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INTERNATIONAL

General Consultant for Mumbai Trans Harbour Link Project

Ref No: MTHL/GC/MMRDA/LT/ENV-3462/2023

11<sup>th</sup> March 2023

**To,**  
**Engineer-in-Chief**  
Engineering Division  
Mumbai Metropolitan Regional Development Authority (MMRDA)  
2<sup>nd</sup> Floor, New MMRDA Building,  
Plot No R-06 & R-12, 'E' Block  
Bandra Kurla Complex, Bandra (E),  
Mumbai, Maharashtra, India 400051.

**Sub:** General Consultancy services for Mumbai Trans Harbour Link (MTHL) project –  
**Submission of Half Yearly Report No. 14 from July to December 2022**

Dear Sir,

We are hereby attaching the Half Yearly Report No. 14 from July to December 2022. You may please forward the same to the concerned departments for their record.

Thanking you,  
Yours faithfully,

11 March 2023

**Dr. S H Robin Sham, CBE**  
**(BSc, PhD, DIC, FCGI, FRSA, CEng, FICE, FStructE, FHKIE)**  
**The Engineer**  
**General Consultant (MTHL)**

**Encl:** Half Yearly Report No. 14 from July to December 2022

**CC:** Superintending Engineer – MMRDA - Mr. Purushottam Nimje  
Executive Engineer – MMRDA – Mr. Arjun Korgaonkar  
Superintending Engineer – MMRDA - Mr. Yatin Sakhalkar  
Executive Engineer – MMRDA – Mr. Abhijit Bhisikar  
Executive Engineer – MMRDA – Mr. M. P. Singh

} By Email

**14<sup>th</sup> HALF YEARLY REPORT FOR MUMBAI  
TRANS HARBOUR LINK**

**July - December  
2022**



**Submitted to**  
**Maharashtra Pollution Control Board (MPCB)**

**Submitted by**



**एम एम आर डी ए  
MMRDA**

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### Information of Project officer and Nodal officer

<b>1.</b>	<p><b>Name of Project officer</b></p> <p><b>Email</b></p> <p><b>Phone /Fax Number</b></p>	<p>Executive Engineer, MTHL- Project Implementation Unit</p> <p>2<sup>nd</sup> &amp; 5<sup>th</sup> floor, New Administrative building, MMRDA, Engineering Division, Mumbai Metropolitan Region Development Authority (MMRDA), E-Block, Bandra Kurla Complex, Bandra East, Mumbai, Maharashtra 400051</p> <p>Phone No.: 022-26594034</p>
<b>2.</b>	<p><b>Name of Nodal officers</b></p> <p><b>Email</b></p> <p><b>Phone /Fax Number</b></p>	<p>Engineer In Chief, MTHL Project Implementation Unit</p> <p>2<sup>nd</sup> floor, New Administrative building, MMRDA, Engineering Division, Mumbai Metropolitan Region Development Authority (MMRDA), E-Block, BKC, Bandra Kurla Complex, Bandra East, Mumbai, Maharashtra 400051</p> <p>Email: <a href="mailto:engineerinchief@mailmmrda.maharashtra.gov.in">engineerinchief@mailmmrda.maharashtra.gov.in</a> Phone No.: 022-26594032</p>



**Photographs showing present progress of work**

Please refer to the Quarterly Progress Report No. 21 (April to June 22) and 22 (July -Sept 2022) for the photographs of the progress



## Monitoring the Implementation of Environmental Safeguards

**Ministry of environmental & Forest  
Western Region, Regional Office, Bhopal**

### Monitoring Report

PART - I

### DATA SHEET

No.	Particular	Information
1.	<b>Project type:</b> River Valley / Mining / Industry / Thermal / Nuclear / Others (specify)	: Infrastructure
2.	<b>Name of the Project</b>	: Mumbai Trans Harbour Link Project
3.	<b>Clearance letter (s) / OM No. and date</b>	: F. No. 11-65/2012-IA.III on 25 <sup>th</sup> January, 2016
4.	<b>Location</b>	<b>Start point:</b> Sewri in Mumbai City
	a) District (s)	: <b>End Point:</b> Chirle in Raigad District
	b) State (s)	: Maharashtra
	c) Location latitude / longitude	: <b>Start:</b> Latitude: 18°59'48.57"N Longitude: 72°51'20.67"E <b>End:</b> Latitude: 18°56'18.33"N Longitude: 73° 1'52.92"E
5.	<b>Address for Correspondence</b>	: Engineer In Chief,
	a) Address of the Concerned Project Chief Engineer (with Pin code & Telephone / Telex / Fax Numbers)	MTHL Project Implementation Unit 2 <sup>nd</sup> floor, New Administrative building, MMRDA, Engineering Division, Mumbai Metropolitan Region Development Authority (MMRDA), E-Block, BKC, Bandra Kurla Complex, Bandra East, Mumbai, Maharashtra 400051
	b) Address of the Concerned Project Chief Engineer (with Pin code & Telephone / Telex / Fax Numbers)	Phone No.: 022-26594034
6.	<b>Salient features</b>	: The proposed Mumbai Trans Harbour Link ('MTHL') is
	a) of the Project	proposed to facilitate decongestion of the island city by improving connectivity between Island city and main land (Navi Mumbai) and development of Navi Mumbai Region.



No.	Particular	Information
		<p>Mumbai Trans Harbour Link Project is 22 km long 6-lane bridge across the Mumbai Bay connecting Sewri on Mumbai side to Chirle on Navi Mumbai side.</p> <p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>• Saving in travel time, Vehicle Operating Cost and Fuel Savings</li> <li>• Accelerated growth of Navi Mumbai</li> <li>• Decongestion of island city of Mumbai</li> <li>• Connectivity to MbPT and JNPT Ports</li> <li>• Faster access to Navi Mumbai International Airport</li> <li>• Connectivity to Pune Expressway and to South India</li> </ul>
	b) of the Environmental Management Plans	Various measures stipulated in the Environmental Management Plan mentioned in the CRZ clearance are being complied.
7.	<b>Breakup of the Project Area</b> : a) Submergence area: forest & non forest b) Others	Total Area of Right of Way: 120.228 Ha Forest area: 47.417 Ha Non-Forest area: 72.811 Ha --
8.	<b>Breakup of the project affected population</b> with the enumeration of those losing Houses / Dwelling units only, Agricultural Land & Landless Laborers / Artisans: a) SC, ST / Adivasi b) Others (Please indicate whether these figures are based on any scientific and systematic survey carried out or only provisional figures, if a survey is carried out give details & year of survey)	<b>Project affected population:</b> Please refer to the <b>Quarterly Progress Report No. 20 and 21</b> for the project affected population attached as <b>Annexure-VI</b> MMRDA has approved eligibility of 6645 fisher folks as project affected so far. Accordingly, fisheries department, Gov. of Maharashtra has paid compensation to eligible fisher-folk as per approved Fisherman Compensation Policy
9	<b>Financial Details:</b> Project cost as originally planned and subsequent revised estimates and the year of price reference a)	The total cost of the project is Rs. 17,843 Crore Year of reference: 2016
	b) Allocation made for	Allocation of Rs. 335 Crore has been made for the



No.	Particular	Information
	environmental management plans with item wise and year wise breakup	implementation of Environment Management Plan for the MTHL project. The item-wise cost breakup of the EMP is attached as <b>Annexure-II</b> .
c)	Benefit cost ratio/Internal rate of Return and the year of assessment	-
d)	Whether (c) includes the cost of environmental management as shown in the above	-
e)	Actual expenditure incurred on the project so far	Rs. 15,300.38 Crore
f)	Actual expenditure incurred on the environmental management plans so far	Please refer <b>Annexure-VII</b> for actual expenditure incurred on the environmental management plans so far.
<b>10</b>	<b>Forest Land Requirement</b>	
a)	The status of approval for diversion of forest land for non-forestry use	Stage - I clearance approval for diversion of forest land for non-forestry use has been received from MoEF & CC on 22 <sup>nd</sup> January 2016 vide letter F.No.8-89/2013-FC.
b)	The status of clearing felling	NOC from Hon. High Court for cutting of mangroves is received on 28 <sup>th</sup> November 2016. Working Permission from Forest Department received on 22 May 2017.
c)	The status of compensatory afforestation, if any Comments on the viability & sustainability of compensatory afforestation program in the light of actual field experience so far	Rs. 91.42 crores have been transferred to Mangrove cell of Mangroves & Marine Biodiversity Foundation, setup under Maharashtra State Forest Department for Compensatory Afforestation (CA). Mangrove cell, Mumbai submitted updated status report of plantation (Attached as <b>Annexure-VIII</b> )
<b>11</b>	The status of clear felling in non-forest areas (such as submergence area or reservoir, approach roads.), if any with quantitative information required.	Commencement Letters have been issued to the Contractors of Package-1, Package-2 and Package-3 on 23 March 2018. Permission for cutting/transplantation in non-forest area of Navi Mumbai side has been granted by CIDCO. Copy of permission letter is attached herewith as



No.	Particular	Information
		<b>Annexure-IX.</b> However, felling in non-forest area has not started yet
<b>12</b>	<b>Status of construction</b> (Actual&/or planned)	Commencement Letters have been issued to the Contractors of Package-1, Package-2 and Package-3 on 23 March 2018.  Please refer to the Quarterly Progress Report No. 20 and 21 attached with this report as <b>Annexure-VI.</b>
a)	Date of commencement (Actual & / or planned)	: Commencement Letters have been issued to the Contractors of Package-1, Package-2 and Package-3 on 23 March 2018.
b)	Date of completion (Actual &/or planned)	: Date of completion planned of Package 1 & 2 is 21-09-2022 and for Package 3 is 21-09-2021.  Extension of Time (EoT) has been granted to the contractors is below:  Package 1: 30-09-2023 Package 2: 27-09-2023 Package 3: 03-03-2023
<b>13</b>	<b>Reasons for the delay</b> if the project is yet to start	: Due to Covid 19 pandemic situation and Land Acquisition issues a project was delayed and Extension of Time (EoT) has been granted up to September 2023. <b>Annexure - XI.</b>
<b>14</b>	<b>Dates of Site Visits</b>	--
a)	The dates on which the project was monitored by the Regional Office on previous occasions, if any	: --
b)	Date of site visits for this monitoring report	: --





Name: - **Shri. S. A. Wandhekar**

**Engineer In Chief, MTHL Project Implementation Unit**

New Administrative building, MMRDA, 2<sup>nd</sup> floor, Engineering Department, Mumbai Metropolitan Region Development Authority (MMRDA), E-Block, BKC, Bandra Kurla Complex, Bandra East, Mumbai, Maharashtra 400051  
Phone No.: 022-26594034

Signature: S. A. Wandhekar

Stamp: **ENGINEER-IN-CHIEF  
ENGINEERING DIVISION  
M.M.R.D.A.**



## HALF YEARLY COMPLIANCE REPORT

1.	<b>Project Type</b>	:	Infrastructure
2.	<b>Name of the Project</b>	:	Mumbai Trans Harbour Link (MTHL) Project
3.	<b>Clearance letter and date</b>	:	F. No. 11-65/2012-IA.III on 25 <sup>th</sup> January, 2016
4.	<b>Location</b>	:	
	<b>a. District</b>	:	<b>Start point:</b> Sewri in Mumbai City <b>End Point:</b> Chirle in Raigad District
	<b>b. State</b>	:	Maharashtra
	<b>c. Latitude/Longitude</b>	:	<b>Start:</b> Latitude: 18°59'48.57"N Longitude: 72°51'20.67"E  <b>End:</b> Latitude: 18°56'18.33"N Longitude: 73° 1'52.92"E
5.	<b>Address of correspondence</b>	:	
6.	<b>a. Address of concerned project Head</b>	:	Chief Engineer / Engineer in Chief,  MTHL Project Implementation Unit  2 <sup>nd</sup> floor, New Administrative building, MMRDA, Engineering Division, Mumbai Metropolitan Region Development Authority (MMRDA), E-Block, Bandra Kurla Complex, Bandra East, Mumbai, Maharashtra 400051 Phone No.: 022-26594034



**Compliance to the Conditions Recommended in CRZ Clearance-2013**

S. No.	Condition of 2013 clearance	Compliance
<b>7. Specific Conditions</b>		
(i)	As per the CRZ Notification 2011, at least five times the number of mangroves destroyed/cut during the construction process shall be replanted. Mangrove plantation in an area of 30 ha shall be carried out as committed against loss of 0.1776 ha mudflats/mangroves. Permission from the High Court of Bombay shall be obtained with respect to mangrove cutting.	Noted, about 25 Crores have been contributed by MMRDA to Mangroves Fund, as an initiative by Govt. of Maharashtra for Conservation and Protection of Mangroves in Coastal areas. The amount is used for Survey & Demarcation of Notified areas. Purchase of vehicles and equipment for anti-Encroachment drives, etc.  Permission copy of High court for mangrove cutting attached as <b>Annexure-I</b>
(ii)	Proponent shall provide lighting in consulting with the Bombay Natural History Society (BNHS) so as to minimize the likely impacts to the migratory birds.	Noted and being complied (embedded lighting, to be finalized in consultation by BNHS)
(iii)	All the construction equipment's shall be provided with exhaust silencers as committed.	Noted, all the construction equipment used by contractors are provided with exhaust silencers to reduce noise.  Photographic evidence of same attached as <b>Annexure-III</b>
(iv)	Noise containment barriers shall be provided on both sides of the bridge in mudflat areas (CRZ-IA) so as to minimize the likely impacts to the migratory birds as committed	Noise containment barriers have to be provided by the Package-I and Package-II on both sides of the bridges to minimize the likely impact to the migratory birds. Till date 1.14 crore have been spent by packages on the temporary barriers.
(v)	There shall be no dredging and reclamation for the project	The proposed project is for the construction of 6 lane road bridge across the Mumbai Harbour between Sewari in MbPT area and Chirle in Navi Mumbai to improve connectivity and facilitate traffic decongestion and hence does not involve dredging and reclamation works
(vi)	Pre-stressed super structure shall be used in the mud flat area for construction as committed	Noted and is being proposed in the mudflat area
(vii)	The muck materials shall be analyses	Noted and is being complied on. Muck



S. No.	Condition of 2013 clearance	Compliance
	prior to dumping/disposal in the identified locations with the approval of the competent authority to ensure that it do not cause any impact to the environment.	materials are collected and analyzed prior to dumping/disposal at identified locations.  Muck analysis report from Package-I attached as <b>Annexure-IV</b>  Excavation work has been completed for pkg 2
(viii)	Proponent informed that there is no fishing activity in the area since it is a navigation channel for the nearby ports. However, navigational channel is provided with 25 m from ships and 9.1 m from fishing boats.	Noted and being complied
(ix)	All the recommendations of the MCZMA shall be strictly complied with.	Noted and being scrupulously complied
(x)	There shall be no building construction beyond 20,000 sqm.	The proposed project is for the construction of 6 lane road bridge across the Mumbai Harbour between Sewari in MbPT area and Chirle in Navi Mumbai to improve connectivity and does not involve construction of buildings. However, during construction phase of the project temporary site offices and work camps will be constructed which will be well within 20,000 sqm area
(xi)	There shall be no water drawal in CRZ area.	The proposed project does not involve abstraction of the ground water in CRZ area. The water demand for the proposed project is being met through tanker water
(xii)	There shall be no disposal of solid or liquid waste on coastal area. Solid waste management shall be as per Municipal Solid (Management and Handling) Rules, 2000.	The project strictly complies with the new SWM rules 2016 and subsequent amendments and the solid and liquid waste and segregated at source, collected and disposed as per the abovesaid rules.  Biodegradable waste is being used for composting at site and non-biodegradable waste will be handed over to authorized agencies for disposal.
(xiii)	Sewage shall be treated and Treatment Facility shall be provided in accordance	Noted and will be complied

S. No.	Condition of 2013 clearance	Compliance
	with the Coastal Regulation Zone Notifications 2011, The disposal of treated water shall conform to the regulation of the State Pollution Control Board.	
(xiv)	The project proponent shall set up a separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of senior executive	<p>Noted and complied,</p> <p>An Environmental Management Cell has been set up and the structure of the committee comprise experts from National Institute of Oceanography; Representative of BNHS; renowned expert in Ornithology; Director, Fisheries Institute, Versova, Andheri; Head of Coastal Engineering, IIT, Mumbai and Representative of Environment Department and Maharashtra Pollution Control Board. The officer of MMRDA is acting as a Member Secretary to coordinate the quarterly meetings of the committee.</p> <p>Six meetings with the members have already commenced till date.</p>
(xv)	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purpose.	<p>Noted,</p> <p>Total fund allocated for the environmental management is 335 crores and till date 346.5 Cr has been spent EMP expenditure details attached as Annexure-V.</p>
<b>8. General Conditions</b>		
(i)	Full support shall be extended to the officers of the Ministry/Regional Office of Bhopal by the project proponent during inspection of the project for monitoring purpose by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities	Noted and being complied



S. No.	Condition of 2013 clearance	Compliance
(ii)	A six-monthly monitoring report shall need to be submitted by the project proponent to the regional office of this ministry at Bhopal regarding the implementation of the stipulated conditions	Noted and is being complied
(iii)	Ministry of Environment and Forest or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary, in the interest of environment and same shall be complied with	Noted and will be adhered
(iv)	The Ministry reserve the right to revoke this clearance if any of the conditions stipulated are not complied with to the satisfaction of the Ministry	Noted and will be adhered
(v)	In the event of a change in project profile or change in the implementation agency, afresh reference shall be made to the Ministry of Environment and Forests	Noted and will be adhered
(vi)	The project proponents shall inform to the Regional office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work	Noted and will be adhered
(vii)	A copy of the clearance letter shall be marked to concerned Panchayat/local NGO if any, from whom any suggestions/representations has been made a received while processing the proposal	Noted and complied. Annexure-X
(viii)	State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's office/Tehsildar's office for 30 days.	-----
9.	The above stipulations would be enforced among others under the provisions of Water (Prevention and	Noted and complied

S. No.	Condition of 2013 clearance	Compliance
	Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance Act), 1991 and EIA notification 1994 including the amendments and rules made thereafter	
10.	All other statutory clearances such as approvals for storage of diesel from Chief Controller of Explosive, Fire Department, Civil Aviation Department and clearances under the Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities	<p>Noted and complied.</p> <p>Clearances under Forest Conservation Act, 1980 has been taken by MMRDA from MoEF &amp; CC on 22<sup>nd</sup> January 2016 vide letter F.No.8-89/2013-FC.</p> <p>The project proponent had allotted the construction work to L&amp;T and JV of Daewoo and Tata through contract and the statutory clearances such as approvals for storage of diesel from Chief Controller of Explosive, Fire Department, Civil Aviation Department has been taken by them.</p> <p>After completion of the project MMRDA will ensure compliance.</p>
11.	The project proponent shall advertise in at least two local newspapers widely circulate in the region, one of which shall be in a vernacular language informing that the project has been accorded CRZ Clearance and copies of the clearance letter are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forest at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . The advertisement should be made within 10 days from the date of the receipt of the clearance letter and a copy of the same should be forwarded to the Regional office of this ministry at Bhopal	<p>Noted and complied.</p> <p>The advertisement for accord of the CRZ clearance was published in the (Lok Satta and Indian Express on 30.01.2016)</p> <p><b>Annexure-X</b></p>
12	The clearance is subject to final order of the Hon'ble Supreme Court of India in	Noted



Sr. No.	SPECIFIC CONDITIONS	COMPLIANCE STATUS
	night hours.	2017 having file no F. No. 11-65/2012-IA. III. Refer Annexure-VI (QPR)
vii.	The proposal indicates the diversion of 47.417 ha forest land for which the proponent shall obtain the requisite Forest Clearance. The project may be executed in the entire stretch in non-forest land, and while making application to get the Forest Clearance, the execution of work on non-forest land shall not be cited as a reason for grant of FC and in case FC is declined, the forest land shall be maintained at its existing condition. The PP shall submit an undertaking to this effect at the earliest to the concerned Regional Office to this Ministry.	<p>Stage - I clearance approval for diversion of forest land for non-forestry use has been received from MoEF &amp; CC on 22nd January 2016 vide letter F.No.8-89/2013-FC.</p> <p>Stage - II application is submitted to Deputy Conservator of Forest vide MMRDA letter 6-3-2017 and latest compliance submitted on 10-09-2018.</p> <p>Stage II Forest Clearance is under process, the earlier land allocated for CA was short by 11 Ha. Of land in Roha Forest Division in Tala Taluka has been identified and is in the process of handover. After the handover the Stage II Clearance will be finally processed by the Forest Department.</p>
viii.	<p>All the wildlife mitigation measures as proposed by BNHS in their report dated 23.09.2015 for original alignment shall be implemented with the following modification</p> <p>a) Construction of jetty on both the ends passing through mud flats and mangroves must not exceed 30 months and construction of actual spans must not exceed more that further 12 months.</p> <p>b) The distance between the supporting pillars shall remain 50 m as currently proposed by the MMRDA.</p> <p>c) MMRDA will partly bear the cost of setting of effluent treatment plant in the region as suggested by BNHS.</p>	<p>Noted and shall be complied</p> <p>Noted</p> <p>The distance between the piers is maintained more than 50 m.</p> <p>Noted and being complied</p>
ix.	The project proponent shall not undertake any blasting/construction activities during night hours.	This condition has been revised by MoEF&CC vide letter dated 28 <sup>th</sup> August 2017 having file no F. No. 11-65/2012-IA. III.





Sr.No.	GENERAL CONDITIONS	COMPLIANCE STATUS
1	Adequate provision for infrastructure facilities including water supply, fuel and sanitation must be ensured for construction workers during the construction phase of the project to avoid any damage to the environment.	Noted and is being complied.
2	Full support shall be extended to the officers of this Ministry/Regional Office at Nagpur by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	Noted and shall be complied.
3	A Six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Nagpur regarding the implementation of the stipulated conditions.	Noted and is being complied. List of Six-monthly compliance report uploaded are: <ol style="list-style-type: none"> <li>1. January to June 2016.</li> <li>2. July to December 2016.</li> <li>3. January to June 2017.</li> <li>4. July to December 2017.</li> <li>5. January to June 2018.</li> <li>6. July to December 2018.</li> <li>7. January to June 2019.</li> <li>8. July to December 2019</li> <li>9. January to June 2020</li> <li>10. July to December 2020</li> <li>11. January to June 2021</li> <li>12. July to December 2021</li> <li>13. January to June 2022</li> </ol>
4	MoEF&CC or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary, in the interest of environment and the same shall be complied with.	Noted and shall be complied
5	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with to the satisfaction of the Ministry.	Noted.
6	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the MoEF & CC.	Noted.
7	The project proponents shall inform to the Regional Office as well as the Ministry, the date of financial closure and final approval of the	Noted.



Sr.No.	GENERAL CONDITIONS	COMPLIANCE STATUS
	project by the concerned authorities and the date of start of land development work.	
8	A copy of the clearance letter shall be marked to concerned Panchayat/ local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal	Noted and complied
9	A copy of the CRZ Clearance letter shall also be displayed on the website of the concerned State Pollution Control Board. The Clearance letter shall also be displayed at the Regional Office, District Industries centre and Collector's Office/Tehsildar's Office for 30 days.	Noted and complied.
10	The above stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter.	Noted and will be complied.
11	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, and clearances under the Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Noted and are being complied.
12	The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment, Forest & Climate Change at. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the regional office of this Ministry at Nagpur.	Complied.



Sr.No.	GENERAL CONDITIONS	COMPLIANCE STATUS
13	This Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Noted.
14	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted.
15	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent on its website.	Stipulated environmental conditions as mentioned in CRZ are complied in six monthly compliance reports. Environmental Safeguards are incorporated in Environmental Management Plan which is being implemented as per the budgetary provisions mentioned in CRZ.  Reports & Publications: Half Yearly Report ( <a href="https://mmrda.maharashtra.gov.in">https://mmrda.maharashtra.gov.in</a> )
16	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Complied.
17	The proponent Shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	Noted. Six monthly reports on compliance & monitoring results of conditions stipulated in CRZ clearance is being submitted to MPCB Regional, sub regional office, Nagpur MPCB office, MCZMA & SEIAA.
18	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF & CC, the respective Zonal Office of CPCB	Noted. Six monthly reports on compliance & monitoring results of conditions stipulated in CRZ clearance is being submitted to MPCB Regional, sub regional office, Nagpur MPCB office, MCZMA & SEIAA.



Sr.No.	GENERAL CONDITIONS	COMPLIANCE STATUS
	and the SPCB.	
19	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF & CC by e-mail.	Noted.  Individual construction packages have obtained CTE for batching plant and casting yards and the stipulations are being adhered to and are uploaded on the website of MMRDA



## Annexures

Annexure No.	Particulars	Page No.
Annexure I	Permission copy of High court for Mangrove Cutting	
Annexure II	Item wise cost breakup of the Environmental Management Plan	
Annexure III	Photographic evidence of construction equipment used by contractors are provided with exhaust silencers to reduce noise	
Annexure IV	Muck analysis report from Package-I & II	
Annexure V	EMP Expenditure details	
Annexure VI	Quarterly Progress Reports 21 (April to June 22) & 22 (July to September 2022)	
Annexure VII	Actual expenditure incurred on the environmental management plans for (July to Dec 2022)	
Annexure VIII	Status report on Mangrove plantation	
Annexure IX	A-Permission letter for Tree cutting by CIDCO B-Permission letter for Tree cutting by CIDCO	
Annexure X	Clearance letter marked to concerned Panchayat /local NGO	
Annexure XI	EOT letters issue to Contractors up to Sept. 2023	
Annexure XII	MCZMA mom for granting CRZ Extension	





# Annexure I

1/2

NM/307/2016

BDPPS

**IN THE HIGH COURT OF JUDICATURE AT BOMBAY  
ORDINARY ORIGINAL CIVIL JURISDICITON  
NOTICE OF MOTION NO.307 OF 2016  
IN  
PUBLIC INTEREST LITIGATION NO.87 OF 2006**

Mumbai Metropolitan Region  
Development Authority

..... Applicant.

**In the matter between**

Bombay Environment Action Group  
and Another

.....Petitioners.

V/s

State of Maharashtra and Others.

.... Respondents.

---  
Mr. Saket Mone a/w Mr. Subit Chakrabarti i/b Vidhi Partners for  
applicant in Notice of Motion No. 307 of 2016 in PIL No.87 of 2016.

Mr. Navroz Seervai, Senior Counsel a/w Ms. Shreya Parikh for the  
Petitioner in PIL No.87 of 2006.

Mrs. P.H. Kantharia, AGP for Respondent/State in PIL No.87 of 2006.

Ms. Trupti Puranik for Respondent/BMC.

Ms. Sharmila Deshmukh for CRZ.

**CORAM: V. M. KANADE &  
MS. NUTAN D. SARDESSAI, JJ.**

**DATE: 28<sup>th</sup> November, 2016**



**P.C.:-**

1. This Notice of Motion is taken out by the Applicant for carrying out construction of the proposed Mumbai Trans Harbour Link (a proposed 22 km freeway grade road bridge connecting the island city of Mumbai with Navi Mumbai).
2. The learned Counsel appearing on behalf of the Applicant submits that Applicant has obtained clearance from all the concerned authorities. He submitted that Ministry of Environment and Forest, Government of India has granted approval on 22/01/2016 and CRZ clearance has been granted on 25/01/2016. Applicant has given an undertaking in paras 12 and 27 of the affidavit in support of the Notice of Motion. The said undertaking is accepted. Applicant shall comply with all the conditions which are imposed in the said letters of sanction granted by both the authorities.
3. We are satisfied that the said project is public utility project and we grant leave in terms of prayer clause (a) of the Notice of Motion subject to conditions imposed by both the authorities.
4. Notice of Motion is accordingly allowed in terms of prayer clause (a) and disposed of.

