



PUBLIC HEARING DOCUMENT

on

EIA & EMP

prepared for obtaining
Environmental Clearances
for

Cluster No. 3
(Group of Mines)
Salanpur Area, ECL

Eastern Coalfields Limited,

PO: Sanctoria, Dist: Burdwan (WB)

1.0 Need for Environmental Clearances for taken over Coal Mines

A large number of taken over mines from pre – nationalization period, mostly underground mines, in the old coalfields of Raniganj (including Mugma) are operating on the basis of “Consents’ received from the State Pollution Control Boards and do not have environmental clearance from the Ministry of Environment & Forests. Environmental clearance (EC) for such mines will be required at the time of lease renewal or at the time of expansion, if any. However, if these mines are brought under the ambit of EC, several measures for environmental protection and pollution control can be put in place. Mining in this region has been going on for two centuries and a number of environmental problems related to mining and to the consequent industrialization of the area need to be addressed. Also, several proposals as envisaged for the cluster can be implemented only after obtaining the Environmental Clearance.

2.0 Concept of Clusters

There are a total number of 111 existing mines in ECL. The work of obtaining EC for each mine, individually, would take a lot of time. Since the environmental problems being faced are of regional nature and not confined to individual mines alone, it was proposed that cluster/groups of such mines may be identified for preparing cluster-wise integrated EIA & EMPs, addressing environmental concerns comprehensively and ensuring effective co-ordination of environmental control measures within each cluster. The matter was originally discussed between Secretary (Coal) and Secretary, MoEF on 28th February, 2008 and it was agreed to prepare EIA & EMPs for clusters of mines instead of individual mines to speed up the process. Accordingly, the mines were distributed into 13 clusters on the suggestions and directions given by MoEF during several rounds of discussions and was approved by MoEF in the EC meeting held in August, 2009. The EIA & EMP for Cluster No. 3 has been prepared on the basis of ‘Terms of Reference’ issued by MoEF vide letter no. J-11015/ 13 /2010 - IA.II(M) dated 23 – 07 – 2012.

3.0 Cluster No. 3 in brief

a. Location

Cluster No. 3 is located in the north-western part of Raniganj Coalfield in Burdwan district of West Bengal. It is situated at about 10 kms north of Asansol and 40 kms west of Durgapur. The area is well connected by roads and railways. The Eastern Railway Main line passes through the western part of the block. Bonjemehari railway siding is present on the above railway line inside the cluster. G.T.Road (NH-2) passes on the south of the block. Maithon reservoir, a

multipurpose project of Damodar Valley Corporation, built over river Barakar is at a distance of 6 Kms west of the cluster boundary. River Ajay flows about 5 kms north of the cluster. Geologically, the mines of this cluster fall in the Sangramgarh, Sadhna, Dabor, Central Salanpur, Central Salanpur South, Chalbalpur Mahismura, Kalyaneswari and Bonjemehari geological blocks. The mines of the cluster are in Salanpur Area (Administrative Block) of ECL.

The cluster includes the following villages / wards / towns (CT) –

1. Achhra
2. Dabar
3. Alkusha
4. Sadhna
5. Lohat
6. Radhaballavpur
7. Shyamdi
8. Salanpur
9. Khudika
10. Dhundabad
11. Banbirdi
12. Bolkunda
13. Dendua

b. Mines within the Cluster, Mine Leaseholds, Capacity and Life

Cluster-3 consists of 1 (one) underground mine and 2 (two) mixed mines (OC + UG). Besides, 3 (three) potential opencast patches have also been identified within the respective leaseholds of the mines of the cluster. The mines are administratively under Salanpur Area of ECL.

