भारत कोकिंग कोल लिमिटड

BHARAT COKING COAL LIMITED
(A Subsidiary of Coal India Limited)
OFFICE OF THE GENERAL MANAGER
KATRAS Area
P.O. Katras, Dhanbad, (Jharkhand)

Ref. No.-BCCL/ KA-IV/ENV/17/ 2874 Dated- 28/11/2017
29

To
The Director,
Ministry of environment, forest and climate charge
Regional office (ECZ)
Bungalow office no.42, Shyamali colony
Ranchi-834002

Sub:-six monthly compliance report on implementation of environmental measures for the period from April 2017 to Sept 2017

Dear Sir

Kindly find enclosed herewith the six monthly compliance report on implementation of environmental measures for the period from **April 2017 to Sept 2017** in respect of cluster IV group of mines under Katras Area, BCCL.

Hope you will find in order.

Enclosed:-As Above.

Yours Faithfully

23/11/17
General Manager
Katras Area, BCCL

General Manager
Katras Area

Copy:-

1. The Director, 1A Monitoring cell, Paryavaran Bhawan, CGO Complex, New Delhi-110003
2. Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex East Arjun Nagar, DELHI - 110 032, INDIA
3. The Director, Ministry of Environment & Forest, Govt. of India –Bhuneshwar751023
4. The Member Secretary, Jharkhand state Pollution Control Board, Ranchi-834004
5. The Regional Officer, Jharkhand state Pollution Board, Dhanabad-826001
6. Dy.GM (ENV), BCCL, Koyla Bhawan, Dhanbad
6. Office Copy

ENVIRONMENTAL CLEARANCE COMPLIANCE OF CLUSTER-IV

(GRANTED VIDE J-11015/212/2010-IA. II (M) Dated 06.02.2013)

(April to Sept - 2017)

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 normal production of the mines under cluster IV has never exceeded the capacity of production granted under environmental clearance of cluster IV, However the coal recovered during dealing of fire in different coal seams for complying the directive under Jharia Master Plan approved by Government of India and Specific condition no. 2 of Environmental clearance has exceeded the limit of environmental clearance granted. It is pertinent to mention that the quantity of coal, recovered during the dealing of fire can't be predicted or pre-assessed, however with the experience gained over the period we have enabled us to surmise the expected quantity of coal and accordingly we have modified the capacity of environmental clearance and approached MoEFCC in 2013 itself for granting the same. We have dealt fire at Gaslitand mine, Katras Chaitudih and AKWMC under cluster IV to control spread of fire and subsequently Emission of Hazardous gases to prevent environmental pollution thereby recovering fiery coal and we have included the exceeded capacity of all the said mines in our modified environmental clearance. It may kindly be noted that TOR has been already issued in 2014 for peak capacity of 9.55 MTPA. Regional officer, MoEFCC-Ranchi has inspected the mines of cluster IV on dated 22.08.2016 and Proposal of Enhancement of the peak production capacity under EC granted from 3.7 MT to 9.55 MT was put-up in 17th EAC meeting 31.08.2017. EAC considered our case, minutes of the meeting is enclosed as **Annexure-1,** however approval of Modified Environmental clearance of Peak capacity 9.55 MTPA is under finalization. Further it is mentioned that we have dug out the fiery coal just beside the Dhanbad chandrapura railway line to ensure the safety of the train and persons using it.
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. Gaslitand fire patch, Katras Choitudih Fire Patch and AKWMC Fire Patch are being operated by open cast method to dig out fire and to control further spread of fire to nearby mine in order to implement fire dealing as per Master Plan/ Jharia Action Plan.
iii	**The proponent shall prepare time –series**	The proponent has got a study carried out through NRSC

	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.**	Hyderabad. NRSC has been awarded the work to prepare time series map by isothermal mapping after getting EC vide BCCL/D(T) OP/F-Env/2012/148(A) dated 11.02.2013. The last report was submitted by NRSC on April, 2014. The report concluded that there is a decrease in areal extent of fire from 3.01 sq.km. in 2006 to 2.18 sq.km. in 2012 based on the satellite data available for Dec, 2012 and validation by ground truth in done in the year 2013. A Global EOI was floated to control fire in Jharia Coalfield. Two 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. Presently, Study is being done by ISM Dhanbad & CIMFR, Dhanbad. All unworked pit and incline has been sealed to protect entry of air to fire area.
Iv	**Underground mining should be taken up after completion of reclamation of Opencast mine area after 15 years.**	Underground mining will be taken up after completion of reclamation of opencast mine area after 15 years.
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** **Stabilised 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. Construction of concrete embankment at critical patch of nallah/Jore has been done. Total length of constructed embankment is 3000 meter.
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.**	No underground mining is continuing where fire exists. However, Mining is being done through opencast excavation method where below ground fire exists. It was stated by the Project Authority that fire control measures are being taken through opencast excavation method to prevent /check its further spread as per the Jharia Action Plan/Master Plan.
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**	There are 6 active OB dump in cluster IV. All the OB dump are within the leasehold area/internal. These dumps are created external to excavation area temporarily for reasons to facilitate safe mining. At the end of mining all the dumps will be levelled and backfilled in opencast excavated area. Apart from the above 6 Active OB Dumps, 2 OB dump have been stabilized and re-vegetated through eco-restoration process

	carried out and completed shall be reclaimed immediately thereafter.	(one 3.4 hectare and another 3.02 hectare). Backfilling of quarry 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 and it has been submitted to MoEFCC. 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).
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 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.**	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. Concrete embankment at critical patch of the nallah/ Jore has been made.
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 active OB dump exist near water bodies. The OB dump of AKWMC OCP near Kumarijore has been biologically reclaimed.
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**	The Plan is prepared for plantation at undisturbed areas and in Mine Reclamation. Ecological Restoration (3-tier Plantation) on 3.4 ha land (2014-15) and 3.02 ha land (2015-16) has been done in the year 2014-15, 2015-16 respectively. In the year 2016-17 at mine boundary 720 Nos of Gabion Plantation has been done by DFO, another 965 Nos of Bamboo

