

EXECUTIVE SUMMARY
OF
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN

FOR

**Enhancement in Production of Coal from
1.00 million TPA to 3.00 million TPA**

FROM

GANGARAMCHAK & GANGARAMCHAK-BHADULIA MINE
(ML Area: 186.42 hectare)

in Village Bastabpur, Tehsil - Khoyrasole, Dist.- Birbhum, West Bengal

PROJECT PROPONENT

M/s West Bengal Power Development Corporation Ltd.

Bidyut Unnayan Bhaban.

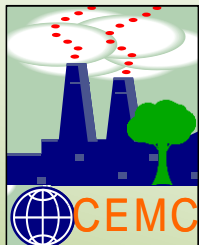
Plot No. 3/C, IInd Floor, LA Block,

Sector-III , Salt Lake City, Kolkata - 700098

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Centre for Envotech and Management Consultancy Pvt. Ltd.

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As Category "A" Consultant Organization

Regd. Office: Plot No. 522/3458, Pahal, Bhubaneswar- 752101, Odisha; Mobile - 8763703371,

E-mail: cemc_consultancy@yahoo.co.in, cemc122@gmail.com; Website: www.cemcpl.com

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar – 752101; E-mail: cemclab@yahoo.in

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

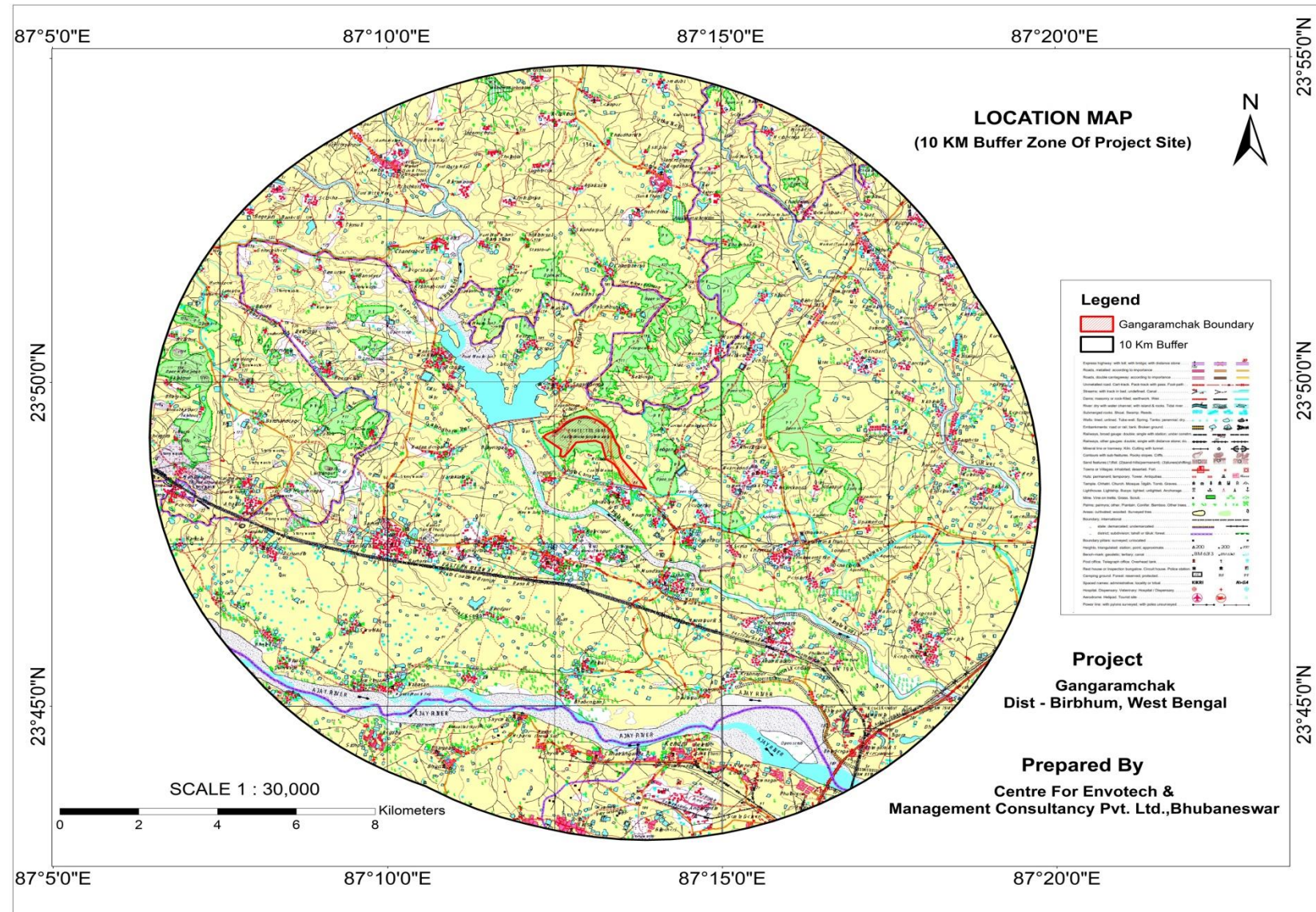
This executive summary gives a brief background /writes up of the project, lessee and justification of the project. The scope and coverage of the EIA/EMP report, methodology adopted for preparing the report & suggested management plan is also discussed.

