



MANIKPUR OPENCAST EXPANSION PROJECT

EXECUTIVE SUMMARY OF EIA/EMP REPORT FOR FOR PUBLIC CONSULTATION

TEHSIL: KORBA; DISTRICT: KORBA;

STATE: CHHATTISGARH

CAPACITY: 5.25 MTPA

AREA: 1018.925 Ha

**PROPONENT: SOUTH EASTERN COALFIELDS LIMITED
(A mini Ratna Company)**

July, 2018

CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED

REGIONAL INSTITUTE-5

SECL COMPLEX, BILASPUR, C.G.

1.1 PREFACE:

Manikpur opencast mine is located in the south eastern part of Korba Coalfield in Korba district of Chhattisgarh. The mine was initially planned with the help of soviet consultants for a rated output of 1.0 MTPA and started in the year 1966. The feasibility report for 2 MTPA production was prepared by CMPDIL in June 1976 and approved by the government in December 1978. The Project obtained NOC from Chhattisgarh State Environment Conservation Board for 2.5 MTPA capacity in 2005.

The revised project report for 3.5 MTPA was prepared by RI-V, CMPDIL and was approved by SECL Board in December, 2009. Environment clearance for 3.5 MTPA production was granted vide letter no. J-11015/1129/2007-IA-II (M) on 22nd August, 2014 as per EIA Notification, 2006 based on TOR granted on 16.06.2008. Earlier the mine was running under consent to Water Act, 1974 and Air Act, 1981 as the mine started before EIA Notification, 1994.

As per the revised scheme of Manikpur Opencast expansion project (approved by SECL Board on 15.09.2015 for expansion of project from 3.5 MTPA to 5.25 MTPA), it is envisaged that the existing quarry has potential to produce at a higher rate by further outsourcing coal and OB production beyond the departmental capacity without any change in quarry boundaries.

Accordingly, scheme for enhancement of coal production has been prepared (both coal & Overburden removal outsourced) for a targeted capacity of 5.25 MTPA. The additional capital requirement of this will be Rs. 54.7838 crores as per approved scheme approved by SECL Board on 15.09.2015. The Project has an IRR of 29.13% at 85% and combined notional IRR (PR and scheme) of 18.57% at 85% level of production as per approved scheme.

Further, as per MoEFCC OM no. J-11015.30/2004.IA.II (M) dt. 07.01.2014, the coal projects having production capacity upto 8 MTPA as per EC letter may be considered for one time expansion as 50% or 1 MTPA whoever is more.

Thus, Manikpur Opencast mine fulfilled the above OM and thus TOR Terms of Reference) was applied for expansion as 50% i.e. 3.5 to 5.25 MTPA under clause 7(ii) of EIA Notification, 2006 with exemption for public consultation process.

However, EAC recommended to prepare EIA/EMP report along with undertaking public consultation since the quantum of expansion is 50%. Accordingly, this EIA/EMP report has been prepared for 5.25 MTPA production capacity based on standard TOR (Terms of Reference) and other conditions as per TOR granted vide letter no. J-11015/1129/2007-IA.II(M) dt 11.09.2017.

1.2 PROJECT DESCRIPTION:

1.2.1 Identification of project: Manikpur OCP Expansion Project is located in the South Eastern part of Korba Coalfield in Korba tehsil of Korba district of Chhattisgarh. South Eastern Coalfields Ltd., a Subsidiary of Coal India Limited, is proponent of the project. Coal India Limited is a Public Sector Undertaking of Government of India and functioning under the Ministry of Coal.

1.2.2 Project Proponent Address: M/s SOUTH EASTERN COALFIELDS LTD, Seepat Road, BILASPUR (CHHATTISGARH) PIN 495 006 Tel. 07752-246324, Fax.07752-246324, E-mail : gmenvtsecl@gmail.com; gmenv.secl@coalindia.in

1.2.3 Location & Approach: Manikpur OCP Expansion Project is located in the South Eastern part of Korba Coalfield in Korba district of Chhattisgarh.

