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**PRE- FEASIBILITY REPORT
FOR
OBTAINING ENVIRONMENTAL CLEARANCE
IN RESPECT OF
SURAKACHHAR UNDERGROUND COAL MINE**

**(APPLIED PRODUCTION CAPACITY – 0.456 MTPA,
PROJECT AREA – 1045.86 ha)**

**Tehsil: Katghora; District: Korba;
State: Chhattisgarh**

**KORBA AREA
SOUTH EASTERN COALFIELDS LIMITED
(A MINI RATNA COMPANY)**

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1. EXECUTIVE SUMMARY

Surakachhar underground coal mine is an existing underground coal mine under the jurisdiction of Korba Area of South Eastern Coalfields Limited and forms part of the Korba Coalfields. The project area is located under P.O. Bhairotal in the Katghora tahsil of district Korba of Chhattisgarh, falls under top-sheet no. 64 J/11 of Survey of India (1:50000) and is bounded by the latitudes 22°20'52" to 22°22'57" North and longitudes 82°36'20" to 82°39' 20" East.

The mine started coal production prior to the Nationalization in the year 1963 in collaboration with Russian Consultants .In the year 1976,Surakachhar 3 & 4 incline was opened which started production in June 1977.Surakachhar 5 & 6 incline was opened in the year 1984 which started production in April 1984. The mine obtained Consent to Establish and Operate for production capacity of 38,000 metric tonnes per month (0.456 Million tonnes per annum) from the Chhattisgarh Environment Conservation Board (CECB). The CTO has been renewed subsequently from time to time. At present, the latest CTO renewal issued by the CECB is valid up to 31.07.2023.

The project applied for obtaining ToR for Environmental Clearance from the MoEF&CC for the existing production capacity of 0.456 MTPA in the project area of 1045.86 ha. At present, the mine is required to submit a pre-feasibility report, in compliance of the provisions of the EIA Notification 2006, for further processing of the proposal for which this report has been prepared as per the format prescribed by the MoEF&CC vide OM no. J-11013/41/2006-IA.II(I) dated 30.12.2010.

The basic details of the project are as tabulated below:

Sl. No.	Particulars	Details
1	Type of the Project	Underground Coal Mining Project
2	Existing EC	EC is to be obtained. The project has been running on CTO under Air and Water Acts issued by the CECB.
3	Project Area	1045.86 ha
4	Category as per EIA Notification 2006	1(a)
5	Capacity	0.456 MTPA
6	Total Geological Coal Reserve as on 01.04.2023	SRK MAIN -11.24 MT, SRK 3&4 -3.02 MT ,TOTAL -14.26 MT
7	Total Mineable Coal Reserve as on 01.04.2023	SRK MAIN -2.25 MT,SRK 3&4- 1.586,TOTAL-3.84 MT

8	Coking or Non-coking Coal	Non-coking
9	Balance Life of the mine as on 01.04.2023	12 years @ 0.456 MTPA
10	No. of workable coal seams	Total four no. of coal seams: G-I, G-II, G-III and G-IV Only G-III (i.e. top seam) and G-I (i.e. bottom seam) are workable. G-I seam is fully developed. At present, the main mine working in from G-III seam. In SRK 3&4, G-I seam is fully developed. Depillaring is going on in G-I seam.
11	Depth of the Seams	30 m to 185 m for Seam G-III (Top) 182 m to 265 m for Seam G-I (Bottom)
12	Seam Thickness	1.2-3.0 m (Seam G-III Top) 1.5-3.3m (Seam G-I Bottom)
13	Dip & Strike of Coal Seams	1 in 10, South 22 ⁰ 12'00"
14	Grade of Coal	G7
15	Mining Method	Semi-mechanized Bord and Pillar method of mining Mining machinery deployed: LHD & UDM
16	Coal Transportation	U/G ^{Conveyor Belt} Surface Bunker ^{Tipper} Railway Siding
17	Forest Area	Nil
18	FC status	NA
19	Maximum Subsidence	Not visible
20	R&R Status	No R&R involved
21	Project Cost	Rs. 67.07 Crore as on 31.03.2022 (Rs. 67,07,39,168/- in exact figures)
22	Pending Court Cases, if any	Nil
23	Existing CTO	Issued vide no. 3163/TS/CECB/2022 dtd. 29.07.2022, valid Up to 31.07.2023

2. INTRODUCTION

2.1 IDENTIFICATION OF THE PROJECT AND PROJECT PROPONENT:

Name of the Project	Surakachhar underground Coal Mine
Name of the Company, Address (Tele No. &E-mail)	South Eastern Coalfields Ltd, Seepat Road, Bilaspur (Chhattisgarh) PIN: 495006 Tel: 07752-246324; Fax: 07752-246324 E-mail: gmenv.secl@coalindia.in

In the above project, land has been acquired under the CBA(A&D)Act,1957.Copy of Mining lease, project site layout plan, project boundary co-ordinates is attached in Annexure-1

2.2 BRIEF DESCRIPTION OF THE NATURE OF THE PROJECT:

Surakachhar underground mine is an old mine which commenced production in the year 1963 in collaboration with Russian Consultants. The mine has been running on the Consent to Operate issued under the Air and Water acts by the Chhattisgarh Environment Conservation Board and subsequently renewed from time to time. The project has applied for obtaining Environmental Clearance for 0.456 MTPA production capacity in project area of 1045.86 ha. There is no forest land involved in the project and the project therefore does not require obtaining Forestry Clearance from the MoEF&CC and Wildlife Clearance from the National Board of Wildlife. The project area involves 372.53 ha tenancy land and 673.33 ha Govt. land. Coal production from the mine is through semi-mechanized Board and Pillar methodology utilizing LHD (Load Haul Dumper) and UDM (Universal Drill Machine). Coal transportation from the mine to the consumers is entirely through rail mode, thereby eliminating the need for road transport which is one of the major causes of air pollution in mining. The mine is under administrative control of Balgi-Surakachhar Sub-Area of Korba Area of SECL.

