



Ministry of Environment & Forests

No.J-11015/272/2008-IA.II (M)

Paryavaran Bhawan,
CGO Complex, Lodi Road
New Delhi-110003

To

Dated: 24th May 2012

Shri B.K. Bhatia,
Head – Mine Development (Coal & Bauxite),
M/s Bharat Aluminium Company Ltd.
PO BALCO Nagar, Korba – 495 684,
CHHATTISGARH

Sub: Durgapur-II Taraimar Opencast (3 MTPA) -cum- Underground (1 MTPA) Coalmine Project (combined OC-cum-UG = 4 MTPA) and Captive Coal Washery (4 MTPA) in an ML area of 1070 ha of M/s M/s Bharat Aluminium Company Ltd. located in villages Taraimar, Bayasi Basti, Bayasi Colony, Dharma Colony, and Rupunga, Tehsil Dharamjaigarh, District Raigarh Chhattisgarh –Environmental Clearance – reg.

Sir,

This is with reference to letter No. BALCO/Coal Mine/2008 dated 20.06.2008 along with application for Terms of Reference (TOR) and this Ministry's letter dated 25.08.2008 granting TOR and your letter No. CB/EC/11-12 dated 21.04.2011 and 21.03.2012 for environmental clearance on the above-mentioned subject. The Ministry of Environment & Forests has considered your application. It is noted that the proposal is for opening a new **Durgapur-II Taraimar Opencast-cum-Underground Coalmine Project of a total combined production of 4 MTPA from both OC and UG mining** (of which the maximum production capacity of the opencast coalmine project is 3 MTPA and that of the underground mine is 1 MTPA) **and for establishing a captive coal washery of 4 MTPA in a total ML area of 1070 ha.** The proposal is to meet the coal requirements of 1110 MW linked Thermal Power Plants (810 MW existing +300MW proposed) at Korba, located at a distance of 78km. There are no ecologically sensitive areas such as WL sanctuaries, National Parks places of archaeological importance, etc. within the 15km buffer zone. However, the study area consisting of core zone and the buffer zone has a number of (9) Reserve Forests and (2) Protected Forests. Stage-I Forestry Clearance was obtained from MOEF vide letter No 8-37/2009-FC dated 21.01.2010 for diversion of 365.056 ha of forestland within ML area. Dharmajaygarh Reserve Forest is about 50 km away and forms a part of elephant corridor/habitat. Elephants are reported to seasonally visit the area near the water bodies present in study area. In addition to elephants, other endangered fauna such as bear, leopard, etc also found in the study area which has a large number of forests. A Wildlife Conservation Plan has been prepared, which has been approved by the PCCF/CWLW, Government of Chhattisgarh vide letter no. 2618 dated 16th November 2011.

The total ML area is 1070 ha of which 365.056 ha is forestland, 420 ha is agricultural land, 44 ha is surface water bodies and 240.944 ha is others. River Mand flows alongside the

lease boundary and a distance of 60m safety barrier (which has forest) between the mine and the river is proposed. An embankment of 3m higher than the HFL is also proposed. SH-4 (Dharamjaygarh to Kharsia) passes along the SE corner of the lease for a distance of 1.70km. Coal transportation of 12,000 TPD of coal from mine to the power plant would be by MGR and until its establishment, by SH-4 road from Dharamjaigarh to Korba involving 400 trucks per day. The MGR would be established within 5 years, almost parallel to the State Highway involving the least forest cover and least disturbance to human habitation or villages.

The entire ML area is mineralised and would be mined by opencast mining. Top seams would be mined by OC and the bottom seams (50-55% of the mineable reserves) by UG mining. Of the total ML area, 1020.66 ha is mine area, 16.20 ha is for embankment, safety zone for River Mand, 16.50 ha is for mine inclines, shaft for underground mining, washery, service buildings, roads, etc and 16.64 ha is for green belt. Mining is mechanised for opencast operations by conventional and blast free operations. Grade of coal is C to G. Total estimated OB generation is 967.28 Mm³. A temporary external OB dump would be created in the mineralised area within leasehold during the initial 7 years of operation the maximum height of this OB dump would be 28m over an area of 175 ha; an amount of 36.82 Mm³ of OB would be re-handled from the temporary OB dump and backfilled until the 7th year. From 8th year onward there would be no external dump. During 3rd to 25th year of OC operation, an estimated 965 Mm³ of OB would be dumped internally and the height of internal dump of 180m would be gradually increased during 20th -25th year of OC operation to a maximum height of 120 m above surface; thus the total combined height of internal and external dump would be 180m + 120m = 300m.

