BHARAT COKING COAL LIMITED
(A SUBSIDIARY OF COAL INDIA LIMITED)
OFFICE OF THE GENERAL MANAGER
LODNA AREA

Ref. No:- BCCL/LA/GM/16/ 946

Dated:- 18.11.2016
26

To,
The Director,
Ministry of Environment, Forest & Climate Change,
Regional Office (ECZ), Bungalow No. A-2,
Shyamali Colony,
Ranchi-834002

Sub:-Six monthly report on implementation of Environmental Measures for the period from 01st April, 2016 to 30th September, 2016 in respect of Cluster – IX Group of Mines, Lodna Area of BCCL.

Ref. No.: EC Order No – J-11015/307/2010-IA.II(M), dated – 21st May, 2013.

Dear Sir,

Please find enclosed herewith the Six monthly report on implementation of Environmental Measures for the period from 01st April, 2016 to 30th September, 2016 in respect of Cluster – IX Group of Mines, Lodna Area of BCCL.

Hope you will find the same in order.

Enclosures: As above with C.D.

Yours faithfully,

General Manager
Lodna Area

Cc to:-
1. Director IA monitoring cell, Paryavaran Bhawan, CGO Complex, New Delhi-110003.
2. General Manager (Env) BCCL, Koyla Bhawan, Dhanbad.
3. General Manager (Min), Lodna Area.

Mrs Meniya Act Mgr (Env).
for G.M.
30.11.16.

ENVIRONMENTAL CLEARANCE COMPLIANCE OF CLUSTER – IX.
(GRANTED VIDE – J-11015/307/2010-IA.II(M), DATED – 21ST MAY, 2013.
(Period - From 01st April, 2016 to 30th September, 2016.

Sl No	A. Specific conditions by MOEF.	Compliance.
i	The Maximum production shall not exceed beyond that for which environmental clearance has been granted.	The production from the cluster is within the limit for which environment clearance has been granted.
ii	Action should be taken to segregate and isolate the fire areas eg. Trench cutting for isolation of fire. Area-wise Action Taken report for extinguishing the fire should be provided.	It is being complied.
iii	"Mission Mode programme' for extinguishing fire is required wherein scientists and other experts be involved. Any international agency may also be contacted for their expertise in extinguishing the fire in such big area.	It shall be complied. An International expression of Interest has been floated and work shall be awarded after evaluation by technical committee.
iv	The recommendations of Indira Gandhi Centre of Atomic Research, Kalpakam should followed dealing with fire in coal mine in Jharia coalfield.	It shall be complied.
v	Transportation Plan should be submitted to the MOEF.	Master plan phase –ii implementation will be done after 5 years. It shall be complied.
vi	The finalized Mine Closure Plan of Cluster – IX should be submitted to MOEF. The void should be in 30 ha. area with 30 mt. depth.	Mine closure plan as per the guideline of Ministry of coal and on the basis of cluster concept has been prepared by CMPDIL and progressive mine closure plan is being followed.
vii	The road transportation of coal during phase – 1 should be by mechanically covered trucks. The road used for coal transportation should be developed with avenue plantation on both sides.	It shall be complied. However transportation of coal is being done by tarpaulin covered trucks at present.
viii	The company must give priority to capacity building both within the company and to the local youth, who are motivated to carry out the work in future.	It is being done. Training and skill development programs are being conducted by VTCs and HRD of BCCL on regular basis.
ix	Details of transportation, CSR, R&R and implementation of environmental action plan for each of the 17 clusters should be brought out in a booklet from.	It is being complied. The booklet has been prepared for CSR and R&R and also uploaded on CIL website.
x	A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.	This is being done by CMPDIL and final report yet to be submitted.
xi	The expertise available internationally should be utilized for control of fire in Jharia coalfields and for their reclamation and to further minimize time for fire and subsidence control.	It shall be complied. Presently Master Plan Approved by Govt. of India is under implementation for this purpose. An International expression of Interest has been floated and work shall be awarded after evaluation by technical committee.
xii	The abandoned pits and voids should be backfilled with OB and reclaimed with plantation and or may be used for pisciculture.	Back filling is being done. Reclamation of old dump has been taken up. Plantation at reclaimed old dump has been started. About 16,157 Nos. of plants have been planted at Gokul Park in NT-ST till 2015 – 16, Sep. 2016.

xiii	BCCL may consider setting up a separate management structure for implementing environment policy and socio-economic issues and the capacity building required in this regard.	A full-fledged Environment Department, headed by a HOD (Environment) along with a suitable, qualified multidisciplinary team of executives (30 Nos.) which includes Environment, Mining, Excavation, Civil, Survey, Electrical & Mechanical, Forestry disciplines executives and technicians (4 Nos.) has been established. They are also trained in ecological restoration, methods sustainable development, rainwater harvesting methods etc. At the project level, one Executive in each area has also been nominated as Nodal Officer (Environment) and also entrusted with the responsibility of compliance and observance of the environmental Acts / Laws including environment protection measures. The activities are monitored on regular basis at Area and at Headquarters levels. GM (Environment) at Head quarter level, Co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xiv	The locations of monitoring stations in the Jharia Coalfields should be finalized in consultation with the Jharkhand State Pollution Control Board.	Complied.
xv	The smoke / dust emission vary from source to source (fuel wood, coal, fly ash from TPPs, silica from natural dust, etc.) and a source Apportionment study should get carried out for the entire Jharia Coalfields.	An e-Tender has been floated twice to conduct the work of Source Apportionment Study. Earlier no bidder had qualified all the criteria and technical committee recommended for cancellation of e-tender. Work will be awarded on nomination basis.
xvi	Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (PM_{10} and $PM_{2.5}$) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of air pollution, based on which appropriate mitigative measures could be taken.	An e-Tender has been floated twice to conduct the work of Source Apportionment Study. Earlier no bidder had qualified all the criteria and technical committee recommended for cancellation of e-tender. Work will be awarded on nomination basis.
xvii	The proponent shall prepare time-series maps of the Jharia Coalfields through NRSA to monitor and prevent fire problems in the Jharia Coalfields by isothermal mapping / imaging and monitoring temperatures of the coal seams (whether they are close to spontaneous ignition temperatures) and based on which, areas with potential fire problems shall be identified.	It is being done by NRSC. Final report has been submitted in which fire area has been reduced to 2.18 sq.km from 9 sq.km. For further liquidation of fire, action has been taken up.
xviii	Measures to prevent ingress of air (Ventilation) in such areas, to prevent restart fresh / spread fires in other areas including in mines of cluster VIII shall be undertaken.	It is being complied.
xix	Underground mining should be taken up after completion of reclamation of Opencast mine area after 15 Years.	It shall be complied.
xx	No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent / check such fire including in old OB dump areas where the fire could start due to presence of coal / shale with sufficient carbon content.	Measures are being taken to prevent/check fires.
xxi	The rejects of washeries in Cluster – IX should be sent to FBC based plant.	Coal washery does not exist in this cluster at present.