The list of mines after incorporating the patches is tabulated as under –

#	Name of Mine	UG / OC	Leasehold Area (Ha)	Normative/ Peak Capacity (MTY)		Life (Years)
1	Dabor UG	UG	1204	0.06	0.07	> 25
	Dabor-Phase I & II OC Mine* (347Ha)	OC		2.00	2.30	10
2	Bonjemehari UG	UG	163	0.07	0.07	> 25
	Bonjemehari OC Mine* (50 Ha)	OC		0.35	0.45	4
3	Sangramgarh UG	UG	261	0.05	0.08	> 25
	Sangramgarh Extension – OC Mine* (25 Ha)	OC		0.80	1.00	4
Total			1628	3.33	3.97	

* New proposed patches/mines (Area of the patch given in brackets)

Note: Environmental Clearances for the mines is sought at their peak production capacities.

The registered addresses of the mines are given as under –

SI #.	Name of Mine	Address
1	Dabor UG & OC Patch	Dabor Underground Project, PO- Samdih, District-Burdwan, State- West Bengal, PIN- 713359
2	Bonjemehari UG	Bonjemehari OC & UG office, PO-Salanpur District- Burdwan, State- West Bengal, PIN- 713357
3	Sangramgarh UG	Sangramgarh OC & UG office, PO- Samdih, District-Burdwan, State- West Bengal, PIN- 713359

c. Production Scenarios for Environmental Impact Assessment (EIA)

The Environmental Impact assessment has been carried out for peak production levels under 3 scenarios as shown below –

Present Scenario (mines operating at present production levels, ie actual for 2011 - 12)	Future Scenario – 1 (after adding production from proposed OC patches to A)		Future Scenario – 2 (OC patches are exhausted and UG mines producing at envisaged capacity)	
A	B		C	
Actual 2011 – 12 *	Normative	Peak*	Normative	Peak*
0.483 MT	3.633 MTY	3.76 MTY	0.18 MTY	0.22 MTY
1606 TPD	12106 TPD	12540TPD	545 TPD	667 TPD

d. Area

Total area of Cluster No. 3 is 1628.00 Ha and entirely within the leasehold of ECL. Breakup of the various land-uses is tabulated as under –

SI No	Land-use	Area (Ha)	%age
1	Agriculture	542.00	33.29
2	Tanks	143.00	8.78
3	Village	105.20	6.46
5	Road & Rail	34.20	2.10
7	Excavated area	60.10	3.69
8	OB dump	15.52	0.95
9	Danga/Waste land	430.10	26.42
10	Plantation	120.00	7.37
11	Built Up Area	20.30	1.25
12	Colliery Infrastructure	24.00	1.47
13	Others	133.58	8.21
Total		1628.0	100.00

4.0 Present Environmental Scenario

Baseline data and other studies were carried out to assess the present environment conditions prevailing in the cluster. These included the following studies –

a. Landscape

The cluster area consists of barren, rocky and rolling country with laterite soil. Coarse, gritty soil blended with rock fragments has been formed from the weathering of pegmatites, quartz veins and conglomeratic sandstones. This soil is of reddish colour, medium to coarse in texture, acidic in reaction, low in nitrogen, calcium, phosphate and other plant nutrients. Water holding capacity of this soil increases with depth as well as with the increase of clay portions. Although the soil is generally not fit for cultivation, paddy can be grown in the areas which become waterlogged during the monsoons. The soil generally supports plantation with necessary additives and care.

b. Topography and Drainage

General RL of the cluster varies between 135 to 174 m (Muktaichandi Hill). The area is generally covered by soil and alluvium. Damodar River with its tributaries controls the main drainage of the property. There is no adverse effect of mining on these water bodies.

c. Climate

The area experiences a humid tropical climate with summer lasting from the month of March to May and winter from the month of November to February. Long-term meteorological data generated by Indian Meteorological Department was collected from IMD, Pune. It has been found that temperature varies from 2.80C (January,1989) to 46.40C (May,1988), relative humidity from 15% (April,1989) to 88% (July,1974). Maximum monthly rainfall of 894mm was recorded in September,1978 however the average annual rainfall is 1352 mm. Mean total cloud cover in a month is found to vary from 0.2 octas (January,1974) to 7.7 octas (August,1986). Maximum mean wind speed was recorded as 16 Kmph (March,1980). The average days of calm in a month is found to be 11.21 days. Predominant wind direction was from Southeast & Northeast quadrant during Post-monsoon and from North and north east during winter.

