

**SUMMARY OF ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FOR PUBLIC HEARING**

**Expansion of Coal Washery Plant from 0.96 MTPA to 5.2MTPA
in two phases**

(Phase-I : 0.96 MTPA to 1.8 MTPA and Phase-II : 1.8 MTPA to 5.2 MTPA)

At

**Village-Bajarmuda and Dholnara, Tehsil- Tamnar, District-
Raigarh, Chhattisgarh**



By

M/s Sarda Energy and Minerals Limited

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1.0 PROJECT DESCRIPTION

M/s Sarda Energy and Minerals Limited has proposed expansion in existing Coal Washery from 0.96 MTPA to 5.2 MTPA (Phase-I : 0.96 MTPA to 1.8 MTPA and Phase-II : 1.8 MTPA to 5.2 MTPA) at Village-Bajarmuda and Dholnara, Tehsil- Tamnar, District- Raigarh, Chhattisgarh. SH-1 is at 12.5 km towards west direction from the project site. The nearest village is Dholnara, which is located about 0.7 km towards NW direction. The nearest railway station is Raigarh Railway Station which is located at about 31.7 km in south direction and nearest Airport is Veer Surendra Sai Airport, Jharsuguda, which is situated at about 64.5 km in SE. The site and study area falls in the survey of India Topo Sheet No-64N/8. Kelo River is at about 3.4 km in SE direction, Bendara Naala is at about 4.1 km in SE direction Chini Naala is at about 4.9 km in NE direction, Dumer Naala is at about 5 km in East direction, Pajhar Naala is at about 5.5 km in west direction, Digi Naala is at about 8.5 km in SW direction and Koledaga Naala is at about 9.5 km in SE direction from the project boundary. There are no Wildlife sanctuaries & National Park within 10km radius.

Standard Terms of Reference (TOR) for the expansion project has been granted by MoEF&CC vide File No. IA-J-11015/37/2004-IA-II(M) dated 25.07.2023. Draft EIA/EMP is being prepared and will be submitted to CECB to conduct public hearing as per the norms.

The proposed project activity falls under the category of "Coal Washeries" and categorized as "Category-A" under project activity 2 (a) of EIA Notification 2006 & its amendment till date.

Existing plant is situated over 10.12 ha and for the expansion project no additional land is required. Thus, total land required will remain same i.e. 10.12 ha after expansion.

Currently 135 man powers are working within the existing washery. No additional manpower is required for Phase-I expansion. For Phase II Expansion and 104 more persons will be required making the total manpower 239.

Water required for the Washery is for washing, dust suppression and domestic purpose. Coal washing is done using a closed water circuit where water after washing is treated and recycled for coal washing. Only make up water is added in the water circuit to compensate the water lost during washing. Total Water requirement after expansion is estimated to be 851 KLD.

Power requirement for Existing washery is 1.0 MVA. The additional load required for the Expansion of coal washery Capacity including crushing and screening ckt shall be around 3.0 MVA (1.0 MVA for Phase I and 2.0 MVA for Phase II) making the total power requirement 4 MVA. Power is being sourced from Chhattisgarh State Power Distribution Company Limited (CSPDCL) and same will be followed after expansion. In case of power failure, the existing DG sets of 2 x 250 kVA can meet the requirements of essential loads. No further DG set is required.

Coal washery comprises unloading of raw coal, storing, handling, crushing, screening and coal cleaning using water mixed with magnetite. No wastewater is being discharged outside from the coal washery. Middlings are being given to power plants located in nearby areas and to our captive plant at Siltara. Bag Filters have been installed to control Dust from crusher and screens.

2.0 DESCRIPTION OF BASELINE ENVIRONMENT

Baseline data was generated during winter season from 1st March 2023 to 31st May 2023 in 10 km area around the site was considered as study area. Data was generated by following the standard/approved procedures of the Ministry of Environment Forests and Climate Change and the Central Pollution Control Board. Meteorological data on wind speed, wind direction, relative humidity and temperature was generated near the project site. Ambient air quality was generated at 8 locations. Noise levels were measured at 8 locations. Surface water quality was collected and analyzed at 8 locations; Groundwater quality was analyzed at 8 locations. Soil quality was analyzed at 5 locations. Data on plants and animals present in the study area was collected from the District Forest Department. Data on landuse, demography, occupation pattern, cropping pattern, infrastructure facilities were collected from District Statistics Handbook and the Tehsil records.

