



EXECUTIVE SUMMARY

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PLAN

FOR

PUBLIC HEARING AS PER EIA NOTIFICATION, 2006

PADMAPUR EXTN DEEP OC

(Chandrapur Area, WCL)

Expansion in production capacity

From 2.50 MTPA to 3.25 MTPA (Peak)

&

Increase in land area from 733.58 ha to 837.19 ha

(PREPARED AS PER TOR J-11015/390/2012.IA-II(M) Dated 25.02.2014)

[NOVEMBER, 2016]



cmpdi
A Mini Ratna Company

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

The present proposal is for expansion in production of coal in the existing Padmapur Extn. Deep Opencast Mine Project from existing 2.50 MTPA to proposed 3.25 MTPA (Peak) in an ML area expansion from existing 733.58 ha to proposed 837.19 ha. The proposed Project envisages to mine out 10.85 Mt of coal. The proposed mine would contribute 2.50 Mt of coal per annum (Normative) & 3.25 MTPA (Peak) to bridge the ever increasing gap between demand & supply. The target beneficiaries would be coal consumers (power plant etc.) and local inhabitants in terms of direct & indirect employment.

Based on the Project Report, the Form – I document was submitted to MOEF through MOC. Terms of Reference (TOR) accorded vide MOEF vide letter no J-11015/390/2012.IA-II(M) Dated 25.02.2014. Hence as directed by MoEF&CC, the draft EIA/EMP has been prepared for submission to Maharashtra Pollution Control Board for conducting Public Hearing

1.1 LOCATION

Proposed Padmapur Extension Deep OC Mine is located in Padmapur geological block, bounded by Latitudes N 19° 59' to N 20° 01' and Longitudes E 79° 20' to E 79° 21'. Padmapur Extension block is in Wardha Valley Coalfield, situated in Chandrapur district of Maharashtra State. The Project is approached through Chandrapur – Mul road and Chandrapur is at a distance of 7 km from the proposed mining block. Topo Sheet No- 55P/8.

1.2 COMMUNICATION: The Project is approached through Chandrapur – Mul road and Chandrapur is at a distance of 7 km from the proposed mining block.

1.3 TOPOGRAPHY & DRAINAGE: Padmapur mining block is undulating. Elevation ranging between 186 m to 196 m, Motaghat nala is flowing NE to SW. Motaghat nala is seasonal tributary of Erai river flowing far west of the area.

1.4 CLIMATE & RAINFALL: Climate is of extreme nature with temperature raising to a maximum of 48°C during summer to a minimum of 10°C during winter. Average annual rainfall is 1250 mm. The minimum and maximum rainfall varies between 950 mm to 1500 mm.

2.0 PROJECT DESCRIPTION

2.1 GEOMINING PARAMETERS

The geo-mining parameters of the proposed Padmapur Extn Deep OC mine are tabulated below:

| S. No | Particular | |
|-------|---|-------------------|
| 1. | Area of the Quarry (including existing) | |
| a) | On floor (ha) | 160.63 |
| b) | On surface (ha) | 231.22 |
| 2. | Depth (m) Deep quarry | |
| a) | Initial | 100 |
| b) | Final | 180 |
| 3. | Average Gradient of Seam | 1in 3.8 to 1 in 6 |
| 4. | Average thickness of seam (m) | 16.45-21.96 |
| 5. | Mineable Reserves (Mt) | 10.85 |
| 6. | Total OB (Mm3) | 62.85 |
| 7. | Average stripping ratio (m ³ /t) | 5.79 |
| 8. | Life of Mine | 8 Year |

2.2 Type and Method of Mining Operations: Opencast Mining, (Shovel- Dumper Combination) is proposed.

3.0 Description of Environment

In order to assess the quality of environment as existing at present before the start of proposed OC in respect of ambient air, ground and surface water, ambient noise, socio-economic scenario, flora & fauna, the baseline data of the Padmapur deep Ext OC mine is considered which is generated during winter season 2015-16 and the same has been discussed below to get an overview of existing environmental scenario which will serve as a baseline.

