*Minutes of the 172nd Meeting of Maharashtra Coastal Zone Management Authority held on 05th February, 2024*

The 172nd meeting of the Maharashtra Coastal Zone Management Authority (MCZMA) was held under the Chairmanship of Principal Secretary (Environment and Climate Change), through Videoconferencing technology on Cisco WebEx platform on 05th February, 2024. List of members present in the meeting is at Annexure-I.

Item No. 10: Development of a Greenfield port at Vadhavan, District Palghar by Jawaharlal Nehru Port Authority (JNPA)

*INTRODUCTION:*

The Chairman, JNPA along with consultant & other officials from JNPA presented the proposal before the Authority.

The JNPA is the major container port in India serving as a gateway port patronised by all major container shipping lines operating in international seaborne trade. However, JNPA has exhausted its potential to expand further due to geographical and natural limitations and therefore, additional cargo will have to be served by other ports which too are likely to exhaust their container cargo handling capacity considering India's container cargo projections in the context of growing international trade coupled with positive economic growth. Further, vessel size has been increasing due to growing international trade and benefits of economy of scale. It is thus obvious that the country needs a new container handling port with deeper draft to thwart the impending situation of demand supply mismatch due to full capacity utilization of JNPA and other ports in India.

Considering the nation's projected demand of international trade, detailed research studies were carried out for identifying the sites for construction of a Major Port where large vessels can berth round the year and the international seaborne trade can be carried out. Consequently, proposed port site at Vadhavan in Dahanu taluka of Palghar district was identified which has unique natural features for construction of a modern all weather port. The proposed site has 18 metres draft naturally available in the port and 20 metres navigational channel also naturally available which drastically minimises capital and maintenance dredging.

Vadhavan Port is planned to be developed by JNPA and Maharashtra Maritime Board (MMB) as Joint Venture Project with equity share of 74% & 26% respectively.

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Being a Nationally important project, Govt of India had conveyed In-Principal approval for Vadhavan as Major Port on 13-02-2020. Notification of Vadhavan as Major Port was published as per Indian Port Act 1908 with Port Limits on 19.02.2020. Location of Proposed Vadhavan Port is ~150 Km from Mumbai.

The proposed port is located at near Dahanu, abutting northern boundary of Palghar district of Maharashtra at co-ordinates Latitude 19055.8'N and Longitude 72039.6'E. Port site has natural and strategic advantages. The site is about 150 km north of Mumbai and about 150 km west Nashik and about 180 km south of Surat respectively.

The Vadhavan has a natural draft of ~20m and as Port has potential to be among the Top 10 Container Ports in the World. The Vadhavan Port will add container capacity of 15 Million TEUs in first phase, which will increase to ~23.2 Million TEUs in second phase.

Breakwater of about 10.14 Km, Reclamation in the intertidal / offshore area including shore protection of 1,448 ha., 571 Ha (1410.97 acres) land for rail and road connectivity, Port Cargo handling Equipments and utilities etc.

Project area is 17, 471 Ha out of which 16,906 Ha is port limit & 571 Ha outside port limit.

- Water front area is 15363.5 Ha.
- Reclamation area is 1448 Ha.
- Berth area- 63.5 Ha
- Reclamation Quantity- 200Mcum with marine borrow pit located offshore of Daman coast at 50 km from port

The port will be developed in two phases. The proposed port is to be developed on landlord model with the port terminals to be developed on PPP basis. In this model, basic infrastructure of the port necessitating upfront investment such as, breakwater, rail and road linkages, power, water lines and common infrastructure and services will be developed by the port/ SPV whereas all cargo handling infrastructure will be developed and operated by the agencies which are awarded concessions through global tender in an open and transparent manner by the port.

Phase I of the project involves following component
JNPA (landlord) Inside Port

- Breakwater of total length 10.14 km main breakwater
- Dredging 6.98 M cum in phase-1 and 21.5Mcum in phase

Member Secretary

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- Port craft/ Tug berth of 200 m.
- Total Reclamation area inside the port 1448 ha. with 116 2 ha. in Phase 1
- Road inside the port 32 km
- DFC rail yard 227.5 ha.
- Buildings with area of 23,500 m2
- Pavement inside port.
- Outside Port
- Land acquisition 571 ha. For road and rail connectivity
- External road connectivity of 33.4 km with 120m wide corridor
- Rail linkage area length 12 km 60 m wide corridor
- Water pipeline from Surya river which is about 22 km from port site
- Power line from Boisar power station 20 km from port

Concessionaire (Operator)

- Container terminals including storage yard, equipment, terminal pavements, drainage, utilities networks etc., with total berth length of 9000 m (4 terminals in Phase-1 and 5 terminals in Phase 2 each of 1000 m length) capable of handling vessels of 24,000 TEU and above with 24,000 TEU design container vessels
- Multipurpose berths of 1000 m (4 berths each of 250 m) including equipment, storage yard/ shed
- 1 Ro Ro berth of 250 m including storage and onshore facilities
- 4 Liquid cargo terminals including pipelines and tank farm

The matter was deliberated in 241st meeting of the Expert Appraisal Committee (EAC), New Delhi on 25th - 26th August, 2020. Accordingly, on 7th October 2020, the MoEF&CC approved the TOR for the said Project and for preparation of an EIA/ EMP report including condition to obtain NOC from Dahanu Taluka Environment Protection Authority (DTEPA), a monitoring body constituted by MoEF in the year 1991. As per ToR all the studies were completed and submitted to Dahanu Taluka Environment Protection Authority (DTEPA). The DTEPA has granted permission to establish and develop the Vadhavan port in the Dahanu Taluka on 31st July 2023.

