PUBLIC CONSULTATION DOCUMENT

(Written submission only)

SUMMARY OF EIA/EMP
FOR KUSMUNDA OC COAL MINE,

Capacity: 50 MTPA NORMATIVE & 62.5 MTPA PEAK
Project Area- From 1655.825 to 2991.943 Ha.
Tehsil: Dipka & Darri; District: Korba; State: Chhattisgarh

(Project categorized under Schedule 1(a): Mining of minerals, Category 'A'; ToR issued vide MoEF&CC File No. J-11015/176/2014-IA-II(M) dated 20th May, 2024)

Project proponent

South Eastern Coalfields Limited
(A Mini Ratna Company)

JULY- 2024

Consultant
Central Mine Planning & Design Institute Limited (CMPDIL)

Kanke Road, Ranchi, Jharkhand-834031
(A Mini Ratna Company & A Subsidiary of Coal India Ltd)
NABET accreditation certificate no. NABET/EIA/22-25/SA 0223 valid till 08/04/2025

Baseline Period - March to May 2022

Laboratory Engaged for Baseline Data Generation
GO GREEN MECHANISMS PRIVATE LIMITED
(NABL Certificate No- TC-7073 issued date 9/11/2020 valid until 08/11/2022)

SUMMARY OF EIA/EMP KUSMUNDA OC COAL MINE, CAPACITY: 50 MTPA(NORMATIVE) and 62.5 MTPA (PEAK)

1.1 PROJECT DESCRIPTION

To obtain Environmental clearance (EC) for Kusmunda Opencast Coal Mine project of Capacity 50 MTPA (Normative) / 62.50 MTPA (Peak) from existing Mine Leasehold area of 1655.825 ha to 2991.943 Ha as required under EIA Notification, 2006. EIA/EMP is prepared for the said purpose.

The proposed land details are as in Table 1.1a and Table 1.1b.

Kusmunda OCP Expansion Project, a part of Eastern Sector of Jatraj, Resdi and Sonpuri Blocks, is located in the south-central part of Korba Coalfield in Korba district of Chhattisgarh. The area is included in the Survey of India Toposheet No. 64 J/11 and is bounded by latitudes N 22°15'18 to N 22°21'30" and longitudes E 82°38'39" to E 82°42'08".

Table 1.1a: Pre-mining Land Use

Sl. No.	Head	Existing Land Use (in ha)	Proposed land use (in ha)
1	Tenancy land	1045.597	2110.320 Ha
2	Government land	404.267	631.720 Ha
3	Forest land	205.961	249.903
Total land area		1655.825	2991.943 Ha

* Stage – I Forest Clearance for total 249.903 ha is obtained.

Table 1.1b: Post-mining Land Use

Sl. No	Land use	Land use (ha)				
		Plantation	Water body	Public use	Undisturbed	Total
1	External OB dump	325	0	0	0	325
2	Top soil dump	0	0	0		0
3	Excavation	1245	355			1600
4	Roads	0	0	10	0	10
5	Built up areas			470.25		470.25
6	Safety Zone (including green belt)				166	166
7	Undisturbed Area				420.693	420.693
	Total	1570	355	480.25	586.693	2991.943

1.2 DESCRIPTION OF THE ENVIRONMENTAL BASELINE

The Environmental Baseline in the study area is summarized in Table 1.2.

