PROGRESSIVE COMPLIANCE OF EC CONDITIONS OF CLUSTER- XVI

EC order no- J-11015/185/2010-IA.II (M) Dated 06.02.2013

Up to March 2019

<table>
<tr><th>Sl. no.</th><th>A. Specific Conditions by MOEF:</th><th>Progressive Compliance</th></tr>
<tr><td>i</td><td>The maximum production shall not exceed beyond that for which environmental clearance has been granted for the 5 mines of cluster XVI as below:</td><td>The approved peak production of coal for Cluster XVI is 1.963 MTPA. The total production of coal for the cluster XVI for the FY 2018-19 is 1.52 MT which is well within the limit.</td></tr>
<tr><td>ii</td><td>All the void /water bodies should be backfilled up to ground level and no OB dump at the end of mining.</td><td>Dahibari Basantimata OCP (DBOCP) is the only operating OC project in Cluster XVI and backfilling is being done simultaneously. At the end of mining all water bodies and void will be filled up to ground level and there will be no OB dump remains left.</td></tr>
<tr><td>iii</td><td>Extensive plantation should be provided on either side of River;</td><td>A total of 90,000 Nos. saplings are planted between 2010-11 to 2018-19 in Cluster XVI. Apart from this extensive plantation already exist on both side of Khudia river.</td></tr>
<tr><td>iv</td><td>Impact of mining on ground water of the area (Impact Zone) should be provided;</td><td>There is no significant impact on ground water.</td></tr>
<tr><td>v</td><td>A Garland drain should be provided</td><td>Garland drain is already present along the periphery of quarry area along with master drain which is named as C-9 drain.</td></tr>
<tr><td>vi</td><td>Excess water from mine after treatment should be supplied to the villagers.</td><td>At present excess water from mine is supplied to the villages through settling pond. Location of pond is at the south of Palasia incline.</td></tr>
<tr><td>vii</td><td>Rejects of washery along with dry carbon slurry should be utilized in power plant and other recognized vendors.</td><td>Dahibari Washery rejects are being kept separately and will be sold to recognized vendors through auctioning process.</td></tr>
<tr><td>viii</td><td>A time schedule for filling of existing and abandoned quarries be done.</td><td>Old abandoned Quarry no. 1, 2, 3 & 3/4 of Kalimati Seam at Basantimata Mine has been filled up to ground level. NLOCP, JOCP & KOCP abandoned quarry has been filled up.

Year wise Backfilling till now is as below:-

<table>
<tr><th>Sl No.</th><th>Year</th><th>Quantity (Lakh M^3)</th></tr>
<tr><td>1.</td><td>2012-13</td><td>7.25</td></tr>
<tr><td>2.</td><td>2013-14</td><td>55.00</td></tr>
<tr><td>3.</td><td>2014-15</td><td>85.75</td></tr>
<tr><td>4.</td><td>2015-16</td><td>5.00</td></tr>
<tr><td>5.</td><td>2016-17</td><td>7.00</td></tr>
<tr><td>6.</td><td>2017-18</td><td>5.00</td></tr>
<tr><td>7.</td><td>2018-19</td><td>2.00</td></tr>
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</td></tr>
<tr><td>ix</td><td>The measure identified in the environmental plan for cluster</td><td>Master Plan activities are dovetailed with compliance of</td></tr>
</table>

	XVI groups of mine and the conditions given in this environmental clearance letter shall be dovetailed to the implementation of the Jharia Action Plan.	environmental clearance conditions.
x	**As there is no fire in Cluster XVI but the measure should be adopted by proponent to control spread of neighboring fire to this Cluster XVI. 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 XIV shall be undertaken.**	**Preparation of time series maps is a continuous process and is being complied by BCCL. On three years interval time series maps are being prepared.** A study and first of the time series Map has been prepared through NRSC Hyderabad **and the report was submitted by NRSC on April, 2014. Presently (i.e. in 2017) the Work Order for "Delineation of Surface Fire and associated land subsidence in Jharia Coal Field using satellite based remote sensing techniques" has already been awarded to NRSC under the MoU signed with NRSC**.
xi	**Underground mining should be taken up after completion of reclamation of Opencast mine area after 2 years.**	It shall be complied. Mining is being done as per the guidance and approval/permission of DGMS.
xii	**No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/ check such fire including in old OB dump**	It is being complied. The fire control measures are being taken through opencast excavation method to prevent /check its further spread.
xiii	**A part of cluster XVI is under Barakar River and Damodar River. It was clarified that although the mine is underground, there is no coal underneath River Damodar, which would be mined. The Committee desired that the data of bore wells near River Damodar require to be monitored for permeability and seepage of waster of River Damodar.**	At present there is no underground mining operation below the River Damodar & Barakar. The data of dugwell near Khudia River is being monitored for ground water level. Working underground mine has not reached near river Damodar & Barakar and it is more than 1000 mtr. away from river bed. When working mine will reach within 15 mtr. of river bed then seepage will be monitored as per requirement of regulation 126 , danger for surface water; of CMR 1957 under Mines act 1952. The bore hole will be maintained & monitored as per regulation 127 (B) of CMR 1957 of Mines act. 1952. So it will be complied on time.
xiv	**The rejects of washeries in Cluster –XVI should be send to FBC based plant.**	Being complied.
xv	**There shall be no external OB dumps. OB produce from the**	There are seven OB dump in the cluster. All the OB dumps are within the leasehold area and are on de-coaled area. These

	whole cluster will be 29.01 Mm^3. OB from One Patch OCP 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.	dumps are created outside/externally to excavation area for reasons of safety and to facilitate mining. At the end of mining all the dumps will be leveled and backfilled in opencast excavated area. Action is being taken as specified in EMP for Backfilling of OB concurrent with mining. No fresh land is used for OB dumping. Proper vegetation is being developed on the OB dump to avoid erosion of soil and gully formation and also to stabilize sufficiently the OB slope.
xvi	**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- XVI shall be drawn up and implemented.**	Calendar plan has been prepared. Mine closure plan as per the guidelines of Ministry of Coal has been prepared by CMPDI and it is being followed.
xvii	**The void in 5 ha area shall be converted into a water reservoir of a maximum depth of 15-20 m in post mining stage and shall be gently sloped and the upper benches of the reservoir shall be stabilised with plantation and the periphery of the reservoir fenced. The abandoned pits and voids should be backfilled with OB and biologically reclaimed with plantation and or may be used for pisciculture**	It shall be complied. Continuous process of the backfilling has been adopted. A part of the void will be converted into the water body as specified in EMP.
xviii	**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.**	Mining is being carried out as per Statute from the streams/Nalas following within the lease and maintaining a safe distance from the nalas flowing along the lease boundary.
xix	**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.**	Presently No OB is being dumped near water bodies. The OB dumps created earlier already stabilized & further action has been taken for their eco-restoration work as per Road Map prepared by FRI, Dehradun and as per the action plan of Prof. CR Babu ,Professor Emirates CEMDE, Delhi University. The OB dumps which are already present at the bank of River will be provided with the Toe-Wall to arrest the silt from going into river.
xx	**Thick green belt shall be developed along undisturbed**	Year wise plantation (Proposed) is being done as per following