During the study period minimum temperature was recorded 13°C and maximum temperature was recorded as 34°C, Minimum humidity was recorded 55% and maximum Humidity was recorded as 154%. Dominant wind direction in the study period was from NNE - SSW during the study period. Average Wind Speed during study period is 3.96 m/s. During the study, wind blow was in the direction of NNE-SSW and wind speed range Calm to 4.91 m/s. Based on the wind direction and wind speed it is interpreted that maximum dispersion of air pollutant will be in SSW direction during the study period.

Summary of Ambient Air Quality

- $PM_{10} = 57.1-92.7 \mu\text{g}/\text{m}^3$
- $PM_{2.5} = 30.9-52.1 \mu\text{g}/\text{m}^3$
- $SO_2 = 6.3-15.4 \mu\text{g}/\text{m}^3$
- $NO_2 = 9.1-32.6 \mu\text{g}/\text{m}^3$
- CO = of 280-1430 $\mu\text{g}/\text{m}^3$

The noise level study shows that the noise levels are meeting the acceptable norms. The noise level in area varies from 45.8 to 73.8 dBA during day time and 34.6 to 65.7 dBA during the night time.

Summary of Ground Water Quality

- pH = 7.16-7.41
- Total dissolved solid = 423to 480 mg/L
- Total hardness = 256-330 mg/L
- Total Alkalinity = 261-292 mg/L
- Iron = 0.15-0.26 mg/L
- Total coliform was not found in any samples

The groundwater quality meets the specification prescribed by BIS for drinking (IS:10500:2012)

Summary of Surface Water Quality

- pH = 7.36-7.56
- TDS = 295-435 mg/L.
- DO = 5.6-6.3 mg/L.
- COD = 12.7-32.3 mg/L.
- BOD = 2.5-4.2 mg/L.

Summary of Soil Quality

- pH :- 7.25-7.36
- Electrical Conductivity :- 210-280 $\mu\text{S}/\text{cm}$

- Sodium Absorption Ratio :- 0.30-0.60
- Cation Exchange Capacity :- 12.5 - 15.6 meq/100 gm
- Loss on ignition in terms of Organic matter :- 0.62-0.79%.

The soils are medium in organic carbon status. The major nutrient such as Nitrogen, Phosphorus and Potassium level varied from 147.96 kg/ha to 187.68 kg/ha., 19.42 to 20.77 kg/ha and 189.7 to 311.02 kg/ha respectively. The micronutrients such as copper, zinc, boron and iron are minimum and sufficient for plantation.

Flora and Fauna: The study area (10 km radius) has three reserve forests viz. Silot RF at 1.4 km (NW), Tolge RF at 4.8 km (E) and Samaruma RF at 10 km (SW). Three Protected forests are also there. One PF is adjacent to site in north and other two are at 0.15 km in W and 0.16 km in S respectively. Kelo River is at 3.4 km (SE), Bendera Naala is at 4.1 km (SE), Chini Nala is at 4.9 km (NE), Dumer Nala is at 5 km (E), Pajhar Nala is at 5.5 km (W), Digi Nala is at 8.5 km (SW) and Koledaga Nala is at 9.5 km (SE). The study area has 12 forests where different species of flora and fauna are stored in large numbers.

Total 16 species of mammals, 9 species of reptiles, 57 species of birds 11 species of butterflies have been observed during the primary survey. Indian Porcupine, Barking Deer, Indian Cobra, Russell's Viper and Indian Chameleon observed in the study area which is protected as Schedule -I in Wildlife Protection Act 1972.

According to 2011 Population Census the study area has a total population of 61185 of which 49.9 percent are male and the remaining 50.1 percent are female. Since there is no urban area in the study area the entire population belongs to rural area. The overall sex ratio in the study area has been worked out to 1004 females per 1000 males.

3.0 ANTICIPATED ENVIRONMENTAL IMPACT & MITIGATION MEASURES

Coal Dust is the main pollutant generated during coal handling and crushing cum screening process. Water sprinklers is being used to reduce dust generation during coal handling. Wet dust suppression system has been installed to reduce the dust generation during coal crushing and screening. The crusher unit have been provided with dust extraction system and Bag Filter. All belt conveyors are covered. Internal roads are concreted. Industrial

vacuum cleaners are used in workshops and other work areas. Mechanical road sweeping machines has been deployed for daily cleaning of all internal roads.

100% wastewater generated during coal washing are treated in Effluent Treatment Plant. The water after treatment is recycled for coal washing. Domestic sewage is sent to septic tank.

Low noise emitting plant and machinery are used. 33% land area have been developed as greenbelt. The noise level at plant boundary is maintained below 70 dBA.

Midlings generated in the washery are sold to nearby power plants, our captive unit at Siltara and to Designated customers with which LoA has been signed for processing of coal.

