

Minutes of the 7th Meeting of the Re-Constituted Expert Appraisal Committee (EAC) on Environmental Impact Assessment (EIA) of Thermal Power Projects held on 15th February, 2021

The 7th Meeting of the re-constituted EAC (Thermal Power) of the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi was held on 15th February, 2021 through videoconference under the Chairmanship of Shri Gururaj P. Kundargi. The list of Members present in the meeting is at **Annexure**.

Item No.7.1: Confirmation of the Minutes of the 6th EAC meeting

The Minutes of the 6thEAC (Thermal Power) meeting held on 20.01.2021 were confirmed in the meeting.

Item No. 7.2: Consideration of projects

Item No.:7.2.1: 55 MW Dual Fuel Based Power Project at Andaman & Nicobar Islands by M/s NTPC VIDYUT VYAPAR NIGAM LIMITED – Environmental Clearance – reg. [Proposal No. IA/AN/THE/113957/2019; F. No. J-13012/14/2018]

The Project Proponent along with the consultant made the detailed presentation on the project and provided the following information to the EAC: -

1. M/s. NTPC Vidyut Vyapar Nigam Limited (NVVN), (A wholly owned subsidiary of NTPC Ltd.) proposes to construct Andaman & Nicobar Gas Power Project of 55 MW capacity at Hope Town in Ferrargunj Tehsil in South Andaman District, Andaman & Nicobar Islands. MOEF&CC accorded the Terms of Reference vide letter no. J-13012/14/2018-IA.II (T) dated 02.08.2019 and its amendment dated 22.10.2019 & 29.01.2020 for undertaking EIA study for the proposed power project. Online application for Environmental Clearance was submitted to MOEF&CC on 23.12.2020.
2. Public Hearing was conducted on 29thSeptember 2020 at Panchayat Hall (Hopetown), in Ferrargunj Tehsil in South Andaman District, Andaman & Nicobar Islands.
3. The proposed site is located in Hope Town, Ferrargunj Tehsil in South Andaman District of Andaman & Nicobar Islands. It is about 2 acres of barren land adjacent to the seashore and at a distance of 3.1 km in North direction from the Port Blair city and 4.5 km in NNW direction from Veer Savarkar International Airport. The highway NH-223 is at a distance of 8.4 km in WNW direction from the proposed site.
4. A&N Wildlife Department vide letter no. CWLW/WL/236/Vol-I/152 dated 09.09.2019 has communicated that wildlife clearance is not required for the proposed project.
5. The proposed project site is located within Island Coastal Regulation Zone-III (ICRZ-III). A&N Coastal Zone Management Authority (A&NCZMA) in its meeting held on 10.04.2019 considered the project proposal and recommended to National Coastal Zone Management Authority (NCZMA) for CRZ clearance with exemption for locating the power plant in ICRZ-III as a special case.

6. A&NCZMA forwarded its recommendations and Minutes of Meeting (MOM) to NCZMA, New Delhi vide letter dated 26.04.2019. Subsequently, Ministry of Shipping, Government of India vide its Gazette Notification dated 02.03.2020 has notified the land area within 50 Yards of High-Water Mark as the landward port limit of Hope Town at Port Blair within the Port Limit, which covers the project site.
7. Estimated cost of environmental protection measures would be about Rs. 25 crores out of total project cost of Rs. 376.06 Crores (as on 2nd Quarter of 2020).
8. The sub-committee comprising of EAC committee members of Thermal projects visited the site on 2.11.2019 and their observations and recommendations were presented in the 35th Meeting of the EAC held on 14.11.2019.
9. The proposal was reconsidered by reconstituted EAC in its 5th meeting held on 30.12.2020 and deferred the proposal seeking additional information which is reflected in the Minutes of the 4th EAC Meeting.
10. Point-wise replies in response to additional details sought (ADS) by EAC in its 5th meeting are as follows:

S. No.	EAC Query	NVVN Reply
1.	There are lot of eco-sensitive areas present in and around the proposed location, therefore, wildlife conservation plan for the area for Schedule -I species including Marine Eco-system to be prepared and submitted.	The proposed power project is a small project based on clean fuel (LNG), therefore no significant impacts on eco-sensitive areas or Schedule-I species around the project are anticipated. However, a Wildlife Conservation Plan has already been prepared and submitted to A&N Forests & Wildlife Department (Copy has been provided vide letter dated 4.2.2021). Marine Environmental Impact Assessment Study report by NIOT, Chennai submitted to MoEF&CC, reports that there are no Schedule-I Marine species recorded near the project site within a kilometre. The impact of discharge of effluents through subsurface diffuser port at 100 m from shore (8 m below sea level) shall be limited to 60 m distance only. Hence there will be no significant effect on Schedule-I species due to the proposed gas-based power plant activity.
2.	A plan for marine outfall including options and design to be prepared so that impact on both marine flora and fauna be studied.	Marine Environmental Impact Assessment Study undertaken by NIOT, Chennai recommends a design for marine outfall based on subsurface diffuser port at a depth of 8m at 100m from shore, below sea surface at 45° angle. The impact on marine flora and

S. No.	EAC Query	NVVN Reply
		fauna has already been studied. A plan for marine outfall including options and design to mitigate the impacts on marine flora and fauna has been submitted along with letter dated 04.02.2021.
3.	Brine water dilution plan is to be prepared	A&N Gas Power Project shall obtain gas from FSRU to be established adjacent to the project. Gas Power Project will draw 25 m ³ /day for desalination & cooling which will result in an effluent quantity of 17 m ³ /day including brine with salinity 1.5 times and 5°C above ambient temperature. In addition, FSRU shall draw 6025 m ³ /day for re-gasification purpose out of which 6017 m ³ /day will be discharged back to sea with a temperature 5° C below ambient water temperature and salinity same as sea water. Mixing of two streams before disposal shall lead to a net increase in salinity of about 0.05 ppm, which is negligible.
4.	Technology for wastewater treatment is to be submitted.	Wastewater containing oil & grease will be separated in oil separator through gravity. As only 20 persons will be deployed during operation of project, domestic sewage shall be about 2.4 m ³ /day, a very small quantity which will be treated in a portable Membrane based Bio-reactor (MBBR) Technology based treatment plant or through septic tanks as per techno-economic feasibility. Separation of suspended pollutants and sludge will be done by Lamella Clarifier. Treated effluent shall be used for horticulture purpose/service water etc
5.	A list of activities as a part of CSR to be prepared.	CER/CSR activities like development of park, drinking water facilities, education, health facilities as raised in Public Hearing would be taken up with appropriate budget (about 60 Lakhs) for both projects (Power Project & FSRU)
6.	The consultant, NIOT who conducted the study on impact of proposed activity on marine life to be present in the next EAC meeting.	NIOT vide email dated 06.01.2021 has confirmed to present Marine EIA Study during the EAC meeting.

The Committee noted the presence of representative of NIOT in the meeting. After consideration of the information submitted by the Project Proponent and detailed deliberations the Committee **recommended** the proposal for grant of Environmental Clearance for establishing 55 MW Dual Fuel Based Power Project at in Hope Town, Ferrargunj Tehsil in South Andaman District of Andaman & Nicobar Islands by M/s NTPC Vidyut Vyapar Nigam Limited with the following specific environmental safeguard conditions for the compliance, in addition to the standard EC conditions (Annexure B) stipulated for the thermal power plants:

1. The entire discharge quantity of Floating Storage Re-gasification Unit (FSRU) shall be used for dilution of brine to control salinity & ambient temperature of discharge & it shall be ensured that salinity/quality of discharge water before disposal into sea should be equivalent to sea water.
2. Wildlife Management Plan for schedule -1 species needs to be approved by the Andaman & Nicobar Islands forest department.
3. Oil and grease recovered from the treatment plant should be disposed only through authorized recyclers.
4. A separate prior EC for FSRU and CRZ clearance for the TPP shall be obtained by the project proponent.
5. The Project Proponent shall submit the time- bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of Environmental Clearance for undertaking the CER activities, committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEF&CC Office Memorandum No.22-65/2017-IA.III dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.
6. A detailed ecological monitoring and survey covering forestry, fisheries, wildlife and its habitat shall be done once in two years to assess the impacts of project on the local environment and ecology. Monitoring report shall be uploaded on the Parivesh Portal and a copy of the same be submitted to the regional office of MoEF&CC.