xxii	There shall be no external OB dumps. At the end of the mining there shall be no void and the entire mined out area shall be re-vegetated. Areas where opencast mining was carried out and completed shall be reclaimed immediately thereafter.	Action is being taken as specified in EMP. Backfilling of OB is going on with mining. At the end of Mining there shall be no void and area will be re-vegetated and reclaimed.
xxiii	A detailed calendar plan of production with plan for OB dumping and backfilling (for OC Mines) and reclamation and final mine closure plan for each mine of cluster – IX shall be drawn up and implemented.	Calendar Plan has been prepared. Mine closure plan as per the guidelines of Ministry of Coal has been prepared by Central Mine Planning and Design Institute (CMPDI) Progressive mine closure plan is being implemented.
xxiv	The void shall be converted into a water reservoir of a maximum depth of 15-20 m and shall be gently sloped and the upper benches of the reservoir shall be stabilized with plantation and the periphery of the reservoir fenced. The abandoned pits and voids should be backfilled with OB and biologically reclaimed with plantation and or may be used for pisciculture.	It shall be complied. A part of the void will be converted into the water body as specified in EMP.
xxv	Mining shall be carried out as per stamette from the streams / Nalas flowing within the lease and maintaining a safe distance from the Nalas flowing along the lease boundary. A safety barrier of a minimum 60 m width shall be maintained along Nalas / water bodies. The small water bodies in OC shall be protected to the extent feasible and the embankment proposed along water body shall be strengthened with stone pitching.	It is being followed as per statutes.
xxvi	Active OB dumps near water bodies and rivers should be rehandled for backfilling abandoned mines voids. However, those which have been biologically reclaimed need not be disturbed.	No active dumps near water bodies exist.
xxvii	Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 937.84 ha. area would be reclaimed. The total additional area under plantation would be 367.95 ha. (189.95) ha. abandoned quarry area, 178 ha. active quarry area, 104.34 OB dump outside quarry area, 36.49 ha service building / Mine infrastructure area / coal dump etc, 165.88 ha. green belt around OCP, 263.22 ha. barren area), by panting 2344700 plants at a total cost Rs. 10830.45 lakhs.	It is being complied. Yearly plantation is being done for development of green belts as per EMP.
xxviii	The road should be provided with avenue plantation on both side as trees act as sink of carbon and other pollutant.	It shall be complied.
xxix	Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action plan prepared for Dhanbad as a critically polluted area and relevant for Cluster IX shall be implemented.	It shall be compiled. Dhanbad Action Plan is being implemented. The salient actions of this cluster. 1. Covered transportation of coal. 2. Water sprinkling. 3. Plantation.
xxx	The locations of monitoring stations in the Jharia Coalfields should be finalized in consultation with the Jharkhand State Pollution Control Board. The committee stated that smoke / dust emission very from source to source (fuel wood, coal, fly ash from TPPs silica from natural dust, etc) and a source Apportionment Study should be got carried out the entire Jharia Coalfields. Mineralogical composition study should be undertaken on the composition for suspended particulate matter (PM 10 and PM 2.5) in Jharia coalfields and also qualified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.	The locations of monitoring stations have been finalized with the Jharkhand State Pollution Control Board. The work of monitoring of ambient environment had been started by Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which is having CSIR Laboratory recognized under the EP Rules. CMPDIL is now on work.
xxxi	No ground water shall be used for the mining activities. Additional water required, if any, shall be met from mine water or by recycling / reuse of the water from the existing activities and from rainwater harvesting measures.	It is being compiled and Mine water is being used for the industrial purpose. Further Mine Water is also utilized for the community and irrigation purpose. 1. Two pressure filters have been installed at South Tisra and North Tisra underground for utilization of Mine Water. 2. Rain water Harvesting

xxxii	Regular monitoring of groundwater level and quality of the study area shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality including Arsenic and Fluoride during the month of May. Data thus collected shall be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board / SPCB quarterly within one month of monitoring. Rainwater harvesting measures shall be undertaken in case monitoring of water table indicates a declining trend.	The work of monitoring was started by Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which has CSIR Laboratory, recognized under the EP Rules. Presently CMPDIL is monitoring the ground water level. The locations of monitoring stations have been finalized.
xxxiii	Mine discharge water shall be treated to meet standards prescribed standards before discharge into natural water coursed / agriculture. The quality of the water discharged shall be monitored at the outlet points and proper records maintained thereof and uploaded regularly on the company website.	It is being complied.
xxxiv	ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to confirm to prescribed standards in case discharge into the natural water course.	Construction of ETP / Oil grease Trap is being taken-up.
xxxv	Regular monitoring of subsidence movement on the surface over and around the working area and 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 movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil / suitable material.	Complied.
xxxvi	Sufficient coal pillars shall be left un-extracted around the air shaft (within the subsidence influence area) to protect from any damage from subsidence, if any.	Sufficient coal pillars have been left around air shafts as per the statutes and DGMS guidelines.
xxxvii	High root density tree species shall be selected and planted over areas likely to be affected by subsidence.	Identification of high root density plants and their plantation in subsidence prone area will be taken-up.
xxx viii	Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.	It shall be complied.
xxxix	Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.	Sufficient barriers are left for saving the surface installation and infra structures as per the statute and DGMS guidelines.
xL	No depillaring operation shall be carried out below the township / colony.	It is being followed.
xLi	The transportation plan for conveyor-cum-rail for Cluster-IX should be dovetailed with Jharia Action plan. Road transportation of coal during Phase – 1 should be by mechanically covered trucks, which should be introduced at the earliest. The plan for conveyor-cum-rail for Cluster – IX should be dovetailed with Jharia Action Pan. The road transportation of coal during Phase – 1 should be done by mechanically covered trucks.	Action has been taken for formulating adequate transportation plan for conveyor-cum-rail system of dispatch. CMPDIL has been requested to prepare the plan. Till that time transportation is being done by covering vehicle with tarpaulin cover. Action for mechanically covered trucks has been taken.
xL ii	A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.	This is being done by CMPDIL
xL iii	R&R of 12246 Nos. of PAF's involved. They should be rehabilitated at cost of Rs. 126092.027 Lakhs as per the approved Jharia Action Plan.	Implementation is being done as per the Master Plan.

xLiv	A detailed CSR Action plan shall be prepared for Cluster IX group of mines. Specific activities shall be identified for CSR the budget of RS. 142.55 Lakhs per year @ Rs. 5/T of coal as recurring expenditure. The 391.28 ha. of area within Cluster IX Ml existing as waste land and not being acquired shall be put to productive use under CSR and developed with fruit bearing and other useful species for the local communities. In addition to afforesting 1942.12 ha. of area at the post-mining stage, the waste land / barren land within Cluster IX ML. shall be rehabilitated / reclaimed as forest / agricultural land under CSR Plan in consultation with local communities. Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website every year. The company must give priority to capacity building both within the company and to the company and to the local youth, who are motivated to carry out the work in future	It shall be complied. BCCL is implementing CSR activities. A separate CSR committee has been formed for this purpose. TISS has conducted the survey for effective and need based CSR activities implementation. Recommendations of TISS shall be followed. A handloom weaving project (JHARCRAFT) has been started in the area which provides employment to local womenfolk.
xLv	For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1:5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its Regional office at Bhubaneswar.	Complied. Presently a time series map of vegetation cover in the Jharia Coal Field is being carried out through CMPDI Ranchi. Further CMPDI has been requested to prepare "Time series of Land use maps based on satellite imagery of the core zone and buffer zone in the scale 1:50000 for every 3 years.
xLvi	A final Mines Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forest Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area during mine reclamation and at the post mining stage for habitat restoration.	Mine closure plan as per the guidelines of Ministry of Coal has been prepared by Central Mine Planning and Design Institute (CMPDI) and progressive mine closure plan is being implemented.
xLvii	A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company for implementing environment policy and socio-economic issues and the capacity building required in this regard.	A full-fledged Environment Department, headed by a HOD (Environment) along with a suitable qualified multidisciplinary team of Executives (30 nos.) which includes Environment, Mining, Excavation, Civil, Survey, Electrical & Mechanical, Forestry disciplines Executives and Technicians (4 Nos.) has been established. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, one Executive in each area has also been nominated as Project Nodal Officer (Environment)and is also entrusted with the responsibility of compliance and observance of the environmental Acts / Laws including environment protection measures. The activities are monitored on regular basis at Area and at Head Quarters levels. GM (Environment) at Head Quarter level Co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xLviii	Implementation of final mine closure plan for Cluster IX, subject to obtaining prior approval of the DGMS in regard to mine safety issues.	Mine closure plan as per the guidelines of Ministry of Coal has been prepared by Central Mine Planning and Design Institute (CMPDIL) and progressive mine closure plan is being implemented.