Table 1.2: Summary of Environmental Baseline

<table>
<tr><th>S.No</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1</td><td>Period of Base Line Data Collection</td><td>01.03.22 to 31.05.22</td></tr>
<tr><td>2</td><td>Season (Summer/Pre-monsoon/Post-monsoon/Winter)</td><td>Summer</td></tr>
<tr><td>3</td><td>Socio-economic profile</td><td></td></tr>
<tr><td>a</td><td>No. of Village (Core zone and Buffer Zone)</td><td>17 and 113</td></tr>
<tr><td>b</td><td>Avg. house hold size</td><td>5</td></tr>
<tr><td>c</td><td>Total Population (Core zone and Buffer Zone)</td><td>5970 and 520407</td></tr>
<tr><td>d</td><td>ST population (Core zone and Buffer Zone)</td><td>2941 and 98336</td></tr>
<tr><td>e</td><td>Literate population (Core zone and Buffer Zone)</td><td>3813 and 366818</td></tr>
<tr><td>f</td><td>Sex ratio (Study Area)</td><td>938</td></tr>
<tr><td>4</td><td>Micro-meteorological parameters</td><td></td></tr>
<tr><td>a</td><td>Avg. Wind speed (m/s)</td><td>0.49</td></tr>
<tr><td>b</td><td>Avg. Temperature (°C)</td><td>31</td></tr>
<tr><td>c</td><td>Avg. Relative Humidity (%)</td><td>47</td></tr>
<tr><td>d</td><td>Avg. Rainfall (mm)</td><td>0</td></tr>
<tr><td>5</td><td>No. of Ambient Air Quality (AAQ) Monitoring Locations</td><td>11</td></tr>
<tr><td>a</td><td>Summary of AAQ monitoring results</td><td></td></tr>
<tr><td></td><td colspan="2">
Core Zone
<table>
<tr><th>Criteria Pollutants</th><th>Unit</th><th>Maximum Value</th><th>Minimum Value</th><th>Mean Value</th><th>Prescribed Standard</th></tr>
<tr><td>PM_{10}</td><td>µg/m3</td><td>138.1</td><td>76.3</td><td>118.7</td><td>300</td></tr>
<tr><td>$PM_{2.5}$</td><td>µg/m3</td><td>82.9</td><td>43.5</td><td>66.3</td><td>NA</td></tr>
<tr><td>SO_2</td><td>µg/m3</td><td>38.8</td><td>25.1</td><td>32.2</td><td>80</td></tr>
<tr><td>No_x</td><td>µg/m3</td><td>46.1</td><td>33.5</td><td>39.4</td><td>80</td></tr>
</table>
Buffer Zone
<table>
<tr><th>Criteria Pollutants</th><th>Unit</th><th>Maximum Value</th><th>Minimum Value</th><th>Mean Value</th><th>Prescribed Standard</th></tr>
<tr><td>PM_{10}</td><td>µg/m3</td><td>83.1</td><td>42</td><td>65.8</td><td>100</td></tr>
<tr><td>$PM_{2.5}$</td><td>µg/m3</td><td>47.5</td><td>21.8</td><td>35.9</td><td>60</td></tr>
<tr><td>SO_2</td><td>µg/m3</td><td>25.5</td><td>8.3</td><td>17.8</td><td>80</td></tr>
<tr><td>No_x</td><td>µg/m3</td><td>38.9</td><td>15.8</td><td>27.4</td><td>80</td></tr>
</table>
</td></tr>
<tr><td>6</td><td>Details of Water Quality Monitoring</td><td></td></tr>
</table>

a	No. of Ground Water Monitoring Locations	Core Zone- 05 Buffer Zone - 05
	Summary of Ground Water in monitoring results standards: IS 10500:2012	

Core Zone

Criteria Pollutants	Unit	Max. Value	Mean	Min. Value	Acceptable Limit	Permissible Limit
pH	-	7.6	7.3	6.7	6.5 to 8.5	No Relaxation
Total Dissolved Solids	mg/l	782	429	233	500	2000
Total hardness as $CaCO_3$	mg/l	478	265	158	200	600
Chlorides	mg/l	113	55.45	32	250	1000
Fluoride	mg/l	1	0.45	0.07	1	1.5
Calcium as Ca	mg/l	98.6	0.45	31.3	75	200
Total suspended solids	mg/l	<0.05	54.29	<0.05	---	---
Nitrate	mg/l	5.5	2.76	1.00	45	No Relaxation

Buffer Zone

Criteria Pollutants	Unit	Max. Value	Mean	Min. Value	Acceptable Limit	Permissible Limit
pH	-	7.7	7.2	6.5	6.5 to 8.5	No Relaxation
Total Dissolved Solids	mg/l	512	350.6	294	500	2000
Total hardness as $CaCO_3$	mg/l	260	200.6	184	200	600
Chlorides	mg/l	100.9	46.4	28	250	1000
Fluoride	mg/l	3.4	0.738	0.29	1	1.5
Calcium as Ca	mg/l	57.72	37.5	27.2	75	200
Total suspended solids	mg/l	<0.05		<0.05	---	---
Nitrate	mg/l	11.5	3.45	1.7	45	No Relaxation

b	No. of Surface Water Monitoring Locations	04
	Summary of Surface Water monitoring results standards: **IS 2296:1987 Class-C**	

