

**SIARMAL OCP (40.0 Mty)
(PEAK CAPACITY 50 MTY)**

SUMMARISED DATA

Sl. No.	Particulars	Unit	Value		
A.	GENERAL				
1	Name of Project		Siarmal OCP		
2	Name of Area /Company		Mahanadi Coalfields Ltd.		
3	Nearest Railway Station from project	Name km	Himgir 35		
4	Nearest National / State Highway / Approach road	Name km	- Sundargarh-Raigarh all weather road is passing through the block - Sundargarh is connected by Sambalpur-Rourkela State Highway-10 Distance of Sundargarh- 46 km		
B.	GEOLOGICAL				
1	Name of geological blocks considered	Name	1. Siarmal & Siarmal Extn. 2. Banapatra (Western Extn. of Siarmal)		
2	Area of the geological blocks	sq. km	Siarmal & Siarmal Extn.- 6.35 Banapatra- 8.32 Total- 14.67		
3	Borehole Density within blocks	BHs / sq.km	Siarmal & Siarmal Extn.- 21 Banapatra- 44 Overall- 34		
4	Description of all coal seams within block (Siarmal & Siarmal Extn. and Banapatra blocks)				
Stratigraphic Sequence	Thickness (m)		No. of borehole intersections	Geological Reserves (Mt)	% of total geological Reserve
	Min.	Max.			
LAJ-IV	1.26	17.17	350	226.90	12.15
PARTING	3.26	29.51	352		
LAJ-III	0.11	6.13	367	73.62	3.94
PARTING	0.16	6.32	362		
LAJ-IIT3	0.12	3.31	363	15.78	0.85
PARTING	0.10	6.86	237		
LAJ-IIT2	0.05	2.40	234	11.52	0.62
PARTING	0.34	12.73	377		
LAJ-IIT1	16.94	28.56	365	405.70	21.73
PARTING	0.21	9.91	413		
LAJ-IIB	1.47	12.34	415	116.88	6.26

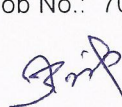
Sanjiv
27.3.18

Stratigraphic Sequence	Thickness (m)		No. of borehole intersections	Geological Reserves (Mt)	% of total geological Reserve
	Min.	Max.			
PARTING	0.34	33.09	412		
LAJ-I	1.20	24.90	409	218.77	11.72
PARTING	31.24	95.60	336		Major Parting
RAM-V	0.22	7.90	378	84.40	4.52
PARTING	0.24	10.65	372		
RAM-IV	0.89	21.97	364	249.92	13.39
PARTING	0.17	9.50	368		
RAM-IVB	0.08	4.54	362	30.03	1.61
PARTING	0.30	7.10	368		
RAM-III	2.70	12.88	370	166.34	8.91
PARTING	0.14	6.93	376		
RAM-II	0.37	11.56	368	57.50	3.08
PARTING	0.09	8.77	367		
RAM-I	0.50	14.81	372	121.73	6.52
PARTING	0.59	20.12	336		
IB-TOP	0.10	6.75	339	22.26	1.19
PARTING	0.11	14.60	275		
IB-MID	0.04	9.14	269	52.09	2.79
PARTING	0.09	14.96	184		
IB-BOT	0.04	5.65	187	13.38	0.72
TOTAL				1866.83	100

C.	TECHNICAL		
1	Area of the proposed mine block (with break-up of different geological blocks)	sq. km	- Siarmal & Siarmal Extn. block=6.35sq.km. - Banapatra block=8.32sq.km.
2	Borehole density within mine area	BHs/sq. km	- Siarmal & Siarmal Extn. block=21 BH/sq.km. - Banapatra block=44.47 BH/sq.km.
3	Mine parameters (seam-wise) Extent along strike (min. – max.) Extent along dip (min.-max.)	Km km	Max 7.0 km Min 4.2 km Max 2.9 km Min 2.8 km

