

**Half Yearly Compliance Report
2024
01 Jun(01 Oct - 31 Mar)**

Acknowledgment

Proposal Name		Manoharpur Opencast Coal Mine Project	
Name of Entity / Corporate Office		ODISHA COAL AND POWER LIMITED	
Village(s)		KATHAFALI	
District		SUNDARGARH	
Proposal No.	IA/OR/CMIN/451362/2023	Category	Coal Mining
Plot / Survey / Khasra No.	0	Sub-District	Hemgir
State	ODISHA	Entity's PAN	NA
MoEF File No.	J-11015/139/2008.IA.II(M)	Entity name as per PAN	NA

Compliance Reporting Details

Reporting Year	2024
Remarks (if any)	<p>In reference to the condition no. 10.5 (Point no. 10; Miscellaneous) stipulated in EC granted by MoEF&CC vide letter dt. 05.02.2024 for development Manoharpur and Dipside Manoharpur Coal Mine Expansion Project (8 MTPA to 16 MTPA) with increase in project area from 977.875 to 1781.591 ha of Odisha Coal and Power Limited in IB valley, Dist. Sundargarh, Odisha, please find enclosed herewith Half Yearly Compliance Report for the period of October 2023 to March 2024. The above is for your kind perusal and further needful action at your end.</p>
Reporting Period	01 Jun(01 Oct - 31 Mar)

Details of Production and Project Area

Name of Entity / Corporate Office	ODISHA COAL AND POWER LIMITED	
	Project Area as per EC Granted	Annual Project Area in Possession
Private	549.597	418.463

Revenue Land	680.138	632.747
Forest	618.644	196.045
Others	0	0
Total	1848.379	1247.255

Production Capacity

Sr. no	Product Name	units	Valid Upto	Capacity	Production last year	Capacity as per CTO
1	Coal	Million Tons per Annum (MTPA)	31/03/2025	16	8.509	13

Conditions

Specific Conditions

Sr.No.	Condition Type	Condition Details
1	PUBLIC HEARING	Persons of nearby villages shall be given training on livelihood and skill development to make them employable with its proper records.

PPs Submission: Being Complied

Training on livelihood and skill development for persons of nearby villages is being conducted through an appointment of international agency i.e. M/s Mart. The copy of LOA issued to agency in this regard is attached herewith. Further, Mining Sirdar training is being provided to 10 nos. of PAF by OCPL to make them employable and approval has been taken for training of additional 15 nos. PAF. The sample copy of appointment letter is attached herewith.

Date:
25/05/2024

2	AIR QUALITY MONITORING AND PRESERVATION	PP to install 1 continuous ambient air quality monitoring stations at suitable locations preferably village side with consultation of SPCB. The real time data so generated shall be uploaded on company website and linked it with website of CPCB & SPCB. In addition, data should also be displayed digitally at entry and exit gate of mine lease area for public display.
---	---	--

PPs Submission: Agreed to Comply

One no. of continuous ambient air quality monitoring station (CAAQMS) has already been installed inside the project premises and the same is linked with the SPCB server to transfer the real time data. Further, an electronic display board showing the air quality data has also been installed at the entry and exit gate of mine lease area for public display. The photograph showing the CAAQMS and electronic display board is attached herewith. Moreover as directed, another CAAQMS will also be installed at village side (i.e. Sarbahal; inside the OCPL township) in consultation with the SPCB for monitoring of air quality data.

Date:
25/05/2024

3	AIR QUALITY MONITORING AND PRESERVATION	PP to maintain the transportation road properly to minimize the dust emission. PP to also develop pucca/concrete roads by seeking consent from the panchayat with widening of roads especially roads inter linking the villages within the study area of 10 km radius buffer zone.
---	---	--

PPs Submission: Complied

Coal transportation roads inside & outside the project premises have been blacktopped / concerted. The photographs showing the same is attached herewith.

Date:
25/05/2024

4	WATER QUALITY	PP to monitor the water quality of the ground water and surface
---	---------------	---

	MONITORING AND PRESERVATION	water body located within the core zone and 5 km radius from the periphery of the mine boundary as per procedure laid down by CPCB.
PPs Submission: Being Complied No ground water extraction is being carried out inside the project area except mine dewatering. Therefore, monitoring of ground water quality and surface water quality is being carried out in buffer zone only. The latest monitoring report of January month 2024 in this regard is attached herewith.		Date: 25/05/2024
5	MISCELLANEOUS	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.
PPs Submission: Agreed to Comply The stipulated condition will be complied as per the applicable norms / guidelines of competent authority.		Date: 25/05/2024
6	Human Health Environment	PP to provide bio toilets to the villages located within the study areas within 1 year from the grant of this EC.
PPs Submission: Agreed to Comply The necessary steps has already been initiated by OCPL to install 10 nos. bio toilets and the same is under process.		Date: 25/05/2024
7	ENERGY PRESERVATION MEASURES	PP to install solar lights along the road used for transportation of minerals to avoid the accidents at night and also seek its maintenance. PP is asked to also identify the rural areas for installation of solar light with its maintenance within the study area of 10 km radius buffer zone within one year.
PPs Submission: Agreed to Comply The necessary steps has already been initiated by OCPL to install the solar lights along the road being used for transportation of coal and the same is under process.		Date: 25/05/2024
8	Statutory compliance	PP shall conduct third party audit of compliance of EC condition at an interval six months and its report shall be submitted to IRO, MoEF&CC.
PPs Submission: Agreed to Comply Third party audit of compliance of EC condition will be carried out at an interval six months by appointing a reputed institute / agency and the report generated will be submitted to IRO, MoEF&CC.		Date: 25/05/2024
9	AIR QUALITY MONITORING AND PRESERVATION	PP shall deploy atleast 20% of overall fleet of dumpers/trucks as electrical or CNG/LNG based dumpers/trucks for transportation of coal/OB etc.
PPs Submission: Agreed to Comply Battery operated loaders are under trail operation at the mine. Further, necessary steps will be taken as & when commercial CNG/LNG based dumpers/trucks for transportation of coal/OB etc. are available in the market.		Date: 25/05/2024
10	Statutory compliance	PP shall obtain CTE/CTO from State Pollution Control Board for 16 MTPA of production capacity.
PPs Submission: Complied The Consent to Establish (CTE) for 16MTPA of coal production capacity has been obtained from SPCB Odisha vide letter dt. 29.02.2024. Further, Consent to Operate (CTO) for 13 MT coal production during FY 2024-25 has also been obtained from SPCB, Odisha vide letter dt. 12.03.2024.		Date: 25/05/2024

The copy of CTE and CTO is attached herewith.		
11	Statutory compliance	PP shall comply the partial/non-complied EC conditions highlighted by Ministry's Regional Office and submit its report within six months to IRO.
PPs Submission: Being Complied The status of partially complied EC condition as observed by Ministry's Regional Office (IRO) is attached herewith.		Date: 27/05/2024
12	AIR QUALITY MONITORING AND PRESERVATION	PP to implement the CHP, RLS and Merry Go Round (MGR) for 16 MTPA capacity before December, 2026 in time bound manner. Further, feasibility of implementing inpit conveyor system till CHP shall be explored for coal avoiding haul road movement and internal road transportation.
PPs Submission: Agreed to Comply CHP and RLS for 16 MT capacity have already designed and the same is in operational stage only for 8 MT capacity due to limitation of transportation capacity of MGR (single line track). Further, pre-feasibility study report of the second line track of MGR has been carried out by engaging RITES and the process of laying of second line has been started.		Date: 25/05/2024
13	LAND RECLAMATION	PP shall prepare land for grazing purpose and construction of additional water body of same area as in land use plan during pre-mining activity.
PPs Submission: Agreed to Comply Will be complied as per applicable norms.		Date: 25/05/2024
14	MINING PLAN	PP should re-handle the OB dump properly by incorporating the mitigation measures for air pollution with budgetary provision and explore the possibility of M-sand in order to re-utilize the OB dump.
PPs Submission: Agreed to Comply The re-handling of OB dump will be carried out as per the approved Mine Closure Plan and accordingly mitigation measures such water sprinkling, plantation, grass carpeting etc. will be carried out to control the air pollution and budgetary provisions for the same has already been considered in the EMP cost. Further, to explore the possibility of M-sand in order to re-utilize the OB dump, an expert agency or a reputed institute will be appointed for the technical study and feasibility of same. Accordingly, the compliance will be implemented at site.		Date: 25/05/2024
15	WATER QUALITY MONITORING AND PRESERVATION	Garia and Lapani stream/nallah shall not be diverted before 15 years. Subsequent changes shall be taken from MoEF&CC for amendment of this condition. All protection measures to protect the streams shall be implemented.
PPs Submission: Agreed to Comply Will be complied as per applicable norms.		Date: 25/05/2024
16	AIR QUALITY MONITORING AND PRESERVATION	PP to implement EMP in view of the mining area lying very near to the IB valley declared as SPA in concurrence with state action plan.
PPs Submission: Being Complied The proposed project site is located at about 5.2 km away from the severally polluted area (SPA) i.e. IB valley area. Further, the EMP measures as suggested by SPCB for SPA (i.e. IB valley) such as usage of concrete / blacktopped roads, closed conveyor system for transportation of coal, deployment of fog canon and rain guns to control of coal fire due to spontaneous heating, silo		Date: 25/05/2024