The Gangaramchak and Gangaramchak Bhadulia coal block was initially allotted to M/s Bengal Emta Coal Mines Limited in the year of 2003, the authorized mine operator brought this mine into production in the year of 2003. The Hon'ble Supreme Court of India vide its judgment dated 25th August 2014 and order dated 24th September 2014 cancelled the allocation of all 204 coal blocks which included the Gangaramchak and Gangaramchak Bhadulia block.

Subsequently this block/mine has been reallocated by the Ministry of Coal (MoC) to West Bengal Power Development Corporation Limited (WBPDC) vide allotment order no 103/8/2015/NA dated 31.03.2015. Coal reserve of Gangaramchak and Gangaramchak Bhadulia coal block is well established in the approved Mine plan vide dated 16.11.2022. Prior allottee M/s Bengal Emta Coal Mines Ltd. has obtained Environmental clearance for 1.00 MTPA from MoEF & CC vide letter no-. J-11015/375/2006-IA-II. (M) dated 17th May 2007 and further Environmental clearance of the block has been transferred to M/s West Bengal Power Development Corporation Limited (WBPDC) from M/s Bengal Emta Coal Mines Ltd. (BECML) on 20th December 2018. Present proposal is for obtaining Environmental clearance (EC) for 3 million TPA of coal production from the same coal block.

1.1 PROJECT HIGHLIGHTS

- The coal of Gangaramchak & Gangaramchak-Bhadulia Mine is being utilized at Power Plants of WBPDC situated at STPS, Santaldih, Purulia district, KTPS, Mecheda, Purba Medinipur district, BKTPP, Bakreswar, Birbhum district, BTPS, Tribeni, Hoogly district and SgTPP, Manigram, Murshidabad district.
- The Mining Plan with Mine Closure Plan for production of 3 million TPA was approved by Coal Controller Organization, Ministry of Coal, Govt. of India on 16.11.2022. The average grade of coal is G11 & GCV is 4150 Kcal/kg. OB removal has been planned with Shovel-Dumper combination and Surface Miners have been selected for winning of Coal.
- The present Mineable Reserve is 5.773 million tons. Based on mineable reserve & the rated production from the mines, it is estimated that the life of the mines shall be 3years.
- Till the end of the life of the mines, entire lease area of 172.17 hectare shall be utilized for mining related activities. This includes excavation area, External dump, Safety Zone, Infrastructure, etc.
- Open cast mechanized method of mining on three shift basis shall be adopted. Stripping Ratio, (in m³ /te) is 5.2297.



Topo Map of the Mining Lease & Study Area

1.2 SALIENT FEATURES

Location	:	Bastabpur village; Block & Tehsil – Khoyrasole, District- Birbhum, West Bengal
Project Area	:	186.42 Hectares
Land Use Pattern of the ML Area	:	101.77 ha. of forest land, for which Stage II FC has been obtained
Capacity of the Project	:	Existing: 1.0 Million TPA of Coal Proposed : Targetted Production :3.0 Million TPA of Coal Peak Rated Production : 4.5 Million TPA of Coal
Method of mining	:	Opencast Mechanised with Drilling & Blasting for OB removal and Surface miner for winning of coal; three shift operation.
Stripping Ratio (Ore : OB)	:	5.2297 (in m ³ /te)
Coal Reserve in the ML area	:	Gross Geological Reserve (Coal): 13.68 million tons Net Geological Reserve: 10.58 million tonne Mineable Reserve (Coal) : 9.15 million tons Reserve already depleted : 3.425 million tons Net remaining mineable reserve: 5.773 million tons
Life of the Mine	:	3 Years
Quantity of Water Consumption	:	Existing: 80 KLD Proposed : 150 KLD (80+70)
Source of Water	:	Ground Water & Mine Water by tanker with due permission
Solid Waste Generation	:	Already accumulated : 16.12 Million Cub M To be generated : 29.94 Million Cub M
Cost of the Project	:	Rs 111.5 crores
Environment Consultant	:	Centre for Envotech & Management Consultancy Pvt. Ltd., Bhubaneswar

1.3 LOCATION

The project area of the block is 186.42 ha which includes Mine lease area of 149.42 ha. The project is located in village Bastabpur, Tehsil- Khoyrasole, Dist.- Birbhum Of West Bengal state. The ML area is included in the Survey of India Topo Sheet No. 73M/1 and is defined by the following coordinates;

Latitudes: 23° 48' 20.812"N to 23° 49' 28.016"N and

Longitudes: 87° 12' 20.292"E to 87° 13' 52.172"E

The area is approachable by road only. The Khayrasole-Panchra road connects the block with the Raniganj - Suri Road, (NH-14) at Panchra. Another unmetalled road connects both Gangaramchak and Bhadulia Collieries, at Khayrasole. Raswan Railway Station, on the Andal-Palasthali section of the Eastern Railway, is located about 4 km south west of the block. Kazi Nazrul Islam Airport is situated about 22 km (aerial

distance) away from the project site. The district head quarter is at Suri which is located about 45 km away (aerial distance).

1.4 TECHNOLOGY & METHOD OF MINING

The Project area is spread over an area of 186.42 Ha. During the life of the mines, the mine shall achieve its targeted production of 3 million TPA Coal. The average number of working days in the year would be 300. It is a running mine. At present, Mining is being carried out through Opencast methodology only. Surface Miner is in place for winning of Coal while Shovel-Dumper combination is adopted for removal of OB. The same methodology will be continued in the expanded capacity. The mineable occurrence of Coal seams by opencast mining method has been established upto a depth of 90 meter through detail exploration of the Block. The depth of occurrence of the Coal seam itself has decided the opencast nature of the deposit. As there is only single seam working and relatively band free, quality deterioration due to mixing of shales and bands are not envisaged.

Overburden removal has been planned with **Shovel-Dumper** Combination due to its operational flexibility. Considering the wide variation of the seam thickness starting, **Surface Miners** have been selected for winning of coal. The seams are relatively flatter and both strike length and Dip-Rise length are also feasible for surface miner operation. The product coal from surface miner is usually (-) 100 mm which eliminates the primary crushing unit at mine end. Coal removal may be done with **Shovel-Dumper** Combination occasionally.

The uppermost layer of soil (about 2-3 m) is relatively soft and will not require drilling and blasting. So, it will directly be excavated by the excavators. The top soil will be kept separately in temporary top soil dump for the reclamation purpose. The total area of 5.80 Ha has been earmarked for top soil dump in the north of the quarry boundary. The remaining hard overburden and partings are to be drilled and blasted before excavation. Rotary blast hole drills of 160 mm diameter have been proposed for O.B. benches. Coal will usually won through surface miner but occasionally also be excavated through drilling and blasting method and removal is envisaged with Shovel- Dumper combination.

Coal will be produced through surface miner, thus primary crushing units are not proposed at mine end. Secondary crushing whatever required will be done at Plant end. Produced coal size will vary within (-200) mm range. Washing of Coal has not been envisaged in this project; hence generation of rejects have not been envisaged.

1.5 YEAR WISE PRODUCTION

As per the Geological Report the grade of coal was defined as E F whereas after reassessment of the coal quality with the help of the available geological information, the average grade of coal comes to G11.

Year Wise Production of Rock

Year of Operation	Coal Production Schedule	Quantity of OB	Stripping Ration
1st Year	1.5 million tones	7.9 million m ³	5.2667
2nd Year	3.0 million tones	15.7 million m ³	5.2333
3rd Year	1.225 million tones	6.34 million m ³	5.1755

1.6 WASTE QUANTITY & DUMP MANAGEMENT

During the process of mining, the solid waste material to be generated as Over Burden. These waste materials consist of lateritic top soil, shale & sandstone. Transportation of overburden waste material is/shall be carried by dumpers and dumped in the pit. Total 29.94 million cum waste will be generated during life of the mines which will be completely backfilled over an area 107.35 ha. Top soil shall be kept over an earmarked area (5.80 ha) and shall be used for plantation purpose.

1.7 MINE CLOSURE & RECLAMATION

Scientific and planned mechanized mining will be practiced to ensure minimum wastage of resources. Concurrent backfilling is under progress and shall be continued to do so. Waste generated from the pit will be dumped in the same pit where Coal already excavated. Conceptually, 127.90 ha shall be backfilled out of total excavated area of 141.92 ha., and the balance 14 ha shall remain as opencast void.

An area of about 14 ha of land will be converted to water body at the end of mine life with depth of 20 m. This area cannot be backfilled, however will technically reclaimed by converting into water body. In post closure phase the water accumulated in the lagoon shall be quarterly sampled and analysed to monitor development of any acidity or toxicity in the accumulated water. Till the conceptual period, 141800 saplings shall be planted over 56.72 ha in additional to the existing plantation area of 26.03 ha (5.43 ha over safety zone, undisturbed area and 20.60 ha over reclaimed area).

2.0 DESCRIPTION OF THE ENVIRONMENT

For preparation of the EIA report, study of area, extending 10km around the proposed location, termed as buffer zone, was conducted during the period March, 2022 to May, 2022. Baseline data such as ambient air quality, surface and ground water quality, noise levels were monitored at several places in the buffer zone. Data regarding land use pattern, forests, ecology, geology, hydro geomorphology was collected from various authentic sources, satellite maps and correlated by field studies. Socio economic data, population, health, education, transport, agriculture etc was collected from census reports and district /state handbooks. Summary of the result of the studies is briefly given below.

- **Topography:** The area exhibits gently undulating topography with elevation ranging from 94 m to 121 m above mean sea level. The general slope of the area is towards south-west. The ground slope is rather steep both towards east & west. The block has highest elevation of 121 m (contour value) around GRC-16 and GRC-41 in the northern part of the block. There are no mines present adjacent to the Gangaramchak & Gangaramchak Bhadulia Opencast Coal Mining Project.

- **Drainage Pattern:** The drainage pattern of the region is dendritic in nature. A number of ephemeral nalas drain the area to the Hingla River flowing to the south and west of the block boundary of Gangaramchak and Gangaramchak-Bhadulia Coal Block. Hingla River is a tributary of Ajay River flows from north-west to south-east direction towards central part of the buffer area. The distance of the Hingla Nadi from the core zone is around 800m towards southern direction. Ajay River flows north-west to south-east direction towards southern part of the buffer area. The distance of the Ajay River from the core zone is around 8Kms towards southern direction.
- **Land Use:** The study area is mainly dominated by Cultivable land (75.4%), Settlements (6.27%), River/Water Body (6.13%), Forest (5.47%%) etc.
- **Climate and Meteorology:** The climate of the area is hot & humid and is characterized by a hot and dry summer between the period of March to May, winter between November to February and well-distributed rainfall between mid of June to mid of September. The rainfall in the area is because of the south western monsoon. The region receives an average annual rainfall of 1405mm.
 - a) **Temperature:** In summer, the temperature rises up to 41.3°C to 44.7°C on some summer days. During winter, the temperature drops down to 10-12°C at times. In the monitored summer months of June 2004, the temperature ranges from 30.1 to 44.7°C. Dust storms are common in dry season (May and June) before the onset of monsoon with increase in temperature and wind speed in the afternoon coupled with low humidity.
 - b) **Humidity:** The average annual relative humidity is about 67%. In summer months the relative humidity (RH) varies between 55 to 66%.
- The soils would be dassified as red, brownish sandy and black cotton soils, black cottonsoil supports agriculture, which is the main source of livelihood of the people in the area. The presence of organic carbon, N, P, K and good water holding capacity of the top soil indicates that the soils will support plant growth.
- The ambient air-quality as recorded was found to have particulate matter (particle size <10 µg) of 50.12 µg/m³ to 90.58µg/m³ against a standard 100 µg/m³ for residential /rural area and quantity of fine particulate matter (particle size <10 µg) is 22.62 µg/m³ to 58.13 µg/m³ against the standard 60 µg/m³ for residential /rural area as per National Ambient Air Quality Standards (NAAQS); Sulphur dioxide level in the area is between 4.31 to 9.81 µg/m³ as against acceptable level of 80 µg/m³ and Oxides of Nitrogen is between 9.18 µg/m³ to 18.15 µg/m³ against the permissible limit of 80 µg/m³.
- The surface water quality & ground water quality confirms to the standard quality & drinking water quality respectively.
- The ambient noise levels were recorded at the study area during night time Leq (Ln) varies from 38.5 to 52.8 dB (A) and the hourly daytime Leq (Ld) varies from 51.1 to 60.02 dB (A) within the study area.
- The terrestrial and aquatic flora, fauna in the area is mostly common species. There are no species which are endangered /endemic or unique to the area..

- Agriculture is the main occupation of the population. The socio-economic condition & related infrastructure of the area is average to good.

2.1 ANTICIPATED ENVIRONMENTAL IMPACTS

This portion discusses the environmental attributes that may be affected due to operation of the mine. The impacts whether beneficial or adverse have been analyzed in this chapter. Based on the input data, the pollution impact of various materials and process activities has been assessed. They are as follows-

- The mining activities involves various processes such as, drilling, blasting, mining extraction, loading & transportation by vehicles on haul road, which are likely to contribute towards air pollution in the area. The effect is localized and is mostly due to fugitive emission of dust particles.
- In this mechanised open-cast mining project, operations such as drilling, blasting, excavation, loading and unloading, movement of dumpers, etc are expected to generate noise. In this particular mine, the operation will be limited to three shift in a day. The various sources of noise mentioned above shall only be periodical and are limited to a fixed period of operation only.
- The storm water discharge coming out of quarries and dump through a network of garland drains is expected to contain solid particles. These solid particles may result in increase in silt content in adjoining water bodies if allowed to go outside.
- The ground water table of the project area varies from 10m to 15mbgl whereas the pit limit by the end of the lease period will be at 90m below from the average surface level. Thus, the quarry depth during the lease period will intersect the ground water table.
- Open cast mining activity leads to creation of depressions in the earth's surface which hinders smooth subsurface flow of groundwater. The seepage of groundwater shall occur as and when water table is intersected. The ingress of water during mining will be through the vertical cross section of the mining pit as well as through the floor and will be accumulated within pit.
- Except the core zone of the mining lease area, there will not be any impact on land use pattern. Cumulative Overburden including previously mined out OB is 3.42 Mcum (previously produced OB is 0.50 Mcum Hard OB and 0.02 Mcum of Top Soil). External OB dump area will be utilized for dumping of Overburden. An area of 12.78 Ha of Land will be utilized for OB dumping externally.
- Top soil will be scrapped and stored in the designated place over an area of 1.80 ha. Although minimum storage time shall be attempted to avoid nutrient loss, but loss of some nutrients due to temporary storage and even after direct placement of soil to the reclaimed areas of the external waste dump, cannot be ruled out.
- Other solid waste like Municipal Solid Waste and Hazardous solid waste are likely to be generated from canteen, office and work shop, which can pollute the water source & generate foul smell.
- No doubt, certain irreversible changes will take place in the locality due to mining. However, to minimize such impacts as far as possible, wildlife present in and outside the zone of influence can survive without much interference as they become habituated to the mining process.

- The mining activity and other ancillary activities such as blasting, dumping of waste and over burden, movement of vehicles, etc. shall threaten the wild animals and interfere in their life cycle. But the study area does not have any significant flora & fauna.
- The implementation of the project will considerably improve the socio economic condition of the local populace. There will be generation of employment, growth in local business, transportation and life style.

2.2 MITIGATION MEASURES

To overcome the various environmental problems, mitigation measures have been worked out with a view to bring down the levels of impacts within limits. The Environmental Management Plan (EMP) has been worked out with keeping in view the mitigation measures of the adverse environmental impacts due to mining.

- The comprehensive EMP will include greenbelt development, disaster management plan and the peripheral socio-economic plan for the region apart from dealing with the possible pollution impact relating to air, water, land, noise etc.
- EMP at design stage will deal with, proper water conservation and planning, efficient dust management, noise and vibration control etc.
- Use of advanced technology, process optimization, energy conservation, preventive and predictive maintenance, waste minimization and good housekeeping are all part of the EMP.

2.2.1 Air Pollution Mitigation Measures

Gangaramchak & Gangaramchak Bhadulia Opencast Coal Mining Project is an operating project. With the addition of extra production to the ongoing mining activity, there will be more impact on the air environment due to airborne fugitive dust emission. Dust emissions which are normally due to mining operation & transportation deteriorate the ambient air quality. These are however temporary in nature. The proposed preventive measures, which will be undertaken by the mining company during various mining related activities are discussed below:-

i) Drilling Operation:

At present drilling operation is carried out with water injection system to minimize dust generation in the work environment. Along with it following few measures are also adopted like;

- Using sharp drill bits for drilling holes & drills with water flushing system.
- Proper maintenance of drill bits.

Dust emanated during drilling operation could be further reduced by;

- Providing Drills with dust arrester or collector.
- Sprinkling of water before and after drilling in dry seasons.
- Drill operators will be provided with dust mask, if necessary, to minimize the impact of air pollution on the workers.

ii) Blasting Operation:

Generation of dust during blasting would be minimized by taking the following measures;

- Proper burden and spacing of blast hole.
- Proper charge per delay.

- Water shall be sprayed at Quarry Faces before and after blasting.

iii) Loading and Transportation:

To minimize the adverse impact on air quality due to loading/unloading and transportation the following measure are proposed:

- The un-metalled service roads are proposed to be metalled or adequately compacted before being put into use.
- Overloading of vehicles will be avoided as spillage generates dust.
- Trucks carrying coal will be covered with tarpaulin sheets to prevent fugitive dust generation.
- Continuous cleaning of haul roads & regularly filling of pot holes.
- Water sprinkling during loading, unloading and transportation in the haul roads.
- All the fossil fuel consuming vehicles & equipment shall be properly maintained as per the guideline of the manufacturer to keep the SO₂ & NO_x level within the prescribed limit.
- Vehicles having Pollution Under Control (PUC) Certificate will be engaged in the mines.

v) Dumping Area:

Once the overburden dump has reached its designed size, Coir matting will be adopted. Jute mat/coir netting of about 25 mm X 25 mm mesh size shall be laid on slopes and anchored by pins on leveled surfaces to prevent displacement and to have intimate contact. The mat/net shall be covered with 80 mm thick good agricultural soil mixed with fertilizer, pesticides and saw dust/hay as base for vegetation along with seeds of Grass-Legume mixture. This not only stops erosion of soil by wind or rain and help to maintain uniform moisture content of the soil underneath but also helps in growth of shrubs & trees species.

vi) Haul Road:

Haul roads are major sources of fugitive dust in a mine. To reduce the problem of dust generation from haul roads, the following actions will be taken up:

- The practice of construction of haul roads with the layers of hard stones overlaid by laterite fines and subsequently compacted by road rollers in surrounding areas will be continued.
- Regular water sprinkling by tanker, especially before transportation.
- The haul road will be compacted & water spraying will be done in a number of runs using only a small quantity of water each time just sufficient to wet the surface.
- Continuous cleaning of haul roads & pot holes to be regularly filled.

vii) Coal Stack Yard:

Spontaneous heating of Coal may cause fire in its Coal benches, Coal yards etc. Heights of coal stack yard will be less than 10 meters to avoid spontaneous combustion at the stack yard. Fixed type sprinkler and firefighting arrangements are already in place and will be installed at the coal stock yards.

2.2.2 Water Management and Water Pollution Control Measures

The objective is to regulate the surface water of the mining area in such a manner so as to cause minimum contamination and alteration of drainage system. The salient features of the scheme are as follows:

- Retaining walls will be built all-around the waste dumps by the conceptual stage, which will have weep holes for passage of storm water to join garland drains.
- Garland drains shall be constructed as much as possible around waste dump (depending on contours). The garland drains shall be routed through settling tank to settle down suspended solids in the storm water.
- Settling pits & drains are cleaned periodically, especially before & after rainy season.
- No overburden or loose sediments are kept in the working benches particularly during monsoon months.
- The settled water from the settling pond will be used in dust suppression & plantation.
- Sanitary sewage generated in office area and Canteen water shall be treated in STP; the treated water to be used in dust suppression and plantation.

The seepage of groundwater shall occur as and when water table is intersected. The impacts exerted on groundwater regime due to mining may be for temporary period during mine life and would tend to regain the initial conditions as infiltration of rainwater would balance the mine dewatering over a period of time. Considering the present stage of groundwater development and availability of groundwater in the lease area it does not seem that the mining is going to make any adverse impact on the groundwater regime of the area.

2.2.3 Noise Pollution Control Measures

Noise level in work zone is expected to increase marginally in the open-cast mining area due to excavation, drilling & blasting, handling and transportation of overburden & coal. The following measures are taken to reduce noise levels within the lease area;

- Diesel powered machineries which are major source of noise in open cast environment will be properly maintained as per maintenance schedule to prevent undesirable noise.
- Drill machine operators, cutters and dumper drivers will be issued with earplugs and earmuffs. Duty hours of operators of noisy machinery are regulated to keep their noise exposure levels within limits.
- Green belt will be developed around the mining lease at suitable location to reduce noise level.
- Attention shall be paid towards rigorous maintenance of silencers of diesel engines.
- Blasting will be made during day time & if possible, at a particular time of the day.

2.2.4 Solid Waste Management

There will be two types of waste material generation in the coal mining process, viz. Top soil and OB. Top Soil will be utilized in the plantation and will be spread over the reclaimed area in later phases during the progressive and final closure of the mine. Stockpiling topsoil may result in disruption & loss of beneficial soil microorganisms and nutritional values, hence needs preservation. Re-vegetation of the stockpile should be done to protect the soil from erosion, discourage weeds and maintain active populations of beneficial soil microbes.

Concurrent backfilling is under progress and shall be continued to do so. Waste generated from the pit will be dumped in the same pit where Coal already excavated. Conceptually, 127.90 ha shall be backfilled out of total excavated area of 141.92 ha., and the balance 14 ha shall remain as opencast void. Following steps will be taken for the management of waste dump;

- Ring bund and drain all around the dump, at the toe shall be made so that the rain water falling over the slopes and bringing down small quantities of silt will be arrested at the toe itself; thus prevented from going far away into the agriculture land & nearby nalas etc. Settling tank along drain shall be made at some intervals.
- Formation of masonry chutes at suitable intervals to bring down the rain water from the top of the dump to the ground levels. By this method, carrying away large quantities of silts by eroding the slopes year after year by water will be prevented.
- Garland drains (diversion ditches) shall be built to avoid water from outside entering into or becoming pounded against overburden dump.
- The external dumps will have stretches of retaining wall at suitable locations.
- Coir matting & grass seeding will be done on dump slope followed by plantation of shrubs in rainy season.

