EXECUTIVE SUMMARY FOR EXPANSION OF CHIRIMIRI OPEN CAST COAL MINE, TEHSIL – MANENDRAGARH, DISTRICT – KOREA, STATE CHHATTISGARH

1.1 Project Description:

1.1.2 Back Ground:

- Chirimiri open cast Mine is an on going coal mining project with a lease area of 1286.18 ha, in village Chirimiri, Bhandardei, Bhukbhuki in Manendragarh, tehsil of district Korea, Chhattisgarh State.
- The project was formulated in 1976 by CMPDI Nagpur, sanctioned by Govt. of India on 24.10.1978 with a capital cost of Rs. 18.7098 crore. The coal production in the mine started in the year 1979.
- The present production capacity is 1.0 MTY and it is proposed to increase the capacity to 2.0 MTY (Normative) & 2.7 MTY (Peak) to meet the demand of superior grade coal from SECL.
- The total ML area considered for environment clearance is 544.046. Out of 544.046 ha of lease area, 332.986 ha is forest land and balance 211.06 ha is non-forest land. Forest Clearance i.e. both Stage – 1 and Stage – II has been obtained.
- Environmental Clearance for a production capacity of 1.0 MTY was awarded by MoEF, New Delhi vide letter No. J-11015/6/92-IA.II(M) dated 31.01.1995 Form-1 for an enhanced capacity of 2.7 MTY was submitted on 11.11.2009 and considered by EAC on 25.11.2009. MoEF advised for re-submission of the project report vide their letter no. J-11015/331/2009-IA.II(M) dated 02.12.2009. The project was modified

and resubmitted. The presentation was done on 24.01.2011. The TOR was received in May 2011.

- This draft EIA/EMP has been prepared based on the field monitoring and collection of secondary data.

1.1.3 Project Description:

- Chirimiri opencast Coal Mine project of M/s South Eastern Coal fields Ltd. is located in village Chirimiri Bhandardei & Bhukbhuki in Manendragarh Tehsil of District Korea, Chhattisgarh state. The area is 40 Km. from Mahendragarh and 200 km. from Bilaspur.
- Nearest railway station Chirimiri is about 5 Km. (Road) from the proposed project and situated in the Anupur- Chirimiri branch line of Delhi-Howrah main line.
- The project has highly undulating topography with elevation ranging between 548 m to 636 m.
- The drainage of the area consists of several streams, some of them flowing locally through deep gorges. The significant major streams flowing in east are Gorghela nala and Bijour Jharia nala, both drain towards south.
- The lithology of the formations in and around Chirimiri Hill Block comprises of Karharbaris &/or Barakar sandstone covered by detrital mantle & with reported occurrence of Dolerite dyke. Chirimiri Hill is free from any igneous activity.
- The Mine has been divided into four sectors. The total mineable coal reserve of the Quarry is 24.25 Million Tonnes.

- ❖ For OB, Dragline (DL) with Shovel-Dumper system of mining has been proposed. For Coal, existing practice of 5.0 cum ERS/3.8 cum hydraulic shovel with 35 T dumpers are proposed.
- ❖ Bench height and width will be 16m to 24m and 60m respectively
- ❖ OB and Coal will be loosened by drilling and blasting to facilitate their excavation by shovels & D/L.
- ❖ No processing or beneficiation of coal is carried out. Most of the coal are transported through rail.

1.2 Description of the Environment:

1.2.1 Meteorological study :

Sl. No.	Parameters	Maximum	Minimum
1	Temperature (°C)	27	14
2	Relative Humidity (%)	82	53
3	Rainfall (mm)	Nil	Nil

1.2.2 Ambient Air Quality:

Out of 7 locations, the maximum Suspended Particulate Matter was found in the lease area near view point (536 µg/m^3) & minimum value was found at Bhkbhuki village (114µg/m^3).

The maximum Respirable Particulate Matter was found in the lease area near view point (275 µg/m^3) & the minimum value was found Near Check Post, Mohan Complex(66.0 µg/m^3)

Highest SO_2 (40.33 µg/m^3) value was found Near View Point of mine working area and lowest SO_2 value (10.84 µg/ m^3) was recorded near DAV Public School Ammatura.

Highest NO_X (38.02µg/ m^3) value was found in the lease area near subarea Manager Office and lowest NO_X value (10.21 µg/m^3) was recorded at DAV Public School near Higher Secondary School.

1.2.3 Water Quality:

Water quality monitoring (surface & ground water) was done at 6 locations within 10 km. radius of the lease. Out of 6 samples collected from different locations, 4 samples were from surface water and 2 from ground water/ drinking water.

Surface water:

The result of water samples are collected from Sump water near mine working (W-1), Pond near Bartunga (W-4), Kurasia Nala, near railway station (W-5), Sarbhoka Dam (W-6) are given below:

Code No.	pH	TSS (mg/l)	Chloride (mg/l)	Fluoride (mg/l)	Nitrate (mg/l)	Iron (mg/l)	Total Coliform (MPN /100 ml)
SW-1	6.70	46.00	11	0.42	0.52	0.56	21
SW-4	7.00	18	11	0.36	0.54	0.58	21
SW-5	8.30	56.0	18	0.30	1.40	0.04	21
SW-6	7.40	16.0	22	0.38	0.38	0.68	11
Desirable Limits							
IS: 2296 (Class C)	6.5-8.5	1500	600	1.00	50.00	50.00	5000

All the Parameters are well within the prescribed limit of IS:2296C.

