Executive Summary of

PROPOSED 1.5 MTPA COAL WASHERY

(Project Area: 7.5 Ha)

Located at:
Village Tadali, Tehsil Chandrapur,
District Chandrapur, State Maharashtra

Project Proponent:
M/s Vimla Infrastructure (India) Pvt. Ltd.
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Maharashtra 440001

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EXECUTIVE SUMMARY

1.1 INTRODUCTION

M/s. Vimla Infrastructure (India) Private Limited is the incorporated organisation under Companies Act, 1956, established in the year 2006. M/s. Vimla Infrastructure (India) Pvt. Ltd.has Railway sidings which cater to the needs of the clients with its handling and logistics services currently in the field of coal, cement, iron ore, manganese, gypsum and bauxite inexpensively and quickly. The company has its first private Railway siding near Siliyari Railway Station and a second private siding is located near Bhupdeopur Railway Station, Chhattisgarh. Railway sidings of these locations are governed under South East Central Railway. As a third step the private siding is constructed at Tadali, near the industrial cluster of MIDC, Dist. Chandrapur, Maharashtra under Central Railway.

Now, looking at the prospective of demand for washed coal, availability of raw coal in the vicinity and availability of own railway siding, M/s Vimla Infrastructure (India) Pvt. Ltd, has decided to venture into Coal Washery business. For this, the company proposed to establish a 1.5 MTPA coal washery adjacent to their existing railway siding at Tadali village, Tehsil & District – Chandrapur, Maharashtra state.

1.1.1 Identification of Project

Looking to the demand of washed coal, M/s Vimla Infrastructure (India) Pvt. Ltd. decided to set up a 1.5 MTPA coal washery. For establishing the coal washery, company has selected own land adjacent to the existing railway siding of the company at Village- Tadali, Tehsil & District - Chandrapur, Maharashtra. An area of 7.50 Ha has been earmarked for the coal washery project. Cost of the proposed 1.5 MTPA Coal Washery is estimated as approx**.** Rs. 22.0 Crore.

1.1.2 Location of the Project

The proposed coal washery area will be located in own private land of M/s Vimla Infrastructure (India) Pvt. Ltd. in Village- Tadali, Tehsil & District - Chandrapur, Maharashtra. The project area and 10 km radius study area falls in Toposheet no. 55 P/4 & 55 M/1 on R.F. 1:50,000. The project falls within Latitude: 20° 0'29.64"N to 20° 0'44.54"N and Longitudes 79°10'12.08"E to 79°10'27.03"E.

1.2 DRAFT EIA/EMP REPORT

Proposed 1.5 MTPA coal washery project of M/s Vimla Infrastructure (India) Pvt. Ltd. is classified as “Category A” as per the EIA notification dated on 14th September, 2006. Baseline environmental monitoring was conducted in line with the ToR during Summer 2019 i.e. March 2019 to May 2019 for determining the status of ambient air quality, ambient noise levels, surface and groundwater quality, soil quality, status of flora, fauna and eco-sensitive areas and socio-economic status of the villages within 10 km radius study area. The observations of the studies are incorporated in the draft EIA/EMP report. Impacts of the proposed project activities during construction and operation stages were identified and duly addressed in the draft EIA/EMP report alongwith the proposed management plan to control /

mitigate the impacts. Environmental Management Plan is suggested to implement the pollution control measures in the project.

TABLE 1.1: SALIENT FEATURES OF THE PROJECT SITE

Sr. No.	Particulars	Details
1	Name of the Project	Proposed 1.5 MTPA Coal Washery (Wet process)
2	Location	Village - Tadali, Tehsil - Chandrapur, District - Chandrapur, State - Maharashtra
3	Total area & present landuse	7.50 Ha Private land owned by company. Proposed site is located adjacent to the existing Railway siding of the company.
4	Site elevation	211 to 214 m MSL
5	SoI Toposheet No.	55 P/4
6	Nearest IMD station	IMD, Chandrapur
7	Site topography	Flat
8	Nearest highway	Chandrapur – Nagpur State Highway (SH 264) : 1.7 KM NE
9	Nearest railway station	Tadali Railway Station: 2.2 Km, NE Bhadrawati Railway station: 10 km NNW Chandrapur Railway Station: 17 Km SE
10	Nearest airport	Morwa Airstrip: 5.4 km E Nagpur Airport: 120 km N
11	Nearest rivers	Wardha River: 6.0 km W Irai River: 9.3 km SE
12	Nearest port	None within 10 km radius
13	Nearest town	Chandrapur, 14 Km E
14	District headquarters	Chandrapur, 14 Km E
15	Nearest state/ national boundaries	None within 10 km radius
16	Nearest major city with 2,00,000 population	Chandrapur, 14 Km E
17	Nearest village	Sakharwai, 1.5 Km NNW Tadali: 2.8 km NE
19	Nearest tourist place	Mahakali Temple, Chandrapur 15.6 km SE
20	Archaeological sites	There are several Archaeological monuments in Chandrapur city beyond 10 km radius from the project site.
21	Protected areas as per wildlife protection act 1972 (tiger reverses, elephant reserve,	Tadoba-Andhari Tiger reserve Ecosensitive zone : approx. 15 km NE

