

ମହାନଦୀ କୋଲ ଫିଲ୍ଡସ୍ ଲିମିଟେଡ୍
महानदी कोलफील्डस लिमिटेड
Mahanadi Coalfields Limited
(A subsidiary of Coal India Limited)

OFFICE OF THE PROJECT OFFICER
BHUBANESWARI OCP, JAGANNATH AREA
PO:-DERA COLLIERY, DIST:ANGUL (ODISHA)
PIN:759103
Phone : (06760)-268409, 269844, FAX – (06760) 269527



MCL

Ref. No. PO/BBSRI-OCP/E&F/EC/Compliance/23-24/ 6603

Date: 12/10/2023

To

**The Director General of Forest (In-charge),
Ministry of Environment, forest and Climate Change
Eastern Regional Office, MoEF&CC
A/3, Chandrasekharpur, Bhubaneswar, Odisha-751016**

Sub: Submission of Six Monthly Progress Report on the implementation of EC conditions imposed by MoEF&CC, New Delhi (Six Month ending Sept'2023) in respect of Bhubaneswari OCP of M/s. Mahanadi Coalfields Limited- Reg.

Ref: 1. EC vide No. J-11015/280/2013-IA. II (M) pt. Dtd.16.02.2018
2. Amendment in EC vide No. J-11015/280/2013-IA. II (M) pt. Dtd.02.05.2022

Dear Sir,

Please find enclosed herewith the Six Monthly Progress Report on the implementation of EC conditions imposed by MoEF&CC, New Delhi (Six Month ending Sept'23) in respect of Bhubaneswari OCP, M/s. Mahanadi Coalfields Limited for your kind perusal.

Soft copy of the above report is also being sent to email id: roez.bsr-mef@nic.in

This is for your kind information

Yours faithfully

[Handwritten Signature]
12/10/23

**Project Officer
Bhubaneswari OCP**

[Handwritten Initials]

Enclosure: As above

Copy for kind information to:

1. The Addl. Director (S), Env't. Monitoring Cell, MoEF&CC, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-1 10003.
2. The Member Secretary (OSPCB), A/118, Nilakantha Nagar, Bhubaneswar.
3. The Regional Officer (OSPCB), S-3/3, Hakimpada, Industrial Estate, Angul- 759143.

Copy to:

1. The General Manager, Jagannath Area.
2. The General Manager (E&F), MCL HQ.
3. The Staff Officer(E&F), Jagannath Area.
4. The Colliery Manager, Bhubaneswari OCP.
5. The Project Env't Officer, Bhubaneswari OCP.
6. File.

SIX MONTHLY PROGRESS REPORTS
ON
THE IMPLEMENTATION OF
ENVIRONMENTAL CLEARANCE
CONDITIONS IMPOSED BY MoEF&CC,
NEW DELHI.

Six month ending September'2023



BHUBANESWARI OCP

JAGANNATH AREA

MAHANADI COLA FIELDS LIMITED

MAHANADI COALFIELDS LIMITED
BHUBANESWARI OCP, BHUBANESWARI AREA
SIX MONTHLY PROGRESS REPORTS ON THE IMPLEMENTATION OF
ENVIRONMENTAL CLEARANCE CONDITIONS IMPOSED BY MoEF&CC
(SIX MONTHS ENDING WITH SEPTEMBER - 2023)

NAME OF THE PROJECT: BHUBANESWARI OCP, BHUBANESWARI AREA.
No. & Date of MOEF clearance letter: J-11015/280/2013-IA. II (M) pt. Dtd.16.02.2018 &
18.03.2019. EC Amendment vide letter J-11015/280/2013-IA. II (M) pt. Dtd. 02.05.2022

SI No.	Condition	Compliance status
i.	Adequate ambient air quality monitoring stations shall be established in consultation with the State Pollution Control Board and regular monitoring shall be carried out for particulate emissions (both PM10, PM2.5), SO2, NOx. The monitoring results for the period during summer season (April-June 2018) shall be submitted to the SPCB and Regional Office of the Ministry.	Complied. Four nos. of Ambient air quality monitoring stations have been jointly decided and established in the core zone as well as in buffer zone in consultation with the State Pollution Control Board and the monitoring is being carried out fortnightly in a month for SPM, PM10, PM2.5, SO2, and NOx. The monitoring results are being submitted to the SPCB The monitoring reports from Apr'2023 to Sep'2023 are attached as Annexure-1.
ii.	The EAC shall review the compliance of the action taken on the observations of the Regional Office, before December 2018 and makes its recommendation for continuance of the project thereafter. Also based on the monitoring results, the Committee shall examine efficacy and adequacy of the proposed control measures and its impact on the ambient air quality.	Complied. Officials from Regional Office, MoEF&CC visited the mine on dated 09.11.2018. After review of the compliance of the action taken on the observations of the Regional Office & recommendation of EAC, the MoEF&CC has clarified EC vide no. J-11015/280/2013-IA-II(M).pt, dtd: 18.03.2019, is valid for 30 years or life of the mine, whichever is earlier.
iii.	To control of dust generation at source, the crusher and in-pit belt conveyors shall be provided with mist type sprinklers.	Complied. Better environment friendly technology has been adopted. 100% coal is excavated through eco friendly surface miners which eliminate the drilling, blasting and crushing operations. Surface miners are provided with mist spray system. CHP pipe conveyor with SILO system for 15 MTPA capacity construction completed and test run is going on.
iv.	Mitigative measures shall be undertaken to control dust and other fugitive emissions all along the roads providing sufficient numbers of water sprinklers. Adequate corrective measures shall be undertaken to control dust emissions as prescribed before the committee, which would include mechanized sweeping, water sprinkling/mist spraying on haul roads and loading sites, long range misting/fogging arrangement, wind barrier wall and vertical greenery system, green belt, dust	Under Compliance. 16 nos. of mobile water sprinklers having capacity ranging from 9 to 34 KL are in operation for dust control. 03 nos. of Volvo 28 KL mist sprinklers are in operation. 10 nos. of fixed sprinklers are provided at railway sidings. 10 nos. of trolley mounted fog canons are provided at railway sidings. 01 No of Wheel washing system provided. 01 Vertical Wind Barrier / Greenery System provided at the railway siding. 02 nos. of instant shower systems are provided at the exit point 02 no. of truck mounted fog canon is deployed for coal

