

ENVIRONMENTAL IMPACT ASSESSMENT

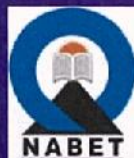
for
The Proposed Coal Washery of 2.5 MTPA at Ghutku Village,
Takhatpur Tehsil, Bilaspur District, Chhattisgarh

EXECUTIVE SUMMARY

Environmental Consultant:



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Project Proponent :



Paras Power & Coal Beneficiation Ltd, (PPCBL)
Chhattisgarh

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1.0 Introduction

M/s Paras Power & Coal Beneficiation Limited (PPCBL) proposes coal washery of 2.5 MTPA capacity at Ghutku Village, Takhatpur Tehsil, Bilaspur District, Chhattisgarh.

As per the Environment Impact Assessment (EIA) Notification dated 14th September 2006 as well as its amendments dated 1st December 2009, new projects or activities, or the expansion or modernization of existing projects proposed in any part of India shall obtain prior environmental clearance from Ministry of Environment Forest and Climate Change (MoEF&CC). The proposed coal washery project falls under "**Category-A**" of activity type 2(a) as per the EIA Notification dated 14th September 2006 issued by MoEF&CC, New Delhi.

The project was considered during the 55th Expert Appraisal Committee (EAC-Thermal & Coal Mining Projects) meeting held on 11th-13th May, 2016 and the Terms of Reference (TOR) were issued vide MoEF&CC letter no. J-11015/70/2004-IA.II (M) dated 6th June, 2016. Subsequently, PPCBL sought change in the area from 24.26 acres to 19.77 acres which was recommended by EAC vide MoEF&CC letter no. J-11015/70/20016-IA.II (M) dated 30th November 2017. EIA/EMP has been prepared as per the approved TOR and its subsequent amendment dated 30/11/2017 in line with the above letter and will be made available to public for comments and concerns. A copy of TOR letter and its compliance are given in **Annexure-I**.

Based on TOR conditions stipulated by MoEF&CC, EIA has been prepared to conduct Public Hearing and onward submission to MoEF&CC for obtaining Environmental Clearance. This report covers the baseline environmental status based on primary data collected from 1st March 2016 to 31st May 2016 representing pre-monsoon season.

1.1. Justification for Implementation of the Project

The Coal India Limited and its subsidiaries are the major domestic producers and suppliers of coal in India. The annual requirement of non-coking coal for various industrial sectors like power, steel and cement is increasing day by day. The reserves of low ash good coal are depleting and hence in order to fulfill industry's demand, huge reserves of inferior grade coal are being mined. Due to higher demand, selective mining is not possible. The average ash in coal now being supplied is around 40 to 50%.

In order to maintain a consistent quality of coal as per the requirements of various customers of coal, it is necessary to set up coal washing plants in the country. Raw coal of around 50% ash will be washed in the proposed coal washing plant to produce washed coal having around 34% ash. The primary discards will be subjected to secondary washing to produce middling at around 58% ash and rejects at around 86.5% ash.

Anticipated total capacity of non-coking coal, by the end of XII plan, has been estimated as 199 MTPA and projected low grade coal production (other than pit head linked coal) as 360 MTPA, which leaves a huge gap of 161 MTPA in the



demand and supply of beneficiated coal. This indicates enough potential for building up of capacity to beneficiate non-coking coal in the private sector. Major availability of coal during the XIIth Plan is expected from Karanpura, Korba, Mand-Raigarh and IB Coal fields. Hence, proposal of PPCBL to set up a 2.5 MTPA coal washery at Ghutku in Bilaspur District, Chhattisgarh State is considered justified.

1.2 Environmental Setting of Study Area

The study area covers 10 km radius around the proposed coal washery plant. The environmental setting of the proposed plant site is as follows:

- The proposed coal washery site located at Latitude 22°08'9.17" N to 22°09'2.84" N and Longitude 82°05'21.74" E to 82°05'31.95" E.
- The proposed coal washery is at a distance of 2.5 km from Arpa River and 7.2 km from Ghongha Nadi. Site elevation is about 280 m above MSL;
- The entire land is private land and is under possession of PPCBL;
- There are no protected areas, ecological sensitive locations, archaeological monuments, places of tourist interests and defence installations within 15 km radius; and
- There are no reserved forest blocks within 15 km radius.

2.0 PROJECT DESCRIPTION

The salient features of proposed coal washery are given below in the **Table-1** and study area map of 10 km radius is shown in **Figure-1**.

