

## PUBLIC HEARING DOCUMENTS OF KUSMUNDA WASHERY (CAPACITY 25 MTY)

### 11.1 INTRODUCTION

The proposed Kusmunda coal washery will be located in the lease hold area of Kusmunda OCP of Kusmunda area of SECL and its capacity shall be 25.0 MTY. The proposed project will receive coal from of Kusmunda OCP of Kusmunda Area, SECL. The raw coal ash content of Kusmunda expansion OCP is in the range of  $38.5 \pm 4\%$ .

This ash content is proposed to be reduced to  $33.5 \pm 0.5\%$  after washing in Kusmunda Washery for use in thermal power stations. It is planned for two product namely clean and reject.

A total of 41.23 Ha land is required for proposed Kusmunda Washery including 9.87 Ha land is required for temporary storage of Reject.

The major portion of the land for proposed washery is barren and no nallah/stream passes through the site for proposed washery.

### 11.2 PROJECT DESCRIPTION

The proposed washery shall be set up on turnkey basis. Ownership of raw coal fed to the washery & products of washery shall lie with SECL.

The washing of coal will lead to improvement in performance of power plant, reduction in particulate emission, reduction in load on Railway Network and reduction in handling and transportation cost of coal and solid waste.

#### 11.2.1 Conveyance Facilities for the Washery Raw Material and Products

**Table 11.1**

S No.	Products	Starting Point	Transportation by	Distance (Approx.)	Destination point
1.	Raw Coal	Mine Site	conveyor 5000 TPH	2 km	500 t Surge Bunker
2.	Washed Coal	Washery Premises	Covered conveyor 2x 2000 TPH	400 m	4000 T Silo at Railway Siding
3.	Coal Reject	Washery Premises	Covered conveyor 1x 1200 TPH	1 Km	Temporary Reject Storage Site
4.	Water	Mine sump of Kusmunda	Water Pipeline	< 2.0 km	Washery Site

#### 11.2.2 Customer for Washed Coal of Kusmunda Washery

The prospective customer for washed coal & distance from washeries is given here under:

**Table 11.2**

Sl. No	Prospective Customer	Location (State)	Distance (Kms)
1	MPEB	Madhya Pradesh	> 500
2	NTPC – Ramagundam	Andhra Pradesh	> 1000
3	Cement Plants	Odisha	> 500
4	CSEB, West Bank Power Plan	Chattisgarh	20
5	CSEB, East Bank Power Plant	Chattisgarh	20

Rejects would be sold through e-auction or MoU route as it has gross calorific value in the range of 1000-2000 K Cal/Kg.

The arrangements in the proposed plant includes:-

- Raw coal Receipt System
- Raw coal crushing & screening system
- Raw coal handling system
- Coal washing circuit
- Fine recovery circuit
- Waste water treatment system
- Product coal handling system

### 11.3 Description of the Environment

The baseline data generation work for proposed Kusmunda washery was carried out for the period from 15th Dec, 2013 to 15th March, 2014.

#### 11.3.1 Land Environment

The proposed site has 21.56 Hectares land for plant, 9.87 Hectares for temporary storage of rejects and 9.80 Ha for future expansion, **total 41.23 Ha**. Various installations required for the washery will be suitably located within the area of 21.56 Ha. The major portion of the land for proposed washery is Barren and no nallah/stream passes through the site for proposed washery. Land Use/ Cover Map of Core & Buffer Zones of Kusmunda Washery Project based on Satellite Data is enclosed as **Plate no. 6** in the EIA/EMP report.

**Table 5.1: Existing Land use pattern**

Description of the Structure	Type of Land/Area in Ha			
	Forest	Tenancy	Govt	Total
Washery	00	12.030	29.200	<b>41.230</b>

#### 11.3.2 Micrometeorological data generation

A meteorology station was set up at core zone and micrometeorological parameters like wind velocity, wind direction, temperature, relative humidity, cloud cover etc. were recorded on hourly basis for summer season (15<sup>th</sup> Dec, 2013 to 15<sup>th</sup> March, 2014). Daily rainfall was also recorded and reported.