3.1 Micrometeorology

A Automatic Weather station (WS-2815U-IT, lacrosse technology) was used to record Ambient temperature, Relative humidity, atmospheric pressure, Cloud cover, Rainfall, wind speed and direction continuously during the study period (1st November 2015 to 31st January 2016). The sky was mostly clear during the study period. The readings of wind velocity were ranging from ≤ 0.5 m/sec to 3.9 m/sec. Predominant wind was blowing from East direction. The seasonal average wind speed was observed to be 1.4 m/sec. The maximum temperature recorded was 38.9°C and the minimum is 8.4°C. The daily average relative humidity values were in the range of 40.0 to 73.0

3.2 Air Quality

Ambient Air quality monitoring was carried out at six location in core and buffer zone of the proposed OCP from 1st Nov, 2015 to 31st January, 2016.

Observation made during the study period Nov 15 to Jan-16 are as follows:

Core Zone I – PO Office (SA - 1)

At this location, SPM, PM₁₀ and PM_{2.5} concentration were observed in the range of 179 to 317 µg/m³, 59 to 105 µg/m³ and 32 to 58 µg/m³. SO₂ and NO_x concentration were in the range of 9.3 to 19.9 µg/m³ and 15.3 to 38.2 µg/m³ respectively.

Core Zone II –(SA - 2)

At this location, SPM, PM₁₀ and PM_{2.5} concentration were observed in the range of 120 to 259 µg/m³, 40.0 to 85 µg/m³ and 22.0 to 47 µg/m³. SO₂ and NO_x concentration were in the range of 9.3 to 18.4 µg/m³ and 12.8 to 28.9 µg/m³ respectively.

Bhatari Village (SA - 3)

At this location, SPM, PM₁₀ and PM_{2.5} concentration were observed in the range of 118 to 189 µg/m³, 39 to 62 µg/m³ and 21 to 34 µg/m³. SO₂ and NO_x concentration were in the range of 8.3 to 14.3 µg/m³ and 11.2 to 18.3 µg/m³ respectively.

Kitari Village (SA - 4)

At this location, SPM, PM₁₀ and PM_{2.5} concentration were observed in the range of 101 to 145 µg/m³, 33 to 48 µg/m³ and 18 to 26 µg/m³. SO₂ and NO_x concentration were in the range of 8.1 to 12.4 µg/m³ and 10.2 to 16.4 µg/m³ respectively.

Ambora Village (SA - 5)

At this location, SPM, PM₁₀ and PM_{2.5} concentration were observed in the range of 121 to 205 µg/m³, 40 to 68 µg/m³ and 22 to 37 µg/m³. SO₂ and NO_x concentration were in the range of 9.4 to 13.2 µg/m³ and 12.2 to 20.1 µg/m³ respectively.

Masala Village (SA - 6)

At this location, SPM, PM₁₀ and PM_{2.5} concentration were observed in the range of 105 to 154 µg/m³, 35 to 51 µg/m³ and 19 to 28 µg/m³. SO₂ and NO_x concentration were in the range of 7.2 to 10.9 µg/m³ and 10.1 to 15.2 µg/m³ respectively.

3.3 Water quality

The water quality characterization has been conducted by collecting water samples from ground water, surface water and mine water discharge / workshop discharge for the proposed project during post-monsoon/winter season (Nov. 2015- Jan. 2016).

Two samples each of ground water, surface water and mine discharge water were collected and analysed.

It was observed from the analysis of baseline water samples that the Physico-chemical characteristics of the discharge water samples collected from the two locations for one season had variations with respect to almost all the parameters but were well within the limits of General Standards for Discharge of Effluents. Among the metals in the mine water under examination Fe, Mn & Zn were found within prescribed limits. It was also observed that all the surface water quality are in a good compliance with IS:2296 Class 'C'.