<table>
<tr><td></td><td>areas, mine boundary and in mine reclamation. During post mining stage, a total of 242.09ha area would be reclaimed by planting native species in consultation with the local DFO/Agriculture Department/institution with the relevant discipline. The density of the trees shall be around 2500 plants per ha.</td><td>plan:-<table><tr><td>Year</td><td>Biologically Reclaimed Area</td></tr><tr><td>2013-14</td><td>1.0 Ha.</td></tr><tr><td>2014-15</td><td>4.6 Ha.</td></tr><tr><td>2015-16</td><td>4.0 Ha.</td></tr><tr><td>2016-17</td><td>12.5 Ha.</td></tr><tr><td>2017-18</td><td>7.0 Ha.</td></tr><tr><td>2018-19</td><td>05.0 Ha.</td></tr><tr><td>2019-20</td><td>05.0 Ha.</td></tr><tr><td>2020-21</td><td>05.0 Ha.</td></tr><tr><td>2021-22</td><td>05.0 Ha.</td></tr><tr><td>2022-23</td><td>05.0 Ha.</td></tr><tr><td>2023-24</td><td>05.0 Ha.</td></tr><tr><td>2024-25</td><td>05.0 Ha.</td></tr><tr><td>2025-26</td><td>25.0 Ha.</td></tr><tr><td>2026-27</td><td>35.0 Ha.</td></tr><tr><td>2027-28</td><td>40.0 Ha.</td></tr><tr><td>2028-29</td><td>78.0 Ha.</td></tr></table></td></tr>
<tr><td>xxi</td><td>The road should be provided with avenue plantation on both side as trees act as sink of carbon and other pollutant.</td><td>1700 gabion trees were planted by DFO along the transportation road and siding in cluster XVI.</td></tr>
<tr><td>xxii</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 -XVI shall be implemented.</td><td>Dhanbad Action Plan has been prepared in consultation with Jharkhand Pollution Control Board for entire BCCL and not cluster wise. It is being implemented comprehensively for all the mines of BCCL.</td></tr>
<tr><td>xxiii</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>Work Order had already been issued to NEERI Nagpur on 12.05.2018. And work has been started in September 2018. Field data collection is scheduled in Summer 2019.</td></tr>
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xxiv	**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.**	No ground water is being utilized for the purpose of industrial use of the water. Mine water has been channelized through pipelines and through discharge in to the ponds for its use for the community and irrigation purposes. During summer season filter water as well as raw water is being supplied through water tanker to local adjacent villages where required. Pressure Filters have been installed for the filtration of mine water being supplied to nearby habitat. Aalready 6 Nos. filters have been installed and in operation.
xxv	**Regular monitoring of groundwater level and quality of the study area shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be 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.**	Ground water level and quality are being monitored by CMPDIL Ranchi. Analysis report is enclosed as **Annexure-1.** As of now water accumulated in quarries during monsoon is being extracted and being used in recharging of nearby ponds. Tender was done on 01.03.2019. No bidder participated in the tender. Hence, the tender was cancelled. Re-tendering in process.
xxvi	**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 regularly on the company website.**	Analysis report has been uploaded on the website.
xxvii	**ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to confirm to prescribe standards in case discharge into the natural water course.**	Proposal for ETP is under process in association with CMPDI at DBOCP. Since only crushing is being done at CHP, hence ETP is not required for CHP.
xxviii	**Regular monitoring of subsidence movement on the**	There is no depillaring is going on in underground mines of Cluster XVI, hence no mining induced subsidence is taking place.

	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.	There has been no subsidence occurred during Environmental Clearance compliance period till now. Regular monitoring of the area is being done by mine officials in this regard.
xxix	**Sufficient coal pillars shall be left un-extracted around the air shaft (within the subsidence influence area) to protect from any damage from subsidence, if any.**	Sufficient coal pillars have been left around air shafts as per the statutes and DGMS guidelines.
xxx	**High root density tree species shall be selected and planted over areas likely to be affected by subsidence.**	It is being complied. The plantation programme includes such plants.
xxxi	**Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.**	It is being complied.
xxxii	**Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.**	It is being followed. Sufficient barriers are left for saving the surface installation and infra structures as per the statute and DGMS guidelines.
xxxiii	**No depillaring operation shall be carried out below the township/colony.**	No depillaring operation is being carried out below township/colony.
xxxiv	**The Transportation Plan for conveyor-cum–rail for Cluster-XVI 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-XIV should be dovetailed with Jharia Action Plan. The road transpiration of coal during phase–I should be by mechanically covered trucks.**	Presently tarpaulin covered coal transportation is being done as earlier there were no OEM (original equipment manufacturer) which were supplying such trucks for coal transportation. However, Initiatives has been taken at corporate level of coal India Limited for developing the mechanically covered trucks and a vendor meeting for the same has been held with the OEM on dated 07.05.2016. Further, a proposal for inclusion of mechanically covered trucks in the Contract Terms has been initiated to ensure that the Outsourcing company should deploy Mechanically Covered Trucks for coal Transportation. Further, the study regarding installation of conveyer-cum-rail system for transportation of coal has been entrusted to CMPDIL. The conveyor-cum–rail system will be installed during Second Phase of Master Plan.

		Mechanically covered trucks were deployed of trial basis in Coal India ltd. but due to their unsuccessful run they have been removed. Tarpaulin covered trucks are being used until the introduction of successful mechanically truck in Coal India Ltd. However the matter has been taken to the higher management for introduction of conveyer-cum-rail system for transportation of coal Proposal for queries & inquiries is under progress for conveyer-cum-rail system.
xxxv	**A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.**	The study regarding pollution load in aspect of Cluster XVI is being been done by CMPDI, Ranchi for year 2018-19.
xxxvi	**R&R of 1193 nos of PAF's involved. They should be rehabilitated at cost of Rs 10171.88 lakhs as per the approved Jharia Action Plan.**	The rehabilitation of 1193 PAF is being done by Jharia Rehabilitation & Development Authority (JRDA) under Jharia Action Plan. Presently they are surveying the house in Cluster XVI. Final report on rehabilitation is yet to be submitted by District Collector, Dhanbad.
xxxvii	**Details of transportation, CSR, R&R and implementation of environmental action plan for each of the 17 clusters should be brought out in a booklet for and submitted to Ministry.**	Booklet on CSR, Transportation and R&R activities and implementation of environmental action plan is prepared. The aforesaid Booklet is enclosed as **Annexure-2.**
xxxviii	**A detailed CSR Action Plan shall be prepared for Cluster XVI croup of mines. Specific activities shall be identified for CSR of Rs 20.25/annum @ of Rs 5/ton of coal production. as recurring expenditure. The 242.09ha of area within Cluster XVI 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**	It is being complied. BCCL is implementing CSR activities.

	company and to the local youth, who are motivated to carry out the work in future.	
xxxix	**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.**	Time series map of vegetation cover in the Jharia Coal field has been carried out through CMPDI.
xl	**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.**	Mine closure plan as per the guidelines of Ministry of Coal has been prepared by CMPDI and it is being followed.
xli	**A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company for implementing environment policy and socio-economic issues and the capacity building required in this regard.**	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives which includes Environment, Mining, Excavation 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.
xlii	**Implementation of final mine**	Final Mine Closure Plan, as per the guideline will be submitted 5

	closure plan for Cluster XVI, subject to obtaining prior approval of the DGMS in regard to mine safety issues.	years before the closure of the Mine. For the purpose of safety issues related to the closure prior approval of DGMS will be taken in this regard.
xliii	**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. Complied. A hierarchical system of the company to deal with environmental issues from corporate level to mine level already exists. 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.**	It is being followed.
ii	**No change in the calendar plan of production for quantum of mineral coal shall be made.**	The approved peak production of coal for Cluster XVI is 1.963 MTPA. The total production of coal for the cluster XVI for the FY 2018-19 is 1.52 MT which is well within the limit.

iii	**Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM_{10}, $PM_{2.5}$, SO_2 and 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.**	The location of monitoring stations has been finalized after the consultation with JSPCB. The work of monitoring of ambient air quality was being done by CMPDIL. Monitoring report is enclosed as **Annexure-3.** To maintain the air quality as per NAAQS standard following precaution measures is being taken:- 1. Sprinkling on Transportation road. 2. Covered truck transportation 3. Plantation 4. Dust controlled blasting and drilling. 5. Regular maintenance of machineries involved in mining.
iv	**Data on ambient air quality (PM_{10}, $PM_{2.5}$, SO_2 and NO_x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EPA rules, 1986 shall be furnished as part of compliance report.**	The location of monitoring stations has been finalized after the consultation with JSPCB. The work of monitoring of ambient air quality was being done by CMPDIL.
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.**	It is being complied. All the workers engaged in noisy operations are provided with the Ear plugs/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.**	Proposal for ETP is under process in association with CMPDI at DBOCP. Since only crushing is being done at CHP, hence ETP is not required for CHP.
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.**	It is being complied. Only tarpaulin covered vehicles all allowed carrying minerals and they are optimally loaded.

