

Brief note on Mumbai Trans Harbour Link (MTHL) project

Date: 09.11.2015

The following points were discussed and clarified in the 107th meeting of the MCZMA held on 07.11.2015.

Accreditation by QCL-NABET of the Consultant preparing the rapid EIA for CRZ clearance:

- The Rapid Environmental Impact Assessment study Report was prepared by the M/s Consulting Engineering Services (CES) India Pvt. Ltd. in January 2012. The consultant has the required accreditation under the Quality Council of India – National Accreditation Board for Education & Training scheme for accreditation of EIA consultant organization for the project(**copy enclosed**).
- The Rapid EIA was prepared in January 2012 and the same is therefore valid till date.

Central Water & Power Research Station (CWPRS) report (copy enclosed):

- MMRDA had engaged Central Water & Power Research Station (CWPRS), Pune to study the effect of proposed Mumbai Trans Harbour Link project on the flow conditions in Mumbai/Jawaharlal Nehru Harbour area from tidal hydrodynamic considerations.
- The flow pattern and various parameters such as water level, current strength and tidal flux i.e effect of MTHL bridge on flow field at various locations like JNPT, MbPT, Panvel and Thane creek were studied by CWPRS.
- The CWPRS submitted their report in March 2014 with recommendations that there will not be adverse impact on overall tidal hydrodynamics of the region due to the project under consideration.
- The report says that by inclusion of MTHL Bridge, the overall change in hydrodynamics is negligible.
- There is insignificant effect on the facilities in Mumbai and JN Port area.

CZMP maps prepared by IRS, Chennai:

- The Coastal Zone Regulation maps along the proposed alignment of Mumbai Trans Harbour Link Project were prepared by the Institute of Remote Sensing, Chennai. The agency has submitted maps in 1:4000 scales at the end of May 2013.
- Accordingly, the statement showing the areas falling in CRZ-I, CRZ-II and CRZ-IV have been assessed & updated in the EIA report on the basis of these CZMP maps and submitted on 6.11.2015 to MCZMA.

Mitigation measures proposed by MMRDA (pro active) for the project:

Following mitigation measures are proposed by MMRDA to mitigate the impacts on the mudflats and migratory birds.

- a) The construction methodology proposed for the entire operations in mud flats or the inter tidal zone would be use of temporary steel bridge/ jetty parallel to the permanent structure in the Right of Way (ROW) for transportation of men, construction material,

precast elements and machinery etc. on either ends, so as not to disturb eco-sensitive mud flats.

- b) The proposed alignment of MTHL passes through the Coastal Regulation Zone (CRZ) as per the Coastal Zone Management Plans (CZMP) of Mumbai and Navi Mumbai. Out of 22 km length of MTHL, 2.25km of length passes through the CRZ (2.0 km in CRZ I and 0.25km in CRZ II). Since entire sea link is proposed on viaduct, only the area occupied by piers/ piles will be affected. Compensatory mangrove plantation is also proposed to be done through the forest department.
- c) Noise barriers of 3m height are proposed to be provided on both side of the Sea Link in the mud flat portion.
- d) It is proposed to use Pre-cast units to avoid effect on mudflats during construction activity. Pre-stressed super structure, launching gantries are proposed to be used for construction of superstructure over the mudflats.
- e) Viaducts are proposed instead of solid embankments in Mudflats area on Sewri and Shivaji Nagar side to avoid disturbance to the mudflats and birds.
- f) As far as possible, it is proposed that the construction machinery movement (barges etc) would bypass the locations having habitation of migratory birds during construction.
- g) All construction equipment will be fitted with mufflers/ exhaust silencer to contain the noise. Proper maintenance of equipment would be done with the provision of enclosures and intake silencers.
- h) The machinery used during construction will be properly maintained to have minimal effect on air and noise emission. DG sets, if used, will adhere to the noise standards of MoEF.
- i) Training of construction personnel so as to cause minimum disturbance to birds.
- j) No reclamation is proposed for the bridge, especially in mudflats area, or in sea either on Sewri side or Navi Mumbai side. Instead, via duct is proposed to minimize disturbance to the mudflats.
- k) The spanning arrangement of piers for via duct is generally about 50m which may be increased in mudflat areas depending on technical feasibility. The piers/ piles for the viaduct in mudflat area would therefore occupy relatively smaller area.
- l) The excavated soil mass will be disposed off at the designated /approved dumping site which is far from the mudflat area.
- m) Any burning of waste in open air will not be allowed during construction and thus would not hamper the movement of migratory birds.
- n) Surveillance management and monitory program during construction to prevent any adverse impact on migratory birds.
- o) Free movement of migratory birds is possible as there is no Cable stayed bridge envisaged.

