Ref No: BCCL/KA-IV/ENV/2016/2954

Dated- 18.05.2016
27

To,
The Director,
Ministry of Environment, Forest and 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 Oct. 2015 to March 2016.**

Dear Sir,

Kindly find enclosed herewith the six monthly report on implementation of environmental protection measures for the period from Oct. 2015 to March 2016 in respect of Cluster-IV group of mines of BCCL.

Hope you will find in order.

Enclosed: - As above.

Your's faithfully

General Manager
Katras Area

GENERAL MANAGER
KATRAS AREA

C.C. to-

1. Dr. Sunita Aulock, Director, 1A Monitoring Cell, Paryavaran Bhawan, CGO Complex, New Delhi- 11003
2. The Director (S) Ministry of Environment & Forest. Govt. of India Bhubaneshwar- 751023
3. Dy. GM(Env), BCCL, Koyla Bhawan, Dhanbad.
4. AM (PLG), Katras Area
5. AM (Civil), katras Area
6. Office Copy

ENVIRONMENTAL CLEARANCE COMPLIANCE OF CLUSTER-IV
(GRANTED VIDE J-11015/212/2010-IA. II (M) Dated 06.02.2013)
(Oct. 2015 to March. - 2016)

SN	A. Specific Conditions by MOEF:	Compliance
i	**The maximum production from one opencast section in the cluster shall not exceed beyond that for which environmental clearance has been granted for the cluster IV.**	The production from the operating mines of the cluster is within the limit for which environmental clearance has been granted. **It is also informed that, during the course of fire dealing activity additional 2608970 Te (Gaslitand colliery – 213715 Te, Katras Choitudih colliery- 581174 Te and AKWMC- 1814081 Te) of firey coal has been recovered during 2015-16.**
ii	**The measure to identify in the Environmental Plan for Cluster- IV groups of mine and the conditions given in this environmental clearance letter shall be dovetailed to the implementation of the Jharia Action Plan.**	Master Plan/Jharia Action Plan is dovetailed with environmental clearance conditions. For implementation of fire dealing as per the Master Plan/Jharia Action Plan Gaslitand fire patch and AKWMC fire patch are operated to dig out the firey coal seam and to control the further spread of fire to the nearby coal mines.
iii	**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. Measures to prevent ingress of air (Ventilation) in such areas, to prevent restart fresh/spread fires in other areas including in mines of cluster IV shall be undertaken.** **Expertise available internationally could also be utilized for control of fire in Jharia Coalfields and for their reclamation and to further minimize time for fire and subsidence control. Monitoring of fire should be carried out regularly.**	The study has been carried out by NRSA and report has been submitted. In the report fire has been reduced up to 2.18 sq km. from 9.0 sq km. Action for the further reduction of fire is being taken as specified in the Master Plan and EMP. 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. **Encl: NRSC work order for conducting of coal mine fires/Thermal infra-red survey in Jharia Coalfield is at Annexure 1.** An International Expression of Interest has been floated to utilize expertise available internationally. The international EOI was opened on 30.15.2014. Two party participated, The technical committee did not find the international parties had expertise in controlling liquidating mine fire. It is informed to HPCC of MoC. The study is now being taken up ISM Dhanbad. As such, scooping out the fiery coal is the only proven method of dealing with fire internationally. **Encl: ISM, Dhanbad work order for scientific study of delineation of Mine fire at GTC is at Annaxure 2** All unworked pit and incline has been sealed to protect entry of air to fire area.

		Work order has been issued to CIMFR for scientific study for delineation of fire at J.K section of AARC Colliery. **Encl: CIMFR work order for scientific study of delineation of fire at J.K.Section is at annexure 3.**
Iv	**Underground mining should be taken up after completion of reclamation of Opencast mine area after 15 years.**	Underground mining shall be taken up after completion of reclamation of opencast mine after 15 years. One u/g mine has been started at Keshalpur unit of AKWMC after reclamation of opencast mines (AKMC-OC).
V	**The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and** **Stabilized with plantation so as to withstand the peak water flow and prevent 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. **Encl: - Pics of embankment is enclosed is at annexure 4.**
Vi	**The rejects of washeries in Cluster –IV should be send to FBC based plant.**	There is no washery in cluster – IV at present.
vii	**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.**	It is being complied. **Following measures has been taken to prevent u/g fire:** **1.** Regular mine air samples taken to detect presence of CO which is an indication of fire. No CO detected in any mine so far. 2. Regular cleaning of fallen coal is done in old working. 3. Regular inspection of old working. **Following measures has been taken up for checking fire in OB dump:** 1. Regular sprinkling of OB dump is done. 2. Compaction of OB dump done regularly.

		3. OB is dumped after quenching of fire. There is no fire in underground mine of cluster – IV.
Viii	**There shall be no external OB dumps. OB produce from the one OC Patch of cluster IV will be 45.5 Mm^3. OB from one OCP patches in mixed mine shall be backfilled. 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.**	Reclamation is a continuous process. We have started reclamation where coal has been extracted from combined seam and revegetation also started in those reclaimed areas, such as 45 hectares reclaimed area has been revegetated by forest department and in another two no. ecological restoration site of AKWMC (one 3.4 hectare and another 3.02 hectare) tree plantation is going on. Backfilling of OB is going on with mining operation. At the end of mining there shall be no void and external OB dumps, area will be re-vegetated and reclaimed.
Ix	**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-IV shall be drawn up and implemented.**	Detailed calendar plan of coal production, OB recovered has been prepared for 5 years. Mine closure plan of AKWMC, AARC, Salanpur Colliery and Katras Choitidih Colliery as per the guidelines of Ministry of Coal and on the basis of cluster concept has been prepared. For Gaslitard is under preparation by Central Mine planning and Design Institute (CMPDI). **Encl:- Calander plan of Coal and OB is enclosed at annexure 5.**
X	**Mining shall be carried out as per statuette 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 60m width shall be maintained along the 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 taking into account the highest flood level, based on past data, so as to guard against mine inundation. The slope of the embankment shall at least 2:1 towards the ML. The height of the embankment shall be at least 3 m higher than the HFL. The embankment to be constructed by OB /solid waste shall be**	Mining is carried out as per statute regarding maintaining of safe distance from streams/nalas flowing within the leasehold area of cluster – IV. A safety barrier as per CMR 126, 2(b) is maintained along the nalas/water bodies. The embankment along water bodies is strengthened with stone pitching/concreting taking into account the HFL so as to guard against mine inundation as per design of CMPDIL.

	strengthened with stone pitching. Slope stability of the embankment shall be done by planting suitable grass and shrubs using native species selected from the study area.	
xi	**Active OB dumps near water bodies and rivers should be rehandled for backfilling abandoned mine voids. However, those which have been biologically reclaimed need not be disturbed.**	No OB dump exist near water bodies except OB dump near water bodies of Gaslitand colliery where it has been rehandled and toe wall along the Katri River has been made. The OB dump of AKWMC OCP near Kumarijore has been biologically reclaimed (45 hectares). Further action has been taken for eco-restoration work in OB dumps as per Road Map prepared by FRI, Dehradun.
xii	**Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 794.09 ha area would be reclaimed. The total additional area under plantation would be 719.42 ha (101.7 ha abandoned quarry area, 103.31 ha active quarry area, 14.82 OB dump outside quarry area, 4.36 ha service building /mine infrastructure area /coal dump etc, 160.25 ha green belt around OCP, 334.94 ha barren area), by planting 17,98,550 plants at a total cost of Rs 396.41 lakhs.**	Yearly plantation is being done for development of green belts as per EMP. At Ecological restoration site under AKWMC already 4837 nos. trees had been planted before 2014 over 3.40 hectare area. During 2014-15, 6900 nos and 2015-16, 1200 nos. trees has been planted at the same site. In addition of tree plantation 5000 nos seed balls has been placed at the said ecological restoration site during monsoon period of 2015-16. In a new ecological restoration site of 3.02 hectare area approx 2500 nos. trees and 10,000 nos. seed balls has been planted during monsoon period of 2015-16. Apart from this work order of 1160 Nos. of gabion plantation has been Awarded to DFO, Dhanbad. DFO, Dhanbad has been started the plantation work and it will be completed by the Mansoon of 2015-16. Another proposal of 525 Nos of gabion plantation has been floated, B.C for the same has been done. During post mining stage, green belt shall be developed by planting trees over 794.09 hectare area as per EMP.
xiii	**The road should be provided with avenue plantation on both side as trees act as sink of carbon and other pollutant.**	Avenue plantation on both side, as trees act as sink on carbon and other pollutant, has been done along DB road

<table>
<tr><td></td><td></td><td>from Shakti Chowk to Tetulmari.</td></tr>
<tr><td>Xiv</td><td>Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a critically polluted are and relevant for Cluster- IV shall be implemented.</td><td>Dhanbad Action Plan is being implemented. The salient actions of this cluster
1. Transportation by covered truck.
2. Water sprinkling
3. Plantation.</td></tr>
<tr><td>xv</td><td>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 vary from source to source (fuel wood, coal, flyash from TPPs, silica from natural dust, etc) and a Source Apportionment Study should be got carried out for the entire Jharia Coalfields. 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 the air pollution, based on which appropriate mitigative measures could be taken.</td><td>The location of the monitoring stations has been finalized in consultation with JSPCB.
Details of air sample location/monitoring stations are as follows:
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Details of water sampling location/monitoring station:
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<tr><td>6.</td><td>Choitodih U/G Mine</td><td>MW-4</td><td>Effluent water (Mine water)</td></tr>
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It may be noted herethat at location Rudhi Basti no sampling is being done at present due to safety and security concern, A letter to JSPCB regarding relocating the Ambient Air quality Monitoring station is attach at Annexure 6.</td></tr>
</table>

<table>
<tr><td></td><td></td><td>Noise monitoring station of the study area

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</table>

The work of monitoring of ambient environment was done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having CSIR laboratory recognized under the EP Rules. Report yet to be submitted for the current quarter. Presently It is being monitored by CMPDIL, Dhanbad.
To conduct the source apportionment study, an e-tender was floated in Feb. 2015 as no tenderer qualified. Re-tendering was done on 31.03.2015 which was opened on 23.05.2015, Again no tenderer qualified. BCCL is working out ways to award work to the institute who had successfully done it for the MoEFCC in the past. The work is expected to be awarded shortly.

Encl: - Monitoring report of cluster IV is enclosed at annexure 7.</td></tr>
<tr><td>Xvi</td><td>The Transportation Plan for conveyor-cum–rail for Cluster-IV should be dovetailed with Jharia Action Plan. Road transportation of coal during Phase–I should be by mechanically covered trucks, which should be introduced at the earliest. The Plan for conveyor-cum–rail for Cluster-IV should be dovetailed with Jharia Action Plan. The Committee desired that road transportation of coal during phase–I should be by mechanically covered trucks.</td><td>Action has been taken for formulating adequate transportation plan for conveyor cum rail system of dispatch. CMPDIL, RI-II has been requested to conduct study and prepare the plan in this regard.
Conversion of existing truck into mechanically covered trucks in a phased manner has been taken up. By that time transportation is being carried out by covering the vehicle with tarpaulin cover in a suitable manner.</td></tr>
<tr><td>Xvii</td><td>A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport</td><td>CMPDIL has Submitted the report, but it is being scrutinized. CMPDIL will soon submit Final Report.
Reduction in pollution load every year by reducing Road transport for cluster IV will be Analyzed and submitted to Regional office, MoEFCC as CMPDI gives the final Report.</td></tr>
<tr><td>Xviii</td><td>R&R of 7012 nos of PAF’s involved. They should be rehabilitated at cost of Rs 26274 lakhs as per the approved Jharia Action Plan.</td><td>Action of Master plan is being complied as per action plan of Master Plan.</td></tr>
</table>

xix	**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 piezometers. The monitoring for quantity shall be dome 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.**	It has been complied. The work of monitoring was done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having CSIR laboratory recognized under the EP Rules. Presently CMPDI is monitoring the ground water level. The location of the monitoring stations has been finalized in consultation with JSPCB.
Xx	**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.**	At present only development districts are in operation at UG mines in Cluster IV and no depillaring district is taken up. However, regular monitoring of subsidence will be undertaken on commencement of depillaring districts. **It may be noted here that there is no Mining induced subsidence in Katras Area at present and Certificate for the same is attach at Annexure 8.**
Xxi	**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 will be left unextracted around the air shafts as per the statutes and DGMS guidelines to protect from any damage from subsidence.
Xxii	**High root density tree species shall be selected and planted over areas likely to be affected by subsidence.**	Identification of high root density plant and its plantation in subsidence prone area will be taken-up at the time of depillaring operation. A request has been made to DFO, Dhanabd for providing the list of High Root density plant. Encl:- Letter to DFO regarding High root density plant is at annexure 9.
Xxiii	**Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained**	It will be strictly complied during depillaring operation.

	out by cutting drains.	
Xxiv	**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 (like road etc.) As per the clause no. – (i) of 105 of Coal Mines Regulation, 1957 and DGMS guidelines.
Xxv	**No depillaring operation shall be carried out below the township/colony.**	It is being followed. No depillaring operation shall be carried out below the township/colony.
Xxvi	**A detailed CSR Action Plan shall be prepared for Cluster IV croup of mines. Specific activities shall be identified for CSR for the budget of Rs 142 .55 Lakhs /annum @ Rs 5/T of coal provided for CSR and Rs. 5/T of coal as recurring expenditure. The 416.98 ha of area within Cluster IV 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. 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 local youth, who are motivated to carry out the work in future.**	It is being complied. BCCL is implementing CSR activities. Approx 6038 nos. of toilet will be constructed during 2015-16 under CSR activities along with other CSR activities. Area wise separate CSR committee has been framed for this purpose. For detailed CSR action plan and framework, Tata Institute of Social Science (TISS) has been consulted. TISS has conducted necessary survey in the project area-IV and CSR Action plan has been formulated. Action plan of C.S.R works proposed to be taken up at Katras Area/Katras - IV has been prepared and on the process. **Encl:- CSR work details of last 3 year under Katras Area is attach at Annexure 10.**
Xxvii	**Details of transportation, CSR, R&R and implementation of environmental action plan for the clusters-IV should be brought out in a booklet form within a year and regularly updated.**	It is being followed.
Xxviii	**Mine discharge water shall be treated to meet standards prescribed standards before discharge into natural water courses/agriculture. The quality of the water discharged shall be monitored at the outlet points and proper records maintained thereof and uploaded**	Monitoring station has been finalized in consultation with the JSPCB.

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There are five gravity filters for filtering mine water before using for community use.
The monitoring was done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having CSIR laboratory recognized under the EP Rules. Presently It is being monitored by CMPDIL, Dhanbad.</td></tr>
<tr><td>xxix</td><td>No groundwater 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.
The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry to dewatering of mine.</td><td>It is being complied. No ground water is used for the mining activities. Mine water is utilized for the industrial purpose like water sprinkling, washing of vehicle etc.
Further Mine water is also utilized for the community and irrigation purposes after due treatment.
Following actions has been taken by the company:
1. Installation of Pressure filters for utilization of mine water
2. Rain water Harvesting</td></tr>
<tr><td>Xxx</td><td>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 recognized with plantation and the periphery of the reservoir fenced. The abandoned pits and voids should be backfilled with OB and reclaimed with</td><td>It shall be complied. A part of the void will be converted into the water body as specified in EMP.</td></tr>
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The location of the monitoring stations has been finalized in consultation with JSPCB.

For Construction of New Piezometer the proposal has been prepared and approved.</td></tr>
<tr><td>Xxxii</td><td>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</td><td>One ETP/Oil and grease trap is there in the Keshalpur workshop under AKWMC workshop. Construction of two no. ETP/Oil and grease trap is in the process, CMPDIL-Dhanbad is preparing the designing of the same.

Position of ETP/Oil and grease trap as mentioned below:

• AKWMC workshop
• Autoworkshop, Angarpathra</td></tr>
<tr><td>Xxxiii</td><td>The location of monitoring stations in the Jharia coalfield should be finalized in consultation with Jharkhand State Pollution Control Board.</td><td>The location of the monitoring stations has been finalized in consultation with JSPCB.
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Details of water sampling location/monitoring station:

Sr. No.	Location Name	Location Code	Description
1.	Katri River	SW-8	Surface Water (U/S of Cluster IV)
2.	Kumari jore	SW-9	Surface Water (U/S of Cluster IV)
3.	Kumari jore	SW-10	Surface Water (Before confluence with Katri River)
4.	Katri River	SW-11	Surface Water (D/S of Cluster IV)
5.	Malkera New colony	GW-4	Groundwater (Hand Pump)
6.	Choitodih U/G Mine	MW-4	Effluent water (Mine water)

Noise monitoring station of the study area

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The work of monitoring of ambient environment was done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having CSIR laboratory recognized under the EP Rules. Presently CMPDI is monitoring the ground water level.

Report yet to be submitted for the current quarter.

To conduct the source apportionment study, an e-tender was floated twice but it was cancelled as no bidder

		qualified the requisite criteria. At present work is to be awarded to Govt. Agency, institutions. Proposal document is prepared.
Xxxiv	**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 3 years (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 covered in the Jharia Coalfield is being carried out through CMPDI, Ranchi. Further CMPDI has also been requested to prepare "Time series of land use maps based on satellite imagery of the core zone and buffer zone in the scale 1:5000 for every 3 years.
Xxxv	**A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat 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 within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration.**	CMPDIL, Dhanbad has been requested to prepare "Final Mine Closure Plan along with a Plan for Habitat Restoration and with details of Corpus Fund". CMPDI has submitted the mine closure plan for the Amalgamated Keshalpur West Mudidih Colliery, Salanpur UG Mine, Amalgamated Angarpathra Ramkanali Colliery & Katras Chaitudih Colliery and for Gaslitant Colliery is awaited. **Encl:- Escrow account details of katras Area is enclosed at annexure 11.**
Xxxvi	**Implementation of Final Mine Closure Plan for Cluster IV, subject to obtaining prior approval of the DGMS in regard to mine safety issues.**	Final mine closure plan for cluster – IV shall be implemented subject to obtaining prior approval of the DGMS with regard to mine safety issues.
Xxxvii	**A separate management structure for implementing environment policy and socio-economic issues and the capacity building required in this regard.**	Environment Advisory committee has been formed at head quarter level to frame and implement the environment policy. Similar cell has also been formed at area level. A full-fledged Environment Department, headed by a HOD (Environment) along with a suitable qualified multidisciplinary team of executives which includes Environment, Mining, Excavation, Civil, Survey, Electrical & mechanical, Forestry disciplines executives and technicians has been established in Headquarters. 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 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.
Xxxviii	**Corporate Environment Responsibility:** **a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.** **b) 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.** **c) 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.** **d) 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 is also posted on BCCL website. The environmental policy has been complied. A hierarchical system of the company to deal with environmental issues from corporate level to mine level already exists. 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 is being complied.
B	**General Conditions by MOEF:**	
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. No change in mining technology and scope of working shall be made without prior approval of the

<table>
<tr><td></td><td></td><td>Ministry of Environment and Forests.

At Present in cluster –IV in UG mines- conventional board & pillar by SDL loading in OC mine- shovel – Dumper Combination is running.</td></tr>
<tr><td>Ii</td><td>No change in the calendar plan of production for quantum of mineral coal shall be made.</td><td>Being complied. No change in the calendar plan of production for quantum of mineral coal shall be made.</td></tr>
<tr><td>Iii</td><td>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 NOx 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.</td><td>Monitoring stations has been finalized in consultation with the JSPCB.
The work of monitoring of ambient environment was done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having CSIR laboratory recognized under the EP Rules. Presently CMPDI is monitoring the ground water level.

Details of air sample location/monitoring stations are as follows:

<table>
<tr><th>Sr. No.</th><th>Stn. Code</th><th>Location</th></tr>
<tr><td colspan="3">CORE ZONE</td></tr>
<tr><td>1.</td><td>A7</td><td>AARC Agent Office, Ramkanali (Gobindpur Village)</td></tr>
<tr><td colspan="3">BUFFER ZONE</td></tr>
<tr><td>2.</td><td>A6</td><td>Mine Office, Block IV, Kooridih OCP</td></tr>
<tr><td>3.</td><td>A8</td><td>Mine Office, Nichitpur</td></tr>
<tr><td>4.</td><td>A18</td><td>Rudhi Basti</td></tr>
</table>
</td></tr>
<tr><td>Iv</td><td>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</td><td>It is being complied. The location of air monitoring stations has been finalized in consultation with JSPCB.</td></tr>
</table>

	analysis from independent laboratories 15recognized under the EPA rules, 1986 shall be furnished as part of compliance report.	**Details of air sample location/monitoring stations are as follows:** **Details of water sampling location/monitoring station:** **Noise monitoring station of the study area** The work of monitoring of ambient environment was done

Sr. No.	Stn. Code	Location
CORE ZONE		
1.	A7	AARC Agent Office, Ramkanali (Gobindpur Village)
BUFFER ZONE		
2.	A6	Mine Office, Block IV, Kooridih OCP
3.	A8	Mine Office, Nichitpur
4.	A18	Rudhi Basti

Sr. No.	Location Name	Location Code	Description
1.	Katri River	SW-8	Surface Water (U/S of Cluster IV)
2.	Kumari jore	SW-9	Surface Water (U/S of Cluster IV)
3.	Kumari jore	SW-10	Surface Water (Before confluence with Katri River)
4.	Katri River	SW-11	Surface Water (D/S of Cluster IV)
5.	Malkera New colony	GW-4	Groundwater (Hand Pump)
6.	Choitodih U/G Mine	MW-4	Effluent water (Mine water)

Sr. No.	Stn. Code	Location
CORE ZONE		
1.	N_7	AARC Office, Ramkanali (Gobindpur Village)
BUFFER ZONE		
2.	N_6	Mine Office, Block IV, Kooridih OCP
3.	N_8	Mine Office, Nichitpur

		through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having CSIR laboratory recognized under the EP Rules. Presently CMPDI is monitoring the ground water level.
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. Adequate measures has been taken by proper maintenance of machine, using sharp tools in drill, using controlled blasting to control noise level within 85 DBA in the work environment. Workers engaged in blasting and drilling, operation of HEMM, etc. has been provided with ear plug/muffs.
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.**	Monitoring stations has been finalized in consultation with JSPCB. The work of monitoring of ambient environment was done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having laboratory recognized under the EP Rules. Presently CMPDI is monitoring the ground water level. One ETP/Oil and grease trap is there in the Keshalpur workshop under AKWMC workshop. Construction of two no. ETP/Oil and grease trap is in the process, CMPDIL-Dhanbad is preparing the designing of the same. Position of ETP/Oil and grease trap as mentioned above: • AKWMC workshop • Autoworkshop, Angarpathra
vii	**Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.**	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.

<table>
<tr>
<td>Viii</td>
<td>Monitoring of environmental 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 analysed through a laboratory recognized under EPA Rules, 1986.</td>
<td>
It is being compiled. Monitoring station has been finalized in consultation with JSPCB.

The work of monitoring of ambient environment was done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad who is having CSIR laboratory recognized under the EP Rules. Presently CMPDI is monitoring the ground water level.