**(MS. NUTAN D. SARDESSAI, J.)****(V.M. KANADE, J.)**



## Annexure-II Environment Management Plan stipulated in CRZ clearance

Sr. No	Environmental attribute	Cost in Crores
1.	Environmental Monitoring- Air Act, Water Act, Noise levels	8
2.	Compensatory Restoration Plan (Mangroves)	25
3.	Implementation of the suggestions given by BNHS	25
4.	Noise barriers	45
5.	Mitigation of marine water pollution caused due to the surrounding industries and Sewage from Urban Bodies, by providing Funding and Capacity Building for Enabling Effluent Treatment	40
6.	<ul style="list-style-type: none"> <li>• Contribution to Mangroves Fund, an initiative by Govt. of Maharashtra for Conservation and Protection of Mangroves in Coastal areas by depositing Seed Money.</li> <li>• This can be used for Survey &amp; Demarcation of Notified areas</li> <li>• Purchase of vehicles and equipment for anti-Encroachment drives, etc.</li> </ul>	25
7.	Oil Spill Mitigation Plan	10
8.	Habitat quality assessment and monitoring Surveillance management and monitoring team for migratory birds, marine flora, turbidity in sea floor, etc Corpus fund for mudflat restoration program	20
9.	Appointment of Bird Monitor and his assistant till Restoration of Baseline data	4
10.	DMP, Firefighting, Risk Analysis	15
11.	Sustainable development including establishing Nature Interpretation Centre	10
12.	Safety and Security	15
13.	Energy conservation	10
14.	Landscaping-Plantation of trees, flower in plants etc.	8
15.	Compensation and Capacity Building of Fisher folks due to Temporary and Permanent Loss of Fishing round	75
		<b>335 crores</b>



# Annexure -III

Photographic evidences of construction equipment used by contractors are provided with exhaust silencers to reduce noise

Attachment III



Photographic evidences of construction equipment used by contractors are provided with exhaust silencers to reduce noise

Attachment III



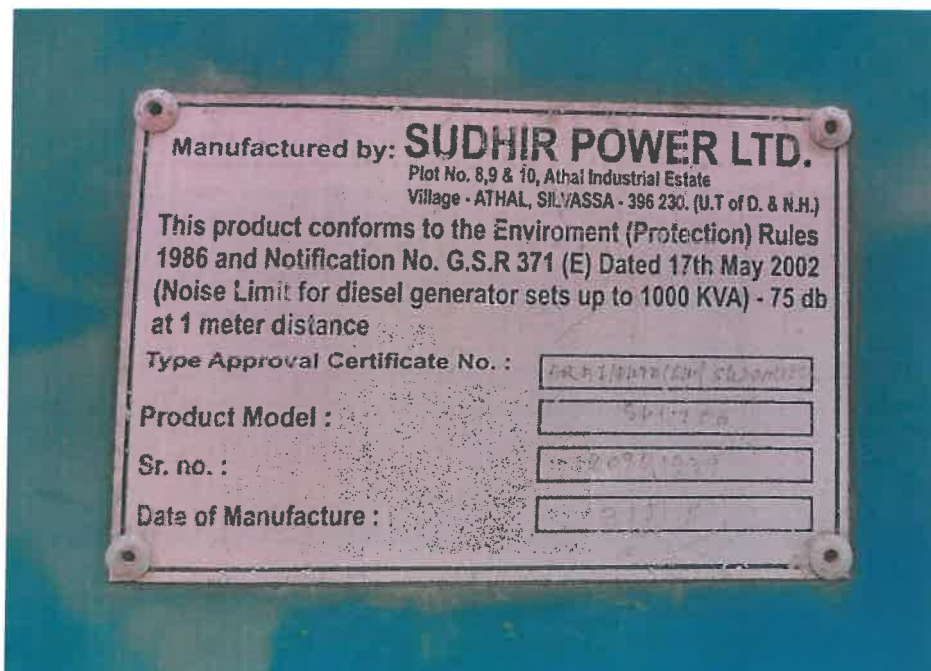
**Photographic evidences of construction equipment used by contractors are provided with exhaust silencers to reduce noise**

**Attachment III**



**Photographic evidences of construction equipment used by contractors are provided with exhaust silencers to reduce noise**

Attachment III



# Annexure IV



Netel (India) Limited

## TEST REPORT

<b>Name of Organization</b> : M/s. L & T Constructions				
<b>Customer Address</b> : Gate No. 1 Sewri Timber Pond, Near GadiAdda, Sewri(East), Mumbai.				
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022				
<b>MoEFCC Validity</b> : 16th Oct 2024				
<b>Discipline/Group</b> : Chemical- Pollution & Environment			<b>Test Report No.</b> : NIL/SO/08/22/001	
<b>Sample Type</b> : Muck			<b>Sample Code</b> : NIL/SO/08/22/001	
<b>Sampling Method</b> : NIL/Soil/SOP-11			<b>Ambient Temperature</b> : 25°C	
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022	
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 30.08.2022	
<b>Reporting Date</b> : 30.08.2022			<b>Sample Qty &amp; Pkng.</b> : 1 kg ,Plastic Zip Lock bag	
<b>Sampling Location</b> : C1P18 Muck Sample			<b>Sampling Done By</b> : Netel India Limited	
Sr. No	Parameter	Result	Unit	Method
<b>General Analyzed Parameters</b>				
1	Cadmium(Cd)	1.2	mg/kg	Lab SOP No:NIL/SOP/15 dt 01/07/14
2	Lead(Pb)	25.83	mg/kg	Lab SOP No:NIL/SOP/15 dt 01/07/14
3	Chromium (as Cr6+)	<0.25	mg/kg	APHA 3500-Cr-B
4	Arsenic (As)	<0.01	mg/kg	EPA 3050B & By FIAS
5	Total Mercury (Hg)	<0.01	mg/kg	EPA 3050B & By FIAS
6	Copper (Cu)	79.33	mg/kg	Lab SOP No:NIL/SOP/15 dt 01/07/14
7	Dichloromethane	<1	mg/kg	By GC-FID
8	Carbon Tetrachloride	<1	mg/kg	By GC-FID
9	Benzene	<1	mg/kg	APHA 6200-C
10	Selenium (Se)	<0.01	mg/kg	EPA 3050B & By FIAS

**Note :**

1. This Test Report shall not be reproduced except in full, without written approval of the Laboratory
2. This Test Report refers only to the sample tested.
3. Any correction in this certificate invalidates the certificate.
4. The testing results reported reflects the quality of sample at the time of testing.
5. The Complaint register is available with the Laboratory as per Environment Protection Act 1986.

\*\*\*End of Report\*\*\*

Verified by

Surekha Jamdar  
Technical Manager



Issued by

Shraddha Kere  
Quality Manager



Page 1 of 1



**TEST REPORT**

<b>Name of Organization</b> : M/s. L & T Constructions					
<b>Customer Address</b> : Gate No. 1 Sewri Timber Pond, Near GadiAdda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16th Oct 2024					
<b>Discipline/Group</b> : Chemical- Pollution & Environment			<b>Test Report No.</b> : NIL/SO/08/22/001		
<b>Sample Type</b> : Muck			<b>Sample Code</b> : NIL/SO/08/22/001		
<b>Sampling Method</b> : NIL/Soil/SOP-11			<b>Ambient Temperature</b> : 25°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 30.08.2022		
<b>Reporting Date</b> : 30.08.2022			<b>Sample Qty &amp; Pkng.</b> : 1 kg ,Plastic Zip Lock bag		
<b>Sampling Location</b> : C1P18 Muck Sample			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit (Schedule II)	Unit	Method
1	Cadmium (Cd)	<1	1.0	mg/lit	EPA Method 1311& by AAS
2	Lead (Pb)	0.11	5.0	mg/lit	EPA Method 1311& by AAS
3	Chromium (as Cr6+)	<0.25	5.0	mg/lit	EPA Method 1311& by AAS
4	Arsenic (As)	<0.01	5.0	mg/lit	EPA Method 1311& By FIAS
5	Total Mercury (Hg)	<0.01	0.2	mg/lit	EPA Method 1311& by FIAS
6	Copper (Cu)	0.08	25	mg/lit	EPA Method 1311& by AAS
7	Silver (Ag)	0.01	5.0	mg/lit	EPA Method 1311 &by AAS
8	Zinc (Zn)	0.29	250	mg/lit	EPA Method 1311 &by AAS
9	Selenium (Se)	<0.01	1.0	mg/lit	EPA Method 1311 &by FIAS
10	Antimony	<1	15	mg/lit	EPA Method 1311 &by AAS
11	Barium (as Ba)	<15	100	mg/lit	EPA Method 1311 &by AAS
12	Beryllium	<0.5	0.75	mg/lit	EPA Method 1311 &by AAS
13	Fluoride (F-)	26.6	180	mg/lit	EPA Method 1311 &by UV-VIS. Spectroscopy
14	Ammonium Compound	76.5	50	mg/lit	EPA Method 1311 &by UV-VIS. Spectroscopy





# Netel (India) Limited

<b>Sampling Location</b> : C1P18 Muck Sample			<b>Test Report No.</b> : NIL/SO/08/22/001		
<b>Sample Type</b> : Muck			<b>Sample Code</b> : NIL/SO/08/22/001		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 30.08.2022		
<b>Reporting Date</b> : 30.08.2022			<b>Sample Qty &amp; Pkng.</b> : 1 kg ,Plastic Zip Lock bag		
Sr. No	Parameter	Result	Limit (Schedule II)	Unit	Method
15	Dibromochloromethane	<1	10	mg/lit	EPA Method 1311 &By GC-FID
16	Chlorobenzene	<1	100	mg/lit	EPA Method 1311 &By GC-FID
17	Methyl Ethyl Ketone	<1	200	mg/lit	EPA Method 1311 &By GC-FID
18	Naphthanlene	<1	5.00	mg/lit	EPA Method 1311 & By HPLC
19	Benzo (a) Pyrene	<0.001	0.001	mg/lit	EPA Method 1311 & By HPLC
20	Aldrin	<0.01	0.14	mg/lit	EPA Method 1311 by GC-ECD
21	Dieldrin	<0.01	0.8	mg/lit	EPA Method 1311 by GC-ECD
22	Chlordane	<0.01	0.03	mg/lit	EPA Method 1311 by GC-ECD
23	Dichlorodiphenyltrichloroethane (DDT)	<0.01	0.1	mg/lit	EPA Method 1311 by GC-ECD
24	MethoxychlorDichlorodiphenyldichloroethylene(DDE)	<0.01	10	mg/lit	EPA Method 1311 by GC-ECD
25	Dichlorodiphenyldichloroethane(DD)	<0.01	0.1	mg/lit	EPA Method 1311 by GC-ECD
26	2,4-Dichlorophenoxyacetic Acid(2,4-D)	<0.01	10	mg/lit	EPA Method 1311 by GC-ECD
27	Endrin	<0.01	0.02	mg/lit	EPA Method 1311 by GC-ECD
28	Heptachlor	<0.001	0.008	mg/lit	EPA Method 1311 by GC-ECD
29	Lindane	<0.01	0.4	mg/lit	EPA Method 1311 by GC-ECD

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3. The complaint register is available with the Laboratory as per Environment Protection Act, 1986.
4. Lab SOP Based on manual o Soil testing in India , Ministry of Agriculture, GOI:2011

\*\*\*End of Report\*\*\*

Verified by

  
**Surekha Jamdar**  
 Technical Manager



Issued by

  
**Shraddha Kere**  
 Quality Manager



Page 2 of 2







# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16th October 2024			<b>QCI-NABL Validity</b> : 16th June 2024		
<b>Discipline/ Group</b> : Chemical-Water			<b>Test Report No.</b> : NIL/W/08/22/219		
<b>Sample Type</b> : Drinking Water			<b>Sample Code</b> : NIL/W/08/22/219		
<b>Sampling Method</b> : IS 3025 (P-1)			<b>Ambient Temperature</b> : 25°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Pre Cast yard Workers Rest D/W			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C	7.19	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	87	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	13.1	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	13.3	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	<5	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	2.6	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	36.5	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	48.9	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(Ni)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

**Note :**

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\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shradha Kere  
Quality Manager



Netelwala Group Company

Page 1 of 3  
CIN : U74999MH2003PLC142228

Office & Laboratory : W-408, Rabale MIDC, TTC Industrial Area, Navi Mumbai - 400 701.

Phone : 72080976 92 / 93 / 94 / 95 • Website : www.netel-india.com • E-mail : ems@netel-india.com

Registered office : Liberty Building, 3rd Floor, Sir Vithaldas Thackersey Marg, (New Marine Lines), Mumbai - 400 020.





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b>	: M/s.L & T Construction				
<b>Address</b>	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.				
<b>Customer Reference</b>	: EH401WOD8000155 Dated 21.04.2022				
<b>MoEFCC Validity</b>	: 16th October 2024				
<b>Discipline/ Group</b>	: Chemical-Water	<b>Test Report No.</b>	: NIL/W/08/22/219		
<b>Sample Type</b>	: Drinking Water	<b>Sample Code</b>	: NIL/W/08/22/219		
<b>Sampling Method</b>	: IS 3025 (P-1)	<b>Ambient Temperature</b>	: 25°C		
<b>Sampling Date</b>	: 24.08.2022	<b>Sample Receive Date</b>	: 24.08.2022		
<b>Analysis Start Date</b>	: 25.08.2022	<b>Analysis End Date</b>	: 02.09.2022		
<b>Reporting Date</b>	: 02.09.2022	<b>Sample Qty &amp; Pkng.</b>	: 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b>	: Pre Cast yard Workers Rest D/W	<b>Sampling Done By</b>	: Netel India Limited		

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	0.6	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Aitrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Diedrin	BDL	0.03	µg/l	APHA 6630-B
iv	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B





Sampling Location : Pre Cast yard Workers Rest D/W			Test Report No. : NIL/W/08/22/219		
			Sample Code : NIL/W/08/22/219		
Sampling Date : 24.08.2022			Sample Receive Date : 24.08.2022		
Analysis Start Date : 25.08.2022			Analysis Finish Date : 02.09.2022		
Reporting Date : 02.09.2022			Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle		
Sr. No	Parameter	Result	Limit	Unit	Method
v	Bitu-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyriphos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coll	Absent	Absent	-	IS 1622

Note :

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2. This Test Report refers only to the sample tested.
3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shradha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16th October 2024			<b>QCI-NABL Validity</b> : 16th June 2024		
<b>Discipline/ Group</b> : Chemical-Water			<b>Test Report No.</b> : NIL/W/08/22/220		
<b>Sample Type</b> : Drinking Water			<b>Sample Code</b> : NIL/W/08/22/220		
<b>Sampling Method</b> : IS 3025 (P-1)			<b>Ambient Temperature</b> : 25°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Staff Canteen D/W			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C	7.23	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	72	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	12.3	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	11.8	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	5.1	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	2.6	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	49.8	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	51.8	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(NI)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

**Note :**

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3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shradha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

Name of Organization	: M/s.L & T Construction		
Address	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.		
Customer Reference	: EH401WOD8000155 Dated 21.04.2022		
MoEFCC Validity	: 16th October 2024		
Discipline/ Group	: Chemical-Water	Test Report No.	: NIL/W/08/22/220
Sample Type	: Drinking Water	Sample Code	: NIL/W/08/22/220
Sampling Method	: IS 3025 (P-1)	Ambient Temperature	: 25°C
Sampling Date	: 24.08.2022	Sample Receive Date	: 24.08.2022
Analysis Start Date	: 25.08.2022	Analysis End Date	: 02.09.2022
Reporting Date	: 02.09.2022	Sample Qty & Pkng.	: 2 lit Plastic Can & Micro Bottle
Sampling Location	: Staff Canteen D/W	Sampling Done By	: Netel India Limited

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	0.5	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Altrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Dieldrin	BDL	0.03	µg/l	APHA 6630-B
iv	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B





Sampling Location : Staff Canteen D/W			Test Report No. : NIL/W/08/22/220		
Sampling Date : 24.08.2022			Sample Code : NIL/W/08/22/220		
Analysis Start Date : 25.08.2022			Sample Receive Date : 24.08.2022		
Reporting Date : 02.09.2022			Analysis Finish Date : 02.09.2022		
			Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle		
Sr. No	Parameter	Result	Limit	Unit	Method
v	Bitu-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyrifos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coli	Absent	Absent	-	IS 1622

**Note :**

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\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shradha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b> : M/s.L & T Construction	
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.	
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022	
<b>MoEFCC Validity</b> : 16th October 2024	<b>QCI-NABL Validity</b> : 16th June 2024
<b>Discipline/ Group</b> : Chemical-Water	<b>Test Report No.</b> : NIL/W/08/22/221
<b>Sample Type</b> : Drinking Water	<b>Sample Code</b> : NIL/W/08/22/221
<b>Sampling Method</b> : IS 3025 (P-1)	<b>Ambient Temperature</b> : 25°C
<b>Sampling Date</b> : 24.08.2022	<b>Sample Receive Date</b> : 24.08.2022
<b>Analysis Start Date</b> : 25.08.2022	<b>Analysis End Date</b> : 02.09.2022
<b>Reporting Date</b> : 02.09.2022	<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle
<b>Sampling Location</b> : Water Filtration Plant Sewari D/W	<b>Sampling Done By</b> : Netel India Limited

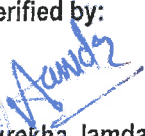
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C	6.48	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	65	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	<5	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	5.4	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	<5	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	<1.0	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	13	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	13.4	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(Ni)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

**Note :**

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\*\*\*End of Report\*\*\*

Verified by:

  
**Surekha Jamdar**  
 Technical Manager



Issued by:

  
**Shradha Kere**  
 Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b>	: M/s.L & T Construction		
<b>Address</b>	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.		
<b>Customer Reference</b>	: EH401WOD8000155 Dated 21.04.2022		
<b>MoEFCC Validity</b>	: 16th October 2024		
<b>Discipline/ Group</b>	: Chemical-Water	<b>Test Report No.</b>	: NIL/W/08/22/221
<b>Sample Type</b>	: Drinking Water	<b>Sample Code</b>	: NIL/W/08/22/221
<b>Sampling Method</b>	: IS 3025 (P-1)	<b>Ambient Temperature</b>	: 25°C
<b>Sampling Date</b>	: 24.08.2022	<b>Sample Receive Date</b>	: 24.08.2022
<b>Analysis Start Date</b>	: 25.08.2022	<b>Analysis End Date</b>	: 02.09.2022
<b>Reporting Date</b>	: 02.09.2022	<b>Sample Qty &amp; Pkng.</b>	: 2 lit Plastic Can & Micro Bottle
<b>Sampling Location</b>	: Water Filtration Plant Sewari D/W	<b>Sampling Done By</b>	: Netel India Limited

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	<0.1	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Altrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Dieldrin	BDL	0.03	µg/l	APHA 6630-B
iv	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B







Sampling Location : Water Filtration Plant Sewari D/W			Test Report No. : NIL/W/08/22/221		
Sampling Date : 24.08.2022			Sample Code : NIL/W/08/22/221		
Analysis Start Date : 25.08.2022			Sample Receive Date : 24.08.2022		
Reporting Date : 02.09.2022			Analysis Finish Date : 02.09.2022		
			Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle		
Sr. No	Parameter	Result	Limit	Unit	Method
v	Bitu-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyriphos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coli	Absent	Absent	-	IS 1622

**Note :**

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\*\*\*End of Report\*\*\*

Verified by:

*Surekha Jamdar*

Surekha Jamdar  
Technical Manager



Issued by:

*Shraddha Kere*

Shraddha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16th October 2024			<b>QCI-NABL Validity</b> : 16th June 2024		
<b>Discipline/ Group</b> : Chemical-Water			<b>Test Report No.</b> : NIL/W/08/22/222		
<b>Sample Type</b> : Drinking Water			<b>Sample Code</b> : NIL/W/08/22/222		
<b>Sampling Method</b> : IS 3025 (P-1)			<b>Ambient Temperature</b> : 25°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Drinking Water TAB			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C .	7.19	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	48	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	13.4	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	13.8	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	<5	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	2.9	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	46.2	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	51.8	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(NI)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

**Note :**

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3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shraddha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b>	: M/s.L & T Construction		
<b>Address</b>	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai		
<b>Customer Reference</b>	: EH401WOD8000155 Dated 21.04.2022		
<b>MoEFCC Validity</b>	: 16th October 2024		
<b>Discipline/ Group</b>	: Chemical-Water	<b>Test Report No.</b>	: NIL/W/08/22/222
<b>Sample Type</b>	: Drinking Water	<b>Sample Code</b>	: NIL/W/08/22/222
<b>Sampling Method</b>	: IS 3025 (P-1)	<b>Ambient Temperature</b>	: 25°C
<b>Sampling Date</b>	: 24.08.2022	<b>Sample Receive Date</b>	: 24.08.2022
<b>Analysis Start Date</b>	: 25.08.2022	<b>Analysis End Date</b>	: 02.09.2022
<b>Reporting Date</b>	: 02.09.2022	<b>Sample Qty &amp; Pkng.</b>	: 2 lit Plastic Can & Micro Bottle
<b>Sampling Location</b>	: Drinking Water TAB	<b>Sampling Done By</b>	: Netel India Limited

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	0.6	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Altrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Dieldrin	BDL	0.03	µg/l	APHA 6630-B
iv	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B





# Netel (India) Limited

Sampling Location : Drinking Water TAB			Test Report No. : NIL/W/08/22/222		
Sampling Date : 24.08.2022			Sample Code : NIL/W/08/22/222		
Analysis Start Date : 25.08.2022			Sample Receive Date : 24.08.2022		
Reporting Date : 02.09.2022			Analysis Finish Date : 02.09.2022		
Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle					
Sr. No	Parameter	Result	Limit	Unit	Method
v	Bitu-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyriphos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coli	Absent	Absent	-	IS 1622

**Note :**

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3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

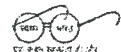
Verified by:

  
**Surekha Jamdar**  
 Technical Manager



Issued by:

  
**Shradha Kere**  
 Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16th October 2024			<b>QCI-NABL Validity</b> : 16th June 2024		
<b>Discipline/ Group</b> : Chemical-Water			<b>Test Report No.</b> : NIL/W/08/22/223		
<b>Sample Type</b> : Drinking Water			<b>Sample Code</b> : NIL/W/08/22/223		
<b>Sampling Method</b> : IS 3025 (P-1)			<b>Ambient Temperature</b> : 25°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Darukhana Labour Camp D/W			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C	7.83	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	65	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	16.1	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	11.3	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	<5	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	3.5	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	58.6	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	62.8	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(Ni)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

**Note :**

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Verified by:

Surekha Jamdar  
Technical Manager

\*\*\*End of Report\*\*\*



Issued by:

Shraddha Kere  
Quality Manager



Netelwala Group Company

Page 1 of 3  
CIN : U74999MH2003PLC142228

Office & Laboratory : W-408, Rabale MIDC, TTC Industrial Area, Navi Mumbai - 400 701.

Phone : 72080976 92 / 93 / 94 / 95 • Website : www.netel-india.com • E-mail : ems@netel-india.com

Registered office : Liberty Building, 3rd Floor, Sir Vithaldas Thackersey Marg, (New Marine Lines), Mumbai - 400 020.





# TEST REPORT

## Netel (India) Limited

<b>Name of Organization</b>	: M/s.L & T Construction		
<b>Address</b>	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.		
<b>Customer Reference</b>	: EH401WOD8000155 Dated 21.04.2022		
<b>MoEFCC Validity</b>	: 16th October 2024		
<b>Discipline/ Group</b>	: Chemical-Water	<b>Test Report No.</b>	: NIL/W/08/22/223
<b>Sample Type</b>	: Drinking Water	<b>Sample Code</b>	: NIL/W/08/22/223
<b>Sampling Method</b>	: IS 3025 (P-1)	<b>Ambient Temperature</b>	: 25°C
<b>Sampling Date</b>	: 24.08.2022	<b>Sample Receive Date</b>	: 24.08.2022
<b>Analysis Start Date</b>	: 25.08.2022	<b>Analysis End Date</b>	: 02.09.2022
<b>Reporting Date</b>	: 02.09.2022	<b>Sample Qty &amp; Pkng.</b>	: 2 lit Plastic Can & Micro Bottle
<b>Sampling Location</b>	: Darukhana Labour Camp D/W	<b>Sampling Done By</b>	: Netel India Limited

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	0.6	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Altrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Dieldrin	BDL	0.03	µg/l	APHA 6630-B
iv	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B





Sampling Location : Darukhana Labour Camp D/W			Test Report No. : NIL/W/08/22/223		
			Sample Code : NIL/W/08/22/223		
Sampling Date : 24.08.2022			Sample Receive Date : 24.08.2022		
Analysis Start Date : 25.08.2022			Analysis Finish Date : 02.09.2022		
Reporting Date : 02.09.2022			Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle		
Sr. No	Parameter	Result	Limit	Unit	Method
v	Bitu-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyrifos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coli	Absent	Absent	-	IS 1622

Note :

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3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shradha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16th October 2024			<b>QCI-NABL Validity</b> : 16th June 2024		
<b>Discipline/ Group</b> : Chemical-Water			<b>Test Report No.</b> : NIL/W/08/22/224		
<b>Sample Type</b> : Drinking Water			<b>Sample Code</b> : NIL/W/08/22/224		
<b>Sampling Method</b> : IS 3025 (P-1)			<b>Ambient Temperature</b> : 25°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Kuria Labour Camp D/W			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C	7.22	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	65	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	9.6	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	13.3	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	<5	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	2.1	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	39.4	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	41.5	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(NI)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

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\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shraddha Kere  
Quality Manager







# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b>	: M/s.L & T Construction		
<b>Address</b>	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.		
<b>Customer Reference</b>	: EH401WOD8000155 Dated 21.04.2022		
<b>MoEFCC Validity</b>	: 16th October 2024		
<b>Discipline/ Group</b>	: Chemical-Water	<b>Test Report No.</b>	: NIL/W/08/22/224
<b>Sample Type</b>	: Drinking Water	<b>Sample Code</b>	: NIL/W/08/22/224
<b>Sampling Method</b>	: IS 3025 (P-1)	<b>Ambient Temperature</b>	: 25°C
<b>Sampling Date</b>	: 24.08.2022	<b>Sample Receive Date</b>	: 24.08.2022
<b>Analysis Start Date</b>	: 25.08.2022	<b>Analysis End Date</b>	: 02.09.2022
<b>Reporting Date</b>	: 02.09.2022	<b>Sample Qty &amp; Pkng.</b>	: 2 lit Plastic Can & Micro Bottle
<b>Sampling Location</b>	: Kurla Labour Camp D/W	<b>Sampling Done By</b>	: Netel India Limited

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	<0.1	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Altrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Dieldrin	BDL	0.03	µg/l	APHA 6630-B
iv	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B





# Netel (India) Limited

Sampling Location : Kurla Labour Camp D/W			Test Report No. : NIL/W/08/22/224		
Sampling Date : 24.08.2022			Sample Code : NIL/W/08/22/224		
Analysis Start Date : 25.08.2022			Sample Receive Date : 24.08.2022		
Reporting Date : 02.09.2022			Analysis Finish Date : 02.09.2022		
Reporting Date : 02.09.2022			Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle		
Sr. No	Parameter	Result	Limit	Unit	Method
v	Bitu-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyrifos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coli	Absent	Absent	-	IS 1622

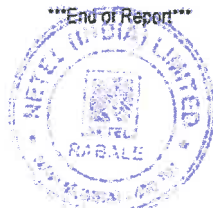
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\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shradha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

Name of Organization : M/s.L & T Construction					
Address : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
Customer Reference : EH401WOD8000155 Dated 21.04.2022					
MoEFCC Validity : 16th October 2024			QCI-NABL Validity : 16th June 2024		
Discipline/ Group : Chemical-Water			Test Report No. : NIL/W/08/22/225		
Sample Type : Drinking Water			Sample Code : NIL/W/08/22/225		
Sampling Method : IS 3025 (P-1)			Ambient Temperature : 25°C		
Sampling Date : 24.08.2022			Sample Receive Date : 24.08.2022		
Analysis Start Date : 25.08.2022			Analysis End Date : 02.09.2022		
Reporting Date : 02.09.2022			Sample Qty & Pkg. : 2 lit Plastic Can & Micro Bottle		
Sampling Location : Belapur Water Filtration Plant DW			Sampling Done By : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C	7.55	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	63	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	8.1	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	8.4	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	<5	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	2.5	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	34.4	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	29.8	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(Ni)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

**Note :**

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\*\*\*End of Report\*\*\*

Verified by:

  
 Surekha Jamdar  
 Technical Manager



Issued by:

  
 Shraddha Kere  
 Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b>	: M/s.L & T Construction		
<b>Address</b>	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.		
<b>Customer Reference</b>	: EH401WOD8000155 Dated 21.04.2022		
<b>MoEFCC Validity</b>	: 16th October 2024		
<b>Discipline/ Group</b>	: Chemical-Water	<b>Test Report No.</b>	: NIL/W/08/22/225
<b>Sample Type</b>	: Drinking Water	<b>Sample Code</b>	: NIL/W/08/22/225
<b>Sampling Method</b>	: IS 3025 (P-1)	<b>Ambient Temperature</b>	: 25°C
<b>Sampling Date</b>	: 24.08.2022	<b>Sample Receive Date</b>	: 24.08.2022
<b>Analysis Start Date</b>	: 25.08.2022	<b>Analysis End Date</b>	: 02.09.2022
<b>Reporting Date</b>	: 02.09.2022	<b>Sample Qty &amp; Pkng.</b>	: 2 lit Plastic Can & Micro Bottle
<b>Sampling Location</b>	: Belapur Water Filtration Plant DW	<b>Sampling Done By</b>	: Netel India Limited

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	<0.1	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Altrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Diedrin	BDL	0.03	µg/l	APHA 6630-B
iv	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B





Sampling Location : Belapur Water Filtration Plant D/W			Test Report No. : NIL/W/08/22/225		
Sampling Date : 24.08.2022			Sample Code : NIL/W/08/22/225		
Analysis Start Date : 25.08.2022			Sample Receive Date : 24.08.2022		
Reporting Date : 02.09.2022			Analysis Finish Date : 02.09.2022		
Reporting Date : 02.09.2022			Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle		
Sr. No	Parameter	Result	Limit	Unit	Method
v	Beta-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyrifos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coli	Absent	Absent	-	IS 1622

Note :

