.9	11.4	20.2	0.5	6.0
Jul-23	32.2	17.7	9.8	19.3	0.5	6.3
Aug-23	30.7	16.4	8.9	18.6	0.5	5.8
Sep-23	29.5	15.5	9.0	18.8	0.5	5.5
Six Monthly Average	45.5	24.4	10.5	20.0	0.5	6.2
NAAQ Standard	100	60	80	80	4	100
Testing method	Gravimetric ISO 5182 (Part-23) RA2019	Gravimetric ISO 5182 (Part-24) RA2019	Improved West and Geake method ISO 5182 (Part-2) RA 2017	Modified Jacob & Hochheise r (Na- Arsenite) ISO 5182 (Part-6) RA 2012	NDIR Spectroscop y ISO 5182(Part 10) RA2009	Chemical Method
Note: No deviation from the NAAQS is observed and all the values are within the standard prescribed under National Ambient Air Quality Standards (NAAQS)						





Visiontek Consultancy 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/PCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10454

Date: 22.11.2023

ANNEXURE-V

Ambient Air Quality (AAQ) Monitoring Results

Period: April'23 - September'23 (Monthly Average Values)

(Buffer Zone)

AAQ-BZ-S5: Adri Village (N 19°21.928' E 82°56.705')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Apr-23	57.8	28.6	7.3	16.2	0.30
May-23	56.6	27.4	6.4	15.2	0.32
Jun-23	56.2	30.4	6.7	15.6	0.34
Jul-23	43.6	23.7	7.3	15.4	0.32
Aug-23	41.6	22.3	6.4	14.4	0.29
Sep-23	29.7	12.4	6.3	14.3	0.31
Six Monthly Average	47.6	24.1	6.7	15.2	0.31
AAQ-BZ-S6: Chandragiri (N 19°23.107' E 82°59.221')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Apr-23	57.5	31.3	6.8	16.0	0.40
May-23	56.2	30.4	6.3	14.9	0.38
Jun-23	55.6	30.6	6.2	15.2	0.39
Jul-23	44.5	23.6	6.8	15.0	0.38
Aug-23	42.7	21.9	5.8	13.0	0.38
Sep-23	31.2	14.0	5.5	12.7	0.38
Six Monthly Average	48.0	25.3	6.2	14.5	0.39
AAQ-BZ-S7: Paikupakhal (N 19°20.197' E 82°59.589')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Apr-23	58.9	32.4	6.4	13.5	0.31
May-23	57.2	30.9	5.9	12.3	0.29
Jun-23	58.1	31.9	6.3	12.5	0.33
Jul-23	42.2	22.8	6.6	12.8	0.32
Aug-23	40.4	21.5	6.1	11.7	0.29
Sep-23	29.9	13.3	5.7	11.2	0.31
Six Monthly Average	47.8	25.5	6.2	12.3	0.31

Note: No deviation from the NAAQS is observed and all the values are within the standard prescribed under National Ambient Air Quality Standards (NAAQS)





Visiontek Consultancy 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/CTCB & SPCB-A Grade

- Infrastructure Engineering
- 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/23-24/TR-10455

Date: 22.11.2023

ANNEXURE-V

Ambient Air Quality (AAQ) Monitoring Results

Period: April'23 - September'23 (Monthly Average Values)

(Buffer Zone)

AAQ-BZ-S8: Andirakanch (N 19°19.079' E 83°0.738')	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Apr-23	60.0	32.3	6.7	14.0	0.37
May-23	57.8	30.0	5.0	13.0	0.35
Jun-23	57.3	30.5	6.0	13.1	0.35
Jul-23	38.4	26.7	6.9	12.8	0.33
Aug-23	37.8	20.6	6.6	11.8	0.31
Sep-23	30.3	14	6.6	11.9	0.30
Six Monthly Average	46.9	25.7	6.3	12.8	0.34
NAAQ Standard	100	60	80	80	4
Testing method	Gravimetric ISO 5182 (Part-23) RA2019	Gravimetric ISO 5182 (Part-24) RA2019	Improved West and Geake method ISO 5182 (Part- 2) RA 2017	Modified Jacob & Hochheiser (Na-Arsenite) ISO 5182 (Part- 6) RA 2012	NDIR Spectroscopy ISO 5182(Part 10) RA2009
Note: No deviation from the NAAQS is observed and all the values are within the standard prescribed under National Ambient Air Quality Standards (NAAQS)					





Visiontek Consultancy 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/CTCB & SPCB-A Grade

- Infrastructure Engineering
- 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/23-24/TR-10456

Date: 22.11.2023

ANNEXURE-VI

Stream Flow Monitoring Results

Period: April'23 - September'23 (Monthly Average Values)

Sl. No	Stream Location	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Monthly Average	
		Stream Flow (m ³ /hr.)	Stream Flow (m ³ /hr.)	Stream Flow (m ³ /hr.)	Stream Flow (m ³ /hr.)	Stream Flow (m ³ /hr.)	Stream Flow (m ³ /hr.)	Stream Flow (m ³ /hr.)	Stream flow (Cusec)
1	SW1: Paikupakhal Nala (N19°20.056' E82°59.776')	100.5	70.3	46.9	329.4	329.4	483.6	226.7	2.22
2	SW2: Near Dandabada Nala (N19°22.940' E82°57.515')	502.3	334.9	251.2	2177.7	2177.7	2352	1299.3	12.75
3	SW3: Chandragiri Nala (N19°23.078' E83°0.248')	795.4	1548.9	1562.8	5490	5490	4641	3254.7	31.93
4	SW4: Mishripada Nala (N19°22.829' E82°59.268')	368.4	279.1	279.1	3303.2	3303.2	2964	1749.5	17.16

Reviewed by 

Approved by 



Visiontek Consultancy 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 Engineering
• 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/23-24/TR-10457

Date: 22.11.2023

ANNEXURE-VII

Surface Water Quality

Period: April'23 - September'23 (Monthly Average Values)

SW1: Sana River (Up Stream) (N 19°17.015' E 83°0.879')