Details of air sample location/monitoring stations are as follows:
<table>
<tr><th>Sr. No.</th><th>Stn. Code</th><th>Location</th></tr>
<tr><td colspan="3">CORE ZONE</td></tr>
<tr><td>1.</td><td>A7</td><td>AARC Agent Office, Ramkanali (Gobindpur Village)</td></tr>
<tr><td colspan="3">BUFFER ZONE</td></tr>
<tr><td>2.</td><td>A6</td><td>Mine Office, Block IV, Kooridih OCP</td></tr>
<tr><td>3.</td><td>A8</td><td>Mine Office, Nichitpur</td></tr>
<tr><td>4.</td><td>A18</td><td>Rudhi Basti</td></tr>
</table>
Details of water sampling location/monitoring station:
<table>
<tr><th>Sr. No.</th><th>Location Name</th><th>Location Code</th><th>Description</th></tr>
<tr><td>1.</td><td>Katri River</td><td>SW-8</td><td>Surface Water (U/S of Cluster IV)</td></tr>
<tr><td>2.</td><td>Kumari jore</td><td>SW-9</td><td>Surface Water (U/S of Cluster IV)</td></tr>
<tr><td>3.</td><td>Kumari jore</td><td>SW-10</td><td>Surface Water (Before confluence with Katri River)</td></tr>
<tr><td>4.</td><td>Katri River</td><td>SW-11</td><td>Surface Water (D/S of Cluster IV)</td></tr>
<tr><td>5.</td><td>Malkera New colony</td><td>GW-4</td><td>Groundwater (Hand Pump)</td></tr>
<tr><td>6.</td><td>Choitodih U/G Mine</td><td>MW-4</td><td>Effluent water (Mine water)</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>Noise monitoring station of the study area
<table>
<tr><th>Sr. No.</th><th>Stn. Code</th><th>Location</th></tr>
<tr><td colspan="3">CORE ZONE</td></tr>
<tr><td>1.</td><td>N_7</td><td>AARC Office, Ramkanali (Gobindpur Village)</td></tr>
<tr><td colspan="3">BUFFER ZONE</td></tr>
<tr><td>2.</td><td>N_6</td><td>Mine Office, Block IV, Kooridih OCP</td></tr>
<tr><td>3.</td><td>N_8</td><td>Mine Office, Nichitpur</td></tr>
</table></td>
</tr>
<tr>
<td>Ix</td>
<td>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.</td>
<td>Being Complied. Person working in dusty areas has been provided with protective respiratory devices/dust masks, goggle, etc. Vocational training Centers under separate Human Resource Development Deptt. Is conducting regular training programme on these issues.
Dust mask issued to workers during last year is 600 nos & Goggle- 265.
Performance of Vocational training of workers during last three years is as follows:
<table>
<tr><th>Year</th><th>Target</th><th>Achievement</th><th>Percentage of achievement</th></tr>
<tr><td>2010</td><td>750</td><td>788</td><td>105</td></tr>
<tr><td>2011</td><td>650</td><td>777</td><td>119</td></tr>
<tr><td>2012</td><td>660</td><td>743</td><td>112</td></tr>
<tr><td>2013</td><td>610</td><td>708</td><td>116</td></tr>
<tr><td>2014</td><td>610</td><td>687</td><td>113</td></tr>
<tr><td>2015 (upto 31.07.2015)</td><td>590</td><td>435 (Upto July-15)</td><td></td></tr>
<tr><td>Total</td><td>3870</td><td>4138</td><td></td></tr>
</table>
Safety talk in the pit office on safety and health hazards is a regular practice.

To give safety talk in the pit office/attendance room on safety and health hazards is a regular practice in each mine of Katras Area.</td>
</tr>
</table>

<table>
<tr><td>X</td><td>Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, 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.</td><td>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.
Performance of IME/PME of workers of Katras Area is as follows: -
<table>
<tr><th>Year</th><th>IME Done</th><th>PME Done</th></tr>
<tr><td>2013</td><td>283</td><td>1940</td></tr>
<tr><td>2014</td><td>423</td><td>1826</td></tr>
<tr><td>2015 (upto 31.07.2015)</td><td>171</td><td>606</td></tr>
<tr><td>Total</td><td>877</td><td>4372</td></tr>
</table></td></tr>
<tr><td>Xi</td><td>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.</td><td>A full-fledged Environment Department, headed by a HOD (Environment) along with a suitable qualified multidisciplinary team of executives which includes Environment, Mining, Excavation, Civil, Survey ,Electrical & mechanical, Forestry disciplines executives and technicians has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, Apart from one senior Executive a Management trainee of environment discipline has been given the responsibility to deal the environment related works. They are 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.</td></tr>
<tr><td>Xii</td><td>The funds earmarked for environmental protection measures shall be kept in</td><td>It is being complied.</td></tr>
</table>

	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.	
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/Zila Parishad, 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. Copy has been sent to ward councilor of Dhanbad Muncipility under cluster IV for necessary suggestion. Copy also displayed on company's website.
Xv	**A copy of the environmental clearance letter shall be shall also 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 of 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 sect oral 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. Copy of environment Clearance letter is uploaded in company's website and it is updated once in every six month so as to bring the same in public domain. The monitoring data of environmental quality parameter also displayed at the entrance of the project/mine office and at the Katras Area office.

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 of the Ministry, respective Zonal offices of CPCB and the SPCB.**	It is being complied. Last six monthly compliance report on status of compliance of the stipulated environmental clearance condition (both in hard & soft copy/email) for the period Oct 2014 to March 2015 has been sent to the Director (Eastern Region Office) vide letter no. – BCCL/KA-IV/ENV/2015/525 dated 29.04.2015
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 officer(s) of the Regional office by furnishing requisite data/ information/ monitoring reports.**	**It shall be complied.**
XIX	**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 under the environment (protection) Rules, 1985 as amended subsequently, shall also be uploaded on the company's website along with the status of compliances 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**	
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**	**Agree**

	in withdrawal of this clearance and attract the provisions of the environment (protection) Act, 1986.	
iii	The above condition will be enforced inter-alia under the provision of the water (protection & Control of Pollution)Act,1974, the Air (prevention & Control of Pollution) Act, 1981, the Environment (protection) Act, 1985, and the public liability insurance Act, 1991 alongwith 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.	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 order issued by the Jharkhand State Pollution Control Board which is pending in the Jharkhand High Court.	Agreed.

Your's faithfully

General Manager
Katras Area

GENERAL MANAGER
KATRAS AREA

भारत कोकिंग कोल लिमिटेड
)कोल इंडिया लिमिटेड का एक अंग(
कोयला भवन, कोयला नगर, धनबाद826005 –
A Mini Ratna Company
निदेशक (तक0) संचालन का कार्यालय

Bharat Coking Coal Limited
(A Subsidiary of Coal India Limited)
Regd.Off: KoylaBhawan, KoylaNagar
CIN : U10101JH1972GOI000918
Office of the D(T) Operation

Ref.No.:BCCL/D(T)OP/FNRSC/2016/ 84

Dated 5th March,2016

To,
The Director,
National Remote Sensing Centre,
Indian Space Research Organization,
Dept of Space, Govt of India,
Balanagar, Hyderabad-500 037.
Email: director@nrsc.gov.in
FAX :040-23877210

Subject:Conducting "Delineation of Surface coal fire and associated land subsidence in Jharia Coalfield, Jharkhand using satellite based remote sensing techniques".

Dear Sir,

This has ref: to our letter no. पत्रांक : भाकोकोलि/उप महाप्रबंधक(पर्या0)/संचिका-NRSC/16/76 दिनांक 01-02-2016 where you were communicated about the need of repeating Time Series Satellite Thermal Survey for "Delineation of Surface coal fire and associated land subsidence in Jharia Coalfield, Jharkhand using satellite based remote sensing techniques" by BCCL, for which administrative approval has been accorded by competent authority and was requested to provide the cost estimate with break-up and time schedule for conducting this study.

NRSC has provided its service to BCCL in conducting TIR Survey of surface coal fire and associated land subsidence in Jharia Coalfield in 2013.

We have received e-mail sent by Dr. Vinod Kumar on dated 11th Feb., 2016 that NRSC would undertake the study from June-July,2016.

This matter is likely to be discussed with Secretary, Government of India, Ministry of Coal, during his visit to Dhanbad.

In view of this, you are requested to expedite the matter from your end so that BCCL can place the work order to NRSC at the earliest.

Yours faithfully,

5/3/16

Director (Tech) Operation

Copy to :
1. CMD, BCCL- for kind information.
2. RD, RI-II, CMPDI, Dhanbad.
3. Dy.GM (Env.),BCCL

BHARAT COKING COAL LIMITED
(A Subsidiary of Coal India Ltd.)
Office of the Agent
Gaslitand Colliery
At +P.O- Angarpathra
Katrasgarh-828113
Katras Area (Dhanbad)

Ref.No. BCCL/KA/GTC/WO/2014/209 Dated. 20.07.2014

To
D.C. Panigrahi
Professor, Department of Mining Engineering
Indian School Of Mines
Dhanbad -826004, Jharkhand

Sub: Scientific Study for delineation of fire at Gaslitand Colliery,Katras Area for safety of Adra-Gomoh South Eastern Railway Line.

Ref:

1. Letter no. GM/KA/14/A-4/853 dt. 25.3.14 from General Manager, Katras Area
2. Quotation no. MIN/VENT/318 dt. 03.04.2014 from Indian School of Mines, Dhanbad.
3. Note sheet no. BCCL/KA/GTC/14/813 dt. 09/04/2014
4. FC no. KA/Mise.Exps./14-15/21 dt. 15/7/14, eFC no. 457 dt. 15/7/14 for amount Rs.11,23,600.00

Dear Sir,

With reference to above, Competent Authority has been pleased to award the above work to you for Scientific Study for delineation of fire at Gaslitand Colliery for safety of Adra – Gomoh S.E.Rly. line. As per the condition given in your quotation we are enclosing herewith one at par **Cheque, bearing no. 934175 dated 18/7/2014 for Rs. 11,23,600.00 (Eleven Lakh Twenty Three Thousand Six Hundred) only** for the Total Study fee as quoted by you, drawn in favour of " **Registrar, Indian School Of Mines, Dhanbad** " payable at Dhanbad.

You are, therefore, requested to please acknowledge receipt of the said cheque and start the job at Gaslitand Colliery for conducting Scientific Studies to assess the extent of fire and furnish the Study Report recommending precautions to be taken to prevent propagation of fire

RECEIVED
Date.....
Sig.....

upto and beneath the Adra –Gomoh S.E.Rly line at an earliest. You are, also requested to kindly provide the said Report within the stipulated time i.e 10 (ten) months or earlier.

Necessary assistance from BCCL will be provided to your team as given in your **Terms & Conditions** in connection with the above study.

Encl: Cheque at par No. 934175 dated 18/7/2014 for Rs. 11,23,600/-

Yours faithfully

20/2/14

General Manager (M)/Agent

Gaslitand Colliery,Katras Area

Distribution:

1. General Manager,Katras Area
2. Addl. General Manager, Katras Area
3. Area Finance Manager, Katras Area
4. Area Safety Officer, Katras Area
5. Manager, Gaslitand Colliery
6. Asstt. Survey Officer/Safety Officer/Engineer , Gaslitand colliery
7. Office File.

MINE VENTILATION AND ENVIRONMENT — RECEIVED

State Bank Of India

(00055) DHANBAD IFS CODE: SBIN0000055
BANK MORE
KATRAS ROAD
DHANBAD-826001

UNDER Rs. 11,23,601/-

PAY Registrar, Indian School of Mines, Dhanbad. को या उनके आदेश पर OR ORDER

रुपये RUPEES Eleven lakh twenty three thousand Six hundred only.

अदा करें ₹ 11,23,600/-

क्र.सं. / A/c No. 10976596520

VALID UPTO Rs. 50 Lacs AT NON-HOME BRANCH

Area Manager (Finance)

Addl. Manager (F)

Area-IV

BHARAT COKING COAL LTD.

Please sign above

Prefix : 1516200001

MULTI-CITY CHEQUE Payable at Par at All Branches of SBI

⑈934175⑈ 826002002⑆ 000036⑈ 29

BHARAT COKING COAL LIMITED

(A Subsidiary of Coal India Limited)

Office of the Project Officer

Amalgamated Angarpathra Ramkanali Colliery (A.A.R.C)

P.O. Katrasgarh, Distt. Dhanbad

Ref No. AARC/PO/2014/ 670 Date: 25-08-2014

To
Dr. N. Sahay,
Sr. Principal Scientist & Head
Mine Ventilation Discipline
CIMFR, Dhanbad.

Sub :- **Scientific study for delineation of fire at J.K. Section, Amalgamated Angarpathra Ramkanali Colliery, Katras Area for safety of Dhanbad – Chandrapura Railway Line track of East Central Railway.**

Dear Sir,

Please accept enclosed herewith one at par cheque bearing no. 934784 dated 21-08-14 of ₹. 975000/- (Rupees nine lakh seventy five thousand only) for the total study fees as quoted by you, drawn in favour of "The Director, Central Institute of Mining and Fuel Research, Dhanbad, Payable at State Bank of India, Hirapur (Code 1670) Dhanbad.

You are requested to start the scientific study work for delineation of fire at J.K. Section, Amalgamated Angarpathra Ramkanali Colliery, Katras Area for safety of Dhanbad – Chandrapura Railway Line track of East Central Railway as early as possible.

Enclosed:- As above.

25/8/14

PROJECT OFFICER
A.A.R.C.

Copy to:-

1. General Manager, Katras Area.
2. Addl. General Manager, Katras Area
3. Area Manager (Safety), Katras Area.
4. Area Finance Manager, Katras Area.
5. Manager, AARC.
6. Safety Officer/Survey Officer/Colly. Engineer, AARC.
7. Master File.

Pic 1- Toe wall with stone pitching at AARC

Pic 2- Concrete

Pic 3-

ANNEXURE 35

Detailed Calendar Plan of Production (including U/G mines) with plan of OB Dumping and Backfilling of Cluster IV mines from the year 2015-16 to 2019-20 (5 years)							Fig. in MT for Coal & million Cu.Mtr for OB					
Name of Colliery	Type of Mine	Stripping Ratio	2015-16		2016-17		2017-18		2018-19		2019-20	
			Coal	OB	Coal	OB	Coal	OB	Coal	OB	Coal	OB
AARC	U/G	NA	0.13		0.130		0.130		0.13		0.13	
SALANPUR	U/G	NA	0.13		0.130		0.130		0.13		0.13	
AKWMC	Mixed	01:2.48	4.10	11.810	4.300	12.737	4.800	13.985	5.35	10.319	6.24	12.552
KATRAS CHOITUDIH	OC	01:14.18	0.20	2.836	0.200	2.836	0.225	3.191	0.60	8.508	0.60	8.508
GASLITANT	OC	01:19.95	0.40	7.980	0.400	7.980	0.000	0.000	0.00	0.000	0.00	0.000
TOTAL			4.96	22.626	5.160	23.553	5.285	17.175	6.21	18.827	7.10	21.060

भारत कोकिंग कोल लिमिटेड
एक मिनी रत्न कंपनी
(कोलइंडियालिमिटेडकाएकअंग)
कोयलाभवन,कोयलानगर,धनबाद –826005

Bharat Coking Coal Limited
A Mini Ratna Company
(A Subsidiary of Coal India Limited)
Regd.Off: Koyla Bhawan, Koyla Nagar

CIN: U10101JH197OI000918
Environment Department

Ref.No.BCCL/Dy.GM (Env.)/F-EMP/16/11(a)

Dated 05-01-2016

To

Regional Officer

JSPCB, Dhanbad

Sub: Regarding relocating the Ambient Air Quality Monitoring station

This is in reference to your letter no.2650 dated 06.07.13 approving the locations depicted on plan indicating Ambient air quality monitoring stations for Clusters of BCCL. In this regard it is to be informed that at one of the Location i.e. A-18 (Rudhi Basti) which is Buffer zone station of Cluster IV, the monitoring at this location is not being carried due to safety and security problems. Therefore, to comply with EC conditions and ensure monitoring of a location instead of A-18 it is requested to relocate the station to some other suitable place.

This is for your kind information and necessary action

Yours Faithfully

Dy.GM (Env)

ENVIRONMENTAL MONITORING REPORT OF CLUSTER - IV MINES OF BCCL

(Monitoring Period: April 2015 – June 2015)

Project No.: CNP/3938/2014-15

Submitted to

Bharat Coking Coal Limited
Koyla Nagar, Dhanbad

(Dr. Abhay Kr. Singh /Dr. G. C. Mondal)
(Project Leaders)

(Dr. K. B. Singh)
(Project Coordinator)

Air quality monitored data at Mine Office of Nichitpur (A8) in the buffer zone, shows that the $PM_{2.5}$ value ranges from 32.1 $\mu g/m^3$ to 85.3 $\mu g/m^3$ with an average value 55.8 $\mu g/m^3$. The concentration of PM_{10} at Nichitpur site ranges from 99.5 $\mu g/m^3$ to 167.5 $\mu g/m^3$ with an average value of 141.0 $\mu g/m^3$. SO_2 concentration ranges from 27.9 $\mu g/m^3$ to 38.6 $\mu g/m^3$ and NOx value ranges from 45.6 $\mu g/m^3$ to 52.0 $\mu g/m^3$ at the Nichitpur site. The Mine Office site of Nichitpur (A8) act as buffer zone for Cluster-IV mines and as the core zone for Cluster-V.

Table 3: Ambient Air Quality in Cluster-IV Mine Area
(Monitoring Period : April 2015 to June 2015)

Location	Longitude & Latitude	Period/Date of Sampling	Parameters ($\mu g/m^3$)			
			$PM_{2.5}$	PM_{10}	SO_2	NO_x
		Core Zone	60	100	80	80
AARC Agent Office, Ramkanali (Gobindpur Village) (A7)	23°48'34" N 86°18'22" E	07/04/2015	92.3	150.3	26.8	42.5
		22/04/2015	72.6	155.6	24.9	46.7
		19/05/2015	73.9	132.6	30.2	44.2
		02/06/2015	52.1	139.0	28.0	50.5
		19/06/2015	53.9	120.2	27.9	45.8
		Buffer Zone				
Mine Office, Block IV, Kooridih OCP (A6)	23°47'55" N 86°16'20" E	09/04/2015	84.5	180.3	31.5	54.6
		01/05/2015	81.0	141.0	28.9	48.8
		18/05/2015	112.4	152.2	30.8	57.6
		03/06/2015	117.8	160.8	34.2	51.0
		18/06/2015	72.5	175.6	32.5	54.2
Mine Office, Nichitpur (A8)	23°48'20" N 86°21'30" E	06/04/2015	67.6	138.6	30.5	51.5
		21/04/2015	58.9	151.3	27.9	45.6
		07/05/2015	32.1	148.1	29.8	48.2
		29/05/2015	35.0	99.5	38.6	50.1
		17/06/2015	85.3	167.5	33.5	52.0

The standard notified vide G.S.R. 742(E) dated 25.9.2000 under Environment (Protection) Amendment Rules 2000 for the coal mining Area is not withdrawn yet and are applicable for the coalfields (**Annexure-I**). The National Ambient Air Quality Standards (NAAQS) as per MoEF Notification on 16th November, 2009 has been depicted in **Annexure-II.**

may be related to either or both; surface and groundwater resources in the mining area depending on the specific situation. To take up these issues it is necessary to take a stock of available water resources in mining area with respect to their existing quality as well as their supportive capacity to represent the baseline status of water environment.

3.1 Water Quality Assessment

Six water samples comprising two each from surface water, groundwater and effluents water resources were collected in June 2015 to assess the water quality of the Cluster-IV mining area of BCCL (**Table 4 and Fig. 3**). The mine discharge water of Choitodih U/G mine (MW-4) was collected on fortnightly basis from April to June 2015 and analysed for four parameter as per CPCB guidelines for effluent water. The water samples were collected in one-liter narrow-mouthed pre-washed polyethylene bottles. For heavy metal analysis, 100 ml of samples were acidified with HNO_3 and preserved separately. Temperature, TDS, pH and DO values were measured in the field using a portable conductivity and pH meter. The other parameters are measured in the geochemical laboratory at CSIR-CIMFR, Dhanbad following the standard methods prescribed in APHA (1998). The turbidity has been determined in pre-filtered sample by turbidity meter. In the laboratory, the water samples were filtered through 0.45 µm Millipore membrane filters to separate suspended particles. Acid titration method was used to determine the concentration of bicarbonate (APHA 1992). Major anions (F, Cl, NO_3 and SO_4) were analysed by ion chromatograph (Dionex Dx-120) using anions AS12A/AG12 columns coupled to an anion self-regenerating suppressor (ASRS) in recycle mode. Major cations (Ca, Mg, Na, K) were measured by Atomic Absorption Spectrophotometer (AAS) in flame mode and the heavy metals were analysed by ICP-MS. The analytical precision was maintained by running a known standard after every 10 samples.

Table 4: Sampling Locations for Water Quality in Clusters IV

S. N.	Location Name	Description	Location Code	Latitude	Longitude
1.	Katri River	Surface water (U/S of Cluster IV)	SW-8	23°48'29" N	86°18'03" E
2.	Kumari Jore	Surface water (U/S of Cluster IV)	SW-9	23°48'45" N	86°19'07" E
3.	Kumari Jore	Surface water (Before confluence with Katri River)	SW-10	23°47'58" N	86°18'44" E
4.	Katri River	Surface water (D/S of Cluster IV)	SW-11	23°47'02" N	86°18'33" E
5.	Malkera New Colony	Groundwater (Hand Pump)	GW-4	23°46'57"N	86°17'56" E
6.	Choitodih U/G Mine	Effluent water (Mine water)	MW-4	23°47'35" N	86°18'02" E

Table 6: Physico-chemical Characteristics of Groundwater in Cluster-IV Mining Area

S.N.	Parameters	Station Code	Drinking water IS: 10500 (2012)	
		GW-4 (Malkera New Colony)	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1.	Colour, Hazen units	<1	5	15
2.	Odour	Unobjectionable	Agreeable	Agreeable
3.	Taste	Agreeable	Agreeable	Agreeable
4.	Turbidity, NTU Max	2.10	1	5
5.	pH	7.10	6.5-8.5	No relaxation
6.	Alkalinity as $CaCO_3$, mg/l, Max	475	200	600
7.	Total Hardness as $CaCO_3$ (mg/l)	717	200	600
8.	Iron (as Fe) mg/l, Max	1.847	0.3	No relaxation
9.	Chlorides (as Cl) mg/l, Max	201.8	250	1000
10.	Free Residual Chlorine, mg/l, Min	0.16	0.2	1.0
11.	Total Dissolved Solids mg/l, Max	1090	500	2000
12.	Calcium (as Ca), mg/l, Max	110.7	75	200
13.	Copper (as Cu), mg/l, Max	0.002	0.05	1.5
14.	Manganese (as Mn), mg/l, Max	0.292	0.1	0.3
15.	Sulphate (as SO_4) mg/l, Max	296.0	200	400
16.	Nitrate (as NO_3), mg/l, Max	<0.01	45	No relaxation
17.	Fluoride (as F), mg/l, Max	0.74	1.0	1.5
18.	Selenium(as Se), mg/l, Max	<0.001	0.01	No relaxation
19.	Arsenic (as As), mg/l, Max	0.009	0.01	No relaxation
20.	Lead (As Pb), mg/l, Max	0.002	0.01	No relaxation
21.	Zinc (as Zn), mg/l, Max	1.038	5	15
22.	Chromium as Cr^{+6} (mg/l)	0.008	0.05	No relaxation
23.	MPN of Coliform in 100 ml	Nil	Nil	No relaxation
24.	Boron (as B), mg/l, Max	0.017	0.5	1.0
25.	Phenolic Compounds (as C_6H_5OH) mg/l, Max	<0.001	0.001	0.002
	Date of Sampling	12.06.2015		

pH of the analysed groundwater are found well within the safe limit of 6.5 - 8.5, prescribed for drinking water.The turbidity is one of the important physical parameters for water quality defining the presence of suspended solids in water which causes the muddy or turbid appearance of water body. The consumption of high turbid water may cause a health risk as excessive

9.0. Total Suspended Solid concentration in the discharged mine water samples are much below the recommended limit of 100 mg L^{-1}. The measured concentration of oil and grease is also found below the recommended limit of 10 mg L^{-1} in all the mine discharge water.

