PRE-FEASIBILITY REPORT

For

Coal Washery Plant (Capacity 4.0 MTPA)

AT

Village - Kunkuni, Tehsil – Kharsia,
District - Raigarh, State - Chhattisgarh.

By:-

M/s Vedanta Washery & Logistics Solution Pvt Ltd
Registered Office
1st Floor, Shop No.45/46, Chaitnya Nagar,
Krishna Complex, Raigarh –496001, Chhattisgarh

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CHAPTER - I
EXECUTIVE SUMMARY

1.0 Introduction

Coal Washery

Coal Reserves and the World's most significant Fossil Fuel Resources. Now about 36% of World Electricity is generated from Coal Based Thermal Power Plant. Coal is also essential for other core Industries like Iron & Steel, Fertilizers and Cement. In our country 72% of Electricity is generated from Coal based Power Houses. In this Millennium with improved clean coal technology, coal will continue to ensure ils global as well national importance as an important source of primary energy relative to Oil, Gas and other non fossil fuel because of its vast availability and most cost effectiveness. With new clean coal technology available, coal can be burnt cleanly and efficiently allowing power station to met the increasingly stringent environment regulation in force. About 70% of the production of Coal India Ltd. (CIL) is utilized by the power sector.

The Indian coal industry suffers from vast availability of high ash coal. inter - branded seams, labour intensive mining methods and various other constraints like movement of coal from pit head to consumers at distant points and threat of availability of imported coal at competitive prices. So the Global competitiveness will force the coal industry to go for production of coal by using the latest technology to eliminate dirt bands and use improved methods of coal beneficiation / clean coal technology.

The availability of low ash imported coal for coastal power sector and the movement of coal on techno-economical viable mode from pit head to the consumers at a distant point have made a challenge to the coal industry in the present scenario. To overcome this challenge, the capacity utilization in the coal industry, which is low in comparison to world standards and the main cause of poor financial performance, has to be improved by standardization of equipment. selection of versatile equipment suitable for the existing gee-mining conditions and making mining operations more or less continuous by utilizing maximum times for productive operations. At the same time, apart from improving the quality of ROM by deployment of improved, suitable and economically viable technology of coal preparation. With the advent of Independence, the country embarked upon the 5 –year development plans. At the beginning of the 1 Plan, annual production went up to 33 mts. During the 1^{St} Plan period itself, the need for increasing coal production efficiently by systematic and scientific development of the coal industry was being felt. Setting up of the National Coal Development Corporation (NCDC)., a Government of India Undertaking in 1956 with the collieries owned by the railways as its nucleus was the first major step towards planned development of Indian Coal Industry.

Right from its genesis, the commercial coal mining in modem times in India has been dictated by the needs of the domestic consumption. On account of the growing needs of the steel industry, a thrust had to be given on systematic exploitation of coking coal reserves in Jharia Coalfield. Adequate capital investment to meet the burgeoning energy needs of the country was not forthcoming from the private coal mine, owners. Unscientific mining practices adopted by sorne of them and poor working conditions of labour in sorne of the

private coal mines became matters of concern for the Government. On account of these reasons, the Central Government took a decision to nationalise the private coal mines.

COAL is the most important and abundant fossil fuel in India. It accounts for 55% of the country's energy need. The country's industrial heritage was built upon Indigenous coal.

Commercial primary energy consumption in India has grown by about 700%. In the last four decades. The current per capita commercial primary energy consumption in india is about 350 kg/year which is well below that of developed countries. Driven by the rising population, expanding economy and a quest for improved quality of life, energy usage in India is expected to rise. Considering the limited reserve potentiality of petroleum & natural gas, eco-conservation restriction on hydel project and geo-political perception of nuclear power, coal will continue to occupy centre-stage of India's energy scenario.

With hard coal reserves around 246 billion tonnes, of which 92 billion tonnes are proven, Indian coal offers a unique eco-friendly fuel source to domestic energy market for the next century and beyond. Hard coal deposit spread over 27 major coalfields, are mainly coal fields to eastern and south central parts of the country, The lignite reserves stand at a level around 36 billion tonnes, of which 90 % Occur in the southern State of Tamil Nadu.

Coal is the most important and abundant fossil fuel in India as well as the World. It is used in Power, Iron & Steel. Fertilizer, Cement and even in household for daily living, The consumption of coal in our country is increasing day by day with the increase in industrialization. Considering the current trend of globalization and Liberalization the growth in the industrial sector and the power demand are expected to be reasonably high.

1	Name of the Company	**M/s Vedanta Washery & Logistic Solutions Pvt. Ltd**
2	Registered Office Plant & Admin Office	**Plant Location :** Near ROB Railway Station, AT/PO- Kunkuni, Kharsia, Raigarh (C.G.) – 496661 **Corporate Office :** Near ROB Railway Station, AT/PO- Kunkuni, Kharsia, Raigarh (C.G.) - 496661
3	Name of the Directors	Shri Sushil Kumar Singhal Shri Surya Kant Agarwal Shri Anubhav Singhal
4	Proposed Sector	Coal Washery, 2 (a)
5	Area of plant	14.119 Hect. (34.88 Acres)
6	Topo Sheet No	64O1

7	Project Site Co-ordinates	Latitude: 21°59'15.01"N, 21°59'27.07"N, 21°59'12.76"N, 21°59'20.12"N Longitude: 83° 9'55.80"E, 83°10'20.21"E, 83°10'19.77"E, 83°10'40.07"E	
8	Proposed Units & Total Capacity	Wet Coal Washery Plant (4.0 MTPA)	
10	Cost of Project	Rs 28 Crore	

1.2 Identification of Project and Project Proponent.

M/s Vedanta Washery & Logistic Solutions Pvt. Ltd. [here in after referred as VWLSPL is incorporated with Registrar of Companies. The company is promoted by Shri. Suryakant Agrawal, Shri Sushil Kumar Singhal & Shri Anubhav Singhal engaged in various businesses and having good reputation in the market, which was gained with good business experience. Looking forward in prospects of utilization of washed coal, VWLSPL propose to install a Coal Washery Unit at Village – Kunkuni, Tehsil Kharsia, District – Raigarh of Chhattisgarh State.

Project Promoters:

M/s Vedanta Washery & Logistic Solutions Pvt. Ltd is promoted by,

- **Shri Sushil Kumar Singhal**
- **Shri Anubhav Singhal**
- **Shri Suryakant Agrawal**

1.3 Employment Generation Manpower

During Construction Phase:-

Total 100 local workers required for the construction of the project for the duration of six months.

During Operation Phase:-

Around 120 persons who will include Executives, Engineers, Supervisors and Skilled and unskilled work force.

1.4 Project Description

VWLSPL proposed to install 4.0 MTPA wet type Coal washery and at Village: Kunkuni, Tehsil: Kharsia, District: Raigarh, Chhattisgarh. Total land envisaged for the proposed project is 14.119 Hect..