	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.	Gabion plantation has been done by DFO. A new ecological restoration site at AKWMC of area 5.7 ha has been taken up in the year 2017-18, till Sept 2017 4000 Nos of plants have been planted at the same . The remaining life of cluster IV is more than 30 years during which period the greenery shall be developed over an area of 794.09 Ha, however over an area of 51.42 ha the greenery has been developed till date and we have planned we will developed the greenery @ 4-5 ha per year during coming 5 years after which we will able to do it for more area to meet the target 794.09 Ha at the end of the life of the cluster.
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 from Shakti Chowk to Tetulmari for a distance of 7-8 Km. Forest authority have been pursued for timely completion of avenue plantation. 2135 Nos of gabion plantation has been done as avenue plantation by forest department Dhanbad since 2014-15. In the FY 2017-18 600 Nos of Gabion plantation has also been processed.
Xiv	**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.**	Dhanbad Action Plan is being implemented. The salient actions of this cluster 1. Transportation by covered truck. 2. Water sprinkling 3. Plantation. 4. Ecological Restoration 5. Water harvesting and water treatment 6. Regularly Air, water and Noise monitoring
xv	**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.**	The locations of monitoring station in the Jharia coalfield has been finalised in consultation with the Jharkhand State Pollution Control Board at Ramkanali (Gobindpur Village) and Chotudih in the core zone, Block IV- Kooridih OCP, Mine Office- Nichitpur and Rudhi Basti in the buffer Zone for Air Quality and noise Monitoring. Katri River & Kumari Jore (Both Upstream & Downstream), Malkera New colony (Ground Water), Choitodih U/G Mine (Mine Effluent) for water Quality Monitoring. The work of monitoring of ambient environment is being done by CMPDIL, Dhanbad. Annexure2**:-** **<u>Monitoring Report.</u>** Tender for conducting source apportionment study for BCCL was floated twice, however, none of the bidders qualified. Therefore, as per the MoU "Sustainable Coal Mining in Coal India Limited" entered between CIL and NEERI, NEERI Nagpur was approached for conducting Source Apportionment Study BCCL for compliance of EC conditions. The proposal regarding Conducting the Source Apportionment Study has been submitted by NEERI.

		Presently it has been submitted to CIL for further scrutiny and approval. Work order for the study is under finalization. An undertaking in this regard has also been submitted to Regional Director, MoEFCC-Ranchi to complete the job by Dec-2018.
Xvi	**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.**	Presently tarpaulin covered coal transportation is being done. Initiatives has been taken at corporate level of coal India Limited for developing the mechanically covered trucks and a meeting for the same has been held with the OEM on dated 07.05.2016. Vender list is awaited. The conveyor-cum–rail for Cluster-IV will be installed in 2nd phase of Master Plan.
Xvii	**A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport**	CMPDIL, Ranchi has already been awarded the work to conduct this study. Report for the same has been submitted.
Xviii	**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.**	Rehabilitation of BCCL families are being done by BCCL and Non-BCCL families are being done by Jharia Rehabilitation Development Authority (JRDA) of Govt. of Jharkhand. 620 Nos of BCCL families and 255 Nos of Non BCCL families has been shifted. BCCL families have been shifted to Coal dump colony and non BCCL family to National Angarpathra, MAZAR. Coal India Limited has provided heavy fund to JRDA for shifting of encroachers and privates people following master plan approved by Government of India. JRDA has prepared 3360 NOs of quarter till date for shifting of encroachers and privates people residing in all clusters of BCCL. Phase wise shifting of encroachers and privates people are being done as per priority basis. 218 Nos of quarters has been allotted for BCCL employees at Kusum-Vihar, Dhanbad, shifting of BCCL employees to the said quarters will be done shortly.

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 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**	Regular monitoring of ground water level and quality are being monitored by CMPDIL, Ranchi. Regarding establishing a network of existing wells and construction of new piezometers the design and location has been finalized by CMPDIL, Ranchi and tender has been floated, but only one bidder participated in the same. RE-tendering will be done shortly. An undertaking in this regard has been submitted to Regional Director, MoEFCC to complete the job by Dec-2018.

	shall be undertaken in case monitoring of water table indicates a declining trend.	
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.**	No depillaring in underground mine is going on hence no mining induced subsidence is taking place. Regular monitoring of the area is being done by mine officials in this regard. A Certificate of Project Officers and General Manager of the Cluster IV, indicating no subsidence due to mining operation has been submitted.
Xxi	**Sufficient coal pillars shall be left unextracted 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.**	High Root density plants has been planted as seesam, Gamhar, Aam, Peepal,Bargad, Sagwan, Kathal etc. over areas likely to be affected by subsidence.
Xxiii	**Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.**	No depillaring in underground mine is going on hence no mining induced subsidence is taking place.
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**	Action plan of CSR works has been taken up at Katras Area/cluster- IV and the activities are going on. 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**.** Details of the TISS study is uploaded on the website. Cluster-IV has given priority to Vocational Training/Skill development training to Local People/PAP.