Table 12.1: Location Details

Particulars	Details
Area	1018.925 Ha
Latitudes	22°19'00' to 22°19'30" North
Longitudes	82°42'30" to 82°44' 30" East
Reference Survey of India Topo-sheet No.	64 J/11 of survey of India (1:50000)

1.2.4 During Mining and Post Mining Land Use**i. Pre-mining Land Use:**

SN.	Land use	Within ML area (ha.)	Outside ML area (ha.)	Total (ha.)
		Already acquired	Already acquired	
1	Agricultural land	531.856	-	531.856
2	Forest land	375.899	-	375.899
3	Waste Land	111.170	-	111.170
4	Grazing Land	-	-	-
5	Surface Water Bodies	4.280 (included in forest land)	-	4.280(include d in forest land)
6	Settlements	-	-	-
7	Others (Specify): Infrastructure & colony	-	-	-
	TOTAL	1018.925	-	1018.925

ii. Post Mining land use:

S.No.	LAND USE	Land Use (ha)				TOTAL
		Plantation	Water body	Public use	Undisturbed	
1.	External OB Dump	187.700	-	-	-	187.700
2.	Internal Dump/ Backfilled Area	189.585	-	-	-	189.585
3.	Excavation	-	321.350	-	-	321.350
4.	Roads	-	-	1.090	-	1.090
5.	Built up area	-	-	88.510	-	88.510
6.	Green Belt	5.0	-	-	-	5.0
7.	Undisturbed Area including Safety Zone	-	-	-	225.690	225.690
	TOTAL	382.285	321.350	89.600	225.690	1018.925

iii. Brief Description of the project:

1. The terrain of the area is a levelled plain with local steep approaches to the streams and nallahs in the north-eastern plain. The average elevation in the block varies between 274 m and 293 m, the highest being in the North-eastern part and the lowest in the south-western corner of the area. The general slope of the area is towards west.
2. The Hasdeo River, tributary of the Mahanadi is the chief flowing north to south across the 16 km width of the Korba coalfield. The westerly flowing Ranphakara and Kachandi nallahs drain the waters of the Manikpur coal bearing area into the Hasdeo. The nallahs are of torrential nature.
3. The mining is to be done using opencast method with drilling and blasting.
4. Considering the extractable reserves and the production schedule, the life of the mine is expected to be about 16 years. Total mineable reserve is 101.50 MT as per the PR for 3.50 MTY. Balance mineable reserves on 01.04.2017 is 79.69 MT.

1.3 DESCRIPTION OF ENVIRONMENT & ANITICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:

M/s EFRAC Limited, Kolkata having NABL accredited & MoEF&CC certified lab, carried out generation of Baseline Environmental Data collection of Manikpur OC Expansion Project in the period from Nov, 2017 to Feb, 2018 & results are detailed below:

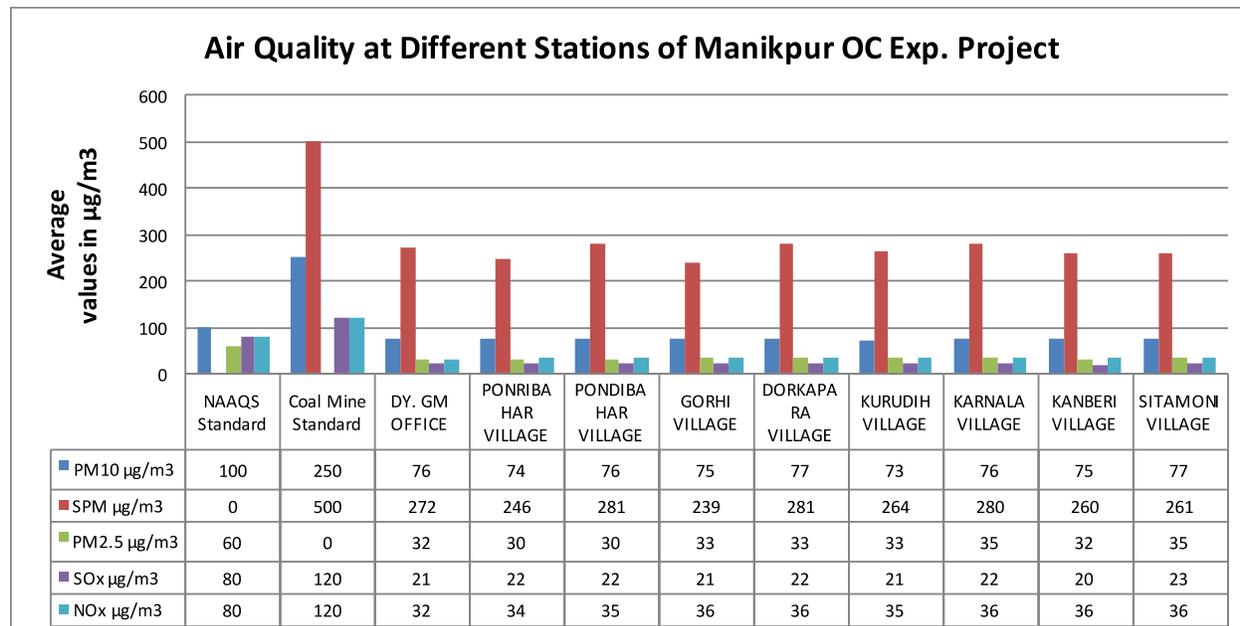
Wind Direction: Predominant as from North-East.