Sr. No.	Particulars	Details
	biospheres, national parks wildlife sanctuaries, community reserves & conservation reserves)	
22	Reserved/protected forests	Bhandak Reserved Forest: 9.1 km NE Morwa Reserved Forest: 1.4 km E
23	Seismicity	Seismic Zone II (Low Damage Risk Zone: MSK VI or Less)
24	Defence Installations	Ordinance Factory Bhadravati, 12.0 km N
25	Other industries in 10 km radius	MIDC Tadali is located near the proposed project site. Also, coal mines of Wani area are located within 10 km radius.

1.3 PROJECT DESCRIPTION

1.3.1 Process Description

The proposed washery will process about 1.50 MTPA raw coal and produce about 1.059 MTPA clean Coal at an average yield of 70.6%. The washery will operate for effective 6000 hours annually. The hourly average capacity of the plant will be approximately 250 TPH (average). The proposed washery will consist of the following sections:

1 Raw Coal Section:

A 250 TPH capacity unit will be constructed and 20% extra over the average capacity will be provided to meet seasonal variations in the production of open cast coal mines. One ground hopper will be provided to receive raw coal from tipping trucks. Vibratory feeder will be provided below each hopper to reclaim coal from the hopper and load on to the associated belt conveyor. The conveyor will elevate coal and discharge the same on the associated double deck primary screen. The primary screen separates coal into fines (0-10mm), sized coal (-60 + 10 mm) and oversize coal (+60-250 mm) fractions. The +60 -250 mm oversize coal from the picking conveyor, after removal of stones, will then be fed to a double roll crusher to reduce the size down to (-)50mm. The crushed coal from the crusher and the (-60 + 10 mm) sized coal from primary screen will be collected on a belt conveyor which will elevate and discharge in an overhead surge bunker. Coal from the surge bunker will be reclaimed with the help of vibratory feeder and discharged on a belt conveyor for elevating and discharging in the wet box provided in HM cyclone house.

2 Washing section:

HM Section: In this circuit (+) 10 mm to (-) 50 mm fraction will be treated to improve the quality. The circuit consists of the following:

De- Sliming section: The raw coal conveyor from the surge bunker will discharge coal in a wet box. From the wet box the pulp will flow down on to a de-sliming screen of 250tph capacity. Water is sprayed over the de-sliming screen with the help of spray nozzles to remove slimes of 0.5 mm size. The over flow from de-sliming screen will be carried to correct

media tank and under flow of de-sliming screen will be carried to fine coal tank/ classifying cyclone sump.

Correct Media tank & HM Cyclones: One number HM cyclone sump of suitable capacity with center tube lined with suitable liners will be provided to receive over flow from the de-sliming screen. The pulp consisting of coal, water and magnetite of required density will be pumped to two numbers of HM cyclones each to separate the pulp into two fractions namely clean coal and rejects. The density of the slurry will be changed as per requirement to achieve optimum yield as per the quality parameters of raw coal. The over flow i.e. clean coal will be discharged on D&R screen (single deck screen). The over flow from D&R screen will be fed to a belt press to remove excess water. Coal from belt press will be discharged on clean coal conveyor and the slurry/ pulp will be taken to fine coal tank. The heavy media will be taken a splitter box from where it will normally be taken to correct media tank with an option for transferring to dilute media tank.

The under flow (rejects) of heavy media cyclone will be taken to a horizontal refuse screen through a fixed sieve bend. The dense media from below the sieve bend and first catch pan of D&R screen will be taken to splitter box. The overflow from the D&R screen will be transported to overhead hopper for storage and then loading into trucks for further transportation.

Magnetite will be charged into the dilute media tank with the help of magnetite charging pump to improve the pulp density. Density gauge will be fitted before the density adjustment tank for controlling the addition of media in dilute media tank.

Fine coal circuit: In this section 0.5 mm fraction will treated and recovered from the pulp. Slurry/pulp from the fine coal tank will be pumped to a set of raw coal classifying cyclones. The over flow from the classifying cyclones will be carried to a high rate thickener (25 m dia.). The under flow from the classifying cyclones will be carried to a high frequency screen. The particles retained over the high frequency screen will be discharged on clean coal conveyor or reject conveyor as per quality parameters and the under flow from the high frequency screen will be taken to a high rate thickener.

Slurry/ pulp from below the high rate thickener will be pumped to a mixing tank where flocculent will be added to agglomerate the fine particles for efficient liquid and solid separation on the belt press. The mixture will then be fed to a parallel drum belt press. In the belt press the material will be pressed to squeeze the water. After wards the cake will be taken to clean coal belt conveyor and the slurry will be taken back to thickener.