	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.	
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.**	Details of transportation, CSR, R&R and implementation of environmental action plan are prepared in a booklet form for Cluster-IV same has been uploaded on the website.
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 regularly on the company website.**	Mine water is being treated to supply for domestic and drinking water purposes to nearby population. Pressure filters are being installed to further enhance mine water utilization capacity. The quality of the water is monitored by CMPDIL, Dhanbad at the outlet points and proper records maintained thereof. The data has been uploaded on the website**.**
xxix	**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.**	Groundwater is not being used for mining activities. Mine water is being used for industrial purposes (sprinkling on road, firefighting etc.) Mine water is being treated at Water Treatment Plant and being supplied to nearby villages.
Xxx	**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 plantation and or may be used for pisciculture.**	It is being complied. Water bodies and ponds has been created.
Xxxi	**Regular monitoring of groundwater level and quality of the study area shall be carried out**	Presently CMPDI is monitoring the ground water level. The location of the monitoring stations has been finalized in

	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.	consultation with JSPCB. Report of monitoring of Ground water level of the FY 2016-17 has been submitted.
Xxxii	**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**	An undertaking regarding installation of ETP has been submitted to Regional Director, MoEFFCC-Ranchi to complete the job by FY 2018-19. A certificate regarding installation of Oil and grease trap by FY 2017-18 has been submitted to RO, Ranchi.
Xxxiii	**The location of monitoring stations in the Jharia coalfield should be finalized in consultation with Jharkhand State Pollution Control Board.**	The locations of monitoring stations are finalized in consultation with Jharkhand State Pollution Control Board.
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.**	For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery of the core zone and buffer zone has been prepared by CMPDI Ranchi. Land-use pattern monitoring report done by CMPDIL has been submitted to MoEF.
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.**	All mines under cluster IV has life of more than five years. It will be submitted online.

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.**	Separate Environmental Management structure has been established.
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. CSR expenditure are being done as per actual production.
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 Ministry of Environment and Forests.
Ii	**No change in the calendar plan of production for quantum of mineral coal shall be made.**	Being complied. No change in the calendar plan of production for quantum of mineral coal shall be made.
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**	Location of Monitoring station in the Jharia Coal Field have been finalized with the Jharkhand State Pollution Control Board. Four ambient air quality monitoring station has been established at AARC agent office (Ramkanali), Mine office - Kooridih OCP, Mine office- Nichitpur and RudhiBasti.

	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.	Presently we are doing air quality monitoring at five location namely Katras Chatudih, AARC agent office (Ramkanali), Mine office - Kooridih OCP, Mine office- Nichitpur and RudhiBasti. Monitoring of Ambient air quality has already been done by ISM Dhanbad as per NAAQS, 2009
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 10recognized under the EPA rules, 1986 shall be furnished as part of compliance report.**	Monitoring data regularly submitted to the Ministry including its Regional Office at Ranchi. Monitoring of air quality is being done by Central Mining & Planning Design Institute (CMPDIL), Dhanbad. Monitoring of Ambient air quality has already been done by ISM Dhanbad as per NAAQS, 2009 and Report of the same has been submitted.
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.**	Personnel operating near HEMMs, drilling machine comply with safety regulation and are equipped with Personal Protective Equipment.
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.**	Installation of Oil and grease in AKWMC, Katras Area workshop has been processed. Tender has been floated for the same. work-order of the same will be awarded shortly. A certificate regarding installation of Oil and grease trap by FY 2017-18 has been submitted to RO, Ranchi.
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. The project authorities are regularly checking all the loaded trucks/dumpers coming inside the plant about their valid PUC.

<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>The locations in the Jharia coalfield have been finalized in consultation with the Jharkhand State Pollution Control Board. Monitoring of air quality is being done by Central Mining & Planning Design Institute (CMPDIL), Dhanbad.</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>Training and awareness programmes are being given to all the personnel working in dusty areas. All personnel working in such areas are also provided with mask to wear themselves. In the Fy 2016-17 different types of training/skill development activities has been given to the worker and PAF. Total 2796 nos of people benefited from the said programme.
Performance of Vocational training of workers during last three years is as follows:

<table>
<tr><th>Year</th><th>Target (Refresher)</th><th>Achievement (Refresher)</th></tr>
<tr><td>2010</td><td>750</td><td>788</td></tr>
<tr><td>2011</td><td>650</td><td>777</td></tr>
<tr><td>2012</td><td>660</td><td>743</td></tr>
<tr><td>2013</td><td>610</td><td>708</td></tr>
<tr><td>2014</td><td>610</td><td>687</td></tr>
<tr><td>2015</td><td>590</td><td>811</td></tr>
<tr><td>2016</td><td>650</td><td>909</td></tr>
<tr><td>2017</td><td>650</td><td>934</td></tr>
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Safety talk in the Mine/pit office on safety and health hazards is in regular practice.</td></tr>
<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</td><td>298</td><td>1593</td></tr>
<tr><td>2016</td><td>248</td><td>672</td></tr>
<tr><td>2017</td><td>303</td><td>1348</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,</td><td>A separate environmental management cell has been established.</td></tr>
</table>

	who will report directly to the Head of the company.	
Xii	**The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.**	Funds for environmental protection kept in separate budget for each year has not been diverted for other purposes. In the Cluster IV, a lot of work has been done to mitigate environment pollution and maintain a safe and healthy environment in its core and buffer zone. Plantation, water harvesting, Environmental monitoring (Air, Water and Noise), Firefighting, Dust suppression, Water treatment is done regularly to protect the environment. Since last three-year Cluster-IV has started ecological restoration work to restore the degraded, damaged, or destroyed ecosystems and habitats in the environment. Till date ecological restoration is in progress on 12.12 Ha area. In the cluster IV a good number of Manpower and machineries are deployed on permanent basis for looking after the environment protection. Environmental protection measures cost has been submitted up to FY 2016-17.
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 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. The Environmental clearance letter has been uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions has also been uploaded. 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 sectoral parameters has displayed at the entrance of the project premises and mine office and in corporate office and on company's website.
XVI I	**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.
XVI II	**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.**	**Agreed**

ii	Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the environment (protection) Act, 1986.	Agreed
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.

