

HALF YEARLY
ENVIRONMENT CLEARANCE COMPLIANCE REPORT
OF
CLUSTER 12
J-11015/76/2011-IA.II(M)
FOR THE PERIOD OF
OCTOBER 2018 TO MARCH 2019



Eastern Coalfields Limited
(A subsidiary of Coal India Ltd.)



Eastern Coalfields Limited

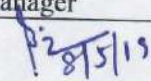
(A subsidiary of Coal India Limited)

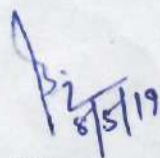
Office of the Agent, Dalurband OC Phase-III

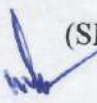
P.O. – Pandaveswar , Dist.- Paschim Bardhaman, PIN-713346

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of October 2018 to March 2019 in respect of Dalurband OC Phase-III under Cluster no.12 is true to the best of my knowledge.

SL NO.	Name of the mine	Name of the Manager	Signature of the Manager
1	Dalurband OC Phase-III	SANJAY KUMAR	 12/8/5/19


Dy. GM(Mining)/Agent
Dalurband OC Phase-III
(SIGNATURE WITH SEAL)


Dy. G.M.(Min.)/AGENT
Dalurband Colliery



Eastern Coalfields Limited

(A subsidiary of Coal India Limited)

Office of the Agent, Khottadih OCP

P.O. – Khottadih , Dist.- Paschim Bardhaman, PIN-713378

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of October 2018 to March 2019 in respect of Khottadih OCP of Cluster no. 12 is true to the best of my knowledge.

SL NO.	Name of the mine	Name of the Manager	Signature of the Manager
1.	Khottadih OCP	P.k.Jha	

9/1/19
Dy.GM(Mining)/Agent
Khottadih OCP
(SIGNATURE WITH SEAL)

FRANCO (संलग्न)
उप महा प्रबंधक (खन) / Agent
Dy. G.M (Mining) / Agent
खोटादीह ओ.सी.
Khottadih O.C.P.



Eastern Coalfields Limited

(A subsidiary of Coal India Limited)

Office of the Agent, Khottadih UGP

Pandaveswar Area

P.O. – Khottadih , Dist.- Paschim Bardhaman, PIN-713378

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of October 2018 to March 2019 in respect of Khottadih UGP of Cluster no.12 is true to the best of my knowledge.

SL NO.	Name of the mine	Name of the Manager	Signature of the Manager
1.	Khottadih UGP	B. Banerjee	<i>[Handwritten Signature]</i>

[Handwritten Signature]

Dy. GM(Mining)/Agent
Khottadih UGP

(SIGNATURE WITH SEAL)

GMM/Agent
Khottadih Colliery



Eastern Coalfields Limited

(A subsidiary of Coal India Limited)

Office of the Agent, Madhaipur OC

Pandaveswar Area

P.O. – Nutandanga , Dist.- Paschim Bardhaman, PIN-713381

UNDERTAKING

Information provided in Half yearly EC compliance report for the period October 2018 to March 2019 in respect of Madhaipur OC Patch of Cluster no.12 is true to the best of my knowledge.

SL NO.	Name of the Mine	Name of the Manager	Signature of the Manager
1	Madhaipur OC Patch	Sayed Istay Hossain	

Dy. GM(Mining)/Agent
Madhaipur OC Patch
(SIGNATURE WITH SEAL)

Agent
Madhaipur Colliery



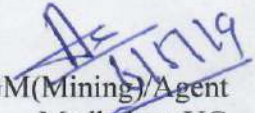
Eastern Coalfields Limited
(A subsidiary of Coal India Limited)
Office of the Agent, Madhaipur UG
Pandaveswar Area

P.O. – Nutandanga , Dist.- Paschim Bardhaman, PIN-713381

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of October 2018 to March 2019 in respect of Madhaipur UG of Cluster no.12 is true to the best of my knowledge.

SL NO.	Name of the Mine	Name of the Manager	Signature of the Manager
1	Madhaipur UG	Sayed Istak Hossain	


Dy. GM(Mining)/Agent
Madhaipur UG
(SIGNATURE WITH SEAL)

Agent
Madhaipur Colliery



Eastern Coalfields Limited

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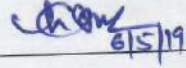
Office of the Agent, Manderboni UG

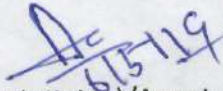
Pandaveswar Area

P.O. – Gogla, Dist.- Paschim Bardhaman, PIN-713381

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of October 2018 to March 2019 in respect of Manderboni UG of Cluster no.12 is true to the best of my knowledge.

Sl no.	Name of the mine	Name of the Manager	Signature of the Manager
1.	Manderboni UG	P. K. Pattanayak	 6/5/19


Dy. GM(Mining)/Agent
Manderboni UG
(SIGNATURE WITH SEAL)

Agent

Manderboni South Sector Amalgamated Colliery



Eastern Coalfields Limited

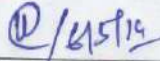
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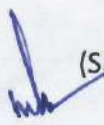
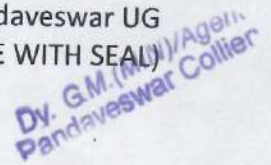
Office of the Agent, Pandaveswar UG

P.O. – Pandaveswar , Dist.- Paschim Bardhaman, PIN-713346

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of October 2018 to March 2019 in respect of Pandaveswar UG of Cluster no.12 is true to the best of my knowledge.

SL NO.	Name of the mine	Name of the Manager	Signature of the Manager
1.	Pandaveswar UG	K.K. Khan	


Dy. GM(Mining)/Agent
Pandaveswar UG
(SIGNATURE WITH SEAL)




Eastern Coalfields Limited

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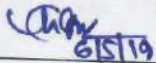
Office of the Agent, South Samla UG


Pandaveswar Area

P.O. – Pandaveswar , Dist.- Paschim Bardhaman, PIN-713346

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of October 2018 to March 2019 in respect of South Samla UG of Cluster no.12 is true to the best of my knowledge.

SL NO.	NAME OF THE MINE	NAME OF THE MANAGER	SIGNATURE OF THE MANAGER
1.	South Samla UG	P.K. Pattanayak	


Dy. GM(Mining)/Agent
South Samla UG
(SIGNATURE WITH SEAL)



Eastern Coalfields Limited
(A Subsidiary of Coal India Limited)
Office of the Agent
Jhanjra Project Colliery
P.O.: Laudoha (B.O.), PIN: 713385
Dist.: Burdwan, W.B.
Ph: 0341- 2670618, Fax: 0341-2672352

UNDERTAKING

Information provided in Half yearly EC compliance report for the period **September 2018 to March 2019** in respect of Jhanjra UGP of Cluster no. 12 is true to the best of my knowledge:

S. No.	Name of the mine	Name of the Manager	Signature of the Manager
1.	Jhanjra UG	P. K. Mondal	

G.M. (M)/Agent
Jhanjra Project Colliery



Phone: (0341) 2667481(O)
Fax: (0341) 2667274(O)

EASTERN COALFIELDS LIMITED

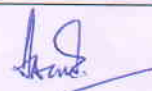
(A Subsidiary of Coal India Limited)


O/o The Agent, Sonapur Bazari Project

PO: Sonapur-713378, Dist.: Paschim Bardhaman

UNDERTAKING

Information provided in half yearly EC compliance report for the period Oct'18 to March'19 in respect of the following mines of Cluster no. 12 is true to the best of my knowledge:

SL. NO.	MINES	NAME OF THE AGENT	SIGNATURE OF THE AGENT
1	Sonapur Bazari OCP	Shri Amitanjan Nandi	


15/07/19
Agent/ Project Proponent
(Sonapur Bazari Project)

G. M. (OP) / AGENT
SONEPUR BAZARI PROJECT
E. C. L.

EASTERN COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
Office of the General Manager
Bankola Area



P.O. Ukhra
District : Paschim Burdwan
West Bengal-713363
Ph.: No. 0341-2665491/492/493/494
Fax No. 0341-2665366
Email: gmbankola@gmail.com

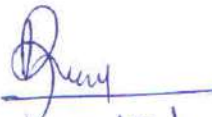
Ref. No.: Bc/A/19/1889

Dated: 19.04.19

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of Oct'18- Mar'19 in respect of the Bankola Colliery of Cluster No.12 is true to the best of my knowledge.

₹ 
Agent 19/4/19
Bankola Colliery


Manager 19/4/19
Bankola Colliery

EASTERN COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
Office of the General Manager
Bankola Area



P.O. Ukhra
District : Paschim Burdwan
West Bengal-713363
Ph.: No. 0341-2665491/492/493/494
Fax No. 0341-2665366
Email: gmbankola@gmail.com

Ref. No.: KA/Agent/Env/19-20/151

Dated: 18.04.19

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of Oct'18- Mar'19 in respect of the Kumardihi-A Colliery of Cluster No.12 is true to the best of my knowledge.


Agent 16.4.19

Kumardihi 'A' Colliery


Manager 16.4.19

Kumardihi 'A' Colliery

EASTERN COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
Office of the General Manager
Bankola Area



P.O. Ukhra
District : Paschim Burdwan
West Bengal-713363
Ph. No. 0341-2665491/492/493/494
Fax No. 0341-2665366
Email: gmbankola@gmail.com

Ref. No.: Agent/NKB/KB/19-20/78

Dated: 19.04.19

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of Oct'18- Mar'19 in respect of the Kumardihi-B Colliery of Cluster No.12 is true to the best of my knowledge.

A handwritten signature in black ink, appearing to be 'A. S. S.', written over the printed name and date.

Agent

19/4/19

Kumardihi 'B' Colliery

AGENT

Kumardihi, 'B' Colliery

A handwritten signature in black ink, appearing to be 'S. S.', written over the printed name and date.

Manager

Kumardihi 'B' Colliery

MANAGER

KUMARDI HI 'B' COLLIERY

EASTERN COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
Office of the General Manager
Bankola Area



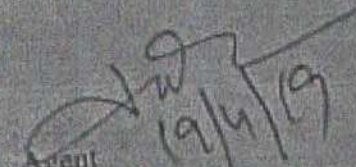
P.O. Ukhra
District : Paschim Burdwan
West Bengal-713363
Ph. No. 0341-266548/1492/493/494
Fax No. 0341-2665366
Email: gmbankola@gmail.com

Ref. No.: Agent/NKB/KB/19-20/78

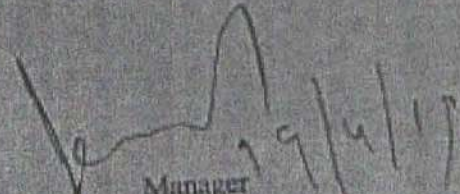
Dated: 19.09.19

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of Oct'18- Mar'19 in respect of the Nakrakonda Colliery of Cluster No.12 is true to the best of my knowledge.


Agent
Nakrakonda Colliery

By. C. M. E / Agent
Nakrakonda Colliery


Manager
Nakrakonda Colliery


Manager
Nakrakonda Colliery

EASTERN COALFIELDS LIMITED

(A Subsidiary of Coal India Limited)

Office of the General Manager
Bankola Area



P.O. Ukhra

District : Paschim Burdwan
West Bengal-713363

Ph.: No. 0341-2665491/492/493/494

Fax No. 0341-2665366

Email: gmbankola@gmail.com

Ref. No.: *Shyam/Agent/Env/19-20/1032*

Dated: *19.04.19*

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of Oct'18- Mar'19 in respect of the Shyamsundarpur Colliery of Cluster No.12 is true to the best of my knowledge.

[Signature]
Agent
[Signature]
Shyamsundarpur Colliery

[Signature]
Manager
Shyamsundarpur Colliery

EASTERN COALFIELDS LIMITED

(A Subsidiary of Coal India Limited)

Office of the General Manager
Bankola Area



P.O. Ukhra

District : Paschim Burdwan
West Bengal-713363

Ph.: No. 0341-2665491/492/493/494

Fax No. 0341-2665366

Email: gmbankola@gmail.com

Ref. No.: Tc/Ag/EC-Report-19-20/73

Dated: 19/04/2019.

UNDERTAKING

Information provided in Half yearly EC compliance report for the period of Oct'18- Mar'19 in respect of the Tilaboni Colliery of Cluster No.12 is true to the best of my knowledge.