Mitigation measures during Operations:

- Noise barriers provided at mudflat areas would reduce noise level and its impact on migratory birds.
- Due to the reduction in traffic congestion and travel time by about 45 mins between Mumbai and the mainland side, the pollution levels are expected to come down due to the proposed road bridge and this will improve the level of air quality.
- Allow vegetation of mangroves below via-duct in mudflat areas on either side to maintain continuity and survival of flora/fauna.
- Educating the construction personnel in the identification of and measures for avoiding the disturbance for migratory birds.

Mitigation plans for migratory birds:

Machinery, equipment and personnel associated with construction activity represent sources of sensory disturbance (eg. noise and light) to migratory birds.

Strategies enabling compliance and mitigative impacts on migratory birds will include:

- Maintaining a buffer zone where no activity occurs in the proximity of their habitat.
- Proper scheduling of site preparation and construction activity.
- Avoiding movement of boats & machinery through the concentration of migratory birds when using boats and other machinery.
- Educating construction personnel in the identification of and measures for avoiding the disturbance for migratory birds.
- Minimize areal and temporal extent of disturbance to the migratory birds
- **Monitoring plan** will be evolved and rigorous monitoring records will be created during construction activity (for the construction area)
- Contractor shall adhere strictly to all state and central regulation pertaining to **Wild Life act**.
- The contractor will take construction activity under **surveillance, management and control to prevent impact on migratory bird**.
- **Weekly monitoring** of migratory bird in the **approved format** will be conducted during the dawn or dusk time.
- The contractor will appoint a **Bird Monitor** for specific time of migration period for monitoring activity.
- Construction at both ends passing through mud flats & mangroves should be minimized.
- For the bridge portion passing through mud flats & mangroves, pier distance to be maximized for about 4 km on both ends.
- Bridge should be cable free so as not to affect the free flight movements of flamingoes and other water birds.
- Debris in any form should not be dumped in mudflat & mangrove areas of Sewri, Thane and Nhava.
- The transport of construction material to be facilitated from Sewri jetty to avoid disturbance to the mudflats.
- Plan for construction to be provided before construction begins.
- As far as possible the spans should be prefabricated at sites which are away from eco-sensitive zones.
- **Monitoring program:** Habitat quality assessment and monitoring of of the conservation/mitigation measures during construction and 5 yrs after completion is necessary.

- **Mud flat restoration program:** Mudflat maintenance is a complex subject requiring long term monitoring and intervention. A corpus fund to be allocated towards the same. BNHS is willing to assist MMRDA in implementing the mudflat restoration program upon completion of the project.
- **Developing walkways around mangroves at Sewri bay:** Sewri jetty being the only vantage point to view flamingoes and water birds, a walkway will have to be created north of Sewri jetty for tourists. A corpus fund to be allocated for construction & maintenance of the same. BNHS will assist in design & development of walkway on the north side of the jetty for tourists.
- Following Case studies as submitted by the consultant reveal that the restoration of habitation of migratory birds is possible post construction like for Sacramento river Bridge, USA; San Francisco- Oakland Bay bridge, USA and Airoli bridge, Mumbai

CASE STUDY-1 ... Sacramento River Bridge:

The project cost was **USD 16.1 mn.**

The following mitigation plan was adopted in order to maintain environmental protection including migratory birds for the construction activity.

- Pre-cast, pre-stressed modified girders were used.
- Segmental erection made continuous by post tensioning
- Scheduling of segments per span per girder
- High strength of concrete which can easily be pumped and flow
- Steel pile foundation driven below the floor of cofferdams.
- Two stage longitudinal post-tensioning.
- Transverse post-tensioning at pier diaphragms
- 3 piers instead of 4, providing less obstruction in water.

