

**CONDITIONS TO BE COMPLIED AS PER ENVIRONMENTAL CLEARANCE APPROVAL  
KATHAUTIA OPEN CAST COAL MINE, DALTONGANJ**

**Half Yearly Compliance report of “Environment Clearance” No. J-11015 /61//2006-IA. II (M) dated 19<sup>th</sup> June, 2006: Period- ((October 2021 - March 2022)) granted to Kathautia Open Cast Coal Mine of M/s Hindalco Industries Limited.**

**A. SPECIFIC CONDITIONS**

<b>Sl. No.</b>	<b>Conditions</b>	<b>Compliance</b>
01	All the conditions stipulated by SPCB shall be effectively implemented	The existing consent to operate is valid till 30.09.2022 which is granted by SPCB post overseeing satisfactory implementation of condition mentioned in earlier consents. <b>(Annexure-1)</b>  The stipulated condition mentioned in existing consent to operate is being implemented.
02	The bund/embankment shall be designed taking into account the highest flood level, based on past data, of the drainage of the water bodies in the buffer zone which impact the mining operations so as to guard against mine inundation	Embankment against Durgawati River is of 5m above the HFL of Durgawati River and is of robust construction. Embankment has been further widened at some places & strengthened, based on the instructions of the IRO. Plantation and grassing using vetiver and lemongrass has been done, to further stabilize it.  Moreover, IEST, Shibpur has completed embankment stability study and the final report has been submitted earlier.
03	Topsoil should be stacked properly with proper slope at earmarked site(s) and should not be kept active and shall be used for reclamation and development of green belt.	Topsoil is being used to cover the dump, once it reaches the final height as a top layer. In FY21-22, we have covered approximately 1.986Ha dump area with top soil. Topsoil from initial cutting (by PA) is stacked properly with proper slope at earmarked site (dump yard-1) only. In future top soil from Dump-1 will be used on the top layer for reclamation and development of green belt.
04	OB should be stacked at earmarked external OB dumpsite (s) within ML area and shall be a maximum height of 60 m only and consist of benches of 10 m each.	OB is being stacked separately within Mining Lease area. Dump Height is within the permissible limit of 60m from OGL (as per approved Mine Plan) Dump benches were made with 10m benches (height) and overall dump slope is maintained less than 28°.

	<p>The ultimate slope of the dump shall not exceed 28°. Backfilling shall begin at the end of 3<sup>rd</sup> year in the de-coaled area. Monitoring and management of existing reclaimed dumpsites should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment &amp; Forests and its Regional Office located at Bhubaneswar on yearly basis.</p>	<p>Backfilling of de-coaled area is a regular activity and always in progress keeping the safe distance from the working face.</p> <p>Continuous monitoring is going on in the current as well as on old dumping area, for safety and stability factor. Reclamation of dump is going on continuously and part of the plantation on OB dump have become self-sustaining ( Photo attached-existing plantation and settled dump).</p> <p>Continuous monitoring is being done by field supervisors on day-to-day basis through effective supervision.</p> <p>This is being updated in this half yearly compliance report and will be submitted to JSPCB &amp; MoEFCC, as applicable.</p>
05	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development, etc. The drains should be regularly desilted and maintained properly.</p> <p>Garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.</p>	<p>Garland drains have been made around all dumps, haul road, important installation like office, stockyard etc. For each pit of mining operation, we have made a sump. Mega Siltation ponds have been created at Pit D to arrest the run- off of silt and finer particles from each area. The water collected from siltation ponds is used for water spraying, watering of plants, gardening and other purposes in the mine. The drains are de-silted and maintained regularly (photo attached- Pit D).</p> <p>Garland drains are designed, constructed and maintained keeping safety in view with regard to sudden inrush of water due to heavy rainfall. Sump capacity is of adequate size and regular de- silting is going on. The mined out Pit D is used as storage of water which is being used for dust suppression, watering of plants etc. and the storage capacity is more than adequate for settling of silts from mines, dumps etc. The storage capacity is almost 3 times of the makeup of water from the ML area and can handle peak sudden rainfall and surface runoff of the area. We are not discharging mined out water outside and holding the water throughout the year to use for the mine as well as for supplying to nearby village in dry period.</p>
06	<p>Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation</p>	<p>Retaining structures at desired places around the toe of the dump have been made (thick toe wall made up of stones) and repairing of existing structure is going on, (photo attached- Toe Wall). Siltation</p>