The JNPA has obtained the Term of Reference (ToR) from MoEF&CC, New Delhi vide letter no. 10-52/2020-IA.III dated 7th October, 2020 and additional TOR on 2nd June, 2023.

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***DELIBERATIONS:***

The Authority noted that the EIA report has been prepared by M/s ENKAY ENVIRO SERVICES PVIVATE LTD (QCI/ NABET Certificate No. NABET/ EIA / 2023 / RA 01830). The Detailed Project Report (DPR) has been prepared for the project which is part of the EIA report.

As per the norms laid out by MoEF an area within 10 km radius with the Vadhavan Port site as a centre has been earmarked for the study as the general study area. Nevertheless, this study as a special case considered the core study area is the acquired project Road/Rail site with two-kilometre radius from the centre of the Port site.

Various studies has been carried out which are part of EIA as Annexures.

1. Detailed Project Report for Development of Greenfield Vadhavan Port by Royal Haskoning DHV (May 2023)
2. Demarcation of HTL and LTL for preparation of CZMP report by Institute of Remote Sensing, Chennai (October 2023)
3. Mathematical Model Studies to assess the impact of proposed capital dredging on tidal hydrodynamics of nearby area of proposed port at Vadhvan by Central Water and Power Research Station (T. R. 5970-November 2021)
4. Mathematical Model Studies to assess the impact of Proposed Port Development at Vadhavan on Flooding in Dahanu Creek and Nearby Control area under Cyclonic Conditions by Central Water and Power Research Station (T. R. 6173 -October 2023
5. Marine biodiversity management plan for the proposed greenfield port at Vadhavan, Palghar district, Maharashtra by CSIR National Institute of Oceanography (SSP 3374-October 2023)
6. 2D Desktop Navigation Simulation Study by DHI/ Force (March 2022
7. Traffic analysis in the vicinity of proposed port at Vadhavan by Indian Institute of Technology, Mumbai (May 2021)
8. Dispersion of silt during dredging from marine Burrow pit for reclamation by Department of Ocean Engineering, Indian institute of technology Madras, Chennai (October 2022)
9. Impact of Breakwaters and Transport Carrier on the Erosion/ Accretion for the Vadhavan Port' by National Centre for Coastal research (NCCR) and Indian National Centre for Ocean Information Services (INCOIS), Ministry of Earth Sciences. (September 2023)

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10. Biodiversity study for the proposed Burrow pit region in arabian sea with Reference to development of vadhavan port, Palghar, Maharashtra by Zoological Survey of India (October 2023)
11. Impact study of proposed Vadhavan Port on Coastal Fisheries by Central Marine Fisheries Research Institute (October 2023)
12. Impact Assessment of Proposed Sand Mining on the Marine Fisheries and Fishermen Community of Daman Union Territory is carried out by Central Marine Fisheries Research Institute (October 2023)
13. Social Impact Assessment Report Vadhavan Port by Southern Enviro Engineers Pvt. Ltd., Hyderabad (March 2022)
14. Dahanu Taluka Environmental Protection Authority (DTEPA) Order dated 31 July 2023 granted permission to JNPA to establish and develop the Vadhvan port in the Dahanu Taluka
15. Letter From Ministry Of Earth Sciences, Government of India dated 25th May, 2023
16. Marine Biodiversity at Shankodhar Point, Dahanu Taluk, Maharashtra conducted by CSIR-National Institute of Oceanography (June 2023)

The Authority noted the compliance of specific TOR condition as per amended TOR dated 2.6.2023 which is part of the EIA report.

The Authority further noted the observations of the EIA report

- The site in the village Vadhavan and its coast near Dahanu has been selected for Port from the logistic and operation angle such as deep draught, very near to the coastline, vast hinterland of north and northwest of India, easy rail and road access to the hinterland and suitability of the site to develop a Port between Gujarat Ports and Mumbai and Jawaharlal Nehru Port.
- The Vadhavan port is planned to be located on reclaimed land on inter tidal zone at Vadhavan Point. The site is surrounded on the West, North and South by Arabian Sea, various villages on East with discreetly habited land. No Land Acquisition for Port is required and the land acquisition is only required for rail and road which is less than 571 ha and 30% of which is forest land and government land.
- A natural water depth of around 20.0 m below CD is available at 10 km from Vadhavan point and 15 m contour is available at a distance of 6 km which will allow safe voyage and mooring for the new generation vessels.
- Topography of the intertidal zone is rocky and highly undulated. Casuarina plantations are observed along the shoreline. The bed levels in inter tidal zone are sloping west.