d. Flora & Fauna

Flora

The general vegetation is essentially tropophilous but with a tendency towards xerophytes. The flora of the area is characterized by the arborescent species such as Simul (*Salmalia malabarica* Schott. & Endl.), Neem (*Azadirachta indica*), Amlaki (*Phyllanthus embica*), Lannea coromandelica Merr., Narikel (*cocos nucifera*), Khejur (*Phoenix dactylifera* L.), Tal (*Borassus flabellifer* L.), Bat (*Ficus bengalensis* L.), Asvattha (*Ficus religiosa* L.), Palas (*Butea frondosa*), Krishnachuda (*Caesalpinia Pulcherrima*), Am (*Mangifera indica* L.) and shrubby species such as ashshoda (*Glycosmis pentaphylla* Corr.), Pianj, Rasun, Rajanigandha (*Polyanthes tuberosa* Willd.), Ghentu or Bhat (*Clerodendron infortunatum* Gaertn.), Kurabaka (*Barleria Cristata*), Gulancha (*Tinospora cordifolia*), Tulsi (*Ocimum sanctum*), Solanum torvum SW., S. Verbascifolium L., Trema orientalis Bl., Shiora (*Streblus asper* Lour.) and Dumur (*Ficus hispida* L.).

The uplands of Asansol subdivision and the laterite area of the district are in places covered with Sal (*Shorea robusta* Gaertn.), Mohua (*Madhnea latifolia*), Palas (*Butea monosperma*), Bans (*Bambusa arundinacea*), Shireesha (*Albizzia lebbek*), Arka (*Calotropis gigantea*), Kend (*Diospyros melanoxylon*), Arjun (*Terminalia Arjuna*) and Ashan (*T. tomentosa*). The common plants in hedges and wastelands are lal-bharenda (*Jatropha gossypifolia* L.), Ban-okra (*Urena lobata* L.), Heliotropium strigosum Willd., Hati-soond (*H. indicum* L.), Ulu (*Imperata arundinacea*), Sida veronicifolia Lam., S.cordifolia L., etc. (Source : District Website).

Trees of economic importance are to be found in abundance all around and these could be classified in three groups – fruit-bearing trees, trees for timber and fuel and flowering trees. Among fruit-bearing trees, Mango, Jacktree, date-palm, imli, plum (ber), Wood Apple (Angle mamelos), custard apple; Avla, Black plum and papaya are commonly found and jack fruit and mango are relatively in greater number. The timber trees are mostly Mahua (*basis latifolia*) Gamhar (*genelina arborea*), Asan (*Terminalia tomentosa*) Murga (*Pterocarpus marsupium*), Shisham (*Dahbergia sissso*), Sal (*Shorearobusta*), Bamboos (*Dendrocalamus strictus*) and the Margosa tree etc. Besides trees like Siris, Semar (Silk Cotton) and Sahjan (*Morniga aneiphera*) etc. are also available.

Low lands of the area are cultivated by Paddy, Maize, Arhar and Kulthi. Vegetables like Brinjal, Tomato, Potato, Chili, Bean (Sem), Jhinga, Parol are cultivated.

Fauna

The carnivora of the area comprise jackal and other smaller species. Monkeys abound including the variety known as Hanuman. Poisonous snakes include several kinds of cobra, the karait and the deadly Russell's viper. Other most frequently seen varieties are the Dhamna and various species of harmless grass snakes.