The meeting ended with vote of thanks to the Chair.

The entire discharge quantity of Floating Storage Re-gasification Unit (FSRU) shall be used for dilution of brine to control salinity & ambient temperature of discharge & it shall be ensured that salinity/quality of discharge water before disposal into sea should be equivalent to sea water.

Attendance List

Name & Address	Role	Attendance
1. Shri Gururaj P. Kundargi	Chairman	P
2. Dr. N. P. Shukla	Member	P
3. Shri Suramya Vora	Member	A
4. Dr. Santosh Kumar	Member	P
5. Dr. Umesh Jagannathrao Kahalekar	Member	P
6. Shri K.B. Biswas	Member	A
7. Dr. Nandini. N	Member	P
8. Dr. Unmesh Patnaik	Member	P
9. Shri Prasant Kumar Mohapatra	Member	P
10. Dr. Nazimuddin	Member (Representative of CPCB)	A
11. Shri M. P. Singh	Member (Representative of CEA)	P
12. Prof S S Rai	Member Representative of IIT/ISM Dhanbad	A
13. Prof R.K. Giri	Member Representative of IMD	A
14. Shri L. K. Bokolia	Member Secretary	P

Standard EC Conditions for Thermal Power Sector:

A. Statutory compliance:

1. Emission Standards for Thermal Power Plants as per Ministry's Notification S.O. 3305 (E) dated 7.12.2015, G.S.R.593 (E) dated 28.6.2018 and as amended from time to time shall be complied.
2. Part C of Schedule II of Municipal Solid Wastes Rules, 2016 dated 08.04.2016 as amended from time to time shall be complied for power plants based on Municipal Solid Waste.
3. MoEF&CC Notification G.S.R 02 (E) dated 2.1.2014 as amended time to time regarding use of raw or blended or beneficiated/washed coal with ash content not exceeding 34% shall be complied with, as applicable.
4. MoEF&CC Notifications on Fly Ash Utilization S.O. 763 (E) dated 14.09.1999, S.O. 979 (E) dated 27.08.2003, S.O. 2804 (E) dated 3.11.2009, S.O. 254 (E) dated 25.01.2016 as amended from time to time shall be complied.
5. Thermal Power Plants other than the power plants located on coast and using sea water for cooling purposes, shall achieve specific water consumption of 2.5 m³/MWh and Zero effluent discharge.
6. The recommendation from Standing Committee of NBWL under the Wildlife (Protection) Act, 1972 should be obtained, if applicable.
7. No Objection Certificate from Ministry of Civil Aviation be obtained for installation of requisite chimney height and its sitting criteria for height clearance.
8. Groundwater shall not be drawn during construction of the project. In case, groundwater is drawn during construction, necessary permission be obtained from CGWA.

B. Ash content/ mode of transportation of coal:

1. EC is given on the basis of assumption of ____% of ash content and ____km distance of transportation in rail/road/conveyor/any other mode. Any increase of %ash content by more than 1 percent, and/or any change in transportation mode or increase in the transport distance (except for rail) require application for modifications of EC conditions after conducting the 'incremental impact assessment' and proposal for mitigation measures.

C. Air quality monitoring and Management:

1. Flue Gas Desulphurisation System shall be installed based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO₂ emissions standard of 100 mg/Nm³.
2. Selective Catalytic Reduction (SCR) system or the Selective Non-Catalytic Reduction (SNCR) system or Low NOX Burners with Over Fire Air (OFA) system shall be installed to achieve NO_x emission standard of 100 mg/Nm³.
3. High efficiency Electrostatic Precipitators (ESPs) shall be installed in each unit to ensure that particulate matter (PM) emission to meet the stipulated standards of 30 mg/Nm³.
4. Stacks of prescribed height ____m shall be provided with continuous online monitoring instruments for SO_x, NO_x and Particulate Matter as per extant rules.