Sl. No.	Parameter	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results SW1						
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
1	Color	Hazen, max	300	10	10	10	15	15	15	12.5
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.38	7.41	7.26	7.54	7.52	7.45	7.43
4	Suspended Solids	mg/l, max	--	32.6	31.7	32.6	51.8	52.8	51.5	42.17
5	Total dissolved solids	mg/l, max	1500	235.6	236.7	233.5	385.2	405.4	397.2	315.60
6	Temperature	0c	--	26.4	27.3	27.6	27.3	26.5	26.2	26.88
7	Conductivity	µs/cm	--	378.6	380.5	376.2	621.3	654	662.2	512.13
8	Ammoniacal Nitrogen (as NH ₄ -N)	mg/l, max	--	4.6	3.9	3.5	3.2	3.3	3.2	3.62
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	5.4	5.3	5.7	5.5	5.6	5.2	5.45
10	Oil & Grease	mg/l, max	0.1	ND	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	6.8	6.3	6.2	6.1	6.2	6.1	6.28
12	Biochemical Oxygen Demand (as BOD at 270C For 3 days)	mg/l, max	3.0	2.7	2.4	2.8	2.4	2.8	2.7	2.63
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	14.6	15.8	16.2	15.2	16.2	15.8	15.63
14	Free Ammonia (as NH ₃)	mg/l, max	--	ND	ND	ND	ND	ND	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	0.32	0.25	0.28	0.27	0.31	0.26	0.28
16	Iron (as Fe)	mg/l, max	50	2.3	2.8	2.6	2.2	2.4	2.2	2.42
17	Fluoride (as F)	mg/l, max	1.5	0.59	0.62	0.62	0.61	0.65	0.62	0.62
18	Hexavalent Chromium (as Cr+6)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
19	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	Sulphate (as S)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Nitrate (as NO ₃)	mg/l, max	50	1.85	2.26	2.21	2.19	2.25	2.18	2.16
22	Dissolved Phosphate (as PO ₄)	mg/l, max	--	0.72	0.75	0.76	0.74	0.72	0.65	0.72
23	Phenolic Compound (as C ₆ H ₅ OH)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs. in 100% effluent	92%	91%	90%	89%	89%	89%	90%
25	Selenium (as S)	mg/l, max	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	0.23	0.25	0.22	0.22	0.25	0.22	0.23
29	Cadmium	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
32	Nickel (as Ni)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
33	Arsenic (as As)	mg/l, max	0.2	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
34	Total Chromium (as TCr)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Reviewed by

Approved by



Visiontek Consultancy 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/CTCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10458

Date: 22.11.2023

ANNEXURE-VII

Surface Water Quality

Period: April'23 - September'23 (Monthly Average Values)

SW2: Sana River (Down Stream) (N 19°16.602' E 82°59.812')

Sl. No.	Parameter	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results SW2						
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
1	Color	Hazen, max	300	10	10	10	20	20	20	15.00
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.45	7.48	7.43	7.82	7.62	7.58	7.56
4	Suspended Solids	mg/l, max	--	34.6	33.6	33.1	55.9	56.8	55.5	44.92
5	Total dissolved solids	mg/l, max	1500	348.5	349.5	241.3	395.2	395.6	386.4	352.75
6	Temperature	0c	--	26.3	27.4	27.8	26.8	25.8	25.4	26.58
7	Conductivity	µs/cm	--	558.7	562.695	385.9	636.272	638.2	645.4	571.19
8	Ammoniacal Nitrogen (as NH4-N)	mg/l, max	--	4.4	4.8	3.8	3.4	3.8	3.3	3.92
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	4.8	6.3	6.1	5.8	6.5	6.2	5.95
10	Oil & Grease	mg/l, max	0.1	ND	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	6.6	5.7	6.1	5.9	5.8	5.5	5.93
12	Biochemical Oxygen Demand (as BOD at 270C For 3 days)	mg/l, max	3.0	2.6	2.2	2.6	2.3	2.3	2.5	2.42
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	15.3	14.2	15.9	14.9	14.1	14.6	14.83
14	Free Ammonia (as NH3)	mg/l, max	--	ND	ND	ND	ND	ND	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	0.31	0.22	0.34	0.33	0.32	0.35	0.32
16	Iron (as Fe)	mg/l, max	50	1.8	2.5	2.7	2.8	2.6	2.7	2.52
17	Fluoride (as F)	mg/l, max	1.5	0.61	0.65	0.67	0.65	0.66	0.65	0.65
18	Hexavalent Chromium (as Cr+6)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
19	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	Sulphate (as S)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Nitrate (as NO3)	mg/l, max	50	0.47	1.25	2.23	2.21	2.32	2.26	1.79
22	Dissolved Phosphate (as PO4)	mg/l, max	--	0.63	0.58	0.78	0.78	0.75	0.71	0.71
23	Phenolic Compound (as C6H5OH)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs. in 100% effluent	93%	94%	92%	90%	90%	90%	91.5%
25	Selenium (as S)	mg/l, max	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	0.21	0.24	0.23	0.23	0.24	0.23	0.23
29	Cadmium	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
32	Nickel (as Ni)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
33	Arsenic (as As)	mg/l, max	0.2	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
34	Total Chromium (as TCr)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Reviewed by

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



Visiontek Consultancy 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/CTCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10459

Date: 22.11.2023

ANNEXURE-VII

Surface Water Quality

Period: April'23 - September'23 (Monthly Average Values)

SW3: Kandabindha (Up Stream) (N 19°22.014' E 83°0.248')

