Six Monthly Environmental clearance Compliance of Cluster IV for the period from April-Sept 2018

SL. No.	Mining	Compliance
1	Mining shall be carried out under strict adherence to provisions of the Mines Act, 1952 and subordinate legislations made there-under as applicable.	It is being Complied.
2	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).	It is being Complied.
3	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980	There is no forest land existing under the leasehold of Cluster IV.
4	No change in mining method i.e. UG to OC, calendar programme and scope of work shall be made without obtaining prior approval of the Ministry of Environment, Forests and Climate Change (MoEFCC).	It is being Complied.
5	Underground work place environmental conditions shall be rendered ergonomic and air breathable with adequate illumination in conformance with DGMS standards.	It is being Complied.
	Land reclamation and water conservation	
1	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 the Ministry of Environment, Forest and Climate Change from time to time shall be submitted to MoEFCC/Regional Office.	The proponent has got a study carried out through NRSC Hyderabad. NRSC has been awarded the work to prepare time series map by isothermal mapping after getting EC vide BCCL/D(T) OP/F-Env/2012/148(A) dated 11.02.2013. The last report was submitted by NRSC on April, 2014. The report concluded that there is a decrease in areal extent of fire from 3.01 sq.km. in 2006 to 2.18 sq.km. in 2012 based on the satellite data available for Dec, 2012 and validation by ground truth in done in the year 2013. A Global EOI was floated to control fire in Jharia Coalfield. Two parties participated. The technical committee did not find the international parties had expertise in controlling liquidating mine fire. It is informed to HPCC of MoC. Presently, Study is being done by ISM Dhanbad & CIMFR, Dhanbad. All unworked pit and incline has been sealed to protect entry of air to fire area.

2	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/EIAIEMP report and with due approval of the concerned State/Go I 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.	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, has been prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses is being done as per the approved Mining Plan/EIAIEMP report and with due approval of the concerned State/Go I Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine is as per the approved Mining Plan and as per the permission of DGMS or any other authority as prescribed by the law.
3	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. Post-mining 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 2ih August, 2009.	The final mine void depth will preferably be as per the approved Mine Closure Plan. At the end of mining all the remaining excavated area will be leveled and reclaimed physically as well as Biologically. Till date 12.12 ha area has been reclaimed. Reclamation of 3.58 Ha areas is in progress.
4	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.	The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan is being in conformity. Land use pattern has been submitted to ministry. Till date 12.12 ha area has been reclaimed. Reclamation of 3.58 Ha areas is in progress.
5	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 S.0.2804 (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 or stowing of mines. Compliance report shall be submitted to Regional Office of MoEF&CC, CPCB and SPCB.	There is no generation of fly ash in cluster IV.

6	It shall be ensured that as per the time schedule specified in mine closure plan it should remain live till the point of utilization. The top soil 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.	It is being Complied. 2 OB dump have been stabilized and re-vegetated through eco-restoration process (one 3.4 hectare and another 3.02 hectare). Flora and fauna can be seen at the said site. Backfilling of quarry is going on with mining operation. Stabilization and re-vegetation of another Ecological Restoration site of 3.58 Ha areas is in line. At the end of mining there shall be no void and external OB dumps, area will be re- vegetated and reclaimed.
7	Post-mining land shall be rendered usable for agricultural/forestry purposes and handed over to the respective State Government, as specified in the Ministry of Coal Guidelines dated 27th August, 2009 for Preparation of Mine Closure Plan.	It will be complied.
8	Regular monitoring of subsidence movement on the surface over and around the working areas and its impact on natural drainage pattern, water bodies, vegetation, structure, roads and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence beyond the limit prescribed, appropriate effective mitigation measures shall be taken to avoid loss of life and materials. Cracks should be effectively plugged in with ballast and clay soil/suitable material.	No depillaring in underground mine is going on hence no mining induced subsidence is taking place. Regular monitoring of the area is being done by mine officials in this regard.
9	A separate team for subsidence monitoring and surface mitigation measures shall be constituted and continuous monitoring & implementation of mitigation measures be carried out.	It is being complied. A Certificate of Project Officers and General Manager of the Cluster IV, indicating no subsidence due to mining operation has been submitted.
10	Thorough inspection of the mine lease area for any cracks developed at the surface due to mining activities below ground shall be carried out to prevent inrush of water in the mine.	It is being complied.
11	Native tree species shall be selected and planted over areas affected by subsidence.	Plants like seesam, Gamhar, Aam, Peepal,Bargad, Sagwan, Kathal etc. has been planted over areas likely to be affected by subsidence.

	Emissions, effluents, and waste disposal	
1	Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun etc shall be carried out in critical areas prone to air pollution (with higher values of PM1Q/PM2.s)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.	Vehicular emission is kept under control by proper maintenance of vehicles. Vehicular emissions are being monitored in every prescribed period. Only those vehicles are being allowed to run having PUC. In addition to the above coal transportation is done by tarpaulins covered and optimally loaded vehicles. The project authorities are regularly checking all the loaded trucks/dumpers coming inside the plant about their valid PUC.
2	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.	Three tier plantations at 12.12 Ha areas at mine lease area have been done. Reclamation of 3.58 Ha areas is in progress. 1785 Nos of Bamboo gabion plantation has also been done along mine boundary. Remaining area will be 3 tiers ecologically restored.
3	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.	It is being complied.
4	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.	Vehicular emissions are being monitored in every prescribed period. Only those vehicles are being allowed to run having PUC. In addition to the above coal transportation is done by tarpaulins covered and optimally loaded vehicles. The project authorities are regularly checking all the loaded trucks/dumpers coming inside the plant about their valid PUC.
5	Coal stock pile/crusher/feeder and breaker material transfer points 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.	It is being complied. Dust suppression arrangement has been made at crusher. Installation of Belt conveyor system may leads to fire Hazard as the existence of fiery coal seam in our command area.
6	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.	It is being complied. Dust suppression arrangement has been made at coal Handling plants.

7	Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.	It is being complied. Regular monitoring of ground water level and quality are being monitored by CMPDIL, Ranchi. Rain water Harvesting arrangement has been made.
8	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.	It is being complied.
9	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).	Five nos of Rain water Harvesting pond has been created. Water are being supplying to nearby villages as per requirement.
10	Solid waste/hazardous waste generated in the mines shall be addressed in accordance to the MSW Rules, 2016.	It is being complied. Solid waste/hazardous waste generated in the mines is being addressed in accordance to the MSW Rules, 2016.
11	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.	It is being complied. Pumped out water are being utilized for water sprinkling on haul road, green belt development.
12	Major approach roads shall be black topped and properly maintained.	It is being complied.
13	The project proponent shall not alter major water channels around the site. Appropriate embankment shall be provided along the side of the river/nallah flowing near or adjacent to the mine. The embankment constructed along the river/nallah boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side, stabilized with plantation so as to withstand the peak water pressure preventing any chance of mine inundation.	The embankment constructed along the river boundary is of suitable dimension and critical patches has been strengthened by concreting and stone pitching as per design made by Central Mine Planning and Design Institute Limited (CMPDIL) on the river front side and stabilized with plantation to withstand the peak water flow and prevent mine inundation. Construction of concrete embankment at critical patch of nallah/Jore has been done. Total length of constructed embankment is 3000 meter.