Clean coal section: Coal from belt press of HM circuit, over flow from the high frequency screen and cake from belt press of fine coal circuit will be stored in overhead hoppers. Trucks will be loaded below these hoppers for transporting to the siding to dispatch by rail wagons to distant consumers.

Reject section: Over flow from the rejects D&R screen of HM section will be stored in overhead hoppers. Trucks will be loaded below the hoppers for transporting the same to user industries located in the vicinity or to the railway siding for transportation by rail.

Fine coal (<10 mm size): Fine coal without beneficiating will be stored in the overhead hoppers. Trucks will be loaded below the hoppers for transporting to railway siding for loading along with the washed coal fractions as per requirement.

Wagon Loading section: Private railway siding of M/s Vimla Infrastructure (India) Pvt. Ltd. is located adjacent to the proposed coal washery site. Existing in motion type electronic weigh bridge at the railway siding will be used to weigh loaded wagons for preparing RRs.

1.3.2 Raw Coal Requirement, Source & Mode of Transport

The coal will be sourced from nearby coal mines of Western Coalfield Limited (WCL), located in Chandrapur & Wani area.

Since the washery site is located close to the WCL mines in Chandrapur and there is existing railway siding adjacent to the proposed plant site, raw coal will be transported to the plant mostly by rail. In case of non-availability of rail facility at the mine site, coal will be transported by road in covered trucks.

Washed Coal and rejects will be supplied to nearby Power plants. The mode of transport of washed coal will be by rail. Only in case of absence of railway facility at user industry, road transport will be used. Adjacent railway siding of the company will be used for coal transport.

1.3.3 Solid waste generation & Management

In the proposed coal washery, it is proposed to process 1.5 MTPA raw coal in the. About 30% of raw coal i.e. 0.441 MTPA washery reject coal will be generated from the proposed coal washery. Rejects generated during coal washing process can be used for power generation in CFBC technology based power plants. Coal Washery rejects will be given to Power plants operating on CFBC technology in the vicinity of the proposed washery. The reject coal will be transported by means of rail / road based on the facilities available at the user industries. The reject coal will be transported by covered trucks in case of road transport.

1.3.4 Water Requirement & Source

Total daiily make up water requirement for the proposed 1.5 MTPA wet coal washery is estimated to be 6,798 m^3/d. Out of this, 6412m^3/d water will be recycled and reused in the process and only 386 m^3/d water will be supplied from outside. Permission for drawal of ground water will be obtained from CGWB.

1.3.5 Manpower Requirement

During the construction phase work will be generated for skilled, semiskilled and unskilled labors. Technical persons will be recruited during the operation phase. The project creates direct employment to about 45 person once the plan comes to the operational stage and for 50 people during construction stage.

1.3.6 Site Infrastructure

The coal washery is proposed in Tadali Village, Tehsil & District Chandrapur, Maharashtra. The proposed site is located adjacent to existing MIDC Tadali area.

Site facilities: For efficient plant operation, infrastructure facilities like office, store, rest area, drinking water facilities, urinals, latrines, canteen, first aid centre, etc will be made available within the plant premises. Internal black topped (tar) roads will be developed. An ambulance facility will be kept ready to attend any medical emergency occurred during construction and plant operation phase.

1.4 EXISTING ENVIRONMENTAL SCENARIO

1.4.1 Baseline Environmental Studies

Baseline environmental studies were carried out within 10 km radius of the proposed coal washery project area to assess the existing environmental scenario in the area. For the purpose of EIA studies, project area was considered as the core zone and area outside the coal washery upto 10 km radius was considered as buffer zone. The baseline environmental monitoring for various components of environment, viz. Air, Noise, Water, Land, soil, ecology was carried out during summer season i.e. **March to May 2019** in the study area covering 10 km radial distance from the coal washery area. Other environmental data on flora and fauna, land-use pattern, forests, socio-economic status, etc. were also generated through field surveys and secondary information collected from different state Govt. departments.

1.4.2 Meteorology & Ambient Air Quality

Summary of Site Specific Meteorological data

Temperature (°C)	19.2°C to 46.5°C
Relative Humidity (%)	16% to 52%
Predominant Wind Direction	SE (13.6%)
Average wind speed	2.28m/s
Calm wind %	10.73%

Ambient Air Quality Status

The status of ambient air quality within the study area was monitored for Summer season during March to May 2019 at 8 locations including the proposed coal washery area and in nearby villages. The sampling locations were selected based on the meteorological conditions considering upwind, downwind and crosswind directions. The levels of Respirable Particulate Matter (PM_{10}), Fine Particulates ($PM_{2.5}$), Sulphur Dioxide (SO_2,) and Oxides of Nitrogen (NO_X) were monitored. The minimum and maximum values of monitoring results are summarized in **Table 1.2**.

