

EXECUTIVE SUMMARY
ENVIRONMENTAL IMPACT ASSESSMENT
&
ENVIRONMENTAL MANAGEMENT PLAN
FOR
PUBLIC HEARING AS PER EIA NOTIFICATION, 2006
CONVERSION OF
ADASA UG TO OC COAL MINE
(Nagpur Area, WCL)
Expansion in production capacity
From 0.50 MTPA to 1.50 MTPA (Normative) and 1.85 MTPA (Peak)
&
Increase in land area from 221.00 ha to 596.27 ha
(PREPARED AS PER TOR J-11015/387/2015.IA-II (M) dated 29.02.2016)



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Prepared by

CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED

(Accredited by NABET vide No/EIA/01/12/002 Dt.31.01.2012)

EXECUTIVE SUMMARY

1.0 INTRODUCTION

Proposed Expn. of Adasa UG by conversion to OC is situated in Saoner Tehsil of the Nagpur district of Maharashtra state. Environmental Clearance for the existing Adasa UG (production capacity- 0.50 MTY) was obtained vide letter no J-11015/341/2008-IA.II(M) Dated – 15th July, 2009. Presently production is being done from this Underground Mine with Board & Pillar method of working and production level is about 0.30 MTPA.

Considering Coal India's target of 1 Billion Tonne coal production by 2019-20, WCL (Project proponent) has desired to convert the Adasa UG mine into Opencast Mine to produce coal to meet target. Accordingly, the Project Report of Adasa UG to OC mine was prepared for normative production of 1.50 MTY and peak capacity 1.85 MTY in total area of 596.27 Ha and approved by WCL Board on 21.08.2015.

Based on the above Project Report, the Form – 1 document was submitted to MoEF&CC. The proposal was discussed in 51st EAC (Thermal & Coal Mining) meeting of MoEF&CC and terms of References (TORs) was granted vide MoEF&CC letter no J-11015/387/2015.IA-II(M) Dated 29.02.2016. Subsequently on the basis of the above said TOR, this executive summary of EIA/EMP is prepared for submission to Maharashtra Pollution Control Board for conducting Public Hearing.

1.1 LOCATION:

The proposed mine area is near Adasa village in Saoner Tahsil of Nagpur district. The mine is located about 38 kms north of Nagpur city. The mine is under the administrative control of Nagpur Area of WCL.

Latitudes : N 21° 19' 31", N 21° 21' 16"

Longitudes : E 78° 55' 47", E 78° 58' 40"

SOI Toposheet No. : 55 K/15

1.2 COMMUNICATION:

The proposed Adasa UG to OC mine is well connected to Saoner Township by all-weathered road. Saoner town is connected with Nagpur by a State Highway & is located

at a distance of 38 km from Nagpur. Saoner town is also connected by Narrow Gauge railway line with Nagpur. Saoner railway station is at a distance of 43 km from Nagpur railway station. Adasa Project lies East of Saoner mine-I on the road, which connects Saoner to Nagpur via Kalmeshwar. Nearest Airport is Nagpur and located about 38 km from the proposed Project.

1.3 TOPOGRAPHY & DRAINAGE:

The mine area has gentle undulating topography formed by the hard and silicified Kamptee and Deccan Trap rocks. The maximum and minimum elevation of the area under consideration is 300.36 to 313.75m above M.S.L. The main drainage of the area is controlled by easterly flowing Kolar and Chandrabhaga rivers. The Chandrabhaga River passes south of the mine. A few seasonal nalas mainly carrying the rain water during monsoon discharge into these rivers. The ground generally slopes towards South-East. The regional drainage is controlled by Kolar River joining the Kanhan River near Kamptee Township.

1.4 CLIMATE & RAINFALL: The climate of the area is subtropical monsoon type characterised by hot summer and mild winter. The bulk of the rainfall is due to SW monsoon. Monsoon advances in the month of June (Normal date of onset of monsoon over Nagpur is 10th June). Maximum rainfall occurs during July and August months.