14	Garland drains (of suitable size, gradient and length) around the critical areas i.e. mine shaft and low lying areas, shall be designed keeping at least 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine sites. The sump capacity shall also provide adequate retention period to allow proper settling of silt material of the surface runoff.	It is being complied. Garland drains (of suitable size, gradient and length) around the critical areas i.e. mine shaft and low lying areas, has been designed.
15	Industrial waste water from coal handling plant and mine water shall be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made thereunder, and as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluent. Sewage treatment plant of adequate capacity shall be installed for treatment of domestic waste water.	It is being complied. Oil and grease trap has been installed before discharge of workshop effluent at AKWMC Katras Area. Installation of sewage treatment plant is under process.
	Illumination, noise & vibration	
1	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 & its RO on six-monthly basis.	It is being complied. The report on the same will be submitted to ministry.
2	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.	Personnel operating near HEMMs, drilling machine comply with safety regulation and are equipped with Personal Protective Equipment. Awareness programmes are being given to all the personnel at Vocational training centre and mine site.
3	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.	It is being complied. Controlled blasting techniques are being practiced in order to mitigate ground vibrations, fly rocks, noise and air blast etc. as per the guidelines prescribed by the DGMS.
4	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.	It is being complied. Noise level is being monitored by CMPDIL.
	Occupational health & safety	
1	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.	It is being complied. Initial Medical Examination (IME) and Periodical Medical Examination (PME) of all the personnel are carried out as per the Statutes and Director General of Mines Safety (DGMS) guideline.

2	Personnel working in core zone shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.	Training and awareness programmes are being given to all the personnel working in dusty areas. All personnel working in such areas are also provided with mask to wear themselves.
	Ecosystem and biodiversity conservation	
1	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.	Ecological restoration are being done in consultation with FRI, dehradun. Road Map of Ecological restoration has been made and submitted to ministry.
2	The project proponent shall take all precautionary measures to ensure riverine/riparian ecosystem in and around the coal mine upto a distance of 5 km. A riverine/riparian ecosystem conservation and management plan should be prepared and implemented in consultation with the irrigation/water resource department in the State Government.	Monitoring of river water are being done regularly. Special affords has been made for cleaning of river water, drives like swachhta pakhwada are being organised regularly.
	Public Hearing, R&R and CSR	
1	Implementation of the 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 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 GovernmenUCentral Government, as applicable.	It is being complied. Compliance report of public hearing has been sent to ministry. Land oustees are getting their compensation as per norms laid down in R&R policy of the company.
2	The project proponent shall ensure the expenditure towards socio-economic development in and around the mine every financial year in pursuance of the Corporate Social Responsibility Policy as per the provisions under Section 135 of the Companies Act, 2013.	It is being complied. Expenditure towards socio-economic development has been ensured.
3	The project proponent shall follow the mitigation measures provided in this Ministry's OM NO.Z-11013/5712014-IA.11 (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'.	It is being complied.
4	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.	No grazing land is involved in core zone.

	Corporate environment responsibility	
1	The Company shall have a well laid down environment policy duly approved by Board of Directors. The environment 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 or forest norms/conditions. Also, the company shall have a defined system of reporting of non-compliances/violations of environmental norms to the Board of Directors and/or shareholders/stakeholders.	It is being complied. Corporate Environmental policy has been made, approved by CMD of M/s BCCL and it is being implemented. Environment management cell has also been made to ensure implementation of environmental management plan.
2	The project proponent shall comply with the provisions contained in this Ministry's OM dated 1st May, 2018, as applicable, regarding Corporate Environment Responsibility.	It is being complied. Corporate Environmental policy has been made, approved by CMD of M/s BCCL and it is being implemented.
3	A separate environmental management cell both at the project and company headquarter level, with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Board level executive/Head of the Organization.	It is being Complied. A separate Environment management cell has been made to ensure implementation of environmental management plan.
4	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.	It is being complied. Action plan has been submitted to ministry, work is being done accordingly. Year wise funds earmarked for environmental protection measure has been kept separately.
5	Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.	It is being complied. CCO has been engaged for the audit of plantation done per year.
6	Skill training as per safety norms specified by DGMS shall be provided to all workmen including the outsourcing employees to ensure high safety standards in mines.	Skill training as per safety norms specified by DGMS are being provided to all workmen including the outsourcing employees to ensure high safety standards in mines.
7	Effective arrangement shall be made to provide and maintain at suitable points conveniently situated, a sufficient supply of drinking water for all the persons employed.	It is being Complied.
	Statutory Obligations	
1	This environmental clearance shall be subject to obtaining Forest Clearance from the concerned regulatory authority, Wildlife clearance from the Standing Committee of National Board for Wildlife, as applicable to the project.	There is no forest land existing under the leasehold of Cluster IV.
2	The project proponent shall obtain the necessary permission from the Central Ground Water Authority (CGWA) if applicable.	It is being Complied. Application has been made to CGWA. Application is attached as annexure-I

3	The Environmental clearance shall be subject to orders of Hon'ble Supreme Court of India, Hon'ble High Courts, NGT and any other Court of Law, from time to time, and as applicable to the project.	It is being complied.
4	The project proponent shall obtain Consent to Establish/Operate under the Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from concerned SPCB.	It is being complied.
	Monitoring of project	
1	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 PM1o, PM2.5, S02 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. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months.	Location of Monitoring station in the Jharia Coal Field have been finalized with the Jharkhand State Pollution Control Board. Four ambient air quality monitoring station has been established at AARC agent office (Ramkanali), Mine office - Kooridih OCP, Mine office- Nichitpur and RudhiBasti. Presently we are doing air quality monitoring at five locations namely Katras Chatudih, AARC agent office (Ramkanali), Mine office - Kooridih OCP, Mine office- Nichitpur and RudhiBasti. Monitoring data regularly submitted to the Ministry including its Regional Office at Ranchi. Monitoring of air quality is being done by Central Mining & Planning Design Institute (CMPDIL), Dhanbad.
2	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 25.9.2000 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.	It is being complied. CMPDIL has been engaged for Air Quality monitoring as well as heavy mentals. monitoring report attached as annexure-II
3	The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Water Act, 1974 Coal Industry Standards vide GSR 742 (E) dated zs" September, 2000 and as amended from time to time by the Central Pollution Control Board.	Monitoring of River water are being done by CMPDIL regularly in Upstream and Downstream.
4	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 the Ministry shall also be referred in this regard for compliance.	It is being complied.

5	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 and water quality once a year, and the data thus collected shall be sent regularly to MoEFCC/RO.	Tender was done on 28.04.2017.only one bidder applied who could not fulfill the eligibility criteria. Hence that tender was cancelled and retendering in process. At present Regular monitoring of ground water level and quality are being monitored by CMPDIL, Ranchi.
6	Monitoring of water quality upstream and downstream of water bodies 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.	It is being complied. Monitoring of water quality upstream and downstream of water bodies is being carried out once in six months and record of monitoring data has been maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office.
7	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental conditions to the MOEFCC/RO. For half yearly monitoring reports, the data should be monitored for the period of April to September and October to March of the financial years.	It is being Complied. Six monthly reports on the status of the implementation of the stipulated environmental conditions are being submitted to the MOEFCC/RO.
8	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.	It is being complied.
	Miscellaneous	
1	Efforts should be made to reduce energy consumption by conservation, efficiency improvements and use of renewable energy.	LED bulb has been distributed among employees. Training has also been provided regarding the same. Installation of Solar power plant is in line.
2	The project authorities shall inform to the Regional Office of the MOEFCC regarding commencement of mining operations.	It is being Complied.
3	A copy of the environmental clearance shall be marked to concerned Panchayat. A copy of the same shall also be sent to the concerned State Pollution Control Board, Regional Office of the MOEFCC, District Industries Centre and Collector's OfficelTehsildar Office for information in public domain within 30 days.	It is being complied.
4	The EC shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain.	It is being Complied. EC has uploaded on the company's website. Six monthly compliance status are also being uploaded on company's website.
5	The project authorities shall advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of this Ministry at www.environmentclearance.nic.in and a copy of the same shall be forwarded to the Regional Office.	It is being Complied.