19/4/19
Agent

Tilaboni Colliery


19.4.2019
Manager

Tilaboni Colliery

**Half Yearly EC Compliance report in respect of mines under
(Cluster 12), ECL
Period:- October 2018 to March 2019**

SPECIFIC CONDITIONS																									
Condition (I)	<p>Grant of EC is only for the non-forest area plus the forest area within the mining lease for which FC is available. No mining activities will be allowed in forest area for which FC is not available as per the following table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">#</th> <th style="width: 45%;">Name of Mine</th> <th style="width: 50%;">Forest Clearance Not available (Ha.)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>JhanjraUGP (Expansion)</td> <td style="text-align: center;">99 Ha</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Tilaboni UGP (Expansion)</td> <td style="text-align: center;">64.8 Ha</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Rangamati A UGP</td> <td style="text-align: center;">91.0 Ha</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Sonepur-Bazari OCP</td> <td style="text-align: center;">32.65 Ha</td> </tr> <tr> <td colspan="2" style="text-align: center;">Total</td> <td style="text-align: center;">287.45 Ha</td> </tr> </tbody> </table>			#	Name of Mine	Forest Clearance Not available (Ha.)	1	JhanjraUGP (Expansion)	99 Ha	2	Tilaboni UGP (Expansion)	64.8 Ha	3	Rangamati A UGP	91.0 Ha	4	Sonepur-Bazari OCP	32.65 Ha	Total		287.45 Ha				
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4	Sonepur-Bazari OCP	32.65 Ha																							
Total		287.45 Ha																							
Compliance	<p>Forest area does not lie under the lease areas of mines under Pandaveswar Area. Bankola - Complied. No mining activity is carried out in forest area. The condition is agreed to and no mining activity shall be carried out in forest area before obtaining prior approval under FC Act 1980. At present, forest clearance of Tilaboni UG (38.44 Ha) for Stage-I FC under Process. Land schedule is yet to be finalized by BLRO. The Pillaring and survey of the forest land will be completed by June'19 (Tentatively). The whole process for stage-I FC will be completed by Jun'20. (Tentatively). Jhanjra – Complied. Stage –II forest has been obtained for diversion of 78 Ha forest land (vide 8-101/2014-FC dated 14th March 2016) And renewal of lease of 90.30 Ha forest land (Vide 8-68/1992-FC dated 16th August 2016) at Jhanjra. Sonepur Bazari – Stage- II Forest Clearance for 32.65 forest land in sonepur Bazari OCP has been obtained by MoEF CCvide reference no. 5-WBC063/2013-BHU Dated 28th march, 2017. Payment of Rs 7920000 has been made for tree felling through demand draft in favour of 'Divisional Forest officer, Durgapur Division' on 23/08/18 vide reference no. GM/SBA/18/127.</p>																								
Condition (II)	<p>The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.</p>																								
Compliance	<p>Pandaveswar - Maximum production from the mines at any given time did not exceed the limit as prescribed in the EC.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">Sl No.</th> <th style="width: 35%;">Name of the Mine</th> <th style="width: 25%;">Peak EC Capacity (MTY)</th> <th style="width: 35%;">Production in (October 2018 to March 2019) MT</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Pandaveswar UG &OC</td> <td rowspan="2" style="text-align: center;">2.45</td> <td rowspan="2" style="text-align: center;">0.391442</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Dalurband OC & UG</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Manderboni South Samla Amalgamated UG</td> <td style="text-align: center;">0.17</td> <td style="text-align: center;">0.042752</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Madhaipur UG</td> <td style="text-align: center;">0.21</td> <td style="text-align: center;">0.031031</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Madhaipur OC</td> <td style="text-align: center;">0.57</td> <td style="text-align: center;">0.226794</td> </tr> </tbody> </table>			Sl No.	Name of the Mine	Peak EC Capacity (MTY)	Production in (October 2018 to March 2019) MT	1	Pandaveswar UG &OC	2.45	0.391442	2	Dalurband OC & UG	3	Manderboni South Samla Amalgamated UG	0.17	0.042752	4	Madhaipur UG	0.21	0.031031	5	Madhaipur OC	0.57	0.226794
Sl No.	Name of the Mine	Peak EC Capacity (MTY)	Production in (October 2018 to March 2019) MT																						
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**Half Yearly EC Compliance report in respect of mines under
(Cluster 12), ECL**

Period:- October 2018 to March 2019

6	Nutandanga UG	0.12	Nil
7	Kendra UG	0.10	Nil
8	Samla UG & OC	0.12	Nil
9	Kottadih UG & OC	3.10	0.793284
10	Manderboni Extension/ Rangamati A UGP	0.98	Nil
11	Madhaipur Extension / Rangamati B UGP	0.48	Nil
Total		8.44	1.485303

Bankola - Maximum production from the mines at any given time did not exceed the limit as prescribed in the EC.

Sl No	Name of the Mine	Peak EC Capacity (MTY)	Production (MT)	
			Oct'18-Mar'19	FY 2018-19
1	Nakrakonda - Kumardihi B UG	1.12 (UG)	0.030820	0.066720
2	Nakrakonda OC	3.00	-	-
3	Kumardihi A UG	0.20	.044255	.082813
4	Tilaboni UG	2.14	0.080645	.145540
5	Shyamsundarpur UG	1.12	0.375710	0.743460
6	Bankola UG & OC	0.30	0.117518	0.230443
Total		6.08		

Jhanjra – Complied

Sl No	Name of the Mine	Peak EC Capacity (MTY)	Production (MT)
			2018-19
1	Jhanjra UG	5.00	3.376

Sonepur Bazari – the maximum production from the mine at any given time will be under the limit as prescribed in the EC. The EC granted for sonepur Bazari OCP is 12 MTY for which the total production in the FY 2018-19 is 10.026 MT. total Production in the year 2017-18 was 9.72 MT.

Condition	The validity of the EC is for the life of the mine or as specified in the EIA Notification, 2006,
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**Half Yearly EC Compliance report in respect of mines under
(Cluster 12), ECL
Period:- October 2018 to March 2019**

(III)	whichever is earlier.
Compliance	Agreed.
Condition (IV)	All safety measures shall be taken as per CMR, 1957 & related Circulars.
Compliance	All safety measures are being taken as per CMR- 1957 & related Circulars.
Condition (V)	The production shall be within the same Mining Lease area.
Compliance	The production is within the same Mining Lease area.
Condition (VI)	Coal shall be transported by rail only. Coal transportation from mine to siding should be by conveyor belt. The loading to siding by pay loaders into railway wagons.
Compliance	<p>Pandaveswar - Coal is being transported by rail only. Coal is transported to railway sidings from the mines outlet by dedicated black-topped road especially constructed for the purpose. Coal transportation from mine to siding through belt conveyors is not feasible because, the capacity of the mines is less and the belt has to cross densely populated area. Coal from Khottadih OCP, Khottadih UGP, Dalurband OC Phase-III and Pandaveswar UG is transported by trucks covered with tarpaulin over black topped roads to Selected Samla Railway Siding, located at a distance of 1.5 to 4 kms from mines. Coal produced from South Samla UG mine is transported by rail from nearby present POCP Railway Siding. Coal produced from Madhaipur UG and Madhaipur OC is transported by tarpaulin covered trucks to POCP Railway Siding which is present at a distance of 9.0 Km from Madhaipur UG and Madhaipur OC. Coal produced from Manderboni UG is transported by tarpaulin covered to POCP Railway Siding situated at a distance of 5 km from the mine.</p> <p>Bankola - Coal is transported to railway sidings from the mines outlet by dedicated black-topped road through road which is especially constructed for the purpose. Coal transportation from mines to siding through belt conveyors is not feasible because, the capacity of the mines is less and all the mines are scattered.</p> <p>Jhanjra – Coal is transported by trucks covered by tarpaulin over black topped roads from mine to railway siding located at a distance of 4 – 6 kms from mine to POCP Railway siding at Jhanjra. Construction of a dedicated railway siding at Jhanjra is under proess. FSR report has been submitted by RITES Limited. Draft has been prepared and is under approval stage.</p> <p>Sonepur Bazari - Coal is transported by rail through sitalpur and dalurband railway sidings. Pay loaders are used for loading into railway wagons. New railway siding in our premises is under construction.</p>
Condition (VII)	Independent network of railway siding inside cluster be developed. Railway sidings should be constructed at the earliest and till then proponent may use mechanically covered trucks for transportation of coal.
Compliance	<p>Pandaveswar- There are currently active 4 railways sidings (Bankola, Purushottampur, Selected Samla and Dalurband) serving to the mines in pandaveswar area. Transportation of coal from mine to railway siding is being done by tarpaulin covered trucks.</p> <p>Bankola - There are currently active 2 railways sidings (Bankola I & Bankola II) serving Bankola Area in Cluster 12. Coal is transported to railway sidings from the mines outlet by dedicated black-topped road especially constructed for the purpose. Coal transportation from mine to siding is done through tarpaulin covered trucks.</p>

**Half Yearly EC Compliance report in respect of mines under
(Cluster 12), ECL
Period:- October 2018 to March 2019**

	<p>Jhanjra – Transportation of coal from mine to railway siding is being done by tarpaulin covered trucks. Construction of a dedicated railway siding at Jhanjra is under process.</p> <p>Sonepur Bazari - A new railway siding is under construction at Sonepur Bazari project. Necessary steps in this direction are being taken to complete Railway siding at the earliest. Transportation of coal is being done by trucks covered manually with tarpaulin cover because mechanically covered trucks are not available in India.</p>
Condition (VIII)	Three tier green belt shall be raised around the railway sidings and along the road sides to prevent dust and noise pollution.
Compliance	<p>Pandaveswar - Plantation already exist around Selected Samla and POCP Railway Sidings.</p> <p>Bankola - Both sides of connecting roadway are well vegetated naturally. Roadside Plantation along 5.5km roadways has been done along coal transportation road and siding. A boundary wall is also constructed around Bankola Siding-I & Siding-II to prevent dust and noise pollution.</p> <p>Jhanjra – The siding is bound by a thick brick wall of 1 feet height approx. Dust suppression system to install in POCP Railway Siding. Plantation already exists along the POCP Railway Siding at Jhanjra</p> <p>Sonepur Bazari – Three tier green belts will be raised around railway siding after the completion of the same. Continuous avenue plantation is being done along roadside. 9 Ha of Plantation has been done between NH 60 and railway siding FY 2017-18 and 10 Ha roadside planation has been done FY 2015-16.</p>
Condition (IX)	Stowing and depillaring shall be as per the recommendations of the DGMS.
Compliance	<p>Pandaveswar/ Bankola - Stowing and depillaring are being done in all the mines as per the recommendations of the DGMS.</p> <p>Jhanjra – Stowing practice is not followed at Jhanjra UGP.</p> <p>Sonepur Bazari – Not applicable. Since the mine is Open Cast project.</p>
Condition (X)	The proponent must comply with the Raniganj Action Plan. The unstable areas within the cluster will be brought under plantation after the population residing over these areas is rehabilitated under the Master Plan for Raniganj Coalfield to be implemented by ADDA.
Compliance	<p>Pandaveswar / Bankola- Job is being implemented by ADDA.</p> <p>Jhanjra- Jhanjra Area does not comes under Raniganj Action Plan</p> <p>Sonepur Bazari – Noted and agreed</p>
Condition (XI)	Trees with deep rooted system should be planted so as to prevent soil erosion.
Compliance	<p>Pandaveswar / Bankola - Deep rooted tree species planted are as follows- Neem, Karanch, Shisham, Arjun, Babool & Sirish</p> <p>Jhanjra – Trees with deep rooted system are planted in consultation with state forest dept. to prevent soil erosion.</p> <p>Sonepur Bazari – Deep rooted local mixed species are being planted to prevent soil erosion. A project on “Mine Site restoration through Erosion Prevention and soil Dump Stabilization and development for horticulture and plantation for Economic post mining land use.” Was conducted by IIT kharagpur. Plantation of vetiver (it has very deep roots) along with other species has been done in monsoon season of 2017-18 & 2018-19 by IIT Kharagpur at OB dump of Sonepur Bazari Project.</p>

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Condition (XII)	Proponent should plant additional 10 Ha/year over the next 10 years at various locations in the cluster.
Compliance	<p>Pandaveswar - 40000 saplings were planted during 2017-18 over 16 Ha land of Khottadih OCP under Pandaveswar Area. During 2018-19, 25000 and 12500 nos of saplings were planted over 10 Ha and 5 Ha lands of Pandaveswar UG and Dalurband OC Phase-III respectively.</p> <p>Bankola- Agreed. Plantation is being taken up every year in ECL command areas according to the plantation programme.</p> <p>Jhanjra – Plantation over 10 Ha Land has been completed for the year 2018-19 at Jhanjra Area. Total plantation done till date 224.5 Ha.</p> <p>Sonepur Bazari - Complied with. Additional 10 Ha road side Plantation has been carried out in the FY 2015-16 and 9 Ha plantation has been done during the FY 2017-18.</p>
Condition (XIII)	River/Nallah shall be desilted and restored back to functional state.
Compliance	<p>Pandaveswar - Garland drains and Catch drains and siltation sump of appropriate size has been constructed to arrest silt and sediment flows from soil, OB dump. The water so collected in the main sump within the mine is utilized for dust suppression in mine Area, roads and green belt development. Garland drains and catch drains are regularly desilted and maintained properly.</p> <p>Bankola - At present 6 nos. UG mines are working under Bankola Area in Cluster-12. No activity is carried out in the UG mines which may cause siltation in any river/nallah in vicinity. However, river/nallah shall be desilted and restored back to functional state when required.</p> <p>Jhanjra – Not Applicable</p> <p>Sonepur Bazari – River / Nallah will be desilted and restored back to functional state.</p>
Condition (XIV)	Wild life conservation plan be prepared and submitted to the MoEF& CC with the approval of the State Govt.
Compliance	<p>Pandaveswar - Wildlife Conservation plan of entire Raniganj Coalfield has been prepared and sent to Addl. PCCF (Wildlife), Govt. of West Bengal for approval. No forest land falls under the mining lease areas of mines under Pandaveswar Area.</p> <p>Bankola - Wildlife Conservation plan of entire Raniganj Coalfield has been prepared and sent to Addl. PCCF (Wildlife), Govt. of West Bengal for approval. Letter enclosed (HQ).</p> <p>Jhanjra – Regional wildlife plan for Jhanjra Area has been prepared by DFO, Durgapur Division and the cost of implementation of which (Rs. 53,64,500/-) has been deposited to Ad-hoc CAMPA with the approval of the department of forest, Govt. of West Bengal.</p> <p>Sonepur Bazari – noted and agreed</p>
Condition (XV)	Proponent shall use high resolution image of all clusters for evaluating land use, plantation etc.
Compliance	Complied with. Satellite monitoring of Sonepur Bazari Mine is being done every year through CMPDIL.
Condition (XVI)	Separate drainage pattern be provided.
Compliance	Not applicable for UG mine in the Cluster. Separate drainage will be provided where required
Condition (XVII)	Sand stowing must be done as recommended by CMPDI.
Compliance	Pandaveswar - Sand stowing is being done as recommended by CMPDIL.