viii	**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 recognised under EPA Rules, 1986.**	Monitoring work is being done by CMPDIL HQ which has a laboratory recognized under EPA rules 1986.
ix	**Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.**	Dust masks are provided to persons working in dusty areas. Training on safety & health is imparted at regular intervals at VTCs and at work place.
x	**Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective 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.**	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. Records of IME & PME are also being maintained.
xi	**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.**	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives (30 nos.) which includes Environment, Mining, Excavation, Civil, Survey ,Electrical & mechanical, Forestry disciplines executives and technicians (4 nos.) has been established 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.
xii	**The funds earmarked for**	It has been complied. The funds were earmarked as per EMP

	environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.	plan and kept in separate finance head for the expenditure to maintain environmental protection measures. Item wise expenditure on Environment protection measures in enclosed as **Annexure-4.**
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.**	It has been complied.
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.**	It has been 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**	It has been complied.

	PM_{10}, $PM_{2.5}$, SO_2 and NO_x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	
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 Office s of CPCB and the SPCB.	It is being complied.
xviii	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.	Full cooperation is being provided for the regional office authorities for monitoring of Environmental Clearance conditions compliances.
xix	The Environmental statement for each financial year ending 31 March in For –V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986,as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF by E-mail .	Environmental Statement for each financial year is submitted to the regional office of Jharkhand State pollution control board by 30th June.

29/5/19
Project Officer
DBOCP

Amit Sinha 29/5/19
MT (Envt)
DBOCP

30.5.19
Staff Officer (Mining)
CV Area

30.5.19
Area Manager (Env)
CV Area

30/05/19
Asst. Manager (Envt)
CV Area

General Manager
CV Area

cmpdi
A Mini Ratna Company

GROUNDWATER LEVEL & QUALITY REPORT FOR CLUSTER OF MINES, BCCL

(Assessment year - 2014)

[CLUSTER – I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XIII, XIV, XV & XVI]

JHARIA COALFIELD AND RANIGANJ COALFIELD (PART)

(BHARAT COKING COAL LIMITED)

MARCH – 2015

Regional Institute – II
Central Mine Planning & Design Institute Ltd.
(An ISO 9001:2000 Company)
(A Subsidiary of Coal India Ltd.)
Koyla Bhawan Complex, Koyla Nagar
DHANBAD – 826005

3.15 Monitoring of Ground Water Levels of Cluster-XVI

Cluster-XVI consists of five mines namely, Dahibari-Basantimata OC, Basantimata UG, New Laikidih OC, Laikdih Deep UG and Chunch UG under the administrative control of Chanch-Victoria Area of BCCL. This cluster of mines is located in the western part of Raniganj Coalfield in Dhanbad district of Jharkhand.

The present leasehold area of Cluster-XVI is 1964.21 Ha. The topography of the area is undulating with slope towards south west. The area is plain with gently undulating with elevation varying from 100 m to 140 m AMSL. The general slope of the area is towards southeast. Barakar River and Khudia River are controlling the drainage of the area. The area comes under the watershed area of Barakar River.

4 hydrograph stations (**DB-22, DB-23, DB-24 and DB-25**) are located in the core zone of the mine area. Water level monitoring in these monitoring stations has been done in the months of January, April, August & November'2014 and the Ground water level data is enclosed in the table below:

Sl No.	Well No.	Location	Water level BGL in meters			
			Jan'14	Apr'14	Aug'14	Nov'14
1	DB-22	Dahibari, Niche Basti	6.40	6.48	2.18	3.03
2	DB-23	Dahibari OC	3.85	3.95	2.32	2.13
3	DB-24	Dahibari	9.05	-	-	8.45
4	DB-25	Palasya	3.10	3.37	1.24	2.73
Average GW Level			***5.60***	***4.60***	***1.92***	***4.09***

Ground Water Level (in BGL) varies from 3.10 to 9.05 m during January, 3.37 to 6.48 m during April, 1.24 to 2.32 m during August and 2.13 to 8.45 m during November'2014 within the Core Zone of Cluster-XVI area.

Annexure – IV

GROUNDWATER SAMPLE LOCATION DETAILS

Sl No	Name of Cluster	Ground Water Sample	Dug well (CMPDI)	Location	Date of sampling
1	CLUSTER-I	GW-1	B-15	BERA VILLAGE	10.03.14
2	CLUSTER-II	GW-2	B-59	KHODOVALY VILLAGE	10.03.14
3	CLUSTER-III	GW-3	A-29	GOVINDPUR,AMBAGAN VILLAGE	10.03.14
4	CLUSTER-IV	GW-4	B-63	KESHALPUR, BATIGHAR	10.03.14
5	CLUSTER-V	GW-5	D-30	BORKIBOA VILLAGE	10.03.14
6	CLUSTER-VI	GW-6	D-25	GODHUR MORE	10.03.14
7	CLUSTER-VII	GW-7	D-80	DHANSAR MINE RESCUE STN.	11.03.14
8	CLUSTER-VIII	GW-8	D-48	NEAR GHANOODIH OC	11.03.14
9	CLUSTER-IX	GW-9	D-5	JEALGORA, NEAR P.O.	11.03.14
10	CLUSTER-X	GW-10	D-35	PATHERDIH RLY. COLONY	11.03.14
11	CLUSTER-XI	GW-11	A-32	MONNIDIH BAZAR	10.03.14
12	CLUSTER-XIII	GW-13	A-23	MACHHAYARA, BESIDE NH-32	10.03.14
13	CLUSTER-XIV	GW-14	B-23	LOHAPATTI VILLAGE	10.03.14
14	CLUSTER-XV	GW-15	B-32A	MADHUBAND VILLAGE	10.03.14
15	CLUSTER-XVI	GW-16	D-22	DAHIBARI,NICHE BASTI	11.03.14

cmpdi
A Mini Ratna Company

GROUNDWATER LEVEL & QUALITY REPORT FOR CLUSTER OF MINES, BCCL

(Assessment year - 2015)

[CLUSTER – I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XIII, XIV, XV & XVI]

JHARIA COALFIELD AND RANIGANJ COALFIELD (PART)

(BHARAT COKING COAL LIMITED)

MARCH – 2016

Regional Institute – II
Central Mine Planning & Design Institute Ltd.
(An ISO 9001:2000 Company)
(A Subsidiary of Coal India Ltd.)
Koyla Bhawan Complex, Koyla Nagar
DHANBAD – 826005

3.3 O Monitoring of Ground Water Levels of Cluster-XVI

Cluster-XVI consists of five mines namely, Dahibari-Basantimata OC, Basantimata UG, New Laikidih OC, Laikdih Deep UG and Chunch UG under the administrative control of Chanch-Victoria Area of BCCL. This cluster of mines is located in the western part of Raniganj Coalfield in Dhanbad district of Jharkhand.

The present leasehold area of Cluster-XVI is 1964.21 Ha. The topography of the area is undulating with slope towards south west. The area is plain with gently undulating with elevation varying from 100 m to 140 m AMSL. The general slope of the area is towards southeast. Barakar River and Khudia River are controlling the drainage of the area. The area comes under the watershed area of Barakar River.