Infall
22.3.18

4	Description of coal seams proposed to be worked along with the parting details						
Name of seam	Thickness range considered (m)	Av. Thickness / Parting Thickness (m)	Av. Grade	Av. gradient (1 in ...)	Depth range (m)	Mineable Reserves (Mt)	Volume of OB (Mcum)
Top OB	5-150	84.13					1179.29
LAJKURA-IV	1-17	12.92	Mostly F	1in 11 To 1in 19		228.10	
PARTING	3-30	12.14					135.42
LAJKURA-III	1-6	4.08	Mostly F			67.81	
PARTING	1-7	2.19					24.47
LAJKURA-IIT3	1-3	1.51	Mostly F			12.65	
PARTING	1-7	2.29					21.93
LAJKURA-IIT2	1-3	1.63	C,D			8.54	
PARTING	1-8	2.04					12.66
LAJKURA-IIT1	14-27	21.04	E,F			377.66	
PARTING	1-7	1.97					22.52
LAJKURA-IIB	2-12	5.75	G			100.50	
PARTING	1-34	3.03					36.23
LAJKURA-I	1-18	10.75	F,G			192.70	
PARTING	31-95	52.79					610.39
RAMPUR- V	1-8	4.53	F,G			62.99	
PARTING	1-11	2.20					21.76
RAMPUR- IV	4-18	13.27	G			189.40	
PARTING	1-10	1.92					18.32
RAMPUR- IVB	1-4	1.68	G			18.63	
PARTING	1-8	2.72					29.31
RAMPUR- III	2-12	8.02	E,F			119.01	
PARTING	1-7	2.27					20.16
RAMPUR- II	1-9	2.74	D,E			36.61	
PARTING	1-9	2.71					5.35
RAMPUR- I	1-15	5.99	E,F			85.94	
PARTING	1-19	4.17					30.84
IB TOP	1-7	1.68	D,E			7.43	
PARTING	1-15	4.69					22.89
IB MIDDLE	1-10	4.85	C,D,E			34.48	
PARTING	1-15	2.87					5.74
IB BOTTOM	1-4	1.69	D,E				4.97
Total Coal OB						1547.82	2269.69
5	Av. Stripping Ratio			cum/t		1.47	
6	Method of Mining					Shovel-dumper, surface miner	
7	Target Output						
	Nominal production capacity (at 100%)			Mt		40 Mty	
	Peak production capacity			Mt		50 Mty	



 273.18

	(at125%) Production capacity (at 85%)	Mt	34 Mty
8	Year of achieving Target Production (from zero date)		Year-12 (Twelfth year including four years of construction period)
9	Year of start of Internal Dumping		14

10	Production Phasing (from zero date upto target year)(for departmental variant)								
Year/	Yr-1 to Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
Coal	Const.	1.50	4.00	7.00	10.00	15.00	22.00	30.00	40.00
OB		3.73	4.78	4.78	12.03	23.87	26.92	37.22	49.67
11	Total Mine Life (at Nom. production capacity)	Years		49					
	Construction period	Years		4 years (upto year-4)					
	Production build-up period	Years		7 years (upto year-11)					
	Full Production period	Years		35 years (upto year-46)					
	Tapering / mine closure period	Years		3 years					
12	Major HEMM Deployed for OB (departmental variant)	Size/Capacity		No. upto Target year (Variant-I)			Beyond Target year(Variant-I)		
	ELEC HYDR. SHOVEL	20-22 cum		7			7		
	ELEC HYDR. SHOVEL	9-11 cum		6			2		
	REAR DUMPER	190 T		82			48		
	REAR DUMPER	100 T		54			16		
	DRILL	250mm		23			6		
	DRILL	160mm		8					
	DOZER	850-870 HP		11			7		
	DOZER	410 HP		17			12		
13	Major HEMM Deployed for Coal(departmental variant)	Size/Capacity		No. upto Target year			Beyond Target year		
	SURFACE MINER,800-1000 HP	3800 drum		10					
	ELEC HYDR. SHOVEL	9-11 cum		2					
	FRONT END LOADER	10-12 cum		10					
	REAR DUMPER	100 T		59			8		
	DRILL	160mm		5					
	DOZER	410 HP		5					
	WHEEL DOZER	460 HP		5					

14	Total Manpower	Nos. Nos. Nos. Nos.	variant	Variant-I	Variant-II	
			Upto target	2995	533	
			Beyond target	778	57	
15	Overall Output per manshift (OMS) including Welfare Manpower	Tonnes	47.56 (Variant-I) 253.66 (Variant-II)			

for fall
22.3.18

16	Presence of Major Surface Constraints (nallas, road, power line, etc.)	(type)	Presence of (i) 2454 PAFs in six nos. villages (ii) State Highway from Sundergarh to Raigarh.			
17	Coal Transport within the mine (In-pit belt conveying system or by Truck)		Truck transportation to In-pit receiving hopper/crusher and then transportation by belt conveyor..			
18	Surface Coal Transport to Siding/Despatch Point and Mode of Despatch		By belt conveyor and through rapid loading system.			
19	Any Railway Siding and distance		Proposed Siding			
20	Name of any Specific Customer/Industry		Basket Linkage			
D.	ENVIRONMENTAL & OTHERS					
1	Civil Construction Residential houses	Nos.	variant	Variant-I	Variant-II	
			Upto target	2089	351	
			Beyond target	539	39	
2	Water Demand (upto target year)	kl	variant	Upto target	Beyond target	Total
			Potable	1.74	0.45	2.19
			Industrial	6.82	0.10	6.92
3	Total Land to be acquired	Ha	2495.30			
	Government land	Ha	450.22			
	Tenancy land	Ha	1800.90			
	Forest land	Ha	244.18			
4	Land to be acquired within mine take area (excavation area)	Ha				
	Total	Ha	1525.37			
	Forest land	Ha	147.32			
5	Land to be acquired outside mine take area (Beyond Excavation Area, such as dump area, Approach Road, Infrastructure, Colony, etc.)	Ha	969.93			
	Non-forest land	Ha	873.07			
	Forest land	Ha	96.86			
6	Land to be acquired for external dumping					
	Non-forest land	Ha	367.46			
	Forest land	Ha	18.64			
7	Net Present Value of Forest Land	Rs.Lakhs /Ha	Rs.7.50 lakh/ha			
	Total Area	Ha	244.18			
	Total Value	Rs.Lakhs	1831.36 lakhs incl NPV			