#### 11.3.3 Ambient air quality monitoring

Ambient air quality was monitored at 06 locations i.e. one in core zone and the remaining five in buffer zone. A total of 24 samples (24-hrly) for Particulate Matter <10 (PM<sub>10</sub>), Particulate Matter <2.5 (PM<sub>2.5</sub>), Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) Carbon Monoxide(CO), Ammonia (NH<sub>3</sub>),

Ozone (O<sub>3</sub>), Benzene (C<sub>6</sub>H<sub>6</sub>), Lead (Pb), Benzo-pyrene (BaP), Arsenic(As), Nickel (Ni) and other heavy metals were collected.

#### **11.3.4 Water quality monitoring**

Representative water samples 6 nos. two in mine effluent, two in surface water and two from ground water i.e. dug well and tube well in buffer zone have been collected, preserved and transported and analyzed as per standard methods.

#### **11.3.5 Noise levels recording**

Noise levels were recorded by using CYGNET Integrated sound level meter (100X) from ten ambient air quality locations during day time and night time at an interval of four hours for one day for three months.

#### **11.3.6 Soil quality monitoring**

Soil samples from three locations, one each in overburden dump, forest land and agricultural land, were collected at depths of 30, 60 and 100 cms and analyzed for various physico-chemical and fertility parameters.

#### **11.3.7 Socio-Economic Survey**

The sample households have been selected by multistage sampling method. The core zone is about 41.23 Hectares in barren and no households were found in core zone area.

### **11.3.8 BASELINE DATA ANALYSIS AND RESULTS**

#### **11.3.8.1 CONCLUSIONS OF BASELINE DATA**

The following conclusions are drawn based on the baseline data collected at core and buffer zone area.

- Wind Direction: Predominant winds are between NE / NNE directions.
- Wind Velocity: Wind velocity readings are ranging between <1.0 to 5.5 Km/Hr.
- Temperature: Temperature values are ranging between 9.0 to 31.5°C.
- Relative Humidity: The average relative humidity is found to be 61.50%.
- Cloud Cover: Mostly clear sky is predominant during the study period.
- Atmospheric Pressure: The average atmospheric pressure is 758.6 mm of Hg.
- Rainfall: There were 16 rainy days with 34.3 mm of rainfall during the study period.
- In general, all the parameters monitored were found to be well within the prescribed limits of CPCB at Core zone and buffer zone.
- The quality of mine water effluent is good even in untreated form. Further, the ground and surface water quality is also good and is well within the standard norms.
- Mean Leq noise levels at Core zone day time and night time were ranging from 72.1 dB(A) and 67.7 dB(A) respectively. Mean Leq noise levels at buffer zone day time and night time were ranging from 52.1 to 53.6 dB(A) and 41.4 to 43.1 dB(A) respectively in the study area. While comparing with IS: 4954 -

1986 norms for acceptable outdoor noise levels all are other locations were found to be well within the prescribed limits.

- Soil quality analysis is given in table below:

<b>Locations</b>	<b>Mine OB Dump (S1)</b>	<b>Barkuta Forest Land (S2)</b>	<b>Barpali Agriculture Land (S3)</b>
Soil Quality	The soil quality at this location would support vegetation	The soil quality at this location would support vegetation	The soil quality at this location would support vegetation

- Villages have been developed to the extent that Govt. health and primary education facilities are well available there.
- Villagers are also availing power supply. People use two wheelers for purpose of travelling. In addition to some kachcha houses, most of other houses are made of concrete.
- SECL runs various programmes in order to provide basic facilities like health, water, road and community hall etc. to the villagers.
- SECL projects have directly or indirectly created various opportunities of employment in the region. A large number of villagers are engaged in such projects. These additional employments have big role in improving the living standards of villagers.

#### 11.4 ANTICIPATED ENVIRONMENTAL IMPACT

The project activities will have impact on environmental attributes. Environmental impacts on following environmental attributes have been assessed.

- Ambient Air Quality
- Ambient Noise Level
- Surface Water Quality
- Topography, water drainage and land use.
- Bio-environment including Flora & Fauna
- Socio-economic environment.
- Storage of coal and washery reject
- Impact on immediate surrounding due to construction of washery

#### 11.5 ENVIRONMENTAL POLLUTION MITIGATION MEASURES

Activities associated with construction and operation of the plant will have negative impact on environmental attributes. In order to minimize the negative impacts, pollution mitigation measures have been recommended. They are briefly mentioned below.