Sl. No.	Parameter	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results SW3						Six Months Average
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	
1	Color	Hazen, max	300	10	10	10	20	20	20	15.00
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.32	7.28	7.26	7.34	7.42	7.38	7.33
4	Suspended Solids	mg/l, max	--	37.3	38.3	36.5	48.2	49.5	48.4	43.03
5	Total dissolved solids	mg/l, max	1500	286.6	287.4	278.4	384.7	389.6	389.6	336.05
6	Temperature	°C	--	28.5	29.6	28.4	26.5	27.2	26.8	27.83
7	Conductivity	µs/cm	--	459.2	462.714	436.5	619.367	628	638	540.63
8	Ammoniacal Nitrogen (as NH ₄ -N)	mg/l, max	--	3.9	4.5	4.1	3.8	4.2	3.8	4.05
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	6.1	5.8	5.8	5.6	6.3	6.2	5.97
10	Oil & Grease	mg/l, max	0.1	ND	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	5.7	6.1	6.2	5.8	5.5	5.2	5.75
12	Biochemical Oxygen Demand (as BOD at 27°C For 3 days)	mg/l, max	3.0	2.8	2.6	2.4	2.1	2.2	2.3	2.40
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	16.1	15.3	16.3	12.9	13.5	12.8	14.48
14	Free Ammonia (as NH ₃)	mg/l, max	--	ND	ND	ND	ND	ND	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	0.26	0.24	0.23	0.25	0.28	0.26	0.25
16	Iron (as Fe)	mg/l, max	50	2.5	1.9	2.1	1.7	1.8	1.2	1.87
17	Fluoride (as F)	mg/l, max	1.5	0.58	0.47	0.48	0.46	0.45	0.42	0.48
18	Hexavalent Chromium (as Cr+6)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
19	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	Sulphate (as S)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Nitrate (as NO ₃)	mg/l, max	50	2.53	2.48	2.47	2.45	2.55	2.45	2.49
22	Dissolved Phosphate (as PO ₄)	mg/l, max	--	0.59	0.63	0.63	0.63	0.65	0.62	0.63
23	Phenolic Compound (as C ₆ H ₅ OH)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs. in 100% effluent	92%	91%	90%	88%	88%	88%	89.5%
25	Selenium (as S)	mg/l, max	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	0.2	0.22	0.25	0.25	0.26	0.22	0.23
29	Cadmium	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
32	Nickel (as Ni)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
33	Arsenic (as As)	mg/l, max	0.2	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
34	Total Chromium (as TCr)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Reviewed by

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



Visiontek Consultancy 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 Engineering
● 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/23-24/TR-10460

Date: 22.11.2023

ANNEXURE-VII

Surface Water Quality

Period: April'23 - September'23 (Monthly Average Values)

SW4: Kandabindha (Down Stream) (N 19°23.078' E 83°0.248')

Sl. No.	Parameter	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results SW4						
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
1	Color	Hazen, max	300	10	10	10	20	20	20	15.00
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.39	7.36	7.45	7.95	7.85	7.82	7.64
4	Suspended Solids	mg/l, max	--	27.8	29.1	37.1	51.2	52.5	50.6	41.38
5	Total dissolved solids	mg/l, max	1500	299	298.3	288.5	399.5	401.7	401.7	348.12
6	Temperature	0c	--	26.4	24.7	27.8	26.3	27.2	26.7	26.52
7	Conductivity	µs/cm	--	476.8	480.263	459.3	644.5	648	657	560.98
8	Ammoniacal Nitrogen (as NH ₄ -N)	mg/l, max	--	4.6	3.5	4.3	4.1	4.3	3.5	4.05
9	Total Kjeldahl Nitrogen (as N)	mg/l, max	--	4.7	4.7	5.9	6.2	6.5	6.4	5.73
10	Oil & Grease	mg/l, max	0.1	ND	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen (as DO)	mg/l, min	4	6.4	5.5	6.3	6.1	6.2	5.8	6.05
12	Biochemical Oxygen Demand (as BOD at 270C For 3 days)	mg/l, max	3.0	2.9	2.3	2.5	2.2	3	2.8	2.62
13	Chemical Oxygen Demand (as COD)	mg/l, max	--	15.7	16.4	15.8	11.8	14.6	13.4	14.62
14	Free Ammonia (as NH ₃)	mg/l, max	--	ND	ND	ND	ND	ND	ND	ND
15	Total Residual Chlorine (as RFC)	mg/l, min	--	0.26	0.24	0.23	0.25	0.24	0.24	0.24
16	Iron (as Fe)	mg/l, max	50	1.9	2.7	2.5	2.1	2.4	2.2	2.30
17	Fluoride (as F)	mg/l, max	1.5	0.63	0.51	0.52	0.51	0.55	0.53	0.54
18	Hexavalent Chromium (as Cr+6)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
19	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	Sulphate (as S)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Nitrate (as NO ₃)	mg/l, max	50	2.62	2.69	2.74	2.76	2.85	2.76	2.74
22	Dissolved Phosphate (as PO ₄)	mg/l, max	--	0.65	0.61	0.65	0.65	0.55	0.52	0.61
23	Phenolic Compound (as C ₆ H ₅ OH)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
24	Bio-assay Test	mg/l, max	90% survival of fish after 96 hrs. in 100% effluent	94%	93%	91%	87%	87%	87%	89.8%
25	Selenium (as S)	mg/l, max	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Manganese (as Mn)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
27	Copper (as Cu)	mg/l, max	1.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
28	Zinc (as Zn)	mg/l, max	15	0.31	0.28	0.26	0.26	0.32	0.28	0.29
29	Cadmium	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30	Lead (as Pb)	mg/l, max	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
31	Mercury (as Hg)	mg/l, max	--	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
32	Nickel (as Ni)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
33	Arsenic (as As)	mg/l, max	0.2	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
34	Total Chromium (as TCr)	mg/l, max	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Reviewed by

Approved by



Visiontek Consultancy 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/CTCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10461

Date: 22.11.2023

ANNEXURE-VIII

Ground Water Quality

Period: April'23 - September'23 (Monthly Average Values)

GW1: Paikupakhal (N19°20.197' E82°59.589')