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- The land close to Vadhavan site is flat and having undulations close to hilly area. The rock outcrop close to shoreline of Vadhavan can be seen and indicate rocky patches under inter-tidal area. The inter-tidal zone is wide and extends up to 1.7 km. The beach is sandy. The general terrain of the site area is largely flat with a mild slope.
- The project area is characterised by different coastal geomorphological features like pocket beaches, rocky coasts, headlands, bays, medium and low cliffs. The shoreline is not a fixed line and its position is dynamic as the change in the shoreline is a natural phenomenon because of the suspension of sediment and transportation of the same due to current (littoral drift) during the monsoon season and deposition in calm non-monsoon season. If this natural cycle is disturbed by anthropogenic intervention, an unbalanced sediment transport cycle will occur which may lead to an unusual and irreversible shoreline behaviour.
- Studies conducted for the proposed port have established that there will be no need of land acquisition for development of the port and hence there will be no displacement of local people and consequent rehabilitation & resettlement.
- The port will be constructed majorly 6.5 Kms away from the sea shore and for support activities small part of space between inter-tidal zone (land between low tide and high tide) in low lying land will be reclaimed from sea for the basic infra for foreshore development and connectivity to fore shore Port and operational area.
- Only for rail and road linkage approx. 571 hectares land (consisting of private, tribal and government land) need to be acquired in a strip of 120 metres throughout the length of 33.4 kms. for connecting to the National Highway 8 (Mumbai Delhi) and rail line at a distance of 12 kms from the port for which 60 metres strip will be required. This alignment has been made to avoid disruption of human habitation and drinking water sources. Moreover, all the mangroves near shore area of 98 hectares will be fully protected thus conserving existing ecology with innovative port design and minimal environment impact due to port development which would also be tackled by enforcement of an environment management plan
- Socio-economic study of villages falling within radius of 10 kms of the proposed port and rail and road alignment have also been conducted to ascertain their living standards and village infrastructure so as to make effective intervention for improving their condition. JNPA has organised health camps in these villages. Village level meetings have been held to spread information about the port project and seek the support of the local community. The area is predominantly tribals and survey has revealed

that they survive at subsistence level economy. The port project is expected to improve their economic condition by generating employment opportunities and offering better value for their produce. The report has been prepared by CMFRI.

- The development of the proposed Vadhavan Port including road-rail connectivity may result in land and seaside environmental changes through increased traffic and development. Therefore, adequate environmental mitigation and management measures are essential for the project.
- From the hydrodynamic and siltation studies as carried out by CWPRS, it was confirmed that the tidal flow conditions are suitable at all container berths and manoeuvring areas and also considered the width between the breakwater and multipurpose berth to 670m.
- The study on shoreline change assessment was carried out by CWPRS and submitted to JNPA in April 2022. The analysis covered long-term (1975-2022) and short-term (2000-2022) shoreline changes using historic satellite images and aerial photographs from 2012. In the long term, 61% of the coast was stable, while in the short term, 50% of the coast was considered stable, with some stable areas transitioning to low erosion. Additionally, areas of low accretion in the long term were gradually trending towards low erosion. It is seen that from Khonda Creek to the North of the proposed port area, the shoreline trend indicates the shoreline transferring from broadly stable to low accretion coast. At the port location and reclamation area, the shore has shifted from broadly Stable to low accretion coast. South of the location till the Varor region, a significant proportion of the regions range from low erosion to medium erosion.
- The existing reports on wave tranquillity, hydrodynamics, shoreline change assessment, and shoreline morphology study were analyzed and shoreline change analysis was carried out by NCCR. The following were the outcomes of the study:
- Studies conducted by other agencies revealed that the mud in that area is a source of Calcium Carbonate clay (lime mud). A large number of fishermen families depend exclusively on fishing for their livelihood in the region. The developmental activities in this area may affect the fishing activity and thus livelihood.
- Proposed project will not have any significant affect on the presence and migratory status of those Near Threaten species as well as for abundance of other birds which is present in the surrounding area. Necessary steps must be undertaken to reduce the impact on the reserve forest areas that support majority of the avian diversity.

- The intertidal regions of the Vadhavan area have the distribution of mangrove species of Avicennia marina. Saplings of the Rhizophora sp. were also found in the intertidal regions of Jhoting Bhabha Mandir. A survey conducted by the Institute of Remote Sensing, Anna University during September 2023 describes about 98.25 acres of area in the vicinity of proposed port has been classified under CRZ1A. Mangroves at Tadiyala area were surveyed by quadrat method and the density ranged between 40 and 132 no/100m2
- ICAR-CMFRI conducted the fishery survey for the proposed project. During their survey, they recorded the occurrence of a variety of finfishes and shellfishes. Fishes (126 species) including 86 species of teleost, 4 sharks, 20 crustaceans and 13 molluscs were reported from the study area
- Judicial planning of port facility will be carried out. Reclamation bunds and setting ponds shall be constructed, the dredged material will be pumped into the reclamation area enclosed by reclamation bunds wherein the solids will be allowed to settle and the return water will be directed into sea through appropriate return channel/pipelines. The dredge fill will be covered by gravel before hard standing. After completion of the reclamation and hard standing, necessary development shall be carried out.

The Authority deliberated the various anticipated Environment Impact and Mitigation Measures as reported in the EIA report.

The Authority in its earlier 171st meeting held on 15th December, 2023 asked JNPA to submit their replies on query raised by the Expert Members pertaining to EIA report, erosion / accretion studies, reclamation material etc. The Authority noted the replies of the JNPA which is as follows

| Sr No. | Query raised by Expert Members | Reply of the NPA |
|---|---|---|
| 1 | Whether the EIA report is carried out is rapid or comprehensive. Whether Public Hearing has been conducted | As per the ToR, EIA studies have been carried out and they are conducted in one season. Comprehensive study (in another season) has been conducted. In addition to this marine environmental studies have been conducted through the respective expert agencies of GoI as per the ToR and also Govt. renowned research organizations such as CWPRS, CSIR-NIO, IIT-Bombay and Madras, INCOIS, ICAR-CMFRI, IRS |

