

Brief Description of Selected Dhori OCP

1. Introduction

Selected Dhori Colliery is a taken over mine of CCL located in the eastern-most part of East Bokaro coalfields. The Project Report for Selected Dhori OCP for a rated capacity of 2.25 MTPA was approved considering Karo Group of seams (VI to X) as base seam by Govt. of India on 26.8.81 at a total capital investment of Rs. 24.38 Crores. Approved PR for Selected Dhori OCP (Aug.1981) proposed to mine Sectors I, II and III in Selected Dhori Block. Central Sector was left out of the PR due to the presence of active fire in the old UG workings. It was envisaged that while working Sector-I,II & III, the investigation regarding fire in the central sector would be continued and thereafter, the reserves of central sector will be mined to the extent possible.

Based on the approved PR, Environment Clearance (EC) for Selected Dhori OCP was issued vide letter No. J-11015/4/89-IA.II(M) from MoEF on 24.12.92. Presently Selected Dhori OCP is working in Sector-I&II (Kalyani OCP/ SDQ-1&2) & in Sector-III (SDQ-3) and is on the verge of exhaustion.

The Selected Dhori Group of mines include three units, Selected Dhori Quarry-1&2, Selected Dhori Quarry-3 and proposed Central Sector (New Selected Dhori OCP). Out of these units, SDQ-1&2 & SDQ-3 are existing mines which are on the verge of exhaustion.

A pre-feasibility note was prepared for Selected Dhori Group of mines incorporating SDQ-1&2, SDQ-3 and proposed Central Sector by CMPDI and approved by CCL Board on 26.04.2013. Based on this pre-feasibility note, Form-I was prepared, for which presentation was made before EAC (T&C), MOEFCC on 4.06.2013 and 25.11.2013. Subsequently TOR was granted vide letter no J-11015/75/2013-IA.II(M) dated 25th February, 2014. Further, a proposal for extended TOR has also been submitted on January, 2016 as per MoEF OM no: J-11013/41/2006-IA-II(I)dated 8th Oct, 2014. EAC meeting was held on 13th May, 2016 & the EAC has commented that " No OM regarding the extension of TOR validation had been yet issued by the Ministry. The Committee therefore, was of the view that the Ministry may take the appropriate decision in all the above four cases."

During the course of mining in Quarry I and Quarry II, due to close proximity of central sector, fire from central sector got transmitted into these quarries which compelled the mine management to accelerate extraction of coal with simultaneous quenching by water. Due to this reason, the coal production from EC approved capacity of 2.25 MTPA has exceeded as given below.

SI No	Year	Coal Production (MT)	OB (Mm ³)
1	2001-02	2.29	1.47
2	2002-03	2.50	1.42
3	2003-04	2.6	1.40

4	2004-05	2.85	1.30
5	2005-06	3.4	1.09
6	2006-07	3.28	1.14
7	2007-08	3.41	1.55
8	2008-09	2.95	1.72
9	2009-10	4.56	2.05
10	2010-11	4.41	1.53
11	2011-12	4.43	3.25
12	2012-13	5.54	3.85
13	2013-14	6.62	1.92
14	2014-15	6.76	2.12
15	2015-16	5.11	1.396
16	2016-17	4.167	2.317

2. Purpose of present proposal

This project has come under violation on account of increase of production beyond the approved EC limit of 2.25 MTPA. Earlier, TOR was granted vide letter no J-11015/75/2013-IA.II(M) dated 25th February, 2014 for normative capacity of 8.25 MTPA and Peak 11 MTPA. Therefore, this proposal is being processed for obtaining additional/ special TOR due to violation as per notification no S.O 804 (E) dt.14.03.2017.

3. Present Status of Mine

The Selected Dhori Group of mines include three units, Selected Dhori Quarry-1&2, Selected Dhori Quarry-3 and proposed Central Sector (New Selected Dhori OCP). Out of these units, SDQ-1&2 & SDQ-3 are existing mines which are on the verge of exhaustion.

4. Identification of project & project proponent

The project under consideration, i.e. Selected Dhori Group of Mines is administratively under Dhori Area of CCL headed by General Manager, Dhori Area. Geologically, it falls in the East Bokaro Coalfield in Jharkhand.

The mailing address of the Project Officer is given below:

Project Officer,
Selected Dhori Group of Mines OCP,
Dhori Area, CCL.
P.O.- Phusro, District- Bokaro,
State- Jharkhand, PIN-829144

5. Location & Communication

Selected Dhori block is located in easternmost part of the East Bokaro Coal field. It is bounded by Tisri Nala in the west, river Damodar in the south, Tarmi Colliery in the east and village Gunjardih in the north. It covers an area of about 3 sq.km and falls within latitudes 23° 45'N to 23° 48'N and longitudes 86° 02'E to 86° 03'E and falls in the Survey of India Toposheet no. 73 I/1.