Ground Water:

The result of water samples were collected from Drinking water Near Main Control room before treatment & after treatment (W-2,W-3) are given below:

Code No.	pH	Chloride (mg/l)	Fluoride (mg/l)	Nitrate (mg/l)	Iron (mg/l)	Hardness (mg/l)	Total Coliform (MPN /100 ml)
GW-2	7.7	28.03	0. 6	3.43	0.05	448	Nil
GW-3	7.30	24.00	0.58	3.35	0.02	446	Nil
Desirable Limits							
IS: 10500	6.5-8.5	250	1.00	45.00	0.30	300	-

All the Parameters are well within the prescribed limit of **IS:10500.**

1.2.4 Noise Level:

The noise level survey was carried out at 7 locations. The salient findings of the survey are given hereunder:

Noise levels were found to be within the standard limit.

		Noise Level			
		Maximum (SPL)	Minimum (SPL)	Day (leq)	Night (leq)
Ambient Noise Level (dBA) *(Industrial area)*					
N-1	Near view point	80	61	71.7	56.5
N-2	Near Subarea Manager Office	70	57	63.9	56.4
Ambient Noise Level (dBA) *(Residential area)*					
N-3	Near Check Post, Mohan Complex	55	42	52.2	44.5
N-4	Near Govt. Higher Secondary School, Godripada,	53	41	49.2	42.0
N-5	Near DAV Public School, Ammatura	48	40	43.5	40.5
N-6	Near Bhukbhuki Village	53	41	51.3	42.8
N-7	Near Shiv Temple, Kothori Colony,	53	40.0	48.4	41.7

1.2.5 Demographic Features:

The study area comprises of 20 census villages with a total population of 20265. Presence of SC & ST population to the total population of the study area are 56.89% & 8.01% respectively. The percentage of Schedule Caste (SC) and Schedule Tribe (ST) to the total population in urban area is 19.75 & 8.97 respectively.

Household size of the study area is 5.18 & 4.8 in Rural and Urban respectively.

Sex ratio of the study area is 981 female per 1000 male.

1.2.6 Flora & Fauna:

The vegetation of Chirimiri are broadly classified into two major type's viz. the Moist Peninsular low level Sal forest & Moist Peninsular valley Sal forest.

There is no Wild life sanctuary, National Park or Biosphere Reserve within the limit of 10 km radius of the site .The most part of the area is covered with vegetation. The peripheral zone consists of very nominal agricultural land, with rice and maize as major crops.

1.2.7 Landuse:

Landuse Categories of Study Area (10 Km. radius area):

Sl. No.	Category	Area (in ha)	% of the Study area
1	Mining area	434	1.4
2	Built-up land	551	1.75
3	Forest land/ Vegetation	15580	49.62
4	Water bodies	350	1.11
5	Waste land	14485	46.12
	TOTAL	**31400**	**100**

1.3 Anticipated Environmental Impact & Mitigation Measures:

	Impact due to proposed expansion	**Environmental Management measures existing & proposed**
Climate	The activities envisaged will have negligible impact on the climate. However, further measures will be taken for control of emission of dust, etc.	Provision of water sprinkling will be more frequent.
Topography	The mine working depth will vary 80 m to 100 m at ultimate stage. The ground water table varies from 3 to 6.5 m.	Mine working intersect the ground water table. Pumping of mine water is used for daily consumption. Excess of water (if any) is used for irrigation
Landuse	There is no external dump as the OB and waste are being backfilled. There will be no external dumps at the conceptual stage. However the height at final stage after backfilling will be 10 to 20 meters above ground level. Land disturbed due to mining will increase from the present 98.0 ha to 307.0 ha.	286.117 ha of mined out area will be reclaimed and rehabilited at final stage 1.0 ha will remain as water body
Solid waste management	A total of 226.78 Mm^3 of waste will be generated till life of mine	All the waste generated will be used for backfilling in 286.17 ha area. The height will be 10 to 20 m from ground floor at the final stage. The whole area will be rehabilitated.