The avifauna are pea-fowl, jungle-fowl, jungle crow, house crow, treepie, common babbler, common jora, gold-fronted chloropsis, red-vented babul, red-whiskered bulbul, red spotted bluethroat, brown-backed robin, Shama, Tickell's blue flycatcher, paradise flycatcher, wood shrike, black drongo, tailor bird, streaked fantail warbler, golden oriole, common mayna, pied mayna, white-backed munia, white-throated munia, spitted munia, red munia, yellow-throated sparrow, house sparrow, woodpecker, India cuckoo, pied crested cuckoo, koel, parakeet, nilkantha, bee-eater, kingfisher, hornbill, hoopoe, horned owl, spotted owlet, jungle owlet, griffon vulture, long-billed vulture, scavenger vulture, lagger falcon, small spotted eagle, brahminy kite, pariah kite, sparrow hawk, various types of pigeon and dove, goose, duck, teal, lapwing, white necked stork and some varieties of egret and heron.

e. Population profile within the ClusterDemography

The cluster covers part of Salanpur Area of ECL. The demographic profile of the population within the cluster is tabulated as under –

No of Households	Total Population	Total Male	Total Female	0-6 Population	Schedule Caste	Schedule Tribe	Literates
5610	27737	14350	13387	3554	11663	1423	17268
		Sex Ratio- 932		12.8 %	42 %	5.13 %	62.2 %

Employment & Occupation

The various occupations of the cluster population is summarized as under –

Total Worker	Non Worker
8951	18786

Main Worker	Main Worker Cultivator	Main Worker Agri-Labour	Main Worker H.hold Indus.	Main Worker Other Worker
6526	246	313	78	5889
Marginal Worker	Marginal Cultivator	Marginal Agri-Labour	Marginal H.hold Indus.	Marginal Other Worker
2425	148	358	79	1840

f. Ambient Air Quality

Ambient air quality was studied by generating data for various air pollutants from 24 bi – weekly samples at 8 locations (2 in the industrial Zone zone and 6 in the residential zone) for the winter season (1st January to 31st March, 2013). The monitoring stations were identified on the basis of meteorology in the upwind and downwind direction based on the available long term meteorological data on predominant wind direction and wind speed for the Asansol IMD Station with a purpose to represent the cross sectional scenario of the cluster. The predominant wind directions taken for this purpose was from North East and North North East. The monitoring stations were fixed at 500 m distance from dust generating sources. The methodology of baseline data generation was as per CPCB guidelines.

The concentrations of the following air pollutants were determined –

S.No.	Parameters
1	PM10
2	PM2.5
3	Sulphur di-oxide
4	Oxides of Nitrogen
5	Carbon–monoxide
6	Ammonia
7	Benzene
8	Benzo-pyrene
9	Heavy Metals

Industrial Area:

SPM values are ranging from 247.5 $\mu\text{g}/\text{m}^3$ to 302.0 $\mu\text{g}/\text{m}^3$. PM10 and PM2.5 values ranging from 108.4 $\mu\text{g}/\text{m}^3$ to 137.2 $\mu\text{g}/\text{m}^3$ and 62.6 $\mu\text{g}/\text{m}^3$ to 80.0 $\mu\text{g}/\text{m}^3$ respectively. SO₂ and NO_x values are varying between 10.0 to 16.8 $\mu\text{g}/\text{m}^3$ and 18.3 to 26.8 $\mu\text{g}/\text{m}^3$ respectively.

At Bonjemehari OCP, the level of Heavy metals i.e. Mercury (Hg) and Arsenic (As) were found to be below the detection limit (BDL) of 0.10 and 0.001 $\mu\text{g}/\text{m}^3$. The concentration of Lead (Pb) was found to be 0.10 to 0.12 $\mu\text{g}/\text{m}^3$. The concentration of Chromium (Cr) was found to be 0.03 and 0.05 $\mu\text{g}/\text{m}^3$. The concentration of Nickel (Ni) was found to be 0.03 and 0.05 $\mu\text{g}/\text{m}^3$.