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\*\*\*End of Report\*\*\*

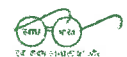
Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shradha Kere  
Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16th October 2024			<b>QCI-NABL Validity</b> : 16th June 2024		
<b>Discipline/ Group</b> : Chemical-Water			<b>Test Report No.</b> : NIL/W/08/22/226		
<b>Sample Type</b> : Drinking Water			<b>Sample Code</b> : NIL/W/08/22/226		
<b>Sampling Method</b> : IS 3025 (P-1)			<b>Ambient Temperature</b> : 25°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis End Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Turbhe Labour Camp D/W			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
1	pH @ 25 °C	7.68	6.5 - 8.5	-	IS 3025(Part 11)
2	Turbidity	<1.0	1	NTU	IS 3025(Part 10)
3	Total Dissolved Solids	56	500	mg/lit	IS 3025(Part 16)
<b>Chemical Parameter</b>					
4	Boron(B)	<0.4	0.5	mg/lit	IS 3025(Part 57)
5	Calcium(Ca)	44.6	75	mg/lit	IS 3025(Part 40)
6	Chloride(Cl)	27.6	250	mg/lit	IS 3025(Part 32)
7	Copper(Cu)	<0.04	0.05	mg/lit	APHA 3111-B,23rd AAS
8	Fluoride(F-)	<0.2	1	mg/lit	IS 3025(Part 60)
9	Iron(Fe)	<0.1	0.3	mg/lit	APHA 3111-B,23rd AAS
10	Magnesium(Mg)	<5	30	mg/lit	IS 3025 (Part 46)
11	Manganese(Mn)	<0.1	0.1	mg/lit	APHA 3111-B,23rd AAS
12	Nitrate(NO3-)	<0.5	45	mg/lit	IS 3025(Part 34)
13	Silver(Ag)	<0.05	0.1	mg/lit	APHA 3111-B,23rd AAS
14	Sulphate(SO4)	3.1	200	mg/lit	IS 3025(Part 24)
15	Total Alkalinity	194.3	200	mg/lit	IS 3025(Part 23)
16	Total Hardness	199.7	200	mg/lit	IS 3025(Part 21)
17	Zinc(Zn)	<0.2	5	mg/lit	APHA 3111-B,23rd AAS
<b>Toxic Substance</b>					
18	Nickel(Ni)	<0.01	0.02	mg/lit	APHA 3111-B,23rd AAS
19	Total Chromium(Cr)	<0.01	0.05	mg/lit	APHA 3111-B,23rd AAS

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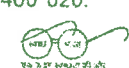
Verified by:

  
 Surekha Jamdar  
 Technical Manager



Issued by:

  
 Shradha Kere  
 Quality Manager





# TEST REPORT

Netel (India) Limited

<b>Name of Organization</b>	: M/s.L & T Construction		
<b>Address</b>	: Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.		
<b>Customer Reference</b>	: EH401WOD8000155 Dated 21.04.2022		
<b>MoEFCC Validity</b>	: 16th October 2024		
<b>Discipline/ Group</b>	: Chemical-Water	<b>Test Report No.</b>	: NIL/W/08/22/226
<b>Sample Type</b>	: Drinking Water	<b>Sample Code</b>	: NIL/W/08/22/226
<b>Sampling Method</b>	: IS 3025 (P-1)	<b>Ambient Temperature</b>	: 25°C
<b>Sampling Date</b>	: 24.08.2022	<b>Sample Receive Date</b>	: 24.08.2022
<b>Analysis Start Date</b>	: 25.08.2022	<b>Analysis End Date</b>	: 02.09.2022
<b>Reporting Date</b>	: 02.09.2022	<b>Sample Qty &amp; Pkng.</b>	: 2 lit Plastic Can & Micro Bottle
<b>Sampling Location</b>	: Turbhe Labour Camp D/W	<b>Sampling Done By</b>	: Netel India Limited

Sr. No	Parameter	Result	Limit	Unit	Method
<b>Physical Parameter</b>					
20	Colour	<5	5	Hazen	IS 3025 (Part 4)
21	Odour	Agreeable	---	-	IS 3025(Part 5)
22	Taste	Agreeable	---	-	IS 3025(Part 7 & 8)
<b>Chemical Parameter</b>					
23	Aluminium	<0.03	0.03	mg/lit	IS 3025 (Part 55)
24	Ammonia	<0.4	0.5	mg/lit	IS 3025 (Part 34)
25	Anionic Detergents	<0.2	0.2	mg/lit	IS 13428 (Annex K)
26	Barium	<0.1	0.7	mg/lit	IS 13428 (Annex F)
27	Chloramines	<4	4	mg/lit	IS 3025 (Part 26)
28	Residual Free Chlorine	<0.1	0.2	mg/lit	IS 3025 (Part 26)
29	Mineral Oil	<0.5	0.5	mg/lit	IS 3025 (Part 39, Clause 6)
30	Phenolic Compounds	<0.001	0.001	mg/lit	IS 3025 (Part 43)
31	Selenium	<0.01	0.01	mg/lit	IS 3025 (Part 56)
32	Sulphide	<0.02	0.05	mg/lit	IS 3025 (Part 29)
33	Total Suspended Solids	<5	-	mg/lit	IS 3025 (Part 17)
<b>Toxic Substance</b>					
34	Cadmium	<0.003	0.003	mg/lit	APHA 3111-B,23rd AAS
35	Cyanide (CN-)	<0.05	0.05	mg/lit	APHA 3111-B,23rd AAS
36	Lead	<0.01	0.01	mg/lit	APHA 3111-B,23rd AAS
37	Mercury	<0.001	0.001	mg/lit	APHA 3111-B,23rd AAS
38	Molybdenum	<0.05	0.07	mg/lit	IS 3025 (Part 2)
39	Arsenic	<0.001	0.01	mg/lit	IS 3025 (Part 37)
40	Polyaromatic Hydrocarbon	<0.0001	0.0001	mg/lit	APHA 6440-B
41	Polychlorinated biphenyls	<0.0005	0.0005	mg/lit	APHA 6131- B
42	Trihalomethanes	<0.05	0.2	mg/lit	APHA 6232
43	Pesticides				
i	Alachlor	BDL	20	µg/l	APHA 6630-B
ii	Altrazine	BDL	2	µg/l	APHA 6630-B
iii	Aldrin/Diedrin	BDL	0.03	µg/l	APHA 6630-B
	Alpha-HCH	BDL	0.01	µg/l	APHA 6630-B





Sampling Location : Turbhe Labour Camp D/W			Test Report No. : NIL/W/08/22/226		
Sampling Date : 24.08.2022			Sample Code : NIL/W/08/22/226		
Analysis Start Date : 25.08.2022			Sample Receive Date : 24.08.2022		
Reporting Date : 02.09.2022			Analysis Finish Date : 02.09.2022		
			Sample Qty & Pkng. : 2 lit Plastic Can & Micro Bottle		
Sr. No	Parameter	Result	Limit	Unit	Method
v	Bitu-HCH	BDL	0.04	µg/l	APHA 6630-B
vi	Butachlor	BDL	125	µg/l	APHA 6630-B
vii	Chlorpyrifos	BDL	30	µg/l	APHA 6630-B
viii	Delta-HCH	BDL	0.04	µg/l	APHA 6630-B
viii	Gamma-HCH	BDL	2	µg/l	APHA 6630-B
ix	2,4-Dichlorophenoxyacetic Acid	BDL	30	µg/l	APHA 6630-B
x	DDT	BDL	1	µg/l	APHA 6630-B
xi	Endosulfan	BDL	0.4	µg/l	APHA 6630-B
xii	Ethion	BDL	3	µg/l	APHA 6630-B
xiii	Isoproturon	BDL	9	µg/l	APHA 6630-B
xiv	Malathion	BDL	190	µg/l	APHA 6630-B
xv	Methyl parathion	BDL	0.3	µg/l	APHA 6630-B
xvi	Monocrotophos	BDL	1	µg/l	APHA 6630-B
xvii	Phorate	BDL	2	µg/l	APHA 6630-B
<b>Bacteriological Parameter</b>					
44	Total Coliform	<1.8	0	MPN/100ml	IS 1622
45	E Coli	Absent	Absent	-	IS 1622

Note :

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\*\*\*End of Report\*\*\*

Verified by:

*Ajunda*  
Surekha Jamdar  
Technical Manager



Issued by:

*S. Kere*  
Shraddha Kere  
Quality Manager







**TEST REPORT**

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024			<b>QCI-NABL Validity</b> : 16 June 2024		
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/227		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/227		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Pre Cast Yard Bio Toilet No 36			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter		Limit	Unit	Method
1	pH @ 25°C	7.36	5.5 - 9.0	--	APHA 4500-H ,23rd Ed :2017
2	Turbidity	197	-	NTU	APHA 2130-B,23ed
3	Total suspended Solids	292	600	mg/lit	IS 3025(Part 17):1984
4	Total Dissolved Solids	2554	-	mg/lit	APHA 2350-C 23rd
5	Sulphate(SO4)	38.3	-	mg/lit	APHA 4500-Cl-B 23rd
6	Nitrate(NO3-)	<0.5	0.5	mg/lit	APHA 4500-NO3-B 23rd
7	Biochemical Oxygen Demand(BOD) 3 days 27°C	290	350	mg/lit	IS 3025(Part 44):1993
8	Chemical Oxygen Demand(COD)	785	-	mg/lit	APHA 5220-B 23rd Ed
9	Phosphate	101.2	-	mg/lit	APHA 4500-P© 23rd Ed
10	Oil & Grease	32	20	mg/lit	APHA 5520-B,23rd Ed

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\*\*\*End of Report\*\*\*

Verified by:

  
Surekha Jamdar  
Technical Manager



Issued by:

  
Shraddha Kere  
Quality Manager





### TEST REPORT

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024					
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/227		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/227		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Pre Cast Yard Bio Toilet No 36			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
11	Dissolved Oxygen	4.7	-	mg/lit	APHA 2150(O)-B
12	E Coli	Present	Absent	-	IS 1622:181
13	Total Bacterial Count Count	18 x 10 <sup>4</sup>	-	cfu	IS 1622:181

**Note :**

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\*\*\*End of Report\*\*\*

Verified by:

  
Surekha Jamdar  
Technical Manager



Issued by:

  
Shradha Kere  
Quality Manager





**TEST REPORT**

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024			<b>QCI-NABL Validity</b> : 16 June 2024		
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/228		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/228		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Store Office			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
1	pH @ 25°C	7.46	5.5 - 9.0	--	APHA 4500-H ,23rd Ed :2017
2	Turbidity	211.3	-	NTU	APHA 2130-B,23ed
3	Total suspended Solids	380	600	mg/lit	IS 3025(Part 17):1984
4	Total Dissolved Solids	2488	-	mg/lit	APHA 2350-C 23rd
5	Sulphate(SO4)	29.1	-	mg/lit	APHA 4500-CI-B 23rd
6	Nitrate(NO3-)	<0.5	0.5	mg/lit	APHA 4500-NO3-B 23rd
7	Biochemical Oxygen Demand(BOD) 3 days 27°C	330	350	mg/lit	IS 3025(Part 44):1993
8	Chemical Oxygen Demand(COD)	1012	-	mg/lit	APHA 5220-B 23rd Ed
9	Phosphate	89.4	-	mg/lit	APHA 4500-PO 23rd Ed
10	Oil & Grease	21	20	mg/lit	APHA 5520-B,23rd Ed

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Verified by:

Surekha Jamdar  
Technical Manager

\*\*\*End of Report\*\*\*

Issued by:

Shraddha Kere  
Quality Manager





Netel (India) Limited

## TEST REPORT

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024					
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/228		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/228		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : Store Office			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
11	Dissolved Oxygen	4.5	-	mg/lit	APHA 2150(O)-B
12	E Coli	Present	Absent	-	IS 1622:181
13	Total Bacterial Count Count	12 x 10 <sup>3</sup>	-	cfu	IS 1622:181

**Note :**

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\*\*\*End of Report\*\*\*

Verified by:

  
Surekha Jamdar  
Technical Manager



Issued by:

  
Shradha Kere  
Quality Manager



Page 2 of 2



**TEST REPORT**

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024			<b>QCI-NABL Validity</b> : 16 June 2024		
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/229		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/229		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : MP-20 Bio Toilet			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
1	pH @ 25°C	6.96	5.5 - 9.0	-	APHA 4500-H ,23rd Ed :2017
2	Turbidity	89.5	-	NTU	APHA 2130-B,23ed
3	Total suspended Solids	140	600	mg/lit	IS 3025(Part 17):1984
4	Total Dissolved Solids	1645	-	mg/lit	APHA 2350-C 23rd
5	Sulphate(SO4)	36.9	-	mg/lit	APHA 4500-CI-B 23rd
6	Nitrate(NO3-)	<0.5	0.5	mg/lit	APHA 4500-NO3-B 23rd
7	Biochemical Oxygen Demand(BOD) 3 days 27°C	215	350	mg/lit	IS 3025(Part 44):1993
8	Chemical Oxygen Demand(COD)	575	-	mg/lit	APHA 5220-B 23rd Ed
9	Phosphate	152.9	-	mg/lit	APHA 4500-PO 23rd Ed
10	Oil & Grease	28	20	mg/lit	APHA 5520-B,23rd Ed

**Note :**

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3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

Verified by:

*Surekha Jamdar*  
**Surekha Jamdar**  
 Technical Manager



Issued by:

*Shraddha Kere*  
**Shraddha Kere**  
 Quality Manager





### TEST REPORT

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024					
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/229		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/229		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : MP-20 Bio Toilet			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
11	Dissolved Oxygen	5.7	-	mg/lit	APHA 2150(O)-B
12	E Coli	Present	Absent	-	IS 1622:181
13	Total Bacterial Count Count	26 x 10 <sup>4</sup>	-	cfu	IS 1622:181

**Note :**

1. This Test Report shall not be reproduced except in full, without written approval of the Laboratory.
2. This Test Report refers only to the sample tested.
3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

Verified by:

*Surekha Jamdar*  
**Surekha Jamdar**  
 Technical Manager



Issued by:

*Shraddha Kere*  
**Shraddha Kere**  
 Quality Manager





Netel (India) Limited

## TEST REPORT


<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024			<b>QCI-NABL Validity</b> : 16 June 2024		
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/230		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/230		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : MP-36 Bio Toilet			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
1	pH @ 25°C	6.92	5.5 - 9.0	--	APHA 4500-H ,23rd Ed :2017
2	Turbidity	76.8	-	NTU	APHA 2130-B,23ed
3	Total suspended Solids	80	600	mg/lit	IS 3025(Part 17):1984
4	Total Dissolved Solids	1672	-	mg/lit	APHA 2350-C 23rd
5	Sulphate(SO4)	44.7	-	mg/lit	APHA 4500-CI-B 23rd
6	Nitrate(NO3-)	<0.5	0.5	mg/lit	APHA 4500-NO3-B 23rd
7	Biochemical Oxygen Demand(BOD) 3 days 27°C	105	350	mg/lit	IS 3025(Part 44):1993
8	Chemical Oxygen Demand(COD)	312	-	mg/lit	APHA 5220-B 23rd Ed
9	Phosphate	150.6	-	mg/lit	APHA 4500-PO 23rd Ed
10	Oil & Grease	24	20	mg/lit	APHA 5520-B,23rd Ed

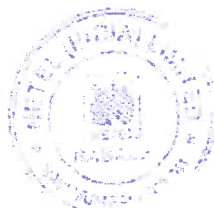
**Note :**

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2. This Test Report refers only to the sample tested.
3. The Complaint register is available with the laboratory as per Environment protection act 1986.


\*\*\*End of Report\*\*\*

Verified by:

  
Surekha Jamdar  
Technical Manager



Issued by:

  
Shraddha Kere  
Quality Manager

Page 1 of 2



# DAEWOO-TPL JV

C/O TATA Projects Limited, 11th Floor, Hiranandani Knowledge Park, Technology Street, Powai, Mumbai-400 076, India

Ref: MTHL/DW-TPL/GC/LT/ENV/2022-4272

Date: 12 Oct 2022

To, : The Engineer  
General Consultant for MTHL Project  
6th Floor, A Wing, MMRDA Old Building, Bandra-Kurla Complex  
Bandra (E), Mumbai 400 051

Kind Attn. : Dr. Sham, Siu hung Robin

Project : Procurement of Mumbai Trans Harbour Link Project (Package 2) Construction of  
7.807km long bridge section (CH 10+380-CH 18+187) across Mumbai Bay including  
Shivaji Nagar Interchange

Subject : Submission of Quarterly Environmental Monitoring Reports (July 2022 to  
September 2022)

Ref. : 1. Contract Agreement no. MMRDA/ENG1/00753 dated 19-01-2018

Dear Sir,

The Contractor is submitting herewith Quarterly Environmental Monitoring Reports for the period July 2022 to September 2022.

This is for your information & records.

Yours truly,  
For Daewoo-TPL JV



Tae-il KIM / Project Director

Encl: Quarterly Environmental Monitoring Reports for the period July 2022 to September 2022

- CC: 1) Mr. S. A. Wandhekar, Engineer-In-Chief, MMRDA  
2) Mr. Yatin Sakhalkar, Superintendent Engineer, MMRDA  
3) Mr. Abhijit Bhisikar, Executive Engineer, MMRDA  
4) Mr. Hohsing Lee, PE, SE, Resident Engineer, General Consultant (MTHL)







UL-2000

ISO 9001:2015  
 ISO 45001:2018

Lab.: Survey No. 43/A, Conformity Hissa No. 2 G V Brothers Bldg., Bala Compound, Khepat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India  
 Tele: +91 22 2547 49 07 / +91 22 2547 62 17 Email: lab@ultratech.in Visit us at: www.ultratech.in

## TEST REPORT

**ISSUED TO: DAEWOO-TATA PROJECTS LIMITED- JV**  
 3<sup>rd</sup> Floor, Transocean House, Lake Boulevard Road, Hiranadani Gardens,  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
**For Your Project: "MTHL Package 2 Project"**

**REPORT NO. :** UT/ELS/REPORT/5455/10-2022  
**ISSUE DATE :** 06/10/2022  
**YOUR REF. :** 83000164-A6  
**REF. DATE :** 27/01/2022

**SAMPLE PARTICULARS :** **AMBIENT NOISE LEVEL MONITORING**

**Sampling Plan Ref. No. :** 23-09/2022 **Sample Lab Code :** UT/ELS/337/09-2022  
**Sampling Procedure :** UT/LQMS/SOP/N01 **Survey Done By :** ULTRA TECH  
**Date of Monitoring :** 20/09/2022 to 21/09/2022

Sr. No.	Location	Noise Level Reading in dB(A) Leq									
		Time (Hrs)	Day dB(A)			Time (Hrs)	Night dB(A)				
			Leq	Lmax	Lmin		Leq	Lmax	Lmin		
01.	At Nhava Temporary Bridge MP-21B Co-ordinates 18°56'38.8"N, 72°54'43.3"E	06:00 to 07:00	66.4	59.1	74.0	22:00 to 23:00	66.9	59.7	70.9		
		07:00 to 08:00	70.6	59.1	83.1	23:00 to 00:00	65.5	57.8	74.3		
		08:00 to 09:00	68.2	59.6	70.5	00:00 to 01:00	64.1	55.1	72.7		
		09:00 to 10:00	67.6	59.5	77.7	01:00 to 02:00	61.5	52.2	72.1		
		10:00 to 11:00	68.9	59.5	77.5	02:00 to 03:00	59.3	49.6	69.0		
		11:00 to 12:00	70.1	61.2	79.6	03:00 to 04:00	62.9	46.7	76.2		
		12:00 to 13:00	70.4	63.1	79.8	04:00 to 05:00	62.7	50.2	74.2		
		13:00 to 14:00	73.4	67.4	82.6	05:00 to 06:00	64.1	54.1	73.6		
		14:00 to 15:00	72.7	65.0	82.5	--	--	--	--		
		15:00 to 16:00	72.4	61.6	83.1	--	--	--	--		
		16:00 to 17:00	72.4	61.6	83.6	--	--	--	--		
		17:00 to 18:00	72.2	59.1	81.8	--	--	--	--		
		18:00 to 19:00	70.2	58.5	78.7	--	--	--	--		
		19:00 to 20:00	76.6	68.0	80.5	--	--	--	--		
		20:00 to 21:00	68.3	59.9	77.1	--	--	--	--		
		21:00 to 22:00	66.0	54.7	74.2	--	--	--	--		
			<b>L<sub>10</sub></b>	<b>73.0</b>			Limits in dB(A) Leq as per <b>THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000</b> (See rule 3(1) and 4(1) Ambient Air Quality Standards in respect of Noise)				
	<b>L<sub>50</sub></b>	<b>65.4</b>									
	<b>L<sub>90</sub></b>	<b>62.0</b>									
	<b>Day Leq</b>	<b>71.3</b>			<b>75</b>						
	<b>Night Leq</b>	<b>63.9</b>			<b>70</b>						

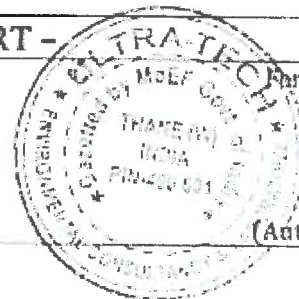
**Remark/ Statement of Conformity:** The observed values for LeqdB(A) for Day Time & Night Time are within the standard limits as per Ambient Air Quality Standards in respect of Noise prescribed in The Noise Pollution (Regulation and Control) Rules, 2000 for Industrial Zone

**Note:**  
 1. Monitoring area coming under Industrial Zone  
 2. Day Time - 06:00 Hrs to 22:00 Hrs and Night Time - 23:00 Hrs to 06:00 Hrs

Sampling Equipment Details	Instrument Used	Make & Model	Calibration Status
	Sound Level Meter	Make - EUTON; Model - SL4033SD Sr. No. Q640350	Valid up to - 13/10/2022

**Note:**  
 1. This test report refers only to the monitoring conducted  
 2. This test report may not be reproduced in part, without the permission of this laboratory.  
 3. Any correction invalidates this test report.

**- END OF REPORT -**



For ULTRA TECH,  
 Meghan Patil  
 (Authorized Signatory)

## Environmental Consultancy & Laboratory

Lab. Gazetted by MoEF&CC-Govt. of India

Lab. Accredited by NABL - ISO/IEC 17025:2017 (FC-5600, Valid until 03.08.2024 in the field of Testing)

QC/NABET Accredited EIA Consulting Organization

STP/ETP/WTP Project Management Consultants

ISO 9001:2015

ISO 45001:2018

Lab.: Survey No. 93/A, Conformity Hissa No. 2 G.V. Brothers Bldg., Bata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India  
 Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

### TEST REPORT

**ISSUED TO:** M/s. DAEWOO-TATA PROJECTS LIMITED- JV  
 3rd Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens,  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
**For Project:** "MTHL Package 2 Project"

**ULR NO. :** --  
**REPORT NO. :** UT/ELS/REPORT/ 5392/10-2022  
**ISSUE DATE :** 01/10/2022  
**YOUR REF. :** 83000164-A6  
**REF. DATE :** 27/01/2022

<b>SAMPLE PARTICULARS</b> Sampling Plan Ref. No.: 23-09/2022 Sampling Procedure : UT/LQMS/SOP/AA01A Date & Time of Sampling : 20/09/2022 14:30 Hrs. to 21/09/2022 14:30 Hrs. Sample Registration Date : 21/09/2022 Analysis Starting Date : 21/09/2022 Analysis Completion Date : 30/09/2022 Ambient Air Temperature : 24.4 °C to 27.3 °C Relative Humidity : 69.5 % to 86.5 %	<b>AMBIENT AIR QUALITY MONITORING</b> Location Code : AM2 Sample Location : At Casting Yard Between Batching Plant No. 1 & 2 (Fortnightly 149 of 212) GPS Co-ordinates : N 18°57'57.7", E 73°00'39.7" Sample Collected By : ULTRA TECH Height of Sampler : 1 Meter Sampling Duration : 24-00 Hours:Minutes Sample Lab Code : UT/ELS/336/09-2022
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Sr. No.	Test Parameter	Test Method	Test Result	Unit	NAAQMS Industrial, Residential, Rural and Other Area 24 Hrs. or 1 Hr**
1	Total VOCs (as BTX)	IS 5162 (Part 11) : 2006	2.7	µg/m <sup>3</sup>	--

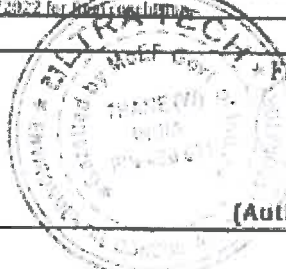

f: Sampling Period 1 Hr.

Remark/Statement of Conformity: Nil

Sampling Equipment Details	Instrument Used	Lab ID	Make	Model	Sl. No.	Calibration Valid up to
	Low Flow Air Sampler	UT/LAB/189	Polltech	PEM - LFAS 4	116	10/01/2023

- Note:**
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/AA01A) based on CPCB Guideline - National Ambient Air Quality Monitoring Series: NAAQMS/2009-04 and respective test methods.
  2. This test report refers only to the sample tested.
  3. Monitoring area coming under industrial areas and observed values are relevant to sample collected only.
  4. This test report may not be reproduced in part, without the permission of this laboratory.
  5. Any correction invalidates this test report.
  6. Weather during sampling was: Rainy and Cloudy.
  7. \*Annual arithmetic mean of minimum 114 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.
  8. \*\*Time weighted average shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not for consecutive monitoring.
  9. This test report shall be referred along with Test Report No. UT/ELS/REPORT/5392/10-2022 Dated 01/10/2022 for final conclusion.

- END OF REPORT -


 For ULTRA TECH,  
  
**Meghan Patil**  
 (Authorized Signatory)





TC-5600

ISO 9001: 2015  
 ISO 45001: 2018

Lab : Survey No. 93/A, Conformity Hissa No 2 G V Brothers Bldg., Sata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India  
 Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

### TEST REPORT

**ISSUED TO:** M/s. DAEWOO-TATA PROJECTS LIMITED- JV  
 3rd Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens,  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
**For Project:** "MTHL Package 2 Project"

**ULR NO. :** ULR-TC560022000003297F  
**REPORT NO. :** UT/ELS/REPORT/ 5457/10-2022  
**ISSUE DATE :** 06/10/2022  
**YOUR REF. :** 83000164-A6  
**REF. DATE :** 27/01/2022

<b>SAMPLE PARTICULARS :</b>	<b>AMBIENT AIR QUALITY MONITORING</b>
Sampling Plan Ref. No. : 23-09/2022	Location Code : AM2
Sampling Procedure : UT/LQMS/SOP/AA01A	Sample Location : At Casting Yard Between Batching Plant No. 1 & 2 (Fortnightly 15l of 212)
Date & Time of Sampling : 21/09/2022 14:45 Hrs. to 22/09/2022 14:45 Hrs.	GPS Co-ordinates : N 18°57'57.7", E 73°00'39.7"
Sample Registration Date : 22/09/2022	Sample Collected By : ULTRA TECH
Analysis Starting Date : 22/09/2022	Height of Sampler : 1 Meter
Analysis Completion Date : 29/09/2022	Sampling Duration : 24:00 Hours:Minutes
Ambient Air Temperature : 26.9 °C to 30.1 °C	Sample Lab Code : UT/ELS/382/09-2022
Relative Humidity : 72.6 % to 88.6 %	

Sr. No.	Test Parameter	Test Method	Test Result	Unit	NAAQMS Industrial, Residential, Rural and Other Area 24 Hrs. or 1 Hr**
1	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2) : 2001	BDL [DL=5]	µg/m <sup>3</sup>	80
2	Nitrogen Dioxide (NO <sub>2</sub> )	IS 5182 (Part 6) : 2006	27	µg/m <sup>3</sup>	80
3	Particulate Matter (PM <sub>10</sub> )	EPA/625/R-96/D101 CM 10-2.1	90	µg/m <sup>3</sup>	100
4	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (Part 24) : 2019	33	µg/m <sup>3</sup>	60
5	Ozone (O <sub>3</sub> )	IS 5182 (Part 9) : 1974	BDL [DL=20]	µg/m <sup>3</sup>	180
6	Lead (Pb)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	0.07	µg/m <sup>3</sup>	1.0
7	Carbon Monoxide (CO)	IS 5182 (Part 10) : 1999	1.3	mg/m <sup>3</sup>	4
8	Ammonia (NH <sub>3</sub> )	ISC 16th Ed. Method 401	54	µg/m <sup>3</sup>	400
9	Benzene (C <sub>6</sub> H <sub>6</sub> )	IS 5182 (Part 11) : 2006	2.9	µg/m <sup>3</sup>	5*
10	Benzo(a)Pyrene (BaP) - Particulate Phase	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL [DL=0.5]	ng/m <sup>3</sup>	1*
11	Arsenic (As)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL [DL=2]	ng/m <sup>3</sup>	6*
12	Nickel (Ni)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL [DL=7]	ng/m <sup>3</sup>	20*

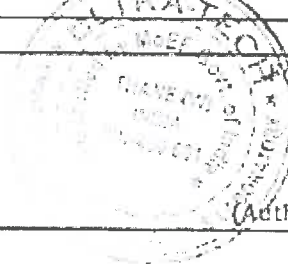
Sampling Period 1 Hr. BDL: Below Detection Limit DL= Detection Limit

**Remark/ Statement of Conformity:** The parameters tested above are found to be within 24 hourly TWA of National Ambient Air Quality Monitoring Standard (NAAQMS), Part III- Section IV

Sampling Equipment Details	Instrument Used	Lab ID	Make	Model	Sl. No.	Calibration Valid up to
	Respirable Dust Sampler	UT/LAB/190	Poltech	PDM-RD59	910	20/12/2022
	Fine Dust Sampler	UT/LAB/217	Poltech	PDM-ADS 2.5/10µ	3228	17/02/2023

- Note:**
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/AA01A) based on CPCB Guidelines - National Ambient Air Quality Monitoring Series: NAAQMS/2003-04 and respective test methods.
  2. This test report refers only to the sample tested.
  3. Monitoring area coming under Industrial areas and observed values are relevant to sample collected only.
  4. This test report may not be reproduced in part, without the permission of this laboratory.
  5. Any correction invalidates this test report.
  6. Weather during sampling was: Rainy and Cloudy.
  7. \*Annual arithmetic mean of maximum 104 measurements in a year at a particular site taken twice a week 24 hourly at an equal intervals.
  8. \*\*Time weighted average shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on any consecutive monitoring days.