Table 7: Physico-chemical Characteristics of Mine Effluent Water in Cluster-IV Mining Area

S.N.	Parameter	MW-4 (Choitodih U/G Mine water)	Effluent water IS:2490
1.	Colour, Hazen units	<1.0	
2.	Odour	Unobjectionable	Unobjectionable
3.	Total Suspended Solids mg/l, max.	46.7	100
4.	pH value	7.23	5.5 to 9.0
5.	Temperature ^{0}C	24.2	Shall not exceed 5°C above the receiving water temperature
6.	Oil and grease, mg/l max.	3.76	10
7.	Total residual chlorine, mg/l max.	0.46	1.0
8.	Ammonical nitrogen (as N), mg/l max.	2.14	50
9.	Kjeldahl nitrogen (as N), mg/l max.	4.75	100
10.	Free ammonia (as NH_3), mg/l max.	0.89	5.0
11.	Biochemical oxygen demand, BOD (3 days at 27°C), mg/l max.	4.32	30
12.	Chemical oxygen demand (COD), mg/l max.	40.8	250
13.	Arsenic (as As), mg/l max.	0.028	0.2
14.	Lead (as Pb), mg/l max.	0.003	0.1
15.	Hexavalent chromium (as Cr^{+6}), mg/l max.	0.002	0.1
16.	Total Chromium (as Cr), mg/l max	0.010	2.0
17.	Copper (as Cu), mg/l max.	0.002	3.0
18.	Zinc (as Zn), mg/l max.	0.016	5.0
19.	Selenium (as Se), mg/l max.	<0.001	0.05
20.	Nickel (as Ni), mg/l max.	0.005	3.0
21.	Fluoride (as F), mg/l max.	1.01	2.0
22.	Total Dissolved Solids mg/l max.	760	2100
23.	Sulphide (as S), mg/l max.	0.94	2.0
24.	Phenolic compounds (as C_6H_5OH), mg/l max.	<0.001	1.0
25.	Manganese (as Mn), mg/l max.	0.012	2
26.	Iron (as Fe), mg/l max.	0.918	3
27.	Nitrate Nitrogen, mg/l max.	<0.01	10
	Date of Sampling	04.02.2015	

Table 8.1: Mine Effluent Water of Choitodih U/G Mine, Cluster-IV Mining Area

Area: Core Zone		Area	Date of Sampling
MW-4: Mine Effluent Water, Choitodih U/G Mine		Cluster: IV	10.04.2015
S.N.	**Parameter**	**MW-4**	**Effluent water IS:2490**
1.	pH value	7.67	5.5 to 9.0
2.	COD, mg/l max.	58.3	250
3.	Total Suspended Solids, mg/l, max.	43.4	100
4.	Oil and grease, mg/l max.	3.64	10

Table 8.2: Mine Effluent Water of Choitodih U/G Mine, Cluster-IV Mining Area

Area: Core Zone		Area	Date of Sampling
MW-4: Mine Effluent Water, Choitodih U/G Mine		Cluster: IV	28.04.2015
S.N.	**Parameter**	**MW-4**	**Effluent water IS:2490**
1.	pH value	7.65	5.5 to 9.0
2.	COD, mg/l max.	45.5	250
3.	Total Suspended Solids, mg/l, max.	55.7	100
4.	Oil and grease, mg/l max.	3.87	10

Table 8.3: Mine Effluent Water of Choitodih U/G Mine, Cluster-IV Mining Area

Area: Core Zone		Area	Date of Sampling
MW-4: Mine Effluent Water, Choitodih U/G Mine		Cluster: IV	15.05.2015
S.N.	**Parameter**	**MW-6**	**Effluent water IS:2490**
1.	pH value	7.49	5.5 to 9.0
2.	COD, mg/l, max.	44.2	250
3.	Total Suspended Solids, mg/l, max.	44.6	100
4.	Oil and grease, mg/l max.	4.10	10

Table 8.4: Mine Effluent Water of Choitodih U/G Mine, Cluster-IV Mining Area

Area: Core Zone	Area	Date of Sampling
MW-4: Mine Effluent Water, Choitodih U/G Mine	Cluster: IV	29.05.2015

S.N.	Parameter	MW-4	Effluent water IS:2490
1.	pH value	7.15	5.5 to 9.0
2.	COD, mg/l, max.	43.5	250
3.	Total Suspended Solids, mg/l, max.	50.5	100
4.	Oil and grease, mg/l max.	3.42	10

Table 8.5: Mine Effluent Water of Choitodih U/G Mine, Cluster-IV Mining Area

Area: Core Zone	Area	Date of Sampling
MW-4: Mine Effluent Water, Choitodih U/G Mine	Cluster: IV	06.06.2015

S.N.	Parameter	MW-4	Effluent water IS:2490
1.	pH value	7.23	5.5 to 9.0
2.	COD, mg/l, max.	40.4	250
3.	Total Suspended Solids, mg/l, max.	45.5	100
4.	Oil and grease, mg/l max.	3.74	10

Table 8.6: Mine Effluent Water of Choitodih U/G Mine, Cluster-IV Mining Area

Area: Core Zone	Area	Date of Sampling
MW-4: Mine Effluent Water, Choitodih U/G Mine	Cluster: IV	19.06.2015

S.N.	Parameter	MW-4	Effluent water IS:2490
1.	pH value	6.79	5.5 to 9.0
2.	COD, mg/l, max.	42.8	250
3.	Total Suspended Solids, mg/l, max.	48.3	100
4.	Oil and grease, mg/l max.	3.45	10

Table 11: Noise Level in the Cluster-IV Mining Area

Stn. Code	Monitoring Location	Latitude	Longitude	Date of Sampling	Noise level dB(A) average	
					Day Time	Night Time
Core Zone						
N_7	AARC Office, Ramkanali (Gobindpur Village)	23°48'34" N	86°18'22" E	07/04/2015	68.5	48.3
				22/04/2015	70.3	50.6
				19/05/2015	65.5	48.2
				02/06/2015	71.4	51.3
				19/06/2015	67.3	49.4
Standards as per CPCB					75	70
Buffer Zone						
N_6	Mine Office, Block IV, Kooridih OCP	23°47'55" N	86°16'20" E	09/04/2015	67.0	49.5
				01/05/2015	68.5	48.3
				18/05/2015	70.2	50.1
				03/06/2015	69.5	47.8
				18/06/2015	71.0	51.0
N_8	Mine Office, Nichitpur	23°48'20" N	86°21'30" E	06/04/2015	65.5	48.8
				21/04/2015	72.6	50.4
				07/05/2015	68.7	51.4
				29/05/2015	65.2	48.7
				17/06/2015	70.0	52.9
Standards as per CPCB					75	70

भारत कोकिंग कोल लिमिटेड
एक मिनी रत्न कंपनी
(कोलइंडियालिमिटेडकाएकअंग)
कोयलाभवन,कोयलानगर,धनबाद –826005

Bharat Coking Coal Limited
A Mini Ratna Company
(A Subsidiary of Coal India Limited)
Regd.Off: Koyla Bhawan, Koyla Nagar
CIN: U10101JH197OI000918
Environment Department

Ref.No.BCCL/Dy.GM (Env.)/F-EMP/16/ 418

Dated 02-02-2016

To,

AN Sharan, IFS
Additional Principal Chief Conservator of Forest
Ministry of Environment, Forests & Climate Change
Regional Officer (ECZ)
Bungalow no. A-2, Shyamli Colony
Ranchi – 834002
Jharkhand

Sub: Regarding No Subsidence due to mining operations in cluster IV

Dear Sir,

This is to inform you that there is no mining induced subsidence movement over and around the working area of Cluster-IV mines as there is no depillaring operation going on in Underground mines at present.

This is for your kind information as solicited by you in letter no **103-398/ROR-2015/190 dated 19.11.2015.**

Project officer
AKWMC

Project officer
AARC

Project officer
KCC

Project officer
GTC

Project officer
Salanpur

Area Safety officer
Katras Area

Area Survey officer
Katras Area

Dy.GM (Env)
BCCL

General Manager
Katras Area,BCCL

GENERAL MANAGER
B.C.C.L., KATRAS AREA

Bharat Coking Coal Ltd.
(A Subsidiary of Coal India Limited)
Office of the General Manager, Katras Area
P.O. Sijua, P.S.- Jogta, Dhanbad-828121
CIN: U1010JH1972GOI000918
Phone/Fax No.: 0326-2371213
Email ID: cgmkatras@bccl.gov.in

Ref. No: - BCCL/KA-IV/GM/2016/ 1287 **Date: - 09/03/2016**

To,
The Divisional Forest Officer,
Dhanbad,

Subject: - List of high root density tree species

Dear Sir,
For compliance of environmental clearance conditions of **cluster-IV high root density tree species** shall be selected for planting over areas likely to be affected by subsidence, For this purpose a list of high root density tree species is required to be prepared.

You are requested to provide a list of high root density tree species.

Yours faithfully

General Manger
Katras Area

MINES CLOSURE COST AND ACCURED INTEREST ON ESCROW A/C

SL	AREA	NAME OF MINE	ACCOUNT NO.	MC COST UP TO 31.03.15	INTEREST upto31.03.15
1	BARORA	MURAIDIH,SHATBDI GRP.OF MINES	00150100008816	555.12	37.00121
		PHULARITAND MIXED MINES (CL-II)	00150100009052	378.184	17.43739
		DAMODA GROUP OF MINES	00150100008869	224.961	13.91414
		TOTAL		**1158.265**	**68.35274**
2	BLOCK II	BLOCK II GRP OF MINES	00150100009044	425.162	19.60346
		TOTAL		**425.162**	**19.60346**
3	GOVIND	MAHESHPUR COLLIERY	00150100008836	54.24	5.19282
		KHARKHAREE COLLIERY	00150100008824	32.84	2.16638
		JOGIDIH COLLIERY	00150100008823	48.43	5.38891
		GOVINDPUR COLLIERY	00150100008835	42.19	2.78304
		BLOCK IV/KOORIDIH MINE	00150100008834	206.7	13.63521
		NEW AKASHKINAREE MINE	00150100008831	124.21	8.19357
		TOTAL		**508.61**	**37.35993**
4	KATRAS	AKWMC	00150100009051	387.538	17.8687
		AARC	00150100009053	70.53	4.61915
		SALANPUR UG MINE	00150100009050	104.209	7.95176
		KATRAS CHAITUDIH(from 2014-16)	00150100010086	(82.119)	0
		TOTAL		**644.396**	**30.63961**
5	SIJUA	NICHITPUR COLLIERY	00150100008825	204.3	13.47699
		TETULMARI COLLIERY	00150100008833	264.78	17.46626
		SENDRA BANSJORA COLLIERY	00150100008832	108.57	7.16175
		MUDIDIH COLLIERY	00150100008829	242.39	15.98955
		LOYABAD COLLIERY	00150100008826	103.48	11.32547
		TOTAL		**923.52**	**65.42002**
6	KUSU	KUSUNDA OCP	00150100008870	212.829	13.16377
		EAST BASSURIYA OC	00150100008876	99.027	6.12498
		AMALGAMATED DHANSAR-INDUSTRY COLLIERY(AIDC)	00150100008939	188.639	10.19066
		GODHUR GROUP OF MINES	00150100009048	113.225	5.22064
		BASSURIYA UG MINES	00150100008944	157.795	16.82053
		GONDUDIH/KHAS KUSUNDA OCP	00150100008875	275.522	17.04143
		ENA OCP	00150100008938	97.717	5.279
		TOTAL		**1144.754**	**73.84121**
7	P B				
		POOTKI BALIHARI GROUP OF MINES	00150100009045	119.215	8.02613
		BURRAGARH UG	00150100008821	13.67	0.902
		HURRLADIH UG	00150100008820	15.71	1.14811
		SIMLABAHAL UG	00150100008822	19.69	1.52404
		BHUTGORIA UG	00150100008818	13.23	1.00476
		GOPALICHOK UG	00150100008819	88.55	10.20848
		TOTAL		**270.065**	**22.813520**
8	BASTA	BASTACOLLA COLLIERY	00150100008877	42.298	2.61616
		BERA COLLIERY	00150100008873	99.823	6.31472
		DOBARI COLLIERY	00150100008935	11.28	0.61789
		GANHOODIH OCP	00150100008936	160.614	8.67685
		KUYA GROUP OF MINES	00150100008874	338.32	20.92553
		RAJAPUR/SOUTH JHARIA OCP	00150100008937	151.308	8.17415
		TOTAL		**803.643**	**47.3253**
9	LODNA				
		NT-ST-JEENAGORA GROUP OF MINES	00150100009046	794.504	36.63318
		JOYRAMPUR	00150100009049	25.615	1.78288
		BARAREE COLLIERY	00150100008940	188.534	18.1176
		LODNA COLLIERY	00150100008942	79.438	6.82636
		KUJAMA COLLIERY	00150100008941	93.264	5.03845
		TOTAL		**1181.455**	**68.39847**
10	EJ				
		SUDAMDIH INC MINES	00150100008872	69.632	8.15358
		BHOWRA(N) GRP OF MINES	00150100008866	279.24	17.27143
		BHOWRA(S) GRP OF MINES	00150100008830	775.47	76.20055
		PATHERDIH GRP OF MINES	00150100008871	117.304	7.25535
		TOTAL		**1241.646**	**108.88091**
11	WJ	MOONIDIH UNDER GROUND PROJEC	00150100008943	168.467	9.10112
		MURLIDIH 20/21 PITS COLLIERY	00150100009047	64.391	2.96893
		LOHAPATTY COLLIERY	00150100009043	548.775	25.30304
		TOTAL		**781.633**	**37.37309**
12	CV	BASANTIMATA COLLIERY	00150100008927	150.78	10.65389
		DAHIBARI BASANTIMATA OCP	00150100008928	263.67	17.38647
		KALYANESHWARI GRP OF MINES	00150100009042	429.7	19.78731
		TOTAL		**844.05**	**53.82767**
		GRAND TOTAL		(9927.199)	**633.83593**

59·13
35·01
53·82
44·97
220·34
132·40

→ Deposited in April

44·914
104·138
169·291
359·25
159·482

831·137
27·387
206·712
86·265

77·781
296·5113
851·67

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

(FOR THE Q.E. MARCH, 2016)

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

June, 2016

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CLUSTER - IV

(FOR THE Q.E. March, 2016)

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ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED CLUSTER – IV

(FOR THE Q.E. MARCH, 2016)

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

June, 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 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, 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 (PM2.5 sampler) were used for sampling of $PM_{10,}$ SO_2, & NO_X and Fine Dust Sampler (PM2.5 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 Mine effluent samples were collected and analysed for four parameters on fortnightly basis. Mine 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 27 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 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.

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, 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 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.

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 (MoEFCC) ,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 MoEFCC 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 IV is in the Northern part of the Jharia coalfield. It includes Salanpur OCP, Katras Choitodih UG, Amalgamated Keshalpur – west Mudidih OCP & UG Mines, Amalgamated Ramkanali – Angarpathra OCP & UG mines, Gaslitand UG. The cluster– IV is situated about 25 - 30 kms 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 Katri River and Kumari Jore.

1.2 The cluster IV is designed to produce 2.851 Mtpa (normative) and 3.706 Mtpa peak capacity of coal. The average grade of coal W – I to IV.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEFCC) 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 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 MoEFCC & 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) 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 ground level at AARC agent Office, Ramkanali. The station was selected to represent the impact of mining activities of Ramkanali Colliery, poor roads condition, heavy public traffic, burning of coal by the surrounding habitants.

ii) Chotudih (A37): Industrial Area

The location of the sampling station is selected to represent the impact of mining activities of Katras Area mines activity and poor roads condition, heavy public traffic, burning of coal by the surrounding habitants.

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 ground level near 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.

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 analysed 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 78 to 285 µ/m^3
In **buffer zone** in **Industrial area** varies from 72 to 94 µ/m^3

Particulate Matter $PM_{2.5}$

In **core zone** under **Industrial area** varies from 26 to 45 µ/m^3
In **buffer zone** in **Industrial area** varies from 31 to 48 µ/m^3

Sulphur Dioxide:

In **core zone** under **Industrial area** varies from 10 to 12 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 18 to 27 µ/m^3
In **buffer zone** in **Industrial area** varies from 19 to 28 µ/m^3

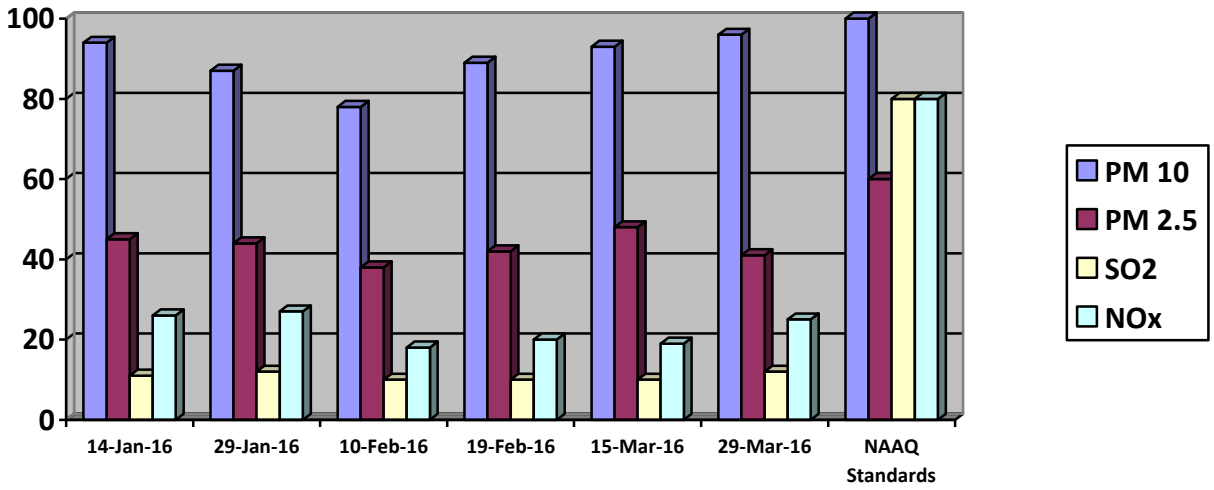
AMBIENT AIR QUALITY DATA

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

Station Code/Name: (a) A7 Govindpur village **Category: Industrial.**
(b) A37 Chotudih
ZONE: Core

(a). Station Code/Name: A7 - Govindpur village Category: Industrial[1].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	14 - Jan -16	94	45	11	26
2	29 - Jan - 16	87	44	12	27
3	10 - Feb -16	78	38	<10.0	18
4	19 - Feb - 16	89	42	<10.0	20
5	15 - Mar - 16	93	48	<10.0	19
6	29 - Mar - 16	96	41	12	25
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

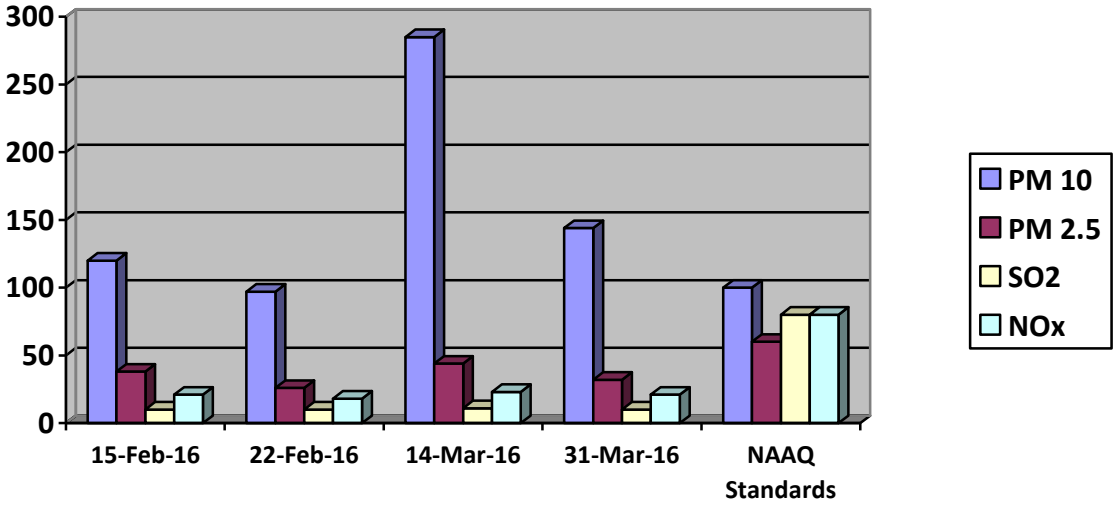
Note:

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*
- *Predominant wind direction South – West.*

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed……  …….Dated 28.05.2016. Job No. 110310

(b). Station Code/Name: A37 – Chotudih Category: Industrial[2].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	15 - Feb -16	120	38	<10.0	21
2	22 - Feb - 16	97	26	<10.0	18
3	14 - Mar - 16	285	44	11	23
4	31 - Mar - 16	144	32	<10.0	21
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

Note:

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*
- *Predominant wind direction South – West.*

[2] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed…… …….Dated 28.05.2016. Job No. 110310

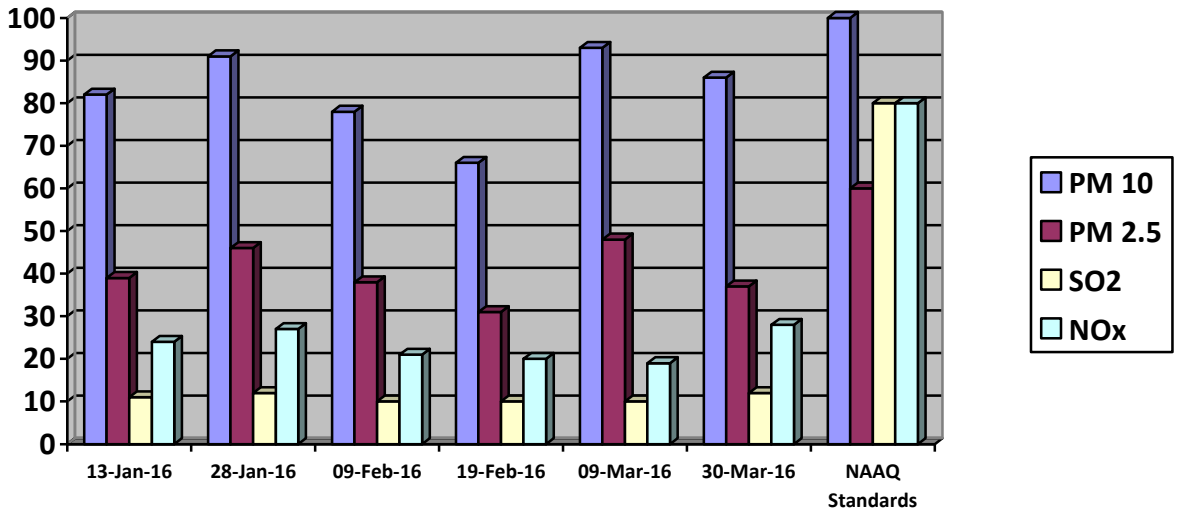
AMBIENT AIR QUALITY DATA

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

Station Code/Name: (a) A6 Block IV OCP **Category: Industrial.**
(b) A8 Nichitpur
ZONE: BUFFER

(a). Station Code/Name: A6 Block IV Kooridih OCP Category: Industrial[3].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_X
1	13 - Jan -16	82	39	11	24
2	28 - Jan - 16	91	46	12	27
3	09 - Feb -16	78	38	<10.0	21
4	19 - Feb - 16	66	31	<10.0	20
5	09 - Mar - 16	93	48	<10.0	19
6	30 - Mar - 16	86	37	12	28
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