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| | | Chennai, ZSI, NCCR, NCSCM have conducted baseline survey at study area and the same is incorporated in EIA.<br>Public Hearing at Daman was conducted on 21st Dec 2023. PH - MOM<br>Public Hearing at Palghar, Maharashtra was conducted on 19th Jan. 2024 - PH - MOM |
| 2 | Studies of erosion/ accretion along the coastline near the project site | As compliance to ToR Assessment has been done by NCSCM and NCCR for Impact of Breakwaters and Transport Carrier on the Erosion/ Accretion for the Vadhvan Port.<br>• The maximum significant wave height in the port basin is 1.0m in the Final Master Plan Layout as compared to 2.5 m height offshore.<br>• The Tidal Hydrodynamic and Siltation study finalized the Master Plan Layout for favorable operation and maneuvering conditions with minimum effect on the morphology<br>• The littoral drift and shoreline evolution comparing the original shoreline and proposed port indicates an insignificant effect on the adjacent shoreline<br>• It was found that any impact during construction on water environment will be restored during the port operation phase.<br>• In the operation phase, most of the high impacts are likely to be minimized to moderate, low and to no impacts. |
| 3 | Material proposed to be used for reclamation and source of it. | The port is proposed to be developed on reclaimed land in the offshore area. The port limits have been declared by GoI vide Gazette notification on 19th Feb 2020. The |

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| | | reclamation of land is proposed from sea sand sourced from Daman coast which is at 65km Northward of proposed port. |
| 4 | Tarapur atomic power project is close to Vadhvan port site and there is outflow from the said project. EIA studies should include the impact of the project on said Tarapur atomic project and its outflow | After discussion with AERB & Nuclear Power Corporation of India Limited (NPCIL), it was decided that Security and Safety of the TAPS need to be examined and accordingly following studies were carried out with assistance from NPCIL, TAPS and shared with them:-<br><br>1. Sedimentation transport studies Including modification in sedimentation pattern affecting siltation around Intake and outfall by CWPRS.- Completed.<br>2. Effect of Oil slick near Vadhvan Port and its Trajectory predication on Tarapur site by INCOIS, Hyderabad- Completed.<br>3. Study related to Probability and impact of Drilling /collision of ships Near TAPS site by M/s.SVC Marine Services Pvt.Ltd.- Completed.<br>4. Study related with Impact of changes in natural growth zone (up to 5km) and Emergency planning zone (up to 16 km) of TAPS on account of industrial Development/storage/handling of chemicals / explosives, etc. Including Population growth by M/s Fine Envirotech Engineers and additional Studies and its impact on TAPS will be incorporated in the report<br><br>In view of above, the security consideration as conveyed by intelligence agencies have been fully addressed and conveyed to AERB for consideration of the AERB. Accordingly, |

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| | | the broad concurrence was issued by Chairman Atomic Energy Commission & Secretary Department of Atomic Energy for development of proposed Vadhvan Port. |
| 5 | There is huge reclamation involved in the project. Impact of reclamation on the marine life should be reported in the details. Source of material which will be used for reclamation should be reported. | Marine burrow pit has been identified 50-65km offcoast Daman. Based on the actual requirement for the construction of Port the requirement of reclamation is about 200Mcum. Considering the substantial amount of reclamation requirement, it was decided to extract the fill material through marine sand borrow pit as against the earth filling in view of the ecological sensitivity of the region. The marine sand burrow pit was identified at the offshore of the Daman Coast about 50km from the proposed Vadhvan Port site at the depth varying from 20-25m<br><br>Marine sand will be dredged using Dredging equipment and sand will be transported by sea route and dumped at the reclamation location within protected bunds.<br><br>IIT - Madras have conducted simulation study to ascertain impact of sediment transport.<br>As per the observations of study marine burrow pit location is far away from the coastal region i.e. about 50-65 km and associated strong currents, the concentration of the sediment plume gets weakened immediately during the dredging activity.<br><br>Marine Biodiversity Management Plan has been prepared by NIO and Zoological Survey of India has conducted two session Biodiversity study for the proposed Borrow |

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| | | pit region in Arabian sea with reference to development of Vadhavan Port and submitted report in October 2023. No adverse impact is indicated in the report. |
| 6 | How the material will be transported for breakwater construction. | The quarry material required for the construction of port infrastructure have been identified from Palghar Taluka. The stone amour block and quarry material will be transported by barges from loading point to work site as well as through trestle constructed for liquid jetty by following all safety norms. |

The Authority further noted the Status of the project as per approved CZMP, 2019. superimposing on Approved CZMP as per CRZ Notification 2019 is prepared by Institute of Remote Sensing (IRS), Chennai (October 2023).

The proposed details viz Approach Trestle, Breakwater, Navigational Area, Offshore Reclamation Area, Sheltered Area within Vadhavan Port Limits lies in CRZ-IVA and the reclamation area near shore in within Vadhavan Port Limits lies in CRZ-IB, CRZ-III(200m to 500m from HTL), CRZ-III ( No Development Zone), CRZ-IVA, and outside CRZ areas as per approved CZMP (Map nos: MH 95, 97, 98 & 99) vide CRZ notification 2019 of MoEF&CC

The remaining Area where there is no development proposed within Vadhavan Port Limits lies in CRZ-IA, CRZ-IA (50m Mangrove Buffer Zone), CRZ-IB, CRZ-III ( No Development Zone), and CRZ-IVA areas as per approved CZMP (Map nos: MH 95, 97, 98 & 99) vide CRZ notification 2019 of MoEF & CC.