6	The environmental statement for each financial year ending 31st March in Form-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF&CC by email.	It is being Complied.
7	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report and also that during their presentation to the EAC.	It is being Complied. EIA/EMP is being implemented.
8	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in revocation of this EC and attract action under the provisions of Environment (Protection) Act, 1986.	Agreed.
9	The above conditions will be enforced inter-alia, under the provrsrons of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 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.	Agreed.
10	Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely particulates, S02 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive receptors in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc. to be carried out at least once in six months. Online ambient air quality monitoring station/stations may also be installed in addition to the regular air monitoring stations as per the requirement and/or in consultation with the SPCB.	Location of Monitoring station in the Jharia Coal Field have been finalized with the Jharkhand State Pollution Control Board. Four ambient air quality monitoring station has been established at AARC agent office (Ramkanali), Mine office - Kooridih OCP, Mine office- Nichitpur and RudhiBasti. Presently we are doing air quality monitoring at five locations namely Katras Chatudih, AARC agent office (Ramkanali), Mine office - Kooridih OCP, Mine office-Nichitpur and RudhiBasti. Monitoring data regularly submitted to the Ministry including its Regional Office at Ranchi. Monitoring of air quality is being done by Central Mining & Planning Design Institute (CMPDIL), Dhanbad.

14/12/18

General Manager
Katras Area

Ritesh

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/320/JH/MIN/2018

1.	**General Information:**	
	Water Quality:	Fresh Water
	Whether Ground Water Utilization for:	Existing Industry
	Date of Commencement Mine/Project:	06/02/2013
	Date of Expansion:	
	Application Type Category/ Type of Application	Coal
2.	**Name of Mine/Project:**	CLUSTER IV MINES OF BCCL
3.	**Location Details of the Mining Unit- (Attach Site, Approved Mining Plan) ($) :**	
	Address Line 1 :	OFFICE OF THE GENERAL MANAGER, KATRAS AREA, M/S BCCL
	Address Line 2 :	PO- SIJUA
	Address Line 3 :	
	State:	JHARKHAND
	District:	DHANBAD
	Sub-District:	BAGHMARA
	Village/Town:	Malkera (CT)
	Latitude:	23.490000
	Longitude	86.200000
	Area Type :	Non-Notified
	Area Type Category :	Over Exploited
4.	**Communication Address**	
	Address Line 1:	OFFICE OF GENERAL MANAGER, KATRAS AREA, M/S BCCL
	Address Line 2:	POST OFFICE- SIJUA
	Address Line 3:	
	State:	JHARKHAND
	District:	DHANBAD
	Sub-District:	DHANBAD
	Pincode:	828121
	Phone Number with Area Code:	
	Mobile Number:	91 9470599350
	Fax Number:	
	E-Mail:	riteshranjan09@gmail.com
5.	**Salient Features of the Activity:**	
	Cluster-IV consist of five collieries(Amalgamated Keshalpur and West Mudidih Colliery, Amalgamated Angarpathra Ramkanali Colliery, Katras Choitudih Colliery, Salanpur Colliery and Gaslitand Colliery) is under the administrative control of Katras Area of Bharat Coking Coal Limited. The normative capacity is 7.34 MTY and peak capacity is 9.55 MTY. Total leasehold area is 1123.79 Ha. Cluster-IV mines produce steel grade-II to washery grade-IV coal. The total volume of Overburden (OB) is 176.685 MCM	

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/320/JH/MIN/2018

6. Land Use Details of the Surroundings (km 10 Radius – Outside): ($)

Land Use Details of the Surroundings(km 10 radius):

7. Land Use Detail of Project Area

Land Use Details	Existing (sq meter)	Proposed (sq meter)	Grand Total (sq meter)
Green Belt Area	746700.00	4303900.00	5050600.00
Open Land	4951900.00	0.00	4951900.00
Road/ Paved Area	1065200.00	0.00	1065200.00
Rooftop area of building/ sheds	170200.00	0.00	170200.00
Total	6934000.00	4303900.00	11237900.00

8. Topography of the Area		
a)	**Regional**	Gently undulating terrain with highest elevation in the northern metamorphic area and sloping towards south i.e towards Damodar River. General elevation ranges from 140 m to 280 m above mean sea level (AMSL). The highest elevation observed in the northern areas and the lowest elevation observed near the Damodar River in the extreme south-east of buffer zone.
b)	**Project Area**	The topography of the Cluster-IV mining area is generally undulating with general slope towards south-west. The ground elevation in the area ranges from 182 m to 216 m AMSL. The highest ground elevation is observed at the eastern part and lowest along the bank of Katri River. The topography of the area has been disturbed due to both underground and opencast mining.
9. Drainage in the Area (River / Nala etc)		
a)	**Regional**	In the eastern part of the buffer zone Kari Jore, Jarian Nala, Ekra Jore is flowing from north to south and meets Damodar River. In the central part Katri River and Kumari Jore flowing from north to south and joins Khudia River. In the western part of the buffer zone, Khudia River, Bagdihi Jore is flowing from north-west to south and discharged to Damodar River. Damodar River is the master drainage in the area which flowing at a distance of 7.50 km from the project boundary.
b)	**Project Area**	The area under Cluster-IV is drained into Katri River and Kumari Jore through seasonal small streams. Katri River which is a 3rd order stream, flowing across the mine area, and joined the Khudia River towards south-east at a distance of 3.20 km from the southern-most part of the project. Another local nala (Kumari Jore) which is a 2nd order stream joined the Katri River in the central part of the project. Besides these streams, there are number of small ponds in the area.
10.	**Source of Availability of Surface Water – Furnish Details:**	No proposal for utilization of surface water
11.	**Average Annual Rainfall in the Area (in mm):**	1260.00
12.	**Townships/Villages within 10 km radius of the Project:**	Buffer Zone- 41 Villages, Core Zone- 01 village

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/320/JH/MIN/2018

13.	**Whether the Groundwater Table will be Intersected by Activity :-**			Yes
	(a)	**At What Depth (m bgl)**	**Pre-monsoon**	**Post-monsoon**
		Minimum (m bgl)	2.35	0.55
		Maximum (m bgl)	8.93	4.48
	(b)	**Maximum Depth Proposed to Dewater (m bgl)**	300.00	
	(c)	**Groundwater Flow Direction (Attach Map)($)**	North to South	
	(d)	**Any Other Information**	Radius of Influence (300 m to 475 m)	
14.	**Total Water Requirment for various Purpose to be Mentioned**		**(m3/day)**	**(m3/year)**
	Ground Water Required through Abstract Structure		40.00	14600.00
	Ground Water Abstracted on account of Dewatering / Mining Seepage		5900.00	2153500.00
	Total Ground Water Withdrawal		5940.00	2168100.00

15. Details of De-Watering Structure

(a) De-Watering Existing Structure

Number of Existing Structures: 2

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA /If so Details Thereof
1	Mine Pumps / -	- / -		1000.00	6 / 365	Submersible Pump		No	No / -
2	Dugwell / -	- / -		4.00	10 / 365			No	No / -

(b) De-Watering Requirment and Proposed Structure Detail

Number of Proposed Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

16. Proposed Utilization of Pumped Water (Please Attach Details)(m3/year) ($)

(a)	**Domestic Use in Mines**	398945.00	Include haul road washing,HEMM,and Fire Fighting, required during mining activity
(b)	**Water Supply**	986869.00	water supply to quarters(for bath/wash and other domestic activity), service buildings and others
(c)	**Agriculture**	259150.00	water supply is being done in nearby villages for agriculture purpose.