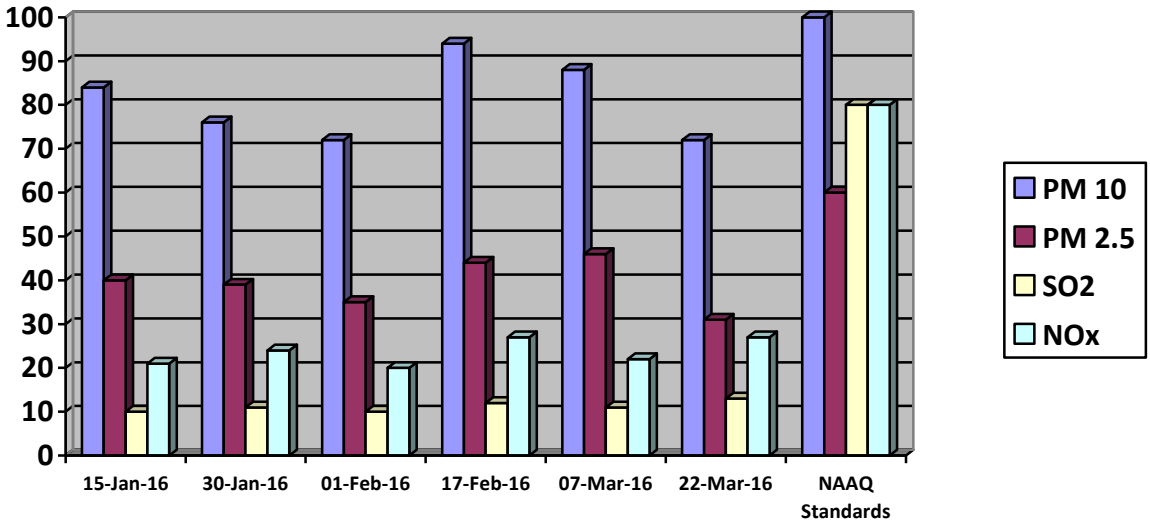
Note:

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

[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed……  …….Dated 28.05.2016. Job No. 110310

(b). Station Code/Name: A8 – Nichitpur, Category: Industrial[4].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_X
1	15 - Jan -16	84	40	<10.0	21
2	30 - Jan - 16	76	39	11	24
3	01 - Feb -16	72	35	<10.0	20
4	17 - Feb - 16	94	44	12	27
5	07 - Mar - 16	88	46	11	22
6	22 - Mar - 16	72	31	13	27
	NAAQ Standards	100	60	80	80



Trace Metal analysis report of Ambient Air Quality

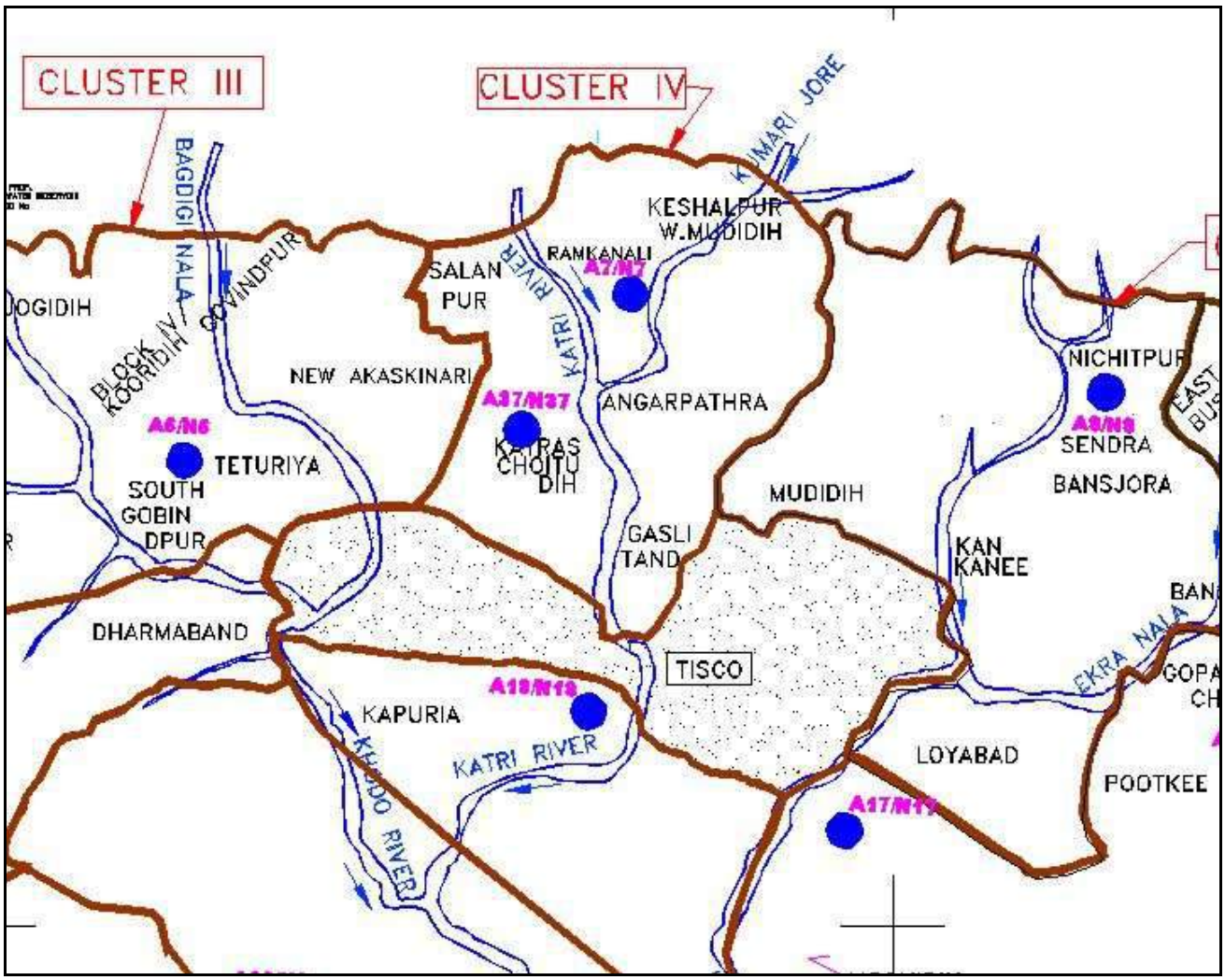
Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

Note:

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

[4] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed…… …….Dated 28.05.2016. Job No. 110310

Fig I: Ambient Air Monitoring Stations in Cluster- IV 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 **Fig. 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.

ii) Drinking Water quality at **Kankanee Village (DW4)**

iii) Surface Water quality at **U/S of Katri river (SW8)**

iv) Surface Water quality at **D/S of Katri river (SW11)**

v) Surface Water quality at **U/S kumari Jore (SW9)**

vi) Surface Water quality at **D/S Kumari Jore (SW10)**

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. 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 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 - IV**

Month: **January, 2016.**

Name of the Stations & Code : **1. MW4- Mine Discharge of Chotudih**

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 01.01.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	46	*100 (Max)*
2	pH	7.52	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 25.01.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	32	*100 (Max)*
2	pH	7.62	*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 - IV**

Month: **February, 2016.**

Name of the Stations & Code : **1. MW4- Mine Discharge of Chotudih**

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 09.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	34	*100 (Max)*
2	pH	7.54	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	28	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 16.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	44	*100 (Max)*
2	pH	7.43	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	36	*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 - IV**

Month: **March, 2016.**

Name of the Stations & Code :

1. MW4- Mine Discharge of Chotudih

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 08.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	7.94	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	24	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 16.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	7.99	*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

18/5/16

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

WATER QUALITY

(EFFLUENT WATER- ALL PARAMETERS)

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

Name of the Project : **Cluster - IV** Period: **H. E. March, 2016.**

Area : **Chotudih** **Project: Chotudih Cluster IV**

Stations: **Date of Sampling:**

1. Mine Water Discharge chotudih MW-4 16/03/2016

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		MW-4	2	3			
1	Ammonical Nitrogen, mg/l, Max	0.48			0.02	50.0	IS 3025/34:1988, R : 2009, Nessler's
2	Arsenic (as As), mg/l, *Max*	<0.002			0.002	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
3	B.O.D (3 days 27°C), mg/l, Max	<2.00			2.00	30.0	IS 3025 /44:1993,R:2003 3 day incubation at 27°C
4	COD, mg/l, Max	32			4.00	250.0	APHA, 22nd Edition, Closed Reflux, Titrimetric
5	Colour	colourless			Qualitative	Qualitative	Physical/Qualitative
6	Copper (as Cu), mg/l, *Max*	<0.03			0.03	3.0	IS 3025/42: 1992 R : 2009, AAS-Flame
7	Dissolved Phosphate, mg/l, Max	0.5			0.30	5.0	APHA, 22nd Edition Molybdovanadate
8	Fluoride (as F) mg/l, *Max*	0.83			0.02	2.0	APHA, 22nd Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.01			0.01	5.0	IS:3025/34:1988, Nesseler's
10	Hexavalent Chromium, mg/l, Max	<0.01			0.01	0.1	APHA, 22nd Edition, Diphenylcarbohydrazide
11	Iron (as Fe), mg/l, *Max*	<0.06			0.06	3.0	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
12	Lead (as Pb), mg/l, *Max*	<0.005			0.005	0.1	APHA, 22nd Edition, AAS-GTA
13	Manganese(as Mn), mg/l, Max	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, *Max*	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, *Max*	<0.5			0.50	10.0	APHA, 22nd Edition, UV-Spectrphotometric
16	Oil & Grease, mg/l, Max	<2.00			2.00	10.0	IS 3025/39:1991, R : 2003, Partition Gravimetric
17	Odour	Agreeable			Agreeable	Qualitative	Is-3015/5:1983/R:2012/Qualitative
18	pH value	7.99			2.5	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
19	Phenolic compounds (as C_6H_5OH),mg/l, *Max*	<0.002			0.002	1.0	APHA, 22nd Edition 4-Amino Antipyrine
20	Selenium (as Se), mg/l, *Max*	<0.002			0.002	0.05	APHA, 22nd Edition, AAS-GTA
21	Sulphide (as SO_3), mg/l, Max	<0.005			0.005	2.0	APHA, 22nd Edition Methylene Blue
22	Temperature (^oC)	36.2			Shall not exceed 5^0 C above the receiving temp.		IS-3025/09:1984, Thermometeric
23	Total Chromium (as Cr), mg/l, *Max*	<0.06			0.06	2.0	IS-3025/52:2003, AAS-Flame
24	Total Kjeldahl Nitrogen, mg/l, Max	1.4			1.00	100.0	IS:3025/34:1988, Nesseler's
25	Total Residual Chlorine, mg/l, Max	0.04			0.02	1.0	APHA, 22nd Edition, DPD
26	Total Suspended Solids, mg/l, Max	38			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
27	Zinc (as Zn), mg/l, *Max*	0.012			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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 Project : **Cluster - IV** Period: **Q. E. March, 2016.**

Area : Chotudih **Project: Chotudih Cluster IV**

Stations: **Date of Sampling:**

1. Upstream in Katri River SW-8 10/03/2016
2. Downstream in KatriRiver SW-11 10/03/2016
3. Upstream in Kumar Jore SW-9 14/03/2016
4. Downstream in Kumar Jore SW-10 14/03/2016

Sl. No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		SW-8	SW-9	SW-10	SW-11		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.4	2.6	2.8	2.6	2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	colourless	colourless	colourless	colourless	Qualitative	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	74	98	108	98	2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03	<0.03	<0.03	0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	6.1	6.3	5.9	5.2	0.10	IS 3025/381989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	1.05	0.89	1.04	1.15	0.02	APHA, 22nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<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	<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	<0.005	0.005	APHA, 22nd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	1.77	1.77	4.43	3.54	0.50	APHA, 22nd Edition, UV-Spectrphotometric
12	pH value	7.25	7.63	7.13	7.20	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	<0.002	0.002	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	APHA, 22nd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	130	240	290	290	2.00	APHA, 22nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	316	498	562	498	25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	0.016	0.012	0.011	0.012	0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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

WATER QUALITY

(DRINKING WATER- ALL PARAMETERS)

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

Name of the Project : **Cluster - IV** Period: **Q. E. March, 2016.**

Area : **Chotudih** **Project: Chotudih Cluster IV**

Stations: **Date of Sampling:**

1. Drinking Water from Kankanee/Malkera Village DW-4 14/03/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		DW-4	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	3			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	96			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	208			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	0.35			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.05			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	0.20			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	11			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	8.19			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	124			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	288			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	1090			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	696			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	0.034			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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

WATER QUALITY

(GROUND WATER- ALL PARAMETERS)

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

Name of the Project : **Cluster - IV** Period: **Q. E. March, 2016.**

Area : Chotudih **Project: Chotudih Cluster IV**

Stations: **Date of Sampling:**

1. Ground Water from Keshalpur, Batighar GW-4 28/02/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-4	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	6			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	66			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	72			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	0.53			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.02			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	7.90			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	66			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	172			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	460			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	236			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	7			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.013			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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

CHAPTER - IV

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites and their rationale

i) **Govindpur village (N7)**

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) **Chotudih (N37)**

To assess the noise generated in the mines activity. Noise levels were recorded in the mines area

iii) **Block IV (N6)**

To assess the noise level in the industrial area,

iv) **Nichitpur (N8)**

To assess the noise level in the industrial area, noise levels were recorded during day time in the Mines area.

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 and night time and the observed values were compared with standards prescribed by MoEFCC.

The results of Noise levels recorded during day and night 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 -IV** Month: **January, 2016.**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[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	Govindpur village (N7)	Industrial area	14.01.2016	61.4	*75*
2	Chotudih (N37)	Industrial area	-	-	*75*
3	Block IV (N6)	Industrial area	13.01.2016	55.7	*75*
4	Nichitpur (N8)	Industrial area	15.01.2016	62.5	*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	Govindpur village (N7)	Industrial area	29.01.2016	62.6	*75*
2	Chotudih (N37)	Industrial area	-	-	*75*
3	Block IV (N6)	Industrial area	28.01.2016	58.3	*75*
4	Nichitpur (N8)	Industrial area	30.01.2016	61.3	*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 28.05.2016. Job No. 110310

NOISE LEVEL DATA

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

Name of the Cluster: **Cluster -IV** Month: **February, 2016**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[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	Govindpur village (N7)	Industrial area	10.02.2016	59.8	*75*
2	Chotudih (N37)	Industrial area	15.02.2016	61.4	*75*
3	Block IV (N6)	Industrial area	09.02.2016	60.2	*75*
4	Nichitpur (N8)	Industrial area	01.02.2016	64.6	*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	Govindpur village (N7)	Industrial area	19.02.2016	55.6	*75*
2	Chotudih (N37)	Industrial area	22.02.2016	62.6	*75*
3	Block IV (N6)	Industrial area	19.02.2016	59.8	*75*
4	Nichitpur (N8)	Industrial area	17.02.2016	61.3	*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 28.05.2016. Job No. 110310

NOISE LEVEL DATA

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

Year : **2015-16.**

Name of the Cluster: **Cluster -IV**

Month: **March, 2016**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[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	Govindpur village (N7)	Industrial area	15.03.2016	60.7	*75*
2	Chotudih (N37)	Industrial area	14.03.2016	60.2	*75*
3	Block IV (N6)	Industrial area	09.03.2016	57.6	*75*
4	Nichitpur (N8)	Industrial area	07.03.2016	58.7	*75*

b. Second Fortnight data

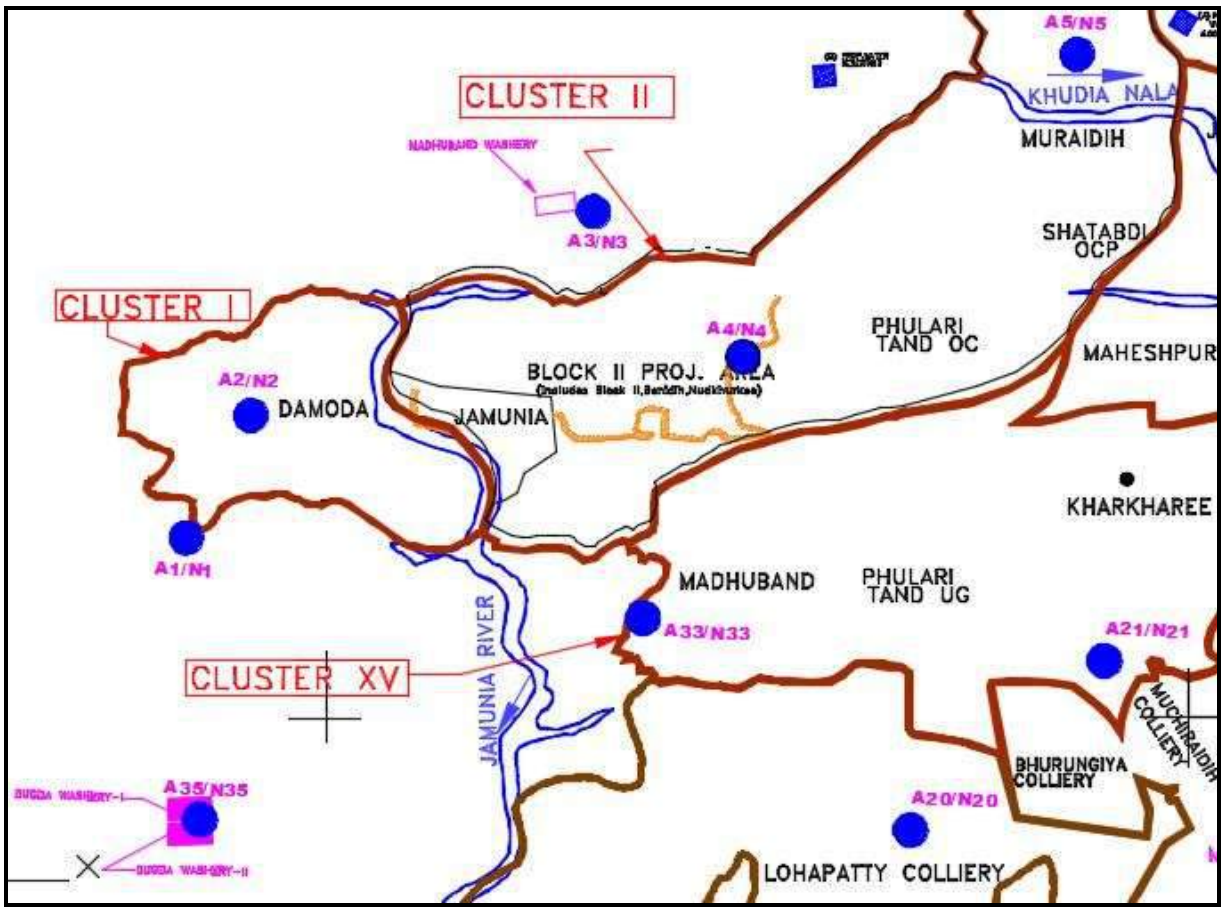
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	Govindpur village (N7)	Industrial area	29.03.2016	62.8	*75*
2	Chotudih (N37)	Industrial area	31.03.2016	58.7	*75*
3	Block IV (N6)	Industrial area	30.03.2016	62.3	*75*
4	Nichitpur (N8)	Industrial area	22.03.2016	61.6	*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.***

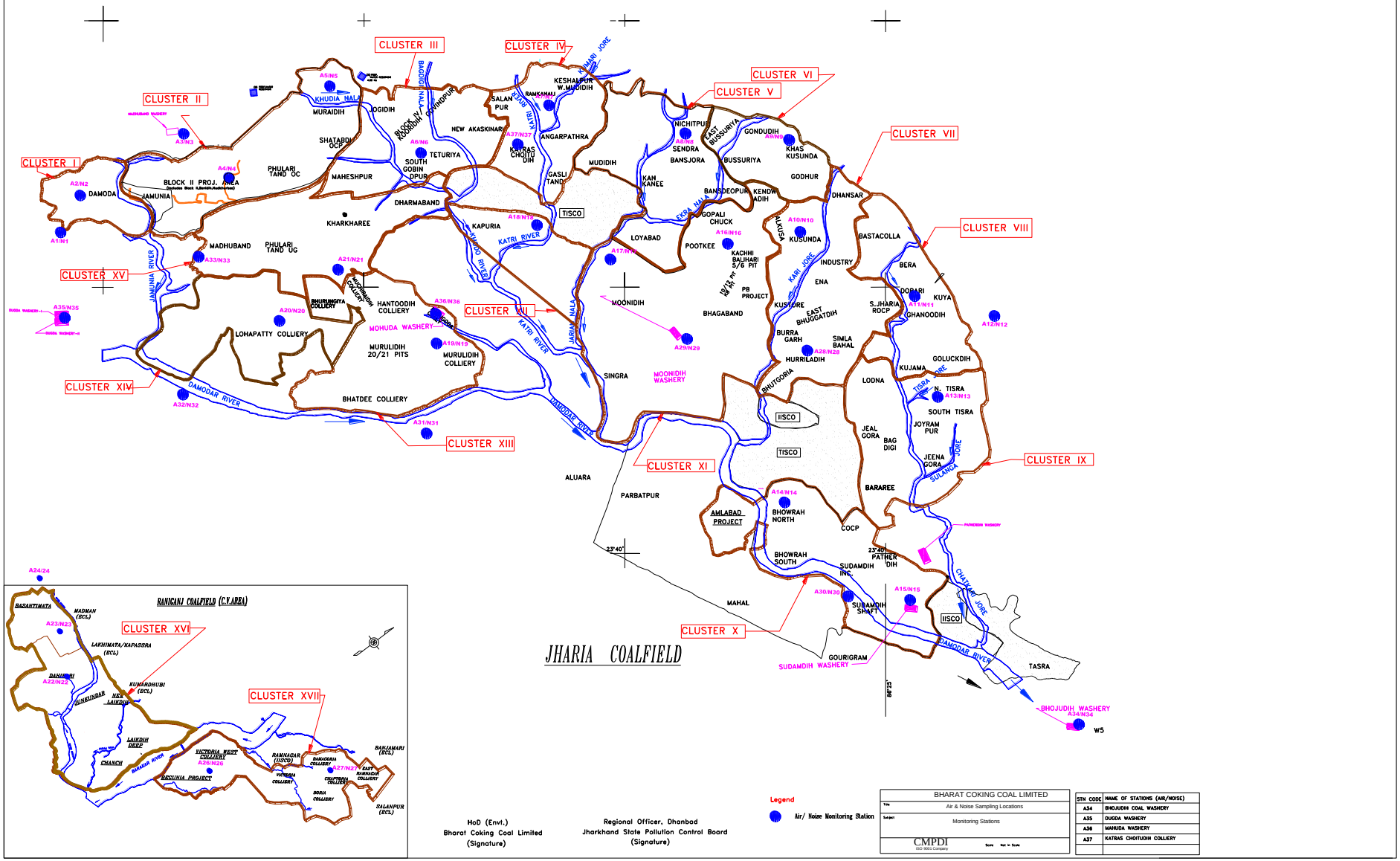
*** Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.**

[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed……  …….Dated 28.05.2016. Job No. 110310