TABLE-1
SALIENT FEATURES OF THE PROPOSED COAL WASHERY PLANT
(2.5 MTPA)

Sr. No	Parameter	Description
1	Capacity/annual through put	500 TPH
2	Washing technology	Heavy Media Cyclone Technology
3	Processing rate	1 X 500 TPH
4	Process	Wet process - comprising crushing, screening, washing and handling.
5	Source of coal	SECL mines-raw coal will be lifted on behalf of the clients as well as own purchase through e-auction
6	Coal Ash content	
	a) Input raw coal	46.50% (approx.)
	b) Throughput (washed coal)	34%
	c) Middling	58%
	d) Rejects	86.5%
7	Land requirement	19.77 acres
8	Water Requirement & Source	61 m ³ /hr, RCC water reservoir of around 5000 m ³ storage capacity will be constructed. Domestic water requirement (4 m ³ /hr) will be met from ground water source.
9	Water Treatment	
	a) Wastewater Generation and Wastewater	There will be no industrial wastewater discharge as the plant will be designed on zero effluent discharge



Environmental Impact Assessment Studies for Proposed Coal Washery of 2.5 MTPA at Ghutku Village, Takhatpur Tehsil, Bilaspur District, Chhattisgarh

Executive Summary

Sr. No	Parameter	Description
	Treatment	principle
10	a Power Requirement	1.5 MVA from CSPDCL Grid Two DG sets of 1250 KVA each – standby
	b Source	State grid, CSPDCL.
11	Coal Transportation	Coal from SECL mines will be transported by rail & road. Railway siding is envisaged for the proposed project. Till such time the railway siding is constructed, required quantum of ROM coal from the SECL mines will be transported through covered trucks. The existing railway siding is at Uslapur about 6 km from the project site.
12	Manpower Requirement	Construction-200 nos; Operation-65 nos
13	Operating hours	3 shifts daily of 8 hours each (Effective 18 hrs a day) 330 days in a year
14	Plant utilization	85%
15	Project Cost	Rs. 24 Crores excluding EMP & land costs.