loading facility for dispatch of coal etc. have been implemented at site and the same are running efficiently. The photograph showing the same is attached herewith.		
17	AIR QUALITY MONITORING AND PRESERVATION	PP shall implement air pollution mitigation measures near the villages, located at coal storage yard within mine lease area.
PPs Submission: Being Complied Adequate mitigation measures such as sprinkling of water through fog canon, rain guns, mobile tankers etc. are being continuously followed to control the air pollution in surrounding villages.		Date: 25/05/2024
18	MISCELLANEOUS	PP shall reduce the carbon footprint after sequestration of CO2. IRO will review the progress of CO2 sequestration. The process of sequestration of CO2 will include the planting trees, by "Developing carbon capture and storage (CCS) technologies" and implementation of renewable energy. Further, PP shall carry out enough plantation to ensure carbon sequestration lost due to deforestation and other fossil fuel based activities.
PPs Submission: Agreed to Comply An expert agency will be appointed to carry out the CO2 sequestration study and appropriate suggestion will be implemented at site to reduce the carbon footprint of the said project. However, OCPL is continuously taking efforts towards the carbon capture and storage technology (CCS) by adopting the various activities such as plantation inside and outside the project premises, installation of solar lights inside township, R&R colony, provision of solar panel in future to utilize the renewable energy etc.		Date: 25/05/2024
19	WATER QUALITY MONITORING AND PRESERVATION	PP shall implement Effluent Treatment Plant for wastewater generated from workshop and Sewage Treatment Plan for its colony. No untreated water shall be discharged from mine boundaries to ponds/nallah/river.
PPs Submission: Complied Effluent Treatment Plant (ETP) for treatment of wastewater generated from workshop has been provided at site. Further, Sewage Treatment Plant (STP) has also been provided inside the township to treat the generated waste water. No treated / untreated waste water is being discharged outside the mine boundary as the total treated waste water obtained from ETP & STP is being reutilized for water sprinkling and green belt development purpose		Date: 25/05/2024
20	MINING PLAN	PP shall limit the activities of mining in its mine lease area only i.e. with 1781.591 ha. No OB Dumping and infrastructure activity should be proposed and dumped on forest land.
PPs Submission: Agreed to Comply The mining activities will be carried out within the mine lease area and as per the area approved for diversion of forest for development of Manoharpur and Dipside Manoharpur Coal Block. Forest Clearance (FC) Stage I & Stage II has already been for the diversion of 276.655 ha forest land for development of Manoharpur Coal Mine Block. Further, FC Stage I has also been obtained for diversion of 342.87 ha forest land for development of Dipside Manoharpur Coal Block. The copy of FC granted for Manoharpur and Dipside Manoharpur Coal Block is attached herewith.		Date: 25/05/2024
21	AIR QUALITY MONITORING AND PRESERVATION	PP should share the online data generated from CAAQMS in consultation with state pollution control Board to the CPCB/SPCB.
PPs Submission: Being Complied The real time data generated through CAAQMS is being shared with the SPCB server through OSPCB RTDAS.		Date: 25/05/2024
22	Human Health Environment	PP shall implement the environmental mitigation plan for villages

		coming in the mine lease area till R&R is completed.
PPs Submission: Being Complied The environmental mitigation as suggested in proposed EMP for the villages coming in the mine lease area (i.e. Parmanandpur & Kathafali) is being and will be followed till R&R gets completed.		Date: 25/05/2024
23	PUBLIC HEARING	PP shall implement the activities-wise budget for Public Hearing (as mentioned on the para no. 7.3.1 of the EIA-EMP report) and Capital cost, recurring cost (as mentioned on the para no. 6.4.1 & para no 10.5 of the EIA-EMP report). The details of annual expenditure incurred shall be part of report to be submitted to IRO, MoEF&CC. PP needs to include the audited figures against the expenditure and activities to be monitored by through dedicated monitoring mechanism. The maintenance of all activities shall be covered through recurring cost of Public Hearing, and continued as a part of CSR budget.
PPs Submission: Agreed to Comply The action plan prepared for the implementation of activities identified under public hearing is attached herewith.		Date: 25/05/2024
24	MISCELLANEOUS	PP shall implement Water distribution system in near villages. A proper water pipeline distribution network shall be devised to meet the demands of farmers related to irrigation and recharging of ponds, wherever required. The water treatment plant to meet the requirement with the start of production.
PPs Submission: Being Complied Water distribution system in nearby villages has been provided through mobile tankers and pipelines.		Date: 25/05/2024
25	Statutory compliance	PP shall deposit the approved amount as proposed for wildlife conservation plan to the State Govt. Forest & Environment Dept. and further consult with State Biodiversity Authority for its CSR activity.
PPs Submission: Complied The demand of Rs. 8.47 Crores raised by State Forest Dept. for wild life conservation plan has already been deposited in CAMPA fund and the same has also been intimated to the competent authority. The copy of intimation letter in this regard is attached herewith.		Date: 25/05/2024
26	MINING PLAN	PP shall submit the status of progressive mine closure activity w.r.t. to ML area already reclaimed (biologically) and proposed area to be completed within 2-3 years.
PPs Submission: Being Complied The status of progressive mine closure activity w.r.t. to ML area is attached herewith.		Date: 25/05/2024
27	Statutory compliance	PP should strengthen the Environmental cell with qualification having environment engineer's/science degree and by developing dedicated environment laboratory within the Mine lease area within three months accordingly SPCB shall issue the CTO.
PPs Submission: Being Complied An Environment Management Cell (EMC) comprises of technical qualified persons have been appointed at site which is taking care of all environmental compliances & related issues thereof. The cell is headed by Head of Company through Head of Mines. The list showing the name of technical qualified persons along with their designation and degree is attached herewith. Further, the setup of dedicated environment laboratory within the mine lease area is also under process and the same will be functional soon. The civil work for setup of env. lab has been completed and procurement of		Date: 25/05/2024

instruments / equipment's for testing of water quality parameters is under progress.		
28	MINING PLAN	PP should strengthen the toe wall all along the OB dump alongwith the weep holes by cementing it.
PPs Submission: Complied The cemented toe wall around the dump has been constructed with weep holes along the stabilized lower bench of OB dump. The photograph showing the same is attached herewith		Date: 25/05/2024
29	Statutory compliance	PP shall obtain No Objection Certificate from Central Ground Water Authority for extraction of ground water.
PPs Submission: Complied The No Objection Certificate from Central Ground Water Authority for dewatering of mine water has been obtained vide letter dt. 14.02.2024. The copy of same is attached herewith.		Date: 25/05/2024
30	WATER QUALITY MONITORING AND PRESERVATION	PP shall monitor regularly water levels in open dug wells located in village and by establishing Piezometer to ascertain the impact of mining over ground water table and to plan mitigative measures to recharge the area.
PPs Submission: Being Complied Water level monitoring is being carried out in core zone as well as buffer zone. The copy of report in this regard is attached herewith. Further, one piezometer with telemetry system has also been installed within the core zone to monitor the ground water level and the same is also connected with CGWA server.		Date: 25/05/2024
31	AIR QUALITY MONITORING AND PRESERVATION	Sufficient nos. of fog cannons of atleast 40 mtrs throw shall be installed at coal storage yard, in nearby villages and along the transportation route. Main haul road in the mine shall be provided with permanent water sprinklers, and other roads shall be regularly wetted with water tankers fitted with sprinklers. Also PP shall install Mist Cannon Dust Suppression Systems (distance 80-100 mtrs.) at Coal Stock Yard to suppress the dust particles.
PPs Submission: Being Complied One no. of fog canon having throw of about 50 to 60 m has been deployed at site. 8 nos. of rain guns have been provided around the coal stock yards. Further, water sprinkling is also being carried out through the fixed water sprinkling system and mobile tankers deployed at site to keep the dust under control.		Date: 25/05/2024
32	WATER QUALITY MONITORING AND PRESERVATION	PP shall develop additional rain water harvesting pond (100 m, width will be 10 m and the depth will be 3 m) as proposed by PP near the villages of stated area in consultation with Gram Panchayat within 1 year. Also, Indicator aquatic species shall be planted in this water bodies to see the environmental quality. PP shall own water bodies/pond currently present in project area, maintain and regularly monitor the quality for its long term protection.
PPs Submission: Agreed to Comply A rain water harvesting pond has been developed in village Kiripsira and additional pond will also be constructed in nearby project area in consultation with Gram Panchayat. Further, the existing water bodies / pond situated inside the Dipside Manoharpur Coal Block will be maintained and preserved till the mine operations reaches there.		Date: 25/05/2024
33	GREENBELT	PP shall maintain at least 10 mtrs width tree plantation of broad leaves and wind break/greenshield of about 10 mts height along the boundary of coal storage yard.

PPs Submission: Agreed to Comply Wind break / green shield of about 10m height will be provided along the boundary of coal stock yard. Further, plantation will be carried out along the coal stock yard to develop the green belt which will act as barrier to control the dust emission.		Date: 25/05/2024
34	GREENBELT	PP to plant additional 100,000 plants with three tier plantation along the transportation route, if not completed, and identified areas with consent to the gram panchayat within two year and plant for remaining within 2 years for their proper growth in additional already committed to plant to plantation in 10 ha of project area.
PPs Submission: Agreed to Comply As per plan submitted to EAC MoEF&CC, 1,00,000 nos. of plants will be planted within 3 years (between 2024 to 2026).		Date: 25/05/2024
35	MISCELLANEOUS	PP shall transport the coal by trucks of fleet size 35-40 tons (Payload) and no village road or sensitive location shall be used for transportation of coal.
PPs Submission: Being Complied Coal is being transported through the trucks of fleet size of 35 tons and also no village road or sensitive location is being used for the same.		Date: 25/05/2024
36	Statutory compliance	PP shall follow the recommendation of subsidence study and monitor the degree of subsidence regularly and shall be submitted to IRO.
PPs Submission: Agreed to Comply Will be complied, if applicable.		Date: 25/05/2024
37	Statutory compliance	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis. Any non- compliance or infringement should be reported to the concerned authority.
PPs Submission: Agreed to Comply The setup of dedicated environment laboratory for measurement of environmental parameters within the mine lease area is under process and the same will be functional soon. The civil work for setup of env. lab has been completed and procurement of instruments / equipment's for testing of water quality parameters is under progress. Further, laboratory chemist and staff are being hired for the said purpose.		Date: 25/05/2024
General Conditions		
Sr.No.	Condition Type	Condition Details
1	AIR QUALITY MONITORING AND PRESERVATION	Coal handling plant shall be operated with effective control measures w.r.t. various environmental parameters. Environmental friendly sustainable technology should be implemented for mitigating such parameters.
PPs Submission: Complied All environmental friendly measures such as dust suppression system at receipt pit, dry fog dust suppression system at each transfer point of belt conveyors, dust suppression system at coal storage		Date: 27/05/2024

		bunker, rake loading facility through silos, coal transportation to end use power plant through dedicated MGR network etc. are being followed at site.	
2	AIR QUALITY MONITORING AND PRESERVATION	Adequate measures on EMP should be analyzed on annual basis to assess the trend of air pollution data from continuous monitoring station and quarterly report shall be generated and submitted with 6 monthly compliance reports to RO, MoEF&CC.	
PPs Submission: Being Complied The latest monitoring data generated from CAAQMS is attached herewith.			Date: 27/05/2024
3	AIR QUALITY MONITORING AND PRESERVATION	Effective safeguard measures for prevention of dust generation and subsequent suppression like regular water sprinkling shall be carried out in areas prone to air pollution. The Fugitive dust emission from all sources shall be regularly controlled by installation of required equipment's. It should be ensured that air pollution level confirm to the standards prescribed by the MOEFCC/CPCB	
PPs Submission: Being Complied Adequate measures as suggested in EMP are being implemented at site to control the dust pollution.			Date: 27/05/2024
4	AIR QUALITY MONITORING AND PRESERVATION	Adequate number of Fog canon (mist sprayer) shall be installed to reduce the impact of air pollution at dust generating sources with time bound action plan.	
PPs Submission: Being Complied One no. of mobile fog canon has been deployed at site to reduce the impact of air pollution at dust generating sources.			Date: 27/05/2024
5	AIR QUALITY MONITORING AND PRESERVATION	PP should Install Wind breaker/shield arrangement along the railway siding for reducing the dust propagation in upwind direction.	
PPs Submission: Agreed to Comply Will be complied after construction of railway siding in future.			Date: 27/05/2024
6	AIR QUALITY MONITORING AND PRESERVATION	Post environmental closure third party monitoring by reputed instituted in air quality, water, land & soil etc shall be carried out and analysed with EMP measures at regular interval. A suitable recommendation in this regard, shall be furnished to IRO, MoEF&CC for compliance. The data used for analysis shall be obtained from continuous AQMS, site specific water regime. Also third party shall analyses the implementation of river diversion, meeting to the requirement of project report.	
PPs Submission: Agreed to Comply Post environmental closure will be monitored by third party and study on environmental parameters will be carried out in confirmation to EMP measures.			Date: 27/05/2024
7	AIR QUALITY MONITORING AND PRESERVATION	Comparison of average monthly temperature of pre and post mine operation after obtaining EC shall be elaborated for post three years and a record to be maintain at regular interval.	
PPs Submission: Agreed to Comply Comparison of average monthly temperature of pre and post mine operation will be carried out and a record will be maintained at site.			Date: 27/05/2024
8	WATER QUALITY	The effluent discharge (mine waste water, workshop effluent) shall	