5. Exit velocity of flue gases shall not be less than 20-25 m/s. Mercury emissions from stack shall also be monitored periodically.
6. Continuous Ambient Air Quality monitoring system shall be set up to monitor common/criteria pollutants from the flue gases such as PM₁₀, PM_{2.5}, SO₂, NO_x within the plant area at least at one location. The monitoring of other locations (at least three locations outside the plant area covering upwind and downwind directions at an angle of 120° each) shall be carried out manually.
7. Adequate dust extraction/suppression system shall be installed in coal handling, ash handling areas and material transfer points to control fugitive emissions.
8. Appropriate Air Pollution Control measures (DEs/DSs) be provided at all the dust generating sources including sufficient water sprinkling arrangements at various locations viz., roads, excavation sites, crusher plants, transfer points, loading and unloading areas, etc.

D. Noise pollution and its control measures:

1. The Ambient Noise levels shall meet the standards prescribed as per the Noise Pollution (Regulation and Control) Rules, 2000.
2. Persons exposed to high noise generating equipment shall use Personal Protective Equipment (PPE) like earplugs/ear muffs, etc.
3. Periodical medical examination on hearing loss shall be carried out for all the workers and maintain audiometric record and for treatment of any hearing loss including rotating to non-noisy/less noisy areas.

E. Human Health Environment:

1. Bi-annual Health check-up of all the workers is to be conducted. The study shall take into account of chronic exposure to noise which may lead to adverse effects like increase in heart rate and blood pressure, hypertension and peripheral vasoconstriction and thus increased peripheral vascular resistance. Similarly, the study shall also assess the health impacts due to air polluting agents.
2. Baseline health status within study area shall be assessed and report be prepared. Mitigation measures should be taken to address the endemic diseases.
3. Impact of operation of power plant on agricultural crops, large water bodies (as applicable) once in two years by engaging an institute of repute. The study shall also include impact due to heavy metals associated with emission from power plant.
4. Sewage Treatment Plant shall be provided for domestic wastewater.

F. Water quality monitoring and Management:

1. Induced/Natural draft closed cycle wet cooling system including cooling towers shall be set up with minimum Cycles of Concentration (COC) of 5.0 or above for power plants using fresh water to achieve specific water consumption of 2.5 m³/MWhr. (Or) Induced/Natural draft open cycle cooling system shall be set up with minimum Cycles of Concentration (COC) of 1.5 or above for power plants using sea water.

2. In case of the water withdrawal from river, a minimum flow 15% of the average flow of 120 consecutive leanest days should be maintained for environmental flow whichever is higher, to be released during the lean season after water withdrawal for proposed power plant.
3. Records pertaining to measurements of daily water withdrawal and river flows (obtained from Irrigation Department/Water Resources Department) immediately upstream and downstream of withdrawal site shall be maintained.
4. Rainwater harvesting in and around the plant area be taken up to reduce drawl of fresh water. If possible, recharge of groundwater to be undertaken to improve the ground water table in the area.
5. Regular (at least once in six months) monitoring of groundwater quality in and around the ash pond area including presence of heavy metals (Hg, Cr, As, Pb, etc.) shall be carried out as per CPCB guidelines. Surface water quality monitoring shall be undertaken for major surface water bodies as per the EMP. The data so obtained should be compared with the baseline data so as to ensure that the groundwater and surface water quality is not adversely impacted due to the project & its activities.
6. The treated effluents emanating from the different processes such as DM plant, boiler blow down, ash pond/dyke, sewage, etc. conforming to the prescribed standards shall be re-circulated and reused. Sludge/ rejects will be disposed in accordance with the Hazardous Waste Management Rules.
7. Hot water dispensed from the condenser should be adequately cooled to ensure the temperature of the released surface water is not more than 5 degrees Celsius above the temperature of the intake water.
8. Based on the commitment made by the Project Proponent, Sewage Treatment Plants within the radius of 50 km from proposed project, the treated sewage ofKLD from STP (name) shall be used as an alternative to the fresh water source to minimize the fresh water drawl from surface water bodies.
9. Wastewater generation ofKLD from various sources (viz. cooling tower blow down, boiler blow down, wastewater from ash handling, etc) shall be treated to meet the standards of pH: 6.5-8.5; Total Suspended Solids: 100 mg/l; Oil & Grease: 20 mg/l; Copper: 1 mg/l; Iron: 1 mg/l; Free Chlorine: 0.5; Zinc: 1.0 mg/l; Total Chromium: 0.2 mg/l; Phosphate: 5.0 mg/l;
10. Sewage generation ofKLD will be treated by setting up Sewage Treatment plant to maintain the treated sewage characteristics of pH: 6.5-9.0; Bio-Chemical Oxygen Demand (BOD): 30 mg/l; Total Suspended Solids: 100 mg/l; Fecal Coliforms (Most Probable Number): <1000 per 100 ml.

