CMPDI/PFR/MCL/2014-15/MAR-15/22/00

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PRE-FEASIBILITY REPORT

FOR

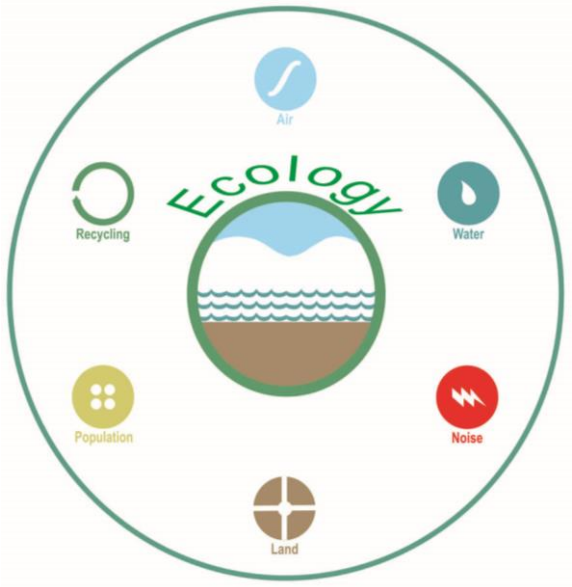
GARJANBAHAL OPEN CAST PROJECT

(NORMATIVE CAPACITY10.0 MTY)

(PEAK CAPACITY 13.0 MTY)

BASUNDHARA-GARJANBAHAL AREA

IB VALLEY COALFIELD
MAHANADI COALFIELDS LIMITED



MARCH 2015

Accreditation Number: NABET/EIA/01/12/002 Dt. Jan 31, 2012.

Central Mine Planning & Design Institute Limited

(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, OSHB Building, Bhubaneswar, Odisha-751 001

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PRE-FEASIBILITY REPORT
FOR
GARJANBAHAL OCP.
(NORMATIVE 10.0 MTY PEAK CAPACITY 13.0 MTY

1. INTRODUCTION

Garjanbahal coal block is situated in north western part- Gopalpur tract of Ib Valley coalfield, Sundargarh district, Odisha. Gopalpur tract of IB Valley coal field is a green field area with huge quarriable coal reserve of thermal power grade. Coal mining in this block has gained importance as M/s.MAPL (Mirant Asia Pacific Ltd.), formerly M/s.CEPA / SEAP had shown expression of interest for their proposal to install Super Thermal Power Plant at Hirma by the side of Hirakud reservoir near Jharsuguda township. On that basis the following actions were taken.

- Advance action plan (AAP) for Garjanbahal OCP (10.0 Mty) was approved by the Govt. of India in January 1998.
- Project report for Garjanbahal was prepared in March, 1998.
- Environmental Management plan was prepared in March 1998.
- Project report was approved by MCL Board on 17.6.1999 and CIL Board on 30.4.2001.
- Environmental Management Plan was approved by MoEF, Govt. of India vide letter No. J-11015/5/2000.IA(M) dt. 3rd May 2005 (Annexure-I).

Subsequently coal linkages granted to M/s. MAPL were cancelled due to uncertainty and slow progress of the implemtnation of Integrated power plan (IPP). Mean while M/s.NTPC (National Thermal Power Corporation) and M/s. Neyveli Lignite Corporation had shown interest to install thermal power plant in Ib Valley Coalfield.

Now report has been modified for proposed Garjanbahal OCP (Normative 10 Mty and Peak 13 Mty) due to change in technology and other infrastructure and dispatch arrangements for following two variants :

Variant-I : Departmental variant (all the activities are proposed to be done departmentally in this variant.

Variant-II : Out sourcing variant (activities related to the coal extraction winning, loading and transportation upto receiving arrangement / conveyor) OBR (drilling, loading and transporation) and other related auxiliary works like haul road construction and maintenance, pumping, etc., are proposed to be out sourced). Blasting is proposed to be done departmentally.

The total capital for Variant-I has been estimated as Rs.1375.38 crore (Rs.1064.12 crore upto target year) and for Variant-II the same has been estimated as Rs.646.64 crores(Rs.530.04 crore upto target year). This includes arealdy sanctioned capital of Rs.18.77 crores under advance action plan (APP).

The above PR was discussed in the Technical sub-committee meeting of MCL Board as well as 161th MCL Board held on 16.09.2014 in N.Delhi. MCL Board recommended the proposal for consideration of CIL Board. MCL Board recommended the departmental variant and peak capacity of 13 Mty for environmental clearance for consideration of CIL Board (Annexure-II). The mining plan approval was obtained from Ministry of Coal, GOI vide letter no 34012/(4)/2011-CPAM dated 18/07/2014 (Annexure III)

2. NEED / JUSTIFICATION FOR THE PROJECT

2.1 DEMAND AND SUPPLY SCENARIO OF MCL

The consumers of MCL are linked to the company and not to any specific coalfield. The actual supply from any coalfield of MCL will depend upon the production and transport logistics. Under the above circumstances coalfield wise demand has been assessed based on the production share of these two coalfield which is as below:

Projected Coal Demand on MCL from Ib-valley Coalfield.

(Fig. in Mt)

Sl.No	Particulars	2016-17	2021-22
1	Total Demand on MCL(Talcher and Ib coalfield)	244.83	274.134
2	Projected coal demand on Ib-valley coalfield	97.93	120.56
3	Coal Availability-Ib coalfield	69.61	70.40
	Gap	**(-)28.32**	**(-)50.16**

The proposed Garjanbahal OCP has no consumer specific linkage. A basket of new consumers may be linked to the projects which have been issued LOA (Letter of Assurances) by MCL under NCDP-2007.

2.2 JUSTIFICATION OF OPENING THE PROJECT

This sector has high potential for opencast mining operations including the proposed project namely Garjanbahal Opencast Project.

Coal demand from Ib-valley coalfield has increased many fold due to its strategic location with Howrah-Mumbai railway line passing through the coalfield. Coal of this coalfield is suitable for thermal power plants.

Many pit head power plants and other coal based plants have come up due to easy availability of coal and water. The southern, western & central India power stations have to depend on Ib valley coalfield for their growth. The Howrah-Mumbai line passes through the coalfield. So coal can move from this coalfield to western India power houses via rail route. Coal to Tamil Nadu Electricity Board is also supplied via rail-cum-sea route through Vishakhapatnam and Haldia ports. Coal can easily move from this coalfield to Eastern India and Northern India as well. Necessary infrastructures like rail and port facilities are being developed/ augmented in the region.

The proximity of Ib-valley coalfield to Hirakud reservoir has generated a lot of opportunities for setting-up super thermal power stations in the vicinity of the coalfield.