The proposed Road and Rail Alignment for the port connectivity lies in CRZ-IB, CRZ-III (200m to 500m from HTL), CRZ-III ( No Development Zone) and Outside CRZ areas as per approved CZMP (Map nos: MH 95, 97, 98 & 99) vide CRZ notification 2019 of MoEF & CC.

Member Secretary

Chairman

The detailed CRZ status is depicted in Table below.

| SI.NO | DESCRIPTION | PROJECT DETAILS | CRZ-CLASSIFICATION | AREA IN ACRES | TOTAL AREA IN ACRES |
|---|---|---|---|---|---|
| 1 | AREA FOR PROPOSED DEVELOPMENT WITHIN VADHAVAN PORT LIMITS | APPROACH TRESTLE | CRZ-IVA | 45.26 | 8763.2 |
| | | BREAKWATER | CRZ-IVA | 444.36 | |
| | | NAVIGATIONAL AREA | CRZ-IVA | 3004.28 | |
| | | OFFSHORE RECLAMATION AREA | CRZ-IVA | 3388.87 | |
| | | RECLAMATION AREA NEAR SHORE | CRZ-IB | 131.67 | |
| | | | CRZ-III (200M TO 500M FROM HTL) | 12.14 | |
| | | | CRZ-III (NDZ) | 22.86 | |
| | | | CRZ-IVA | 417.8 | |
| | | | OUTSIDE CRZ | 49.56 | |
| | | SHELTERED AREA | CRZ-IVA | 1246.41 | |
| 2 | REMAINING AREA WITHIN VADHAVAN PORT LIMITS | NIL | CRZ-IA (50m Mangrove Buffer) | 126.48 | 33214.37 |
| | | | CRZ-IA | 98.25 | |
| | | | CRZ-IB | 426.28 | |
| | | | CRZ-III-NDZ | 19.71 | |
| | | | CRZ-IVA | 32543.64 | |
| **Grand Total** | | | | 41977.57 | 41977.57 |
| SI.NO | DESCRIPTION | PROJECT DETAILS | CRZ-CLASSIFICATION | LENGTH IN METERS | TOTAL LENTH IN METERS |
| 3 | PROPOSED ROAD ALIGNMENT FOR THE PORT CONNECTIVITY | PROPOSED ROAD | CRZ-IB | 277.29 | 34033.32 |
| | | | CRZ-III (200m to 500m from HTL) | 257.89 | |
| | | | CRZ-III-NDZ | 491.77 | |
| | | | Outside CRZ | 33006.36 | |
| 4 | PROPOSED RAIL ALIGNMENT | PROPOSED RAILWAY LINE | CRZ-IB | 217.26 | 21735.45 |
| | | | CRZ-III (200m to 500m from HTL) | 355.71 | |

Member Secretary

Chairman

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| | FOR THE PORT CONNECTIVITY | | CRZ-III-NDZ | 514.39 | |
| | | | Outside CRZ | 20648.1 | |
| Grand Total | | | | 55768.77 | 55768.77 |

During the meeting, Mr. Kudale, Expert Member raised following issues

a) The Proposed Vadhavan Port is located in the near vicinity of the Tarapur Atomic Power Station, TAPS on south and ecologically fragile area of Dahanu on the North. As such the predictions of coastal environmental impacts of Vadhavan port become of utmost important. The cooling water system of TAPS is designed based on the tidal hydrodynamics of the area and any change in the hydrodynamics will have major impact on the operations of TAPS. As such, this aspect needs to be attended properly in the EIA report.

b) The coastal environmental parameters (winds, storms, waves, surges, sea level rise, currents, sediment movement) are having the large impact of Climate Change. Obviously, the coastal structures will have also large impact of climate change, and it has become imperative to consider climate resilience in planning and design of coastal structures. It is essential to incorporate climate resilience aspects into project planning and design procedures of this Major Port. The adaptation of Climate Resilience in the planning and design of Vadhavan Port shall be discussed in the EIA report. Especially, the frequency and intensity of cyclones on the west coast has increased in the past few years, which is attributed to the global climate change. As such, the coastal environmental parameters like Waves, Storm Surge, and sea level, which are directly dependent on the intensity cyclone need to be assessed carefully.

c) The Rehabilitation and Compensation are very sensitive issues for this Mega-Project and need to be given priority in the initial stages.

In response, Consultant and the Project Proponent (JNPA) presented that

a) The issue of Tarapur Atomic Power Station, TAPS has been addressed in the DPR which is part of the EIA report. Regarding the impact on TAPs a detailed study has been carried out and mitigative measures have been suggested and PP already decided to implement. For which a budget of INR264Cr has been kept in the project and during the meeting with secretary DEA and Chairman JNPA on 23.01.2024, it has been promised that any enhancement in the cost will be borne by PP. The JNPA officials submitted that the DTEPA while giving clearance also satisfied that there will not be any substantial impact to ecology due to the port. Also, the project PP will monitor the site during construction and operation phase to

ascertain impact on the ecology and DTEPA has also set up monitoring mechanism to study and manage the impact on the ecology due to the project.

b) The climatic factors have been taken into consideration while designing the port and rightly addressed in the Detailed project Report. The design consideration and other tidal hydrodynamic aspects has been taken into consideration and are part of the DPR.

c) The Chairman, JNPA submitted that the compensation for the local affected people will be assured as per the prevailing Government policies. He further proactively assured that if Government of Maharashtra comes with special compensation package for the affected people, JNPA is more than willing to accept the same.