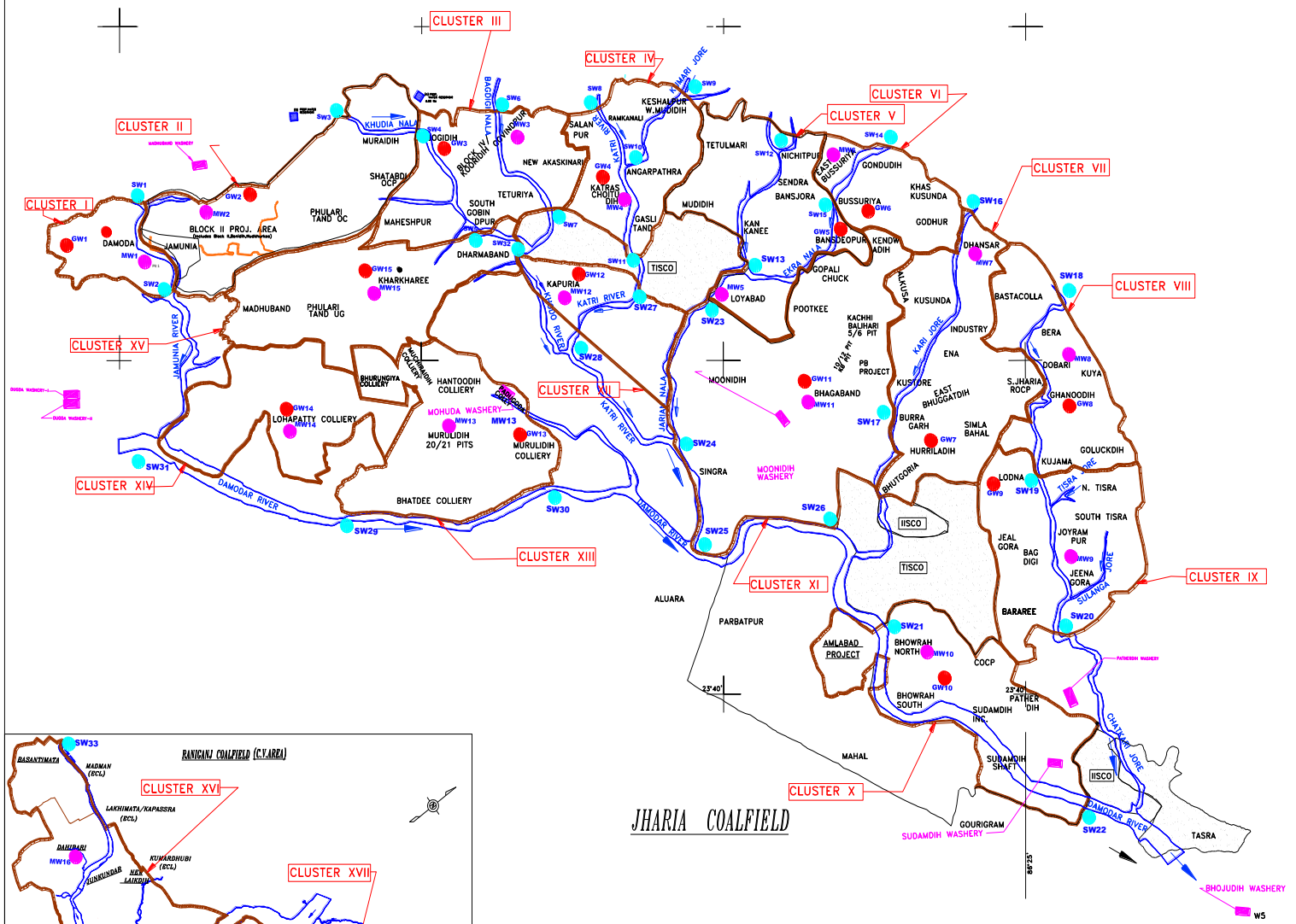
Fig: Noise Level Monitoring Location of Cluster IV



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 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

Bharat Coking Coal Ltd.
(A Subsidiary of Coal India Limited)
Salanpur Colliery, Katras Area
Address of GM office-P.O. Sijua, P.S
CIN: U1010JH1972GOI000918
Phone/Fax No.: 0326-2371213
Email ID: cgmkatras@bccl.gov.in

Ref. No: - SPC/PO/2016/ 1695

Date:-13.08.2016

To,
The Member Secretary,
Jharkhand state pollution control Board,
T.A. Division building,
H.E.C. Dhurwa,
Ranchi- 834004

Sub:- Submission of Environmental statement in Form V for the financial year 2015-16 in respect of Salanpur Colliery (SPC) under Cluster IV, Katras Area, BCCL, Dhanbad

Dear Sir,
Please find enclosed herewith "Environmental statement in Form V" for the financial year 2015-16 in respect of Salanpur Colliery (SPC) under Cluster IV, Katras Area, BCCL, Dhanbad.

Please acknowledge the receipt.

Yours faithfully

13/8/16.

Project officer
SPC, BCCL

ANNEXURE

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March of 2016 of ***Salanpur colliery under Cluster IV,,****Katras Area, BCCL, Dhanbad.*

PART-A

i. Name and address of the owner/ occupier of the industry operation or process. – ***Shri D Gangopadhyay, D(T), BCCL, At+Po- Koyla Bhawan, Dhanbad-826004, Jharkhand***

ii. Industry category – RED (Coal Mining Industry)

iii. Production capacity Units. – Salanpur Colliery is within cluster IV, BCCL, for which Environmental Clearance has been granted by Ministry of Environment & Forests vide letter no. J-11015/212/2010-1A. II(M), dated 06.02.2013. The production capacity of the cluster IV mines as per granted Environment clearance is 3.706 MTPA and lease hold area is 1123.79 ha.

iv. Year of establishment – Colliery operating since pre nationalization period and vested to BCCL through Coal Mines Nationalization act 1972-73.

v. Date of the last environmental statement submitted-. 29/09/2015

PART B

Water and Raw Material Consumption:

i. Water consumption in m^3/d

***Process**: Water is not utilized as a process water in mining operation. The pumping from mine sump is done to save mine from flooding. Water pumped out from the mine is for the purpose of safety and to facilitate mining.*

Cooling : NIL

Domestic : 550 KL/day

Dust Control: - 350 KL/day (Sprinkling)

	Name of Products	Process water consumption per unit of products	
		During the previous financial year	During the current financial year
1.	*Coal*	*NIL*	NIL

ii. Raw material consumption

Name of raw materials*	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
NIL	*NA*	NA	NA

* *Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.*

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed standards with reasons.
(a) Water	*NIL*	*Water analysis report is enclosed.*	
(b) Air		*Ambient air quality report is enclosed.*	

Monitoring results of Water, Air and Noise of Cluster IV is enclosed.

PART-D

HAZARDOUS WASTES

(as specified under Hazardous Wastes (Management & Handling Rules, 1989). –

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
1. From Process	NA	NA
2. From Pollution Control Facilities	NA	NA

Total quantity of spent oil/used oil generated during year 2015-16 = ***0.5 KL***

PART E - SOLID WASTES:

Solid Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
a. From process	NIL	NIL
b. From Pollution Control Facility	NIL	NIL
c. Quantity recycled or reutilized within the unit.	NIL	NIL

There is no solid waste generated from Mine, Overburden is generated from the production of the coal, which is kept temporary outside the pit area/excavation area for the reasons of safety and to facilitate mining. After the complete exploration of the coal from the mine the overburden will be reutilized as a backfill material, after that technical reclamation and biological reclamation of the overburden will be done.

PART F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.
Collected used oil is sent to regional store for disposal.
Characteristics of the generated hazardous waste is Hydrocarbon.

PART-G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

For the sustainable relief from water scarcity the rain water harvesting is being done. Formation of green cover and ecological restoration is being developed to conserve biodiversity and maintain greenery. Cost of production is increased.

PART H

Additional measures/investment proposal for environmental protection including abatement of pollution.

PART I

MISCELLANEOUS:

Any other particulars in respect of environmental protection and abatement of pollution.

1. *Green cover development*
2. *Dust suppression through water sprinkling*
3. *Ecological Restoration*
4. *Rain water harvesting*

13/8/16

Project officer
Salanpur Colliery,
Katras Area, BCCL

Bharat Coking Coal Ltd.
(A Subsidiary of Coal India Limited)
Amalgamated keshalpur west modidih Colliery, Katras Area
Address of GM office-P.O. Sijua, P.S.
CIN: U1010JH1972GOI000918
Phone/Fax No.: 0326-2371213
Email ID: cgmkatras@bccl.gov.in

Ref. No: - AKWMC/PO/2016/1210

Date:-13.08.2016

To,
The Member Secretary,
Jharkhand state pollution control Board,
T.A. Division building,
H.E.C. Dhurwa,
Ranchi- 834004

Sub:- Submission of Environmental statement in Form V for the financial year 2015-16 in respect of Amalgamated keshalpur west modidih Colliery (AKWMC) under Cluster IV, Katras Area, BCCL, Dhanbad

Dear Sir,
Please find enclosed herewith "Environmental statement in Form V" for the financial year 2015-16 in respect of Amalgamated keshalpur west modidih Colliery (AKWMC) under Cluster IV, Katras Area, BCCL, Dhanbad.

Please acknowledge the receipt.

Yours faithfully

13/8/16

Project officer
AKWMC, BCCL

PROJECT OFFICER
Amalgamated Keshalpur
West Mudidih Colliery

ANNEXURE

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March of 2015 of ***Amalgamated Keshalpur West Modidih colliery under Cluster IV,*** *Katras Area, BCCL, Dhanbad.*

PART-A

i. *Name and address of the owner/ occupier of the industry operation or process. –* ***Shri D Gangopadhyay, D(T), BCCL, At+Po- Koyla Bhawan, Dhanbad-826004, Jharkhand***

ii. *Industry category – RED (Coal Mining Industry)*

iii. *Production capacity Units. – Amalgamated Keshalpur West Modidih colliery is within cluster IV, BCCL, for which Environmental Clearance has been granted by Ministry of Environment & Forests vide letter no. J-11015/212/2010-1A. II(M), dated 06.02.2013. The production capacity of the cluster IV mines as per granted Environment clearance is 3.706 MTPA and lease hold area is 1123.79 ha.*

iv. *Year of establishment – Colliery operating since pre nationalization period and vested to BCCL through Coal Mines Nationalization act 1972-73.*

v. *Date of the last environmental statement submitted-. 24/09/2015*

PART B

Water and Raw Material Consumption:

i. Water consumption in m^3/d

***Process**: Water is not utilized as a process water in mining operation. The pumping from mine sump is done to save mine from flooding. Water pumped out from the mine is for the purpose of safety and to facilitate mining.*

Cooling : 600 KL/day (Firefighting)

Domestic : 950 KL/day

Dust Control: - 550 KL/day (Sprinkling)

	Name of Products	Process water consumption per unit of products	
		During the previous financial year	During the current financial year
1.	*Coal*	*NIL*	NIL

ii. Raw material consumption

Name of raw materials*	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
NIL	*NA*	NA	NA

* *Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.*

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed with standards reasons.
(a) Water	*NIL*	*Water analysis report is enclosed.*	
(b) Air		*Ambient air quality report is enclosed.*	

Monitoring results of Water, Air and Noise of Cluster IV is enclosed.

PART-D

HAZARDOUS WASTES

(as specified under Hazardous Wastes (Management & Handling Rules, 1989). –

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
1. From Process	NA	NA
2. From Pollution Control Facilities	NA	NA

Total quantity of spent oil/used oil generated during year 2015-16 = **5 KL**

PART E - SOLID WASTES

Solid Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
a. From process	NIL	NIL
b. From Pollution Control Facility	NIL	NIL
c. Quantity recycled or reutilized within the unit.	NIL	NIL

There is no solid waste generated from Mine. Overburden is generated from the production of the coal, which is kept temporary outside the pit area/excavation area for the reasons of safety and to facilitate mining. After the complete exploration of the coal from the mine the overburden will be reutilized as a backfill material, after that technical reclamation and biological reclamation of the overburden will be done.

PART F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.
Collected used oil is sent to regional store for disposal.
Characteristics of the generated hazardous waste is Hydrocarbon.

PART-G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

For the sustainable relief from water scarcity the rain water harvesting is being done. Formation of green cover and ecological restoration is being developed to conserve biodiversity and maintain greenery. Cost of production is increased.

PART H

Additional measures/investment proposal for environmental protection including abatement of pollution.

PART I

MISCELLANEOUS:

Any other particulars in respect of environmental protection and abatement of pollution.

1. *Green cover development*
2. *Dust suppression through water sprinkling*
3. *Ecological Restoration*
4. *Fire fighting*
5. *Rain water harvesting*

13/08/16

Project officer
AKWMC,
Kajras Area, BCCL

PROJECT OFFICER
Amalgamated Keshalpur
West Mudidih Colliery

BHARAT COKING COAL LIMITED

A Mini Ratna Company (A Subsidiary of Coal India Limited)

Office of the Project Officer

Amalgamated Angarpathra Ramkanali Colliery (A.A.R.C)

P.O. Katrasgarh, Dist. Dhanbad (828113)(E-mail ID – poaarc@bcci.gov.in)

Ref. No: - AARC/PO/2016/ 565

Date – 12-08-16

To
The Sr. Environment Engineer,
Jharkhand State Pollution Control Board,
T.A. Building, HEC, Dhurwa,
Ranchi.

Sub:- Submission of Environment Statement in Form V for the Financial Year 2015-2016.

Dear Sir,

We are hereby submitting the Environmental Statement for the financial year ending 31st March 2016.

So, you are requested to kindly issue the Discharge consent and Emission consent order in respect of Amalgamated Angarpathra Ramkanali Colliery.

Encl.: As Above.

Yours Faithfully

12/8/16

PROJECT OFFICER

PROJECT OFFICER
A.A.R.C., Katras Area-II

c.c. to :

1. Reg. Officer, JSPCB, Dhanbad.
2. Area Manager (Plg), Katras Area

ANNEXURE

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March of 2016 of ***Amalgamated Angarpathra Ramkanali colliery, Cluster IV,*** *BCCL, Dhanbad.*

PART-A

i. *Name and address of the owner/ occupier of the industry operation or process.* – **Shri D Gangopadhyay, D(T), BCCL, At+Po- Koyla Bhawan, Dhanbad-826004, Jharkhand**

ii. *Industry category – RED (Coal Mining Industry)*

iii. *Production capacity Units. – Amalgamated Angarpathra Ramkanali Colliery is within cluster IV, BCCL, for which Environmental Clearance has been granted by Ministry of Environment & Forests vide letter no. J-11015/212/2010-1A. II(M), dated 06.02.2013. The production capacity of the cluster IV mines as per granted Environment clearance is 3.706 MTPA and lease hold area is 1123.79 ha.*

iv. *Year of establishment – Colliery operating since pre nationalization period and vested to BCCL through Coal Mines Nationalization act 1972-73.*

v. *Date of the last environmental statement submitted-. 24/09/2015*

PART B

Water and Raw Material Consumption:

i. *Water consumption in m^3/d*

Process: *Water is not utilized as a process water in mining operation. Water is pumped out from the mine for the purpose of safety and to facilitate mining operation.*

Firefighting: 1450 KL/ day

Domestic : 2250 KL/day

Dust Control: - 850 KL/day (Sprinkling)

	Name of Products	Process water consumption per unit of products	
		During the previous financial year	During the current financial year
1.	Coal	NIL	NIL

ii. *Raw material consumption*

Name of raw materials*	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
NIL	NA	NA	NA

* *Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.*

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed with standards reasons.
(a) Water	NIL	*Water analysis report is enclosed.*	
(b) Air		*Ambient air quality report is enclosed.*	

Monitoring results of Water, Air and Noise of Cluster IV is enclosed.

PART-D

HAZARDOUS WASTES

(as specified under Hazardous Wastes (Management & Handling Rules, 1989) –

Machineries are used for production and to control air pollution from dust generation. Lubricant oil is used in these machineries and is replaced periodically as per schedule. Replaced lubricant oil is collected in drums as Hazardous waste with proper care and safety.

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
1. From Process	NA	NA
2. From Pollution Control Facilities	NA	NA

Total quantity of spent oil/used oil generated during year 2015-16 = ***1 KL***

PART E - SOLID WASTES:

Solid Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
a. From process	NIL	NIL
b. From Pollution Control Facility	NIL	NIL
c. Quantity recycled or reutilized within the unit.	NIL	NIL

There is no solid waste generated from Mine, Overburden is generated from the production of the coal, which is kept temporary outside the pit area/ excavation area for the reasons of safety and to facilitate mining. After the complete exploration of the coal from the mine the overburden will be reutilized as a backfill material, after that technical reclamation and biological reclamation of the overburden will be done.

PART F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Machineries are used for production and to control air pollution from dust generation. Lubricants oil is used in these machineries and is replaced periodically as per schedule. Replaced lubricant oil is collected in drum as Hazardous waste with proper care and safety.
Collected used oil is sent to regional store for disposal.
Characteristics of the generated hazardous waste is Hydrocarbon.

PART G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

For the sustainable relief from water scarcity the rain water harvesting is being done. Formation of green cover and ecological restoration is being developed to conserve biodiversity and maintain greenery. Cost of production is increased.

PART H

Additional measures/ investment proposal for environmental protection including abatement of pollution.

PART I

MISCELLANEOUS:

Any other particulars in respect of environmental protection and abatement of pollution.

1. Green cover development
2. Dust suppression through water sprinkling
3. Ecological restoration
4. Rain water harvesting

Project officer
AARC,
Katras Area, BCCL

PROJECT OFFICER
A.A.R.C., Katras Area (B.C.C.L.)

Bharat Coking Coal Ltd.
(A Subsidiary of Coal India Limited)
Gaslitand Colliery, Katras Area
Address of GM office P.O. Sijua, P.S
CIN: U1010JH1972GOI000918
Phone/Fax No.: 0326-2371213
Email ID: cgmkatras@bccl.gov.in

Ref. No: - GTC/PO/2016/ 1795

Date:-13.08.2016

To,
The Member Secretary,
Jharkhand state pollution control Board,
T.A. Division building,
H.E.C. Dhurwa,
Ranchi- 834004

Sub:- Submission of Environmental statement in Form V for the financial year 2015-16 in respect of Gaslitand Colliery (GTC) under Cluster IV, Katras Area, BCCL, Dhanbad

Dear Sir,
Please find enclosed herewith "Environmental statement in Form V" for the financial year 2015-16 in respect of Gaslitand Colliery (GTC) under Cluster IV, Katras Area, BCCL, Dhanbad.

Please acknowledge the receipt.

Yours faithfully

13/8/16

Project officer
GTC, BCCL

ANNEXURE

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March of 2015 of ***Gaslitand Colliery under Cluster IV,*** *Katras Area, BCCL, Dhanbad.*

PART-A

i. *Name and address of the owner/ occupier of the industry operation or process.* – ***Shri D Gangopadhyay, D(T), BCCL,***
At+Po- Koyla Bhawan, Dhanbad-826004, Jharkhand

ii. *Industry category – RED (Coal Mining Industry)*

iii. *Production capacity Units. – Gaslitand Colliery colliery is within cluster IV, BCCL, for which Environmental Clearance has been granted by Ministry of Environment & Forests vide letter no. J-11015/212/2010-1A. II(M), dated 06.02.2013. The production capacity of the cluster IV mines as per granted Environment clearance is 3.706 MTPA and lease hold area is 1123.79 ha.*

iv. *Year of establishment – Colliery operating since pre nationalization period and vested to BCCL through Coal Mines Nationalization act 1972-73.*

v. *Date of the last environmental statement submitted-. 20/05/2015*

PART B

Water and Raw Material Consumption:

i. *Water consumption in m^3/d*

Process: *Water is not utilized as a process water in mining operation. The pumping from mine sump is done to save mine from flooding. Water pumped out from the mine is for the purpose of safety and to facilitate mining.*

Cooling : 450 KL/day (Firefighting)

Domestic : 300 KL/day

Dust Control: - 150 KL/day (Sprinkling)

	Name of Products	Process water consumption per unit of products	
		During the previous financial year	During the current financial year
1.	*Coal*	*NIL*	NIL

ii. *Raw material consumption*

Name of raw materials*	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
NIL	*NA*	NA	NA

* *Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.*

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed standards with reasons.
(a) Water	*NIL*	*Water analysis report is enclosed.*	
(b) Air	–	*Ambient air quality report is enclosed.*	

Monitoring results of Water, Air and Noise of Cluster IV is enclosed.

PART-D

HAZARDOUS WASTES

(as specified under Hazardous Wastes (Management & Handling Rules, 1989). –

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
1. From Process	NA	NA
2. From Pollution Control Facilities	NA	NA

Total quantity of spent oil/used oil generated during year 2015-16 = ***0.5 KL***

PART E - SOLID WASTES:

Solid Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
a. From process	NIL	NIL
b. From Pollution Control Facility	NIL	NIL
c. Quantity recycled or reutilized within the unit.	NIL	NIL

There is no solid waste generated from Mine, Overburden is generated from the production of the coal, which is kept temporary outside the pit area/excavation area for the reasons of safety and to facilitate mining. After the complete exploration of the coal from the mine the overburden will be reutilized as a backfill material, after that technical reclamation and biological reclamation of the overburden will be done.

PART F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.
Collected used oil is sent to regional store for disposal.
Characteristics of the generated hazardous waste is Hydrocarbon.

PART-G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

For the sustainable relief from water scarcity the rain water harvesting is being done. Formation of green cover and ecological restoration is being

developed to conserve biodiversity and maintain greenery. Cost of production is increased.

PART H

Additional measures/investment proposal for environmental protection including abatement of pollution.

PART I

MISCELLANEOUS:

Any other particulars in respect of environmental protection and abatement of pollution.

1. *Green cover development*
2. *Dust suppression through water sprinkling*
3. *Ecological Restoration*
4. *Fire fighting*
5. *Rain water harvesting*

13/8/12

Project officer
GTC,
Katras Area, BCCL

Bharat Coking Coal Ltd.
(A Subsidiary of Coal India Limited)
Katras Choitodih Colliery, Katras Area
Address of GM office-P.O. Sijua, P.S
CIN: U1010JH1972GOI000918
Phone/Fax No.: 0326-2371213
Email ID: cgmkatras@bccl.gov.in

Ref. No: - KCC/PO/2016/ 531

Date:-13.08.2016

To,
The Member Secretary,
Jharkhand state pollution control Board,
T.A. Division building,
H.E.C. Dhurwa,
Ranchi- 834004

Sub:- Submission of Environmental statement in Form V for the financial year 2015-16 in respect of Katras Choitodih Colliery (KCC) under Cluster IV, Katras Area, BCCL, Dhanbad

Dear Sir,

Please find enclosed herewith "Environmental statement in Form V" for the financial year 2015-16 in respect of Katras Choitodih Colliery (KCC) under Cluster IV, Katras Area, BCCL, Dhanbad.

Please acknowledge the receipt.

Yours faithfully

13/8/16

Project officer
KCC, BCCL

ANNEXURE

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March of 2015 of ***Katras choitudih colliery under Cluster IV,****,Katras Area, BCCL, Dhanbad.*

PART-A

i. Name and address of the owner/ occupier of the industry operation or process. – ***Shri D Gangopadhyay, D(T), BCCL, At+Po- Koyla Bhawan, Dhanbad-826004, Jharkhand***

ii. Industry category – RED (Coal Mining Industry)

iii. Production capacity Units. – Katras Choitudih Colliery is within cluster IV, BCCL, for which Environmental Clearance has been granted by Ministry of Environment & Forests vide letter no. J-11015/212/2010-1A. II(M), dated 06.02.2013. The production capacity of the cluster IV mines as per granted Environment clearance is 3.706 MTPA and lease hold area is 1123.79 ha.

iv. Year of establishment – Colliery operating since pre nationalization period and vested to BCCL through Coal Mines Nationalization act 1972-73.

v. Date of the last environmental statement submitted-. 20/08/2015

PART B

Water and Raw Material Consumption:

i. Water consumption in m^3/d

Process: *Water is not utilized as a process water in mining operation. The pumping from mine sump is done to save mine from flooding. Water pumped out from the mine is for the purpose of safety and to facilitate mining.*

Cooling : 400 KL/day (Firefighting)

Domestic : 950 KL/day

Dust Control: - 300 KL/day (Sprinkling)

	Name of Products	Process water consumption per unit of products	
		During the previous financial year	During the current financial year
1.	*Coal*	*NIL*	NIL

ii. Raw material consumption

Name of raw materials*	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
NIL	*NA*	NA	NA

* *Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.*

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed with standards reasons.
(a) Water	*NIL*	*Water analysis report is enclosed.*	
(b) Air		*Ambient air quality report is enclosed.*	

Monitoring results of Water, Air and Noise of Cluster IV is enclosed.

