

No. J-11015/68/2008.IA.II (M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
CGO complex, Lodi Road,
New Delhi – 110003
Dated 21st January, 2013

To
The Chief General Manager,
M/S Neyveli Lignite Corp. Ltd.,
Office of the Chief General
Manager, Central technical
Offices, Block-I,
NEYVELI - 600101.

Sub: Hadla Lignite Mining Project (1.62 MTPA normative with a peak capacity of 1.90 MTPA in an area of 1567 ha) of M/S Neyveli Lignite Corp. Ltd., located in villages Hadla Bhatiyar, Hadla Rawaitan & Mokha" Tehsil Kolayat, District Bikaner, Rajasthan - Environmental Clearance reg.

Sir,

This is with reference to your letter No. GM/P&BD/HLMP/MOEF/EIA-EMP/2008 dated 30.01.2008 and letter No. 43011/40/2008-CPAM dated 15.05.2008 along with application for Terms of Reference, which was granted vide MOEF letter dated 23.05.2007 and with reference to your application for environmental clearance based on the Terms of Reference vide letter No. GM/P&BD/Hadla/EIAEMP/1823/2011 dated 06.09.2011 and letters dated 05.03.2008, 30.12.2008, 15.12.2011, 21.12.2011, 20.04.2011, 15.05.2011 and 12.06.2012 on the above-mentioned subject. The Ministry of Environment & Forests has considered the application. It is noted that the proposal is for opening a new opencast lignite mine of a production capacity of 2.5 MTPA in an ML area of 1567 ha. The mine is located at a distance of the Barsingsar Lignite Mine and Barsingsar TPP at a distance of about 15 km. Hadla Lignite mine project is for the proposed expansion of the Barsingsar TPP (2 x 125 MW) by another 250 MW for which a separate application has been made. The mine would partially meet the lignite requirement of the linked Barsingsar Extension Project for putting up an additional unit of 1x250 MW capacity and the balance met from the proposed Palana Lignite mine also allocated to the company. EC for Barsingsar Lignite Mine was transferred from M/s Hindustan Vidyut Power Corp. Ltd. along with the mining lease. The life of the proposed lignite mine is 20-25 years. There are no National Parks, Wildlife Sanctuary, Biosphere Reserves found within the study area.

2. Of the total ML area of 1567 ha, 1561.20 ha is agricultural land (of which 59.92 ha is irrigated and 1501.58 ha is non-irrigated (rainfed) land, and 5.80 ha is Govt. land. No forestland and no grazing land is involved. There are no water bodies in the major part of the ML. No major drainage exists in the core zone. The crops cultivated in non-irrigated area include Bajra, Gwar, Moong, Moth, Gigly Arandi and in the irrigated area include wheat, gram, jeera, mustered, ground nut, Isabgol. Of the total ML area, 621 ha is quarry, 306 ha is for ext. OB dumps, 15 ha is for road and infrastructure (office and workshop), 75 ha is for colony and service area for outsourced personnel, 111 ha is green belt and vacant area, 40 ha is for approach roads, conveyor corridor and 436 ha is area for future mining. Mining would be opencast with shovel-dumper combination. Occasional blasting is required due to presence of sandstone. Lignite removal is by shovel-dumper. Ultimate working depth is 125m. The total estimated water requirement is 1539 m³/d. The water requirement of Hadla mine and for the linked Barsingsar Power