Sl. No.	Parameter	Unit	Standard as per IS 10500:2012, Amend. 2015 & 2018	Analysis Results GW1						
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
Organoleptic & Physical Parameters										
1	Color	Hazen	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.12	7.16	7.34	7.28	7.31	7.35	7.26
4	Turbidity	NTU, max	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Total Dissolved Solids	mg/l	500	267.8	265.7	259.3	348.2	332.5	326.4	299.98
6	Temperature	0C	-	16.3	16.3	26.8	27.3	27.5	27.5	23.62
7	Conductivity	µS/cm	-	414.6	414.6	406.3	544.3	512.2	552.5	474.08
General Parameters Concerning Substances Undesirable in Excessive Amounts										
8	Calcium (as Ca)	mg/l, max	75	35.8	33.6	32.6	30.7	32.1	32.1	32.82
9	Chloride (as Cl)	mg/l, max	250	32.4	31.7	32.6	30.3	32.3	30.8	31.68
10	Copper (as Cu)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
11	Fluoride (as F)	mg/l, max	1.0	0.35	0.33	0.35	0.33	0.32	0.28	0.33
12	Free residual Chlorine	mg/l, min	0.2	ND	ND	0.25	0.22	0.22	0.25	0.24
13	Iron (as Fe)	mg/l, max	1.0	0.37	0.35	0.38	0.35	0.32	0.28	0.34
14	Magnesium (as Mg)	mg/l, max	30	8.4	9.3	9.6	10.4	10.2	11.5	9.89
15	Manganese (as Mn)	mg/l, max	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Mineral oil	mg/l, max	0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
17	Acidity	mg/l, max	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Selenium (as Se)	mg/l, max	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
20	Sulphate (as SO4)	mg/l, max	200	22.6	20.5	18.3	17.5	17.6	16.8	18.88
21	Total Alkalinity	mg/l, max	200	72.5	74.5	72.4	78.3	82.5	83.5	77.28
22	Total Hardness	mg/l, max	200	124	122	121	119.3	122	126	122.38
23	Zinc (as Zn)	mg/l, max	5.0	0.28	0.26	0.28	0.26	0.24	0.22	0.26
Parameters Concerning Toxic Substances										
24	Cadmium (as Cd)	mg/l, max	0.003	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
25	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Lead (as Pb)	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Mercury (as Hg)	mg/l, max	0.001	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
28	Total arsenic	mg/l, max	0.01	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY										
30	Total Coli forms	MPN/100 ml	Shall not be detected in any 100 ml sample	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

Reviewed by



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



Visiontek Consultancy 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/CTCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10462

Date: 22.11.2023

ANNEXURE-VIII

Ground Water Quality

Period: April'23 - September'23 (Monthly Average Values)

GW2: Andirakanch (N19°19.079' E83°00.738')

Sl. No.	Parameter	Unit	Standard as per IS 10500:2012, Amend. 2015 & 2018	Analysis Results GW2						
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
Organoleptic & Physical Parameters										
1	Color	Hazen	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.46	7.42	7.45	7.41	7.53	7.62	7.48
4	Turbidity	NTU, max	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Total Dissolved Solids	mg/l	500	332.3	330.7	324.5	322.4	335.2	328.8	328.98
6	Temperature	0C	-	28.4	27.1	27.6	26.9	26.5	26.3	27.13
7	Conductivity	µS/cm	-	515.8	515.8	501.2	505.9	518.5	547.5	517.45
General Parameters Concerning Substances Undesirable in Excessive Amounts										
8	Calcium (as Ca)	mg/l, max	75	36.4	35.2	34.8	32.5	33.2	33.2	34.22
9	Chloride (as Cl)	mg/l, max	250	34.7	35.7	37.4	35.6	34.6	33.8	35.30
10	Copper (as Cu)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
11	Fluoride (as F)	mg/l, max	1.0	0.32	0.31	0.34	0.31	0.35	0.32	0.33
12	Free residual Chlorine	mg/l, min	0.2	ND	ND	0.23	0.21	0.25	0.24	0.23
13	Iron (as Fe)	mg/l, max	1.0	0.33	0.34	0.39	0.37	0.35	0.32	0.35
14	Magnesium (as Mg)	mg/l, max	30	7.32	7.56	7.32	9.03	9.5	10.1	8.47
15	Manganese (as Mn)	mg/l, max	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Mineral oil	mg/l, max	0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
17	Acidity	mg/l, max	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Selenium (as Se)	mg/l, max	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
20	Sulphate (as SO4)	mg/l, max	200	21.2	23.1	20.6	18.6	18.5	17.8	19.97
21	Total Alkalinity	mg/l, max	200	73.6	71.2	73.6	72.3	82.3	85.3	76.38
22	Total Hardness	mg/l, max	200	121	119	117	118.3	121.8	124.2	120.22
23	Zinc (as Zn)	mg/l, max	5.0	0.31	0.31	0.35	0.33	0.32	0.28	0.32
Parameters Concerning Toxic Substances										
24	Cadmium (as Cd)	mg/l, max	0.003	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
25	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Lead (as Pb)	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Mercury (as Hg)	mg/l, max	0.001	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
28	Total arsenic	mg/l, max	0.01	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY										
30	Total Coli forms	MPN/100 ml	Shall not be detected in any 100 ml sample	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

Reviewed by

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



Visiontek Consultancy 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/PCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10463

Date: 22.11.2023

ANNEXURE-VIII

Ground Water Quality

Period: April'23 - September'23 (Monthly Average Values)

GW3: Malligaon (N19°21.359' E82°59.889')

Sl. No.	Parameter	Unit	Standard as per IS 10500:2012, Amend. 2015 & 2018	Analysis Results GW3						
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
Organoleptic & Physical Parameters										
1	Color	Hazen	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.38	7.34	7.28	7.24	7.33	7.28	7.31
4	Turbidity	NTU, max	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Total Dissolved Solids	mg/l	500	289.2	287.4	278.3	367.1	336.3	347.5	317.63
6	Temperature	0C	-	29.5	26.4	27.2	27.4	27.4	26.5	27.40
7	Conductivity	µS/cm	-	451.3	451.3	438.9	569.3	514.6	532.8	493.03
General Parameters Concerning Substances Undesirable in Excessive Amounts										
8	Calcium (as Ca)	mg/l, max	75	29.6	27.3	30.6	28.4	32.5	29.8	29.70
9	Chloride (as Cl)	mg/l, max	250	33.5	32.7	35.8	34.2	34.5	32.8	33.92
10	Copper (as Cu)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
11	Fluoride (as F)	mg/l, max	1.0	0.33	0.35	0.32	0.29	0.3	0.38	0.33
12	Free residual Chlorine	mg/l, min	0.2	ND	ND	0.24	0.23	0.24	0.26	0.24
13	Iron (as Fe)	mg/l, max	1.0	0.39	0.37	0.42	0.39	0.42	0.32	0.39
14	Magnesium (as Mg)	mg/l, max	30	9.50	11.14	11.56	12.29	11.60	11.10	11.20
15	Manganese (as Mn)	mg/l, max	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Mineral oil	mg/l, max	0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
17	Acidity	mg/l, max	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Selenium (as Se)	mg/l, max	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
20	Sulphate (as SO4)	mg/l, max	200	19.6	17.2	18.6	17.4	17.5	18.1	18.07
21	Total Alkalinity	mg/l, max	200	85.8	83.6	71.5	75.2	84.5	77.5	79.68
22	Total Hardness	mg/l, max	200	113	114	124	121.5	128.7	120.2	120.23
23	Zinc (as Zn)	mg/l, max	5.0	0.27	0.27	0.29	0.27	0.26	0.23	0.27
Parameters Concerning Toxic Substances										
24	Cadmium (as Cd)	mg/l, max	0.003	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
25	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Lead (as Pb)	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Mercury (as Hg)	mg/l, max	0.001	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
28	Total arsenic	mg/l, max	0.01	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY										
30	Total Coli forms	MPN/100 ml	Shall not be detected in any 100 ml sample	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