Temperature: Ranges as from 8.3⁰ C to 37.9⁰ C

10.3.1 Ambient Air Quality:

Code	Name of Location	Latitude	Longitude	As per Wind Direction
L1	Deputy GM Office	22°19'56.73''	82°43'39.28''	Core Zone
L2	Ponribahar Village	22°21'14.29''	82°44'41.57''	Up wind direction
L3	Pondibahar Village	22°19'37.69''	82°45'20.71''	Cross Wind direction
L4	Gorhi Village	22°18'51.63''	82°47'85.93''	Down Wind direction
L5	Dorkapara Village	22°17'51.28''	82°44'33.13''	Down Wind direction
L6	Kurudih Village	22°17'42.46''	82°45'30.46''	Down Wind direction
L7	Karanala Village	22°17'24.94''	82°43'40.71''	Down Wind direction
L8	Kanberi Village	22°17'25.77''	82°41'46.95''	Down Wind direction
L9	Sitamani Village	22°20'15.23''	82°42'34.28''	Cross Wind direction
Weather	Deputy GM Office	22°19'56.73''	82°43'39.28''	Core Zone

Observations



All the values are found to be within the National Ambient & Coal mines air quality Standards.

Air Pollution Control Measures: Following air pollution control measures is practiced within the mining area and at coal handling plants and railway siding site.

1. Mine is dispatching most of the coal through rail mode with only a small portion being dispatched to local consumers by road sale.
2. Water spraying arrangements have been made at loading, unloading and transfer points at the CHP.
3. The mine roads are black topped.
4. Wet drilling is in use along with provision of dust extractor.
5. Conveyor belts are provided at loading point, feeder breakers and at different locations where dust is generated.
6. Water spraying along mine roads is being done for dust suppression through departmental (2 nos. converted from 50 Tonne dumpers) and contractual (3 nos. truck mounted 12 kl, 1 no. 28 kl water sprinkler) mobile tankers.
7. CHP has been provided with mist type water spraying arrangements.
8. Additional 2 numbers of 28 KL Water sprinklers and budget for fixed water sprinklers has been approved in the scheme.
9. Special blasting technique using nonel tubes to reduce air pollution during blasting operation.
10. Provision for in-pit conveying of coal has been made in the Project Report.
11. Increased quantum of coal production will be dispatched to Chhattisgarh State Power Generation Company Limited (CSPGCL) through own-wagon system (rail mode).
12. Extensive plantation has been carried out over the years within the project area. At present, around 135 Ha dump area stands biologically reclaimed and around 35 Ha non-dump area is covered with plantation.

13. CAAQMS (Continuous Ambient Air Quality Monitoring Station) has been installed in the office premises. Apart from this, 8 ambient air quality stations in and around the mine is being routinely monitored. The reports are regularly submitted to SPCB and Regional Office, MoEFCC.