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Station Extension TPP would be met from Indira Gandhi Nagar Pariyojna (IGNP) which is at the distance of about 60 km from the power plant. The State Government has allocated 46 cusecs of water for industrial use to M/s NLC of which about 0.5 cusec of water would be used for the Hadla Project. As per the Ground Water Resource Estimation Committee report of State Ground Water Department Govt. of Rajasthan, the proposed Hadla Mine is located in an overexploited ground water potential zone. Hadla area lies in groundwater potential zone (T1 - NC) and covers an area of 975 Sq Km and is located in eastern and central part of Kolayat Block. The groundwater level in the area ranges between 115-120m below ground level. The groundwater occurs below unconfined to semi-confined conditions. Long-term trend of water level indicates a declining trend of about 1.6m per year. The depth of water level in the area is 120-130m bgl. Groundwater has not been encountered even at 70-100m depth of lignite seam in the Barsingsar mine. Mining would reach a depth of about 120m only in the 15th year and in view of the continued decline in ground water level, intersection of aquifers is unlikely. Water level is found to be 10 to 15m below the floor of lignite seam and intersection of groundwater is not likely. No brackish water has been encountered in mine area and the TDS levels in the natural aquifers are in the range of 760-1700 mg/l, which is termed as 'sweet water'. Lignite transportation from mine to power plant would be by closed conveyors. Plantation/green belt would be developed in 29ha during the first three years from the date of commencement of project. OB would be stored in the external dump of about 70-90m height only during the initial years of mine operation. External OB-dumping would continue up to the 5th year and during 6th - 10th year OB would be dumped both externally and internally. After the 6th year of operation, lignite excavation as well as backfilling of overburden in the decoaled area would be carried out concurrently. Of total ML area, an area of 621 ha is for quarrying, of which 504 ha (81%) would be backfilled. Of the total volume of 585.67 Mm³ of OB to be generated, 508.12 Mm³ would be backfilled. At the end of mine life, of the total quarry area of 621 ha, void of 120m in 117 ha would taper to void floor area of 14 ha only (pit bottom). The average depth of final mine void would be 125 m. The cost of Final Mine Closure is estimated to be Rs 9404 lakhs as per which, the final void depth of 130m, would be backfilled upto 65m and the top 65m would be left as a void of an area of 51ha, which is 8% of the total quarry area of 621 ha. The estimated manpower of 90 persons required for the project would be accommodated in the colony of the existing Barsingsar colony. There are 3 villages located within the lease area. R&R involves 209 PAFs (PAPS 1826) of villages Hadla Bhatiyar, Hadla Rawatan and Mokha Charnan, of which 766 PAPs from 88 families would be displaced. An Action Plan for the implementation of Resettlement and Rehabilitation of 209 Project affected families (PAFs) as well as the CSR has been prepared. Public Hearing was held on 27.01.2011, which was disrupted and a second Public Hearing was held on 04.05.2011. Cost for EMP is Rs 26.03 crores and cost of CSR is Rs 136 lakhs (capital) and Rs 125 lakhs (recurring). Life of the mine is 25 years. Capital cost of the project is Rs 339.09 crores.

3. The Ministry of Environment & Forests hereby accords environmental clearance for the above-mentioned **Hadla lignite Mining Project (2.5 MTPA in an area of 2001.61 ha) of M/s Neyveli lignite Corp. Ltd.** under the provisions of the Environmental Impact Assessment Notification, 2006 and subsequent amendments thereto and Circulars there under subject to the compliance of the terms and conditions mentioned below:

Specific Conditions

- i. Low lying area, which forms a part of SW boundary of the core zone, and which holds the water body during monsoon season and where natural plantation have developed, shall not be disturbed to the extent possible as it may support grassland for the local communities during monsoon season.
- ii. Open scrub found in the non-mineralised area of the core zone shall not be disturbed.
- iii. A Plan for conservation of Schedule-I birds and animals, which visit the mine area shall be prepared in consultation with ZSI and BSI or any other reputed institutions and implemented and details thereof furnished as part of compliance report.
- iv. The total water requirement for the project shall be minimised and the wastewater shall be recycled from the ETP and STP and used for dust suppression and developing green belt.