	should be based on the rainfall data.	ponds of adequate size have been built to check surface runoff and capture the silts.
07	No ancillary operations such as crushing, screening and washing of coal shall be done within the lease	No such ancillary operation is done within ML area.
08	Crushers at the CHP should be operated with high efficiency bag filters, water sprinkling system should be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points	No CHP is installed at present. Dust suppression through sprinklers (both fixed type and truck mounted, <b>photo attached-Fixed Type Sprinklers</b> ) on haul road, office premises and stock yard is going on regularly to minimize fugitive emission generated from mining operations.
09	Drills should be wet operated only.	Drilling is done with wet operated drill machine only
10	Surface Miners shall be used for coal and OB extraction. Controlled Blasting should be limited to hard strata only and practiced only during daytime with use of delay detonators. The mitigation measures for control of ground vibration and to arrest the fly rocks and boulders should be implemented.	The techno-economic study was done by HIL and found that its use is not feasible/possible due to techno-economic constraint. Rather, a more flexible extraction method using shovel and dumper combination after applying the controlled blasting techniques (minimizing the blast induced ground vibration levels) was encouraged.  Blasting is limited to hard strata only. For soft strata/top soil we are using excavator to excavate the material without blasting. HIL engaged IIT Kharagpur to study the control blasting parameters and recommendations. According to the recommendation of the study, proper use of explosive and delay detonator is being used, over charging is avoided, proper stemming with sand, muffling with wire net is used to restrict flying of rock/boulders to mitigate and monitor the vibration during blasting activity. Vibrometer is used to monitor the vibration caused during blasting ( <b>Annexure-3 Vibrometer reading</b> ). Deep trenches are made to minimize the spread of vibration to nearby areas. Security personnel are deployed before blasting to safeguard people and property near to the mine.
11	Area brought under afforestation shall cover a total area of 802.03 ha and includes reclaimed external OB dump (73.97 ha), reclaimed topsoil dump (4 Ha), backfilled	Afforestation program is a continuous process in this mine. As of date, in H1 of FY 21-22, 1.986Ha of land has been covered with 12815 plants and in another area of 0.8984 Ha, gap plantation of 3050 nos has been completed. Most of these are fruit bearing plants. Altogether 85.106 Ha

	<p>area (683.97 ha), 18.65 ha along excavated area, along ML boundary, along roads (14.80 ha) 6.64 ha along the river and in undisturbed area 1.14 ha) within the lease by planting native species in consultation with the local DFO/Agriculture department. The density of the trees should be around 2500 plants per ha.</p>	<p>(around 42.62 Ha in external dump and around 43.486 Ha in in-pit dumping) has been reclaimed with top soil. Rehabilitation with plantation has been done for around 74.54 Ha, all-together, after attaining final shape. Plantation has been done on various places in and around the mine lease area including dumps and reclaimed area.</p> <p>We have also started river side plantation and almost 1 km is covered till date. Green belt has been developed along magazine road , in dump slope area and also wherever open area is available. The present density of plants per hectare is more than 2500. The plants are mostly local variety and have been consulted with local DFO before plantation.</p>
12	<p>A progressive closure Plan shall be implemented by reclamation of quarry area of 683.97 ha shall be backfilled and afforested by planting native plant species in consultation with the local DFO / Agriculture Department. The density of the trees should be around 2500 plants per ha. The balance 3.96 ha of de-coaled area shall be converted into a water reservoir, the upper benches of which shall be gently sloped and stabilized and reclaimed with plantation.</p>	<p>A progressive mine closure plan is under implementation and reclamation of quarry area is under progress. The density of the trees in the afforestation area is more than 2500 plants per Ha.</p> <p>Altogether 85.106 Ha (Around 42.62 Ha in external dump and around 43.486 Ha in backfilled area or in-pit dumping) area has been reclaimed with top soil and Rehabilitation with plantation has been done for 74.54 Ha all- together on it after attaining final shape. Plantation has been done on various places in and around the mine lease area including dumps and reclaimed area.</p> <p>Also, 04 nos. of water reservoirs have been created (mined out pits, some of them are temporary in nature) measuring 12.5 ha (approx.) to maintain the ground water level of the adjoining villages and also to act like recharge point. The slopes are properly maintained with benches as per statutes</p>
13	<p>Conservation Plan for endangered species, found in and around the project area shall be formulated, if required, in consultation with the State Forest and Wildlife Departments.</p>	<p>In the EIA and EMP no such endangered species are mentioned. No endanger species is informed to be found in and around the project area also.</p> <p>Local DFO, Agriculture Department and other concerned persons were contacted to discuss the plantation program. With the mutual consent the afforestation plan was made. As per discussion with them we have planted local species such Sisham, Teak, Mango, Guava, Lichi, Cashew, Shal</p>

