

Form - I

of
Proposed 2.5 MTPA (Phase I – 1.25 MTPA & Phase II – 1.25
MTPA) Coal Washery
at
Village – Lokhandi & Jonki, Teshil – Takhatpur,
District - Bilaspur, State - Chhattisgarh

For

M/s Bhatia Energy & Coal Benefication Pvt. Ltd.
Village – Lokhandi & Jonki, Teshil – Takhatpur,
District - Bilaspur, C.G. (India)

Prepared by



QCI-NABET Accredited EIA Consultant for Coal Washeries (Sector 6)
MoEF&CC (GOI) and NABL Recognized Laboratory
ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007
60, Bajiprabhu Nagar, Nagpur - 440 033, MS
Lab. & Consultancy: FP-34, 35, Food Park,
MIDC, Butibori, Nagpur – 441122
Ph.: (0712) 2242077, 9373287475
Email: info@anacon.in, ngp@anacon.in
website: www.anaconlaboratories.com

July - 2017

FORM – I

I. Basic Information		
Sl. No.	Item	Details
1	Name of the project	Proposed 2.5 MTPA Coal Washery (Wet process) of M/s Bhatia Energy & Coal Beneficiation Pvt. Ltd.
2	S. No in the schedule	2(a)
3	Proposed capacity/ area /length/tonnage to be handled/command area/lease area/number of well to be drilled	Proposed washing capacity – 2.5 MTPA Phase – I = 1.25 MTPA Phase – II = 1.25 MTPA Total land envisaged for the proposed project is 39.71 Acres (out of which 15.47 Acres is under possession of Management and remaining 24.24 Acre is lease hold area from Govt. of Chhattisgarh which is in advanced stage of possession)
4	New/Expansion/Modernization	New
5	Existing Capacity /Area etc.	Not applicable as newly proposed.
6	Category of the project i.e. 'A' or 'B'	'A'
7	Does it attract the general condition? If yes, please specify.	No
8	Does it attract the specific condition? If yes, please specify.	No
9	Location	The proposed coal washery will be located at Khasara No. 7/2, 7/3, 7/4, 7/5, 8/1 & 8/2, 9,4/1,14,4/2,4/3,4/4,6,10,12/2,12/3,13/2,287/1, 287/2,287/3/287/4,287/16 and 303 in Village: Lokhandi and Jonki, Tehsil: Takhatpur, Dist: Bilaspur, Chhattisgarh. The proposed coal washery falls in the Survey of India Toposheet No. 64J/4. The geographical location of the proposed coal washery are given below : 22°08'01.33"N , 82°05'40.23"E
	Plot/Survey/Khasara No.	7/2, 7/3, 7/4, 7/5, 8/1 & 8/2, 9,4/1,14,4/2,4/3,4/4,6,10,12/2,12/3,13/2,287/1, 287/2,287/3/287/4,287/16 and 303
	Village	Lokhandi & Jonki
	Tehsil	Takhatpur
	District	Bilaspur
	State	Chhattisgarh

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10	Nearest railway station / airport along with distance in kms	Nearest Railway Station: Uslapur Railway station – 2.5 Km Nearest Airport: Raipur Airport ~ 120 km, SSW
11	Nearest Town, city, District Headquarters along with distance in kms.	Nearest town: Bilaspur ~ 5.50 Km, ESE Nearest City: Bilaspur ~ 5.50 Km, ESE District Headquarter: Bilaspur ~ 7.50 Km, ESE
12	Village Panchayats, Zilla Parishad, Municipal corporation, Local body (complete postal addresses with telephone nos. to be given)	Village Panchayat : Gram Panchayat - Lokhandi, Village- Lokhandi & Jonki, Tehsil-Takhatpur, District – Bilaspur, Chhattisgarh Zila Parishad : C. E. O., Zila Panchayat Bilaspur, Dist.- Bilaspur, Chhattisgarh. Tel : 07752-223993 Municipal Corporation : Commissioner, Municipal Corporation, Vikas Bhawan, Nehru Chowk, Bilaspur, Chhattisgarh-495001 Tel: 07752-222642 Email : commissionerbilaspur@yahoo.com
13	Name of the applicant	Bhatia Energy & Coal Beneficiation Pvt. Ltd.
14	Registered address	Bhatia Energy & Coal Beneficiation Pvt. Ltd. Next to IDBI Bank, Agrasen Chowk, Bilaspur, Chhattisgarh, PIN: 495001
15	Address of correspondence:	
	Name	Shri. Tejinder Singh Bhatia
	Designation (owner/partner/CEO)	Director
	Address	Bhatia Energy & Coal Beneficiation Pvt. Ltd. Next to IDBI Bank, Agrasen Chowk, Bilaspur, Chhattisgarh.
	Pin code	495001
	e-mail	bhatiacoaltradelink@yahoo.com
	Telephone No.	07752-400006
	Fax No.	07752-400006
16	Details of alternative sites examined, if any. Location of these sites should be shown on topo sheet.	Three sites were examined: Site 1: Village Lokhandi & Jonki, Tehsil Takhatpur, District Bilaspur, Chhattisgarh Site 2: Village Deori Kalan, Tehsil Takhatpur, District Bilaspur, Chhattisgarh Site 3: Village Jonki, Tehsil Takhatpur, District Bilaspur, Chhattisgarh Site 1 is finalized because :

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		<ul style="list-style-type: none"> • Total land envisaged for the proposed project is 39.71 Acres (out of which 15.47 Acres is under possession of Management and remaining 24.24 Acre is lease hold area from Govt. of Chhattisgarh which is in advanced stage of possession) and coal crushing unit has already been set up in the same land and furthermore the same land has been utilized for the industrial purpose. • Availability of Barren land. • At very short distance from source of raw material i.e. SECL coal mines • Remoteness from sensitive area like forest, water body and habitation. • Nearby roadway facility for transportation of raw material and finished product. • Availability of railway siding at short distance as compared to other alternate sites. • Very less road transport is required for transportation of raw material from nearby coal mine.
17	Interlinked projects	None
18	Whether separate application of interlinked project has been submitted?	Not Applicable
19	If yes, date of submission	Not Applicable
20	If no, reason	Not Applicable
21	<p>Whether the proposal involves approval/clearance under: If yes, details of the same and their status to be given.</p> <p>(a) The Forest (conservation) Act, 1980?</p> <p>(b) The Wildlife (Protection) Act, 1972?</p> <p>(c) The C.R.Z Notification, 1991?</p>	<p>Not Applicable</p> <p>Not Applicable</p> <p>Not Applicable</p>
22	Whether there is any government order/policy relevant/ relating to the site?	The existing coal crushing unit already in place of owned land by the company
23	Forest land involved (hectares)	Nil
24	Whether there is any litigation pending against the project and /or landing which the project is	No litigation is pending in any court of law.

	proposed to be set up? (a) Name of the court (b) Case No. (c) Order/directions of the court, if any and its relevance with the proposed project	
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(II) Activity

1. Construction, operation or decommissioning of the Project involving actions which will cause physical changes in the locality (topography, land use, changes in water bodies etc.)

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	The land requirement for proposed 2.5 MTPA (Phase – I = 1.25 MTPA & Phase – II = 1.25 MTPA) Total land envisaged for the proposed project is 39.71 Acres (out of which 15.47 Acres is under possession of Management and remaining 24.24 Acre is lease hold area from Govt. of Chhattisgarh which is in advanced stage of possession) of M/s Bhatia Energy & Coal Beneficiation Pvt. Ltd. for establishment of Coal washery. The land will be developed for industrial use Permanently. Thick green belt will be developed around the plant premises.
1.2	Clearance of existing land, vegetation and buildings?	Yes	Clearance of existing land cover would be done as per the requirement for grading/ leveling for the project site to construct proposed coal washery and associated utility, infrastructure. Clearance of vegetation would be negligible and no clearance of any building/structures required in view of land identified for the project site at present is devoid of any residences or other structures and consisting of scanty vegetation.
1.3	Creation of new land uses?	Yes	There will be creation of new land use due to construction of proposed Coal Washery. This will be achieved by proper landscaping/ plantation around the boundary walls at suitable patches within the boundary complex.
1.4	Pre-construction	Yes	Soil testing is envisaged for safe design of civil

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	investigations e.g. bore holes, soil testing?		and engineering structures.
1.5	Construction works?	Yes	Following construction works will be undertaken within the proposed site of washery: i) Raw coal handling and coal washing section. ii) Conveyor system iii) Service buildings, store and workshop iv) Thickeners, settling tanks and water reservoirs v) Drains, roads and culverts vi) Canteen, parking lot, etc
1.6	Demolition works?	No	The land is free from any structure and, therefore, no demolition work is involved in construction and operation of the washery.
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	Temporary sheds will be made with all minimum required facilities like water, power, fuel and adequate sanitary system for construction workers.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	Administrative building, rest shelter, canteen etc. and washery structure will be constructed.
1.9	Underground works including mining or tunneling?	No	Not applicable
1.10	Reclamation works?	No	No reclamation required. It is proposed to develop green belts all along the boundary for a width of 5m. In this green belt, local tree species with thick foliage cover will be planted. In between the tree species, bush and shrub varieties will be planted. The proposed area for green belt will be 33% of the total area for the proposed coal Washery.
1.11	Dredging?	No	Not applicable
1.12	Offshore structures?	No	Not applicable
1.13	Production and manufacturing processes?	Yes	<ul style="list-style-type: none"> ▪ ROM coal from ramp will be fed to a Feed Hopper. ▪ From the ground hopper the raw coal shall be fed to a Rotary Breaker for primary sizing of coal at 200 mm. ▪ The primary sized coal shall then be subjected to close circuit crushing and

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			<p>screening and finally sized to minus 50 mm. The sized coal shall be taken to a series of storage bunker.</p> <ul style="list-style-type: none"> Washed coal is forwarded to washed coal bunker and reject coal is forwarded to reject coal bunker. Slurry is pumped to a Thickener tank and further treated at Hydro-cyclone. Finally it is pumped to Settling Pond. Fresh water from settling pond and Belt Press will again be fed to system for process of coal. 				
1.14	Facilities for storage of goods or materials?	Yes	<p>The following four types of storage facilities will be provided:</p> <p>i) <i>Raw Coal Storage</i> – The proposed washery is envisaged to have raw coal receiving & storage section.</p> <p>ii) <i>Washed Coal Storage</i> – Washed coal from the plant will be transported by railway or by road in covered trucks directly to the end users.</p> <p>iii) <i>Reject Storage</i></p> <p>iv) <i>Storage for Spares and consumables</i> – Store building for storage of all materials i.e. electrical & mechanical equipments spares belts, media, structural items etc. will be provided at the washery site.</p>				
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	<table border="1"> <tr> <td>Solid Waste (Coal Rejects)</td> <td>The solid waste i.e. Rejects generated during the washing process shall be stacked separately in the storage yard and shall be disposed off to the nearby power plants.</td> </tr> <tr> <td>Liquid effluent</td> <td>Suitable treatment scheme of slurry/effluent and excess water/ rain water so that there is no leaching/ discharge of effluent or water outside the washery premises and the effluent treatment plant shall be operated in closed circuit with zero outside discharge and it will be reused in coal washing process.</td> </tr> </table>	Solid Waste (Coal Rejects)	The solid waste i.e. Rejects generated during the washing process shall be stacked separately in the storage yard and shall be disposed off to the nearby power plants.	Liquid effluent	Suitable treatment scheme of slurry/effluent and excess water/ rain water so that there is no leaching/ discharge of effluent or water outside the washery premises and the effluent treatment plant shall be operated in closed circuit with zero outside discharge and it will be reused in coal washing process.
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Liquid effluent	Suitable treatment scheme of slurry/effluent and excess water/ rain water so that there is no leaching/ discharge of effluent or water outside the washery premises and the effluent treatment plant shall be operated in closed circuit with zero outside discharge and it will be reused in coal washing process.						

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1.16	Facilities for long term housing of operational workers?	No	Not proposed. Mostly local persons will be given employment. Skilled staff will come from nearby towns.
1.17	New road, rail or sea traffic during construction or operation?	Yes	Transport vehicles for construction material during construction phase and traffic for transportation of raw coal from mines to plant and washed coal from plant to users location.
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	Not applicable. Existing road / rail facilities are sufficient to cater the transportation requirement for the proposed plant.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Not applicable
1.20	New or diverted transmission lines or pipelines?	No	Not applicable
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	No change in the hydrology of water course or aquifers is envisaged.
1.22	Stream crossings?	No	Not applicable
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	Total daily water requirement in the proposed coal washery is about 13,500 KLD. However, most of the water from washed coal slurry will be recovered and reused in the plant. Daily make up water requirement in the plant will be about 1,150 KLD, which will be drawn from bore well sources.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	There is no surface water body within the proposed project site. Surface run-off from the washery premises will be collected in settling pond and will be used for dust suppression and plantation in the washery complex.
1.25	Transport of personnel or materials for construction,	Yes	Transport of personal and materials for construction shall be done through the existing

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	operation or decommissioning?		road network. During operation phase the raw coal will be transported upto coal washery through existing road. The washed coal will be transported to the end users mainly via existing road network. The road network is adequate to take the slight increase in the traffic load. Transport of men and material during construction and operation phase will be by existing roads.
1.26	Long-term dismantling or decommissioning or restoration works?	No	Not applicable
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	Not applicable
1.28	Influx of people to an area in either temporarily or permanently?	Yes	Maximum manpower requirement for operation and maintenance of washery – from raw coal receiving arrangement to delivery of washed coal will be met from nearby villages and town but some skilled manpower may have to be arranged from places other than nearby villages and town. Therefore, there will be some influx of people in and around washery site till the operational life of washery.
1.29	Introduction of alien species?	No	Green belt development/ plantation shall be mainly confined to project site and native species will be given preference.
1.30	Loss of native species or genetic diversity?	No	There is no any chance of loss of native species or genetic diversity due to proposed coal washery.
1.31	Any other actions?	No	Not applicable

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S. No.	Information/checklist confirmation	Yes /No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
2.1	Land especially	Yes	The total land area is 39.71 acres will be used for

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	undeveloped or agricultural land (ha)		proposed Coal Washery. The physical changes in respect of topography and land use, though permanent, shall be compensated by developing green belt and afforestation activities in and around the project site. The land is already owned by the company for establishing coal washery.
2.2	Water (expected source & competing users) unit: KLPD	Yes	Total daily water requirement in the proposed coal washery is about 13,500 KLD. However, most of the water from washed coal slurry will be recovered and reused in the plant. Daily make up water requirement in the plant will be about 1,150 KLD, which will be drawn from borewell sources.
2.3	Minerals (MT) Raw Coal	Yes	2.5 MTPA raw coal will be washed in the washery. Raw coal will be sourced from different mine of SECL.
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)	Yes	The Requirement of the building construction material (Stone, Sand and Cement, steel, etc) will be met through local supplier. These materials will be purchased as per prevailing market rate.
2.5	Forests and timber (source – MT)	No	Not Applicable
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	Power required : 5.0 MVA Source: CSEB / D.G. Stand by. Fuel used : HSD (0.25 TPD) Source: Authorized Fuel distributors
2.7	Any other natural resources (use appropriate standard units)	No	Not Applicable

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the Environment or raise concerns about actual or perceived risks to human health.

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
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3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	No	Usage of hazardous material is not envisaged.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	No such substances or material will be used which will cause changes in occurrence of disease or disease vectors. In spite of this fact, health of workers will be checked regularly under periodical medical examination. Proper health and hygiene conditions and proper housekeeping will be maintained in the plant premises and surrounding area.
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	The proposed project will result into direct and indirect employment opportunities to the local population and also in development of the area in the form of improved roads and infrastructure facilities. These will improve the living standard/conditions of the people.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	Necessary environmental pollution control measures will be adopted to avoid impacts on the vulnerable group as all the safeguards will be undertaken by the project.
3.5	Any other causes	No	Not applicable

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S. No.	Information/Checklist confirmation	Yes /No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
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4.1	Spoil, overburden or mine wastes	No	Not applicable
4.2	Municipal waste (domestic and or commercial wastes)	Yes	Municipal waste from site office and canteen etc will be used for composting and the compost will be used as manure for plantation.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	No	Not applicable
4.4	Other industrial process wastes	Yes	0.85 MTPA Washery reject will be the main solid waste and it will be sold to nearby CFBC power plant.
4.5	Surplus product	No	Not applicable
4.6	Sewage sludge or other sludge from effluent treatment	Yes	Washery effluent will be generated and it will be treated with sludge thickener. Treated wastewater will be recycled in the process. Zero discharge norms will be adopted. Thickener sludge will be stored separately and disposed as per norms.
4.7	Construction or demolition wastes	Yes	No demolition waste will be generated during construction of the washery. Small quantity of construction waste will be generated, which will be used for land filling and development of roads.
4.8	Redundant machinery or equipment	No	Damaged spare parts of washery equipment and framed civil structures will be replaced and will be sold to authorised recycling vendors.
4.9	Contaminated soils or other materials	No	Not applicable
4.10	Agricultural wastes	No	Not applicable
4.11	Other solid wastes	No	Not applicable

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
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5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	No	Combustion is not involved in coal washing process. Operation of pay loader/tipper may generate SO ₂ , NO _x , etc. but will be controlled within prescribed limits.
5.2	Emissions from production processes	Yes	Particulate matter will be generated during crushing and screening operation. However water sprinkler will be provided at the crushing point.
5.3	Emissions from materials handling including storage or transport	Yes	Particulate matter will be generated at ROM coal unloading points, raw coal handling section at conveyor transfer points, crushers and screens besides pay loader operation. Suitable control measures like water sprinkling, enclosures, etc will be provided for minimizing the emissions.
5.4	Emissions from construction activities including plant and equipment	No	Negligible amount of particulate matter and vehicular emission will be generated during construction activities.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Dust emission due to coal handling & transport. Domestic effluent will be disposed off in septic tanks and soak pits. There is no odor causing material in the coal washing process.
5.6	Emissions from incineration of waste	No	Not applicable
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Not applicable
5.8	Emissions from any other sources	No	Not applicable

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	Noise will be generated due to operation of Crushers, screens, electric motors, air compressors, pumps & other machineries. The equipment will have suitable noise and vibration abatement system to keep the

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			noise level within the permissible limits.
6.2	From industrial or similar processes	Yes	Noise generating sources will be coal crusher and other activity. Necessary noise control measures shall be taken as part of EMP
6.3	From construction or demolition	Yes	Noise will be generated during plant construction stage. Regular maintenance of the equipment will help in reducing these noise levels. No demolition work is envisaged.
6.4	From blasting or piling	Yes	No blasting will be done. Piling will be done and there will be some noise and vibration from this. This will be negligible.
6.5	From construction or operational traffic	Yes	The noise from equipment's used for construction and from the traffic is envisaged. Regular maintenance of the equipment will help in reducing these noise levels.
6.6	From lighting or cooling systems	No	Not applicable
6.7	From any other sources	No	Not applicable

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	No	Not applicable
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	Waste water from Washery will be treated in thickeners and will be recycled back for coal washing. Domestic effluent will be discharged in septic tank followed by soak pit system. The Washery will be designed to operate on zero effluent discharge.
7.3	By deposition of pollutants emitted to air into the land or into water	No	Covered transport of raw and washed coal will be practiced. Negligible quantity of dust containing coal particles will be escaped to

			atmosphere. This will not cause any contamination of land or water bodies.
7.4	From any other sources	No	Not applicable
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	Not applicable

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	Yes	Risk of fire in coal stacks or fuel oils, electrical short circuit, etc. Adequate fire extinguishers of suitable types will be provided at strategic locations in the plant premises. Necessary Risk assessment & Disaster Management Plan will be prepared and implemented in the plant.
8.2	From any other causes	No	Not applicable
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	Not Applicable Seismically, this area is categorized under Zone-III as per IS-1893 (Part 1)-2002.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting Facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:		Economic growth associated with coal washing activity leads to semi urban like development of ancillary and supporting industries and other related activities.

Application Form I for Proposed (Phase I – 1.25 MTPA + Phase II – 1.25 MTPA) 2.5 MTPA Coal Washery at Village Lokhandi & Jonki, Teshil – Takhatpur, District - Bilaspur, C.G. (India) M/s Bhatia Energy & Coal Benefication Pvt. Ltd.

	<ul style="list-style-type: none"> Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) Housing development Extractive industries Supply industries Other 	<p>No</p> <p>Yes</p> <p>No</p> <p>Yes</p> <p>No</p>	<p>Existing infrastructure facility is sufficient for the proposed project.</p> <p>Additional houses may be constructed by local villagers for providing rented accommodation for plant employees.</p> <p>Not envisaged</p> <p>Shops, garages, eateries, etc may come up around the proposed plant site.</p> <p>Not Applicable</p>
9.2	Lead to after-use of the site, which could have an impact on the environment	No	No major impacts are envisaged.
9.3	Set a precedent for later developments	Yes	Ancillary industries would develop.
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	There are no other industries within 1 km of the proposed project site.

(III) Environmental Sensitivity

S. No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	None	None within the study area
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	None	None within the study area

Application Form I for Proposed (Phase I – 1.25 MTPA + Phase II – 1.25 MTPA) 2.5 MTPA Coal Washery at Village Lokhandi & Jonki, Teshil – Takhatpur, District - Bilaspur, C.G. (India) M/s Bhatia Energy & Coal Benefication Pvt. Ltd.

3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	None	None within study area
4	Inland, coastal, marine or underground waters	None	None within study area
5	State, National boundaries	None	None within study area
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	None	None within study area
7	Defence installations	None	None within study area
8	Densely populated or built-up area	Yes	Bilaspur
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	Primary health center and primary and higher secondary school is available.
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	None	None within study area
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None	None within study area.
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No	Not Applicable Seismically, this area is categorized under Zone-III as per IS-1893 (Part 1)-2002.

(IV) Proposed Terms of Reference for EIA studies

**Tentative terms of reference which will be addressed for the preparation of the EIA Report
Objective of the EIA study:**

In order to identify the environmental impacts due to construction and operation of the proposed project and associated facilities, a study will be undertaken to establish existing base line environmental conditions, predict impacts of the proposed project, suggest Environmental Management Plan and develop post project monitoring program.

The Terms of reference for conducting Rapid EIA study for the proposed project is described in the following sections.

Site Selection:

Conformity of the site with the prescribed guidelines in terms of distance Coastal Areas, Estuaries, Flood Plains of the Riverine systems, Transport/Communication System, Major Settlements etc had been considered. Critically polluted areas, Natural disaster prone areas, Ecologically sensitive areas had been avoided.

EIA Report:

Executive summary:

- Executive summary contains objective of the proposal, use of resources, justification, etc. In addition, it will provide a compilation of EIA report, EMP and the post-project monitoring plan in brief.

Project description:

- Justification for selecting the proposed unit size.
- Process description with process flow chart
- Land requirement for the project including break up of land requirement and its availability. Process and operation flow diagram.
- Quantity of fuel required, source and transportation, fuel linkage/copy of the MoU will be provided.
- Water requirement, Source, Water allocation letter form the competent authority will be provided.
- Water balance (water intake, use, wastewater generation) taking into account reuse and re-circulation of effluents.
- Details of rainwater harvesting scheme.

Environmental Baseline Status

The data for EIA study is proposed to be collected through field studies, literature review, and interaction with concerned departments. The study area for the EIA study shall be the area within the 10 km radius of the periphery of the land to be acquired for the project. The data/information on Environmental Baseline Status is to be collected as per the following paragraphs.

Land use

The information on Landuse pattern will be collected from the Revenue Department, census of India book, District Gazetteer, SOI toposheets and NRSC satellite imageries. The landuse pattern will be classified as follows:

- Forest land
- Un irrigated Land
- Cultivable land
- Waste land, Barren land
- Irrigated agricultural land
- Water bodies
- Mangroves
- Wet land, etc.

Based on the remote sensing data, GIS information and satellite imagery, a detailed land use map of the study area will be prepared.

Water Requirement & Source

The quantity of water required by the project at various stages will be estimated. The sources of water and waste disposal points shall be identified.

Water quality & Resources

- The surface and groundwater sampling will be done at various locations in the study area.
- Fields studies will be conducted for one season as a part of the EIA study.

Meteorology

As a part of the REIA study, a micro-meteorological station shall be set up near proposed project site. The parameters to be monitored shall include wind speed, wind direction, temperature, and relative humidity. The collected data shall be used for preparation of wind rose diagrams and air quality modeling.

Ambient Air Quality

An ambient air quality monitoring network will be designed for assessment of the baseline status of ambient air quality. The parameters to be monitored are given as below:

- PM 2.5
- PM 10
- Sulphur Dioxide (SO₂)
- Nitrogen Oxide (NO_x)
- Carbon Monoxide

The frequency of sampling shall be twice a week for complete one season. Ambient air quality monitoring is proposed to be conducted for one season.

Ambient Noise Levels

Equivalent continuous noise level (Leq) in and around the project area will be monitored. Noise readings will be taken every hour for 24 hours at each location. The monitoring will be done for one season as a part of EIA study.

Biological Environment

Primary field study will be conducted to identify and enlist existing flora and fauna observed in the 10 km radius study area of the project. As a part of the study, secondary information on flora and fauna of the area will be collected from State Forest Department.

The publications available in the form of maps and documents will also be collected and utilized. The data on the availability of various floral and faunal species in the study area will also be collected from Department of Forests and utilized.

Socio-economic Environment

The data on demographic profile in the study area will be collected using secondary data sources. The data to be collected is as follows:

- Demography
- Caste profile
- Literacy profile
- Occupational profile

Environmental Attributes and Frequency of Monitoring

Sr. No.	Attributes	Parameters	Frequency
1	Ambient Air Quality	RPM, PM2.5, SO ₂ , NO _x , CO	24 hourly samples twice a week for three months at 8 locations.
2	Meteorology	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall Non-instrumental observation Cloud cover, visibility and dust storms etc will be recorded.	Near proposed project site continuous for one season with hourly recording and secondary data also collected from the nearest IMD station.
3	Water quality	Physical, Chemical and Bacteriological parameters at 6 ground water and 3 surface water locations.	Grab samples will be collected once during study period.
4	Soil quality	Soil samples will be collected at 5 locations.	Grab samples will be collected once during study period.
5	Ecology	Existing terrestrial and aquatic flora and fauna in 10-	Through field studies once during study period. Secondary data will also

Application Form I for Proposed (Phase I – 1.25 MTPA + Phase II – 1.25 MTPA) 2.5 MTPA Coal Washery at Village Lokhandi & Jonki, Teshil – Takhatpur, District - Bilaspur, C.G. (India) M/s Bhatia Energy & Coal Benefication Pvt. Ltd.

Sr. No.	Attributes	Parameters	Frequency
		Km radius.	be collected.
6	Noise levels	Noise levels in dB (A) at 8 locations will be monitored.	Noise levels in and around the project area will be monitored every hour for 24 hours at each location once during study period.
7	Land use	Trend of land use change for different categories	Based on data collected from secondary sources like census abstracts of census of India 2011 and satellite imagery.
8	Geology	Geological history	Data will be collected from secondary sources
9	Hydro-geology	Drainage area and pattern, nature of streams, aquifer characteristics, recharge and discharge areas	Hydro-geological data based on primary and secondary sources
10	Socio-Economic aspects	Socio-economic characteristics: i.e. demographic structures, population dynamics, infrastructure resources, health status, economic resources.	The data on demographic profile in the study area will be collected from primary and secondary sources like census abstracts of census of India 2011

Anticipated Environmental Impacts:

With the knowledge of the baseline conditions, Project characteristics, the intensity of construction activities and current critical conditions, detailed projections shall be made of the influence of planned units of the project on all the areas of social, physical and biological environment in the area. Based on the predictions, the critically affected environmental parameters will be identified for the proposed project.

The impacts to be considered during project construction phase are listed as below:

S. No.	Environmental Attributes	Activities during Construction Phase	Activities during Operation Phase
1	Land Environment	Site preparation for construction of plant	Handling and storage of raw material and washed coal & rejects
2	Water Environment	Excavation for construction, Domestic effluent from site	Process effluent discharge, domestic effluent discharge, surface run-off from project area
3	Noise Environment	operation of construction machinery, raw material	crushing and screening operations, transport vehicles, DG sets, conveyor

		transport vehicles	belts, etc
4	Air Environment	excavation for construction, loose material handling, raw material transport	crushing and screening operations, stacking of coal, emissions from machinery and transport vehicles, etc
5	Ecology	site clearance for plant construction, roads, etc	Dust deposition from plant activities and mineral transport, noise & light from plant operations
6	Socio-economic Environment	influx of manpower for construction of plant, increase in demand for facilities	Improvement in infrastructure facilities, direct & secondary employment generation, CSR activities by project proponent

Environmental Management Plan (EMP)

Environmental Management Plan will be developed to selectively mitigate the adverse impacts due to the construction and operation of various activities planned for the proposed project. Any modification needed to make the project environmentally compatible will also be suggested. EMP will include all the aspects covered during impact assessment phase as mentioned above.

Analysis of alternatives

The analysis of alternatives considered during selection of project site and different alternatives considered during selection of the proposed coal washing process will be discussed in this chapter.

Risk Analysis and Disaster Management Plan

A detailed risk analysis study comprising of the following is to be conducted:

- Identification of potential accidents
- Consequence analysis for each identified failure will be conducted
- Assessment of what the calculated risk levels portray.

As a part of the study, a detailed onsite Disaster Management Plan shall be formulated as a part of the EIA Study.

Environmental Monitoring Program

- Appropriate monitoring network as per regulatory compliance will be suggested.

Conclusion and recommendations

Disclosure of Consultant

Declaration

I hereby given undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost.

Date:

Place:

Authorised Signatory

Shri Tejinder Singh Bhatia

(Director)

M/s Bhatia Energy & Coal Beneficiation Pvt. Ltd

Pre-Feasibility Report

of
Proposed 2.5 MTPA (Phase I – 1.25 MTPA & Phase II – 1.25
MTPA) Coal Washery
at
Village – Lokhandi & Jonki, Teshil – Takhatpur,
District - Bilaspur, State - Chhattisgarh

For

M/s Bhatia Energy & Coal Benefication Pvt. Ltd.
Village – Lokhandi & Jonki, Teshil – Takhatpur,
District - Bilaspur, C.G. (India)

Prepared by



QCI-NABET Accredited EIA Consultant for Coal Washeries (Sector 6)
MoEF&CC (GOI) and NABL Recognized Laboratory
ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007
60, Bajiprabhu Nagar, Nagpur - 440 033, MS
Lab. & Consultancy: FP-34, 35, Food Park,
MIDC, Butibori, Nagpur – 441122
Ph.: (0712) 2242077, 9373287475
Email: info@anacon.in, ngp@anacon.in
website: www.anaconlaboratories.com

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SUMMARY

Salient Features of the Project

The salient features of the project are given below:

S. No.	Particulars	Description
1	Name of the Project	Bhatia Energy and Coal Benefication Pvt. Ltd.
2	Location of the Plant	Village - Lokhandi & Jonki, Tehsil - Takhatpur District - Bilaspur, Chhattisgarh
3	Proposed Project	2.5 MTPA Phase I – 1.25 MTPA Phase II – 1.25 MTPA Wet Type Coal Washery
4	Washing Technology	Heavy media cyclone
5	Total water requirement	1150 cum/day
6	Total Power requirement & Source	5 MVA – Chhattisgarh State Electricity Board
7	Total Land	Total land envisaged for the proposed project is 39.71 Acres (out of which 15.47 Acres is under possession of Management and remaining 24.24 Acre is lease hold area from Govt. of Chhattisgarh which is in advanced stage of possession)
8	Working hours	3 shifts daily (effective 18 hr. a day) 320 days a years
9	Manpower	40 nos.
10	Cost of the project for the present proposal	INR 24.0 Crores

The proposed washery will receive coal from SECL and through trucks. The coal from will be directly taken into storage bunkers after primary crushing. The coal received from trucks is dumped on ground and then pushed into the same storage bunkers using dozers and conveyors. The primary crushed coal is reduced to < 50 mm in the close circuit secondary crushing & fed to washery plant. There is a storage capacity of the raw coal circuit about 12000T.

The new Washery is proposed to be located on vacant land in existing crushing and sizing unit having 1,80,000 TPA capacity at Lokhandi belonging to BECBPL. It is free from encumbrances and is without habitation or vegetation. The seismic activity and the

soil load bearing capability may also be checked by BECBPL based on the facilities shown in the proposed system Layout Drawings.

The proposed 400 TPH Washery project to feed Lokhandi washery of BECBPL with the facility of enhanced capacity. The Dumping and crushing system is envisaged receipt, unloading, one stage crushing, storage, reclaiming and conveying of (-) 50 mm size coal to the existing plant feed conveyor as shown in the enclosed material flow diagram. The proposed HM cyclone Washery requires an investment of Rs.24 crores (Rupees Twenty four Cores only) as basic cost with 10% variation based on the scope of work in this report. However, BECBPL shall include the additional facilities and infrastructure, contingencies and misc. expenses for entire plant to be setup as shown in the enclosed area layout (Annexure – I)

The project can be implemented between 12-14 months upon receiving statutory approval.

About the Proposed Project

Bhatia Energy and Coal Benefication Pvt. Ltd. proposed to install (Phase I - 1.25 MTPA Phase II - 1.25 MTPA) 2.5 MTPA wet type Coal washery at Lokhandi & Jonki Village, Takhatpur Tehsil, Bilaspur District, Chhattisgarh. Total land envisaged for the proposed project is 39.71 Acres (out of which 15.47 Acres is under possession of Management and remaining 24.24 Acre is lease hold area from Govt. of Chhattisgarh which is in advanced stage of possession) Khasra no. of the total land are - 7/2, 7/3, 7/4, 7/5, 8/1 & 8/2, 9,4/1,14,4/2,4/3,4/4,6,10,12/2,12/3,13/2,287/1, 287/2,287/3/287/4,287/16 and 303.

Total project cost envisaged for the proposed project is INR 24.0 Crores.

1.0 INTRODUCTION OF THE PROJECT / BACKGROUND INFORMATION

1.1 Identification of Project and Project Proponent

Bhatia Energy and Coal Benefication Pvt. Ltd. is a Shri Tejinder Singh Bhatia, established in the year 2015, is incorporated with Registrar of Companies. The company is promoted by Shri Tejinder Singh Bhatia engaged in various businesses like Coal trading, Linkage Handling agent, Coal consultancy, Transportation and having good reputation in the market, which was gained with good business experience.

Looking forward in prospects of utilization of washed coal, BECBPL propose to install a Coal Washery in Bilaspur District of Chhattisgarh State.

1.2 Brief Description of Nature of Product

Bhatia Energy and Coal Benefication Pvt. Ltd. proposed to install 2.5 MTPA wet type Coal washery at Lokhandi & Jonki Village, Takhatpur Tehsil, Bilaspur District, Chhattisgarh.

Total land envisaged for the proposed project is 39.71 Acres (out of which 15.47 Acres is under possession of Management and remaining 24.24 Acre is lease hold area from Govt. of Chhattisgarh which is in advanced stage of possession).

1.3 Need for the Project and Importance to the 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 reluctant as well as a fuel for providing heat to maintain the requisite temperature inside the kiln at 950-1050°C. 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 from 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 Bhatia

Energy and Coal Benefication Pvt. Ltd. is proposing establish Wet type of coal Washery at Lokhandi & Jonki Village, Takhatpur Tehsil, Bilaspur District, Chhattisgarh.

1.4 Demand – Supply Gap

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 Benefication. 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 utilisation 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 Benefication 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 Benefication 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.

1.5 Employment Generation (Direct & Indirect)

Physical Infrastructure

Once the proposed activity is commissioned, the socio-economic status of the local people will improve and there by infrastructure facilities like communication systems will improve. Most of the villages at present do not have protected water supply. After the implementation of the project, the affordability of the public to spend on water treatment, supply & distribution will more along with the aid from the state government.

Employment Potential

The proposed project creates employment to 60 people during construction and 40 people during operation of the proposed Coal washery.

Skilled

Total skilled employment in the proposed plant will be around 15.

Semi-Skilled

Total Semi-skilled employment in the proposed project will be around 10. Priority will be given to local people for semi-skilled jobs.

Unskilled

Total Unskilled employment in the proposed project will be around 15. Top priority will be given to local people for unskilled jobs. Details are given in **Table 1**.

Table-1: Manpower Details

S. No.	Designation	Nos.
1	Manager	1
2	Engineers (in different dept.)	5
3	Control room operator	5
4	Operator	6
5	Helper	5
6	Electrician with Assistants	7
7	Mechanic	3
8	Chemist with assistants	4
9	Office & Weighbridge staff	2
10	Miscellaneous	2
Total		40

2.0 PROJECT DESCRIPTION

2.1 Type of the Project

Bhatia Energy and Coal Benefication Pvt. Ltd. proposed to install 2.5 MTPA wet type Coal washery at Lokhandi & Jonki Village, Takhatpur Tehsil, Bilaspur District, Chhattisgarh. Total land envisaged for the proposed project is 39.71 acres and same is in possession of management.

2.2 Location of the Project

Project is located at Lokhandi & Jonki Village, Takhatpur Tehsil, Bilaspur District, Chhattisgarh. Topographical location of project site is shown in **Figure -1** and the study area of the proposed project is given in **Figure-2**.

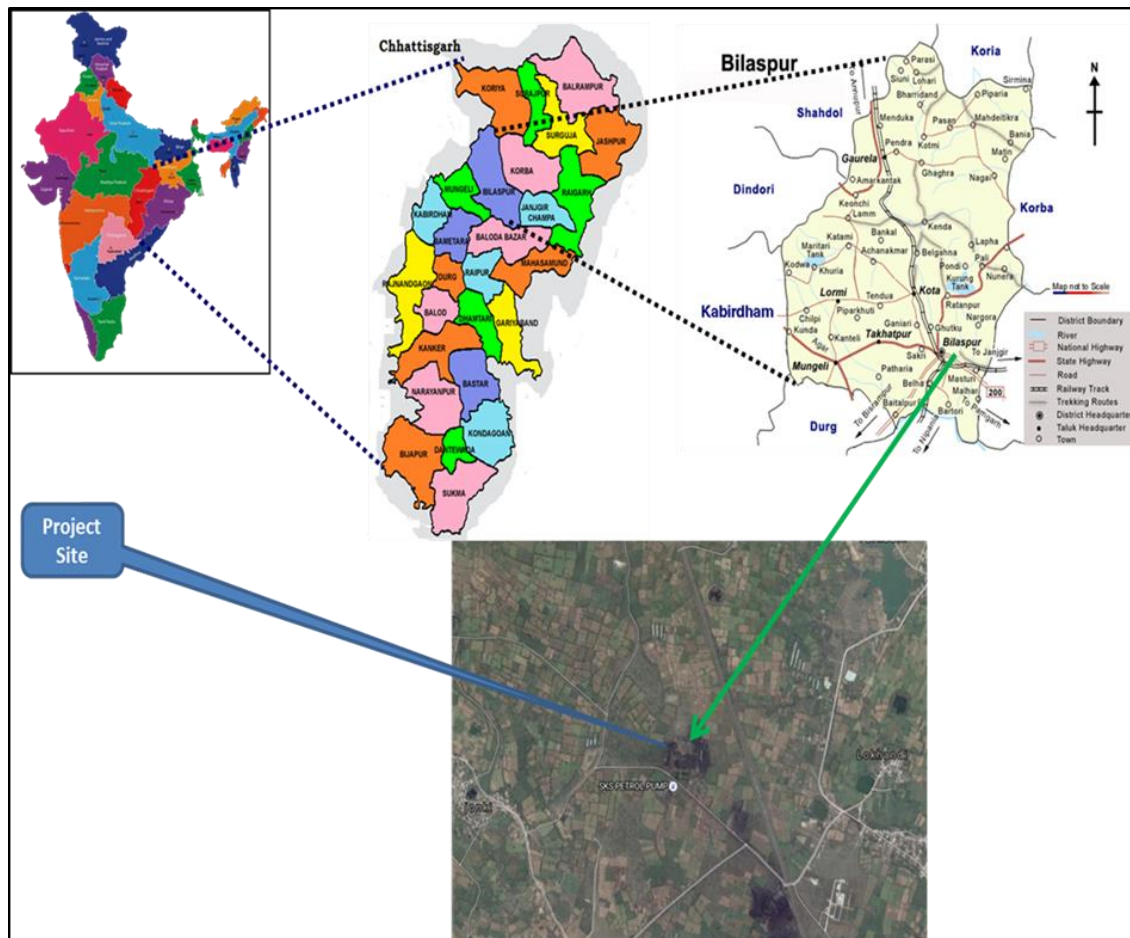


Figure 1: Location of the Project Site

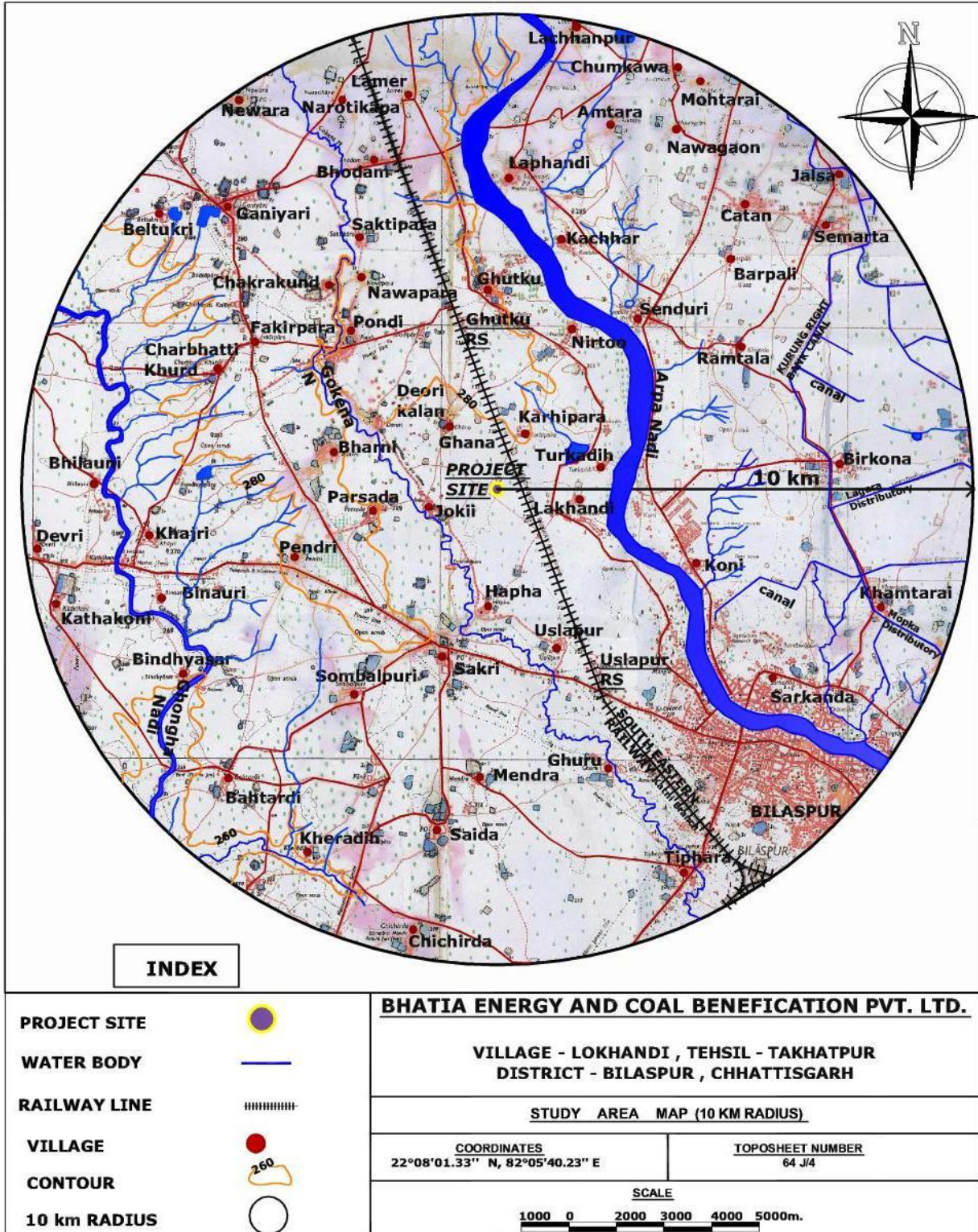


Figure -2: STUDY AREA MAP OF 10 KM RADIUS FROM PROJECT SITE

2.3 Size or Magnitude of Operation

(Phase I - 1.25 MTPA Phase II - 1.25 MTPA) 2.5 MTPA wet type coal washery.

2.4 Manufacturing Process

2.4.1 Coal Washery

The proposed washery is wet type of coal washery, the entire process and operations to be carried out at the unit are described in brief as follows:

Raw Coal Receipt and Handling Arrangement

Raw coal in the size range 200-0mm, from the mines will be received by wagons at nearby railway siding. The stock pile will have a self-flowing capacity of 600-700 tons. In addition arrangements for stocking of raw coal to an extent of 200 tons on the ground (close to the stock pile) will also be provided. A Payloader will be used for reclamation of coal from ground stock.

Two mechanical vibratory feeders, 200 TPH each have been provided for reclamation of coal from the stock pile for feeding to the Reclaim conveyor of 200 TPH capacity; which will carry the coal to the screen cum crusher house.

The reclaim conveyor will feed the coal to a vibratory screen for screening the coal at 50mm. The 200-50 mm coal will then be fed to a 1200 mm wide picking conveyer for picking/removing the shales/ stones which will be disposed off by trucks. The 200-50 mm coal from the picking conveyer, after removal of stones, will then be fed to a double roll crusher down to- 50mm.

The crushed coal from the crusher and the 50-0mm undersize coal from the vibratory screen will be carried by belt conveyor to supply the coal to the washery.

Washing Section

The washery feed conveyor carrying crushed coal (50-0mm) will discharge on to a desliming vibrating screen for wet-removal of coal below 0.63mm. The over flow of this screen will be sent to a mixing box where the coal gets mixed with the magnetite medium of required specific gravity. The coal plus magnetite from the mixing box will be pumped to the Heavy Media Cyclone by a centrifugal pump. The HM Cyclones will separate washed/clean coal and rejects by density. The over flow (Clean coal) from the HM cyclone will be fed to a Draining and Rinsing horizontal vibrating screen for initial

dewatering and for removal/recovery of magnetite. The overflow of this D & R screen will then be fed to a Vibrating Basket Centrifuge for further / final dewatering of clean coal. The underflow of the HM cyclones (rejects) will be fed to a Draining and Rinsing horizontal vibrating screen for dewatering and removal of media.

The magnetite with correct density, from the D & R screens for clean and rejects will be fed to the Correct/Heavy – media sump from where it will be pumped for reuse. The dilute media from the D & R screen will be fed to the dilute media sump from where it will be pumped to a magnetic separator to recover the magnetite. The effluent generated after recovery of magnetite from the magnetic separator will be pumped to a thickener to recover process water and to thicken the slurry. The underflow form the desliming screens and the under flow form the thickener will be charged/transported hydraulically to a tailings/slime – pond from natural drying. The clear water form this pond will be pumped back to the system for reuse. The naturally dried material will be disposed of manually. It is proposed to use powdered magnetite as media which will be added by manual process.

Process flow sheet

Process flow diagram is shown in **Figure 3.**

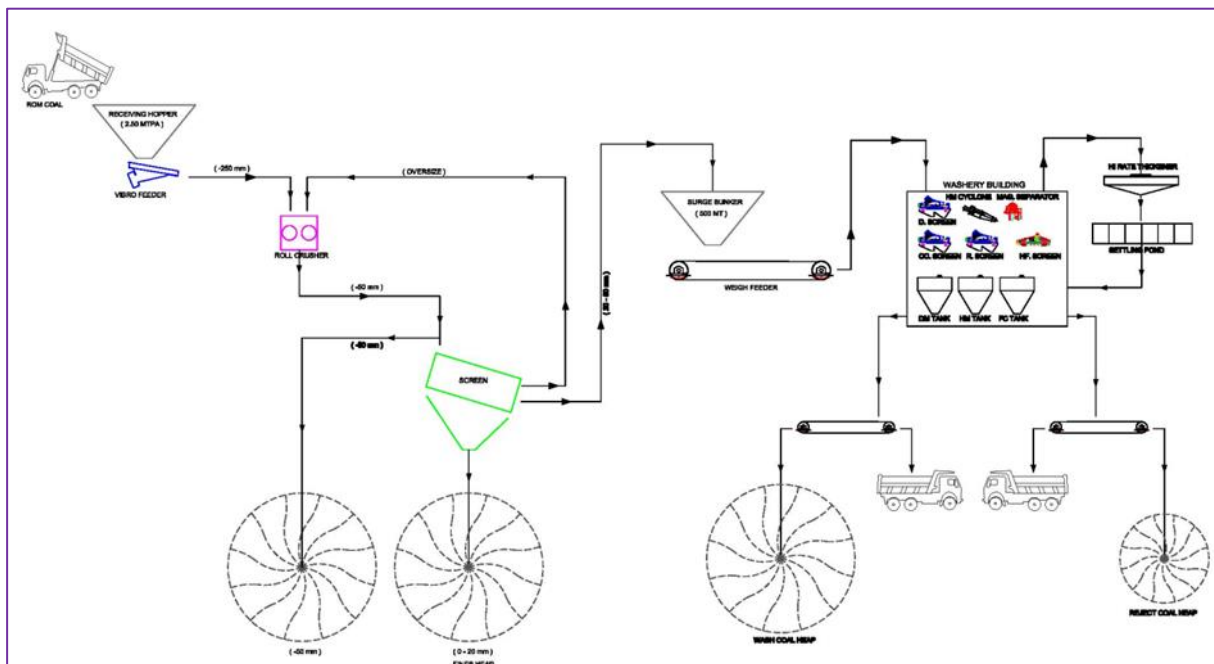


Figure-3: Process Flow Diagram

Advantages of Washed Coal

Below mentioned are the uses of Washed/Beneficiated Coal:

- In the process of washing the coal the abrasive non-coal matter like stones and shale will be removed from the ROM coal. As such use of washed coal in the Sponge Iron plant will result in less wear and tear of the Machinery. The life of the Rotary Kiln will be prolonged with the use of washed coal.
- Due to the uniform size of the washed coal and the uniform quality (Ash content being more or less uniform with a very little variation) as compared to much larger variation in the quality of Raw Coal from the coal mines, the operating parameters of manufacturing the sponge iron can be better regulated. Together with this and with the increased heat value of washed coal the productivity of the Rotary Kiln will increase by 15 to 20%.
- Use of cleaner coal will improve the environmental conditions. Less production of char from the Kiln (which contains un-burnt coal & other nonmagnetic material), gives some sort of rid from its disposal.

2.4.2 Raw Material Requirement

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 (Phase I - 1.25 MTPA + Phase II - 1.25 MTPA) 2.5MTPA.

2.5 Land Requirement

Total land envisaged for the proposed project is 39.71 Acres (out of which 14.47 Acres is under possession of Management and remaining 24.24 Acre is lease hold area from Govt. of Chhattisgarh which is in advanced stage of possession). Details are given in Table-2 and plant layout is given in **Annexure I**.

Table -2: Land use Breakup

Sl.	Description	Area in Acres	%
1.	Area of Plant	2.66	6.70
2.	Coal Storage Yard	6.23	15.69
3.	Clean Coal Storage Yard	5.75	14.48
4.	Reject Coal Storage Yard	2.75	6.93
5.	Green Belt & Plantation Area	14.65	36.89
6.	Water Reservoir & Rainwater Harvesting	0.20	0.51

Sl.	Description	Area in Acres	%
	Area		
7.	Office Building and Rest Shelters/Labour Room	3.27	8.23
8.	Area of Weight Bridge	0.10	0.25
9.	Area of Road	4.10	10.32
	Total land	39.71	100.00

2.6 Mode of Transport for Raw Materials and Finished Products

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 for the proposed coal washery to be served from Uslapur Railway 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.

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.

The material balance is given in **Figure 4.0**

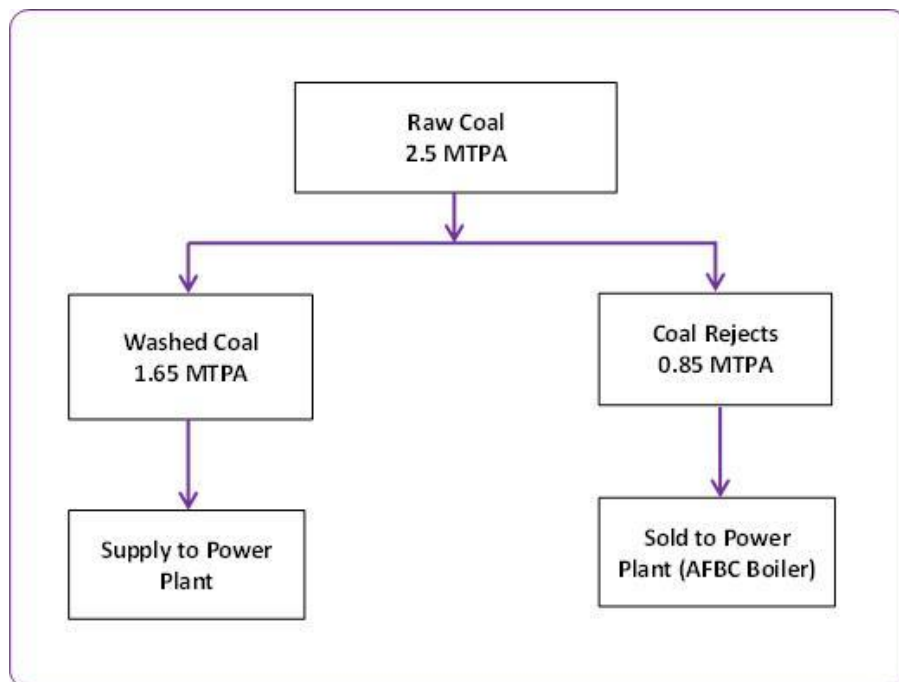


Figure - 4.0: Material Balance

2.7 Water Requirement and its Source

Water required for the proposed project will be 1150 cum/day. Water required will be sourced from the ground water source. Permission will be obtained from the CGWA for drawl of Ground Water. Water balance is shown in **Figure 5**.

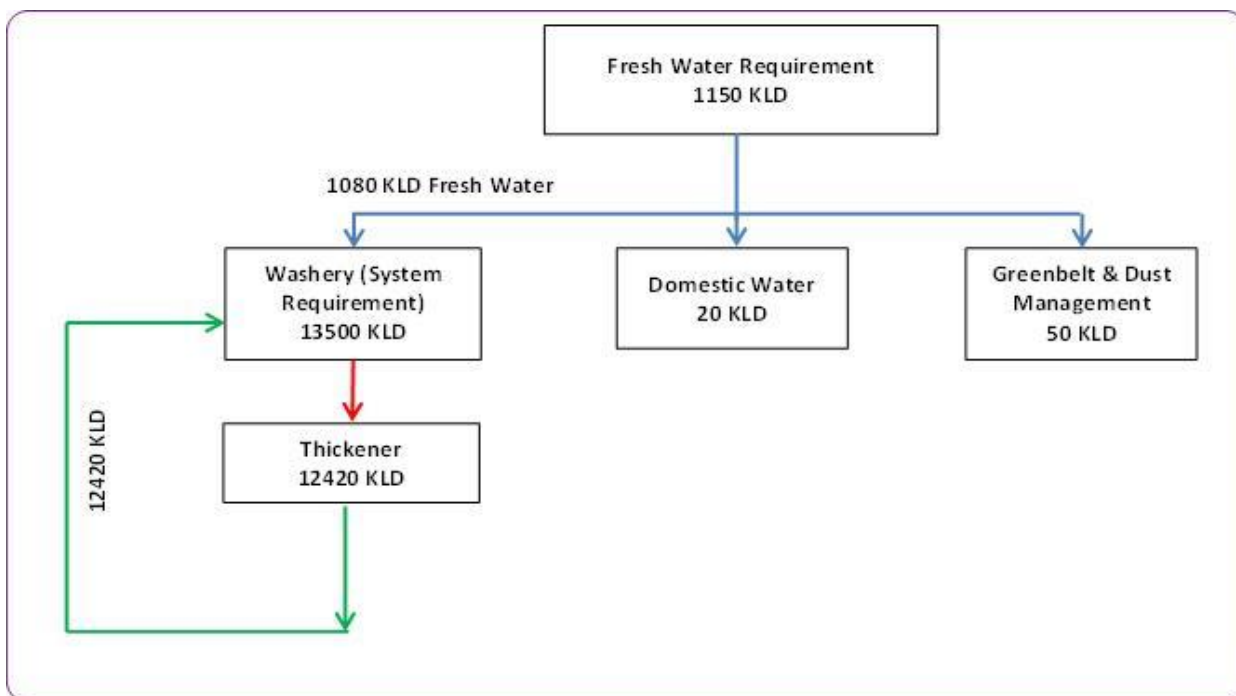


Figure-5: Water Balance

2.8 Quantity of Waste Generated

Closed circuit water system will be adopted in the proposed Coal washery. Hence there will not be any wastewater generation from the process. However only wastewater generated will be sanitary wastewater i.e. 16.0 cum/ day; which will be treated through Septic Tanks followed soak pits.

2.9 Solid Waste Generation and its Disposal

Washery rejects 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.

3.0 DESIGN BASIS

3.1 Design

Contained herein are the findings and resulting products of that effort, considering raw coal size analysis provided by client and raw coal shall be fed by trucks at Lokahandi washery plant. The Truck dump hoppers system will increase the overall capacity of plant to 5LT/year from existing 3LT/year which will be operating (for 5 hours/day) when plant is not getting feed from mines.

Consideration of following points for developing the overall system

- Study of raw coal size analysis & existing facilities
 - > 400 mm coal: - 10 to 12 %
 - >300 mm to 400 coal: - 12-15 %
 - > 100 mm to 300 mm coal:- 15-20 %
 - > 50mm to 100 mm coal:- 9-10 %
 - > 15 mm to 50 mm coal:- 20-22 %
 - >0.5 mm coal to 15 mm coal:- 16-20 %
 - < 0.5 mm coal:- Less than 10 %
- Requirement of (-)50mm size from feed size 250mm ROM coal by trucks.
- The new dumping system needs to be compact with two stage crushing.
- Oversize (+50 mm) to washery plant should be limited to 5% and existing closed circuit shall be clubbed with proposed system to control the over size.
- Fines (-1 washery plant should be limited to 20%.
- Moisture in ROM shall be limited to 5%.
- New electrical premises, Independent automation scheme, illumination and earthing (power and electronic) is considered for the new system.

4.0 SYSTEM AND OPERATIONAL DESCRIPTION

4.1 Trucks Dumping & Primary crushing system

The system is designed to handle 20/40 T Dumper bringing coal of size (-)250 mm. One number dumping hopper (cap. 150t) with fixed grizzly having opening of 100 mm has been envisaged. Hydraulic Rock Breaker on top of fixed grizzly provided to break the lump to -250mm. The apron feeders of 500TPH below the hopper shall extract coal and discharge onto belt conveyor for subsequent transfer to the primary sizer. Conveyor of 100TPH will work as dribble conveyor and receive the fines from apron feeder. Primary sizer will crush the raw coal from 100mm to 50mm and discharge on to the secondary conveyor. The system capacity will be 800 TPH. Crushed coal of +50 mm shall be conveyed to screening and secondary crushing house via conveyor BC-2. Electrical hoist of 10t capacity shall be provided above primary sizer.

4.2 Screening & Secondary Crushing Station

Incoming coal of (-)50 mm size will fed to Vib. Screen via BC-2. Oversize from vib. screen feed to re-circulating conveyor BC-2B passing through Inline magnetic separator provided on the conveyor . Impactor (400tph) will crush down the coal again and then conveyed to storage bunkers. and undersize coal pass through on the BC-3 conveyor through suitable chute.

4.3 Storage Bunkers

The crushed coal from screen of (-)50 mm shall be transferred via Belt conveyor BC-4 to the storage bunkers of total 500T Capacity. Coal shall be reclaimed at capacity 450 tph from the storage bunkers via vibrating feeders located below storage bunkers. Belt conveyor BC-5 shall collect the coal from bunkers via Vib. Feeder.

4.4 Washery Plant

Process Description

- Dry raw coal of 1 mm to 50 mm size fed to washery through raw coal feed conveyor. Raw coal mixed with water then sends to single deck desliming screen for desliming -1mm fine coal.
- 1-50mm raw coal then fed to blending tank to mixed with pre-determined magnetite solution

- With desired specific gravity and then pumped to 1100 dia heavy media cyclone for separation. Overflow of the cyclone (Coal and media) goes to clean coal drain and rinsing screen through clean coal screen feed chute to recover magnetite contain.
- Overflow of the screen then fed to clean coal basket centrifuge for de moisturize the product which finally discharge to clean coal conveyor. Underflow of the clean coal D&R screen goes to correct HM sump and thus recover magnetite to reuse in the system.
- Dilute media of the screen fed to dilute media sump and pumped to drum magnetic separator for further recovery of magnetite. Recovered magnetite fed to correct HM sump for maintaining specific gravity of the system.
- Underflow of the cyclone (Coal and media) goes to reject coal drain and rinsing screen through reject coal screen feed chute to recover magnetite contain.
- Overflow of the screen then fed to reject coal basket centrifuge for de moisturize the product which finally discharge to clean coal conveyor.
- Underflow of the reject coal D&R screen goes to correct HM sump and thus recover magnetite to reuse in the system.
- Effluent recovered from both clean coal and reject centrifuges has been collected to ground floor pump pit and then fed to reject screen by clean up pump to remove slurry.
- De slimed fine coal of -1mm recovered through de sliming screen are collected to raw coal cyclone feed sump and then pumped to raw coal cyclone classifier for finer separation. 0-0.25 mm fines which is overflow of classifying cyclone flown to Hi rate thickener feed tank for adding flocculants for quick settling. The mixer then fed to Hi rate thickener. Due to quick settling of fines, overflow of thickener Clear fresh water and is fed to clarified water sump for recirculation.
- Underflow of thickener fed to filter feed sump and then to filter press to extract maximum moisture from settling fines where dewatered fines in the form of cakes discharges to a reversible cake conveyor to carry it to clean coal conveyor. Water which was dewatered from filter press return back to Hi rate thickener

- For recirculation and further cleaning. All effluents and drainage of washery will be collected to a settling pond for settling of solids and the overflow of the pond will be pumped to the plant for reuse. Thus this plant is designed as Zero effluent discharge.
- Magnetite require for the system has been put into magnetite adding sump and by adding water in the sump it is pumped to dilute media sump for recovery of magnetite through magnetite separator.

5.0 LIST OF EQUIPMENT & SPECIFICATIONS

Details of Equipment & Specifications are given in **Table -3**.

Table-3: List of Equipment

Unit Number	Description
1	Fixed grizzly on Dump Hopper
2	Dump Hopper
3	Rod gate
4	Apron feeder
5	Primary Crusher – Sizer
6	Belt Conveyor – 1
7	Belt Conveyor – 2, 2A, 2B & 2C
8	Inline Magnetic Separator – 1 & 2
9	Vibrating Screen
10	Belt Conveyor – 3
11	Belt Conveyor – 4
12	Surge Bunker
13	Weigh Feeder
14	Belt Conveyor – 5
15	Disliming Screen
16	Clean Coal Screen
17	Reject Coal Screen
18	Heavy Media Tank
19	Dilute Media Tank
20	Heavy Media Cyclone
21	Classifying Cyclone
22	Sieve Bend
23	Thickener
24	Settling Pond
25	Liners for chutes and hoppers
26	Technological Structure for conveyor and equipment support
27	Dust Suppression System
28	Fire Fighting System

6.0 ELECTRICAL & INSTRUMENTATION CONTROLS

The Electrical, Automation & Instrumentation system for the new “Truck Dump Hopper system” at BECBPL, has been envisaged as follows:-

- A) 33 KV HT Power shall be provided by the client at the new electrical building for the proposed new plant at Lokhandi.
- B) The 33 KV HT incoming cable at the incomer of HT panel for the new system is considered to be in client’s scope.
- C) 33 KV HT panel will feed power to 450 Hp motor of “Secondary Crusher CR-2” & Transformer (1.6 MVA, 33 KV/0.415 KV).
- D) An HT capacitor bank panel is considered for power factor correction of HT motor (450 HP). However as there is only one single motor running at 33KV, the capacitor requirement estimated is quite small (180 KVAR) which if used will increase the system cost with the price of VCB panel. So though indicated in order to maintain proper engineering norms.
- E) The transformer will feed power to the MCC Cum PDB which is dedicated for feeding power to all LT loads.
- F) An APFC panel (360 KVAR) is considered for power factor correction of all LT inductive loads.
- G) MCC Cum PDB panel will also feed power to MLDB cum Lighting Transformer panel dedicated for feeding proposed plant illumination loads. However road & area illumination is not considered.
- H) Separate Power & Electronics earthing system is considered for the new plant.
- I) Separate Automation system with PLC is considered for the new plant. No soft interfacing with existing automation system (if any) is considered.

