

DRAFT EIA/EMP REPORT

EXECUTIVE SUMMARY

DURGAPUR II - TARAIMAR COAL BLOCK

(Raigarh District, Chhattisgarh State)

OF

MIS BHARAT ALUMINIUM COMPANY LIMITED

KORBA, CHHATTISGARH

JANUARY 2009

EXECUTIVE SUMMARY

1.0 INTRODUCTION:

1.1 GENERAL:

Durgapur II Taraimar coal block in Mand Raigarh coal field has been allocated to **Bharat Aluminium Company Limited (BALCO)** Ltd, by Ministry Of Coal, Government Of India vide letter no 38011/1/2007-CA-1, New Delhi, Dated 6.11.07, for captive use in its power plant in Korba including expansion from 810 MW to 1110MW located 78 km away from the mining block. Total mine lease area is 1070 hectares (Ha).

BALCO intends to produce 4.0 Million Tonnes Per Annum (MTPA) of coal from this block comprising of 3.0 MTPA from the opencast and 1.0 MTPA from underground mining operations. Besides, a coal washery of 650 TPH capacity is also proposed within this mine lease area. The entire coal produced from this block proposed to be transported by Merry Go Round (MGR) rail system for a total length of approximately 63 km between the mine and the power plant.

1.2 BRIEF PROJECT PROFILE :

- a) Name of the project : **Durgapur II – Taraimar Coal block**
- b) Location : Latitude (N) 22°26'20" to 22°28'31"
Longitude (E) 83°08'28" to 83°11'13"
(Topo sheet no : 64N/3)
Villages : Taraimar, Bayasi Colony, Bayasi,
Dharam Colony
Tehsil: Dharamjaygarh, Dist:Raigarh,
Chhattisgarh State.
- c) Topography : 318 to 266 m above MSL with the general
slope towards west
- d) Total Mine lease(ML) : 1070 Ha. Besides, about 625 Ha. of land is
area expected to be required for laying of MGR
rail line.

- e) Present land use of ML area:
- Private - 600.179 Ha
 - Government land - 104.765 Ha
 - Chote jharke jungle - 56.922 Ha
 - Badejharke jungle - 308.134 Ha
- f) Habitation : There are approximately 544 land oustees and 575 home oustees within the ML area.
- g) No of workable Seams : Seam VA on top followed by Seam V, IV, III, II
- h) Method of mining : Seam VA & V by Mechanised Opencast
Seam IV,III, II >1.2m thick by mechanized underground
- i) Production : Open cast mine - 3.0 MTPA
Underground mine - 1.0 MTPA
Total - 4.0 MTPA
Coal washery - 650 TPH
- j) Life : Opencast mine - 25 years
Underground mine - 70years
- k) Nearest Road : State Highway (SH - 4) from Dharamjaygarh to Kharsia passes through the South Eastern corner of the block.
- l) Nearest Rail link : Kharsia is the nearest railhead in Howrah Mumbai Railway line and 60 km South of the block.
- m) Nearest major Place : Dharamjaygarh 3.0 km North East of the Site
- n) Water courses : Mand river flows west of the block boundary.
in the area

- o) Sensitive zones like National parks,
Bio reserves, Tourist spots, historical
Monuments etc nearby : Nil
- p) Other industries in the area : Nil

There are no ecologically sensitive areas within 15 kms of the core area

2.0 PROJECT DESCRIPTION:

2.1 OPENCAST MINE:

Upper seams V-A & V by Mechanised Opencast method. 25m³ Electric Rope Shovel with 200 tonnes Rear Discharge Dumpers for OB, 8.3 m³ Electric Hydraulic Shovel with 50 tonnes RD dumpers and 1.2 m³ Hydraulic shovel with 8 tonnes tipping truck for coal will be used.

2.2 UNDERGROUND MINE:

Lower seams IV, III, II of >1.2m thick by mechanized underground method. Mechanised Bord & Pillar with Blasting Gallery system will be adopted. It is proposed to provide the main entries by Inclined Drifts from surface to Seam III which has a general thickness of 3.0 to 6.0 m. The inclines are proposed to be located on the north-eastern part of the block, keeping sufficient space for surface installations e.g. Pit Office, Lamp Room, Electric. Sub-station, etc.