Table 1.2: Summary of Ambient Air Quality Monitoring Results

Station code	Location	Description	PM10, (µg/m³)	PM2.5, (µg/m³)	SO2 (µg/m³)	NOx (µg/m³)
A1	Project Site	Minimum	44.3	25.4	11.2	17.6
		Maximum	65.2	32.2	23.2	38.3
A2	Chichala village	Minimum	41.3	22.6	8.9	17.0
		Maximum	56.4	33.6	22.3	32.7
A 3	Goraja village	Minimum	39.9	22.8	11.2	16.3
		Maximum	51.3	31.8	21.8	32.7
A 4	Sonegaon village	Minimum	43.4	20.5	14.2	14.6
		Maximum	55.2	34.7	21.5	36.9
A5	Tadali village	Minimum	44.3	23.2	12.5	18.4
		Maximum	58.1	31.1	20.5	34.7
A6	Marodia village	Minimum	44.3	20.6	11.4	18.4
		Maximum	57.4	33.6	20.9	32.7
A7	Ghuggus village	Minimum	45.1	21.6	11.2	19.3
		Maximum	63.7	35.8	22.3	35.1
A8	Sakharwahi village	Minimum	40.4	25.9	10.3	16.3
		Maximum	50.7	32.6	16.3	28.2
NAAQ Standard			**100 (24 hrs)**	**60 (24 hrs)**	**80 (24 hrs)**	**80 (24 hrs)**

From the above results, it is observed that the ambient air quality with respect to PM_{10}, $PM_{2.5}$, SO_2 and NOx at all the monitoring locations was within the permissible limits.

1.4.3 Ambient Noise Levels

Ambient noise level monitoring was carried out at the 8 monitoring locations, those were selected for ambient air quality monitoring. The monitoring results are given in **Table 1.3.**

Table 1.3: Summary of Ambient Noise Level Monitoring Results

Station Code	Location	Range [LEQ IN dB(A)]		Ld, dB(A)	Ln, dB(A)
		Minimum	Maximum		
N1	Project site	41.6	51.9	46.18	44.2
N 2	Tadali village	41.0	48.5	44.52	43.67
N 3	Sakharwahi village	41.2	48.7	44.72	43.87
N 4	Chargaon village	40.8	50.6	46.96	41.97
N 5	Morwa village	43.4	50.9	46.92	46.07
N 6	Yerur village	41.6	49.1	45.12	44.27
N 7	Mursa village	39.6	49.4	45.76	40.97
N 8	Sonegaon village	42.3	49.8	45.82	44.97

1.4.4 Surface and Ground Water Resources & Quality

Water Resources

The proposed project site is almost flat area with elevation ranging from 211 to 213 m MSL.. There is no habitation in or adjacent to the project site. There is no perennial or seasonal surface water body in or adjacent to the proposed coal washery area. The surface run-off during monsoon joins nearby seasonal streams.

The general slope of the area is towards south and east. Wardha river, Erai River and Sarai nala forms the major drainage of the study area. Erai river (9.30 km E) flows from North to south and joins Wardha river(6.0 km W) at about 20 km SE of the project area. Tadali lake (4.0 km NE) is another major surface water body in the study area. Sarai nala (3.5 km SW) and Kantiya Nala (8.7 km NE) are seasonal surface water bodies in the study area. Apart from these, there are some seasonal streams flowing in the study area. Also, there are a number of village ponds in the study area of the project.

The project site is located in Chandrapur tehsil of Chandrapur District. The formation exposed in site location comprises of sequence of Kamthi Barakar Sandstones and Maleri – Talcher Shale which comes under Gondwana Formation. The elevation observed at project site is about 211m to 213m. The depth to water level observed in the area ranged from 10m to 20m bgl during Pre-monsoon and 5m to 10m bgl during Post-monsoon season. Most of the wells have a falling trend in water level in the range of 0 to 0.20 m (CGWB, Chandrapur Report, 2013). The entire Chandrapur district falls in 'Safe' category of ground water development as stage of ground water development is 14.61% , which is much less than specified limit of 70%.

Water Quality

The existing status of groundwater and surface water quality was assessed by identifying 8 ground water (Bore wells) locations in different villages and 5 surface water samples.

Surface water Quality

The pH of the surface water samples collected was 7.2 to 7.4 and within the acceptable limit of 6.5 to 8.5. The total dissolved solids were found in the range of 193 - 462 mg/l and are within the acceptable limit at all locations. The total hardness varied between 97 - 269 mg/l and is observed to be within acceptable limit at all locations. In all samples, iron content varied in between 0.14 - 0.33 mg/l, Nitrate in between 1.3 – 5.9 mg/l, fluoride varied between 0.2 - 0.3 mg/l, chloride 11.8 – 42.7 mg/l, Sulphate 34.0 – 88.7 mg/l, alkalinity 105 – 229 mg/l, calcium 39.8 – 60.9 mg/l and magnesium in between 9.8 – 21.3 mg/l in all samples. Coliform organisms are observed to be in the range of 11 to 96 MPN/100 ml. It was observed from the analysis that, the physico-chemical characteristics of the surface water samples are within permissible limits for all the parameters except for colofirm organisms. Coliform organisms are observed in all the samples. Thus, the water from all these can be used for drinking & domestic use after proper primary treatment and disinfection.