2.3 NEED OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY AND OR REGION:

The national demand for coal is increasing day by day and CIL has to achieve stiff targets in order to meet the ever-growing energy needs of the country. SECL being the leading producer of coal for CIL has to take the onus for steep increase in production. In Indian coal industry there are only two

technologies for coal winning, which are well known viz., Opencast coal mining and Underground coal mining.

Though opencast coal mines generally have higher achievable production rates compared to underground coal mines, underground mining has the benefit of being less polluting and producing coal of higher grades.

Surakachhar underground mine is an eco-friendly mine with semi-mechanized Bord and Pillar methodology and the entire coal transport to consumers being rail based. Since the mine is very old, it has also significantly contributed towards the socio-economic growth and welfare of the surrounding area and villages in terms of direct/indirect employment generation, supply of mine water to nearby localities and the measures undertaken in CSR in the nearby villages.

Continuation of the mine will therefore benefit the nation in terms of meeting coal availability targets and contribution to the Govt. exchequer and the region in terms of the aspects listed above.

2.4 DEMAND AND SUPPLY SCENARIO:

Liberalization of power sector by Government of India has generated widespread interests for private and public sector investments in power generation and other industrial development. As such, there is an appreciable increase in the number of upcoming new projects in both private and public sectors. As per Perspective Plan of Coal India, Coal Production level of CIL is projected to reach the 1 Billion Tonne (BT) level in 2025-26. SECL is expected to reach 200.00 Million Tonnes (Mt) level by 2023-24. Since substantial increase in coal production is expected between short term and long-term periods, attempt has been made to bring as many blocks of CIL into production as possible. The year wise breakup of the production projection of SECL is as given in the table below:

Year -wise breakup of the production projection (Figures in Mt) of SECL			
YEAR	23-24	24-25	25-26
SECL	200.00	225.00	260.00

2.5 IMPORT VS INDIGENOUS PRODUCTION:

Around 20% of coal demand of the country is still met through imports. It is thus important to augment indigenous production. The coal produced from Surakachhar underground mine shall be utilized by both power and non-power sector within and outside Chhattisgarh.

2.6 EXPORT POSSIBILITY:

Since, there is a considerable gap between demand & supply scenario in our country, there is no possibility to export coal from the project.

2.7 DOMESTIC/EXPORT MARKETS:

The coal produced from Surakachhar underground mine is planned to meet the domestic requirement.

2.8 EMPLOYMENT GENERATION:

The project manpower stands at 615 nos. of employees at present out of which 495 nos. of employees in the project are from the nearby areas and total 550 nos. of indirect employment has been generated. No new employment generation is proposed against land as there is no further land acquisition involved in the project.

3 PROJECT DESCRIPTION

3.1 TYPE OF THE PROJECT INCLUDING INTERLINKED AND INTERDEPENDENT PROJECTS, IF ANY:

The project is an underground coal mine with the applied and maximum production capacity as 0.456 MTPA in project area of 1045.86 ha. There are no interlinked or interdependent projects involved.

3.2 LOCATION:

The project area is located under P.O. Bhairotal in the Katghora tehsil of district Korba of Chhattisgarh, falls under topo-sheet no. 64 J/11 of Survey of India (1:50000) and is bounded by the latitudes 22^o20'52" to 22^o22'57" North and longitudes 82^o36'20" to 82^o39' 20" East. Screenshot of the KML file for location reference is as provided below:



Mine Boundary Co-ordinates of Surakachhar UG mine:

POINT	LATITUDE	DEPARTURE
1	931698	2859108
2	931417	2859300
3	930833	2859310
4	930806	2859518
5	930290	2859360
6	930247	2859382

POINT	LATITUDE	DEPARTURE
7	930225	2859550
8	929995	2859540
9	929840	2859465
10	929640	2859485
11	929615	2859595
12	929420	2859680
13	929420	2859765
14	929115	2859795
15	928985	2860590
16	928920	2861355
17	928705	2861620
18	927912	2861809
19	927849	2858252
20	927978	2858130
21	928210	2857517
22	928975	2857341
23	928700	2856903
24	928808	2856525
25	929910	2856807
26	931392	2857247

3.3 DETAILS OF ALTERNATE SITES CONSIDERED AND THE BASIS OF SELECTING THE PROPOSED SITE, PARTICULARLY THE ENVIRONMENTAL CONSIDERATIONS GONE INTO:

Coal deposits are site specific. Therefore, no alternate site has been considered for the mine. The project is an existing underground coal mine. Environmental quality monitoring is routinely carried out vis-à-vis the applicable standards to assess the impacts of mining from the project on the environment and the monitoring reports are submitted to the state pollution control board (CECB). Various measures are undertaken to ensure environmental quality is maintained as per the norms.

3.3.1 ENVIRONMENTAL POLLUTION MITIGATION MEASURES

3.3.1.1 AIR POLLUTION CONTROL MEASURES

Following air pollution control measures are being practices and will continue to be practiced within the mining area and at coal handling plants and railway siding site.

- a) Coal from the underground is transported to the surface bunker through covered belt conveyor provided with water spraying arrangements, thereby ensuring that coal reaches

- The surface bunker in wet condition resulting in no dust emission along the way.
- b) Coal is supplied to the Surakachhar Railway siding through covered tippers.
 - c) 10 nos. of fixed sprinklers covering length of around 600 m have been installed along the railway siding for effective dust control and are being properly operated & maintained.
 - d) Wind barrier sheet is provided along the outer boundary of the railway siding. Plantation with native species has been carried out in the outer area of the siding for providing an additional layer for arresting dust.
 - e) The roads in the project premises are bituminous. Dust suppression in the project premises is being done through mobile water tanker of 9 kl. Spraying arrangements have been made at all the loading, unloading and transfer points for efficient dust control arrangements.
 - f) Routine air quality monitoring is being carried out at eight nos. of air quality monitoring stations in the core and buffer zones vis-à-vis the applicable discharge standards. The monitoring reports are submitted to the Chhattisgarh Environment Conservation Board (CECB)

3.3.1.2 WATER POLLUTION CONTROL MEASURES

▪ Management of Surface Water Drainage

Garland drain of adequate size and gradient has been constructed around Incline mouth and air shaft of the mine to prevent ingress of surface run off.

