

No.J-16011/26/2001- IA.III  
Government of India  
Ministry of Environment and Forests

Paryavaran Bhavan,  
CGO Complex, Lodhi Road,  
New Delhi - 110003.

Dated 2<sup>nd</sup> June 2003.

**Sub: Construction of LNG Import Terminal at Puthuvypeen Island, Kochi, Kerala- regarding.**

Reference is invited to the letter No. 4215/B1/2000/STED, dated 9.2.2001 from Science, Technology and Environment (B) Department, Government of Kerala regarding the subject mentioned above. Subsequent clarifications furnished by Govt. of Kerala vide their letter no. 4216/131/2000/STED dated 10.4.2002 and the information/clarifications submitted by M/s Petronet LNG Limited vide their letters no.ND/LNG/K-22/2K1 and No.ND/LNG/K-22/2K2 dated 12.2.2001, 19.9.2001, 23.1.2002, 18.4.2002, 1.8.2002, 26.8.2002, 20.12.2002 dated 3.4.2003 have been considered.

The project involves import of LNG which will be received from Qatar in specially designed and dedicated LNG cryogenic vessels of capacity upto 1,37,000 cum. through sea route. The estimated cost of the project is Rs. 1600 crores. A dedicated LNG unloading jetty will be built as a part of LNG terminal facility. Two breakwaters, one on Northern side (870 m) and other on Southern side (800 m) would be provided. The piled jetty trestle including the jetty head will be provided in deep water. Four unloading arms will be provided.

Two full containment LNG storage tanks of 1,10,000 cum. capacity will be installed. The LNG from the ship will be unloaded through 30" diameter insulated line running from the unloading arms manifold to the own shore LNG storage tanks.

Regasification system is designed to deliver regasified LNG into the distribution system at a pressure of 90-92 Kg. Per cm square (g) and 4°C. Sea water cooled open rack LNG vaporizers will be provided for the operation of the terminal. The temperature drop in seawater will be limited to 5°C. Power requirement will be met from Kerala State Electricity Grid. It is estimated that 2-3 MW power will be required during construction and 6.5-7 MW during operation. To meet the power requirement during failure of the grid natural gas based power plant of 7.5 MW will be setup. In addition, DG sets of 750 KW capacity will be installed.

It is noted that the LNG jetty and the terminal are proposed to be located at Puthuvypeen Island in Kochi taluka of District Ernakulam in Kerala. The area is vacant and away from habitation. The LNG terminal comprising storage and regasification facilities along with other facilities will be located approximately 180-200 m North of the LNG jetty.

The existing width of the channel is 200 meter and depth is 13.8 meter CD. The existing width in the approach channel will be increased to 280 meters and channel depth will be increased to 14.3 meter CD for approach and unloading LNG vessels.

The project involves 42 hectares of land in Coastal Regulation Zone area falling within Cochin Port Trust. The freshwater required for the project is around 25-30 cu. m. per day which will be met from existing fresh water network in the area. In addition the saline water from the sea will be used for regasification. It is estimated that 245568 cum. per day of saline water will be required. The cold water at a temperature differential not exceeding 5° C with respect to ambient water temperature will be discharged into the sea.

The project involves dredging for the purpose of creating an approach channel which is estimated to be  $8.9 \times 10^6 \text{ m}^3$  and  $3.6 \times 10^6 \text{ m}^3$  for the harbour basin. Maintenance dredging will also be carried out regularly.

The Government of Kerala, Science, Technology and Environment Department have accorded clearance for the above project in their Coastal Zone Management Authority meeting held on 22.12.2000.

Director of Fisheries, Government of Kerala have accorded NOC for the project vide their letter No. D1/19501/99 dated 11.4.2000.

Forest and Wildlife (C) Department, Govt. of Kerala have accorded NOC to the project vide their letter No. 8313/C2/99/F&WLD dated 4.4.2000.

The Kerala State Pollution Control Board has accorded NOC vide their letter No. PCB/NOC/EK/117/98, dated 17.9.1999. The Public hearing for the project was held on 16.6.1999. The cost of the project is Rs.1,600 crores. No forest land is involved for the project.

The proposal has been examined in the Ministry of Environment & Forests and Environmental Clearance to this project is hereby accorded subject to effective implementation of the following conditions:

**A. SPECIFIC CONDITIONS:**

- (i) All the conditions stipulated by the Science Technology and Environment Department, Government of Kerala vide their letter No.4215/B1/2000/STED, dated 9.2.2001 should be effectively implemented.
- (ii) All the conditions stipulated by Kerala Pollution Control Board in their NOC No. PCB/NOC/EK/117/98 dated 17.9.99 should be effectively implemented.
- (iii) No change in scope of work shall be made without prior approval of this Ministry.