	MONITORING AND PRESERVATION	be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board.
PPs Submission: Being Complied No effluent is being discharged to outside the mine premises and the treated water generated from ETP and mine sump is being reused for water sprinkling purpose, plantation etc.		Date: 27/05/2024
9	Statutory compliance	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
PPs Submission: Agreed to Comply Forest Clearance (FC) Stage I & Stage II has already been for the diversion of 276.655 ha forest land for development of Manoharpur Coal Mine Block. Further, FC Stage I has also been obtained for diversion of 342.87 ha forest land for development of Dipside Manoharpur Coal Block.		Date: 27/05/2024
10	Statutory compliance	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
PPs Submission: Complied The stipulated condition is not applicable to the said project.		Date: 27/05/2024
11	Statutory compliance	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report (in case of the presence of schedule-I species in the study area).
PPs Submission: Complied The site specific wildlife conservation plan has been approved by PCCF (Wildlife & CWLW), Bhubaneswar vide letter dt. 04.10.2021 wherein an amount of Rs. 8.47 Crores was approved for deposition in CAMPA fund for effective implementation of wildlife conservation plan. Accordingly, State Forest Dept. raised the demand notice to deposit the fund in CAMPA account. OCPL has been deposited the Rs. 8.47 Cr. in CAMPA fund on 06.03.2024 and the same has also been intimated to the competent authority vide letter dt. 16.04.2024.		Date: 27/05/2024
12	Statutory compliance	Validity of Environment Clearance is as per life of the mine mentioned in EC letter or 30 years as per EIA Notification, 2006 and its amendments therein
PPs Submission: Agreed to Comply The life of mine as per the approved MP (rev III) is 44 years and date of grant of EC by MoEF&CC is 05.02.2024. However, the validity of EC will be get renewed after 30 years as per EIA Notification, 2006 and its amendments therein.		Date: 27/05/2024
13	Statutory compliance	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee prior to start/commencement of mining operations/production
PPs Submission: Complied The Consent to Establish (CTE) for 16MTPA of coal production capacity has been obtained from SPCB Odisha vide letter dt. 29.02.2024. Further, Consent to Operate (CTO) for 13 MT coal		Date: 27/05/2024

production during FY 2024-25 has also been obtained from SPCB, Odisha vide letter dt. 12.03.2024.		
14	Statutory compliance	The project proponent shall obtain the necessary permission from the Central Ground Water Authority
PPs Submission: Complied The No Objection Certificate from Central Ground Water Authority for dewatering of mine water has been obtained vide letter dt. 14.02.2024.		Date: 27/05/2024
15	AIR QUALITY MONITORING AND PRESERVATION	Transportation of coal, to the extent, if permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun/ Fog cannon etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.
PPs Submission: Being Complied Transportation of coal is being carried out through covered trucks / conveyors. Further, effective control measures such as rain guns, fog canon, fixed water sprinkling along the roads, wheel washing with instant shower system for tippers, water sprinkling through tankers etc. are being implemented to control the dust pollution and to confirm the standards of air quality as per the norms prescribed by CPCB/SPCB.		Date: 27/05/2024
16	AIR QUALITY MONITORING AND PRESERVATION	The transportation of coal shall be carried out as per the provisions and route envisaged in the approved Mining Plan or environment monitoring plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could be appropriately mitigated.
PPs Submission: Being Complied Transportation of coal is being carried out as per the provisions laid in the approved MP (rev III). Further, no village road is being re-utilized for transportation of coal.		Date: 27/05/2024
17	AIR QUALITY MONITORING AND PRESERVATION	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.
PPs Submission: Being Complied PUC certified vehicles are being used in mining and allied activities.		Date: 27/05/2024
18	Statutory compliance	Solid/hazardous waste generated in the mines needs to addressed in accordance to the Solid Waste Management Rules, 2016/Hazardous & Other Waste Management Rules, 2016.
PPs Submission: Complied Authorization under Hazardous & Other Waste Management Rules, 2016 has been obtained from SPCB, Odisha vide letter dt. 15.03.2024.		Date: 27/05/2024
19	Statutory compliance	Permission of power supply to be taken from the concerned authority for meeting power demand of the project site.
PPs Submission: Complied The transmission line between NTPC Darlipali power station and OCPL mine substation for supply		Date: 27/05/2024

of power has already been laid for meeting the power demand of project site and the same will be commissioned soon. The necessary permission in this regard has already been obtained from the competent authority. The copy of same is attached herewith.		
20	Statutory compliance	The maximum production or peak production at any given time shall not exceed the limit as prescribed in the EC.
PPs Submission: Being Complied The maximum production or peak production at any given time will not exceed the limit as prescribed in the EC (i.e. 16 MTPA PRC).		Date: 27/05/2024
21	Statutory compliance	All the conditions stipulated in previous Environment Clearance conditions should be strictly complied within certain timeline
PPs Submission: Being Complied The conditions stipulated in previous EC (8MTPA) and current EC (16MTPA) is being followed at site.		Date: 27/05/2024
22	AIR QUALITY MONITORING AND PRESERVATION	Continuous ambient air quality monitoring stations as prescribed in the statue be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10, PM2.5, SO2 and NOx. 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. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation with the SPCB. The new CAAQMS should be installed with expansion.
PPs Submission: Being Complied Eight nos. monitoring stations (4 nos. in core zone and 4 nos. in buffer zone) has been installed for monitoring of air quality in consultation with the SPCB (regional office). The monitoring of environmental parameters is being carried out through the MoEF&CC/NABL/OSPCB accredited laboratory M/s Visiontek Consultancy Services Pvt. Ltd. Further, one no. CAAQMS for monitoring of air quality parameters has also already been installed in core zone in consultation with the SPCB (regional office). The same has been connected with SPCB server for the transfer of real time air quality data.		Date: 27/05/2024
23	AIR QUALITY MONITORING AND PRESERVATION	The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25th September, 2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.
PPs Submission: Being Complied The ambient air quality is being monitored regularly with the heavy metals analysis such as Hg, As, Ni, Cd, Cr etc. in every six months. The analysis report shows that the results are under permissible limits. The copy of heavy metal analysis report in this regard is attached herewith.		Date: 27/05/2024
24	AIR QUALITY MONITORING AND PRESERVATION	PP to install solar lights along the road used for transportation of coal to avoid the accidents at night and also seek its maintenance.
PPs Submission: Agreed to Comply solar lights will be installed along the road used for transportation of coal.		Date: 27/05/2024
25	AIR QUALITY	Coal stock pile/crusher/feeder and breaker material transfer points

	MONITORING AND PRESERVATION	shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.
PPs Submission: Complied Dump hopper & crusher at receiving pit have been equipped with dust suppression system. Belt conveyors are also fully covered to control the fugitive dust emission. Drill operating at site are fitted with dust extractor as well as wet operated.		Date: 27/05/2024
26	MINING PLAN	Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.
PPs Submission: Agreed to Comply Mine operation will be carried out in accordance with applicable rules / guidelines as prescribed by the Statutory / Competent authorities.		Date: 27/05/2024
27	MINING PLAN	Efforts should be made to reduce energy and fuel consumption by conservation, efficiency improvements and use of renewable energy.
PPs Submission: Agreed to Comply OCPL will make its efforts towards the reduction in fuel consumption by adopting the latest technologies and use of renewable energy.		Date: 27/05/2024
28	WATER QUALITY MONITORING AND PRESERVATION	The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No.J-20012/1/2006-IA.11 (M) dated 27th May, 2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.
PPs Submission: Being Complied The monitoring data is being displayed at company website as well as main entry/exit gate of project site.		Date: 27/05/2024
29	WATER QUALITY MONITORING AND PRESERVATION	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to MOEFCC/RO.
PPs Submission: Being Complied The monitoring of ground water level and quality is being carried out regularly. The data generated in this regard is attached herewith.		Date: 27/05/2024
30	WATER QUALITY MONITORING AND PRESERVATION	Monitoring of water quality upstream and downstream of river including ponds, lakes, tanks shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.
PPs Submission: Being Complied Monthly monitoring of upstream and downstream of garia nalla located inside and outside the mine premises is being carried out and analysis report is being submitted regularly to the SPCB and other competent authority. The copy of same is also attached herewith.		Date: 27/05/2024
31	WATER QUALITY	Ground water, excluding mine water, shall not be used for mining

	MONITORING AND PRESERVATION	operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.
PPs Submission: Being Complied No ground water excluding mine water is being used inside the project premises for mining operations. The collected mine water in sump is being reused for sprinkling purpose. Further, rainwater harvesting is also being carried out through the establishment of permanent and temporary rain water recharge pond inside the project area.		Date: 27/05/2024
32	WATER QUALITY MONITORING AND PRESERVATION	Catch and/or garland drains and siltation ponds in adequate numbers and appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly de-silted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression and green belt development and other industrial use. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.
PPs Submission: Being Complied Catch drains or garland drains along with siltation ponds in adequate numbers and size are being constructed at site around the mine working, coal storage yard & OB dumps to handle the generated runoff water. The drains & siltation ponds are also being desilted at regular interval well before the monsoon season. Further, toe wall has also been constructed around the finished lower bench of OB dump 1 to handle the sliding down of OB dump material, if any. Plantation of native species such as neem, sababool, bahuda, harida have been planted between toe of the dump and toe wall constructed around the dump.		Date: 27/05/2024
33	WATER QUALITY MONITORING AND PRESERVATION	Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) after due treatment conforming to the specific requirement (standards).
PPs Submission: Being Complied Adequate groundwater recharge measures as suggested in EMP and approved MP are being taken up for augmentation of ground water.		Date: 27/05/2024
34	WATER QUALITY MONITORING AND PRESERVATION	Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the standards prescribed under Water Act 1974 and Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Adequate ETP /STP needs to be provided.
PPs Submission: Being Complied The waste water generated from the CHP areas are being treated through the settling tanks provided at various locations. Apart from that ETP has also been provided at workshop to treat the generated waste water.		Date: 27/05/2024
35	WATER QUALITY MONITORING AND PRESERVATION	The water pumped out from the mine, after siltation, shall be utilized for industrial purpose viz. watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly.