During the meeting, Dr. Shindikar expressed that phytoplankton and zooplankton are the indicators of the determining of the productivity i.e fisheries in the seawater. He suggested that JNPA need to do continuous monitoring of the marine water for studies on phytoplankton and zooplankton during construction phase and operation phase in order to understand the impact of the project on local fisheries. JNPA officials noting concern the Hon'ble Chairman has informed that the said study has already been conducted by NIO and CMFRI and as per the recommendations of the reports continuous monitoring shall be adopted.

Dr. Shindikar suggested that considering the mega project, the JNPA need to proactively initiate the measures / steps to maintain the ecology of the area. During the construction phase, JNPA should impart necessary training programmes on continuous basis for contractors & labours for following mitigations measures as suggested in the EIA report.

Dr. Rahul Khot, representative of BNHS asked the JNPA whether the corals would be affected due to project. The Consultant clarified that as per NIO and ZSI report that there is no Corals found in the proposed project in daman as well as Dahanu region.

The Authority deliberated the project and observed that this is a mega project and would be a major & important for the Maharashtra State from development & economic point of view. This will generate the considerable employment opportunities for the local people and will contribute to Wealth of

the Nation. The Ministry of Ports, Shipping and Waterways has issued an Office Memorandum dated 6th Jan, 2021 stating that the Vadhavan Port is a nationally important project and has a cabinet approval.

Having considered this shiny side, the environmental / ecological consideration can not be ignored, especially when the Dahanu has been notified as Ecologically sensitive area and there is special Authority constituted by the MoEF&&CC, New Delhi and there is large scale reclamation involved in the project. The Authority deliberated the likely impact on the coastline due to large scale reclamation. The JNPA has carried out EIA studies and other relevant studies which indicate certain environment impacts and suggested various mitigation / remedial measures. The Authority took note of various studies of CWPRS, NCCR & INCOIS and NCSCM about the shoreline and siltation pattern. The report of the NCCR states that alongshore movement of sediment or the 'littoral drift' plays a significant role in emanating the shoreline morphology of the area. With the introduction of an artificial structure along the coast, the drift pattern may be altered due to the dynamics of the nearshore area. The said report concludes that the littoral drift and shoreline evolution comparing the original shoreline and proposed port indicates an insignificant effect on adjacent shoreline. The shoreline change analysis by NCCR suggests that a stretch of 2.4 km of the study area is in a moderate to high erosion state for long term analysis. The construction of the port breakwater is likely reduce the erosion in the south. The study recommends shoreline morphology and maintenance dredging are to be monitored periodically.

The Authority advised the real time monitoring during construction and operation phase and further period of time is required to truly understand the impact of reclamation & breakwater on shoreline near the project site. The Authority further suggested that JNPA shall constitute a separate dedicated inhouse environment cell with adequate expert staff for the Vadhavan port project which will ensure all compliance of various studies carried out for the project and will carry out environment monitoring. The Cell shall also engage a reputed / competent organization in the field of Coastal engineering for monitoring the 10 km coastline around the project site during the construction phase and post construction up to next 15 years in order to truly understand the impact of the port & its reclamation on coastline its erosion/ accretion status and remedial measure required if any.

Member Secretary

Chairman

The Authority further noted the observation of the NCCR report which states that, the Hydrodnamic and siltation studies of the Master Plan were carried out and it was observed that the maximum current strength of the at the container are within 0.15 m/s. The flow approaches at an angle varying between 4 degree and 7 degree along oil berths and LPG terminals. With these flow conditions, it was reported that the currents would bypass the sediments to the north of the proposed port. The total quantity of likely siltation in the dredged area will be about 8.45 million cum per annum as per the siltation studies. With advised maintenance dredging of 6.45 million cum for phase I, a volume of 0.15 Mm3 form this maintenance dredging can be used for beach nourishment to the immediate north of the port. The Authority suggested that it will be responsibility of the JNPA to ensure that the dredged material will be used for the beach nourishment as suggested in the NCCR report.

The Authority noted the report of the offshore sand mining for the development of port prepared by ICAR-CMFRI. As per the said report, two hundred million m3 of fill material will be extracted from the marine sand borrow pit located offshore of Daman. The marine borrow pit is located far away from the coastal region approx. 50-60km with high tidal range and associated strong currents, the concentration of the sediment plume gets weakened immediately during the dredging activity. This was validated by model simulation studies of IIT madras. The model study shows that the turbid plume does not reach the shore. Based on the above scenario, it can be observed that the plume trajectory of the dredged sediment does not move towards the coast, and they appear not to cause any impact on the shore and the marine environment. The Authority suggested that the dedicated environment cell in consultation with competent organization shall monitor long term effect of dredging operation on the ecosystem, Dedicated fund should be allocated for the said monitoring, as suggested in the said report.

The Authority noted the report of the CMFRI about the fisheries, as per the report fishing is the major livelihood activity identified in the nearest coastal villages, and most fishermen in the area are marginal fishers. The total fishermen population residing in the identified fishing villages is around 20,809 in 5333 households. The infrastructure facilities in fisheries are found to be limited and insufficient to support future development. The said report summaries loss of fishing area at reclamation area, navigations channel and port limit and other associated impacts. The report recommends to identify the affected fishers and coastal community and provide compensation to minimize the economic impact / livelihood impact. All direct and livelihood impacts must be adequately

compensated and mitigated to the maximum. Based on the availability suitable types of artificial reefs can be deployed to increase the productivity and support lobster fisheries. Seawater quality in the port area / port limit should be strictly maintained and monitored so that it should not cause adverse impacts on fishing and the environment. Continuous fisheries monitoring programme on the effectiveness of the mitigation measures or additional impacts, if any, during construction and operations of the project. All mitigation measures for, reducing marine pollution in coastal waters, seawater quality in the nearshore waters should be monitored regularly and pollution should not cause adverse impacts on fishing and environment. The Authority noted that the CMFRI has suggested practical & sound measures to address the fisheries and fisherfolks issues. The Authority suggested that the JNPA shall strictly follow each and every recommendation of the said report and submit the compliance to the office of commissioner of Fisheries periodically.