	suppression arrangement at railway sidings etc.	<p>transportation road & coal corridor.</p> <p>A dedicated coal transportation corridor of 20.99 Km length (1.82 Km in Bhubaneswari OCP) has been constructed bypassing the residential areas and other habitation.</p> <p>04 nos. of underpasses have been constructed on the coal corridor to avoid crossing of public road, thereby improving ambient air quality, congestion and safety.</p> <p>100% coal production is done through Environment friendly Surface Miners.</p> <p>More than 82% coal dispatch is done through eco friendly rail mode.</p> <p>CHP pipe conveyor SILO system (15Mty) – 100% work completed. Completion & handover is expected by Dec, 2023.</p> <p>01 Nos. Mechanical Road Sweeper is deployed for public and coal transportation roads.</p>
v.	Thick green belt of 50m width at the final boundary in the down wind direction of the project site shall be developed to mitigate/check the dust pollution.	<p>Complied.</p> <p>Thick green belt of more than 50m width with 45,650 nos. of plants has been planted in the down wind direction.</p> <p>20500 nos plants have been planted over 8.0 Ha of OB backfilled area</p>
vi.	Persons of nearby villages shall be given training for their livelihood and skill development.	<p>Complied.</p> <p>The villagers around the mines have been employed under land outstees have been trained every year by the PP.</p>
vii.	To ensure health and welfare of nearby villages regular medical camps shall be organized at least once in six months.	<p>Complied.</p> <p>To ensure health and welfare of nearby villages, regular medical camps are being carried out on regular basis by the PP.</p>
viii.	In view of the mining potential of the area and the prevailing environmental concerns, carrying capacity of the eco-system shall be studied through some expert agencies to assess optimal mining operations in the area with minimal impact on the environmental components.	<p>Complied.</p> <p>The study of carrying capacity of eco-system to assess optimal mining operations in the area with minimal impact on the environmental components is under progress by CMPDIL and the Draft report has been prepared and submitted.</p>
ix.	The mine is surrounded by large opencast mines operated by M/s MCL and shall have a cascading impact on air pollution. Therefore, a stage wise response plan vis-a-vis varying level of air pollution level be prepared and implemented in the mine during its operation.	<p>Complied.</p> <p>The study of cascading impact on air pollution in and around the mining area has been completed by CMPDIL and the recommendations as per the report and the current status are detailed below:</p> <p>Stage-I:</p> <p>It should be ensured that all surface miners runs with water jet-Complied.</p> <p>Automated sprinkler should be installed at coal stock yards- Water spraying is being carried out by mobile water sprinklers. Haul roads should be equipped with fixed sprinklers- Water spraying is being carried out by mobile water sprinklers of capacity ranging from 9Kl to 34Kl and 28Kl mist type water</p>

		<p>sprinklers.</p> <p>All railway sidings must be covered with wind barrier and vertical greenery system- Trolley mounted fog canons are in operation at railway sidings. The Vertical greenery system at railway sidings is constructed.</p> <p>Stage-II:</p> <p>Dedicated coal corridor must be used for coal transportation- Complied.</p> <p>CAAQMS should be installed- Complied.</p> <p>There should be use of mechanical road sweeper- Complied</p> <p>There should be use of fog canon- Both Truck mounted fog canon & trolley mounted fog canons are in operation.</p> <p>Stage-III:</p> <p>All coal loading should be done through in-pit conveyors to SILO and washing of coal must be ensured to reduce the dust at source- CHP-pipe conveyor-SILO system is under construction, 100% completed., Trail run is going on.</p>
x.	A mechanism of inter project environmental audit shall be devised and implemented with reporting to this ministry along with half yearly reports.	<p>Complied.</p> <p>A multi-disciplinary team from different areas of Talcher coalfield carrying the Environmental Audit on quarterly basis. Report is submitted along with Half yearly compliance report.</p>
Mining:		
(i)	No change in Mining technology and scope of working shall be made without prior approval of the Ministry of Environment, Forest & Climate Change. No Change in the calendar plan including excavation, quantum of mineral coal and waste should be made.	<p>Complied.</p> <p>No change in Mining technology and scope of working and no Change in the calendar plan including excavation, quantum of mineral coal and waste shall be made without prior approval of the Ministry of Environment, Forest & Climate Change</p>
(ii)	Mining shall be carried out as per the approved mining plan and abiding by the relevant laws related to coal mining and the circulars issued by Directorate General of Mines Safety (DGMS). An approved progressive Mine Closure Plan shall strictly be complied with and submitted.	<p>Complied.</p> <p>Mining is being adhered to approved mining plan, mine closure plan and relevant laws related to coal mining and the circulars issued by Directorate General of Mines Safety (DGMS)</p>
Land reclamation:		
(i)	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, Forest & Climate Change its Regional Office.	<p>Complied.</p> <p>Digital processing of entire lease area using remote sensing technique is being carried out regularly on yearly basis for monitoring land use pattern and the report is also submitted to MoEF&CC, Regional Office, Bhubaneswar. Copy of the same is also available in the company's website.</p>

(ii)	<p>Will be Complied. The condition is related to activity which requires compliance during mine closure stage.</p>
(iii)	<p>Complied. Top soil is being stacked separately and spread concurrently over technically reclaimed backfilled area before plantation. It is a continual process. Biological reclamation on 45 Ha of internal dump comprising of native species like Neem, Gamhari, Sirsa, Mahaneem, Karanj etc has been done. Grassing & short duration plantation has been done covering whole external dump of an area 94Ha. Now External OB dump is being re-handling into the mine voids.</p>
(iv)	<p>Under Compliance. Green belt of 25.98 Ha outside the leasehold area under vacant/safety zone comprising of native species have been planted through Odisha Forest Development Corporation. Biological reclamation on 45 Ha of internal dump comprising of native species like Neem, Gamhari, Sirsa, Mahaneem, Karanj etc has been done till date.</p>