Source: Project Report, PPCBL

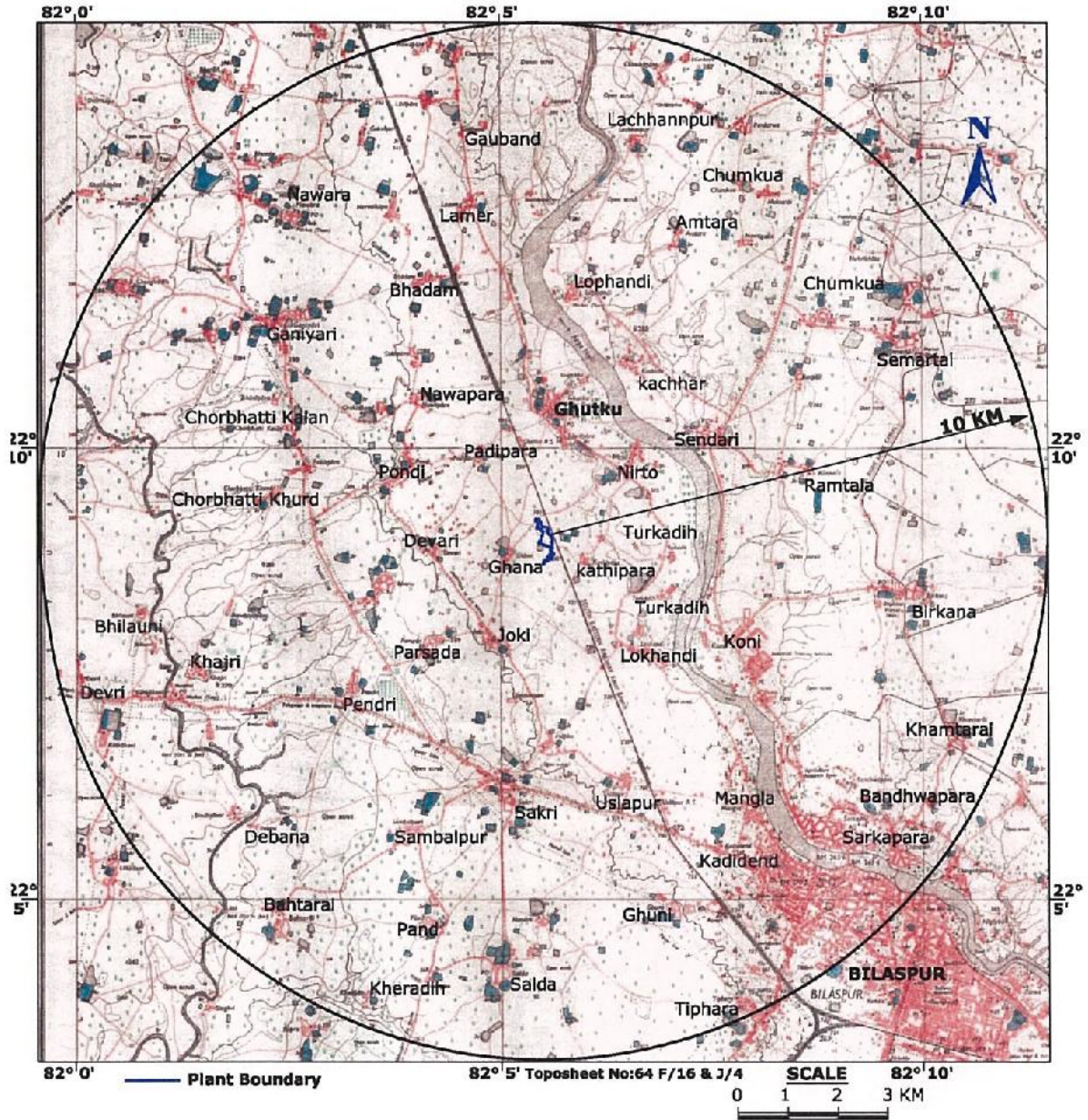


FIGURE-1
STUDY AREA MAP OF THE PROJECT (10 KM RADIUS)



3.0 Baseline Environmental Status

The baseline data monitoring studies have been carried out for three months covering pre-monsoon season (March 2016 to May 2016).

3.1 Landuse

IRS-R2 Geo-Coded FCC of LISS-IV FX satellite imagery dated 16th December, 2015 was used for the mapping and interpretation. The landuse details of study area are given below:

- The built-up area constitutes 8.9 % of the total study area. It comprises 27.946 ha (8.9 %) of the settlements and 7.222 ha (2.3%) of industrial areas;
- The agricultural area covers 184.632 ha, which is about 58.8 % of the study area
- The single crop is 160.768 ha, which is about 51.2 % of the study area. The double crop is 16.014 ha, which is about 5.1 % of the study area. The land with scrub is 32.028 ha, which constitutes about 10.2 % of the study area;
- Whereas the land without scrub is 19.154 ha, which constitutes to about 6.1 % of the study area
- The total area of water body is about 29.83 ha, which is about 9.5 % of the study area

3.2 Meteorology

Meteorological data at the site was monitored during 1st March 2016 to 31st May 2016 representing pre-monsoon season. It was observed that the during study period, temperature ranged from 22.2°C to 44.6°C and the relative humidity recorded in the range of 26% to 56%.

3.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) was carried out at nine locations with a frequency of two days per week for three months during pre-monsoon season 2016. The minimum and maximum values of PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were given in below **Table-2**.

TABLE-2
AMBIENT AIR QUALITY LEVELS

Season / Parameters	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	CO
Pre-monsoon, 2016	14.8-24.9	26.8- 60.2	8.4-16.7	11.5-20.9	152-480
CPCB Standard	100	60	80	80	2000

All values are given in µg/m³

The results thus obtained indicate that the concentrations of PM₁₀, PM_{2.5}, SO₂, NO_x and CO in the ambient air are well within the National Ambient Air Quality (NAAQ) standards for Residential and Rural areas.



3.4 Water Quality

To assess the physical and chemical properties of water in the region, water samples from seven ground water and three surface water locations were collected and analyzed from various water sources within and around the project site.

• Ground Water

The pH and conductivity vary from 6.5 to 7.1 and 581 to 1160 $\mu\text{S}/\text{cm}$ respectively. Total Dissolved Solids ranged between 385 to 772 mg/l. Sodium and Potassium contents were found to be in the range of 14.9 to 64.2 mg/l and 0.8 to 2.9 mg/l respectively. Calcium and Magnesium content vary between 66.0 to 142.0 mg/l and 14.6 to 35.2 mg/l respectively. Total hardness expressed as CaCO_3 and alkalinity ranges between 250 to 500 mg/l and 240.0 to 360.0 mg/l respectively. Chlorides and Sulphates were found to be in the range of 14.2 to 46.1 mg/l and 8.5 to 266.5 mg/l respectively. Nitrates and Fluorides were found to be in the range of <1 to 12 mg/l and 0.1 to 0.6 mg/l respectively. The heavy metal contents were found to be well within the limit. Pesticides and E.coli were found to be absent.

The physico-chemical and biological analysis revealed that most of the parameters are well within the prescribed limits of IS: 10500.