**- END OF REPORT -**



For ULTRA TECH,  
 \_\_\_\_\_  
 Meghan Patil  
 (Authorized Signatory)



Lab. Survey No. 93/A, Conformity Hissa No. 2 G V Brothers Bldg., Bata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601 Maharashtra, India  
 Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

### TEST REPORT

**ISSUED TO:** M/s. DAEWOO-TATA PROJECTS LIMITED- JV  
 3rd Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens,  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
**For Project:** "MTHL Package 2 Project"

**ULR NO. :** ULR-TC560022000003248F  
**REPORT NO. :** UT/ELS/REPORT/ 5389/10-2022  
**ISSUE DATE :** 01/10/2022  
**YOUR REF. :** B3000164-A6  
**REF. DATE :** 27/01/2022

SAMPLE PARTICULARS		AMBIENT AIR QUALITY MONITORING	
Sampling Plan Ref. No.:	: 23-09/2022	Location Code	: AM3
Sampling Procedure	: UT/LQMS/SOP/AA01A	Sample Location	: NHAVA Temporary Bridge Nr. MP-218 (Fortnightly 150 of 212)
Date & Time of Sampling	: 20/09/2022 14:00 Hrs. to 21/09/2022 14:00 Hrs.	GPS Co-ordinates	: N 18°58'38.6", E 72°59'42.8"
Sample Registration Date	: 21/09/2022	Sample Collected By	: ULTRA TECH
Analysis Starting Date	: 21/09/2022	Height of Sampler	: 1 Meter
Analysis Completion Date	: 30/09/2022	Sampling Duration	: 24:00 Hours:Minutes
Ambient Air Temperature	: 24.3 °C to 27.2 °C	Sample Lab Code	: UT/ELS/335/09-2022
Relative Humidity	: 69.4 % to 86.4 %		

Sr. No.	Test Parameter	Test Method	Test Result	Unit	NAAQMS Industrial, Residential, Rural and Other Area 24 Hrs. or 1 Hr**
1	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2) : 2001	BDL[DL=5]	µg/m <sup>3</sup>	80
2	Nitrogen Dioxide (NO <sub>2</sub> )	IS 5182 (Part 6) : 2006	24	µg/m <sup>3</sup>	80
3	Particulate Matter (PM <sub>10</sub> )	EPA/625/R-96/0101 CM 10-2.1	79	µg/m <sup>3</sup>	100
4	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (Part 24) : 2019	34	µg/m <sup>3</sup>	60
5	Ozone (O <sub>3</sub> )	IS 5182 (Part 9) : 1974	BDL[DL=20]	µg/m <sup>3</sup>	180
6	Lead (Pb)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	0.07	µg/m <sup>3</sup>	1.0
7	Carbon Monoxide (CO)	IS 5182 (Part 10) : 1999	1.4	mg/m <sup>3</sup>	4
8	Ammonia (NH <sub>3</sub> )	ISC 16th Ed. Method 401	56	µg/m <sup>3</sup>	400
9	Benzene (C <sub>6</sub> H <sub>6</sub> )	IS 5182 (Part 11) : 2006	2.4	µg/m <sup>3</sup>	5*
10	Benzo(a)Pyrene (BaP) - Particulate Phase	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL[DL=0.5]	ng/m <sup>3</sup>	1*
11	Arsenic (As)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL[DL=2]	ng/m <sup>3</sup>	5*
12	Nickel (Ni)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL[DL=7]	ng/m <sup>3</sup>	20*

†: Sampling Period 1 Hrs.

BDL: Below Detection Limit

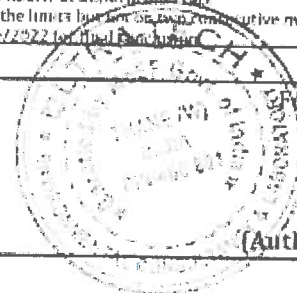
DL=Detection Limit

**Remark/Statement of Conformity:** The parameters tested above are found to be within 24 hourly TWA of National Ambient Air Quality Monitoring Standard (NAAQMS), Part III- Section IV.

Sampling Equipment Details	Instrument Used	Lab ID	Make	Model	Sl. No.	Calibration Valid up to
	Respirable Dust Sampler		UT/LAB/191	Polltech	PEM-RDS 4	1818
Fine Dust Sampler		UT/LAB/121	Polltech	PEM-ADS 2.5/10µ	19013	06/10/2022

- Note:**
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/AA01A) based on CPCB Guidelines - National Ambient Air Quality Monitoring Series: NAAQMS/2003-04 and respective test methods.
  2. This test report refers only to the sample tested.
  3. Monitoring area coming under Industrial areas and observed values are relevant to sample collected only.
  4. This test report may not be reproduced in part, without the permission of this laboratory.
  5. Any correction invalidates this test report.
  6. Weather during sampling was: Breezy and Cloudy.
  7. \*Annual arithmetic mean of maximum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.
  8. \*\*Time weighted average shall be complied with 99% of the time in a year. 2% of the time, they may exceed the limits but for 60 days consecutive monitoring.
  9. This test report shall be referred along with Test Report No. UT/ELS/REPORT/5389/10-2022 Dated 01/10/2022 by the Client.

- END OF REPORT -



For ULTRA TECH,

Meghan Patil

(Authorized Signatory)



Lab : Survey No. 93/A, Conformity Hissa No. 2 G.V Brothers Bldg. Bala Compound, Khopat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India  
 Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : fab@ultratech.in Visit us at : www.ultratech.in

### TEST REPORT

**ISSUED TO:** M/s. DAEWOO-TATA PROJECTS LIMITED- JV  
 3rd Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens,  
 MHADA Colony 19, Powal, Mumbai - 400076, Maharashtra, India.  
**For Project:** "MTHL Package 2 Project"

**ULR NO. :** ULR-TC560022000003298F  
**REPORT NO. :** UT/ELS/REPORT/ 5458/10-2022  
**ISSUE DATE :** 06/10/2022  
**YOUR REF. :** 83000164-A6  
**REF. DATE :** 27/01/2022

<p><b>SAMPLE PARTICULARS</b></p> <p>Sampling Plan Ref. No. : 23-09/2022                  Sampling Procedure : UT/LQMS/SOP/AA01A                  Date &amp; Time of Sampling : 21/09/2022 14:15 Hrs. to 22/09/2022 14:15 Hrs.                  Sample Registration Date : 22/09/2022                  Analysis Starting Date : 22/09/2022                  Analysis Completion Date : 29/09/2022                  Ambient Air Temperature : 26.9 °C to 30.1 °C                  Relative Humidity : 72.8 % to 89.6 %</p>	<p><b>AMBIENT AIR QUALITY MONITORING</b></p> <p>Location Code : AM2                  Sample Location : NHAVA Temporary Bridge Nr. MP-21H (Fortnightly 152 of 212)                  GPS Co-ordinates : N 18°58'38.6", E 72°59'42.8"                  Sample Collected By : ULTRA TECH                  Height of Sampler : 1 Meter                  Sampling Duration : 24:00 Hours Minutes                  Sample Lab Code : IFT/ELS/383/09-2022</p>
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Sr. No.	Test Parameter	Test Method	Test Result	Unit	NAAQMS Industrial, Residential, Rural and Other Area 24 Hrs. or 1 Hr**
1	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2) : 2001	BDL [DL=5]	µg/m <sup>3</sup>	80
2	Nitrogen Dioxide (NO <sub>2</sub> )	IS 5182 (Part 6) : 2006	28	µg/m <sup>3</sup>	80
3	Particulate Matter (PM <sub>10</sub> )	EPA/625/R-96/0101 CM 10-2.1	83	µg/m <sup>3</sup>	100
4	Particulate Matter (PM <sub>2.5</sub> )	IS 5182 (Part 24) : 2019	31	µg/m <sup>3</sup>	60
5	Ozone (O <sub>3</sub> ) <sup>1</sup>	IS 5182 (Part 9) : 1974	BDL [DL=20]	µg/m <sup>3</sup>	180
6	Lead (Pb)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	0.06	µg/m <sup>3</sup>	1.0
7	Carbon Monoxide (CO) <sup>1</sup>	IS 5182 (Part 10) : 1999	1.1	mg/m <sup>3</sup>	4
8	Ammonia (NH <sub>3</sub> )	ISC 16th Ed. Method 401	47	µg/m <sup>3</sup>	400
9	Benzene (C <sub>6</sub> H <sub>6</sub> )	IS 5182 (Part 11) : 2006	2.7	µg/m <sup>3</sup>	5*
10	Benzo(a)Pyrene (BaP) - Particulate Phase	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL [DL=0.5]	ng/m <sup>3</sup>	1*
11	Arsenic (As)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL [DL=2]	ng/m <sup>3</sup>	6*
12	Nickel (Ni)	CPCB Guidelines, Volume-I, NAAQMS/36/2012-13	BDL [DL=7]	ng/m <sup>3</sup>	20*

†: Sampling Period 1 Hr. BDL: Below Detection Limit DL=Detection Limit

**Remark/ Statement of Conformity:** The parameters tested above are found to be within 24 hourly TWA of National Ambient Air Quality Monitoring Standard (NAAQMS), Part III- Section IV. NAAQMS is provided as Annexure-I for your reference (Turnover to find Annexure)

Sampling Equipment Details	Instrument Used	Lab ID	Make	Model	Sl. No.	Calibration Valid up to
	Respirable Dust Sampler	UT/LAB/191	Folltech	PEM-RDS 9	1018	21/01/2023
Fine Dust Sampler	UT/LAB/121	Folltech	PEM-ADS 2.5/10µ	1903	08/10/2022	

- Note:**
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/AA01A) based on CPCB Guidelines - National Ambient Air Quality Monitoring Series: NAAQMS/2003-04 and respective test methods.
  2. This test report refers only to the sample tested.
  3. Monitoring area coming under industrial areas and observed values are relevant to sample collected only.
  4. This test report may not be reproduced in part, without the permission of this laboratory.
  5. Any correction invalidates this test report.
  6. Weather during sampling was: Rainy and Cloudy.
  7. \*Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.
  8. \*\*Time weighted average shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits for the 24 hourly monitoring.

**- END OF REPORT -**

For ULTRA TECH,  
  
 Meghan Patil  
 (Authorized Signatory)



## Environmental Consultancy & Laboratory

Lab. Gazetted by MoEF&CC-Govt. of India  
 Lab. Accredited by NABL - ISO/IEC 17025:2017 (TC-560) Valid until 03/08/2024 in the field of Testing  
 GCI-NABET Accredited EIA Consulting Organization  
 STP/ETP/WTP Project Management Consultants

ISO 9001:2015  
 ISO 45001:2018

Lab: Survey No. 93/A, Conformity Hissa No 2 G.V. Brothers Bldg. Bata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India  
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### TEST REPORT

ISSUED TO: **M/s. DAEWOO-TATA PROJECTS LIMITED- JV**  
 3rd Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens,  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
 For Project: "MTHL Package 2 Project"

U/LR NO. : --  
 REPORT NO. : UT/ELS/REPORT/ 5390/10-2022  
 ISSUE DATE : 01/10/2022  
 YOUR REF. : 83000164-A6  
 REF. DATE : 27/01/2022

SAMPLE PARTICULARS		AMBIENT AIR QUALITY MONITORING	
Sampling Plan Ref. No.:	23-09/2022	Location Code	AM3
Sampling Procedure	UT/LQMS/SOP/AA01A	Sample Location	NHAVA Temporary Bridge Nr. MP-218 (Fortnightly 150 of 212)
Date & Time of Sampling	20/09/2022 14:00 Hrs. to 21/09/2022 14:00 Hrs.	GPS Co-ordinates	N 18°58'38.6", E 72°59'42.8"
Sample Registration Date	21/09/2022	Sample Collected By	ULTRA TECH
Analysis Starting Date	21/09/2022	Height of Sampler	1 Meter
Analysis Completion Date	30/09/2022	Sampling Duration	24:00 Hours:Minutes
Ambient Air Temperature	24.3 °C to 27.2 °C	Sample Lab Code	UT/ELS/335/09-2022
Relative Humidity	69.4 % to 86.4 %		

Sr. No.	Test Parameter	Test Method	Test Result	Unit	NAAQMS Industrial, Residential, Rural and Other Area 24 Hrs. or 1 Hr**
1	Total VOCs (as BTX)	IS 5182 (Part 11): 2006	2.4	µg/m <sup>3</sup>	--

†: Sampling Period 1 Hr.

Remark/ Statement of Conformity: Nil

Sampling Equipment Details	Instrument Used	Lab ID	Make	Model	Sl. No.	Calibration Valid up to
	Low Flow Air Sampler	UT/LAB/181	Polltech	PEM 2FA54	216	10/01/2023

- Note: 1. Samples were collected by following laboratory's SOP [UT/LQMS/SOP/AA01A] based on CIEB Guidelines - National Ambient Air Quality Monitoring Series - NAAQMS/2003-04 and respective test methods.  
 2. This test report refers only to the sample tested.  
 3. Monitoring area coming under Industrial areas and observed values are relevant to sample collected only.  
 4. This test report may not be reproduced in part, without the permission of this laboratory.  
 5. Any correction invalidates this test report.  
 6. Weather during sampling was: Rainy and Cloudy.  
 7. \*Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.  
 8. \*\*Time weighted average shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on an consecutive monitoring.  
 9. This test report shall be referred along with Test Report No. - UT/ELS/REPORT/5390/10-2022 Dated 01/10/2022 for final conclusion.

- END OF REPORT -

For ULTRA TECH,

Meghan Patil  
 (Authorized Signatory)



### TEST REPORT

**ISSUED TO: DAEWOO-TATA PROJECTS LIMITED- JV**      **REPORT NO. :** UT/ELS/REPORT/5421/10-2022  
 3<sup>rd</sup> Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens,      **ISSUE DATE :** 03/10/2022  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.      **YOUR REF. :** H3000164-A6  
**For Your Project: "MTH, Package 2 Project"**      **REF. DATE :** 27/01/2022

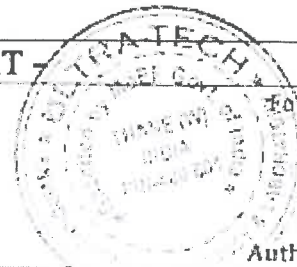
<b>SAMPLE PARTICULARS</b>	<b>MARINE WATER QUALITY MONITORING SAMPLE</b>
<b>Sampling Plan Ref. No. :</b> 23-09/2022	<b>Sample Type :</b> Marine Water
<b>Sampling Procedure :</b> UT/LQMS/SOP/W01A	<b>Sample Location :</b> At Marine Zone
<b>Sample Registration Date :</b> 20/09/2022	Co-ordinates: 18°59'33.20"N, 72°57'36.90"E
<b>Date &amp; Time of Sampling :</b> 20/09/2022 at 12.20Hrs	<b>Sample Quantity :</b> 1L in Wide Mouth Glass Bottle for Oil and Grease, 300ml BOD Bottle with stopper for DO and 2L in Plastic Container for other parameters.
<b>Analysis Starting Date :</b> 20/09/2022	<b>&amp; Packing Details</b>
<b>Analysis Completion Date :</b> 29/09/2022	
<b>Sample Collected By :</b> ULTRA TECH	
<b>Sample Lab Code :</b> UT/ELS/326/09-2022	

Sr. No.	Test Parameter	Test Method	Test Result	Unit	Standards Limits (Primary Water Quality Criteria for Class SW IV Waters (For Harbour Waters) EP Rules - 1986)
1.	Temperature	IS 3025 (Part 09):1984	28.7	°C	--
2.	Turbidity	IS 3025 (Part 10):1984	16.8	NTU	--
3.	pH	IS 3025 (Part 11):2022	7.5	--	6.0 to 9.0
4.	Dissolved Oxygen	IS 3025 (Part 38):1986	6.0	mg/L	Min. 3.0
5.	Biochemical Oxygen demand (At 27°C for 3 Days)	IS 3025 (Part 44):1993	BDL[DL=2]	mg/L	5.0
6.	Chemical Oxygen demand	IS 3025 (Part 46):1994	12	mg/L	--
7.	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 (Part 23):1986	143	mg/L	--
8.	Total Hardness as CaCO <sub>3</sub>	IS 3025 (Part 21):2009	NR00	mg/L	--
9.	Salinity	COMAPS	29.5	ppt <sup>o</sup>	--
10.	Oil & Grease	IS 3025 (Part 39) : 2021	BDL [DL=2]	mg/L	10
11.	Arsenic as As	APHA 23 <sup>rd</sup> Ed. 3114 C	BDL [DL=0.003]	mg/L	--
12.	Chromium as Cr	IS 3025 (Part 52):2003	BDL [DL=0.02]	mg/L	--
13.	Cadmium as Cd	IS 3025 (Part 41):1992	BDL [DL=0.015]	mg/L	--
14.	Lead as Pb	IS 3025 (Part 47):1994	BDL [DL=0.6]	mg/L	--
15.	Nickel as Ni	IS 3025 (Part 54):2003	BDL [DL=0.6]	mg/L	--
16.	Mercury as Hg	APHA 23 <sup>rd</sup> Ed. 3112 B	BDL [DL=0.006]	mg/L	--
<b>BDL-Below Detection Limit</b>					<b>DL-Detection Limit</b>

**Remark/ Statement of Conformity:** The given sample conforms with specifications as per standard tabulated above for set of analyzed parameters.

- Note:**
1. Samples was collected using laboratory's SOP (UT/LQMS/SOP/W01A) based on CPCB's Guide Manual: Water & Wastewater Analysis, APHA 23<sup>rd</sup> Edition and IS 3025 (Part 1)
  2. This test report refers only to the sample tested.
  3. This test report may not be reproduced in part, without the permission of this laboratory.
  4. Any correction invalidates this test report.

**- END OF REPORT -**



For ULTRA TECH,  
 Meghan Patil  
 Authorized Signatory

## Environmental Consultancy & Laboratory

Lab. Gazetted by MoEF&CC Govt. of India  
 Lab. Accredited by NABL - ISO/IEC 17025:2017 [TC:5600 Valid until 03/08/2024 in the field of Testing]  
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 ST/ETP/WTP Project Management Consultants

ISO 9001:2015  
 ISO 45001:2018

Lab. Survey No. 930A, Conformity Hissa No. 2 G V Brothers Bldg., Bata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601 Maharashtra, India  
 Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

## TEST REPORT

ISSUED TO: DAEWOO-TATA PROJECTS LIMITED- JV  
 3<sup>rd</sup> Floor, Transocean House, Lake Boulevard Road, Hiranadani Gardens,  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
 For Your Project: "MTHL Package 2 Project"

REPORT NO. : UT/ELS/REPORT/5422/10-2022  
 ISSUE DATE : 03/10/2022  
 YOUR REF. : 83000164-A6  
 REF. DATE : 27/01/2022

<b>SAMPLE PARTICULARS</b>	:	<b>MARINE WATER QUALITY MONITORING</b>	
Sampling Plan Ref. No.	: 23-09/2022	Sample Type	: Marine Water
Sampling Procedure	: UT/LQMS/SOP/W01A	Sample Location	: At Intertidal Zone Co-ordinates: 18°58'49.70"N, 72°59'27.60"E
Sample Registration Date	: 20/09/2022	Sample Quantity & Packing Details	: 1L in Wide Mouth Glass Bottle for Oil and Grease, 300ml BOD Bottle with stopper for DO and 2L in Plastic Container for other parameters.
Date & Time of Sampling	: 20/09/2022 at 11:55hrs		
Analysis Starting Date	: 20/09/2022		
Analysis Completion Date	: 29/09/2022		
Sample Collected By	: ULTRA TECH		
Sample Lab Code	: UT/ELS/325/09-2022		

Sr. No.	Test Parameter	Test Method	Test Result	Unit	Standards Limits (Primary Water Quality Criteria for Class SW-IV Waters (For Harbour Waters), EP Rules - 1986)
1.	Temperature	IS 3025 (Part 09):1984	28.7	°C	--
2.	Turbidity	IS 3025 (Part 10):1984	18.4	NTU	--
3.	pH	IS 3025 (Part 11):2022	7.5	--	6.0 to 9.0
4.	Dissolved Oxygen	IS 3025 (Part 3A):1989	5.6	mg/L	Min. 3.0
5.	Biochemical Oxygen demand (At 27°C for 3 Days)	IS 3025 (Part 44):1993	BDL [DL=2]	mg/L	5.0
6.	Chemical Oxygen demand	IS 3025 (Part 46):1994	16	mg/L	--
7.	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 (Part 23):1986	134	mg/L	--
8.	Total Hardness as CaCO <sub>3</sub>	IS 3025 (Part 21):2009	6300	mg/L	--
9.	Salinity	COMAPS	26.3	ppt <sup>b</sup>	--
10.	Oil & Grease	IS 3025 (Part 39): 2021	BDL [DL=2]	mg/L	10
11.	Arsenic as As	APHA 23 <sup>rd</sup> Ed. 3114 C	BDL [DL=0.003]	mg/L	--
12.	Chromium as Cr	IS 3025 (Part 52):2003	BDL [DL=0.02]	mg/L	--
13.	Cadmium as Cd	IS 3025 (Part 41):1992	BDL [DL=0.015]	mg/L	--
14.	Lead as Pb	IS 3025 (Part 47):1994	BDL [DL=0.6]	mg/L	--
15.	Nickel as Ni	IS 3025 (Part 54):2009	BDL [DL=0.6]	mg/L	--
16.	Mercury as Hg	APHA 23 <sup>rd</sup> Ed. 3113 B	BDL [DL=0.006]	mg/L	--

BDL-Below Detection Limit DL-Detection Limit

Remark/ Statement of Conformity: *The given sample conforms with specifications as per standard tabulated above for set of analyzed parameters*

- Note:
1. Samples was collected using laboratory's SOP (UT/LQMS/SOP/W01A) based on GPCB's Guide Manual, Water & Wastewater Analysis, APHA 23<sup>rd</sup> Edition and IS3025 (Part 1)
  2. This test report refers only to the sample tested
  3. This test report may not be reproduced in part, without the permission of this laboratory.
  4. Any correction invalidates this test report.

**- END OF REPORT -**



For ULTRA TECH,

Meghan Patil  
 Authorized Signatory



**Environmental Consultancy & Laboratory**

Lab. Gazetted by MoEF&CC-Govt. of India  
 Lab. Accredited by NABL - ISO/IEC 17025:2017 [TC-5600, Valid until 03.08.2024 in the field of Testing]  
 QCI-NABET Accredited EIA Consulting Organization  
 STP/ETP/WTP Project Management Consultants



TC-5600

ISO 9001 : 2015  
 ISO 45001 : 2018

Lab : Survey No. 93/A, Conformity Hissa No.2 G.V.Brothers Bldg., Bata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India.  
 Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

**TEST REPORT**

**ISSUED TO: DAEWOO-TATA PROJECTS LIMITED- JV** REPORT NO. : UT/ELS/REPORT/5417/10-2022  
 3<sup>rd</sup> Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens, ISSUE DATE : 03/10/2022  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India. YOUR REF. : 83000164-A6  
**For Your Project: "MTHL Package 2 Project"** REF. DATE : 27/01/2022

**SAMPLE PARTICULARS**

Sampling Plan Ref. No. : 23-09/2022  
 Sampling Procedure : UT/LQMS/SOP/S01A  
 Sample Registration Date : 20/09/2022  
 Date & Time of Sampling : 20/09/2022 at 11:30Hrs  
 Analysis Starting Date : 20/09/2022  
 Analysis Completion Date : 28/09/2022  
 Sample Collected By : ULTRA TECH  
 Sample Lab Code : UT/ELS/327/09-2022

**SOIL QUALITY MONITORING**

Sample Type : Soil Sample  
 Sample Location : At Casting Yard  
 Sample Quantity : 1kg In Plastic Bag Contained in Zip Lock Bag  
 & Packing Details

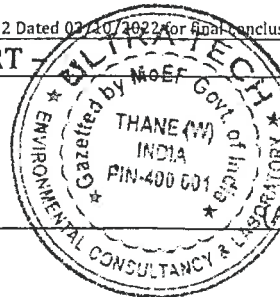
Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Bulk Density	UT/LQMS/SOP/S03	1177	kg/m <sup>3</sup>
2.	Total Organic Carbon	IS:2720 (Part 22) : 1972	0.4	%
3.	pH	IS:2720 (Part 26) : 1987	7.8	-
4.	Conductivity(1:2soil:Water Extract)	IS:14767- 2000	512	µS/cm
5.	Moisture Content	IS:2720 (Part 02): 1973	18.3	%
6.	Sodium as Na	UT/LQMS/SOP/S19	620	mg/kg
7.	Potassium as K	UT/LQMS/SOP/S20	41	mg/kg
8.	Calcium as Ca	UT/LQMS/SOP/S21	248	mg/kg
9.	Magnesium as Mg	UT/LQMS/SOP/S22	217	mg/kg
10.	Sodium Adsorption Ratio	UT/LQMS/SOP/S26	15.4	(meq/kg) <sup>1/2</sup>
11.	Cation Exchange Capacity	UT/LQMS/SOP/S18	30.3	meq/100g
12.	Porosity	UT/LQMS/SOP/S40	50.3	%
13.	Silt	UT/LQMS/SOP/S39	65.4	%
14.	Clay	UT/LQMS/SOP/S39	31.8	%
15.	Cadmium as Cd	UT/LQMS/SOP/S35 & S37	BDL[DL=2]	mg/kg
16.	Chromium as Cr	UT/LQMS/SOP/S35 & S37	19	mg/kg
17.	Cobalt as Co	UT/LQMS/SOP/S35 & S37	13	mg/kg
18.	Copper as Cu	UT/LQMS/SOP/S35 & S37	100	mg/kg
19.	Iron as Fe	UT/LQMS/SOP/S35 & S37	42963	mg/kg
20.	Lead as Pb	UT/LQMS/SOP/S35 & S37	BDL[DL=5]	mg/kg
21.	Manganese as Mn	UT/LQMS/SOP/S35 & S37	712	mg/kg
22.	Nickel as Ni	UT/LQMS/SOP/S35 & S37	32	mg/kg
23.	Zinc as Zn	UT/LQMS/SOP/S35 & S37	45	mg/kg

BDL-Below Detection Limit

DL- Detection Limit

**Remark/ Statement of Conformity:** NIL

**Note:** 1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/S01A) based on Methods Manual: Soil Testing in India by DA&FW, MoA, GOI.1. This test report refers only to the sample tested.  
 2. This test report refers only to the sample tested.  
 3. This test report may not be reproduced in part, without the permission of this laboratory.  
 4. Any correction invalidates this test report.  
 5. This test report shall be referred along with Test Report No. UT/ELS/REPORT/5418/10-2022 Dated 03/10/2022 for final conclusion.

**- END OF REPORT -**


For ULTRA TECH

Mj Namjoshi

Manasi Namjoshi  
(Authorized Signatory)

Page 1 of 1

**H.O.:** Unit No. 224,225,206, Jai Commercial Complex, Eastern Express Highway, Opp. Cadbury Factory, Khopat, Thane (W) 400 601, Maharashtra, India.