- (iv) Project proponent shall take all safety measures and take into account the dynamics of the marine/coastal area before constructing the break waters. The recommendations made by CWPRS shall be duly implemented. The dredged materials shall be disposed of as per the recommendations by CWPRS.
- (v) No activities will be undertaken in the mangrove area or in the buffer zone of the mangroves. The route of the pipeline and other activities shall have minimum of 50 meters distance from the nearby mangrove and forest lands, if any, in the CRZ area. Expansion of existing service road into Coastal Regulation Zone-I (i) shall not be carried out.
- (vi) The laying and commissioning of the pipelines shall be in accordance with the established procedures, practices and rules. LNG facilities shall be designed, constructed and operated as per existing international standards. The pipelines shall be provided with in-built gas leakage detection and warning system. Adequate measures for monitoring pressures in excess of those for which the pipeline is designed shall be ensured to prevent leakage of gas.
- (vii) Design and alignment of the pumping platform/jetty and other structures should be chosen in such a way that it causes minimum resistance to the flow of tidal waters.
- (viii) The pipelines related to effluent discharge, sea water intake and pumping of LNG should be laid on sea floor after trenching. Trenching operations should be restricted to minimum area to minimize damage to benthic fauna.
- (ix) Disposal facilities should be completed prior to the commissioning of project activities. As per the Thermal Plume Studies by NIO, Goa, the return water should be discharged at a location having water depth of about 3 m. Post monitoring should be carried out at definite intervals in order to ensure mid course corrections, if any, for maintenance of environmental quality.
- (x) Fish eggs, larvae and small fish as well as plant and animal plankton pass through the water intake screen and at times through the trash bars. Accordingly, the water intake for regasification purpose is to be provided with a velocity cap, trash bars, and low intake velocity be maintained to minimize the entry of debris and fish.
- (xi) No groundwater shall be tapped for the project.
- (xii) Specific arrangement for rainwater harvesting should be made in the project design and the rainwater so harvested should be optimally utilized.
- (xiii) The Bathymetric survey of the dredged material disposal site should be carried out regularly and it should be ensured that there is no navigational hazard be due to reduction of navigational depth as a result of project activities. Location of dumping site should be informed to all concerned.
- (xiv) Regular surveys shall be conducted to identify changes in the channel morphology so that navigational hazards are minimal.

- (xv) Mangrove afforestation will be promoted in consultation with the expert agencies and the local NGOs in the area. A detailed plan shall be worked out in this regard and submitted to this Ministry within 3 months.
- (xvi) Marine environment shall be periodically monitored to assess changes, if any, in the ecology and suitable remedial measures, if any required, shall be taken.
- (xvii) The budget allocated for environment safeguard measures shall not be diverted for any other purpose.
- (xviii) The comprehensive Environmental Impact Assessment report shall be completed early and the final report submitted to this Ministry within one year from the date of this clearance letter. Based on the comprehensive EIA report, additional environmental safeguards, as required, shall be implemented by the proponents.
- (xix) Based on the risk analysis, Disaster Management Plan should be prepared and submitted to this Ministry within 6 months. Necessary safety norms for the movement of LNG ships are to be laid down by Cochin Port Trust Authorities within their jurisdiction and communicated to the project proponent for strict compliance with a view to prevent collision, grounding or ramming or any other major accidents.

**B. GENERAL CONDITIONS:**

- (i) Construction of the proposed structure should be undertaken meticulously conforming to the existing Central/local rules and regulations including Coastal Regulation Zone Notification, 1991 and its amendments. All the construction designs/drawings relating to the proposed construction activities must have approvals of the concerned State Government Departments/Agencies.
- (ii) The proponent shall ensure that as a result of the proposed constructions, ingress of the saline water into the groundwater does not take place. Piezometers shall be installed for regular monitoring for this purpose at appropriate locations on the project site.
- (iii) Handling, manufacturing, storage and transportation of all hazardous chemicals should be carried out in accordance with MSIHC Rules, 1989 and subsequent amendments. All approvals from State and Central nodal agencies including OISD, Chief Controller of Explosives, Chief Inspectorate of Factories must be obtained. A comprehensive contingency plan in collaboration with the concerned authorities must be formulated before commissioning of the project to meet any eventuality in case of an accident.
- (iv) Minor oil spills are likely to be caused due to ship movement in the port. Engine room waste, oil ballast and tank wash water have to be discharged to the shore reception for treatment by port authorities or by certified contractors. In case of major

oil spills due to accidents. Petronet LNG Limited should interact with Kochi Port to ensure full preparedness to undertake all combat operations.