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	<p>Bankola - Stowing is carried out at Bankola UG and Shyamsundarpur and Khandra UG under Bankola Area in the Cluster. Sand stowing is being used as recommended by CMPDIL. The quantity of sand stowed each year is mentioned in Mine Closure Plan (MCP).</p> <p>Jhanjra – Not Applicable. De-pillaring practice is being followed at jhanjra as per DGMS conditions.</p> <p>Sonepur Bazari – Not applicable as the mine is an Open Cast Project.</p>
Condition (XVIII)	Action plan for prevention and mitigation of subsidence be prepared and implemented.
Compliance	<p>Pandaveswar - Action plan for prevention and mitigation of subsidence have been prepared and it is being implemented.</p> <p>Bankola - No underground mining is carried out below within 45m of the Major Roads, Railway line and nallah flowing through the cluster. Coal pillars are left intact vertically below and within the angle of draw of villages and other surface features. Depillaring is done with sand stowing in Bankola UG and Shyamsundarpur UG. The mining method adopted in consultation with DGMS with their approval.</p> <p>Jhanjra - Action plan for prevention and mitigation of subsidence have been prepared and it is being implemented as per DGMS guidelines.</p> <p>Sonepur Bazari – Not applicable, since the mine is and Open Cast Project.</p>
Condition (XIX)	The OC patches to be operated will be completely filled-up after exhaustion of reserves and reclaimed with plantation.
Compliance	<p>Pandaveswar - At Khottadih OCP and Dalurband OC Phase-III mines under Pandaveswar Area, OB is being concurrently backfilled into the mined out areas. At Khottadih OCP, 220.30 Ha area land has been excavated till March 2019 out of which 171.20 Ha area has been backfilled. Plantation over 16 Ha area of Khottadih OCP has been done during the year 2017-18.</p> <p>At Dalurband OC Phase-III 39.45 Ha land area has been excavated till March 2019 out of which backfilling has been carried out in 25.15 Ha area.</p> <p>At Madhaipur OC Patch 11.64 Ha land Area has been excavated till March 2019 out of which backfilling has been carried out in 2.92 Ha area. Total plantation till date on backfilled areas and external dump is back on track as per EMP calendar plan. 71 Ha plantation has been done so far including 10 Ha of plantation at Pandaveswar UG and 5 Ha plantation in Dalurband OC Phase-III during FY 2018-19.</p> <p>Bankola - Noted and agreed.</p> <ol style="list-style-type: none"> 1. In Kumardihi 'B' OCP 11.74 ha has been backfilled out of 11.74 ha. 2. In Nakrakonda 'B' OCP 3.6 ha has been backfilled out of 53.46 ha. 3. In Nakrakonda 'B' OCP (extension), 5.82 ha has been backfilled out of 59.28 ha. <p>Jhanjra – this condition is not valid as Jhanjra is a UG mine.</p> <p>Sonepur Bazari – OB is being concurrently backfilled into the de-coaled areas. Plantation is also being done simultaneously as the dumping is completed. Total 807.91 Ha area has been excavated till March, 2019 out of which backfilling is being carried out in 416.17 Ha area. Plantation in 158.0 Ha area has been done on these backfilled dumps.</p>
Condition (XX)	The OB shall be completely re-handled at the end of the mining.
Compliance	Noted and Agreed.
Condition	There shall be no residual OB dump after the mining.

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(XXI)									
Compliance	Noted and agreed.								
Condition (XXII)	After completion of mining activities, the subsided areas shall be graded and planted upon.								
Compliance	Noted and agreed								
Condition (XXIII)	Action plan for prevention and mitigation of subsidence be prepared and implemented.								
Compliance	Action plan for prevention and mitigation of subsidence has been prepared and implemented as per DGMS guidelines. Not applicable for Open Cast project.								
Condition (XXIV)	Rehabilitation of the households falling within this cluster to be carried out in two phases within 10 years.								
Compliance	<p>Pandaveswar - Rehabilitation to be done at Khottadih OCP under Pandaveswar is as follows:-</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Sl No.</th> <th>Name of the village</th> <th>No. of PAFS (approx.)</th> <th>Expected year of shifting of the village</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Bilpahari</td> <td>771</td> <td>2018-19</td> </tr> </tbody> </table> <p>Bankola - Agreed Jhanjra – Not applicable at Jhanjra UGP Sonepur Bazari - Phase wise rehabilitation of the households is being carried out. Total 1221 PAFs have been shifted till now.</p>	Sl No.	Name of the village	No. of PAFS (approx.)	Expected year of shifting of the village	1	Bilpahari	771	2018-19
Sl No.	Name of the village	No. of PAFS (approx.)	Expected year of shifting of the village						
1	Bilpahari	771	2018-19						
Condition (XXV)	The land excavated after mining must be brought back to original condition for agricultural/plantation purpose.								
Compliance	<p>Pandaveswar / Jhanjra - Agreed. Shall be carried out as per Mine Closure Plan. Bankola - Agreed. Presently production is being done from UG mines only; plantation is done on subsided area as per Progressive Mine Closure Plan. Sonepur Bazari – the land excavated after mining will be brought back to original condition suitable for Agriculture/ Plantation.</p>								
Condition (XXVI)	Water discharged from the mine should be as good as surface drinking water.								
Compliance	<p>Pandaveswar - Mine discharge water is being treated in pressure filter along with chlorination at Dalurband and Khottadih villages. The water is then used for domestic uses. The discharged mine waters is treated through pressure filters and is fortnightly tested for parameters namely pH, TSS, TDS, Oil & Grease and COD and conforms to the MoEF Schedule-VI Standards. Bankola - Mine discharge water is being treated in i) Pressure filter – 1 unit each at Kumardihi ‘B’, Bankola, Shankarpur, Kumardihi ‘A’, and Tilaboni colliery. 2 units at SSP colliery. ii) Slow Sand Filter – 1 unit each at Moira Colliery and Area Complex. 2 units each at Khandra colliery and SSP colliery. iii) Rapid Gravity Filter – 1 unit at Bankola Colliery. iv) Reverse Osmosis Plant – 1 unit at Bankola Colliery. The water is fortnightly tested for parameters namely pH, TSS, TDS, Oil & Grease and COD and conforms to the MoEF Schedule-VI Standards. The water is then used for domestic and mining</p>								

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	<p>uses</p> <p>Jhanjra – the discharged mine water is treated through pressure filter and is fortnightly tested for parameters namely pH, TSS, TDS, Oil and Grease and COD and conforms to the MoEF Schedule – VI standards.</p> <p>At Jhanjra, a part of mine water is also supplied for domestic purpose after treatment through water treatment plant and 5000 LPH capacity RO Plant.</p> <p>Sonepur Bazari – All the mine water is being used in the mine itself for industrial purpose. No water is being discharged outside from the mine.</p>
Condition (XXVII)	Final mine void 453 Ha and depth will not be more than 20-30 m. The void area will be converted into water body. The mine void should be used for pisciculture purpose.
Compliance	Noted and agreed. Not applicable for underground mine.
Condition (XXVIII)	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.
Compliance	<p>Pandaveswar/ Bankola - Regular inspection is being carried out by the Safety committee headed by Safety Officer on the surface over and around the working area for any sign of subsidence. It is pertinent to point out that underground mining is being carried out in conjunction with hydraulic sand stowing as per DGMS stipulations. Crack filling is also carried out wherever required.</p> <p>Jhanjra – Regular inspection is being carried out over and around the working area for any sign of subsidence. Crack filling is also carried out wherever required.</p> <p>Sonepur Bazari – Not applicable, since the mine is an Open cast project.</p>
Condition (XXIX)	If subsidence is found exceeding the permitted limits, then the landowners shall be adequately compensated with mutual agreement of the landowners.
Compliance	Not Applicable for OC mines under this Cluster. In case of UG mines surface land is already acquired under CBA Act and Compensation as per Company's R&R Policy given to the land owners.
Condition (XXX)	Water sprinkling system shall be provided to check fugitive emissions from loading operations, conveyor system, haulage roads, transfer points, etc. Major approach roads shall be black topped and properly maintained.
Compliance	<p>Pandaveswar - The coal transportation roads from colliery to Railway Siding are black topped and Water Sprinkling is being done on the approach road with Mobile Water tankers. Regular sprinkling of water is carried out over the surface through mobile sprinklers to check fugitive emissions at Railway Siding, Transfer Points, and Haulage Roads etc.</p> <p>Bankola - The coal transportation road from colliery to Railway Siding has been black topped in order to prevent fugitive dust emission. Water Sprinkling is being done on the approach road with Mobile Water tankers.</p> <p>Regular sprinkling of water is carried out over the surface through fixed and mobile sprinklers to check fugitive emissions at Railway Siding, Fixed water sprinklers (22 nos) have been installed at Bankola I and Bankola II Railway Sidings under Bankola Area.</p> <p>Jhanjra – 13 no. of Fixed water sprinklers have been installed at POCP Railway siding, Jhanjra</p>