Groundwater Quality

The pH of the water samples collected ranged from 7.1 to 7.5 and within the acceptable limit of 6.5 to 8.5. The total dissolved solids were found in the range of 426 - 689 mg/l and is exceeding the acceptable limit at 6 locations. The total hardness varied between 234 - 418 mg/l and is observed to exceed acceptable limit at all locations but are within permissible limits at all locations. In all samples, iron content varied in between 0.1 - 0.3 mg/l, Nitrate in between 0.32 – 1.36 mg/l, fluoride varied between 0.2 - 0.4 mg/l, chloride 34.3 – 102.3 mg/l, Sulphate 51.6 – 121.2 mg/l, alkalinity 237 – 302 mg/l, calcium 71.4 – 99.2 mg/l and magnesium in between 14.6 – 52.4 mg/l. The overall ground water quality was found to be good with slightly higher hardness. The levels of heavy metals content were found to be within permissible limits. Thus, the ground water is required can be used for drinking and domestic use after necessary primary treatment, softening and disinfection.

1.4.5 Land use Land Cover classification

Satellite imagery for the 10 km radius study area of the project was obtained and studied for identifying the different land use land cover patterns. Survey of India toposheets were also used to corelate with the satellite imagery. Based on the standard land use land cover classification, area covered in different categories was calculated. The Land Cover classes and their coverage are summarized in **Table 1.4.**

Table 1.4: LU/LC classes and their coverage within 10 km radius

LULC Class		Area (Sq. Km.)	%
	Cropland	215.21	65.63
	Deciduous	0.39	0.12
	Fallow land	7.46	2.28
	Mining	16.47	5.02
	Reservoirs/ Lakes/ Ponds	6.83	2.08
	River/ Stream/ Canals	5.71	1.74
	Rural	4.72	1.44
	Scrub Forest	5.51	1.68
	Scrub land	53.46	16.30
	Urban	12.15	3.71
	Total	**327.91**	**100.00**

1.4.6 Soil Quality

For studying soil profile of the region, sampling locations were selected to assess the existing soil conditions in and around the proposed project site representing various land use conditions. The physical, chemical properties and heavy metals concentrations were determined. The samples were collected by ramming a core-cutter into the soil up to a depth of 15-20 cm. Total 3 samples within the study area were collected and analyzed.

From the analysis results of the soil samples, it was observed that the soil was low to medium fertile and having low productivity. The soil in the study area needs additional fertilizers for

improving the fertility status and increase in crop productivity. Overall the soil quality in the area was found to poor to medium fertile with moderate productivity.

1.4.7 Biological Environment

Forests

The project site is located adjacent to private railway siding of M/s Vimla Infrastructure (India) Pvt. Ltd. and MIDC Tadali Industrial area. Forest area in the study area includes Morwa Reserved Forest (1.4 km E) and Bhandak Reserved Forest (9.1 km NE). Tadoba-Andhari Tiger reserve Ecosensitive zone is located at approx. 15 km NE of the project site. There is no other forest area, National Park, Wildlife sanctuary or Biosphere reserve within the 10 km radius study area of the project.

Flora

Flora (Plant Species): The forest mainly comprises of moist deciduous mix forests. Some of the common trees present in this area are Mango, Arjun, Bel, Bija, Jamun, Ain, Behada, Shishamtendu, Hirda, Haldu, Kuda, Kusum, Bamboo, Kadam and many others. The main species of grasses includes Gawat, Mussam, Khus, Kusal and Chirkhus. Shrub species like Kuda, Tarota, Kudgudi, Tarwad, Gokhru & Neel are also present extensively. Gond and Madia tribes are the main tribes that reside in the jungles. They still completely depend upon the forest for living & fulfill their need for food, timber, grass and wood. Madia and Gondi are their languages.

Fauna

The core zone is located adjacent to existing railway siding and is located near the MIDC Tadali industrial area, wherein some industries are already operating, there is no wild animals observed within or in the vicinity of the project site. Wild fauna occassionaly observed in the project site comprise of common small animals such as Five striped squirrel, Field rat, Common house rat, common grey mongoose, Hanuman Langur, etc and birds like Blue rock piegeon, House crow, Pariah kite, Myna, Koel, etc.

Buffer Zone

Chadrapur region has large areas covered with forest which form undisturbed tracts with a very sparse population. Naturally this forest with luxurious vegetation harbors a large variety of animals.