Selected Dhori is well connected by rail and road. The Gomoh-Barkakana loop line of the Eastern Railway passes adjacent to the area. The nearest railway Station 'Phusro' on the Barkakana-Gomoh loop line is about 2 Km to the West of the area.

6. Climate & Rainfall

The area witnesses a sub-tropical climate. The summer, which is between April and June, the maximum temperature reaches upto 46°C and the minimum temperature reaches 4°C during winter months of December and January. Heavy rainfall occurs in the months of June to September. The area is thickly forested.

7. Topography & Drainage

Selected Dhori block represents rugged topography being traversed by a major flat topped hill, some isolated hillocks and dumps of existing and old quarries. The general elevation within the block lies between 213m to 326m above mean sea level. The ground slopes generally from north to south in the project area. Most of the small channels criss crossing the area flow from north to south finally joining Damodar river. The drainage of the block is controlled by master drainage Damodar river which flows from west to east, through the centre of the study area and south of the block at a safe distance of more than 600m and its tributary Tisri nala flowing from north to south and joins Damodar river in the south of the project at a distance of around 250m to 300m. Tisri nala flows in the west of the quarry at a safe distance varying from 100m to 250m. There are some other seasonal tributaries of Damodar river and Tisri nala flowing around the project. The easterly flowing Damodar river is the master drainage and perennial source of water for the area. The HFL of the Damodar river as recorded in the vicinity of the project is 206.31 m above MSL (As on 17.09.1976). The HFL of the Tisri nala as recorded in the vicinity of the project is 206.28 m above MSL (As on 17.09.1976). Several small nalas emerging from the main upland traverses the area and flow towards Tisri nala and Damodar river. The other major streams flowing in the study area are Jaria nala, Khanjo nadi etc

8. Importance of project

Central Coalfields Limited is facing increasing demand of coal because of increased demand from industry and power sector. Continuing and augmentation of coal production from the mines of CCL will help to bridge the gap of demand and supply of coal in India. To meet the growing demand of coal, especially in power and steel sectors, CCL has planned to increase its production capacity from 67.04 Mt. of coal during 2016-17 to 133.50 MTPA by 2019-20. Augmentation of capacity at Selected Dhori OCP will help CCL in meeting the growing demand of power grade coal in country and to fulfill the target of one billion tonne coal production of CIL.

9. Mining System

Coal deposits in Selected Dhori block in East Bokaro Coalfield upto seam X are potential seams for opencast mining, both qualitatively and quantitatively. These aspects are taken into account during mine planning and operation in ensuring maximum recovery. Opencast mining using shovel - dumper system in combination with blast hole drilling and controlled heavy blasting is the most suitable technology for coal production and overburden removal at Selected Dhori Opencast considering presence of coal seams and partings of varying thickness with economic stripping ratio (cum of overburden required to be removed to raise one tonne of coal)

10. O.B Dumps

The total volume of O.B to be removed is estimated at 1.15 M.cum. The entire OB is proposed to be dumped as internal dump in the existing void of Quarry-I, II & III of Selected Dhori OCP.

11. Quarry Boundary

Quarry No.1

The surface southern boundary of quarry No. I has been fixed at a distance of 50m. from the rationalized railway land boundary. The eastern floor boundary of quarry no. I is fixed by Fault F10-F10 and the in crop of the Karo group of seam (VI-X) in the north eastern side. The northern floor boundary is fixed by fault F8-F8 and the fault F6-F6. There is a small manual quarry, presently being worked, in the western part.

Quarry No.II

The bottom edge of the quarry no.II is fixed by fault F8-F8 in the south and F6-F6 in the north . The eastern edge of the quarry is fixed by the in crop of the Karo group of seams (VI-X). There is no underground workings reported in any section of the Karo group of seam (VI-X) in quarry no.II area, while in the quarry no.I area, a small patch of underground workings has been developed in bottom and top sections of the Karo group of seam (VI-X) and was known as SK unit of the erstwhile private owners, prior to nationalization.

Total balance of mineable reserves including Quarry 1, Quarry 2 & central sector is 4.283 MT.