xl.ix	Corporate Environment Responsibility :- The company shall have a well laid down Environment Police approved by the Board of Directors. The environment Policy shall prescribe for standard operating process / procedures to bring into focus any infringements / deviation / violation of the environmental or forest norms / conditions. The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished. To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large.	A well-defined Corporate Environment Policy has already been laid down and approved by the Board of Directors. This also posted on BCCL website. Complied. A hierarchical system of the company to deal with environmental issue from corporate level to mine level already exists. Being complied.

B	General Conditions :-	Compliance.
i	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	Being complied.
ii	No change in the calendar plan of production for quantum of mineral coal shall be made.	Being complied.
iii	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM 10, PM 2.5, SO_2 and NO_x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the state Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	The locations of monitoring stations have been finalized. The work of monitoring of ambient environment had been started by Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which is having CSIR Laboratory recognized under the EP Rules. Currently CMPDIL is carrying out the work of monitoring.
iv	Data on ambient air quality (PM 10, PM 2.5, SO_2 and NO_x) and heavy metals such as HG, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EPA rules, 1986 shall be furnished as part of compliance report.	It is being complied.
v	Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs / muffs.	Being complied.
vi	Industrial wastewater (workshop and wastewater from the Mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.	The locations of monitoring stations have been finalized. The work of monitoring of ambient environment has been started by Central Institute of Mine & Fuel Research (CIMFR), Dhanbad which is having Laboratory recognized under the EO Rules. CMPDI is currently carrying out the work of monitoring the ambient environment.
vii	Vehicular emission shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.	It is being complied.
viii	Monitoring of environment quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analyzed through a laboratory recognized under EPA Rules, 1986.	It is being done.
ix	Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.	Being Complied. Vocational training Centers under separate Human Resource Development Dept. is conducting regular training programme on these issues.

x	Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measure, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.	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) guidelines.
xi	A separate environment management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the Company.	A full-fledged Environment Department, headed by HOD (Environment) along with a suitable qualified multidisciplinary team of executives (30 Nos.) which includes Environment, Mining, Excavation, Civil, Survey, Electrical & Mechanical, Forestry disciplines Executives and Technicians (4 Nos.) has been established. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, one Executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental Acts / Laws including environment protection measures. The activities are monitored on regular basis at Area and at Head Quarters levels. GM (Environment) at Head Quarter level Co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xii	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.	It is being complied.
xiii	The project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at the website of the ministry of Environment & Forests at http://envfor.nic.in.	It has been complied.
xiv	A copy of the environmental clearance letter shall be marked to concern Panchayat/ZilaParished, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion / representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.	Complied.
xv	A copy of the environmental clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office District Industry Sector and Collector's Office/Tehsildar's Office for 30 days.	Complied.
xvi	The clearance letter shall be uploaded on the company's Website. The compliance status of the stipulated environmental clearance 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. The monitoring data environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM_{10}, $PM_{2.5}$, SO_2 and NO_x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	Complied.

xvii	The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office o the Ministry respective Zonal Offices of CPCB and the SPCB.	Being complied.
xviii	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the Office(s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Shall be complied.
xix	The Environment Statement for each financial year ending 31 March in for-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (protection) Rules, 1996, 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 by E-mail.	Being complied.

C	Other Conditions by MOEF :	Compliance.
i	The Ministry or any other Competent Authority may stipulate any further condition(s) for environmental protection.	Agree.
ii	Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.	Agree.
iii	The above conditions will 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 and the Public Liability Insurance Act 1991 along with their amendments and Rules the proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.	It is being complied
iv	The Environmental clearance is subject to the outcome of the Writ Petition filed by M/s Bharat Coking Coal Limited (BCCL) in response to the closure orders issued by the Jharkhand State Pollution Control Board which is pending in the Jharkhand High Court	Agree.

of

21.11.16

General Manager (Mining)
Lodna Area
BCCL, Dhanbad

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

(FOR THE Q.E. JUNE, 2016)

E. C. no. J-11015/307/2010-IA.II (M) dated 21.05.2013.

September, 2016

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CLUSTER - IX

(FOR THE Q.E. June, 2016)

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ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED CLUSTER – IX

(FOR THE Q.E. JUNE, 2016)

E. C. no. J-11015/307/2010-IA.II (M) dated 21.05.2013.

September, 2016

CMPDI

ISO 9001 Company

Regional Institute-II

Dhanbad, Jharkhand

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 MoEFCC 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 MoEFCC, 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, drinking water supply, well/ Hand pump water also surface water samples.

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 noise levels were recorded in mining area, washery and in residential area.

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-I, Asansol.

3.2 Water quality

Water samples were collected as per standard practice. The effluent samples were collected and analysed for four parameters on fortnightly basis. Effluent samples were also analysed for 27 parameters on half-yearly basis. The drinking and Surface water samples were collected and analysed for 25 and 17 parameters respectively, on quarterly basis. Thereafter the samples were preserved and analysed at the Environmental Laboratory at CMPDI (HQ), Ranchi.

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 MoEFCC 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 SPM, 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.

4.2 Water quality

The test results indicate that the major parameters compared with MoEFCC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines, IS.10500/2012 (Drinking water) and IS: 2296 (Surface water), are with in 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 MoEFCC 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.

CHAPTER - I

INTRODUCTION

1.0 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 Limited (BCCL), a subsidiary company of Coal India Limited (CIL) is operating UG Mines and Opencast Mines in Jharia Coalfield (JCF). The Jharia Coalfield (JCF) having an area of 450 Sq.KM.

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.

1.1 The Cluster-IX is in the Eastern part of the Jharia coalfield. It includes a group of 7 Mines (viz. Lodna, S. Tisra/NTST OC, Jealgora, Joyrampur, Jeenagora, Bararee, S.Tisra/NTST Expan. OC. The Cluster – IX is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – IX are operating since pre nationalization period (prior to 1972-73). It is connected by both Railway and Road. The drainage pattern of the area is governed by Kashi Jore.

1.2 The Cluster-IX is designed to produce 6.548 MTPA (normative) and 8.512 MTPA (peak) capacity of coal.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEF&CC) for a rated capacity 6.548 MTPA (normative) and 8.512 MTPA (peak) capacity of coal production vide letter no. J-11015/307/2010-IA.II (M) dated 21st May, 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 in consultation with the State Pollution Control Board." And other conditions regarding water / effluent and noise level monitoring.