Residential Area:

SPM values are ranging from 158.8 $\mu\text{g}/\text{m}^3$ to 192.4 $\mu\text{g}/\text{m}^3$. PM10 and PM 2.5 values ranging from 76.4 $\mu\text{g}/\text{m}^3$ to 91.5 $\mu\text{g}/\text{m}^3$ and 44.60 $\mu\text{g}/\text{m}^3$ to 52.8 $\mu\text{g}/\text{m}^3$ respectively. SO₂ and NO_x values are varying between 6.4 to 13.9 $\mu\text{g}/\text{m}^3$ and 13.0 to 27.0 $\mu\text{g}/\text{m}^3$ respectively.

Thus, the observed concentrations were mostly found to be within reasonable and permissible limits as per NAAQS (2009) or the standards for coal mines stipulated by MoEF for old coalfields.

g. Water Quality

Water quality was studied by collecting and analysis samples of ground water from dugwells and tubewells, surface water from river, nallah, ponds and abandoned quarries and mine water from all the mines within the cluster. A total number of 6 groundwater/potable water samples, 4 mine discharges samples and 7 surface water samples were collected and analysed. The results were compared to the IS: 10500, 1991 norms for drinking water, MOEF Scheduled - VI norms for mine discharge and IS: 2296 class C norms for surface water. The analysis results were found generally conforming to the stipulated standards. The ground water samples collected were found suitable for drinking purpose and free from Arsenic, Mercury and other toxic elements and compounds.

h. Groundwater levels & Hydrogeology

Hydrogeological investigation for the cluster was carried out by the study of long term water level trends in 62 designated wells (hydrograph stations) spread over the core (4 wells) and immediate buffer zone of the cluster (58 wells). It was observed that the pre-monsoon water levels within the cluster show a rising trend for 3 wells out of 4 while 1 of the well show a declining trend during post – monsoon. Since all future mining in the cluster, except the few OC patches to be operated for a brief period, will be at even lower horizons, no adverse impact of mining is anticipated in the cluster.

It was estimated by water balance studies that there is surplus water available per annum from the ground water annual recharge after catering to the future requirement in the core zone and the discharges from the mines. The groundwater development for the cluster was determined to be 62.68 % which falls in the 'safe' category.

5.0 Environmental Impact Assessment

The EIA carried out for the cluster covered the aspects of impacts of mining within the cluster on Air Quality & Noise levels, Hydrology and Hydrogeology, Land & Soil Quality, Flora and Fauna and Socio – economic profile of the area.

6.0 Environmental Action Plan

Environmental Management System (EMS) refers to the management of an organization's environmental programmes in a systematic, planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection. The Environmental Action Plan for mining in this cluster has been prepared accordingly and the measures suggested will go a long way in improving the overall environmental scenario of the cluster especially in light of the area coming under the list of critically polluted industrial clusters of the country. The scope of environmental management includes plantation, surface drainage, industrial waste water treatment plant, subsidence monitoring, air, water and noise pollution check etc.

Objectives of the Environmental Action Plan

The EIA & EMP for the cluster has been prepared with the following objectives –

- ✓ Integrated efforts by mines for pollution control and monitoring.
- ✓ Rationalization of the coal transport system to reduce pollution due to truck movements.
- ✓ Effective solid waste management to achieve backfilling of OC voids
- ✓ Synchronization of rehabilitation measures for unstable locations with the Master plan for Raniganj Coalfield.
- ✓ Co-ordinated reclamation works.
- ✓ Meaningful CSR activity due to pooling of resources.
- ✓ To meet the water requirement of the community from mine water after filtration and treatment.
- ✓ Setting up of special environment management and monitoring cell for meeting the above objectives and to closely interact with the concerned SPCB and Forest Deptt. for achieving the set standards.

The above programme will be in keeping with the goals set out as per the CIL's **Corporate Policy for Environmental Management (2012)** as stated below –

Policy Statement

Coal India Ltd affirms its commitment for environment friendly mining with right mitigation of pollution, reclamation of the degraded land, preservation of biodiversity and proper disposal of

waste following the best environmental practices including judicious use of the non-renewable energy on the path of continual improvement.