- v. Of the total ML area, plantation shall be developed using local species in the backfilled quarry area (504 hal, 306 ha of ext. OB dumps, along road and near infrastructure (office and workshop), colony and service area, green belt and vacant area (111 ha), along the 40 ha for approach roads, and lignite conveyor corridor
- vi. Plantation/green belt shall be developed in 29ha during the first three years from the date of commencement of project using local species ..
- vii. Topsoil shall be stacked properly with proper slope at earmarked site(s) and shall not be kept active and shall be used within a year of its generation for reclamation and development of green belt.
- viii. An estimated 77.55 Mm³ of OB shall be stored during the initial years of mine operation in the external dump of a max. height of 70-90m. External OB dumping shall continue up to the 5th year and during 6th-10th year OB shall be dumped both externally and internally and thereafter there shall be no external dumping of OB. The ultimate slope of the dump shall not exceed 28°. Monitoring and management of existing reclaimed dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional office located at Lucknow on yearly basis.
- ix. 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 utilized for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.
- x. 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.
- xi. 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 .
- xii. Mining shall not involve drilling and blasting operations unless exceptionally hard strata are encountered during OB removal.
- xiii. Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new piezometers in and around the mine. 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 (including TDS and acid mine water) 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. Water quality parameter such as pH, TDS, Fluoride etc. and acidic mine water if any, shall be treated to confirm to prescribe standards before discharge or use in dust suppression/green belt development. Records of the water quality of the mine discharge water shall be maintained. Recognised institutions such as National Geophysical Research Institute, Hyderabad could be involved for undertaking such a study. Post project monitoring of groundwater quality shall be continued for at least 3 years. In case the mine void water is found to be acidic, remedial measures for its treatment shall be undertaken by the project proponent and the costs thereof also shall be borne by the proponent.
- xiv. Mine discharge water discharged into the land/surface waters or for drinking purpose shall be treated to norms prescribed under General Standards under EPA Rules, particularly for pH, TDS, F, etc. Mine pit water which is high in TDS shall be treated in an RO Plant to prescribed limits before discharge into natural water/land for various uses.
- xv. Measures shall be undertaken to ensure that mining does not intersect the confined aquifers found below the lignite seams. Adequate safety measures shall be taken to ensure that the clay band below the lignite seam is not disturbed during mining operation. Measures shall also be undertaken during the entire project life to not dewater the mine resulting in aquifer depressurisation.
- xvi. The proponent shall prepare a hydro-geological study on the potential impact of mining on the groundwater about 10 years after start of mining, well in advance before likely intersection of groundwater, i.e, well before reaching the ultimate working depth of 120m bgl and the report on the same shall be furnished to the ministry.
- xvii. The proponent shall not use bore well/ground water for mine operation. Additional water