CASE STUDY-2 ... San Francisco Oakland Bay Bridge:

- This is one of the **prestigious bay bridge projects** in the state of California.
 - Migratory birds were one of the elements which required mitigation plan and observatory.
 - Bird monitoring and management plan evolved before construction activity, which includes :
 - Monitoring of active construction area
 - Listing of all migratory bird species
 - Frequency and duration of each monitoring
 - Monitoring during pile driving and other construction activities
 - Timing and scheduling of monitoring
 - Vantage monitoring locations
 - Survey methods
 - Strict monitoring during dismantling phases and winding up process of all the construction activities
 - Plans for post construction period
- Similar measures & construction methodology will be adopted for this project. Moreover, we would also try to study the experiences and mitigation measures implemented elsewhere in other countries in similar situations on major projects.**

MARINE POLLUTION:

- The rapid EIA has been carried out for monitoring of air, water, noise, marine (ecology and biology) and all other relevant parameters at 6 locations within 10km radius area. The locations in the marine area have been carried out at the sites where there was maximum pollution observed due to the rampant release of untreated industrial and domestic wastes taking place along the coastal line.
- Due to untreated effluents and domestic sewage being released in an unscientific manner, there is no rich biodiversity of the marine areas found in the area where the monitoring was carried out. The marine ecology survey was carried out for the 10 important and significant parameters. There were 5 zones made within the alignment in the marine area for the ecology survey and out of these 5 zones in 3 zones marine ecological stress found due to above reasons. Presence and population of phytoplankton were found to be un-healthy and all pollution related phytoplankton were observed due to the levels of pollution existing in these 3 zones. Even in case of zooplanktons, the Shannon weaver and biomass values indicate poor species diversity. Population of zooplankton is not healthy. In the areas where the pollution levels and stress due to pollution is minimal, richness of biodiversity is evident and there will not be any effect on these parameters from our project as there will not be release of any kind of pollution viz. industrial nor domestic taking place in the marine area.
- In case of any such incidences, the Project Proponent is fully geared up with the mitigation measures as described in the EIA. The most likely cause will be release of oil and grease in to the marine area, which is fully addressed and will be mitigated with all required mitigation measures and those will be made immediately available and adopted for the project.
- Thus overall there will not be any type of increase in stress on the marine ecology due to the project development.

Impact Assessment and special efforts by MMRDA:

- MMRDA would formulate a Environment Monitoring Cell (EMC) to monitor the impacts on environment during construction as well as during operations. The EMC would be proposed to be formulated under the chairmanship of the Additional Metropolitan Commissioner, MMRDA. The committee would comprise of internal cell with Joint Project Director (Environment), MMRDA and the Chief Engineer, MMRDA and other members will be from Forest department, Maharashtra Pollution Control Board (MPCB) and other Environmental specialist.
- MMRDA has also formulated a committee to evaluate the impact of MTHL Bridge on the fishing folk and the compensation policy there for. Details enclosed as **Annexure- 4**
- Mangrove restoration program in suitable areas will be taken up by MMRDA through the Forest department.
- Compensatory afforestation in lieu of forest affected due to project will be carried out by MMRDA as per the requirements and guidelines of the Forest department.
- We are also setting aside an amount of about 2% of the project cost towards mitigation measures; restoration & conservation of mangroves/ birds/ flora/fauna.

Annexure- 4

Compensation to the project affected fisher folk:

MMRDA has also formulated a committee to evaluate the impact of MTHL Bridge on the fishing folk and the compensation policy there for. The following is the methodology suggested to finalize the guidelines / compensation policy.

Suggested methodology:

- i. Carry out demographic surveys of the villages around the impact area to identify fisher families, active, part-time and occasional fishers and those dependent on the fishery related activities.
- ii. Analyze fishing gear-wise annual trends of fish landings in the impact area from the past data collected from the secondary sources (*Fishing Reports* of Department of Fisheries, Govt. of Maharashtra).
- iii. Estimate current fishery catch, the number of boats operated (units) and per boat fish catch (cpu) and the value of catch (earnings) based on price structure of the varieties.
- iv. Collect information on fixed and operational costs and revenue of each fishing activity.
- v. Evaluate present subsistence and artisanal fishing activities, their production zones, types of craft and gears used and establish their relationships with the nature of fishing.
- vi. Carry out synoptic fishing surveys from the affected area between *Sewree* and *Nhavato* establish fish biodiversity, production and biomass by suitable methods.
- vii. Based on the landings from the affected area and the fishing surveys find out likely impacts on the fish production due to temporary and permanent closure of the area.
- viii. Measure turbidity, sediments and the related water parameters in the construction and operations area to establish short term effects of dredging and piling on fish abundance in the impact area.
- ix. Study long term effects of dredging and piling works on benthos and resident fish populations in the impact area by use of suitable models.
- x. Estimate loss of earnings (livelihood) due to closure of fishing activities during construction phase.
- xi. Estimate costs of ecosystem damage and biodiversity loss that can be utilized for mitigation of the community.

The above methodology would be adopted to finalize the permanent, temporary and incidental effect of the project on the fishing activities
