

**CHHATTISGARH MINERAL
DEVELOPMENT CORPORATION LTD.
RAIPUR (CG)**

**SUMMARY OF
ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
FOR
SHANKARPUR (BHATGAON-II) &
EXTENSION COAL BLOCK,
BISRAMPUR COAL FIELD,
DISTRICT-SURGUJA, CHHATTISGARH
(BLOCK EXTENT: 3332.49 HA, MINE LEASE 3005.12 HA,
ROM 2.0 MTPA WITH MAXIMUM OPENCAST 2.0 MTPA
AND MAXIMUM UNDERGROUND 0.20 MTPA)**

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EXECUTIVE SUMMARY OF EIA/EMP

1.0 INTRODUCTION

1.1 General background

The Shankarpur (Bhatgaon-II) & Extension Coal Block located in Sarguja district of Chhattisgarh has been allotted to M/s Chhattisgarh Mineral Development Corporation Limited, Raipur vide allotment letter No. 13016/8/2007-CA-1 dt. 25th July, 2007.

The coal block is present in the Bistrampur Coalfields under the command area of South Eastern Coalfields Ltd., Bilaspur. The coal field is nearly rectangular in shape covering an area of 1250 square kilometers. The annual production of the mine is proposed as maximum 2.0 MTPA from opencast method and maximum 0.20 MTPA from underground. When the underground production will be at its peak of 0.20 MTPA, the opencast production will correspondingly be 1.8 MTPA. Thus, total production shall be 2.0 MTPA. The underground production will start from 6th year upto 23rd year. From 24th year, all production i.e. 2.0 MTPA shall occur from opencast.

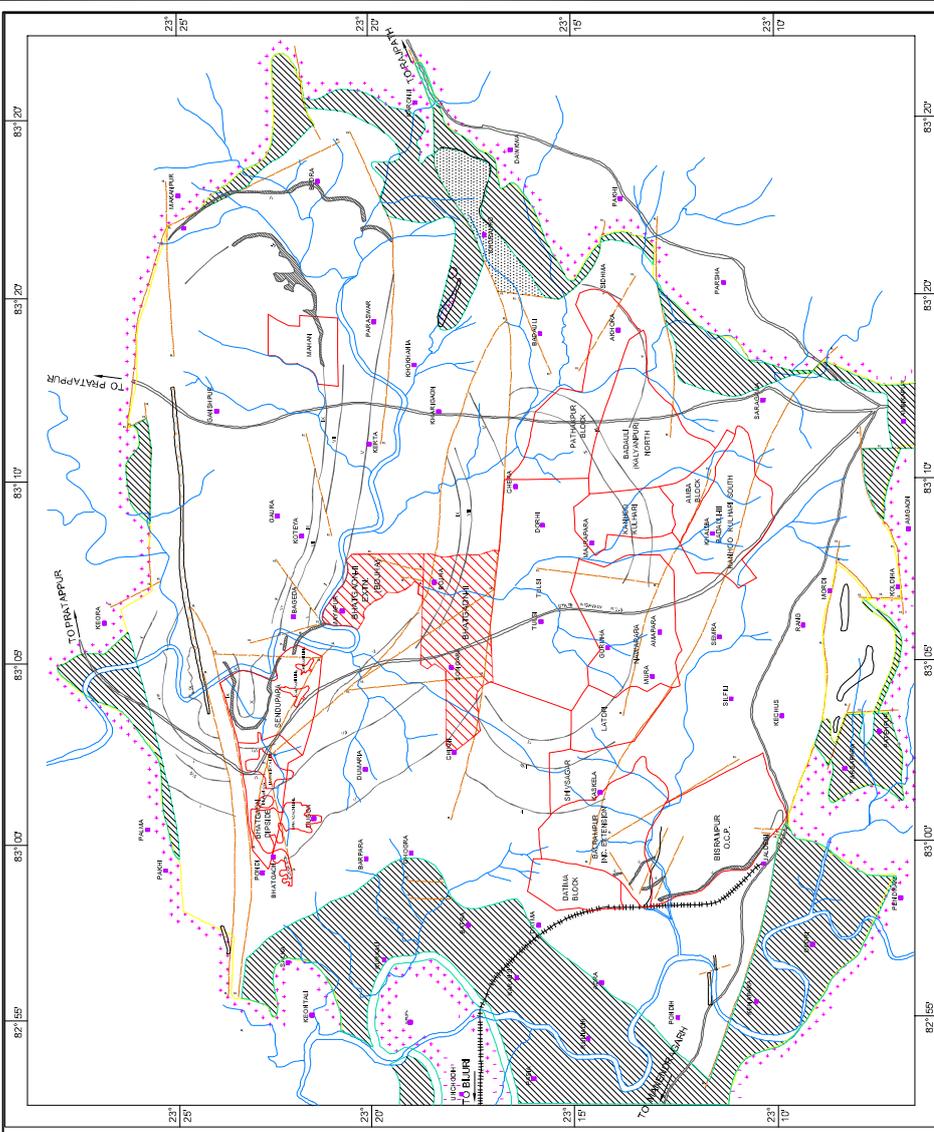
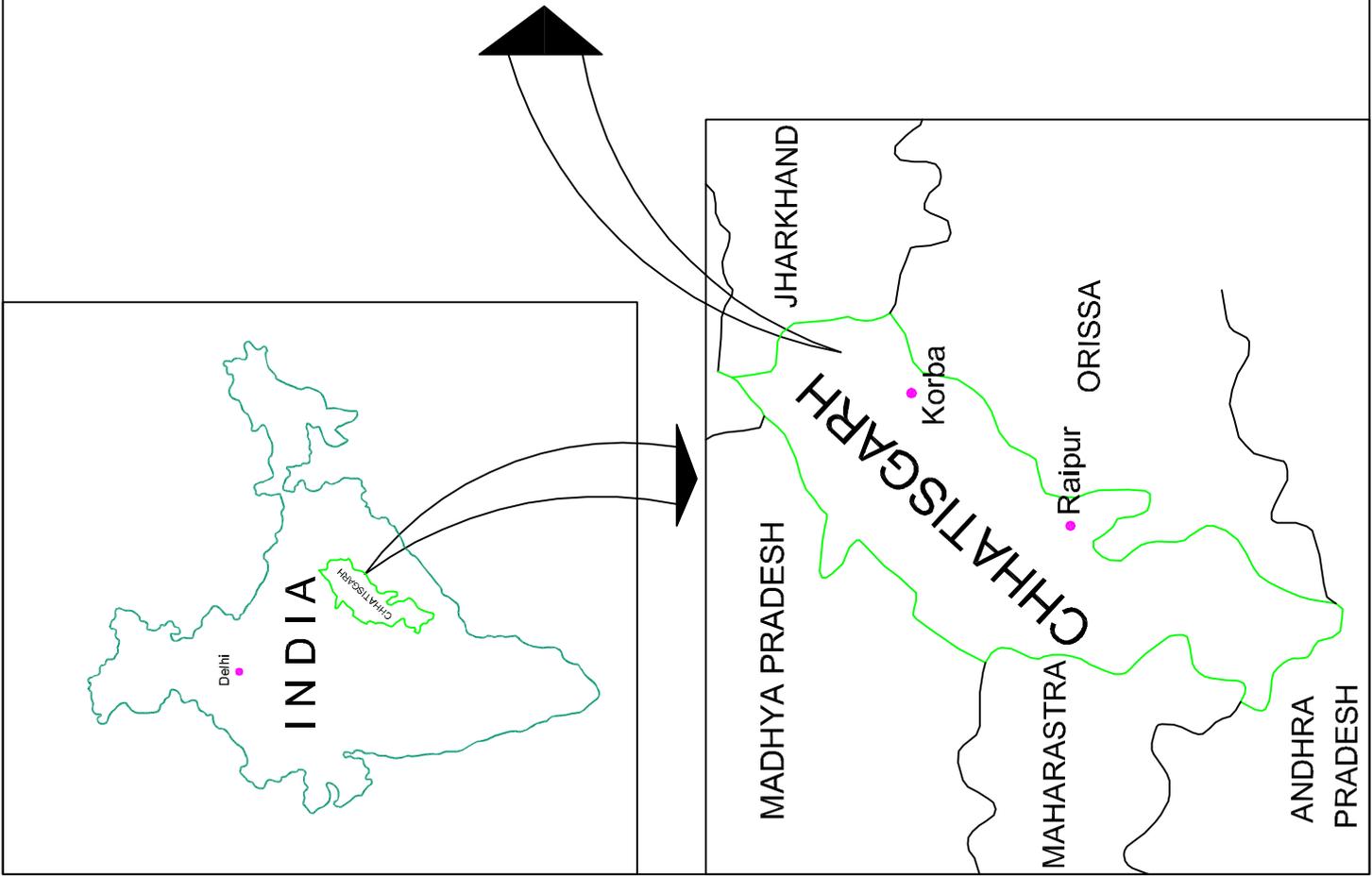
1.2 Location and communication

The area of the allotted block is 33.63 sq.kms as per Geological Reports and falls in villages Shankarpur, Songara, Mohanpur, Bojha, Mayapur (within the block) & Tulsi, Shakalpur, Dharampur and Koteya (outside the block) in Sarguja district of Chhattisgarh. The area falls in the Survey of India Top sheet No. 64 M/3 and lies between latitude 23°16'54"N to 23°21'24"N and longitude 83°03'00"E to 83°08'06"E. The location plan is given Fig 1. The State Highway No. 5 Ambikapur to Varanasi passes through the western part of the block. The nearest railway station is Bistrampur at a distance of 15 km in South West direction of the East Central Railway on the Bijuri- Ambikapur broad gauge branch line and the nearest air port is Ranchi which is approximately 300 km by road in East direction.

2.0 PROJECT DESCRIPTION

2.1 Geology

The geology of the block has been established from the sub-surface data from boreholes as the entire area in the block is covered by soil and alluvium. All the coal seams occurring in the block are confined to the Barakar Formation. A metamorphic rock intersected in one borehole has revealed the presence of folded and streaked quartzite. Fine grained greenish sandstone, shaly sandstone and shale of Talchir formation have been encountered in 13 bore holes. No igneous intrusive has been encountered in any of the bore holes. The strike is found to vary within wide



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-  ALLOTTED COAL BLOCK
-  ROAD
-  TALCHIR FORMATION
-  RIVER / NALA
-  VILLAGE SITE
-  FAULT
-  INCROP OF SEAM

FIG.NO - 1

CHHATISGARH MINERAL DEVELOPMENT CORPORATION, RAIPUR	
SHANKARPUR BHATAGAON-II & EXTN. COAL BLOCK	
Subject	LOCATION PLAN
Scale	SCALE- NTS
Prepared by:-  GEOMIN CONSULTANTS (P) LTD. 287, KHARAVELA NAGAR, BHUBANESWAR.	RQP: L. N. MAHESHWARI 34011(34)/2005 CPAM

limits and shows local undulations in the southern part of the block. The coal seams show rolling dips generally due NW and NNE varying from sub horizontal to about 5°. There are 14 normal faults encountered within the entire block. Out of the five coal seams in Bhatgaon II, three seams i.e. III top, II and L1 are persistent and considered for reserve estimation. Seam III Bottom and I are impersistent and thin. Similarly out of the ten seams in the Extension block, only three seams i.e. VIII, L6 and VI are persistent and developed, hence considered for reserve estimation, while the other seams are impersistent.

2.2 Reserve estimation

Mineable reserves have been estimated by Iso-chore method. The area of the allotted block is 33.63 sq. km. with 80.13 MT of geological reserves, out of which 58.45 MT coal is extractable (55.15 Opencast and 3.30 Underground). The overall rated capacity proposed for the mine is 2.0 MTPA. The total life of the mine shall be 32 years.

2.3 Mining

Opencast mining: Opencast mining will be carried out through excavating the block into four quarries. Quarry 1 & quarry 4 are proposed to be developed in the 1st year of mine operation. The coal production will start from the 2nd year of mine operation and the target coal production from opencast of 1.8 MTPA will be achieved in the 4th year. On exhaustion of reserves of quarry 1, quarry 2 will start & against quarry 4, quarry 3 will start. The maximum depth will be 102 m. The removal of overburden will be done with the help of shovel dumper combination by drilling and blasting. For coal winning, 2 surface miners with 20 numbers of 30 Tonne dump truck (coal body) and 3 numbers of 4.5 cubic metre front end loader will be deployed. The total extractable reserves within the quarries have been estimated to be 55.15 Million Tonnes with a corresponding OB volume of 924.43 million cubic metre. The average stripping ratio is estimated to be 16.76 cum/te. Mining and transport of coal and OB will be fully mechanised. The mine will operate 330 days in a year and 3 shifts per day.

Underground mining: Underground mining operation will start from 6th year. Underground mine in seam L1/VI is proposed where no other seam exists above this. In this area, the stripping ratio is very high i.e. 31.50 cubic metre/tonne. Seam is thin and at shallow depth. The overall percentage of extraction is considered 50%. The extractable reserve will be 3.3 Million Tonnes. Simple Bord & Pillar method of development with solid blasting and loading by extra low height site dump loader is proposed which will load on to chain conveyor/pony belt conveyor. It will be transferred on to gate belt & trunk belt conveyor.

2.4 Surface constraints

Galphulli Nala, having a width of approximately 100 m is a perennial nala passing through the centre in the southern portion and forms western

boundary in the northern portion of the block. The coal blocked beneath this water body is about 0.948 Million Ton. However, the nala will not be diverted. The State Highway, Ambikapur to Varanasi for a stretch of about 3.8 kms is passing through the property. The coal blocked below the road is about 0.803 Million Ton and will not be diverted. But from safety point of view, to keep the industrial infrastructure on one side of the road, it is necessary to divert about 0.90 km length along the block boundary. Shankarpur and Mayapur are falling in the quarry area and are proposed to be shifted/resettled.

2.5 Blasting

In opencast mining, removal of top soil will be done without drilling and blasting while overburden will be removed by drilling and blasting using explosives, detonating cord, cord relay and detonators. Powder factor of 0.30 to 0.32 kg/m³ for overburden and for coal as 0.2 kg/m³ has been adopted. In underground development and depillaring, blasting off solid with permitted explosive P5 will be done. The daily requirement will be about 300 kg. Slurry explosive is proposed to be used in overburden and the daily requirement will be about 30 te.

2.6 Site services

It is imperative to develop core infrastructure like power, road, telecommunication, housing, service buildings viz. office, store, first aid centre, canteen, etc. for a large number of employees for the project. A heavy earth moving machinery (HEMM) workshop is to be constructed for maintenance of shovel, dumper, drills, dozer etc. A 10 T capacity magazine has been provided for the storage of primers, detonators, fuse, permitted explosive etc.

Total requirement of water for mining and allied activities and domestic consumption are estimated as 1616.5 m³/day. Out of this the requirement 114.1 m³/day potable water for mine and 700 m³/day for colony will be met from bore well and the rest 802.4 m³/day of industrial water requirement will be met from mine sump and surface water reservoir.

An electrical substation will be constructed near the mine site to meet the requirement of electricity for machinery, pumping, lighting etc. Field sub stations will be developed in future.

2.7 Manpower

The requirement of manpower for open cast has been estimated as 1251 and for underground mine is estimated as 366 persons. Mine will work for 330 days in a year with 3 shifts of 8 hours each.

3.0 PRESENT ENVIRONMENTAL SCENARIO

3.1 Topography and drainage

The lease hold and study area exhibits undulating and rolling topography. The lease area has regional slope towards north while study area has north westerly slope. The maximum elevation observed over the lease area is 550 m above mean sea level (amsl) over the south-western parts and the lowest elevation of 518 m amsl is observed in the north. The maximum elevation in study area is 580 m amsl over the south-western parts and the lowest elevation of 518 m amsl within lease.

The drainage pattern of the core zone is dendritic. Various seasonal streams flow in the core zone which dries during the summer season. The lease and study area forms a part of Mahan river catchment. Galphuli nala, cuts across the southern portion of lease hold. The land slopes on either side of Galphuli nala towards the nala bed. River Mahan is the main river of the study area which flows westerly through eastern parts of study area and turns to north-west near village Mayapur in central parts of the study area. The entire study area has intricate drainage network showing dendritic pattern.

3.2 Climate and micro-meteorology

The area exhibits sub tropical climate and is characterized by an oppressive hot summer, a mild winter and well-distributed rainfall during the south-western monsoon season. The nearest meteorological station of IMD is at Ambikapur. May, June and July are hottest part of the year. In winter season the average maximum and minimum temperatures are around 31.60 °C (Nov 2009) and 1.6 °C (Jan 2010), respectively. The area receives maximum rainfall of monsoon precipitation in the months of July and August. The average rainfall in the area is 1192.2 mm.

The micro-meteorology was monitored at the site from March to May 2011. The temperature recorded as a minimum of 21.0°C and maximum of 41.50°C. Relative humidity varied as a minimum of 9% and maximum of 84.50% during the monitoring period. The wind speed varies from calm to 20.80 km/hr and the predominant wind direction was observed from N with 16.53 % of occurrences.

3.3 Ambient air quality

Ambient air quality was studied at six locations, one in the core and five in the buffer zone namely Jhigador, Haripur, Pandpa, Sukhdeopur and Maridand villages. PM 10 was found between 18 to 43 $\mu\text{g}/\text{m}^3$, PM 2.5 was found between 32 to 75 $\mu\text{g}/\text{m}^3$, SO₂ from 6.1 to 8.8 $\mu\text{g}/\text{m}^3$ and NO_x from 7.2 to 13.9 $\mu\text{g}/\text{m}^3$. CO values were found to be less than 1000 $\mu\text{g}/\text{m}^3$ at all location on all sampling days.

3.4 Water environment

The study area forms a part of Mahan river catchment. Galphuli nala flows from south to north through southern part and forms western boundary of the northern extension of the block. A number of small seasonal tributaries join the Galphuli nala. The entire study area has intricate drainage network showing dendritic pattern. The average depth to water table over the mine lease range between 5.8 to 12.10 m below ground. The average slope of water table is 6.4 m/km over the study area. The annual ground water resource of the study area is 56.48 MCM and the utilization is 20.59 MCM.

Water samples were collected from 7 ground water (core zone, Sukhdeopur, Maridand, Chikni, Shyampur, Haripur, and Kalyanpur villages) and 3 surface water (Chandrapur, Mahan river and 0.9 km from core zone) in the study area. Different hydro-chemical parameters present in ground water as well as surface water are well within the desirable / permissible limits specified by IS: 10500 for drinking purposes and Schedule-VI for surface water. The ground water is neutral in nature.

3.5 Land use pattern and soil quality

The total area of core zone is 3005.12 Ha, covering part of the tribal tenancy land, other tenancy land, Chhote Jhad Ka Jungle, Government land and protected forest. The study area falls in 2 Tehsils of Sarguja district (Pratappur & Surajpur). There are 100 villages in the study area. As per 2001 census, 18.27% of total area is under forest, area not available for cultivation is 8.54%, culturable waste land is 18.07%, unirrigated land is 51.07 % and irrigated area 4.06%.

4 top soil samples were collected and analysed from core zone and buffer zone. pH shows that soil is slightly acidic and is rich in nitrogen but deficient in Potassium. The conductivity is normal.

3.6 Noise and traffic density

Noise levels (Leq. values) at the ten monitoring stations (1 within the core area and 9 within study area) were observed in the range from 43.10 to 49.40 dB (A) during day and 36.00 to 39.50 dB (A) during night time. The traffic density survey was conducted on Ambikapur to Varanasi Road, Songara on 20/21-5-2010 (from 1.00 hrs till 24.00 hrs). Total numbers of vehicles were found as 2127 including cycles.

3.7 Ecology

The area comes under broad category of sub-humid to dry deciduous, mixed and sal forests. A dense mixed forest dominated by Sal trees is present over entire study area. The forest mainly consists of Sal, Mahua, Char, Palas, Neem, Tendu etc. trees. Timber, Tendu leaves, gum, Mahua flowers and fruits etc. are obtained from the forest. Rice is the major crop raised in the area as kharif crop during the rainy season.

Sloth bear is the Schedule I animal found in the core zone. The 10 km radius study area is home to several species of mammals, reptiles and aves. The study area has 12155.89 Ha (18.27%) forest. The fauna like Jackal, Monkey, and Common Fox etc. are found in the forest area. Schedule I animals found in the study area include *Melursus ursinus*, *Varanus bengalensis* and *Python molurus*. The birds found in the study area are Jungle myna, Pigeon, Parrot, House crow, Common grey hornbill etc.

3.8 Socio-economic condition

Total population in the study area is 134420 that include 66439 females and 67981 males. SC percentage is 5.20 while ST constitutes bulk of population (45.24%). The average literacy is 42.40%. The literacy among women is still poorer at 30.38%. 29.82 % of the total population are main workers, while 16.40 % are marginal workers and 53.79 % are non workers.

3.9 Places of archaeological/historical/tourist/religious importance

There is no important archaeological/historical place or other place of tourist or religious importance within the study area. Nag Bill Cave is situated about 3 km (within Songhara RF) NW and Bill Dwar cave situated 2 km East of Khargawan village.

4.0 ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION

4.1 Topography and drainage

Impact: The total mine lease area is 3005.12 ha out of which 2036.00 ha i.e. 67.75% land will be excavated area. Total disturbed area (2695 ha i.e. 89.88%) within ML will comprise excavated land, external dumps, area occupied by infrastructure, roads etc. This will cause change in topography. At the end of life of mine 111 ha i.e. 3.69% shall be under surface dumping while during the mine life 10.12 ha of area shall be under top soil dump. Maximum depth of mine in opencast method will be 102m bgl.

Northerly flowing Galphuli nala in the middle of the area is the main drainage channel for the block. This nala is joining Mahan River which forms northern boundary for extension block. Protection measure like embankments against the nala has been planned.

Mitigation: Part of the area i.e. 1887 ha i.e. 92.68% shall be backfilled. Balance 149 ha void area of the excavated pit will ultimately become a water reservoir. Out of total backfilled area, 200 ha in Quarry-2 and 300 Ha in Quarry-4 are proposed to be converted into agriculture land and water body. The external dump shall be upto a height 30m over an area of 111 Ha. The area of the top soil dump shall be 10.12 ha and maximum height shall be less than 6 m. Bord and pillar with caving system of mining has been proposed to be adopted. Bojha village is situated within the underground portion of the coal block. The manner of extraction of pillars below Bojha village shall be so adopted so that, the surface is not affected

by subsidence. Adequate measures to protect the mine workings from surface water flow during the rains will be taken by way of providing garland drains around the mine excavation, surface dumps and also providing suitable drainage gradients for mine benches.

4.2 Air environment

Impact : Source of PM10 and PM 2.5 in open cast mine is due to excavation, transportation, handling, drilling, blasting, loading and hauling operations. Air pollution due to SO₂, NO_x and PM may result in irritation and inflammation of eyes and congestion of throat and oedema of lungs. Carbon monoxide can cause loss of haemoglobin in blood and subsequently stresses on those suffering from cardio-vascular and pulmonary diseases. The ground level concentration of PM10, PM 2.5, SO₂ and NO_x at a distance of 100 m in North direction will be 14.37 µg/m³, 8.23 µg/m³, 1.80 µg/m³ and 3.46 µg/m³ respectively.

Mitigation: Drilling and blasting will generate dust which will be controlled through sprinkling, providing drill with sharp drill bits, suitable burden and spacing of blast holes and controlled blasting. Transfer points in the coal handling plant will be provided with proper dust suppression and extraction system like water sprinklers, suction hoods etc., Plantation all around the coal handling plant (CHP) will be done. Broken pieces of coal will be wet prior to their loading in dumpers. Regular maintenance of vehicles and machinery, black topping of service roads, avenue plantation etc. will be done.

4.3 Water environment

Impact: No impact on the surface water resources is envisaged as no water is drawn. Surface water bodies are anticipated to get affected. Jhanpi Nala will get excavated during mining of Quarry 1. Parts of four of the first and second order streams joining the third order Jhanpi Nala will also get excavated. Nala diversion is suggested. The Galphuli Nala flowing through the central part of the block is not planned to be disturbed and instead, Quarry 2 and Quarry 3 are proposed to be established on either side of it. The ground water table being shallow, it will be intersected even during the 1st year of mining. Maximum anticipated mine seepage at peak when open cast and underground mining both will operate will be 2.22 M.Cum annually. The loss of ground water through mine seepage will be 4.26% of the ground water resource available. Thus, the lowering of water table will be experienced within the radius of influence of the mine. Neither coal nor the OB, contains any harmful ingredients.

Mitigation: To prevent surface and ground water contamination by oil/grease leak proof containers for storage and transportation will be used. The sewage waste generated will be drained by underground impervious drains, and will be treated in Sewage Treatment Plant. Any areas with loose debris within the leasehold will be planted. Garland drains will be constructed around freshly excavated and dumped areas so that flow of

water with loose material is prevented. Rainwater harvesting shall be established in the project after the office, service buildings and residential buildings come up.

4.4 Noise, traffic density and ground vibration

Impact: Ambient noise levels in the core area are likely to increase from deployment of noise generating equipment like Heavy Earth Moving Machines, drills, heavy blasting and coal handling operations. The main noise generating sources during coal mining are due to dozers, loaders and dumper movement, service vans, blasting operation and truck movement. Intermittent noise is generated due to operation of diesel generator. The increase in traffic will also result in increased emissions which will cause impact on the ambient air quality. The blasting operation may generate ground vibration, after commencement of mining operations.

Mitigation: Air Silencers will be used to modulate the noise generated by the machines. Workers will be exposed to higher levels of noise exposure by rotation. Proper maintenance of noise generating machinery including transportation vehicles will be done and blasting will be carried out in the daytime and controlled blasting shall be implemented. Coal will be transported in covered trucks. Any spillage on the roads shall be cleaned after wetting. To control ground vibration appropriate blasting pattern shall be adopted.

4.5 Land use

Impact: The total mine lease area is 3005.12 ha out of which 2695.00 ha i.e. 89.68% land will be disturbed. The disturbed area within ML will comprise excavated land, external dumps, area occupied by infrastructure, roads etc. The soil quality of the surrounding area are likely to get affected due to siltation and run off from waste dumps.

Mitigation: The post mining land use of core zone shows that all the disturbed areas will be reclaimed before abandoning the mine excluding the void. Total mined area will be 2036.00 ha. Out of this 1887.00 ha area will be backfilled and planted while rest of the area is proposed to be converted into water body. On an experimental basis, about 500 ha of reclaimed land shall be utilised for agriculture. Whole of the excavated area is proposed to be developed into a picnic spot due to the formation of water body created as a result of the left out void. The water body will be used for irrigation, watering the forest at earlier stages and it will also attract avifauna.

4.6 Solid waste management

Impact: Four types of solid wastes are likely to be generated through mining activities which can be categorized as over burden (Top soil & waste), sludge from oil / water separator, sludge from mine water settling pond and domestic waste. Total volume of top soil will be 30 Mcum during the life of the mine.

Mitigation: It is envisaged to scrap out about 0.5 m thick layer of topsoil separately before excavating the 1st OB bench and stack it in low height (<6m) stack near the OB dumps over the 10.0 Ha area. Total of 924.43 M cum of top soil and overburden will be generated. The solid waste, which is biodegradable in nature, will be composted by conventional or non-conventional techniques (vermi-composting) into manure for use in greenbelt and reclamation. The recyclable waste will be sold to vendors while the disposable waste will be land filled. The sludge other than oil and grease obtained from the workshop water treatment system will be disposed in an impermeable pit.

4.7 Ecology

Impact: Impacts of different activities of mine will cause loss of vegetation by excavation and dumping, migration of biotic species due to noise, vibrations and lighting and lowering of water table. Fauna will move away from the area. Trees shall be cut due to diversion of forest land for non-forest purpose. Agricultural area will be acquired for mining and get disturbed.

Mitigation: A thick plantation is proposed to be provided and maintained around the mining area and along the roads. During peak requirements, additional plants will be transported from Govt./Forest nurseries, located around the area. The common species used for plantation in the region are Sal, Mahua, Neem, Siris, Acacia, Mango, etc. On an experimental basis, the last about 500 ha reclaimed land shall be utilised for agriculture.

4.8 Socio-economics

Due to implementation of the project 9 villages shall get impacted/affected these villages are Mayapur, Shankarpur, Bojha, Songara, Mohanpur, Kotaya, Shakalpur, Tulsi and Dharampur. Out of the above, habitat of 5 villages namely; Mayapur, Bhojha, Songara, Mohanpur and Shankarpur are situated within the block boundary. Only Mayapur and Shankarpur villages shall be required to be resettled as they are falling within the quarriable zone. Total number of project affected families requiring resettlement is 538. The project affected families will be given rehabilitation and resettlement benefits according to the Govt. of Chhattisgarh Policies and prevailing practice in industries in the vicinity. Preference will be given to the local people for gainful employment in the unskilled and semi-skilled categories. With the advent of the mine, infrastructure such as road, telephone, etc. will become available to the local people.

4.9 Occupational health

The medical facilities will be provided for all the employees of the mine. All the employees and contractual workers will be sent for regular health check up for the occupational diseases like silicosis, pneumoconiosis, etc., which are prevalent in the mining industry and tests like optometric, audiometric, cardio-vascular etc will be done.

5.0 ANALYSIS OF ALTERNATIVES

No alternative site is proposed as coal occurrence is site specific. Shankarpur (Bhatgaon II) & Extension Coal Block has been allotted to M/s Chhattisgarh Mineral Development Corporation Limited. Thus, the mine is being established where the mineral is available. Mining will be done through opencast as well as underground mining method under economic viability keeping in view the conservation of minerals. Mechanized mining will be followed with shovel dumper combination to suit the geological conditions of the coal seams in opencast and Bord & Pillar System with low height SDL in underground.

6.0 ENVIRONMENTAL CONTROL AND MONITORING ORGANISATION

A team has been proposed to take care of pollution monitoring aspects and implementation of control measures headed by an Environmental Engineer. A schedule has been spelt out for periodical monitoring of the important environmental parameters. The total investment on environmental improvement works is envisaged as Rs. 1699.80 lakhs and recurring expenditure during the stage of production is Rs. 328.3 lakhs per year. Total project cost will be about Rs. 900 Crores including the above costs.

7.0 DISASTER MANAGEMENT PLAN

Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine should be able to work under conditions, which are adequately safe and healthy. In case a disaster takes place despite preventive actions, disaster management will have to be done. There are various factors, which can result in a disaster in the mine. These hazards are pit slope failure, overburden dump slope failure, heavy machinery. To avoid very high dumps, early backfilling is planned. In order to prevent the danger of overburden sliding a sturdy stonewall will be built around the toe of each active dump.

To prevent accidents due to trucks and dumpers all transportation within the main working should be carried out directly under the supervision and control of the management. In order to prevent disaster due to surface fire/coal stack fires sufficient fire extinguishers will be installed at selected locations on surface like electrical sub-stations, work shop, garage, diesel depot, stores, etc. Besides, sufficient number of water hydrants with sufficient hose pipes will be made available on the surface for fire protection. Bunds/embankments shall be constructed along the nalas/water courses to prevent water entering the mining area.

Garland drains shall be provided around the mine pit at surface to divert surface water from flowing inside the pit. In underground mine, the mine entries shall be made above the HFL to prevent rain water entering into the mine.

8.0 PROJECT BENEFITS

The mining project is located in one of the most undeveloped and backward area with respect to employment and facilities. During operation phase, around 1617 persons (1251 for Opencast and 366 for Underground) will be directly employed at the mine. Many more persons will be indirectly engaged either on contract basis or in transportation of materials in provision of different services associated with the project. Better education facilities, proper health care, road infrastructure and drinking water facilities are basic social amenities for better living standard of any human being. The initial CSR budget will be approximately Rs. 100 lakhs of investment followed by Rs. 100 lakhs/ annum as recurring cost @ Rs. 5/- per tonne of coal production.

9.0 PROJECT CONSULTANTS

The consultants engaged for the preparation of the EIA/EMP of the project are Min Mec Consultancy Pvt. Ltd. Company. It was registered in July 1983 with the Registrar of Companies, Delhi & Haryana, India. In 1994, Min Mec established a modern R & D laboratory. Min Mec is ISO 9001: 2008 certified under ANZ-JAS. In June 2006, the laboratory received accreditation from NABL. Min Mec has already applied for accreditation for EIA Consultant with the Quality Council of India. As per MoEF circular of 30th September, 2011, it is listed at No. 7 of List B.