Details of garland drain construction are as follows:-

- a. Type of drain : Pucca construction
- b. Width : 0.6 m
- c. Depth : 1.0 m
- d. Length : 1200 m

▪ Mine Water Discharge and Industrial Effluent

Underground sumps of capacities 2500 cu.m and 1500 cu.m have been provided to collect and settle the mine water mixed with coal and silt particles in the underground itself. There after, the mine water is pumped into the settling tank constructed at the surface for secondary settling so as to conform to the applicable discharge standards.

Details of the constructed settling tank are as follows :-

Settling tank of volume 2160 cu.m with dimensions 18 * 40 m * 3.0 m

The mine is not acidic and hence there is no concern of acid mine drainage.

▪ **Domestic Effluent Treatment**

The residential quarters are provided with pucca drainage and soak-pit and septic tank arrangement for arresting and discharging the domestic effluent.

▪ **Water Conservation**

Rainwater harvesting structures are proposed for the mine office buildings. Mine water from the project is treated and supplied to nearby rural areas for domestic use, thereby reducing their dependency on groundwater.

3.3.1.3 Noise Level Management

The present noise levels are below the prescribed limits. If the impulsive noise levels increase due to mining operation, sufficient measures will be adopted to maintain the noise level within permissible limits at working zone.

The following measures have been adopted for maintaining noise levels within the applicable standards in the surface and underground workings:

- a) Plantation in the mine premises and nearby areas in the leasehold
- b) Lined chutes in bunkers to reduce noise.
- c) Provision of ear muffs/ear plugs to workers subjected to noise level above recommended limits.
- d) Regular monitoring of noise level
- e) Routine maintenance schedules for machines and belts to eliminate noise as far as possible.

3.4 SIZE AND MAGNITUDE OF OPERATION:

The scope of the project is limited to coal production through underground mining with Bord & Pillar technology at 0.456 MTPA capacity in the project area of 1045.86 ha.

3.5 PROJECT DESCRIPTION WITH PROCESS DETAILS:

3.5.1 SEQUENCE OF COAL SEAMS:

The sequence of coal seams and partings in the block is summarized in Table below:

SEAM/ PARTING	SEAM THICKNESS (m)		PARTING THICKNESS (m)	
	MIN.	MAX.	MIN.	MAX.
G III TOP	1.2	3	65	85
G I BOTTOM	1.5	3.3	65	85

3.5.2 RESERVES:

The seam-wise break-up of net geological coal reserve and extractable coal reserve of Surakachhar u/g mine as on 01.04.2023 is as follows.

NAME OF SEA M	TOTAL GEOLOGICAL COAL RESERVE AS ON 01.04.2023 (MT)			TOTAL EXTRACTABLE COAL RESERVE AS ON 01.04.2023 (MT)		
	SOP	VIRGIN	TOTAL	SOP	VIRGIN	TOTAL
SRK M M GIII	4.4	2.5	6.9	1.5	0.75	2.25
SRK MM GI	4.34	NIL	4.34	NIL	NIL	NIL
SRK 3&4 G III	NIL	NIL	NIL	NIL	NIL	NIL
SRK 3&4 G I	3.02	NIL	3.02	1.586	NIL	1.586
Total Reserves	11.76	2.5	14.26	3.086	0.75	3.836

Year wise Production of Surakachhar UG mine since 1993-94

Year	Production (MT)
1993-94	0.312
1994-95	0.401
1995-96	0.367
1996-97	0.348
1997-98	0.349
1998-99	0.333
1999-2000	0.343
2000-01	0.335
2001-02	0.352
2002-03	0.301
2003-04	0.341
2004-05	0.392
2005-06	0.418
2006-07	0.378
2007-08	0.435
2008-09	0.495
2009-10	0.495
2010-11	0.392
2011-12	0.377
2012-13	0.294
2013-14	0.248
2014-15	0.268
2015-16	0.267
2016-17	0.191
2017-18	0.184
2018-19	0.255
2019-20	0.129
2020-21	0.233
2021-22	0.168
2022-23	0.056

Total Production from the mine as on date since inception (i.e 1964-65) of the mine is 13.68 MT.

3.5.3 GEO-MINING CHARACTERISTICS:

GEO-MINING CHARACTERISTICS

- **Mining Area & Infrastructure** : 1045.86 ha
- **No. of Boreholes** : 30 approx. (within the mining area)
- **Borehole density in proposed mining area** : 0.25-0.35 borehole/sq. km. (approx)
- **Dip & Strike:** Dip is 1 in 10; direction South 22^o12'00"
- **Intrusion:** no significant intrusions
- **Faults:** One major upthrow fault of 47 m passes NW to SE through the middle of the property. Two other faults exist in EIA and EIB panel in G-I seam.
- **Forest Area:** No forest land is involved in the project

- **Seams available in the mining area:** G-III, G-I

3.6 RAW MATERIAL REQUIRED ALONG WITH ESTIMATED QUANTITY & MODE OF TRANSPORT OF RAW MATERIAL & FINISHED PRODUCTS:

Since this is a coal mining project (primary sector), no raw material is required.

Coal transportation:

- Coal from the face shall be brought to surface through conveyor belt and discharged into the surface bunker.
- From surface bunker, the coal shall be transported by road through optimally loaded and tarpaulin covered trucks to the railway siding and through rail to the coal consumers. The distance from the surface bunker to Surakachhar railway siding is approx. 2km.