1.3.2 Water Quality:

Location Code	Name of Location	Latitude	Longitude	Remarks
D/W-1,3	Sitamani Village borewell	22°20'15.23''	82°42'34.28''	Drinking water
D/W-2,4	Rapakhara Village borewell	22°17'26.00''	82°43'24.00''	Drinking water
S/W-1,3	Dadar Village pond water	22°18'29.00''	82°44'23.00''	Surface water
S/W-2,4	Kudri Village pond water	22°20'27.00''	22°44'14.00''	Surface water
S/W-5,7	Hasdeo River U/S	22°19'29.20''	82°42'38.81''	Surface water
S/W-6,8	Hasdeo River D/S	22°18'58.52''	82°42'37.91''	Surface water
E/W-1,3	Kachandi Nala U/S	22°18'52.20''	82°44'40.38''	Effluent water
E/W-2,4	Kachandi Nala D/S	22°18'02.96''	82°43'07.95''	Effluent water
E/W-5	ETP Discharge (A/T)	22°19'50.32''	82°43'45.13''	Effluent water
E/W-6	Mine Water (Eastern Quarry no 1)	22°19'24.35''	82°43'28.29''	Effluent water

Observation:

Bore well Water, Sitamani Village (D/W-1,3): After the analysis it was found that all the above tested parameters are within tolerance limits of Indian standard 10500:2012.

Bore well Water, Rapakhara Village (D/W-2,4): After the analysis it was found that all the above tested parameters are within tolerance limits of Indian standard 10500:2012.

Pond Water, Dadar Village (S/W-1,3): After the analysis it was found that all the above tested parameters are within tolerance limits of Indian standard 2296:1982.

Pond water, Kudri village (S/W-2,4): After the analysis it was found that all the above tested parameters are within tolerance limits of Indian standard 2296:1982.

Hasdeo River (up stream) (S/W-5,7): After the analysis it was found that all the above tested parameters are within tolerance limits of Indian standard 2296:1982.

Hasdeo River(Down Stream) (S/W-6,8): After the analysis it was found that all the above tested parameters are within tolerance limits of Indian standard 2296:1982.

Kachandi Nallah(E/W-1,3): After the analysis it was found that all the above tested parameters of Effluent water were within standard limits as per GSR No 422(E) of part A (Class-A).

Kachandi Nallah(E/W-2,4): After the analysis it was found that all the above tested parameters of Effluent water were within standard limits as per GSR No 422(E) of part A (Class-A).

ETP Discharge after treatment (E/W): After the analysis it was found that all the above tested parameters of Effluent water were within standard limits as per GSR No 422(E) of part A (Class-A).

Mine Water (Eastern Quarry no 1)(E/W): After the analysis it was found that all the above tested parameters of Effluent water were within standard limits as per GSR No 422(E) of part A (Class-A).

Water Pollution Control Measures:

1) Management of surface water drainage:-

Kachcha garland drains of cross section area 0.5 sq. m. have been provided for a length of 7.2 km and will be strengthened further around the periphery of the quarry. These garland drains are provided at the mine site and connected to the local water body which is not likely to be disturbed by mining operation. Pakka catch drains of cross section area 1.2 sq. m. are provided for a length of 2.4 km along the road side and Coal Handling Plant. In the working areas, adequate pumping capacity has been provided to deal with any abnormal rainfall. Sufficient number of diesel pump sets have also been provided to pump out water from the areas where water gets collected and does not drain into the sump. These pumps throw the accumulated water from the working face into the garland drains. As the extraction of the quarry advances, the position of garland drain will also advance and will drain off the rain water away from the workings.

2) Mine Water Discharge & Industrial Effluent

1. Mine sump of 1.2 Mcum has been provided.
2. Settled mine effluent is being used for industrial purpose.
3. Settling tanks are provided to treat mine water. Mine water is reused after treatment for industrial purposes.
4. One workshop ETP of 0.48 MLD capacity exists in the area. Also, in the workshop, oil & grease trap has been commissioned for treatment.
5. Sludge from workshop ETP post dewatering is collected in a cemented tank to prevent ground water contamination.
6. Mine sump water is used in plantation and for dust suppression.
7. Balance water in the sump serves the purpose of ground water recharge.
8. Mine sumps will act as water recharge structures.
9. Water from an old exhausted water logged Pilot Quarry is treated through pressure filter equipped chlorination facility and supplied for domestic use to colony. The quarry also aids in groundwater recharge.