S.No	Unit	Capacity
1	Wet Coal Washery	4.0 MTPA

1.5 Site Location

The above industry is proposed to be located at Village- Kunkuni, Tehsil - Kharsia, Distt.- Raigarh, Chhattisgarh. The promoters have, after conducting all India Surveys, proposed to put up the unit at Raigarh keeping in view the fact that the industrially developed area of Raigarh is located in the very center of the Country and very well connected with prospective clients of the product by road, rail as well as Air links.

1.6 Raw Material Requirement & Source.

Run of mines [ROM] coal will be the raw material requirement for proposed washery. Annual requirement of proposed washery is envisages to the tune of 4.8 MTPA.

1.7 Mode of Transport for Raw Materials.

Desired quantum of ROM coal will be transported through covered trucks from coal mines. Washed coal and rejects will be transported either through covered trucks or rail routes. Railway siding is envisaged for the proposed coal washery to be served from Robertson Station, which will be used for transport of Raw material and finished projects depending upon the MoU with customers, who may have either road transport or rail transport.

1.8 Mode of Transportation of Washed Coal.

Washed coal from the plant will be transported by road in covered trucks directly to the customer (or) by rail. The mode of transport of washed coal will depend on the MoU with the customers who may have either road transport or rail transport. All the trucks required for transportation of coal will be covered and environmentally compliant. Pucca road exist upto the site. The existing road is capable of absorbing this additional truck movement. Hence there will not be any significant adverse impact on air environment due to the transportation of raw coal & washed coal. Avenue plantation will be taken up along the road to prevent the fugitive emissions. Hence there will not be any significant by fugitive dust generation during transportation of raw materials & product. The existing road is capable of absorbing this additional truck movement. Hence there will not be any adverse impact on vehicular traffic due to the proposed project.

1.9 Water and Power Requirement

It is required only for washing purposed under industrial usage of the said unit. Total amount of makeup water required for operation of plant is about 1500 KL/day this is inclusive of washing, dust suppression and domestic purposes. Closed circuit water system will be adopted in the proposed Coal washery unit. Hence there will not be any wastewater generation from the process. However only wastewater generated will be sanitary wastewater i.e. 5.0 m3/ day; which will be treated through Septic Tanks followed soak pits.

1.9 Waste Generation and Management

It is required only for washing purposed under industrial usage of the said unit. Total amount of makeup water required for operation of plant is about 1500 KL/day this is inclusive of Washing, dust suppression and Domestic Purposes. Closed circuit water system will be adopted in the proposed Coal washery unit. Hence there will not be any wastewater generation from the process. However

only wastewater generated will be sanitary wastewater i.e. 5.0 m3/ day; which will be treated through Septic Tanks followed soak pits.

Hazardous waste: There is no hazardous waste from the plant except for used oil with approx quantity of 100 Liters per annum, during course of production of and is also saleable to the registered recyclers in the market.

1.10 Site Analysis

The site is within notified Industrial Area and has all the facilities for the proposed project. Also it has good connectivity with the rail and road.

- **Road Connectivity:** National Highway-216 is at 24.67 km towards ESE direction and SH-1 is approx. 19.60 km towards East direction from project site.
- **Rail Connectivity:** The nearest railway station is Robertson Railway Station at 0.5 Km towards East direction and Kharsia railway station at a distance of 6.40 km from the proposed project site towards West.
- **Airport:** Nearest airport to the project site is Swami Vivekananda International Airport, Raipur at distance of 172.46 KM towards WSW direction from the project site.
- **Approach Road:** Project site is attached to Kharsia Main Road directly.

1.11 Proposed Infrastructure

a) Plant Area

The setting up of the Main Plant Facilities, Storage, Auxiliary facilities, etc. requires 24 Acre & company will use nearest road for materials transportation and manpower connectivity.

b) Green Belt & Plantation

A greenbelt & plantation development plan will be prepared and implemented along with the project Total area shall 4.65 Hect. which is 33% of the total area. The main objective of the greenbelt is to provide a barrier between the plant and the surrounding areas.

Greenbelt development plan.

- Local DFO will be consulted in developing the green belt.
- Greenbelt of 33% of the area will be developed in the plant premises as per CPCB/MoEFCC guidelines.
- 15 m wide greenbelt is being maintained all around the plant.
- The tree species to be selected for the plantation are pollutant tolerant, fast
- Growing, wind firm, deep rooted. A three tier plantation is proposed comprising of an outer most belt of taller trees which will act as barrier, middle core acting as air

c) Rehabilitation and Resettlements (R & R) Plan

No R & R involved. Land is already has been acquired for the project by the project proponent.

1.12 Project Schedule and Cost Estimates

a) Project Schedule

The total project implementation schedule is six months from project start date. The external agencies such as consultant, machinery suppliers, contractors of civil construction and equipment will be selected carefully well in advance.

b) Project Cost

An indicative estimated capital cost of the proposed Plant is around Rs. 28 Crore.

CHAPTER – 02

INTRODUCTION OF THE PROJECT/BACKGROUND INFORMATION

2.1 Identification of Project and Project Proponent.

VWLSPL is incorporated with Registrar of Companies. The company is promoted by Shri. Suryakant Agrawal, Shri Sushil Kumar Singhal & Shri Anubhav Singhal engaged in various businesses and having good reputation in the market, which was gained with good business experience. Looking forward in prospects of utilization of washed coal, VWLSPL propose to install a Coal Washery unit in Raigarh District of Chhattisgarh State.

Project Proponent & Promoters:

M/s. Vedanta Washery and Logistic Solutions Pvt. Ltd has been promoted by following Directors:

1	**Shri. Suryakant Agrawal**	**The promoters have good experience in the field of coal industry and marketing of same.**
2	**Shri Sushil Kumar Singhal**	
3	**Shri Anubhav Singhal**	

It is a very well-known fact that the background of promoter is the most important aspect responsible for every successful enterprise. The abilities, efforts, Sincerity and hard work of an entrepreneur can totally change the shape and scene of the enterprise. Thus it is very important to know the background and capabilities of an entrepreneur or promoters involved into the project.

The project is mainly being promoted by one of the well-reputed and established family. The brief Bio - Data of the promoters are as given below: -

Shri Sushil Kumar Singhal S/o Shri Satya Narayan Agrawal

Enthusiastic and optimistic, Sushil Kumar is a bright entrepreneur. He has a knack of creativity and achievement. Mr. Sushil is diversified into different business fields. He is in supply and transport business of coal and has a hotel business as well. He is a A-class civil contractor. He is presently director of many companies.

Since Mr. Sushil is the supplier of coal, he is familiar with coal business. It will be proven boon for their coal washery business. His organizational skill and operational acumen will immensely contribute to the cost reduction and customer satisfaction for their services.