From the forest working plan, it is known that Chital, Sambhar and Nilgai cause damage to the crop. So also wild boar uproots young seedlings and bamboo clumps. Porcupine eats outer bark of Haldu, Moha, Bhilwa and Amaltas. Bear dig the soil near the root of the tree in search of rodents.

As per the forest working plan, this division is a heaven for migratory birds.The presence of big water bodies like Erai dam, Chargao, Mohali, Junona, Naleshwar tank are main visiting

places for the winter visitors. The prominent visitors are Coots, teals, pintails, bar headed geese, pochards, mallards, gadusal, and Shovellar are regular visitors. Sarus cranes are also resident of Junona Lake. Besides these winter visitors there are variety of resident birds like peafowls, Partridges, jungle fowl, quails, green pigeon, tits, babblers, robins, bulbul, flycatchers, shriker, drongo, warblers, mynas, weaver birds, munias, wagtails, woodpeckers, cuckoos, owls, etc.

1.4.8 Socio-economic Environment

Information on socio-demographic status and the trends of the communities in the 10 km radius, was collected through primary social survey and secondary data from census 2011. Summary of the socio-economic status of the study area is given in **Table 1.5.**

Table 1.5: Summary of Socio-economic Environment of villages within 10 km radius

Particulars	Numbers	%
No. of villages	46	
No. of Household	34752	
Total Population	145141	
Total Male	75434	51.97
Total Female	69707	48.03
Population SC	27839	19.18
Population ST	11568	7.97
Total Literate	111666	76.94
Male Literate	61000	42.03
Female Literate	50666	34.91
Total workers	55491	38.23
Total main workers	48641	33.51
Cultivators	5846	12.02
Agriculture Labors	8489	17.45
Household Industries	1219	2.51
Other workers	33093	68.04
Total Marginal Workers	6850	4.72
Total Non workers	89650	61.77

1.5 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

1.5.1 Identified Impacts during construction phase and proposed mitigation measures

Ambient Air Quality

During construction phase, dust will be the main pollutant, which will be generated from the site development activities and vehicular movement on the road. Further, concentration of NOx and CO may also slightly increase due to increased vehicular traffic. Sprinkling of water at regular intervals preferably using truck-mounted sprinklers along the roads and work zone areas will be carried out to control fugitive dust emissions.

Water resources and Quality

There is no surface water stream within the proposed project site. There will not be any process wastewater generation during the construction phase. The surface run-off during rainy season from the broken up areas containing silt wash off may be carried to the seasonal steams flowing outside the project area. Wastewater generation during the construction period will be from domestic effluent from the sanitation facilities provided for the workers. The earth work (cutting and filling) will be avoided during rainy season. In-plant roads will be concreted/blacktopped. Soil binding and fast growing vegetation will be grown within the plant premises to arrest the soil erosion. Mobile toilets will be prodiced to construction workers.

Ambient Noise Levels

The major sources of noise during the construction phase are vehicular traffic, construction equipment like dozers, scrapers, concrete mixers, cranes, pumps, compressors, pneumatic tools, saws, vibrators etc. Equipment will be maintained appropriately to keep the noise level within 85 dB(A). Wherever possible, equipment will be provided with silencers and mufflers. Acoustic enclosures will be provided to stationary machines like DG Sets, wherever possible. High noise generating construction activities will be restricted to day time only. Greenbelt will be developed from construction stage. Further, workers working in high noise areas will be provided with necessary protective devices e.g. ear plug, ear-muffs etc.

Ecology & Land environment

Proposed site of the 1.5 MTPA coal washery is located at uncultivated land surrounded by some agriculture fields, railway siding and industrial area. The majority of local vegetation in project site is of seasonal shrubs, herbs and grasses and naturally grown local tree species. No tree cutting is planned. Plant design is made such that the existing trees will be protected as it is. Development of green belt around the periphery of the project site and along the approach road will be taken up during construction phase.

1.5.2 Identified Impacts during Operation phase and proposed mitigation measures

1.5.2.1 Ambient Air Quality

Impacts on Air Quality

Ambient air quality modeling was carried out to assess the impacts on air quality due to proposed 1.5 MTPA coal washery project of M/s Vimla Infrastructure (India) Pvt. Ltd. AERMOD Cloud Model was used for assessing air pollution load from washery operations.

The predicted maximum- incremental GLC (24-hour average) of PM10 due to operations at coal washery, as predicted by air modelling was **2.86 µg/m^3** at 900 m S of the coal washery area.

From the observations of modeling results, it is observed that the predicted concentrations of PM10 in the study area will remain within the permissible limits after establishment of the coal washery project.

Air Pollution Control Measures

- Minimise transport of coal through trucks by maximum use of railway siding.
- Coal transport by trucks covered with tarpaulin sheets, where rail network does not exist.
- Concreting/blacktopping of internal roads to avoid generation of dust.
- Plantation of tall trees with thick folliage ;
- Continuous water sprinkling will be applied to cover railway wagons width during unloading.
- Provision of fixed water sprinklers at loading / unloading site within the plant.
- Provision of bag filters of adequate capacity for coal crushers.
- Provision of dust extraction / water sprinkling arrangement at all transfer points.
- Periodic monitoring of ambient air quality in plant premises and in nearby villages.