Slope stability study has been carried out by CIMFR which has indicated that the height of the internal dump raised to 120 m above ground level, consisting of 6 benches of 20m each would not result in dump failures. The Study has recommended specific stability measures such as provision of garland drain, gabion toe wall, maintaining a minimum distance of 120 m between dump toe and bank of River Mand, retaining wall near toe of dump along haul road, grassing of dumps reinforced with geo-textile material in critical patches and reclamation with vegetation at the final stage. All the aforesaid recommendations of the CIMFR study would be strictly followed.

From 26th year to 31st year of mine operation, 'pruning' of 120m external dump would begin for ensuring safety and stability, by rehandling of 349.02 Mm³ of OB into the internal dump area of 1020.66 ha, reducing the final dump height to a max. height of 12 m above ground level only from the original height of 120m. At the post mining stage, the entire mined out area of 1020.66 ha would be restored back to the pre-mining state or a better state through various reclamation measures and no mine void would be left.

A small amount of 16.20 Mm³ of OB would be used in the construction of embankment along River Mand, since some portions of the coal block lie below the HFL, which would be about 12m in height, 30m wide and 3m above the HFL of River Mand and stone pitching along the slopes of the banks would also be done and the slopes stabilised by planting suitable grass and shrubs.

Underground mining, which is also mechanised by use of Bord & Pillar method and continuous miner, would begin even as OC mining is in progress and the depillaring operation is planned to start after 12th year of UG mining. DGMS and Subsidence Prediction modelling study carried out by CIMFR Regional Centre has recommended that all the panels demarcated in seam IV, III and II of Taraimar Block can be developed and depillared and top seam IV and III are contiguous and should be depillared simultaneously followed by seam-II. All 3 seams would be extracted by continuous miner by Bord & Pillar method. The study recommends monitoring of groundwater movements (subsidence slope and strain) during depillaring of the proposed extraction panels. The study further recommends that in order to protect River Mand from surface subsidence, a safe distance of 60m should be left from the river bank as recommended for depillaring operations. A 200m solid barrier between OC and UG mining would be where UG mining will start below OC mining.

Life of the OC mine at 3 MTPA is 25 years and life of the UG mine at 1 MTPA capacity is 75 years. Mining depth of the OC-cum-UG mine is 16.5m to 250m bgl. Water table is in the range of 5-12m bgl during pre-monsoon and 2-6m bgl during post-monsoon.

The coal washery of 4 MTPA capacity is based on a concept of zero-discharge. Technology to be used is Heavy media Cyclone (wet process). Coal rejects of 79-80% ash is proposed to be backfilled into the mine voids. The total water requirement of the project is 864 m³/d of which 381 m³/d is for dust suppression, 9m³/d is for workshop, 390 m³/d is for mining operations, 110 m³/d is for drinking/ domestic use, 100m³/d is for green belt, 264 m³/d is for make-up water for the coal washery. Potential buyers for coal rejects, namely M/s ACB (India) Ltd., Raigarh/Korba and M/s RR Energy Ltd, Raigarh have been identified and an MOU entered with them for utilising the washery rejects of 2.7 lakh T/year and 1.8 lakh/year respectively.

A Wildlife Conservation and Management Plan has been prepared and approved by PCCF, Govt. of Chhattisgarh, wherein habitat improvement of the 4 sites identified of 108 ha identified as "Elephant Use Area" namely near Bhalalpara (part of Sisriga RF in 25 ha, Khujibari near village Kudmura-25 ha, Kudmura village in the bank of river Mand-25 ha, near Sirtha village – shall be undertaken by creation of water source and salt licks, development of salt licks, implementation of soil conservation measures, addressing human-wildlife conflict issues, vigil and fire protection measures, creation of Conservation awareness, anti-depredation measures, etc. Conservation plan would be implemented for 25 years.