4 hydrograph stations (**DB-22, DB-23, DB-24 and DB-25**) are located in the core zone of the mine area. Water level monitoring in these monitoring stations has been done in the months of February, April, August & November'2015 and the Ground water level data is enclosed in the table below:

Sl No.	Well No.	Location	Water level (bgl in meters)			
			Feb'15	Apr'15	Aug'15	Nov'15
1	DB-22	Dahibari, Niche Basti	3.78	4.59	2.50	3.53
2	DB-23	Dahibari OC	4.33	3.38	4.16	6.04
3	DB-24	Dahibari	8.38	9.52	5.30	8.20
4	DB-25	Palasya	3.47	3.83	2.13	2.68
Average GW Level			***4.99***	***5.33***	***3.52***	***5.11***

Ground Water Level (in bgl) varies from 3.47 to 8.38 m during February, 3.38 to 9.52 m during April, 2.13 to 5.30 m during August and 2.68 to 8.20 m during November'2015 within the Core Zone of Cluster-XVI area.

GROUNDWATER LEVEL & QUALITY

REPORT

FOR CLUSTER OF MINES, BCCL

(Assessment year - 2016)

[CLUSTER – I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XIII, XIV, XV & XVI]

JHARIA COALFIELD AND RANIGANJ COALFIELD (PART)

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DHANBAD – 826006

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The present leasehold area of Cluster-XVI is 1964.21 Ha. The topography of the area is undulating with slope towards south west. The area is plain with gently undulating with elevation varying from 100 m to 140 m AMSL. The general slope of the area is towards southeast. Barakar River and Khudia River are controlling the drainage of the area. The area comes under the watershed area of Barakar River.

4 hydrograph stations (**DB-22, DB-23, DB-24 and DB-25**) are located in the core zone of the mine area. Water level monitoring in these monitoring stations has been done in the months of February, April, August & November'2016 and the Ground water level data is enclosed in the table below:

Sl No.	Well No.	Location	Water level (bgl in meters)			
			Feb'16	Apr'16	Aug'16	Nov'16
1	DB-22	Dahibari, Niche Basti	3.63	5.38	1.13	3.33
2	DB-23	Dahibari OC	4.26	5.30	0.53	0.90
3	DB-24	Dahibari	8.40	10.65	1.70	6.50
4	DB-25	Palasya	3.33	3.61	1.28	1.98
Average GW Level			***4.91***	***6.24***	***1.16***	***3.18***

Ground Water Level (in bgl) varies from 3.33 to 8.40 m during February, 3.61 to 10.65 m during April, 0.53 to 1.70 m during August and 0.90 to 6.50 m during November'2016 within the Core Zone of Cluster-XVI area.

CSR, R&R AND TRANPORTATION PLAN OF CLUSTER-XVI, BCCL

As per

EC condition (Specific Condition :37) The Details of transportation, CSR, R&R and implementation of environmental action plan for the clusters-XVI should be brought out in a booklet form within a year and regularly updated.

FY 2017-18

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 XVI is 1.51 MT ,an amount to the tune of Rs. 75,55,000 will be used for the CSR works per year for Cluster-XVI.

The CV Area under the Bharat Coking Coal Limited is committed to good corporate citizenship and makes constant efforts to build and nurture long lasting relationships with members of the society in general and its peripheral communities in Particular.

CSR committee of CV Area

Sr. No.	Name	Designation	Post Hold
1	Sri. A. Banerjee	Addl. General Manager, CV Area	Chairman
2	Sri. S.R. Prasad	Chief Manager (P)/APM, CV Area	Member
3	Sri. Trilok Meena	Area Manager (Civil), CV Area	Member
4	Dr. S. Sinha	MS, CV Area	Member
5	Sri. B.B. Saharoy	Area Manager (Finance), CV Area	Member

The EMP contained the following:

Sl. No.	HEAD OF WORKS	CSR expenditure to be done per year in Rs. lakhs						
		2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	Education facilities including grant of schools, providing education kits, running of schools etc.	10.00	8.00	12.00	10.00	8.00	8.00	8.00
2	Water Supply and rain water harvesting works, wells, ponds, hand pumps and tube wells	20.00	22.00	18.00	20.00	22.00	22.00	22.00
3	Health Care and vaccination, awareness camp, mobile medical camp, Immunisation, medicine etc.	7.00	7.00	5.00	5.00	7.00	7.00	7.00
4	Environnent Protection i.e plantation etc.	10.00	8.00	10.00	8.00	8.00	8.00	8.00
5	Social Empowerment like Community centre, Literacy drive, shopping complex.	5.00	7.00	5.00	5.00	5.00	5.00	5.00
6	Infrastructure Development like road, bridge, repairing of school, drains, electric line etc.	10.00	12.00	14.55	15.00	14.00	14.00	14.00
7	Sports Culture like village	3.00	3.00	3.00	3.00	3.00	3.00	3.00

	stadium village stadium, grant to village sports body, organizing sports meet							
8	**Grant to NGO for community development**	**5.00**	**4.55**	**3.00**	**5.00**	**4.55**	**4.55**	**4.55**
9	**Miscellaneous welfare for adopted villages**	**5.55**	**4.00**	**5.00**	**4.55**	**4.00**	**4.00**	**4.00**
	TOTAL	**75.55**	**75.55**	**75.55**	**75.55**	**75.55**	**75.55**	**75.55**

CURRENT STATUS

Healthcare: Annual CSR (Healthcare) Expenditure for the year 2017-18

I. General Medical Camps (2017-18):

SN.	Month	No. of General Medical Camp	Beneficiaries	Amount (in Rs.)
1	April'16	1	102	2400
2	May'16	1	43	1600
3	June'16	1	67	2000
4	July'16	1	60	3000
5	August'16	0	0	00
6	September'16	1	59	3000
7	October'16	1	72	3000
8	November'16	0	0	00
9	December'16	1	106	3000
10	January'17	1	36	2000
11	February'17	1	46	2000
12	March'17	1	38	2000
Total =		**10**	**629**	**24000**

II. Health Awareness Programmes (2017-18):

SN	Date	Activities	Amount (in Rs.)
1.	10.07.2017	Uric acid Camp	Medicine supplied by company
2.	10.08.2017	Uric acid Camp	Medicine supplied by company
3.	15.11.2017	Blood donation camp	9500.00
4.	17.11.2017	Uric acid camp	Medicine supplied by company