PART-D

HAZARDOUS WASTES

(as specified under Hazardous Wastes (Management & Handling Rules, 1989). –

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
1. From Process	NA	NA
2. From Pollution Control Facilities	NA	NA.

Total quantity of spent oil/used oil generated during year 2015-16 = ***1 KL***

PART E - SOLID WASTES:

Solid Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
a. From process	NIL	NIL
b. From Pollution Control Facility	NIL	NIL
c. Quantity recycled or reutilized within the unit.	NIL	NIL

There is no solid waste generated from Mine, Overburden is generated from the production of the coal, which is kept temporary outside the pit area/excavation area for the reasons of safety and to facilitate mining. After the complete exploration of the coal from the mine the overburden will be reutilized as a backfill material, after that technical reclamation and biological reclamation of the overburden will be done.

PART F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Machineries are used for production and to control air pollution from dust generation, Lubricants oil is used in these machineries and is replaced periodically as per scheduled. Replaced lubricants oil is collected in drum as Hazardous waste with proper care and safety.
Collected used oil is sent to regional store for disposal.
Characteristics of the generated hazardous waste is Hydrocarbon.

PART-G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

For the sustainable relief from water scarcity the rain water harvesting is being done. Formation of green cover and ecological restoration is being developed to conserve biodiversity and maintain greenery. Cost of production is increased.

PART H

Additional measures/investment proposal for environmental protection including abatement of pollution.

PART I

MISCELLANEOUS:

Any other particulars in respect of environmental protection and abatement of pollution.

1. *Green cover development*
2. *Dust suppression through water sprinkling*
3. *Ecological Restoration*
4. *Fire fighting*
5. *Rain water harvesting*

13/8/16

Project officer
KCC,
Katras Area, BCCL

CLUSTER - IV

(FOR THE Q.E. March, 2016)

CONTENTS

ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED CLUSTER – IV

(FOR THE Q.E. MARCH, 2016)

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

June, 2016

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

NOISE LEVEL DATA

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

Name of the Cluster: **Cluster -IV** Month: **February, 2016**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[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	Govindpur village (N7)	Industrial area	10.02.2016	59.8	75
2	Chotudih (N37)	Industrial area	15.02.2016	61.4	75
3	Block IV (N6)	Industrial area	09.02.2016	60.2	75
4	Nichitpur (N8)	Industrial area	01.02.2016	64.6	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	Govindpur village (N7)	Industrial area	19.02.2016	55.6	75
2	Chotudih (N37)	Industrial area	22.02.2016	62.6	75
3	Block IV (N6)	Industrial area	19.02.2016	59.8	75
4	Nichitpur (N8)	Industrial area	17.02.2016	61.3	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 28.05.2016. Job No. 110310

NOISE LEVEL DATA

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

Year : **2015-16.**

Name of the Cluster: **Cluster -IV**

Month: **March, 2016**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[3]

a. First Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Lim of Noise level in dB(A)
1	Govindpur village (N7)	Industrial area	15.03.2016	60.7	75
2	Chotudih (N37)	Industrial area	14.03.2016	60.2	75
3	Block IV (N6)	Industrial area	09.03.2016	57.6	75
4	Nichitpur (N8)	Industrial area	07.03.2016	58.7	75

b. Second Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Lim of Noise level in dB(A)
1	Govindpur village (N7)	Industrial area	29.03.2016	62.8	75
2	Chotudih (N37)	Industrial area	31.03.2016	58.7	75
3	Block IV (N6)	Industrial area	30.03.2016	62.3	75
4	Nichitpur (N8)	Industrial area	22.03.2016	61.6	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.**

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[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

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°37' N to 23°52' N latitudes and 86°09' E to 86°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, 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 (PM2.5 sampler) were used for sampling of PM_{10}, SO_2, & NO_x and Fine Dust Sampler (PM2.5 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 Mine effluent samples were collected and analysed for four parameters on fortnightly basis. Mine 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 27 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 'LEQ' 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.

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, 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 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.

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 (MoEFCC) ,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 MoEFCC 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 IV is in the Northern part of the Jharia coalfield. It includes Salanpur OCP, Katras Choitodih UG, Amalgamated Keshalpur – west Mudidih OCP & UG Mines, Amalgamated Ramkanali – Angarpathra OCP & UG mines, Gaslitand UG. The cluster– IV is situated about 25 - 30 kms 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 Katri River and Kumari Jore.

1.2 The cluster IV is designed to produce 2.851 Mtpa (normative) and 3.706 Mtpa peak capacity of coal. The average grade of coal W – I to IV.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEFCC) 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 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 MoEFCC & 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) 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 ground level at AARC agent Office, Ramkanali. The station was selected to represent the impact of mining activities of Ramkanali Colliery, poor roads condition, heavy public traffic, burning of coal by the surrounding habitants.

ii) Chotudih (A37): Industrial Area

The location of the sampling station is selected to represent the impact of mining activities of Katras Area mines activity and poor roads condition, heavy public traffic, burning of coal by the surrounding habitants.

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 ground level near 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.

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 analysed 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:

AMBIENT AIR QUALITY DATA

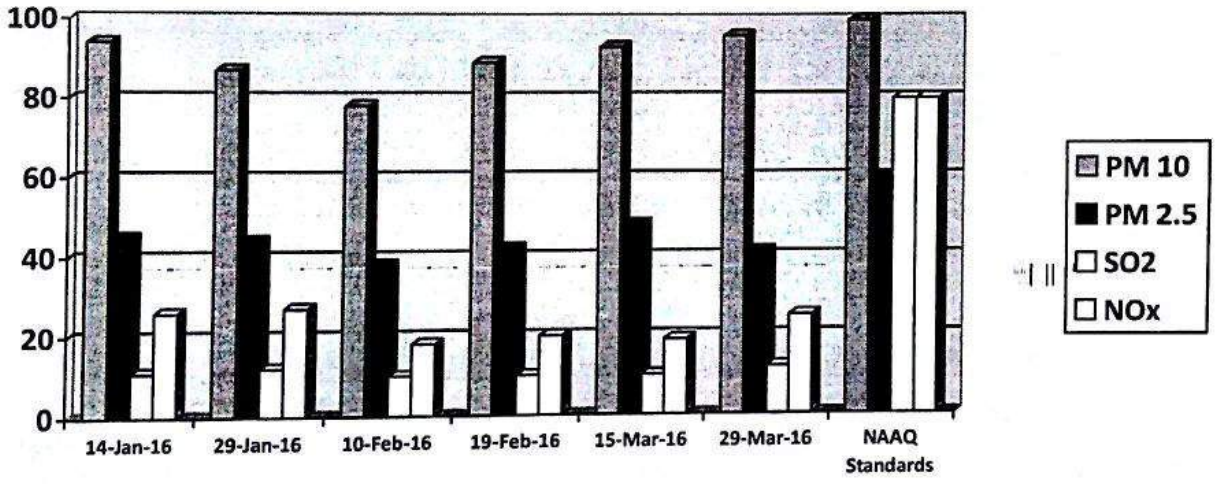
Name of the Company: **Bharat Coking Coal limited** Year : **2015-16.**
Name of the Cluster : **Cluster – IV** Q.E.: **March 2016**

Station Code/Name: **(a) A7 Govindpur village** **Category: Industrial.**
(b) A37 Chotudih

ZONE: Core

(a). Station Code/Name: A7 - Govindpur village Category: Industrial[1].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	14 - Jan -16	94	45	11	26
2	29 - Jan - 16	87	44	12	27
3	10 - Feb -16	78	38	<10.0	18
4	19 - Feb - 16	89	42	<10.0	20
5	15 - Mar - 16	93	48	<10.0	19
6	29 - Mar - 16	96	41	12	25
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

Note:

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*
- *Predominant wind direction South – West.*

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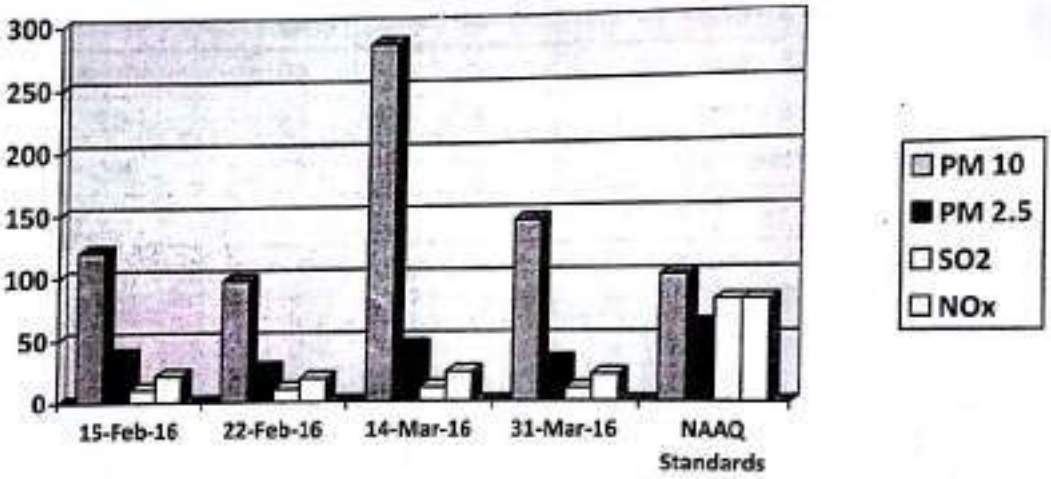
[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

(b). Station Code/Name: A37 – Chotudih **Category: Industrial[2].**

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	15 - Feb -16	120	38	<10.0	21
2	22 - Feb - 16	97	26	<10.0	18
3	14 - Mar - 16	285	44	11	23
4	31 - Mar - 16	144	32	<10.0	21
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration(μg/m^3)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.00

Note:

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*
- *Predominant wind direction South – West.*

[2] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... Dated 28.05.2016. Job No. 110310

AMBIENT AIR QUALITY DATA

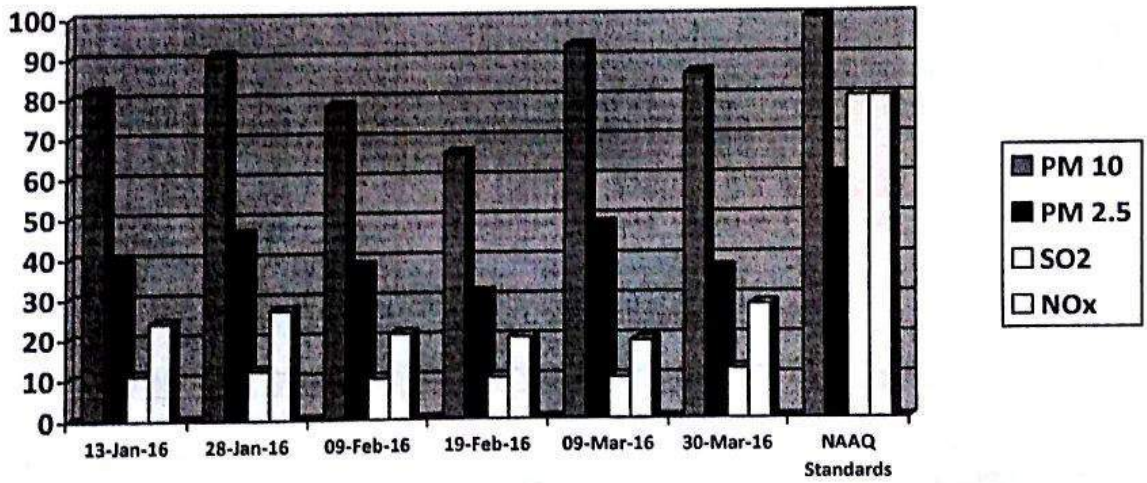
Name of the Company: **Bharat Coking Coal limited** Year : **2015-16.**
Name of the Cluster : **Cluster – IV** Q.E.: **March 2016**

Station Code/Name: **(a) A6 Block IV OCP** **Category: Industrial.**
(b) A8 Nichitpur

ZONE: BUFFER

(a). Station Code/Name: A6 Block IV Kooridih OCP Category: Industrial[3].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	13 - Jan -16	82	39	11	24
2	28 - Jan - 16	91	46	12	27
3	09 - Feb -16	78	38	<10.0	21
4	19 - Feb - 16	66	31	<10.0	20
5	09 - Mar - 16	93	48	<10.0	19
6	30 - Mar - 16	86	37	12	28
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

Note:

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

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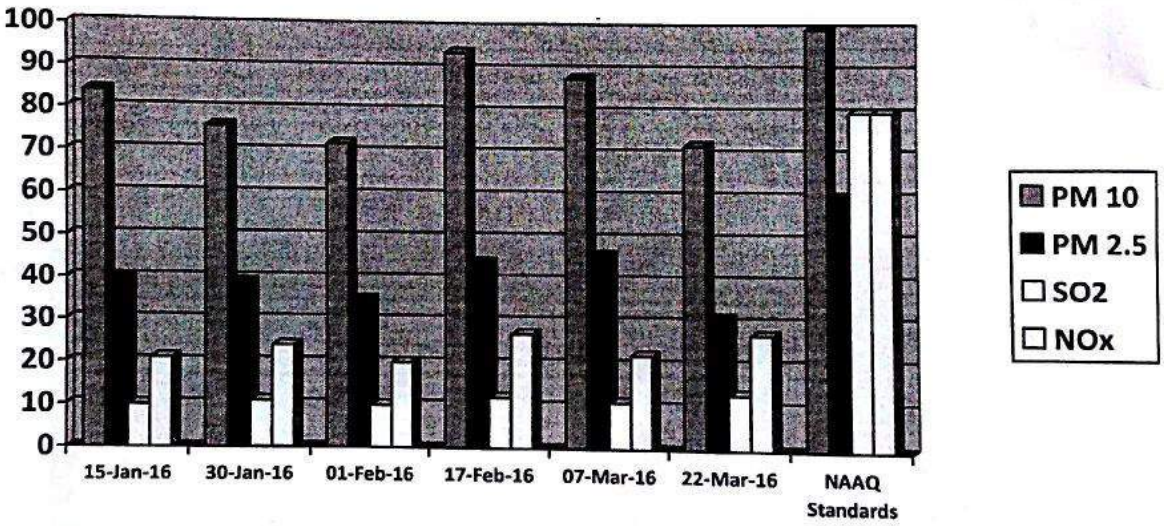
[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

(b). Station Code/Name: A8 – Nichitpur, Category: Industrial

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	15 - Jan -16	84	40	<10.0	21
2	30 - Jan - 16	76	39	11	24
3	01 - Feb -16	72	35	<10.0	20
4	17 - Feb - 16	94	44	12	27
5	07 - Mar - 16	88	46	11	22
6	22 - Mar - 16	72	31	13	27
	NAAQ Standards	100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lea (Pb
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.0

Note:

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

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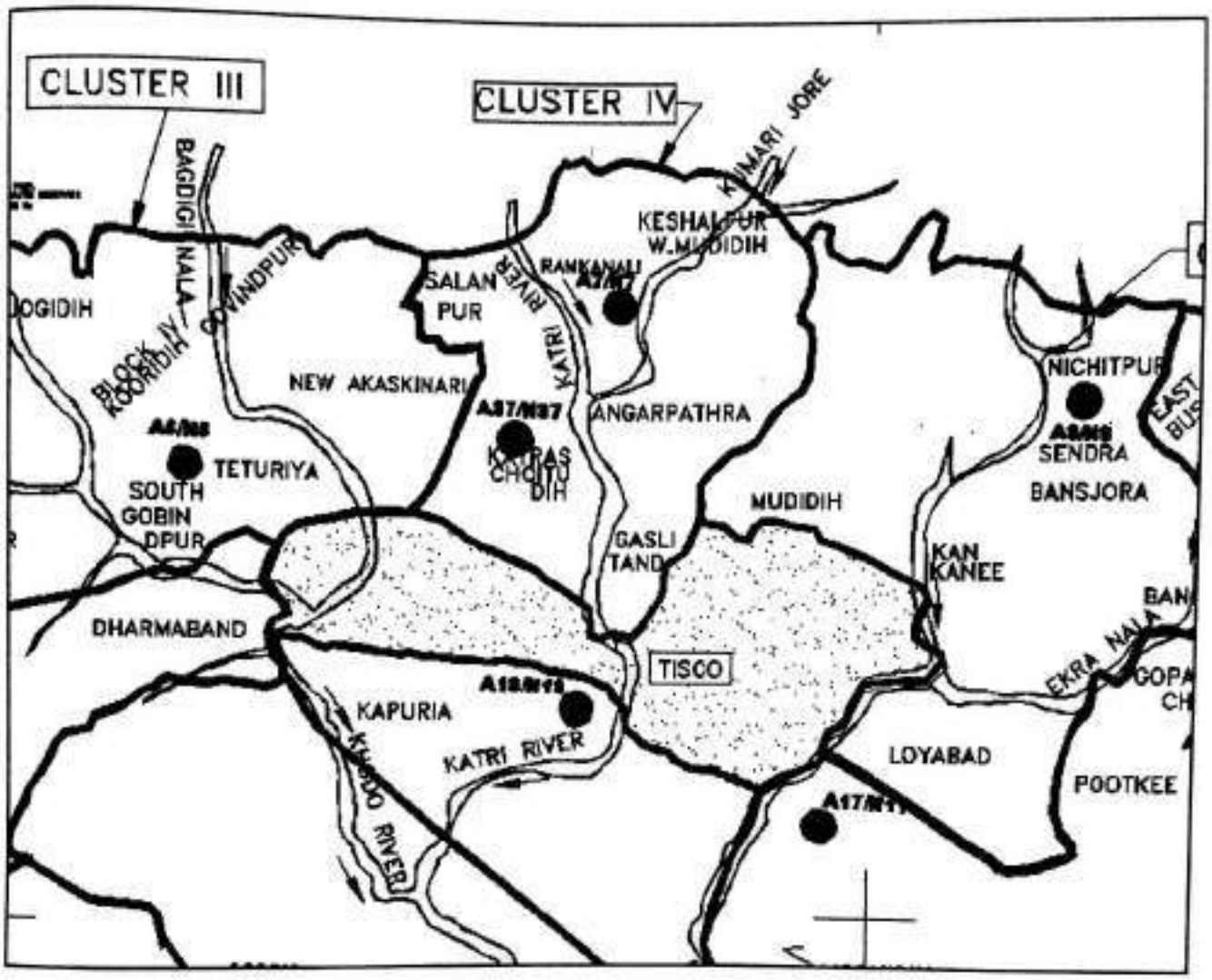
[4] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

Fig I: Ambient Air Monitoring Stations in Cluster- IV 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/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.

CHAPTER – III

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Fig. 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.

ii) Drinking Water quality at **Kankanee Village (DW4)**

iii) Surface Water quality at **U/S of Katri river (SW8)**

iv) Surface Water quality at **D/S of Katri river (SW11)**

v) Surface Water quality at **U/S kumari Jore (SW9)**

vi) Surface Water quality at **D/S Kumari Jore (SW10)**

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. 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 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 - IV** Month: **January, 2016.**

Name of the Stations & Code : **1. MW4- Mine Discharge of Chotudih**

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 01.01.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	46	*100 (Max)*
2	pH	7.52	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 25.01.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	32	*100 (Max)*
2	pH	7.62	*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

18/5/16

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 - IV** Month: **February, 2016.**

Name of the Stations & Code : **1. MW4- Mine Discharge of Chotudih**

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 09.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	34	*100 (Max)*
2	pH	7.54	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	28	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 16.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	44	*100 (Max)*
2	pH	7.43	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	36	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By

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

WATER QUALITY DATA
(EFFLUENT WATER- FOUR PARAMETERS)

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

Name of the Cluster: **Cluster - IV** Month: **March, 2016.**

Name of the Stations & Code : **1. MW4- Mine Discharge of Chotudih**

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 08.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	7.94	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	24	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 16.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	7.99	*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

(EFFLUENT WATER- ALL PARAMETERS)

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

Name of the Project: **Cluster - IV** Period: **H. E. March, 2016.**

Area : **Chotudih** **Project: Chotudih Cluster IV**

Stations: **Date of Sampling:**

1. Mine Water Discharge chotudih MW-4 16/03/2016

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		MW-4	2	3			
1	Ammonical Nitrogen, mg/l, Max	0.48			0.02	50.0	IS 3025/34 1988, R 2009, Nessler's
2	Arsenic (as As), mg/l, *Max*	<0.002			0.002	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
3	B.O.D (3 days 27°C), mg/l, Max	<2.00			2.00	30.0	IS 3025 /44:1993,R:2003 3 day incubation at 27°C
4	COD, mg/l, Max	32			4.00	250.0	APHA, 22nd Edition, Closed Reflux, Titrimetric
5	Colour	colourless			Qualitative	Qualitative	Physical/Qualitative
6	Copper (as Cu), mg/l, *Max*	<0.03			0.03	3.0	IS 3025/42: 1992 R : 2009, AAS-Flame
7	Dissolved Phosphate, mg/l, Max	0.5			0.30	5.0	APHA, 22nd Edition Molybdovanadate
8	Fluoride (as F) mg/l, *Max*	0.83			0.02	2.0	APHA, 22nd Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.01			0.01	5.0	IS:3025/34:1988, Nesseler's
10	Hexavalent Chromium, mg/l, Max	<0.01			0.01	0.1	APHA, 22nd Edition, Diphenylcarbohydrazide
11	Iron (as Fe), mg/l, *Max*	<0.06			0.06	3.0	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
12	Lead (as Pb), mg/l, *Max*	<0.005			0.005	0.1	APHA, 22nd Edition, AAS-GTA
13	Manganese(as Mn), mg/l, Max	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, *Max*	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, *Max*	<0.5			0.50	10.0	APHA, 22nd Edition, UV-Spectrphotometric
16	Oil & Grease, mg/l, Max	<2.00			2.00	10.0	IS 3025/39:1991, R : 2003, Partition Gravimetric
17	Odour	Agreeable			Agreeable	Qualitative	Is-3015/5:1983/R:2012/Qualitative
18	pH value	7.99			2.5	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
19	Phenolic compounds (as C_6H_5OH),mg/l, *Max*	<0.002			0.002	1.0	APHA, 22nd Edition 4-Amino Antipyrine
20	Selenium (as Se), mg/l, *Max*	<0.002			0.002	0.05	APHA, 22nd Edition, AAS-GTA
21	Sulphide (as SO_3), mg/l, Max	<0.005			0.005	2.0	APHA, 22nd Edition Methylene Blue
22	Temperature (°C)	36.2			Shall not exceed 5° C above the receiving temp.		IS-3025/09:1984, Thermometeric
23	Total Chromium (as Cr), mg/l, *Max*	<0.06			0.06	2.0	IS-3025/52:2003, AAS-Flame
24	Total Kjeldahl Nitrogen, mg/l, Max	1.4			1.00	100.0	IS:3025/34:1988, Nesseler's
25	Total Residual Chlorine, mg/l, Max	0.04			0.02	1.0	APHA, 22nd Edition, DPD
26	Total Suspended Solids, mg/l, Max	38			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
27	Zinc (as Zn), mg/l, *Max*	0.012			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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 Project: **Cluster - IV** Period: **Q. E. March, 2016.**

Area : **Chotudih** **Project: Chotudih Cluster IV**

Stations:

1. Upstream in Katri River SW-8
2. Downstream in KatriRiver SW-11
3. Upstream in Kumar Jore SW-9
4. Downstream in Kumar Jore SW-10

Date of Sampling:
10/03/2016
10/03/2016
14/03/2016
14/03/2016

Sl. No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		SW-8	SW-9	SW-10	SW-11		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.4	2.6	2.8	2.6	2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	colourless	colourless	colourless	colourless	Qualitative	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	74	98	108	98	2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03	<0.03	<0.03	0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	6.1	6.3	5.9	5.2	0.10	IS 3025/381989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	1.05	0.89	1.04	1.15	0.02	APHA, 22nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<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	<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	<0.005	0.005	APHA, 22nd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	1.77	1.77	4.43	3.54	0.50	APHA, 22nd Edition, UV-Spectrphotometric
12	pH value	7.25	7.63	7.13	7.20	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	<0.002	0.002	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	APHA, 22nd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	130	240	290	290	2.00	APHA, 22nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	316	498	562	498	25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	0.016	0.012	0.011	0.012	0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

Analysed By

Dy.Technical Manager
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(Authorized Signatory)

WATER QUALITY

(DRINKING WATER- ALL PARAMETERS)

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

Name of the Project: **Cluster - IV** Period: **Q. E. March, 2016.**

Area : **Chotudih** **Project: Chotudih Cluster IV**

Stations: **Date of Sampling:**

1. Drinking Water from Kankanee/Malkera Village DW-4 14/03/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		DW-4	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	3			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	96			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	208			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	0.35			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.05			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	0.20			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	11			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	8.19			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	124			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity (c_ac_{03}),, mg/l, Max	288			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	1090			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_ac_{03}), mg/l, Max	696			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	0.034			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

Analysed By

18/3/16

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WATER QUALITY
(GROUND WATER- ALL PARAMETERS)

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

Name of the Project: **Cluster - IV** Period: **Q. E. March, 2016.**

Area : Chotudih **Project: Chotudih Cluster IV**

Date of Sampling: 28/02/2016

Stations: 1. Ground Water from Keshalpur, Batighar GW-4

SL No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-4	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition Carmine
2	Colour,in Hazen Units	6			1	5	APHA, 22nd Edition ,Pt-Co Method
3	Calcium (as Ca), mg/l, Max	66			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	72			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	0.53			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.02			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	7.90			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 Antipyrine
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	66			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	172			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	460			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	236			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	7			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.013			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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CHAPTER - IV
NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites and their rationale

i) **Govindpur village (N7)**

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) **Chotudih (N37)**

To assess the noise generated in the mines activity. Noise levels were recorded in the mines area

iii) **Block IV (N6)**

To assess the noise level in the industrial area,

iv) **Nichitpur (N8)**

To assess the noise level in the industrial area, noise levels were recorded during day time in the Mines area.