23/11/17

General Manager
Katras Area

General Manager
Katras Area

The earlier EC for 1 MTPA was granted by the Ministry on 10.12.2009 in favour of M/s Eastern Coalfields Ltd, based on the ToR issued on 13th January, 2008 and the public hearing conducted on 18th November, 2008.

The proposal was earlier considered by the EAC in its meeting held on 14th August, 2014. The observations of the Committee are reflected in the preceding para. During the meeting, the Committee also noted excess coal production during the years 2011-12, 2012-13 beyond the sanctioned capacity for which the EC was granted. Considering the same as non-compliance of the EC conditions, the project proponent was asked to comply with the extant OMs/guidelines dealing with such violation cases. However, due to subsequent development and legal interventions, the proposal was not taken forward, and kept pending till policy decision and clarification in this regard.

To deal with the matters involving violation of the EIA Notification, 2006, the Ministry issued a Notification on 14th March, 2017 under the Environment (Protection) Act, 1986. The Notification provides for appraisal/approval of proposals for grant of EC, where projects were implemented and/or the expansion carried out without obtaining prior EC as mandated in the EIA Notification, 2006.

The above proposal was proposed to be considered by the EAC constituted in pursuance of the Notification dated 14th March, 2017. Meanwhile, Hon'ble Madras High Court vide their order dated 4th May, 2017 in WP No.11189 of 2017 in the matter of 'Puducherry Environment Protection Association Vs Union of India' prohibited the Ministry from taking any further action pursuant to the Notification dated 14th March, 2017. The matter was last heard on 23rd August, 2017. The order has since been reserved.

In the meantime, Hon'ble Supreme Court in its order dated 2nd August, 2017 in Civil Appeal No.114/2014 in the matter of 'Common Cause Vs Union of India &Ors. has issued many directions on illegal mining of major minerals in the State of Odisha, which would be applicable to the present proposal also. However, the same is yet to be examined for its legal implications and requires comprehensive deliberations.

The proposal was placed before the Committee to take stock of the alternatives available in consultation with the inputs/feedback from the project proponent for further consideration of the proposal for EC. The EAC, after deliberations and in view of the legal interventions as above, preferred that the Ministry may first examine the matter in complete perspective to arrive at the applicability of the orders of Hon'ble Supreme Court and Hon'ble Madras High Court, including the action contemplated under the Environment (Protection) Act, for the reported non-compliance of opinion the EC condition. The Committee sought directions of the Ministry for further consideration of the proposal vis-à-vis the provisions of the EIA Notification, 2006.

17.5.6 *The EAC, after detailed deliberations, deferred the proposal for the present and sought opinion of the Ministry for further consideration of the proposal vis-à-vis the provisions of the EIA Notification, 2006.*

Agenda 17.6

Expansion of Cluster-IV (5 mixed mines) Coal Mining Project from 3.706 MTPA (Peak) to 7.34 MTPA (Normative)/9.55 MTPA (Peak) in ML area of 1123.79 ha of M/s Bharat Coking Coal Ltd, District Dhanbad (Jharkhand) - For further consideration of EC

17.6.1 The proposal is for environmental clearance to expansion proposal of Cluster-IV (5 mixed mines) Coal Mining Project from 3.706 MTPA (Peak) to 7.34 MTPA (Normative)/9.55 MTPA (Peak) in ML area of 1123.79 ha of M/s Bharat Coking Coal Ltd, District Dhanbad (Jharkhand).

17.6.2 The proposal was earlier considered in the 29th EAC meeting held on 15 -16 January, 2015 and 49thmeeting held on 7-8 January, 2016. During the last EAC meeting the committee made the following observations:

(i) With respect to the first requirement mentioned above i.e. compliance report from the RO, it was noted from the PP's presentation, as well as from the RO's report, that many of the EC conditions given for the existing level of production had not been fully complied with as yet. Since compliance of EC conditions is is required, the case was deferred. The PP was asked to approach the EAC, after a revised certified report from the Regional Office clearly stating the status of compliance of the conditions and proposed action plan, if any, in respect of the conditions not yet complied with.

(ii) The PP was also advised that all documents submitted should be legible since it was noticed that (i) the approved mine plan was not legible and (ii) whatever document was produced before the EAC, did not appear to be a valid approval for the Mine Plan.

17.6.3 In response to the observations of EAC, the details submitted by the PP and/or as informed during the meeting, are as under:-

(i) Inspection of Cluster-IV was made on 22.08.2016. Revised report of R.O. along with compliance is submitted and action taken report vis-à-vis RO compliance is as under:

a. Regarding 1,2 & 3, it is submitted that Capacity Enhancement proposal of cluster-IV (for implementation of Master plan for dealing with fire and subsidence and rehabilitation within lease hold of BCCL which has also been directed by MoEFCC for dovetailing of the Jharia Master Plan with the EMPs of BCCL's Cluster concept), submitted on 16th September 2013 is for the purpose as mentioned by R.O. at point 1 and TOR was granted on 10th Feb. 2014 with exemption of baseline data generation and public hearing for expediting the process of fire dealing . Since fire dealing has to continue to control spread of fire to new areas, the recovery of fiery coal is possible. BCCL on the direction of MoEFCC ,instituted a TIR survey for monitoring of fire areas through NRSC/ISRO Hyderabad. NRSA in report submitted in 2014, reported fire area as 2.18 sq km. This has reduced the fire area which was 9.8 sq km in 1996. Further study is being conducted by NRSA for 2018.The fire dealing through excavation method at Gaslitand is yielding fiery/burnt coal and so in this proposal, it is included as OC Mine. The fire dealing action plan is shown in proposal and fire in Gaslitand will be excavated out in 3 years. It is also accepted in compliance of Specific condition (ii) that the recovery of coal in line with dovetailing of the EC with implementation of the Jharia Master Plan.(Which is approved by the Government of India and is being monitored by Hon'ble Supreme Court of India).
b. Regarding 4&5 above, it is submitted that BCCL is carrying out ecological restoration over mined out areas as per roadmap prepared through Forest Research Institute, Dehradun. 51.42 ha has already reclaimed biologically and further ecological restoration is being carried out to complete the work within life of 30 years. As accepted by R.O. in compliance of specific condition (xii), Gabion plantations/avenue plantation work through DFO, Dhanbad has been completed.
c. Source Apportionment study is being taken up through NEERI. The work will be completed within committed time.

d. Regarding Mechanically covered trucks use in phase-I ,as accepted by R.O., Action for development of suitable trucks is taken by Coal India in association with manufacturers. Meanwhile, the transporting is being done by tarpaulin covered trucks.
e. The reporton the study on reduction in pollution load is submitted to R.O., MoEFCC, Ranchi with compliance dated 09.06.2017.
f. Monitoring of ground water level and quality is being done through CMPDI, tender for piezo metric well establishment under evaluation and will be implemented within committed time. The ETP installation will also be completed within committed time.
g. Rehabilitation of BCCL and non BCCL families is being done by BCCL and JRDA (Jharkhand rehabilitation development authority), Govt. of Jharkhand respectively. Till date, 1456 families have been shifted. Action is being taken by JRDA for shifting of encroachers and privates people following Master Plan approved by Government of India. JRDA has prepared 3360 nos of quarters till date for shifting of encroachers and private people residing in all clusters of BCCL.
h. CSR is done on actual production basis with TISS Mumbai acting as third party monitoring agency.
i. The final Mine closures plan will be submitted 05 years before final closure.
j. Monitoring of Rudhibasti is not being done due to lack of security. The alternative station at KatrasChoitudihis established and Monitoring of Ambient air quality has already been done by ISM Dhanbad as per NAAQS, 2009. The report is submitted with compliance dated 09.06.2017.
k. Gaslitand is operative for fire dealing under deemed consent since renewal is applied with submission of fee upto 2020. The application is under process at JSPCB,Ranchi.

(ii) Approval of Mining Plan of cluster-IV by BCCL Board of Directors, for a peak capacity of 9.55 MTPA has been obtained.

17.6.4 During deliberations on the proposal, the Committee observed inconsistencies in respect of the coverage of actual mining operations presently being carried out vis-a-vis the coordinates of project boundary as reflected in the KML file presented during the meeting.

17.6.5 *The EAC, after detailed deliberations and in view of the persistent/chronic fire conditions in the Jharia Coalfields, it is proposed that a sub-committee of EAC members shall visit the site of actual mining operations in cluster IV for on the spot assessment and the mine coordinates as reflected in KML file.*

Agenda 17.7

Expansion of washery from 1.25 MTPA to 2.0 MTPA in an area of 4.49 ha of M/s Chhattisgarh Power and Coal Beneficiation Limited located in Sirgitti Industrial Growth Centre, Tehsil and District Bilaspur (Chhattisgarh) - For ToR

17.7.1 The proposal is for grant of TOR to the expansion of washery from 1.25 MTPA to 2.0 MTPA in an area of 4.49 ha of M/s Chhattisgarh Power and Coal Beneficiation Limited located in Sirgitti Industrial Growth Centre, Tehsil and District Bilaspur (Chhattisgarh).

17.7.2 The details of the project, as per the documents submitted by the project proponent, and also as informed during the meeting, are reported to be as under:-

(i) The project was not accorded EC for 1.25 MTPA capacity, as existing plant has obtained Consent to Establishment from Chhattisgarh Environment Conservation Board (CECB) vide letter No.1775/TS/CECB/2004 Raipur dated 24/05/2004, prior to EIA

ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED CLUSTER – IV

(FOR THE Q.E. JUNE, 2017)

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

October, 2017

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

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 1.5 m above the 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 at the roof top of the Manager Office.

II. BUFFER ZONE Monitoring Location

i) Block IV (A6) : industrial area

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

ii) Nichitpur (A8): Industrial Area

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

iii) Rudih Basti (A18): Residential Area

The location of the sampling station was at Rudih Basti a village area near Kapuria. The sampler was placed at roof top of a residence in Rudih Basti.

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-II, Dhanbad.