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	<p>UGP. Regular Sprinkling of water is also carried out over the surface through fixed and 03 nos of mobile sprinklers to check fugitive emissions at Railway siding, transfer points, Transport roads etc.</p> <p>Sonepur Bazari – Water sprinkling system has been provided to check fugitive emissions. Water sprinklers with mist formation have been provided at input hopper, transfer points and discharge chutes. Mobile sprinklers with mist formation have also been provided on haulage road. Major approach roads are black topped. Proper Maintenance of roads is done regularly. Water sprinkling on the roads is done with the help of mobile water sprinklers.</p>																																						
Condition (XXXI)	The CSR cost should be Rs 5 per Tonne of Coal produced which should be adjusted as per the annual inflation. Rs 1358 Lakh/annum shall be earmarked for holding medical camps from CSR fund.																																						
Compliance	<p>Pandaveswar - As per the revised CSR policy of CIL 2% of the average profit of preceding 3 years is the norms for CSR expenditure in the entire ECL command areas. During 2016-17, construction of 1.38 Km concrete road was done inside Khottadih Village and the cost of this construction was Rs. 5748372.00.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Year</th> <th style="width: 60%;">Name of the work</th> <th style="width: 30%;">Expenditure (In Rs.)</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">2017-18</td> <td>Solar Street light at Laskarbandh village</td> <td style="text-align: center;">2.72 Lakh</td> </tr> <tr> <td>Medical Activities under CSR</td> <td style="text-align: center;">0.70 Lakh</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 8%;">SL No.</th> <th style="width: 12%;">Year</th> <th style="width: 60%;">Name of work</th> <th style="width: 20%;">Expenditure in lakh Rs.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">01</td> <td rowspan="6" style="text-align: center;">2018-19</td> <td>Construction of Boundary Wall at Gobindpur Village</td> <td style="text-align: center;">16.67</td> </tr> <tr> <td style="text-align: center;">02</td> <td>Arrangement of Special Diet for Selected Players of ECL</td> <td style="text-align: center;">1.51</td> </tr> <tr> <td style="text-align: center;">03</td> <td>Operational cost of MMV-6.</td> <td style="text-align: center;">3.50</td> </tr> <tr> <td style="text-align: center;">04</td> <td>Operation of MMV-6 at 10 villages in command Areas of Pandaveswar ,from 26-11-2018 to 25-03-2019</td> <td style="text-align: center;">8.86</td> </tr> <tr> <td style="text-align: center;">05</td> <td>Health Awareness cum free Sanitary Napkin Distribution to School Girls of Rakhil Chandra Balika Vidyalaya Pandaveswar</td> <td style="text-align: center;">0.34</td> </tr> <tr> <td style="text-align: center;">06</td> <td>Stipend for SC,ST Training</td> <td style="text-align: center;">1.30</td> </tr> <tr> <td></td> <td></td> <td>Total</td> <td style="text-align: center;">32.18</td> </tr> </tbody> </table> <p>Bankola - As per the revised CSR policy of CIL 2% of the average profit of preceding 3 years is the norms for CSR expenditure in the entire ECL command areas. The detailed CSR expenditure is provided in annexure D.</p> <p>Jhanjra - As per the revised CSR policy of CIL 2% of the average profit of preceding 3 years is the norms for CSR expenditure in the entire ECL command areas. CSR project is being</p>	Year	Name of the work	Expenditure (In Rs.)	2017-18	Solar Street light at Laskarbandh village	2.72 Lakh	Medical Activities under CSR	0.70 Lakh				SL No.	Year	Name of work	Expenditure in lakh Rs.	01	2018-19	Construction of Boundary Wall at Gobindpur Village	16.67	02	Arrangement of Special Diet for Selected Players of ECL	1.51	03	Operational cost of MMV-6.	3.50	04	Operation of MMV-6 at 10 villages in command Areas of Pandaveswar ,from 26-11-2018 to 25-03-2019	8.86	05	Health Awareness cum free Sanitary Napkin Distribution to School Girls of Rakhil Chandra Balika Vidyalaya Pandaveswar	0.34	06	Stipend for SC,ST Training	1.30			Total	32.18
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	<p>implemented. The budget for CSR activities is centrally controlled by EC, HQ.</p> <p>Sonepur Bazari – CSR project is being implemented. The CSR activities at Sonepur Bazari OCP are done under following heads:</p> <ul style="list-style-type: none"> • Health care • Infrastructure • Education Development • Water Supply <p>Following expenditure were made in CSR from March 2018- September 2018</p> <ol style="list-style-type: none"> 1. Construction of library cum community hall at Khas Kenda village- Rs 1116922 2. Mobile Medical Van service for Haelth care Rs.1525496 3. Facilitating two no. of trekker or similar type of vehicle for transportation of villagers and school going children of sonepur Bazari area for 1 year- Rs 304102.31 																		
Condition (XXXII)	The mining in the existing mines should be phased out after expiry of the current mining lease and after reclamation of mined over area. The operating mines may be analyzed and monitored for compliance of conditions, bearing with movement of wildlife and until such time they are closed/phased out.																		
Compliance	Noted and agreed. Shall be complied as per Mine Closure Plan (MCP).																		
Condition (XXXIII)	Everybody in the core area should be provided with mask for protection against fugitive dust emissions.																		
Compliance	In order to provide protection against fugitive dust emission, dust masks are being provided to people working in the core area. Protection against dust is provided as per the Regulation 143 of CMR, 2017																		
Condition (XXXIV)	Dust mask to be provided to everyone working in the mining area.																		
Compliance	Dust mask have been provided to everyone working in the mining area. Protection against dust is provided as per the Regulation 143 of CMR, 2017																		
Condition (XXXV)	The supervisory staff should be held personally responsible for ensuring compulsory regarding wearing of dust mask in the core area.																		
Compliance	Supervisory staff ensures compulsory wearing of the dust masks in the core area Protection against dust is provided as per the Regulation 143 of CMR, 2017																		
Condition (XXXVI)	People working in the core area should be periodically tested for the lung diseases and the burden of cost on account of working in the coal mine area.																		
Compliance	<p>20 % of the work force is covered under periodic medical examination each year including lung diseases the cost of which is borne by the company.</p> <p>Details of PME done in Pandaveswar Area from October 2018 to March 2019 is as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Month</th> <th>Khottadi h OCP</th> <th>Khottadi h UG</th> <th>Madhaipur UG</th> <th>South Samla UG</th> <th>Manderb oni UG</th> <th>Pandaveswar UG</th> <th>DO CP</th> <th>Local Cont.</th> </tr> </thead> <tbody> <tr> <td>April 2018</td> <td>00</td> <td>83</td> <td>11</td> <td>5</td> <td>0</td> <td>14</td> <td>0</td> <td>48</td> </tr> </tbody> </table>	Month	Khottadi h OCP	Khottadi h UG	Madhaipur UG	South Samla UG	Manderb oni UG	Pandaveswar UG	DO CP	Local Cont.	April 2018	00	83	11	5	0	14	0	48
Month	Khottadi h OCP	Khottadi h UG	Madhaipur UG	South Samla UG	Manderb oni UG	Pandaveswar UG	DO CP	Local Cont.											
April 2018	00	83	11	5	0	14	0	48											

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	May 2018	08	56	13	0	07	23	12	29
	June 2018	04	46	08	03	01	22	05	49
	July 2018	04	49	05	04	10	21	02	20
	August 2018	15	36	09	15	19	01	0	29
	September 2018	00	07	0	0	01	09	0	0
	October 2018	00	04	02	02	00	07	0	0
	November 2018	00	35	02	12	17	13	0	0
	December 2018	3	24	01	00	08	08	0	13
	January 2019	00	19	04	03	15	05	0	6
	February 2019	00	45	06	03	09	09	17	14
	March 2019	00	23	00	00	09	02	06	0
	TOTAL:	34	404	61	47	87	134	42	208
	<p>Bankola- 20% of the work force is covered under periodic medical examination each year including lung diseases the cost of which is borne by the company. Periodic Medical Examination (PME) of 779 employees has been done within Oct'18-Mar'19 in FY 2018-19.</p> <p>Jhanjra – 20% of the work for force is covered under periodic medical examination each year including lung diseases the cost of which is borne by the company. 10 bedded area hospital also exists at Jhanjra Area.</p> <p>Sonepur Bazari- Complied with. PME of employees is being done regularly. Total 308 PME of company employees has been done in the FY 2018-19.</p>								
Condition (XXXVII)	The mining area should be surrounded by green belt having thick closed canopy of the tree cover.								

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Compliance	<p>Pandaveswar - In Pandaveswar Area plantation is being done at Khottadih OCP since 2014-15 by WBWDCL. Details of plantation is as follows:</p> <table border="1" data-bbox="412 352 1403 926"> <thead> <tr> <th>Year</th> <th>Name of Species</th> <th>Location</th> <th>Area in Ha</th> <th>No. of saplings</th> <th>Density</th> <th>Survival rate</th> </tr> </thead> <tbody> <tr> <td>2014-15</td> <td>Chatim</td> <td rowspan="4">Khottadih OCP</td> <td>10</td> <td>25000</td> <td>2500/ha</td> <td>85%</td> </tr> <tr> <td>2015-16</td> <td>Krishnachura</td> <td>20</td> <td>50000</td> <td>2500/ha</td> <td>75%</td> </tr> <tr> <td>2016-17</td> <td>Radhachura</td> <td>10</td> <td>25000</td> <td>2500/ha</td> <td>75%</td> </tr> <tr> <td>2017-18</td> <td>Sonajhuri</td> <td>16</td> <td>40000</td> <td>2500/ha</td> <td>75%</td> </tr> <tr> <td>2018-19</td> <td>Karanch</td> <td>Pandaveswar UG near SS Siding</td> <td>10</td> <td>25000</td> <td>2500/ha</td> <td>95%</td> </tr> <tr> <td></td> <td>Amla , Neem, Shimul, Shisham, Sirish, Arjun, Babool</td> <td>OB Dump of Dalurband OC Phase-III</td> <td>5</td> <td>12500</td> <td>2500/ha</td> <td>80%</td> </tr> </tbody> </table> <p>Bankola - UG mines cause very low pollution load which is concentrated in mine working faces and transfer points. The collieries are surrounded by densely populated village and private agricultural lands. Natural vegetation exist around mines. Plantation is being carried out wherever land is available. However, at Bankola Area, 12 ha plantation along with 5.5 km roadside plantation is created on 2016-17.</p> <p>Jhanjra - A total of 224.30 Ha of plantation has been carried out over the leasehold of Jhanjra till 2018-19. Plantation over total area of 10 Ha has been done in 2018 – 19 at Jhanjra. Yearly plantation will be carried out over the available land in future as well.</p> <p>Sonepur Bazari – Noted and agreed. Plantation in 7.5 meter strip all along the lease boundary within the mine lease area will be done. Rs. 1,23,75,000.00 have been deposited th Ad-hoc CAMPA A/c for this purpose.</p>	Year	Name of Species	Location	Area in Ha	No. of saplings	Density	Survival rate	2014-15	Chatim	Khottadih OCP	10	25000	2500/ha	85%	2015-16	Krishnachura	20	50000	2500/ha	75%	2016-17	Radhachura	10	25000	2500/ha	75%	2017-18	Sonajhuri	16	40000	2500/ha	75%	2018-19	Karanch	Pandaveswar UG near SS Siding	10	25000	2500/ha	95%		Amla , Neem, Shimul, Shisham, Sirish, Arjun, Babool	OB Dump of Dalurband OC Phase-III	5	12500	2500/ha	80%
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Condition (XXXVIII)	Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through an specialized agency /institution within the District/State and the results reported to this Ministry and to DGMS.																																														
Compliance	PME is being carried out for all employees once in every 5 years (@ 20% employees/year). Special cases diagnosed during such PME are monitored at shorter intervals as directed by the PME Board of Doctors.																																														
Condition (XXXIX)	The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation.																																														
Compliance	Pandaveswar - Embankment made against Ajay River, which flows nearby the Pandaveswar																																														

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	<p>UG, is of suitable dimension and critical patches have been strengthened by stone pitching on the river front side. Not applicable for areas where no river exist within the mining lease.</p>
Condition (XL)	There shall be no overflow of OB into the river and into the agricultural fields and massive plantation of native species shall be taken up in the area between the river and the project.
Compliance	Noted and agreed.
Condition (XLI)	Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilized for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly. Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.
Compliance	<p>Pandaveswar - At Khottadih OCP garland drains have been provided along the toe of external dump for collecting and discharging rain water from soil & OB dumps. Catch drains are being maintained properly & cleaning is being done regularly according to the monsoon preparation plan.</p> <p>Bankola - Permanent masonry drains of size range 200 to 600 m, 0.90 m to 2 m and 0.6 m to 2 m depth and 1 in 30 gradients, depending on the catchment have been constructed for evacuation of rain water. The size of the drain is large enough to take care of heavy downpours. The drain is cleared of debris before start of the monsoon season as part of our annual monsoon preparation program. The rainwater harvesting structure will also be constructed at Bankola Siding-I and II for arrest mineral dump and to increase ground water recharge in FY 2019-20.</p> <p>Jhanjra – Not applicable as Jhanjra is a UG mine.</p> <p>Sonepur Bazari – Garland drains has been provided along the toe of external dump for collecting and discharging rain water from soil and OB dumps. Drain is being maintained properly and cleaning is being done regularly.</p>
Condition (XLII)	Garland drains (size, gradient and length) around the safety areas such as mine shaft and low lying areas and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine sites. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.
Compliance	<p>Pandaveswar - Total length of garland drain at Khottadih OCP is about 2 km. Width of garland drains are usually kept at 0.90 m while depth of the drain varies from 0.6 m to 1.5 m depending on the catchment and gradient of the drain. Garland drain wherever required are maintained and required sump capacity is also maintained in the mine.</p> <p>Bankola - Garland drain is present at Sarpi sub-station, Sarpi pumping station, ESP pit, transformer room, incline mouth and CHP. Total length of garland length is about 5 km. Width</p>

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	<p>of garland drains are usually kept at 0.90 m while depth of the drain varies from 0.6 m to 1.5 m depending on the catchment and gradient of the drain.</p> <p>Garland drain wherever required are maintained and required sump capacity is also maintained in the mine. Catch drains are being maintained properly & cleaning is being done regularly according to the monsoon preparation plan</p> <p>Jhanjra – Not applicable as Jhanjra is a UG mine.</p> <p>Sonepur Bazari – Garland drain has been constructed keeping sufficient safety margin over and above the peak sudden rainfall with an average width of 3m & average depth of 1.5 to 2.5 m.</p>
Condition (XLIII)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
Compliance	<p>Not applicable for UG mines in the cluster.</p> <p>For OCP in the Cluster, to check run-off and siltation proper benching in dumps is being done while maintaining slope stability as per norms to check run-off from OB dumps. Also regular plantation on OB dumps is carried out to stabilize the dumps and check run-off.</p>
Condition (XLIV)	Crushers at the CHP of adequate capacity for the expansion project shall be operated with high efficiency bag filters, water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.
Compliance	<p>Pandaveswar - The CHP at Khottadih Colliery under Pandaveswar Area is equipped with water sprinkler to arrest fugitive emissions. There is no crusher at the CHP of Khottadih Colliery(UG).</p> <p>Bankola - Complied. The CHPs of Shyamsundarpur Colliery under Bankola Area is equipped with water sprinkler to arrest fugitive emissions. Sprinkling on CHP approach road is being done through mobile water sprinklers.</p> <p>Jhanjra – No CHP exists at Jhanjra.</p> <p>Sonepur Bazari – Water sprinklers with mist formation have been installed at input hopper, transfer points and discharge chutes in the CHP to check fugitive emission.</p>
Condition (XLV)	Mine discharge water outside the mining lease shall be monitored, particularly for TDS and treated to conform to prescribed levels before discharge into the natural environment.
Compliance	Mine water discharge quality complies with prescribed standards. Regular monitoring is done by CMPDIL. The quality of mine water is within permissible limits. Reports of the monitoring is enclosed herewith.
Condition (XLVI)	Drills shall be wet operated.
Compliance	<p>Water spraying is done for dust suppression before drilling in underground and OC mines.</p> <p>Sonepur Bazari – Wet drilling is being carried out. Total population of Drills with such arrangements is given below: Model 70E – 9 (nine) Nos. Model 650D – 4 (Four) nos.</p>