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

CHAPTER-II

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) Jeenagora (A13) : Industrial Area

The location of the sampling station is 23^0 42. 536' N & 86^0 24. 664' E. The sampler was placed at 1.5 m above the ground level of Safety Office. The station was selected to represent the impact of mining activities of Lodna area, poor roads condition, heavy public traffic, burning of coal by the surrounding habitants

II. BUFFER ZONE Monitoring Location

i) Bhowrah North (A14) : Industrial Area

The location of the sampling station is 23º40.977' N 086º23.963'E. The sampler was placed at 1.5 m above the ground level of Project Office.

ii) Hurriladih UGP (A28) : Industrial Area

The location of the sampling station is $23^0$44' 65'' N & 86^0 24. 101'E.The sampler was placed at 1.5 m above the ground level of Safety office.

2.2 Methodology of sampling and analysis

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM_{10}), Particulate Matter ($PM_{2.5}$), Sulphur di-oxide (SO_2) and Nitrogen oxides (NO_X). Respirable Dust Samplers (RDS) & fine particulates for $PM_{2.5}$ sampler were used for sampling PM_{10} & $PM_{2.5}$ respectively at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analyzed in Environmental Laboratory of CMPDI, RI-I, Asansol.

2.3 Results & Interpretations

The results of Ambient Air Quality are presented in tabular form along with Bar chart for each monitoring station. The interpretations of different parameters are given below:

2.3.1 Ambient air quality

Particulate Matter PM_{10}

In **core zone** under **Industrial area** varies from 69 to 86 μ/m^3
In **buffer zone** in **Industrial area** varies from 66 to 85μ/m^3

Particulate Matter $PM_{2.5}$

In **core zone** under **Industrial area** varies from 30 to 44 μ/m^3
In **buffer zone** in **Industrial area** varies from 28 to 42 μ/m^3

Sulphur Dioxide:

In **core zone** under **Industrial area** varies from 10 to 13 μ/m^3
In **buffer zone** in **Industrial area** varies from 10 to 13 μ/m^3

Oxides of Nitrogen:

In **core zone** under **Industrial area** varies from 20 to 30 μ/m^3
In **buffer zone** in **Industrial area** varies from 20 to 30 μ/m^3

AMBIENT AIR QUALITY DATA

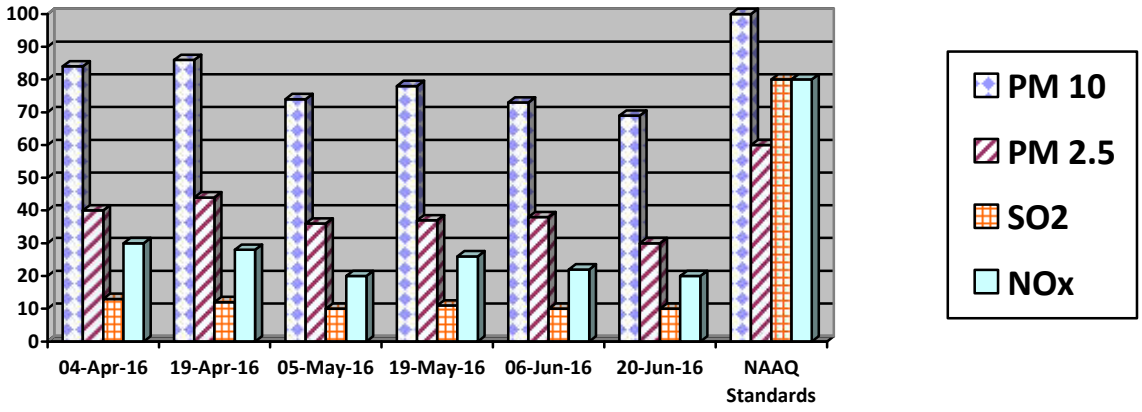
Name of the Company: **Bharat Coking Coal limited** Year : **2015-16.**
Name of the Cluster : **Cluster – IX** Q.E.: **June 2016**

Station Code/Name: (a) A13 Jeenagora **Category: Industrial.**

ZONE: Core

(a). Station Code/Name: A13- Jeenagora Category: Industrial[1].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	04 - Apr -16	84	40	13	30
2	19 - Apr - 16	86	44	12	28
3	05 - May -16	74	36	<10.0	20
4	19 - May -16	78	37	11	26
5	06 - Jun - 16	73	38	<10.0	22
6	20 - Jun - 16	69	30	<10.0	20
NAAQ Standards		100	60	80	80



Note:

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

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed…… …….Dated 28.07.2016. Job No. 110310

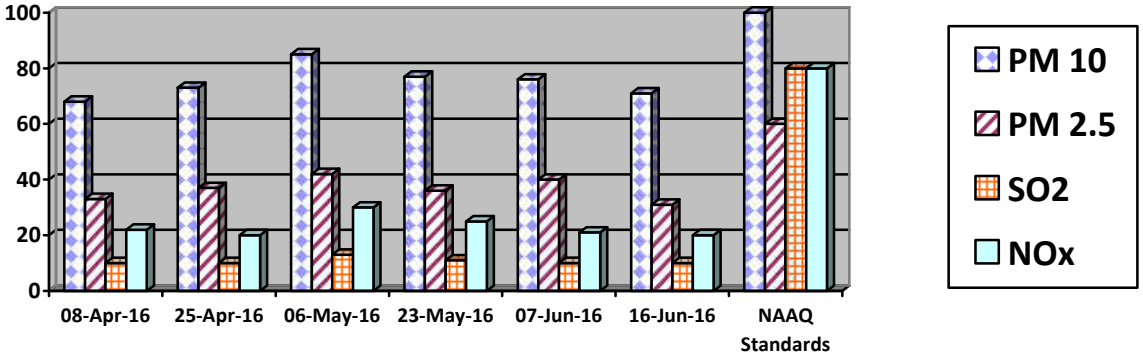
AMBIENT AIR QUALITY DATA

Name of the Company: **Bharat Coking Coal limited** Year : **2015-16.**
Name of the Cluster : **Cluster – IX** Q.E.: **June 2016**

Station Code/Name: (a) A14 Bhowrah North **Category:**
(b) A28 Hurriladih UGP **Industrial.**
ZONE: BUFFER

(a). Station Code/Name: A14 Bhowrah North, Category: Industrial[2].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	08 - Apr -16	68	33	<10.0	22
2	25 - Apr - 16	73	37	<10.0	20
3	06 - May -16	85	42	13	30
4	23 - May -16	77	36	11	25
5	07 - Jun - 16	76	40	<10.0	21
6	16 - Jun - 16	71	31	<10.0	20
	NAAQ Standards	100	60	80	80



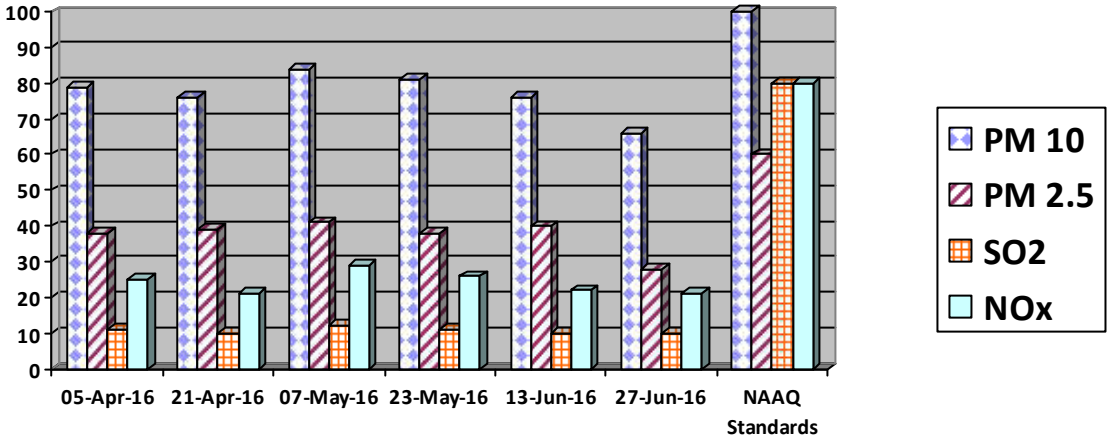
Note:

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

[2] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed…… …….Dated 19.07.2016. Job No. 110310

(b). Station Code/Name: A28 Hurriladih UGP, Category: Industrial[3].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	05 - Apr -16	79	38	11	25
2	21 - Apr - 16	76	39	<10.0	21
3	07 - May -16	84	41	12	29
4	23 - May -16	81	38	11	26
5	13 - Jun - 16	76	40	<10.0	22
6	27 - Jun - 16	66	28	<10.0	21
	NAAQ Standards	100	60	80	80

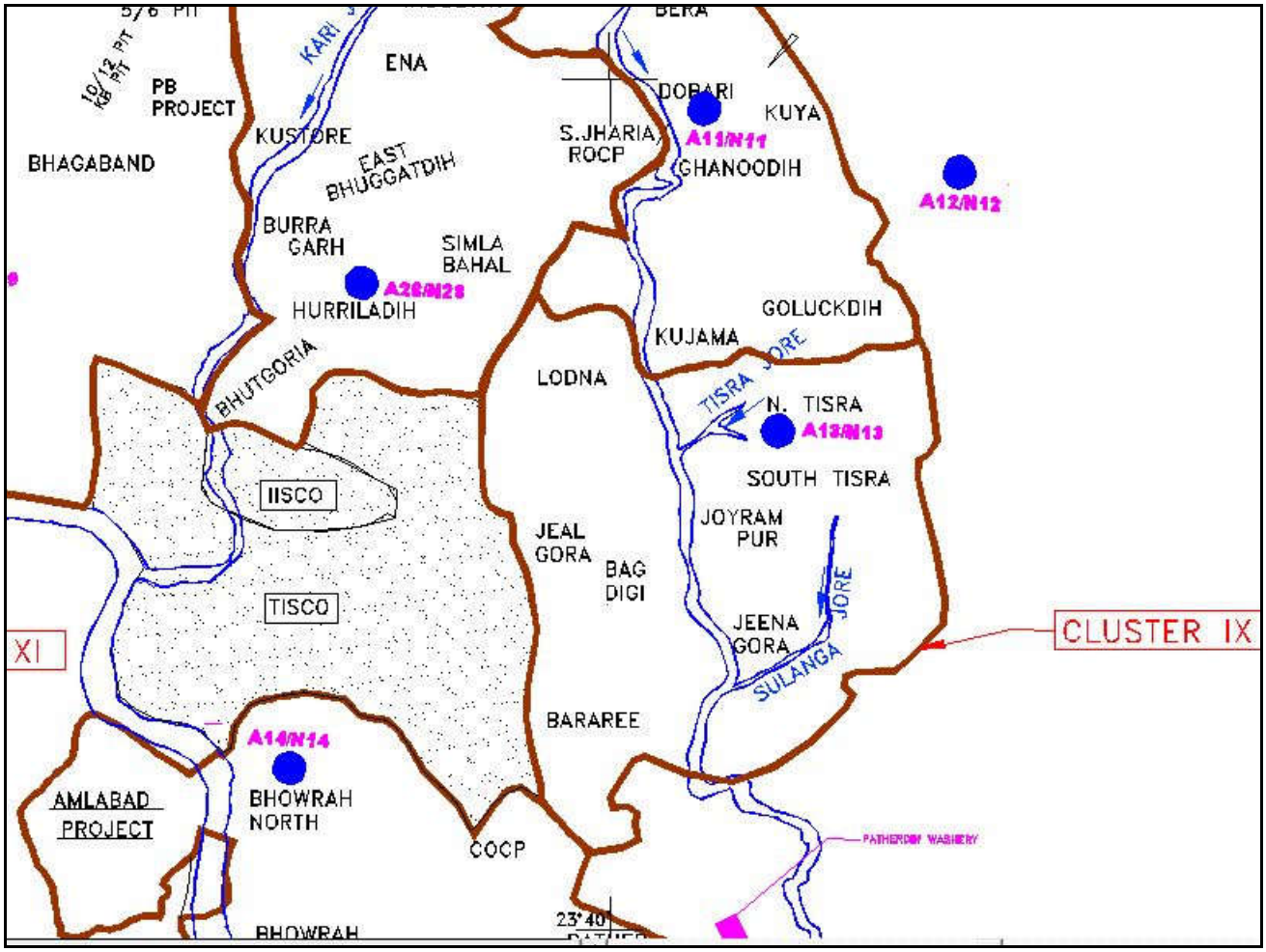


Note:

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

[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed…… …….Dated 19.07.2016. Job No. 110310

Ambient Air Monitoring Stations in Cluster- IX in Core & Buffer Zones



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 m^3/minute)
	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.Improved west 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 clause 2.

** 24 hourly / 8 hourly values shall be met 92% of the time in a year. However, 8% of the time it may exceed but not on two consecutive days.

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/m^3	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO_2), µg/m^3	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/m^3	Annual * 24 Hours **	60 100	60 100	-Gravimetric -TEOM -Beta attenuation
Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$, µg/m^3	Annual * 24 Hours **	40 60	40 60	-Gravimetric -TEOM -Beta attenuation
Ozone (O_3) , µg/m^3	8 Hours * 1 Hour **	100 180	100 180	-UV Photometric -Chemiluminescence -Chemical Method
Lead (Pb) , µg/m^3	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/m^3	8 Hours ** 1 Hour **	02 04	02 04	-Non dispersive Infrared (NDIR) Spectroscopy
Ammonia (NH_3), µg/m^3	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C_6H_6), µg/m^3	Annual *	05	05	-Gas Chromatography (GC) based continuous analyzer -Adsorption and desorption followed by GC analysis
Benzo(a)Pyrene (BaP) Particulate phase only, ng/m^3	Annual *	01	01	-Solvent extraction followed byHPLC/GC analysis
Arsenic (As), ng/m^3	Annual *	06	06	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper
Nickel (Ni), ng/m^3	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.

CHAPTER – III

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. - II**)

i) **Mine Discharge of Jeenagora (MW9)**
A sampling point is fixed to assess the effluent quality of Mine discharge. This location is selected to monitor effluent discharge in to Kashi jore.

ii) Drinking Water quality at **Lodna (DW9)**

iii) Surface Water quality at **U/S of Kashi Jore (SW19)**

iv) Surface quality at **D/S of Kashi Jore (SW20)**

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. The drinking and Surface water samples were collected and analyzed for 25 and 17 parameters on quarterly basis at the Environmental Laboratory at CMPDI (HQ), Ranchi.

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 Company: **Bharat Coking Coal Limited**

Year : **2015-16.**

Name of the Cluster: **Cluster - IX**

Month: **April, 2016.**

Name of the Stations & Code :

1. MW9- Mine Discharge of Jeenagora

First Fortnight

Sl. No.	Parameters	MW9 (Mine Discharge) 06.04.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	8.16	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	28	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW9 (Mine Discharge) 30.04.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	8.11	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

*All values are expressed in mg/lit unless specified.