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:

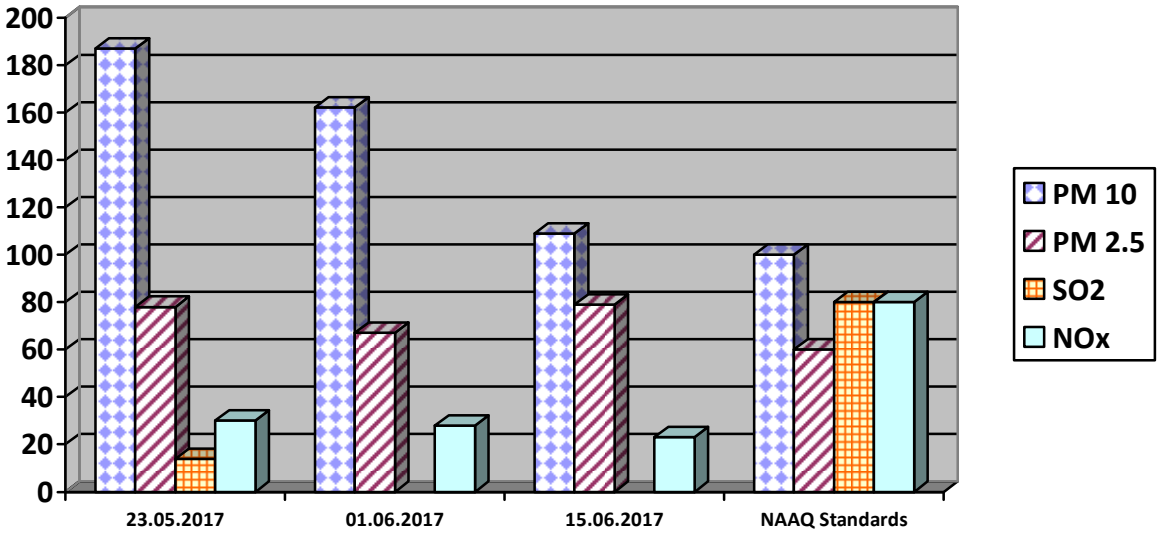
AMBIENT AIR QUALITY DATA

Name of the Company: **Bharat Coking Coal limited** Year : **2017-18.**
Name of the Cluster : **Cluster – IV** Q.E.: **June, 2017**

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

(a). Station Code/Name: A7 – Govindpur, Ramkanali, Category: Industrial.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	23.05.2017	187	78	14	30
2	01.06.2017	162	67	<10.0	28
3	15.06.2017	109	79	<10.0	23
	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)	Led (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

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

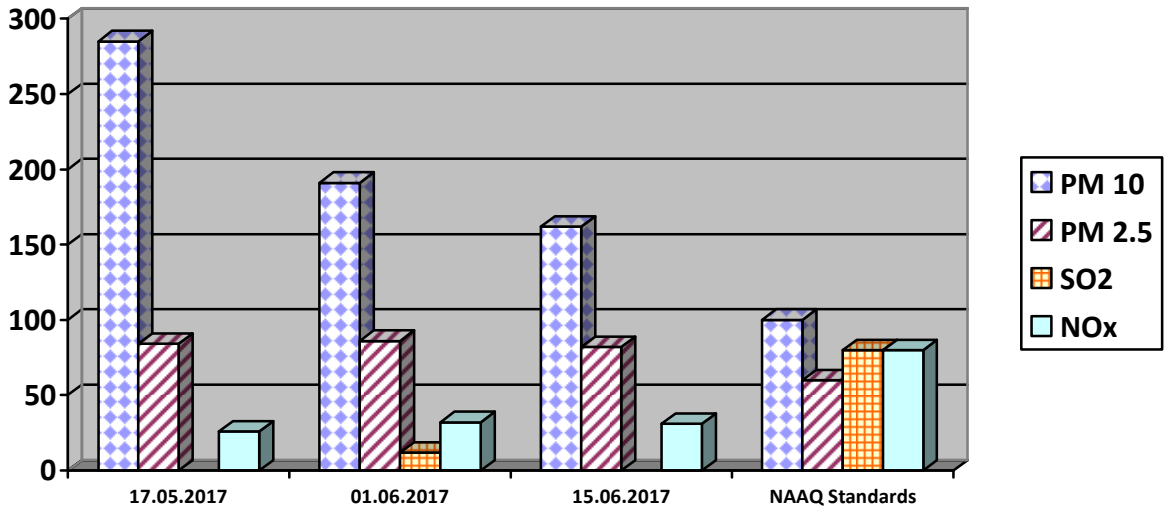
Analysed By
JSA/SA/SSA

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

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

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

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	17.05.2017	285	84	<10	26
2	01.06.2017	191	86	12	32
3	15.06.2017	162	82	<10	31
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)	Led (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

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

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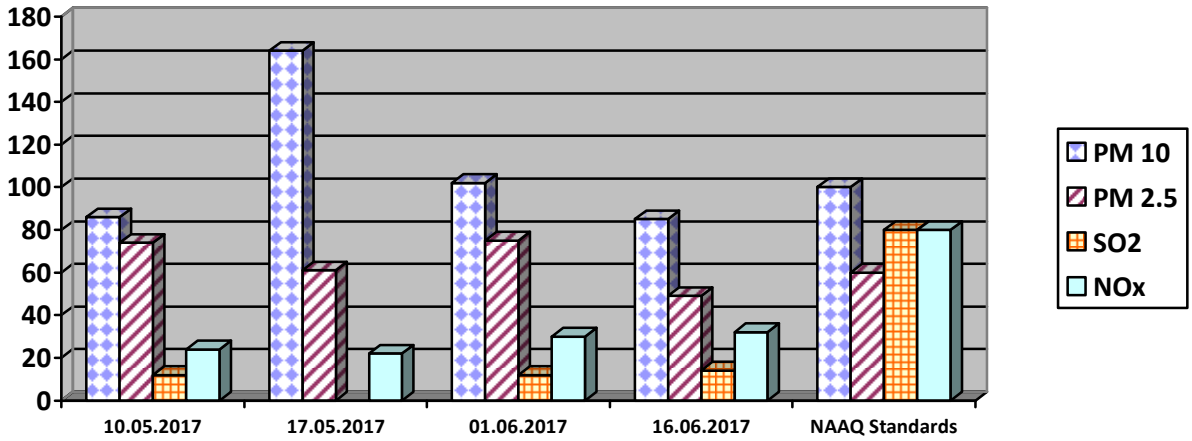
AMBIENT AIR QUALITY DATA