PPs Submission: Being Complied The water pumped out from the mine is being reused for watering the mine area, roads, green belt development etc. Further, the drains are also being regularly desilted before and after monsoon to maintain the same properly.		Date: 27/05/2024
36	WATER QUALITY MONITORING AND PRESERVATION	The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
PPs Submission: Agreed to Comply An expert agency or a reputed institute will be hired to carry out the surface drainage study for the core and buffer zone for surface water conservation. The suggestion / recommendation of the study will be implemented to conserve the surface water. Further, the diversion of garia nalla located inside the project premise will be diverted as per the design approved by the Dept. of water Resources.		Date: 27/05/2024
37	WATER QUALITY MONITORING AND PRESERVATION	The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine up to a distance of 5 km. A rivarine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation / water resource department in the state government.
PPs Submission: Agreed to Comply As stated earlier, an expert agency or a reputed institute will be appointed to prepare a rivarine/riparian ecosystem conservation and management plan and the recommendation of same will be implemented at site.		Date: 27/05/2024
38	WATER QUALITY MONITORING AND PRESERVATION	Quality of polluted water generated from the operations which include COD and acid mine drainage and metal contamination shall be monitored along with TDS, DO, TSS. The monitored data shall be uploaded on the website of the company as well as displayed at the site in public domain.
PPs Submission: Being Complied The polluted waste water generated from the mine sump and ETP of the workshop is being monitored regularly. The data of analysis report is also being submitted regularly to the SPCB and competent authority. The same is also is being uploaded on company website and main entry / exit gate of project site.		Date: 27/05/2024
39	WATER QUALITY MONITORING AND PRESERVATION	Domestic water shall be providing to the residents/villages which are coming under the zone of influence of the project due to ground water extraction and mining operation by installing adequate number of RO plants with proper supply line and Taps within 2 years
PPs Submission: Being Complied The domestic water is being provided through the mobile tankers to the residents / villages which are coming under the zone of influence due to mining operations.		Date: 27/05/2024
40	WATER QUALITY MONITORING AND PRESERVATION	No obsolete technologies for sewage treatment shall be implemented. Construction of Sewage Treatment Plant with latest technology should be completed within 2 years and treated water

		shall be reused for plantation. CTE and CTO of STP shall be obtained as per the norms.
PPs Submission: Agreed to Comply The STP has been provided inside the township to treat the generated domestic waste water. Further, the additional STP will be constructed as and when required at an appropriate place.		Date: 27/05/2024
41	Noise Monitoring & Prevention	Adequate measures shall be taken for control of noise levels as per Noise Pollution Rules, 2016 in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.
PPs Submission: Being Complied Adequate measures such as control blasting, proper PPE's to the workers engaged in blasting and drilling operations, operation of HEMM, etc. are being adopted at site for control of noise levels as per Noise Pollution Rules, 2016. Further awareness training programme is also being conducted regularly in the vocational training centre (VTC) situated inside the project premises.		Date: 27/05/2024
42	Noise Monitoring & Prevention	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc., as per the guidelines prescribed by the DGMS.
PPs Submission: Being Complied Controlled blasting as per recommendation of CIMFR is being followed at site in order to reduce the ground vibrations, fly rocks, noise and air blast etc.		Date: 27/05/2024
43	Noise Monitoring & Prevention	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises, and report in this regard shall be submitted to the Ministry/RO on six-monthly basis.
PPs Submission: Being Complied Regular monitoring of noise level is being carried out in core and buffer zone to check the noise exposure of the workmen at vulnerable points in the mine premises. The result of the same is being submitted regularly to the SPCB and competent authority. The report of the same in this regard is attached herewith.		Date: 27/05/2024
44	MINING PLAN	5- Star Rating is mandatory to obtaine certification as per guidelines of Mininstry of Coal
PPs Submission: Being Complied The mine has awarded 5 star rating for FY 2019-20, 2021-22, 2022-23 by the Ministry of Coal (MoC), GoI. The copy of 5 star rating obtained from MoC for FY 2022-23 is attached herewith.		Date: 27/05/2024
45	MINING PLAN	Mining shall be carried out as per the approved mining plan (including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
PPs Submission: Agreed to Comply Mining will be carried out as per the mining plan (including Mine Closure Plan) approved by Ministry of Coal (MoC), GoI vide letter dt. 26.09.2019.		Date: 27/05/2024
46	MINING PLAN	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980.

PPs Submission: Agreed to Comply Necessary forest clearance has been obtained from the MoEF&CC for mining operation inside the Manoharpur and Dipside Manoharpur Coal Block.		Date: 27/05/2024
47	LAND RECLAMATION	Progressive backfilling of mine and progressive reclamation of OB dump shall be done
PPs Submission: Agreed to Comply The progressive backfilling of mine and reclamation of OB dump with backfilled areas will be carried out as per approved MP.		Date: 27/05/2024
48	LAND RECLAMATION	Active OB Dump should not be kept barren/open and should be covered by temporary grass to avoid air born of particles
PPs Submission: Agreed to Comply The finished benches of active OB dump will be covered by planting grass to avoid air born of dust particles.		Date: 27/05/2024
49	Human Health Environment	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & it's RO on sixmonthly basis.
PPs Submission: Being Complied Adequate illumination has been provided in all mine operational areas and the same is also being monitored regularly and recorded at site for improvement, if required. The monitoring report in this regard is attached herewith.		Date: 27/05/2024
50	Human Health Environment	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the personnel engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the personnel identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, as amended time to time.
PPs Submission: Being Complied Occupational health survey for initial and periodical medical examination of the personnel engaged in the project is being carried out regularly and the records have been maintained at site.		Date: 27/05/2024
51	Human Health Environment	Personnel (including outsourced employees) working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.
PPs Submission: Being Complied Proper PPE's including protective respiratory devices have been provided to the workers engaged in core zone. Further, a vocational training centre has also been setup inside the project premises wherein adequate training and information's are being provided on safety and health aspects.		Date: 27/05/2024
52	MINING PLAN	PP shall adopt mining method by preferably using surface miners for the project and silo loading through in-pit conveyor should be adopted
PPs Submission: Agreed to Comply Surface miner is being used for mining of coal and silo loading through in-pit conveyor will be adopted at a later stage as and when required.		Date: 27/05/2024
53	MINING PLAN	Tranportation of coal till Railway Siding shall be developed to avoid transportation through Road

PPs Submission: Agreed to Comply To transport the excess coal, railway siding will be developed in future as and when required.		Date: 27/05/2024
54	LAND RECLAMATION	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive top soil. Postmining land be rendered usable for agricultural/forestry purposes and shall be diverted. Further action will be treated as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.
PPs Submission: Agreed to Comply The mine closure will be carried out in accordance with the Mine closure Plan as approved in Mining Plan (Rev III) by MoC, GoI.		Date: 27/05/2024
55	LAND RECLAMATION	Fly ash shall be used for external dump of overburden, backfilling or stowing of mine as per provisions contained in clause (i) and (ii) of subparagraph (8) of fly ash notification issued vide SO 2804 (E) dated 3rd November, 2009 as amended from time to time. Efforts shall be made to utilize gypsum generated from Flue Gas Desulfurization (FGD), if any, along with fly ash for external dump of overburden, backfilling of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.
PPs Submission: Agreed to Comply Fly ash will be used with overburden for backfilling at a later stage when the sufficient void is available in the mine. However, a detailed study in this regard will be carried out by an expert agency and accordingly the recommendation / suggestions will be implemented at site.		Date: 27/05/2024
56	LAND RECLAMATION	Further, it may be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The topsoil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office.
PPs Submission: Agreed to Comply The time schedule as specified in the approved Mine Closure Plan will be followed at site. The top soil stored at topsoil dump will be utilized for land reclamation and plantation purposes. Further, the finished benches of active OB dump is being stabilised with native grass species and plantation over the slope & toe of dump to prevent erosion and surface run off. The excavated area will be backfilled and afforested in line with the approved Mine Closure Plan and compliance status of same will be submitted regularly to Ministry of Environment, Forest and Climate Change/ Regional Office.		Date: 27/05/2024
57	LAND RECLAMATION	The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.

PPs Submission: Agreed to Comply Will be complied in compliance to applicable norms / guidelines of Hon'ble Supreme Court.		Date: 27/05/2024
58	LAND RECLAMATION	PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads/ manufacture of artificial sand, aggregates/ use for farmers etc.)
PPs Submission: Agreed to Comply To explore the possibility of utilization of OB material for different purposes, an expert agency or a reputed institute will be appointed for the technical study and feasibility of same. Accordingly, the compliance will be implemented at site.		Date: 27/05/2024
59	LAND RECLAMATION	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 operations, undertake regrassing 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
PPs Submission: Agreed to Comply OCPL hereby undertake that the mining area and any other area which may have been disturbed due to mining activities will be restored as per the land use approved in MP. The implementation report of the same will be submitted to Regional Office of the MoEF&CC.		Date: 27/05/2024
60	GREENBELT	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered/endemic flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.
PPs Submission: Agreed to Comply Site specific wildlife conservation plan has been prepared in consultation with the State Forest Dept. and the same will be implemented at site in consultation with the State Forest Dept. Further, if any endangered/endemic flora/fauna will be observed in the project area, the same will be conserved and protected in consultation with the State Forest Dept.		Date: 27/05/2024
61	GREENBELT	Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area as soon as possible. The green belt comprising a mix of native species (endemic species should be given priority) shall be developed all along the major approach/ coal transportation roads. And Plantation should also be carried out in nearby area with consent of forest department and gram panchayat within 10 km radius with its proper maintenance.
PPs Submission: Agreed to Comply Green belt is being developed in the safety zone (i.e. 7.5m) all along the mine boundary by planting the local native species. Further, plantation is also being carried out in open areas, around coal transportation road etc.		Date: 27/05/2024
62	PUBLIC HEARING	The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z- 11013/5712014-IA.II (M) dated 29th October, 2014, titled 'Impact of mining activities on

		habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area’.
PPs Submission: Agreed to Comply Adequate EMP measures are being and will be followed at site to reduce the impact of mining activities on habitations and nearby areas.		Date: 27/05/2024
63	Human Health Environment	PP should conduct epidemiology study to (analysis of the distribution, patterns and determinants of health and disease conditions in defined populations).
PPs Submission: Agreed to Comply Epidemiology study will be carried out at an appropriate stage to analyse the distribution, patterns and determination of health and disease aspects.		Date: 27/05/2024
64	PUBLIC HEARING	Persons of nearby villages shall be given training on livelihood and skill development to make them employable with its proper records.
PPs Submission: Being Complied Persons of nearby villages have been appointed for training of Mining Sirdar, Supervisors etc. for their better livelihood and skill development to make them employable.		Date: 27/05/2024
65	LAND RECLAMATION	Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale or as notified by Ministry of Environment, Forest and Climate Change(MOEFCC) from time to time shall be submitted to MOEFCC/Regional Office (RO).
PPs Submission: Being Complied The digital survey of Manoharpur coal mine block was carried out in 2021 for monitoring of land use pattern and report was submitted to MoEF&CC. Further, the due study in 2024 will also be conducted for the entire lease hold area of Manoharpur and Dipside Manoharpur Coal Mine Block.		Date: 27/05/2024
66	LAND RECLAMATION	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the “during mining”/”post mining” land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the MOEFCC/RO.
PPs Submission: Agreed to Comply The back filling of OB material, external OB dumping (including top soil) and afforestation plan will be carried out at site as per the approved mining plan. Further, the progressive compliance report on the said parameters will be submitted regularly to your good office.		Date: 27/05/2024
67	LAND RECLAMATION	Top soil should be stored separately at marked area and necessary vegetation shall be maintained to avoid any entrainment of dust
PPs Submission: Complied The excavated top soil has been stored at an earmarked place as per the approved MP.		Date: 27/05/2024
68	LAND RECLAMATION	All approach roads to mine and all other roads which are in regular use should be black topped. The maintenance of road shall be done by PP in collaboration with state government

PPs Submission: Agreed to Comply All approach roads to mine and all other roads connected to project site are either black topped or concreted. The maintenance of same will be carried out in collaboration with state government.		Date: 27/05/2024
69	PUBLIC HEARING	Implementation of the time bound action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the time bound action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.
PPs Submission: Agreed to Comply OCPL will make its best efforts to comply the task/measures as suggested during the public hearing. Budgetary provisions for the same has already been considered. Further, land oustees will be compensated as per the norms approved in R&R policy of the company/State Government/Central Government, as applicable.		Date: 27/05/2024
70	PUBLIC HEARING	PP to conduct need based assessment survey of the area to for in order to decide the activities to be carried under the CSR and to provide detail of the activity carried out with adequate budgetary provision and time bound action plan.
PPs Submission: Being Complied CSR activities are being carried out in consultation with the Administration Dept. of Dist. Sundargarh.		Date: 27/05/2024
71	Human Health Environment	Permanent Health care facilities of Hospital should be established within 5 km of project boundary for the local people.
PPs Submission: Complied A dispensary has been constructed inside the township of OCPL which is very near to the project site. To operate the same, medical staff has been appointed.		Date: 27/05/2024
72	Human Health Environment	PP must ensure an emergency action plan during pandemic in order to provide assistance to the nearby villages located within the 10 km radius buffer zone (If required)
PPs Submission: Agreed to Comply An emergency action plan has already been prepared and the same is in place to follow in any emergency situation. Further, the same will be updated to provide assistance to the nearby villages located within the 10 km radius in pandemic situation, if arise in future.		Date: 27/05/2024
73	PUBLIC HEARING	PP is asked to also identify the rural areas for installation of solar light with its maintenance within the study area of 10 km radius buffer zone within one year
PPs Submission: Agreed to Comply The villages have been identified and steps are being taken to install the solar lights.		Date: 27/05/2024
74	PUBLIC HEARING	PP to take measure for installation of Renewable Energy sources in nearby area falling within 10 km radius
PPs Submission: Agreed to Comply It is planned to install 500 KWp solar plant an supply the power on transportation roads and surrounding villages.		Date: 27/05/2024
75	PUBLIC HEARING	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent

		sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours
PPs Submission: Agreed to Comply The mining operation is being carried out in such a way that the illumination and sound at night at project site will not disturb the villages in respect of both human and animal population. The noise level monitoring is being carried out to check the noise level at project site and in surrounding during the day and night. The observed noise levels are well within the permissible limits as prescribed by the MoEF&CC.		Date: 27/05/2024
76	PUBLIC HEARING	Adequate facility of drinking water, plantation and other social amenities should be provided to established R&R villages.
PPs Submission: Complied Adequate facility of drinking water, plantation and other social amenities have already been provided to the constructed R&R colonies for village Manoharpur and Ghumudasan. Further, the same will also ensure for the village Parmanandpur and Kathfali which will be shifted at later stage for the development of Dipside Manoharpur Coal Block.		Date: 27/05/2024
77	Corporate Environmental Responsibility	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
PPs Submission: Complied An environment management cell comprising of technical qualified personnel is working in the organization who is directly reporting to the Head of Company through Head of Mines.		Date: 27/05/2024
78	Corporate Environmental Responsibility	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis. Any non- compliance or infringement should be reported to the concerned authority
PPs Submission: Agreed to Comply The setup of dedicated environment laboratory within the mine lease area is also under process and the same will be functional soon. The civil work for setup of env. lab has been completed and procurement of instruments / equipment's for testing of water quality parameters is under progress.		Date: 27/05/2024
79	MISCELLANEOUS	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
PPs Submission: Complied The copy of EC granted by MoEF&CC vide letter dt. 05.02.2024 has been published in two local newspapers. The copy of same is attached herewith. Further, the copy of EC has also been uploaded permanently on company website.		Date: 27/05/2024
80	MISCELLANEOUS	The copies of the environmental clearance shall be submitted by the

		project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
PPs Submission: Complied The copy of EC has been submitted to the Heads of local bodies, Panchayats and Municipal Bodies. The acknowledgement receipt in this regard is attached herewith.		Date: 27/05/2024
81	MISCELLANEOUS	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
PPs Submission: Being Complied The status of compliance of the stipulated environment clearance conditions, including results of monitored data has been displayed at company website.		Date: 27/05/2024
82	MISCELLANEOUS	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
PPs Submission: Being Complied The monitored data have been displayed at company website and main entry/ exit gate of project site for disclosure to the public.		Date: 27/05/2024
83	MISCELLANEOUS	The project proponent shall submit the environmental statement for each financial year in Form- V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
PPs Submission: Being Complied The environmental statement for each financial year in Form- V is being submitted regularly to the SPCB and the same has also been uploaded on company website.		Date: 27/05/2024
84	MISCELLANEOUS	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
PPs Submission: Agreed to Comply Agreed.		Date: 27/05/2024
85	PUBLIC HEARING	Compensation of the land acquired for the project shall be settled as per the R&R Policy within fixed timeline
PPs Submission: Agreed to Comply Compensation of the land acquired for the project will be settled as per the R&R policy approved by company/ State Govt./ Central Govt..		Date: 27/05/2024
86	Corporate Environmental Responsibility	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/forest/wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the

		environmental/forest/wildlife norms/conditions and/or shareholders/stake holders.
PPs Submission: Complied Environment policy has been approved by Board and it is in place. The policy document has the SOPs to deal with environmental issues for ensuring compliance to the conditions stipulated in environmental clearance. There is an environment management cell comprises of technical qualified persons which is taking care of all environmental compliances of clearances and monitoring. The cell is headed by Head of Company through Head of Mines.		Date: 27/05/2024
87	Corporate Environmental Responsibility	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
PPs Submission: Agreed to Comply The measures as proposed in the EMP with responsibility matrix will be implemented at site. Further, the funds earmarked for environmental protection measures have been kept separate in ESCROW account. The year wise implementation of the activities as prescribed in Mine Closure Plan are being followed at site and the details of fund spent year wise towards their implementation is attached herewith.		Date: 27/05/2024
88	MISCELLANEOUS	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
PPs Submission: Being Complied The six-monthly report on the status of the compliance of the stipulated environmental conditions is being uploaded on Parivesh 2.0 Portal of Ministry of Environment, Forest and Climate Change		Date: 27/05/2024
89	MISCELLANEOUS	The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.
PPs Submission: Complied The commencement of mining operation has been informed to the Regional Office of the MoEF&CC in the half yearly compliance report.		Date: 27/05/2024
90	MISCELLANEOUS	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
PPs Submission: Agreed to Comply OCPL will comply the commitments and recommendations as made in the EIA/EMP report, during Public Hearing and also during presentation to the Expert Appraisal Committee.		Date: 27/05/2024
91	MISCELLANEOUS	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change.
PPs Submission: Agreed to Comply No further expansion or modifications in the said project will be carried out without prior approval of the Ministry of Environment, Forests and Climate Change.		Date: 27/05/2024
92	Corporate Environmental	Self environmental audit shall be conducted annually. Every three

	Responsibility	years third party environmental audit shall be carried out.
PPs Submission: Agreed to Comply Self-environmental audit is being conducted regularly at site for better implementation of EMP measures. Further, third party environmental audit will be carried out in every three years to ensure the compliance of EC conditions.		Date: 27/05/2024
93	MISCELLANEOUS	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
PPs Submission: Agreed to Comply Agreed.		Date: 27/05/2024
94	MISCELLANEOUS	The Regional Office of this Ministry 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.
PPs Submission: Agreed to Comply Agreed.		Date: 27/05/2024
95	MISCELLANEOUS	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
PPs Submission: Being Complied OCPL is strictly following the stipulation as made by the State Pollution Control Board and the State Government.		Date: 27/05/2024
96	MISCELLANEOUS	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
PPs Submission: Agreed to Comply Agreed.		Date: 27/05/2024
97	MISCELLANEOUS	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
PPs Submission: Agreed to Comply Agreed.		Date: 27/05/2024
Visit Remarks		
Last Site Visit Report Date:		N/A
Additional Remarks:		