		etc. We have discussed the matter with DFO-Palamau and have given him a letter as well. (Annexure 4)
14	The company shall obtain prior approval of CGWA/CGWB Regional Office for use of groundwater if any, for mining operations.	HIL has obtained the requisite permission from the CGWA, in form of the NOC, which is valid upto 07/04/2024, via NOC number CGWA/NOC/MIN/REN/1/2022/6862 . ( <b>Annexure 5</b> )
15	Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new piezometers. The monitoring for quantity should be done four times a year in pre-monsoon (May), monsoon (August), post monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.	Piezometer has been installed in bore holes for measuring ground water level on regular basis. Quality of ground water is monitored by M/s ULIMATE ENVIROLYTICAL SOLUTIONS (appointed for the purpose) – in pre monsoon, monsoon, post monsoon and winter seasons. The report along with the data collected is sent to MOEF and to the JSPCB. (Copy attached <b>in Annexure-6</b> )
16	The company shall put up artificial groundwater recharge measures for augmentation of groundwater resource. The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	Hindalco has set up ground water recharge pits for augmentation of ground water resources in the adjoining villages. Also, 4 nos. of big water reservoirs are perennially maintained along with Ground Water Recharge Structures. The combined water recharge capacity as per Water Audit Report is more than 20,00,000 cubic meter for the last year. Rain Water Harvesting structures have been installed in KOCCM as per guidelines given in CGWB website. The water table of the local villages is not lowered. As precautionary measures, water tankers are available to supply the water to the nearby villages in case of any emergency. We supply water to nearby villages for drinking and domestic uses. Photo of Pit D
17	ETP should also be provided for workshop and CHP waste water	5 KLD ETP, with automatic oil skimmer, is in working condition, with most advanced technology, just beside the workshop. The

		mine is not having any CHP. New ETP photo has been attached.
18	R & R shall not be less than the norms laid down by the State Government and National R & R Policy and shall be completed within a specified time-frame.	R & R compensation is paid as per Jharkhand R & R policy and one R & R colony has been constructed about 2 km from the mines premises. The R&R activities are completed well before the stipulated time for specified area of mining.
19	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests for approval 5 years in advance of final mine closure for approval.	Tri-partite Escrow Agreement has been made between Hindalco, Govt. of India and Designated Bank (IDBI) for the opening of Escrow Account and deposit of Escrow money. The deposit amount was as per the Revised Progressive Mine Closure Plan (payment of Rs. 2,94,57,000.00 (Two crore ninety four lakhs fifty-seven thousand only) was made to the Mine Closure Escrow Account of KOCCM on 05-03-2021 in advance for FY 2021-22) and was informed to CCO Kolkata.
20	Consent to operate shall be obtained before starting mining operations	CTO has been obtained , and now, it is valid up to 30.09.2022

## B. GENERAL CONDITIONS

Sl. No.	Conditions	Compliance
01	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.	Noted.
02	No change in the calendar plan including excavation, quantum of mineral coal and waste should be made.	The calendar plan is being followed as per approved mining plan and production of coal and waste is aligned with the mining plan.
03	Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone, for SPM, RPM, SO2 and NOx monitoring.	Adequate nos. of monitoring stations have been set up in core zone and buffer zone area based on the discussion with State Pollution Control Board to monitor all the specified parameters of pollutants.

	Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.	Monitoring is being done on regular basis by M/s ULIMATE ENVIROLYTICAL SOLUTIONS (appointed for the purpose) and report is being submitted to State Pollution Control Board. (Copy attached- Annexure-7)
04	Fugitive dust emissions (SPM and RPM) from all the sources should be controlled regularly monitored and data recorded properly. Water spraying arrangement on haul roads, wagon loading, dump trucks (loading and unloading) points should be provided and properly maintained.	Fugitive dust emissions (SPM and RPM) from all the sources are controlled through dust suppression via sprinklers and other arrangements and water spraying is done on haul road, wagon loading & unloading points etc. The monitoring is being done on regular interval by M/s ULIMATE ENVIROLYTICAL SOLUTIONS and records are being maintained properly.
05	Data on ambient air quality (SPM, RPM, SO <sub>2</sub> and NO <sub>x</sub> ) should be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and to the Central Pollution Control Board once in six months.	Ambient air quality data of SPM, RPM, SO <sub>2</sub> and NO <sub>x</sub> is being monitored by M/s ULIMATE ENVIROLYTICAL SOLUTIONS and the report thereof is being submitted to JSPCB and to the regional office of MOEF and SPCB in every 6 months by email (Annexure-7)
06	Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc should be provided with ear plugs/muffs.	Adequate measures have been taken to control the noise levels below 85 dBA in the work environment. All workers engaged in blasting and drilling operations, and also operation of HEMM have been provided with ear plugs/muffs. The use of ear muffs/plugs are being ensured by supervisors
07	Industrial wastewater (workshop and wastewater 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 before discharge. Oil and grease trap should be installed before discharge of workshop effluents.	Industrial waste water (workshop and wastewater from the mine) is collected and treated properly to conform to the prescribed standards. Mine water is collected in Sump and pumped to the nearby reservoir (Pit-D) after initial settlement of clay, particulate matter. After the settlement of floating particulate matter in settling pit, the water is used for dust suppression, watering of plants, and is also being used in irrigation purpose in the nearby villages. Oil and grease trap, along with oil skimmer has been installed in the ETP for the workshop effluent, we have installed another most advanced ETP near workshop (photo attached).