3) Domestic Effluent Treatment: -

Sewage from project colony is treated in the Domestic effluent treatment plant of 0.50 MLD capacity and the sludge generated post dewatering and disinfection is used as manure.

4) Water Conservation: -

Water treated in ETP provided in the workshop is recycled in the workshop for HEMM and floor washing purposes, thus maintaining zero discharge and minimizing fresh water use. Run-off water from the mine areas comes down into the mine sump, where the silt particles settle down. The mine sump and Pilot Quarry provide for year round ground-water recharge.

Groundwater:

The net groundwater recharge and draft for the buffer zone were estimated as 43.12 and 28.95 M m³ respectively. Thus, the balance available annual ground water resource is projected as 14.17 M m³.

Due to extensive use of groundwater for irrigation purpose as well as industrial activities (Korba township) in this area, the groundwater development in the area is significant. CGWB, NCC Region, Raipur has reported in their report 'Dynamic Ground Water Resources of Chhattisgarh (As on March, 2013)' that the stage of Groundwater development of the Korba development block, where Manikpur OC mine exists is 22.71 % and identified the region within category "Safe". The overall stage of groundwater development in Korba District was reported as 30.92 % and falls under the category of "Safe". Stage of groundwater development for the study area of the project area has also been determined as about 67.14 %, which is also under the 'safe' category.

The groundwater chemistry indicates that the groundwater in the area is potable and does not contain any toxic elements. With no processing activity in coal mining, the mine water is free from any pollutants. However, with movement of HEMM and OB/Coal handling, the discharge will have high TSS. With low sulphur content in coal, no acid mine drainage is anticipated.

The intermittent and main sumps also act as sedimentation tanks and improve the water quality of mine water discharge. To reduce TSS further, the mine water would be discharged only after passing through the sedimentation tanks constructed on surface

1.3.3 Flora and Fauna:

A. Flora	Core Zone/Buffer zone
Agricultural crops	Slimamaranth, Chilly, Lemon, Coriander, Pumpkin, Sweet potato, Bottle guard, Ridgedguard, Spongourd, Tomato, Mint Bitter Gourd, Radis, Brinja, Pointed guard, etc
Commercial crops	Mustard, Tuvar Dal, Chickpea, Paddy, Sugarcane, Sesame, Maize
Natural vegetation/forest type	White Bark Acacia, Babul, White Sirish, Blackboard tree, Jack, Banyan, Mango, Wild date palm, copper-pod, etc
Grass lands	Khus Khus, Broom grass, Giant Reed, Crow foot grass, Cogon grass Japanese bristlegrass, Bamboo, etc

Endangered species	None
Others (Specify)	Nil
B. Fauna	
Total listing of faunal elements	Common fauna -Goat, Buffalo, Cow and Dog Mammals - Rat, Common House Rat,5 Strip Palm squirrel, Bandicoot rat, Jackal, Common Languor, Wild Pig,etc Birds -House Crow,House Swift, Common Myna ,Indian Pond Heron Reptiles -House lizard, Garden lizard, Krait, Rat snake, Smooth water snake Butterflies - Lemon or Common Emigrant, White Arab, Blue tiger
Endangered species	Nil
Migratory species	Nil
Details of aquatic fauna, if applicable	Fish-Catla, Rohu, Magur, Spotted murrel

Endangered/ Endemic Flora:

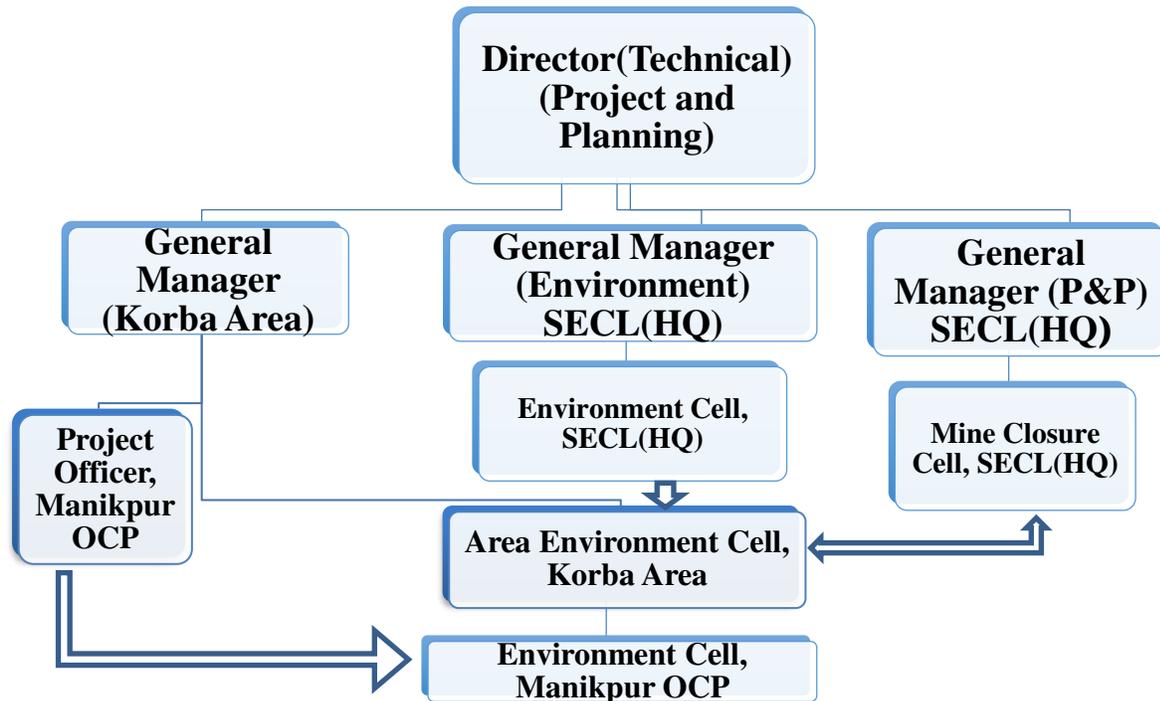
During survey it is observed that, areas which are important or sensitive for ecological reasons – geological formations, dunes, beaches, coral reefs, mangroves and swamps are not present within the study area. Also, areas used by protected, important or sensitive species of flora are not present within the study area.

It is observed that, Endangered, Endemic or Migratory species are not present in the Core Zone of the project. Also, migratory corridors, Flight path, Breeding and spawning grounds in Core Zone are not present. During survey, it is observed that, there were no endangered, threatened and endemic category flora as per the IUCN-Red Data Book (RDB), Botanical Survey of India (BSI) and Indian wildlife (protection) Act, 1972.

1.4 ENVIRONMENT MONITORING PROGRAMME

1.4.1 Environment Management Structure

The responsibility for implementing environmental management plan would rest with the environment management structure who would be properly assisted by a team of qualified and trained personnel. An organization chart showing the hierarchical levels for environmental control is given below:



1.4.2 Monitoring and control

For effective implementation and mid term corrective measures (if required) monitoring and control of programme implementation is essential.

For this purpose a time bound action programme for environmental management has been prepared.

The scope of environmental management includes plantation, surface drainage, industrial water treatment plant, air, water and noise pollution checks etc.

For air, water and noise pollution control measures, samples will be collected and tested for all four seasons at strategic places representing all the categories of areas as indicated by CPCB, SPCB. The implementation authority should be guided and advised as per the feedback data from these tests. CMPDI may be consulted as and when necessary.

1.4.3 Monitoring Schedule

Monitoring schedule for Air, Water, and Noise levels will be as per Standards of MOEF (Vide GSR 742 (E) dated 25.9.2000 & GSR 826 (E) dated 16.11.2009)

Ambient Air : Parameters to be monitored are SPM, RPM, SO₂, NO₂ at every fortnight.
(Vide GSR 742 (E) dated 25.9.2000)

PM₁₀, PM_{2.5}, SO₂, NO₂, lead, Arsenic, Nickel, Ozone, CO, Ammonia, Benzene, Benzo (alpha) Pyrene at a frequency twice a week (vide GSR 826 (E) dated 16.11.2009)

Water : For effluent, the parameters to be monitored are pH, Chemical Oxygen Demand, Total Suspended Solid, Oil & Grease at every fortnight and all parameters as per GSR no 422(E) of part A (Class-A) once in a year.