3.7 RESOURCE OPTIMIZATION/ RECYCLING AND REUSE:

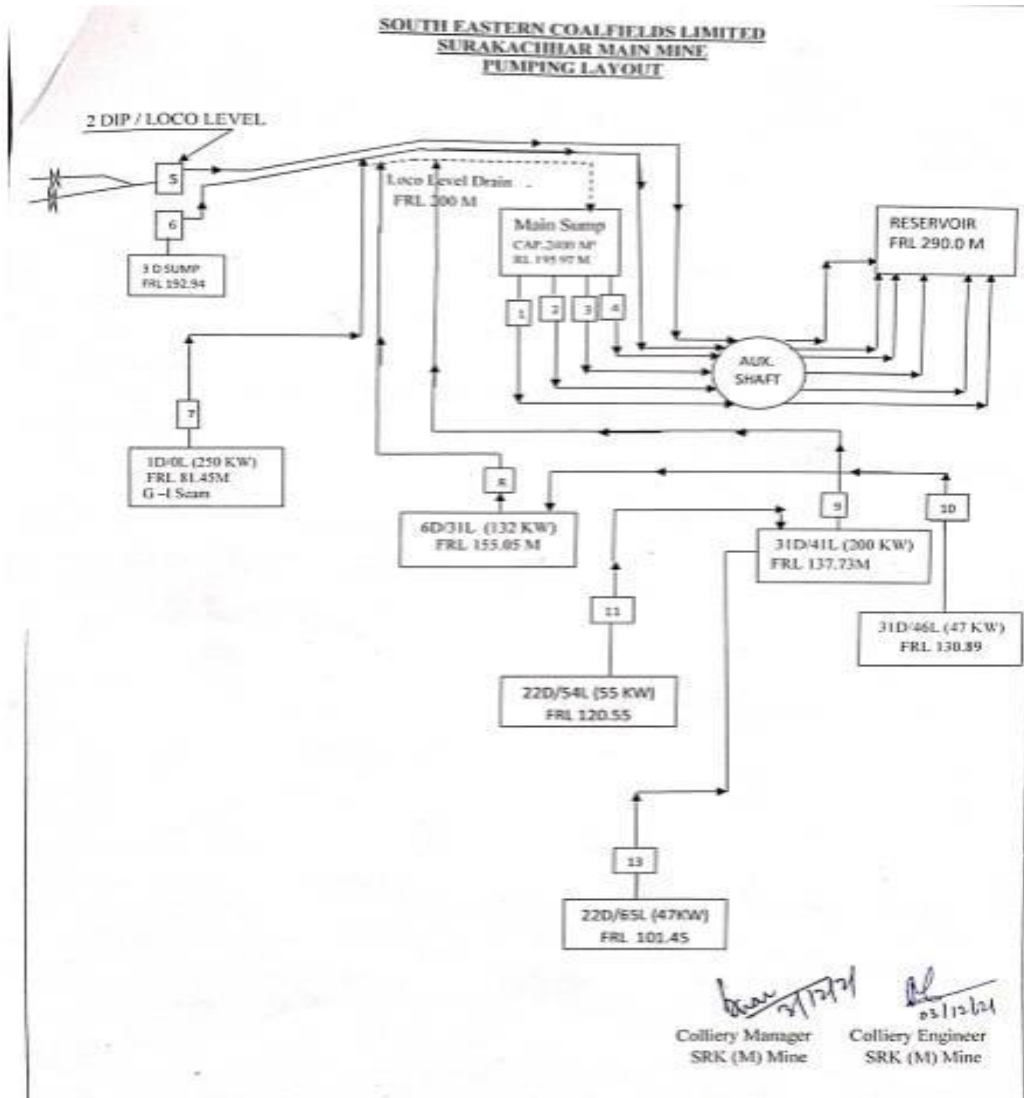
- The underground mining machineries deployed in coal production are utilized at their maximum capacities.
- Mine water is utilized in dust suppression, domestic requirements of the project office, green belt development and supply to the nearby rural areas for domestic use and the balance clear mine water is discharged into natural watercourse which maintains the optimum flow of the natural drainage.

3.8 AVAILABILITY OF WATER AND ITS SOURCE, ENERGY/POWER REQUIREMENT AND SOURCE:

Total industrial water requirement for the mine works out to 400 KLD including that for dust suppression, firefighting, plantation watering and pipeline losses. Total domestic consumption in office building is estimated around 220 KLD. This entire water demand is being met from the mine water. The surplus clear mine water after passing through settling tank is discharged into the nearby natural nala which becomes the main source of irrigation by villagers residing on the sides of this nala. Paddy is the main crop cultivated by villagers in the surrounding region.

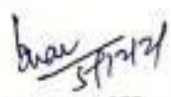
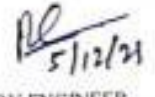
Schematic diagram showing the pumping layout is as provided below:

PUMPING LAYOUT WITH PUMP DETAILS OF SURAKACHHAR U/G MINE



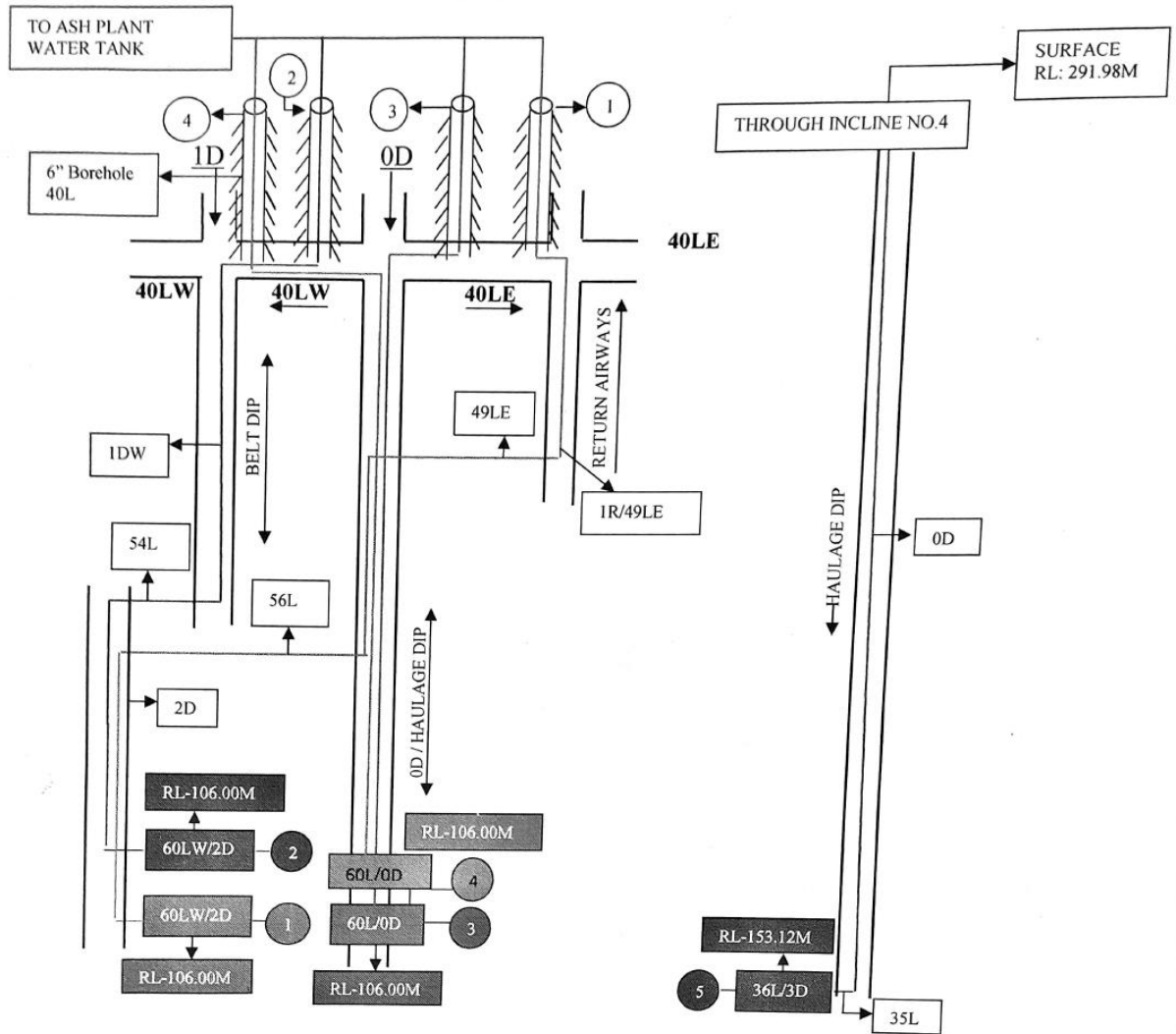
The details of the installed pumps are as follows:

S. N	LOCATION	DETAILS OF PUMP	Electrical Motor Capacity	HEAD	DISCH	PIPE DIA.	PIPE LENGTH
1.	PUMP HOUSE	Make – Kirloskar, RKB 200/37, 4 Stage	250KW,3.3KV	160 M	80 LPS	10"	370 M.
2.	PUMP HOUSE	Make – Kirloskar, RKB 150/34, 5 Stage	220KW,3.3 KV	--DO--	--DO--	10"	370 M.
3.	PUMP HOUSE	Make – Kirloskar, RKB 150/34, 5 Stage	250KW,3.3KV	--DO--	--DO--	10"	370 M.
4.	PUMP HOUSE	Make – Kirloskar, RKB 150/34, 5 Stage	270KW,3.3 KV	--DO--	--DO--	10"	370 M.
5.	2D/L. LEVEL	Make – Kirloskar, RKB 150/34, 5 Stage	270KW,3.3 KV	150 M	--DO--	6"	1170 M.
6.	2D/L. LEVEL	Make – Kirloskar, RKB 150/34, 5 Stage	270KW,3.3 KV	150 M	--DO--	6"	1170 M.
7.	1D/0L (G1)	Make – Kirloskar, RKB 150/34, 5 Stage	250KW,3.3 KV	120 M	--DO--	6"	950 M.
8.	6D/31L	Make – Kirloskar, MLA 100, 4 Stage	90KW,550 V	150 M	38 LPS	4"	600 M.
9.	41L/31D	Make – Kirloskar, RKB 125/27, 4 Stage	160KW,3.3KV	150 M	38 LPS	6"& 4"	1500 M.
10.	31D/46L	Make – Kirloskar, MLA 100, 4 Stage	47KW,550V	150 M	38 LPS	4"	450 M.
11.	22D/54L	Make – Kirloskar, MLA – 3, 3 Stage	47KW,550V	75 M	38 LPS	4"	270 M
12.	22D/65L	Make – Kirloskar, MLA - 3, 3 Stage	47KW,550V	33 M	38 LPS	4"	690 M

S. E. C. L SURAKACHHAR COLLIERY (MAIN MINE) PUMPING DETAILS	
SEAM G-I & SEAM G-III	NOT TO SCALE
 COLLIERY MANAGER SRK Colliery (Main Mine)	 COLLIERY ENGINEER SRK Colliery (Main Mine)

SURAKACHHAR 3&4 INCLINE SECL.KORBA AREA

PUMPING LAYOUT (NOT TO SCALE)



SL.No.	Name of Pump	Location	Capacity	Head (M)	Length Delivery Pipe (M)	Sump Capacity	Motor 3.3 KV	Current (Ampere)
1	Mather & Platt (5CHR)	60LW/2D	80LPS/1000GPM	200	750	3000 M ³	250 KW	60
2	Mather & Platt (5CHR)	60LW/2D	80LPS/1000GPM	200	750	3000 M ³	320 KW	75
3	Max flow	60L/0D	80LPS/1000GPM	200	750	3000 M ³	270 KW	50
4	RKB 150/34K	60L/0D	80LPS/1000GPM	200	750	3000 M ³	290 KW	55
5	RKB 150/34 K	36L/3D	80LPS/1000GPM	160	1150	1500M ³	231 KW	35

[Signature]
18/07/23
Colliery Engineer
SRK 3&4 Incline

[Signature]
18/07/23
Colliery Manager
SRK 3&4 Incline

The project receives power by means of 11 KV overhead line (ACSR, DOG equivalent) on tubular/rail poles drawn from 33KV/11KV regional substation at Ghordewa. The distance from the project is around 3 km.

For catering the power supply for the proposed load of underground face equipment, pumping, conveyor belts, haulage and underground lighting loads, along with surface lighting, MMV and siding. The total connected load has been assessed as 3650 kW and 1500 kVAR with a corrected power factor of 0.96 (lagging).

3.9 QUANTITY OF WASTE TO BE GENERATED:

Surakachhar underground mine is an underground coal mine. All development and pillar extraction activities will be in-seam activities only. Hence, no waste is likely to be generated.