2.3 COAL WASHERY:

A coal washery of 650 TPH capacity with latest state-of-art coal washery technology will be installed within the mining lease area, using wet process with zero discharge due to recycling of water for repeated washing in the unit. The discharge from Hi Frequency Screen and Multi Roll Filter Press will be transported to the mine for back-filling. The entire water circuit will be of closed cycle and the entire wastewater will be clarified and reused for coal cleaning. No wastewater will be discharged outside the washery premises.

2.4 SITE SERVICES:

The site infrastructure to be provided by BALCO will include roads, workshops, stores, power supply, pumping, surface water management, potable and industrial water supplies, offices, communication and other required amenities.

3.0 EXISTING ENVIRONMENTAL SCENARIO

3.1 GENERAL:

Baseline environmental data for various Environmental components were collected in the study area during summer 2008 season. The details of study are briefly given below:

- ❖ The study details based on the 2001 census show that there are 8916 households in buffer zone. The total population works out to 41484 of which 49.61% are males and 50.39% are females.
 - ❖ Meteorological study shows that, the temperature in the area during the study period ranged from 25.0 °C to 44 °C while the relative humidity varied between 15 % and 96%. The wind speed during the study period ranged from <1 Km/hr to 21.4 Km/hr. The predominant wind direction is from South west.
 - ❖ The ambient air quality data for SO₂, NO_x, TSPM, and RPM ranged between 6.5 to 12.3 µg/m³, 7.5 to 15.2 µg/m³, 62.0 to 125.0 µg /m³ and 23 to 45.0 µg/m³ respectively. The pre-mining air quality levels are well within the prescribed CPCB limits for "Residential, Rural & other areas".
 - ❖ The noise levels shows that the day equivalent values are in range from 41.3 to 52.3 dB(A), night equivalent values from 38.5 to 43.7 dB(A) and day and night equivalent values from 40.6 to 50.8 dB(A). All these values are well within prescribed standards prescribed by Central Pollution Control Board for "Residential area".
 - ❖ The results of the ground water samples and surface water samples show that they are well within the prescribed IS10500 limits and fit for drinking purpose.
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- ❖ Results of the soil samples show that the soil are generally clay and clay loam type. The organic matter of the collected soil samples low to very low in nature. The micro nutrient status of all the samples is on the very low to higher side.
- ❖ Land use of the area shows that only 2.42 % of the buffer zone is irrigated.
- ❖ About 34.11 % of the core zone area and manor part of the buffer zone are forest land. The common trees in the forest lands are Sal, Butea Monosperma, Asan, Saja, Imli, Bija, Mahua, Tendu, Piar, Larizan, Khair, Amla etc.
- ❖ The common animals found in the area are Fox (*Vulpus Sp.*), Indian mongoose (*Herpestes edwardsi*), Monkey (*Presbuttes entellus*), spotted deer (*Axis axis*), Common Hare (*Lepus nigricollis*), Porcupine (*Hystrix indica*), cats, Dogs etc. Poisonous snakes namely cobra, viper (*Viperera russelli*), krait (*Bungarus caeruleus*) etc and non poisonous snakes namely python etc are found in the area. The parrot, wild fowl, crow, etc are the common birds in the area.

3.2 PRESENT STATUS OF GROUND WATER DEVELOPMENT

Total ground water recharge	- 106.78 mcm,
Ground water discharge	- 20.25 mcm
Status of ground water development of buffer zone-	18.96%.

From the above it is seen that the status of ground water development in core and buffer zones is within the safe limits.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 AMBIENT AIR QUALITY:

Impact on air quality due to fugitive emissions consequent to this project operation was estimated based on the computer model – ISCST (Industrial Source Complex Short Term Model). Total Suspended Particulate Matter (TSPM) concentrations under worst scenario, works out to about 42 $\mu\text{g}/\text{m}^3$. The maximum occurrence of the peak concentration is within the mine area only. In the 8 AAQ

monitoring locations covering all the nearby villages, the post-project values for TSPM ranged between 93 to 130 mcg/m³, which are well within prescribed limits.

Adoption of various mitigative measures like laying of haul roads and service roads as per standards, to avoid or eliminate airborne dust, development of extensive green barrier around mine, CHP, workshop, along roads, around coal washery, along periphery of mine, dumps, embankments, etc, designing CHP with dust extractors at transfer points, discharge chutes, vibrating screens and conveyors, avoiding overloading of dumpers, frequent water spraying / sprinkling on the roads, stock-piles, OB dumps and transfer points where dust is produced, wet drilling ,etc will ensure that the impact on air quality due to this integrated mining operation will not be appreciable. As the coal washery will be using wet process and the underground mining activities may not create any major impact on air quality in the area.