For drinking water and surface water monitoring will be done as per IS: 10500:2012 once in a month

Noise : Noise will be monitored during day & night at every fortnight.

The report of the Monitoring data thus generated shall be submitted to SPCB/Regional Office, MoEF&CC.

1.5 ADDITIONAL STUDIES:

1.5.1 AIR QUALITY MODELING RESULTS:

In the air quality modelling, AERMOD (Model version 16216r) has been used to assess the impact on AAQ in the area due to mining activities due to expansion of Manikpur OC Mine. In the modeling, one full season baseline air quality data (period – Nov, 2017 to Feb, 2018) winter season along with micro meteorological data have been used for assessment of impact on ambient air quality (PM₁₀) at 9 control locations termed as receptors and grid of other arbitrary receptors.

Increase in PM₁₀ levels due to expansion of Manikpur OC – with control condition

Location Code	Name of station	Station Position (Direction, Distance)	Baseline PM ₁₀ values (in µg/m ³)-Average	Baseline PM ₁₀ values (in µg/m ³)-max. of 98 percentile	Incremental conc. Of PM ₁₀ with control condition (in µg/m ³)	Predicted GLC of PM ₁₀ (in µg/m ³) - average	Predicted GLC of PM ₁₀ (in µg/m ³)-98 percentile	Prescribed limits (in µg/m ³)
L1	Deputy GM office	Core	76.00	84.00	40.17	116.17	124.17	300
L2	Ponribahar Village	N, 2.3 KM	74.00	84.00	17.84	91.84	101.84	100
L3	Pondibahar Village	E, 0.5 KM	76.00	83.00	16.60	92.60	99.60	100
L4	Gorhi Village	ESE, 3.7 KM	75.00	84.00	11.50	86.50	95.50	100
L5	Dorkapara Village	S, 1.8 KM	77.00	82.00	12.23	89.23	94.23	100

L6	Kurudih Village	SSE, 3 KM	73.00	80.00	12.67	85.67	92.67	100
L7	Karanala Village	S, 2.7 KM	76.00	83.00	6.50	82.50	89.50	100
L8	Kanberi Village	SW, 4 KM	75.00	82.00	8.14	83.14	90.14	100
L9	Sitamani Village	NW, 1.3 KM	77.00	83.00	17.55	94.55	100.55	100

1.6 PROJECT BENEFITS:

1.6.1 CSR WORKS:

For subsidiaries of CIL, fund for CSR should be allocated based on 2% of average net profit of the company for the three immediate preceding financial years or Rs. 2.00 per tonne of coal production of previous year whichever is higher.

Total CSR expenditures during last three years from 2014-15 to 2016-17

S. No.	Year	Expenditure (Rs. lakh)	Production (MT) (Total for Korba Area)	Expenditure (Rs. per tonne w.r.t. entire area)	Production (MT) (Manikpur)	Expenditure (Rs. per tonne w.r.t. Manikpur OCP)
1	2014-15	885.29	5.33	16.61	3.50	25.29
2	2015-16	449.15	5.34	8.41	3.50	12.83
3	2016-17	300.04	5.14	5.84	3.50	8.57
4	2017-18	789.02	5.14	15.34	3.50	22.54
	TOTAL	2423.5				

1.7 ENVIRONMENTAL MANAGEMENT PLAN & COST PROPOSED

STATEMENT SHOWING THE ESTIMATED CAPITAL AND REVENUE REQUIREMENT FOR R & R AND ENVIRONMENTAL PROTECTION MEASURES:

A. CAPITAL COST

Sl. No.	Particulars	Existing Amount as per PR 3.5 MTPA (in Rs in lakhs)	Addl. Amount as per Scheme 5.25 MTPA (in Rs in lakhs)	Total Amount (in Rs in lakhs)
1.	REHABILITATION			