The existing truck movement pattern will not undergo any significant change due to this expansion. Fraction of the coal which is already transported by road from the coal mines of the region will be intercepted by the coal washery for washing. Appropriate traffic management plan will be implemented in consultation with the transport authorities.

4.0 ENVIRONMENTAL MONITORING PROGRAM

Environmental Management Cell (EMC) has been constituted to undertake routine environmental monitoring. Regular Monitoring is done to ensure compliance with the prescribed laws and standards. The Head of EMC reports to the Plant Head. Qualified staff will be recruited in EMC. Environmental monitoring of ambient air, stack emission, fugitive dust emission, noise levels, groundwater quality, surface water quality and soils are carried out as per norms. EMC is responsible for the following functions:-

Regular monitoring of:-

- Measuring fugitive emissions, measuring PM_{2.5} and PM₁₀ in work environment and report any abnormalities for initiating corrective and preventive actions.
- Measuring the ambient air quality at upwind and downwind direction of crusher, at plant boundary (3 locations, 120 degree to each other).
- Checking the wastewater quality (inlet and outlet water wastewater treatment plant).
- Checking the ground water quality near the coal storage area, and surrounding villages.

- Noise monitoring at plant boundary, nearest habitation, near highway, and work areas.
- Development and maintenance of greenbelt and greenery within the plant boundary.

5.0 ADDITIONAL STUDIES

Adequate fire mitigation measures will be ensured for handling fire in coal yard. Disaster Management Plan has been prepared to take care of public health and safety during any accident.

CER activities and public hearing commitment will be carried out over three year period. This amount will be spent for making classrooms in local schools, providing teaching aids, making community centres, develop drinking water facility in nearby villages, making rainwater harvesting structures like anicuts and check dams in the area, developing infrastructure facilities and equipment in primary health centres and as per public hearing.

6.0 PROJECT BENEFITS

Coal washing improves the quality of poor grade coal to higher grade coal. During washing, the waste materials like muck present in poor grade coal is removed. High grade coal is required for steel making and cement making. Use of high grade coal in thermal power plants improves the plant efficiency.

The demand for coal washery is growing due to following reasons:

- Depletion of good quality coal mines in India.
- Mechanized mining increases impurities in raw coal.
- Higher transportation cost makes it uneconomical to transport high ash coal.
- Meeting strict environmental requirement in regard to pollution prevention and control (by steel plants, power plants and cement plants).

About 100 people on daily wages basis will get employment during the construction stage. 239 persons will be employed during operational phase after the expansion, in the skilled, semi-skilled and unskilled category. The preference will be given to local population for employment in the semi-skilled and unskilled category.

7.0 ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management Plan for effective management of environmental impacts and ensuring overall protection of the environment through appropriate management procedures has been developed. In order to implement the recommended mitigation measures and institutionalize the EMP, budgetary provision of Rs.420.82 capital expenditure has been made. Recurring annual expenditure will be Rs. 90.5 lakhs of the capital expenditure.

Environment Management Cell (EMC) will ensure that all air pollution control device, effluent treatment plants and water re-circulating systems function effectively. EMC will also supervise disposal of spent oil and lubricants and used batteries to the authorized vendors. Plantation will be started during the construction phase by following the guidelines issued by the Central Pollution Control Board. Schemes for resource conservation (raw materials, water, etc.), rainwater harvesting and social forestry development will be taken up by EMC. Regular environmental awareness programs for the employees will be conducted.

Workers will be periodically subjected to health check-up. EMC will ensure cleanliness and industrial hygiene in the plant. EMC in association with the safety department will undertake full review of the potential hazard scenarios during plant commissioning. The review will ensure enforcement of the proposed safeguards for pollution abatement, resource conservation, accident prevention and waste minimization. The implementation of EMP would ensure that all elements of project comply with relevant environmental legislation throughout its life cycle.

8.0 CONSULTANTS

The consultant engaged for the preparation of the EIA/EMP for Expansion of Wet Type Coal Washery based on Heavy Media Cyclone is M/s GRC India Pvt. Ltd. GRC India is an ISO 9001:2015, 14001:2015 & ISO 45000:2018 certified pioneer environmental consultancy in India. It has been accredited by National Accreditation Board of Education & Training (NABET), Quality Council of India (QCI), which is the highest accreditation authority in India. The GRC India Pvt Ltd established a modern R&D Laboratory, which is compliant to IS/ISO 9001:2015, IS/ISO 14001:2015 and IS/ISO 45001:2018. All the project sampling

and analysis with various studies are done by the GRC labs. Laboratory received accreditation from NABL which has been renewed as per procedure (current certificate no. TC-7501 valid till 25.04.25) and is recognized by MoEF&CC (Gazette Notification No. S.O. 388 (E) dated 10.02.2017).