4.2 WATER ENVIRONMENT :

Since this is a mining project, there will not be any process effluent . The coal washery, though being of wet process type, is planned with zero discharge and effluent from washery will be recycled, in the washery itself.

Effluents from vehicle wash/ workshop will be discharged into oil and grease trap system where oil and grease will be collected in a separate pit. Clean water will be stored in a clear water tank from which it will be recycled for vehicle wash, etc. The domestic effluent will be treated in a sewage treatment plant and treated water will be used for green belt development and afforestation. As such there will not be any effluent outlet from mining and allied activities.

Besides, to avoid any impact due to mine discharge water and wash out from dumps, coal stock piles various measures like, Providing sump of adequate capacity for settling of suspended solids, providing garland drains at the periphery of active edge of mine and around dumps , etc will be adopted.

The total water requirement for this project is estimated to be 1040 m³/day . Based on the hydrological investigation, it is estimated that about 4700 m³/day of water will have to be pumped out of the mine. Since this water is of good quality, it is

proposed to treat this water in the settling pond to meet the industrial requirements for dust suppression, make-up water for coal washery, fire fighting, vehicle washing, green belt creation , etc., Excess water conforming to the standards will be let out into nearby Mand river.

Since the status of ground water development in core and buffer zones is within the safe limits, (i.e. the long term ground water recharge being more than the present and proposed ground water withdrawal) the static ground water reserves will be safely preserved and are not going to be depleted due to mining activity.

In view of above factors, the impact on water quality will be insignificant.

Detailed area drainage study of the area is carried out. surface runoff in the mining lease block will be allowed to join the natural drainage system and it will be ensured that there will not be any impact on the surface water source due to mining

4.3 NOISE ENVIRONMENT :

Due to mining and allied operations, noise will be felt only near the active working source within the mining lease area and at farther areas it will be insignificant. Thus due to natural attenuation effects, by proper green belt development, design / maintenance of machines, etc., the impact on noise levels will be negligible and are expected to be well within the limits prescribed by Environment Protection Rules 1986 and CPCB.

Avenue plantations and green belt will be created around mine periphery, around dump areas, around offices and other infrastructural buildings, etc, to abate noise levels in the area to the minimum.

4.4 LAND ENVIRONMENT :

Out of the total mine lease area of 1070 Ha , 365.056 Ha are Forest Lands. An application has been made to the Government under the Forest Conservation Act 1980 for diversion of Forest land for Non- forest purpose (i.e for mining purpose). Accordingly, an area of 490 Ha in Jaggir – Champa Forest range has been identified by the forest department for compensatory afforestation. Necessary compensatory afforestation through state forest department will be carried out in the identified area.

To reduce the adverse effects on flora and fauna due to deposition of dust generated from project operations, water sprinkling and water spraying systems will be ensured in all dust prone areas.

During mining operation, out of the total quantity of 967.28 MM³ of solid waste generated from the mine area, about 38.32 MM³ generated in the initial years will be dumped externally in the temporary dump within the mine area, which will be rehandled into the mined out void later. Thus the entire waste generated will be backfilled and as such there will not be any external dump. The back filling operations will be continued up to the end of mine life to form the internal dumps in the mined out areas. At the end of mine life, the height of the dump will be pruned by dozing the waste material toward the mined out voids, so as to fill the same. After the above, plantation will be carried out on the entire surface to improve the stability and to restore the ecological status of the area.

As the underground workings will be below the already worked opencast mine area, the effect of subsidence will be mostly felt only in the back filled opencast mine area and will not affect surrounding areas.

4.5 SOCIO ECONOMIC ENVIRONMENT :

There will be about 575 home oustees and 544 land oustees due to the proposed Mining operations in this coal block, who have to be resettled and rehabilitated properly in consonance with the statutory provisions and guidelines of the State Government in this respect.