12. Geological & Mining Characteristics of Quarriable Block

The Barakar formation occupies a major part of the area. It is represented mainly by medium to coarse grained sandstone, grey shale and thick coal seams. Karo group of seams (X to VI) belonging to this formation have been encountered in all the CCL. The area has been traversed by twelve faults varying in magnitude and trend.

Karo Group of Seams (VI-X)

This thick seam has been encountered in 9 boreholes drilled by CCL and 3 of the G.S.I boreholes such as EBC-8, & EBC-21 and 3 of the CMPDI boreholes, viz., CMESD-9, 12 & 13. the thickness of the seam varies from 57.33 to 69.28m. The outcrop of this seam is seen all-around the major hook-shaped plateau and covers a large part of the area. This seam strikes almost E-W in the central part of the area and dips at low angle towards south. The dip of this seam varies from 5⁰ to 10⁰.

Sequence of Coal Seams in Selected Dhori Block

Seam / Parting	Thickness (m)		No of Boreholes considered
	Minimum	Maximum	
Combined Karo group of seams (X-VI)	57.33	69.28	12
Parting	24.50	27.10	
Seam-V	2.92	4.93	11
Parting	5.34	14.15	
Seam-IV	0.18	1.15	4
Parting	4.40	5.10	
Seam-III	3.25	7.66	4
Parting	4.40	8.60	
Seam-II	0.17	1.25	4
Parting	4.00	5.00	
Seam-I	0.30	0.40	2

Sector wise coal reserves in Selected Dhori block

Sector	Area m ²	Sp.Gr	Gross Reserve (MT)	Net Reserves (MT)
Sector I	574880	1.66	36.44	32.79
Sector II	221768	1.67	14.75	13.27
Sector III	575264	1.67	38.04	32.24
Sector IV	370720	1.67	22.84	20.56
Total	1742632		112.07	98.86

12.1 Mineable Reserve & Life of Mine

The mineable reserves have been estimated from the isochore plans of the different seams. A geological loss of 10% and a mining loss of 10% have been considered in the estimation of the mineable reserves of the seams. The total volume of OBR has been estimated from the total iso-excavation plan. The parting wise volume of OBR has been estimated from the cross-sections. Estimation of the mineable reserves of the seam.

Sl.No	Particulars	Qty
01	Mineable Reserves	4.283 MT
02	Total vol. of partings/OB	1.15 Mm ³
03	Average Stripping Ratio	0.27

12.2 Void Creation & Management

The void left at the end of mine life is about 38.53 Ha, which is around 12.22 % of the project area of 15.05 Ha. The void so formed will be left as water body. Details of post mining land use and extent of plantation is as given below.

Post-mining Reclamation Status	
Particulars	Area in Ha.
Plantation	176.70
Water body	38.53
CCL Use	20.89
Plantation	24
Undisturbed	54.93
Total	315.05

13. Water Demand

Purpose	Peak Demand (m ³ /day)
A.Mine site	Selected Dhori Quarry
1.Mine operation	-
2.Land reclamation	504
3.Dust suppression	756
4.Drinking	84
5.Green belt	10
6.CHP	186
7.Washerries	-
8.Workshop	60
9.Fire service	371
10.Others (specify)	-
Total (A)	1,971

B. Township	
1.Green belt	124
2.Domestic	622
3.Other (Service Building like GM office, Guest house, Hospital, Club, School etc)	124
Total (B)	870
Grand Total (A+B)	2,841

Source: mine water of Selected Dhori Quarry & from Integrated Water Supply System (IWSS)

14. Source of Electrical Power Supply

Central Coalfields Ltd. has one regional sub-station at Kargali, where power is received at 33kV from DVC's Bokaro Thermal Power Station and stepped down to 11kV and 3.3kV and distributed to various projects. It is proposed that Selected Dhori OCP will receive power from Kargali Regional sub-station. A 11kV feeder of approx. 7.5 km length with "DOG" ACSR conductor is utilized to feed the Selected Dhori OC Project. A provision for extension of this overhead line (with "DOG" ACSR conductor for about 5km has been made. One main sub-station (3x3.15 MVA, 11/6.6 kV) is proposed. Power shall be distributed from this sub-station to various additional electrical equipment and load points. Estimated maximum power demand for this project will be 3.20 MVA. The annual energy consumption will be 8.643 million units. Quarry/haul road/mine area lighting will be done by 250W/400W HPMV Lamps mounted on poles. Township/workshop would continue to receive power from the existing power supply network

15. Coal Handling & Dispatch System

A CHP has been envisaged to handle the production of coal from the mine.

- Feed size in mm: (-)1200
- Product size in mm: (-)100
- Mode of Dispatch: By rail to BTPS.
- System capacity: 2.25 MTY

The balance coal will be crushed by a feeder breaker at nearby Tarmi Railway siding.