		Trapped oil/grease is collected in drums and are being disposed along with hazardous waste to the authorized dealer <b>(Annexure-8)</b> . The treated water is recycled for the washing again in the workshop. The sediments are periodically collected from different pits and cleaned and disposed in the designated place. The treated water is recycled for further use.
08	Vehicular emissions should be kept under control and regularly monitored. Vehicles used for transporting the mineral should be covered with tarpaulins and optimally loaded.	Vehicles used for transporting the coal from the mine to railway siding is optimally loaded and covered with tarpaulins to prevent dust dispersion. Vehicular emissions are under control and is being regularly monitored. <b>(Emission certificate is attached- (Annexure 09)</b>
09	Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.	Regular monitoring of air, water, noise, and soil pollution is done by M/s ULIMATE ENVIROLYTICAL SOLUTIONS to monitor periodically, the environmental conditions. (Copy attached- Annexure 07). We have purchased all Environmental Laboratory equipments and necessary things to run the Env. Lab by our own for continuous monitoring and supervision. We also have appointed a chemist for the said job. The work is in progress and we expect to make it operational soon.
10	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 programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.	People working in mining area are given training and information on safety and health aspects. They are provided with nose mask, goggles, hand gloves, safety shoes, helmet etc. (PPEs and Protective respiratory devices). Occupational health surveillance programme of the workers is under taken under IME & PME (Initial Medical Examination & Periodical Medical Examination) during entry and once in every 3 years to observe any contractions due to exposure to dust so as to take corrective measures, if required.
11	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 company.	A separate environmental management cell has been set up and copy attached. (Annexure 10)



12	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 this Ministry and its Regional Office at Bhubaneswar.	The funds earmarked for environmental protection measures as mentioned under the Progressive Mine Closure Plan is kept separately in Escrow A/C which was opened with IDBI banks, Ranchi with CCO Kolkata as the custodian of the fund.
13	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/information/monitoring reports.	All the stipulated conditions are being monitored by Regional Office of the Ministry. Full cooperation is being extended to the officials and all data/information / reporting are being furnished to them.
14	A copy of the clearance letter be marked to concerned Panchayat/Local NGO, if any, from whom any suggestion/representation has been received while processing the proposal.	Copy of the clearance letter has been shared with local Panchayat and was discussed along with good suggestions
15	State Pollution Control board should display a copy of the clearance letter at the regional Office, District Industry Centre and Collector's Office / Tehsildar's Office for 30 days.	Duty of the concerned authority of JSPCB
16	The project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days 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 may also be seen at the website of the Ministry of Environment & Forests.	Local declaration/publicity has been done in widely circulated newspaper during the execution of the project.



**Fig 01 i**- Temporary water storage at mined out Pit D



**Fig 01 ii**- Temporary water storage for Groundwater recharge and biodiversity conservation at Narayan Ahara



**Fig 02-** Self Sustaining Plantation on OB Dump



**Fig 03-** New Plantation on Top Soil Covered OB Dump



**Fig 04-** Plantation and grassing along the slopes of the Embankment



**Fig 05 i-** Fixed Type Water Sprinkler along Haul Road



**Fig 05 ii-** Fixed Type Water Sprinkler along Haul Road



**Fig 06-** State of the art ETP in working condition with Oil Skimmer



**Fig 07** -Designated washing point, next to ETP



**Fig 08**- Mobile Water Sprinkling by trucks



**Fig 09** –Roof Top Direct Rainwater Harvesting Structure



**Fig 10** – Newly constructed Toe Wall along the Dump



**Fig 11** – Environmental Laboratory at KOCCM