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Kolkata: +033-40089145 / +91-9674488198 - kolkata@ultratech.in

## Environmental Consultancy & Laboratory

Lab. Gazetted by MoEF&CC-Govt. of India  
Lab. Accredited by NABL - ISO/IEC 17025:2017 [TC-5600, Valid until 03.08.2024 in the field of Testing]  
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ISO 9001 : 2015  
ISO 45001 : 2018

Lab : Survey No. 93/A, Conformity Hissa No.2 G.V.Brothers Bldg., Bata Compound, Khopat. Near Flower Valley, Thane (West) - 400 601, Maharashtra, India.  
Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

### TEST REPORT

ISSUED TO: DAEWOO-TATA PROJECTS LIMITED- JV  
3<sup>rd</sup> Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens, MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
For Your Project: "MTHL Package 2 Project"

REPORT NO. : UT/ELS/REPORT/5418/10-2022  
ISSUE DATE : 03/10/2022  
YOUR REF. : 83000164-A6  
REF. DATE : 27/01/2022

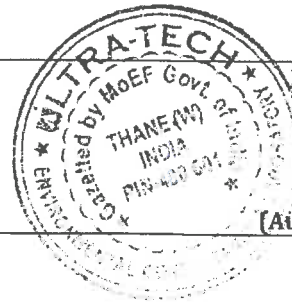
SAMPLE PARTICULARS		SOIL QUALITY MONITORING	
Sampling Plan Ref. No.	: 23-09/2022	Sample Type	: Soil Sample
Sampling Procedure	: UT/LQMS/SOP/S01A	Sample Location	: At Casting Yard
Sample Registration Date	: 20/09/2022		
Date & Time of Sampling	: 20/09/2022 at 11:30Hrs		
Analysis Starting Date	: 20/09/2022		
Analysis Completion Date	: 28/09/2022	Sample Quantity	: 1kg In Plastic Bag Contained in Zip Lock
Sample Collected By	: ULTRA TECH	& Packing Details	: Bag
Sample Lab Code	: UT/ELS/327/09-2022		

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Salinity (1:2 soil: Water Extract)	Calculated in terms of Total Dissolved Solids	317	mg/L
2.	Gravel	UT/LQMS/SOP/S39	0.76	%
3.	Coarse Sand	UT/LQMS/SOP/S39	0.51	%
4.	Medium Sand	UT/LQMS/SOP/S39	2.94	%
5.	Fine Sand	UT/LQMS/SOP/S39	0.97	%
6.	Barium as Ba	UT/LQMS/SOP/S35 & S37	3172	mg/kg

Remark/ Statement of Conformity: NIL

Note: 1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/S01A) based on Methods Manual: Soil Testing in India by DA&FW, MoA, GOI.1. This test report refers only to the sample tested.  
2. This test report refers only to the sample tested.  
3. This test report may not be reproduced in part, without the permission of this laboratory.  
4. Any correction invalidates this test report.  
5. Parameter/s Tested is/are not covered under NABL scope.  
6. This test report shall be referred along with Test Report No. UT/ELS/REPORT/5417/10-2022 Dated 03/10/2022 for final conclusion.

- END OF REPORT -



For ULTRA TECH

MJ Namjoshi

Manasi Namjoshi  
(Authorized Signatory)

**Environmental Consultancy & Laboratory**

Lab. Gazetted by MoEF&CC-Govt. of India  
 Lab. Accredited by NABL - ISO/IEC 17025:2017 [TC-5600, Valid until 03.08.2024 in the field of Testing]  
 QCI-NABET Accredited EIA Consulting Organization  
 STP/ETP/WTP Project Management Consultants

ISO 9001 : 2015  
 ISO 45001 : 2018

Lab :Survey No. 93/A, Conformity Hissa No.2 G.V.Brothers Bldg., Bata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India.  
 Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

**TEST REPORT**

**ISSUED TO: DAEWOO-TATA PROJECTS LIMITED- JV** **REPORT NO. :** UT/ELS/REPORT/5419/10-2022  
 3<sup>rd</sup> Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens, **ISSUE DATE :** 03/10/2022  
 MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India. **YOUR REF. :** 83000164-A6  
**For Your Project: "MTHL Package 2 Project"** **REF. DATE :** 27/01/2022

SAMPLE PARTICULARS		SOIL QUALITY MONITORING	
Sampling Plan Ref. No.	: 23-09/2022	Sample Type	: Soil Sample
Sampling Procedure	: UT/LQMS/SOP/S01A	Sample Location	: Nhava Temporary Bridge Near MP-240
Sample Registration Date	: 20/09/2022		
Date & Time of Sampling	: 20/09/2022 at 14:20Hrs		
Analysis Starting Date	: 20/09/2022		
Analysis Completion Date	: 28/09/2022	Sample Quantity	: 1kg In Plastic Bag Contained in Zip Lock
Sample Collected By	: ULTRA TECH	& Packing Details	: Bag
Sample Lab Code	: UT/ELS/328/09-2022		

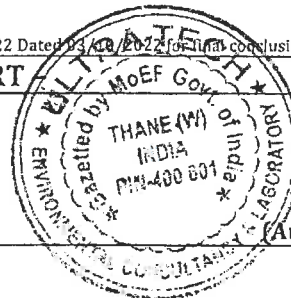
Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Bulk Density	UT/LQMS/SOP/S03	1196	kg/m <sup>3</sup>
2.	Total Organic Carbon	IS:2720 (Part 22): 1972	0.35	%
3.	pH	IS:2720 (Part 26): 1987	7.9	-
4.	Conductivity(1:2soil:Water Extract)	IS:14767- 2000	9291	µS/cm
5.	Moisture Content	IS:2720 (Part 02): 1973	17.6	%
6.	Sodium as Na	UT/LQMS/SOP/S19	3511	mg/kg
7.	Potassium as K	UT/LQMS/SOP/S20	45	mg/kg
8.	Calcium as Ca	UT/LQMS/SOP/S21	357	mg/kg
9.	Magnesium as Mg	UT/LQMS/SOP/S22	255	mg/kg
10.	Sodium Adsorption Ratio	UT/LQMS/SOP/S26	16.1	(meq/kg) <sup>1/2</sup>
11.	Cation Exchange Capacity	UT/LQMS/SOP/S18	43.5	meq/100g
12.	Porosity	UT/LQMS/SOP/S40	53.0	%
13.	Silt	UT/LQMS/SOP/S39	68.7	%
14.	Clay	UT/LQMS/SOP/S39	33.4	%
15.	Cadmium as Cd	UT/LQMS/SOP/S35 & S37	BDL[DL=2]	mg/kg
16.	Chromium as Cr	UT/LQMS/SOP/S35 & S37	24	mg/kg
17.	Cobalt as Co	UT/LQMS/SOP/S35 & S37	19	mg/kg
18.	Copper as Cu	UT/LQMS/SOP/S35 & S37	92	mg/kg
19.	Iron as Fe	UT/LQMS/SOP/S35 & S37	52315	mg/kg
20.	Lead as Pb	UT/LQMS/SOP/S35 & S37	BDL[DL=5]	mg/kg
21.	Manganese as Mn	UT/LQMS/SOP/S35 & S37	726	mg/kg
22.	Nickel as Ni	UT/LQMS/SOP/S35 & S37	33	mg/kg
23.	Zinc as Zn	UT/LQMS/SOP/S35 & S37	54	mg/kg

BDL-Below DetectionLimit

DL- Detection Limit

**Remark/ Statement of Conformity:** NIL

- Note:**
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/S01A) based on Methods Manual: Soil Testing in India by DA&FW, MoA, GOI.1. This test report refers only to the sample tested.
  2. This test report refers only to the sample tested.
  3. This test report may not be reproduced in part, without the permission of this laboratory.
  4. Any correction invalidates this test report.
  5. This test report shall be referred along with Test Report No. UT/ELS/REPORT/5420/10-2022 Dated 03/10/2022 for final conclusion.

**- END OF REPORT**


For ULTRA TECH

M. Namjoshi

Manasi Namjoshi

(Authorized Signatory)



Page 1 of 1

## Environmental Consultancy & Laboratory

Lab. Gazetted by MoEF&CC-Govt. of India  
Lab. Accredited by NABL - ISO/IEC 17025:2017 [TC-5600, Valid until 03.08.2024 in the field of Testing]  
QCI-NABET Accredited EIA Consulting Organization  
STP/ETP/WTP Project Management Consultants

ISO 9001 : 2015  
ISO 45001 : 2018

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Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

### TEST REPORT

ISSUED TO: DAEWOO-TATA PROJECTS LIMITED- JV  
3<sup>rd</sup> Floor, Transocean House, Lake Boulevard Road, Hiranandani Gardens, MHADA Colony 19, Powai, Mumbai - 400076, Maharashtra, India.  
For Your Project: "MTHL Package 2 Project"

REPORT NO. : UT/ELS/REPORT/5420/10-2022  
ISSUE DATE : 03/10/2022  
YOUR REF. : 83000164-A6  
REF. DATE : 27/01/2022

**SAMPLE PARTICULARS :**

Sampling Plan Ref. No. : 23-09/2022  
Sampling Procedure : UT/LQMS/SOP/S01A  
Sample Registration Date : 20/09/2022  
Date & Time of Sampling : 20/09/2022 at 14:20Hrs  
Analysis Starting Date : 20/09/2022  
Analysis Completion Date : 28/09/2022  
Sample Collected By : ULTRA TECH  
Sample Lab Code : UT/ELS/328/09-2022

**SOIL QUALITY MONITORING**

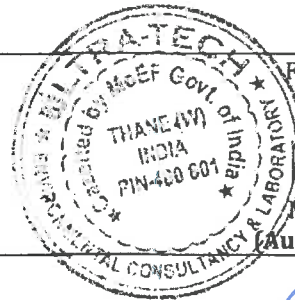
Sample Type : Soil Sample  
Sample Location : Nhava Temporary Bridge Near MP-240  
Sample Quantity : 1kg In Plastic Bag Contained in Zip Lock  
& Packing Details Bag

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Salinity (1:2 soil: Water Extract)	Calculated in terms of Total Dissolved Solids	5760.42	mg/L
2.	Gravel	UT/LQMS/SOP/S39	1.89	%
3.	Coarse Sand	UT/LQMS/SOP/S39	0.66	%
4.	Medium Sand	UT/LQMS/SOP/S39	0.72	%
5.	Fine Sand	UT/LQMS/SOP/S39	0.19	%
6.	Barium as Ba	UT/LQMS/SOP/S35 & S37	3511	mg/kg

Remark/ Statement of Conformity: *NIL*

- Note:
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/S01A) based on Methods Manual: Soil Testing in India by DA&FW, MoA, GOI.1. This test report refers only to the sample tested.
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  6. This test report shall be referred along with Test Report No. UT/ELS/REPORT/5419/10-2022 Dated 03/10/2022 for final conclusion

- END OF REPORT -



For ULTRA TECH

*M. Namjoshi*  
Manasi Namjoshi  
(Authorized Signatory)





Ref: MTHL/ P3/L&T/GC/LT/HSE-0003221/2022

Date: 04.07.2022

To

The Engineer,

M/s AECOM Asia Company Ltd., -PADECO Co. Ltd – Dar Al-Handasah Consultants –TY  
Lin International Consortium, General Consultant for MTHL Project,  
6<sup>th</sup> Floor, 'A' Wing, MMRDA Old Building,  
Bandra-Kurla Complex, Bandra (E),  
Mumbai 400 051.

**Project:** Procurement of Mumbai Trans Harbour Link Project (Package-3)-Construction of  
a 3.613 km long viaduct section (CH 18+187 to CH21+800) including interchange  
at State Highway-54 and at National Highway-4B near Chirle in Navi Mumbai.  
IFB No.: MMRDA/ENG1/000754.

**Subject:** Environment Monitoring Test Reports of 1<sup>st</sup> quarter.

- Ref:**
1. MoEF CC letter no 11-65/2012-IA.III dated 25.1.2016 granting CRZ clearance  
to the Mumbai Trans Harbour Link Project.
  2. GC letter MTHL/GC/L&T/Env /2019/757 dated 08.11.2019

Dear Sir/Madam,

We hereby submit the following test reports of June 2022 for your kind information and records.

1. Ambient Air quality (48 hrs)
2. Ambient Noise quality
3. Effluent water quality (labour colony)
4. DG Set Stack Monitoring

Thanking you and assuring you of our best services at all times.

Yours faithfully,

For **LARSEN & TOUBRO LIMITED,**



**Satya Prakash**

Project Manager

Mumbai Trans Harbour Link Project – Pkg. 3

CC: The Chief Engineer, MTHL-PIU, MMRDA, Mumbai, INDIA 400 051

Encl: MTHL PACKAGE-3 Sept -2021 Environment Monitoring Test Reports. [231 Pages]

ULR NO: TC0515022000002195F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0148)

REPORT DATE :27/06/2022

CUSTOMER REF :VERBAL

REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO. : AAM (22-23-0148)  
 SAMPLING PLAN& METHOD NO. :As per Reference Method  
 SAMPLING DATE :21/06/2022 to 22/06/2022  
 SAMPLING TIME :02:40 PM TO 02:40 PM  
 ANALYSIS START DATE :23/06/2022  
 ANALYSIS COMPLETE DATE :27/06/2022

LOCATION : Gavan, Batching Plant- Near to Casting Yard


SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>a</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	62.7	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	29.3	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO <sub>2</sub> )	24 HRS	µg/m <sup>3</sup>	8.4	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NO <sub>x</sub> )	24 HRS	µg/m <sup>3</sup>	20.5	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O <sub>3</sub> )	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH <sub>3</sub> )	24 HRS	µg/m <sup>3</sup>	14.2	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C <sub>6</sub> H <sub>6</sub> )	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng/m <sup>3</sup>	<0.5	1	LAB SOP NO - 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng/m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng/m <sup>3</sup>	1.24	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

<sup>a</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by

  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

1. This report reflects findings only for the above sample tested/monitored and only for time and place of monitoring/testing.
2. This report is confidential & cannot be re-produced in part or full without permission of SKYLAB Analytical Laboratory.
3. Any attempt of forgery or misleading use of this report by any person/organization etc will attract suitable legal action against them by SkyLab Analytical Laboratory.



**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0148)

REPORT DATE :27/06/2022

CUSTOMER REF :VERBAL

REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO . : AAM (22-23-0148)  
 SAMPLING PLAN& METHOD NO. :As per Reference Method  
 SAMPLING DATE :21/06/2022 to 22/06/2022  
 SAMPLING TIME :02:40 PM TO 02:40 PM  
 ANALYSIS START DATE :23/06/2022  
 ANALYSIS COMPLETE DATE :27/06/2022

LOCATION : Gavan, Batching Plant- Near to Casting Yard

SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.5	-	IS 5182 (Part 17):1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.6	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/m <sup>3</sup>	0.58	2	IS 5182 (Part 10): 1999

\*: As per NAAQMS Guidelines 2009

Opinion/Observation: Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by



Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY



Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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ULR NO: TC0515022000002196F

### TEST REPORT

**NAME & ADDRESS OF CUSTOMER:**  
M/S .L & T Construction  
MTHL-3 Project, Near Kharkopar Railway Station,  
Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0156)  
**REPORT DATE** :01/07/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** AMBIENT AIR QUALITY MONITORING

**SAMPLE REGISTRATION NO .** : AAM (22-23-0156)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :27/06/222 to 28/06/2022  
**SAMPLING TIME** :01:14 PM TO 01:14 PM  
**ANALYSIS START DATE** :29/06/2022  
**ANALYSIS COMPLETE DATE** :01/07/2022

**LOCATION** : Chirle  
**SAMPLE COLLECTED BY:** SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>a</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	55.4	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	24.1	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO <sub>2</sub> )	24 HRS	µg/m <sup>3</sup>	8.5	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NO <sub>x</sub> )	24 HRS	µg/m <sup>3</sup>	22.3	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O <sub>3</sub> )	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH <sub>3</sub> )	24 HRS	µg/m <sup>3</sup>	11.6	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C <sub>6</sub> H <sub>6</sub> )	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng /m <sup>3</sup>	<0.5	1	LAB SOP NO – 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng /m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng /m <sup>3</sup>	0.73	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

<sup>a</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by



Mr. Atul Shahane  
Chemist



For SKYLAB ANALYTICAL LABORATORY



Mr. S. B. Pansare  
Authorized Signatory

END OF REPORT

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Page 1 of 2



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Recognized by MoEFCC, Govt. of India, valid till 08.12.2023

Add.: 202, CFC - 3, Asmeeta Texpa. Addl. Kalyan - Bhiwandi Industrial Area, MIDC, Village Kon, Tal. Bhiwandi,  
Dist. Thane, Maharashtra, INDIA. Pincode - 421311

Mob. No. - 9867577309 / 310 / 312 / 9930060058

Email - mails@skylabenviro.com Website - www.skylabenviro.com

SALAC2212020910194

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .I & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0156)  
**REPORT DATE** :01/07/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** AMBIENT AIR QUALITY MONITORING


**SAMPLE REGISTRATION NO.** : AAM (22-23-0156)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :27/06/222 to 28/06/2022  
**SAMPLING TIME** :01:14 PM TO 01:14 PM  
**ANALYSIS START DATE** :29/06/2022  
**ANALYSIS COMPLETE DATE** :01/07/2022

**LOCATION** :Chirle  
**SAMPLE COLLECTED BY:** SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>a</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.3	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.3	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/ m <sup>3</sup>	0.51	2	IS 5182 (Part 10): 1999

<sup>a</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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ULR NO: TC0515022000002197F

### TEST REPORT

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
MTHL-3 Project, Near Kharkopar Railway Station,  
Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0157)

REPORT DATE :01/07/2022

CUSTOMER REF :VERBAL

REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO. : AAM (22-23-0157)  
SAMPLING PLAN & METHOD NO. :As per Reference Method  
SAMPLING DATE :27/06/2022 to 28/06/2022  
SAMPLING TIME :01:40 PM TO 01:40 PM  
ANALYSIS START DATE :29/06/2022  
ANALYSIS COMPLETE DATE :01/07/2022

LOCATION : Chirle

SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	60.8	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	27.6	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO <sub>2</sub> )	24 HRS	µg/m <sup>3</sup>	10.3	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NO <sub>x</sub> )	24 HRS	µg/m <sup>3</sup>	25.1	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O <sub>3</sub> )	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH <sub>3</sub> )	24 HRS	µg/m <sup>3</sup>	13.2	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C <sub>6</sub> H <sub>6</sub> )	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng/m <sup>3</sup>	<0.5	1	LAB SOP NO - 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng/m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng/m <sup>3</sup>	0.82	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

# As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by



Mr. Atul Shahane  
Chemist



For SKYLAB ANALYTICAL LABORATORY



Mr. S. B. Pansare  
Authorized Signatory

END OF REPORT

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0157)

REPORT DATE :01/07/2022

CUSTOMER REF :VERBAL

REF DATE :04/04/2022

**SAMPLE TYPE:**

SAMPLE REGISTRATION NO. : AAM (22-23-0157)  
 SAMPLING PLAN& METHOD NO. :As per Reference Method  
 SAMPLING DATE :27/06/222 to 28/06/2022  
 SAMPLING TIME :01:40 PM TO 01:40 PM  
 ANALYSIS START DATE :29/06/2022  
 ANALYSIS COMPLETE DATE :01/07/2022

**AMBIENT AIR QUALITY MONITORING**

LOCATION :Chirle

SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.5	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.7	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/ m <sup>3</sup>	0.58	2	IS 5182 (Part 10): 1999

# : As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by

  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

1. This report reflects findings only for the above sample tested/monitored and only for time and place of monitoring/testing.
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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S.L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ DGSM (22-23-0185)

REPORT DATE :01/07/2022

CUSTOMER REF :EH383WOD1000025

REF DATE :23/03/2021

**SAMPLE TYPE:**

**DG STACK EMISSION MONITORING**

SAMPLE REGISTRATION NO. : DGSM (22-23-0185)

LOCATION :DG Stack-1,(250 KVA)  
 (Near Main Gate)

SAMPLING PLAN & METHOD NO. : As per Reference Method

SAMPLE COLLECTED BY : SKYLAB

SAMPLING DATE :27/06/2022

STACK HEIGHT : 3.5 Meters

SAMPLING TIME :01:15 PM

SHAPE OF STACK : Round

ANALYSIS START DATE :29/06/2022

MATERIAL OF STACK :MS

ANALYSIS COMPLETE DATE :01/07/2022

FUEL USED (CONSUMPTION) : Diesel

Sr. No.	Test Parameter	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Dimensions of Stack	m	0.1	NA	-
2.	Cross section area of Stack	m <sup>2</sup>	0.008	NA	-
3.	Temperature	°C	132	NA	IS 11255 (Part 1), RA July-2014: 1985
4.	Velocity	m/s	8.6	NA	IS 11255 (Part 1), RA July-2014: 1985
5.	Flue Gas Discharge	Nm <sup>3</sup> /hr	179.5	NA	IS 11255 (Part 1), RA July-2014: 1985
6.	Total Particulate Matter (TPM)	mg/Nm <sup>3</sup>	49.2	-	IS 11255 (Part 1), RA July-2014: 1985
	Total Particulate Matter (TPM)	g/kwh	0.044	≤ 0.2 g/kwh	IS 11255 (Part 1), RA July-2014: 1985
7.	Carbon Monoxide (CO)	mg/Nm <sup>3</sup>	101	-	Instrumental
	Carbon Monoxide (CO)	g/kwh	0.091	≤ 3.5 g/kwh	Instrumental
8.	Nitrogen Oxide (NOx)	mg/Nm <sup>3</sup>	88.4	≤ 4.0 g/kwh	IS 11255, (Part 7):2005
	Nitrogen Oxide (NOx)	g/kwh	0.079		IS 11255, (Part 7):2005
9.	Hydrocarbon (HC)	mg/Nm <sup>3</sup>	79		Instrumental
	Hydrocarbon (HC)	g/kwh	0.071		Instrumental

NS: Not Specified. NA: Not Applicable. <sup>#</sup>: As per CPCB Guidelines.

Opinion/Observation: Analyzed parameters in above tested sample are within standard limit as per CPCB guideline.

Verified by



Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY



Mr. S. B. Pansare  
 Authorized Signatory

END OF REPORT

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S.L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ DGSM (22-23-0186)  
**REPORT DATE** :01/07/2022  
**CUSTOMER REF** :EH383WOD1000025  
**REF DATE** :23/03/2021

**SAMPLE TYPE:**  
**SAMPLE REGISTRATION NO.** : DGSM (22-23-0186)

**DG STACK EMISSION MONITORING**  
**LOCATION** :DG Stack-2,(250 KVA)  
 (Near Site Office)  
**SAMPLE COLLECTED BY** : SKYLAB  
**STACK HEIGHT** : 3.5 Meters  
**SHAPE OF STACK** : Round  
**MATERIAL OF STACK** :MS  
**FUEL USED (CONSUMPTION)** : Diesel

**SAMPLING PLAN & METHOD NO.** : As per Reference Method  
**SAMPLING DATE** :27/06/2022  
**SAMPLING TIME** :01:40 PM  
**ANALYSIS START DATE** :29/06/2022  
**ANALYSIS COMPLETE DATE** :01/07/2022

Sr. No.	Test Parameter	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Dimensions of Stack	m	0.1	NA	-
2.	Cross section area of Stack	m <sup>2</sup>	0.008	NA	-
3.	Temperature	°C	138	NA	IS 11255 (Part 1), RA July-2014: 1985
4.	Velocity	m/s	8.8	NA	IS 11255 (Part 1), RA July-2014: 1985
5.	Flue Gas Discharge	Nm <sup>3</sup> /hr	180	NA	IS 11255 (Part 1), RA July-2014: 1985
6.	Total Particulate Matter (TPM)	mg/Nm <sup>3</sup>	49.8	-	IS 11255 (Part 1), RA July-2014: 1985
	Total Particulate Matter (TPM)	g/kwh	0.045	≤ 0.2 g/kwh	IS 11255 (Part 1), RA July-2014: 1985
7.	Carbon Monoxide (CO)	mg/Nm <sup>3</sup>	102	-	Instrumental
	Carbon Monoxide (CO)	g/kwh	0.092	≤ 3.5 g/kwh	Instrumental
8.	Nitrogen Oxide (NOx)	mg/Nm <sup>3</sup>	91.3	≤ 4.0 g/kwh	IS 11255, (Part 7):2005
	Nitrogen Oxide (NOx)	g/kwh	0.082		IS 11255, (Part 7):2005
9.	Hydrocarbon (HC)	mg/Nm <sup>3</sup>	83	≤ 4.0 g/kwh	Instrumental
	Hydrocarbon (HC)	g/kwh	0.075		Instrumental

NS: Not Specified. NA: Not Applicable. #: As per CPCB Guidelines.

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per CPCB guideline.

Verified by

  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S.L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ DGSM (22-23-0187)  
**REPORT DATE** :01/07/2022  
**CUSTOMER REF** :EH383WOD1000025  
**REF DATE** :23/03/2021

**SAMPLE TYPE:**  
 SAMPLE REGISTRATION NO. : DGSM (22-23-0187)  
 SAMPLING PLAN & METHOD NO. : As per Reference Method  
 SAMPLING DATE :27/06/2022  
 SAMPLING TIME :01:40 PM  
 ANALYSIS START DATE :29/06/2022  
 ANALYSIS COMPLETE DATE :01/07/2022

**DG STACK EMISSION MONITORING**  
 LOCATION :DG Stack-3,(62.5 KVA), (Jasai)  
 SAMPLE COLLECTED BY : SKYLAB  
 STACK HEIGHT : 2 Meters  
 SHAPE OF STACK : Round  
 MATERIAL OF STACK :MS  
 FUEL USED (CONSUMPTION) : Diesel

Sr. No.	Test Parameter	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Dimensions of Stack	m	0.1	NA	-
2.	Cross section area of Stack	m <sup>2</sup>	0.008	NA	-
3.	Temperature	°C	117	NA	IS 11255 (Part 1), RA July-2014: 1985
4.	Velocity	m/s	7.2	NA	IS 11255 (Part 1), RA July-2014: 1985
5.	Flue Gas Discharge	Nm <sup>3</sup> /hr	156.1	NA	IS 11255 (Part 1), RA July-2014: 1985
6.	Total Particulate Matter (TPM)	mg/Nm <sup>3</sup>	42.1	-	IS 11255 (Part 1), RA July-2014: 1985
	Total Particulate Matter (TPM)	g/kwh	0.13	≤ 0.3 g/kwh	IS 11255 (Part 1), RA July-2014: 1985
7.	Carbon Monoxide (CO)	mg/Nm <sup>3</sup>	83	-	Instrumental
	Carbon Monoxide (CO)	g/kwh	0.26	≤ 3.5 g/kwh	Instrumental
8.	Nitrogen Oxide (NOx)	mg/Nm <sup>3</sup>	61.1	≤ 4.7 g/kwh	IS 11255, (Part 7):2005
	Nitrogen Oxide (NOx)	g/kwh	0.19		IS 11255, (Part 7):2005
9.	Hydrocarbon (HC)	mg/Nm <sup>3</sup>	56		Instrumental
	Hydrocarbon (HC)	g/kwh	0.175		Instrumental

NS: Not Specified. NA: Not Applicable. <sup>#</sup>: As per CPCB Guidelines.

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per CPCB guideline.

Verified by



Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY



Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S.L & T Construction  
 MTHL-3 Project, Near Kharokpar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO SAL/FM/58/ L&TU/ DGSM (22-23-0188)

REPORT DATE :01/07/2022

CUSTOMER REF :EH383WOD1000025

REF DATE :23/03/2021

**SAMPLE TYPE:**

SAMPLE REGISTRATION NO. : DGSM (22-23-0188)

**DG STACK EMISSION MONITORING**

LOCATION :DG Stack-5,(15 KVA)  
 (Near labor colony)

SAMPLING PLAN & METHOD NO. : As per Reference Method

SAMPLING DATE :27/06/2022

SAMPLING TIME :03:00 PM

ANALYSIS START DATE :29/06/2022

ANALYSIS COMPLETE DATE :01/07/2022

SAMPLE COLLECTED BY : SKYLAB

STACK HEIGHT : 1.5 Meters

SHAPE OF STACK : Round

MATERIAL OF STACK :MS

FUEL USED (CONSUMPTION) : Diesel

Sr. No.	Test Parameter	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Dimensions of Stack	m	0.05	NA	-
2.	Cross section area of Stack	m <sup>2</sup>	0.002	NA	-
3.	Temperature	°C	91	NA	IS 11255 (Part 1), RA July-2014: 1985
4.	Velocity	m/s	6.35	NA	IS 11255 (Part 1), RA July-2014: 1985
5.	Flue Gas Discharge	Nm <sup>3</sup> /hr	36.8	NA	IS 11255 (Part 1), RA July-2014: 1985
6.	Total Particulate Matter (TPM)	mg/Nm <sup>3</sup>	28.4	-	IS 11255 (Part 1), RA July-2014: 1985
	Total Particulate Matter (TPM)	g/kwh	0.087	≤ 0.3 g/kwh	IS 11255 (Part 1), RA July-2014: 1985
7.	Carbon Monoxide (CO)	mg/Nm <sup>3</sup>	58	-	Instrumental
	Carbon Monoxide (CO)	g/kwh	0.178	≤ 3.5 g/kwh	Instrumental
8.	Nitrogen Oxide (NOx)	mg/Nm <sup>3</sup>	41.1	≤ 7.5 g/kwh	IS 11255, (Part 7):2005
	Nitrogen Oxide (NOx)	g/kwh	0.126		IS 11255, (Part 7):2005
9.	Hydrocarbon (HC)	mg/Nm <sup>3</sup>	42		Instrumental
	Hydrocarbon (HC)	g/kwh	0.129		Instrumental

NS: Not Specified. NA: Not Applicable. <sup>#</sup>: As per CPCB Guidelines.