• Surface Water

The pH and conductivity varies from 7.1 to 7.7 and 543.0 to 648.4 $\mu\text{S}/\text{cm}$ respectively. The total dissolved solids ranged from 350 to 418 mg/l. Sodium and Potassium content were found to be in the range of 33.5 to 42.4 mg/l and 2.2 to 5.4 mg/l respectively. Calcium and Magnesium content varies in between 44.9 to 49.2 mg/l and 19.7 to 24.2 mg/l respectively. Total hardness expressed as CaCO_3 and alkalinity ranges between 193.0 to 223.0 mg/l and 175 to 200 mg/l respectively. Chlorides and Sulphates were found to be in the range of 53.1 to 63.7 mg/l and 12.6 to 21.5 mg/l respectively. Nitrates and Fluorides were found to be in the range of 4.9 to 8.2 mg/l and 0.2 to 0.5 mg/l respectively.

The analysis results indicate that most the parameters are well within the prescribed limits of IS:10500.

3.5 Soil Quality

Nine soil samples were collected and analyzed in and around the proposed coal washery area to assess the present soil quality of the region. The pH value indicates of the soil indicating that it is slightly acidic to slightly alkaline in nature. The organic carbon content in the study area observed as 0.11% to 0.75%, i.e. the soil falls under very less to on an average sufficient category. Available potassium was observed as 223.8 kg/ha to 525.9 kg/ha in the study region indicating that the soil falls under medium to more than sufficient category. Available nitrogen was observed as 10.3 kg/ha to 81.7 kg/ha. The soil in the study area falls under very less to less category of nitrogen. Available



phosphorous was observed as 5.2 kg/ha to 29.2 kg/ha in the study region shows that the soil falls under very less to less category.

3.6 Noise Levels

Ambient noise levels were measured at nine locations around the project site.

a) Day Time Noise Levels (L_{day})

The day time noise levels were ranged in between 37.9 dB (A) to 51.1 dB (A). The maximum value 51.1 dB (A) was recorded at Bilaspur (N5), and the minimum value 37.9 dB (A) was recorded at plant site (N1). It is observed that the day time noise levels are in accordance to the prescribed limit of 55 dB (A) for Residential areas.

b) Night Time Noise Levels (L_{night})

The night time noise levels were ranged in between 34.7 dB (A) to 47.8 dB (A). The maximum value 47.8 dB (A) was recorded at Bilaspur (N5), and the minimum value 34.7 dB (A) was recorded at Plant Site (N1). It has been found that the night time noise levels are in accordance with prescribed limit of 45 dB (A) for Residential areas.

3.7 Ecological Environment

Based on the field studies and review of published literature, it is observed that there are no endangered and protected flora and fauna in the core zone.

As per forest records and review of literature, there are no sanctuaries, biosphere reserves or national parks including tiger or elephant reserves within 15 km radius from the plant boundary. Also, there is no notified elephant corridor in the study area.

On comparison of the check list given in the Schedule-I of the Wildlife (Protection) Act 1972 and the list of wildlife recorded in the study area, it can be concluded that there are no endangered flora and fauna in the study area, except the presence of the raptors which are local migrants.

The study area has the presence of Schedule-II, III and IV and V, mammals, birds, reptiles and insects.

As per the records there are no endangered plants found in the study area as per the records of Botanical Survey of India.

3.8 Social Environment

The study area (10 km radius) area has a total population of 513402 according to 2011 Census. The non-workers are the predominant population with 63.23%. Total male population is about 51.45% and total female population is around 48.55%. The average literacy rate 83.27% is moderate in the region.



4.0 Anticipated Environmental Impacts and Mitigation Measures

4.1 Topography

The proposed site for the coal washery unit is fairly flat with minimum filling. There will be minimum levelling during the construction of the plant. This will not cause any significant topographical changes in the area.

Similarly, there will not be any micro or macro climatic changes as there will not be any thermal imbalance. It can be concluded that the coal washery unit will have no adverse impacts on the topography and climate due to its operation.

4.2 Air Environment

The proposed coal washery unit will generate dust from the coal processing operations. The emissions are not likely to affect the area outside the plant. The emissions of particulate matter from the coal washery will be controlled by effective dust extraction/dust suppression system. Dusty air from various material transfer points will be controlled with dry fog system.

Hence, the impact on human habitation will be insignificant. Therefore, the proposed activity will not have any significant adverse impact on the air environment.

Air pollution modeling carried out for the proposed site shows that the resultant concentrations of PM, SO₂ and NO_x after implementation of the proposed will remain within the NAAQ Standards for industrial/rural/residential and other areas.