1.5.2.2 Ambient Noise Levels

For predicting the impacts on ambient noise levels, 'DHWANI' Noise model, developed by NEERI was used. From the modeling results, it was observed that the resultant noise levels at the plant boundary will be about 65 dB(A), which will further reduce over short distance. The resultant noise levels due to plant operations at the nearest habitation i.e. Sakharwahi village was about 45 dB(A). Thus, it can be seen that no significant impact will take place on the ambient noise levels due to the proposed coal washery project operations.

Proposed Noise Control Measures

- Provision of noise attenuation measures during Design and layout of building;
- Use of lagging with attenuation properties on plant components / installation of sound attenuation panels around the equipment;
- Provision of acoustic enclosures to stationary equipment like crushers & screens, DG sets, etc.;
- Periodic maintenance of equipment and machinery;
- Provision of ear muffs/ear plugs to workers exposed to high noise generating areas;
- Job rotation for workers working in high noise generating areas;
- Development of thick green belt around plant boundary and within plant premises;
- Regulating speed of transportation vehicles to below 40 KMPH;
- Periodical monitoring of noise in the plant premises and in nearby villages;

1.5.2.3 Water Resources & Quality

Impact on Water Resources & Quality

There is no surface water stream flowing within or adjacent to the applied project site. At present, the surface run-off from the applied project area flows along the natural slope of the

area and joins seasonal streams flowing outside the project site. Wardha river, Erai River and Sarai nala forms the major drainage of the study area.

About 386 m^3/day make up water is required for industrial and domestic purposes during the operation phase of the proposed coal washery project. The water requirement will be fulfilled from ground water. Rainwater harvesting will be carried out in the coal washery plant and the harvested rainwater will be used in coal washing process to the extent possible. NOC from CGWA will be obtained before start of coal washery operations. Applied project area falls in 'Safe zone' for ground water drawal.

The potential sources of wastewater / effluent generation in the proposed coal washery project are Storm water run-off carrying coal particles & silt, Coal washery effluent and domestic effluent from plant premises. These effluents / wastewater, if discharged to environment (surface streams / land), will not only increase the plant water requirement, but will also cause significant pollution of the receiving water bodies / land surfaces.

Proposed Water Conservation & Water Pollution Control Measures

M/s Vimla Infrastructure (India) Pvt. Ltd. will implement 'Zero Effluent Discharge' system. Entire waste water after treatment will be re circulated in process by close circuit system. For domestic waste water treatment, package type of STP is proposed. This will drastically reduce the fresh water requirement in the plant and will also protect the water quality of surface water resources flowing outside the plant area.

M/s Vimla Infrastructure (India) Pvt. Ltd. will also implement rainwater harvesting measures in the plant premises. This will involve collection of the storm water run-off from the plant premises to a settling tank and use of the properly settled water in coal washing process, dust suppression and plantation in the plant premises.

1.5.2.4 Land Use Pattern

The proposed coal washery project will be located in 7.5 Ha area. The land is already owned by M/s Vimla Infrastructure (India) Pvt. Ltd. and comprise of uncultivated land. The existing land use of the core zone will be changed into industrial area due to set up of coal washery. Out of total 7.5 Ha area, plant will be established in 2.25 Ha area, green belt and plantation will cover 2.6 Ha area, coal storage and reject disposal will be carried out in 1.05 Ha area and raw water reservoir& RWH structure will be provided in 1.2 Ha area. Thus, entire land use pattern of the core zone will be changed.

Measures to avoid impact on land use pattern

- Green belt development will be taken up during construction stage;
- Entire plant area will be aesthetically landscaped;
- Stacking of raw coal, washed coal and coal rejects will be carried out at designated areas within the plant premises..
- Internal roads will be cemented / black topped and maintained periodically.
- Plantation will be developed along the PWD roads used for coal transport.

- Suitable air pollution control measures will be adopted, to control dust emission and deposition on the agriculture crops / land surrounding the plant premises.
- No effluent will be discharged outside the plant premises.

1.5.2.5 Solid Waste Generation & Management

The types of solid waste and their estimated quantities are given in **Table 1.6.**

TABLE 1.6: SOLID WASTE GENERATION

Sr. No.	Type of solid waste	Estimated daily Quantity	Estimated annual quantity
1	Reject coal	1470 tonnes per day	0.441 MTPA
2	Sludge from thickener	2.5 TPD	750 tonnes per annum
3.	Spent oil & Grease	0.5 kg/day	~ 150 kg per annum
4.	Damaged/worn out machine parts	-	~ 3 TPA
5.	Domestic waste	5 kg per day	1500 kg per annum

Solid waste management:

- Washery reject coal will be sold to nearby CFBC based thermal power plants and cement plants and Brick kiln operators.
- Thickener sludge will be mixed with washery reject coal and will be dispatched to the user industries.
- The oil and grease will be collected and stored in leak proof containers in store rooms with concrete floorings. This will be sold to the CPCB/MPCB authorized recycling vendors periodically.
- The organic and inorganic wastes will be segregated at site itself. Organics will be used for composting and the compost will be used as manure for plantation in green belt area. The inorganic waste material will be sold to authorised vendors.