A	For additional quarry			
a)	Compensation of land to be acquired for rehabilitation Ha @ Rs. 2, 00,000/- per Ha.	Nil	Nil	Nil
b)	Compensation for home assets @ Rs. 1,12,000/- per family for 100 families	112.00	Nil	112.00
c)	School, hospital roads, etc in rehabilitation colony	20.00	Nil	20.00
d)	Compensation in lieu of job to land oustees	0.00	Nil	0.00
B	R & R package in existing quarry	0.00	Nil	0.00
	Sub-total of (1)	132.00	Nil	132.00
2.	RESTORATION			
a)	Housing for reclamation personnel (for persons)	0.00	0.00	0.00
b)	HEMM for reclamation	0.00	0.00	0.00
	Sub-total of (2)	0.00	0.00	0.00
3.	COMPENSATORY AFFORESTATION FOR ADDITIONAL QUARRY AREA			
a)	Compensatory afforestation for forest land involved in the quarry (Land=194.73 Ha) at the rate of Rs. 1,07,000/- per Ha	208.36	Nil	208.36
b)	For strengthening the forest in safety zone at the rate of Rs. 21,000/- per Ha	0.00	Nil	0.00
	Sub-total of (3)	208.36	Nil	208.36
4.	ANTI-POLLUTION MEASURE IN MINE & INDUSTRIAL AREA			
a)	Water Sprinklers (2 Nos. additional 28KL mobile water sprinkler and additional fixed water sprinkler approved in scheme)	181.65	267.84	449.49
b)	Sewage disposal arrangement in workshop effluent	1.15	Nil	1.15
c)	Settling Tank for mine water disposal	0.00	Nil	0.00
d)	Sewage treatment plant	200.00	Nil	200.00
e)	Garland drains	25.00	Nil	25.00
f)	Drains, Tree Guards etc.	0.00	Nil	0.00
g)	Arboriculture / plantation in industrial area	10.00	Nil	10.00
h)	Dust suppression arrangement at CHP	6.98	Nil	6.98
i)	Piezometer etc	25	Nil	25

j)	Barbed fencing/boundary walls for quarry, Dump & abandoned quarry	220	Nil	220
k)	Nalla diversion	1000	Nil	1000
l)	Overbridge for western quarry	1225	Nil	1225
	Sub-total of (4)	2894.78	267.84	3162.62
5.	ENVIRONMENTAL CONTROL MEASURES IN TOWNSHIP			
a)	Arboriculture / plantation	10.00	20.00	30.00
b)	Sewage Treatment Plant in the colony	4.39	Nil	4.39
c)	Water Drains	0.99	Nil	0.99
d)	Tree Guards etc.	0.04	Nil	0.04
e)	Parks and Playground etc.	15.00	Nil	15.00
	Sub-total of (5)	30.42	20.00	50.42
6.	COMMUNITY DEVELOPMENT			
a)	Community Development	100.00	Nil	100.00
	Sub-total of (6)	100.00	Nil	100.00
7.	ENVIRONMENTAL MONITORING			
a)	EMP Preparation	17.00	50	67.00
	Sub-total of (7)	17.00	50	67.00
GRAND TOTAL		3382.56	337.84	3720.4

B. REVENUE COST ESTIMATE

DIFFERENT TYPES OF REVENUE NATURE COST TO BE CONSIDERED IN THE COST OF PRODUCTION		Rs. Lakh per Year
a)	Environment Audit @ 1 lakh/annum	1.00
b)	Environment monitoring @ 225 lakhs/annum	225.00
c)	Mine Closure Cost (Annual Mine Closure cost to be escalated @ 5% compounding annually)	431.8425
d)	Monitoring of land use through Satellite surveillance	10.00
e)	Regular monitoring of CSR, R&R Plan and Mine Closure Plan	10.00
f)	Consent charges per annum	15.00
	Sub Total	692.8425

CONCLUSION:

The demand of coal is increasing day by day and to meet this demand, opening new coal mine project is very much needed. Baseline and predicted Environmental quality is within the permissible limits. A number of people will be directly and indirectly benefitted from this mine. This mine will provide benefits in terms of socio-economic. This mine is justified in terms of seeking Environmental Clearance.