##### 11.5.1 Air Pollution Mitigation Measures

**Table 11.3**

S. No.	Identified Source of Fugitive Emission	Planned Mitigation
1	Receiving Hopper	Sprinkling
2	Surge Hopper	Sprinkling
3	Crushing / Dry Screening	Dust Extraction System / Sprinkling
4	Coal Stock Yard	Sprinkling
5	Washing ( Wet Process )	Coal Becomes Wet Hence Does Not Cause Fugitive Emission
6	Washed Coal Stock	
7	Rejects Stock	
8	Belt Conveyors	Covered Conveyor

- Dust suppression on the road shall be done by sprinkling of water.
- Monitoring the condition of transfer chutes and skirt boards and replacing/repairing shall be done on regular basis during the normal inspection by the concerned persons along with the sectional heads.
- Water spraying for dust suppression at temporary storage site for reject shall be done regularly.
- Road inside the plant shall be paved to minimize the dust due to vehicle movement.
- To minimize the generation of fugitive dust in conveyance of washery products Pipe conveyors/covered belt conveyors shall be used for their transportation.
- Green belt 15m wide in and around the washery site including around the conveyor, vacant places shall be developed to control dust emission.
- Efforts for good housekeeping will minimize dust nuisance within the plant premises.
- The crushers/pulverizers of the coal washeries shall be provided with enclosures fitted with suitable air pollution control measures.
- Water spray arrangements shall be provided at all strategic coal transfer points, enclosures for conveyors etc.

### 11.5.2 Water Pollution Mitigation Measures

- Sewage generated in service buildings, i.e. rest shelter, canteen, office etc. would be treated in septic tank.
- The process of the proposed washery is based on closed water circuit system. All the water fed into the system will be collected after use and re-circulated, after treatment, in various units and no effluent will be allowed to escape into the natural drainage system. Thus, the operation of the washery will not cause any pollution to the local source of water.
- Provision of surface run-off settling pond shall also be provided. Garland drain(s) around the stockpiles and other process areas shall collect and carry the run off to settling pond. Overflow water of the settling pond shall be utilized for plant operation etc. Hence, there will be no impact on groundwater and surface streams.
- Washery will be designed for zero discharge. However, in case of emergency underflow from thickener shall be treated in 05 Nos of slime ponds and treated effluent shall be reused.
- Total water demand is 2291 m<sup>3</sup>/hr out of which 1719 m<sup>3</sup>/hr is recycled water. Make-up water of 270 m<sup>3</sup>/hr shall be met from mine sump. This includes 81 m<sup>3</sup>/hr for washery process, 42 m<sup>3</sup>/hr for Potable water, Sanitation etc. and 125 m<sup>3</sup>/hr

for other industrial use (dust suppression, green belt maintenance etc.). Additional capacity of the treatment plant will be utilized as per future needs. For detailed water balance **Fig. no. 2.2** may be referred.

### 11.5.3 Noise Pollution Mitigation Measures

The following measures therefore, have been envisaged to reduce the noise level to the minimum and to protect the workers from noise hazard.

- Use of equipment with arrangements for absorbing the operational noise.
- Use of insulated cabins for operators
- Use of rubber/ polymer liners in chutes and hoppers
- Use of ear muffs by workers in the zone of high noise source (if any)
- 15 meter wide green belt around the Washery and service building area.
- Routine preventive maintenance of equipment/HEMM to minimize noise generation at source.
- Regular maintenance with prompt replacement of worn-out parts/ liners etc.
- Operational / work zone – not to exceed 85 db (A) Leq for 8 hours exposure
- Use of silencer for equipments such as diesel sets and air displacement equipment
- Regular monitoring of noise levels at various points.

### 11.5.4 Bio-Environment Mitigation Measures

Proposed Kusmunda washery will be located at Kusmunda Opencast Project in Kusmunda Area in the Korba Coalfield of SECL and the land is in possession of SECCL. The major portion of total 41.23 Ha of land required for Kusmunda washery is barren.