The Authority observed that it is the crucial responsibility of the JNPA and its appointed contractors to minimize the impacts by strictly adhering to all mitigation measures suggested in the EIA report. Best practices should be brought in for carrying out the dredging activities to lessen the impact on marine and terrestrial environment. The Authority further suggested that the JNPA should not only just passively follow the mitigation measures and environment plans as suggested in the EIA report, but should implement all proactive steps / measures to lessen the impact on coastal, terrestrial and marine environment. JNPA should proactively explore other best international practices for making the port with green initiatives (Five star ratings).

The recommendations of the Zoology survey of India, CMFRI, CWPRS, Social Impact assessment report, National Centre for Coastal Research (NCCR), Marine Biodiversity Management plan by NIO, Ministry of Earth science & Studies etc should be followed in letter and spirit. In the light of various representations were received from the local people, JNPA shall initiate all possible measures to address the concerns of local people, especially fisher folks. The JNPA officials submitted that the public hearing has been conducted on 19.1.2024. The Authority suggested that the JNPA shall ensure implementation of the action plan on the issues raised during the public hearing.

The Authority further felt that apart from dedicated environment cell, there should be a technical committee headed by JNPA for evaluation & effectiveness of mitigations / remedial measures during construction & operation phase. The

said technical committee shall have experts from marine ecology, coastal engineering, representative from reputed Govt institute like IIT/ IIM, representative of CMFRI, MPCB, representative from DTEPA, representative of NIO and other experts as deemed fit by the Chairman, JNPA. The said committee shall be meeting once in a quarter.

The Authority noted the provision of the CRZ Notification, 2019

1) As per para 5.1.2, CRZ I(B) of CRZ, 2019:

(i) Land reclamation, bunding, etc. shall be permitted only for activities such as,-

(a) foreshore facilities like ports, harbours, Jetties, wharves, quays, slipway, bridges, hover ports for coast guard, sea links, etc;

(e) maintenance and clearing of waterways, channels, ports and hover ports for coast guard;

(ii) Activities related to waterfront or directly needing foreshore facilities such as ports andActivities related to waterfront or directly needing foreshore facilities such as ports and harbours, jetties, quays, wharves, erosion control measures, breakwaters, pipelines, lighthouses, navigational safety facilities, coastal police stations, Indian coast guard stations and the like.

(v) Facilities for receipt and storage of petroleum products and liquefied natural gas as specified in Annexure-II to this notification, subject to implementation of safety regulations including guidelines issued by the Oil Industry Safety Directorate in the Ministry of Petroleum and Natural Gas and guidelines issued by the Ministry of Environment, Forest and Climate Change, provided that such facilities are for receipt and storage of fertilizers and raw materials required for fertilizers, like ammonia, phosphoric acid, sulphur, sulphuric acid, nitric acid, etc.

(vi) Storage of non-hazardous cargo i.e. edible oil, fertilizers and food grains in notified Ports

(xv) Pipelines, conveying systems including transmission lines.

2) As per para 5.3, CRZ III of CRZ, 2019;

Member Secretary

Chairman

(i) Activities as permitted in CRZ-I B, shall also be permissible in CRZ-III, in so far as applicable.

3) As per para 5.4, CRZ IV of CRZ, 2019:
Activities shall be permitted and regulated in the CRZ IV areas as under:-
(ii) Land reclamation, bunding, etc to be permitted only for activities such as.-
(a) foreshore facilities like ports, harbours, Jetties, wharves, quays, slipway, bridges, sea links and hover ports for coast guard ,etc;

(iii)Activities related to waterfront or directly needing foreshore facilities, such as ports and harbours, jetties, quays, wharves, erosion control measures, breakwaters, pipelines, navigational safety facilities and the like.

4) As per para 7(ii) of CRZ, 2019:

All development activities or projects in CRZ-I and CRZ-IV areas, which are regulated or permissible as per this notification, shall be dealt with by Ministry of Environment, Forest and Climate Change for CRZ clearance, based on the recommendation of the concerned Coastal Zone Management Authority.

5) Project is a category A project under EIA Notification, 2006, for which,

As per 7(iv) of the CRZ, 2019:

Projects or activities which attract the provisions of this notification as also the provisions of EIA notification, 2006 number S.O. 1533(E), dated the 14th September, 2006, shall be dealt with for a composite Environmental and CRZ clearance under EIA Notification, 2006 by the concerned approving Authority, based on recommendations of the concerned Coastal Zone Management Authority, as per delegations i.e., State Environmental Impact Assessment Authority (hereinafter referred to as the SEIAA) or the Ministry of Environment, Forest and Climate Change for category 'B' and category 'A' projects respectively.