Emissions, Effluents, and Waste Disposal:

(i)	<p>Complied. Road sale trucks & vehicles used for transportation of coal outside the mine area are covered with tarpaulin. Mitigative measures to control dust and other fugitive emissions are detailed below: 16 nos. of mobile water sprinklers having capacity ranging from 9 to 34 KL are in operation for dust control. 03 nos. of Volvo 28 KL mist sprinklers are in operation. 10 nos. of fixed sprinklers are provided at railway sidings. 04 nos. of trolley mounted fog canons are provided at railway sidings. 02 nos. of instant shower systems are provided at the exit point of quarry.</p>
-----	---

<p>this regard.</p>	<p>01 no. of truck mounted fog canon is deployed for coal transportation road & coal corridor.</p> <p>A dedicated coal transportation corridor of 20.99 Km length (1.82 Km in Bhubaneswari OCP) has been constructed bypassing the residential areas and other habitation.</p> <p>04 nos. of underpasses have been constructed on the coal corridor to avoid crossing of public road, thereby improving ambient air quality, congestion and safety.</p> <p>100% coal production is done through Environment friendly Surface Miners.</p> <p>More than 85% coal dispatch is done through eco friendly rail mode.</p> <p>The Ambient Air Quality parameters are within the prescribed norms. Monitoring report is attached.</p>
<p>(ii) Vehicular emissions shall be kept under control and regularly monitored. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centers.</p>	<p>Complied.</p> <p>All the vehicles plying in the mine premises carries valid PUC certificate issued by authorized pollution testing center and is renewed on six monthly basis.</p>
<p>(iii) Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants namely PM₁₀, PM_{2.5}, SO₂ and NO_x. Location of the stations shall be decided based on the meteorological data, topographical features, and environmentally and ecologically sensitive targets in consultation with the state pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.</p>	<p>Complied.</p> <p>Four nos. of Ambient air quality monitoring stations have been jointly decided and established in the core zone as well as in buffer zone in consultation with the State Pollution Control Board and the monitoring is being carried out fortnightly in a month for SPM, PM10, PM2.5, SO2, and Nox.</p> <p>Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr etc carried out at six monthly intervals.</p> <p>The monitoring reports from Apr'23 to Sept'23 are attached as Annexure-1 and monitoring report of heavy metals attached as Annexure-2.</p>
<p>(iv) Crusher/feeder and breaker material points should invariably be provided with dust suppression system. Belt conveyors should be fully covered to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.</p>	<p>Complied.</p> <p>There is no crusher/feeder in mine, since 100% coal production is through surface miner technology with mist spray arrangement.</p> <p>CHP-Pipe conveyor-SILO system construction completed & trail run is going on.</p> <p>All drill machines are provided with dust extractor & wet drilling arrangement.</p>
<p>(v) The project proponent shall not alter the major channels around the site. Appropriate embankment should be provided along the side of the river/nallah flowing near or adjacent to the mine. The</p>	<p>Complied.</p> <p>An earthen bund embankment has been made adjacent to the Bangaru Nala.</p> <p>The bund height is about 5m; width is 20m and its side slope is about 50 to 60 degrees.</p>

	embankment constructed along the river/nallah boundary should be of suitable dimensions and critical patches should be strengthened by stone pitching on the river front side and stabilized with plantation to withstand the peak water flow and prevent mine inundation.	The bund was stabilized naturally with vegetation of <i>Artisida setacea</i> (Ghasa), <i>Hyptis suaveolens</i> (Pig nut), <i>Tridax procumbens</i> (Coat buttons), <i>Saccharum spontaneum</i> (Wild sugarcane), <i>Azadirachta indica</i> (Neem), <i>Alstonia scholaris</i> (White cheese wood) etc.
(vi)	Rain water harvesting shall be implemented for conservation and augmentation of ground water resources in the area in consultation with Central Ground Water Board.	Complied. Mine is zero discharge mine. During monsoon, the rain water from the mining area is collected in 03 nos. of mine sumps having capacity of 4.64 Mm ³ which acts as a reservoir cum recharge structures. 02 nos. of rain water harvesting arrangement in the Project Office and 01 no. constructed at Bhubaneswari guest house for recharge of ground water
(vii)	Catch drains and siltation ponds of appropriate size shall be constructed around mine working, coal heaps, and OB dumps to prevent runoff of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de-silted particularly after monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. Dimension of the retaining wall to be constructed at the toe of the dumps and OB benches within the mine to check runoff and siltation should be based on the rainfall data.	Complied. Catch drains of dimension 2m*2m*2200m has been provided around the external dump with 02nos. of siltation ponds of capacity 90×25×3 m ³ and 80×60×3 m ³ . Catch drain around mine (7km×1.5km×1m) has been provided. Catch drain has been provided around coal stock. The water is channelized to mine sump. Catch drains are de-silted and regularly cleaned before monsoon. 03 nos. of mine sump act as a huge rain water harvesting structure North side sump: 1969500 m ³ South side sump: 2044500 m ³ North west sump: 624000 m ³ . Water from the sump after settling is being re-used for firefighting, dust suppression and watering of plants etc.
(viii)	Industrial waste water (CHP, workshop, and waste from the mine) should be collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the rules made there under, and as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Complied. The ETP (400 m ³ /hr.) equipped with oil & grease trap along with mechanical oil skimmer has been provided for treatment of wastewater at workshop. The water is re-circulated and reused for industrial purposes. Zero discharge of treated effluent is being implemented at workshop.
(d) Noise and Vibration Control:		
(i)	Adequate measures shall be taken for control noise level below 85dBA in the work environment. Workers engaged in	Complied. The noise levels are within the prescribed limits. Workers engaged in blasting and drilling operations, operations of

	blasting and drilling operations, operation of HEMM etc shall be provided with ear plugs/muffs.	HEMM etc are provided with ear plugs/ muffs.
(ii)	Controlled blasting techniques should be practiced with use of delay detonators to mitigate ground vibrations and fly rocks.	Complied. Controlled blasting by NONEL technology is being practiced and ground vibration is monitored by Blastmet with proper maintenance of records. Threshold Limit :- 10 PPV Readings of the Vibration :- 1-5 PPV