4.2 Methodology of sampling and analysis

Noise level measurements in form of 'LEQ' 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 and night time and the observed values were compared with standards prescribed by MoEFCC.

The results of Noise levels recorded during day and night time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of LEQ 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 -IV**

Month: **January, 2016.**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[1]

(a) **First Fortnight**

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Lim of Noise level in dB(A)
1	Govindpur village (N7)	Industrial area	14.01.2016	61.4	75
2	Chotudih (N37)	Industrial area	-	-	75
3	Block IV (N6)	Industrial area	13.01.2016	55.7	75
4	Nichitpur (N8)	Industrial area	15.01.2016	62.5	75

(b) **Second Fortnight**

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Lim of Noise level in dB(A)
1	Govindpur village (N7)	Industrial area	29.01.2016	62.6	75
2	Chotudih (N37)	Industrial area	-	-	75
3	Block IV (N6)	Industrial area	28.01.2016	58.3	75
4	Nichitpur (N8)	Industrial area	30.01.2016	61.3	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 28.05.2016. Job No. 110310

NOISE LEVEL DATA

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

Year : **2015-16.**

Name of the Cluster: **Cluster -IV**

Month: **February, 2016**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[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	Govindpur village (N7)	Industrial area	10.02.2016	59.8	75
2	Chotudih (N37)	Industrial area	15.02.2016	61.4	75
3	Block IV (N6)	Industrial area	09.02.2016	60.2	75
4	Nichitpur (N8)	Industrial area	01.02.2016	64.6	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	Govindpur village (N7)	Industrial area	19.02.2016	55.6	75
2	Chotudih (N37)	Industrial area	22.02.2016	62.6	75
3	Block IV (N6)	Industrial area	19.02.2016	59.8	75
4	Nichitpur (N8)	Industrial area	17.02.2016	61.3	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 28.05.2016. Job No. 110310

NOISE LEVEL DATA

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

Year : **2015-16.**

Name of the Cluster: **Cluster -IV**

Month: **March, 2016**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**[3]

a. First Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Lim of Noise level i dB(A)
1	Govindpur village (N7)	Industrial area	15.03.2016	60.7	75
2	Chotudih (N37)	Industrial area	14.03.2016	60.2	75
3	Block IV (N6)	Industrial area	09.03.2016	57.6	75
4	Nichitpur (N8)	Industrial area	07.03.2016	58.7	75

b. Second Fortnight data

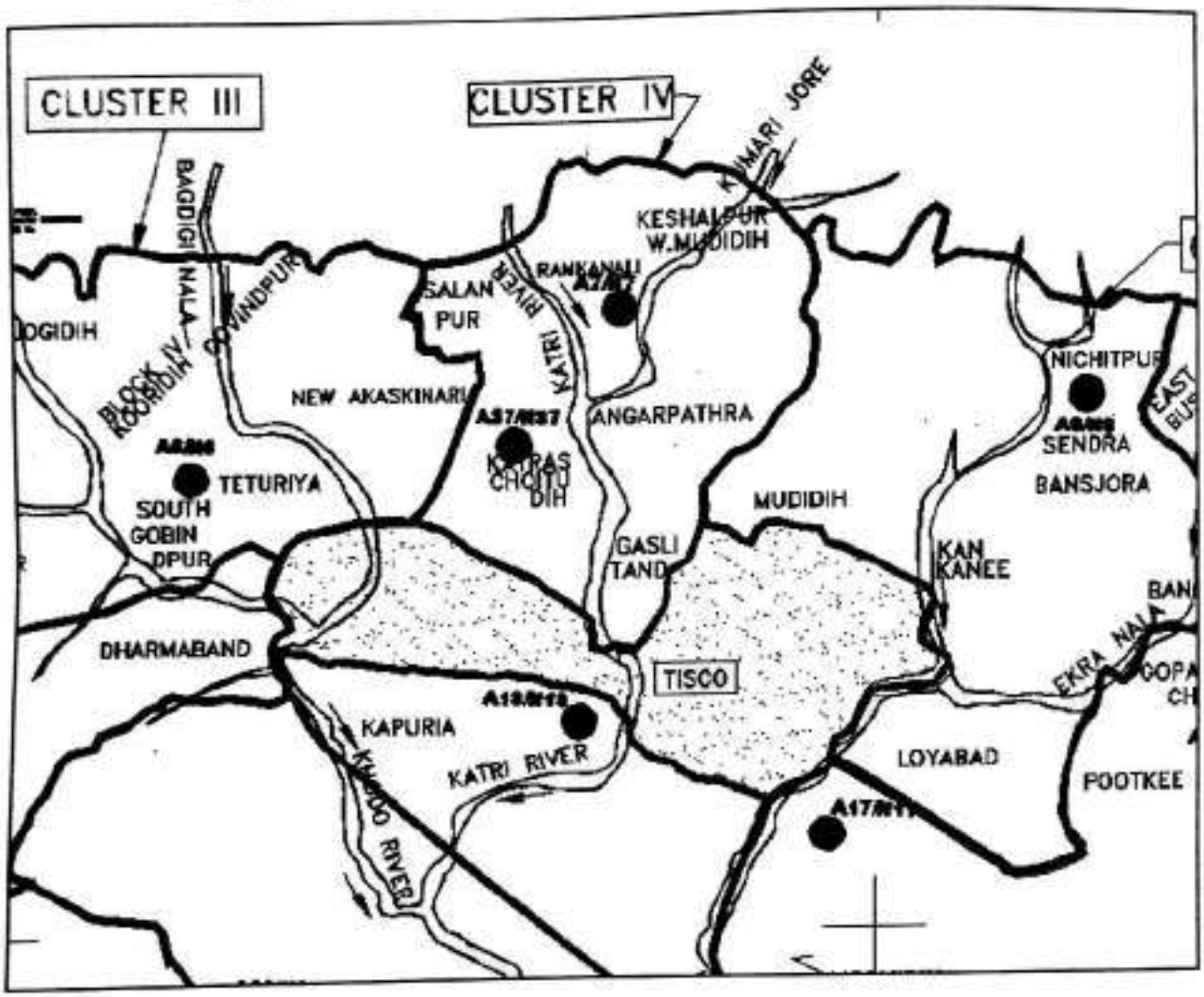
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Lim of Noise level i dB(A)
1	Govindpur village (N7)	Industrial area	29.03.2016	62.8	75
2	Chotudih (N37)	Industrial area	31.03.2016	58.7	75
3	Block IV (N6)	Industrial area	30.03.2016	62.3	75
4	Nichitpur (N8)	Industrial area	22.03.2016	61.6	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.

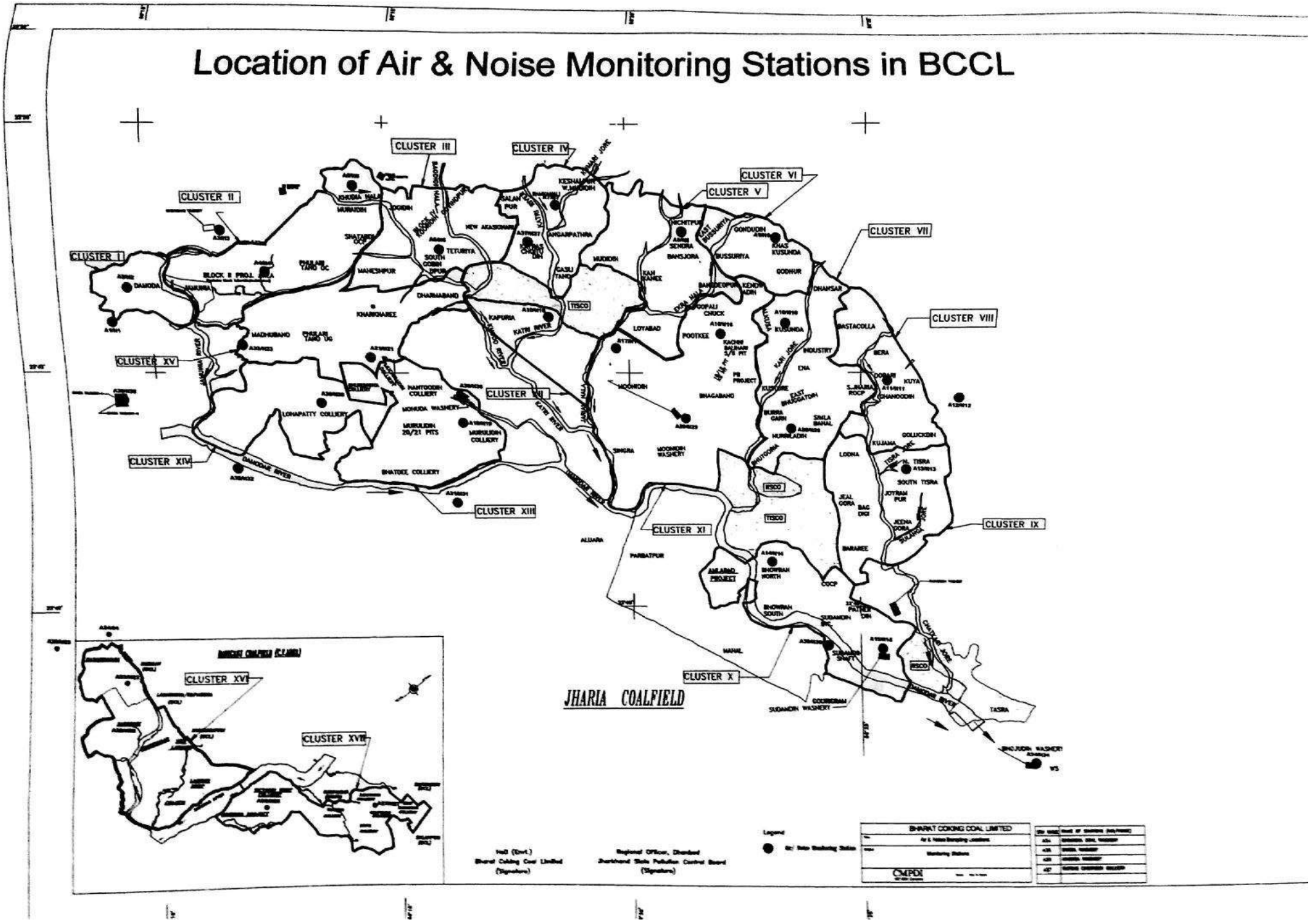
*** Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.**

[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

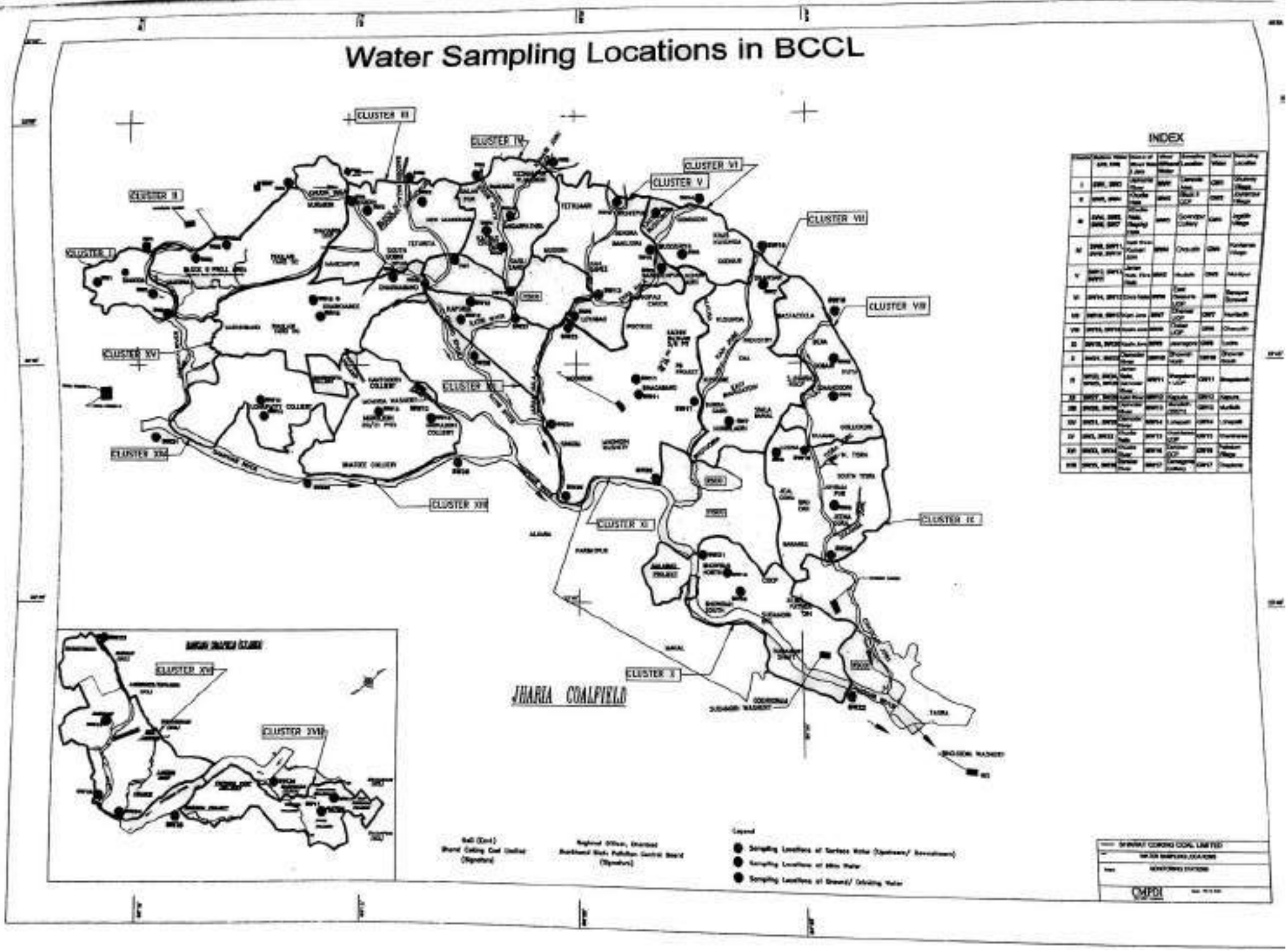
Fig: Noise Level Monitoring Location of Cluster IV



Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



ANNEXURE 38

CSR, R&R AND TRANPORTATION PLAN OF

CLUSTER-IV

As per

EC condition (Specific Condition :27) The Details of transportation, CSR, R&R and implementation of environmental action plan for the clusters-IV should be brought out in a booklet form within a year and regularly updated.

Aug 2015

INTRODUCTION

Coal India has adopted CSR as a strategic tool for sustainable growth. For Coal India in the present context, CSR means not only investment of funds for Social Activity but also Integration of Business processes with Social processes. Even much before the issue of CSR became global concern, Coal India was aware of its Corporate Social Responsibility and was fulfilling the aspiration of the Society through well-defined "Community Development Policy" within the periphery of 8 Kms. of the Project sites. This has resulted into a harmonious relationship between Coal India and the peripheral Communities.

Coal India has identified land oustees, PAP and those staying within the radius of 25 Kms of the Project as primary beneficiaries. Poor and needy section of the society living in different parts of India are second beneficiaries. For carrying out CSR activities, 80% of the budgeted amount are be spent within the radius of 25 Km of the Project Site/Mines/Area HQ/Company HQ and 20% of the budget to be spent within the States in which operating.

SCOPE

As per Schedule VII of New Companies Act 2013 the following should be the Scope of Activities under Corporate Social Activities:

i) Eradicating hunger, poverty and malnutrition, promoting healthcare including preventive health care and sanitation and making available safe drinking water.

ii) Promoting education, including special education and employment enhancing vocation skills especially among children, women, elderly, and differently abled and livelihood enhancement projects;

iii) Promoting gender equality, empowering women, setting up homes and hostels for women and orphans, setting up old age homes, day care centres and such other facilities for senior citizens and measures for reducing inequalities faced by socially and economically backward groups;

iv) Ensuring environmental sustainability, ecological balance, protection of Flora and Fauna, animal welfare, agro-forestry, conservation of natural resources and maintaining quality of soil, air and water;

v) Protection of national heritage, art and culture including restoration of buildings and sites of historical importance and works of art; setting up public libraries, promotion and development of traditional arts and handicrafts;

vi) Measures for the benefit of armed forces veterans, war widows and their dependents

vii) Training to promote rural sports, nationally recognized sports, Paralympics sports and Olympic sports;

viii) Contribution to the Prime Minister's National Relief Fund or any other fund set up by the Central Government for socio-economic development and relief and welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities and women;

ix) Contributions or funds provided to technology incubators located within academic institutions which are approved by the Central Government;

x) Rural development projects

SOURCE OF FUND

The fund for the CSR should be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.00 per tonne of Coal Production of previous year whichever is higher.

ACTION PLAN FOR CORPORATE SOCIAL RESPONSIBILITY

When the EC was granted,it was estimated as per prevailing policy, 5% of the retained earning of the previous year subject to minimum of Rs. 5 per tonne of coal production of the previous year will be provided for Corporate Social Responsibility (CSR) . Since Normative Capacity of the Cluster-IV is 2.851 MT ,an amount to the tune of Rs. 1,42,55,000 will be used for the CSR works per year for Cluster-IV.

The EMP contained the following:

S.N	HEAD OF WORKS	CSR expenditure to be done per year in Rs. lakhs				
		2011-12	2012-13	2013-14	2014-15	2015-16
1	Education facilities including grant of schools, providing education kits, running of schools etc.	40.00	45.00	35.00	40.00	40.00
2	Water Supply and rain water harvesting works, wells, ponds, hand pumps and tube wells	30.00	35.00	45.00	30.00	30.00
3	Health Care and vaccination, awareness camp, mobile medical camp, Immunisation, medicine etc.	20.00	20.00	10.00	20.00	20.00
4	Environment Protection i.e plantation etc.	8.25	8.25	18.25	8.25	8.25
5	Social Empowerment like Community centre, Literacy drive, shopping complex.	10.00	10.00	10.00	10.00	10.00
6	Infrastructure Development like road, bridge, repairing of school, drains, electric line etc.	20.00	10.00	10.00	20.00	20.00
7	Sports Culture like village stadium village stadium, grant to village sports body, organizing sports meet	3.00	3.00	3.00	3.00	3.00
8	Grant to NGO for community development	5.00	6.30	6.30	5.00	5.00

9	Miscellaneous welfare for adopted villages	6.30	5.00	5.00	6.30	6.30
	TOTAL	**142.55**	**142.55**	**142.55**	**142.55**	**142.55**

CURRENT STATUS

Healthcare: Annual CSR (Healthcare) Expenditure for the year 2014-15

I. Mobile Medical Van (MMV):

SN	Month	No. of Mobile Medical Van Camp	Beneficiaries	Amount (in Rs.)
1	April'14	04	64	3986.37
2	May'14	25	604	26696.54
3	June'14	21	501	22613.97
4	July'14	19	543	26095.76
5	August'14	16	471	21884.78
6	September'14	21	776	32133.91
7	October'14	19	689	36241.37
8	November'14	14	435	20687.14
9	December'14	17	508	18176.77
10.	January'15	17	480	17737.06
11.	February'15	20	614	21800.27
12.	March'15	22	615	22669.54
	Total =	215	6300	270723.48

II. General Medical Camps (2014-15):

SN.	Month	No. of General Medical Camp	Beneficiaries	Amount (in Rs.)
1	June'14	1	131	6592.80
2	November'14	1	124	7687.52
	Total =	2	255	14280.32

III. Health Awareness Programmes (2014-15):

SN	Date	Activities	Amount (in Rs.)
1.	29.08.2014	Aids Awareness Programme	5677.00
2.	10.04.2014	Nasha Mukti Abhiyan	2795.00
3.	20.12.2014	Blood Pressure Detection Camp	5200.00
4.	26.11.2014 to 28.11.2014	Eye Camp	19361.00

IV. CSR Clinics (2014-15):

Sr. No.	Month	No. of Beneficiaries
1	April'14	326
2	May'14	264
3	June'14	377
4	July'14	533
5	August'14	621
6	September'14	
7	October'14	451

8	November'14	713
9	December'14	911
10	January'15	456
11	February'15	591
12	March'15	315

EDUCATION

School Grants (2014-15):

Sr. No.	Name and allocation of Private Committee Managed School	No. of eligible teachers for getting financial assistance	Under Graduate Rs. 5000/- PM/PT	Graduate Rs 5500/- PM/PT	Graduate with BT Rs 6500/- PM/PT	Graduate with B. Ed Rs 7000/- PM/PT	Total amount of financial assistance for 2014-15 (In Rs.)
1	U.P. School, Keshalpur	2	1	1	0	0	126000/-
2	Shishu Vidya Mandir, Kantapahari	2	1	1	0	0	126000/-
3	Ramkanali Middle Cum High School	5	3	2	0	0	312000/-
						Total	564000/-

Highlights of CSR Work under taken during 2014-15 at Cluster-IV

SN	Details	Rs. in Lakhs	Remarks
1)	Construction of PCC road for New Keshalpur Basti (Carried over of 2013-14)	11.4 Lakhs	Completed
2)	Deepening of pond and construction of ghat near Keshalpur bisthapit basti of Katras area	4.26 Lakhs	Under construction
3)	Installation of pressure filter at Salanpur	20 Lakhs	Job taken up by BCCL (HQ)
4)	Water reservoir at the old ecological site and pumping arrangement	1.5 Lakhs	Completed
5)	School Grant	5.64 Lakhs	Completed
6)	1 no. Mobile Medical Van under CSR during 2014-15 (recurring expenditure) (SWASTHYA RATH)	0.43 Lakhs	720 litres Diesel provided by Area annually
7)	Construction of toilets in various schools in different districts of Jharkhand under "Swachh Vidyalaya Abhiyaan" under CSR activities of BCCL.	316 Lakhs	Construction of 44 toilets (with 5yr maintenance) is under process by Katras Area at Koderma District.
8)	Construction of additional 120 units of toilet (girls – 65 & boys - 55) at Koderma district under CSR activities of BCCL	201.40 Lakhs	Amount to be provided to Jharkhand govt. for construction (under process). Estimated cost.
9)	Contribution of Rs 10 (Ten) Crores to Prime Minister's National Relief Fund (PMNRF) for the relief of victims of HUDHUD Cyclone in Andhra Pradesh and Odisha	1000	Contributed by BCCL (HQ).