Coal will be dispatched to nearby railway yard on the western bank of Tisri Nala for evacuation.

16. Description of the Environment

Ambient Air Quality of main parameters as per routine monitoring is given below.

Year	Quarter	Concentration in $\mu\text{gm}/\text{m}^3$				Remarks
		PM ₁₀	PM _{2.5}	SO ₂	NO _x	
2010-11	June'2010	166.33	67.33	10.33	37.33	4.41 MTPA coal production
	Sep'2010	71.00	39.33	10.00	38.00	

	Dec'2010	153.33	79.00	10.00	35.00	
	March'2011	280.00	107.00	10.00	39.66	
	Average for 4 Qtrs	167.67	73.17	10.08	37.50	
2011-12	June'2011	268.66	98.66	10.66	39.33	4.43 MTPA coal production
	Sep'2011	116.33	78.33	10.33	39.33	
	Dec'2011	243.66	127.00	10.00	42.00	
	March'2012	248.66	95.66	10.33	40.00	
	Average for 4 Qtrs	219.33	99.91	10.33	40.17	
2012-13	June'2012	288.66	84.66	10.00	40.33	5.54 MTPA coal production
	Sep'2012	115.00	49.33	10.66	44.33	
	Dec'2012	191.00	104.33	11.00	42.66	
	March'13	252.00	95.66	10.66	44.66	
	Average for 4 Qtrs	211.67	83.50	10.58	43.00	
2016-17	June'2016	83.33	40.33	<25	<6.00	No coal production
	Sept' 2016	87.33	32.33	<25	<6.00	
	Dec' 2016	85.66	35.00	<25	<6.00	
	March' 2017	91.58	46.83	<25	6.25	
	Average for 4 Qtrs	86.98	38.62	<25	6.06	

Ambient Noise Level Observations as per routine monitoring

		NOISE				
		June	Sept	December	March	Average
Tunio Village	2010-11	51.2	42.6	42.6	46	45.60
Tarmi Siding Colony	2010-11	49	48.9	48.5	48	48.60
Tunio Village	2011-12	47	47.8	42.5	47.2	46.13
Tarmi Siding Colony	2011-12	46	49.9	48.7	49.3	48.48
Tunio Village	2012-13	49.5	48.6	49.8	47.4	48.83
Tarmi Siding Colony	2012-13	55	54.2	54	50.3	53.38
Tunio Village	2016-17	49.5	48.6	49.8	47.4	48.83
Tarmi Siding Colony	2016-17	55	54.2	54	50.3	53.38

Present Water Quality Status as per on routine monitoring

Parameters	Annual average level as per on routine monitoring (mg/l)				MoEF Sch-VI Standard
	2013-14	2014-15	2015-16	2016-17	
pH	8.04	7.67	7.79	7.80	5.5-9.0
TSS	43.00	32.00	23.50	19.50	100.0
Oil & Grease	BDL	<2.00	<2.00	<2.00	10.0
COD	51.00	39.00	32.00	24.00	250.0
BOD(3 days at 27 ⁰ C)	1.75	2.00	2.00	2.00	30.0
Iron as Fe	BDL	<0.06	<0.06	<0.06	3.0
Fluoride	0.49	0.55	0.77	0.84	2.0

NOTE: The concentration of all parameters except pH is in mg/l.

Conclusion:

The above table indicates that the mine water discharged into the local drainage fully conforms with MoEF&CC Schedule-VI standard, for discharge into surface water bodies.

17. Stage-wise land-use and reclamation plan (Ha)

The post mining and post- reclamation (final land use plan) is given in Table below.

Present Status		Post Mining statuts		Post-reclamation Final land use plan	
Particulars	Area (Ha)	Particulars	Area (Ha)	Particulars	Area (Ha)
Agriculture	5.00	Internal Dumps	176.70	Plantation	176.70
Forest	45.00	Voids	38.53	Water body	38.53
Waste Land	51.00	Infrastructures	20.89	CCL Use	20.89
Surface Water Bodies	0.00	Green Belt	24.00	Plantation	24.00
Others	214.05	Safety zone	54.93	Undisturbed	54.93
Total	315.05	Total	315.05	Total	315.05

143.05 Ha of Forest land has been diverted vide letter no 8-122/90-FC, dt. 01-07-1996. 69.183 Ha of forest land has been diverted vide letter no 8-69/2004-FC, dt. 02-03-2009. 82.357 Ha of forest land yet to be acquired