1.5 GEOMINING PARAMETERS

The geo-mining parameters of the proposed Adasa UG to OC mine are tabulated below:

Sl. No.	Particulars	Detail
1.	Area of the Quarry	
a)	On floor	222.87 Ha
b)	On surface	313.93 Ha
2.	Depth	
a)	Initial	35 m
b)	Final	115 m
3.	Average gradient of Seams	1 IN 6.5
4.	Average Strike length	3270 m
5.	Width on surface [dip rise]	880 m
6.	Width on floor [dip rise]	600 m
7.	Mineable Reserves	22.08 Million Tonne
8.	Total OB including access trench	146.36 Million m ³
9.	Average stripping ratio	6.63 m ³ /t
10.	Life of Mine	20 Years

1.6 Type and Method of Mining Operations: Opencast Mining, Semi - mechanized (Shovel- Dumper Combination) with inclined slicing is proposed.

2.0 DESCRIPTION OF ENVIRONMENT AND ANTICIPATED IMPACT

The present scenario has been assessed by the regular monitoring carried out by CMPDI for air, water and noise environment. Regular baseline data will be generated and it will be included in Final EIA & EMP of the Adasa UG to OC. Meteorological data of Inder UG to OC generated in pre-monsoon season, 2013 is used for the purpose of air quality impact prediction.

2.1 Micrometeorology

A meteorology station has been set up at Inder UG to OC and micrometeorological parameters like wind velocity, wind direction, temperature, relative humidity, cloud cover etc. are recorded on hourly basis for 91 days during the period from 1st April to 30th June 2013 representing pre-monsoon season. Daily rainfall also has been recorded and reported.

The wind velocity readings were ranging from 1.0 – 22.5 km/h. Predominant wind was from North-West direction. The maximum temperature recorded was 48.0°C and the minimum was 22.0 °C. The relative humidity ranges from 25% to 96%. The average atmospheric pressure value has been found to be around 750 mm Hg. The Total Rainfall recorded during the study period was 438 mm.

2.2 Air quality

Regular ambient air quality monitoring is being carried out at four locations in existing Adasa UG. The air quality monitoring report from Q/E March 2013 to Dec 2015 is included in EIA & EMP report. Summary of reports is given below:

Project Manager Office:

TPM was found to be ranging from 20 to 650 µg/m³ and PM-10 was ranging from 13 to 524 µg/m³. In total 40 samples taken in three years only 2 sample were found to be exceeding the limits as notified by G.S.R. 742(E), dated 25.09.2000.

At Patkakhedi G. P. Office:

TPM was found to be ranging from 31 to 380 $\mu\text{g}/\text{m}^3$ and PM-10 was ranging from 12 to 157 $\mu\text{g}/\text{m}^3$. In total 47 samples taken in three years about 7 sample (14%) were found to be exceeding the limits as notified in NAAQS, 2009.

Colony (Water Treatment Plant):

TPM was found to be ranging from 25 to 389 $\mu\text{g}/\text{m}^3$ and PM-10 was ranging from 3 to 198 $\mu\text{g}/\text{m}^3$. In total 56 samples taken in three years about 8 sample (14%) were found to be exceeding the limits as notified in NAAQS, 2009.

Katodi Village:

TPM was found to be ranging from 60 to 715 $\mu\text{g}/\text{m}^3$ and PM-10 was ranging from 20 to 439 $\mu\text{g}/\text{m}^3$. In total 56 samples taken in two years, about 24 samples (42%) were exceeding the NAAQS limits. The two main reason were observed for the high air pollution at Katodi village

1. Stone mining had been carried out in nearby area of Katodi village in previous 3-4 years for construction.
2. Burning of fossil fuel for cooking purpose by village households.

The present proposal of Adasa UG to OC envisages the rehabilitation and resettlement of the village.

2.3 Water quality

Mine water quality monitoring is carried out on fortnight basis for the four parameters and for all parameters once in a year for the existing Adasa UG mine as per the CPCB guidelines for Coal Mines.