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	Dust guards are also provided in the drills.																		
Condition (XLVII)	The project authorities shall undertake regular repairing and tarring of roads used for mineral transportation. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.																		
Compliance	<p>Pandveswar - As per requirement, regular repairing and tarring of roads are being taken on priority basis. Both sides of approach roadway are well vegetated naturally.</p> <p>Bankola - As per requirement, Regular repairing and tarring of roads are being taken on priority basis. Both sides of approach roadway are well vegetated naturally. Plantation Done:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Name of Species</th> <th>Area in Ha</th> <th>No. of saplings</th> <th>Density</th> <th>Survival rate</th> </tr> </thead> <tbody> <tr> <td>2016-17</td> <td>Kamini, Rangan, Krishnachura, Jaba, Karabi, Bougenvelia, Pathodia, Jamun, Radhachura etc.</td> <td>5.5 Km (Roadside)</td> <td>-</td> <td>-</td> <td>80%</td> </tr> <tr> <td>2016-17</td> <td>Chatim, Krishnachura, Radhachura, Karanch, Aamla etc.</td> <td>12 Ha</td> <td>22500</td> <td>2500/Ha</td> <td>90%</td> </tr> </tbody> </table> <p>Jhanjra – Complied. As per requirement, regular repairing and tarring of roads are being taen on priority basis. Both sides of approach roadway are well vegetated naturally.</p> <p>Sonepur Bazari – Regular repairing and maintenance of roads is being done. Tree plantation along the approach road is being carried out. 9 Ha of road side avenue plantation was done FY 2017-18</p>	Year	Name of Species	Area in Ha	No. of saplings	Density	Survival rate	2016-17	Kamini, Rangan, Krishnachura, Jaba, Karabi, Bougenvelia, Pathodia, Jamun, Radhachura etc.	5.5 Km (Roadside)	-	-	80%	2016-17	Chatim, Krishnachura, Radhachura, Karanch, Aamla etc.	12 Ha	22500	2500/Ha	90%
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Condition (XLVIII)	Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.																		
Compliance	<p>Controlled blasting is being done as per DGMS permission and conditions.</p> <p>Blasting pattern and vibration studies is being carried out by CMPDI on regular basis and is strictly followed in the project.</p> <p>Controlled blasting is being done with help of delay detonators (Using Nonel system). Blasting is done only in day time. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders are being taken.</p>																		
Condition (XLIX)	A Progressive afforestation plan shall be implemented covering an area of 6215.5 ha at the end of mining, which includes reclaimed external OB dump area (404.74 Ha), internal dump area (1856.54 ha), and Green belt land (364.57 ha), and in township located outside the lease by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha. Massive plantation shall be carried out in open																		

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	spaces in and around the mine and a 3-tier avenue plantation along the main approach roads to the mine.															
Compliance	<p>Pandaveswar - The mine is in Cluster 12 and it is proposed to plant 10 Ha per year within the cluster at the density of 2500 plants/Ha. During 2018-19, plantation was done over 10 Ha and 5 Ha area of Pandaveswar UG and Dalurband OC Phase-III respectively. Density of the trees is maintained at 2500 plants per Ha.</p> <p>Bankola - It is proposed to plant 10 Ha per year within the cluster at the density of 2500 plants/Ha according to the available land area.</p> <p>Jhanjra – Plantation over total area of 10 Ha has been done in 2018-19 at Jhanjra. Total plantation of 224.5 Ha has been done till now through Forest Dept. Durgapur & West Bengal Wasteland Development Corporation Limited and Panchayat Density of trees is maintained at 2500 Plants per Ha.</p> <p>Sonepur Bazari – Plantation is being done on reclaimed external dumps, internal dumps, in the plain land including CHP, along the approach roads, township etc. through Forest Department, Durgapur and West Bengal Wasteland Development Corporation Limited under the supervision of DFO Durgapur. Density of the trees maintained at 2500 plants per Ha. Total plantation in 243.20 Ha has been done till now. Details of which are given in the table below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">S No.</th> <th style="width: 55%;">Location</th> <th style="width: 30%;">Plantation</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>External OB dumps</td> <td style="text-align: center;">51.0 Ha</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Internal OB dumps</td> <td style="text-align: center;">107.0 Ha</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Plain land (including CHP, along approach roads etc)</td> <td style="text-align: center;">85.2 Ha</td> </tr> <tr> <td colspan="2" style="text-align: center;">total</td> <td style="text-align: center;">243.2 Ha</td> </tr> </tbody> </table> <p>Plantation in 25 Ha is done on internal OB dumps FY 2018-19 and 34 ha land on OB dump along with 9.0 Ha roadside plantation done in FY 2017-18.</p>	S No.	Location	Plantation	1	External OB dumps	51.0 Ha	2	Internal OB dumps	107.0 Ha	3	Plain land (including CHP, along approach roads etc)	85.2 Ha	total		243.2 Ha
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1	External OB dumps	51.0 Ha														
2	Internal OB dumps	107.0 Ha														
3	Plain land (including CHP, along approach roads etc)	85.2 Ha														
total		243.2 Ha														
Condition (L)	The proponent should prepare restoration and reclamation plan for the degraded area. The land be used in a productive and sustainable manner.															
Compliance	Mine closure Plan has already been prepared for the purpose. Restoration and reclamation shall be done accordingly.															
Condition (LI)	Compensatory Ecological & Restoration of waste land, other degraded land and OB dumps in lieu of breaking open the land be carried out.															
Compliance	Mine Closure Plan has already been prepared for the purpose. Compensatory ecological and restoration of wasteland shall be done accordingly. An Ecological/Herbal park at Bankola Area Hospital is proposed to be constructed in the FY 19-20.															
Condition	No groundwater shall be used for mining operations.															

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(LII)	
Compliance	No ground water is used for mining operations. Ground Water mostly used for domestic purposes. However NOC for usage of Ground water is applied and issuing of NOC is under process.
Condition (LIII)	Quarry area is 2325 Ha. Backfilled quarry area of 1856 Ha shall be reclaimed with plantation by planting native plant species in consultation with the local DFO/Agriculture Department. The density of trees shall be around 2500 plants per ha.
Compliance	<p>Pandaveswar - At Khottadih OCP, 220.30 Ha area land has been excavated till March 2019 out of which 171.20 Ha area has been backfilled. Plantation over 16 Ha area of Khottadih OCP has been done during the year 2017-18. Since 2014-15, plantation has been done over 56 Ha land under Khottadih OCP.</p> <p>At Dalurband OC Phase-III 39.45 Ha land area has been excavated till March 2019 out of which backfilling has been carried out in 25.15 Ha area.</p> <p>At Madhaipur OC Patch 11.64 Ha land Area has been excavated till March 2019 out of which backfilling has been carried out in 2.92 Ha area. During 2018-19, plantation has been done over 5 Ha OB dump land under Dalurband OC Phase-III.</p> <p>Bankola - Agreed. Not applicable for UG mines. Continuous back filling is being done in quarried area at Kumardihi-B, Nakrakonda, and Nakrakonda (extension) OCP. Total 124.48 Ha area has been excavated till September 2017 out of which backfilling is being carried out in 15.345 Ha area.\</p> <p>Jhanjra – this condition is not applicable for Jhanjra.</p> <p>Sonepur Bazari – Continuous back filling is being done in quarried area. 807.91 Ha of land has been finally reclaimed by planting native species through Forest Department & West Bengal Wasteland Development Corporation Limited. Under the supervision of DFO Durgapur.</p>
Condition (LIV)	Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new piezometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected shall be submitted to the Ministry of Environment, Forests & Climate Change and to the Central Pollution Control Board quarterly within one month of monitoring.
Compliance	<p>Pandaveswar - Ground water level monitoring is being done regularly by CMPDIL. Ground water quality is tested and compared to Indian Drinking Water Standard (IS-10500) by CMPDIL. Process for installation of Piezometers is in progress.</p> <p>Bankola - Ground water level monitoring is done through a network of existing wells and construction of new piezometer is completed. The Borewell is constructed at Tilaboni area Hospital under Bankola Colliery.</p> <p>Jhanjra – Ground water level monitoring is being done regularly by CMPDIL. Ground water quality is tested and compared to Indian Drinking Water Standard (IS 10500) by CMPDIL. Piezometer for continuous monitoring of ground water levels has also been installed at Jhanjra</p>

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	<p>Area with continuous monitoring of ground level (Frequency – 4 times/ Day)</p> <p>Sonepur Bazari - Regular monitoring of Well water level & quality is carried out by CMPDIL. The results indicate good quality of ground water. All the data collected are being regularly submitted to the MoEF &CC and to the WBPCB with the half yearly compliance report.</p>
Condition (LV)	The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring indicates a decline in water table. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.
Compliance	<p>Pandaveswar - In underground mines, recharging of water at surface will further add to the quantum of water percolating into the underground workings. Also, no declining trend has been noticed in the mine leasehold.</p> <p>The mine discharge is effectively being utilized to meet the domestic demands of the community thus reducing the strain on ground water resources.</p> <p>In Pandaveswar Area mine water is supplied to Khottadih, Aam Bagan and Dalurband villages after treatment of mine water by Pressure filters present at Khottadih and Dalurband Villages.</p> <p>Bankola- In underground mines, recharging of water at surface will further add to the quantum of water percolating into the underground workings. Also, no declining trend has been noticed in the mine leasehold.</p> <p>At present two artificial ground water recharge system is constructed i.e Rainwater Harvesting system near SSpur Agent Office (Approximate quantity of the area covered: 1600 sqm) and T at Bankola Area Hospital (Approximate quantity of the area covered: 2500 sqm)</p> <p>Mine discharged water is supplied by tanker or pipeline to Ukhra village, Shankarpur Village, Kumardihi village, Lal Bangla, Shyamsundarpur village and other locations.</p> <p>Jhanjra – the mine discharge is effectively being utilized to meet the domestic demands of the community thus reducing the strain on ground water resources. The total domestic water demand of Jhanjra Area is met by rainwater harvesting project at purushottampur OCP. Rainwater harvesting system has also been setup at Jhanjra Area Office, Jhanjra Guest House. Chinese Hostel and Jhanjra DAV School. The water requirement of Local villages is being fulfilled by the project authorities. A dedicated R.O. plant of capacity 5000 LPH for drinking water supply has also been setup at Jhanjra.</p> <p>Sonepur Bazari – Artificial recharge measures are not required since ground water level trends show an uptrend of wells being monitored. Tanker water is provided to nearby needy villages on demand basis regularly. Financial help is also provided on opening of new well, their maintenance and installation of Hand pumps. Rain water harvesting system is installed in project office of Sonepur Bazari Area.</p>
Condition (LVI)	Sewage treatment plant shall be installed in the existing colony. ETP shall also be provided for workshop and CHP wastewater.
Compliance	Pandaveswar - At Khottadih OCP an ETP of capacity 500 KL/Day has been installed for the treatment of wastewater generated from the workshop.