Analysed By

Dy.Technical Manager
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

WATER QUALITY DATA

(*EFFLUENT WATER-FOUR PARAMETERS)*

Name of the Company: **Bharat Coking Coal Limited**
Year : **2015-16.**

Name of the Cluster: **Cluster - IX**
Month: **May, 2016.**

Name of the Stations & Code :
1. MW9- Mine Discharge of Jeenagora

First Fortnight

Sl. No.	Parameters	MW9 (Mine Discharge) 12.05.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	36	*100 (Max)*
2	pH	7.65	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	24	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW9 (Mine Discharge) 19.05.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	24	*100 (Max)*
2	pH	8.09	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	20	*250 (Max)*

*All values are expressed in mg/lit unless specified.

Analysed By

Dy.Technical Manager
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

WATER QUALITY DATA

(*EFFLUENT WATER-FOUR PARAMETERS)*

Name of the Company: **Bharat Coking Coal Limited**

Year : **2015-16.**

Name of the Cluster: **Cluster - IX**

Month: **June, 2016.**

Name of the Stations & Code :

1. MW9- Mine Discharge of Jeenagora

First Fortnight

Sl. No.	Parameters	MW9 (Mine Discharge) 06.06.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	48	*100 (Max)*
2	pH	8.12	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	36	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW9 (Mine Discharge) 16.06.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	32	*100 (Max)*
2	pH	7.68	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	24	*250 (Max)*

*All values are expressed in mg/lit unless specified.

Analysed By

Dy.Technical Manager
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

WATER QUALITY

(SURFACE WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - IX** Period: **Q. E. June, 2016.**

Area : **Jeenagora** **Project: Jeenagora** **Cluster IX**

Stations:

1. Upstream in Kashi Jore SW-19
2. Downstream in Kashi Jore SW-20

Date of Sampling:

10/03/2016

10/03/2016

Sl. No	Parameter	Sampling Stations		Detection Limit	BIS Standard & Method
		SW-19	SW-20		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.6	2.8	2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	colourless	colourless	Qualitative	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	68	80	2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03	0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	4.8	4.3	0.10	IS 3025/381989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.67	0.95	0.02	APHA, 22nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	0.01	0.01	APHA, 22nd Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.06	<0.06	0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005	0.005	APHA, 22nd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	8.42	11.08	0.50	APHA, 22nd Edition, UV-Spectrphotometric
12	pH value	7.40	7.58	2.5	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.002	<0.002	0.002	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	0.002	APHA, 22nd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	320	360	2.00	APHA, 22nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	764	792	25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	0.04	0.02	0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

1
2

Analysed By

26/7/16

Dy.Technical Manager
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

*All values are expressed in mg/lit unless specified.

WATER QUALITY

(DRINKING WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - IX** Period: **Q. E. June, 2016.**

Area : **Jeenagora** **Project: Jeenagora Cluster IX**

Stations: 1. Drinking Water from Lodna DW-9

Date of Sampling: 19/05/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		DW-9	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	1			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	112			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	144			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.61			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.06			0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22nd Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	4			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.89			2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22nd Edition,4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22nd Edition, AAS-GTA
16	Sulphate (as SO_4) mg/l, Max	54			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity (c_aco_3),, mg/l, Max	376			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	780			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	472			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	2			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.21			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

1
2
Analysed By

Dy.Technical Manager
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

·All values are expressed in mg/lit unless specified.

WATER QUALITY

(GROUND WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - IX** Period: **Q. E. June, 2016.**

Area : **Dobari UGP** **Project: Dobari UGP** **Cluster VIII**

Stations: 1. Ground Water from Jealgora Near P.O GW-9 **Date of Sampling:** 21/05/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-9	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	1			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	64			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	52			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.29			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.04			0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22nd Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	7			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.83			0.20	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22nd Edition,4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22nd Edition, AAS-GTA
16	Sulphate (as SO_4) mg/l, Max	114			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity (c_aco_3),, mg/l, Max	128			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	540			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	336			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	3			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.03			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

1
2
Analysed By

26/7/16
Dy.Technical Manager
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

*All values are expressed in mg/lit unless specified.

CHAPTER - IV

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites and their rationale

i) **Jeenagora (N13)**

To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

ii) **Bhowrah North (N14)**

To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

iii) **Hurriladih UGP (N28)**

To assess the noise level in the industrial area, noise levels were recorded during day as well as night time in the colony.

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 MoEFCC.

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 Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster -IX** Month: **April, 2016.**

Name of the Stations & Code :

1. **Jeenagora (N13)**
2. **Bhowrah North**
3. **Hurriladih UGP (N28)**[1]

(a) First Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	**Jeenagora (N13)**	**Industrial area**	04.04.2016	67.8	*75*
2	**Bhowrah North (N14)**	**Industrial area**	08.04.2016	54.7	*75*
3	**Hurriladih UGP (N28)**	**Industrial area**	05.04.2016	54.7	*75*

(b) Second Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	**Jeenagora (N13)**	**Industrial area**	19.04.2016	58.4	*75*
2	**Bhowrah North (N14)**	**Industrial area**	25.04.2016	60.2	*75*
3	**Hurriladih UGP (N28)**	**Industrial area**	21.04.2016	56.8	*75*

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, +Night Time: 10.00 PM to 6.00 AM.**

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed……  …….Dated 19.07.2016. Job No. 110310

NOISE LEVEL DATA

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster -IX** Month: **May, 2016.**

Name of the Stations & Code :

1. **Jeenagora (N13)**
2. **Bhowrah North**
3. **Hurriladih UGP (N28)**[2]

a. First Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	Jeenagora (N13)	Industrial area	05.05.2016	56.7	*75*
2	Bhowrah North (N14)	Industrial area	06.05.2016	56.7	*75*
3	Hurriladih UGP (N28)	Industrial area	07.05.2016	57.3	*75*

b. Second Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	Jeenagora (N13)	Industrial area	19.05.2016	61.6	*75*
2	Bhowrah North (N14)	Industrial area	23.05.2016	62.1	*75*
3	Hurriladih UGP (N28)	Industrial area	23.05.2016	58.9	*75*

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, +Night Time: 10.00 PM to 6.00 AM.**

[2] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed……  …….Dated 19.07.2016. Job No. 110310

NOISE LEVEL DATA

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster -IX** Month: **June, 2016.**

Name of the Stations & Code :