### 11.5.5 Mitigation Measures for Socio-Economic Profile

- During construction of washery, the civil and structural work shall be outsourced to sub-contractors and therefore the manpower will be provided by them (sub-contractor), depending on the work requirement at site. Hence semi-skilled and unskilled labor during construction phase and unskilled labor during operational phases of the project are proposed to be employed from amongst the local population.
- Employment opportunity and access to other amenities such as education, health care facilities for local people
- Socio-economic survey conducted and the analysis to identify areas of corporate contribution to improve quality of life
- Project specific CSR initiatives
- The land is free from human habitation. Thus construction and operation of plant will not create any R&R issue. However, the project proponent (SECL) will undertake certain socio-economic development schemes under CSR programme.

## 11.6 PROJECT BENIFITS

### 11.6.1 Physical Infrastructure

#### Access Road:

A new access road is proposed to connect the project site to existing road network in the area. Presently this road is katcha road. This road will be strengthened, widened and black topped. This road will also provide road access to the area.

### 11.6.2 Social Infrastructure

The study area in which the project is located is comparatively developed in terms of social infrastructure including health care facilities, education facilities etc. However the project proponent (SECL) will develop the social infrastructure in the area under its Corporate Social Responsibility (C.S.R.) activities.

### 11.6.3 Employment Potential

During construction of washery, the civil and structural work shall be outsourced to sub-contractors and therefore the manpower will be provided by them (sub-contractor), depending on the work requirement at site. Hence semi-skilled and unskilled labor during construction phase and unskilled labor during operational phases of the project are proposed to be employed from amongst the local population. Business opportunity in Secondary & Tertiary sectors will increase.

### 11.6.4 Other (Indirect) Benefits

#### To Power Plants Using Washed Coal

➤	Increased generation efficiency, mainly due to the energy loss as inert material passes through the combustion process.
➤	Increased plant availability.
➤	Reduced investment cost.
➤	Reduced operation & maintenance cost due to less wear and reduced cost for fuel and ash handling.
➤	Energy conservation in the transportation sector and lower transportation costs.
➤	Less impurities and improved coal quality.
➤	Reduced load in the air pollution control system.
➤	Reduction in the amount of solid waste that has to be disposed off
➤	Reduction in the generation of fly ash quantity at the user point by using washed coal in place of coal
➤	Revenue contribution to government/local bodies and local area development activities

## 11.7 ENVIRONMENT MANAGEMENT PLAN

The activities associated with project construction and project management are likely to have minimum adverse impact on various environmental attributes including air, water, noise, soil, socio-economic profile and bio-environment. To ensure that levels of pollutants do not exceed the limits prescribed by regulatory authorities, following exercise has been taken up:

- Baseline environmental data have been generated to describe the present environmental quality in the study area.
- Likely impacts on environmental attributes due to project construction & operation have been assessed using standard method.

With above exercise, the anticipated levels of pollutants in environment have been assessed.

Environment pollution mitigation measures have been recommended to minimize the impact & to limit them within prescribed level. These environmental mitigation measures are able to be implemental throughout the life of the project.

In addition, environmental parameters will be monitored on regular basis to ensure that level of pollution is within the prescribed level.

The project proponent (SECL) will submit several statutory reports relating to project's environment impact.

From the above, it may be seen that environmental management of the project during the full life will involve planning, design & implementation of several activities. This will require an exclusive budget and a dedicated organization.

### 11.7.1 Budget Estimate for Environmental Management

**Table 11.5: CAPITAL ESTIMATE**

<b>Cost for Environment Management (Approximate)</b>		
Amount in rupees(Lakhs)		
<b>Sl.no</b>	<b>Description</b>	<b>Cost</b>
<b>I) Capital cost</b>		
1	Belt filterpress-2nos	800.00
2	Slurry pond -3nos,	700.00
3	Circulating pump-2nos	25.00
4	Pipe line & fittings	7.5
5	Closed conveyor gantries	500.00
6	Cost of Preparing EIA/EMP & Baseline Data Generation	100.00
	<b>Total (Capital Cost)</b>	<b>2132.5</b>
<b>II) Operational cost</b>		



1	Dust extraction	1200.00
2	Sprinklers	
3	Plantation-green belt	
4	Noise pollution control	
5	Other Miscellaneous	
<b>Total (Operational Cost)</b>		<b>1200.00</b>
<b>Grand Total (I + II)</b>		<b>3332.50</b>
<b>Note:</b>	Cost for following items are inbuilt in Civil, Electrical and Mechanical cost:	
	1) Arrangement for rain water harvesting & surface drainage	
	2) Facility for treatment of slurry/effluent as well as surface runoff.	