The total estimated environmental cost of the project is Rs 979 lakhs and the total recurring cost is Rs 482.76 lakhs. R&R consists of 729 PAFs for Durgapur and Taraimar Coal Blocks respectively. A detailed R&R Plan, CSR and Tribal Welfare Development Plan has been prepared, as per which, Rs 65 crores for Tribal Welfare Development Plan has been earmarked from the Rs 130 crores for CSR. The total cost for R&R Plan is Rs 190.735 crores. An estimated Rs 2800 lakhs is proposed for CSR for the next 5 years, which includes Rs 1 crore is earmarked for developmental activities for the surrounding villages.

Public Hearing for the Durgapur Coalmine (OC-cum-UG)-cum Washery Project was held on 31.01.2011. Mining Plan for the OC (3 MTPA)-cum-UG (1 MTPA) mine of a combined production of 4 MTPA has been approved by the Ministry of Coal on 17.10.2008. Capital cost of the coalmine-cum-washery project is Rs. 2450 crores.

2. The Ministry of Environment & Forests has examined the application in accordance with the EIA Notification 2006 and under the provisions thereof, hereby accords environmental clearance for the above-mentioned **Durgapur-II Taraimar Opencast-cum-Underground Coalmine Project of a total combined production of 4 MTPA from both OC (3 MTPA peak) and UG mining (1 MTPA peak) and a Coal Washery of 4 MTPA capacity of M/s Bharat Aluminium Company Ltd. in a total mining lease area of 1070 ha** under the provisions of the Environmental Impact Assessment Notification, 2006 and amendments thereto and Circulars issued thereon and subject to the compliance of the terms and conditions mentioned below:

A. Specific Conditions

The maximum production by opencast mining shall not exceed 3 MTPA and that by underground mining shall not exceed 1 MTPA. The maximum combined production of the opencast-cum-underground mine at

any given time shall not exceed 4 MTPA.

Mining shall be carried out as per statute at a safe distance from River Mand. The embankment of 16.20 ha being provided along the mine boundary with River Mand shall be designed taking into account the highest flood level, based on past data, so as to guard against mine inundation. The slope of the embankment shall at least 2:1 towards the ML. The height of the embankment shall be at least 3 m higher than the HFL. The embankment to be constructed by OB /solid waste shall be strengthened with stone pitching. Slope stability of the embankment shall be done by planting suitable grass and shrubs using native species selected from the study area.

Top soil shall be stored in the earmarked area and used for green belt development and for plantation/reclamation within a year of its generation. Green belt development shall be completed within the first 3 years of mining operation.

OB shall be stacked within the mineralised area within ML area and rehandled during the mine operations.

The maximum combined height of internal-cum-external dump is proposed to be 300m. For increasing the dump height of the internal-cum-external dump beyond 60m to 90m and from 90m to a maximum height of 120m above ground level, the proponent shall undertake Slope Stability Modelling Study which shall be got carried through a recognised institution for possible dump failures, by taking into consideration parameters such as peak rainfall data (for a cumulative number of high rainfall days in rainy season, compaction for OB stabilisation, mix of soil material which increases dump stability and reduces dump slope failures, water erosion characteristics of the dump, etc. Based on modelling, the best option for stabilisation shall be selected, checked with actual data/situation and appropriate course corrections taken thereon. In addition, proper slope and gradient of the OB dump shall be maintained.

In addition, recommendations of the CIMFR study for adoption of specific stability measures such as provision of garland drain, gabion toe wall, maintaining a minimum distance of 120m between dump toe and bank of River Mand, retaining wall near toe of dump along haul road, grassing of dumps reinforced with geotextile material in critical patches and reclamation with vegetation at the final stage, shall be strictly followed. A batter against River Mand shall also be created.

After due diligence, if the external dump height is increased to 120m above ground level, 'pruning' of the 120m external dump shall begin from the 26th year to 31st year of mine operation for ensuring safety and stability, by rehandling of 349.02 Mm³ of OB into the internal dump area of 1020.66 ha, and reducing the final dump height to a max. height of 12m only above ground level only from the original height of 120m. At the post mining stage, the entire mined out area of 1020.66 ha shall be restored back to the pre-mining state or a better state through various reclamation and eco-restoration measures and no mine void shall be left.

Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.

Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.

Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.

Underground mining below the area of opencast operations and below the 300m dump shall be started only after due diligence of the safety issues of dumping to a max. height of 300m. The aspect of depillaring with/without caving shall also be reviewed thoroughly at that stage. The decision on the matter of undertaking UG mining below OC mine/internal dump and the process of depillaring 12 years thereafter with caving thereafter shall be reviewed prior to start of UG mining and in case of serious safety issues, UG mining shall not commence or shall do so only after a thorough risk assessment by DGMS and its prior approval.

Depillaring operation scheduled after 12 years of underground mining for depillaring of seams IV, III, II by caving, which poses very high risks of possible pit slope failure, dangers of parting failures leading to accidents, dangers of inundation due to subsidence and embankment failure of River Mand and dangers of fires in OB dumps migrating to underground workings, shall be carried out only with prior approval and directions of DGMS. A minimum 200m barrier shall be left between underground mine and opencast mine.

During underground mining, while extracting panels in the lower seam, all water bodies in the subsidence area shall be drained. Dewatering of the old goaves of the upper seam shall be continued as long as the lower seam is worked to prevent accumulation of large water bodies over working area. At the time of depillaring, protective bunds and garland drains shall be provided so that no water from the surface enters the subsidence area and the shaft.

Sufficient coal pillars shall be left unextracted around the airshaft (within the subsidence influence area) to protect from any damage from subsidence, if any.

Solid barriers shall be left below habitation, agricultural land, roads falling within the blocks to avoid subsidence. No depillaring operation shall be carried out below the roads and habitation area found within the lease. In case of subsidence, the land shall be acquired and compensation provided as per Policy/rules.

Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads, and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.

Crushers at the CHP shall be operated with high efficiency bag filters/water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system which shall be closed, haulage roads, transfer points, etc.

Drills shall be wet operated only.

Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.

(xx) The Washery unit shall be a zero-discharge facility and no wastewater shall be discharged from the washery into the drains/natural watercourses. Recycled water shall be used for development and

maintenance of green belt and in the plant operations.

(xxi) The raw coal, washed coal and middling and coal wastes (rejects) shall be stacked properly at earmarked site(s) within sheds/stockyards fitted with wind breakers/shields. Adequate measures shall be taken to ensure that the stored minerals do not catch fire.

(xxii) The proponent shall maintain proper records of the quantum and ash content of raw (ROM) coal, clean coal and middling and coal rejects and the same shall be uploaded on the company website every month.

The entire quantity of clean coal and middling shall be transported by MGR only to the linked TPP at a distance of 71km from the mine. The MGR route shall be aligned to ensure minimal disturbance to movement of wild fauna found in the area. A time limit of 5 years for the establishment of MGR for coal transportation shall be given. Until the operation of the MGR for the initial 5 years, coal transportation could be by road to railway siding at Kharsia which is 60 km from mine and thereafter to Korba. The proponent shall in consultation with PCCF (WL), Govt. of Chhattisgarh introduce alert/warning system such as whistle, horn, etc and train their drivers of MGRs for reducing train speeds to enable the wild animals including wild elephants to move away from the MGR tracks.

No flyash shall be used for backfilling of mine voids without detailed study and prior approval of this Ministry.

(xxv) All internal roads shall be concreted or black topped and the approach roads used for the project shall be blacked topped. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit.

(xxvi) The roads (internal/approach/and roads used for the project) shall be regularly cleaned with mechanical sweepers and with water sprinklers. A 3-tier avenue plantation shall be developed along the major approach roads, internal roads and nearby roads used by the company.

(xxvii) Green belt shall be developed along the areas such as the washery unit, crushing unit, and stockyards and at transfer points.

(xxviii) Hoppers of the coal crushing unit at the crushing shed and washery unit shall be fitted with high efficiency bag filters/Dust extractors and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of belt conveyor systems which shall be closed and from transportation roads.