Shri Anubhav Singhal S/o Shri Amar Agrawal

Shri Anubhav Singhal is a resourceful personality and has good connects with various industries; this will certainly help the proposed project in many ways.

Shri Surya Kant Agrawal S/o Shri Santosh Kumar Agrawal

Mr. Surya Kant Agrawal will look after project implementation, production and day to day affair of the plant. He will manage the production of the plant as per demand and supply of market.

As mentioned above the promoters are experienced in different field of business and they would bring very vast experience and industry connects into this project. They are energetic and resourceful men.

Last but not the least, promoters are financially stable & will be able to setup the project successfully within specified time and run it smoothly with desired profit margin in future too.

2.2 Brief Description of Nature of the project

It's a Coal Washery Project having capacity of 4.0 MTPA which falls into category A, as per EIA Notification 2006 and require prior environmental clearance from MoEF & CC.

2.3 Need of the Project and its Importance to the Country and/or Region

India is a strong player in the sponge iron business. The installed capacity of Sponge Iron in the country increased from 1.52 million tons per annum in 1990-91 to 7.032 million tons per in 2002-03. There are 53 sponge iron units in the country producing 7 million tons per annum and 3 gas based units covering a capacity of 3.76 million tons per annum. Despite the lower number of gas based plants gas based sponge iron production accounted for 44% of the total domestic production, the rest 56% being coal-based. In the year 2002, with 6.53 million tons of production, India had become the world's largest producer of sponge iron. It recorded a 16.87% increase in production from 5.59 to 6.53 million tones. In order to push up the production of sponge iron in the country and to gainfully utilize natural resources, the Government is encouraging the development of coal washery. The factors in favor of sponge iron industry:-

- It reduces dependency on imported scrap.
- Global sponge iron prices are on an upswing as demand for steel seems insatiable and domestic prices have followed suit.
- Off – take in sponge iron demand by EAF (Electric Arc Furnace) and Induction Furnaces will continue to remain firm even as price of scrap increases.
- Scrap as a percentage of total steel production has reduced significantly in the last few years leading to lower availability of scrap.
- Lower ship breaking activities is also contributing to lower availability of scrap and hence higher sponge iron demand
- To boost productivity, sponge iron is also finding increased use in blast furnaces. This has furthered the metallic demand
- No major capacity coming up in the medium term. It will be at least two years before new capacity comes up.

Coal plays a dual role in the sponge iron process by acting as reductant as well as a fuel for providing heat to maintain the requisite temperature inside the kiln at 950-1050ºC. For sponge iron industries,

where the quality of coal varies widely depending on the variation in the technological propriety and process parameters, no stringent specification has been made till to date.

The major production of the non-coking / steam coal (>85%) in the country is of inferior quality (Grades E, F & G) whereas the Sponge Iron Industry needs coal of B & C Grades at the most. As such most of the sponge iron plants are not getting the coal of required quality from the coal-mines. The average ash in the coal being supplied is 25 to 30%. Apart from the inferior quality, there is a wide range of variation in the quality of coal being supplied on day–to-day basis and this causes problem in optimization of the inputs to the Kiln and control of it's performance in terms of quality and quantity of the out-put. In case of the Consortium the present supplies of washed coal form the present Supplier neither consistent nor adequate.

As such there is a need for a Coal Washery with a superior technology not only to get better heat-value coal but also to get the consistency in the quality which lends itself for optimization of the inputs to the Kiln resulting in better performance and more profitability.

In view of the above M/s Vedanta Washery & Logistic Solutions Pvt. Limited has proposed establish Wet type of coal Washery & Iron Ore Beneficiation at Village: Kunkuni, Tehsil: Kharsia, District: Raigarh, Chhattisgarh.

2.4 Demand – Supply Gap

Coal is the backbone of industrial activity required by almost all the industries as fuel like that of power plant, sponge iron plant, and steel plant etc. The coal is available in different grades like grade: A, B, C, D, E. F. depending upon the ash contents of the coal. India has to even import the coal just because of low ash contents. In order to upgrade the quality of coal from "F" grade to "O" grade a coal beneficiation plant is required which are very few in numbers. The demand for higher grade of Coal increased consequently upon the Govt. order to Power Plant which requires coal as the main raw-material.

Coal washing is a process of separation which uses the difference in specific gravity of coal and the impurities that are extracted along with it, such as shale, sand and stones. The purpose of coal washing is to get a relatively pure marketable coal, with a higher calorific value since non-combustible material is separated from useful combustible material. Due to the high ash content, this process is particularly appropriate for Indian coal, and it started to be adopted in the 1950s. Traditional Indian coal washeries mainly use (outdated) European technology, but the need for coal washing is increasing and calls for an improvement of the technologies and a broadening of beneficiation. Coal washing allows the lowering of production costs through improved thermal efficiency and availability, and also reduces the amount of material to be transported, hence cutting emissions in transportation. Furthermore, coal washing increases the calorific value of the coal, lowers ash disposal, operation and maintenance costs, reducing the need for imports of higher quality coal. Coal washing also reduces land requirements, and has a social impact as well, decreasing settlement costs and effects on cultivation in the impact zone, and improving health and living conditions.

In 1997, the Ministry of Environment and Forest decreed that all thermal plants located at a distance of a thousand kilometers or more from the mine (or located in very polluted urban areas) must use coal not exceeding 34 percent ash content. This law does not apply to plants situated near mining

sites, which can burn coal without beneficiating it. The regulation was meant to be operative since 2001, but has not been implemented on a large scale. In India there are currently 17 coking coal and 32 thermal coal washeries, with a total installed capacity of 130 million tonnes a year. However, the real effective utilization is rather low. The actual washing is preceded by crushing, in order to reduce the size of raw coal. While the smaller pieces are not washed, the bigger ones are beneficiated by jig, heavy medium bath or heavy medium cyclone. In some washeries inefficient barrel washers and spirals are used, and sometimes the cleaning of coal is limited to rock removal by hand picking. However, these methods are clearly not efficient.

Although the government's support and Coal India's recent investments in coal washing, obstacles for implementation and improvement of this kind of coal beneficiation continue to persist. There is widespread perception that improving coal washing would add to the cost of supplied coal, but this would be true from a very short term perspective only. In fact, in the longer term, improving these techniques would have major economic benefits. The hurdles are not technical, but primarily political. One of the main issues in achieving a satisfying development of coal beneficiation is the need for effective coordination between the different governmental departments dealing with coal (such as the Ministry of Coal, the Ministry of Transportation and the Ministry of Railways); from extraction, to preparation, transportation, distribution and use. Furthermore, the coal pricing system should also be addressed, including the quality of coal as a factor influencing in the cost, so that there would be a further incentive to the production of quality coal.