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## DECISION

In the light of above, the Authority after detailed discussion and deliberation decided to recommend the proposal to MoEF&CC, New Delhi from CRZ point of view subject to following conditions:

1. The proposed Vadhavan port project should be carried out strictly as per the provisions of CRZ Notification, 2019 as amended from time to time and with a commitment of protection and conservation of coastal environment.
2. JNPA to consider the Climatic conditions & Climate Change induced coastal Hazards like storm, surges, sea level rise, flooding etc during the implementation of the project. Necessary Disaster management plan / safety measures along with oil spill plan should be formulated and implanted in spirit.
3. JNPA shall set up full-fledged separate dedicated inhouse environment cell with adequate expert staff on deputation from GoI / State Government with required experience for the Vadhavan port project which will ensure all compliance of various studies carried out for the project and will carry out environment monitoring. The Cell shall also engage a reputed / competent organization in the field of Coastal engineering for monitoring the 10 km coastline around the project site during the construction phase and post construction up to next 15 years in order to truly understand the impact of the port & its reclamation on coastline its erosion/ accretion status and remedial measure required if any. Specific adequate fund should be earmarked for the same. It is also suggested to have a third-party monitoring/Audit of such management initiatives.
4. Dedicated environment cell in consultation with competent organization shall monitor long term effect of dredging operation on the ecosystem, Dedicated fund should be allocated for the said monitoring, as suggested in the said report.
5. JNPA shall strictly follow each and every recommendation of the CMFRI report pertaining to mitigation of impacts on fisheries and capacity building of fisherfolks under directions of the Commissioner Fisheries.
   JNPA shall submit the compliance to the office of commissioner of Fisheries periodically.
6. Noc from the office of Commissioner of Fisheries should be obtained.
7. JNPA shall implement proactive programme/ plan for capacity building of the local fishermen coastal community along with modern equipment and facilities for fishing, drying, cold storage etc by engaging CMFRI.

Member Secretary

Chairman

Necessary Compensation / R&R shall be assured for local affected fishermen and coastal community people, as per prevailing Govt policies.

8. JNPA to ensure that the dredged material will be used for the beach nourishment as suggested in the NCCR report.
9. Prior High Court permission should be obtained, as per Hon'ble High Court order dated 17th Sep, 2018 in PIL 87/2006, if the project involves cutting of mangroves or project activities are situated within 50 m mangrove buffer zone area.
10. JNPA to ensure that the storage of chemicals/ fertilizer products as permissible in CRZ Notification, 2019 shall only be allowed.
11. JNPA should proactively explore other best international practices for making the port with green initiatives (Five Star Rating).
12. JNPA and its appointed contractors to minimize the impacts by strictly adhering to all mitigation measures suggested in the EIA report. Best practices should be brought in for carrying out the dredging activities to lessen the impact on marine and terrestrial environment.
13. All recommendations of the Zoology survey of India, CMFRI, CWPRS, Social Impact assessment report, National Centre for Coastal Research (NCCR), Marine Biodiversity Management plan by NIO, Ministry of Earth science & Studies etc should be followed in letter and spirit. PP should ensure that livelihood activities of the fishermen communities should not be hampered due to project activities. The local fishermen will be allowed free and non-discontinuity access to operate their fishing boats. All recommendations of the CMFRI studies concerning the fisheries/ fishermen shall be complied with along with R & R package to be finalised in consultation with GoM , Dept of Fisheries and local communities representatives.
14. JNPA to ensure that technical committee headed by JNPA is constituted for evaluation & effectiveness of mitigations / remedial measures during construction & operation phase. The said technical committee shall have experts from marine ecology, coastal engineering, representative from reputed Govt institute like IIT/ IIM, representative of CMFRI, MPCB, representative from DTEPA, representative of NIO and other experts as deemed fit by the Chairman, JNPA. The said committee shall meet once in a quarter.
15. All mitigation measures for, reducing marine pollution in coastal waters, seawater quality in the nearshore waters should be monitored regularly and pollution should not cause adverse impacts on fishing and environment. JNPA shall ensure the same with State of Art laboratory along with expert staff either on deputation or to be recruited by JNPA.

Member Secretary

Chairman

16. No labour camp are allowed in CRZ area & it should also be ensured that the waste water from these entities should not be released into sea. Mobile toilets with mobile STPs to be provided in work front area.
17. PP to provide adequate capacity STP to treat the sewage during construction and operation phase and ensure to meet standards prescribed by the MPCB.
18. Prior approval of the MPCB shall be obtained for the project.
19. There shall not be any kind of discharge/ disposal in the marine water/ CRZ area.
20. Debris generated during the project activity should not be dumped in CRZ area. It should be processed scientifically at a designated place as per C & D Waste Management Rules, 2016.
21. JNPA shall ensure implementation of the action plan on the issues raised during the public hearing. The PP shall complete all the task as per the action plan submitted with budgetary allocation and time lines.
22. JNPA shall create a dedicated website & weblink for the project and upload all studies report relating to project on website
23. All other required permissions from the concerned statutory authorities should be obtained prior to commencement of the work.

Member Secretary

Chairman

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## Annexure I

List of members/officials present in the online meeting:

1. Dy. Che. Engg. DP, MCGM, Member, MCZMA
2. Dr. Mahesh Shindikar, College of Engineering, Pune, Expert Member, MCZMA
3. Mr. Mirashe, Representative from the Industry Dept, Member MCZMA
4. Mr. Maruti Kudale, Ex Director, CWPRS, Expert Member, MCZMA
5. Mr. Rahul Khot, BNHS, Member MCZMA
6. Mr. Abhay Pimparkar, Director, Environment & CC and Member Secretary, MCZMA

Member Secretary

Chairman