Name of the Company: **Bharat Coking Coal limited** Year : **2017-18.**
Name of the Cluster : **Cluster – IV** Q.E.: **June, 2017**

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.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_X
1	10.05.2017	86	74	12	24
2	17.05.2017	164	61	<10	22
3	01.06.2017	102	75	12	30
4	16.06.2017	85	49	14	32
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)	Led (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

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

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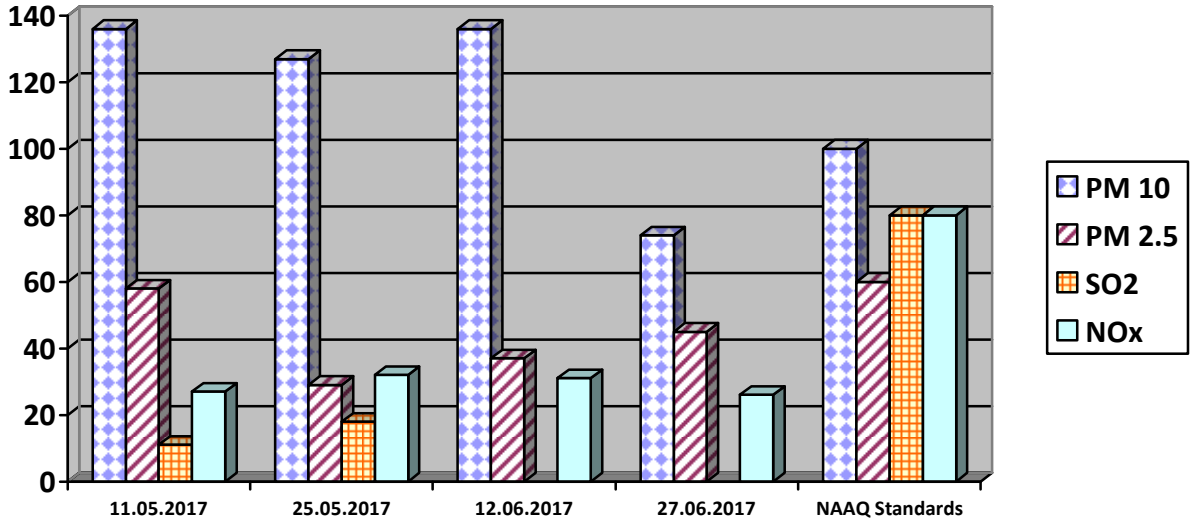
(b). Station Code/Name: A8 – Nichitpur, Category: Industrial.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	11.05.2017	136	58	11	27
2	25.05.2017	127	29	18	32
3	12.06.2017	136	37	<10	31
4	27.06.2017	74	45	<10	26
	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)	Led (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

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

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Approved By
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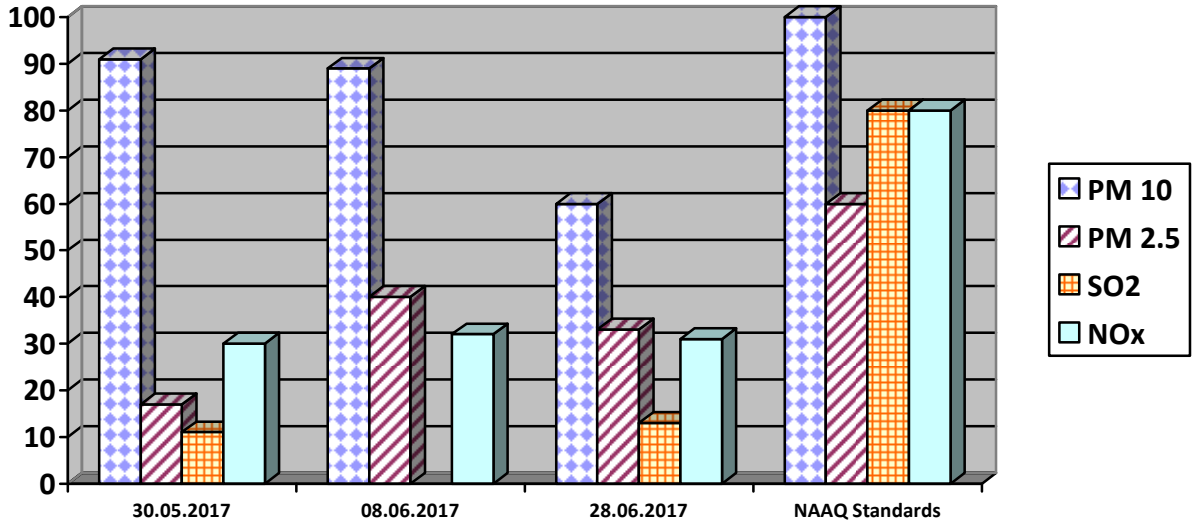
RI-2, CMPDI, Dhanbad

(c). Station Code/Name: A18 – Rudih Basti, Category: Residential.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	30.05.2017	91	17	11	30
2	08.06.2017	89	40	<10	32
3	28.06.2017	60	33	13	31
	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)	Led (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

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

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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) Ground Water quality at **Kankanee Village (GW4)**

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)**

vii) Mine Discharge of Chotudih (MW4) – 27 parameters.

3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. The effluent samples were collected and analysed for four parameters on fortnightly basis. The effluent samples were collected and analysed for 27 parameters on half yearly basis. The ground 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 : **2017-18.**

Name of the Cluster: **Cluster - IV**
Month: **May, 2017.**

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

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 09.05.2017	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	24	*100 (Max)*
2	pH	8.45	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	56	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 15.05.2017	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	20	*100 (Max)*
2	pH	8.48	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	44	*250 (Max)*

All values are expressed in mg/lit unless specified.