Details of the mine discharge water quality monitoring report of four parameters (From Q/E Dec'14 to Q/E Dec'15) and all parameters (For Q/E Dec'14 and Q/E Dec'15) is included in EIA & EMP.

The water quality all the parameters are found to be well within the prescribed norms of, IS: 10500 – 1991 (permissible) and IS: 2296 - 1982.

2.4 Hydrogeological quality

The average water levels fluctuations measured from the area in and around the proposed Adasa UG to OC mine area are given below.

Pre monsoon period (April/May)	Core Zone	8.93 m to 12.12 m (bgl)
	Buffer zone	9.90 m to 12.05 m (bgl)
Post monsoon (nov'13)	Core Zone	6.53 m to 9.55 m (bgl)
	Buffer zone	6.67 m to 9.34 m (bgl)

2.5 Noise levels

Mean L_{eq} noise levels at day time and night time are furnished in the table given below.

Location	Station No	Noise level dB(A)		Noise level Standards dB(A)	
		Daytime	Night time	Daytime	Night time
Near Fan House	NAUN-I	67.3 - 71.9	65.0 – 70.6	75	70
Near Managers Office	NAUN-II	52.5 – 62.5	46.0 – 61.9	75	70
Colony (Saoner)	NAUN-III	42.6 – 50.7	41.1 – 46.3	55	45

All noise levels values are found to be almost within the prescribed limits.

2.6 Land Use

Present Land use of the land required for Adasa UG to OC is given below:

Sl. No.	Particulars	Existing Land (ha)	Additional land (ha)	Total Land (ha)
1)	Agricultural/Tenancy land	3.83	532.52	536.35
2)	Government land	8.83	21.09	29.92
3)	Forest land	0.00	0.00	0.00
	SUB TOTAL	12.66	553.61	566.27
4)	Land for Katodi & Erangaon village rehabilitation (Outside mine leasehold)	0.00	30.00	30.00
	TOTAL	12.66	583.61	596.27

Final Land Use

S. No.	Land use post mining	Land use (ha)				
		Plantation	Water Body	Public use	Undisturbed	Total
1	External OB Dump*	91.50	-	-	-	91.50
2	Excavation	313.93	-	-	-	313.93
3	Roads	1.0	-	3.0	-	4.0
4	Built up area	3.0	-	5.0	-	8.0
5	Undisturbed Area	50.0	-	-	114.84	164.84
6	Embankment	3.0	-	11.0	-	14.0
	Total	462.43	-	19.0	114.84	596.27

2.7 Socio Economic:

Two villages namely Katodi and Erangaon falling within the core zone are required to be rehabilitated and resettled. Both villages is falling over the proposed quarry area. Positive impacts on socio-economic environment are expected due to creation of direct and indirect employment opportunities and development of infrastructure such as roads, schools, hospitals etc.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

To have a close watch on the environmental condition and implementation of various measures suggested, a multi- disciplinary approach is essential.

3.1 Air Quality:

Prediction of fugitive dust level in the surrounding is carried out (for 24 hours average) with the help of computerized Fugitive Dispersion Model (FDM90121 by USEPA), based on Gaussian Plume formulation. The resultant values are within limits as per CPCB rules except Kotadi village. The village within the proposed quarry area hence needs to be relocated.

3.1.2 AIR POLLUTION CONTROL MEASURES

In order to mitigate the adverse impacts on ambient air, the following main control measures have been proposed and will be implemented during the actual operation of the mine.

- a) Water sprinkling on road, stockpiles by mobile tankers.
- b) Black topping of road.
- c) Covering of trucks carrying coal & avoiding overloading of trucks.
- d) Development of adequate green belt all along the coal transportation road on both sides will be done.
- e) Blasting will be done between shifts or during the rest interval when the minimum number of persons are present around the blast area. In order to quickly disperse the dust generated in blasting operations, blasting will be avoided when there is wind. Blasting will be avoided in the mornings and during cloudy situations.
- f) Wet suppression of unpaved areas can achieve dust emission reductions of about 70 percent or more, and this can sometimes be increased by up to 95% through the use of chemical stabilisation.