To meet the increasing demand of power in the country, more and more super thermal power stations are being planned in western, northern and eastern India, majority of which are coal based and may be linked from Ib-valley coalfield. Power Houses of Punjab State Electricity Board, Haryana State Electricity Board have also been linked to MCL and will be supplied coal from this coalfield. The New Power houses of TNEB, KPCL, WBPDCL, CESC and DVC will be supplied coal from this coalfield.

3. LOCATION AND COMMUNICATION (PLATE I & II)

Garjanbahal OCP is located in the north-western part of the Ib valley in Sundargarh district in the state of Odisha. It is situated between latitudes 21^{O}59'43" to 22^{O}01'35" North and longitudes 83^{O}44'29" to 83^{O}46'26" East.

Garjanbahal block is connected by road to the state capital Bhubaneswar through State Highway -10 and National Highway – 42 with a total distance of around 450 km. District HQ Sundergarh, on the state Highway – 10 (Sambalpur to Rourkela) is at a distance of about 46 km. Sambalpur is located at a distance of about 100km. The block is connected by black top road with two important towns of Odisha namely Rourkela at 145 km and Jharsuguda at 75.0 km. The block come under Himgir Tahsil and Balinga Police Station in the district of Sundargarh, Odisha. Basundhara (W) OCP is 6 km away from this block. Nearest railhead is Himgir on Mumbai-Howrah Broad Guage of South Eastern Railway at a distance of about 35 km from the block. Jharsuguda Airport is the nearest airport from the block.

4. TOPOGRAPHY, DRAINAGE AND CLIMATE (PLATE-III)

The topography of the block is represented by small hillocks & flat ground. The western part of the block is covered by small hillocks which are prominent in the north western part. The minimum and maximum elevations of the area are 260m in east and 322 in north western part respectively above the mean sea level.

The general slopes towards east and north east and the drainage is through small seasonal streams, which in turn feed to river Basundhara. The climate is sub tropical. The mean temperature varies from 9.3^{o}C to 44.1^{o}C. The mean annual precipitation is 1280mm of which 85% occurs during rainy season.

5. MINE BOUNDARY

The mine boundary of the project is as follows:

North / North-west	:	Floor boundary is arrived after leaving 75m surface barrier from planned surface boundary of Kulda OCP
South/ South-east	:	Floor boundary is marked after leaving surface barrier of 300 m against Garjanbahal village and 100m from the road.
East	:	Incrop of Rampur-I / Rampur-II seam
South / South-west	:	Fault F2 – F2.

6. GEOLOGY

A total of 116 boreholes have been drilled with a total meterage of12542.85 (excluding 2 boreholes drilled by GSI) in an area of 5.00 sqkm. Coal bearing area is 4.24 sq.km out of which 0.90 sq.km is covered under dense forest and hilliocks. The borehole density is about 23.2 per sq.km.

Three coal seams viz. Ib, Rampur and Lajkura in ascending order have been encountered in this block. Ib seam, occurring in 2 splits is thin and impersistent and has got no potentiality in this block except for the northern part in a very small patch. Both Rampur and Lajkura seams are occurred each in 6 sections / split thickness of Lajkura and Rampur coal seams range from 75 to 85 m and 35 to 50 m respectively. The parting between Rampur and Lajkura seam varies from 16.78 to 31.59 m.

In this block, the strata shows NNW-SSE strike with dip varying from 3^o to 7^o. Four faults have been deciphered in the area having throw upto 60m. Out of total area of 5 sq.kms of the block, coal bearing area covers 4.25 sq.kms out of which 0.90 sq.km is covered under dense forest and hillocks.

7. MINING TECHNOLOGY

The proposed mining block represents presence of moderately flat single coal seam with intermediate varying parting. The planned quarry surface area is about 4.01km^2. Thick seams occur at shallow depth in wide area having power grade coal reserve. So this will make the project feasible for adopting opencast mining method. For better management and higher capacity utilization, large size excavators have been proposed. The top soil and sub-soil will be excavated and stacked separately or utilized directly for covering the backfill. Shovel-dumper mining method has been adopted for overburden removal and the same has been suggested for remaining life of the mine. Considering the annual target capacity of 13.0 Mt and corresponding yearly overburden removal, higher capacity of shovel and dumpers are suggested for overburden removal.

In this recast project report 10 cum rope shovel with 100 T dumpers have been envisaged for removal of top overburden and thick parting between Rampur & Lajkura coal horizon . Other thin partings within Lajkura and Rampur seams will be removed by 5.5-6.5 cum hydraulic shovels/backhoe with 60T dumpers. Thin inseam bands/partings will also be removed by high capacity ripper-dozer system.

Major coal production will be done by using 3800mm drum dia surface miner, 5-7 cum front end loader and 60t rear dumper.

The present proposal has the following changes with respect to earlier project report.

- Coal extraction will be by surface miner in all variants.
- Coal transportation from coal receiving arrangement within quarry floor to washery and from washery to SILO through belt conveyor.

- Washing (-) 100mm coal from surface miner in washery, storage and conveying of clean coal by conveyor upto SILO over railway siding.
- Washery rejects will be auctioned.
- Surface bunker / stock shall be kept within washery and away from reserve forest.
- External dump should be within notified area of MCL.
- The seam wise reserves (both Geological and mineable reserve) have been estimated as per available GCV data and weighed average ROM Coal has been calculated for pricing of coal.
- 850 HP Ripper –Dozers have been provided.
- Partial in pit conveying has been provided.
- The cost has been updated to August 2014 cost base.

Mining Characteristics

Sl. No.	Particulars	Unit	
1)	Floor Area	ha	279.52
2)	Surface Area	ha	394.78
3)	Mineable Reserves	Mt	229.25
4)	Waste volume	Mcum	223.81
5)	Stripping ratio	M^3/t	0.98
6)	No. of seams/sections		2/13*
7)	Capacity	Mt	Normative 10.00 (Peak 13.0)
8)	Life	Yrs.	23 years @ 13.0 Mty
9)	Gradient		
	Range	Deg	3-15.5
	Average	Deg	3-7
10)	Strike length (along floor)		
	Maximum	m	1640
	Minimum	m	72
11)	Strike length (along surface)		
	Maximum	m	2080
	Minimum	m	380
12)	Depth		
	Maximum	m	260
	Minimum	m	3
13)	Perimeter	m	8053

*This include split section

Thickness of Coal Seam Section

Sl. No.	Descriptions	Max. (m)	Min. (m)	Average (m)
1.	Lajkura IV seam	18.79	1.98	13.12
2.	Lajkua III/II Top seam	11.45	8.42	9.52
3.	Lajkura III/II Middle seam	26.37	8.61	20.45
4.	Lajkura IIII/II Bottom	6.18	1.47	3.44
5.	Lajkura I seam	18.86	4.80	14.81
6.	Ljakura I Bottom	4.45	1.04	2.00
7.	Rampur V/IV top seam	12.26	1.61	9.31
8.	Rampur V/IV Middle seam	16.11	9.97	11.05
9.	Rampur V/IV Bottom	6.84	1.97	3.62
10.	Rampur III Top & Bot. seam	10.07	1.69	6.15
11.	Rampur III/II combined	15.56	7.67	11.60
12.	Rampur II seam	10.73	1.45	4.24
13.	Rampur I seam	5.58	1.15	2.32