3.4 Hydrogeology

The average water levels fluctuations measured from the area in and around the proposed project mine area are given below.

| | | |
|--------------------|-------------|-------------------|
| Pre monsoon period | Core Zone | 3.35 m to 8.57 m |
| | Buffer zone | 2.55 m to 12.30 m |
| Post monsoon | Core Zone | 2.20 m to 4.05 m |
| | Buffer zone | 0.55 m to 12.55 m |

The water table configuration is mostly similar to that of topography but with reduced relief. The general groundwater flow direction is towards west and south-west towards Erai river with hydraulic gradient of 2.7×10^{-3} to 7.00×10^{-3} .

3.5 Noise levels

The noise level for core zone was observed in the range of 44.0 dB (A) to 62.2 dB (A) during day time and 41.8 dB (A) to 48.5 dB (A) during night time. The noise levels in buffer zone of the project area were observed in the range of 42.5 dB (A) to 53.7 dB (A) in day time & 40.5 dB (A) to 44.6 dB (A) in the night time. Thus, from the observation it may be concluded that the noise levels in the area were in good compliance with prescribed limit for industrial area which are 75 dB (A) for day time and 70 dB (A) for night time.

3.6 Soil quality

Two Soil samples from agriculture field of nearby villages and one sample from core zone area of Padmapur OC were collected and analysed. Detailed analysis report is given in Draft EIA report. The soil quality of the project area appears to be good and would support vegetation after suitable reclamation / modification.

3.7 Flora and Fauna

An ecological survey was conducted during July 2015 to generate baseline data on flora and fauna of the project. No Changes in the diversity of species or number of

any species of animal are anticipated. Adequate plantation has been proposed with native species to maintain the diversity and also to attract the fauna.

3.8 Land Use

Regarding land use during mining, in addition to excavation of quarry for coal, overburden dump will be created along with development of other mine related infrastructures. Overburden dump is proposed to be technically and biologically reclaimed and sufficient greenery will be developed.

The land use pattern for the project is as follows:-

Pre-Mining Land use details

| Sl.no | Land Particulars | CBA Act,1957 (ha) | Forest Act, 1980 (ha) | Total Land (ha) |
|--------------|-------------------|----------------------|--------------------------|--------------------|
| 1. | Agricultural land | 702.29 | Nil | 702.29 |
| 2. | Waste Land | 70.70 | Nil | 70.70 |
| 3. | Forest Land | Nil | 64.20 | 64.20 |
| Total | | 772.99 | 64.20 | 837.19 |

Land Use During Mining

| S.N. | Particulars | Total Land (ha) |
|------|---|-----------------|
| 1 | Quarry Area | 231.22 |
| 2 | External OB dump | 175.17 |
| 3 | Infrastructure | 30.00 |
| 4 | Area needed for rationalization and blasting zone | 400.80 |
| 5 | Land required for Kitadi village shifting | 20.98 |
| | Total Land | 837.19* |

* Excluding land required for Kitadi village shifting

Post -Mining Land use details

| S. N. | Land use during mining | Land use (ha) | | | | Total |
|-------|------------------------|---------------|---------------|--------------|---------------|---------------|
| | | Plantation | Water Body | Public use | Undisturbed | |
| 1 | External OB Dump | 175.17 | - | - | - | 175.17 |
| 2 | Top soil dump | - | - | - | - | - |
| 3 | Excavation | 71.83 | 159.39 | - | - | 231.22 |
| 4 | Roads | 1.73 | - | 2.23 | - | 3.96 |
| 5 | Built up area | - | - | 26.04 | - | 26.04 |
| 6 | Green Belt | - | - | - | - | - |
| 7 | Undisturbed Area | 222.91 | - | - | 177.89 | 400.80 |
| | Total | 471.64 | 159.39 | 28.27 | 177.89 | 837.19 |

3.9 Socio Economic Status: The project envisages Resettlement of 521 house oustees belonging to Kitadi village. This project will bring social change in the society with improved socio-economic life of the local people. Nearby villages of the project will get benefited under the Corporate Social Responsibility (CSR) activities of the WCL.