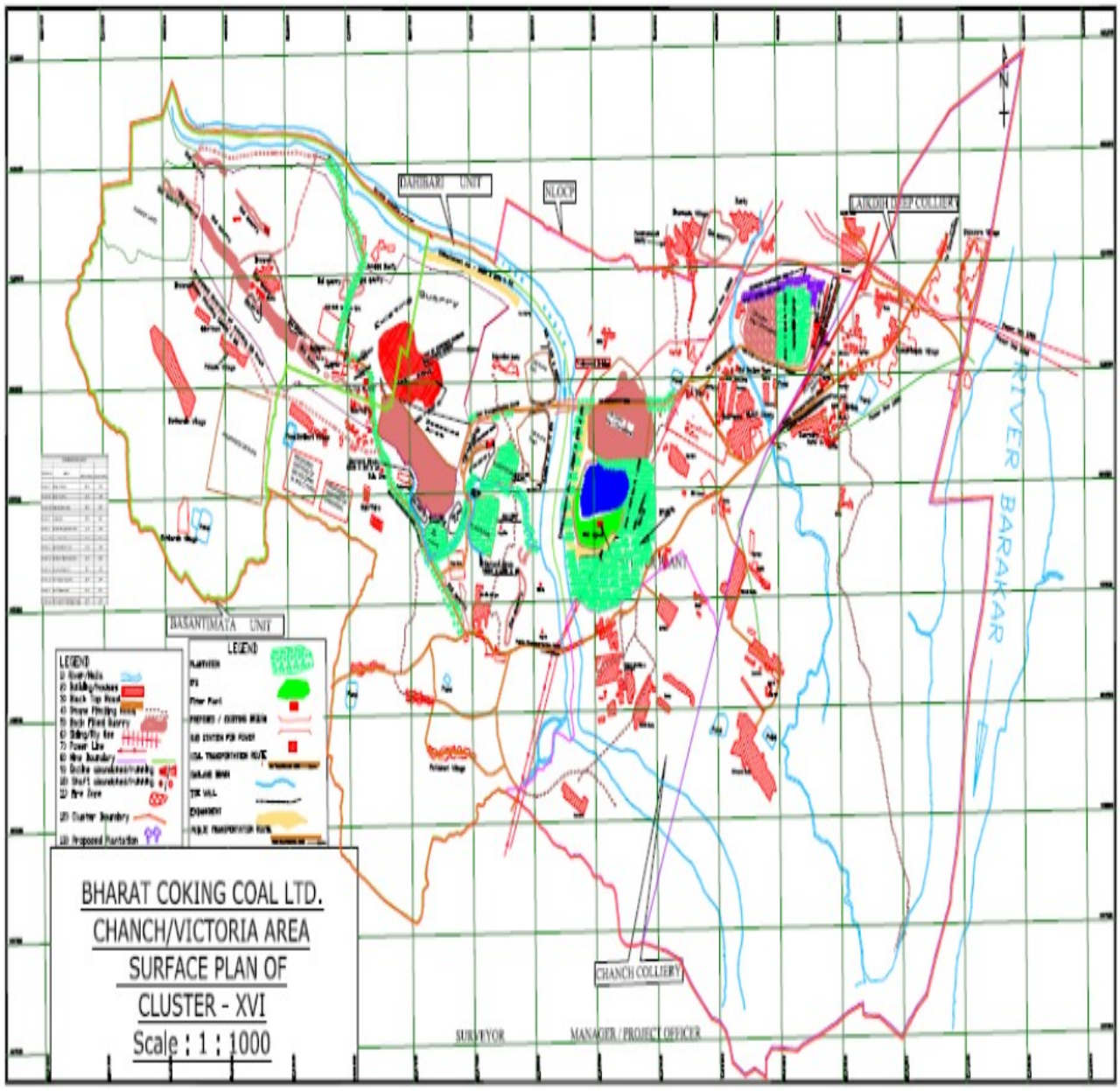
EDUCATION
School Grants (2017-18):

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 2017-18 (In Rs.)
1	Adarsh Primary School, Dahibari	2	1	1	0	0	126000
2	U.P. School Laikdih, CMWO Colony	3	2	1	0	0	186000
3	U.P. School, Chanch	2	2	0	0	0	120000
4	Prathmik Vidhyalay, Laikdih Deep	2	1	1	0	0	126000
Total		558000/-					

TRANSPORTATION PLAN

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

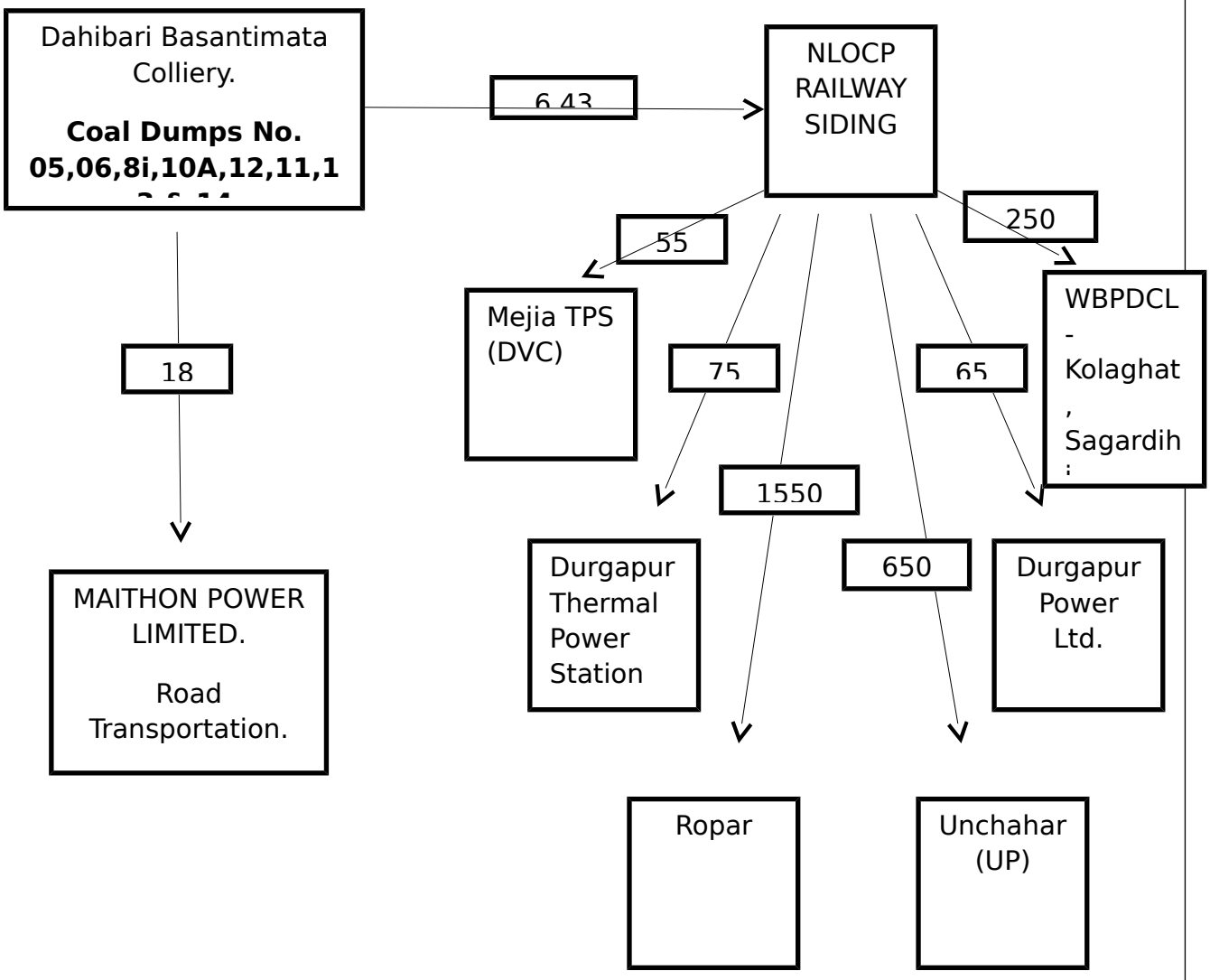
The Phase-I is applicable up to 5years after implementation of Master Plan is completed.



1. Name of the Cluster : CLUSTER XVI
2. Name of the mines of the Cluster: Dahibari-Basantimata Colliery
3. Annual Coal Production : 1.96 MTPA

Name of the Mine	2015-16	2016-17
Dahibari-Basantimata Colliery	1.084 MT	1.299 MT

4. Diagram showing the lead distance from the coal dumps to the railway sidings and other consumers:



5. Coal Dispatch of Cluster-XVI :

Name of the Mine	year	Location	Distance from face to siding (km)	Coal Transferred (in tonnes)	Daily coal Production	Average capacity of the dumpers
Dahibari Basantimata Colliery.	2015-16	NLOCP SIDING	3.5 KM	1279860	2800 Te	30 Te
	2015-16	Road Transport	-----	42583		20 Te
Dahibari Basantimata Colliery.	2016-17	NLOCP SIDING	4.0 KM	947615	3300 Te	30 Te
	2016-17	Road Transport	------	28680		20 Te

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

SHIFTING OF BCCL EMPLOYEES:

A total of 420 No. of houses construction has been completed and BCCL families is being shifted.