Until 2012, coal supplied by Coal India – the country's largest single supplier, was priced based on quality, grade and the amount of heat generated from a particular type of coal. This method was revised in January 2012, and made the price depend on the coal's gross calorific value, which led to an increase in prices. In April 2013 Coal India and NTPC Limited, a large state-owned power generation company, agreed on a new pricing system; the price of coal will now be calculated based on the amount of heat that can be generated by burning a particular amount of coal, with coal sampling done by a third party.

2.5 Export Possibility and Domestic/Export Market

In addition to the requirement of low ash coal by the industries the Ministry of Environment & Forest is also setting up certain norms to protect the environment and has already issued a notification on 19th Sept., 1997 for use fo 34% and below ash content coal by the thermal power stations located beyond thousand kms from the mines. Presently most of the thermal power stations are using coal containing approximately 40% ash. Also Ministry of Environment & Forest has issued another guideline in sept. 1999 that by the year 2010-2015, 100% fly ash produces by the thermal power stations to be utilized. This also necessitates reducing ash generation and improving the quality of ash for better use. This can be achieved by using low ash coal. Presently most of the thermal power stations are using coal containing 35% - 45% ash.

More than 70% of the coal available in India needs to be cleaned for ash reduction. To meet such a huge requirement. coal washeries were not planned earlier. Thus there is great scope for setting up coal beneficiation Project. Also it is highly profitable industry for coal mines washeries and consumers with high returns on the investments and other benefits.

South Eastern Coal fields Ltd. From its Gevra Chhal, Barod., Neco (including Augmentation Project), Dipika including Dipika Expansion Project in Korba, Raigarh area presently produces a

total of about 32 million tonnes 'F' grade Coal of Over 40% ash annually. Out of this about 6 million tonnes is presently being washed at Aryan Coal Beneficiation PTant (3.5 Million tonnes) and Bombay Suburban Electric Supply Company (2.5 million tonnes) in the area to meet part requirement of power plants of Punjab state Electricity Board, Gujarat State Electricity Board etc.
There is a ready market for washed coal arising out of washing of balance 26.5 million tonnes of raw coal to cater to requirement of a number of customers engaged in power generation. Electricity boards of Rajasthan, Gujrat, Maharastra. Punjab, Delhi vidyut Boards and other independent power plant are the possible customers for the washed coal. Besides, there are a number of entrepreneurs putting up their own power plants to alter to their in-house requirement of sponge iron, Ferro alloys, cement etc. They will also need washed coal.

The direct benefits that would accrue to these customers are:

- Saving in coal freight to the tune of about 20%
- Prolonged life of Boilers
- Reduced wear in coal mill and on JD fans.
- Less coating on Boiler tubes resulting into better heart transmission.
- Reduced ash handling on grates & ESP.
- Less emission of SO_x & NO_x coupled with less generation of fly ash to the tune of 40%
- An improved plant load factor.

All these put together would provide substantial benefits to power plant operators which will more than offset the increase in the purchase price per toñ of washed coal they would be required to pay.

2.6 Employment Generation (Direct and Indirect) Due to the Project.

Increased industrial activity and rise in establishments of industries in the last few years have lead to the availability of experienced Skilled & Unskilled. Technical, Professional & Administrative personal for all the divisions of Integrated Steel Plant within the State of Chhattisgarh.

CHAPTER - 3
PROJECT DESCRIPTION

3.1 Type of Project Including Interlinked & Interdependent Projects

Its Category A project as per EIA Notification and requires Environment Clearance from MoEFCC. Project is not interlinked and interdependent.

3.2 Location

The above industry is proposed to be located at Village-Kunkuni, Tehsil - Kharsia, Distt-Raigarh (C.G).The promoters have, after conducting all India Surveys, proposed to put up the unit at Raigarh keeping in view the fact that the industrially developed area of Raigarh is located in the very center of the Country and very well connected with prospective clients of the product by Road. Rail as well as Air links. Besides, the main Raw Materials. Iron Ore and Coal are amply and easily available in and around the area.

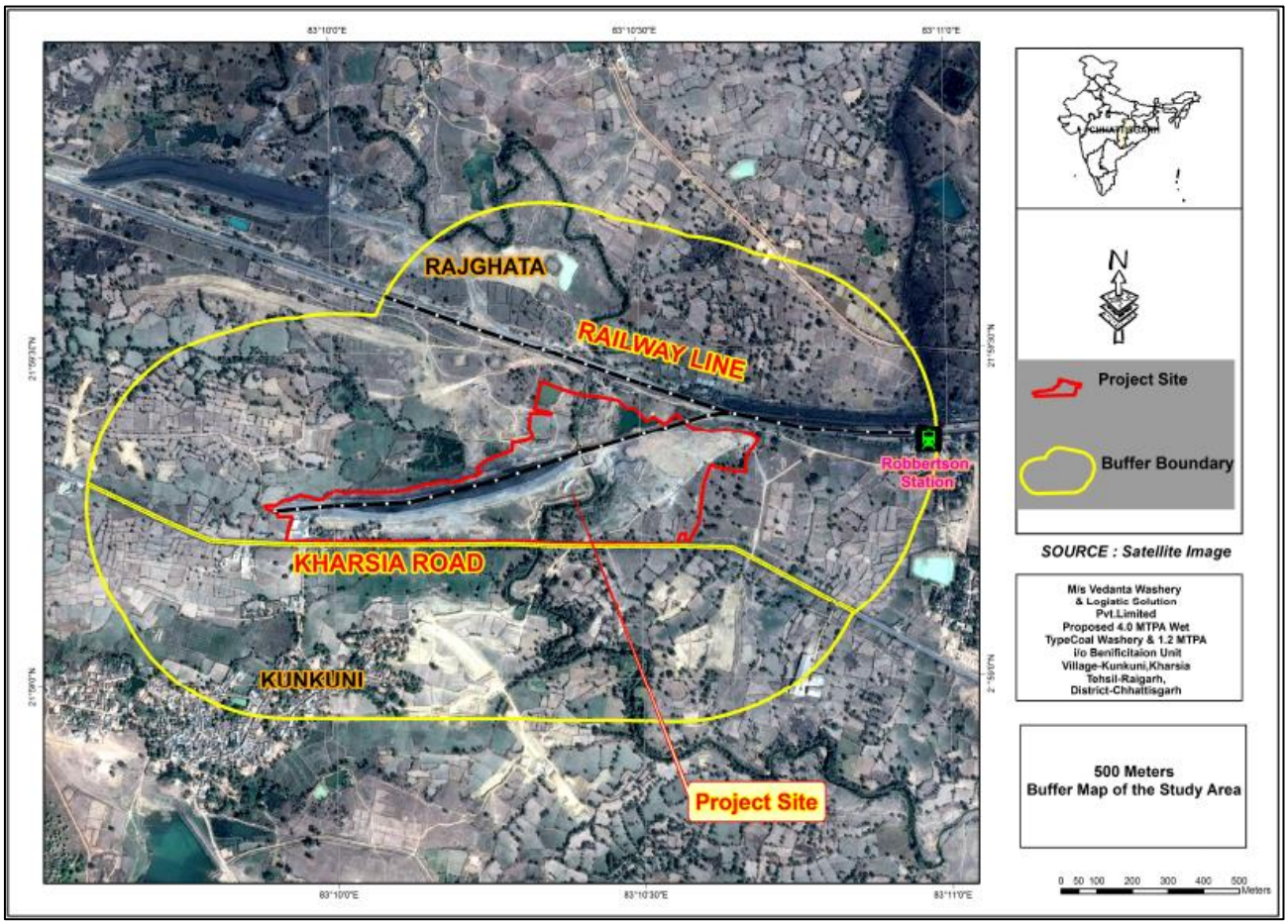


Fig 1: Google Image of project Site (500 meter Radius)

3.2.2 Plant Layout

The layout of the plant will be developed taking into following considerations:

- Process will be consolidated into comprehensive production units. The major utilities and service facilities available for the existing unit will be used.
- Sufficient space for storage of raw materials and finished products.
- Green belt, plantation, RWH & space for pollution control facilities will be provided

Fig : 3 Layout Plan(Preliminary/Conceptual Plan)

3.3 Site Selection

The selection of project site/location has been based on the factors as given below:-

- Availability of adequate flat land for the proposed plant and its rational future expansion.
- Proximity to raw material
- Proximity to finished goods market.
- Existence of road/Rail connection in the vicinity for transportation of incoming & Outgoing materials.
- Availability of industrial infrastructure facilities, e.g. power, water & skilled personnel.

3.4 Size or Magnitude of Operation

VWLSPL proposed to install 4.0 MTPA capacity wet type Coal washery plant at Village: Kunkuni, Tehsil: Kharsia, District: Raigarh, Chhattisgarh.

3.5 Manufacturing Process, Raw Material Details & Supply of Final Project.

General

The concern is going to install a coal washery and iron ore beneficiation plant at Raigarh Region. Coal, washery is the process for cleaning & reducing ash content in the coal, thus improving the quality of coal. In India, coal is the cheapest source of energy. which is found in abundance. But its quality is very poor compared to the coal being improved from China & Australia. Also there is wide variance in the quality of coal from mines to mines In some cases the ash contents are as high as 45-50% also.

Iron ore beneficiation is the process which removes the gang particle like Alumina. Silica from the Iron Ore. Basically, it separates Fe2O3 or Fe3O4 from other impurities in the iron ore. In this process the Fe content is improve to maximum possible extent. Normally required quality of iron ore is not available readily from the mines, this can be achieved by beneficiating the available iron ore.

Also iron ore is collected from couple of mines and different pockets due to which there is a variation in the quality & chemical composition of the ore which is not desirable for Pelletizing. Hence these ores are blended together and Beneficiated to improve its quality as near to the ideal requirement.

Process Coal Washery

The coal washery will be installed inside premise near raw material yard. This section comprises of coal crushing and screening station and coal washery to produce clean coal with 25% ash, appropriately sized and a middling fraction by treating the raised coals from the mine.

Considering 300 day of operation in a year the average plant capacity, requirement works out to be 1.2 Million Tons/ Year.

The coal washery has been designed to wash the coal in heavy media circuit to reduce clean coal with 25% ash and middling. The process consists of crushing of the ROM coal in a combination of rotary breaker and 2 stages roll crushers, The crushed coal is then washed in heavy media cyclone to produce clean coal and middling. The heavy medial preparation/ regeneration unit for maintaining the required density in the heavy media circuit is also included in the plant-designed.

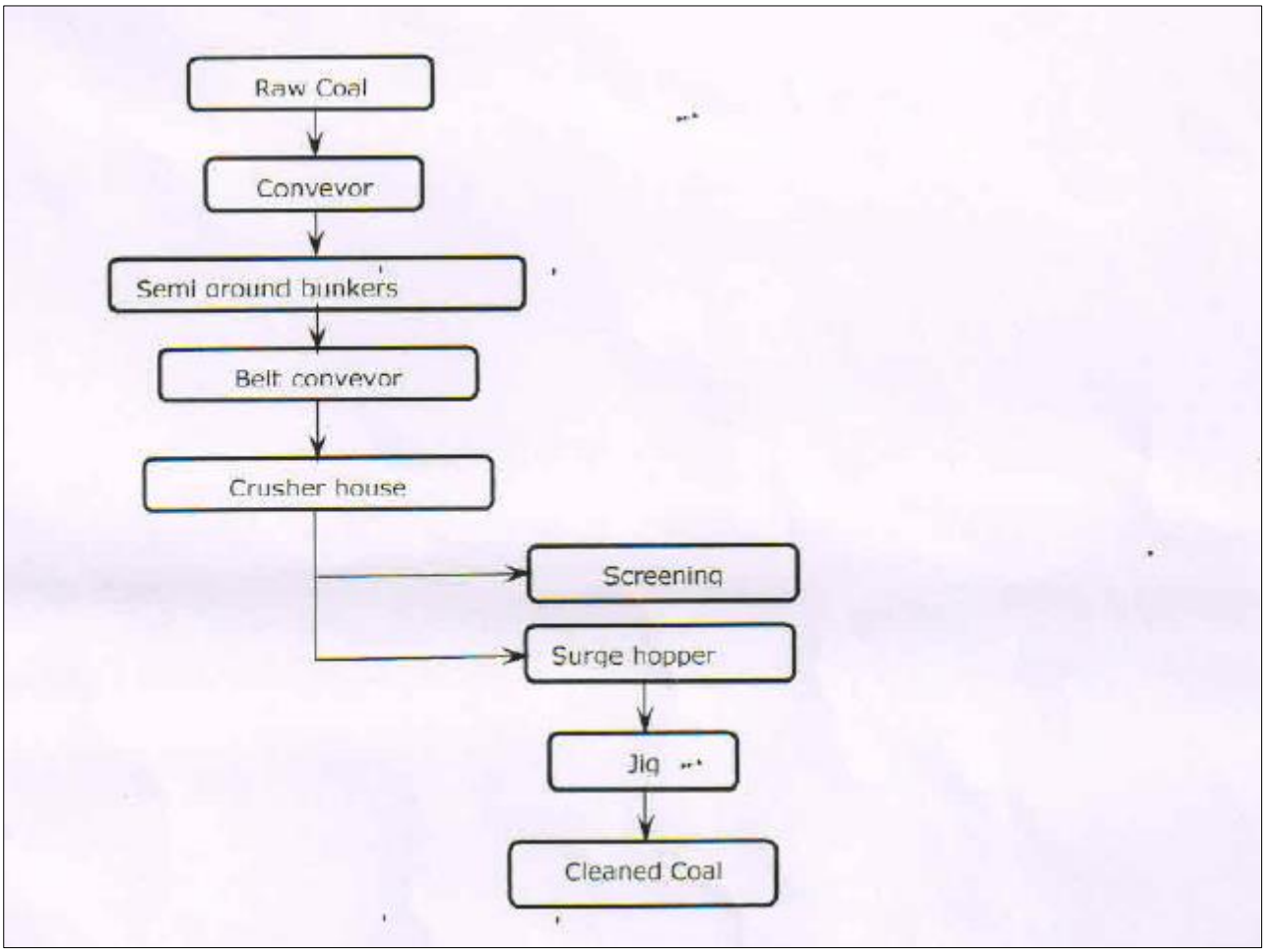


Figure 4: Process Flow

3.5.1 Raw Material & Supply of product.

Source of the raw material will be Chhal mines which is 24 KM from the project site through railways & Details of raw material required are given below:-

Raw material Required: - 4.80 MTPA

Final product will be supply to the following industries:-

1. Madhya Pradesh Power Limited.
2. SKS Power Generation Chhattisgarh Limited.
3. D.B .Power Coal based Power Project, Chhattisgarh.
4. R.K.M Powergen Pvt Ltd Chhattisgarh.

3.6 Safety Envisaged In the Project

Fire Protection Facilities: In order to combat any occurrence of fire in plant premises the following tire protection facilities have been envisaged for the various units of the plant.

Portable Fire Extinguishers: All plant units, office buildings, stores, laboratories etc will be provided with adequate number of portable fire extinguishers to be used as first aid fire appliances. The distribution and selection of extinguishers will be done in accordance with the requirement of IS: 2130-92.

Hydrant System: Internal hydrants will be provided at suitable locations and at different levels inside the major plant units. Yard hydrants will be provided normally along the road and in the close vicinity of the units to meet the additional requirement of water for existing fire.

3.8 Resource Optimisation

3.8.1 Water Requirement

It is required only for washing purposed under industrial usage of the said unit. Total amount of makeup water required for operation of plant is about 1500 KL day this is inclusive of Washing, dust suppression and Domestic Purposes. All the effluent generated shall be treated through ETP of appropriate size and treated water will be utilized for dust suppression.

3.8.2 Power Requirement

Total requirement of power for the unit is 1.0 MW. The total power demand of the plant will be met from Chhattisgarh State Electricity Board Grid.

3.9 Quantity of Wastes to Be Generated (Liquid and Solid) and Scheme for Their Management/Disposal

3.9.1 Air Environment – Mitigation Measures

Sources of air pollution and control measures

Section	Source of Pollution	Pollutants	Air pollution control Measures
Raw material handling & sizing section	Pulverizer for grinding of raw material	Dust and particulate matter	Dust catcher.

Over all Plant area	Open space	Fugitive dust emission	Pucca roads within the premises, water sprinkling in dusty areas and green belt/plantation to arrest the fugitive dust emission.

- The pollution control equipment will regularly be operated and maintained.
- Fugitive emission will be regularly monitored and suitable action like cleaning, water sprinkling will be taken.

3.9.2 Waste water Generation, Solid Waste & Management

Closed circuit water system will be adopted in the proposed Coal washery unit. Hence there will not be any wastewater generation from the process. However only wastewater generated will be sanitary wastewater i.e. 5.0 m3/ day; which will be treated through Septic Tanks followed soak pits.

Hazardous waste: There is no hazardous waste from the plant except for used oil with approx quantity of 100 Liters per annum, during course of production of and is also saleable to the registered recyclers in the market.

Washery reject will be generated from the proposed coal washery. These rejects have considerable amount of carbonaceous material hence the same will be utilized as blend with coal to make fuel mix for generation of power and will be sold-out to nearby Power Generating units.

3.9.4 Noise Levels

There is no major noise prone process except equipment for crushing, milling, separators, compressors etc. The noise control will be done in three ways namely:

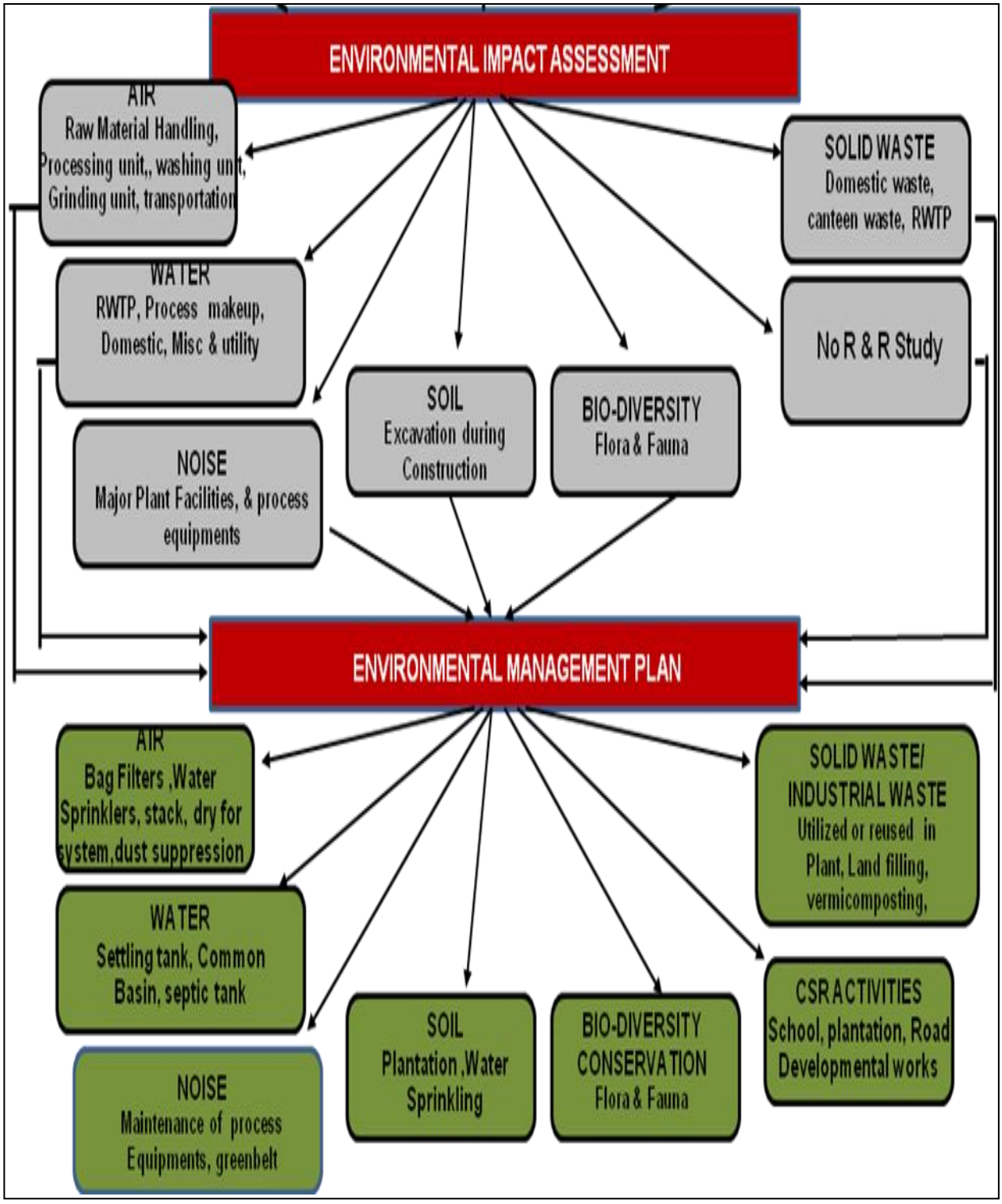
- By selecting low noise generating equipment, which would have below 75 dBA at 1m distance. This is taken care at the equipment design stage.
- By isolating the noise unit from the working personnel's continuous exposure by providing acoustic aids for plant personnel.
- By administrative & safety measures, providing noise level monitoring, remedial measures, providing noise safety appliances.