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

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

WATER QUALITY DATA

(*EFFLUENT WATER- FOUR PARAMETERS)*

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster: **Cluster - IV** Month: **June, 2017.**

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

First Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 01.06.2017	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	24	*100 (Max)*
2	pH	9.08	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	36	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW4 (Mine Discharge) 24.06.2017	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	48	*100 (Max)*
2	pH	7.58	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	28	*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

WATER QUALITY

(MINE EFFLUENT- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -IV** PERIOD: **Q. E. JUNE- 2017.**

Area : **Katras** **Project: Choitudih** **Cluster iv**

Stations: **Date of Sampling:**

1. Mine Water Discharge Chotudih MW-4 24/06/2017

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	0.1			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	28			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	<0.30			0.30	5.0	APHA, 22nd Edition Molybdovanadate
8	Fluoride (as F) mg/l, *Max*	1.07			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*	0.4			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*	0.7			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	7.58			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)	31.9			Shall not exceed 5^0 C above the receiving temp.		IS-3025/09:1984, Thermometeric
23	Total Chromium (as Cr), mg/l, *Max*	<0.04			0.04	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	<0.02			0.02	1.0	APHA, 22nd Edition, DPD
26	Total Suspended Solids, mg/l, Max	48			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
27	Zinc (as Zn), mg/l, *Max*	<0.01			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

All values are expressed in mg/lit unless specified

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WATER QUALITY

(SURFACE WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Project : **Cluster - IV** Period: **Q. E. June, 2017.**

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

Stations: **Date of Sampling:**

1. Upstream in Katri River SW-8 29/05/2017
2. Downstream in KatriRiver SW-11 29/05/2017
3. Upstream in Kumar Jore SW-9 DRY
4. Downstream in Kumar Jore SW-10 31/05/2017

Sl. No	Parameter	Sampling Stations				IS:2296 – 1982 (Inland surface water) Class C	Detection Limit	BIS Standard & Method
		SW-8	SW-9	SW-10	SW-11			
1	Arsenic (as As), mg/l, Max	<0.002	DRY	<0.002	<0.002	0.2	0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	3.0		3.0	3.2	300	2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	Colourless		Colourless	Colourless	300	Qualitati ve	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	52		57	64	600	2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03		<0.03	<0.03	1.5	0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	4.0		3.8	3.8	4	0.10	IS 3025/381989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.63		0.26	0.28	1.5	0.02	APHA, 22nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01		<0.01	<0.01	0.05	0.01	APHA, 22nd Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	0.122		0.144	0.026	50	0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005		<0.005	<0.005	0.1	0.005	APHA, 22nd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	17.03		3.09	4.83	50	0.50	APHA, 22nd Edition, UV-Spectrphotometric
12	pH value	7.42		7.56	7.69	6.5-8.5	≥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	0.0005	0.002	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002		<0.002	<0.002	0.05	0.002	APHA, 22nd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	67		30	27	400	2.00	APHA, 22nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	344		291	262	1500	25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	0.637		0.285	0.246	5.0	0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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WATER QUALITY

(GROUND WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Project : **Cluster - IV** Period: **Q. E. June, 2017.**

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

Stations: **Date of Sampling:**

1. Ground Water from Kankanee/Malkera Village GW-4 30/05/2017

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	3			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	77			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	20			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	1.04			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	0.129			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	0.059			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	19.76			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.12			2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.002			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	260			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	180			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	0.152			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	1051			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	496			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	1			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.634			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel (as Ni), mg/l, Max	0.016			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.

v) **Rudhi basti (N18)**
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 MoEF&CC.

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 : **2017-18.**

Name of the Cluster: **Cluster -IV** Month: **May, 2017.**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**
5. **Rudhi Basti (N18)**

(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	**Block IV (N6)**	**Industrial area**	10.05.2017	56.2	*75*
2	**Nichitpur (N8)**	**Industrial area**	11.05.2017	54.4	*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**	23.05.2017	63.6	*75*
2	**Chotudih (N37)**	**Industrial area**	17.05.2017	62.0	*75*
3	**Block IV (N6)**	**Industrial area**	18.05.2017	60.5	*75*
4	**Nichitpur (N8)**	**Industrial area**	25.05.2017	61.3	*75*
5	**Rudhi Basti(N18)**	**Residential area**	30.05.2017	51.4	*55*

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

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

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NOISE LEVEL DATA

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster: **Cluster -IV** Month: **JUNE, 2017**

Name of the Stations & Code :

1. **Govindpur village (N7)**
2. **Chotudih (N37)**
3. **Block IV (N6)**
4. **Nichitpur (N8)**
5. **Rudhi Basti (N18)**

(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	31.05.2017	59.6	*75*
2	Chotudih (N37)	Industrial area	31.05.2017	60.5	*75*
3	Block IV (N6)	Industrial area	01.06.2017	59.7	*75*
4	Nichitpur (N8)	Industrial area	12.06.2017	59.2	*75*
5	Rudhi basti (N18)	Residential Area	08.06.2017	52.0	*55*

(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	15.06.2017	57.8	*75*
2	Chotudih (N37)	Industrial area	15.06.2017	57.4	*75*
3	Block IV (N6)	Industrial area	22.06.2017	62.7	*75*
4	Nichitpur (N8)	Industrial area	27.06.2017	63.4	*75*
5	Rudhi basti (N18)	Residential Area	28.06.2017	50.6	*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, +Night Time: 10.00 PM to 6.00 AM.**

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