1. **Jeenagora (N13)**
2. **Bhowrah North**
3. **Hurriladih UGP (N28)**[3]

a. First Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	**Jeenagora (N13)**	**Industrial area**	06.06.2016	`60.3	*75*
2	**Bhowrah North (N14)**	**Industrial area**	07.06.2016	63.6	*75*
3	**Hurriladih UGP (N28)**	**Industrial area**	13.06.2016	61.3	*75*

b. Second Fortnight data

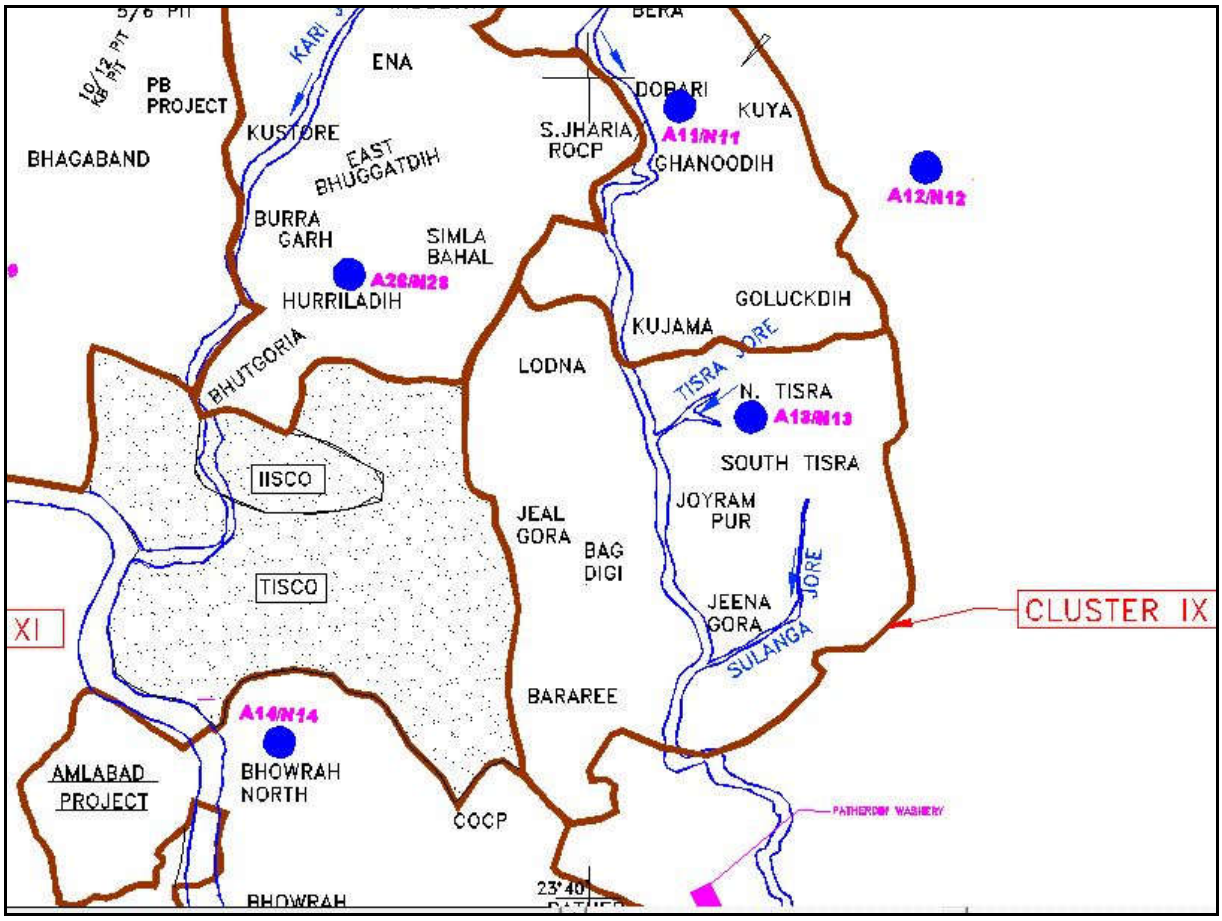
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	**Jeenagora (N13)**	**Industrial area**	20.06.2016	57.8	*75*
2	**Bhowrah North (N14)**	**Industrial area**	16.06.2016	55.7	*75*
3	**Hurriladih UGP (N28)**	**Industrial area**	27.06.2016	55.2	*75*

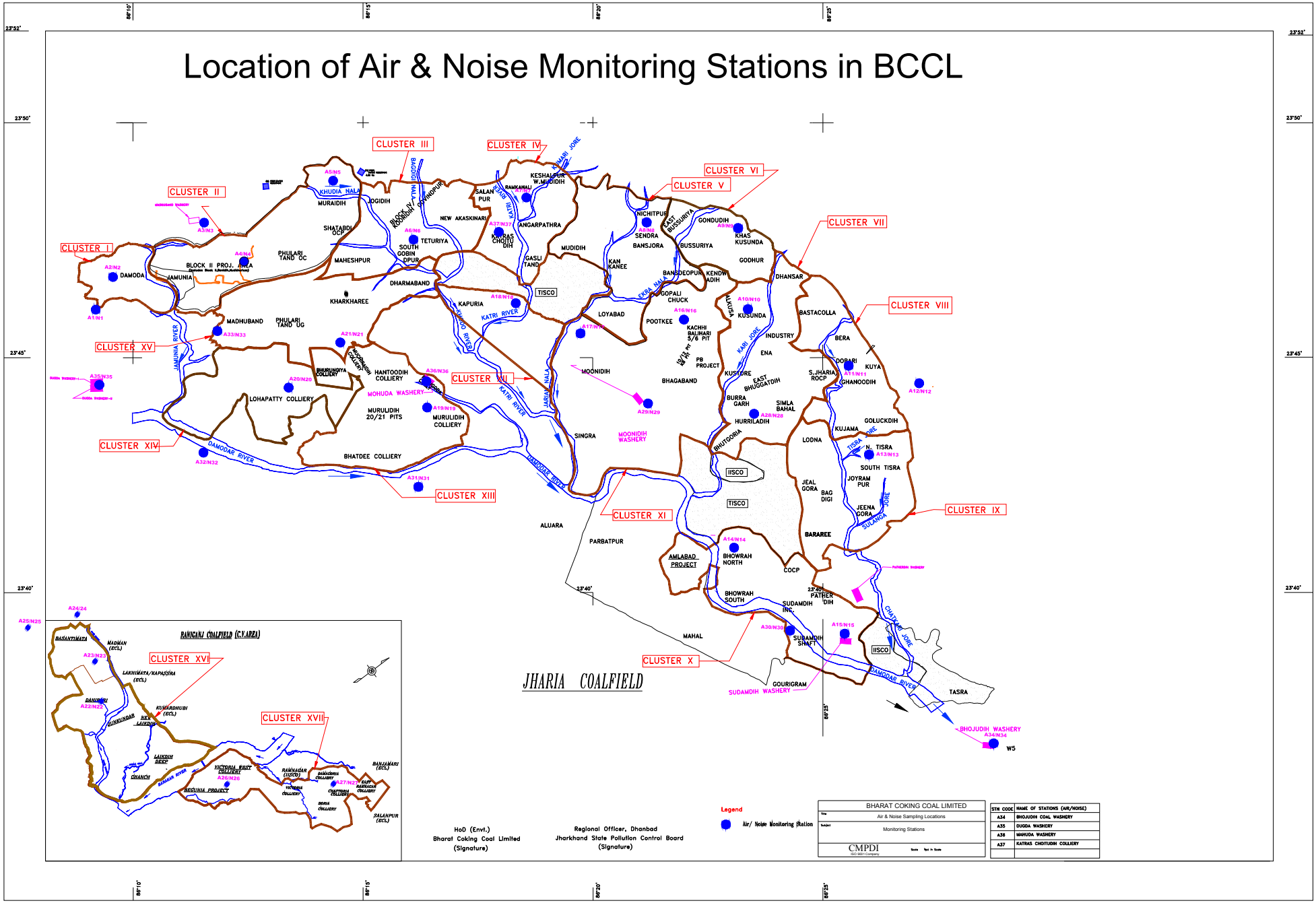
****Permissible limits of Noise Level as per MOEF Gazette Notification No. GSR 742(E) dt. 25.09.2000 Standards for Coal Mines and Noise Pollution (Regulation and Control)Rules,2000.***

*** Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.**

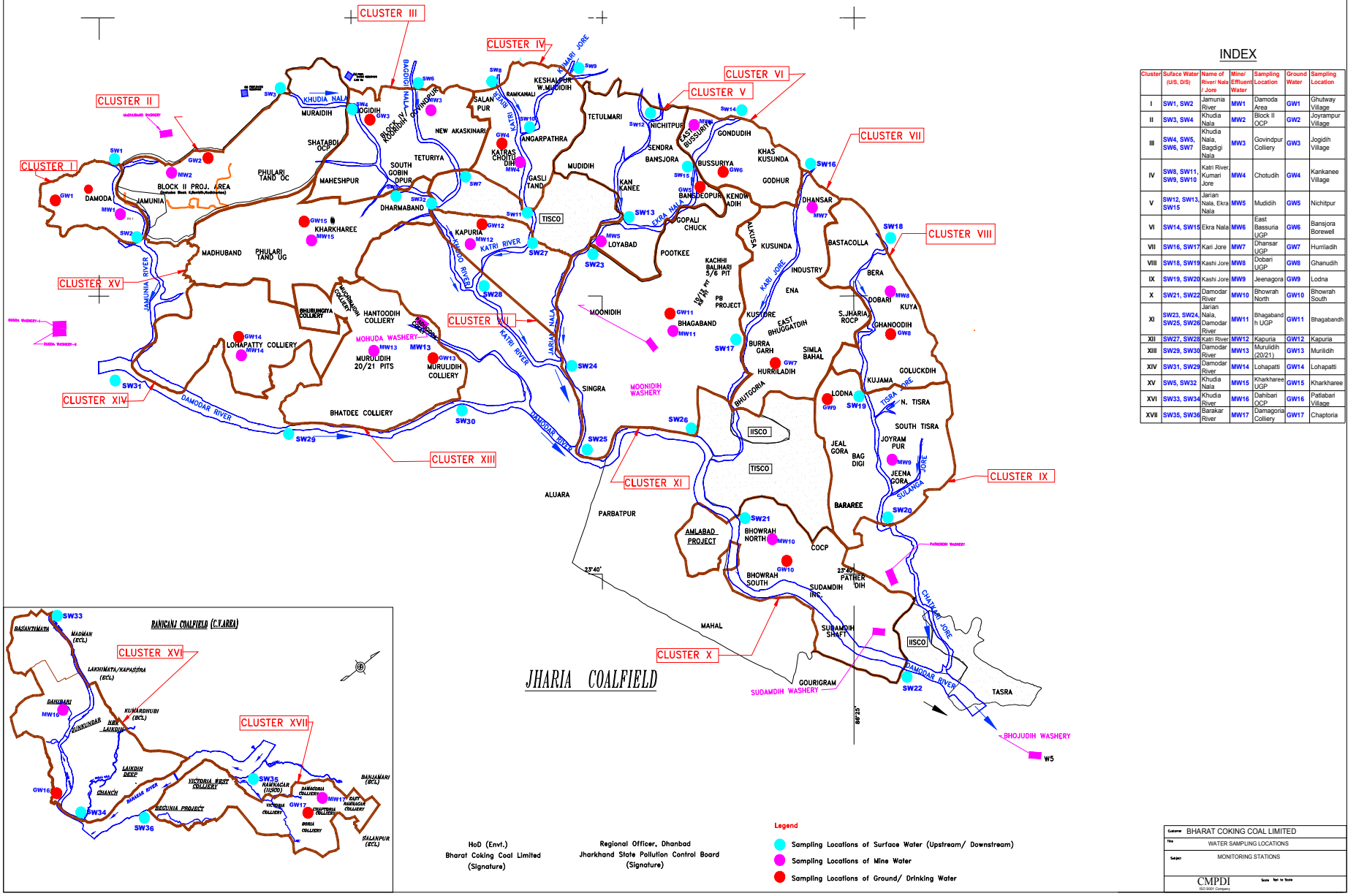
[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed……  …….Dated 19.07.2016. Job No. 110310

Noise Level Monitoring Location of Cluster IX




Location of Air & Noise Monitoring Stations in BCCL
CLUSTER I
CLUSTER II
CLUSTER III
CLUSTER IV
CLUSTER V
CLUSTER VI
CLUSTER VII
CLUSTER VIII
CLUSTER IX
CLUSTER X
CLUSTER XI
CLUSTER XII
CLUSTER XIII
CLUSTER XIV
CLUSTER XV
CLUSTER XVI
CLUSTER XVII
JHARIA COALFIELD
RANIGANJ COALFIELD (C.V.AREA)
DAMODAR RIVER
JAMUNIA RIVER
KATRI RIVER
BARAKAR RIVER
KUMARI RIVER
KHUDIA NALA
KARI JORE
TISRA JORE
SULANGA JORE
CHANDAMARI JORE
DHARMABAND
KHARKHAREE
MAHESHPUR
MURAIDIH
JOGIDIH
NEW AKASKINARI
ANGARPATHRA
MUDIDIH
GASLI TAND
SALANPUR
KESHALPUR W.MUDIDIH
RAMKANALI
KAPURIA
TETURIYA
SOUTH GOBIN PUR
KARAS CHOITU DIH
NICHITPUR
SENDRA
BANSJORA
BUSSURIYA
GONDUDIH
KHAS KUSUNDA
GODHUR
DHANSAR
BASTACOLLA
BERA
DOBARI
KUYA
GHANOODIH
S.JHARIA ROCP
KUSUNDA
POOTKEE
LOYABAD
KAN KANEE
BANSDEOPUR
KENDWADIH
GOPALI CHUCK
KACHHI BALIHARI S/E PIT
INDUSTRY
ENA
PB PROJECT
KUSTORE
EAST BHUGGATDIH
BURRA GARH
SIMLA BAHAL
HURRILADIH
BHAGABAND
MOONIDIH
MOONIDIH WASHERY
SINGRA
BHUTGORIA
LODNA
KUJAMA
GOLUCKDIH
N. TISRA
SOUTH TISRA
JOYRAM PUR
JEENA GORA
JEAL GORA BAG DIGI
BARAREE
PATHER DIH
SUDAMDIH INC.
SUBAMDIH SHAFT
SUDAMDIH WASHERY
GOURIGRAM
TASRA
BHOWRAH NORTH
BHOWRAH SOUTH
AMLABAD PROJECT
COCP
IISCO
TISCO
ALUARA
PARBATPUR
MAHAL
BHATDEE COLLIERY
LOHAPATTY COLLIERY
MURULIDIH 20/21 PITS
MURULIDIH COLLIERY
MOHUDA WASHERY
HANTOODIH COLLIERY
BHURUNGIYA COLLIERY
PHULARI TAND OC
PHULARI TAND UG
BLOCK II PROJ. AREA
MADHUBAND
DAMODA
JAMUNIA
BHOJUDIH WASHERY
W5
Legend
Air/ Noise Monitoring Station
HoD (Envt.)
Bharat Coking Coal Limited
(Signature)
Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)
BHARAT COKING COAL LIMITED
Air & Noise Sampling Locations
Monitoring Stations
CMPDI
STN CODE
NAME OF STATIONS (AIR/NOISE)
A34 BHOJUDIH COAL WASHERY
A35 DUGDA WASHERY
A36 MAHUDA WASHERY
A37 KATRAS CHOITUDIH COLLIERY

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	Murulidih
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