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	<p>Bankola- Quantity of effluent generated from mining activities (viz. workshops) are very less, about 10 lit/day for which ETP is not required. Sewage generated from residential colony goes through Septic Tank. The feasibility study of STP at Colony by ISM under Process.</p> <p>Jhanjra- Mine water discharge is treated through settling pond and pressure filters. The sewage generated from the residential colony is treated at septic tanks.</p> <p>Sonepur Bazari- A sewage treatment plant with capacity 600 cum/d is in final stage of construction at R. N. Colony of Sonepur Bazari project. An Effluent Treatment plant with capacity 7200 cum/d is in final stage of construction for workshop and CHP wastewater. Work order issued on 21.10.2017 for construction of ETP & STP.</p>																	
Condition (LVII)	Land oustees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.																	
Compliance	Land outsees are being compensated as per the norms laid out R&R Policy of CIL.																	
Condition (LVIII)	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&CC and its concerned Regional office.																	
Compliance	Land use pattern and plantation is being monitored by satellite surveillance based on satellite imagery. Satellite monitoring of Cluster is done every year through CMPDIL Ranchi. Reports are being submitted to the MoEF & CC and its regional office and are also at the website of CMPDIL.																	
Condition (LIX)	A detailed Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest & Climate Change within 6 months of grant of Environmental Clearance.																	
Compliance	MCP for all mines have been prepared.																	
Condition (LX)	The project authorities shall in consultation with the Panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of the mine.																	
Compliance	<p>Pandaveswar - List of CSR activities carried out in Pandaveswar Area during last four financial years is as follows-</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Activity</th> <th>Expenditure</th> </tr> </thead> <tbody> <tr> <td>2016-17</td> <td>Construction of Cement concrete road at Khottadih Village.</td> <td>57.20 Lakh</td> </tr> <tr> <td>2016-17</td> <td>Medical Activities under CSR</td> <td>0.54 Lakh</td> </tr> <tr> <td rowspan="2">2017-18</td> <td>Solar Street light at Laskarbandh village</td> <td>2.72 Lakh</td> </tr> <tr> <td>Medical Activities under CSR</td> <td>0.70 Lakh</td> </tr> <tr> <td></td> <td>Construction of boundary wall, community shed, community room and cultural stage at Govindpur</td> <td>Work under progress.</td> </tr> </tbody> </table>	Year	Activity	Expenditure	2016-17	Construction of Cement concrete road at Khottadih Village.	57.20 Lakh	2016-17	Medical Activities under CSR	0.54 Lakh	2017-18	Solar Street light at Laskarbandh village	2.72 Lakh	Medical Activities under CSR	0.70 Lakh		Construction of boundary wall, community shed, community room and cultural stage at Govindpur	Work under progress.
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	2018-19	<p>Village Of Pandaveswar Area for an amount of Rs.1667024.77.</p> <p>Mobile medical van covering 40 no. of villages in Pandaveswar, Jhanjra and Bankola Area</p> <p>Distribution of aids and appliances for Dibyang people in Pandaveswar Area</p>	<p>7974000.00</p> <p>634638.00</p>	<p>Bankola - List of CSR activities are to be found in Annexure-D.</p> <p>Jhanjra – Complied. CSR works are being carried out time to time in accordance with the Company’s Act 2013.</p> <p>Sonepur Bazari – Socio-economic and other welfare measures under CSR are identified in consultation with the panchayats of the local villages and administration, Socio-economic study of following 07 tribal villages has been completed:</p> <ol style="list-style-type: none"> 1. Arsola 2. Kuchibeda 3. Banghat 4. Bangapada 5. Basak Danga 6. Nichu Basak Danga 7. Chatim Danga. <p>Socio-economic study of sonepur village has also been completed.</p>
Condition (LXI)	<p>Corporate Environment Responsibility:</p> <p>a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.</p> <p>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.</p> <p>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.</p> <p>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.</p>			
Compliance	<p>Complied.</p> <p>“Corporate Environmental Policy 2012” of Coal India Limited has already been formulated.</p> <p>“Corporate Environmental Policy 2012” of Coal India Limited has prescribed standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/condition.</p>			

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	<p>The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions has been furnished in “Corporate Environmental Policy 2012” of Coal India Limited.</p> <p>The company is having a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company.</p> <p>Socio-economic and other welfare measures under CSR are identified in consultation with the Panchayats of the local villages and administration.</p>
GENERAL CONDITIONS	
Condition (I)	No. change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment, Forest & Climate Change
Compliance	<p>Complied.</p> <p>Change in mining technology and scope of working, if any, is being made with prior approval of the Ministry of Environment, Forests & Climate Change.</p>
Condition (II)	No change in the calendar plan of production of quantum of mineral cost shall be made.
Compliance	Noted and agreed.
Condition (III)	Four ambient air quality monitoring stations shall be established in the core s\zone as well as in the buffer zone for PM ₁₀ , PM _{2.5} , SO ₂ and NO _x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.
Compliance	Air quality monitoring is carried out by CMPDIL on every fortnight and all desired parameters are well within the prescribed limits. Monitoring data are sent to the Ministry including its concerned Regional Office and to the state pollution Control Board and the Central Pollution Control Board once in six month with six monthly EC compliance. Reports are enclosed.
Condition (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 concerned Regional Office 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.
Compliance	Ambient Air quality monitoring for PM ₁₀ , PM _{2.5} , SO ₂ and NO _x and heavy metals such as Hg, As, Ni, Cd, Cr is being carried out on regular basis. Monitoring data are sent to the ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board. Once in six months with six monthly EC compliance report. Reports are enclosed.
Condition (V)	Adequate measures shall be taken for control of noise levels below 85dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
Compliance	The monitoring report is being submitted quarterly to MoEF.

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	<ul style="list-style-type: none"> • All HEMM and light vehicles are provided with silencers • Noise monitoring is being carried out regularly and found to be within permissible levels. • Workers exposed to high sound levels are provide with ear muffs and their working hours are reduced to prevent long exposure time. <p>Periodical Medical Examinations of workers is being carried out at 5 year intervals in which audiometric tests are carried out.</p>
Condition (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 19 th May 1993 and 31 st December 1993 or as amended from time to time before discharge.Oil and grease trap shall be installed before discharge of workshop effluents.
Compliance	<p>Water discharged from the mine is being regularly analyzed by CMPDIL and found conforming to the MoEF Schedule VI Standards for discharge of effluents.</p> <p>Pandaveswar - At Pandaveswar Area an ETP has been built at Khottadih OCP for treatment of workshop effluents.</p> <p>Bankola - Mine discharge water samples are tested in laboratory at CMPDI on fortnightly basis. Mine water quality conforms to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993.</p> <p>Jhanjra- Pressure filters of 32000 GPH capacity exists at Jhanjra to treat the pumped out mine water.</p> <p>Sonepur Bazari – Sedimentation of mine water takes place in the mine sump where sufficient retention time for siltation process is given to set down properly. Construction of an effluent treatment plant for treatment of wastewater from workshop and CHP is under process. Oil and grease trap has been provided at workshop.</p>
Condition (VII)	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the minerals shall be covered with tarpaulins and optimally loaded.
Compliance	<p>Vehicular emissions are kept under control and regularly monitored. Coal transportation from Colliery to railway siding is being done by tarpaulin covered trucks.</p> <p>The loaded trucks are made wet at first and then covered with tarpaulins for transportation. All the vehicles have PUC certificate which are used for coal transportation.</p>
Condition (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 analyzed through a laboratory recognized under EPA rules, 1986
Compliance	<p>Complied.</p> <p>Monitoring of environment quality parameters is being done by RI-I, CMPDIL, who has well equipped laboratories with skilled manpower.</p> <p>List of monitoring stations in Cluster 12 is enclosed.</p>
Condition (IX)	Personnel working under dusty area shall wear protective respiratory devices and they shall also be provided with adequate training and information and information safety and health aspects.
Compliance	Protective wears are being supplied and used by workmen judiciously . Adequate trainings and safety week programmes are being provided to increase the awareness and to provide necessary information on safety. Occupational health surveillance i.e. Periodic Health Examination (PME)

**Half Yearly EC Compliance report in respect of mines under
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	are being done as per norms at Central Hospital, Kalla.
Condition (X)	Occupational health surveillance program 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.
Compliance	<p>Pandaveswar / Jhanjra - Every year, 20% of the workforce is covered under occupational health surveillance programme in the form of Periodical Medical Examinations. Regular PME of employees, workers is done for any contractions due to exposure to dust and for other health related issues.</p> <p>Pandaveswar - PME of Contractual workers is also done. At Pandaveswar Area PME of 765 employees was done in Pandaveswar Area from October 2017 to March 2018. During April 2018 to March 2019 PME of 1017 workers was done in Pandaveswar Area.</p> <p>Bankola - Every year, 20% of the employees, workers are covered under occupational health surveillance programme in the form of Periodical Medical Examinations for any contractions due to exposure to dust and for other health related issues.</p> <p>This PME is mandatory for all employees. Special cases diagnosed during such PMEs are monitored at shorter intervals as directed by the PME Board of Doctors. All serious diseases and impairments are reported to DGMS at regular intervals.</p> <p>PME of 1541 workers has been conducted in Bankola Area in the year 2018-19 along with 69 Spirometry and 64 Audiometry tests. Details can be found in Annexure B.</p> <p>Sonepur Bazari – Regular PME of employees, workers is done for any contractions due to exposure to dust and for other health related issues. PME of contractual workers is also done. In the year 2018-19, PME of 131 contractual workers & 308 company workers has been done.</p>
Condition (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.
Compliance	A separate environmental management cell with qualified personnel has been established for all the Areas under Cluster 12. The cell reports to the respective Area GM and GM, Environment and Forest; ECL.
Condition (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.

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Compliance	Pandaveswar : Expenditure is given as follows:	
	F/Y	Name of Work
	2017-18	Plantation of 40000 nos. saplings in 16 Ha Reclaimed Land at Khottadih OCP
	2018-19	Plantation of total 37500 nos. of saplings in 10 Ha and 5 Ha land of Pandaveswar UG and Dalurband OC Phase-III respectively.
		Amount (in Rs.)
		2827200.00
		50% amount i.e. Rs. 1352250.00 have been paid till March 2019..
	Bankola - Expenditure is given as follows:	
	F/Y	Name of Work
	2016-17	Installation of Dust Suppression System at Bankola No. I and Bankola No II siding
		Rooftop Solar Power Generation at Bankola Area Office
	2017-18	Rainwater Harvesting system near SSpur Agent Office (Approximate quantity of the area covered: 1600 sqm)
	2017-18	Rainwater Harvesting system at Bankola Area Hospital (Approximate quantity of the area covered: 2500 sqm)
		Amount
		Rs. 24.85 lac
		Rs. 20.35 lac
		Rs 4.75 lac
		Rs 4.62 lac
	Jhanjra – Complied.	
	Sonepur Bazari – the fund earmarked for environment protection measures are kept in separate account and are not diverted for other purpose.	
Condition (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, Forest and Climate Change at http://envfor.nic.in .	
Compliance	Complied.	
Condition (XIV)	A copy of the environmental clearance letter shall be marked to concern Panchayat/ZilaParishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestions/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on Company's website.	
Compliance	A copy of the environmental clearance letter for cluster 12 has been marked to concerned Panchayat/ Zila Parishad, Municipal Corporation or Urban local body.	
Condition (XV)	A copy of the environmental clearance letter 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.	
Compliance	To be complied by State Pollution Control Board.	
Condition	The clearance letter shall be uploaded on the Company's website. The compliance status of the	

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(XVI)	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 the environmental quality parameters (air, water, noise & soil) and critical pollutant such as PM ₁₀ , PM _{2.5} , SO ₂ and NO _x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on Company's website.
Compliance	The EC letter is uploaded on the company's website. It can be found following the URL: http://www.easterncol.gov.in/notices/envclr04032015.pdf The monitoring data of environmental quality parameter (air, water and noise) and critical pollutant such as PM ₁₀ , PM _{2.5} , SO ₂ and NO _x (ambient) and critical sectoral parameters are being displayed on Company's website. The compliance status of the stipulated environmental clearance conditions is also being regularly uploaded on the website.
Condition (XVII)	The Project Proponent shall submit six monthly compliance reports on statue 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.
Compliance	Being complied. The six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions is regularly being submitted (both in haed copy and in Email) to MoEF & CC RO Bhubaneswar & WBPCB.
Condition (XVIII)	The Regional Office of the Ministry located in the Region shall monitor compliances 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.
Compliance	Noted and agreed.
Condition (XIX)	The environmental statement for each financial year ending 31 march in form-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along the status of the EC conditions and shall be sent to the respective Regional Offices of the MOEFCC by e-mail.
Compliance	Complied.

STRICTLY RESTRICTED
FOR COMPANY USE ONLY RESTRICTED

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

**ENVIRONMENTAL MONITORING REPORT
OF
CLUSTER NO. 12**

(FOR THE MONTH OF MARCH, 2019)

**(BANKOLA, JHANJRA, PANDAVESWAR &
SONEPUR BAZARI AREA)**

Eastern Coalfields Limited



cmpdi
A Mini Ratna Company

**Regional Institute-1
Asansol (WB)**

ENVIRONMENT MONITORING REPORT FOR CLUSTER NO. 12

(For the Month of March, 2019)

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CHAPTER - I
INTRODUCTION

1.0 The environmental monitoring has been carried out as per conditions laid down by MoEF&CC while granting environmental clearance to different projects. CMPDIL has trained manpower and well equipped laboratory to carry out monitoring, analysis and R&D work in the field of environment.

Reports have been prepared for submission to MoEF&CC & SPCB and other statutory authorities.



CHAPTER-II

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

2.1.1 Ambient Air Quality Sampling Locations

I. Industrial Area Monitoring Location**i) Kendra village (12A1): Industrial Area**

The sampler was placed in Manager's Office of Kendra Colliery. This site was selected to assess the present ambient air quality status in residential area of core zone of Kendra Colliery.

ii) Dalurband village (12A10): Industrial Area

The sampler was placed at Agent office of Dalurband Colliery. This station was selected to assess the ambient air quality of Industrial Area in the core zone where mining activities are in progress.

iii) Mandarboni village (12A11): Industrial Area

The sampler was placed at Co-Operative office. This station was selected to assess the ambient air quality of Industrial Area in the core zone where mining activities are in progress.

iv) Pandaveswar village (12A12): Industrial Area

The sampler was placed at Canteen of Pandaveswar Colliery. This station was selected to assess the ambient air quality of Industrial Area in the core zone where mining activities are in progress.

v) Madhaipur village (12A13): Industrial Area

The sampler was placed at Pit Office of Madhaipur Colliery. This station was selected to assess the ambient air quality of Industrial Area in the core zone where mining activities are in progress.