- g) Optimize travel distances through appropriate site layout and design.
- h) Vehicular emission of particulates, SO₂, NO_x, hydrocarbons can be minimized by proper training and maintenance of vehicles and other oil - operated equipment.
- i) Regular monitoring of ambient air quality as per CPCB rules for Coal Mines.

3.1.3 Plantation to Check Air Pollution

Plantation will be under taken in the mine area as mitigative measure against air pollution, noise pollution and to increase the aesthetic value. The plantation will be developed at suitable places like overburden dump, along the road sides, unused land etc. to arrest dust generated due to various mining operations viz. quarrying, coal and OB transportation, OB dumping, CHP operation. About 50.0 ha of plantation will be carried out in undisturbed area as green belt. Total 462.43 Ha out of total 596.27 Ha (77.55%) area will be planted till the end of mine life.

3.2 WATER QUALITY

3.2.1 *Anticipated Impact*

Mining and its associated activities not only use a lot of water but also likely to affect the hydrological regime of the area. The major impact of deep and large mines is of natural groundwater table. Lowering of water table may result in reduced groundwater availability. Extraction of different minerals is known to lead to water pollution due to heavy metal, acid discharges and increased suspended solids. However effect of coal mining due to nearby mines of Kamptee coalfield on water is mainly observed as increase in suspended solids.

Salient controls measures to be taken to reduce water pollution are as follows:

i) Industrial Effluent

The waste-water from workshop and CHP, which normally remain laden with oil and grease, suspended and dissolved solids etc. will be treated in the Effluent Treatment Plant (ETP). Clear water coming out from the treatment plant will be taken into the closed water circuit and recycled for its reuse. All parameter of ETP waste discharge will be monitored regularly as per Env. (Protection) Amendment Rule, 2000.

ii) Mine Water

Most of the suspended particles will be settled in the sump located in the quarry and the supernatant water is pumped out to the sedimentation tank present on surface. This water is to be passed through sedimentation pond on surface, before being discharged in to natural drain or agricultural field.

iii) Surface Run-off

Adequate numbers of vegetation will be grown on the top surface and slopes of the dumps in order to arrest the erosion of soil and it will also reduce surface run-off, which helps averting siltation of natural water courses.

3.2.2 IMPACT ON HYDRO-GEOLOGICAL REGIME

In the opencast mine, the different aquifers overlying the working coal seam would be contributing groundwater to the mine by gravity drainage since they are exposed at the mine. The anticipated groundwater inflow to the mine would be to the tune of 6572.7 m³/day, when mine reaches at the final quarry depth of 114 m. The radius of mine influence area has been estimated for the Adasa UG to OC based on the above mentioned aquifer and mine parameters and works out to about 450 m at final mine depth of 114 m.

CONSERVATION MEASURES:

1. The mine discharge will be utilized to meet the mine's domestic, dust suppression, firefighting and other industrial water needs.
2. The artificial recharge by water conservation structures in the outside mine influence areas will check water level lowering. The impact on ground water level is being minimized by artificial recharge by spreading of pumped out water, creation and filling of ponds with mine water and construction of rainwater harvesting structure.

3. After the cessation of mining, with copious rainfall and abundant groundwater recharge, the water levels will recoup and attain normalcy. Thus, the impact of mining on groundwater system may be considered as a temporary phenomenon. The old mine workings also behave as water pools and improves the resource availability in the area.
4. The discharged mine water would be available for the local people to utilize in irrigation and domestic use. Thereby the mine water will be a resource for many of the local villagers.
5. Monitoring of water quality of mine water discharge, local river/nala and domestic water (dug well/hand pumps) will be done under routine monitoring. On analyzing the field data if any area receiving the maximum impact, suitable controls measures will be adopted by the project authorities.

3.3 NOISE QUALITY

In order to assess the existing ambient noise level in the surrounding of proposed project site corresponding to present scenario , ambient noise level data obtained in regular monitoring in the surrounding of the project site has been detailed out in Chapter – III and noise level values have been found to be within permissible limits.