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/320/JH/MIN/2018

	(d)	**Green Belt Development**	106580.00	Include plantation and green belt development within the core mining area
	(e)	**Suppression of Dust**	40150.00	water sprinklers are being utilized for dust suppression.
	(f)	**Recharge**	362080.00	Artificial ground water recharge structure are developed.
	(g)	**Any Other Item**		

17.	**Monitoring of Ground Water Regime (Attach Map($))**		
	(a)	**Location Details of the Wells / Piezometers (Latitute, Longitude, Reduced Level)**	Attached as Annexure-I
	(b)	**Number of Wells / Piezometers**	Dug well Buffer zone- 82 Dug well in Core zone 09
	(c)	**Attach Details of GW Level of Observation Wells / Piezometers(At Least for One Year)($)**	Attached as Annexure-II
	(d)	**Number of Wells / Piezometers Proposed to Monitor**	Dug well (Buffer zone)- 82 nos Dug well (Core zone)- 09 nos Piezometer (proposed)- 02 nos
	(e)	**Number of Piezometers Proposed to Monitor to Construct in Surroundings**	Piezometer-02 no.
	(f)	**General Water Quality Report from NABL accredited lab(in the Arae and Surroundings) ($)**	Attached as Annexure-III
	(g)	**Any Other Item**	No

18. Proposed Pump / Pumping Groundwater Outside the Mine Pit for Domestic or Other Use (If so, give Details):

Number of Existing Structures: 0

SNo.	**Type of Structure Name / Year of Construction**	**Depth (Meter) / Diameter (mm)**	**Depth to Water Level (Meters below Ground Level)**	**Discharge (m3/Hour)**	**Operational Hours (Day) / Days (Year)**	**Mode of Lift Name**	**Horse Power of Pump**	**Whether fitted with Water Meter**	**Whether Permission Registered with CGWA/If so Details Thereof**

Number of Proposed Structures: 0

SNo.	**Type of Structure Name / Year of Construction**	**Depth (Meter) / Diameter (mm)**	**Depth to Water Level (Meters below Ground Level)**	**Discharge (m3/Hour)**	**Operational Hours (Day) / Days (Year)**	**Mode of Lift Name**	**Horse Power of Pump**	**Whether fitted with Water Meter**	**Whether Permission Registered with CGWA/If so Details Thereof**

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/320/JH/MIN/2018

19.	**Groundwater Availability Report (Please Enclose a Comprehensive Report on Groundwater Condition / Groundwater Quality in and Around 5Km of the Area) Map showing location of groundwater regime monitoringwells, flow chart showing details of water requirment and recycle water use and gainfull of pumped water- ($)**	
	Enclosed as annexure-IV	
20.	**Details of Rainwater Harvesting / Artificial Recharge Measures for Groundwater Recharge in the Area. If already Implemented, details may be Furnished. (Attach Report on Comprehensive & Feasible Rainwater Harvesting / Recharge Proposal).- ($)**	
	Rain water harvesting and artificial recharge implemented within the premises.Details are enclosed as annexure-V	
21.	**TOR/EC/Approval letter from statutory bodies viz Ministry of Environment & Forest (MoEF) or State Pollution Control Board (SPCB) or State Level Expert Appraisal Committee(SEAC) or State Level Environment Impact Assessment Authority (SLEIAA)- ($)**	
	Attached Referral Letter No Record Found!	
	Letter Number	**J-11015/372/2013.IA-II(M)**
22.	**Have you Applied Earlier for the Same Purpose with CGWA / State Ground Water Authority:**	
	If Yes, so Details thereof with Status:	

MINING USE- Self Declaration

☑ It is to Certify that the Data and Information Furnished Above are True to the Best of My Knowledge and Belief and I am Aware that if any Part of the Data / Information Submitted is Found to be False or Misleading at any Stage the Application will be Rejected Out Rightly.

1. Application Proforma is subject to modification from time to time.

2. Application should be submitted to Regional Office.

Regional Director,Central Ground Water Board Mid Eastern Region, 6th & 7th Floor, Lok Nayak Jai Prakash Bhawan, Frazer Road Dak Banglow, PATNA, BIHAR, 800011

3. Incomplete Application will be Summarily Rejected.

Submitted Application will not be Processed till the Print Out of the Signed Complete Application is Submitted to Regional Office.

4. Applicant has to Submit Processing Fee of Rs. 1000.00/- (Rupees One Thousand Only) through NON TAX RECEIPT PORTAL (https://bharatkosh.gov.in). A receipt will be generated. Please fill in the Transaction Ref No. and Date from the receipt, in print out of application and attach receipt along with hard copy of application.

Bharatkosh Details:-

Transaction Ref Number:-	
Dated:-	

Note:- The Processing Fee is Non-Refundable. Applicant should ensure and Check Eligibility of Submission of Application and Required Documents before Submitting Online Application.

Attached Files:

1). Site Plan : (Refer 3)

No Attachment Found!

2). Approved Mining Plan : (Refer:3)

S.No	Attachment Name	File Name
1	Mining Plan	Mining Plan c.pdf

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/320/JH/MIN/2018

3). Toposketch of Surroundings 10 km Radius Outside : (Refer: 3)

No Attachment Found!

4). Document of Ownership of the land : (Refer-7)

No Attachment Found!

5). Source of Availability of Surface Water : (Refer-10)

No Attachment Found!

6). GroundWater flow Direction Map : (Refer: 13-C)

No Attachment Found!

7). Proposed Utilization of Pumped Water : (Refer: 16)

No Attachment Found!

8). Monitoring of Groundwater Regime Map : (Refer: 17)

No Attachment Found!

9). GW Level of Observation Wells / Piezometer : (Refer: 17-C)

No Attachment Found!

10). General Quality of Ground Water in the Area : (Refer: 17-f)

S.No	Attachment Name	File Name
1	Quality of GW,Annexure-III	annexure-III.pdf

11). Hydrogeological Report (Previous:Groundwater Availability Report) : (Refer: 19)

S.No	Attachment Name	File Name
1	Hydrological Report	final.pdf

12). Rain Water Harvesting/Artificial Recharge proposal (Previous:Details of Rainwater Harvesting and Artificial Recharge Measures) : (Refer: 20)

S.No	Attachment Name	File Name
1	Annexure-V	annexure-V.pdf

13). Authorization Letter (Previous:Authorization) :

S.No	Attachment Name	File Name
1	Authorization letter	IMG-20181116-WA0004.jpg

15). Extra Attachment :

S.No	Attachment Name	File Name
1	Annexure-I	annexure-1.pdf
2	Level of observation well,annexure-II	annexure-2.pdf
3	Comprehensive report of GW Condition,Annexure-IV	annexure-IV f.pdf

Application for Permission to Dewater Ground Water for Mining Industry (Application for New NOC)

Application Number : 21-4/320/JH/MIN/2018

16). Scanned Mining Application :

No Attachment Found!

17). TOR/EC/Approval Letter :

S.No	Attachment Name	File Name
1	Copy Of TOR	Tor-min.pdf

Date : Name & Signature of the applicant

Place : (With official seal)

Associated User : katrasarea

Submitted By User : katrasarea

Submission Date : 16/11/2018

* In case signed by any authorized signatory, the details of the signatory with the authorization shall be enclosed.