(e) Occupational Health & Safety:

(i)	Besides carrying out regular periodic health checkup of their workers, 20% of the workers identified from workforce engaged in active mining operations shall be subjected to health checkup for occupational diseases and hearing impairment, if any, through a specialized agency/ institute within the District/ State and the results reported to this Ministry and to DGMS.	Complied. In compliance to provisions of Mines Act'1952 and DGMS circular, regular periodic health checkup of workers initially and in 5 years (both contractual & departmental) and the workers above 45 years of age are subjected to health checkup in every 3 years. 20% of employees engaged in active mining are also included in the above provision. Medical examinations of all the contractual workers are conducted and no case related to occupational disease detected so far. Report submitted to DGMS & to RO, MoEF&CC.
(ii)	Personal working in dusty areas should wear protective respiratory devices and they should be provided with adequate training and information on safety and health aspects. Supervisory staff shall be held responsible for ensuring compulsory wearing of dust mask.	Complied. All persons who are working in dusty areas have been provided with dust mask. Supervisory staff not only brings awareness on safety and health aspects but also ensure compulsory wearing of dust mask by the work persons.
(iii)	In case of outsourcing of work through MDO, the project proponent shall ensure the strict enforcement of the above conditions.	Complied.

(f) Biodiversity:

(i)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, 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. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	Complied. The project has deposited Rs. 50 Lakhs vide challan no. 422052, dtd: 04.09.2004 to the forest Dept. for Habitatant improvement Plan of the surrounding area. Habitatant Improvement Plan has been prepared as per the FC conditions. The project has planted variety of locally available native species such as Mango, Neem etc. Stone pack wall, barbed wire fencing and garland drains are constructed all along the mine boundary to ensure there is no entry of animals within the mining area.
-----	--	---

(g) Implementation of Action Plan as per Public Hearing and CSR activities:

(i)	<p>Complied. The Public Hearing was held on 10.02.2009. The issues raised during Public Hearing were regarding employment, supply of drinking water, blasting vibration, plantation, and dust in pond in core zone, dust suppression & sprinkling on peripheral roads. All the issues have been addressed. The R&R of the land outstees are done as per the R&R policy of Govt. of Odisha.</p>
(ii)	<p>Complied. MCL has spent more than two percent of the average net profit of the company made during the three immediately preceding financial years in pursuance of its Corporate Social Responsibility. The CSR expenditure in the FY 2022-23 (JA) is 283 lakhs. for MCL 207.97 crores.</p>
(h) Corporate Environment Responsibility:	
(i)	<p>Complied. MCL has a well laid down Environmental policy approved by the Board of Directors dated 09.05.2019. The copy of this is available at company's website.</p>
(ii)	<p>Complied. A multidisciplinary committee has been formed at MCL under the chairmanship of Director (Technical/P&P), MCL vide letter no. 556, dtd: 28.06.2019. Similar multidisciplinary committee has also been formed at area level for reviewing compliance of EC & FC conditions on quarterly basis and reporting the non compliance/ violations of environmental norms. The audit report is submitted to HQ, which is subsequently submitted to MCL board for review of compliance of conditions.</p>
(iii)	<p>Complied.</p>
(iv)	<p>Complied.</p>

	Regional Office.	
(i) Statutory Obligations:		
(i)	Environmental Clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, NGT and any other Court of Law, if any as applicable to the project.	Agreed & Complied.
(ii)	This Environmental Clearance is subject to obtaining requisite NBWL Clearance from the standing Committee of National Board for wildlife, if any as applicable to the project.	Complied.
(iii)	The Project Proponent shall obtain Consent to Establish and Consent to Operate from the concerned State Pollution Control Board prior to increase in capacity of Washery and effectively implement all the conditions stipulated therein.	Complied. The Project proponent has been obtained CTE & CTO for 28 MTPA production capacity from the concerned SPCB vide CTE no. 2385/IND-II-NOC-6139, dtd: 06.03.2018 and CTO no. 4891/IND-I-CON-4829 dtd.28/03/22. and amendment in CTE vide no 12868 dtd. 21.07.2022 and CTO vide no 14785 dtd. 16.08.2022 has been obtained for extraction of coal under external OB dump (Re handling of OB Dump) without any increase in production capacity (28.0 MTPA) and change in mining lease area (638.341ha ML area)
(iv)	Project Proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) for drawl of water (surface and ground water).	Complied. NOC from CGWA for groundwater withdrawal has been granted vide letter No. CGWA/NOC/MIN/ORIG/2020/9378, dtd: 16.12.2020 with validity up to 15.12.2022 & file sent for renewal.
(j) Monitoring of Project:		
(i)	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 operations. 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 Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Complied. Piezometric water level data during pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) are collected and sent to RO, MoEF&CC in half yearly compliance reports of EC conditions. Peizometer reading during for Apr'23 to Sept'2023 is attached as: Annexure- 3.
(ii)	The project proponent shall submit six monthly reports on the status of the	Complied. PP is regularly submitting the six monthly compliance reports

	implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Central Pollution Control Board and State Pollution Control Board.	and monitoring data to RO, MoEF&CC and SPCB. The last submission was vide letter no. PO/BBSRI-OCP/E&F/EC/compliance//22-23/4123 dated 27/06/2023 for the period Apr'2023 to Sep'2023
(iii)	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions furnishing the requisite data/information/monitoring reports.	Complied.
(iv)	The activities pertaining to development of green belt/horticulture shall be reported to the concerned Regional Office of MoEF & CC on six monthly basis from the date of commencement of mining operations.	Complied. The said activities are being submitted regularly along with the half yearly compliance report.
(v)	For half yearly monitoring reports, the data should be monitored for the period of April to September and October to March of the financial years and submitted to the concerned authorities within 2 months of the completion of periodicity of monitoring.	Complied. PP is regularly submitting the six monthly compliance report and monitored data to this office on timely.
Conditions imposed in the EC dated 02.05.2022		
(i)	PP to install 1 continuous ambient air quality monitoring stations at suitable locations in consultation of SPCB. The real time data so generated shall be uploaded on company website. In addition, data should also be displayed digitally at entry and exit gate of mine lease area for public display. Data shall be linked to website of SPCB/CPCB. Monitoring station shall be installed within 1-year period and action taken report shall be submitted to IRO with photographs	1 No. continuous ambient air quality monitoring stations in the mine has been installed in consultation of SPCB. Data is also being displayed digitally and data has been linked to the website of SPCB/CPCB
(ii)	PP shall make use of advanced computer simulation techniques for design and execution of blasting operation in the mine. PP shall make use of Electronic Delay Detonators for optimal blasting in coal and OB rock to minimize the environmental impacts of blasting such as ground vibration, fly rocks and excessive dust generation	Complied.
(iii)	No village road shall be used for	No village roads are used for transportation of coal and no road

	transportation of coal and no road transport route shall be adopted, which is passing through any sensitive location such as schools, hospitals etc. PP shall take legal undertaking from its consumers accordingly	transport route is adopted, which is passing through any sensitive location such as schools, hospitals etc. a separate coal corridor road covering 1.82 km has been constructed for road transport which is bypassing all the village areas around the mine.
(iv)	PP shall conduct tree plantation along the villages namely Anandipur, Kandhal, Natedi, Near Joragadia, sahasahi basti and deploy additional atleast 10 number fog canon to reduce air emission.	Plantation going on in near by villages namely balungakhamar, Anadapur, Kandal, and Hensmul presently. Already 4 nos. of static fog cannons deployed at railway siding and 6 nos. fog cannons are in the installation stage commissioned by Dec'2023.
(v)	PP shall furnish the proof of an expenditure as per its letter refer no. MCL/GM/BBSRI/ENV/EC/2022-23/2094 dated 2nd April, 2022 of about 7.02 Crores on air pollution control measures within one year to Ministry's IRO.	Complied.
(vi)	PP shall plant additional 150,000 nos. of native trees with broad leaves along the transportation route in three years to prevent the effect of air pollution. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Officer	Already 12500 nos plans have been planted and DFO, Angul has been requested to take up plantation in the mine
(vii)	PP shall deploy 40-50 T covered trucks/dumpers to reduce fleet size	Contract have already been exists for trucks/dumpers with 16-32T fleet size and most of the contracts have been given to the Project Affected People (PAPs)
(viii)	PP shall implement Peripheral tree plantation along the mine lease area with miyawaki method of 50 mts width within 2 years through independent expert	Already 12500 nos plans have been planted and DFO, Angul has been requested to take up plantation in the mine
(ix)	PP shall pay to farmers of agricultural land if there is any loss due to pollution found by concerned District Commissioner as per extent rules or norms	Farmers of agricultural land will be paid if there is any loss due to pollution found by concerned District Commissioner as per extent rules or norms
(x)	Hon'ble Supreme Court in an Writ Petition(s) Civil No. 114/2014, Common Cause vs Union of India & Ors vide its judgement dated 8th January, 2020 has directed the Union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing	Mining land will be restored by grassing suitable for growth of fodder, flora and fauna at the time of final mine closure.

mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Regional Office of the MoEF&CC

Signature
12/10/23

**Project Officer
Bhubaneswari OCP**

Signature
परियोजना अधिकारी
भुवनेश्वरी औसीपी, ज.क्षे.एम.सी.एल
Project Officer
Bhubaneswari OCP, JA, MCL

**FORMAT FOR PROVIDING PARTICULARS ON GREEN BELT/PLANTATION
UNDER F(C) ACT 1980 AND EP (ACT) 1986**

1	a) Name of the organization	Mahanadi Coalfields Limited
	b) Env. /Forest clearance order	(i) Env. Clearance accorded vide letter no. J-11015/280/2013-IA. II (M) pt. Dt.16.02.18. (ii) Amendment in EC vide no. J-11015/280/2013/- IA-II(M)pt Dt.02-05-2022 for re-handling of external OB dump (iii) Stage-II Forest clearance granted vide letter no 8(18)/2002-FCE DT. 06.12.2004.
2	Location, Block /Sub divn. / Dist./state	Location Talcher Block Talcher Sub division Talcher Dist: Angul State Odisha
3	Address for communication	Office of the Project Officer, Bhubaneswari OCP, Jagannath Area, P.O. Dera Colliery, Dist: Angul. 759103, Ph. 06760-269844, Extn-7285 Fax.269527
4	Existing vegetation in the area	Tropical dry deciduous open canopied forests with Sal as dominant.
(a)	Species (Trees/Shrubs/grasses/climbers)	(Trees, Shrubs, Grass, and Liana)
(b)	Major prevalent species of each type	Tree: Sala, Jamu, Kendu, Tala, Karada Shrubs: Kendu, Kakhida, Navagin Grass: Mutha, Jhadu ghasa, Khadika Liana: Achundi, Pita Alu. Etc.
5	Land coverage by the project	
(a)	Total area under the project	787.911 ha.
(b)	Area covered for basic infrastructure (roads / buildings / factory etc.)	The major break up is as under: Infrastructure: 10.933 ha. Residential Colony: 32.00 Ha Rehabilitation Site: 117.570 ha.
6	Details about natural vegetation	
(a)	Name and number of trees/species felled	10024 nos. over 68.911 ha. of forest land felled by Forests Department.
(b)	Name and number of plant species still available in the area	2519 nos. over 17.955 ha. in balance forest area.
(c)	By protecting the area will indigenous stock come up.	Yes
(d)	Extent of green belt developed	6.033 Ha. green belt has been developed on the safety zone by the forest department.