Core Zone

Criteria Pollutants	Unit	Max. Value	Mean	Min. Value	Permissible Limit
pH	-	8.3	7.6	7.1	6.5 to 8.5
DO	mg/l	8.3	6.81	5.8	4
BOD	mg/l	2.60	2.3	2.10	3
COD	mg/l	10	7.6	5	---
Total Dissolved Solids	mg/l	573	401.44	246	1500
Total Coliform	MPN/ 100ML	36	21.33	11	5000
Nitrate	mg/l	4.6	2.96	1.7	50

Buffer Zone

Criteria Pollutants	Unit	Max.	Mean	Min.	Permissible

				Value		**Value**	**Limit**
		pH	-	8.10	7.53	7.20	6.5 to 8.5
		DO	mg/l	8.50	7.35	6.10	4
		BOD	mg/l	2.60	2.24	2.10	3
		COD	mg/l	8.80	6.40	1.80	---
		Total Dissolved Solids	mg/l	863	362.19	134	1500
		Total Coliform	MPN/ 100ML	52	23.44	8	5000
		Nitrate	mg/l	10.30	3.54	0.70	50
c	Stage of ground water extraction for Katghora development block						Semi Critical
7	No. of Ambient Noise Monitoring Locations						11
	Core zone						

Parameter	**Unit**	**Maximum Value**	**Minimum Value**	**Prescribed Standard**
L_{eq} (Day)	dB(A)	71.5	68.9	75
L_{eq} (Night)	dB(A)	61.3	57.5	70

Buffer zone

Parameter	**Unit**	**Maximum Value**	**Minimum Value**	**Prescribed Standard**
L_{eq} (Day)	dB(A)	52.6	45.5	55
L_{eq} (Night)	dB(A)	39.6	32.7	45

8	No. of Soil Quality Monitoring Locations	03
	Summary of Soil Quality monitoring results	

Buffer Zone

Criteria Pollutants	**Unit**	**Mean**	**Maximum Value**	**Minimum Value**
pH		6.41	6.5	6.335
Nitrogen	kg/Ha	283.683	383.7	180.35
Potassium	kg/Ha	209.483	247	158.65
Phosphorus	kg/Ha	10.0833	14	7.05
Electric Conductivity	mS/cm	416.367	465.45	390.1

Core Zone

	Criteria Pollutants	**Unit**	**Mean**	**Maximum Value**	**Minimum Value**
	pH		6.0	6.19	5.73
	Nitrogen	kg/Ha	157.3	199	120
	Potassium	kg/Ha	146	179	117
	Phosphorus	kg/Ha	5.7	7.9	3.3
	Electric Conductivity	mS/cm	288.5	300	280
9	Details of Flora Fauna Study				
a	Study has been conducted by State Forest Research and Training Institute				
b	Wild conservation plan for study area was prepared and approved by Chief Wildlife Warden C.G. Forest Department, Naya Raipur on 17.05.2023 for an amount of Rs 6,19,50,000/- for a ten year period (2022-2032).				
c	Presence of migratory corridors, flight paths and spawning grounds in study area				Not present
10	Details of Ground Water Table				
a	Range of Water Table Pre-Monsoon Season (m bgl)				2.88 m to 14.60 m
b	Range of Water Table Post-Monsoon Season (m bgl)				1.70 m to 11.98 m

1.3 ANTICIPATED ENVIRONMENTAL IMPACTS

TABLE 1.3: ANTICIPATED IMPACTS

S.No	**Anticipated impacts**	**Type**
1	Socio-economic impacts	
a	Population Growth and In-migration	Positive
b	Transport and Communication	Positive
c	Human Settlement and R&R (In present case no R&R is involved)	-
d	Income and Employment	Positive
e	Civic Amenities and Community Development	Positive
f	Educational facilities and Literacy Drive	Positive
2	Impact on Ambient Air Quality	Buffer