Thickness of Parting

Sl. No.	Descriptions	Max. (m)	Min. (m)	Average (m)
1.	Top overburden	126.45	1.00	--
2.	Ptg. Bet. Lajkura IV and Ljakura III/II Top	7.5	1.63	3.81
3.	Ptg. Bet. Laj. III/II Top and Laj. III/II Middle	2.28	0.34	1.73
4.	Ptg. Bet. III/II Mid. And Laj.III/II Bottom	6.18	1.47	3.44
5.	Ptg. Bet. Laj. III/II Bot. and Lajkura I	6.88	0.86	2.80
6.	Ptg. Bet. Laj.I and Lajkura I Bottom	6.04	1.15	3.33
7.	Ptg. Bet. Laj.I and Bot and Rampur V/IV Top	31.59	16.78	25.87
8.	Ptg. bet. Rampur V/IV Top and Middle	3.59	0.15	1.82
9.	Ptg. Bet. Rampur V/IV Middle & Bottom	10.96	0.65	2.11
10.	Ptg. Bet. Rampur V/IV Bottom & Rampur III Top & Bot.	7.88	0.47	2.60
11.	Ptg. Bet. III Top & Bot. and Rampur II	4.9	0.61	2.29
12.	Ptg. Bet. Rampur II & Rampur I	5.35	0.54	1.91

8. MINING AND DUMPING STRATEGY

OPENING OF DEPOSIT

Opening is proposed through Rampur-I seam which incrops at shallow depth and is workable in northern corner. For working the mine following two variants have been considered :

i) Main haul road is laid near the northern/north western flank.

ii) Main haul road is laid along the south eastern/southern flank.

First alternative is selected considering scope of barrier extraction and concentration of surface infrastructures for despatch to consumers. The second variant involves more rehandling, to work the barrier between two mines.

WORKING OF BARRIER BETWEEN GARJANBAHAL & KULDA OCPS

Working of barrier between Garjanbahal and Kulda OCPs will yield. 52.26 Mt of mineable coal with corresponding OB of 57.52Mcum including 21.28Mcum of rehandling. Since major part of coal transport is planned through haul roads developed on either side of barrier of 75m between Kulda & Garjanbahal, simultaneous working of barrier with the mine is difficult. Considering necessity of maintaining transport horizons and difficulty in simultaneous liquidation of barrier it is proposed to start the working of barrier when alternate transport horizons could be developed over the internal dumps. These transport horizons are envisaged to be common for both mines.

OB DUMPING

The external dump site for adjoining Kulda OCP has been proposed adjacent to Garjanbahal block. Existence of forest land in large areas on the rise side has been the main consideration in deciding location of overburden dumps. Since there is acute shortage of dumping space near the mine, it is proposed to make this dumping area as common for both Kulda and Garjanbahal OCPs after annexing adjoining non-forest land and also non-forest land available east of Garjanbahal village. Around 21.09Mcum OB from Garjanbahal OCP will be dumped externally. Internal dumping will start in 6th year (4^{th} year of production). The internal & external dumps will be merged and the dump will be heightened upto 385m level i.e. 120m above ground level due to non- availability of sufficient non-forest land for external dumping. Any dumping by existing Kulda OCP on coal bearing area of proposed Garjanbahal OCP will have to be rehandled while operating this mine.

Internal & external dumping

(All figs. in Mcum)

Year	OB Removal	External Dump			Internal dump
		Dump-I	Dump-II	Total	
Yr3	2.56	2.56	-	2.56	-
Yr4	2.70	1.32	1.38	2.70	-
Yr5	4.56	-	4.56	4.56	-
Yr6	6.46	-	6.00	6.00	0.46
Yr7	8.52	-	4.87	4.87	3.65
Yr8	8.78	-	0.40	0.40	8.38
Yr9	8.85	-			8.85
Yr10	9.90	-			9.90
Yr11-Yr30	171.48	-	-	-	171.48
Total :	223.81	3.88	17.21	21.09	202.72

9. PRESENT STATUS OF MINE

STATUS OF ADVANCE ACTION PROPOSAL

An Advance Action Proposal (AAP) for Garjanbahal OCP was approved by Govt. for Rs.8.28 crores in January,1998 and the same is under implementation. A revised AAP has also been sanctioned in July'05 for Rs.17.39 crores. The present status of different activities under AAP given below :

LAND ACQUISITION

Entire land is vested in the company U/s.11(I) of the CBA(A&D) Act,1957.

Govt. Non-Forest Land : The entire Govt. Non-Forest land is under possession.

Tenancy Land : Payment of tenancy land for village Balinga for 149.20 ha has been made. Draft compensation roll of village Garjanbahal has been completed and circulated to the villagers. Survey of this village was completed and completion roll was prepared. Fresh survey of Karlikachhar and Bangurkela village is under process.

Forest Land:

Rs.1.27 crore paid to state Govt. as land value and capitalized value of 88.90 Ha of forest land. Proposal for Garjanbahal OCP for forest land of 88.899 ha has been submitted in state serial Bo. 131/04 dated. 17/05/06 for stage-I forest clearance.NOC was issued by Collector on 14/09/2011 and the same was forwarded to CCF (Nodal) through RCCF (Rourkela) and DFO (Sundergarh). DGPS survey was completed on 07/02/13. Map prepared and authenticated by ORSAC on 7/03/2013. The same was submitted on 20/03/2013 to RCCF Rourkela for onward transmission to CCF (Nodal) BBSR.

Compensatory afforestation scheme modified as per new norms of Govt. and submitted to RCCF Rourkela through DFO on 27/07/2013. Diversion proposal has been sent to PCCF Odisha on 30/09/2013 pending for FRA compliance for safety zone area from forest land of 88.899 ha. Compensatory afforestation proposal forwarded to CCF (Nodal), Bhubaneswar on 01-10-2013. Fresh plan along with land schedule with reducing the safety zone area within FRA area i.e. 88.899 ha has been finalized and resubmitted to DFO, Sundergarh on 03/03/2014 after authentication of Tehsildar. Site inspection was made by DFO on 04/03/2014. Diversion proposal forwarded to Addl. PCCF (Nodal), Bhubaneswar on 09/05/2014. After authentication of compensatory afforestation second site plan by DFO and RCCF, Sundergarh has been deposited to PCCF office on 31/05/2014.