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- required, if any, shall be met by recycling/reuse of the water from the existing activities and from rainwater harvesting measures.
- xxviii. The Company shall put up artificial groundwater recharge measures such as check dams within and adjoining the lease for augmentation of groundwater resource in case monitoring indicates decline in water table. The company shall also develop and maintain the existing natural channels and seasonal nallas and ponds/tanks and natural low-lying areas in the buffer zone for storing rainwater for use of local communities. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.
 - xix. Water sprinkling systems shall be provided to check fugitive emissions, haulage roads, transfer points, etc.
 - xx. All approach roads, major haul roads and road to village shall be black topped. Areas near habitations and villages shall be developed with 3-tier avenue plantation and maintained by the project authorities.
 - xxi. Transportation of lignite to linked TPP shall be by conveyors only.
 - xxii. No stockpile of lignite shall be permitted. The lignite produced from mine face shall be transported within 1-2 days.
 - xxiii. ETP shall also be provided for workshop, and CHP. Effluents shall be treated to conform to prescribed standards, particularly for pH and TDS in case of discharge into any water course outside the lease. Brine sludge shall be stored in concrete lined pits and disposed off to a suitable buyer for use in chemical manufacture.
 - xxiv. An R&R Action Plan for the 208 PAFs (PAPS 1826) of villages Hadla Bhatiyan, Hadla Rawaltan and Mokha Charnan, of which 766 PAPs from 88 families would be displaced, shall be implemented within an agreed time-frame. Land owners shall be compensated as per norms not below that laid under the National R&R Policy/State Government norms whichever is higher.
 - xxv. A pre-mining socio-economic survey shall be undertaken and impact of CSR and R&R assessed every 3 years and furnished as part of the Monitoring Report.
 - xxvi. A project specific CSR Plan shall be implemented which includes a one-time capital investment of Rs 136 lakhs (capital) and Rs 125 lakhs (recurring) for undertaking socio-economic activities such as health (primary health centres), schools (particularly primary schools), water and sanitation facilities, etc health (such as establishing/strengthening Primary Health Centres), schools (particularly primary schools), water and sanitation facilities, etc for the surrounding villages in the area for the life of the project. The details of expenditure and various activities shall be uploaded on the company website. The socio-economic development of the villages shall be monitored over the life of the project using indices such as the UNDP Human Development Index.
 - xxvii. A Progressive Mine Closure Plan shall be implemented and of the total quarry area of 621 ha of which an area of 504 ha shall be backfilled and afforested by planting native plant species including 'Khejri' in consultation with the local DFO/Agriculture Department. Backfilling shall begin from the 6th year onwards and from concurrently from the 10th year of operation. The density of the trees shall be around 600-800 trees per ha. The balance de-coaled void of 117 ha area and a final depth of 120m bgl being left as a water body shall be gently sloped along the upper benches and reclaimed with grass and plantation. The quality of the water in the water body shall be regularly monitored and treated to ensure that it is not acidic or contain TDS, fluoride and other parameters beyond prescribed limits. The water body to be left at the post mining stage should be monitored for TDS and treated for irrigation and other purposes under CSR.
 - xxviii. 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 particular season which is consistent in the time series), and the report submitted to MOEF and its Regional office at Lucknow.
 - xxix. A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests for approval 5 years in advance of final mine closure for approval. At the Post-mining stage, land shall be restored to agricultural use to extent possible. The cost of Final Mine Closure estimated to be Rs 9404 lakhs as per which, the final void depth of 130m, would be

backfilled upto 65m and the top 65m would be left as a void of an area of 51ha, which is 8% of the total quarry area of 621 ha.

B. General Conditions

- (i) No change in 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 quantum of lignite and waste being produced 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}, SO_x 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 particulates shall be carried out at least once in six months.
- (iv) Data on ambient air quality (PM₁₀, PM_{2.5}, SO_x 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 Lucknow 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) 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.
- (vi) Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, and treated so as to conform to the standards including for heavy metals before discharge prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluents.
- (vii) Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of the mineral shall be covered with tarpaulins and optimally loaded.
- (viii) Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EP Rules, 1986.
- (ix) 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.
- (x) 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.
- (xi) 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 Lucknow.
- (xii) 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>
- (xiii) A copy of the environmental clearance letter shall be marked to concerned Panchayat/Zila Parishad, Municipal Corporation or Urban Local Body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on the company's website.
- (xiv) A copy of the clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.
- (xv) The clearance letter shall be uploaded on the company's website. The compliance status of the

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- stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical pollutants such as PM₁₀, PM_{2.5}, SO_x and NO_x (ambient and stack if any) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website.
- (xvi) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the MOEF, the respective Zonal offices of CPCB and the SPCB.
 - (xvii) The Regional Office of this Ministry located at Lucknow 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.
 - (xviii) The environmental statement for each financial year ending 31st March in Form-V is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MOEF by E-mail.
4. The Ministry or any other competent authority may stipulate any further condition for environmental protection.
5. 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.
6. 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. Manoranjan Hota)
Director

Copy to:

1. Secretary, Ministry of Coal, New Delhi.
2. Secretary, Department of Environment & Forests, Government of Rajasthan, Secretariat, Jaipur.
3. Chief Conservator of Forests, Regional office (CII, Ministry of Environment & Forests, Kendriya Bhawan, 5th, floor, Sector H, Aliganj, Lucknow-226024.
4. Chairman, Rajasthan State Pollution Control Board, 4, Institutional Area, Jhalana Doongri, Jaipur
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, Bikaner, Government of Rajasthan.
8. Ministry of Environment & Forests, New Delhi.
9. Monitoring File 10. Guard File 11. Record File

(Dr. Manoranjan Hota)
Director