(xxix) The proponent shall ensure that coal rejects shall not be dumped into the mine voids and shall be utilised/sold for power generation in CFBC boilers by entering into a long-term MOU with identified buyers for coal rejects, namely M/s ACB (India) Ltd., Raigarh/Korba and M/s RR Energy Ltd, Raigarh or with any other suitable buyer for utilising the washery rejects of 2.7 lakh T/year and 1.8 lakh/year respectively. Records of quantum and ash content of coal rejects dispatched every month to the buyers shall be maintained and uploaded on the company website.

Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected shall be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.

A Plan for water conservation and recharge measures of ground water along with budgetary provisions be prepared and implemented in consultation with the Central/State Ground Water Board to mitigate the adverse impact of mining which may lead to depletion of ground water in the area. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring of groundwater levels indicate decline of water table. Any additional water requirement for mining operation shall be met from rainwater use only. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine. It shall be ensured that if the river/nala discharge of mine water takes place, it shall be treated to conform to prescribed standards before discharge.

-) ETP shall also be provided for treatment of effluents from workshop, CHP and an STP shall be provided in the colony and the treated effluents shall be used for green belt development. Outflow of rainfall, if any, from the mine shall meet prescribed norms and the water quality of such discharge shall be monitored at the exit points and records maintained thereof and also uploaded on the company website.
- i) Besides carrying out regular periodic health check up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check up for occupational diseases and hearing impairment, if any, through a recognised agency found in the district, and the results reported to this Ministry and to DGMS.
- r) An afforestation plan covering an area not less than 1060 ha shall be implemented, which includes backfilled area (1027.16 ha), along ML boundary, green belt, embankment (16.20 ha), along roads and

infrastructure, undisturbed/vacant land (16.64 ha) by planting native species such as Sal, Tendu, Mahua, etc in consultation with the local DFO/Agriculture Department/institution with the relevant discipline. The density of the trees shall be around 2500 plants per ha.

-) Backfilling shall start by the 3rd year of operations and completed by 25th year including rehandling of the external OB dump, with cessation of opencast operations. The total excavated area of 1020.66 ha shall be backfilled and reclaimed with plantation/afforestation by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha. No void shall be left as a water body at the post-mining stage.
- i) A Programme for conservation of the wildlife particularly for the Indian Elephant reported in the study area and for other rare and endangered species/Schedule-I fauna and endangered flora and species of medicinal importance found in the study area shall be formulated and implemented in consultation with the Forest and Wildlife Departments in the State Government. Separate funds shall be earmarked for implementation of the various activities there under and the status thereof shall be regularly reported to this Ministry and the MOEF Regional Office, Bhopal and also uploaded on the company website. The project authorities shall participate in a Regional Action Plan of the State Government for conservation of flora and fauna and wildlife found within the study area. The Wildlife Conservation Plan shall be implemented for life of the project with budgetary provision of Rs 5 crores.
- ii) The Wildlife Conservation and Management Plan shall include a plan for habitat improvement of the 4 sites of 108 ha area identified as “Elephant Use Area” namely near Bhahalapara (part of Sisriga RF in 25 ha, Khujibari near village Kudmura-25 ha, Kudmura village in the bank of river Mand-25 ha, near Sirtha village – which shall be undertaken by creation of water source and salt licks, development of salt licks, implementation of soil conservation measures, addressing human-wildlife conflict issues, vigil and fire protection measures, creation of Conservation awareness, anti-depredation measures, etc.
- iii) Grasslands shall be developed as part of habitat restoration of the mined out area, for elephants using the area as habitat.

(xxxx) For monitoring land use pattern and for post mining land use, a time series of landuse maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its Regional office at Bhopal.

(xxxxi) Cost for environmental protection measures shall be not less than Rs 979 lakhs (capital) and the annual recurring costs shall be not less than Rs. 482.76 lakhs.

(xxxxii) A project specific R&R Action Plan for the 729 PAFs of homestead and land oustees from Durgapur and Taraimar Coal Blocks respectively for a total cost not less than Rs 190.735 crores shall be implemented in a time-bound manner in consultation with the District Administration. In addition, a Plan for Tribal Welfare to address the livelihood issues of tribal communities shall also be implemented to address issues for tribal welfare and development and displaced communities and land losers under BPL shall be implemented.