Revised mining plan submitted to Additional PCCF (Nodal) BBSR on 25/07/2014.Compensatory afforestation plan of second site submitted to RCCF Rourkela on 16/09/2014 and it has been forwarded to Addl. PCCF (Nodal) Bhubaneswar on 29/09/2014. Diversion proposal has been submitted to principal Secretary, F&E Deptt., Govt. of Odisha on 17/11/2014. A letter has been communicated to PCCF office on 17/12/2014 for six point compliance. Inspection completed by RCCF, Rourkela on 06/02/15. Inspection report along with other compliance were submitted to additional PCCF (nodal) on 21/2/15.

REHABILITATION & RESETTLEMENT

Approximately 1046 families are required to be resettled. Correspondence with State Govt. is in progress for identification of R&R site.

- **POWER SUPPLY**

Main substation for all projects of the area at Garjanbahal is under advance stage of construction. 220kV incoming power supply line is under erection and forest clearance for drawing OH line is obtained.

STATUS OF EMP

EMP has been approved by MoEF, New Delhi in May,2005. However, a fresh EMP has to be prepared as the mine could not be opened in time due to delay in obtaining forest clearance.

10. LAND REQUIREMENT (in ha) (PLATE-III)

Land requirement for Garjanbahal project for 13 Mty (peak)

Total land requirement under different heads is indicated in table below:

Table- Land-use pattern of Total mining area

Sl. No.	Particulars	Total Area in ha		
		Forest	Non-forest	Total
1	Quarry excavation area *	68.16	321.66	389.82
2	Safety zone (7.5m around excavation boundary of the forest land)	1.66	3.51	5.17
3	Blasting danger zone (excluding the part of OB dump) (7.5 m safety zone to either block boundary or 300m from mine boundary)	3.86	132.98	136.84
4	External OB dump	1.87	60.71	62.58
5	Infrastructure (CHP, Washery, Silo point, project office, laying of railway lines for dispatch point)	13.35	36.31	49.66
6	Rationalisation of project boundary		9.76	9.76
	Total mining area required for operating Garjanbahal OCP	**88.90**	**564.93**	**653.83**
B.	Outside Mine Lease Area			
1.	Other infrastructure	-	40.00	40.00
2.	Resettlement	-	68.50	68.50
3.	Residential colony	-	33.05	33.05
	Total Project area	88.90	706.48	795.38

NOTE :1. * 4.97 Ha of excavation area and 4.43 ha of blasting danger zone is not included as that has been included in forest proposal of Kulda OCP as indicated by project authority.

2. Rationalization of project boundary is a lump sum provision and depends on ground reality.

3. The above land schedule is based on the land-use plan and plot-wise area provided by the concerned area of MCL while preparing mining plan/PR and may change in actual.

Infrastructural facilities like washery, workshops, stores, substations, CHP etc. have been proposed near the silo loading system because of constraint in space near the mine area.

Provision for acquiring the land falling within 300m of blasting danger zone in the south and south west has been made. Provision of land in the northern side has been estimated after considering the approved land provision of sanctioned Kulda OCP. Provision of land in the east has been made considering land requirement for infrastructure etc.

FOREST LAND REQUIREMENT

Total forest land required for the project has been estimated as 88.90 ha. This includes forest land in excavation area, 7.5m safety zone, blasting danger zone and infrastructure area. Requirement of forest land in 7.5m safety zone is 1.66 Ha and mine excavation area is 68.16 Ha which have been included in total forest land requirement.

11. TARGETED OUTPUT, LIFE, RESERVE & PRODUCTION SCHEDULE

Garjanbahal OCP is a new mine. The normative capacity of the project is 10.0 Mty and peak is 13.0 Mty. The life of the mine is 23 years for peak production including construction period of two years.

Equipment requirement for departmental operations has been assessed considering normative capacity of 10 Mty and cooresponding overburden removal. Production capacity of the mine can be enhanced to 13 Mty in particular years by improving machine utilization & availability thus Increasing efficiency, preponing same of HEMM or may be done due to occurrence of favorable geological conditions in actual working.

Enhancing the production to peak capacity throughout the life can possibly be achieved by continuous increasing working hours, improving machine availability and utilization or by increasing population of some of the machines. Increase in capacity can also be done through outsourcing.

The year-wise calendar programme for peak capacity is given below:

PRODUCTION PROGRAMME (for peak capacity)

YEAR	TOTAL COAL Mt	TOTAL OB Mcum	S.R. cum/t
Yr3	0.75	2.56	3.41
Yr4	3.00	2.70	0.90
Yr5	6.00	4.56	0.76
Yr6	10.00	6.46	0.65
Yr7	13.00	10.34	0.80
Yr8	13.00	11.26	0.87
Yr9	13.00	12.73	0.98
Yr10	13.00	15.31	1.18
Yr11	13.00	15.77	1.21
Yr12	13.00	15.94	1.23
Yr13	13.00	15.25	1.17
Yr14	13.00	14.29	1.10
Yr15	13.00	14.39	1.11
Yr16	13.00	14.30	1.10
Yr17	13.00	14.30	1.10

Yr18	13.00	14.36	1.10
Yr19	13.00	14.30	1.10
Yr20	13.00	13.66	1.05
Yr21	13.00	5.48	0.42
Yr22	9.00	4.76	0.53
Yr23	5.50	0.71	0.13
TOTAL	**229.25**	**223.81**	**0.98**

12. WATER DEMAND AND SUPPLY ARRANGEMENT

(Fig in Kld)

	Total for 13.0 Mty
Potable	915.00
Industrial	2237.00
Total	3152.00

WATER SUPPLY ARRANGEMENT

Industrial water demand will be met from existing mine void of Basundhara (East) OCP (Exhausted decoaled mine voids) till mine voids is developed for storing mine water of proposed water. The potable water requirement will be met through the weir constructed over Basundhara river till Integrated Water Supply Scheme (IWSS) for the project is implemented.

13. MANPOWER

The manpower required for the project is 1567.

14. POWER SUPPLY

The project substation will receive permanent power at 33kV from the proposed 3x20 MVA, 220/33 kV proposed sub-station of MCL located near Garjanbahal. The project substation comprising of 3 nos. 5 MVA, 33/6.6kV transformers has been envisaged to cater to the loads of HEMM, work shop, pumping and quarry lighting. A separate substation for both CHP and washery has been envisaged.

15. COAL HANDLING & DESPATCH ARRANGEMENT

The present Coal Handling Plant envisages surface coal collection, conveying of the coal from the mine access trench to the proposed washery and in future once the mine is developed partial inpit transportation system has been envisaged upto certain distance of around 300m from access trench on quarry floor.

In all the variants, ROM coal of (-) 100 mm size by blast free techniques has been proposed for 80% production of coal and balance 20% wedge coal that requires crushing and inpit coal transport has been envisaged same for both the variants.