S. No	**Criteria Pollutants**	**Unit**	**Baseline (98 percentile value)**	**Mini Value**	**Incremental con-centration**	**Total GLC**	**Prescribed Standard (24 Hrs)**

	1	PM_{10}	$\mu g/m^3$	80.20	59.3	8.99	89.19	100
	2	$PM_{2.5}$	$\mu g/m^3$	44.30	32.6	2.36	52.40	60
	3	SO_x	$\mu g/m^3$	25.50	18.4	0.01	25.51	80
	4	NO_x	$\mu g/m^3$	36.70	25.4	7.17	43.87	80
	Note: Above values are highest incremental value obtained through modelling at Akrapali village in downwind direction (in buffer zone).							
3	Impact on Water Quality							
a	Radius of influence on the groundwater regime							

Maximum Probable drawdown of unconfined aquifer (m)	**Radius of influence (m)**	
	Min K (0.039 m/day)	**Max K (0.36 m/day)**
104	209	636

b	Stage of Ground Water Extraction	Semi Critical

1.4 MITIGATION MEASURES

TABLE 1.4: DETAILS OF PROPOSED MITIGATIVE MEASURES

S. No	**Proposed measures**
1	**Measures for Socio-economic status**
CSR activities, Medical camps, Literacy drive, R&R package, Vocational and Skill Development Training facilities.	
2	**Measures for Air quality**
Surfacing of all service roads/permanent roads by asphalt. The length of haul road has been reduced to the minimum possible. The unmetalled roads are kept free of ruts, potholes, etc. Industrial road sweepers for periodic cleaning of loose materials lying on the roads. Regular maintenance of HEMM engines to limit emission of harmful exhaust fumes. Frequent and at regular intervals, water is being sprayed on haul roads, service roads by using mobile sprinklers of 70 KL capacity. Physical removal of dust from the roads. Fog cannon dust suppression system and similar item (Movable) in core zone. Greenbelts around quarry, industrial sites, service building area besides avenue plantation along roads. Fixed type of water sprinklers installed to suppress dust.	
3	**Measures for Water quality**

To assess the impact on local water levels, in time and space coordinates, monitoring of water levels in dug wells/ piezometers will be continued. To create the water source and to increase ground water recharge tanks/ ponds will be maintained in the nearby villages under community development exercises. Increased vegetative cover by plantation in the mine areas under amelioration measures will contain the surface runoff and increase the ground water recharge. Monitoring of water quality of mine water discharge, local river/ nala and domestic water (dug well/hand pumps) will be continued under routine monitoring. Creation of awareness among mine workers and local people about rainwater harvesting and significance of water. Gainful utilization of mine water within the mines and by the local people. Implementation of any other suggestive methods to conserve and augment ground water recharge by the regulatory agencies.	
4	**Measures for Blasting, Noise and vibrations**
• Provision of safety zone all around the mine to nullify impacts of Blasting, Noise and vibrations as per DGMS regulations. • Green belt will be developed around the mine along roads and other noise generating centers to curtail noise and vibrations as acoustic barriers. • Drilling and blasting in coal will be eliminated with the use of surface miner. • The ground vibration due to blasting will be controlled by optimum blasting pattern designed after conducting field trials. • Routine maintenance of HEMM and other machineries will be done.	
5	**Measures for Flora and Fauna**
Plantation of native species. Budget of Rupees 6,19,50,000/- for a ten year period (2022-2032) under wildlife conservation plan.	
6	**Measures for Land use and Soil quality**
Scientific study like slope stability study for internal & external OB dump, monitoring and other study etc Monitoring of landuse through satellite surveillance Land reclamation/restoration as per mine plan and afforestation plan	

1.5 ANALYSIS OF ALTERNATIVES

Alternative site for the project is not possible in case of extraction of the minerals & method of work to be adopted for any seam depends on many aspects such as depth of occurrence,

thickness and gradient of the seam, parting between the seams, structure, gassiness of the seam, geological disturbances etc. In addition, the presence of village, built up area and other surface features play an important role in deciding the method of work. Coal can be mined through Underground or opencast Mining.