4.3 Water Environment

The entire water requirement is of 61 m³/hr for the process, domestic, dust suppression, plantation and others will be met from the groundwater through bore wells.

Proposed 2.5 MTPA coal beneficiation plant is based on wet process. No process wastewater will be generated from the proposed project. Proposed plant is based on zero effluent discharge concepts as such there will be no industrial wastewater discharge.

Storm water drains in conformity with the site drainage pattern should be made simultaneous on starting construction activities. The drain should be linked to rainwater recharge pit at site. Hence, impact on the water quality is not envisaged.

4.4 Solid Waste Management and Land Use

No hazardous waste will be generated either in the process or pollution control facilities. Rejects and fines of coal will be generated at a minimum level. The total coal reject expected to be generated from the proposed site is about 38 TPH rejects. Rejects will be sold to the prospective buyers. Efforts will also made to supply rejects to the brick kiln owners in the region.



Solid waste in the form of sludge is generated from septic tank/soak pit. This waste will be used as manure for greenbelt development.

The development in the study area will definitely bring changes in the land use pattern due to the proposed plant. Shift in occupation or sectoral changes will require more land for non-primary activities. The land use of the project site is industrial. There are a few patches of single crop with the project site. No forest land exists in this land. Hence, the impact on forest land usages is not there.

No discernible impacts on terrestrial life are anticipated. The development of greenbelt will help to attract avifauna.

4.5 Noise Environment

The most common noise generating sources are screens, crushers and vehicular movement. These noise sources are generating noise continuously as well as intermittently. Workers near such sources could be exposed to sound pressure level exceeding permissible limit.

The increment noise levels are about 30 dB (A) at all the surrounding habitations. It is seen from the simulation results that the incremental noise levels are confined to factory premises only and do not contribute to violation of CPCB standards. Hence, the impact of noise on the human habitation and surrounding environment is likely to be insignificant.

4.6 Flora and Fauna and Greenbelt Development

As per the field survey, State Forest Department, Govt. of Chhattisgarh and MoEF&CC records, there is no notified wildlife sanctuary, national park and Biosphere reserve within 10 km radius from the project boundary. Also there are no wildlife corridors in the study area. As the project is restricted to the core zone, no significant impact on fauna of the buffer zone due to the proposed coal washery is anticipated.

30% of the project area will be developed on greenbelt using nature plant species at the rate of 2500 trees per ha.

4.7 Socio-Economics

The impact of the proposed facility will begin to be felt with the start-up of the construction activities. As the labours / workmen are generally un-skilled, about 200 local people will get opportunities for employment during construction activities. In addition to the opportunity of getting employment as construction labourers, the local population will also have employment opportunities in related service activities like petty commercial establishments, small contracts/sub-contracts and supply of construction materials for buildings and ancillary infrastructures etc. Consequently, this may lead to economic upliftment of the area.

It is proposed to invest a sum equivalent to 2% of the net profit or an amount of Rs. 10 lakhs, whichever is higher annually for various social welfare and



community development activities like health and sanitation, education, employment and community infrastructure development in the region.

5.0 Health and Safety Monitoring Plan

All the potential occupational hazardous work places, coal handling area will be monitored regularly. No fuel storage tank is envisaged for the proposed unit. Occupational safety and health is very closely related to productivity and good employer-employee relationship. The main factors of occupational health are fugitive dust and noise. Safety of employee during operation, maintenance and handling of coal will be taken care of as per the company regulations. PPEs such as Dust masks, earplugs/earmuffs will be provided to workmen. Hence, no significant impact on health of workers is envisaged.

6.0 Conclusion

The proposed project will have marginal impacts on the local environment with proper mitigation measures and effective implementation of the environment management measures as suggested in the EIA/EMP report and as may be recommended by MoEF&CC and the State Pollution Control Board. The negative impacts will be minimized to a great extent. However, development of this project has beneficial impact/effects in terms of growth in regional economy, transform the region's economy from predominantly agricultural to significantly industrial, increase Government earnings and revenues and accelerate the pace of industrial development in the region.

The proposed project will provide direct employment to a large number of personnel. This project will also generate indirect employment to a considerable number of families, who will render their services for the employees of the project.

The project will also encourage ancillary industries in the region, which will not only increase the employment potential but also the economic base of the region will be further strengthened.

Beneficiation of low grade non-coking coal is an important area both from the economic and the environment point of view. Thus, in view of considerable benefits from the project, the proposed project is most advantageous to the region as well as to the nation.