	Impact due to proposed expansion	Environmental Management measures existing & proposed
Drainage	The area is drained by several small streamlets on the slopes of the hills. The prominent amongst them is "Saudam' nallah which flows through the northern part of Chirimiri Hill and Joins Korea nallah which in turn drains into Hasdeo River.	There is no effluent discharge. The mine pumping water is used for domestic as well as industrial consumption. Rain water run off only is likely to cause turbidity for which check dams/ silt ponds have been & proposed to be constructed in the course of seasonal nalla. The check dams are constructed to check the speed of the water, as well, the wash off material also gets arrested. The water after passing through the check dam is collected in a sump. Mine sump of 0.5 lakh gallons has been constructed. Oil and Grease trap has been commissioned. No effluent is discharged outside the mine lease area. The existing plantation and proposed tree plantation will also definitely check the flow &

	Impact due to proposed expansion	Environmental Management measures existing & proposed
		turbidity of water, joining the nallas.
Air quality	The mining activities will be spread in an area of 286.117 ha. Mining will increase from 79.117 ha to an area of 286.117 ha till end of life of mine in phases. The mine will be mechanized to produce 2.7 mtpa (Peak) of Coal. Loading and transportation of ore and waste materials, dumping and storage of minerals and waste disposal are contributive factors for the air borne dust and emissions.	The coal coming out of the mine is wet hence there is very little chance of getting air bome. Internal roads are black topped coal is dispatched through rail. Trucks are covered with tarpaulin upto railway siding. The measures like water sprinkling on haul road, wet drilling, equipment maintenance, etc. will be ensured to reduce the dust levels & other emissions and keep them well within the safe limits.
Water quality	Rain water runoff has to be managed properly.	Necessary control measures like chlorination etc in the wells and hand pumps in the vicinity will be continued. Chances of flow of sediments/silt will be minimised as discussed under item 'drainage'.
Water requirement	The total water requirement would be 0.50 Million m3 which	Total water requirement will be meet out from the mine pit

	Impact due to proposed expansion	**Environmental Management measures existing & proposed**
	will be met from mine pumped out water	pumping water. To avoid wasting any excess water will be used for irrigation.
Noise level and Ground Vibration	Blasting is envisaged which will cause ground vibrations, noise and fly rocks. Bada Bazar and Chota Bazar are human settlement in close vicinity. Both electric and diesel RBH drill will be in use.	Drilling and blasting will be done as per DGMS guidelines. Blasting will be carried out as per the CMPDI report.
Flora & Fauna	332.986 ha is under forest land, Therefore the standing trees and vegetation over this area will be lost. No threatened endangered or endemic species of flora or fauna within the core zone reported.	Compensatory afforestation and plantation will be carried out 1,39,340 number of sapling have been planted as on date. Biodiversity Conservation Plan is prepared and funds will be provided for implementation.
Socio-economic	There are settlement / residential area within the proposed lease area. Environmental clearance is being sought for a part of lease area, wherein there is no settlement and hence no re-settlement & re-habilitation is	The project authority is also carrying out adequate peripheral development jobs.

	Impact due to proposed expansion	Environmental Management measures existing & proposed
	envisaged. The proposed project will run with 1270 persons. Apart from above employment, 150 more indirect employment will be generated through handling of material, transport etc, which will include social status of the people in the locality.	

1.4 Environmental Monitoring Programme:

Sl.	Description of parameters	Schedule & duration of monitoring
1.	**AIR QUALITY**	
	Four ambient air quality monitoring stations will be established in the core zone & buffer zone for PM_{10}, $PM_{2.5}$, SO_2, NOx and CO. Location of the ambient air quality stations will be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets.	One sample (24 hourly) per day, 2 days/ week and 12 weeks/ season, twice a year.
2.	**WATER QUALITY :**	
	Water quality of Balijhar nala and groundwater will be monitored.	Physico-chemical, metals and biological parameters, in each season.
3.	Water flow	Balijhar nala in each season.
4.	Vehicular emissions	Regular Monitoring
5.	Noise level	Regular Monitoring

6.	Soil quality	Every year in dry season, of all plantation areas
7.	Flora & fauna	Once in 5 years
8.	Socio-economic	Once in 3 years.
9.	Water level by piezometer / existing well	Once in Every season

1.5 Project Benefits:

- The proposed project will run with 1270 persons. Apart from above employment, 150 more indirect employment will be generated through handling of material, transport etc, which will include social status of the people in the locality.
- For providing medical facilities to its workers company will provide an well equipped Occupational Health Center. One doctor having MBBS and DIH qualification and paramedical staff is available to meet the requirements of the workers. Medicines are supplied to the workers as per the prescription of the attending doctor. In case of any emergency company provides ambulance to shift the patient to any ESI/major hospital.
- Company will provide permanent or temporary employment to local people based on their qualification when required.
- The Company will organize Total Literacy Campaign in the area**.** It will adopt village and helped in total literacy work**.** The company will use the services of its officers for spreading literacy in the area.
- The company will conduct awareness programme for elimination of child labour for creating awareness among the local public. The local people's representatives, teachers, industrialists and police participation will be invited for the above work.

1.6 Environmental Management Plan:

The environmental management programme can be successfully implemented only in the case of an efficient organizational set up. Similarly regular monitoring of the various environmental parameters is required to check the pollution status and effect of control measures.

A capital cost of the project has been estimated to be Rs. 954.61 lacs including the environmental safeguards and there is a plan for recurring expenditure of Rs 169.70 lacs per year.

Conclusion:

The SECL is a miniratna company and admired for implementation of best environmental practices and compliances to applicable statutory requirements. The Environmental Clearance proposed for the project will encourage the Company towards excellence of environmental practices and development of people around the mine.