In this project coal transport has been envisaged in three parts:

1. Coal from benches will be transported to reclaim feeders located at pit top by rear dumpers. Once the mine is advanced to dipside these reclaim feeders will be shifted to inpit to reduce dumper movement.
2. Coal from reclaim feeders will be transported to washery via belt conveyor.
3. Coal receipt from washery and transport upto Silo for final dispatch by belt conveyor.

16. WORKSHOP AND STORE

All necessary facilities have been provided in the workshop to cater the needs of the entire project. The workshop has 2 tier layout system along with a store. The daily and scheduled maintenance including lubrication and minor repair shall be performed in the workshop to be located at pit head. The service provided shall be preventive in nature as the workshop is being planned mainly to book after the job of minor report only. Main workshop shall look after for major break downs of the HEMM / E&M equipment and shall arrange to send the HEMM / E&M equipment to central workshop located at Ib Valley coalfield of M/s. MCL.

17. CIVIL CONSTRUCTION

Provision has been made in the project report:

- Residential Building of 1097 no. quarters at the cost Rs.5955.61 lakhs.
- Service building at the cost of Rs.4826.20 lakhs.
- Roads and Culverts at the cost of Rs.3256.52 lakhs.
- Cost of water supply for Drinking Rs.333.49 lakhs
- Cost of water supply for Non-Drinking Rs.786.84 lakhs
- Sewerage disposal of residential buildings at the cost of Rs.199.86 lakhs.
- Cost of industrial effluent treatment plant – Rs. 248.55

18 DIVERSION OF NALLAH

A small seasonal nallah is flowing through the mine property, the catchment area of which lies near the south-eastern limit of the quarry boundary. Due to mining operation, the existing drainage pattern will be disrupted. Hence, it is suggested in the PR for recoursing of surface run-off from the catchment area of the nallah through suitable water course directed towards Basundhara river. The nallah will be channelised along the toe of Garjanbahal external dump.

The provision of Rs.475.73 lakhs has been provided for the diversion of this nallah which is inclusive of construction of culvert, etc.

19. ENVIRONMENTAL MANAGEMENT

AIR QUALITY

Winter Season (Dec'13 to Feb'14)						
		Barapali Village	**Near crusher being installed**	**Near CHP**	**Near Kulda PO**	**Tikilipara Village**
	95%ile	187.75	339.25	340.75	351.00	372.25
	98%ile	189.10	340.30	340.90	351.00	373.90
	mean	176.83	322.83	330.83	335.67	344.67
	Min	166.00	295.00	317.00	316.00	292.00
SPM	Max	190.00	341.00	341.00	351.00	375.00
	95%ile	95.00	148.75	158.50	151.00	164.00
	98%ile	95.60	150.10	158.80	151.60	165.20
RPM	mean	88.17	133.00	139.50	140.67	150.50

	Min	82.00	110.00	119.00	127.00	131.00
	Max	96.00	151.00	159.00	152.00	166.00
	95%ile	14.75	22.50	21.75	23.50	24.75
	98%ile	14.90	22.80	21.90	23.80	24.90
	mean	13.17	17.83	17.67	18.83	22.50
	Min	12.00	15.00	15.00	16.00	18.00
PM2.5	Max	15.00	23.00	22.00	24.00	25.00
	95%ile	19.00	25.75	25.50	26.50	29.00
	98%ile	19.00	25.90	25.80	26.80	29.00
	mean	16.83	21.83	21.17	22.00	26.33
	Min	15.00	19.00	18.00	19.00	21.00
SOx	Max	19.00	26.00	26.00	27.00	29.00
	95%ile	44.75	69.25	66.75	65.25	69.50
	98%ile	44.90	69.70	66.90	65.70	71.00
	mean	41.17	62.17	63.33	61.00	55.33
	Min	35.00	51.00	56.00	56.00	39.00
NOx	Max	45.00	70.00	67.00	66.00	72.00

Pre-monsoon (March to May 2014)						
		Barapali Village	**Near crusher being installed**	**Near CHP**	**Near Kulda PO**	**Tikilipara Village**
	95%ile	189.75	373.00	371.75	372.25	181.50
	98%ile	190.50	374.20	371.90	373.90	183.00
	mean	179.17	347.67	358.17	344.67	163.50
	Min	158.00	304.00	329.00	292.00	142.00
SPM	Max	191.00	375.00	372.00	375.00	184.00
	95%ile	93.00	166.75	164.00	164.00	86.00
	98%ile	93.60	167.50	164.00	165.20	86.60
	mean	85.00	150.50	156.50	150.50	77.67
	Min	74.00	130.00	147.00	131.00	66.00
RPM	Max	94.00	168.00	164.00	166.00	87.00
	95%ile	17.50	25.75	25.75	24.75	16.00
	98%ile	17.80	25.90	25.90	24.90	16.00
	mean	15.17	22.67	23.33	22.50	15.33
	Min	12.00	17.00	20.00	18.00	14.00
PM2.5	Max	18.00	26.00	26.00	25.00	16.00
	95%ile	20.50	30.00	29.75	29.00	19.75
	98%ile	20.80	30.00	29.90	29.00	19.90
	mean	18.33	27.00	27.50	26.33	18.67
	Min	15.00	22.00	24.00	21.00	17.00
SOx	Max	21.00	30.00	30.00	29.00	20.00
	95%ile	49.00	76.50	83.50	69.50	53.25
	98%ile	49.00	77.40	83.80	71.00	54.30
	mean	39.00	65.00	69.17	55.33	40.67
	Min	30.00	35.00	54.00	39.00	26.00
NOx	Max	49.00	78.00	84.00	72.00	55.00

Post-Monsoon (Oct – Dec 14)						
		Barapali Village	**Near crusher being installed**	**Near CHP**	**Near Kulda PO**	**Tikilipara Village**
	95%ile	191.50	339.75	337.50	349.50	191.75
	98%ile	191.80	340.50	339.00	350.40	192.50
	mean	179.83	298.17	313.83	336.00	172.83
	Min	154.00	250.00	276.00	315.00	154.00
SPM	Max	192.00	341.00	340.00	351.00	193.00
	95%ile	90.00	140.25	150.50	145.25	89.50
	98%ile	90.00	140.70	152.60	145.70	89.80
	mean	82.00	130.33	136.00	136.17	84.33
	Min	63.00	110.00	129.00	120.00	70.00
RPM	Max	90.00	141.00	154.00	146.00	90.00
	95%ile	14.00	16.75	16.00	17.00	14.00
	98%ile	14.00	16.90	16.00	17.00	14.00
	mean	13.00	15.00	15.33	16.33	13.17
	Min	12.00	13.00	15.00	15.00	12.00
PM2.5	Max	14.00	17.00	16.00	17.00	14.00
	95%ile	17.00	20.75	20.00	20.75	17.00
	98%ile	17.00	20.90	20.00	20.90	17.00
	mean	16.00	18.67	18.83	19.83	16.17
	Min	15.00	16.00	18.00	19.00	15.00
SOx	Max	17.00	21.00	20.00	21.00	17.00
	95%	42.50	68.50	68.75	64.75	45.25
	98%	43.40	69.40	69.50	65.50	45.70
	mean	35.83	63.00	58.50	57.33	38.17
	Min	29.00	58.00	39.00	47.00	25.00
NOx	Max	44.00	70.00	70.00	66.00	46.00