Techno-economically, Surface miner alternative is better option than conventional one. Environmental Impact with effect from deployment of the Surface miner in coal extraction is somewhat lesser than that from the Conventional method. Under the flexibility in the implementation stage within the approved cost estimates to respond to improvements in technology and equipment which would result in improved profitability and productivity measures, it is proposed that most of the coal production will be done by deploying surface miner.

1.6 ENVIRONMENT MONITORING PROGRAMME

The responsibility for implementing environmental Monitoring plan would rest with the environment management structure who would be properly assisted by a team of qualified and trained personnel. For effective implementation and mid-term corrective measures (if required) monitoring and control of programme implementation is essential. A monitoring schedule for Air, Water, and Noise levels is already in operation as per Standards of MOEF vide GSR 742 (E) dated 25.9.2000 & G.S.R-826 (E), dated 16.11.2009.

1.6.1 AMBIENT AIR

Parameters monitored are SPM, PM10, PM2.5, SO_2, and NOx at the frequency mentioned in GSR 742 (E) dated 25.9.2000 & G.S.R-826 (E), dated 16.11.2009. Monitoring of heavy metal contents such as lead, chromium, arsenic, nickel etc. in ambient air quality is being done half yearly.

1.6.2 WATER

For effluent & surface water the parameters monitored are pH, Chemical Oxygen Demand, Total Suspended Solid, Oil & Grease at every fortnight and all parameters once in a year. For drinking water, monitoring is being done as per IS.10500 once in a month.

For Surface Water, Monitoring will be done on monthly basis as per IS: 2296: Part C.

1.6.3 NOISE

Noise is being monitored during day & night at every fortnight.

Monitoring data thus generated are being submitted to SPCB by end of the following month.

1.7 ADDITIONAL STUDIES

1.7.1 DISASTER MANAGEMENT AND RISK ASSESSMENT

Kusmunda OC is an expansion of running mine. The safety management plan for Kusmunda OCP addressing risk assessment and disaster preparedness plan. It has been prepared as per DGMS guidelines.

1.7.2 SOCIAL IMPACT ASSESSMENT, R&R PLAN

There are 10 nos. of villages, involved in the expansion area of project comprising a total land area of 2991.943 Ha. It involves rehabilitation of 1848 families while that of affected land oustees are 1354. Out of which 62 families rehabilitated at R&R site, and 1786 families balance to be shifted to R&R colony. Land oustees are compensated as per CIL R & R policy, 2012.

1.7.3 PUBLIC CONSULTATION

To ascertain the concern of local affected and others who have a plausible stake in environmental impacts of the project/activity, public consultation **(**Written submission only**)** will be conducted as per ToR dated 20.05.2024 and guidelines as per EIA Notification 2006.

1.7.4 TRAFFIC SURVEY

The traffic density survey has been conducted at two strategic points and the estimated average Level of Service (LoS) is B and C.

1.8 PROJECT BENEFITS

The project activities will directly and indirectly improve physical infrastructure, social infrastructure, Central & state Exchequer, helps Nation in Energy self-sufficiency, Green cover and Water reserves, secondary employment opportunities.

1.9 ENVIRONMENT COST BENEFIT ANALYSIS

MOEF&CC while issuing TOR has not specifically indicated for carrying out “Cost Benefit analysis” hence the same has not been carried out.

1.10 ENVIRONMENT MANAGEMENT PLAN

Environmental Management Plan is the key to ensure that the environmental quality of the area does not deteriorate due to the operation of the project. The tentative responsible officials to implement EMP are as in Table 1.5.

TABLE 1.5: THE TENTATIVE ROLES AND RESPONSIBILITIES OF OFFICIAL

S. No	Activities	Responsible official
1	Pollution Control Measures	General Manager, Kusmunda Area
		Project Officer / Environment Cell, Kusmunda OCP
		Monitoring by Environment Deptt. SECL(HQ)
2	Plantation/ Green Belt Development	General Manager, Kusmunda Area
		Project Officer / Environment Cell, Kusmunda OCP
		Forest Deptt. SECL(HQ)
3	Land Restoration	General Manager, Kusmunda Area
		Project Officer / Environment Cell, Kusmunda OCP.
		Monitoring by MCP Cell SECL(HQ)

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