Signature
27.3.18

8	Habitation & Rehabilitation No. of villages within mine boundary No. of land oustees No. of PAFs to be rehabilitated	Nos.	6 nos. 10574 2454
9	Cost of land Total Cost	Rs. crores	Rs.797.20 crores(454.31crores upto target year)
10	Total EMP Capital R&R cost	Rs. crores	Rs.624.92 crores Rs.551.25 crores
11	Drainage of the Area (Name of river/nala)		Basundhara river, Chaturdhara nalla, Chattajhor nalla.
12	Any proposed diversion of nala or power line		No

E.	FINANCIAL(MINE+WASHERY)		Variant-I	Variant-II
1	Total Capital Investment <u>Upto target year</u> Existing Additional Total <u>Beyond target year</u>	Rs. crores	31.09 7034.73 7065.82 476.91	31.09 3596.35 3627.44 128.92
2	Specific Investment (upto target year) Total	Rs. / tonne	1758.68	899.09
3	Total Capital Investment on P&M(upto target year)	Rs. crores	3592.53	440.98
4	Specific Investment on P&M (upto target year) Total	Rs. /tonne	898.13	110.24
6	Year of opening of Revenue account (from zero date)		Year-6	Year-6
7	Earnings per manshift (EMS)	Rs.	2693.74	3143.82
8	Estimated Cost of Production At 100% production level At 85% production level	Rs. / tonne	956.54 1051.33	767.27 808.31
9	Estimated average selling price (at 95% sales realization) & (-)100mm reimbursement for surface transportation & silo loading& WASHING	Rs. / tonne	1707.87	1707.87
10	Estimated Profit At 100% production level At 85% production level	Rs. / tonne	751.33 656.55	940.61 899.56
11	Financial Internal rate of return (FIRR) At 100% production level At 85% production level	%	20.54 16.99	26.06 23.53

Impd all
22.3.18

12	Economic rate of return At 100% production level	%	24.53	31.48
13	NPV at 12% At 100% production level At 85% production level	Crores Crores	2718.56 1417.66	4671.55 3484.82
13	Break-even point Production Production level	Mty %	11.67 41.69	5.55 19.83
14	Cost of Outsourcing (average) OB Coal	Rs/cum Rs/t Rs./t	Not applicable	68.39 51.58(surface miner) 40.94(Conventional)
15	Mine Closure Cost (for corpus fund)	Rs./t	2.58	2.58
16	Expected Completion Capital	Rs. crores	12635.55	5657.15
17	Financial IRR for completion cost	%	16.00	22.14
18	Economic IRR for completion cost	%	18.36	27.60

F.	FINANCIAL (ONLY MINE)		Variant-I	Variant-II
1	Total Capital Investment <u>Upto target year</u> Existing Additional Total <u>Beyond target year</u>	Rs. crores	31.09 5955.92 5987.01 476.91	31.09 2517.55 2548.64 128.92
2	Specific Investment (upto target year Total	Rs. / tonne	1488.98	629.39
3	Total Capital Investment on P&M(upto target year)	Rs. crores	3592.53	440.98
4	Specific Investment on P&M (upto target year) Total	Rs. /tonne	898.13	110.24
5	Estimated Cost of Production At 100% production level At 85% production level	Rs. / tonne	444.15 501.37	311.65 331.27
6	Estimated average selling price (at 95% sales realization) & (-)100mm reimbursement for surface transportation & silo loading	Rs. / tonne	822.83	822.83
7	Estimated Profit At 100% production level At 85% production level	Rs. / tonne	378.68 321.46	511.18 491.56

27-3-18

8	Financial Internal rate of return (FIRR) At 100% production level At 85% production level	%	17.82 14.22	24.38 22.06
9	NPV at 12% At 100% production level At 85% production level	Crores Crores	1524.64 514.56	3477.64 2581.73
10	Break-even point Production Production level	Mty %	18.45 46.13	7.14 17.86
11	Cost of Outsourcing (average) OB Coal	Rs/cum Rs/t Rs./t	Not applicable	68.39 51.58(surface miner) 40.94(Conven tional)

Amf ali
27.3.18

Chief Manager(Min)
Siarmal OCP