## 11.8 Environmental Monitoring

**Table-11.6 Summary of Environmental Monitoring (During Operational stage)**

Particulars	Parameters	Schedule
<b>Ambient Air</b>	TPM, RPM(PM <sub>10</sub> & PM <sub>2.5</sub> ) SO <sub>2</sub> , NO <sub>x</sub>	At every fortnight.
<b>Water</b>		
Effluent	pH, Chemical Oxygen Demand, Total Suspended Solid, Oil & Grease	At every fortnight
Drinking water	All parameters	As per IS: 10500 once in a month
<b>Noise</b>	Leq(dB)	Day and night at every fortnight
<b>Plantation</b>	Growth and survival/mortality rates of the plantations	Till the end of 3 years. Once trees attain desired growth, no further monitoring will be required.
<b>Health</b>	Health of the workers and staff associated with the plant operations and other connected industrial activities for identifying occupational diseases etc.	Regular / Periodic health check-up and initiating remedial measures against diseases, and mobile health ambulance for health monitoring for periodic health checkup of the industrial workers.

### Environmental Monitoring during construction stage

The proposed Kusmunda Washery shall lie in the leasehold area of Kusmunda OCP, Kusmunda area, SECL. The environmental monitoring of Kusmunda OCP, being carried out by CMPDIL, shall also serve the purpose of the Environmental Monitoring of Kusmunda Washery during the construction stage.

The above planned Environmental Monitoring program for Kusmunda Washery shall help evaluate the effectiveness of various mitigation measures.

### 11.9 System of Environmental Checks and Balances and Reporting of Non-compliances, SECL

- For checks and balances, GM(Washery) & CGM/GM(Environment) SECL HQ or their representatives will visit the sites for compliances of environmental norms on regular basis.
- In normal course, Nodal officer (Environment)/Area Environment Officer will report the non-compliances/violations of environmental norms to the EIC/Project Officer (Washery).
- The Nodal officer (Environment)/Area Environment Officer of Kusmunda Area will also report such non-compliances/violations to GM, Kusmunda Area & CGM/GM (Envt.), SECL HQ or his deputed representative.
- EIC/Project Officer (Washery) shall then report the same to GM (Washery) & GM, Kusmunda Area. GM, Kusmunda Area will report the same to GM(Washery) & CGM/GM(Environment), SECL HQ.
- After the field visits of GM (Washery) & CGM/GM(Environment) the matter will be placed by CGM/GM(Environment) before Director (T/P&P)/MCL Board on the basis of the merit of the non-compliance of norms.

### 11.10 DISCLOSURE OF CONSULTANTS ENGAGED

<b>Preparation of EIA EMP Report</b>		
Central Mine Planning & Design Institute Limited, an ISO 9001 Company.		
It is accredited By QCI VIDE QCI/NABET letter No. NABET/EIA/01/12/002 dated 31.01.2012 Validity: 03 years (from 01/10/2011). Sectors approved Mining of Minerals including OC/ UG Mining and Coal Washeries.		
<b>Generation Baseline data</b>		
<b>Sl. No.</b>	<b>Nature of Study</b>	<b>Name of Agency which has conducted the study</b>
1.	Seasonal Ambient Air Quality and Micro-meteorology study	VRDS., Chennai
2.	Water Quality study	VRDS, Chennai
3.	Ambient Noise Level Study	VRDS, Chennai
4.	Soil Quality study	VRDS, Chennai
5.	Land-use study	CMPDIL
6.	Socio- Economic Study	VRDS, Chennai
7.	Flora & Fauna study	GRC, New Delhi