7.	Plantations required to be carried out					
(a)	Conditions of Environmental Clearance in ha./nos.	2500 plants per Ha.				
(b)	A condition of Forest (C) act clearance	Comp afforestation: 225.042 Ha. And total biological reclamation of mined out area, OB dump etc. by State Govt for which amount has already been deposited with State Govt.				
(C)	Voluntarily in ha/nos.	2500 plants per Ha.				
(d)	Details about plantation	Executed by Forest department, Orissa				
(a) Total area available for plantation in each category (Proposed) for 2023-24						
i) Green belt		ii) Dump		iii) Back filled area		iv) Road side
						v) Block plantation
		-		10 Ha.		--
b) Plantation details (Category wise and methodology used)						
Year of plantation	Species planted	Spacing	Height attained	Total area covered	Area still available(d)	
2000-01	Mixed Sisoo, Gambhar, Neem, etc.	2X2 mtr	>1.2 mtr	1.6 Ha.	in 3 years	
2006	Teak			20.383		
2010-11	9650 Nos					
2018-19	Native Species	2.5X2.5 mtr	>1.2 mtr	5.0 Ha		
2019-20	Native Species	2.5X2.5 mtr	>1.2 mtr	4.0 Ha		
2020-21	Native Species	2.5X2.5 mtr	>1.2 mtr	5.0 Ha		
2021-22	Native Species	2.5X2.5 mtr	>1.2 mtr	18.0 Ha		
2022-23	Native Species	2.5X2.5 mtr	>1.2 mtr	5.0 Ha		
2023-24	Native Species	2.5X2.5 mtr	>1.2 mtr	8.0 Ha		
c)						
Survival % of plantation	2010-11	2019-20	2020-21	2021-22	2022-23	2023-24
Total plantation (no)	9650	9500	12500	40000	12500	20500
Survival (no)	7720	9200	11000	36000	11000	20100

	Survival (%)	80% approx. (after 3 year) 80%		
(8)	Agency carrying out plantation and maintenance	M/s. Bhubaneswari Coal Mining Ltd.		
(9)	Financial details (year wise) Plantation wise and item wise			
	Sl	Year	Funds allocated	Expenditure made
	1.	2000-01	2.55 lakhs	1.6 ha. green belt.
	2.	2003-04	32.53 lakhs	Deposited with DFO, Angul as part of CA
	3.	2004-05	170.73 lakhs	Paid to DFO, Angul towards biological reclamation as per Stage-I Forestry Clearance.
	4.	2004-05	07.59 lakhs	for maintenance of excluded forest area of 20.383Ha
	5.	2004-05	50.00 Lakhs	Deposited to DFO, Angul, Scheme for Habitat Imprv. Plan.
	6.	2005-06	28.28 Lakhs	Paid to Forest Dept. regarding Protection & Regeneration of Safety Zone.
	7.	2006-07	Nil	
	8.	2007-08	Nil	
	9.	2008-09	Nil	
	10.	2009-10	Nil	
	11.	2010-11		Safety zone plantation by forest department
	12.	2011-12	Nil	
	13.	2012-13	Nil	
	14.	2013-14	Nil	
	15.	2014-15	Nil	
	16.	2015-16	Nil	
	17.	2016-17	Nil	
	18.	2017-18	Nil	
	19.	2018-19	Nil	
	20.	2019-20	Nil	
	21.	2020-21	Nil	
	22.	2021-22	Nil	
	22.	2022-23	Nil	
	23.	2023-24	Nil	
	Plantation is being carried by the M/s BCML an out sourcing agency. An amount of 170.73 lakhs has been deposited to the DFO, Angul for taking up plantation in the Bhubaneswari OCP			
10	Inspection of plantation by field experts and their comments and follow up action :		---	
11	Remarks/ any other information :		----	

TABLE AMBIENT AIR QUALITY DATA

<i>Date of Sampling</i>	<i>Monitoring Station</i>	<i>SPM</i>	<i>PM10</i>	<i>PM2.5</i>	<i>SO2</i>	<i>NO₂</i>	<i>Dust Generating Source (DGS)</i>	<i>Distance from DGS</i>	<i>Remarks</i>
08.04.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	394.47	95.24	46.61	75.73	75.62	Mining activities, O.B Dump yard	About 400 to 500m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
08.04.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	393.26	137.23	45.83	73.74	75.41	Mining activities, O.B Dump yard	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
08.04.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	394.44	140.73	44.33	73.52	73.63	Mining activities	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
08.04.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	142.62	68.45	43.36	49.64	50.21	Mining activities	About 500 m	West to East, Sunny
	NAAQS	200	100	---	80	80			
24.04.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	396.54	93.35	46.43	75.87	76.57	Mining activities, O.B Dump yard	About 400 to 500m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
24.04.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	394.55	140.23	45.63	74.56	77.78	Mining activities, O.B Dump yard	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
24.04.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	395.34	142.76	46.46	74.44	74.23	Mining activities	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
24.04.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	142.83	69.44	45.74	50.28	51.46	Mining activities	About 500 m	South to West, Sunny
	NAAQS	200	100	---	80	80			



TABLE AMBIENT AIR QUALITY DATA

<i>Date of Sampling</i>	<i>Monitoring Station</i>	<i>SPM</i>	<i>PM10</i>	<i>PM2.5</i>	<i>SO2</i>	<i>NO₂</i>	<i>Dust Generating Source (DGS)</i>	<i>Distance from DGS</i>	<i>Remarks</i>
07.05.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	397.52	94.33	46.72	77.26	77.43	Mining activities, O.B Dump yard	About 400 to 500m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
07.05.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	394.75	143.64	45.78	76.82	77.36	Mining activities, O.B Dump yard	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
07.05.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	396.65	145.52	44.37	75.66	75.42	Mining activities	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
07.05.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	145.67	71.72	43.26	51.61	52.46	Mining activities	About 500 m	West to East, Sunny
	NAAQS	200	100	---	80	80			
24.05.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	400.24	93.17	46.64	80.23	79.82	Mining activities, O.B Dump yard	About 400 to 500m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
24.05.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	396.74	144.52	45.47	77.34	79.23	Mining activities, O.B Dump yard	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
24.05.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	399.27	145.17	46.53	77.53	78.64	Mining activities	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
24.05.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	148.56	73.46	45.66	53.22	53.24	Mining activities	About 500 m	South to West, Sunny
	NAAQS	200	100	---	80	80			