II. Residential Area Monitoring Location**vi) Kumardihi village (12A2) : Residential Area**

The sampler was placed at Store office of Kumardihi A Colliery This site was selected to assess the present ambient air quality status in residential area of core zone of Kumardihi Colliery..

vii) Danya village (12A3): Residential Area

The Air sampler was placed at Danya Village of Danya Colliery ECL Colony Quarter. This site was selected to assess the present ambient air quality status in residential area of buffwe zone of South Shamla Colliery.

viii) Banbahal village (12A4): Residential Area.

The sampler was placed GM Office of Kenda Area. This site was selected to assess the present ambient air quality status in residential area of buffer zone of Shankarpur OCP of Kenda Area.

ix) Ichhapur village, (12A5): Residential Area.

The sampler was placed at Ichhapur High school of Ichhapur Village. This site was selected to assess the present ambient air quality status in residential area of buffer zone of Madhaiganj Colliery.

x) Madhaiganj village, (12A6): Residential Area.

The sampler was placed at Chapla Village. This site was selected to assess the present ambient air quality status in residential area of buffer zone of Madhiganj Colliery.

xi) Bankola village (12A14): Residential Area

The sampler was placed at GM Office of Bankola Colliery. This station was selected to assess the ambient air quality of Residential Area in the core zone of Bankola colliery.

2.2 Methodology of sampling and analysis

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂) and Nitrogen Oxides (NO_x). Respirable Dust Sampler (RDS) & Fine Dust Sampler (FDS) were used for sampling of PM₁₀ & gaseous pollutants and PM_{2.5} respectively. The samples were analysed in Environmental Laboratory of CMPDI, RI-I, Asansol.

2.3 Results & Interpretations

The results of Ambient Air Quality are presented in tabular form along with for each monitoring station. Sampling stations have been chosen keeping in view predominant wind direction and have been classified as Permanent, Pre monsoon (April – September) & Post monsoon (October – March) air sampling stations. The interpretations of different parameters are given below:

2.3.1 Ambient air quality

Particulate Matter (PM₁₀)

In Industrial area varies from 93.2 to 96.5 µg/m³ & in Residential area from 85.5 to 95.7 µg/m³.

Fine Particulate Matter (PM_{2.5})

In Industrial area from 51.2 to 56.7 µg/m³ & in Residential area from 40.7 to 43.8 µg/m³

Sulphur Dioxide (SO₂)

In Industrial area below 10 µg/m³ & in Residential area below 10 µg/m³.

Oxides of Nitrogen (NO_x):

In Industrial area varies from 21.8 to 24.8µg/m³ & in Residential area from 17.3 to 20.7 µg/m³.

AMBIENT AIR QUALITY DATAName of the Company: **Eastern Coalfield Limited**Year: **2019**Name of the Project: **Mines of Cluster No. 12**Month : **March.****Industrial Area****1st fortnight**

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
12A1	Kendra Colliery	12-Mar-19	93.2	54.3	<10.0	24.8
12A10	Dalurband Colliery	11-Mar-19	95.5	54.1	<10.0	23.6
12A11	Mandarboni Colliery	14-Mar-19	96.2	53.9	<10.0	24.5
12A12	Pandaveswar Colliery	14-Mar-19	95.8	54.4	<10.0	24.5
12A13	Madhaipur Colliery	2-Mar-19	94.4	53.9	<10.0	23.8

2nd fortnight

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
12A1	Kendra Colliery	19-Mar-19	93.6	56.7	<10.0	23.8
12A10	Dalurband Colliery	22-Mar-19	95.9	53.7	<10.0	22.6
12A11	Mandarboni Colliery	25-Mar-19	96.5	52.6	<10.0	21.8
12A12	Pandaveswar Colliery	25-Mar-19	96.2	51.2	<10.0	23.7
12A13	Madhaipur Colliery	25-Mar-19	94.8	53.5	<10.0	22.9

AMBIENT AIR QUALITY DATA

Name of the Company: **Eastern Coalfield Limited**Year : **2019**Name of the Project: **Mines of Cluster No. 12**Month : **March.**

Residential Area

1st fortnight

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
12A2	Kumardihi village	12-Mar-19	94.5	40.9	<10.0	18.7
12A3	Danya village	12-Mar-19	95.2	41.3	<10.0	20.5
12A4	Banbahal village	7-Mar-19	86.7	41.1	<10.0	19.3
12A5	Ichhapur village	7-Mar-19	85.5	40.7	<10.0	18.2
12A6	Chapla village	11-Mar-19	86.0	42.3	<10.0	19.4
12A14	Bankola village	2-Mar-19	94.8	42.1	<10.0	18.6

2nd fortnight

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
12A2	Kumardihi village	19-Mar-19	94.8	41.2	<10.0	18.6
12A3	Danya village	19-Mar-19	95.7	42.6	<10.0	17.3
12A4	Banbahal village	19-Mar-19	86.9	43.8	<10.0	18.7
12A5	Ichhapur village	22-Mar-19	86.1	41.2	<10.0	19.4
12A6	Chapla village	22-Mar-19	86.5	42.5	<10.0	20.7
12A14	Bankola village	25-Mar-19	95.2	41.6	<10.0	18.6

Environmental Standards for Ambient Air Quality (AAQ) :

Station Category	<i>Environmental standard for Raniganj Coalfield vide MOEF, Govt. of India, Gazette Notification No. GSR 742 (E) dated 25.09.2000 for 24 hourly samples at 500 meters from dust generating point</i>			<i>National Ambient Air Quality Standards (NAAQS), 2009 for industrial, residential and rural areas for 24 hours samples</i>
	Pollutant Concentration (µg/m³)			
	PM ₁₀	SO ₂	NO _x	PM _{2.5}
Industrial	300.0	120.0	120.0	60.0
Residential	100.00	80.0	80.0	

AMBIENT AIR METAL ANALYSIS REPORTName of the Company: **Eastern Coalfield Limited**Year : **2019**Name of the Project : **Mines of Cluster No. 12**Month : **March.**

Station No.	Station Name	Date of Sampling	Arsenic (ng/m ³)	Cadmium (µg/m ³)	Chromium (µg/m ³)	Mercury (µg/m ³)	Nickel (ng/m ³)	Lead (µg/m ³)
Method of Detection			Atomic Absorption Spectrophotometric (AAS)					
Detection Limit			1.0	0.001	0.01	0.001	0.10	0.005
12A1	Kendra village	12-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A2	Kumardihi village	12-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A3	Danya village	12-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A7	Barajora village	7-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A8	Konda village	7-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A9	Tajpur village	11-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A10	Dalurband village near Railway siding	11-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A11	Mandarboni village near Railway siding	14-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A12	Pandaveswar village near Rly siding	14-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A13	Madhaipur village near Railway siding	2-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
12A14	Bankola village	2-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005

Environmental standards:

National Ambient Air Quality Standards (NAAQS) for residential, industrial and rural areas for 24 hourly/yearly samples:

Heavy Metal	Arsenic (ng/m ³)	Cadmium (µg/m ³)	Chromium (µg/m ³)	Mercury (µg/m ³)	Nickel (ng/m ³)	Lead (µg/m ³)
Concentration	6	Not specified	Not specified	Not specified	20	0.5

CHAPTER – III

WATER QUALITY MONITORING

3.1 Location of sampling sites and their rationale

- i) **Pandaveswar UG (12MW1)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after sedimentation tank.
- ii) **Dalurband OC Phase-III (12MW2)**
This location has been selected to monitor the discharge quality of Mine effluent use for sparkling at road and mining area.
- iii) **Manderboni UG (12MW3)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams
- iv) **South Samla UG (12MW4)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams.
- v) **Madhaipur UG (12MW5)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after sedimentation tank.
- vi) **Sonepur Bazari OC (12MW6)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after siltation pond.
- vii) **Kumardihi B UG (12MW7)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after sedimentation tank.
- ix) **Nakrakonda UG (12MW9)**
This location has been selected to monitor the discharge quality of Mine effluent use in boiler and remaining discharge to natural surface streams after sedimentation tank.
- x) **Jhanjra UG (12MW10)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after sedimentation tank.
- xi) **Tilaboni UG (12MW11)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after sedimentation tank.
- xii) **Shyamsundarpur UG (12MW12)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after sedimentation tank.

- xiii) **Bankola UG (12MW13)**
This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams
- xiv) **Kottadih UG & OC (12MW14)**
This location has been selected to monitor the discharge quality of Mine effluent use for boiler and remaining discharge to natural surface streams after sedimentation tank.
- xv) **Kumardihi A UG (12MW15)**
This location has been selected to monitor the discharge quality of Mine effluent use for boiler and remaining discharge to natural surface streams after sedimentation tank.
- xvi) **Madhaipur OC (12MW16)**
This location has been selected to monitor the discharge quality of Mine effluent discharge to natural surface streams.

3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. The effluent samples were collected and analysed for five parameters on fortnightly basis and all parameters on Half-yearly basis. The Ground water samples were collected and analysed for all parameters on annualy basis. Parameters like pH and Free Residual Chlorine were analysed on-site while collecting the samples. Thereafter the samples were preserved and analysed at the field laboratory located at RI-I Office campus.

3.3 Results & Interpretations

The results are given in tabular form along with the applicable standards. Results are compared with General Standards for Discharge of Effluent (Schedule VI) in case of effluent/mine water sample and compared with IS.10500: 2012 in case of drinking water sample. Results show that most of the parameters are within the permissible limits.

Cluster No. 12

CMPDIL

WATER QUALITY DATA (Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project: **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **1. 12MW1- Pandaveswar UG 2. 12MW2- Dalurband UG 3. 12MW3- Manderboni UG
4. 12MW4- South Samla UG 5. 12MW5- Madhaipur UG**

First Fortnight data

Sl. No.	Parameters	Analytical Results					General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit					
	Station Code	12MW1	12MW2	12MW3	12MW4	12MW5								
	Date of sampling	All parameters result is given separately for the month of March'19												
1	pH											5.5 - 9.0	Electrometric	0.01
2	TSS											100 (Max)	Gravimetric Method	10.0
3	TDS											Not specified	Gravimetric Method	25.0
4	Oil & Grease											10 (Max)	Partition Gravimetric	2.0
5	COD											250 (Max)	Closed Reflux	4.0

Second Fortnight data

Sl. No.	Parameters	Analytical Results					General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Station Code	12MW1	12MW2	12MW3	12MW4	12MW5			
	Date of sampling	16-Mar-19	16-Mar-19	16-Mar-19	16-Mar-19	16-Mar-19			
1	pH	8.22	8.31	7.46	8.21	8.54	5.5 - 9.0	Electrometric	0.01
2	TSS	34	26	32	28	26	100 (Max)	Gravimetric Method	10.0
3	TDS	536	558	414	480	538	Not specified	Gravimetric Method	25.0
4	Oil & Grease	<2.0	<2.0	<2.0	<2.0	<2.0	10 (Max)	Partition Gravimetric	2.0
5	COD	24	12	20	16	28	250 (Max)	Closed Reflux	4.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA (Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project: **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **6. 12MW6- Sonepur Bazari OC 7. 12MW7- Kumardihi B UG 9. 12MW9- Nakrakonda UG**
10. 12MW10- Jhanjra UG 11. 12MW11- Tilaboni UG

First Fortnight data

Sl. No.	Parameters	Analytical Results					General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit					
	Station Code	12MW6	12MW7	12MW9	12MW10	12MW11								
	Date of sampling	All parameters result is given separately for the month of March'19												
1	pH											5.5 - 9.0	Electrometric	0.01
2	TSS											100 (Max)	Gravimetric Method	10.0
3	TDS											Not specified	Gravimetric Method	25.0
4	Oil & Grease											10 (Max)	Partition Gravimetric	2.0
5	COD											250 (Max)	Closed Reflux	4.0

Second Fortnight data

Sl. No.	Parameters	Analytical Results					General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Station Code	12MW6	12MW7	12MW9	12MW10	12MW11			
	Date of sampling	16-Mar-19	16-Mar-19	16-Mar-19	18-Mar-19	18-Mar-19			
1	pH	7.49	7.58	8.54	8.34	8.52	5.5 - 9.0	Electrometric	0.01
2	TSS	32	24	28	22	32	100 (Max)	Gravimetric Method	10.0
3	TDS	618	546	604	752	322	Not specified	Gravimetric Method	25.0
4	Oil & Grease	<2.0	<2.0	<2.0	<2.0	<2.0	10 (Max)	Partition Gravimetric	2.0
5	COD	12	20	48	12	24	250 (Max)	Closed Reflux	4.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA (Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project: **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **12. 12MW12- Shyamsundarpur UG 13. 12MW13- Bankola UG 14. 12MW14- Kottadih UG & OC**
15. 12MW15- Kumardihi A UG 16. 12MW16- Kottadih OC