Online Pollution Monitoring Portal						
Manoharpur Coal Mine Project						
Average Report						
From Date: 01-03-2024T12:00:45Z To Date: 31-03-2024T12:00:45Z						
Report Created by MCMPPM on 2024-04-02 16:40:18						
Sl No.	Time	AAQMS_1-CO(mg/m3)	AAQMS_1-NOx(ug/m3)	AAQMS_1-PM2.5(ug/m3)	AAQMS_1-PM10(ug/m3)	AAQMS_1-SO2(ug/m3)
1	2024-03-01 00:00:00	NA	NA	NA	NA	NA
2	2024-03-02 00:00:00	NA	NA	NA	NA	NA
3	2024-03-03 00:00:00	NA	NA	NA	NA	NA
4	2024-03-04 00:00:00	NA	NA	NA	NA	NA
5	2024-03-05 00:00:00	1.172	19.239	0	137.061	49.092
6	2024-03-06 00:00:00	1.034	22.946	0	135.637	59.782
7	2024-03-07 00:00:00	0.835	15.161	0	104.207	45.296
8	2024-03-08 00:00:00	0.882	13.646	0	99.279	28.524
9	2024-03-09 00:00:00	1.107	24.255	0	147.596	37.948
10	2024-03-10 00:00:00	1.273	24.992	0	174.527	54.949
11	2024-03-11 00:00:00	1.029	27.532	0	178.723	55.178
12	2024-03-12 00:00:00	1.084	25.82	0	203.791	43.624
13	2024-03-13 00:00:00	1.092	23.964	0	192.125	49.432
14	2024-03-14 00:00:00	1.598	26.738	0	210.359	49.543
15	2024-03-15 00:00:00	1.288	25.916	0	197.363	54.663
16	2024-03-16 00:00:00	1.31	27.771	0	193.23	59.481
17	2024-03-17 00:00:00	0.896	14.921	0	97.802	44.432
18	2024-03-18 00:00:00	1	14.287	0	88.785	52.765
19	2024-03-19 00:00:00	1.11	15.293	0.739	64.437	63.098
20	2024-03-20 00:00:00	0.849	12.306	21.912	40.09	29.548
21	2024-03-21 00:00:00	1.086	23.239	45.003	102.852	43.228
22	2024-03-22 00:00:00	0.978	18.4	45.401	134.851	58.849
23	2024-03-23 00:00:00	1.524	38.696	43.76	205.91	44.37
24	2024-03-24 00:00:00	1.474	33.079	43.76	198.647	49.609
25	2024-03-25 00:00:00	1.635	23.534	43.76	214.83	42.946
26	2024-03-26 00:00:00	1.233	20.546	43.76	168.203	43.801
27	2024-03-27 00:00:00	1.685	26.036	43.76	207.381	49.525
28	2024-03-28 00:00:00	1.638	34.817	43.76	264.14	62.999
29	2024-03-29 00:00:00	1.579	38.768	43.76	258.497	51.331
30	2024-03-30 00:00:00	1.955	38.232	43.76	329.335	61.402
31	Prescribed Standards	0 - 4	0 - 80	0 - 60	0 - 100	0 - 80
32	Maximum Value	1.96	38.77	45.4	329.34	63.1
33	Maximum Value At Time	2024-03-30 00:00:00	2024-03-29 00:00:00	2024-03-22 00:00:00	2024-03-30 00:00:00	2024-03-19 00:00:00
34	Minimum Value	0.84	12.31	0	40.09	28.52
35	Minimum Value At Time	2024-03-07 00:00:00	2024-03-20 00:00:00	2024-03-05 00:00:00	2024-03-20 00:00:00	2024-03-08 00:00:00
36	Arithmetic Mean	1.24	24.24	17.81	167.29	49.44
37	Median	1.14	24.11	0	176.62	49.53
38	Standard Deviation	0.3	7.81	21.57	66.25	9.15
39	Valid Data Points	26	26	26	26	26
40	Total Data Points	30	30	30	30	30
41	Data Availability %	86.67	86.67	86.67	86.67	86.67



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13819

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (CORE ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-1:Near OB Dump-I
5. Location Co-ordinates : 21° 56' 57.6996" N, 83° 47' 46.1436" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
10.01.2024	24 hrs.	305.0	219.0	110.5	24.3	30.6	0.71
25.01.2024	24 hrs.	320.0	225.0	118.2	26.5	32.8	0.73
AVERAGE		312.5	222.0	114.4	25.4	31.7	0.72
As per MoEF & CC Standard Notification no. GSR 742 (E) for Coal mine		500	250	--	120	120	--
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24) 2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13820

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (CORE ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-2:Near OB Dump-II
5. Location Co-ordinates : 21° 57' 46.71" N, 83° 47' 5.352" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
09.01.2024	24 hrs.	355.0	230.0	125.8	28.9	34.6	0.67
24.01.2024	24 hrs.	331.0	219.0	130.1	26.7	33.1	0.71
AVERAGE		343.0	224.5	128.0	27.8	33.9	0.69
As per MoEF & CC Standard Notification no. GSR 742 (E) for Coal mine		500	250	--	120	120	--
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24) 2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13821

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (CORE ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-3: CHP OCPL Office
5. Location Co-ordinates : 21° 58' 4.782" N, 83° 47' 56.0616" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m ³)
09.01.2024	24 hrs.	290.0	213.0	102.0	25.8	32.8	0.71
24.01.2024	24 hrs.	298.0	221.0	124.0	26.6	33.1	0.74
AVERAGE		294.0	217.0	113.0	26.2	33.0	0.73
As per MoEF& CC Standard Notification no. GSR 742 (E) for Coal mine		500	250	--	120	120	--
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24) 2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13822

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (CORE ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-4:Near Mine Pit Area
5. Location Co-ordinates : 21° 57' 18.97121" N, 83° 46' 47.65163" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
10.01.2024	24 hrs.	325.0	282.0	136.5	30.9	33.1	0.80
25.01.2024	24 hrs.	317.0	253.0	141.3	31.2	32.5	0.79
AVERAGE		321.0	267.5	138.9	31.1	32.8	0.80
As per MoEF & CC Standard Notification no. GSR 742 (E) for Coal mine		500	250	--	120	120	--
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24) 2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13823

Date: 06.02.2024

AAQ MONITORING REPORT (Heavy Metals) FOR JANUARY-2024 (Core Zone)

1. Name of Project : Manoharpur Open Cast Coal Mine Project
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sample collected by : VCSPL representative in presence of OCPL representative

Monitoring Location	Date	Hg (mg/m ³)	As (ng/m ³)	Ni (ng/m ³)	Cd (mg/m ³)	Cr (mg/m ³)
AAQMS-1: Near OB Dump-I	09.01.2024	BDL	BDL	BDL	BDL	BDL
AAQMS-2: Near OB Dump-II	10.01.2024	BDL	BDL	BDL	BDL	BDL
AAQMS-3: CHP OCPL Office	24.01.2024	BDL	BDL	BDL	BDL	BDL
AAQMS-4: Near Mines Pit Area	25.01.2024	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard		--	6	20	--	--
Testing Method		AAS Method IS 5182(Part -22):2004				

BDL Values: Ni < 2.5 ng/m³, As < 1.0 ng/m³, Hg < 0.001 mg/m³, Cd < 0.002 mg/m³, Cr < 0.006 mg/m³





Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13824

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-1:Kalamegha Village
5. Location Co-ordinates : 21° 56' 55.5288" N, 83° 50' 33.9036" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m ³)
12.01.2024	24 hrs.	78.4	55.6	29.8	14.4	22.1	0.44
27.01.2024	24 hrs.	76.5	57.1	30.5	14.9	21.7	0.47
AVERAGE		77.5	56.4	30.2	14.7	21.9	0.46
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24) 2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13825

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-2:Paramanandpur Village
5. Location Co-ordinates : 21° 57' 15.7464" N, 83° 45' 54.8172" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m ³)
11.01.2024	24 hrs.	77.8	56.9	28.8	14.3	22.8	0.45
26.01.2024	24 hrs.	74.6	57.1	29.6	14.5	22.3	0.49
AVERAGE		76.2	57.0	29.2	14.4	22.6	0.47
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24) 2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13826

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-3:Sarbahal Village OCPL Mines Colony
5. Location Co-ordinates : 21° 58' 4.7388" N, 83° 48' 35.91187" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m ³)
11.01.2024	24 hrs.	76.2	56.8	30.8	14.6	21.6	0.48
26.01.2024	24 hrs.	74.5	55.2	29.2	15.2	20.8	0.45
AVERAGE		75.4	56.0	30.0	14.9	21.2	0.47
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24)2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13827

Date: 06.02.2024

AAQ MONITORING REPORT FOR JANUARY-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sampling Location : AAQMS-4: Kiripsira Village
5. Location Co-ordinates : 21° 59' 22.6788" N, 83° 46' 47.2368" E
6. Sample collected by : VCSPL representative

Date of Monitoring	Sampling duration	Suspended Particulate Matter, SPM ($\mu\text{g}/\text{m}^3$)	Respirable Particulate Matter, PM10 ($\mu\text{g}/\text{m}^3$)	PM2.5 ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	CO (mg/m ³)
12.01.2024	24 hrs.	80.2	56.3	30.5	14.1	22.4	0.44
27.01.2024	24 hrs.	78.5	57.5	29.4	13.9	21.9	0.42
AVERAGE		79.4	56.9	30.0	14.0	22.2	0.43
NAAQ Standard		--	100.0	60.0	80.0	80.0	4.0 (1hour)
Testing Method		Gravimetric IS 5182: (Part 4) RA 2019	Gravimetric IS 5182: (Part 23) RA 2017	IS 5182 (Part 24) 2019	Improved West & Geake Method IS 5182 (Part-2) RA2017	Modified Jacob & Hochheiser Method IS 5182 (Part-6) RA2017	NDIR Spectroscopy method IS 5182 (Part-10) RA 2019

BDL Values: SO₂ < 4 $\mu\text{g}/\text{m}^3$, NO_x < 9 $\mu\text{g}/\text{m}^3$





Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13828

Date: 06.02.2024

AAQ MONITORING REPORT (Heavy Metals) FOR JANUARY-2024 (Buffer Zone)

1. Name of Project : Manoharpur Open Cast Coal Mine Project
2. Name of Industry : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Monitoring Instruments : RDS (APM 460 BL), FPS (APM 550)
4. Sample collected by : VCSPL representative in presence of OCPL representative

Monitoring Location	Date	Hg (mg/m ³)	As (ng/m ³)	Ni (ng/m ³)	Cd (mg/m ³)	Cr (mg/m ³)
AAQMS-1: Kalamegha Village	11.01.2024	BDL	BDL	BDL	BDL	BDL
AAQMS-2: Paramanandpur Village	12.01.2024	BDL	BDL	BDL	BDL	BDL
AAQMS-3: Sarbahal Village	26.01.2024	BDL	BDL	BDL	BDL	BDL
AAQMS-4: Kiripsira Village	27.01.2024	BDL	BDL	BDL	BDL	BDL
CPCB, New Delhi AAQ Standard		--	6	20	--	--
Testing Method	AAS Method IS 5182(Part -22):2004					

BDL Values: Ni < 2.5 ng/m³, As < 1.0 ng/m³, Hg < 0.001 mg/m³, Cd < 0.002 mg/m³, Cr < 0.006 mg/m³