PROPOSED STATUS

Annual CSR (Medical) proposed for the year 2015-16

1) Mobile Medical Van (MMV) (2015-16):

Sr. No.	Month	No. of Mobile Medical Van Camp
1	April'15	20
2	May'15	20
3	June'15	20
4	July'15	20
5	August'15	20
6	September'15	20
7	October'15	20
8	November'15	20
9	December'15	20
10.	January'16	20
11.	February'16	20
12.	March'16	20
	Total =	240

2) General Medical Camp Proposed (2015-16):

SN	Month	No. of General Medical Camp proposed
1	June'15	1
2	November'15	1
	Total =	2

3) Other Medical Activities Proposed (2015-16):

Sr. No.	Activities Proposed
1.	Aids Awareness Programme

2.	Nasha Mukti Abhiyan
3.	Blood Pressure Detection Camp
4.	Eye Camp

4) CSR Clinics (2015-16):

Sr. No.	Month	No. of Beneficiaries (Expected)
1	April'15	6000
2	May'15	
3	June'15	
4	July'15	
5	August'15	
6	September'15	
7	October'15	
8	November'15	
9	December'15	
10	January'16	
11	February'16	
12	March'16	

EDUCATION

Proposed grant for Schools (2015-16)

Sr. No.	Name and allocation of Private Committee Managed School	No. of eligible teachers for getting financial assistance	Under Graduate Rs. 5000/- PM/PT	Graduate Rs 5500/- PM/PT	Graduate with BT Rs 6500/- PM/PT	Graduate with B. Ed Rs 7000/- PM/PT	Total amount of financial assistance (Proposed) for 2015-16 (In Rs.)
1	U.P. School, Keshalpur	2	1	1	0	0	126000/-
2	Shishu Vidya Mandir,	2	1	1	0	0	126000/-

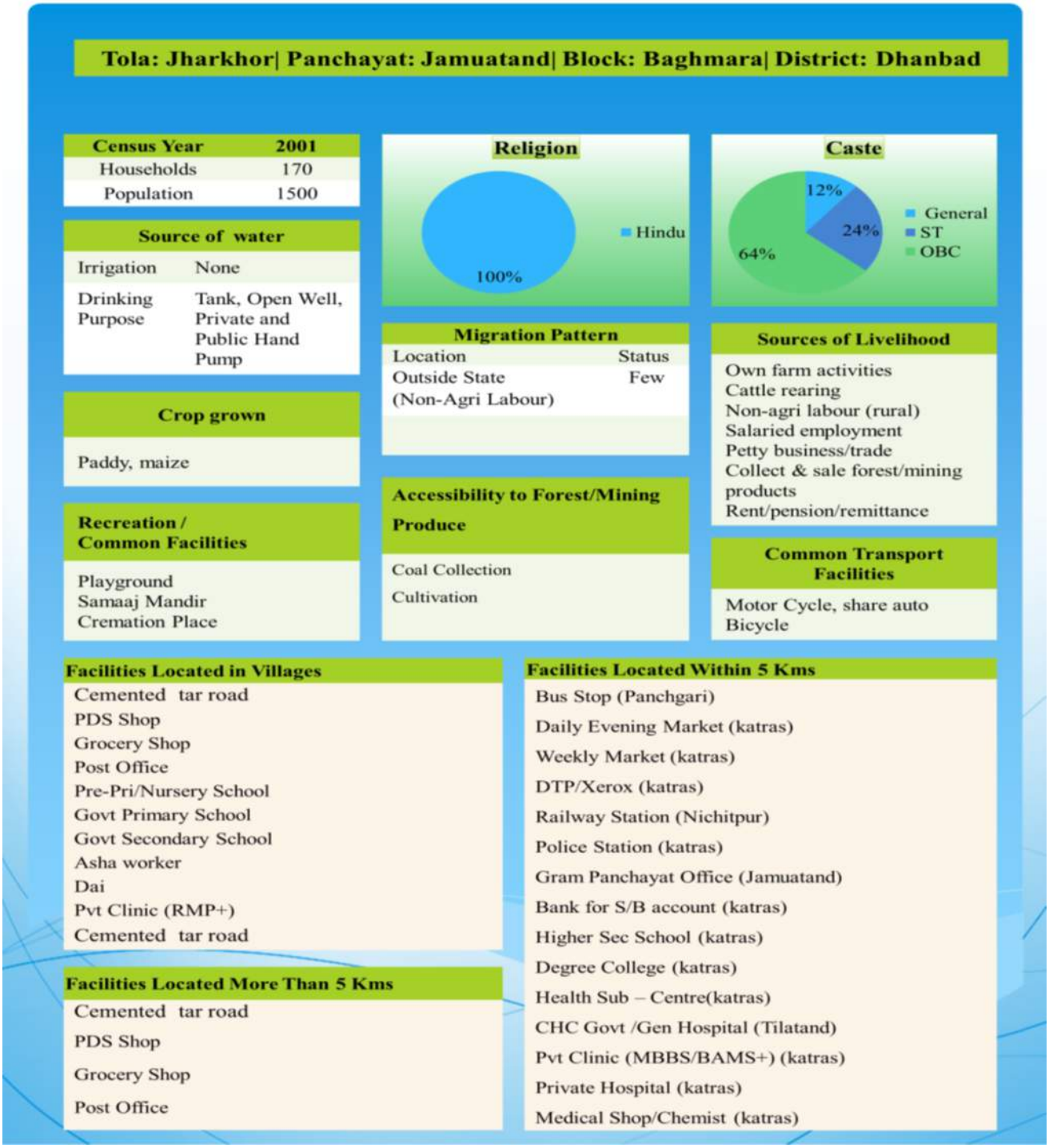
	Kantapahari						
3	Ramkanali Middle Cum High School	5	3	2	0	0	312000/-
						Total	564000/-

CSR Work to be under taken during 2015-16 at Cluster-IV

Sr. No.	Details	Rs. in Lakhs	Remarks
1	Deepening of pond and construction of ghat near Keshalpur bisthapit basti of Katras area	4.26 Lakhs	Construction to be completed
2	Installation of pressure filter at salanpur	20 Lakhs	Job taken up by BCCL (HQ)
3	Water reservoir at the new ecological site and pumping arrangement	1.5 Lakhs	To be completed
4	School Grants	5.64 Lakhs	To be granted to 3 Schools
5	Hiring of TATA SUMO Ambulance for Mobile Medical Van		Hired by BCCL (HQ)
6	Mobile Medical vans under CSR during 2014-15 (recurring expenditure) (SWASTHYA RATH)	0.43 Lakhs	Recurring expenditure granted by Katras Area (HQ)
7	Construction of toilets in various schools in different districts of Jharkhand under “Swachh Vidyalaya Abhiyaan” under CSR activities of BCCL.	316 Lakhs	Construction of 44 toilets is under process by Katras Area at Koderma District
8	Construction of additional 120 units of toilet (girls – 65 & boys - 55) at Koderma district under CSR activities of BCCL	201.40 Lakhs	Amount to be provided to Jharkhand govt. for construction (under process). Estimated cost.

TISS Baseline Survey Report

Tata Institute of Social Sciences (CSR Hub) has prepared a baseline survey report of the nearby villages of BCCL. The report has outlined a detailed survey of three villages Jharkhor, Gundhali Beda and Rangadih. The baseline report is following: -



SC-27 (14)

Coal Transportation Plan-

Coal produced in the coal face in the different mines of Katras Area is first dumped in the coal dumps of the concerned colliery at the surface. From the individual coal dump, coal is then shifted to the following railway siding of Katras Area for rail despatch to power plants/steel plants.

1. Lakurka Railway Siding
2. Sijua Railway Siding
3. Jogta Railway Siding

Distance from coal dumps of AKWMC to Lakurka/Sijua Railway siding is 4-5 KM (Max)
Distance from coal dumps of AARC to Lakurka/Sijua Railway siding is 5-6 KM (Max)
Distance from coal dumps of Salanpur to Lakurka/Sijua Railway siding is 6-7 KM (Max)
Distance from coal dumps of GTC to Jogta Railway siding is 4-5 KM (Max)

Mine wise coal production of Katras Area during 2012-13

SL.NO	Name of mine(OC)	Total Coal Production(Te)
1	AKWMC(U/G)	130229
2	AARC(U/G)	179451
3	SPC(U/G)	115402
4	KCC(U/G)	5715
5	AKWMC(D/OC)	2112080
6	AKWMC/Kantapahari(H/OC)-I	668094
7	AKWMC/Kumarijore(H/OC)	NIL
8	GASLITANT(H/OC)	868860
9	SALANPUR(H/OC)	NIL
	TOTAL	**4079831**

Mine wise coal production of Katras Area during 2013-14

SL.NO	Name of mine(OC)	Total Coal Production(Te)
1	AKWMC(U/G)	124634
2	AARC(U/G)	164400
3	SPC(U/G)	148101
4	AKWMC(D/OC)	2394825
5	AKWMC/Kantapahari(H/OC)-I	269
6	AKWMC/Kumarijore(H/OC)	1061814
7	GASLITANT(H/OC)	352100
8	SALANPUR(H/OC)	130560
	TOTAL	**4376703**

Mine wise coal production of Katras Area during 2014-15

SL.NO	Name of mine(OC)	Total Coal Production(Te)
1	AKWMC(U/G)	120532
2	AARC(U/G)	110260
3	SPC(U/G)	130738
4	AKWMC(D/OC)	3129717
5	AKWMC/Kantapahari(H/OC)-II	44600
6	AKWMC/Kumarijore(H/OC)	568030
7	GASLITANT(H/OC)	82380
8	SALANPUR(H/OC)	-----
9	KCC(H/OC)	----
10	Mega Project(H/OC)	686444
11	AARC	5600
	TOTAL	**4878301**

SC-27

nkage- Coal produced in Katras Area is despatch to the different organisation like-power plant, el plants etc. Following are the few names of power plants, steel plants, other organisation here coal is despatch from Katras Area:-

stance of different Power/Steel/Fertilizer Plant from Katras Area Railway Siding ijua/Lakurka/Jogta)

Power Plant	Distance (in KM)
Panki	740
Uchhahar	604
BGB	412
HGJ (Harduaganj)	1065
Farakka	315
PMRG	1700
DTPS	110
DSTP	120
Roper	1500
Koderma Pit	155
Kanti	415
CTPS	25
BTPS	55
Budge-Budge	300
DGTP	115
Steel Plant	
Panipat	1400
B.T.I.	800
Nangal, Fertilizer	1500

me of the coal is directly despatch through road transport to some power plants/steel plants etc truck/dumper.

Distance of different Power/Washery Plant from Katras Area by Rod

Power House	Distance (in Km)
MPL	55
Moonidih Washery	28
RGNTPR (Raghunathpur)	60
CTPS	30

SC-27

Colliery wise Coal Despatch by Rail and Road ,2012-13, Katras Area

Colliery	2012-13 , Rail	2012-13 , Road	Total Dispatch (Rail+Road)
SPC	0	0	0
AARC	0	266561	266561
KCC	0	13018	13018
chandore	0	2628	2628
kantaphari	690405	117491	807896
AKWMC (Dept)	1895754	512184	2407938
GTC	442186	776612	1218798
Total	**3028345**	**1688494**	**4716839**

Colliery wise Coal Despatch by Rail and Road, 2013-14, Katras Area

Colliery	2013-14 , Rail	2013-14 , Road	Total Dispatch (Rail+Road)
SPC	53397	54675	108072
SPC (oc)	5208	73545	78753
AARC	93973	73145	167118
Kumarijore	618689	0	618689
AKWMC (Dept)	2603456	217842	2821298
Kumarijore	0	257890	257890
GTC	304661	167693	472354
Kantapahari	35490	13027	48517
Total	**3714874**	**857817**	**4572691**

Colliery wise Coal Despatch by Rail and Road, 2014-15, Katras Area

Colliery	2014-15 , Rail	2014-15 , Road	Total Dispatch (Rail+Road)
SPC	2436	109304	111740
SPC (oc)	130	11526	11656
AARC	12785	45789	58574
Kumarijore	326348	73237	399585
Megaproject	649138	9043	658181
AKWMC (Dept)	3062977	299660	3362637
GTC	41585	22693	64278
Total	**4095105**	**571252**	**4666357**

TRANSPORTATION PLAN

Proposed Reduction in Transport-Distance for Phase-I as presented to EAC

The Phase-I is applicable up to 5years after implementation of Master Plan is completed.

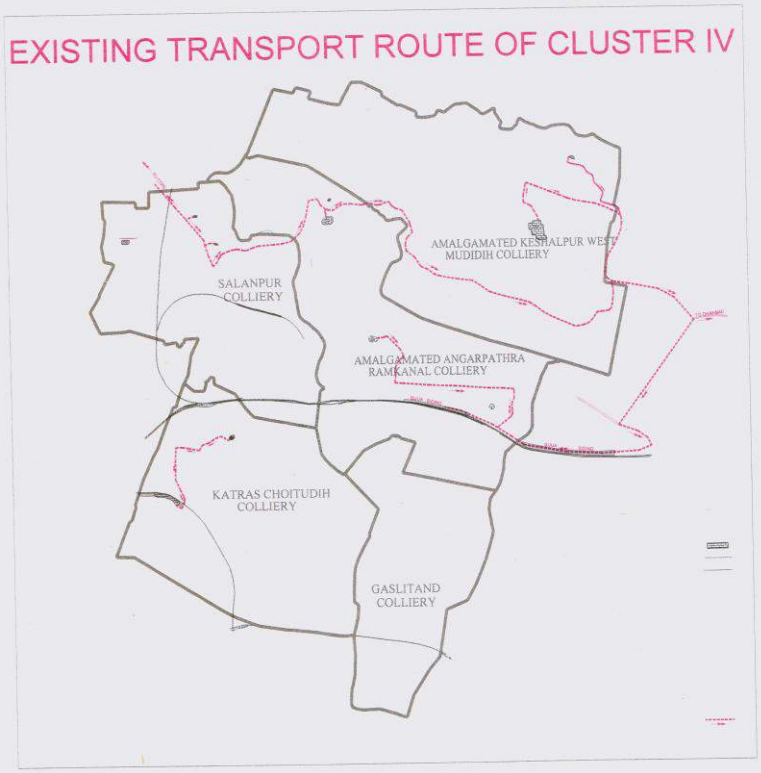
S.No.	Mine	Capacity (MTY)	Existing Siding	Proposed Siding	Existing Transport Distance in km	Proposed Transport Distance in km	Reduction in Coal Transport Distance in km
1	SALANPUR COLLIERY UG	0.15	Sijua	Salanpur	6.652	5.837	0.815
2	KATRAS CHOITUDIH COLLIERY	0.22	Katras Choitudih	Katras Choitudih	0.944	0.944	_
3	AKWMC OC	2.00(life 5.5 yrs)	Sijua	Sijua	3.791	2.820	0.971
	AKWMC UG	0.19	Sijua	Sijua	3.400	2.429	0.971
4	AARC UG	0.291	Sijua	Sijua	1.712	0.653	1.059
5	GASLITAND COLLIERY UG	0.00	_	_	_		——

Change in transportation route is represented in the route maps:

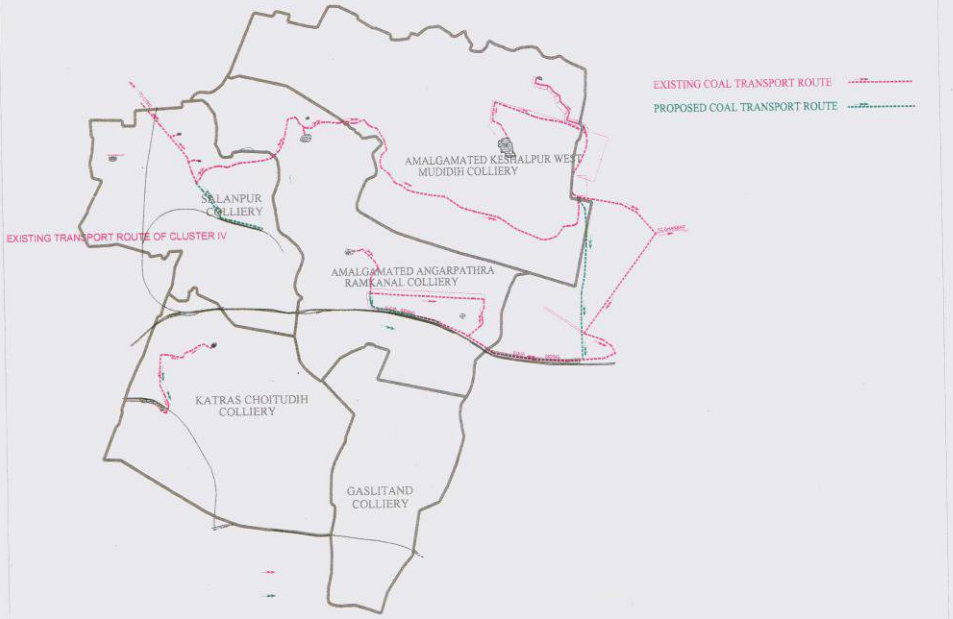
1. Existing Transportation Route of Cluster-IV
2. Existing & Proposed Transport Route of Cluster-IV
3. Conceptual plan of proposed integrated coal transportation network for all clusters in Phase-II

The coal transport is being done as per this commitment and will continue accordingly.

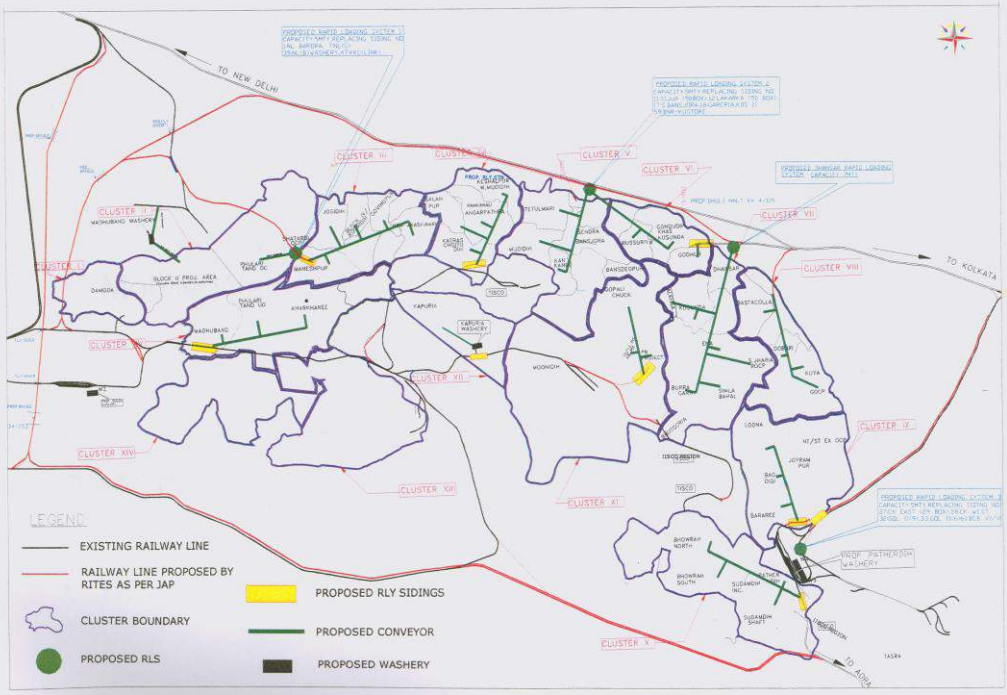
EXISTING TRANSPORT ROUTE OF CLUSTER IV



EXISTING & PROPOSED TRANSPORT ROUTE OF CLUSTER IV



CONCEPTUAL PLAN OF PROPOSED INTEGRATED COAL TRANSPORTATION NET WORK FOR ALL CLUSTERS IN PHASE-II



REHABILITATION AND RESETTLEMENT PLAN

The cluster of mines will be dovetailed with the approved Jharia Action Plan for dealing with fire, subsidence and rehabilitation of people. Master Plan for dealing with fire, subsidence and rehabilitation within the leasehold area of BCCL has already been approved by Government of Jharkhand & Government of India. Out of 595 unstable sites identified in the Master Plan, 51 sites consisting of 7012 no. of houses are affected in this cluster. The affected families will be rehabilitated in adjacent non-coal bearing area at a cost of Rs. 26273.69 lakhs.

Requirement of land at Resettlement site:

A) For BCCL houses

The BCCL houses will be resettled in satellite townships with equivalent type of houses in triple storey building. The weighted average plinth area of the houses proposed to be rehabilitated has been estimated at 48.09 sq m /house. Considering the amenities, infrastructure, internal roads etc. to be provided in the township, requirement of land for BCCL houses has been estimated at 34.30 Ha. (@ 160 m^2 /House)

B) For Non BCCL Houses

(i) Private (Authorised)

Head of every family will be provided a plot of land measuring 100 sq.m. Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for private authorized houses has been estimated at 82.94 Ha. (@ 270 m^2 /house)

(ii) Private Houses (Encroachers)

Encroachers will be provided with a house constructed on about 27 sq.m land in triple storied building in the resettlement site. However provision of 11 sq . m of land has been considered for construction of another room in future . Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for encroachers has been estimated at 22.74 Ha. (@ 130 m^2/house)

CURRENT STATUS

1. SHIFTING OF BCCL EMPLOYEES:

648 houses from Katras have already been shifted from unstable areas and 984 houses construction is under progress.

2. SHIFTING OF NON-BCCL FAMILIES:

JRDA will decide the shifting of Non-BCCL families at their rehabilitation site for which BCCL has paid Rs 332.83 Cr for this purpose.

3. FIRE DEALING:

Fire Dealing through excavation of burning coal is being done.

Sr No	Area Name	Previous Area Under Fire (sq.m)	Present Area under fire (sq.m)
1	Gaslitand	232400	152000
2	Katra Choitudih-6 pit	11200	11200
3	Katra Choitudih-9 pit upto bangali dhowrah	Nil	432000
3	West Mududih	Nil	1200000

Active fire dealing is under process at the above mentioned sites.