3.10 SCHEMATIC REPRESENTATIONS OF THE FEASIBILITY DRAWING:

The project is not economically feasible at the current level and technology of production. However, the project is still required due to multiple socio-economic benefits to the community and the Govt. of India, as illustrated in section 9.2 ahead.

4 SITE ANALYSIS

4.1 CONNECTIVITY/COMMUNICATION:

The approach road to mine is existing and project is located around 14 Km from the area head office and District HQ Korba. The nearest rail head is Gevra road of SEC Railway on the Champa-Korba branch line at a distance of around 3 km.

4.2 LAND FORM, LAND USE AND LAND OWNERSHIP:

The project involves 1045.86 ha land acquired for mining right under Notification S.O. 1619 dtd. 22.05.1962. The land details are as follows:

Land Details (Type of Land in Ha.)				
Sl. No	Land Use	Within ML Area (ha)	Outside ML Area (ha)	Total (ha)
1	Agriculture Land	372.53	0	372.53
2	Govt. Land	673.33	0	673.33
3	Forest Land	0.00	0	0.00
	TOTAL	1045.86	0	1045.86

AREA UNDER SURFACE RIGHTS:

Sl. No	Details	Area (Ha)
Within Mine Take Area		
1.	Infrastructure	13.04
2.	Others (Specify) Explosive magazine	21.0
Sub Total		23.04
3.	Residential Buildings	44.89
4.	Roads	20.05
Sub Total		64.94
Grand TOTAL		87.98

4.2.1 ACQUISITION STATUS:

A total of 1045.86 ha land has been notified u/s 11(1) of CBA Act, 1957 for Surakachhar underground mine. The land has already been acquired and under possession. No additional land acquisition is envisaged in future for the project.

4.3 TOPOGRAPHY AND DRAINAGE:

The project area is predominantly characterized by dendritic drainage controlled by River Hasdeo (a tributary to River Mahanadi). The Ahiran river flows in close proximity to the area, and ultimately drains into the River Hasdeo at around 5 km South-East of Surakachhar. The Ahiran river is in turn joined roughly 1.5 km south of Surakachhar by the Kholar Nala, which flanks the project area towards far-west. Another major Nala which feeds the Ahiran Nadi and the project area is the Banarijhiriya Nala. It joins the Ahiran Nadi around 4 km South East of Surakachhar. Other minor Nalas draining the buffer area surrounding the project area are Karra Nala (towards north), and Saliha Nala (towards far west). The other prominent water body is the Darri Dam, constructed on Hasdeo River on upstream near NTPC. The terrain of the area is gently undulating with surface elevation varying from 105 to 434 m above MSL. The area is dissected by Kholar nala and Ahiran River. Dendritic drainage pattern is seen in the study area.

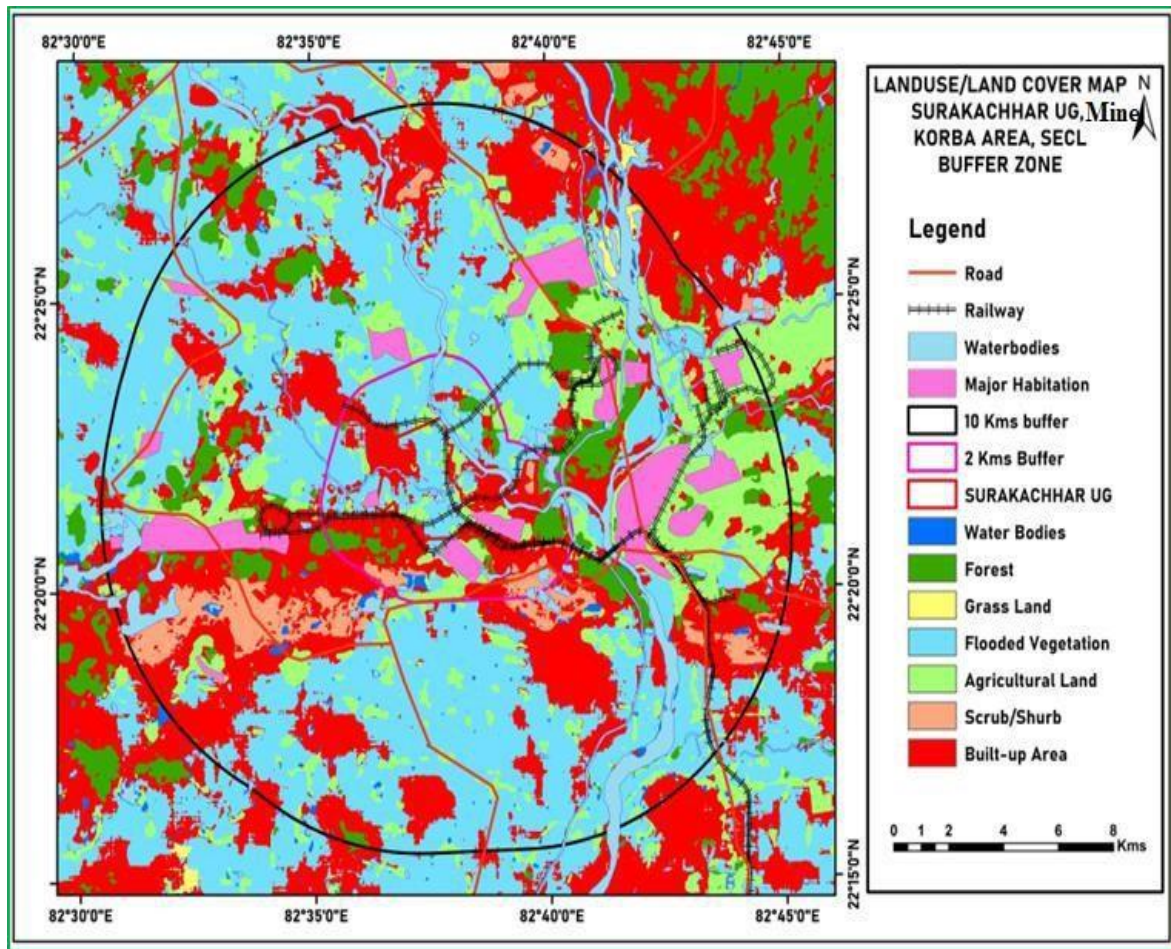
4.4 EXISTING LAND USE PATTERN:

The breakup of existing land use in the Core Zone has been tabulated under section 4.2 above. The detailed land use of the Buffer Zone is provided as below:

S. No.	LULC Class	Area in ha	Area in %
1	Water bodies	1886	2.5
2	Forest	6451	8.57
3	Grass Land	331	0.44
4	Flooded vegetation	28573	37.93
5	Agricultural land	11930	15.84
6	Scrub/Shrub	2219	2.95
7	Buit-up Area	23928	31.77

There is no National Park, Wildlife Sanctuary, Eco-sensitive areas in the Buffer zone (10 km from the periphery of Core zone). There are isolated patches of scrub land, vegetation, grass land and few water bodies in the study area. Distance of project to Pasan forest is 20 km and Wildlife sanctuary is 134 Km. Shortest distance from periphery of project to water HFL (arihan river) is 5 KM.

The land use map of the buffer zone of Surakachhar u/g mine is as follows:



4.5 EXISTING INFRASTRUCTURE:

Service Buildings:

The required essential service buildings comprising of offices, lamp room, MTK, Store, auto section, parking, control room, etc are already existing and are in good condition.

Fan House:

To meet the ventilation requirement of mine with regard to deployment of underground face machineries, two main mechanical ventilators (one no. in standby) of capacity 7200 cum/min have been installed.

Substation:

To meet the power requirement of surface and underground equipment, transformers and switch gears of rated capacities are existing at the 11 KV/3.3 KV surface substation. There are 6 no. of 3.3 Kv/550 v underground substations catering to the power requirement of underground equipment.

Weighbridge:

There are 3 nos. of 100 Tonne road weighbridges and 1 no. of 120 Tonne rail weighbridge installed in the project.

Residential Buildings:

Quarters for mine workers, staffs and executives of mine are existing and no new residential buildings are proposed.

Road & Culverts:

Most of roads & culverts are existing.

4.5.1 PUMPING AND DRAINAGE:

Existing infrastructure for mine water pumping is sufficient as on date. Make of water is around 2500 GPM and the installed pumping capacity is 6000 GPM.

4.5.2 RAILWAY SIDING:

Coal from the mine is transported to Surakachhar wharf wall siding by trucks for onward movement to consumers through rail. Mobile water sprinklers are deployed for dust suppression on the coal transportation route upto Surakachhar wharf wall Siding.

4.5.3 WORKSHOP AND STORES:

Since it is an existing underground project, workshop facilities and Store are already existing. Services of Regional/Central Workshop of Korba Area shall also be utilized, if required.

4.5.4 CIVIL CONSTRUCTION:

No new construction is required as the project is an existing mine with all necessary infrastructure in place.

4.6 SOIL CLASSIFICATION:

Soil is a fundamental natural resource which provides various services like agriculture, industrial construction, ecological habitat development etc. Some of the most significant impacts on this resource because of activities associated with mining are disturbance in the horizons of soil, loss of fertile topsoil, seedbank disturbance etc.

Surakachhar u/g mine being an underground mine, the quality of soil will not deteriorate by mining activities. Subsidence may alter the contour of the surface but there may not be any adverse change in quality of soil. However, in the active area where the incline and infrastructural facilities are

4.7 CLIMATE DATA FROM SECONDARY SOURCES:

Tropical climate conditions prevail in the area with well-defined summer from April to June, rainy season from July to September and winter from November to February. April, May and June are the hottest months with near monthly temperature varying between 28.30 C and 36.40 C. The average rainfall is generally 1200 mm out of which about 95% is during June to September. The highest rainfall in the area at Champa meteorological observation post for any 24 hours period is 171.50 mm.

4.8 SOCIAL INFRASTRUCTURE AVAILABLE:

Social infrastructures like schools, hospitals, roads, etc. already exist in the area and have helped in the economic development of the region. Social infrastructures available in this area are as summarized below:

- Most of the villages are connected with fair weather (tar/mud) roads with state transport facilities. Motorcycles and cycles are used for traveling purposes. Tractors and trucks are used for carrying materials.
- Power supply network and communication network.
- Community health centers.
- Primary schools, middle schools, high schools.
- Necessary market facilities and shops.
- Taps, hand pumps, wells, borewells, mine water are the sources of water available in the area. The quality of water is reasonably well.

5. PLANNING BRIEF

5.1 PLANNING CONCEPT:

The project is currently producing coal with conventional Bord and Pillar and depillaring with bottom-ash stowing. Coal transportation from face to surface bunker is through series of belt conveyors. The project has a CTO approved production capacity of 0.456 MTPA. There is no proposal for enhancement of the production capacity. The project can achieve the production capacity of 0.456 with existing mining equipment and infrastructure and hence, no additional equipment or capital outlay is required. The project is also beneficial from the viewpoint of utilization of huge volumes of bottom ash in stowing in Surakachhar 3&4 incline.

5.2 PROJECT MANPOWER:

The total manpower of the project as on 01.02.2023 is 651.(as on 31.03.2023).

5.3 LAND USE PLANNING:

The present land use planning of the core zone is outlined in section 4.4. The land under surface rights is being optimally utilized by the project and no change is proposed in the same.

5.4 ASSESSMENT OF INFRASTRUCTURE DEMAND:

The existing mine infrastructures are outlined in Section 4.5 and are in line with the present production from the mine and the maximum production of 0.456 MTPA No additional infrastructures are envisaged in the project.

5.5 AMENITIES / FACILITIES:

Basic amenities available in the core zone and buffer zone villages around the project are as follows:

- Health-care facilities SECL Banki-Surakachhar hospital, community health centers, Anganbadi, testing/sampling pathology labs, medical shops, etc.
- Educational facilities like primary, secondary and high schools.
- Agriculture and animal husbandary are well developed in the region.
- Post office and co-operative banks.
- Taps, hand pumps, wells, borewells, mine water are the multiple sources of water available in the region.
- The villages are connected with electric lines.