1.5.2.6 Biological Environment

There is no Forest land, National Park, Wildlife Sanctuary and Biosphere Reserve within 10 km radius of the project site. No rare, endemic & endangered species are reported in the buffer zone. Agricultural crops may be affected when exposed to high concentrations of various air pollutants especially particulate matter (dust) & SO_2. This may result in crop damage and loss in agriculture produce to the nearby farmers.

Proposed Biological Environment Conservation Measures

1. Maximise coal transportation through rail mode.
2. Periodic maintenance of coal transport road in collaboration with PWD
3. Regular water sprinkling on PWD road used for coal transport.
4. Covered coal Transport system

- Monitoring of dust fall at agriculture land located nearby the coal washery

1.5.2.7 Socio-economic Environment

- There is no rehabilitation and resettlement involved in the project.
- The proposed coal washery will require about 45 workers as direct employees during operation phase while 50 persons will get employment during construction phase. Secondary employment is expected to be generated for more than 100 local persons.
- Under the Corporate Social Responsibility of the company, M/s Vimla Infrastructure (India) Pvt. Ltd. will take up various socio-economic development programmes in the nearby villages, which will improve socio-economic status of the nearby villages.

1.6 ENVIRONMENTAL MONITORING PROGRAM

An Environmental Management Cell (EMC) will be established for the coal washery project under the control of G.M. (Coal washery). The EMC will look after the environmental management of the proposed project. The EMC will be headed by an Environmental Manager having adequate qualification and experience in the field of environmental management. Environmental monitoring of ambient air quality, surface and ground water quality, ambient noise levels, etc will be carried out through MOEF accredited agencies regularly and reports will be submitted to MPCB/MoEF.

1.7 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

The assessment of risk in the proposed coal washery project has been estimated for fire, explosion and toxicity and corresponding mitigation measures are suggested in the Draft EIA/EMP report.

A detailed Disaster Management Plan for facing disasters due to natural effects and human reasons, is prepared and incorporated in the draft EIA/EMP report for ensuring safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of Disaster Management Plan, it will be widely circulated and personnel training through rehearsals. Site facilities, procedures, Duties and responsibilities, Communications, etc are considered in detail in the Disaster Management Plan.

1.8 PROJECT BENEFITS

The proposed coal washery project at Tadali village would provide development of area and consequent indirect and direct job opportunities which would finally result in improvement in the quality of life of people in the nearby villages around the coal washery site. In line with this CSR policy, M/s Vimla Infrastructure (India) Pvt. Ltd. will carry community welfare activities in the following areas:

- Health & Sanitation
- Drinking water
- Education for poor

- Economic upliftment
- Village roads & Lighting

A budget of Rs. 44.25 Lakh has been proposed for implementation of Socio-economic welfare activities in the nearby villages under CER.

1.9 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan comprise of following set of mitigation, management, monitoring and institutional measures to be taken during implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels.

- Overall conservation of environment.
- Minimization of natural resources and water.
- Safety, welfare and good health of the work force and populace.
- Ensure effective operation of all control measures.
- Vigilance against probable disasters and accidents.
- Monitoring of cumulative and longtime impacts.
- Ensure effective operation of all control measures.
- Control of waste generation and pollution.

Judicious use of the environmental management plan addresses the components of environment, which are likely to be affected by the different operations in the project. A budget of Rs. 222.3 Lakh as capital cost and Rs. 72.25 Lakh as recurring expenses has been allocated for implementation of the Environmental Management Plan.

1.10 CONCLUSION

The proposed 1.5 MTPA coal washery project of M/s Vimla Infrastructure (India) Pvt. Ltd. will be beneficial for the development of the nearby villages. Some environmental aspects like dust emission, noise, wastewater generation, traffic density, etc will have to be controlled within the permissible norms to avoid impacts on the surrounding environment. Adequate environmental pollution control equipments like bag house, water sprinklers, enclosures, thickener, etc. will be provided to control pollution within permissible limits. Measures like development of thick green belt and plantation within plant premises and along transport road, adoption of rainwater harvesting in the plant and in nearby villages, etc will be implemented. The CSR measures proposed to be adopted by the company will improve the social, economic and infrastructure availability status of the nearby villages.

The overall impacts of the proposed coal washery will be positive and will result in overall socio-economic growth of nearby villages.