REHABILITATION AND RESETTLEMENT

As per the Action plan for rehabilitation , the demographic survey has been conducted by the JHARIA REHABILITATION & DEVELOPMENT AUTHORITY and they have completed the said survey in respect of the following sites:-

Sl.	*Name of the site*	*No. of house surveyed*
1	*Nutungram*	*776*
2	*Jograd Bastee*	*161*
3	*Yadavpur Luchibai*	*362*
4	*Bautdih 2*	*118*
5	*Reliance Factory*	*766*
6	*Dumurkonda Co's quarter*	*210*
7	*Dumurkonda Village*	*1804*
8	*Manjhi Bastee*	*108*

Besides the above the BCCL management is taking action to rehabilitate 5 houses at Kalyanchak Bastee for their rehabilitation at the Non coal bearing area.

28/5/15
Area Manager (Estate)
C V Area, BCCL

Environmental Action Plan

To improve and maintain the environment following action is being taken:-

1. **Air Quality:-**

Drilling operation:-

- All the drills are equipped with well-designed dust extractor arrangement.

Blasting operation

- Controlled blasting is being done in daytime during the shift change over period.

Loading and transport

- Frequent and at regular intervals, water is be sprayed on haul roads, service roads. Mobile water sprinklers of 28 KL capacity have been provided in the project.

- Regular maintenance of HEMM engines to limit emission of harmful exhaust fumes.

- Optimal loading of coal transport vehicle is being ensured.

Coal handling

- Fixed nozzle sprinkler has been installed & maintained for dust suppression at CHP & Mobile Crusher.

Firefighting

- Exposures of coal benches for long time are being avoided.
- Provision of adequate firefighting arrangements including storage of sufficient quantity of water at all critical points is being done.
- Careful removal of all loose coal from the abandoned coal faces is being done.
- Regular supervision is being done.

2. **Water Quality**

- The mine discharge is being effectively utilized to meet the mine's domestic and industrial needs. The entire industrial and domestic water demand of the Cluster-XVI mines has been met from treated mine water of UGP and OCP.

- The abandoned mine workings behave as water pool and improves the resources availability in the area.

- The construction of surface tanks and de-siltation/deepening of existing ponds in the local villages are being done to enhance the water availability of nearby area.

- Mine water is being utilized for irrigation purposes which will also enhance the groundwater recharge potential through artificial recharge of the area.

- Drinking water is being supplied to nearby villages through pipeline network.

- The discharge mine water has been gainfully utilized for the Industrial and domestic requirement. Thereby the mine water, from existing mines in the area, is a resource for local villages.

-The excess mine water is being discharged to local Nalas to recharge groundwater system.

- Plantation is being done on regular basis.

3. Noise pollution control

- Proper designing of plant & machinery by providing in-built mechanisms like silencers, mufflers and enclosures for noise generating parts and shock absorbing pads at the foundation of vibrating equipment.

- Routine maintenance of equipment.

- Rational deployment of noise generating plant and machinery.

-Greenbelts around the quarry, infrastructure sites and service building area besides avenue plantation on both sides of the roads.

- HEMMs with sound proof cabins.

- Personal protective devices to all the persons working in high noise areas.

- Regular monitoring of noise levels at various points.

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

(FOR THE MONTH MARCH, 2019)

E. C. no. J-11015/185/2010-IA.II (M) dated 06.02.2013.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

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EXECUTIVE SUMMARY

1.0 Introduction

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

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

2.0 Sampling location and rationale

2.1 Ambient air sampling locations

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

2.2 Water sampling stations

The Water sampling stations were selected for mine sump water.

2.3 Noise level monitoring locations

Noise levels vary depending on the various activities in mining areas. The monitoring of noise level in different locations will be helpful to take appropriate mitigating measures. The noise levels were recorded in mining areas, washery areas and in residential areas.

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM_{10}), Fine Particulate Matter ($PM_{2.5}$), Sulphur Di-oxide (SO_2) and Nitrogen Oxides (NO_X). Respirable Dust Samplers (RDS) and Fine Dust Sampler ($PM_{2.5}$ sampler) were used for sampling of $PM_{10,}$ $SO_{2,}$ & NO_X and Fine Dust Sampler ($PM_{2.5}$ sampler) were used for sampling of $PM_{2.5}$ at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI RI-II, Dhanbad.

3.2 Water quality

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

3.3 Noise level monitoring

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

4.0 Results and interpretations

4.1 Air quality

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

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

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

4.2 Water quality

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

4.3 Noise Level

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

INTRODUCTION

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

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

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

1.1 The Cluster-XVI is in the Western part of the Raniganj coalfield and situated in the C.V. area of BCCL. It includes a group of 5 Mines (viz. Dahibari Basantimata OCP, Basantimata UG, New Laikdih OCP, Laikdih Deep UG &Chanch UG). The Cluster – XVI is situated about 50 - 55 kms from Dhanbad Railway Station. The mines of this Cluster – XVI 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 Khudia River & Barakar River.

1.2 The Cluster-XVI is designed to produce 1.51 MTPA (normative) and 1.963 MTPA (peak) capacity of coal.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEF&CC) for a rated capacity 1.51 MTPA (normative) and 1.963 MTPA (peak) capacity of coal production vide letter no. J-11015/185/2010-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 MoEF&CC & SPCB and other statutory authorities.

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

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

2.1.1 Ambient Air Quality Sampling Locations

I. CORE ZONE Monitoring Location

i) Dahibari OCP (A22): Industrial Area

The location of the sampling station is 23º 43' 43.11''N 86º 45' 5.00'' E. The sampler was placed at a height of 1.5m from above ground level of Substation Office.

ii) **Basantimata Colliery Office (A23): Industrial Area**

The location of the sampling station is 23º 44' 0.24''N 86º 44' 54.71'' E. The sampler was placed at Roof of Project Office.

II. BUFFER ZONE Monitoring Location

i) Gopinathpur village (A24): Residential Area

The location of the sampling station is 23º 44' 57.21''N 86º 44' 39.19'' E. The sampler was placed at a height of 1.5m from above ground level.

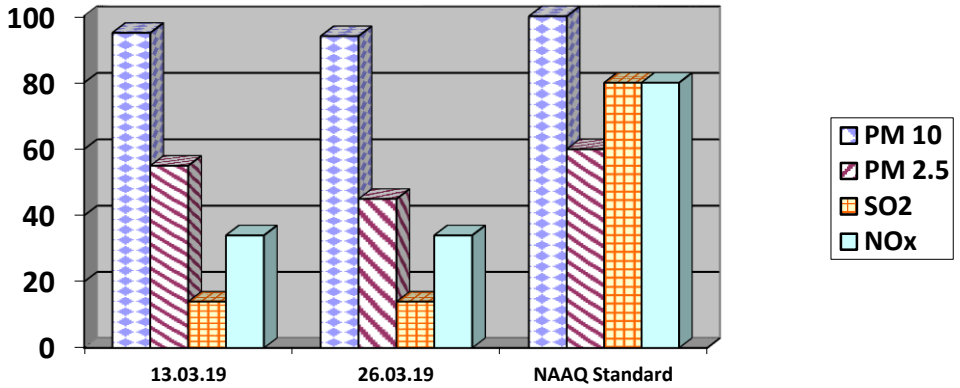
ii) Guliardih Village (A25): Residential Area

The sampler was placed at a height of 1.5m from above ground level.