TABLE AMBIENT AIR QUALITY DATA

<i>Date of Sampling</i>	<i>Monitoring Station</i>	<i>SPM</i>	<i>PM10</i>	<i>PM2.5</i>	<i>SO2</i>	<i>NO₂</i>	<i>Dust Generating Source (DGS)</i>	<i>Distance from DGS</i>	<i>Remarks</i>
07.06.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	399.14	93.14	47.42	77.22	79.57	Mining activities, O.B Dump yard	About 400 to 500m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
07.06.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	397.83	155.12	46.27	78.75	78.72	Mining activities, O.B Dump yard	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
07.06.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	399.24	110.06	45.36	75.34	77.74	Mining activities	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
07.06.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	145.24	75.44	44.46	51.23	52.47	Mining activities	About 500 m	West to East, Sunny
	NAAQS	200	100	---	80	80			
22.06.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	498.86	90.126	46.47	79.44	79.13	Mining activities, O.B Dump yard	About 400 to 500m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
22.06.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	399.72	128.27	45.67	77.34	79.22	Mining activities, O.B Dump yard	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
22.06.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	398.45	120.14	46.33	76.52	78.33	Mining activities	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
22.06.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	146.37	75.33	45.36	52.54	53.24	Mining activities	About 500 m	South to West, Sunny
	NAAQS	200	100	---	80	80			



TABLE AMBIENT AIR QUALITY DATA

<i>Date of Sampling</i>	<i>Monitoring Station</i>	<i>SPM</i>	<i>PM10</i>	<i>PM2.5</i>	<i>SO2</i>	<i>NO2</i>	<i>Dust Generating Source (DGS)</i>	<i>Distance from DGS</i>	<i>Remarks</i>
08.07.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	398.57	87.00	45.22	76.74	79.16	Mining activities, O.B Dump yard	About 400 to 500m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
08.07.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	396.86	115.07	44.12	77.83	78.26	Mining activities, O.B Dump yard	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
08.07.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	398.68	100.00	43.22	75.12	77.36	Mining activities	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
08.07.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	144.43	73.42	41.37	50.65	51.72	Mining activities	About 500 m	West to East, Sunny
	NAAQS	200	100	---	80	80			
26.07.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	498.27	82.05	44.23	77.47	78.52	Mining activities, O.B Dump yard	About 400 to 500m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
26.07.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	397.43	95.04	44.23	76.73	78.64	Mining activities, O.B Dump yard	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
26.07.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	397.44	105.04	42.53	75.21	77.42	Mining activities	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
26.07.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	144.14	73.22	42.53	51.65	52.37	Mining activities	About 500 m	South to West, Sunny
	NAAQS	200	100	---	80	80			



TABLE AMBIENT AIR QUALITY DATA

<i>Date of Sampling</i>	<i>Monitoring Station</i>	<i>SPM</i>	<i>PM10</i>	<i>PM2.5</i>	<i>SO2</i>	<i>NO2</i>	<i>Dust Generating Source (DGS)</i>	<i>Distance from DGS</i>	<i>Remarks</i>
09.08.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	396.23	86.06	44.57	75.35	78.25	Mining activities, O.B Dump yard	About 400 to 500m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
09.08.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	393.26	113.12	43.46	75.43	76.14	Mining activities, O.B Dump yard	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
09.08.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	395.64	98.67	43.12	73.42	75.24	Mining activities	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
09.08.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	142.33	72.33	41.14	48.55	49.37	Mining activities	About 500 m	West to East, Sunny
	NAAQS	200	100	---	80	80			
27.08.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	494.32	81.27	43.52	73.23	76.42	Mining activities, O.B Dump yard	About 400 to 500m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
27.08.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	392.23	93.76	43.57	74.63	75.44	Mining activities, O.B Dump yard	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
27.08.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	393.54	103.22	41.65	73.14	74.27	Mining activities	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
27.08.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	140.34	71.43	42.53	48.15	48.25	Mining activities	About 500 m	South to West, Sunny
	NAAQS	200	100	---	80	80			



TABLE AMBIENT AIR QUALITY DATA

<i>Date of Sampling</i>	<i>Monitoring Station</i>	<i>SPM</i>	<i>PM10</i>	<i>PM2.5</i>	<i>SO2</i>	<i>NO2</i>	<i>Dust Generating Source (DGS)</i>	<i>Distance from DGS</i>	<i>Remarks</i>
09.09.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	394.45	87.23	44.52	74.37	76.41	Mining activities, O.B Dump yard	About 400 to 500m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
09.09.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	391.26	107.46	41.53	72.44	74.25	Mining activities, O.B Dump yard	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
09.09.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	393.37	99.24	41.27	71.25	72.34	Mining activities	About 500 m	West to East, Sunny
	MoEF Standards	600	300	---	120	120			
09.09.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	140.56	73.42	40.24	46.53	48.57	Mining activities	About 500 m	West to East, Sunny
	NAAQS	200	100	---	80	80			
27.09.2023	N 20°59'5.89" E 85°09'3.44" B.C.M.L. Workshop	492.32	85.27	42.23	73.42	75.54	Mining activities, O.B Dump yard	About 400 to 500m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
27.09.2023	N 20°59'7.07" E 85°10'27.44" Near External OB Dump	390.73	97.76	40.62	73.41	73.46	Mining activities, O.B Dump yard	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
27.09.2023	N 20°59'21.2" E 85°08'56.2" N-E of Mine	390.54	97.83	40.63	72.35	72.67	Mining activities	About 500 m	South to West, Sunny
	MoEF Standards	600	300	---	120	120			
27.09.2023	N 20°58'52.4" E 85°11'15.8" S-E of Mine	138.72	70.32	38.62	44.46	45.47	Mining activities	About 500 m	South to West, Sunny
	NAAQS	200	100	---	80	80			



TABLE--
AIR QUALITY MONITORING DATA (Half Yearly)

(conc. in µg/cu.m.)