Objectives:

Coal India Ltd. shall endeavor to:

1. Conduct mining and associated operation in an environmentally responsible manner to comply with applicable laws and other requirements related to environmental aspects. Design projects with due consideration of sustainable development.
2. Prevent pollution of surrounding habitation by continuous monitoring and adopting suitable measures for environment protection.
3. Ensure compliance of all applicable EC conditions, FC conditions and other statutory conditions issued by regulatory agencies.
4. Implement EMP in all our mines effectively to mitigate pollutions on air, water and noise, reclamation of degraded land and proper disposal of wastes.
5. Strive to conserve Bio-Diversity.
6. Conserve natural resources through recycling of waste on the principle of REDUCE, RECYCLE and REUSE. Put special thrust on efficient energy utilization as a measure to reduce carbon foot-print.
7. Strive for continual improvement in environmental performance by setting targets, measuring progress and taking corrective action.
8. Create environmental awareness among employees and local communities through pro-active communication and training.

7.0 Environmental Monitoring & Control

Monitoring of environmental attributes is imperative for an effective environmental management of the cluster. It is proposed to carry out routine environmental monitoring of the cluster by setting up sampling stations for air, water, groundwater level & noise.

The routine monitoring will be carried out as per the following guidelines –

SI No	Environmental attribute to be monitored	No. of sampling stations	Type of monitoring	Frequency of monitoring	Follow-up Action
1	Ambient Air	3 to 4 stations in each mine and 1 station at railway siding at 500m from dust generating sources (CHP, transport route, coal depot, etc) Total = 13 stations within the cluster	24 hrly sampling for PM10, PM2.5, SO2, NOX, CO & heavy metals	2 consecutive days in each quarter year. Heavy metals once every year	In case the concentrations are observed to be higher than the standards for RCF on both days, fortnightly monitoring will be carried out until corrective measures take effect.
2	Mine Discharge Water	As many as discharge points on surface Total = 3 samples within the cluster	All parameters as per MoEF Schedule VI Standards	Once in each quarter year	Monitoring frequency will be increased in case any parameter is found in excess of discharge standards
3	Ground Water Level	5 no. of dugwells in each mine leasehold Total = 15 dugwells within the cluster	Level of water table below ground (unconfined aquifer)	Once in each season (Jan, April/ May, Aug & Nov)	Trends to be established and corrective action taken accordingly & report submitted to WBPCB
4	Ground water	Water samples from the 15 wells selected as above	All parameters as per IS 10500 – 1991 Standards	Once in May every year	Corrective action with the help of experts in the field will be taken if any of the parameters is found exceeding the standards & report submitted to WBPCB
5	Surface water	3 samples from 3 ponds/abandoned quarries located in the periphery of each mine. Total = 3 samples	All parameters as per IS 2296 Inland Surface Water Body(1982) Class 'C' Standards	Once in each quarter year	Efforts will be made to identify the source of pollutant will be made and corrective action with the help of experts in the field will be taken if any of the parameters is found exceeding the standards & report submitted to WBPCB

8.0 Conservation Measures for Water

The following conservation measures are being / will be adopted –

- ✓ The mine discharges are being effectively utilized to meet the domestic and industrial needs of the mines. Almost, the entire industrial and domestic water demand of the mines is being met from treated mine water.
- ✓ After cessation of mining, with plenty rainfall and abundant ground water recharge, the water levels will recoup and attain normalcy. Thus, the impact of mining on groundwater system may be considered as a temporary phenomenon. The abandoned mine workings also behave as water pool and improves the resources availability in the area.
- ✓ To increase the source availability, hand pumps and in some places piped water supply is being provided to nearby villages.
- ✓ The discharged mine water is also being gainfully utilized by the local people for irrigation and domestic use. Thus, the mine water from existing mines in the cluster and abandoned OC voids is a resource for local villages.