Opinion/Observation: Analyzed parameters in above tested sample are within standard limit as per CPCB guideline.

Verified by



Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY



Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S.L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO :** SAL/FM/58/ L&TU/ DGSM (22-23-0189)  
**REPORT DATE :** 01/07/2022  
**CUSTOMER REF :** EH383WOD1000025  
**REF DATE :** 23/03/2021

**SAMPLE TYPE:** **DG STACK EMISSION MONITORING**

**SAMPLE REGISTRATION NO. :** DGSM (22-23-0189) **LOCATION :** DG Stack-6,(62.5 KVA)  
 ( Zero point-Jasai)

**SAMPLING PLAN & METHOD NO. :** As per Reference Method **SAMPLE COLLECTED BY :** SKYLAB  
**SAMPLING DATE :** 27/06/2022 **STACK HEIGHT :** 2 Meters  
**SAMPLING TIME :** 03:20 PM **SHAPE OF STACK :** Round  
**ANALYSIS START DATE :** 29/06/2022 **MATERIAL OF STACK :** MS  
**ANALYSIS COMPLETE DATE :** 01/07/2022 **FUEL USED (CONSUMPTION) :** Diesel

Sr. No.	Test Parameter	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Dimensions of Stack	m	0.1	NA	-
2.	Cross section area of Stack	m <sup>2</sup>	0.008	NA	-
3.	Temperature	°C	115	NA	IS 11255 (Part 1), RA July-2014: 1985
4.	Velocity	m/s	7.1	NA	IS 11255 (Part 1), RA July-2014: 1985
5.	Flue Gas Discharge	Nm <sup>3</sup> /hr	154.3	NA	IS 11255 (Part 1), RA July-2014: 1985
6.	Total Particulate Matter (TPM)	mg/Nm <sup>3</sup>	40.2	--	IS 11255 (Part 1), RA July-2014: 1985
	Total Particulate Matter (TPM)	g/kwh	0.124	≤ 0.3 g/kwh	IS 11255 (Part 1), RA July-2014: 1985
7.	Carbon Monoxide (CO)	mg/Nm <sup>3</sup>	81	--	Instrumental
	Carbon Monoxide (CO)	g/kwh	0.25	≤ 3.5 g/kwh	Instrumental
8.	Nitrogen Oxide (NOx)	mg/Nm <sup>3</sup>	57.2	≤ 4.7 g/kwh	IS 11255, (Part 7):2005
	Nitrogen Oxide (NOx)	g/kwh	0.177		IS 11255, (Part 7):2005
9.	Hydrocarbon (HC)	mg/Nm <sup>3</sup>	57		Instrumental
	Hydrocarbon (HC)	g/kwh	0.176		Instrumental

NS: Not Specified. NA: Not Applicable. #: As per CPCB Guidelines.

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per CPCB guideline.

Verified by

  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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ULR NO: TC0515022000002198F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S.L& T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/110/L&TU/NM(22-23-488)  
 REPORT DATE :01/07/2022  
 CUSTOMER REF :EH383WOD1000025  
 REF DATE :23/03/2021

**SAMPLE TYPE:**

SAMPLE REGISTRATION NO. :NM(22-23-488)  
 SAMPLING PLAN& METHOD NO. : IS 9989: 1981  
 SAMPLING DATE :28/06/2022 to 29/06/2022

**AMBIENT NOISE MONITORING**

SAMPLE LOCATION : Jasai (Near Site office container)  
 SAMPLING DURATION : 24 HRS

Day Time (Hrs.)	Noise Level dB(A)
	Hourly $L_{eq}$
06.00 to 07.00	50.2
07.00 to 08.00	63.7
08.00 to 09.00	64.4
09.00 to 10.00	52.3
10.00 to 11.00	56.2
11.00 to 12.00	61.8
12.00 to 13.00	62.2
13.00 to 14.00	59.3
14.00 to 15.00	60.1
15.00 to 16.00	49.2
16.00 to 17.00	51.6
17.00 to 18.00	50.7
18.00 to 19.00	58.3
19.00 to 20.00	50.1
20.00 to 21.00	57.5
21.00 to 22.00	59.3

Night Time (Hrs.)	Noise Level dB(A)
	Hourly $L_{eq}$
22.00 to 23.00	54.7
23.00 to 00.00	53.3
00.00 to 01.00	52.9
01.00 to 02.00	50.2
02.00 to 03.00	55.7
03.00 to 04.00	48.4
04.00 to 05.00	44.3
05.00 to 06.00	43.8

**Noise Level Monitoring Report Summary**

L <sub>min</sub> .	L <sub>max</sub> .	$L_{eq}$ Day	$L_{eq}$ Night	L <sub>DN</sub>
44.9	63.8	59.6	52.1	60.5

Note: All Values in dB(A)

Verified by

Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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TC 5150

Accredited by NABL as per ISO/IEC 17025:2017. Certified as ISO 9001:2015 & ISO 45001:2018  
 Recognized by MoEFCC, Govt. of India, valid till 08.12.2023

Addr.: 202, CFC - 3, Asmeeta Texpa, Addl. Kalyan - Bhiwandi Industrial Area, MIDC, Village Kon, Tal. Bhiwandi,  
 Dist. Thane, Maharashtra, INDIA, Pincode - 421311

Mob. No. - 9867577309 / 310 / 312 / 9930060058

Email - mails@skylabenviro.com Website - www.skylabenviro.com

SALAC2212020910196

ULR NO: TC0515022000002199F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S.L& T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai - 410206

REPORT NO :SAL/FM/110/L&TU/NM(22-23-489)  
 REPORT DATE :01/07/2022  
 CUSTOMER REF :EH383WOD1000025  
 REF DATE :23/03/2021

**SAMPLE TYPE:**

SAMPLE REGISTRATION NO. :NM(22-23-489)  
 SAMPLING PLAN& METHOD NO. : IS 9989: 1981

**AMBIENT NOISE MONITORING**

SAMPLE LOCATION : Gavan (Near Site Office)

SAMPLING DATE : 28/06/2022 to 29/06/2022 SAMPLING DURATION : 24 HRS

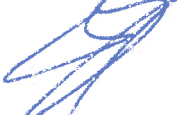
Day Time (Hrs.)	Noise Level dB(A)		Night Time (Hrs.)	Noise Level dB(A)	
	Hourly $L_{eq}$			Hourly $L_{eq}$	
06.00 to 07.00	60.8		22.00 to 23.00	59.6	
07.00 to 08.00	65.2		23.00 to 00.00	62.3	
08.00 to 09.00	56.3		00.00 to 01.00	58.4	
09.00 to 10.00	55.2		01.00 to 02.00	48.7	
10.00 to 11.00	59.5		02.00 to 03.00	47.6	
11.00 to 12.00	63.6		03.00 to 04.00	49.5	
12.00 to 13.00	66.3		04.00 to 05.00	54.3	
13.00 to 14.00	67.7		05.00 to 06.00	60.7	
14.00 to 15.00	60.5				
15.00 to 16.00	58.4				
16.00 to 17.00	73.3				
17.00 to 18.00	58.9				
18.00 to 19.00	54.1				
19.00 to 20.00	56.6				
20.00 to 21.00	60.4				
21.00 to 22.00	62.3				

**Noise Level Monitoring Report Summary**

Lmin.	Lmax.	$L_{eq}$ Day	$L_{eq}$ Night	$L_{DN}$
44.8	68.6	62.3	57.6	65.5


Note: All Values in dB(A)

Verified by

  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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 Dist. Thane, Maharashtra, INDIA, Pincode - 421311

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Email - [mails@skylabenviro.com](mailto:mails@skylabenviro.com) Website - [www.skylabenviro.com](http://www.skylabenviro.com)

SALAC2212020910197

ULR NO: TC051502200002200F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S.L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/110/L&TU/NM(22-23-490)  
**REPORT DATE** :01/07/2022  
**CUSTOMER REF** :EH383WOD1000025  
**REF DATE** :23/03/2021

**SAMPLE TYPE:**  
**SAMPLE REGISTRATION NO.** :NM(22-23-490)  
**SAMPLING PLAN& METHOD NO.** : IS 9989: 1981  
**SAMPLING DATE** : 28/06/2022 to 29/06/2022

**AMBIENT NOISE MONITORING**  
**SAMPLE LOCATION** :Chirle (Near Site office container)  
**SAMPLING DURATION** : 24 HRS

Day Time (Hrs.)	Noise Level dB(A)	Night Time (Hrs.)	Noise Level dB(A)
	Hourly $L_{eq}$		Hourly $L_{eq}$
06.00 to 07.00	64.5	22.00 to 23.00	45.7
07.00 to 08.00	68.2	23.00 to 00.00	50.6
08.00 to 09.00	63.3	00.00 to 01.00	54.4
09.00 to 10.00	61.1	01.00 to 02.00	48.2
10.00 to 11.00	60.2	02.00 to 03.00	57.7
11.00 to 12.00	58.3	03.00 to 04.00	56.3
12.00 to 13.00	65.7	04.00 to 05.00	50.5
13.00 to 14.00	63.5	05.00 to 06.00	58.1
14.00 to 15.00	65.3		
15.00 to 16.00	64.4		
16.00 to 17.00	61.8		
17.00 to 18.00	66.6		
18.00 to 19.00	65.7		
19.00 to 20.00	63.4		
20.00 to 21.00	64.1		
21.00 to 22.00	57.5		

**Noise Level Monitoring Report Summary**

Lmin.	Lmax.	$L_{eq}$ Day	$L_{eq}$ Night	$L_{DN}$
47.4	65.8	63.5	54.3	64.6

Note: All Values in dB(A)

Verified by

Mr. AtulShahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

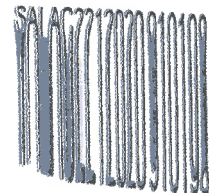
Mr. S. B. Pansare  
 Authorized Signatory

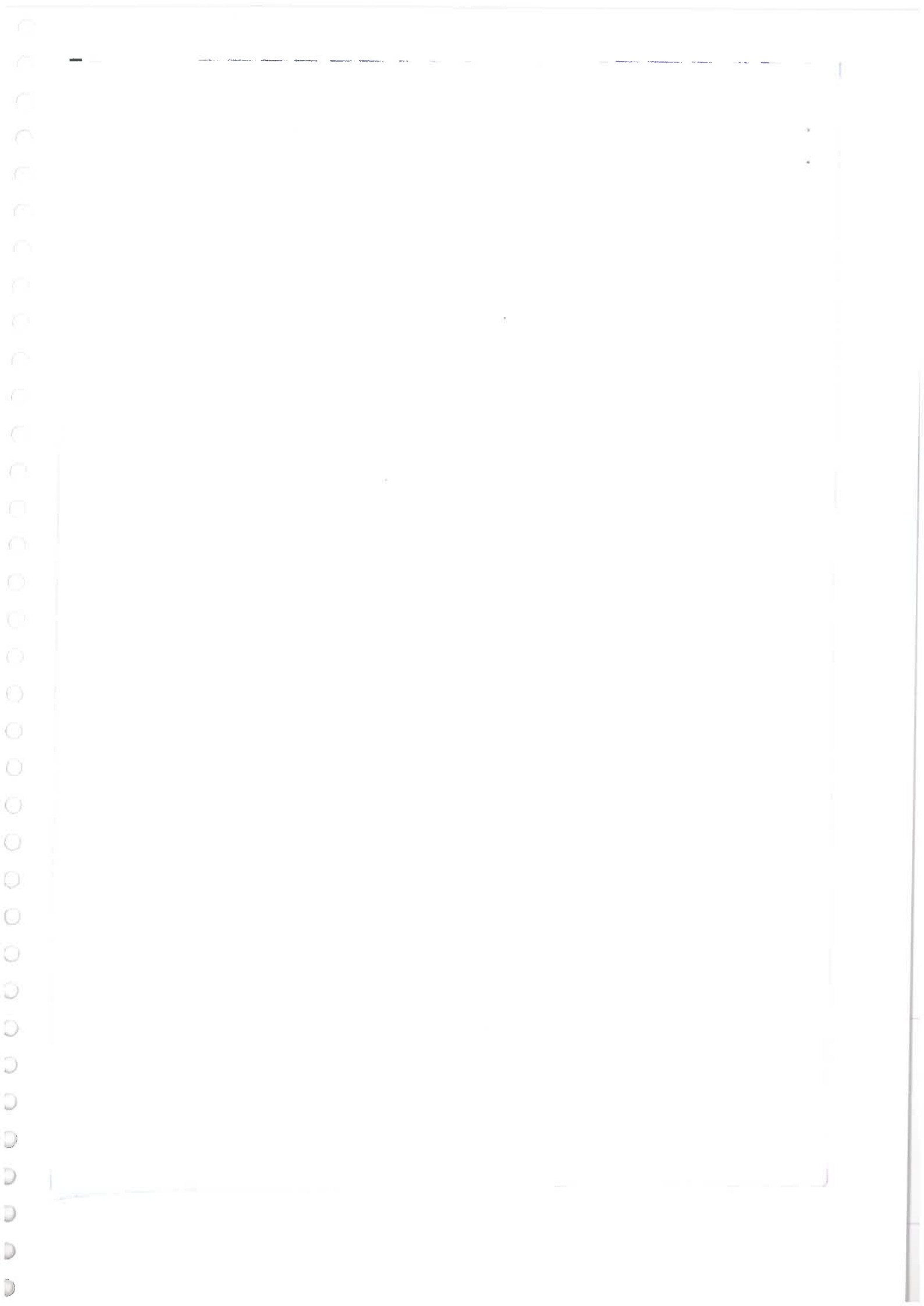
**END OF REPORT**

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 Email - mails@skylabenviro.com Website - www.skylabenviro.com





ULR NO: TC051502200002201F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S. L & T Construction.  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/61/I &TU/WW(22-23-0406)  
**REPORT DA** :27/06/2022  
**CUSTOMER REF** :EH383WOD1000025  
**REF DATE** :23/03/2021

**SAMPLE TYPE:**  
**SAMPLE REGISTRATION NO.** :WW(22-23-0406)  
**SAMPLING PLAN& METHOD NO.** : IS 3025 Part 1:1987 RA 2019  
**SAMPLING DATE** : 20/06/2022  
**SAMPLE RECEIPT DATE** : 20/06/2022  
**ANALYSIS START DATE** : 21/06/2022  
**ANALYSIS COMPLETE DATE** : 27/06/2022

**EFFLUENT WATER ANALYSIS**  
**LOCATION** : Sedimentation tank, Gavan  
**SAMPLE SPECIFICATION** :Treated Effluent Water  
**SAMPLE COLLECTED BY** : SKYLAB  
**SAMPLE QUANTITY** :1 Ltrs

Sr. No.	Test Parameter	Unit	Result	Limit <sup>*</sup>	Reference Method
				Inland surface water	
1.	pH	-	8.03	5.5 - 9.0	IS 3025 (Part 11), RA Aug 2017: 1983
2.	Total suspended solids	mg/L	14	100	IS 3025 (Part 17), RA Aug 2017: 1984
3.	Ammonical Nitrogen	mg/L	<0.5	50	IS 3025 (Part 34), RA 2014: 1988
4.	Total Nitrogen	mg/L	<0.5	100	IS 3025 (Part 34), RA 2014: 1988
5.	Chemical Oxygen Demand (COD)	mg/L	36	250	IS 3025 (Part 46), RA 2014: 1994
6.	Biochemical Oxygen Demand (BOD)	mg/L	7	30	IS 3025 (Part 44), RA 2014: 1993

NS: Not Specified. \*: As per CPCB Guidelines.

**Opinion/Observation:** Analyzed parameters in above tested sample are within limit as per specified standard.

Verified by

  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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ULR NO: TC0515022000002188F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0112)

REPORT DATE :07/06/2022

CUSTOMER REF :VERBAL

REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO. : AAM (22-23-0112)

LOCATION : Gavan, Batching Plant- Near to Casting Yard

SAMPLING PLAN& METHOD NO. :As per Reference Method

SAMPLING DATE :01/06/2022 to 02/06/2022

SAMPLING TIME :12:45 PM TO 12:45 PM

SAMPLE COLLECTED BY: SKYLAB

ANALYSIS START DATE :04/06/2022

ANALYSIS COMPLETE DATE :07/06/2022

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	78.4	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	34.2	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO2)	24 HRS	µg/m <sup>3</sup>	10.6	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NOx)	24 HRS	µg/m <sup>3</sup>	26.3	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O3)	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH3)	24 HRS	µg/m <sup>3</sup>	15.1	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C6H6)	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng /m <sup>3</sup>	<0.5	1	LAB SOP NO - 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng /m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng /m <sup>3</sup>	1.38	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

# As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by

Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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Page 1 of 2



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Mob. No. : 9867577309 / 310 / 312 / 9930060058

Email - mails@skylabenviro.com Website - www.skylabenviro.com

SALAC2212020910186

TC 5150



**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0112)

REPORT DATE :07/06/2022

CUSTOMER REF :VERBAL

REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO. : AAM (22-23-0112)  
 SAMPLING PLAN & METHOD NO. :As per Reference Method  
 SAMPLING DATE :01/06/2022 to 02/06/2022  
 SAMPLING TIME :12:45 PM TO 12:45 PM  
 ANALYSIS START DATE :04/06/2022  
 ANALYSIS COMPLETE DATE :07/06/2022

LOCATION : Gavan, Batching Plant- Near to Casting Yard

SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
12.	Methane (CH <sub>4</sub> )	24 HRS	ppm	2.1	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	1.3	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/m <sup>3</sup>	0.74	2	IS 5182 (Part 10): 1999

<sup>#</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by

  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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ULR NO: TC051502200002189F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0113)  
 REPORT DATE :07/06/2022  
 CUSTOMER REF :VERBAL  
 REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO . : AAM (22-23-0113)  
 SAMPLING PLAN& METHOD NO. :As per Reference Method  
 SAMPLING DATE :02/06/2022 to 03/06/2022  
 SAMPLING TIME :11:50 AM TO 11:50 AM  
 ANALYSIS START DATE :04/06/2022  
 ANALYSIS COMPLETE DATE :07/06/2022

LOCATION : Gavan, Batching Plant- Near to Casting Yard

SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	75.2	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	32.5	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO <sub>2</sub> )	24 HRS	µg/m <sup>3</sup>	8.3	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NO <sub>x</sub> )	24 HRS	µg/m <sup>3</sup>	27.1	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O <sub>3</sub> )	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH <sub>3</sub> )	24 HRS	µg/m <sup>3</sup>	13.8	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C <sub>6</sub> H <sub>6</sub> )	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng /m <sup>3</sup>	<0.5	1	LAB SOP NO - 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng /m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng /m <sup>3</sup>	1.30	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

<sup>#</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by



Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY



Mr. S. B. Pansare  
 Authorized Signatory

END OF REPORT

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Mob. No. - 9867577309 / 310 / 312 / 9930060058

Email - mails@skylabenviro.com Website - www.skylabenviro.com

SALAC2212020910187

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .I & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0113)  
**REPORT DATE** :07/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:**  
**AMBIENT AIR QUALITY MONITORING**


**SAMPLE REGISTRATION NO .** : AAM (22-23-0113)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :02/06/2022 to 03/06/2022  
**SAMPLING TIME** :11:50 AM TO 11:50 AM  
**ANALYSIS START DATE** :04/06/2022  
**ANALYSIS COMPLETE DATE** :07/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.8	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.9	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/ m <sup>3</sup>	0.68	2	IS 5182 (Part 10): 1999

<sup>#</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0114)  
**REPORT DATE** :13/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:**  
**AMBIENT AIR QUALITY MONITORING**


**SAMPLE REGISTRATION NO .** : AAM (22-23-0114)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :06/06/2022 to 07/06/2022  
**SAMPLING TIME** :11:15 AM TO 11:15 AM  
**ANALYSIS START DATE** :09/06/2022  
**ANALYSIS COMPLETE DATE** :13/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.6	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	1.0	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/ m <sup>3</sup>	0.64	2	IS 5182 (Part 10): 1999


<sup>#</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
**Mr. Atul Shahane**  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
**Mr. S. B. Pansare**  
 Authorized Signatory

**END OF REPORT**

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ULR NO: TC0515022000002190F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0114)  
**REPORT DATE** :13/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** **AMBIENT AIR QUALITY MONITORING**


**SAMPLE REGISTRATION NO.** : AAM (22-23-0114)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :06/06/2022 to 07/06/2022  
**SAMPLING TIME** :11:15 AM TO 11:15 AM  
**ANALYSIS START DATE** :09/06/2022  
**ANALYSIS COMPLETE DATE** :13/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	73.2	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	30.5	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO <sub>2</sub> )	24 HRS	µg/m <sup>3</sup>	8.1	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NO <sub>x</sub> )	24 HRS	µg/m <sup>3</sup>	21.7	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O <sub>3</sub> )	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH <sub>3</sub> )	24 HRS	µg/m <sup>3</sup>	12.8	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C <sub>6</sub> H <sub>6</sub> )	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng /m <sup>3</sup>	<0.5	1	LAB SOP NO - 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng /m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng /m <sup>3</sup>	1.35	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

<sup>#</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified-by  
  
**Mr. Atul Shahane**  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
**Mr. S. B. Pansare**  
 Authorized Signatory

**END OF REPORT**

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 Dist. Thane, Maharashtra, INDIA, Pincode - 421311  
 Mob. No. - 9867577309 / 310 / 312 / 9930060058  
 Email - mails@skylabenviro.com Website - www.skylabenviro.com

SALAC2212020910188

ULR NO: TC0515022000002191F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0115)  
**REPORT DATE** :13/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** AMBIENT AIR QUALITY MONITORING  
**LOCATION** : Gavan, Batching Plant- Near to Casting Yard


**SAMPLE REGISTRATION NO.** : AAM (22-23-0115)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :07/06/2022 to 08/06/2022  
**SAMPLING TIME** :11:20 AM TO 11:20 AM  
**ANALYSIS START DATE** :09/06/2022  
**ANALYSIS COMPLETE DATE** :13/06/2022

**SAMPLE COLLECTED BY:** SKYLAB


Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	74.6	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	33.2	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO2)	24 HRS	µg/m <sup>3</sup>	10.4	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NOx)	24 HRS	µg/m <sup>3</sup>	23.3	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O3)	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH3)	24 HRS	µg/m <sup>3</sup>	13.1	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C6H6)	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng /m <sup>3</sup>	<0.5	1	LAB SOP NO – 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng /m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng /m <sup>3</sup>	1.40	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

# As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY  
  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0115)  
**REPORT DATE** :13/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:**  
**AMBIENT AIR QUALITY MONITORING**


**SAMPLE REGISTRATION NO .** : AAM (22-23-0115)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :07/06/2022 to 08/06/2022  
**SAMPLING TIME** : 11:20 AM TO 11:20 AM  
**ANALYSIS START DATE** :09/06/2022  
**ANALYSIS COMPLETE DATE** :13/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB


Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>1</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.8	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.8	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/ m <sup>3</sup>	0.70	2	IS 5182 (Part 10): 1999

<sup>1</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY  
  
 Mr. S. B. Pansare  
 Authorized Signatory

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ULR NO: TC0515022000002192F

### TEST REPORT

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0125)  
 REPORT DATE :20/06/2022  
 CUSTOMER REF :VERBAL  
 REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO. : AAM (22-23-0125)  
 SAMPLING PLAN& METHOD NO. :As per Reference Method  
 SAMPLING DATE :13/06/2022 to 14/06/2022  
 SAMPLING TIME :11:30 AM TO 11:30 AM  
 ANALYSIS START DATE :16/06/2022  
 ANALYSIS COMPLETE DATE :20/06/2022

LOCATION : Gavan, Batching Plant- Near to Casting Yard


SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>a</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	64.8	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	28.5	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO <sub>2</sub> )	24 HRS	µg/m <sup>3</sup>	9.2	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NO <sub>x</sub> )	24 HRS	µg/m <sup>3</sup>	21.6	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O <sub>3</sub> )	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH <sub>3</sub> )	24 HRS	µg/m <sup>3</sup>	12.3	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C <sub>6</sub> H <sub>6</sub> )	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng /m <sup>3</sup>	<0.5	1	LAB SOP NO – 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng /m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng /m <sup>3</sup>	1.24	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

<sup>a</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by

  
 Mr. Atul Shahane  
 Chemist

For SKYLAB ANALYTICAL LABORATORY



  
 Mr. S. B. Pansare  
 Authorized Signatory

END OF REPORT

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ULR NO: TC0515022000002193F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0126)  
**REPORT DATE** :20/06/2022  
**CUSTOMER REF**:VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** **AMBIENT AIR QUALITY MONITORING**


**SAMPLE REGISTRATION NO.** : AAM (22-23-0126)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :14/06/2022 to 15/06/2022  
**SAMPLING TIME** :11:40 AM TO 11:40 AM  
**ANALYSIS START DATE** :16/06/2022  
**ANALYSIS COMPLETE DATE** :20/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>1</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	68.4	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	30.1	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO <sub>2</sub> )	24 HRS	µg/m <sup>3</sup>	7.3	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NO <sub>x</sub> )	24 HRS	µg/m <sup>3</sup>	19.5	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O <sub>3</sub> )	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH <sub>3</sub> )	24 HRS	µg/m <sup>3</sup>	10.8	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C <sub>6</sub> H <sub>6</sub> )	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng/m <sup>3</sup>	<0.5	1	LAB SOP NO – 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng/m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng/m <sup>3</sup>	1.32	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988


<sup>1</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

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Page 1 of 2



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 Recognized by MoEFCC, Govt. of India, valid till 08.12.2023  
 Add.: 202, CFC - 3, Asmeeta Texpa, Addl. Kalyan - Bhiwandi Industrial Area, MIDC, Village Kon, Tal. Bhiwandi,  
 Dist. Thane, Maharashtra, INDIA, Pincode - 421311  
 Mob. No. - 9867577309 / 310 / 312 / 9930060058  
 Email - mails@skylabenviro.com Website - www.skylabenviro.com

SALAC2212020910191

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0126)  
**REPORT DATE** :20/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** AMBIENT AIR QUALITY MONITORING


**SAMPLE REGISTRATION NO .** : AAM (22-23-0126)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :14/06/2022 to 15/06/2022  
**SAMPLING TIME** :11:40 AM TO 11:40 AM  
**ANALYSIS START DATE** :16/06/2022  
**ANALYSIS COMPLETE DATE** :20/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB


Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.7	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.7	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/m <sup>3</sup>	0.66	2	IS 5182 (Part 10): 1999

<sup>#</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY  
  
 Mr. S. B. Pansare  
 Authorized Signatory

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ULR NO: TC0515022D00002194F

**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**  
 M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0147)  
**REPORT DATE** :27/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** **AMBIENT AIR QUALITY MONITORING**


**SAMPLE REGISTRATION NO .** : AAM (22-23-0147)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :20/06/2022 to 21/06/2022  
**SAMPLING TIME** :02:15 PM TO 02:15 PM  
**ANALYSIS START DATE** :23/06/2022  
**ANALYSIS COMPLETE DATE** :27/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB


Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
1.	Particulate Matter as PM10	24 HRS	µg/m <sup>3</sup>	58.4	100	IS:5182, (Part 23) RA July-2017: 2006
2.	Particulate Matter as PM2.5	24 HRS	µg/m <sup>3</sup>	26.8	60	LAB SOP NO - 02 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 15-30): 2012
3.	Sulphur Dioxide (SO2)	24 HRS	µg/m <sup>3</sup>	8.6	80	IS:5182, (Part 2) RA July-2017: 2001
4.	Nitrogen Oxide (NOx)	24 HRS	µg/m <sup>3</sup>	16.2	80	IS: 5182, (Part 6), RA July - 2017: 2006
5.	Ozone (O3)	8 HRS	µg/m <sup>3</sup>	<20	100	Method 411, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
6.	Ammonia (NH3)	24 HRS	µg/m <sup>3</sup>	9.5	400	Method 401, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
7.	Benzene (C6H6)	24 HRS	µg/m <sup>3</sup>	<0.10	5	IS 5182 (Part 11) RAJULY-2017: 2006
8.	Benzo(a)pyrene	24 HRS	ng /m <sup>3</sup>	<0.5	1	LAB SOP NO – 018 based on CPCB Guidelines NAAQMS/36/2012-13, Vol-1 (Page 40-47): 2012
9.	Metal-Lead	24 HRS	µg/m <sup>3</sup>	<0.1	1	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
10.	Metal-Arsenic	24 HRS	ng /m <sup>3</sup>	<1	6	Method 302, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988
11.	Metal-Nickel	24 HRS	ng /m <sup>3</sup>	1.15	20	Method 822, Methods of Air Sampling and Analysis, 3rd Edition, 1988: 1988

<sup>#</sup>: As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
**Mr. Atul Shahane**  
 Chemist



For SKYLAB ANALYTICAL LABORATORY  
  
**Mr. S. B. Pansare**  
 Authorized Signatory

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 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

**REPORT NO** :SAL/FM/58/ L&TU/ AAM (22-23-0147)  
**REPORT DATE** :27/06/2022  
**CUSTOMER REF** :VERBAL  
**REF DATE** :04/04/2022

**SAMPLE TYPE:** AMBIENT AIR QUALITY MONITORING


**SAMPLE REGISTRATION NO.** : AAM (22-23-0147)  
**SAMPLING PLAN& METHOD NO.** :As per Reference Method  
**SAMPLING DATE** :20/06/2022 to 21/06/2022  
**SAMPLING TIME** :02:15 PM TO 02:15 PM  
**ANALYSIS START DATE** :23/06/2022  
**ANALYSIS COMPLETE DATE** :27/06/2022

**LOCATION** : Gavan, Batching Plant- Near to Casting Yard  
**SAMPLE COLLECTED BY:** SKYLAB


Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>#</sup>	Reference Method
12.	Methane (CH4)	24 HRS	ppm	1.1	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.6	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/ m <sup>3</sup>	0.54	2	IS 5182 (Part 10): 1999

<sup>#</sup> As per NAAQMS Guidelines 2009

**Opinion/Observation:** Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
**Mr. Atul Shahane**  
 Chemist



For SKYLAB ANALYTICAL LABORATORY  
  
**Mr. S. B. Pansare**  
 Authorized Signatory

**END OF REPORT**

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**TEST REPORT**

**NAME & ADDRESS OF CUSTOMER:**

M/S .L & T Construction  
 MTHL-3 Project, Near Kharkopar Railway Station,  
 Ulwe, Navi Mumbai – 410206

REPORT NO :SAL/FM/58/ L&TU/ AAM (22-23-0125)  
 REPORT DATE :20/06/2022  
 CUSTOMER REF :VERBAL  
 REF DATE :04/04/2022

**SAMPLE TYPE:**

**AMBIENT AIR QUALITY MONITORING**

SAMPLE REGISTRATION NO. : AAM (22-23-0125)  
 SAMPLING PLAN& METHOD NO. :As per Reference Method  
 SAMPLING DATE :13/06/2022 to 14/06/2022  
 SAMPLING TIME :11:30 AM TO 11:30 AM  
 ANALYSIS START DATE :16/06/2022  
 ANALYSIS COMPLETE DATE :20/06/2022


LOCATION : Gavan, Batching Plant- Near to Casting Yard

SAMPLE COLLECTED BY: SKYLAB

Sr.No.	Test Parameter	Duration	Unit	Result	Limit <sup>a</sup>	Reference Method
12.	Methane (CH <sub>4</sub> )	24 HRS	ppm	1.6	-	IS 5182 (Part 17) :1979
13.	VOC (BTX)	24 HRS	µg/m <sup>3</sup>	0.8	-	IS 5182 (Part 11) RAJULY-2017: 2006
14.	Carbon Monoxide (CO)	8 HRS	mg/ m <sup>3</sup>	0.59	2	IS 5182 (Part 10): 1999

<sup>a</sup>: As per NAAQMS Guidelines 2009

Opinion/Observation: Analyzed parameters in above tested sample are within standard limit as per NAAQMS Guidelines.

