

No.J-11015/692/2007-IA.II(M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
C.G.O.Complex,
New Delhi -110510.

Dated: 19th May 2009

To
Shri A.B.Haldar
Additional General Manager (CM),
M/s National Thermal Power Corporation Ltd.,
Engineering Office Complex,
A-8A, Sector 24, NOIDA – 201301

Sub: Pakri Barwadih Coal Mine Project (15 MTPA) of M/s National Thermal Power Corporation Ltd. (NTPC) Ltd. located in villages Barkagaon, Itij, Chirudih, Urub, Chepa, Kalan, Nagri, Jugra, Sinduari, Churchu, Carahara, Sonbarsa, Pakri-Barwadih, Chepa-Khurd, Deora-Kalan, Lakura, Langatu, Keri, Dadikalan, Tehsil Barkagaon, District Hazaribagh, Jharkand - environmental clearance – reg.

Sir,

This has reference to letter No. CC/CM&CW/MoEF/01 dated 27.06.2007 along with application for environmental clearance and subsequent letters dated 16.08.2007, 14.03.2008, and 17.03.2009 on the above-mentioned subject. The Ministry of Environment & Forests has considered your application. It has been noted that the project is for **opening a new coal mine – Pakri-Barwadih Opencast Coal mine Project of 15 million tonnes per annum (MTPA) rated capacity** for its linked Thermal Power Station. The existing project consists of Phase-I of 39 years and comprises of opencast operations only and would be restricted to the explored lease area of **3319.42** ha. Of this area, 643.9 ha is forestland, 1950.51 ha is agricultural land, 159.64 ha is barren and wasteland, 435 ha is grazing land, 101.22 ha is human settlements and 29.15 ha includes roads and seasonal nala. In addition, an area of 68.58 ha is being acquired outside the ML at a distance of 2 km from the ML for township comprising 150 dwellings. There are no National Parks, Wildlife Sanctuary, Biosphere Reserves found in the 10 km buffer zone. Barkagaon Reserve Forest is situated within the core zone and in the buffer zone. Forestry clearance has been applied for. There are endangered fauna such as Sloth Bear reported in the study area. Elephant has not been reported from the area. A monolith found within the core zone is not a centrally protected monument. Ghagri nadi flows south of the ML at a distance of 1.5 km from west to east. Hahro nadi flows at a distance of 1.5km south of ML from SW to northern direction. It is proposed to modify the natural drainage by diversion and realignment of the nalas and by construction of an embankment. Of the total mining lease area, 25 ha is for topsoil dump, 632 ha is for external OB dump, 1785 ha is quarry area, 31 ha is for roads, 18 ha is for infrastructure and 797 ha is undisturbed area. The project involves R&R of 17 villages. A land of 141.70 ha is being acquired as R&R site in villages Dhenga and Lakura on the eastern side of the Block. Detailed R&R has been prepared for Phase-I consisting of 7 villages and involving a total 2221 PAPs:- Chirudih (10), Itiz (125), Nagadi (125), Arhara (202), Pakri-Barwadih (634), Dadikalan (665), Chepakalan (460). An area outside the mining area where infrastructure will be located also involves an R&R of a total 1068 land oustees which would also be completed in Phase-I. The balance 10 villages – Sinduari, Sonbarsa, Churchu, Jugra, Chepakhurd, Keri, Langatu, Deoriakhurd, Urub, Barkagaon are to be taken up for R&R in subsequent phases and are under survey.

Mining will be opencast by mechanised method involving shovel-dumper and involves drilling and blasting. **Rated capacity of the mine is 15 (MTPA)**. Mineral transportation of coal from the mine to CHP would be by closed conveyors and by rail link to the linked TPP. Railway siding would be provided with Silo Loading System. Ultimate working depth of the mine would be 300m below ground level (bgl). Water table in the study area during pre-monsoon is in a range of 4.24m –14.64 m and in a range of 1.52- 8.54m during post-monsoon. Peak water requirement is 4576 m³/d of

which 526 m³/d is for domestic consumption to be met from ground water, and the of the remaining 4050 m³/d, 3400 m³/d would be from mine pit water and 550 m³/d from recycled water. An estimated 2118 Mm³ of OB will be generated over the life of mine (39 years) of which 1238 Mm³ would be from western quarry (first 25 years) and 860 Mm³ would be from eastern quarry (25th – 39th year). Of the 1238 Mm³ of OB from the western quarry, 595 Mm³ of ob would be dumped externally in two external OB dumps (A and B) and 643 Mm³ would be stored in external dump C. Max. height of the 3 dumps would be 90m. The entire OB of 860 Mm³ from eastern quarry would be backfilled over an area of 665 ha and reclaimed into grazing land (223 ha) and agricultural land (442 ha) at the post mining stage. Ultimate working depth is 300m. Life of mine at the rated capacity of 15 MTPA is 39 years. Public Hearing was held on 16.04.2007. Mining Plan has been approved for 15 MTPA on 25.08.2006. **Capital cost of the project is Rs. 4500 crores.**

2. The Ministry of Environment & Forests hereby accords environmental clearance for the above mentioned **Pakri Barwadih Coal mine Project of M/s NTPC Limited of a production capacity of 15 MTPA in a total lease area of 3319.42 ha** under the provisions of Section 12 of the Environmental Impact Assessment Notification, 2006 and subsequent amendments thereto and under MOEF Circulars there under subject to the compliance of the terms and conditions mentioned below:

A. Specific Conditions

- (i) The environmental clearance is restricted to Phase-1 of 39 years of opencast operations involving 3319.42 ha of ML area only for which exploration has been completed.
- (ii) No mining operations shall be undertaken in the forestland within the ML until clearance has been obtained under the provisions of FC Act, 1980.
- (iii) The monolith found within the core zone shall not be disturbed by the mining operations and a minimum 500m distance along with thick green belt would be maintained between the eastern quarry and the monolith. A road would be created upto the monolith a park created around it so that the monolith could be visited.
- (iv) Mining shall be carried out as per statute from the streams/nailahs flowing within the lease. Embankment to be constructed shall be based on peak flow data and shall be at least 3m above the HFL. The slope of the embankment shall be at least 2:1 towards the ML and shall be stabilised with plantation. The CWPRS would be engaged for the design and study of realignment of the drains/nailahs flowing across the ML and creation of embankment, and also obtain approval of the State Government for diversion of the nailahs.
- (v) Topsoil should be stacked properly with proper slope at earmarked site(s) and should not be kept active and shall be used for reclamation and development of green belt.
- (vi) OB should be stacked at earmarked three external OB dumpsite within ML area of a maximum height of 90m. A minimum of 500m shall be maintained and thick green belt developed between the habitation and OB dumps particularly that of Barkhagaon. The option of raising the level of grazing land created after backfilling the quarry by 10m or so shall be examined so to reduce the overall OD dump height. Slope stability tests may be undertaken and the feasibility of backfilling depending on the type of cost effective technology available at that stage shall be re-examined. The ultimate slope of the dump shall not exceed 28°. Monitoring and management of reclaimed dumpsite should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional office located at Bhubaneswar on yearly basis.
- (vii) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilised

for watering the mine area, roads, green belt development, etc. The drains should be regularly desilted and maintained properly.

Garland drains (size, gradient and length) and sump capacity should 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 should also provided adequate retention period to allow proper settling of silt material.

- (viii) Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.
- (ix) The main haul road of 6 km within the core zone shall be metalled. A 3-tier avenue plantation shall be developed along the main approach roads and haul roads. Mineral transportation from CHP to Railway siding shall be by closed belt conveyor of a length of 7km. The railway siding shall be provided with Silo Rapid Loading System.
- (x) Drills should be wet operated only.
- (xi) Controlled blasting should be practiced with use of delay detonators. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders should be implemented.
- (xii) No additional groundwater (bore well) shall be used for mining operations. Additional water if any required for the project shall be used from recycled water or mine discharge water or rainwater collected in rainwater harvesting pits within the CML.
- (xiii) Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity should 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 should be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring. Rainwater structures shall be erected in the core and buffer zone, in case monitoring indicates a decline in water table.
- (xiv) The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.
- (xv) Sewage treatment plant of adequate capacity shall be installed in the colony. ETP should also be provided for workshop and CHP wastewater. Treated wastewater meeting prescribed norms only shall be recycled for mining operations to the extent possible and permitted to be discharged in to the natural water courses only if it meets the prescribed standards.
- (xvi) The total area that shall be brought under afforestation at the time of mine closure shall not be less than 1199 ha which includes reclaimed topsoil soil dump area (25 ha), external OB dump (632 ha), backfilled area (524 ha), along ML boundary, embankment and undisturbed area, along roads and infrastructure, green belt (18 ha), and in township outside the lease by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.
- (xvii) A Progressive Mine Closure Plan shall be implemented by reclamation of 524 ha, of the total quarry area of 1785 ha, which shall be backfilled and afforested by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha. Of the total reclaimed backfilled area, 223 ha shall be grazing land and 442 ha shall be agricultural land for utilisation of the villagers.
Of the balance 1261 ha of quarry area, an area of 596 ha of degraded area/void being converted into a water reservoir shall be gently sloped and the the upper benches of

the reservoir shall be terraced and stabilised with plantation and the remaining 665 ha is for public use for Phase-2 of the project.

- (xviii) 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 an agency such as NIOH, Ahmedabad within a period of one year and the results reported to this Ministry and to DGMS.
- (xix) A detailed R&R Plan for the life of the project comprising land losers, homestead losers and land and homestead losers, including tribals to be displaced from the project area shall be prepared and implemented in a stipulated time-frame. Phase-I of the R&R comprising of 2221 PAPs shall be implemented within one year. The compensation shall be not less than that specified in the National R&R Policy. Provision shall also be made in the R&R Plan to take care of the land less labourers and the tribals. The total expenditure on R&R shall not be less than Rs. 700 crores, which includes land acquisition (Rs. 30 crores) and R&R (350 crores). Alternate livelihood and skill development programmes and schemes shall be implemented as part of R&R and CSR.
- (xx) The project authorities shall carry out a pre-mining socio-economic survey based on the UNDP Human Development Report and monitor the socio-economic status once every three years and maintain records thereof and report in their Annual Report, the socio-economic impact of R&R and CSR activities.
- (xxi) For monitoring land use pattern and for post mining land use, a time series of land use 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 Bhubaneswar.
- (xxii) A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

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 SPM, RPM, SO₂, NO_x and heavy metals such as Hg, Pb, Cr, As, etc. 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.
- (iv) Fugitive dust emissions (SPM and RSPM 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.
- (v) Data on ambient air quality (SPM, RSPM, SO₂, NO_x and heavy metals such as Hg, Pb, Cr, As, etc) 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.

- (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) 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) 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.
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.
 - (xi) A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.
 - (xii) 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.
 - (xiii) 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.
 - (xiv) 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.
 - (xv) 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.
 - (xvi) 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 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 Jharkand, Secretariat, Ranchi.
3. Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, A-31, Chandrashekarpur, Bhubaneswar - 751023.
4. Chairman, Jharkand State Pollution Control Board, T.A. Division Building (Ground Floor), H.E.C., Dhurwa, Ranchi - 834004.
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, Hazaribagh, Government of Jharkand.
8. Monitoring File 9. Guard File 10. Record File