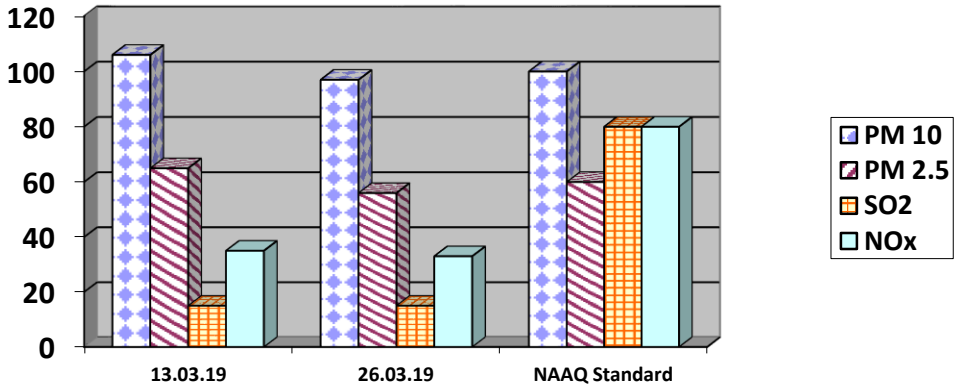
AMBIENT AIR QUALITY DATA

Cluster –XVI, Bharat Coking Coal Ltd Month: **MARCH,2019** Year : **2018-19.**

Station Name:A22, Dahibari OCP		**Zone: Core**		**Category: Industrial**	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	13.03.19	95	55	14	34
2	26.03.19	94	45	14	34
	NAAQ Standard	100	60	80	80



Station Name: A23, Basantimata Office		**Zone: Core**		**Category: Industrial**	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	13.03.19	106	65	15	35
2	26.03.19	97	56	15	33
	NAAQ Standard	100	60	80	80

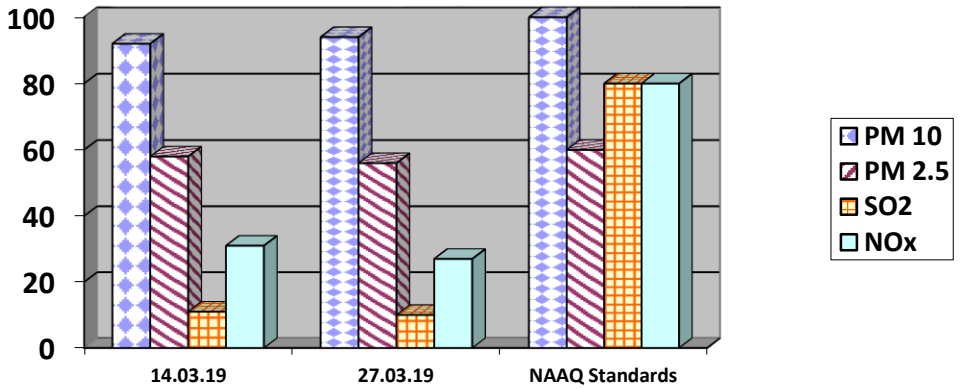


Analysed By
JSA/SA/SSA

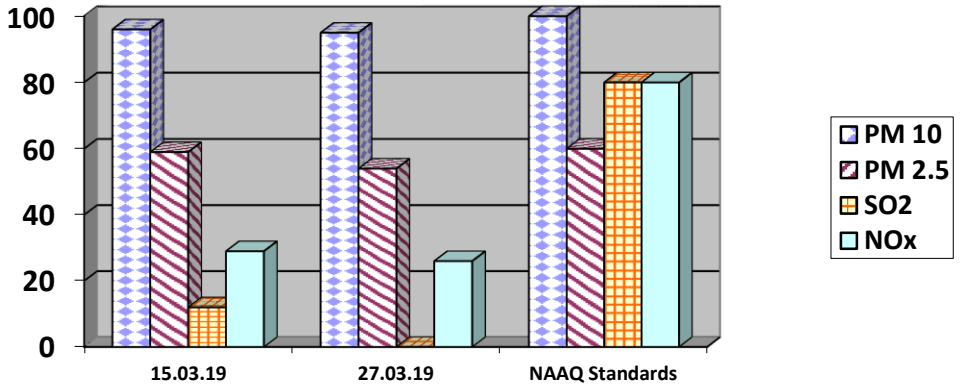
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

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

Station Name: A24, Gopinathpur village		Zone: Buffer		Category: Residential	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	14.03.19	92	58	11	31
2	27.03.19	94	56	10	27
	NAAQ Standards	100	60	80	80



Station Name: A25,Guliardih Village		Zone: Buffer		Category: Residential	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	15.03.19	96	59	12	29
2	27.03.19	95	54	<10	26
	NAAQ Standards	100	60	80	80



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

Analysed By
JSA/SA/SSA

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

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

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. – II**)

i) **Mine Discharge of Dahibari (MW16)**

A sampling point is fixed to assess the effluent quality of Mine discharge.

3.2 Methodology of sampling and analysis

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

3.3 Results & Interpretations

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

WATER QUALITY DATA

(EFFLUENT WATER- FOUR PARAMETERS)

Name of the Cluster: **Cluster -XVI**		Month: **MARCH , 2019**	Name of the Station: **Mine Discharge of Dahibari**	
Sl. No.	**Parameters**	**MW16** First Fortnight	**MW16** Second Fortnight	**As per MOEF General Standards for schedule VI**
		13.03.19	**27.03.19**	
1	Total Suspended Solids	18	22	*100 (Max)*
2	pH	8.11	7.97	*5.5 - 9.0*
3	Oil & Grease	<2.0	<2.0	*10 (Max)*
4	COD	32	36	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By
JSA/SA/SSA

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

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

NOISE LEVEL QUALITY MONITORING

4.1Location of sampling sites

i) **Dahibari OCP (N22)**
ii) **Basantimata UGP (N23)**
iii) **Gopinathpur village (N24)**
iv) **Guliardih Village (N25)**

4.2 Methodology of sampling and analysis

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

4.3 Results & Interpretations

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

NOISE LEVEL DATA

Name of the Project: **Cluster -XVI**			Month: **MARCH, 2019**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)L_{EQ}**	***Permissible Limit of Noise level in dB(A)***
1	Dahibari OCP (N22)	Industrial area	13.03.19	64.3	*75*
2	Dahibari OCP (N22)	Industrial area	26.03.19	68.7	*75*
3	Basantimata UGP (N23)	Industrial area	13.03.19	61.8	*75*
4	Basantimata UGP (N23)	Industrial area	26.03.19	67.8	*75*
5	Gopinathpur village (N24)	Residential area	14.03.19	50.6	*55*
6	Gopinathpur village (N24)	Residential area	27.03.19	54.4	*55*
7	Guliardih Village (N25)	Residential area	15.03.19	51.2	*55*
8	Guliardih Village (N25)	Residential area	27.03.19	46.3	*55*

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

Analysed By
JSA/SA/SSA

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

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

Ambient Air Quality Standards for Jharia Coal Field

As per the Environment (Protection) Amendment Rules, 2000 notified vide notification G.S.R. 742(E), dated 25.9.2000.

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

Note:

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

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th FEBRUARY 2009

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

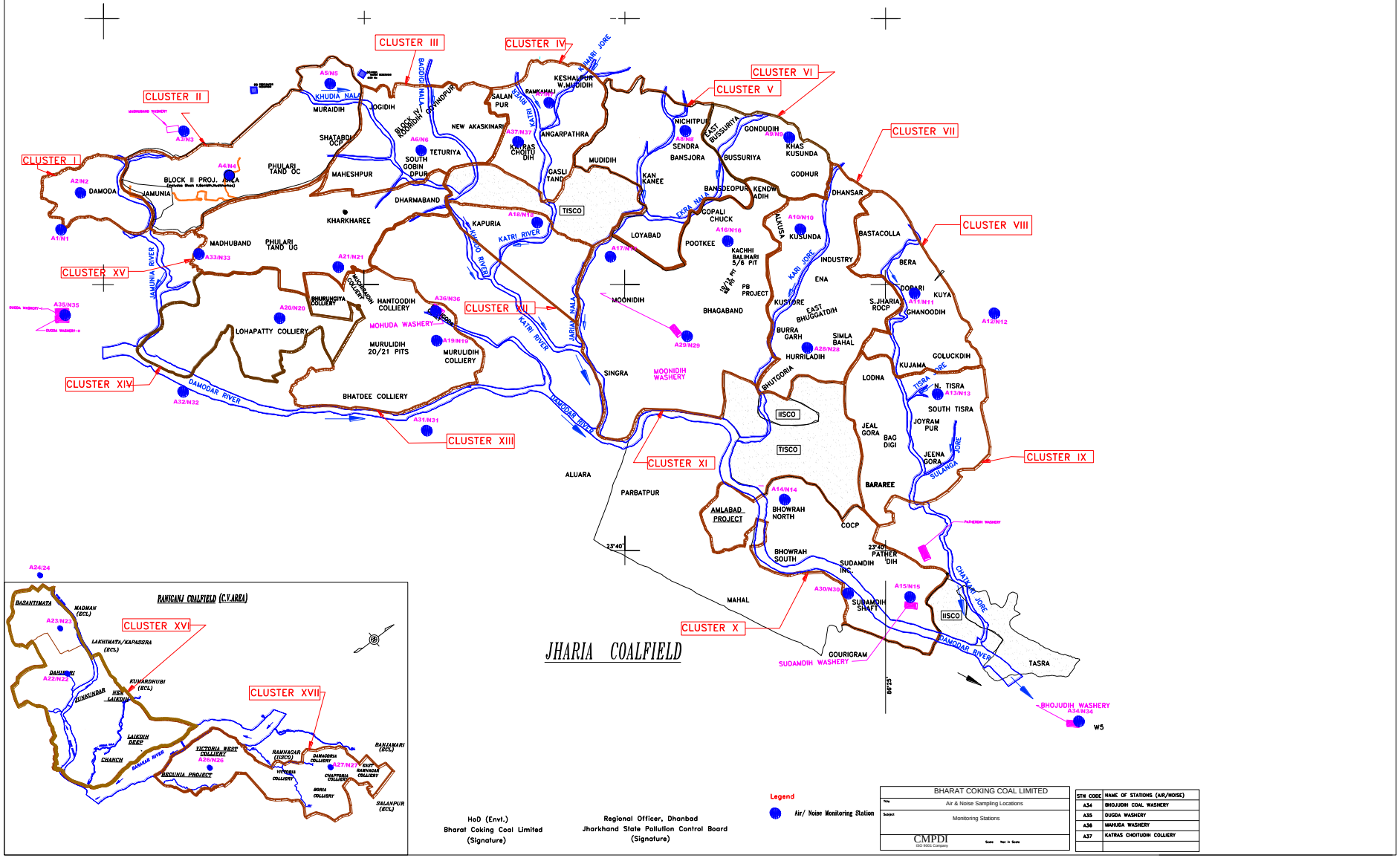
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO_2), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet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

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

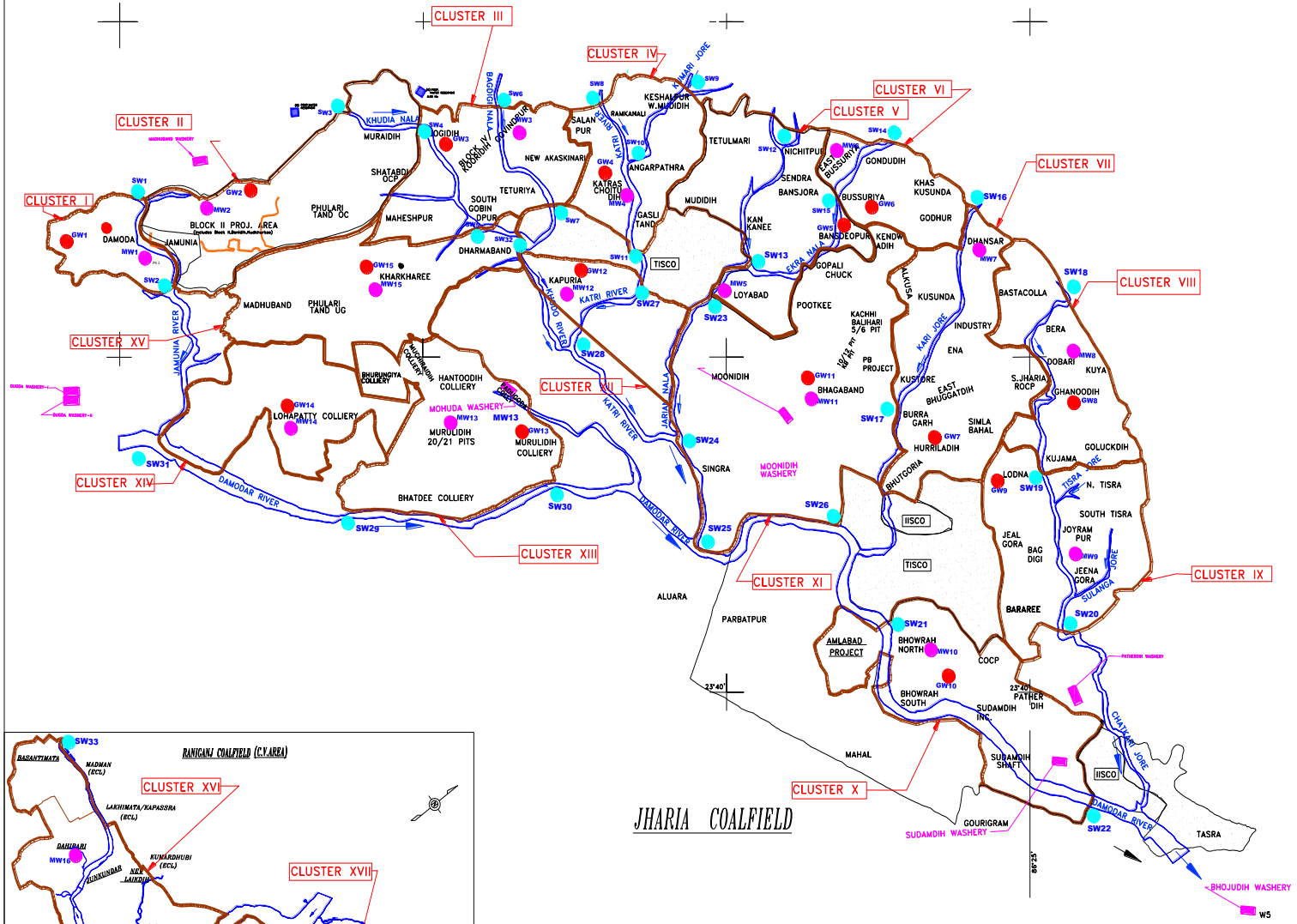
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

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

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

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

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

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

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

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

ANNEXURE-9

भारत कोकिंग कोल लिमिटेड
एक मिनिरत्न कम्पनी
(कोल इंडिया लिमिटेड का एक अंग)
महाप्रबंधक का कार्यालय,
चाँच विक्टोरिया क्षेत्र
पि. ओ.- बराकर, जिला - पं.बर्धमान (पं बंगाल)
पिन 713324 दूरभाष 0341-2520061/62,
पंजीकृत कार्यालय कोयला भवन, कोयला नगर, धनबाद-825005, (झारखण्ड)
CIN U10101JH1972GOI000918

Bharat Coking Coal Limited
A MINI RATNA Co.
(A Subsidiary of Coal India Ltd)
Office of the General Manager,
Chanch Victoria Area
P.O.-BARAKAR, DIST-PAS.BARDHAMAN (W.B.)
PIN- 713324, TeL. 0341-2520061/62
Regd Off: Koyla Bhawan, Koyla Nagar, Dhanbad-825005.
CIN U10101JH1972GOI000918.

Environmental Fund Expenditure in 2017-18 (Cluster XVI)

Sl No.	Activity	Expenditure Amount (Rs.)
1.	Plantation /Eco-Restoration/Afforestation	1,80,000/-
2.	Sprinkling	23,72,554/-
3.	Wages of Manpower Involved	2,10,00,000/-
4.	Expenditure on EMP Study & Monitoring	2,00,000/-
5.	Expenditure on mine closure activity	1,89,73,000/-
	Total	**4,27,25,554/-**

18/05/18
Ass. Mgr. (Envt)
CV Area