Future Strategy

- ✓ To assess the impact on local water levels, in time and space coordinates, a monitoring network of dug wells and/ piezometers in the zone of influence will be established and the water levels will be monitored quarterly (please refer monitoring schedule above).
- ✓ To create the water resources and to increase groundwater recharge in the nearby villages, under community development, hand pumps and tanks/ponds will be constructed or strengthened.
- ✓ Utilization of mine water for irrigation use will also enhance the ground water recharge potential through artificial recharge in the area.
- ✓ Increase in vegetative cover by plantation in the mine area under land amelioration measures will contain the surface run-off and increase the ground water recharge.
- ✓ The impact on ground water level will be minimized by artificial recharge by spreading of pumped out water, creation and filling of ponds with mine water and construction of rainwater harvesting structures. Creation of awareness among workers and local people about rain water harvesting and artificial recharge will be given priority. This aspect is usually covered during the Environmental Week celebrated every year (5 to 12 June).
- ✓ Rain water along with surplus mine pumping water will be discharged into local streams / nala after passing through the settling tank. Necessary earthen check dams will be made in the nala for recharging ground water aquifer. Rainwater harvesting and artificial

recharge will also take place through abandoned dug-wells and final voids of old opencast mines for increasing ground water potential and check water level lowering.

- ✓ Utilization of treated mine water discharge by both industry and local people in the mine influence area.
- ✓ Monitoring of water quality of mine water discharge, local river/nala and domestic water source (dug well/hand pump wells) will be continued under routine monitoring (please refer monitoring schedule above).
- ✓ Suitable control and remedial measures would be adopted by the mine authorities in case of any adverse trends being noticed through regular monitoring.
- ✓ Any other measures recommended by the regulatory agencies from time to time will be implemented.

9.0 Conservation Measures for Land

The following conservation / reclamation measures for land will be taken –

Management of Old & proposed OC Voids & Dumps

- a. The OC patches to be operated will be completely filled-up after exhaustion of reserves and reclaimed with plantation.

Management of Subsided Land

- b. No areas will be brought under subsidence. After completion of mining activities, the subsided areas will be graded and planted upon.

Management of Unstable Areas

- c. The unstable areas within the cluster will be brought under plantation after the population residing over these areas are rehabilitated under the Masterplan for Raniganj Coalfield to be implemented by ADDA.

Additional Plantation works proposed

- d. By the end of mining, an additional area of 235.62 Ha will be brought under plantation taking the total planted area (including area under natural vegetation) within the cluster to 355.62 Ha or 21.8 % of cluster area.

10.0 Progressive Landuses

The total area of the cluster is 1628.00 Ha. Present and proposed land use of this area is tabulated below –

S.No	Type Land Use	Present Mining Land Use (ha)	Land Use during Mining (ha)	Post- mining Land Use (ha)
1	Running quarry	72.58	222.10	
	Backfilled		48.83 (Plantation)	212.93 ha (Plantation)
	Not Backfilled	55.83	7.00	65.00 (lagoon)
2	External OB dump	35.52	15.52	15.52 (Plantation)
3	Service building	44.00	44.00	44.00
4	Rail & Road	49.50	49.50	49.50
5	Habitation (total)	66.61	66.61	66.61
	Unstable habitations	7.17	7.17 (Plantation)	7.17 (Plantation)
6	Forest Land	0.00	0.00	0.00
7	Other areas	130.00	100.00	100.00
8	Agriculture land	542.00	542.00	542.00
9	Plantation / Natural Vegetation	6.28	6.28	6.28
		113.72	113.72	113.72
10	River/nallah/pond	74.69	74.69	74.69
11	Barren land	430.10	330.58	330.58
	Total	1628.00	1628.00	1628.00

The Post-mining land use of core zone with environment management and requirement of trees in tables prepared by MoEF are given in the following tables –