(xxxxiii) A project specific CSR Plan for the nearby villages of Taraiumar, Byasi, Dharam, Rupunga and other adjoining villages shall be implemented. Measures/activities under CSR shall includes strengthening the existing ITI institutions, establishment of more cooperatives and SHGs, effective role as an interface/link between buyers-sellers of local produce/goods, implementing a wide range

of skill development and alternate livelihood schemes particularly for the SC/ST including tribals and BPL families, strengthening and adding wherever necessary health care and educational facilities are lacking in and around the project area over the life of the project. A provision of Rs 2800 lakhs made for CSR for the next 5 years which includes Rs 1 crore earmarked for recurring expenditure on developmental activities for the surrounding villages or an annual recurring expenditure of Rs.5/tonne of coal, whichever is higher, which shall be adjusted according to value of the rupee until end of mine life, shall be implemented in a time bound manner. Provision of annuities of Rs 2500/month to vulnerable persons found in and around the project area shall be made. Details of village-wise activities under CSR along with the activities and budgetary provision shall be uploaded on the company website and the status of its implementation along with expenditure thereon and also desired that a Third party audit of implementation of CSR shall be done periodically.

(xxxxiv) Both R&R and CSR Plan shall incorporate a Tribal Welfare Development Plan of a total budgetary provision of Rs 65 crores.

(xxxxv) A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration.

(xxxxvi) Corporate Environment Responsibility:

- a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.
- b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
- c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.
- d) To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

B. General Conditions

(i) No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.

(ii) No change in the calendar plan including excavation, quantum of mineral coal and waste shall be made.

(iii) Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring PM₁₀, PM_{2.5}, SO₂ and NO_x. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, in PM₁₀ and PM_{2.5} shall be carried out at least once in a year.

- (iv) Data on ambient air quality (PM₁₀, PM_{2.5}, SO₂ and NO_x and heavy metals such as Hg, As, Ni, Cr, etc) and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhopal and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EP Rules, 1986 shall be furnished as part of the compliance report.
- (v) Fugitive dust emissions (PM₁₀, PM_{2.5} and heavy metals such as Hg, Pb, Cr, As, etc) from all the sources shall be controlled regularly monitored and data recorded properly. Water spraying arrangement on haul roads, wagon loading, dump trucks (loading and unloading) points shall be provided and properly maintained.
- (vi) Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
- (vii) Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.
- (viii) Vehicular emissions shall be kept under control and regularly monitored.
- (ix) An Environmental laboratory shall be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.
- (x) An Environmental Cell reporting directly to the Head of the company shall be created consisting of experts drawn from disciplines such as ecology, hydrogeology/ground water, sociology for implementation of the environmental clearance.
- (xi) Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.
- (xii) Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.
- (xiii) The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhopal.
- (xiv) The Regional Office of this Ministry located at Bhopal shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.
- (xv) A copy of the will be marked to concerned Panchayat/ local NGO, if any, from whom any suggestion/representation has been received while processing the proposal.
- (xvi) State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.

(xvii) The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at <http://envfor.nic.in>. The compliance status shall also be uploaded by the project authorities in their website and regularly updated at least once in six months so as to bring the same in the public domain. The data shall also be displayed at the entrance of the project premises and mines office and in corporate office.

3. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

4. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.

5. The above conditions will be enforced *inter-alia*, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules. The proponent shall ensure to undertake and provide for the costs incurred

for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.

(Dr.T.Chandini)
Director

Copy to:

1. Secretary, Ministry of Coal, New Delhi.
2. Secretary, Department of Environment & Forests, Government of Chhattisgarh, Secretariat, Raipur.
3. Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, E-2/240 Arera Colony, Bhopal 462016.
4. Chairman, Chhattisgarh State Environment Conservation Board, 1-Tilak Nagar, Shiv Mandir Chowk, Main Road, Avanti Vihar, RAIPUR-Chhattisgarh- 492001.
5. Chairman, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi -110032.
6. Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. District Collector, Raigarh, Government of Chhattisgarh, New Delhi.
8. Monitoring File
9. Guard File
10. Record File.

(Dr. T.Chandini)
Director