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13831

Date: 06.02.2024

GROUND WATER QUALITY REPORT JANUARY-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Name of the Location : Ground Water-1: Tube well at Paramanandpur Village
4. Location Co-ordinates : GW-1: 21° 57' 15.4476" N, 83° 45' 54.144" E
5. Date of Sampling : 24.01.2024
6. Date of Receiving : 25.01.2024
7. Date of Analysis : 25.01.2024 TO 31.01.2024
8. Sample Collected By : VCSPL Representative

SL. No.	Name of the Parameters	Unit	Testing Method	Standard as per IS 10500:2012, Amnd. 2015 & 2018(Acceptable Limit)	Analysis Result
					GW-1
1.	pH (at 25 °C)	---	APHA 4500H ⁺ B	6.5-8.5	7.19
2.	Color	Hazen	APHA 2120 B,C	5.0 (max)	<5
3.	Odor	---	APHA 2150 B	Agreeable	Agreeable
4.	Taste	---	APHA 2160 C	Agreeable	Agreeable
5.	Turbidity	NTU	APHA 2130 B	1.0 (max)	<1.0
6.	Residual Free Chlorine	mg/l	APHA:4500 Cl ⁻ B	0.2 (min)	0.13
7.	Total Dissolved Solids	mg/l	APHA 2540 C	500.0(max)	360.2
8.	Electrical Conductivity	μS/cm	APHA 2510 C	---	578.5
9.	Total Alkalinity as CaCO ₃	mg/l	APHA 2320 B	200(max)	82.0
10.	Total Hardness as CaCO ₃	mg/l	APHA 2340 C	200(max)	118.0
11.	Calcium as Ca	mg/l	APHA 3500 Ca B	75(max)	31.9
12.	Magnesium as Mg	mg/l	APHA 3500Mg B	30(max)	9.3
13.	Chloride as Cl	mg/l	APHA 4500Cl ⁻ B	250(max)	34.5
14.	Fluoride as F	mg/l	APHA 4500 F ⁻ C, D	1.0(max)	0.12
15.	Sulphide	mg/l	APHA 4500 -S.D	0.05(max)	ND
16.	Sulphate as SO ₄	mg/l	APHA 4500 SO ₄ ⁻ E	200(max)	11.6
17.	Nitrate as NO ₃	mg/l	APHA 4500 NO ₃ ⁻ B	45(max)	4.2
18.	Ammonical Nitrogen as NH ₃ -N	mg/l	APHA 4500 NH ₃ C	0.5(max)	BDL
19.	Hexavalent Chromium as Cr ⁺⁶	mg/l	APHA 3500 Cr B	--	BDL
20.	Phenolic Compounds as C ₆ H ₅ OH	mg/l	APHA 5530-B, D	0.001(max)	BDL
21.	Cyanide as CN	mg/l	APHA 4500 CN ⁻ C E	0.05(max)	BDL
22.	Sodium as Na	mg/l	APHA 3500 Na, B	---	5.6
23.	Potassium as K	mg/l	APHA 3500K, B	---	3.2
24.	Copper as Cu	mg/l	APHA 3111 B	0.05(max)	BDL
25.	Iron as Fe	mg/l	APHA 3111 B	1.0(max)	0.23
26.	Manganese as Mn	mg/l	APHA 3111 B	0.1(max)	BDL
27.	Mercury as Hg	mg/l	APHA 3112 B	0.001(max)	BDL



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

28.	Cadmium as Cd	mg/l	APHA 3111 B	0.003(max)	BDL
29.	Selenium as Se	mg/l	APHA 3500 Se C	0.01(max)	BDL
30.	Arsenic as As	mg/l	APHA 3500 As	0.01(max)	BDL
31.	Lead as Pb	mg/l	APHA 3111 B	0.01(max)	BDL
32.	Zinc as Zn	mg/l	APHA 3111 B	5.0(max)	0.16
33.	Nickel as Ni	mg/l	APHA 3111 B	0.02(max)	BDL
34.	Total Chromium as Cr	mg/l	APHA 3111 B	0.05(max)	BDL
35.	Boron as B	mg/l	APHA 4500 B, B	0.5(max)	BDL
36.	Silver as Ag	mg/l	APHA 3111 B	0.1(max)	BDL
37.	Barium as Ba	mg/l	APHA 3111 B	0.7(max)	BDL
38.	Aluminium as Al	mg/l	APHA 3500 Al B	0.2(max)	BDL
39.	Anionic detergent as MBAS	mg/l	APHA 5540 C	1.0(max)	ND
40.	Mineral Oil	mg/l	APHA 5220 B	0.5(max)	ND
41.	Total Coli form	MPN/100ml	APHA 9221 B	Shall not be detectable in any 100 ml	<1.1
42.	E.Coli	MPN/100ml	APHA 9221 E	Shall not be detectable in any 100 ml	Absent
43.	Faecal Coli form	MPN/100ml	APHA 9221 F	---	<1.1
44.	Pesticides	mg/l	APHA 6630 C	---	Absent

BDL Value: Cu <0.02mg/l, Al <0.1mg/l, B <0.1mg/l, Ba <0.1mg/l, Mn<0.05mg/l, Hg<0.002 mg/l, Cd <0.01 mg/l, Se <0.001 mg/l, As <0.004 mg/l, Pb<0.01mg/l, Ni<0.05 mg/l, Cr <0.05mg/l, NH₃-N< 0.1mg/l, Cr⁶⁺<0.01mg/l, Phenol <0.05mg/l, CN <0.01mg/l, Ag<0.1mg/l, TC & FC : MPN/100 ml

< 1.1 (0-0-0)



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13832

Dates: 06.02.2024

GROUND WATER QUALITY REPORT JANUARY-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Name of the Location : Ground Water-2: Tube Well at Kalamegha Village
4. Location Co-ordinates : GW-2: 21° 56' 55.5288" N, 83° 50' 33.9036" E
5. Date of Sampling : 24.01.2024
6. Date of Receiving : 25.01.2024
7. Date of Analysis : 25.01.2024 TO 31.01.2024
8. Sample Collected By : VCSPL Representative

SL. No.	Name of the Parameters	Unit	Testing Method	Standard as per IS 10500:2012, Amnd. 2015 & 2018 (Acceptable Limit)	Analysis Result
					GW-2
1.	pH (at 25 °C)	---	APHA 4500H ⁺ B	6.5-8.5	7.24
2.	Color	Hazen	APHA 2120 B,C	5.0 (max)	<5
3.	Odor	---	APHA 2150 B	Agreeable	Agreeable
4.	Taste	---	APHA 2160 C	Agreeable	Agreeable
5.	Turbidity	NTU	APHA 2130 B	1.0 (max)	<1.0
6.	Residual Free Chlorine	mg/l	APHA:4500 Cl ⁻ B	0.2 (min)	0.12
7.	Total Dissolved Solids	mg/l	APHA 2540 C	500.0(max)	334.5
8.	Electrical Conductivity	μS/cm	APHA 2510 C	---	566.1
9.	Total Alkalinity as CaCO ₃	mg/l	APHA 2320 B	200(max)	74.0
10.	Total Hardness as CaCO ₃	mg/l	APHA 2340 C	200(max)	126.0
11.	Calcium as Ca	mg/l	APHA 3500 Ca B	75(max)	32.5
12.	Magnesium as Mg	mg/l	APHA 3500Mg B	30(max)	10.9
13.	Chloride as Cl	mg/l	APHA 4500Cl ⁻ B	250(max)	36.7
14.	Fluoride as F	mg/l	APHA 4500 F ⁻ C, D	1.0(max)	0.14
15.	Sulphide	mg/l	APHA 4500 -S.D	0.05(max)	ND
16.	Sulphate as SO ₄	mg/l	APHA 4500 SO ₄ ⁻ E	200(max)	12.1
17.	Nitrate as NO ₃	mg/l	APHA 4500 NO ₃ ⁻ B	45(max)	3.6
18.	Ammonical Nitrogen as NH ₃ -N	mg/l	APHA 4500 NH ₃ C	0.5(max)	BDL
19.	Hexavalent Chromium as Cr ⁶⁺	mg/l	APHA 3500 Cr B	--	BDL
20.	Phenolic Compounds as C ₆ H ₅ OH	mg/l	APHA 5530-B, D	0.001(max)	BDL
21.	Cyanide as CN	mg/l	APHA 4500 CN ⁻ C E	0.05(max)	BDL
22.	Sodium as Na	mg/l	APHA 3500 Na, B	---	6.0
23.	Potassium as K	mg/l	APHA 3500K, B	---	2.7
24.	Copper as Cu	mg/l	APHA 3111 B	0.05(max)	BDL
25.	Iron as Fe	mg/l	APHA 3111 B	1.0(max)	0.21
26.	Manganese as Mn	mg/l	APHA 3111 B	0.1(max)	BDL
27.	Mercury as Hg	mg/l	APHA 3112 B	0.001(max)	BDL
28.	Cadmium as Cd	mg/l	APHA 3111 B	0.003(max)	BDL



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

29.	Selenium as Se	mg/l	APHA 3500 Se C	0.01(max)	BDL
30.	Arsenic as As	mg/l	APHA 3500 As	0.01(max)	BDL
31.	Lead as Pb	mg/l	APHA 3111 B	0.01(max)	BDL
32.	Zinc as Zn	mg/l	APHA 3111 B	5.0(max)	0.20
33.	Nickel as Ni	mg/l	APHA 3111 B	0.02(max)	BDL
34.	Total Chromium as Cr	mg/l	APHA 3111 B	0.05(max)	BDL
35.	Boron as B	mg/l	APHA 4500 B, B	0.5(max)	BDL
36.	Silver as Ag	mg/l	APHA 3111 B	0.1(max)	BDL
37.	Barium as Ba	mg/l	APHA 3111 B	0.7(max)	BDL
38.	Aluminium as Al	mg/l	APHA 3500 Al B	0.2(max)	BDL
39.	Anionic detergent as MBAS	mg/l	APHA 5540 C	1.0(max)	ND
40.	Mineral Oil	mg/l	APHA 5220 B	0.5(max)	ND
41.	Total Coli form	MPN/ 100ml	APHA 9221 B	Shall not be detectable in any 100 ml	<1.1
42.	E.Coli	MPN/ 100ml	APHA 9221 E	Shall not be detectable in any 100 ml	Absent
43.	Feacal Coli form	MPN/ 100ml	APHA 9221 F	---	<1.1
44.	Pesticides	mg/l	APHA 6630 C	---	Absent

BDL Value: Cu <0.02mg/l, Al <0.1mg/l, B <0.1mg/l, Ba <0.1mg/l, Mn <0.05mg/l, Hg <0.002 mg/l, Cd <0.01 mg/l, Se <0.001 mg/l, As <0.004 mg/l, Pb <0.01mg/l, Ni <0.05 mg/l, Cr <0.05mg/l, NH₃-N < 0.1mg/l, Cr⁶⁺ <0.01mg/l, Phenol <0.05mg/l, CN <0.01mg/l, Ag <0.1mg/l, TC & FC : MPN/100 ml < 1.1 (0-0-0)





Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13833

Date: 06.02.2024

SURFACE WATER QUALITY REPORT JAN-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Name of the Location : SW-1: Garia Nallah U/S (Durubaga Village)
: SW-2: Garia Nallah D/S (Dulanga Village)
4. Location Co-ordinates : SW-1: 21° 56' 55.5288" N, 83° 50' 33.9036" E
: SW-2: 21° 56' 37.644" N, 83° 47' 34.5444" E
5. Date of Sampling : 24.01.2024
6. Date of Receiving : 25.01.2024
7. Date of Analysis : 25.01.2024 TO 31.01.2024
8. Sample Collected By : VCSPL Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results	
					SW-1	SW-2
1	pH (at 25 °C)	APHA 4500H+ B	--	6.0-9.0	7.26	7.33
2	Colour	APHA 2120 B	Hazen	300 (max)	10	15
3	Total Dissolved Solids	APHA 2540 C	mg/l	1500 (max)	285.0	221.0
4	Dissolved Oxygen	APHA 4500 O. C	mg/l	4 (min)	3.4	4.2
5	BOD (3) days at 27 °C	IS 3025 (Part 44):1993	mg/l	3 (max)	2.6	3.0
6	Chloride	APHA 4500Cl- B	mg/l	600 (max)	28.5	31.5
7	Fluoride as F	APHA 4500 F- C, D	mg/l	1.5 (max)	0.19	0.23
8	Sulphates (SO ₄)	APHA 4500 SO ₄ - E	mg/l	400 (max)	11.8	13.2
9	Nitrate as NO ₃	APHA 4500 NO ₃ - B	mg/l	50 (max)	2.4	2.6
10	Phenolic Compounds as C ₆ H ₅ OH	APHA 5530-B, D	mg/l	0.005 (max)	BDL	BDL
11	Hexa Chromium as Cr ⁺⁶	APHA 3500Cr B	mg/l	0.05	BDL	BDL
12	Cyanide as CN	APHA 4500 CN- C, E	mg/l	0.05(max)	ND	ND
13	Copper as Cu	APHA 3111 B	mg/l	1.5 (max)	BDL	BDL
14	Iron as Fe	APHA 3111 B	mg/l	0.5 (max)	0.21	0.23
15	Cadmium as Cd	APHA 3111 B	mg/l	0.01 (max)	BDL	BDL
16	Selenium as Se	APHA 3500 Se C	mg/l	0.05 (max)	BDL	BDL
17	Arsenic as As	APHA 3500 As	mg/l	0.2 (max)	BDL	BDL
18	Lead as Pb(max)	APHA 3111 B	mg/l	0.1 (max)	BDL	BDL
19	Zinc as Zn(max)	APHA 3111 B	mg/l	15 (max)	BDL	BDL
20	Anionic Detergents	APHA 5540 C	mg/l	1.0 (max)	BDL	BDL
21	Total Coli form	APHA 9221 B	MPN/100 ml	5000	280	320

BDL Value: Cu <0.02mg/l, Cd <0.01 mg/l, Se <0.001 mg/l, As <0.004 mg/l, Pb<0.01mg/l, Cr <0.05mg/l, Cr⁺⁶<0.01mg/l, Phenol <0.05mg/l BOD<1.0 mg/l, CN <0.01mg/l, Ba<0.1mg/l

Reviewed by:

Approved by:



- 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



Ref: Envlab/23-24/R-15823

Date: 06.02.2024

GROUND WATER LEVEL REPORT JANUARY-2024

1. Name of Project : **Manoharpur Open Cast Coal Mine Project**
2. Name of Industry : **Odisha Coal and Power Limited (OCPL), Sundargarh**

Sl. No.	Date of Monitoring	Sampling Location	Location Co-ordinates	Source	Water Level in meters
1	18.01.2024	Paramanandpur Village	21° 57' 18.1116" N 83° 45' 56.8764" E	Open well	3.5
2	18.01.2024	Kathapali Village	21° 56' 26.8044" N 83° 46' 8.9724" E	Open well	4.9
3	18.01.2024	Sangamuda Village	21° 57' 40.59" N 83° 47' 37.6404" E	Open well	2.8
4	18.01.2024	Kalamegha Village	21° 56' 54.6036" N 83° 50' 32.9892" E	Open well	4.0
5	18.01.2024	Sarbahal Village	21° 58' 20.5824" N 83° 48' 37.5408" E	Open well	5.6
6	18.01.2024	Kiripsira Village	21° 59' 32.4126" N 83° 46' 42.3726" E	Open well	3.2



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/R-15824

Dates: 06.02.2024

GROUND WATER LEVEL REPORT JANUARY-2024

1. Name of Project : Manoharpur Open Cast Coal Mine Project
2. Name of Industry : Odisha Coal and Power Limited (OCPL), Sundargarh

Sl. No.	Date of Monitoring	Sampling Location	Location Co-ordinates	Source	Water Level in meters
1	18.01.2024	Paramanandpur Near T10 benchmark pillar	21° 96' 03.5311" N 83° 76' 34.4613" E	Bore well	25.3
2	18.01.2024	Paramanandpur Near T10 benchmark pillar	21° 96' 02.695" N 83° 76' 35.2973" E	Bore well	25.7
3	18.01.2024	Near Kathapali (Pillar showing Beldihi -4km)	21° 94' 04.7751" N 83° 77' 42.0145" E	Bore well	5.1
4	18.01.2024	Near Kathapali Village	21° 56' 26.8044" N 83° 46' 08.9724" E	Bore well	5.3

Reviewed by:



Approved by:





Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018
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

Ref: Envlab/23-24/TR-13836

Date: 06.02.2024

NOISE MONITORING REPORT JANUARY-2024

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh

Location ID	Date of Recording	Location	Location Co-ordinates	Day time Equivalent	Night time Equivalent
				Noise Level in dB(A) leq	
CORE ZONE					
N-1	08.01.2024	Near OB Dump-I	21° 56' 57.6996" N 83° 47' 46.1436" E	71.8	65.2
N-2	15.01.2024	Near OB Dump-II	21° 57' 46.71" N 83° 47' 5.352" E	70.1	61.9
N-3	22.01.2024	CHP OCPL Office	21° 58' 4.782" N 83° 47' 56.0616" E	72.2	60.8
N-4	29.01.2024	Near Pit Area	21° 57' 18.97121" N 83° 46' 47.65163" E	69.5	63.8
BUFFER ZONE					
N-5	02.01.2024	Kalamegha Village	21° 56' 55.5288" N 83° 50' 33.9036" E	53.2	42.1
N-6	09.01.2024	Paramanandpur Village	21° 57' 15.7464" N 83° 45' 54.8172" E	52.5	42.9
N-7	16.01.2024	Sarbahal Village OCPL Mines Colony	21° 58' 4.7388" N, 83° 48' 35.91187" E	51.8	43.6
N-8	23.01.2024	Kiripsira Village	21° 59' 22.6788" N 83° 46' 47.2368" E	52.3	43.2
Standard as per CPCB	Industrial Area			75	70
	Residential Area			55	45



Reviewed by:



Approved by:



Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

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

Ref: Envlab/23-24/TR-13833

Date: 06.02.2024

SURFACE WATER QUALITY REPORT JAN-2024 (BUFFER ZONE)

1. Name of Project : Manoharpur Open Cast Coal Mine Project (8 MTPA)
2. Name of Customer : Odisha Coal and Power Limited (OCPL), Sundargarh
3. Name of the Location : SW-1: Garia Nallah U/S (Durubaga Village)
: SW-2: Garia Nallah D/S (Dulanga Village)
4. Location Co-ordinates : SW-1: 21° 56' 55.5288" N, 83° 50' 33.9036" E
: SW-2: 21° 56' 37.644" N, 83° 47' 34.5444" E
5. Date of Sampling : 24.01.2024
6. Date of Receiving : 25.01.2024
7. Date of Analysis : 25.01.2024 TO 31.01.2024
8. Sample Collected By : VCSPL Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results	
					SW-1	SW-2
1	pH (at 25 °C)	APHA 4500H+ B	--	6.0-9.0	7.26	7.33
2	Colour	APHA 2120 B	Hazen	300 (max)	10	15
3	Total Dissolved Solids	APHA 2540 C	mg/l	1500 (max)	285.0	221.0
4	Dissolved Oxygen	APHA 4500 O. C	mg/l	4 (min)	3.4	4.2
5	BOD (3) days at 27 °C	IS 3025 (Part 44):1993	mg/l	3 (max)	2.6	3.0
6	Chloride	APHA 4500Cl- B	mg/l	600 (max)	28.5	31.5
7	Fluoride as F	APHA 4500 F- C, D	mg/l	1.5 (max)	0.19	0.23
8	Sulphates (SO ₄)	APHA 4500 SO ₄ - E	mg/l	400 (max)	11.8	13.2
9	Nitrate as NO ₃	APHA 4500 NO ₃ - B	mg/l	50 (max)	2.4	2.6
10	Phenolic Compounds as C ₆ H ₅ OH	APHA 5530-B, D	mg/l	0.005 (max)	BDL	BDL
11	Hexa Chromium as Cr ⁺⁶	APHA 3500Cr B	mg/l	0.05	BDL	BDL
12	Cyanide as CN	APHA 4500 CN- C, E	mg/l	0.05(max)	ND	ND
13	Copper as Cu	APHA 3111 B	mg/l	1.5 (max)	BDL	BDL
14	Iron as Fe	APHA 3111 B	mg/l	0.5 (max)	0.21	0.23
15	Cadmium as Cd	APHA 3111 B	mg/l	0.01 (max)	BDL	BDL
16	Selenium as Se	APHA 3500 Se C	mg/l	0.05 (max)	BDL	BDL
17	Arsenic as As	APHA 3500 As	mg/l	0.2 (max)	BDL	BDL
18	Lead as Pb(max)	APHA 3111 B	mg/l	0.1 (max)	BDL	BDL
19	Zinc as Zn(max)	APHA 3111 B	mg/l	15 (max)	BDL	BDL
20	Anionic Detergents	APHA 5540 C	mg/l	1.0 (max)	BDL	BDL
21	Total Coli form	APHA 9221 B	MPN/100 ml	5000	280	320

BDL Value: Cu <0.02mg/l, Cd <0.01 mg/l, Se <0.001 mg/l, As <0.004 mg/l, Pb<0.01mg/l, Cr <0.05mg/l, Cr⁺⁶<0.01mg/l, Phenol <0.05mg/l BOD<1.0 mg/l, CN <0.01mg/l, Ba<0.1mg/l

Reviewed by:

Approved by: