EXECUTIVE SUMMARY
OF
ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENT MANAGEMENT PLAN
FOR
BIKRAM COAL BLOCK
SOHAGPUR COALFIELD
DISTRICT SHAHDOL, MADHYA PRADESH
[ML Area : 239.00 Ha, Capacity 0.36 MTPA
(0.16 MTPA by Opencast & 0.2 MTPA by Underground)]

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EXECUTIVE SUMMARY OF EIA/EMP

1.0 INTRODUCTION

1.1 General background

Bikram Coal Block has been allotted to M/s Birla Corporation Limited vide letter No. 38011/2/2007-CA-I dated 12.08.2008 by Ministry of Coal. Coal will be required for the captive power plant as well as the cement plant of M/s Birla Corporation Ltd. Both underground as well as opencast method has been proposed to be deployed. The coal will be mined at a rate of 0.36 MTPA with an opencast mine life of 23 years and underground life as 31 years. The anticipated project cost is Rs. 60 Crores.

1.2 Location and communication

Bikram coal block is located in Karkati sector of Sohagpur coalfield in Shahdol district of Madhya Pradesh. The area of the block is 2.39 sq.km. and is encircled by two villages, namely Bartara and Gopalpur. About 142.075 Ha of the block is covered by Burhar Reserve forest.

The block is virgin. It is covered in the survey of India Toposheet no. 64 E/12, 8(R.F. 1:50,000) and lies between Latitude 23°11'5.6" to 23°11'29.9" N and Longitude 81°28'44.12" to 81°31'6.12" E. The location plan is given in Fig 1. The block is accessible through Shahdol-Amarkantak Highway No. 78 that passes 4 km due its NE side.

The nearest railway station Burhar on the Bilaspur-Katni section of S.E. railway is located at a distance of about 2.6 km due NE of the block and the nearest airport is Raipur airport at a distance of about 250 kms southwards from the proposed block.

2.0 PROJECT DESCRIPTION

2.1 Geology

Sohagpur coalfield has been a traditional source of superior quality and high volatile coal. Bikram Block is located almost in the central part of Amlai-Burhar sub-basin, Sohagpur coalfield. The area is mainly covered by thin cover of soil and alluvium, ranging in thickness from 1.75 m to 8.55 m.

Rock exposures are largely confined to seasonal nala sections. The coal bearing Barakar formation is chiefly composed of greyish white coarse and very coarse grained sandstone, a few coal seams, carbonaceous shale and sandy shale. The strata being soft, the depth of the weathering ranges between 8.35 m to 31.85 m below the surface.
2.2 Reserve estimation

The net geological reserve of the allotted block is 20.975 MT, out of which 10.897 MT is found beneath forest and 10.078 MT is outside forest area. Mineable Reserves are 18.078 MT (3.874 MT OC + 14.204 MT UG). The recoverable reserves are 3.758 MT by OC method and 5.682 MT for underground. Gradewise percentage of recoverable coal will be 26.5% C, 34.7% D, 24.5% F and rest A, B, E & G.

2.3 Mining

Both opencast as well as underground mining methods have been chosen for the proposed mine.

**Opencast mining:** Conventional methods of mining employing shovel-dumper combination will be mainly used to excavate coal. 110/115 mm dia drills will be used for blast hole drilling and the blasted coal will be loaded into 4 numbers of 10 T dumpers (coal body) by 0.9-1.1 M^3^ hydraulic shovel/ backhoe. Seams IX & VIII will be worked by opencast method. The total extractable coal reserve by this method will be 3.758 MT, amount of overburden 36.81 MCum and OB: coal ratio will be 9.80 Cum:T. The capacity of mine will be 0.16 MTPA except during 2nd year, when it is 0.36 MTPA. The maximum depth of mining is expected to be around 60m. During 1st to 3rd year, about 3.36 MCum (loose) of overburden will be dumped over a surface dump on non-forest area of 15 Ha. Additionally, about 5 Ha area will be assigned for facilities including coal stack yard and 3 Ha for top soil storage. The backfilling of overburden will start from 2nd year onwards.

**Underground mining:** Simple Bord & Pillar method of development with solid blasting and loading by extra low height side dump loader is proposed which will load on to chain conveyor/pony belt conveyor. It will then be transferred on to gate belt & trunk belt conveyor. The underground mining operation will start from 2nd year and carried out through two sets of inclines from surface. The total extractable coal reserve will be 5.682 MT and the rate of production is envisaged to be 0.20 MTPA. The 1st two years will be confined to inset developments and starting of four coal dip drivage in seams IX and VIII soon after the coal seams are encountered. Separate ventilation systems for the inclines and three pumps of 37 litres/sec capacity will be installed to pump out mine water.

2.4 Surface constraints

There are 118 houses within the block, which have to be rehabilitated due to the proposed mining operations. Also, forest area to the extent of 151.095 Ha (Revenue + RF), occupying almost 63% of the total block area, may get disturbed to different extents depending upon the option selected.

2.5 Blasting

The coal and OB faces are blasted using explosives and detonators. Holes of 110-160 mm will be drilled in order to excavate on an average 1.50 million BCM (Bank Cubic Metre) of OB per year, while 110/115mm dia drill will be used in
coal. A powder factor of 0.30 to 0.35 kg per BCM has been adopted for overburden in OC operations. The powder factor for coal has been adopted as 0.2 kg/m$^3$ in OC operations. Short delay detonators shall be used. Heavy ANFO explosive in OC mine is proposed to be used and the daily requirement will be 0.87 T. In case of an underground mine, advances in the galleries will be done by solid blasting using permitted explosives, like Soligex.

2.6 Transportation

In case of opencast mine, the coal will be transported by coal tippers from pit to the pit head stockpile, while in underground mine, it will be brought out by conveyors and led to a surface bunker, underneath which the trucks can be loaded by chutes. The OB from OC will be transported by dumpers to the surface dumps and backfill dumps. Initially, the coal will be transported by road to Satna Cement Plant via Shahdol. Later, the company intends to transport coal through railways by taking a siding at Burhar.

2.7 Site services

The site services required at proposed mine will be housed within the premises of proposed mine. There will be garage-cum-workshop-cum-engineering stores meant for regular repair and maintenance of earth moving equipments, dumpers etc. The power requirement is expected to be about 5 MVA that will be drawn from 11 KV line at Burhar sub-station of MPSEB through a local sub-station. Emergency power supply will be provisioned through 2 DG sets each of capacity 500 KVA. A colony will be provided for 50% of the manpower. Total water requirement is estimated to be 444 KLD, out of which 244 KLD is potable water met from bore well and the rest 200 KLD industrial water will be sufficed from mine sump water. The total consumption of water will be reduced to 257.56 KLD by recycling and reusing the treated water obtained from sewage treatment plant in green belt and landscape watering as well as sprinkling on haul roads.

Most of the HEMM operates on diesel. Hence, an underground 50 KL diesel pump will be established at the mine site along with a diesel brouzer for crawler mounted machines. A 5 T capacity magazine will be provided for the storage of primers, detonators, fuse etc. near outside dump.

2.8 Manpower

The requirement of manpower for open cast has been estimated as 305 and for underground mine is estimated as 396 persons. Mine will work for 330 days a year with 3 shifts each of 8 hours.

3.0 PRESENT ENVIRONMENTAL SCENARIO

3.1 Topography and drainage

Core zone: The Bikram block has a gentle undulating topography. The highest elevation of the core zone is 479 m above mean sea level towards east as well as centre and lowest elevation as 493 m towards west. There is no prominent drainage system developed within the block except seasonal streamlets.
Buffer zone: This zone exhibits rolling topography with a general slope towards north. The variation in surface elevations, excluding nala cuttings, is from 440 m above mean sea level in the northern part to 540 m above mean sea level in the southern part of the study area. Baisaha nala in the west and Nargara nala in the east constitute the main drainage means of the area. These two along with a number of seasonal streamlets drain the area and finally discharge their water into the river Son.

3.2 Climate and micro-meteorology

The climate of the study area is of subtropical type and characterised by an oppressive hot summer, a mild winter and well distributed rainfall during the south western monsoon season. The long term meteorological data have been collected from the nearest IMD station Umaria situated at a distance of 75 kms from the proposed mine. The highest temperature is recorded to be 39.1°C during May, while the lowest reads to be 11.2°C in January. The average annual rainfall for the year 1998 to 2007 was 1257.0 mm and the relative humidity ranged between 27 and 86%.

The micro-meteorology was monitored at the project site from March to May 2011. The temperature is recorded as a minimum of 25.10°C and maximum of 43.60°C. Relative humidity varied from a minimum of 9.20% to maximum of 72% and the wind speed ranged from calm to 21.60 km/hr with a predominant wind direction as NW for 18.48% of the occurrences.

3.3 Ambient air quality

Ambient air quality was studied at seven locations, one in the core zone and six in the buffer zone, namely Chooradih, Burhar, Khanndih, Dhanpuri, Karkati and Gopalpur villages. The PM10 concentration of the study area ranged from 31.5 µg/m³ to 57.6 µg/m³, PM2.5 from 17.6 µg/m³ to 36.3 µg/m³, SO₂ from 6.3 µg/m³ to 9.6 µg/m³, NOₓ from 7.7 µg/m³ to 15.3 µg/m³ and CO from 173 to 254 µg/m³ thus limiting the air quality within the prescribed standards.

3.4 Water environment & quality

There is no prominent drainage system existing within the block and two nallas Baisaha and Nargara mainly drain the study area. The depth to water table over major parts of the study area is between 5.0 & 10.0 m below ground with a seasonal fluctuation of 2.8 m. The level of groundwater development is 22.70%.

2 water samples were collected from surface water resources (Son River and Ram Sagar Pond) and 8 ground water locations at Khairoha, Singhpur, Bartara, Lalpur, Dhanpuri, Bimhauri, Karkati and Burhar for assessing the water quality in the study area.

Different physico-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 except one parameter nitrate, which is more than the permissible limit in a sample taken from bore well situated at village Burhar.
3.5 Land use pattern and soil quality

The core zone is spread over two villages, namely Bartara and Gopalpur and comprises of 142.075 Ha of Reserved forest. The study area covered under District Shahdol encompasses two Tehsils Sohagpur and Anuppur and a total of 79 villages. About 20% of the area comes under forest, 3% under irrigated agricultural land, unirrigated agricultural land is 42%, 19% area is not available for cultivation and the rest 16% is cultivable waste land.

Top soil samples were collected from 2 spots, one in core zone and the other in Gopalpur village. The soil of the region is black in texture. The percentage of organic matter and other inorganic nutrients are almost normal in their range. The iron content is comparatively low in the core zone. The NPK (Nitrogen, Phosphorus and Potassium) is relatively high in concentration, which confers high fertility.

3.6 Noise and traffic density

Ambient noise levels (Leq. values) at eight monitoring stations (1 within core area and 7 within study area) were observed in the range from 47.3 to 53.8 dB (A) during day and 36.9 to 39.7 dB (A) during night time. The traffic density survey was conducted on Burhar to Shahdol road (shortcut) near Bikram Coal Block at Bartara for 24 hours on 23 – 24 / 05 / 2011. Total numbers of vehicles were found as 2113 including cycles.

3.7 Ecology

The study area covers 3 RF & 1 PF Reserved Forests and the core zone covers only Burhar Reserved forest that mainly consists of Sal, Mahua, Saja, Kusum etc. Study area is scattered with bushy growth of Tendu and Palas. The main Kharif crops grown are Arhar, Till and Rabi crops are commonly Wheat, Mustard, Sunflower and Chana. The common fauna found in the core zone includes Jackal, Five stripped squirrel, Field rat, Bandicoot, House rat, Indian hare, Common Indian mongoose besides various avifauna, reptiles, butterflies etc. and study area has mainly Deer, Langur, schedule I animals, such as Sloth bear and Indian rock python etc. for which conservation plan has been made.

3.8 Socio-economic condition

Total population in the study area is 176458 that includes 84903 females and 91555 males. SC percentage is 7.69 while ST constitutes bulk of population, i.e., 29.44%. The average literacy is 53.95%. The literacy among women is still poorer at 43.78%. 22.45 % of the total population are main workers, while 9.62 % are marginal workers and 67.93 % are non workers. About 118 houses and 86 wells located in 2 villages, i.e. Gopalpur and Bartara are envisaged to be disturbed due to the project.

3.9 Industries around project area

There are 29 mines operating or proposed around the project site within its 10 km radius.
3.10 Places of archaeological/historical/tourist/religious importance

There is no such monument within the ML boundary to get impacted and those in the buffer zone are too far away to experience any impact due to mining. Hence, question of impact on historical monument does not arise.

4.0 ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION

4.1 Climate

**Impact:** During construction phase, construction of buildings creates an urban heat island effect which raises the temperature at the buildings themselves, but the impact will be short lived. During operation phase, the trucks and heavy earth moving machineries that run on diesel contributes emission of carbon dioxide, which is a greenhouse gas, into the atmosphere.

**Mitigation:** Development of greenbelt in and around the lease area will act as sink for greenhouse gases. Also the proponent will undertake all possible measures to minimise CO₂ emissions. Since the transportation will be through tippers, it will be ensured that the vehicles are having their “Pollution Under Control” (PUC) certificates. The trucks and earth moving machinery will be maintained in order to ensure optimum fuel utilization. Urban heat island will be reduced by using environment friendly building material. Plantation of trees, layouts of the buildings and creation of shades and water bodies over which wind can blow to cool down will be some measures taken to reduce the impact of urban heat island effect.

4.2 Topography and drainage

**Impact:** In case of opencast mine, about 125.40 Ha i.e. 52.47% of land will be disturbed by the end of life of mine, while 47.53% will remain undisturbed. The disturbed area within ML will comprise of excavated land, external dumps, settling pond, magazine, area occupied by infrastructure, roads etc. This will cause change in topography. The excavated area will be 118.60 Ha and the maximum depth of excavation will be 60 m. Also, 151.095 Ha out of total block area is covered by forest (Revenue + RF), which will be partly excavated to the extent of 99.23 Ha. An impact of underground mining can be felt on the surface in the form of subsidence. The predicted maximum tensile strain at the end of 10 years of mining is 6.16 mm/m, which remains almost constant as 7.17 mm/m till end of mine and the predicted corresponding width of surface cracks is 72 mm, which are well within the safe limits for forest cover. There is no prominent drainage pattern developed within the block, hence no diversion of water body is envisaged. However the sheet flow of the area may get obstructed due to excavation and other construction related activities, if proper drains and channels are not made.

**Mitigation:** Part of the excavated area, i.e. 79.53 Ha shall be backfilled and the balance 39.07 Ha void area of the excavated pit will ultimately become a water reservoir having a maximum depth of about 60m. The backfilled area will be planted. The top soil dumps will be eliminated by the end of life of mine by reuse in plantation within mine lease area, on backfill area and. OB dumps. To reciprocate forest area destruction of 99.23 Ha, plantation has been planned.
over a total area of 96.65 Ha. Bord and pillar with caving system of mining has been proposed to be adopted. Bartara village is situated within the underground portion of the coal block. Normal extraction of coal will be done evacuating 118 houses of Bartara village falling under leasehold area. However partial extraction of pillars below Bartara village may be adopted with permission of DGMS 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.

4.3 Air environment

**Impact:** Due to blasting, fuel oil combustion, coal handling system etc. opencast mining operations are prone to generation of higher levels of PM10 and to a limited extent of SO2, NOx and CO, while the underground mining operations are prone to generation of higher levels of PM2.5 and to a limited extent of PM10, SO2, NOx and CO. Air pollution due to SO2, NOx 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, NOx and CO due to emission from mining operation (material handling + HEMM) and point source (DG stack) will be 82.97 µg/m³, 50.72 µg/m³, 17.47 µg/m³, 35.59 µg/m³ and 243.75 µg/m³ respectively. Which will remain well within the permissible Limits.

**Mitigation:** Drilling and blasting will be controlled through excessive sprinkling, providing drill with sharp drill bits, suitable burden and spacing of blast holes and controlled blasting. Coal handling 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 made wet prior to their loading onto dumpers. Regular maintenance of vehicles and machinery, black topping of service roads, avenue plantation etc. will be done.

4.4 Water environment

**Impact:** No impact on the surface water resources is envisaged as no water will be drawn specifically from any surface water resource. Also, no drainage system exists within the core zone. Surface water quality is likely to be affected by wash off from dumps, soil erosion from mine and roads, pumping out mine water to surface water channels, oil spillage at the pit head and at the facilities. Moreover, the ground water table will be intersected even during the 1st year of mining and most of the water requirement is planned to be met from mine sump water, which will have some impact on the ground water resources. The domestic waste water generated from colony will have extra load of BOD and suspended solids, which will cause adverse impact on surface and ground water quality.