WATER ENVIRONMENT

Project	**Kulda OCP**					**Indian Drinking Standards (IS-10500)**
Monitoring Station	**Well at Balinga**					
Dt. of sampling	**01.01.14**	**6.02.14**	**06.03.14**	**08.04.14**	**5.5.14**	
Colour	4	12	3	3	8	5
Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	6	15	5	5	11	5
pH	7.79	8.72	8.68	8.69	8.58	6.5-8.5
Total Alkalinity	152	204	88	96	88	200
Total Hardness	268	144	144	152	144	300
Iron	<0.06	<0.06	<0.06	0.26	0.26	0.3

Chloride	64	24	34	34	32	250
Residual Free chlorine	0.19	0.07	0.15	0.14	0.18	0.2
Total Dissolve Solid	462	260	252	266	252	500
Calcium	65.6	38.4	33.6	36	33.6	75
Copper	<0.03	<0.03	<0.03	<0.03	<0.03	0.05
Manganese	<0.02	<0.02	<0.02	0.73	0.73	0.1
Sulphate	84	56	44	55	46	200
Nitrate	9.75	1.22	5.32	5.32	3.54	45
Fluoride	0.59	0.38	0.34	0.34	0.32	1.5
Selenium	<0.002	<0.002	<0.002	<0.002	<0.002	0.01
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	0.05
Lead	<0.005	<0.005	<0.005	<0.0005	<0.005	0.05
Cadmium	<0.0005	<0.0005	<0.0005	<0.001	<0.001	0.01
Zinc	<0.010	<0.010	<0.010	<0.010	<0.010	5
Hexavelent Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
Boron	<0.01	<0.01	<0.01	<0.01	<0.01	1
Faecal col.as MPN/ 100ml	Nil	NIL	NIL	nil	Nil	Nil
Phenolics	<0.001	<0.001	<0.001	<0.001	<0.001	0.001

Project	**Kulda OCP**			**Indian Drinking Standards (IS-10500)**
Monitoring Station	**Well at Balinga**			
Dt. of sampling	**7.10.2014**	**5.11.2014**	**03.12.14**	
Colour	4	8	3	5
Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	5	14	4	5
pH	8.64	8.63	8.62	6.5-8.5
Total Alkalinity	96	92	88	200
Total Hardness	160	156	152	300
Iron	<0.06	<0.06	<0.06	0.3
Chloride	36	32	34	250
Residual Free chlorine	0.17	0.15	0.15	0.2
Total Dissolve Solid	278	274	272	500
Calcium	36.8	38.4	35.2	75

Copper	<0.03	<0.03	<0.03	0.05
Manganese	0.04	0.03	<0.02	0.1
Sulphate	55	51	52	200
Nitrate	6.2	5.76	4.87	45
Fluoride	0.24	0.24	0.25	1.5
Selenium	<0.002	<0.002	<0.002	0.01
Arsenic	<0.002	<0.002	<0.002	0.05
Lead	<0.005	<0.005	<0.005	0.05
Cadmium	<0.0005	<0.0005	<0.0005	0.01
Zinc	0.05	0.03	0.05	5
Hexavelent Chromium	<0.06	<0.06	<0.06	0.05
Boron	<0.20	<0.20	<0.20	1
Faecal col.as MPN/ 100ml	Nil	Nil	Nil	Nil
Phenolics	<0.001	<0.001	<0.001	0.001

NOISE ENVIRONMENT

Winter Season (Dec'13 to Feb'14)			
		Kulda P.O	**Karlikacchhar Village**
Day	95%ile	54.25	51.68
	98%ile	54.34	51.75
	mean	52.68	50.77
	Min	50.60	50.10
	Max	54.40	51.80
Night	**95%**	48.78	44.28
	98%	48.91	44.29
	mean	47.47	43.85
	Min	45.80	43.20
	Max	49.00	44.30

Pre- Monsoon Season (March to May 2014)			
		Kulda P.O	**Karlikacchhar Village**
Day	95%ile	53.48	53.13
	98%ile	53.67	53.29
	mean	52.08	51.52
	Min	50.90	50.10
	Max	53.80	53.40
Night	**95%**	47.53	44.43
	98%	47.63	44.47
	mean	46.63	43.92
	Min	45.60	43.40
	Max	47.70	44.50

Post-Monsoon Season (Oct – Dec 14)			
		Kulda P.O	**Karlikacchhar Village**
Day	95%ile	54.20	52.25
	98%ile	54.32	52.34
	mean	52.80	51.15
	Min	51.60	50.10
	Max	54.40	52.40
Night	95%ile	48.78	44.58
	98%ile	48.91	44.65
	mean	47.42	43.92
	Min	45.80	43.30
	Max	49.00	44.70

20. SAFETY MANAGEMENT AND CONSERVATION

Adequate provisions have been made for safe working of mine in form of design of operational system, provision of safety management for safe use of explosive electricity and HEMM.

21. REHABILITATION AND RESETTLEMENT

The core zone of the project comprising of excavation zone, infrastructure area, OB dump sites, safety zone for blasting, etc., covers partly and/or fully the land from six (6) villages namely, Garjanbahal, Balinga, Bankibahal, Karlikachhar, Bangurkela and Tumulia. About 1046 families will be displaced due to mining and other associated activities of this project. These families will be resettled and rehabilitated socially, culturally and economically along with other displaced such as major married sons, unmarried daughters of 30 years of age, etc., as per latest Norms of Govt. of Orissa, May, 2006. Details of project affected families and project affected persons are given below:

Name of village	Project affected families	Project affected persons
Garjanbahal	318	1243
Balinga	311	1201
Karlikachhar	121	454
Bangurkela	296	1309
Total	1046	4207

However, the exact number of project affected families will be known after due enumeration by the Project Authority.

Bankibahal & Tumulia has been considered in Kulda OCP and Siarmal OCP respectively.

22. RAIN WATER HARVESTING

Rain water is naturally pure water except where it becomes acidic due to industrial pollution. The rapid exploitation of ground water as well as surface water due to the industrial developmental projects, increase in population resulted in acute scarcity of fresh water availability. It has become necessary to conserve this valuable natural resource for sustainable development.

Conservation of this valuable natural resource can be done by collecting this rain water scientifically and utilizing it either for drinking purposes or ground water recharging purposes.

Scientifically & technically designed system which helps us to collect and utilize the rain water effectively through various steps and collectedly termed as “Rain Water Harvesting”.

The various steps/methods are roof top catchments, check dams, percolation pond, storage tanks, etc.