First Fortnight data

Sl. No.	Parameters	Analytical Results					General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit					
	Station Code	12MW12	12MW13	12MW14	12MW15	12MW16								
	Date of sampling	All parameters result is given separately for the month of March'19												
1	pH						All parameters result is given separately for the month of March'19					5.5 - 9.0	Electrometric	0.01
2	TSS											100 (Max)	Gravimetric Method	10.0
3	TDS											Not specified	Gravimetric Method	25.0
4	Oil & Grease											10 (Max)	Partition Gravimetric	2.0
5	COD	250 (Max)	Closed Reflux	4.0										

Second Fortnight data

Sl. No.	Parameters	Analytical Results					General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Station Code	12MW12	12MW13	12MW14	12MW15	12MW16			
	Date of sampling	18-Mar-19	18-Mar-19	18-Mar-19	18-Mar-19	18-Mar-19			
1	pH	8.16	7.35	8.49	8.42	8.44	5.5 - 9.0	Electrometric	0.01
2	TSS	42	22	26	24	34	100 (Max)	Gravimetric Method	10.0
3	TDS	500	284	360	454	534	Not specified	Gravimetric Method	25.0
4	Oil & Grease	<2.0	<2.0	<2.0	<2.0	<2.0	10 (Max)	Partition Gravimetric	2.0
5	COD	8	16	40	24	36	250 (Max)	Closed Reflux	4.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **1. 12MW1- Pandaveswar UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	26	100	Gravimetric	10
4	pH	8.30	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	31.1	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.54	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.52	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	6	30	Bioassy	2.0
12	COD	32	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.03	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.57	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.84	5.0	Molybdovanadate	0.30
23	Sulphide	0.008	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.26	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.8	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	504	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **2. 12MW2- Dalurband UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	28	100	Gravimetric	10
4	pH	8.16	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.5	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.58	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.64	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	5	30	Bioassy	2.0
12	COD	16	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.32	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.68	5.0	Molybdovanadate	0.30
23	Sulphide	0.007	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.28	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.7	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	580	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **3. 12MW3- Manderboni UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	32	100	Gravimetric	10
4	pH	7.74	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	28.9	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.64	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.72	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	2	30	Bioassy	2.0
12	COD	28	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.04	3.0	AAS-Flame	0.03
18	Zinc	0.03	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.60	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.44	5.0	Molybdovanadate	0.30
23	Sulphide	0.006	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.30	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.2	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	428	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **4. 12MW4- South Samla UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	34	100	Gravimetric	10
4	pH	8.35	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.9	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.74	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.79	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	8	30	Bioassy	2.0
12	COD	24	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.03	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.50	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.58	5.0	Molybdovanadate	0.30
23	Sulphide	0.009	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.32	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.0	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	446	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **5. 12MW5- Madhaipur UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	20	100	Gravimetric	10
4	pH	8.28	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.8	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.48	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.52	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	6	30	Bioassy	2.0
12	COD	32	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.42	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.66	5.0	Molybdovanadate	0.30
23	Sulphide	0.008	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.34	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.0	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	492	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **6. 12MW6- Sonepur Bazari OC**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	18	100	Gravimetric	10
4	pH	7.41	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	30.5	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.64	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.54	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	5	30	Bioassy	2.0
12	COD	20	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.48	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.78	5.0	Molybdovanadate	0.30
23	Sulphide	0.010	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.26	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.6	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	518	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **7. 12MW7- Kumardihi B UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	32	100	Gravimetric	10
4	pH	8.23	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	31.8	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.54	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.68	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	4	30	Bioassy	2.0
12	COD	28	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.04	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.34	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.80	5.0	Molybdovanadate	0.30
23	Sulphide	0.006	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.28	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.4	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	574	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **9. 12MW9- Nakrakonda UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	7-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	18	100	Gravimetric	10
4	pH	7.50	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	31.6	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.78	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.49	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	5	30	Bioassy	2.0
12	COD	40	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.04	3.0	AAS-Flame	0.03
18	Zinc	0.03	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.62	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.16	5.0	Molybdovanadate	0.30
23	Sulphide	0.010	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.28	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	2.6	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	600	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **10. 12MW10- Jhanjra UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	7-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	32	100	Gravimetric	10
4	pH	8.27	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.5	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.72	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.62	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	2	30	Bioassy	2.0
12	COD	24	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.26	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.70	5.0	Molybdovanadate	0.30
23	Sulphide	0.011	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.32	2.0	AAS-Flame	0.02
26	Iron	0.12	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.2	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	730	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **11. 12MW11- Tilaboni UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	16	100	Gravimetric	10
4	pH	7.77	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.2	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.68	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.48	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	2	30	Bioassy	2.0
12	COD	36	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.04	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.30	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.28	5.0	Molybdovanadate	0.30
23	Sulphide	0.012	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.34	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.4	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	300	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **12. 12MW12- Shyamsundarpur UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	24	100	Gravimetric	10
4	pH	8.12	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	30.4	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.48	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.64	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	4	30	Bioassy	2.0
12	COD	12	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.38	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.46	5.0	Molybdovanadate	0.30
23	Sulphide	0.012	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.30	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	0.3	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	468	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **13. 12MW13- Bankola UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	5-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	26	100	Gravimetric	10
4	pH	8.23	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	30.7	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.52	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.76	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	5	30	Bioassy	2.0
12	COD	20	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.40	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.42	5.0	Molybdovanadate	0.30
23	Sulphide	0.010	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.32	2.0	AAS-Flame	0.02
26	Iron	0.12	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.0	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	272	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **14. 12MW14- Kottadih UG & OC**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	28	100	Gravimetric	10
4	pH	7.84	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	31.8	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.58	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.68	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	2	30	Bioassy	2.0
12	COD	44	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.04	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.32	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.40	5.0	Molybdovanadate	0.30
23	Sulphide	0.008	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.26	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	2.2	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	344	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **15. 12MW15- Kumardihi A UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	4	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	32	100	Gravimetric	10
4	pH	7.93	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.9	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.62	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.76	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	6	30	Bioassy	2.0
12	COD	32	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.03	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.50	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.26	5.0	Molybdovanadate	0.30
23	Sulphide	0.006	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.30	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.5	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	432	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 12

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 12**

Month: **March.**

Name of the Stations & Code : **16. 12MW16- Kottadih OC**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	6-Mar-19			
1	Colour	3	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	30	100	Gravimetric	10
4	pH	8.09	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.3	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.52	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.64	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	4	30	Bioassy	2.0
12	COD	40	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.04	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.44	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.52	5.0	Molybdovanadate	0.30
23	Sulphide	0.012	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.26	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.0	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	504	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

ANNEXURE – B:

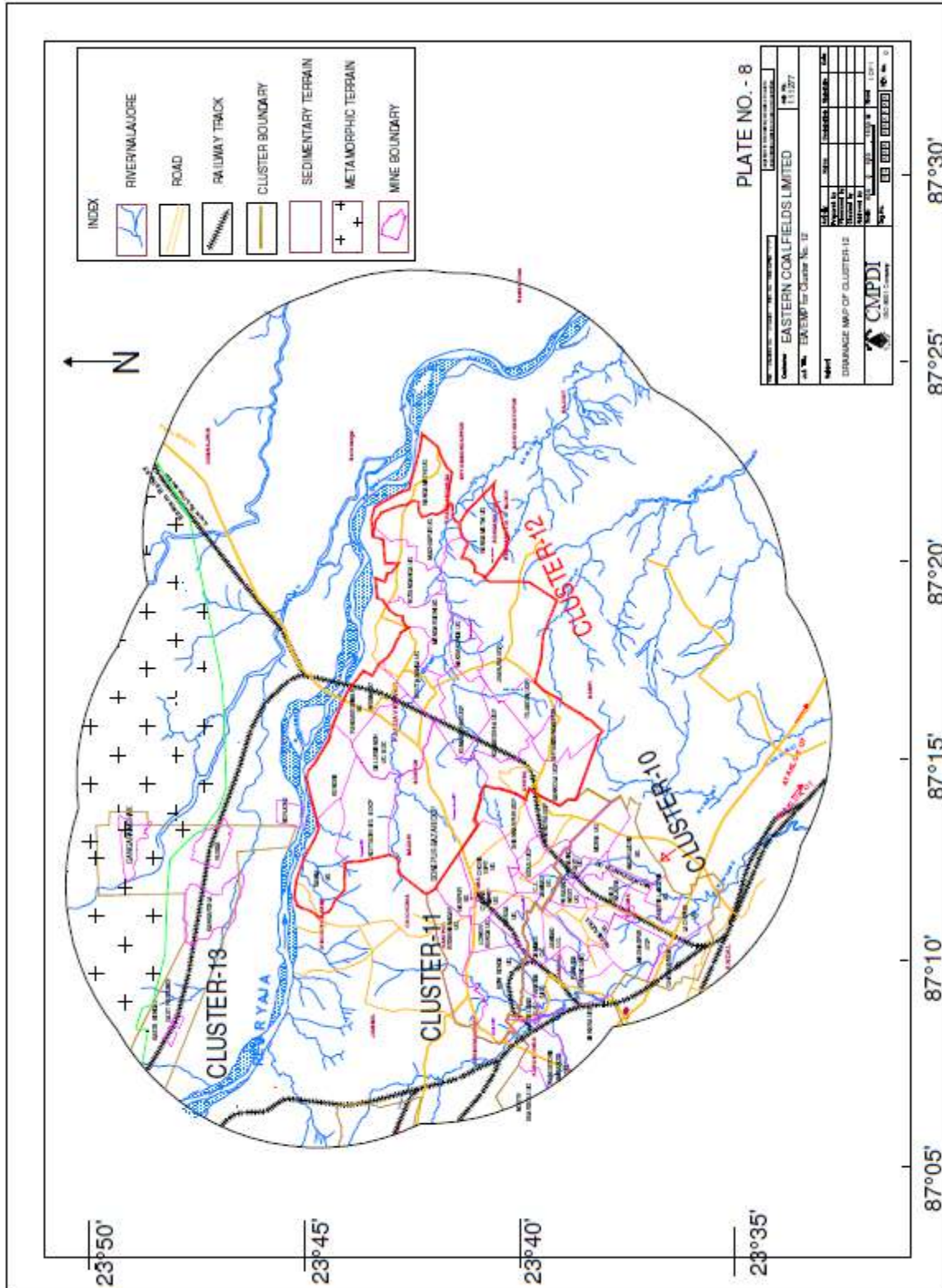
Periodic Medical Examination Report (2018-2019)

Sl No	Name of Colliery	Man Power	Target /Month	PME IN 2018-2019												Total
				Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	
1	Bankola Colliery	1343	28	33	10	28	45	21	29	23	30	25	24	22	318	
2	S.S. Pur Colliery	1199	29	11	42	36	31	33	9	0	12	28	66	69	366	
3	Khandra Colliery	811	15	11	12	14	16	14	6	25	17	11	3	4	148	
4	Kumardhi A Colliery	726	5	12	9	8	19	3	14	7	17	9	3	40	146	
5	Kumardhi B Colliery	525	6	3	9	1	14	15	1	9	19	8	5	10	100	
6	Moiri Colliery	335	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	Tilaboni Colliery	906	19	14	10	6	17	25	16	9	5	31	17	8	177	
8	Sankarpur Colliery	873	8	16	15	21	35	11	3	12	21	14	9	10	175	
9	Nakrakonda Colliery	330	0	8	4	6	14	4	8	2	0	0	0	0	46	
10	GM Office & Hospital	264	0	0	0	0	0	0	0	0	57	3	0	0	60	
	Ukhra RW		16	11	4	0	0	0	0	0	4	0	0	0	35	
	Total	7312	126	119	115	120	191	126	86	88	182	129	127	167	1576	
1	Pathology		126	119	115	120	191	126	81	62	182	129	125	167	1543	
2	Xray		126	119	115	120	191	126	74	88	169	101	118	145	1492	
3	ECG		10	13	15	15	19	22	16	15	15	15	15	13	183	
4	Spirometry		5	6	5	5	6	7	7	6	8	5	5	4	69	
5	Audiometry		5	6	5	5	6	7	7	3	7	5	5	3	64	
A.	Contractual Worker		31	18	0	0	0	0	0	1	0	0	1	0	51	
B.	Female Worker		3	0	1	1	8	6	3	5	24	7	4	6	68	
C.	Above-45yrs		93	75	79	100	157	99	62	58	143	87	89	125	1167	
D.	Below 45yrs		33	44	36	20	34	27	24	30	39	42	38	42	409	

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ANNEXURE – C:

Surface Drainage Pattern



ANNEXURE – D:

CSR Activities (2018-19)

Liability and Expenditure Report for the Year 2018-19					
Sl No	Name of the Work	BC amount for the year 2017-18	BC amount for the year 2018-19	Revalidation amount for the year 2018-19	Expenditure in the year 2018-19
1	Unnati- A Microenterprise of Handicrafts run by women	Rs 2490677	0	1267200	1244355
2	Diet for Football Academy students	0	Rs 128700	0	128700

M. Mondal

ANNEXURE – E:

Images



Figure 1 Wet Road after Mobile Water Sprinkling



Figure 2 Natural Vegetation along Roadside