**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.

4.5 Noise, traffic density and ground vibration

**Impact:** Ambient noise levels in the core area are likely to increase from deployment of additional noise generating equipment, like Heavy Earth Moving Machines, drills, heavy blasting, dozers, loaders, dumper & truck movement, service vans and crushing operations. The impact of this airborne noise will be more on the operating personnel and on the persons working nearby and not so much on the surroundings. 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 once the mining operations start.

**Mitigation:** Tree plantation will be done around the mine lease area and along haul roads. Air Silencers will be used to modulate the noise generated by the machines. The operator's cabin would be safe guarded with proper enclosures to reduce the noise levels, whenever necessary, personal protective equipments, like ear plug and ear muff will be provided to workers. Workers will be exposed to higher levels of noise exposure by rotation. To reduce generation of the noise 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. To control ground vibration, appropriate blasting pattern shall be adopted.

4.6 Land use

**Impact:** Out of total mine lease area, 52.46% of the land will be disturbed in the form of excavated land, external dumps, area occupied by infrastructure, roads etc. At the end of mining, a deep void having 60 m depth over an area of 39.07 Ha will be created. Besides, green area will be developed over 91.42 Ha area, which will impart positive impact on account of the project.

**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 out area will be 118.60 ha, out of which 79.53 Ha area will be backfilled and planted, while rest of the area is proposed to be converted into water body that will be ultimately developed into a picnic spot. The water body will also be used for irrigation, watering the forest at earlier stages and it will also attract avifauna.

4.7 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, domestic waste. Total volume of top soil generated will be 0.71 MCum, OB will be 36.10
MCum, sludge from workshop will be 3 tonnes per annum, oil & grease from the workshop will be 0.57 tonnes per annum and above all about 21 tonnes per annum municipal waste is expected to be generated during the life of mine.

**Mitigation:** It is envisaged to scrap out about 0.6 m thick layer of topsoil separately before excavating the 1st OB bench and stack it in 3 m height stack over coal bearing area of 3 Ha. About 1.78 MCum (B) OB will be dumped on a surface dump of area 8.23 Ha and height 50 m. This overburden will be used to backfill the excavated area from 2nd year onwards. 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 authorized agencies, while the disposable waste will be land filled. The sludge other than oil and grease obtained from the workshop water treatment system will be dredged periodically and the mud removed shall be put with the backfill.

4.8 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 3m wide green belt along the roads and 5 m wide green belt around colony and infrastructure in 3 tier along with a plantation density of 2500 plants per ha on intervening land will be created. To counteract the loss of forest land, compensatory afforestation will be done. Also, plantation on the backfilled area, OB dumps etc. will again bring the area to its natural state. Some tree species proposed for restoration include Bel, Karhi, Saliha, Char, Dahgan, Dhabn, Shisoo, Mahua, Gunja, Khadhar, Koriya, Sidha, Sandhan, Awala, Bija, Bhalwa, Sal, Khurul, Baira, Harra, Saja etc. Besides, various other conservation measures have been proposed in the “Wildlife Conservation Plan” for the proposed project.

4.9 Socio-economics

Due to the proposed project, 2 villages, namely Bartara and Gopalpur are envisaged to get impacted. Total number of project affected people requiring resettlement is 706 and affected households will be 118. The project affected families will be given rehabilitation and resettlement benefits according to the Govt. of Madhya Pradesh Policies and prevailing practice in industries in the vicinity as mentioned in their R & R Policy. 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.

4.10 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 at a regular interval.

5.0 ANALYSIS OF ALTERNATIVES

No alternative site has been proposed as coal occurrence is site specific. Bikram Coal Block has been allotted to M/s Birla Corporation Limited. Thus, the mine will have to be 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.

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. 4.7 Crores and recurring expenditure during the stage of production will be Rs. 76.13 Lakhs per year.

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 mine area will 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 701 persons (305 for Opencast and 396 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. 18.0 lakhs of investment followed by Rs. 18.3 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 recorded in S. No. 7 of List ‘B’.