Annexure-I

No.J-11015/5/2000-IA.II (M)
Government of India
Ministry of Environment & Forests
I A Division

Paryavaran Bhavan
C.G.O. Complex, Lodi Road
New Delhi-110 003

Dated 3rd May 2005

To,

Chief General Manager(Envt.),
M/s Mahanadi Coalfields Limited
Jagriti Vihar, P.O.U.E.C.Burla
District Sambalpur-768 018
ORISSA

Subject: Garjanbahal Open Cast Coal Mining Project of M/s Mahanadi Coalfields Limited located in Village (s) Garjanbahal, Balinga,Bankibahal,, Karlikachhar, Bangurkela and Tumulia, Tehsil Hemgiri, District Sundergarh in Orissa –environmental clearance reg.

Sir,

This has reference to the Ministry of Mines and Minerals, Department of Coal letter No. 43011/38/97-CPAM dated 25.02.2000, MCL letters dated 16.02.2000, 26.05.2000, 12.06.2000, 15.06.2000, 08.08.2000, 30.11.2000, 19.05.2001, 30.10.2001, 12.01.2002, 09.02.2002,19.03.2002, 09.11.2002, 22.05.2003, 01.08.2003, 20.03.2004 and 15.12.2004 and Coal India Limited letter No. CIL/DLI/ENV/MCL/2005/17 dated 22.03.2005 on the subject mentioned above. The Ministry of Environment & Forests has examined the application. It has been noted that the total land requirement for the project is 705.0 ha, which comprises lease area of 603.45 ha, 33.05 ha area for township and 68.50 ha for rehabilitation colony out side the lease area. Out of the total lease area of 603.45 ha, 88.90 ha is forestland and remaining 514.55 ha is Government and tenancy land. Area proposed for excavation is 366.87 ha, 55.62 ha for OB dumps , 30.50 ha is for infrastructure, 6.24 ha for roads, 122.46 ha for safety zone for blasting and 21.76 ha for rationalization of project boundary. The excavation area excludes 34.62 ha of non forest Government land to be acquired separately for safety zone for blasting. Township is outside the mine lease area, about 4-5 km from the mine site comprising an area of 33.05 ha and 1218 dwelling units. Annual production capacity of the mine is 10.0 million tonnes. Working will be opencast by mechanised method. There are 512 families from four villages comprising population of 1799 people will be affected by the project. The R&R will be followed as per the norms of the State Government of Orissa and CIL. No ecologically sensitive area such as national park, sanctuary, biosphere reserve etc. reported within 10 km radius of the proposed project. It has been mentioned that about 225.08 million cubic metere of OB will be generated throughout of the mine life of which 202.02 million cubic meter will be backfilled and 23.06 million cubic meter will be kept as external dump. Backfilling of OB will start from the 4th year of the operation. Total water requirement for the project envisaged is 2790 m^3 /day which will be met from the proposed State Government dam site of the Basundhara River. Consent to Establish from the Orissa State Pollution Control Board has been obtained on 28.11.2001. The CIL Board has approved project report on 23.05.2001. Public hearing was held on 29.12.1999. Capital cost of the project is Rs. 76369.41 lakhs (March 1998).

Annexure-I(Contd.)

2. The Ministry of Environment and Forests hereby accords environmental clearance to the above mentioned mechanised opencast coal mine of M/s Mahanadi Coalfields Limited for 10.0 million TPA production involving lease area of 603.45 ha under the provisions of the Environment Impact Assessment Notification, 1994 as amended on 04.05.1994 and 10.04.1997 subject to the compliance of the terms and conditions mentioned below:

A. Specific conditions

(i) Top soil should be stacked with proper slope at earmarked site(s) and adequate measures should be used for reclamation and rehabilitation of mined out area.

(ii) OB dumps should be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dumps should not exceed 120 m in four stages of 30 m each. Overall slope of the dump should not exceed 28°. Concurrent back-filling should be started from the fourth year of operation. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on yearly basis.

(iii) Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilised for watering the mine area, roads, green belt development etc. The drains should be regularly desilted and maintained properly.

Garland drains (size, gradiant and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.

(iv) Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.

(v) Permission from competent authority should be obtained for drawl of water for the project.

(vi) Green belt should be raised by planting the native species around the ML area, coal handling plant, roads, OB dump sites, etc., in consultation with the local DFO/Agriculture Department. The density of the tree should be around 2500 plants per ha.

(vii) The proponent should undertake regular monitoring of ground water level (in January, May, August and November) and quality (in May) by establishing a network of piezometers in an around the mine lease area. The ground water monitoring data should be furnished to the CGWB, SER, Bhubneshwar, CGWA and Ministry of Environment and Forests on annual basis. The ground water data generated during pre and post project period should also be used by the

project proponent for ground water modeling studies and the findings to be submitted to CGWA, New Delhi for further necessary action.

(viii) The project proponent should undertake suitable artificial recharge measures in the project area for augmentation of ground water resources.

(ix) The proponent should withdraw the estimated mine seepage only i.e., 0.16 million cubic meter per year for dewatering purposes and explore the possible reuse of the mine seepage water for gainful utilisation.

(x) Coal handling plant (CHP) should be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.

(xi) Drill should be wet operated or with dust extractors and Controlled blasting should be practiced.

(xii) Project authority should undertake sample survey to generate data on pre-project community health status within a radius of 1 km from proposed mine.

(xiii) A comprehensive R&R plan should be submitted to the Ministry as per the final package finalized in consultation with the State Government for rehabilitation of project effected families within 3 months.

(xiv) Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to MOEF and its Regional Office.

(xv) Sewage Treatment Plant should be installed for the colony. ETP should also be provided for workshop and CHP waste water.

(xvi) A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

B. General Conditions

(i) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.

(ii) No change in the calendar plan including excavation, quantum of mineral coal and waste should be made.

(iii) Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest department and experts.

(iv) Five ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO_2, NO_x, and CO monitoring. Location of the stations should be decided based on the meteorological data,

topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.

Data on ambient air quality (RPM, SPM, SO_2, NO_x, and CO) should be regularly submitted to the Ministry including its Regional Office at Bhubneshwar and to the State Pollution Control Board/Central Pollution Control Board once in six months.

(v) Fugitive dust emissions from all the sources should be controlled regularly monitored and data recorded properly. Water spraying arrangements on haul roads, wagon loading, dump trucks (loading & unloading) should be provided and properly maintained.

(vi) Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operations of HEMM, etc., should be provided with ear plugs/muffs.

(vii) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop.

(viii) Acid mine water, if any has to be treated and disposed of after conforming to the standard prescribed by the competent authority.

(ix) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to coal dust and take corrective measures, if needed.

(x) Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.

(xi) A separate environmental management cell with suitable qualified personnel should be set up under the control of a senior Executive, who will report directly to the Head of the organization.