Annexure-II

STRICTLY RESTRICTED
FOR COMPANY USE ONLY RESTRICTED
The information given in this report is not to be communicated either directly or indirectly to the press or to any person not holding an official position in the CIL /GOVERNMENT.

ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED, CLUSTER – IV

(FOR THE MONTH SEPTEMBER, 2018)

E. C. no. J-11015/212/2010-IA.II (M) dated 06.02.2013.

CMPDI

ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CONTENTS

EXECUTIVE SUMMARY

1.0 Introduction

The purpose of environmental monitoring is to assess the quality of various attributes that affects the fauna and flora. In accordance with the quality of these attributes appropriate strategy is to be developed to control the pollution level within the permissible limits. The three major attributes are air, water and noise level.

Bharat Coking Coal Limited (BCCL), a Subsidiary company of Coal India Limited is operating Underground and Opencast Mines in Jharia Coalfield (JCF) is a part of Gondwana Coalfields located in Dhanbad district of Jharkhand, the JCF is bounded by $23^0$37' N to $23^0$52' N latitudes and $86^0$09' E to $86^0$30' E longitude occupying an area of 450 Sq.km. BCCL has awarded Environmental monitoring work of Jharia Coalfield (JCF) to Central Mine Planning & Design Institute Limited (CMPDIL). The environmental monitoring has been carried out as per the conditions laid down by the MoEF&CC while granting environmental clearance of project, consent letter issued by the respective SPCB, and other statutory requirements.

2.0 Sampling location and rationale

2.1 Ambient air sampling locations

The ambient air quality monitoring stations were selected to represent core, buffer zone area. The rationale has been based on the guidelines stipulated by MoEF&CC, consent letter of SPCB, as well as other statutory requirements.

2.2 Water sampling stations

The Water sampling stations were selected for mine sump water.

2.3 Noise level monitoring locations

Noise levels vary depending on the various activities in mining areas. The monitoring of noise level in different locations will be helpful to take appropriate mitigating measures. The rationale has been based on the guidelines stipulated by MoEF&CC, consent letter of SPCB, as well as other statutory requirements.

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM_{10}), Fine Particulate Matter ($PM_{2.5}$), Sulphur Di-oxide (SO_2) and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler ($PM_{2.5}$

sampler) were used for sampling of PM_{10}, SO_2, & NO_x and Fine Dust Sampler ($PM_{2.5}$ sampler) were used for sampling of $PM_{2.5}$ at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI, RI-II, DHanbad.

3.2 Water quality

Water samples were collected as per standard practice. The Mine effluent samples were collected and analysed for four parameters on fortnightly basis. Thereafter the samples were preserved and analysed at the Environmental Laboratory of CMPDI, RI- II, Dhanbad.

3.3 Noise level monitoring

Noise level measurements in form of 'L_{EQ}' were taken using Integrated Data Logging Sound Level Meter. Noise levels were measured in Decibels, 'A' weighted average, i.e. dB(A).

4.0 Results and interpretations

4.1 Air quality

It has been seen from the analysis results that the 24 hours average concentration parameters like PM_{10}, $PM_{2.5}$, SO_2 and NO_x are mostly within the permissible limits in all sampling locations as per MoEF&CC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines and National Ambient Air Quality Standard -2009. Sometimes the concentration of PM_{10}& $PM_{2.5}$ exceeds the limits due to heavy public traffic, poor road condition, coke oven plants, burning of coal by surrounding habitants, brick making, municipal waste dumps and industries like Steel Plant, thermal Plants including their fly ash etc.

The following preventive and suppressive mitigative measures can be undertaken to contain the pollution level within prescribed level:-

- Wet drilling and controlled blasting should be practice.
- Explosive used should be optimised to restrict the dust generation.
- Transportation roads should be permanently asphalted free of ruts, potholes etc.
- Water should be sprayed on coal transportation road, service road more frequently and at regular interval.
- Dust from roads should be removed physically or mechanically.
- Greenbelts around industrial sites, service building area besides Avenue plantation along roads should be created.
- Coal dust should be suppressed by using fixed sprinklers.
- Regular maintenance of plant and machinery should be undertaken.

4.2 Water quality

The test results indicate that the major parameters compared with MoEF&CC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines, are within permissible limits.

4.3 Noise Level

During the noise level survey it has been observed that the noise level in the sampling locations is within the permissible limits prescribed as per MoEF&CC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines for Industrial Area and Noise pollution (Regulation and Control) Rules, 2000.

INTRODUCTION

Any industry and development activities including coal mining is bound to affect environmental attributes. There are positive as well as negative impacts of such operations. For controlling the adverse impacts a regular monitoring is essential. The environmental monitoring is being done as per the guide-lines stipulated by Ministry of Environment, Forest and Climate Change (MoEF&CC), Govt. of India.

The very purpose of environmental monitoring is to assess the quality of various attributes which affects the environment. As per quality of these attributes appropriate strategy is to be developed to control the pollution level within the permissible limits. The three major attributes are air, water and noise level.

Bharat Coking Coal has awarded Environmental Monitoring work of all Projects, Cluster wise, to Central Mine Planning & Design Institute Limited (CMPDIL). The environmental monitoring has been carried out as per conditions laid down by MoEF&CC while granting environmental clearance to different projects. CMPDI has trained manpower and well equipped laboratory to carry out monitoring, analysis and R&D work in the field of environment.

The Cluster IV is in the Northern part of the Jharia coalfield.It includes SalanpurOCP, KatrasChoitodihUG, Amalgamated Keshalpur – West Mudidih OCP & UG Mines, Amalgamated Ramkanali – Angarpathra OCP & UG mines, Gaslitand UG. The cluster– IV is situated about 25 - 30kms from Dhanbad Railway Station. The mines of this cluster- IV are operating since pre nationalization period (prior to 1972-73). It is connected by both Railway and Road. The drainage of the area is governed by KatriRiver and KumariJore.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEF&CC) for a rated capacity of 2.851 Mtpa (normative) and 3.706 Mtpa peak capacity of coal production vide letter no. J-11015/212/2010-IA.II (M) dated 06th February, 2013.

Ministry of Environment, Forest and Climate Change while granting environmental clearance has given one of the General conditions that " Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for PM_{10}, $PM_{2.5}$, SO_2, NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets, other conditions regarding water / effluent and noise level monitoring in consultation with the State Pollution Control Board."

In compliance of these conditions the Environmental Monitoring has been carried out & report prepared for submission to MoEF&CC& JSPCB and other statutory authorities.

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

(As per G.S.R. 742 (E) dt. 25th December, 2000)

2.1.1 Ambient Air Quality Sampling Locations

I. CORE ZONE Monitoring Location

i) Govindpur Village (A7): Industrial Area

The location of the sampling station is 23^0 48'34" N, 86^0 18'22" E. The sampler was placed at 1.5 m above the ground level at AARC agent Office.

ii) Katras Chotudih (A37): Industrial Area

The location of the sampling station is at the roof top of the Manager Office.

II. BUFFER ZONE Monitoring Location

i) Block IV (A6) : industrial area

The location of the sampling station is 23^0 47.916' N 86^0 15.333' E. The sampler was placed at a height of 1.5 m above the ground level in Safety office of Block IV OCP.

ii) Nichitpur (A8): Industrial Area

The location of the sampling station is 23^0 48'20" N 86^0 21'30" E. The sampler was placed at roof top at Safety office of Nichitpur.