- The available fuel for cooking purpose is L.P.G, Kerosene.
- Most of the villages are connected with fair weather (tar/mud) roads with state transport facilities. Vehicles like cars, motorcycles, cycles, etc are used for traveling purposes. Tractors, trucks are used for carrying materials.
- Playground and stadium are available within 10 km radius and are used by local people for recreation.
- Under CSR activities also various work has been executed by Surakachhar UG mine
 - i. Construction of hall for cultural program at Sarvmangla Vidya Niketan Hr. secondary, Banki.
 - ii. Construction of community building at SRK
 - iii. Drilling of 150 m diameter tube well with 180 m deep/ installation of hand pump/construction of platform in water crisis village-korba (Kuchena Basti & Pankhadafai Basti)
 - iv. Piped water supply scheme at purena village Korba district

6. PROPOSED INFRASTRUCTURE

The existing mine infrastructures are outlined in Section 4.5 and are in line with the present production from the mine and the maximum production of 0.456 MTPA. No additional infrastructures are envisaged in the project.

6.1 GREEN BELT:

Around 3.9 lakh saplings have been planted by the project in and around the lease area since inception of the mine. Vacant large area for carrying out further plantation is not available at present. However, small scale plantation activities and sapling distribution on awareness camps organized on Environment Day, Swacchta Pakhwada, etc are routinely undertaken.

6.2 SOCIAL INFRASTRUCTURE:

Basic amenities and infrastructure existing in the core and buffer zone are as outlined in section 5.5. Projects under CSR will be undertaken in future as per the requirements of the nearby villages and approval of the district administration.

6.3 DRINKING WATER MANAGEMENT (SOURCE AND SUPPLY OF WATER):

Water requirements of the project are being met through mine water. Mine water is treated through settling tank and filter plant and is supplied to the project buildings. Water supply in the project colony is through the Balgi mine's filter plant.

6.4 SEWAGE SYSTEM:

The residential quarters of the project are provided with proper drainage, soak pit and septic tank arrangement for disposal of sewage.

6.5 INDUSTRIAL WATER MANAGEMENT:

Water requirement for dust suppression, fire-fighting, plantation watering, etc is being met through mine water. Existing infrastructures including pipelines, tanker filling point, etc are sufficient in this regard and no new infrastructure is proposed.

6.6 SOLID WASTE MANAGEMENT:

The project is an underground coal mine. All development and pillar extraction activities will be in-seam activities only. Hence, no solid waste or OB is likely to be generated.

6.7 POWER REQUIREMENT AND SUPPLY / SOURCE:

Power requirement and supply/source details are outlined in section 3.9. Existing infrastructure is sufficient in this regard and no new/additional infrastructural requirement is envisaged.

7. REHABILITATION AND RESETTLEMENT(R&R) PLAN

The project is an old existing mine with land acquisition already completed prior to Nationalization. No villages/ families have been shifted. No R&R is involved at present.

8. PROJECT SCHEDULE AND COST ESTIMATES

8.1 PROJECT SCHEDULE:

The mine is already in production phase. The balance mineable reserve as on 01.04.2023 is 3.84 MT and the project life at the rated capacity of 0.456 MTPA is 12 years as on 01.04.2023.

8.2 ESTIMATED PROJECT COST:

The project cost or gross block investment of the mine as on 01.04.2022 is Rs. 6707.3917 Lakh (or, Rs. 67.07 Crore). The project is a running/revenue mine. No additional capital cost is envisaged.

8.3 MINE CLOSURE PLAN:

Progressive mine closure plans have been prepared in two parts: for Surakachhar Main incline and Surakachhar 3&4 incline. Both the mine closure plans have been approved by the SECL Board on 12.04.2013. Separate escrow accounts have been opened with the Coal Controller Organization. Amounts in the escrow accounts are being routinely deposited and the mine closure activities are being progressively undertaken. Final mine closure plans will be prepared five years prior to the closure of the project.

9. ANALYSIS OF THE PROPOSAL

9.1 FINANCIAL BENEFITS:

The recorded financial figures of cost of production and profit/loss per tonne from coal production from Surakachhar u/g mine, as obtained from the Area Finance Deptt., are Rs. 32,448.66/ tonne and (-)32,157/tonne, respectively, as on 01.04.2023. From the above figures, it is evident that the mine is a loss-making project at present from financial viewpoint.

However, coal production from Surakachhar u/g mine is still required owing to the following factors:

- Significant contribution in the national coal production target and to the Govt. exchequer
-
- Fulfilling the requirement of the coal consumers including thermal power plants
- Sustaining livelihood of many families through direct/indirect employment
- Providing socio-economic benefits to the nearby areas under CSR/welfare schemes
- Utilizing bottom-ash generated from thermal power plant for stowing with depillaring in compliance with the Fly Ash Notification, 2009

9.2 SOCIAL BENEFITS:

The social profile of the buffer zone area shows significant development and infrastructural activities in terms of education, health, roads and other community infrastructure, water supply etc. as direct/indirect outcomes of the project. Traders and private enterprises have tremendously grown in the area with this economic growth. Various activities undertaken in CSR in the nearby villages over the years have provided for socio-economic requirement of these villages and have also aided in the development of the region. Departmental and contractual employment provided by the project has improved the earnings and quality of life of the dependent families. Besides, the State exchequer is deriving and will continue to derive financial revenues through levy of royalty, SGST etc. and Central Government will also be benefited by way of CGST, Income Tax, Cess's etc.

9.3 CONCLUSION:

The Surakachhar UG mine has total loss of Rs 182.22 Cr (@Rs 32448.66/ton) in the FY 2022-23. However, to meet the gap between supply and demand of the coal to fulfill the energy requirement of the country and coal winning in underground mine is much less environmentally polluting manner in comparison of Opencast miens, it is proposed for continuing the mine at the existing CTO capacity of 0.456 MTPA in the project area of 1045.86 ha with the existing technology and infrastructure and for obtaining the Environmental Clearance from the MoEF&CC for further improvements in the environmental management practices being adopted by the mine.

ANNEXURE-1

Project Boundary