3.9.5 Green Belt Development

The Greenbelt & plantation will be developed in 4.65 Hect. of plot area so as to mitigate the effects of emissions from the plant. The treated waste water from the plant will be utilized for the greenbelt development. Roads for vehicular movement will be paved and adequate mitigation measures will be provided to prevent fugitive emissions. Tree density of 800-1200 trees per hectare with local board leaf specification will be planted.

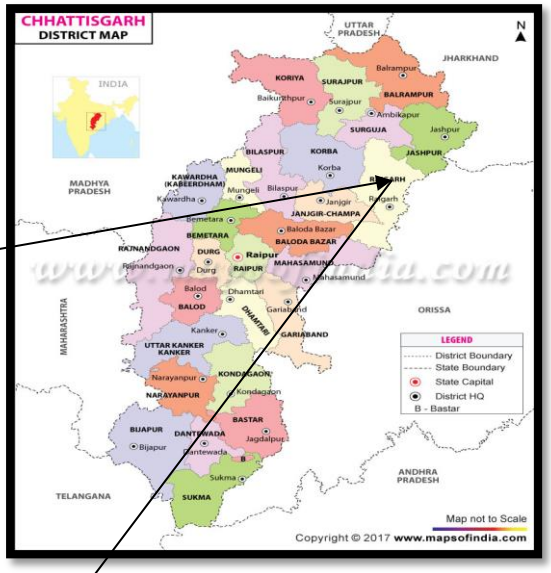
3.10 Schematic Representations of the Feasibility Drawing Which Give Information of EIA Purpose.

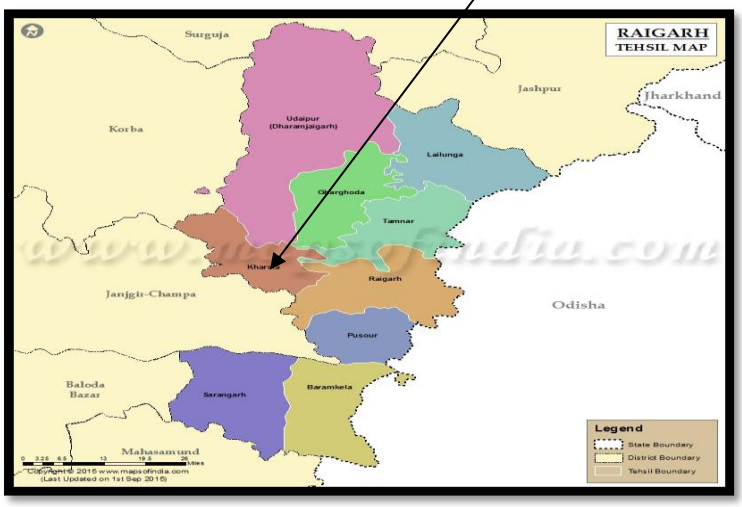
Environment Impact Assessment and Environment Management Plan is an important tool in achieving the sustainable development of the project. The process is depicted below:



CHAPTER-04

SITE ANALYSIS





4.1 Connectivity

The site is within has all the facilities for the proposed project. Also it has good connectivity with the rail and road.

- **Road Connectivity:** National Highway-216 is at 24.67 km towards ESE direction and SH-1 is approx. 19.60 km towards East direction from project site.
- **Rail Connectivity:** The nearest railway station is Robertson Railway Station at 0.5 Km towards East direction and Kharsia railway station at a distance of 6.40 km from the proposed project site towards West.
- **Airport:** Nearest airport to the project site is Swami Vivekananda International Airport, Raipur at distance of 172.46 KM towards WSW direction from the project site.
- **Approach Road:** Project site is attached to Kharsia Main Road directly.

4.2 Land Use

Present is more or less flat terrain. Present land use of the proposed site is Barren however few single crop patches are involve.

4.3 Existing Land Use Pattern

Acquired 14.119 Hect. land is barren land and no forest/ Government is involved within the site.

4.4 Existing Infrastructure

All required infrastructure is prevailing in the site.

4.5 Soil Classification

The soils in the area are generally of clayey loam types with sandy loam soil in some areas.The soils have been classified as Ustocherpts/ Ustorthents/ Rhodustalfs/ Haplustalfs/Haplusterts, as per pedological taxonomy.

4.6 Climatic data from secondary sources

The climatic condition of this area is semi-arid. The maximum temperature goes upto 48ºC during summer in the month of May and the minimum temperature goes down to 4.0ºC during winter in the month of January-February. The winds in the area are light to moderate during summer and winter. The rainfall of the district is 790.6 mm to 1182.0 mm. Generally light to moderate winds prevails throughout the year. Winds were light and moderate particularly during the morning hours. While during the afternoon hours the winds were stronger. A review of the wind rose diagram shows that predominant winds are mostly from S, SW, NW, WNW, W, NE and N directions followed by NW direction.

4.5 Nearby Industries

SL. No	Name of the Industry	Distance	Direction
1	SKS Power Generation Chhattisgarh Limited	9 Km	NE
2	Athena Chhattisgarh Power Ltd	19 Km	SW
3	DB Power Plant Ltd.	13 Km	SE
4	Skylite Power Plant	3.85 Km	ESE
5	Monnet Ispat And Energy Limited	8.3 Km	E
6	Athena Chhattisgarh Power Ltd	9 Km	SE
7	R.K.M Powergen Pvt Ltd	11.73 Km	SW
8	Scania Steel And Power Ltd	48.1 Km	ENE
9	Maa Kali Alloys Udyo Pvt Ltd	39.9 Km	E
10	NSPL Nalwa Steel & Power Ltd.	21 Km	E

CHAPTER – 05
PLANNING BRIEF

5.1 Planning Concept

It is proposed to install 4.0 MTPA wet type of coal washery at Village: Kunkuni, Tehsil: Kharsia, District: Raigarh Chhattisgarh.