In conformity with the R&R legislation 2007, framed by Chhattisgarh State Government, a rehabilitation and resettlement package has been worked out for the Project Affected Persons (PAP) and is already submitted to collector, Raigarh District on 10.10.2008 . M/s. BALCO have initiated comprehensive study in this connection, involving focused group discussion with concerned oustees to find out their requirement for which a need based survey has also been initiated. The R & R plan, submitted already, will be further improved to the advantage of the locals, based on there need and

studies. The affected people will be more than compensated by the liberal packages of rehabilitation and resettlement of the home and land oustees, in a better manner than original conditions and facility, experienced by them earlier.

Many positive impacts will also accrue to the local population of the surrounding areas from the project as shown below :

- The project operation will result in direct employment opportunities for about 2230 persons. Besides indirectly about 5000 persons will be benefited by gainful indirect employment opportunities through various service related activities connected with the project operations as shown under.
 - Project related ancillary services
 - Project related logistical operations for transport / loading of coal, bringing various materials for project operations, etc.
 - Various trading services for consumer goods, spare parts, sundry items, etc.
 - Contractual services connected with the project.
 - Green belt and horticultural works in the project.
 - Casual labor needs for various activities.

Besides there will be marked improvement for various facilities in the local areas as below.

- ❖ Improvement in medical and health care system
- ❖ Improvement in educational services
- ❖ Infrastructural betterment through better roads, lighting and communicational systems
- ❖ Betterment of drinking water facilities.
- ❖ Vocational training facilities for local eligible youth of local community to enable them to seek employment in suitable project operations and elsewhere.

Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc from this project directly and also indirectly.

State Highway (SH - 4) from Dharamjaygarh to Kharsia passing through the South Eastern corner of the block will be properly rerouted.

4.5.1 CORPORATE SOCIAL RESPONSIBILITY (CSR) :

BALCO'S dedication and commitment to social welfare causes is centered around their corporate philosophy of harnessing natural resources in harmony with nature to enhance economic well being and quality of life of communities in and around their plant sites. Based on this corporate Social Responsibility (CSR), BALCO has already undertaken community development projects benefiting 102 villages with forces on Health, Livelihood, education, infrastructure development and bio- investment.

CSR activities will be implemented for the proposed project , after assessing need based priorities of the surrounding villagers.

In brief, various Effective Environmental Management schemes to be adopted during the working of the mine are as follows:

- Laying of haul roads as per the standards, black topping of permanent roads to avoid or eliminate air – borne dust.
- Development of extensive green barriers around mine, coal handling plant, workshop, along the roads, periphery of the mine, backfilled area etc.
- Designing CHP with dust extractors at transfer points, discharge chutes, vibrating screens and conveyors.
- Use of wet process for coal washery and having all material transfers through closed conveyors.
- Avoiding overloading of dumpers.
- Frequent water spraying / sprinkling on the roads, stock-piles, dumps and transfer points where dust is produced.
- Provision of dust filters / mask to workers working at highly dust prone and affected areas.
- Provision of settling tanks for mine discharge water for settling suspended

solids.

- Recycling and reuse of Coal washery for zero effluent discharge status.
- Desilting of settling ponds/drains at regular intervals.
- Making operator's cabin of equipments like dumpers, shovel, etc. sound proof.
- Designing the main ventilation fan in such a way to reduce noise to the maximum extent possible, with measures like fan balancing, lubrication of bearings, fastener, tighteners etc.

5.0 ENVIRONMENTAL MONITORING PROGRAMME :

Regular monitoring of implementation of various control measures in respect of air quality, meteorology, water quality, noise levels, biological status, land environment, socio-economic factors, occupational health, etc. is most important to ensure that the project operations do not deteriorate the environmental status of the area at any point of time and environmental quality in respect of above parameters are kept well within the statutorily sustainable levels, as prescribed by CPCB, MOEF and Chhattisgarh Environmental Conservation Board.

6.0 CONCLUSION :

The elaborate description given above on predictions of anticipated impacts and various mitigative measures for each environmental parameter brings out the fact that due to well planned mitigative measures for all parameters, in the post project scenario, environmental status will be minimum and well within the statutory limits. The advent of the project in the backward rural area will greatly improve the socio-economic environment of the area due to improvement in various social facilities, like employment potential, medical health care, infrastructural improvement, educational services, etc, as aforesaid. Similarly, biological status will be greatly enhanced due to green belt and afforestation planned for the project, as described above. The coal output from this mine will help to generate more power in the linked Power Plant there by reducing the power demand on the national grid.

As such, the project operations in the area will contribute its own share towards achieving infrastructure & industrial growth of the region & the country.

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