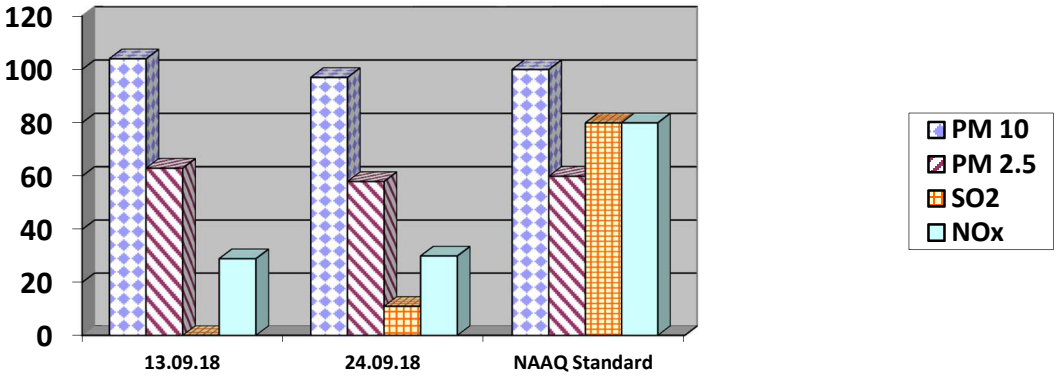
iii) Rudhi Basti(A18): **Residential Area**

The sampler was placed at a height of 1.5 m above the ground level at Rudhi Basti.

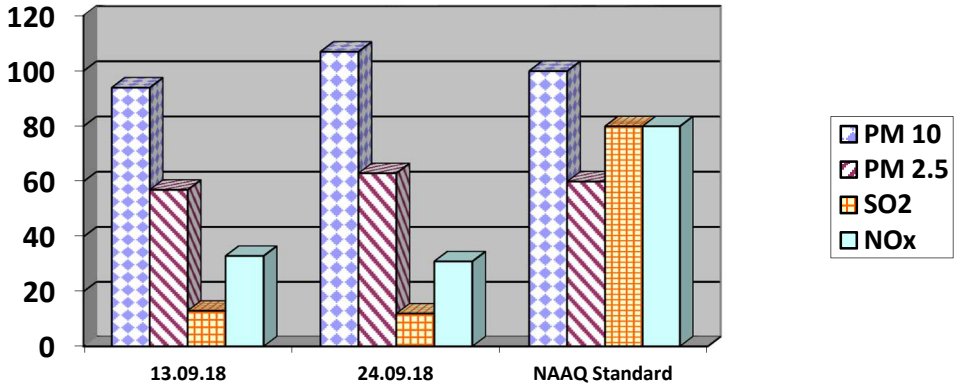
AMBIENT AIR QUALITY DATA

Cluster – IV, Bharat Coking Coal limited Month: **SEP. 2018** **Year: 2018-19.**

Station Name: A7, Govindpur		**Zone: Core**		**Category: Industrial**	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_x**
1	13.09.18	104	63	<10	29
2	24.09.18	97	58	11	30
	NAAQ Standard	100	60	80	80



Station Name: A37, Katras Chotudih		**Zone: Core**		**Category: Industrial**	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_x**
1	13.09.18	94	57	13	33
2	24.09.18	107	63	12	31
	NAAQ Standard	100	60	80	80

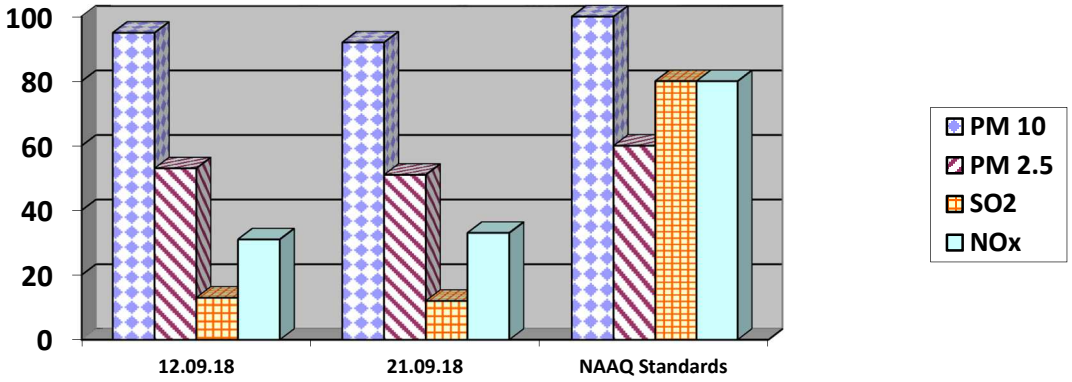


Analysed By
JSA/SA/SSA

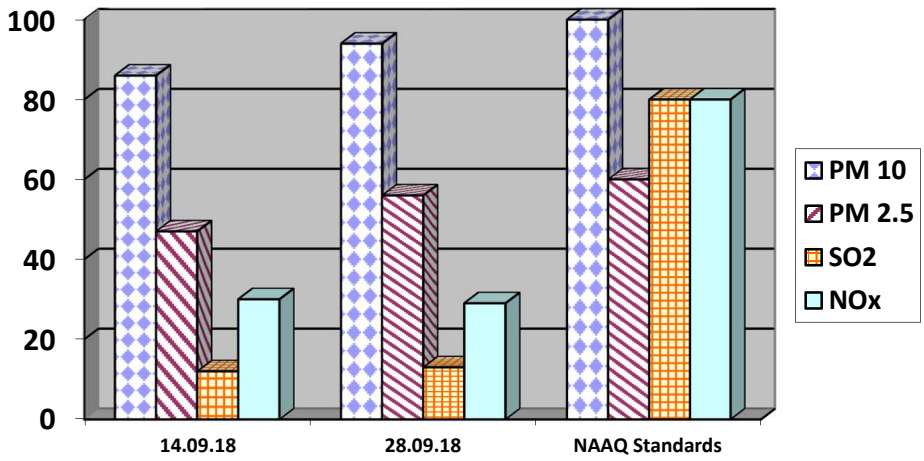
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

Station Name: A6,Block IV		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	12.09.18	95	53	13	31
2	21.09.18	92	51	12	33
	NAAQ Standards	100	60	80	80



Station Name: A8,Nichitpur		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	14.09.18	86	47	12	30
2	28.09.18	94	56	13	29
	NAAQ Standards	100	60	80	80



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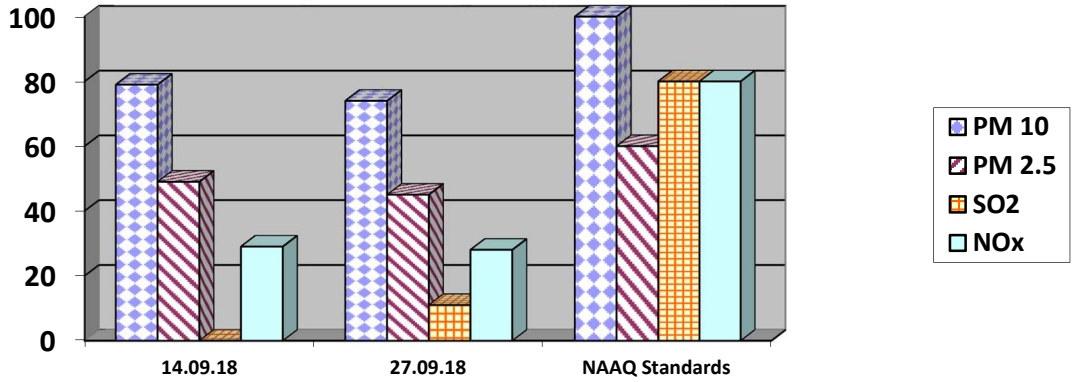
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

Station Name: A18,Rudhi Basti		Zone: Buffer		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO2**	**NOx**
1	14.09.18	79	49	<10	29
2	27.09.18	74	45	11	28
	NAAQ Standards	100	60	80	80



- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*

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Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. – II**)

i) **Mine Discharge of Chotudih (MW4)**

A sampling point is fixed to assess the effluent quality of Mine discharge. This location is selected to monitor effluent discharge in to Katri River and Kumari Jore.