4.0 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.

4.1 Air Quality:

The mining and its related activities create ambient air pollution. The impacts of mining on ambient air quality are highlighted in the following paragraphs:

- a) Baseline data for Air Quality data has been generated for proposed Padmapur Extn deep OC and is being incorporated in EIA & EMP report. The baseline ambient air quality data used in this report to assess the present ambient air quality scenario corresponding to existing pre-mining status of the proposed project.
- b) The ambient air quality is influenced due to the presence of TPM, SO₂, NO_x, etc., which are generated due to various activities like drilling, blasting and handling related to the project. Further, the ambient air quality is affected marginally to a varying degree due to the mining activities of other nearby opencast and underground coal mines of the same coalfield, Vehicular traffic and other local activities. The concentration of pollutants may vary depending upon the various micro-meteorological parameters and the seasons of a year.
- c) Now, with the start of the proposed project, there is likelihood of addition of pollution to the existing concentration level of different attributes of ambient air.
- d) Efforts will be made by implementation of proper abatement measures so as to maintain the sinking capacity of ambient air to absorb the additional load, if any, thereby maintaining the quality of ambient air to the existing level to the extent possible.
- e) Further, as per TOR received from MoEF&CC, AQI Prediction modelling have been done with FDM90121 and has been incorporated in the EIA report at chapter - IV.

4.1.1 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.
- 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.

4.1.2 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 471.74 Ha out of total 837.19 Ha (56.34%) area will be planted till the end of mine life.

4.2 WATER QUALITY

4.2.1 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 Wardha 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.

4.2.2 IMPACT ON HYDRO-GEOLOGICAL REGIME

In the opencast mines, the different aquifers overlying the working coal seam would be contributing groundwater to the mine by gravity drainage since they are exposed/removed at the mine. The anticipated groundwater inflow to the mine is to the tune of 6000 m³/day at the final quarry depth. As such due to this pumping, cone of depression would be formed. The shape and extent of the cone would depend on mainly hydraulic conductivity and specific yield of aquifers, mine depth & area etc. The radius of mine influence area has been estimated for Padmapur Deep extn. OC mine by based on aquifer and mine parameters and works out to about 700-800 m at final mine depth of 180 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. 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.
4. 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.

4.3 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 of EIA report and noise level values have been found to be within permissible limits.

4.3.1 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.

4.4 LAND RECLAMATION / LAND MANAGEMENT

The following activities have been proposed for reclamation of land.

1. Backfilling of the excavated area to the extent possible.
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. Technical and biological reclamation of external OB dump. The density of trees is around 2000 – 2500 plants/Ha.

4.5 REHABILITATION SCHEME

Provision for rehabilitation of neighbouring Kitadi village involving 521 houses were kept in approved project report. The villagers will be compensated as per R&R policy of Coal India Limited. Total cost of rehabilitation was estimated to be 20.91 Crores in approved Project Report.

5.0 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. Mine Closure Plan has been approved by WCL Board on 6th February, 2014 for mine closure cost at the rate of Rs. 6.00 Lakh/Ha. Total corpus will be 76.89 Crores for the mine closure activities (Considering WPI of April'12).

6.0 ENVIRONMENTAL MONITORING PROGRAMME

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

7.0 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.

8.0 ENVIRONMENTAL COST PROJECTION

A capital provision of Rs **50** lakhs has been made against environment protection. Rs. 6.00/t of coal has been provided for the environmental related cost in the project (Revenue cost).

9.0 Provision for CSR Work

The fund for the CSR will be allocated based on 2% of the average net profit of the Company for three immediate preceding financial years or Rs 2.00 per Tonne of Coal Production of the previous year whichever is higher. However CSR activities of Chandrapur area for two years is enclosed in the public hearing document..

Hence as directed by MoEF&CC, this Executive Summary of EIA report for Padmapur Extn Deep OC has been prepared for submission to Maharashtra Pollution Control Board for conducting Public Hearing.