G. Risk Mitigation and Disaster Management:

1. Adequate safety measures and environmental safeguards shall be provided in the plant area to control spontaneous fires in coal yard, especially during dry and humid season.
2. Storage facilities for auxiliary liquid fuel such as LDO and HFO/LSHS shall be made as per the extant rules in the plant area in accordance with the directives of Petroleum & Explosives Safety Organisation (PESO). Sulphur Content in the liquid fuel should not exceed 0.5%.
3. Ergonomic working conditions with First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.

4. Safety management plan based on Risk Assessment shall be prepared to limit the risk exposure to the workers within the plant boundary.
5. Regular mock drills for on-site emergency management plan and Integrated Emergency Response System shall be developed for all kind of possible disaster situations.

H. Green belt and Biodiversity conservation:

1. Green belt shall be developed in an area of 33% of the total project with indigenous native tree species in accordance with CPCB guidelines. The green belt shall inter-alia cover an entire periphery of the plant.
2. *In-situ/ex-situ* Conservation Plan for the conservation of flora and fauna should be prepared and implemented.
3. Suitable screens shall be placed across the intake channel to prevent entrainment of life forms including eggs, larvae, juvenile fish, etc., during extraction of seawater.

I. Waste management:

1. Solid waste management should be planned in accordance with extant Solid Waste Management Rules, 2016.
2. Toxicity Characteristic Leachate Procedure (TCLP) test shall be conducted for any substance, potential of leaching heavy metals into the surrounding areas as well as into the groundwater.
3. Ash pond shall be lined with impervious liner as per the soil conditions. Adequate dam/dyke safety measures shall also be implemented to protect the ash dyke from getting breached.
4. Fly ash shall be collected in dry form and ash generated shall be used in phased manner as per provisions of the Notification on Fly Ash Utilization issued by the Ministry and amendment thereto. By the end of 4th year, 100% fly ash utilization should be ensured. Unutilized ash shall be disposed off in the ash pond in the form of High Concentration Slurry. Mercury and other heavy metals (As, Hg, Cr, Pb, etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. Flyash utilization details shall be submitted to concerned Regional Office along with the six-monthly compliance reports and utilization data shall be published on company's website.
5. Unutilized ash shall be disposed off in the ash pond in the form of High Concentration Slurry/Medium Concentration Slurry/Lean Concentration Slurry method. Ash water recycling system shall be set up to recover supernatant water.
6. In case of waste-to-energy plant, major problems related with environment are fire smog in MSW dump site, foul smell and impacts to the surrounding populations. Therefore, the following measures are required to be taken up:
 - i) Water hydrant at all the dumpsites of MSW area to be provided so that the fire and smog could be controlled.
 - ii) Sprayer like microbial consortia may be provided for arresting the foul smell emanating from MSW area.

J. Monitoring of compliance:

1. Environmental Audit of the project be taken up by the third party for preparation of Environmental Statement as per Form-V & Conditions stipulated in the EC and report be submitted to the Ministry.
2. Resettlement & Rehabilitation Plan as per the extant rules of Govt. of India and respective State Govt. shall be followed, if applicable.
3. Energy Conservation Plan to be implemented as envisaged in the EIA / EMP report. Renewable Energy Purchase Obligation as set by MoP/State Government shall be met either by establishing renewable energy power plant (such as solar, wind, etc.) or by purchasing Renewable Energy Certificates.
4. Monitoring of Carbon Emissions from the existing power plant aswell as for the proposed power project shall be carried out annually from a reputed institute and report be submitted to the Ministry's Regional Office.
5. Energy and Water Audit shall be conducted at least once in two years and recommendations arising out of the Report should be followed. A report in this regard shall be submitted to Ministry's Regional Office.
6. Environment Cell (EC) shall be constituted by taking members from different divisions, headed by a qualified person on the subject, who shall be reporting directly to the Head of the Project.
7. The project proponent shall (Post-EC Monitoring):
 - a. Send a copy of environmental clearance letter to the heads of Local Bodies, Panchayat, Municipal bodies and relevant offices of the Government;
 - b. Upload the clearance letter on the web site of the company as a part of information to the general public.
 - c. Inform the public through advertisement within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment, Forest and Climate Change (MoEF&CC) at <http://parviesh.nic.in>.
 - d. Upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same periodically;
 - e. Monitor the criteria pollutants level namely; PM (PM₁₀& PM_{2.5} in case of ambient AAQ), SO₂, NO_x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company;
 - f. Submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB;
 - g. Submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company;
 - h. Inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project and the date of commencement of the land development work.