<i>Date of Sampling</i>	<i>Monitoring Station</i>	<i>AS</i>	<i>Ni</i>	<i>Hg</i>	<i>Cd</i>	<i>Pb</i>	<i>Cr</i>	<i>Dust Generating Source (DGS)</i>	<i>Distance from DGS</i>	<i>Remarks</i>
22-June-23	S-E of Mine	<1.0	<1.0	<1.0	<0.01	<1.0	<0.01	Mining activities	About 500 m	West to East, Sunny
22-June-23	Near External OB Dump	<1.0	<1.0	<1.0	<0.01	<1.0	<0.01	Mining activities, O.B Dump yard	About 500 m	West to East, Sunny
22-June-23	B.C.M.L. Work shop	<1.0	<1.0	<1.0	<0.01	<1.0	<0.01	Mining activities, O.B Dump yard	About 400 to 500m	West to East, Sunny
22-June-23	N-E of Mine	<1.0	<1.0	<1.0	<0.01	<1.0	<0.01	Mining activities	About 500 m	West to East, Sunny



<i>MoEF Standards Notification dated 25th September, 2000 NAAQS, 2009 for PM2.5</i>	06	20	--	--	01	--
---	----	----	----	----	----	----



TEST REPORT

TR #: EEL/27/23

DATE: 30.08.2023

Name & Address of Customer : Bhubaneswari Coal Mining Limited
 Deullbera, Near Mangalam Club
 Talcher- 759103, Dist- Angul

Ground Water Level Checked by : Laboratory
 Log Date : 27.08.2023
 Date of Performance : 28.08.2023 To 30.08.2023

A. GROUND WATER LEVEL & QUALITY DATA

Sl. #	Well ID	Time	Level to Water (m)			Average Level (m)	Remarks
			1 st	2 nd	3 rd		
1.	p-7 (BCML W)	09.30 AM	08.33	08.22	09.06	08.53	---
2.	p-8 (Ekdal High school)	11.20 PM	09.18	09.21	08.66	09.01	---

B. GROUND WATER LEVEL & QUALITY DATA

Sl. #	Test Parameters	Analysis Result		Units	Test Protocol	Standard of IS-10500:2012 RA 2015	
		p-7 (BCML W)	p-8 (Ekdal High school)			Acceptable	Permissible
1.	pH	7.2	7.1	---	IS:3025 (Pt-11)1983 RA-2017	6.5-8.5	No Relaxation
2.	Colour	0.7	0.6	Hazen	IS:3025 (Pt-4) 1983 RA 2017	5	15
3.	Odour	Agreeable	Agreeable	---	IS:3025 (Pt-5) 1983 RA 2017	Agreeable	Agreeable
4.	Taste	Agreeable	Agreeable	---	APHA 23 rd Ed 2017,2160	Agreeable	Agreeable
5.	Turbidity	Nil	Nil	NTU	IS: 3025 (P10) 1984 RA 2017	1	5
6.	Total Alkalinity	67	70	mg/l	IS : 3025 (Pt 23) 1986 RA 2014	200	600
7.	Total Hardness	161	166	mg/l	IS 3025 (Part 21) 2009 RA 2014	200	600
8.	Iron	0.055	0.057	mg/l	APHA 23 rd Ed 2017, 3IIIC	0.3	No Relaxation
9.	Chloride	82.3	84.2	mg/l	IS:3025 Pt-32, 1988 RA 2014	250	1000
10.	Residual Chlorine	0.07	0.07	mg/l	IS:3025(Pt-26) 1986 RA 2014, APHA, 23 rd Ed 2017, 4500-B	0.2	1

11.	TDS	268	264	mg/l	IS: 3025 (Pt-16)1984, RA 2017	500	2000
12.	Calcium	48.23	52.24	mg/l	IS 3025 (Part 40) 1991 RA 2009 APHA 23 rd Ed 2017, 3500-B	75	200
13.	Copper	0.0262	0.0283	mg/l	APHA 23 rd 2017- 3IIIB	0.05	1.5
14.	Manganese	0.06	0.07	mg/l	APHA 23 rd Ed. 2017 3500, & IS: 3025 (Pt. 59) 2006 RA 2017	0.1	0.3
15.	Sulphate	53.44	62.57	mg/l	IS:3025, Pt-24 1986,RA 2014	200	400
16.	Nitrate	8.35	8.64	mg/l	APHA 23 rd Ed. 2017 4500	45	No Relaxation
17.	Fluoride	0.67	0.62	mg/l	IS: 3025 (Pt. 60): 2013	1.0	1.5
18.	Selenium	0.008	0.008	mg/l	APHA 23 rd Ed.2017 3500 & IS: 3025 (Pt.56) RA2014	0.01	No Relaxation
19.	Arsenic	0.0063	0.0065	mg/l	IS : 3025 (Part 37) – 1988, RA-2014	0.01	0.05
20.	Lead	0.0072	0.0076	mg/l	APHA 23 rd Ed 2017, 3IIIB	0.01	No Relaxation
21.	Zinc	0.283	0.278	mg/l	IS: 3025 (Pt. 49): 1994, R.A.- 2014	5	15
22.	Hexavalent Chromium	0.033	0.028	mg/l	APHA 23 rd Ed. 3500, 3-69, 3-70	0.05	No Relaxation
23.	Boron	0.27	0.28	mg/l	IS:3025(Pt-57):2005 RA 2017	0.5	1.0
24.	Phenol	0.0008	0.0007	mg/l	IS: 3025(Pt.43): 1992, RA-2014	0.001	0.002
25.	Cadmium	0.0008	0.0007	mg/l	APHA 23 rd Ed. 3500,3-107, & IS: 3025 (Pt. 41) 1992, RA 2014	0.003	No Relaxation



**Note: 1. The test report shall not be reproduced partially or fully, without written approval of the laboratory, in the court of Law.
2. The results relates only to the items tested.**