S No.	Description	Land-use (Ha)				Total
		Plantation	Water Body	Public use	Undisturbed	
1	Top-soil Dump	Included in Sl no. 2	-		-	-
2	External Waste Dump	15.52	-	-	-	15.52
3	Excavation	212.93	-	-	-	212.93
4	Rail /Road		-	49.50	-	49.50
5	Built-up	-	-		-	
6	Mine Infrastructure	-	-	44.00	-	44.00
7	Forest Land	-	-	-	-	
8	Afforestation/ Natural vegetation	-	-		120	120.00

S No.	Description	Land-use (Ha)				
		Plantation	Water Body	Public use	Undisturbed	Total
9	Unstable habitation	7.17	-	-	-	7.17
10	Water bodies	-	65.00	-	74.69	139.69
11	Cultivable	0	-	-	542.00	542.00
12	Vacant Land	-	-	-	330.58	330.58
13	Habitation	-	-	-	66.61	66.61
	Other Areas	-	-	-	100.00	100.00
	Total	235.62	65.00	93.50	1233.88	1628.00

Ecology: Stage Wise Cumulative Plantation

REQUIREMENT OF PLANTS FOR AFFORESTATION/ RECLAMATION

Year	Subsided Area		Old External Dump		Reclaimed Quarry Area		Others		Total	
	Area (Ha)	Trees	Area (Ha)	Trees	Area (Ha)	Trees	Area (Ha)	Trees	Area (Ha)	Trees
Existing	-	-	-	-	-	-	113.72	181952	113.72	181952
Natural Vegetation	-	-	-	-	-	-	6.28	-	6.28	-
0 – 5 years	7.17	11472	-	-	48.83	78128	-	-	56.00	89600
6 – 10 years	-	-	-	-	80.10	128160	-	-	80.10	128160
11 – 15 years	-	-	15.52	24832	84.00	134400	-	-	99.52	159232
16 – 20 years	-	-	-	-	-	-	-	-	-	-
Total	7.17	11472	15.52	24832	212.93	340688	120.00	192000	355.62	568992

11.0 Corporate Social Responsibility

As part of its Corporate Social Responsibility (CSR) efforts, Coal India Limited and its subsidiary companies regularly undertake various community development activities in and around the coalfield areas for the benefit of the local people. A detailed cluster specific CSR plan has been made in the EMP and is given below in brief –

Works done under Community Development Programme are normally as under:-

- ✓ Installation/Repairing of Hand Pumps.
- ✓ Digging/renovation of Wells/Ponds/Dam etc.
- ✓ Water Supply through pipelines.

- ✓ Construction/Renovation and repair of Community Centre/building.
- ✓ Construction/repair of Roads/Culverts.
- ✓ Construction/repair of school building.
- ✓ Organising Medical Camps.
- ✓ Organising Sports and cultural activities.
- ✓ Misc works.

Provisions for CSR

Provisions for CSR under Community Development have been made @ Rs. 5.00 per tonne of coal produced. This works out to about Rs. 1.7 Cr per annum at 3.33 MTY of coal production` (present production from the cluster is only 0.483 MTY). The amount to be spent annually will be significant as the life of most of the mines is more than 25 years.

12.0 Employment in ECL and further potential

There are altogether 3 existing mines employing 732 persons. Further, 1 OC patch. The presently closed UG unit at Sangramgarh UG and Bonjemehari UG are also proposed to be restarted due to better economics. There are expected to provide employment to an additional 250 persons. The following table is illustrative of the employment potential of the mines –

#	Name of Mine	Leasehold Area (Ha)	Life (Years)	Existing Employment (as on 1 st April, 2013)	Proposed Additional
1	Dabor UG	1204	> 25	463	50
	Dabor-Phase I & II OC Mine* (347Ha)		10		
2	Bonjemehari UG	163	> 25	231	50
	Bonjemehari OC Mine* (50 Ha)		4		
3	Sangramgarh UG	261	> 25	38	50
	Sangramgarh Extension – OC Mine* (25 Ha)		4		
Total		1628		732	250

* Proposed OC Patches