(xii) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar.

(xiii) The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The Project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing requisite data/information/monitoring reports.

Annexure-I(Contd.)

(xiv) A copy of the clearance letter will be marked to the concerned Panchayat /local NGO, if any, from whom any suggestions/representation has been received while processing the proposal.

(xv) The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

(xvi) State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's/Tehsildar's Office for 30 days.

(xvii) The project authorities should advertis ast in two local newspapers widely circulated, one of which shall be in ernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubneshwar.

3. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

4. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

5. The above conditions will be enforced, *inter-alia*, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

Yours faithfully,

(Dr.T.Chandini)
Additional Director

Copy to:

1. Secretary, Ministry of Coal & Mines, Department of Coal, Government of India, Shastri Bhawan, New Delhi.

2. Secretary, Department of Environment & Forests, Government of Orissa, Bhubaneshwar.

3. Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-3 Chandrashekharpur, Bhubaneshwar-751023.

Annexure-I(Contd.)

4. Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.

5. Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneshwar-751012.

6. Member Secretary, Central Ground Water Authority, Ministry of Water Resources, A-2, W-3, Curzon Road Barracks, New Delhi-110001.

7. District Collector, Angul District, Government of Orissa.

8. Shri M.K.Shukla, Chief General Manager, Coal India Limited,407/8, Surya Kiran, 19 Kasturba Gandhi Marg, New Delhi-110 001

9. Advisor (EI), Ministry of Environment and Forests, New Delhi

10. Monitoring File.

11. Guard File.

12. Record File.

Annexure-II

ମହାନଦୀ କୋଲ୍ ଫିଲ୍ଡସ୍ ଲିମିଟେଡ୍
महानदी कोलफील्डस लिमिटेड
Mahanadi Coalfields Limited
(A subsidiary of Coal India Limited)

Office of the General Manager (CP & P)
P.O : Jagruti Vihar, Burla
Dist: Sambalpur, Odisha-768020
Ph: +91 (663) 254 2808
Fax: +91 (663) 254 2767,
e-mail: bn_shukla008@yahoo.co.in

MCL

No : MCL/HQ/Sambalpur/GM(CP&P)/14/ 502 Date: 20.09.2014

To
The General Manager (PMD),
Coal India Limited,
10, Netaji Subhas Road,
Kolkata-700001

Sub: **Approval of Project Report of Garjanbahal OCP**

Dear Sir,

The Project Report of Garjanbahal OCP has been approved by MCL Board in its 161st meeting held on 16.09.2014(MCL Board resolution is enclosed). As the proposed capital investment for this project is more than Rs. 500.00 Crore, the PR requires to be approved by CIL Board.

You are therefore requested to kindly do the needful to get it approved by CIL Board.

Yours faithfully,

20-09-14
General Manager (CP&P).

Encl: As above

Copy to:-

1. Director (T/P&P), MCL
2. TS to CMD, MCL
3. RD, RI-VII, Bhubaneswar
4. TS to Director (T/O), MCL
5. Company Secretary, MCL

Annexure-II(Contd.)

ମହାନଦୀ କୋଲ୍ ଫିଲ୍ଡସ୍ ଲିମିଟେଡ୍
महानदी कोलफील्डस लिमिटेड
Mahanadi Coalfields Limited
(A subsidiary of Coal India Limited)

Office of the Company Secretary
At/Po. Jagruti Vihar, Burla, MCL
Dist. Sambalpur – 768020 (Odisha)
CIN: U10102OR1992GOI003038
TeleFax No. 06632542977
Email id: cosecymcl@gmail.com
Website: www.mcl.gov.in

Ref. No. MCL/SBP/CS/Bd-161/Exct/2014/**821**

Date: 19.09.2014

गोपनीय/CONFIDENTIAL

सेवा में,

GM(CP&P)

महानदी कोलफील्ड्स लिमिटेड, सम्बलपुर

Sub: Extract from the minutes of 161st meeting of the Board of Directors of MCL held at 5.30 PM on 16.09.2014 at Conference Room, CIL, Core 6, 6th Floor, Scope Complex, 7 Lodi Road, New Delhi.

प्रिय महोदय,

आप के सूचनार्थ एवं उचित कार्यवाही हेतु एम.सी.एल. की निदेशक मण्डल की 161 वी बैठक का उदधृत दिया जा रहे हैं ।

161.C/11 **Approval of Project Report of Garjanbahal Opencast Project (Normative capacity 10.00 MTY) (Peak Capacity 13.00 MTY), at a capital investment of ₹1064.12 crore (including ₹ 17.39 crore sanctioned under revised AAP by Govt. of India in July, 2005 and ₹ 1.3797 crore for exploration) up to target year and ₹ 311.26 crore beyond target year to be implemented in both coal and OB by departmental means.**

11.1 The Board deliberated on the subject in detail and based on the facts brought out in the agenda note and recommendation of the Technical Sub-committee meeting held on 16.09.2014, approved the Project Report of Garjanbahal OCP (Normative Capacity 10.00Mty) (Peak Capacity 13.00 Mty) with a capital investment of ₹ 1064.12 crore (including ₹17.39 crore approved under revised AAP by Govt of India in July, 2005 and ₹ 1.3797 crore for exploration) up to target year and ₹ 311.26 crore beyond target year to be implemented in both coal and OB by departmental means as per the details brought out in the agenda note and recommended to put up the same before CIL Board for further deliberation and approval.

11.2 The Board further directed to expedite environment clearance for the peak capacity 13 MTY of Garjanbahal Opencast Project.

19-09-14

भवदीय,

(अभय कुमार सिंह)
कंपनी सचिव

Annexure III

No. 34012/(4)/2011-CPAM
Government of India
Ministry of Coal
(CPAM Section)

New Delhi, the 18th July, 2014

To

Shri B.N. Shukla,
General Manager (CP&P),
Mahanadi Coalfields Limited,
P.O. Jagruti Vihar, Burla,
Distt. Sambalpur – 768 020 (ODISHA).

Subject:	Approval of Revised Mining Plan [July 2014] for Garjanbahal OCP (Normative Capacity 10.00 MTY) (Peak Capacity 13.00 MTY) dated July, 2014 of Mahanadi Coalfields Limited (MCL).

Sir,

I am directed to refer to MCL's letter No. MCL/HQ/Sambalpur/GM(CP&P)/14/472 dated 11.07.2014 and subsequent letter dated 18.07.2014 on the above cited subject and to forward herewith three **(3)** copies of Revised Mining Plan [July 2014] of Garjanbahal OCP (Normative Capacity 10.00 MTY) (Peak Capacity 13.00 MTY) of MCL duly signed by Competent Authority.

Encls : 3 copies of Revised
Mining Plan [July 2014]

(Surender Swarup)
Section Officer (CPAM)
Tele : 011 23073937
Email : socpam.moc@nic.in