Verified by  
  
 Mr. Atul Shahane  
 Chemist



For SKYLAB ANALYTICAL LABORATORY

  
 Mr. S. B. Pansare  
 Authorized Signatory

**END OF REPORT**

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## TEST REPORT

<b>Name of Organization</b> : M/s.L & T Construction					
<b>Address</b> : Gate No. 1-Sewri Timber Pond, Near Gadi Adda, Sewri(East), Mumbai.					
<b>Customer Reference</b> : EH401WOD8000155 Dated 21.04.2022					
<b>MoEFCC Validity</b> : 16 October, 2024					
<b>Discipline/ Group</b> : Chemical-Environment & Pollution			<b>Test Report No.</b> : NIL/W/08/22/230		
<b>Sample Type</b> : Waste Water			<b>Sample Code</b> : NIL/W/08/22/230		
<b>Sampling Method</b> : APHA 1060 (B & C)			<b>Ambient Temperature</b> : 27°C		
<b>Sampling Date</b> : 24.08.2022			<b>Sample Receive Date</b> : 24.08.2022		
<b>Analysis Start Date</b> : 25.08.2022			<b>Analysis Finish Date</b> : 02.09.2022		
<b>Reporting Date</b> : 02.09.2022			<b>Sample Qty &amp; Pkng.</b> : 2 lit Plastic Can & Micro Bottle		
<b>Sampling Location</b> : MP-36 Bio Toilet			<b>Sampling Done By</b> : Netel India Limited		
Sr. No	Parameter	Result	Limit	Unit	Method
11	Dissolved Oxygen	6.4	-	mg/lit	APHA 2150(O)-B
12	E Coli	Absent	Absent	-	IS 1622:181
13	Total Bacterial Count Count	26 x 10 <sup>4</sup>	-	cfu	IS 1622:181

**Note :**

1. This Test Report shall not be reproduced except in full, without written approval of the Laboratory.
2. This Test Report refers only to the sample tested.
3. The Complaint register is available with the laboratory as per Environment protection act 1986.

\*\*\*End of Report\*\*\*

Verified by:

Surekha Jamdar  
Technical Manager



Issued by:

Shraddha Kere  
Quality Manager



### Annexure V :- MTHL EMP Expenditure details

Sr. No	Environmental attribute	Provision	Total Cost till Dec 2022
1	Environmental Monitoring- Air Act, Water Act, Noise levels	8	2.25
2	Compensatory Restoration Plan (Mangroves)/Land area (Cut/Transplant and compensatory plantation)	25	50.98
3	Implementation of the suggestions given by BNHS	25	41.98
4	Noise barriers	45	1.1426
5	Mitigation of marine water pollution caused due to the surrounding industries and Sewage from Urban Bodies, by providing Funding and Capacity Building for Enabling Effluent Treatment	40	5.8
6	Contribution to Mangroves Fund, an initiative by Govt. of Maharashtra for Conservation and Protection of Mangroves in Coastal areas by depositing Seed Money. This can be used for Survey & Demarcation of Notified areas. Purchase of vehicles and equipment for anti-Encroachment drives, etc.	25	25
7	Oil Spill Mitigation Plan	10	1.84
8	Habitat quality assessment and monitoring Surveillance management and monitoring team for migratory birds, marine flora, turbidity in sea floor, etc Corpus fund for mudflat restoration program	20	(included in Sr. No. 2 and 3)
9	Appointment of Bird Monitor and his assistant till Restoration of Baseline data	4	Included in Sr. No. 3
10	DMP, Fire fighting, Risk Analysis	15	2.76
11	Sustainable development including establishing Nature Interpretation Centre	10	10 (included in Sr. No. 2 and 3)
12	Safety and Security	15	19.37
13	Energy conservation	10	4.6
14 a	Landscaping-Plantation of trees, flowering plants etc.	8	0.77
15	Compensation and Capacity Building of Fisher folks due to Temporary and Permanent Loss of Fishing round.	75	190
	<b>Total</b>	<b>335.00</b>	<b>346.49</b>



# Annexure VI



No. MMRDA/MTHL-PIU/JICA/QPR-21/1293/2022

Date: 20<sup>th</sup> July 2022

**To,**  
**Chief Representative,**  
Mumbai Trans Harbour Link Project (I)  
16<sup>th</sup> Floor, Hindustan Times House,  
18-20, Kasturba Gandhi Marge, New Delhi-110-001

**Kind Attn: Mr. Katsuo Matsumoto,**

**Sub : Mumbai Trans Harbour Link Project (I) (ID-P255)**  
**- Quarterly Progress Report (QPR) No. 21 for April 2022 to June 2022.**

Sir,


The loan agreement for the Official Development Assistance (ODA) loan for the Mumbai Trans Harbour Link Project (I) is signed between Mumbai Trans Harbour Link Project (I) and Mumbai Metropolitan Region Development Authority (MMRDA) on 31<sup>st</sup> March 2017 & 29<sup>th</sup> March 2020 with MMRDA as a direct borrower of the loan.

The Quarterly Progress Report (QPR) No. 21 for the Mumbai Trans Harbour Link Project (I) for the period of April 2022 to June 2022 is enclosed herewith for information please.

Thanking you.

Yours faithfully,

Encl.: QPR-21 (April 2022 to June 2022)

  
(S. A. Wandhekar)  
Engineer- In- Chief

**Mumbai Metropolitan Region Development Authority**

Bandra-Kurla Complex, Bandra East, Mumbai 400 051.

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**एम एम आर डी ए**  
**MMRDA**

Mumbai Metropolitan Region Development Authority

# Mumbai Trans Harbour Link Project

## Quarterly Progress Report - No. 21

(From 1<sup>st</sup> April 2022 to 30<sup>th</sup> June 2022)



**Mumbai Trans Harbour Link Project  
Quarterly Progress Report No. 21  
1<sup>st</sup> April 2022 to 30<sup>th</sup> June 2022  
Loan Agreement No. ID-P255 (Tranche-I)**

**ORGANIZATION INFORMATION**

<b>Borrower</b>	<b>Mumbai Metropolitan Region Development Authority</b>	
	Person in Charge	<b>Metropolitan Commissioner, MMRDA</b>
	Contact Address	M.M.R.D.A. New Office Building, Bandra-Kurla Complex, Plot no. R-5, R-6 & R-12, E Block, Bandra (East), Mumbai - 400051 Phone: +91-22-26594000 Fax No:+91-22-2659 1264
<b>Executing Agency</b>	<b>Mumbai Trans Harbour Link Project Implementation Unit</b>	
	Headed by:	Chief Engineer Mumbai Trans Harbour Link Project Implementation Unit
	Contact Address	M.M.R.D.A. New Office Building, Bandra-Kurla Complex, Plot no. R-5, R-6 & R-12, E Block Bandra (East), Mumbai - 400 051 Phone: +91-22-2659 4034 Fax No: +91-22-2659 4179

**Details of JICA Loan**

<b>Source of Finance</b>	JICA ODA Loan Portion:	238,572 million Japanese YEN (JPY)
	Tranche-I:	144,795 million Japanese YEN (JPY) (Loan Agreement signed on 31 <sup>st</sup> March 2017)
	Tranche-II:	66,909 million Japanese YEN (JPY) (Loan Agreement signed on 27 <sup>th</sup> March 2020)
<b>Terms and Conditions of JICA ODA Loan (Tranche-1)</b>	Repayment Period:	30 years, including 10 years of the grace period.



DOCUMENT VERIFICATION AND REVISION RECORD

PROJECT NAME		Mumbai Trans Harbour Link Project			
DOC NO.		21	DATE OF ISSUE		12/07/2022
DOC TITLE		Quarterly Progress Report No. 21			
REV No.	DATE OF ISSUE	DESCRIPTION	PREPARED BY	CHECKED BY	APPROVED BY
RO	05/07/2017	Quarterly Progress Report No. 1 (Apr-Jun 17)	J Senthil	Dr T K Sundaram	Dr Robin Sham
RO	05/10/2017	Quarterly Progress Report No. 2 (Jul-Sep 17)	J Senthil	Dr T K Sundaram	Dr Robin Sham
RO	05/01/2018	Quarterly Progress Report No. 3 (Oct-Dec 17)	J Senthil	Dr T K Sundaram	Dr Robin Sham
RO	05/04/2018	Quarterly Progress Report No. 4 (Jan-Mar 18)	J Senthil	Dr T K Sundaram	Dr Robin Sham
RO	24/07/2018	Quarterly Progress Report No. 5 (Apr-Jun 18)	Prashant B	Dr T K Sundaram	Dr Robin Sham
RO	10/10/2018	Quarterly Progress Report No. 6 (Jul-Sep 18)	Prashant B	Dr T K Sundaram	Dr Robin Sham
R1	08/02/2019	Quarterly Progress Report No. 7 (Oct-Dec 18)	Prashant B	J Senthil/ Dr T K Sundaram	Dr Robin Sham
RO	05/04/2019	Quarterly Progress Report No. 8 (Jan-Mar 19)	Prashant B	J Senthil	V. D. Sharma/ Dr Robin Sham
RO	18/09/2019	Quarterly Progress Report No. 9 (Apr-Jun 19)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	13/11/2019	Quarterly Progress Report No. 10 (Jul-Sep 19)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	11/02/2020	Quarterly Progress Report No.11 (Oct-Dec 19)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	25/11/2020	Quarterly Progress Report No.12 (Jan-Mar 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	15/12/2020	Quarterly Progress Report No.13 (Apr-Jun 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	06/01/2021	Quarterly Progress Report No.14 (Jul-Sept 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	12/02/2021	Quarterly Progress Report No.15 (Oct-Dec 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	06/05/2021	Quarterly Progress Report No.16 (Jan-Mar 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	30/07/2021	Quarterly Progress Report No.17 (Apr-Jun 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	11/11/2021	Quarterly Progress Report No.18 (Jul - Sep 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	17/01/2022	Quarterly Progress Report No.19 (Oct-Dec 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	22/04/2022	Quarterly Progress Report No.20 (Jan - Mar 22)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
RO	12/07/2022	Quarterly Progress Report No.21 (Apr-Jun 22)	Prashant B	Mr. Som Ghosh	Dr Robin Sham



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## 1.0 PROJECT DESCRIPTION

### 1.1 Project Objective

#### **Original:**

To improve connectivity in Mumbai Metropolitan region by constructing the Mumbai Trans Harbour Link connecting Mumbai with Navi Mumbai, thereby contributing to mitigation of traffic congestion and promoting regional economic development.

#### **Actual (P/R, PCR)**

There is no change in the Project Objective.

### 1.2 Necessity of the Project

The Project is consistent with the development policy, sector plan, national/regional development plans and demand of target group of the recipient country.

#### **Benefits from MTHL Project**

- Saving in travel time for commuters from Mumbai to Navi Mumbai.
- Improved comfort and accessibility between the island and the mainland.
- Reduced operating costs of vehicles due to lesser congestion.
- Smooth traffic flow from Navi Mumbai airport to Mumbai Island.
- Accelerated economic development of Navi Mumbai and nearby regions.
- Greater economic integration of Mumbai Island with Navi Mumbai and extended regions of Pune, Goa, Panvel and Alibaug.
- Improvement in environment and reduced pollution levels.
- Improved safety due to reduction in accidents.
- Improvement in trade competitiveness through faster and improved logistics.
- Accelerated growth of Navi Mumbai.
- Decongestion of Mumbai Island and dispersal of population to Navi Mumbai region & beyond.

#### **Necessity of the Project**

1. Although the urbanization in India has been rapidly progressing, infrastructure development in the urban areas has not caught up its progress. Particularly, the traffic congestion in the urban areas due to a lack of road network hinders the economic development. Thus, Government of India (GOI) places transport and connectivity as one of the "Growth Enablers" and plans to enhance road network in the "Three Year Action Agenda 2017-2018 to 2019-20 (NITI Aayog)".
2. Mumbai Metropolitan Region, which includes Mumbai and Navi Mumbai, has about 18.4 million people in population as of 2011 (Census 2011) and the population density reaches 20,694 people per square km in the center of Mumbai, which is one of the most overpopulated and high-density cities in the world.
3. Mumbai, the narrow stretch of land that has traditionally been the epicentre of India's commerce, has seen a steady increase in population in the last three decades despite obvious spatial constraints. Thus, the development of Navi Mumbai has been identified as

an urgent requirement for broad development in Mumbai Metropolitan Region.

4. The Government of Maharashtra (GoM), of which Mumbai Metropolitan Region is under jurisdiction, has been facilitating various development plans particularly in Navi Mumbai area, which stands at the opposite site of Mumbai across the Mumbai Bay and still has spacious area for development, such as a new international airport, Special Economic Zone (SEZ) and expansion of Jawaharlal Nehru Port in order to promote the sustainable economic development in Mumbai Metropolitan Region.
5. Furthermore, a lack of connectivity in Mumbai has stunted its growth. The GoM has given importance to construct the faster connection with Mumbai to Navi Mumbai International Airport, Jawaharlal Nehru Port, Mumbai-Pune expressway and main hinterland.
6. Accordingly, the Mumbai Trans Harbour Link (MTHL) has been identified as the important infrastructure to improve the connectivity between Mumbai and Navi Mumbai and continue economic development in Mumbai Metropolitan Region.

The MTHL is proposed to be developed as an expressway link comprising of a dual three-lane main carriageway bridge connecting Sewri in Mumbai to Chirle in Navi Mumbai. When completed, MTHL will reduce the distance between Mumbai and Navi Mumbai and will help save approximately an hour in travel time. Also, development of Navi Mumbai along with the imminent construction of the Navi Mumbai airport will lead to increased traffic between Mumbai and Navi Mumbai. Consequently, the project is envisaged to; improving accessibility between Mumbai and Navi Mumbai, accelerating growth of Navi Mumbai, smooth traffic flow from Navi Mumbai airport to Mumbai, accelerating economic development of Navi Mumbai and surrounding regions, greater economic integration of Mumbai with Navi Mumbai and extended regions of Pune, Goa, Panvel and Alibaug, and decongestion of Mumbai and dispersal of population to Navi Mumbai region and beyond.

7. The Comprehensive Transportation Study (CTS) for Mumbai Metropolitan Region which was guided by Mumbai Metropolitan Region Development Authority (MMRDA) and supported by World Bank, was completed in July 2008, which was over 25 years after the issuance of the last comprehensive transport study. The report provided a vision for Mumbai's future transportation as seamless and integrated system, in which commuters can make their journeys safely and conveniently by various modes of transport, particularly by public transport, and recommended the development of Multi Modal Corridor to take care of the varied travel demands of the region for the period up to 2031. The CTS proposed to develop the highway network in the region. The MTHL has been regarded as the priority road for Mumbai, considering its function and importance connecting between Mumbai and Navi Mumbai.
8. Necessity of the Project: - To promote economic development in Mumbai Metropolitan Region it is essential to improve the connectivity between Mumbai and Navi Mumbai, by constructing MTHL.

**Actual (P/R, PCR)**

There is no change in the Necessity of the Project preamble.

### 1.3 Rationale of the Project Design

- Timing, Scale, Technology of the Project:

1<sup>st</sup> April to 30<sup>th</sup> June 2022



**Demand Analysis**

1. At the opening year 2022, the daily traffic on the main bridge is expected to be 39,300 PCU. The traffic is projected to increase up to 103,900 by 2032 and up to 145,500 by the year 2042. The daily breakdown by vehicle class on the main bridge link is presented in the Table 1.3.1 below:

**Table 1.3.1 Demand Projections Over the Period**

Vehicle Type	Between Sewri Interchange and Shivaji Nagar Interchange			Between Shivaji Nagar Interchange and Chirle Interchange		
	2022	2032	2042	2022	2032	2042
Car	24,100	66,400	94,100	4,900	21,300	43,300
Taxi	2700	14,100	20,200	100	400	2,300
Bus	2,700	3,700	3,700	2,700	3,700	3,700
LCV	2,200	4,100	5,600	700	1,300	1,800
HCV	3,000	6,500	8,100	1,000	2,000	2,200
MAV	4,600	9,100	13,800	400	900	1,700
<b>Total</b>	<b>39,300</b>	<b>103,900</b>	<b>145,500</b>	<b>9,800</b>	<b>29,600</b>	<b>55,000</b>

LCV: Light Commercial Vehicle; HCV: Heavy Commercial Vehicle; MAV: Multi Axle Vehicle

2. At the opening year in 2022, the traffic flow on MTHL represents a diversion of 10% on the traffic across Thane creek which will increase up to 16% in 2032. If only Thane Creek Bridge is considered, then the diverted traffic from the bridge will be 21% in 2022 which will rise up to 35% in 2032.
3. 6-lane of main carriageway was decided by GoM. It was reviewed based on the forecasted result of future traffic volume by Manual of Specification and Standards for Expressways (IRC: SP:99-2013). The result of the review shows that 6-lane will be required in 2032 (10 years later after traffic open). Although, 8-lane will be required in 2042, it is assumed that the level of service of MTHL would be maintained as additionally metro might be constructed in parallel with MTHL.

**Design Parameters / Overall Design**

4. The MTHL which is 21.8 km long road bridge partly on the land and partly over the creek across the Mumbai Bay between Sewri in Mumbai and Chirle in Navi Mumbai, is to be constructed with the approach sections and interchanges. ITS (Intelligence Transport System) and the other necessary facilities will be provided for full access-controlled bridges.
5. As per the provisions of IRC (Indian Road Congress) SP:99-2013, the Width of each lane of the Main Carriageway is 3.5 meters.
6. When the design speed is 100 km/h according to the traffic demand forecast the large vehicle, ratio will be as low as 9.4% (2022).
7. The shoulder width of bridge towards outside of each carriageway is 2.5 meters and towards median side of each carriageway is 0.75 meters.
8. The major portion of MTHL structure is on sea and partly towards ends is on land with different type and with different span, viz., PC box girder with 50 m spans which is typically applied on marine viaduct since, it is economical, easy to construct and maintain



9. On the land portion, the PC box girder having span of generally 30m is used.
10. As far as the location in which long span (150-180 m) is required to cross significant obstacles, such as navigation channels, pipelines and creeks, the steel box girder bridge with steel deck is proposed with large block erection method to shorten the construction period.
11. The project is coded with three lanes of traffic in each direction. The reference toll is presented in the Table 1.3.2 below for each vehicle class in Year 2022 (based on 2015 monetary value reflecting price escalation).

**Table 1.3.2: Base Toll Rates (Rs) for different class of vehicles between Interchanges**

Vehicle Type	Sewri to Shivaji Nagar	Shivaji Nagar to Chirle	Total
Car	180	60	240
Bus	420	130	550
LCV	240	70	310
HCV	420	130	550
MAV	600	180	780

**Intelligent Transport Systems (ITS) and Toll Management System (TMS)**

12. The Toll Management System will be implemented in MTHL to collect tolls from all road users of MTHL. Two types of toll collection method will be adopted: Electronic Toll Collection (ETC) and Manual (paying by cash).
13. The lanes corresponding to these toll collection methods are dedicated ETC lanes and Manual lanes, and Manual system shall be installed to ETC lanes for backup to be able to cope at the time of the trouble of ETC equipment failure.

**Traffic management System**

14. Traffic Management System is a support system to Manage the traffic on MTHL safely and efficiently. The System consists of the information collection system including Closed-Circuit Television (CCTV), Emergency Call Box (ECB), Automatic Traffic Counter-Cum-Classifer (ATCC) and Meteorological Data System (MDS), and Information Dissemination System including Variable message Sign (VMS).
15. CCTV Cameras shall be installed at around three places per 1 km, on Both side of main route and the monitoring of the traffic condition of the whole stretch of MTHL will be almost enabled in the Traffic Control Centre and VMS displays the appropriate information for road users on the collated information.
16. The Information collected by these devices shall be transmitted to the Command Control Centre through the medium of an Optical Fiber Cable laid in MTHL.

Actual (P/R, PCR)

There is no change in the Rationale of the Project Design.





## 2.0 PROJECT IMPLEMENTATION

### 2.1 Project Scope

Refer Table 2.1.1 and 2.1.2 for details on Scope of the Project.

**Table 2.1.1 Comparison of Original and Actual location**

<b>Location</b>	<b>Original: (P/M)</b> Mumbai Metropolitan Region Development Authority, Mumbai, State of Maharashtra	<b>Actual: (P/R and PCR)</b>
-----------------	----------------------------------------------------------------------------------------------------------	------------------------------

**Table 2.1.2 Comparison of Original and Actual Scope**

Items	Original	Actual
<b>Construction work: 6-lane Marine Bridge Road (21.8 km)</b>		
Package-1 Ch 0+000- 10+380 (10.380 km)	<ul style="list-style-type: none"> <li>1 Interchange (Sewri)</li> <li>Viaduct superstructure (Marine Portion: PC Box Girder &amp; Steel Box Girder with Steel Slab Land Portion: PC Box Girder &amp; PC-I Girder)</li> <li>Viaduct Substructure (RC Concrete Structure)</li> <li>Viaduct Foundation (Bored piles)</li> <li>Road Furniture and roadside facilities (Traffic Signs and Pavement Marking, Traffic Safety Devices, Crash Barrier, Drainage Structures, Noise Barriers, View Barriers)</li> </ul>	(P/R and PCR)
Package-2 Ch 10+380- 18+187 (7.80 km)	<ul style="list-style-type: none"> <li>1 Interchange (Shivaji Nagar)</li> <li>Viaduct superstructure (Marine Portion: PC Box Girder &amp; Steel Box Girder with Steel Slab Land Portion: PC Box Girder &amp; PC-I Girder)</li> <li>Viaduct Substructure (RC Concrete Structure)</li> <li>Viaduct Foundation (Bored piles)</li> <li>Road Furniture and roadside facilities (Traffic Signs and Pavement Marking, Traffic Safety Devices, Crash Barrier, Drainage Structures, Noise Barriers, View Barriers)</li> </ul>	(P/R and PCR) Actual: No View Barriers
Package-3 Ch 18+187- 21+800 (3.61 km)	<ul style="list-style-type: none"> <li>2 Interchanges (State Highway-54, National Highway-4B)</li> <li>Viaduct superstructure (Marine Portion: PC Box Girder &amp; Steel Box Girder with Steel Slab Land Portion: PC Box Girder &amp; PC-I Girder &amp; Steel Truss Girder for Rail-over-Bridges (ROB))</li> <li>Viaduct Substructure (RC Concrete Structure)</li> <li>Viaduct Foundation (Bored piles)</li> <li>Cutting Section (6-lane with Slope Protection)</li> <li>Road Furniture and roadside facilities (Traffic Signs and Pavement Marking, Traffic Safety Devices, Crash Barrier, Drainage Structures, Noise Barriers, View Barriers)</li> </ul>	(P/R and PCR) Actual: No Noise Barriers & View Barriers



Items	Original	Actual
<p>Package-4 ITS (Intelligent Transport System)</p>	<ul style="list-style-type: none"> <li>• Administrative Buildings</li> <li>• Toll Booths (1 for main alignment and each on and off rumps for 3 interchanges)</li> <li>• Traffic Management System (Traffic Control Centre, Closed Circuit Television (CCTV), Meteorological Observation System (MET), Emergency Call Box (ECB), Automatic traffic Counter-cum-Classifer (ATCC), Variable Message Sign (VMS))</li> <li>• Highway Lighting (Whole sections Low-positioned lighting for some sections)</li> <li>• Electrical Powering System including HV/ LV Ring Network across the Bridge.</li> </ul>	<p>(P/R and PCR)</p>
<p>Consulting Services</p>	<ul style="list-style-type: none"> <li>• Tender Assistance</li> <li>• Construction Supervision</li> <li>• Facilitation of Implementation of Environmental Management Plan (EMP), Environmental Monitoring plan (EMoP).</li> </ul>	<p>(P/R and PCR)</p>



## 2.2 Implementation Schedule

### 2.2.1 The Original Implementation Schedule

**Table 2-2-1 Comparison of Original and Actual Schedule**

Items	Original	Status (P/R and PCR) as on 30 <sup>th</sup> June 2022
1) Completion of Land Acquisition and Resettlement	March 2019	Sept 2022
2) Consulting Services		
a) Selection of Consultant	May – December 2016	May – December 2016
b) Consultancy Works	December 2016 – September 2024	December 2016 – September 2024
3) Selection of Contractor		
Package-1, Package-2 & Package-3 (Civil)		
a) Pre-Qualification Process	May – December 2016	May – December 2016
b) Main Bidding	January – December 2017	January – December 2017
c) JICA's Concurrence of Contract	February-2018	February-2018
Package-4 (ITS)		
a) Pre-Qualification Process	Single Stage Bidding as concurred by JICA	
b) Main Bidding	June 2019 – September 2020	Jan 2021 – Dec 2021
4) Civil Construction		
Package-1 and Package-2	March 2018 – September 2022	March 2018–September 2023 (Extended)
Package-3	March 2018 – September 2021	March 2018 – March 2023 (Extended)
Package-4	October 2020 – September 2022	June 2022 – August 2023
5) Defect Liability Period		
Package-1 and Package-2	October 2022 – September 2024	October 2023 – September 2025
Package-3	October 2021 – September 2023	April 2023 – March 2025
Package-4	October 2022 – September 2024	Sept 2023 – August 2025
6) Commencement of Toll Collection	September 2022	October 2023
7) Selection of O&M Organization	October 2020 – September 2021	October 2022 – September 2023

**Attachment 6, 7 & 8: Package wise construction schedules (progress) updated at the end of 1<sup>st</sup> Quarter (April – May - June 2022).**

### 2.2.2 Reasons for changes of the schedule and their effects to the Project

(P/R and PCR)

No change in the Implementation Schedule except the selection of O&M Organization timeline.