K. Corporate Environmental Responsibility (CER) activities:

1. CER activities will be carried out as per OM No. 22-65/2017-IA.II dated 01.05.2018 or as proposed by the PP in reference to Public Hearing or as earmarked in the EIA/EMP report along with the detailed schedule of implementation with appropriate budgeting.

L. Marine facilities:

1. As the seawater intake systems are required for the plant fall in CRZ area, recommendations from State Coastal Zone Management Authority (SCZMA) as per CRZ Notification shall be implemented.
2. Marine intake and outfall pipelines shall be located as per the recommendations State Coastal Zone Management Authority (SCZMA).

M. Sea Water Intake:

1. Seawater intake system shall be so designed and constructed to ensure sufficient seawater in terms of quantity and quality.
2. The withdrawal of seawater shall be preferably through a pipeline with a riser equipped with a velocity cap arrangement and bar screen to arrest the impingement of large marine organisms.
3. In all tide conditions (particularly at spring low tides) the riser head must be flooded with the required submergence of seawater above its top.

N. Effluent Release:

1. At the effluent release point, maximum temperature of the discharge water shall not be more than 5°C and salinity shall not exceed 50 ppt with respect to that of the ambient seawater.
2. Use of antifouling agents like chlorine / hypochlorite, shall be carefully controlled. The chlorine concentration shall not exceed 0.2 ppm at the effluent release point.
3. The effluent when released at the selected location shall attain sufficient dilution so that near ambient water quality (particularly temperature and salinity) is attained within 500 m from the release location, at low tide.
4. The location of the diffuser shall be marked with a solar lighted buoy to avoid accidents.
5. The site selected based on mathematical modelling shall ensure absence of recirculation of the effluent plume in the seawater intake area under all tidal conditions.
6. The effluent shall be released through a properly designed multiport diffuser above the seabed to facilitate its efficient initial mixing with the receiving seawater.
7. Efficacy of the diffuser shall be ascertained at least once in 2 years through scientific studies and corrective actions such as cleaning of the diffuser from marine growth, removal of silt deposits, etc. shall be taken up, if warranted.
8. Continuous online monitoring system for Temperature and Salinity shall be installed to monitor the quality of effluent.

O. Common to intake and effluent:

1. The pipeline shall be buried below the seabed at a depth to ensure its stability under rough sea conditions particularly during cyclone / tsunami. The depth of burial will depend on the seafloor strata but normally the top of the pipeline shall be at least 1 m below the bed level. In the surf and intertidal zones, the pipeline shall be buried below the maximum scour level.
2. In case of open channel, the channel shall be constructed as per the recommendations of State Coastal Zone Management Authority (SCZMA).
3. If the substratum is rocky the pipeline may be anchored to the rock provided the geology of the area satisfactorily supports the structure which shall be ascertained through geo-technical investigations.
4. Exposed pipeline section and riser shall be protected by armour stone from waves, boats anchoring, fishing activities etc.
5. The location of the riser & diffuser shall be marked with a solar lighted buoy to avoid accidents from boats.
6. Marine / Sea water quality shall be monitored at effluent release location at the center. Parameters to be monitored shall be as follows:
 - a. *Physico-chemical*: Temperature, Salinity, pH and Dissolved Oxygen.
 - b. *Biological*: Primary Productivity, Phytoplankton (Chlorophyll a, Phaeophytin, Population, Species), Zooplankton (Biomass, Population, Species) and Benthos (Biomass, Population, Species).
7. In case of Coastal Power Plants, the Mangrove plantation shall be taken up in an area ofha, along the coast/ on the banks of Estuary.

Approval of the Chairman