3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. The effluent samples were collected and analysed for four parameters on fortnightly basis at the Environmental Laboratory of CMPDI RI-II, Dhanbad.

3.3 Results & Interpretations

The results are given in tabular form along with the applicable standards. Results are compared with Schedule - VI, effluent prescribed by MoEF&CC. Results show that most of the parmeters are within the permissible limits.

WATER QUALITY DATA

(EFFLUENT WATER- FOUR PARAMETERS)

Name of the Cluster: **Cluster -IV**		Month: **SEP. 2018**	Name of the Station: **Mine Discharge of Chotudih**	
Sl. No.	**Parameters**	**MW4** First Fortnight	**MW4** Second Fortnight	**As per MOEF General Standards for schedule VI**
		13/09/2018	24/09/2018	
1	Total Suspended Solids	38	34	*100 (Max)*
2	pH	7.87	7.95	*5.5 - 9.0*
3	Oil & Grease	<2.0	<2.0	*10 (Max)*
4	COD	24	40	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By
JSA/SA/SSA

Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

NOISE LEVEL QUALITY MONITORING

4.1Location of sampling sites

i) **Govindpur (N7)**
ii) K**atras Chotudih (N37)**
iii) **Block IV(N6)**
iv) **Nichitpur(N8)**
v) **RudhiBasti (N18)**

4.2 Methodology of sampling and analysis

Noise level measurements in form of 'L_{EQ}' were taken using Integrated Data Logging Sound Level Meter (NL-52 OF RION CO. Ltd. Make) during day time. Noise levels were measured for about one hour time in day time. Noise levels were measured in Decibels, 'A' weighted average, i.e. dB (A).

4.3 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of L_{EQ} are presented**.** The observed values at all the monitoring locations are found to be within permissible limits.

NOISE LEVEL DATA

Name of the Project : **Cluster -IV**			Month: **SEP. 2018**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)LEQ**	***Permissible Limit of Noise level in dB(A)***
1	**Block IV**	**Industrial area**	12.09.18	59.8	*75*
2	**Block IV**	**Industrial area**	21.09.18	59.3	*75*
3	**Govindpur Village**	**Industrial area**	13.09.18	55.2	*75*
4	**Govindpur Village**	**Industrial area**	24.09.18	52.7	*75*
5	**Nichitpur**	**Industrial area**	14.09.18	60.2	*75*
6	**Nichitpur**	**Industrial area**	28.09.18	50.9	*75*
7	**Katras Chotudih**	**Industrial area**	13.09.18	60.2	*75*
8	**Katras Chotudih**	**Industrial area**	24.09.18	53.3	*75*
9	**Rudhi Basti**	**Residential area**	14.09.18	56.8	*55*
10	**Rudhi Basti**	**Residential area**	27.09.18	57.4	*55*

Permissible limits of Noise Level as per MOEF Gazette Notification No. GSR 742(E) dt. 25.09.2000 Standards for Coal Mines and Noise Pollution (Regulation and Control) Rules, 2000.
*** Day Time: 6.00 AM to 10.00 PM,**

Analysed By
JSA/SA/SSA

Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

Ambient Air Quality Standards for Jharia Coal Field
As per the Environment (Protection) Amendment Rules, 2000 notified vide notification G.S.R. 742(E), dated 25.9.2000.

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
III Coal mines located in the coal fields of • Jharia • Raniganj • Bokaro	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	500 µg/m^3 700 µg/m^3	- High Volume Sampling (Average flow rate not less than 1.1
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average * 24 hours **	250 µg/m^3 300 µg/m^3	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1.Improvedwest and Gaeke method 2.Ultraviolet fluorescene
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1. Jacob &Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemilumine-scence

Note:

* Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause2.

** 24hourly/8hourlyvaluesshallbemet92%ofthetimeinayear.However,8% of the time it may exceed but not on two consecutivedays.

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No. 14 of 1981), and in supersession of the notification No(s).S.O.384(E), dated 11th April 1994 and S.O.935(E), dated 14th October 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect.

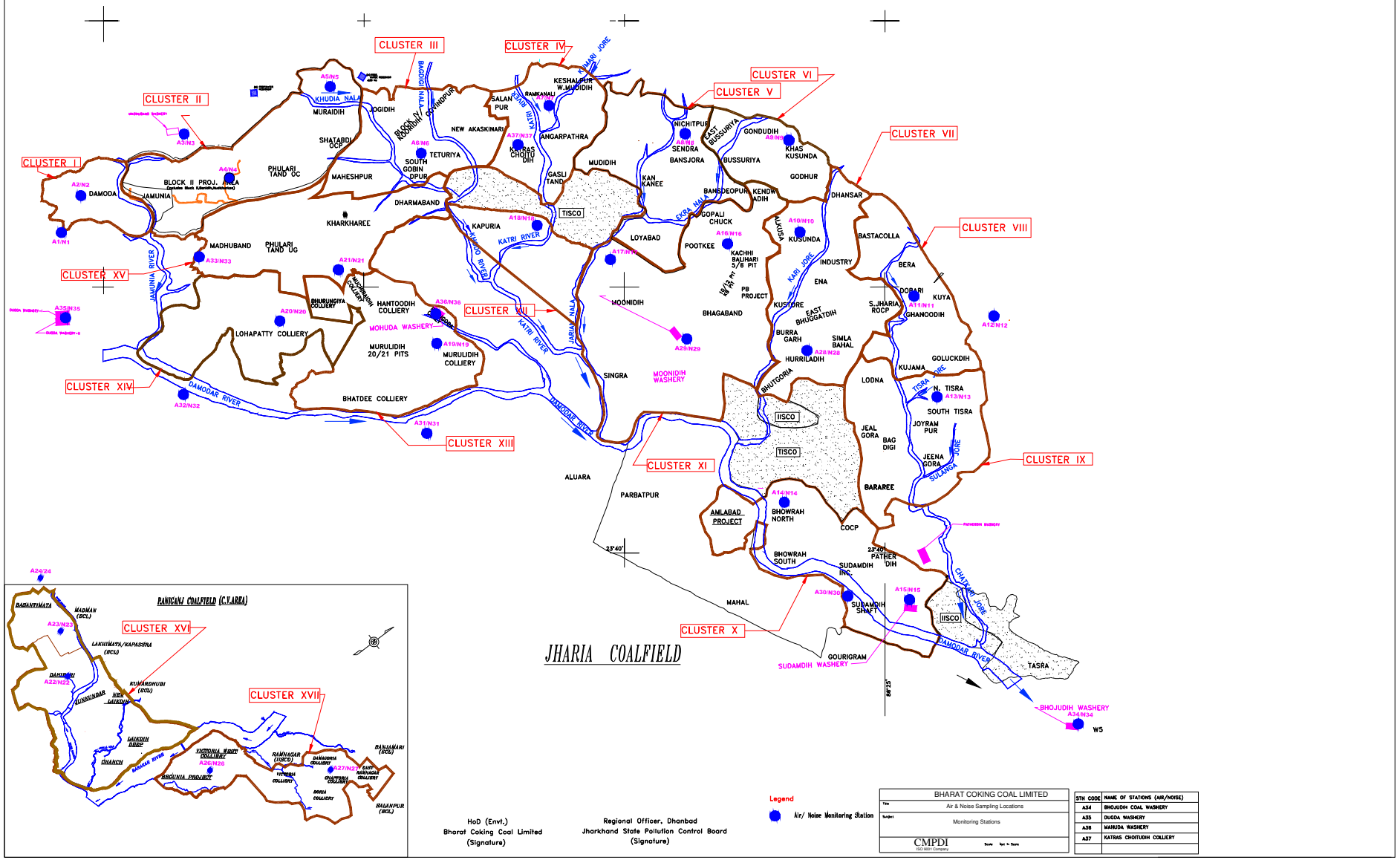
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO_2), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO_2), µg/m³	Annual * 24 Hours **	40 80	30 80	-Jacob &Hochheiser modified ($NaOH$-$NaAsO_2$) Method -Gas Phase Chemiluminescence
Particulate Matter (Size less than 10µm) or PM_{10}, µg/m³	Annual * 24 Hours **	60 100	60 100	-Gravimetric -TEOM -Beta attenuation
Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$, µg/m³	Annual * 24 Hours **	40 60	40 60	-Gravimetric -TEOM -Beta attenuation
Ozone (O_3) , µg/m³	8 Hours * 1 Hour **	100 180	100 180	-UV Photometric -Chemiluminescence -Chemical Method
Lead (Pb) , µg/m³	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper -ED-XRF using Teflon filter
Carbon Monoxide (CO), mg/m³	8 Hours ** 1 Hour **	02 04	02 04	-Non dispersive Infrared (NDIR) Spectroscopy
Ammonia (NH_3), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C_6H_6), µg/m³	Annual *	05	05	-Gas Chromatography (GC) based continuous analyzer -Adsorption and desorption followed by GC analysis
Benzo(a)Pyrene (BaP) Particulate phase only, ng/m³	Annual *	01	01	-Solvent extraction followed byHPLC/GC analysis
Arsenic (As), ng/m³	Annual *	06	06	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper
Nickel (Ni), ng/m³	Annual *	20	20	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper

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

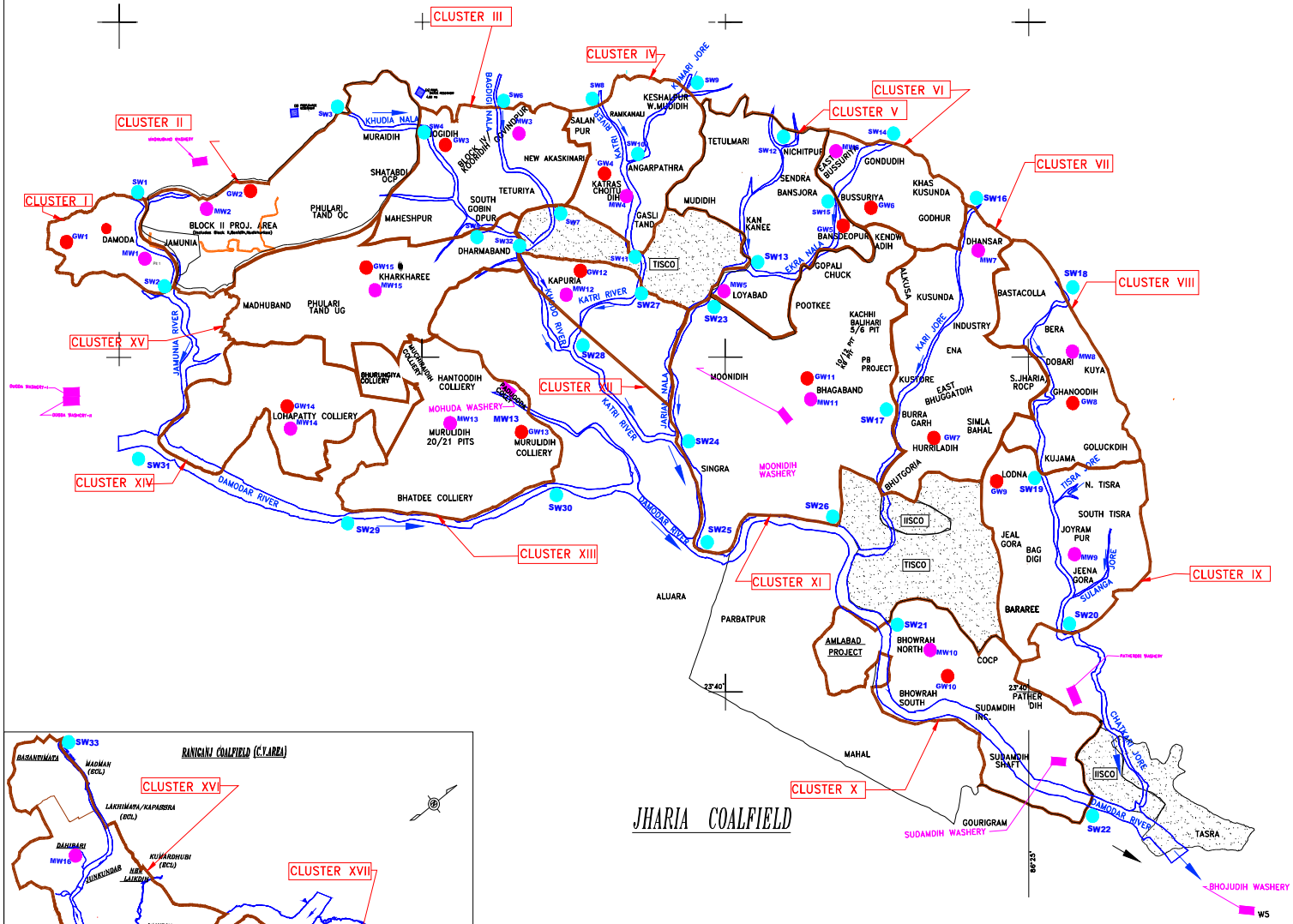
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

NOTE: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigations.

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

Cluster	Suface Water (U/S, D/S)	Name of River/ Nala / Jore	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghutway Village
II	SW3, SW4	Khudia Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudia Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogidih Village
IV	SW8, SW11, SW9, SW10	Katri River Kumari Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudidih	GW5	Nichitpur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansjora Borewell
VII	SW16, SW17	Kari Jore	MW7	Dhansar UGP	GW7	Hurriladih
VIII	SW18, SW19	Kashi Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kashi Jore	MW9	Jeenagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband h UGP	GW11	Bhagabandh
XII	SW27, SW28	Katri River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murulidih (20/21)	GW13	Murilidih
XIV	SW31, SW29	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Khudia Nala	MW15	Kharkharee UGP	GW15	Kharkharee
XVI	SW33, SW34	Khudia River	MW16	Dahibari OCP	GW16	Patlabari Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

HoD (Envt.)
Bharat Coking Coal Limited
(Signature)

Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)

Legend
- Sampling Locations of Surface Water (Upstream/ Downstream)
- Sampling Locations of Mine Water
- Sampling Locations of Ground/ Drinking Water

Customer: BHARAT COKING COAL LIMITED
Title: WATER SAMPLING LOCATIONS
Subject: MONITORING STATIONS
CMPDI
ISO 9001 Company
Scale: Not to Scale