Reviewed by

Approved by



Visiontek Consultancy 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/PCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10464

Date: 22.11.2023

ANNEXURE-VIII

Ground Water Quality

Period: April'23 - September'23 (Monthly Average Values)

GW4: Kendumundi (N19°21.359' E82°59.889')

Sl. No.	Parameter	Unit	Standard as per IS 10500:2012, Amend. 2015 & 2018	Analysis Results GW4						
				Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
Organoleptic & Physical Parameters										
1	Color	Hazen	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH value	--	6.5-8.5	7.33	7.29	7.34	7.29	7.28	7.28	7.30
4	Turbidity	NTU, max	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Total Dissolved Solids	mg/l	500	287.7	288.5	277.9	374.6	347.5	347.5	320.62
6	Temperature	0C	-	30.2	28.5	27.3	26.8	26.5	26.5	27.63
7	Conductivity	µS/cm	-	452.3	452.3	437.2	584.2	535.5	532.8	499.05
General Parameters Concerning Substances Undesirable in Excessive Amounts										
8	Calcium (as Ca)	mg/l, max	75	32.4	33.6	31.5	29.6	29.8	29.8	31.12
9	Chloride (as Cl)	mg/l, max	250	36.6	34.2	36.4	33.4	32.5	32.8	34.32
10	Copper (as Cu)	mg/l, max	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
11	Fluoride (as F)	mg/l, max	1.0	0.35	0.34	0.39	0.37	0.35	0.38	0.36
12	Free residual Chlorine	mg/l, min	0.2	ND	ND	0.23	0.21	0.32	0.26	0.26
13	Iron (as Fe)	mg/l, max	1.0	0.35	0.37	0.35	0.32	0.32	0.32	0.34
14	Magnesium (as Mg)	mg/l, max	30	8.04	7.80	8.83	11.03	11.20	11.10	9.67
15	Manganese (as Mn)	mg/l, max	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Mineral oil	mg/l, max	0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
17	Acidity	mg/l, max	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
18	Phenolic Compounds	mg/l, max	0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Selenium (as Se)	mg/l, max	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
20	Sulphate (as SO4)	mg/l, max	200	21.4	20.7	19.5	18.1	18.5	18.1	19.38
21	Total Alkalinity	mg/l, max	200	87.3	85.4	78.9	76.3	77.5	77.5	80.48
22	Total Hardness	mg/l, max	200	114	116	115	119.3	120.3	120.2	117.47
23	Zinc (as Zn)	mg/l, max	5.0	0.27	0.27	0.28	0.25	0.24	0.23	0.26
Parameters Concerning Toxic Substances										
24	Cadmium (as Cd)	mg/l, max	0.003	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
25	Cyanide (as CN)	mg/l, max	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Lead (as Pb)	mg/l, max	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Mercury (as Hg)	mg/l, max	0.001	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
28	Total arsenic	mg/l, max	0.01	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
29	Pesticide	mg/l, max	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
BACTERIOLOGICAL QUALITY										
30	Total Coli forms	MPN/100 ml	Shall not be detected in any 100 ml sample	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

Reviewed by

Approved by



Visiontek Consultancy 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/CTCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10465

Date: 22.11.2023

ANNEXURE-IX

Ground Water Level Monitoring Results

Period: April'23 - September'23 (Monthly Average Values)

Sl. No.	Monitoring Location	GPS Coordinate	Result (Meter)						
			Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
			Water Level (Meter)	Water Level (Meter)	Water Level (Meter)	Water Level (Meter)	Water Level (Meter)	Water Level (Meter)	Water Level (Meter)
1	Paikupakhal (Buffer Zone)	Latitude: N19°20.197' Longitude: E82°59.589' Altitude: 874.17 m.	2.3	3.9	3.8	3.3	3.3	3.5	3.35
2	Andirakanch (Buffer Zone)	Latitude: N19°19.079' Longitude: E83°00.738' Altitude: 739.45 m.	3.1	4.1	4.2	4.3	4.3	4.5	4.08
3	Malligaon (Buffer Zone)	Latitude: N19°21.359' Longitude: E82°59.889' Altitude: 699.82 m.	4.1	10.3	9.8	13.9	13.9	12.6	10.77
4	Kendumundi (Buffer Zone)	NA	4.8	6.3	6.1	4.5	4.5	4.8	5.17
5	Near Dump Yard (Core Zone)	Latitude: N 19°20'55" Longitude: E 82°58'24"	>104	>104	>104	>104	>104	>104	>104
6	Near Check Post (Core Zone)	Latitude: N 19°20'26" Longitude: E 82°58'40"	>104	>104	>104	>104	>104	>104	>104

Reviewed by 

Approved by 

ANNEXURE-X

Surface Water Withdrawal Agreement

Email Id:-eeharabhangi@gmail.com

Office of the Superintending Engineer
Harabhangi Irrigation Division,
Adava, Gajapati.

Letter No. _____ / Date. _____

To,

The Chief Engineer, Water Service,
O/o the Engineer-In-Chief, Water Resources,
Odisha, Bhubaneswar.

Sub:- Submission of renewal of Agreement as per Clause 18 of the Agreement of M/s
Utakal Alumina International Ltd, Doraguda, Rayagada.

Sir,

In inviting a kind reference to the letter on the above cited subject, I am to submit herewith the Xerox copy of renewal of the agreement as per clause 18 of the Agreement drawn with M/s Utakal Alumina International Ltd, Doraguda, Rayagada on dated 21.12.2021 for drawl of 9.00 cusecs of Surface Water from San River upstream of Indravati River along with Xerox copy of Bank Guarantee and F.D.R. for favour of kind information and necessary action.

Encl:- 1. Xerox copy of Agreement:- 11 pages.
2. Xerox copy of B.G. bearing
No. 0665721BG0000131 dated.18.11.2021:-1No.
3. Xerox copy of FDR bearing Account
No.40586201112 dated. 18.11.2021:-1No.

Superintending Engineer
Harabhangi Irrigation Division, Adava

Memo No. _____ Date. _____

Copy Submitted to the Engineer-In-Chief-cum-Spl. Secretary to government, Department of Water Resources, Odisha, Rajiv Bhawan, Bhubaneswar for favour of kind information and necessary action.
Encl :-As above.

Superintending Engineer
Harabhangi Irrigation Division, Adava

Memo No. _____ Date. _____

Copy Submitted to the Engineer-In-Chief, Water Resources, Odisha, BBSR for favour of kind information and necessary action.
Encl :-As above.

Superintending Engineer
Harabhangi Irrigation Division, Adava

Memo No. _____ Date. _____

Copy Submitted to the Chief Engineer and Basin Manager, R.B.V.N. Basin, Berhampur/ Additional Chief Engineer Vansadhara, Nagavali Basin, Paralakhemundi for favour of kind information and necessary action.
Encl :-As above.

Superintending Engineer
Harabhangi Irrigation Division, Adava

Memo No. 4242 Date. 22.12.21

Copy Forwarded to M/s Utakal Alumina International Ltd, Doraguda, Rayagada for information.

Encl :-As above.

Superintending Engineer
Harabhangi Irrigation Division, Adava



ଓଡ଼ିଶା ओडिशा ODISHA

FORM 'K'
(See Rule 23-A (2) (e) & rule 26)

11AA 304983

AGREEMENT FOR SUPPLY OF WATER FOR THE PURPOSE OF
INDUSTRIAL COMMERCIAL USE.

INDUSTRIAL/COMMERCIAL USE

THIS AGREEMENT is made on the 21st day of December Two Thousand Twenty-One (2021) BETWEEN **Shri. Mazharullah Belg** S/o Late Mohammed Masihullah Belg by profession Chief Executive Officer (CEO), permanent resident of 570, Ambamata OTC Scheme, Opp: Central Academy Sr. School, Udaipur, Rajasthan, PIN- 31300, 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

Sri S.K. Gupta, Son of Late Chandravanu Gupta, resident of village Polosara, P.S. Polosara, Dist. Ganjam, Odisha by profession **Superintending Engineer**, Harabhangi Irrigation Division, Adava, Dist:-Gajapati, Odisha (hereinafter referred to as the 'Sureties') of the second part: **AND** the Governor of Odisha which expression unless repugnant to the context, shall include his successors and assigns (hereinafter called 'the Government') of the third part:



[Handwritten signature]

[Handwritten signature]
21/12/21
Superintending Engineer
Harabhangi Irrigation Division
Adava, Gajapati



WHEREAS the applicant has made an application for supply of water from Government water source/from San River upstream of Indravati River for the period as mentioned in the schedule here to annexed:

AND WHEREAS, the sureties have agreed to stand surety for payment of rates charged for such supply in the manner hereinafter appearing and the Government has agreed to supply water for the purpose specified in the schedule annexed hereto:

SCHEDULE

Purpose for which water will be supplied	Volume of water, if any	Period of supply	The place at which it will be supplied
(1)	(2)	(3)	(4)
Industrial purpose for Refinery & Mines of M/s Utkal Alumina International Ltd.	9.0 cusec or 777600 cft/day	Continuous as per availability from the source	To Plant site at Doraguda & Mines at Baphalimali



[Signature]
Superintending Engineer
Harabhangal Irrigation Division
Bhubaneswar

ANNEXURE-XI

CONSENT TO OPERATE(CTO)



CONSENT ORDER
BAPTHIMALI BAUXITE MINES OF UTKAL ALUMINA INT. LTD.

Page 1 of 13

BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF ODISHA]

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012

Phone-2561909, Fax: 2562822, 2560955 E-mail: paribeshi@ospboard.org, Website: www.ospboard.org

CONSENT ORDER

No. 4157 /

IND-I-CON- 5450

Dt. 20.03.2023 /

CONSENT ORDER NO. 2765

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

Ref: Your online application No. 4445226 Dated 22.12.2022.

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

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

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

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

This consent order is valid for the period from 01.04.2023 to 31.03.2027.

Details of Products Manufactured

Sl. No	Product	Quantity
01.	Bauxite	7.63 MTPA

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



Visiontek Consultancy 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 Engineering
- 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/23-24/TR-10466

Date: 22.11.2023

ANNEXURE-XII

Treated Water (STP Outlet) Baphalimali Mines Period: April'23 - September'23 (Monthly Average Values)										
SL. No.	Parameters	Units	Standards (Inland Surface Water) Part-A	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
1	pH value		5.5-9.0	7.63	7.58	7.24	7.24	7.52	7.51	7.45
2	Faecal Coliform	MPN/100ml	--	70	48	37	70	62	65	58.67
3	Oil & Grease	mg/l, Max	10	ND	ND	ND	ND	ND	ND	ND
4	N-Total	mg/l, Max	--	5.2	4.8	4.7	4.4	4.7	4.2	4.67
5	COD	mg/l, Max	250	31.6	32.7	33.5	31.2	30.6	27.6	31.20
6	BOD, 3 Days at 27°C	mg/l, Max	30	8.3	7.8	7.2	6.9	7.6	7	7.47
7	Total Suspended Solid	mg/l, Max	100	34	33	32.6	32.4	34.4	31.3	32.95
8	Ammoniacal Nitrogen (as NH ₃ -N)	mg/l, Max	100	5.7	4.8	4.7	4.5	4.5	4.3	4.75





Visiontek Consultancy 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/PCB & SPCB-A Grade

- Infrastructure Engineering
- 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/23-24/TR-10467

Date: 22.11.2023

ANNEXURE-XIII

Treated Water (ETP Outlet) Baphalimali Mines Period: April'23 - September'23 (Monthly Average Values)										
SL. No.	Parameters	Units	Standards (Inland Surface Water) Part-A	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Six Months Average
1	pH value		5.5-9.0	7.37	7.34	7.61	7.14	7.25	7.18	7.32
2	Faecal Coliform	MPN/100ml	--	25	34	34	34	35	38	33.33
3	Oil & Grease	mg/l, Max	10	ND	2.5	3.1	2.8	3.2	3.3	2.98
4	N-Total	mg/l, Max	--	5.5	5.8	5.7	4.8	5.3	5.2	5.38
5	COD	mg/l, Max	250	30.6	29.5	31.5	27.9	32.5	32.5	30.75
6	BOD, 3 Days at 27°C	mg/l, Max	30	8.3	7.9	8.1	7.1	8.1	8.1	7.93
7	Total Suspended Solid	mg/l, Max	100	39.4	40.2	38.2	37.5	38.6	37.4	38.55
8	Ammoniacal Nitrogen (as NH ₃ -N)	mg/l, Max	100	3.5	3.7	3.6	3.2	3.3	3.2	3.42



ANNEXURE-XIV

FINANCIAL FORECAST OF ACTIVITIES TO BE UNDERTAKEN AT THE PROJECT AREA

(To be implemented by the Project proponent)

Sl. No.	Item of work to be undertaken	Unit	Amount in Lacs	Remarks
1	Soil & Moisture Conservation Measures			
	a) Construction of loose boulder Check dam across the seasonal nala, drainage line and semi perennial nala occurring along the slopy area of the lease. 1 mtr span 60 nos @ Rs. 3600/- each = 2.16 lacs 2 mtr span 40 nos @ Rs. 7113/- each = 2.8452 lacs 3 mtr span 26 nos @ Rs.14 920/- each = 3.9 lacs	126 nos	8.9052	Annexure-B-IV, V & VI
	b) Contour Bonding		3.0000	
2	Fire Protection Measures			
	Provision for a fire watch tower on North-west side of the lease near the boundary on LS-		5.0000	
	Deployment of a fire fighting squad consisting of 5 members with provision of vehicle etc. as per approved cost norm of CWLW, Odisha for five fire months @ 3.50 lacs per annum. 3.50 lacs x 10 years =	1 squad	35.0000	Annexure-A-V
3	Prevention of fall & entry to mining pits by wild animals.			
	Construction of balance RR Stone masonry $\frac{1\text{mtr}+0.75\text{mtr}}{2} \times 1\text{mtr}$ @ 4.00 lacs per km Where necessary along the boundary for 10km.	10km	40.0000	
4	Development of Green Belt.			
	Green Belt through ANR practices with Gap Plantation and through Block plantation (50+50) in safety zone of 7.5 mtr width over a length of 22km = 8.25ha. ANR Practices with plantation @ 400 plants per ha. @ Rs. 38,806/- per ha =3,20,150/- 8.25ha Block Plantation on Bald hill cost norm with 1600 plants per ha inside the non-forest land @ 2,86,421/- = 23,62,973/-		26.8312	Annexure-A-I & II
5	Cost of one latest Model SUV (SCORPIO-S-10) vehicle to be handed over to the DFO, Rayagada	01 no	16.0000	
6	Interventions for regulating impact of mining activities.			
	Interventions for regulating light, water, air, noise pollution, dump stabilisation & waste management will be carried out at the project cost as per the approved environmental management plan.		Implementation at the project cost according to the approved EMP.	
	Total		134.7364	

(Rupees one crore thirty four lakhs seventy three thousand six hundred forty) only

For Utkal Alumina International Ltd.

Authorized Signatory

43

Principal Chief Conservator of Forests
(Wildlife) & Chief Wildlife Warden
Odisha, Bhubaneswar

ANNEXURE-XV

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

(Website: odishawildlife.org, E. mail: odishawildlife@gmail.com)

No. 5608 /1WL-SSP-80/2016

Dated, Bhubaneswar, the 27 Jun, 2017

To

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

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,

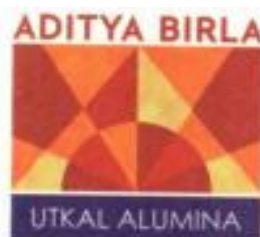
It is to inform you that you have to implement a Site Specific Wildlife Conservation Plan for your Baphilimali Bauxite Mines in Kalahandi and Rayagada Districts to address the impact on wildlife within the surrounding area and the recommendation of State Govt. for implementation of such a plan while 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-XVI

Submission of Digital processing of Mine lease area Report



Ref: UAIL-Mines/BBM/53/2023

14th October 2023

To

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

Subject: 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-11015/650/2007-1A. II(M) dated 19.02.2009

Dear Sir,

Please find enclosed herewith the Land use report & the land use map of lease area, as a part of the compliance to the Special Condition No. XXXII of EC granted with respect to Baphlimali Bauxite Mine of M/s Utkal Alumina International Ltd. for an annual production capacity of 8.5 MTPA.

This is for your kind information and perusal.

Thanking You

Yours faithfully,

For Utkal Alumina International Limited

Mukesh Kumar Jha

Head- Mines

Baphlimali Bauxite Mine

Encl: As Above

Copy to:

1. The Member secretary State Pollution Control Board, Odisha Parivesh Bhawan, A/118 Nilakanthanagar, unit- VIII Bhubaneswar- 751012
2. Regional Office, OSPCB, Rayagada.
3. Roetz_bsr-mef@nic.in , parivesh1@ospcbboard.org & rospcb.rayagada@ospcbboard.org



Visiontek Consultancy 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 Engineering
- 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/23-24/TR-10468

Date: 22.11.2023

ANNEXURE-XVII

Noise Monitoring Results Period: April'23 - September'23 (Monthly Average Values) CORE ZONE NOISE															
Sl. No	Noise Monitoring Locations	Apr-23		May-23		Jun-23		Jul-23		Aug-23		Sep-23		Six Months Average	
		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq			
		Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day	Night
1	Drilling Operation	72.5	67.8	71.6	68.1	72.3	67.4	71.6	66.9	70.3	65.8	71.5	65.5	71.6	50.2
2	Loader Operation	67.5	65.2	68.2	67.2	69.2	63.8	70.1	67.2	72.1	68.4	73.5	67.9	70.1	66.6
3	Shovel Operation	68.3	62.7	65.9	63.4	67.3	63.1	68.3	62.9	70.1	60.9	69.3	62.1	68.2	62.5
4	Dumper Operation	73.1	65.9	71.6	66.9	71.5	68.1	70.8	67.3	69.3	65.4	69.6	64.8	71.0	66.4
5	Crusher Operation	73.6	69.5	72.5	65.3	72.3	68.3	71.3	67.5	70.4	66.9	72.2	66.3	72.1	67.3
6	Workshop Area	71.4	59.3	72.1	57.3	71.6	60.4	70.5	61.3	71.3	62.4	71.6	62.2	71.4	60.5
7	Middle of Quarry	63.3	57.2	65.3	56.8	66.3	58.4	67.3	59.3	69.3	60.1	70.3	62.1	67.0	59.0
Ambient Air Quality Standards in respect of Noise for Industrial Area														75	70
Note: No deviation from the AAQ standard in respect of Noise is observed and all the values are within the standard prescribed.															





Visiontek Consultancy 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/CTCB & SPCB-A Grade

• Infrastructure Engineering
• 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/23-24/TR-10469

Date: 22.11.2023

ANNEXURE-XVII

Noise Monitoring Results

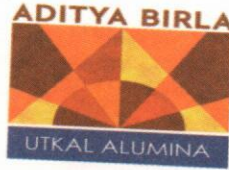
Period: April'23 - September'23 (Monthly Average Values)

BUFFER ZONE NOISE

Sl. No	Noise Monitoring Locations	Apr-23		May-23		Jun-23		Jul-23		Aug-23		Sep-23		Six Months Average	
		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq		Results in dB(A)Leq			
		Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day	Night
1	Village Paikupakhal	54.6	45.3	53.6	43.4	54.8	43.2	53.9	42.8	54.2	43.1	53.1	43.5	54.0	43.6
2	Village Andirakanch	54.2	44.2	52.6	43.8	51.9	42.8	53.6	44.1	53.9	43.9	54.1	43.8	53.4	43.7
3	Village ADRI	54.2	43.2	54.9	44.3	53.8	42.8	52.7	43.1	53.4	44.1	52.2	43.0	53.5	43.4
4	Village Chandragiri	54.7	44.1	53.6	43.5	54.8	43.1	53.9	42.3	54.8	43.3	54.5	44.5	54.4	43.5
Ambient Air Quality Standards in respect of Noise for Residential Area														55	45

Note: No deviation from the AAQ standard in respect of Noise is observed and all the values are within the standard prescribed.





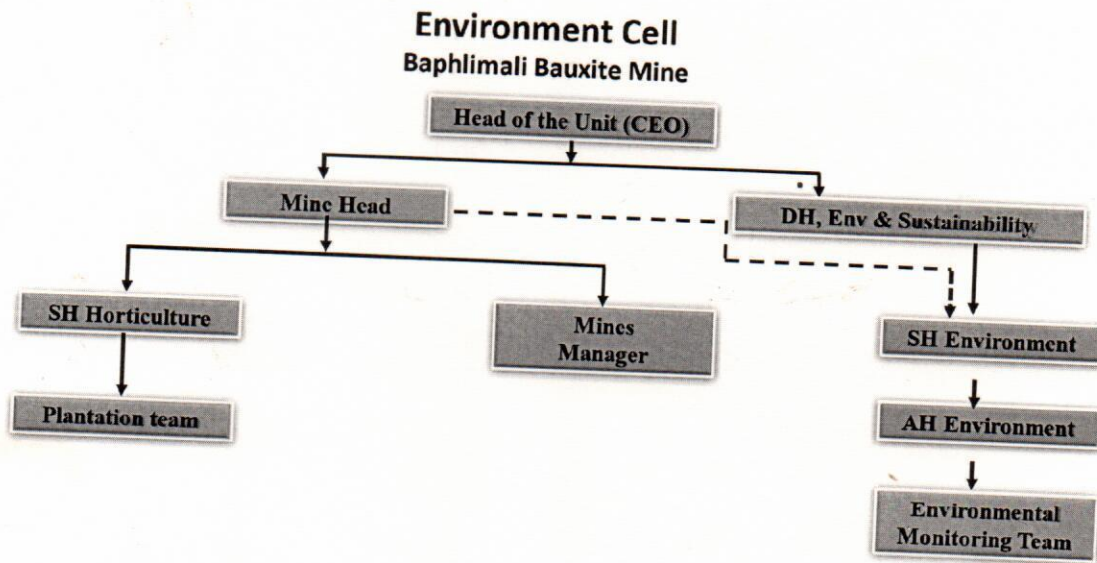
Annexure-XVIII

OFFICE ORDER

Date: 23rd November 2023

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 are enlisted below.



Thanking You
For Utkal Alumina International Limited


Mukesh Kumar Jha
Head- Baphlimali Bauxite Mine

ANNEXURE-XIX: ENVIRONMENTAL EXPENDITURES

Recurring Annual Cost for Environmental Protection Measures for FY'2022-23		
Sl. No.	Particulars	Rs. In Lakhs
1	Air Pollution Control Measure	427.99
2	Plantation & Horticulture	190.72
3	Environment Monitoring	9.79
4	Environment Awareness & Health	1.36
5	Water Management	85.11
6	Statutory Expenses & Study report Preparation	128.89
7	Waste Management	9.06
	Total	852.95