The municipal Solid waste like organic waste from canteen and office shall be composted for horticulture use. STP Sludge shall be dried in sludge drying bed and shall be used for horticulture purpose. Hazardous Waste like Used oil, oil & grease skimming, chemical sludge from waste water treatment, other scrap material etc. shall be collected and disposed off as per Hazardous & other Waste (Management and Transboundary Movement) Rule,2016 and amendments thereof.

2.2.5 Mitigation Measures for Reducing Impacts on Vegetation & Wildlife

There are no Protected Forests, wildlife sanctuary or corridor within 10km radius of the ML area. However, the forests in the buffer zone support faunal species which have become habituated to prevailing conditions. Similarly, the fauna in the core zone in the vicinity of the mine is restricted to few common small species. But after the mine is closed and the plantations developed on the abandoned mine area will attract back at least some of the animals displaced / scared away by the project.

2.2.6 Occupational Safety and Health

Occupational safety and health are very closely related to productivity and good employer-employee relationship. The factors of occupational health in this mining project will be mainly dust, noise & vibration. Safety of employees during operation and maintenance, etc. shall be as per mines rules and regulations. The following measures relating to safety and health shall also be practiced:

- Provision of rest shelters for mine workers with amenities like drinking water etc.
- All safety measures like use of safety appliances, safety awards, posters, slogans related to safety, etc.
- Regular maintenance and testing of all equipment as per manufacturer's guidelines.
- Periodical Medical Examination (PME) of all workers by a medical specialist so that any health hazard can be detected in its early stage.
- First aid facility in the mines including training and retraining of First aiders.

- Close surveillance of the working environment and work practices by the Env. Mang. Cell, which may affect environment and worker's health.
- Working of mine as per approved mining and environmental plans.

2.3 ADDITIONAL STUDIES

2.3.1 Public Consultation

Public Consultation is one of the important aspects of environmental impact assessment which is covered under MoEF notification on environmental clearance issued on 14th September 2006. The aspect of public consultation is to be followed as per the said notification. In the present case, M/s West Bengal Power Development Corporation Limited is hereby applying to SPCB, West Bengal for conducting Public Consultation.

2.3.2 Disaster Management & Risk Assessment and Cost on Environmental Control Measures

Mining and allied activities are associated with several potential hazards to both the employees and the public at large. Hence mine safety is one of the most essential aspects of any working mine. The possibilities of occurrence of disasters are as follows:

- As far as the nature of deposit and method of mining is concerned, there is no possibility of landslides, subsidence and inundation during the mining activities.
- The seismic map of India indicates that the project area is located in the state of West Bengal is in Seismic zone III, but hardly any ominous tremor has been felt in the target area any time before.
- Keeping in view the past occasions, flood is not expected, as the mine area is not located in the delta region of any river.
- Spontaneous heating of Coal may cause fire in its Coal benches, Coal yards etc. Extraction of coals will made maximum possible from the coal benches and spillage coals will be removed before moving to another bench. This will reduce the chances of fire.

Cost of Environmental Control Measures

Particulars	Details of Capital Investment	Details of Recurring Cost
Air Pollution Control	Rs 45 lakhs	Rs 10 lakhs
Water Pollution Control	Rs 40 lakhs	Rs 3.5 lakhs
Noise Pollution Control	Rs 2.5 lakh	Rs 0.5 lakhs
Environment Monitoring	---	Rs 5 lakhs
Occupational Health	Rs 8 lakh	Rs 4.5 lakhs
Green Belt Development and Maintenance	Rs 15 lakhs	Rs 2.5 lakhs
Total	Rs 110.5 lakhs	Rs 26 lakhs

3.0 CONCLUSION

Due to mining activity the area will see development in economic sector with scope of employment (both direct & indirect) to locals and the coal produced will provide uninterrupted supply of coal to power plants to generate electricity within the State of Bengal which will fulfill the electricity demand of the state. With implementation of Environmental Management Plan, pollution will be kept within norms. Hence, it is requested that necessary Environmental Clearance may kindly be accorded for implementation of the project.

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