5.2 Employment & Population Projection

There are no major human settlements in the close vicinity of the project site. The manpower requirement will be sourced from the local areas to the extent possible; hence not much of settlement of outside people in the area. However population concentration may increase around the project site due to increase in ancillary activities.

Direct Employment	**50**
Indirect Employment	**50**
Total	**100**

5.3 Land Use Planning

Proposed approximate use of Land after installation:

SL No	Type Of Use	Area (Hect)
1	Plant Area	9.469
3	Green Belt & Open area	4.65
Total		**14.119 Hect**

5.5 AMENITIES / FACILITIES

The following facilities shall be provided at the project site:

- Canteen and welfare center
- Toilets and Rest rooms
- Car parks and cycle / scooter stands
- Time and security offices
- First aid and fire fighting station

CHAPTER – 06
PROPOSED INFRASTRUCTURE

6.1 Processing Area – industrial use

The processing area will comprise of various plant facilities within the premises they are – Raw material handling & processing area, reactor area, & product handling area.

6.2 Residential Area (Non-Processing Area)

There is no proposal of any residential colony as the required manpower will be sourced from local populace. Few highly skilled posts may be filled from outsiders for whom houses will be leased in nearby residential area. Non-processing area will comprise of facilities within the premises such as – administrative block, road & pollution control equipment area etc. Other social infrastructure like housing, schooling and medical facilities area already developed in nearby area, hence, no residential colony/township is envisaged for employees.

6.3 Green Belt

A greenbelt development plan will be prepared and implemented along with the implementation of project. Total green belt & plantation area shall be 4.65 Hect. The main objective of the greenbelt is to provide a barrier between the plant and the surrounding areas. Tree density of 800-1200 trees per hectare with local board leaf specification will be planted. The species selection will depend upon type of soil and local species with good survival rate will be selected

6.4 Socio-Economic Benefits & Social Infrastructure

This is an industrial land with adequate facilities. The existing infrastructure facility is adequate in the proposed project site. The social infrastructure like school, college, temples and play ground already exist in this area. The above infrastructure facilities need no further development for the project nor is any major change in the infrastructure envisaged due to the project. Only direct and indirect employment generation is envisaged.

6.5 Sewage System

Domestic effluent collected through toilet blocks and other areas will be collected through well designed sewer network and send to Septic tanks followed by soak pits. No effluent will be left-out after Soak pits.

6.6 Industrial Waste Management

It is proposed to install one effluent treatment plant which will be the part of process as the effluent generated contains media solution; hence it is prime objective to recover the media solution to maximum possible extent. This treatment plant comprising of settling pond and thickener and clear water will be recycled back to process area as raw water.

6.8 Solid Waste Management

Washery reject will be generated from the proposed coal washery. These rejects have considerable amount of carbonaceous material hence the same will be utilized as blend with coal to make fuel mix for generation of power and will be sold-out to nearby Power Generating units. Tailing will be generated from the proposed iron ore beneficiation unit. These rejects will be given to nearby cement plant and ceramic industries.

CHAPTER – 07
REHABILITATION AND RESETTLEMENT (R & R) PLAN

7.1 Policy to Be Adopted for R & R Plan With Respect To Project - Not Required

There is no displacement of any houses, habitation or livestock. Thus the project does not require any R & R plan.

CHAPTER – 08
PROJECT SCHEDULE & COST ESTIMATES

8.1 Project Schedule

In this industry, any one of the following three alternate modes of project execution will be adopted:

- Turnkey
- Semi Turnkey
- Packaged procurement mode

Statutory Clearances

The proposed project will require various statutory approvals and clearances from various authorities of the Government. Clearances required for the proposed project are identified and necessary action initiated to obtain the same.

Project Schedule

It is envisaged that total project will be completed within a period of 6-12 months from `Go-ahead'. Land acquisition on lease is completed. The external agencies such as consultant, machinery suppliers, contractors for civil construction and equipment will be selected well in advance. An effective project team has been formulated with Director as its leader.

8.2 Project Cost

An indicative estimated capital cost of the proposed Plant is **Rs. 28 Crore**.

CHAPTER – 09
ANALYSIS OF PROPOSAL

The proposed Plant has been promoted by **M/s Vedanta Washery & Logistic Solutions Pvt. Ltd.** The Company has proposed to set-up Coal Washery with an Installed Capacity 4.0 MTPA.The unit is proposed to be located at Village: Kunkuni, Tehsil — Kharsia, Distt : Raigarh. The place Rigarh is adjoining to well-developed industrial area at Raigarh. were all infrastructure facilities are available. It provides power, raw materials, labour, smooth transportation as well centralised location. It is situated on Main National Highway, Railway Line and feeding to adjoining states. The location seems ideal for the type of unit proposed.

The promoters are experienced entrepreneurs and they are engaged in. High Class Minerals, Coal Supply, Power Plant, Rice Mill industry, Transporter, hospitality Industry and Real Estate Developer. The family is well known and resourceful with good financial background.

In view of all this fact it is found that the proposed unit has all the desired characteristics of a viable unit, the financial analysis as per details given in financial annexure - shows good profitability, perfect technical feasibility, the commercial studies established very good demand. The total cost of project as Rs. 28 Crores is purpose to be met by Promoters. As per analysis, the overall financial, liquidity and profitability parameters of the project are considered reasonable, achievable and satisfactory.

Therefore, the consultant. recommend the unit as a financially viable & technically feasible one and it is therefore accepted that all necessary cooperation shall be extended by all concern to make the unit a successful one. It deserves support from all concern. We wish the promoters great success and prosperity, towards a successful implementation of the project.

Financial & Social Benefits

With the implementation of the proposed project, the socio-economic status of the local people will improve substantially. The land rates in the area will improve in the nearby areas due to the proposed activity. This will help in upliftment of the social status of the people in the area. Educational institutions will also come-up and will lead to improvement of educational status of the people in the area. Primary health centre will also be developed by us and the medical facilities will certainly improve due to the proposed project.

Socio-Economic Developmental Activities

The management is committed to uplift the standards of living of the villagers by undertaking following activities / responsibilities as the part of Corporate Social Responsibility.

- Health & hygiene
- Drinking water
- Education for poor

- Village roads
- Lighting

Health & Hygiene.

- Personal and domestic hygiene,
- Maintaining clean neighborhood,
- Weekly health camps offering free-checkup & medicines
- Ambulance services
- Education & drug de-addiction, aids.

Supporting Education.

- Providing books to all poor children,
- Conducting annual sports festival in the village schools,
- Providing amenities like fans, lavatories,
- Maintain play ground etc.