- (v) Control room/tower should be equipped with modern communication and control device to act instantaneously if spill/leakage occurs. At the jetty, loading arm should be equipped with latest Emergency Release Systems (ERS) and monitoring device for LNG services. Articulated cargo transfer arm should be used at the unloading jetty. It shall be ensured that LPG and LNG tankers are scheduled properly to avoid bunching and also that LPG will not be unloaded from the ship when the LNG tanker is at berth.
- (vi) Dry chemical fire fighting extinguishers should be provided at all levels of the jetty to permit personnel to fight small fires. Water spray for dispersing unignited vapour clouds should be kept as standby. Full fledged fire fighting facilities should be provided at jetty.
- (vii) A well-equipped laboratory with suitable instruments to monitor the quality of air and water shall be set up as to ensure that the quality of ambient air and water conforms to the prescribed standards. The laboratory will also be equipped with qualified manpower including a marine biologist so that the marine water quality is regularly monitored in order to ensure that the marine life is not adversely affected as a result of implementation of the said project. The quality of ambient air and water shall be monitored periodically in all the seasons and the results should be properly maintained for inspection of the concerned pollution control agencies. The periodic monitoring reports at least once in 6 months must be sent to this Ministry (Regional Office at Bangalore) and State Pollution Control Board.
- (viii) Adequate provisions for infrastructure facilities such as water supply, fuel for cooking, sanitation etc. must be provided for the laborers during the construction period in order to avoid damage to the environment. Colonies for the laborers should not be located in the Coastal Regulation Zone area. It should also be fuel wood purpose.
- (ix) To prevent discharge of sewage and other liquid wastes into the water bodies, adequate system for collection and treatment of the wastes must be provided. No sewage and other liquid wastes without treatment should be allowed to enter into the water bodies.
- (x) Appropriate facility should be created for the collection of solid and liquid wastes generated by the barges/vessels and their safe treatment and disposal should be ensured to avoid possible contamination of the water bodies.
- (xi) Necessary navigational aids such as channel markers should be provided to prevent accidents. Internationally recognized safety standards shall be applied in case of barge/vessel movements.
- (xii) The project authorities should take appropriate community development and welfare measures for villagers in the vicinity of the project site, including drinking water facilities. A separate fund should be allocated for this purpose.

- (xiii) The quarrying material required for the construction purpose shall be obtained only from the approved quarries/borrow areas. Adequate safeguard measures shall be taken to ensure that the overburden and rocks at the quarry site do not find their way into water bodies.
- (xiv) The dredging operations to be undertaken with the prior approval of this Ministry, shall be executed with appropriate safeguard measures to prevent turbidity conditions in consultation with the expert agencies such CWPRS/NIO.
- (xv) For employing unskilled, semi-skilled and skilled workers for the project, preference shall be given to local people.
- (xvi) The recommendations made in the Environment Management Plan and Disaster Management Plan, as contained in the Environmental Impact Assessment and Risk Analysis Reports of the project shall be effectively implemented.
- (xvii) A separate Environment Management Cell with suitably qualified staff to carry out various environment should be set up under the charge of a Senior Executive who will report directly to the Chief Executive of the Company.
- (xviii) The project affected people, if any should be properly compensated and rehabilitated.
- (xix) The funds earmarked for environment protection measures should be maintained in a separate account and there should be no diversion of these funds for any other purpose. A year-wise expenditure on environmental safeguards should be reported to this Ministry.
- (xx) Full support should be extended to the officers of this Ministry's Regional Office at Bangalore and the officers of the Central and State Pollution Control Boards by the project proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect if mitigative measures and other environmental protection activities.
- (xxi) In case of deviation or alteration in the project including the implementing agency, a fresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection. The project proponents should be responsible for implementing the suggested safeguard measures.
- (xxii) This Ministry reserve the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.
- (xxiii) This Ministry or any other competent authority may stipulate any additional conditions subsequently, if deemed necessary for environmental protection, which shall be complied with.
- (xxiv) The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular

language of the locality concerned informing that the project has been accorded environmental clearance and copies of clearance letters are available with the State Pollution Control Committee and may also be seen at Website of the Ministry of Environment & Forests at <http://www.envformic.in>. The advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to the Regional Office of this Ministry at Bangalore.

- (xxv) The Project proponents should inform the Regional Office as well as the Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of start of Land Development Work.

The above mentioned stipulations will be enforced among others under the Water(Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (protection) Act, 1986, the Hazardous Chemicals (Manufacture, Storage and Import) Rules, 1989, the Coastal Regulation Zone Notification, 1991 and its subsequent amendments and the Public Liability Insurance Act, 1991 and the Rules made thereunder from time to time. The project proponents should also ensure that the proposal complies with the provisions of the approved Coastal Zone Management Plan of Kerala and the Supreme Court's order dated 18<sup>th</sup> April, 1996 in the Writ Petition No.664 of 1993 to the extent the same are applicable to this proposal.

*J. Ravarathna R. Bhatt*

Dr.J.R.Bhatt  
Additional Director

To

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**General Manger (LNG),**  
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Copy to:

1. The Chairman, Cochin Port Trust, Cochin.
2. The Secretary, Ministry of Shipping, Transport Bhawan, Parliament Street, New Delhi.
3. The Secretary, Ministry of Petroleum and Natural Gas, Shastri Bhawan, New Delhi.
4. The Principal Secretary, Department of Science, Technology and Environment, Govt. of Kerala, Thiruvananthapuram.
5. The C.C.F., Regional Office (SZ), Ministry of Environment & Forests, Kendriya Sadan, IV Floor, E & F Wings, 7<sup>th</sup> Main Road, II Block, Koramangala, Bangalore - 560 034.
6. The Chairman, CPCB, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 32.
7. The Chairman, Kerala State Pollution Control Board, Pattom P.O., Thiruvananthapuram - 695004, Kerala.

8. DIG (SU), Regional Office Cell, Ministry of Environment and Forests, New Delhi
9. Guard File.
10. Monitoring Cell.
11. Sr. Adviser (H), Ministry of Environment & Forests, New Delhi.

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