7.0 PROJECT COST AND IMPLANTATION SCHEDULE

7.1 Project Cost

The Capital Cost of the project will be INR 24.0 crores and EMP cost will be INR 2.5 crores.

7.2 Project Implementation Schedule

PROJECT IMPLEMENTATION SCHEDULE

Particulars	Implementation Period (in Months)
Start of Construction	After Receipt of Environmental Clearance and NOC
Construction Period	
PHASE I: (1.25 MTPA)	12 Months
PHASE II: (1.25 MTPA)	24 Months
Commercial Production Period	
Phase I (1.25 MTPA)	On 14 Months
Phase II: (1.25 MTPA)	On 26 Months

8.0 SITE ANALYSIS & SOIL INVESTIGATION

8.1 Connectivity

The proposed site is well connected with Road network. However nearest railway station is Uslapur and Ghutku. The following table gives brief regarding connectivity of the proposed site:

Component	Description
Road	NH – 111 = 5.3 km
Rail	Nearest station – 2.5 km & 5.7 [Uslapur & Ghutku]
Air	Raipur Air Port – 112 KM
Sea Port	Vishakapatanam – 500 Kms.

Below mentioned table gives brief regarding environmental setting of the project site.

Particulars	Distance from the site
National Park	No national Park is situated within the 15 km radial distance periphery
Wild life sanctuaries	Nil
Eco Sensitive Areas	Nil
Forests	Nil
Surface water bodies	Arpa River – 5 km
Costal Regulation Zone [CRZ]	Nil
Industrial Area	No industrial area within close vicinity

8.2 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.

8.3 Topography

The topography of the land is more or less flat without undulations.

8.4 Existing Land Use Pattern

Total 39.71 envisaged for the proposed project activities out of which 15.47 land is private land which will be converted for industrial purposes whereas 24.24 Acre of Land (barren with sparse

vegetation) will be lease hold Govt. land which is under advance Stage of possession. No forest land is involved within the site

8.5 Existing Infrastructure

All required infrastructure is prevailing in the site.

8.6 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.

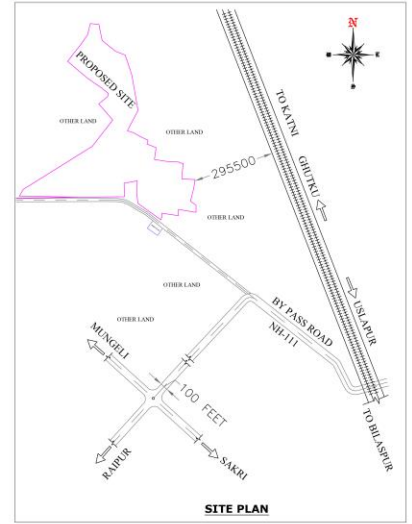
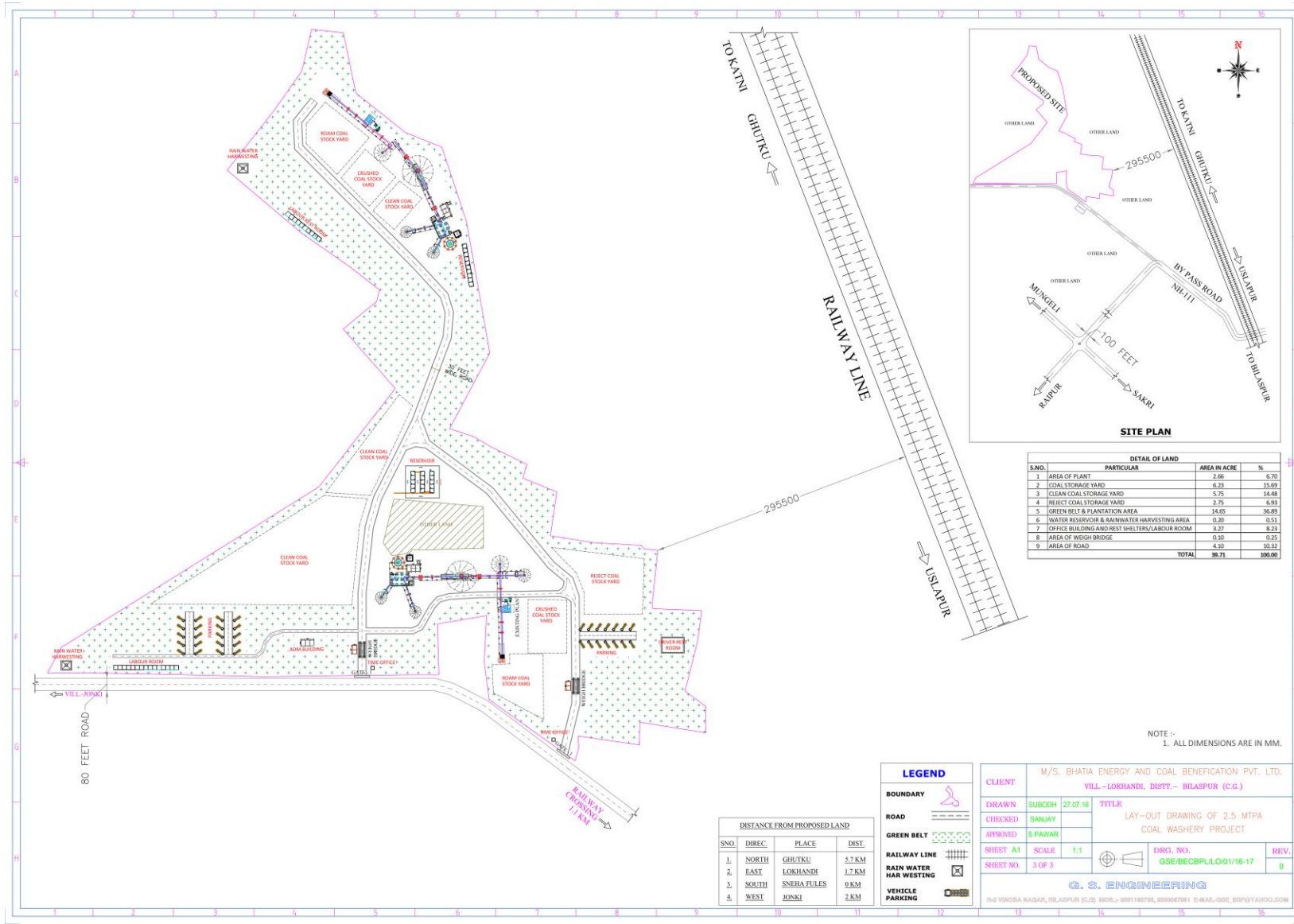
Approximately 3 no bore holes with standard deep as listed below are required for the plant.

1. Raw coal feeding station
2. Screening and Sec. Crushing station
3. Storage bunkers

8.7 Climatic Data from Secondary Sources

The climate is pleasant and mild in the winter (minimum temperature 10 °C, 50 °F). There are medium rains in the monsoon season. The summers are very hot and dry, with maximum temperature 45+ °C, 113 °F.

**Annexure I
Plant Layout**



DETAIL OF LAND			
S.NO.	PARTICULAR	AREA IN ACRE	%
1	AREA OF PLANT	2.66	6.70
2	COAL STORAGE YARD	6.23	15.69
3	CLEAN COAL STORAGE YARD	5.75	14.48
4	REJECT COAL STORAGE YARD	2.75	6.93
5	GREEN BELT & PLANTATION AREA	14.65	36.89
6	WATER RESERVOIR & RAINWATER HARVESTING AREA	0.20	0.51
7	OFFICE BUILDING AND REST SHELTERS/LABOUR ROOM	3.27	8.23
8	AREA OF WOOD BRIDGE	0.30	0.75
9	AREA OF ROAD	4.33	10.92
TOTAL		99.71	100.00

NOTE :-
1. ALL DIMENSIONS ARE IN MM.

DISTANCE FROM PROPOSED LAND			
SNO.	DIREC.	PLACE	DIST.
1.	NORTH	GHUTKU	5.7 KM
2.	EAST	LOKHANDI	1.7 KM
3.	SOUTH	SNEHA PULES	0 KM
4.	WEST	JONKI	2 KM

LEGEND

- BOUNDARY
- ROAD
- GREEN BELT
- RAILWAY LINE
- RAIN WATER HARVESTING
- VEHICLE PARKING

CLIENT: M/S. BHATIA ENERGY AND COAL BENEFICATION PVT. LTD.
VILL.-LOKHANDI, DIST.- BILASPUR (C.G.)

DRAWN: SUBODH 27.07.16 TITLE: LAY-OUT DRAWING OF 2.5 MTPA COAL WASHERY PROJECT

CHECKED: SANJAY

APPROVED: S PAWAR

SHEET: A1 SCALE: 1:1 DRG. NO. GSE/BECPL/01/16-17 REV. 0

SHEET NO. 3 OF 3

G. S. ENGINEERING

P-3 VISHWA NAGAR, BILASPUR (C.G.) MOB.- 991180736, 990667591 E-MAIL- GSE_BSP@yahoo.com