3.3.1 NOISE POLLUTION CONTROL MEASURES

Monitoring of the noise control will be carried out on regular basis as per the Env (Protection) Amendment Rule 2000. While planning for an effective noise attenuation measures, the concept of source, path and receiver has been considered.

3.4 IMPACT ON LAND AND LAND RECLAMATION

Total area required for the project is 596.27 Ha. Out of this about 12.66 Ha is already acquired and balance land will be acquired. Two villages, Katodi & Erangaon, will be rehabilitated. The land use in core zone is mainly agricultural land. So the major impact on land will degradation of agriculture land in the mining area. No forest land is involved.

The following activities have been proposed for reclamation of land.

1. Backfilling of the excavated area at the time of mine closure.
2. Levelling of the backfilled area and carpeting with the topsoil.

3. Creation of garland drains in order to arrest the silt load, due to erosion, to enter into natural watercourses during surface run-off.
4. Grass, legumes and different types of plants etc. will be planted on such reclaimed land in order to make it, as far as possible, conducive to agricultural growth.
5. Technical and biological reclamation of external OB dump and rehandling at the end of mine life. The density of trees will be around 2500 plants/Ha.

3.5 REHABILITATION & RESETTLEMENT

The project area has been taken in consideration for the quarry and OB dumping in view of minimizing impact on environment and local population. However, two villages namely Katodi & Erangaon present in core zone (Quarry Area) are required to be rehabilitated and resettled outside the mine lease area.

S. No.	Village Name	No of Households	Population
1	Katodi Village	238	592
2	Erangaon Village	153	465
Total		391	1057

It is contemplated that the entire exercise of land acquisition and R & R of villages shall be completed in first five years of project.

REHABILITATION SCHEME

Compensation will be paid to the families as per the R & R Policy of Coal India. Rate adopted for Government land is Rs 14.82 lacs/ha. For tenancy land Rs 24.70 lacs/ha is adopted assuming irrigated land. Provision of 43.73 Crores has been made in approved project report for the rehabilitation and resettlement of Katodi and Erangaon villages. Beside this, 7.41 crore will be land cost of the R & R site. Also one time Monetary Compensation package for 50% of tenancy land (281.26 Ha) in lieu of employment as per new R&R package of CIL will also be paid.

3.6 PROGRESSIVE MINE CLOSURE PLAN

The mine closure cost will cover the different mine closure activities for which a corpus fund will be created by opening an escrow account with the coal controller organization in nationalised bank. An amount @ Rs 6.00 lakhs per Ha of the project area will be deposited in this account for final mine closure. Progressive mine closure will be done with the fund provided in approved report. The financial provision for closure of Project

Report for Adasa UG to OC mine works out to Rs. 8514.92 lakhs (based on February, 2015 WPI @ Rs 6 lakh/ Ha).

4.0 ENVIRONMENTAL MONITORING PROGRAMME

The environmental monitoring programme will be carried out as per statutory requirements and detailed in the chapter – IV of the Draft EIA report.

5.0 ENVIRONMENT MANAGEMENT CELL

WCL, has an Environment Deptt. headed by General Manager (Env.) at its HQ. The department provides necessary support that are required for environmental management of various mining projects under the jurisdiction of the company. At area level, Area General Manager co-ordinates the activities of various disciplines in the area to render all necessary assistance at the implementing level i.e. the Project level. Nodal Officer (Environment) of the area monitors all aspects of environment on behalf of the Area General Manager. He will also take suitable steps for generation of environmental data along with CMPDI team for its analysis and interpretations.

6.0 ENVIRONMENTAL COST PROJECTION

A capital provision of Rs **97.09** lakhs has been made against environment protection. Rs. 6.00/t of coal has been provided to absorb environmental related cost in the project.

7.0 Provision for CSR Work

The fund for the CSR will be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs 2.00 per Tonne of Coal Production of the previous year whichever is higher.

Hence as directed by MOEF, this Executive Summary to Conversion of Adasa UG to OC has been prepared for submission to Maharashtra Pollution Control Board for conducting Public Hearing.