## 2.3 Project Cost

### 2.3.1.a Comparison of Originally Planned and Actually Incurred Cost BY ITEM

Table 2.3.1.a.(i) Originally Planned Cost BY ITEM

Cost Breakdown	Foreign Currency Portion			Local Currency Portion			Total		
	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)	Total (Rs. mil)	JICA Portion (Rs. mil)	Others (Rs. mil)	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)
Package-1	34,398	34,398	0	45,376	45,376	0	105,713	105,713	0
Package-2	26,513	26,513	0	32,617	32,617	0	77,774	77,774	0
Package-3	759	759	0	8,276	8,276	0	13,766	13,766	0
Package-4 (ITS)	0	0	0	1,444	1,444	0	2,269	2,269	0
Package-5 (Geotechnical Investigation)	0	0	0	166	0	166	260	0	260
Dispute Boards (Package-1, 2, 3 & 4)	63	63	0	45	45	0	134	134	0
Price Escalation	2,251	2,251	0	7,133	7,133	0	13,460	13,460	0
Physical Contingency	6,398	6,398	0	9,506	9,489	17	21,338	21,312	26
Consulting Services	1,650	1,650	0	1,587	1,587	0	4,145	4,145	0
Land Acquisition*	0	0	0	11,293	0	11,293	17,748	0	17,748
Administration Cost	0	0	0	4,898	0	4,898	7,698	0	7,698
GST	0	0	0	18,238	0	18,238	28,663	0	28,663
Import Tax	0	0	0	13,435	0	13,435	21,114	0	21,114
Interest during construction	2,942	0	2,942	0	0	0	2,942	0	2,942
Front End Fee	477	0	477	0	0	0	477	0	477
<b>Total</b>	<b>75,451</b>	<b>72,032</b>	<b>3,419</b>	<b>154,013</b>	<b>105,967</b>	<b>48,046</b>	<b>317,501</b>	<b>238,572</b>	<b>78,929</b>

(Note) 1. Exchange Rate: US\$1=Rs. 71.9, US\$1=JPY 113.0, Rs.1 = JPY 1.57

2. Price Escalation (a) Foreign Currency Portion: 1.83% p.a.

(b) Local Currency Portion: 4.13% p.a.

3. Physical Contingency: 10%

4. Base Year for Cost Estimation: December 2018

\* Base Cost for Land Acquisition considered in the year 2016 was INR 9,062,669,696.

The base cost has been revised to INR 11,293 million considering Price Escalation and 10% Physical Contingency.



**Table 2.3.1.a.(ii) Actually Incurred Cost BY ITEM**

Cost Breakdown	Foreign Currency Portion			Local Currency Portion			Total		
	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)	Total (Rs. mil)	JICA Portion (Rs. mil)	Others (Rs. mil)	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)
Package-1	21,828	21,828	-	33,680	33,680		73,196	73,196	
Package-2	22,472	22,472	-	22,759	22,759		56,847	56,847	
Package-3	633	633	-	6,721	6,721		10,664	10,664	
Package-4 (ITS)	-		-	-			-		
Package-5 (Geotechnical Investigation)	-			196		196	308		308
Dispute Boards (Package-1, 2, 3 & 4)	-			-			-		-
Price Escalation	-			4	4		6	6	-
Physical Contingency	-			-			-		-
Consulting Services	253	253		362	362		1,108	1,108	
Land Acquisition*	-			7,601		7,601	11,933		11,933
Administration Cost	-			4,936		4,936	7,749		7,749
GST	-			14,014		14,014	22,002		22,002
Import Tax	-			-			-		-
Interest during construction	-			-			-		-
Front End Fee	-			-			-		-
<b>Total</b>	<b>45,186</b>	<b>45,186</b>	<b>-</b>	<b>90,273</b>	<b>63,524</b>	<b>26,747</b>	<b>183,813</b>	<b>141,821</b>	<b>41,992</b>

(Note) 1. Exchange Rate: Rs.1 = JPY 1.57 for MMRDA Portion only

2. Price Escalation (a) Foreign Currency Portion: 1.83% p.a.

(b) Local Currency Portion: 4.13% p.a.

3. Physical Contingency: 10%

4. Base Year for Cost Estimation: December 2018

\* Base Cost for Land Acquisition considered in the year 2016 was INR 9,062,669,696.

The base cost has been revised to INR 11,293 million considering Price Escalation and 10% Physical Contingency.



**2.3.1.b Comparison of Originally Planned and Actually Incurred Cost BY YEAR**

**Table 2.3.1.b.(i) Originally Planned Cost BY YEAR**

(All Figures are in JPY mil)

Cost Breakdown	Total	JICA Portion				Others (MMRDA Portion)
		Tranche I	Tranche II	Tranche III	Sub Total	
FY 2017	12,679	10,134	0	0	10,134	2,545
FY 2018	30,771	22,707	0	0	22,707	8,064
FY 2019	72,379	56,816	0	0	56,816	15,563
FY 2020	92,944	55,138	16,040	0	71,178	21,765
FY 2021	66,397	0	50,869	0	50,869	15,527
FY 2022	27,683	0	0	20,113	20,113	7,570
FY 2023	3,723	0	0	565	565	3,158
FY 2024	10,925	0	0	6,189	6,189	4,735
<b>Total</b>	<b>317,501</b>	<b>144,795</b>	<b>66,909</b>	<b>26,868</b>	<b>238,571</b>	<b>78,929</b>

**Table 2.3.1.b.(ii) Actually Incurred Cost BY YEAR**

(All Figures are in JPY mil)

Cost Breakdown	Total	JICA Portion				Others (MMRDA Portion)
		Tranche I	Tranche II	Tranche III	Sub Total	
FY 2017	13,738	9,232	-	-	9,232	4,506
FY 2018	26,813	21,695	-	-	21,695	5,118
FY 2019	40,410	31,014	-	-	31,014	9,396
FY 2020	31,859	23,922	-	-	23,922	7,937
FY 2021	54,021	43,248	-	-	43,248	10,773
FY 2022	16972	12,710	-	-	12,710	4,262
FY 2023						
FY 2024						
<b>Total</b>	<b>183,813</b>	<b>141,821</b>	<b>-</b>	<b>-</b>	<b>141,821</b>	<b>41,992</b>

(Note) 1. Exchange Rate used: Rs.1 = JPY 1.57 for MMRDA Portion only

2. Fiscal Year starting from 1<sup>st</sup> April and ending on 31<sup>st</sup> March.

**2.3.2** Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(P/R and PCR)

There is no major gap between the original and actual cost.



## 2.4 Organization for Implementation

### 2.4.1 Executing Agency

#### **Original:**

#### Executing Agency

Mumbai Metropolitan Region Development Authority (MMRDA) was established on 26th January 1975 in accordance with the Mumbai Metropolitan Development Act, 1974 to make Mumbai Metropolitan Region (MMR) a destination for economic activity by promoting infrastructure and regional planning. MMRDA takes all the necessary measures, required from time to time, in an effective manner and be fully responsible for the Project implementation. After completion of the Project, MMRDA continues to be responsible for the efficient operation and maintenance of the Project.

The GoM appointed MMRDA as the implementing/ executing agency of MTHL vide Government Resolution dated 4th February 2009 and further the ownership of MTHL would be with MMRDA vide Government Resolution dated 8th June 2011.

#### Organization's Role

To construct, execute, carryout, improve, work, develop, administer, manage, control or maintain in MMR all types of roads, highways, express routes, paths, streets, bridges, sideways, tunnels and other infrastructure, works and conveniences, approach road, etc. Under the Project, MMRDA is responsible for all the tendering process including employment of consultants, as well as for the construction process.

#### Project Implementation Unit (PIU)

The PIU is in charge of the Projects. The PIU is headed by Chief Engineer, comprising of 6 Divisions/Cells (Finance Division, Social Development Cell, Engineering Division, Land Cell, Administrative Division and Environmental Cell), Supervision/ ITS Consultant and supporting staff.

#### Procurement

MMRDA shall have to adopt the JICA's Standard Bidding Documents of the latest version, as stipulated in Section 4.01 (2) of "Guidelines for Procurement under Japanese ODA Loans.

Procurement of goods and services, except for consulting services, converted by the Japanese ODA Loan should be implemented in accordance with "Guidelines for Procurement under Japanese ODA Loans", dated in April 2012. Employment of consultants should be implemented in accordance with "Guidelines of Employment of Consultant under Japanese ODA Loans", dated in April 2012. "Principles of Procurement under the Project" is attached for brief explanation of the above Guidelines.

#### **Actual, if changed: (P/R and PCR)**

There is no change made in the original Organisation Set-up & Implementation methods. Refer Annexure III Organisation Chart.



**2.4.2 Contractor(s)/ Supplier(s), and Consultant(s) and their Performance:**

**2.4.2.1 Procurement & Consultant**

**Table 2.4.2 Procurement of Contractor(s)/ Supplier(s) and Consultant(s)**

Contract Package	Selection Method		
	Original: (P/M)	Actual: (P/R and PCR)	
<b>Construction Works</b>			
1	<u>Package-1:</u> From CH 0+000 - To CH 10+380 (10.38 km)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	No Change
2	<u>Package-2:</u> From CH 10+380 - To CH 18+187 (7.80 km)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	No Change
3	<u>Package-3:</u> From CH 18+187 - To CH 21+800 (3.61 km)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	No Change
4	<u>Package-4:</u> To install ITS (Toll Management System and Highway Traffic Management System)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	International Competitive Direct Bidding Process without Pre-Qualification
5	<u>Package-5:</u> To conduct the geotechnical investigation	Local Competitive Bidding Process	No Change
<b>Consulting Services</b>			
1	Consulting Service for Supervision	Short List Method (QCBS)	No Change





#### 2.4.2.2 Performance

##### Consultant's Progress:

##### April 2022:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
  - i) Package-1: IPC-49 20% Detailed Verification and IPC-51 80% Ad-hoc.
  - ii) Package-2: IPC-47 20% Detailed Verification and IPC-48 80% Ad-hoc.
  - iii) Package-3: IPC-43 20% Detailed Verification and IPC-44 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 10387.79 million JPY to MMRDA / JICA in April 2022.

##### May 2022:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
  - i) Package-1: IPC-50 20% Detailed Verification and IPC-52 80% Ad-hoc.
  - ii) Package-2: IPC-48 20% Detailed Verification and IPC-49 80% Ad-hoc.
  - iii) Package-3: IPC-44 20% Detailed Verification and IPC-45 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 991.05 million JPY to MMRDA / JICA in May 2022.

##### June 2022:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
  - i) Package-1: IPC-51 20% Detailed Verification and IPC-53 80% Ad-hoc.
  - ii) Package-2: IPC-49 20% Detailed Verification and IPC-50 80% Ad-hoc.
  - iii) Package-3: IPC-45 20% Detailed Verification and IPC-46 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 1412.15 million JPY to MMRDA / JICA in June 2022.
- 3 100% of the Technical Design Modules across all the 3 Packages have been given "NONO" by the GC.
- 4 Approximately 99% of the Construction (GFC – Good For Construction) Design Modules across all the 3 Packages have been given "NONO" by the GC.  
  
Package-1 – 100%, Package-2 – 99%, Package-3 -100%
- 5 Package-4 (ITS) - Letter of Acceptance (LOA) was issued to Strabag GmbH and Strabag AG JV on 5th May 2022.



**Contractor's Progress:**

**Package-1 Physical Progress till 30<sup>th</sup> June 2022**

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
<b>1</b>	<b>Permanent Bridge Works - Land/ Interchange Zone</b>					
1.1	Piles	523	No.	523	100%	
1.2	Pile Caps	158	No.	125	79.11%	
1.3	Piers	228	No.	187	82.02%	
1.4	Pier Caps	228	No.	178	78.07%	
<b>2</b>	<b>Permanent Bridge Works - Intertidal Zone</b>					
2.1	Piles	312	No.	312	100%	
2.2	Pile Caps	75	No.	75	100%	
2.3	Piers	146	No.	146	100%	
2.4	Pier Caps	146	No.	146	100%	
<b>3</b>	<b>Permanent Bridge Works - Marine Zone</b>					
3.1	Piles	403	No.	403	100%	
3.2	Pile Caps	80	No.	80	100%	
3.3	Piers	162	No.	128	79.01%	
3.4	Pier Caps	162	No.	125	77.16%	
<b>4</b>	<b>Permanent Bridge Works - Total</b>					
4.1	Piles	1238	No.	1238	100%	
4.2	Pile Caps	313	No.	280	89.46%	
4.3	Piers	536	No.	461	86.01%	
4.4	Pier Caps	536	No.	449	83.77%	
<b>5</b>	<b>Precast Segments</b>					
5.1	Segment Casting	6713	No.	4972	74.07%	
5.2	Segment (Span) Erection+ Cast-in-Situ Slab	478	No.	268	56.07%	
<b>6</b>	<b>OSD Structural Steel</b>					
6.1	Fabrication	52726	MT	53703	100%	
6.2	Assembly (Large Blocks)	52726	MT	19957	37.16%	
6.3	OSD Span Erection	38	No.	9	23.68%	



**Package-2 Physical Progress till 30<sup>th</sup> June 2022**

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
<b>1</b>	<b>Permanent Bridge Works - Land/ Interchange Zone</b>					
1.1	Open Foundation	113	No.	113	100%	
1.2	Piers	119	No.	119	100%	
1.3	Pier Caps	105	No.	99	94%	
1.4	Portal Beams- Land	6	No.	6	100%	
1.5	Pier Head Segments -Land	42	No.	42	100%	
<b>2</b>	<b>Permanent Bridge Works - Intertidal &amp; CRZ Zone</b>					
2.1	Piles	280	No.	280	100%	
2.2	Pile Caps	72	No.	72	100%	
2.3	Piers	72	No.	72	100%	
2.4	Pier Caps	18	No.	18	100%	
2.5	Pier Head Segments	54	No.	54	100%	
<b>3</b>	<b>Permanent Bridge Works - Marine Zone</b>					
3.1	Piles	504	No.	504	100%	
3.2	Pile Caps	120	No.	117	98%	
3.3	Piers	120	No.	110.6	92%	
3.4	Pier Caps	48	No.	33	69%	
3.5	Pier Head Segments	74	No.	37	50%	
<b>4</b>	<b>Permanent Bridge Works - Total</b>					
4.1	Open Foundation	113	No.	113	100%	
4.2	Piles	784	No.	784	100%	
4.3	Pile Caps	192	No.	189	98%	
4.4	Piers	311	No.	301.6	97%	
4.5	Pier Caps/ Portal Beams	177	No.	156	88%	
4.6	Pier Head Segments	170	No.	133	78%	
<b>5</b>	<b>Precast Segments</b>					
5.1	Segment Casting	3142	No.	2227	71%	
5.2	Segment (Span) Erection + Cast-in-Situ Slabs	272	No.	152	56%	
<b>6</b>	<b>OSD Structural Steel</b>					
6.1	Fabrication	34726	MT	34,726	100%	
6.2	Assembly (for Large Block)	34726	MT	9863	28.40%	
6.3	OSD Span Erection	32	No.	6	18.75%	



**Package-3 Physical Progress till 30<sup>th</sup> June 2022**

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
<b>1</b>	<b>Permanent Bridge Works</b>					
1.1	Open Foundations	221	No.	221	100%	
1.2	Piles	24	No.	2	100%	
1.3	Pile Caps	4	No.	4	100%	
1.4	Piers	242	No.	231	95.45%	
1.5	Pier Caps	189	No.	178	94.18%	
1.6	Segment Casting	834	No.	834	100%	
1.7	Segment (Span) Erection	59	No.	44	74.58%	
1.8	Cast in-situ Slab	108	No.	82	75.93%	
1.9	ROB Span	20	No.	4	20%	

**Package-4 (ITS) Progress till 30<sup>th</sup> June 2022**

1. As recommended by the GC, JICA accorded concurrence for Single Stage Bidding (without Pre-Qualification) on 9<sup>th</sup> October 2020 and asked to submit draft Bid Document for review and approval.
2. The GC submitted first draft Bid Document to the Employer on 2<sup>nd</sup> November 2020 for review.
3. After reviewing the draft, MMRDA issued the observations on 29<sup>th</sup> December 2020 for further correction & amendments, etc. The GC is in the process of preparing the revised draft Bid Document.
4. The GC submitted the revised draft Bid Document to the Employer on 14<sup>th</sup> June 2021 for a review and further concurrence with JICA.
5. The Employer received JICA concurrence for the revised Bid Documents on 24<sup>th</sup> August 2021.
6. The Tender has been floated (published) on 3<sup>rd</sup> September 2021. A Pre-bid Meeting was arranged on 27<sup>th</sup> September 2021.
7. JICA concurrence for the Technical Evaluation Report received on 15<sup>th</sup> Feb 2022. The Financial Bid opened on 16<sup>th</sup> Feb 2022.
8. GC evaluated the Financial Bid, and the report was sent to the Employer on 28<sup>th</sup> March 2022 which they further sent to JICA. JICA concurrence for the Financial Evaluation Report is awaited.
9. JICA concurrence for the Financial Evaluation Report received on 21<sup>st</sup> April 2022.
10. Letter of Acceptance (LOA) was issued to Strabag GmbH and Strabag AG JV on 5<sup>th</sup> May 2022.



**Health & Safety and Environment (HSE)**

The HSE Plans have been submitted by the respective construction agencies for the Packages which are being monitored by the GC on a regular basis.

**Package-1 Safety Report**

Sr. No	Description	From April to June 2022	Cumulative
1	Total Man Hours Since Inception	4,456,369	51,475,264
2	Number of Man-Hours (Accident-Free Man-Hours)	2,999,916	11,560,260
3	Number of Man-Days	557,046	6,434,407
4	Number of Reportable Fatal Accidents	0	6
5	Number of Non-Fatal Accidents	4	12
6	Number of Near Miss Incidents	9	126
7	Number of First Aid Cases	32	324
8	Number of Dangerous Occurrences	1	4
9	Number of Reportable Sick Cases	0	0
10	Number of Man-Hours Lost	3,240	297,544
11	Number of Man-Days Lost	433	37,221
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	3	3
13	Number of Inspections done for Offices & Sites	90	4,003
14	Number of Training/ Induction done for Offices & Sites	410	3,059
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	12,823	16,042
16	Details of Safety Committee meetings	3	46
17	No. of toolbox talks	13,460	138,407
18	No. of critical excavations.	3	81
19	Pre-employment Medical check-up	3,227	43,544
20	No. of Safety Walk down	22	284
21	No. of Safety Inductions completed	3,227	43,544



**Package-2 Safety Report**

Sr. No	Description	From April to June 2022	Cumulative
1	Total Man Hours Since Inception	2,857,910	27,569,190
2	Number of Man-Hours (Accident-Free Man-Hours)	2,597,848	3,288,725
3	Number of Man-Days	259,810	2,507,637
4	Number of Reportable Fatal Accidents	0	0
5	Number of Non-Fatal Accidents	1	10
6	Number of Near Miss Incidents	41	323
7	Number of First Aid Cases	11	179
8	Number of Dangerous Occurrences	3	18
9	Number of Reportable Sick Cases	0	2
10	Number of Man-Hours Lost	1,056	5,716
11	Number of Man-Days Lost	132	696
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	1	1
13	Number of Inspections done for Offices & Sites	7,255	8,455
14	Number of Training/ Induction done for Offices & Sites	124	1,122
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	10,278	12,650
16	Details of Safety Committee meetings	3	50
17	No. of toolbox talks	1,166	11,878
18	No. of critical excavations.	0	0
19	Pre-employment Medical check-up	851	16,599
20	No. of Safety Walk down	12	173
21	No. of Safety Inductions completed	960	17,007



**Package-3 Safety Report**

Sr. No	Description	From April to June 2022	Cumulative
1	Total Man Hours Since Inception	581,262	6,200,401
2	Number of Man-Hours (Accident-Free Man-Hours)	581,262	4,100,052
3	Number of Man-Days	72,658	775,051
4	Number of Reportable Fatal Accidents	0	0
5	Number of Non-Fatal Accidents	0	2
6	Number of Near Miss Incidents	4	28
7	Number of First Aid Cases	6	120
8	Number of Dangerous Occurrences	0	1
9	Number of Reportable Sick Cases	0	0
10	Number of Man-Hours Lost	0	2,312
11	Number of Man-Days Lost	0	289
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	0	0
13	Number of Inspections done for Offices & Sites	59	897
14	Number of Training/ Induction done for Offices & Sites	32	298
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	1,739	2,214
16	Details of Safety Committee meetings	4	47
17	No. of toolbox talks	598	7,942
18	No. of critical excavations.	3	12
19	Pre-employment Medical check-up	631	10,254
20	No. of Safety Walk down	12	177
21	No. of Safety Inductions completed	631	10,254



### 3.0 BENEFITS DERIVED FROM THE PROJECT (EFFECTIVENESS)

#### 3.1 Operational and Physical Condition

(This section will be developed when the operational plan is available)

Facilities	Description of condition	Problems, its Background and Remedial Action Plan
(P/R and PCR)	(P/R and PCR)	(P/R and PCR)

#### 3.2 Precautions (Measures To Be Adopted/ Points Which Require Special Attention)

Original Issues and Countermeasure(s)	Actual Issues and Countermeasure(s)
<p><b>3.2.1 General Issues</b></p> <p><b>1. Toll Arrangement/ Toll Rate</b> Fixed toll rate as per the type of vehicle will be levied for the road users after the completion of the Project. An appropriate tolling policy/ rates will be finalized in consultation with the state government prior to the completion of Civil works.</p> <p><b>2. Operation and Maintenance</b> MMRDA proposes to appoint separate agencies for Operation &amp; Maintenance of the bridge and for Toll Management System. Both the agencies for O &amp; M and Toll Management System may be appointed through open tendering process. Overall monitoring of the two agencies would be done by MMRDA in-house through a separate cell which could be constituted for the purpose. MMRDA has confirmed to allocate an adequate budget for engaging the Contractors.</p>	<p>(P/R and PCR)</p> <p>Appropriate Tolling Policy/ Rates will be finalized by December 2021.</p> <p>A single Operation and Maintenance Contractor will be appointed by December 2021.</p>
<p><b>3.2.2 Environmental and Social Consideration</b></p> <p><b>a. CRZ Clearance</b></p> <p>i. Supplemental EIA has been approved by MMRDA and disclosed on the website of JICA. A supplemental EIA report has been disclosed also on the website of MMRDA.</p> <p>ii. Furthermore, renewed CRZ Clearance has been obtained in January 2016.</p> <p>iii. In accordance with the conditions for</p>	<p>(P/R and PCR)</p> <ul style="list-style-type: none"> <li>• MMRDA has disclosed Supplemental EIA &amp; SIA on MMRDA website.</li> <li>• The renewed CRZ clearance was granted on 25/1/2016 from MoEF&amp;CC and the approval conditions have been imposed on the Contractors as the Employer's requirements. MMRDA has actively monitored the compliances of the approval conditions and maintained them throughout the construction phase.</li> </ul>





<p>CRZ Clearance, appropriate measures shall be taken, and necessary budget shall be secured by MMRDA.</p>	<ul style="list-style-type: none"> <li>• MMRDA appointed Mangroves &amp; Marine Biodiversity Foundation for bird monitoring and implementation of Flamingos and bird monitoring program for the MTHL project during the construction as well as the long-term monitoring after the construction.</li> <li>• Rs 91.42 Crore has been transferred to Mangroves &amp; Marine Biodiversity Foundation, Mumbai for the development &amp; conservation of mangrove area and its afforestation. Such funds will be managed by the Mangrove Foundation of Maharashtra State.</li> <li>• As per the renewed CRZ clearance condition, IIT Mumbai has been appointed for the DPR study to develop a Mahul creek Effluent Treatment Plant (ETP). Rs 4.98 Crore was secured for IIT services. The Draft DPR has been reviewed and approved.</li> </ul>
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**b. Required Permits**

The Permits to be obtained by MMRDA/ Contractors and the present status is given in the following Table.

**Table 3.2.2 Present Status of some Important Permits**

Clearance Required	Approving Authority	Responsible Organization	Obtained by when	Remark /Status
Mangrove Cutting	Hon. Bombay High Court	MMRDA/ Contractor	Approval received from Hon. Bombay High Court on 28 <sup>th</sup> November 2016	Mangrove cutting operation was completed with full compliance and as of now, no further follow up work is required.
Tree Cutting /Transplantation	Respective Tree Authorities	Contractor for respective Packages		<p><b>Pkg-1:</b> Tree Cutting/ Transplantation permission from the Garden Dept., MCGM obtained on 24<sup>th</sup> December 2020.</p> <p><b>Pkg-2:</b> Tree Cutting/ Transplantation permission obtained &amp; completed.</p> <p><b>Pkg-3:</b> Forest Department issued a concurrence on 19/05/2019. CIDCO's permission for Tree Cutting/ Transplantation obtained on 25<sup>th</sup> November 2019.</p>
Consent to Establish	Maharashtra Pollution Control Board	Contractor for respective Packages	Pkg-1-18.07.2018 Pkg-2-16.08.2018 Pkg-3-29.05.2019	



### 3.3 Environmental and Social Impacts

Major environmental and social impacts have occurred during project implementation (e.g. involuntary resettlement, poverty reduction, impacts on the natural environment).

Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p><b>1. Establishment of Effective Environmental and Social Cell in PIU</b></p> <p>MMRDA confirmed that Social Development Cell (2 Officers), Land Cell (3 Officers), and Environmental Cell (2 Officers) had been set up.</p>	<p>Cell is established by MMRDA (Annexure III, Organization chart)</p>
<p><b>2. Rehabilitation and Land Acquisition Issues</b></p> <p><b>a. Affected Area and Population</b></p> <p>Due to the Project, 1282 non-titleholders will be involuntary resettled, and 108.09 ha of land will be handed over by CIDCO.</p>	<p><b>Sewri:</b> Involuntary resettlement in Sewri section has been further validated by Social Development Cell of MMRDA. Out of 297 Project Affected Households (PAHs) have given consents as follows:</p> <ul style="list-style-type: none"> <li>• 164 PAHs Kanjurmarg for residential</li> <li>• 25 PAHs Kanjurmarg for commercial</li> <li>• 7 PAHs (Satsangi Plot) Kanjurmarg for Commercial</li> <li>• 1 PAHs (commercial to residential) for Bhakti Park</li> <li>• 100 PAHs HDIL Kurla for residential</li> </ul> <p><b>Navi Mumbai:</b> CIDCO has been finalizing the land acquisition closely monitored by Land Cell of MMRDA. Except private land and forest, CIDCO has possessed all required land of 108.09 ha. Out of the 108.09 ha, 106.345 ha has been handed over by CIDCO to MMRDA. CIDCO is going to acquire the balance 1.745 ha with the help of Collector, Raigad.</p>
<p><b>b. Entitlement Policy</b></p> <p>MMRDA prepared the entitlement matrix for resettlement of non-title holders in Sewri, which meets the Resettlement and Rehabilitation Policy for Mumbai Urban Transportation Project (1997, amended in 2000) and JICA guidelines for Environmental and social considerations (2010)</p>	<p>There have been no changes during the enforcement. As per the Attachment 2-5 of JICA MoD, MMRDA has committed to enforce the agreed/ approved policy.</p>



Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p>“Guidelines” (Attachment 2-5).</p>	
<p><b>c. Compensation to Project affected Fishermen</b></p> <p>Detailed baseline survey will be undertaken by MMRDA in order to identify fishermen who are affected by the Project. Based on the result of the baseline survey, MMRDA will compensate them in accordance with compensation policy prior to the construction. Monitoring will be conducted by MMRDA with assistance of the Consultant to gasp the exact impact during construction and operation phase.</p>	<p>Updated Attachments 2-8 and 2-10 are enclosed in the report.</p>
<p><b>d. Implementation Schedule</b></p> <p>The Implementation schedule for land acquisition, resettlement and rehabilitation is attached as per Attachment 2-10.</p>	<p>Updated Attachment 2-10 is enclosed in the report.</p>
<p><b>e. Grievance Redressal Mechanism</b></p> <p>Grievance Redressal Committee (“GRC”) set under MMRDA will deal with grievances raised by PAPs in Sewri and fishermen to be affected by the Project. Any grievances raised by PAPs whose land is acquired by CIDCO shall be resolved by CIDCO.</p>	<p><b>Sewri:</b> FLGRC (Field Level Grievance Redressal Committee) and SLGRC (Senior Level Grievance Redressal Committee) were set as per the RAP and in operation. Compensation Committee has been constituted to address the issues of Compensation to Lease Holders at Sewri. <b>Fishermen:</b> GRC for resolving grievances of the fisherfolk was set up as per the compensation policy and is in operation.</p>
<p><b>f. Internal Monitoring</b></p> <p>Internal Monitoring of the Resettlement Action Plan (RAP) implementation will be conducted by MMRDA in accordance with the RAP with necessary assistance of the consultant. RAP Internal Monitoring Form (Attachment 2-8) will be submitted to JICA on a quarterly basis as a part of PSR during the RAP implementation.</p>	<p>Internal Monitoring updates are mentioned in Attachment 2-8.</p>



Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p><b>g. Qualitative Independent Evaluation</b></p> <p>An Independent Evaluation Agency will be hired by MMRDA for evaluation of RAP implementation. An external evaluation report will be submitted to MMRDA at mid-term and end-term. MMRDA would submit the evaluation report to JICA in a timely manner.</p>	<p>Updated <b>Attachment 2-10</b> is enclosed in the report.</p>
<p><b>h. RAP Implementation Budget</b></p> <p>The amount of estimated resettlement and compensation budget is Rs.906.26 Cr MMRDA informed to the JICA Mission that RAP implementation cost would be borne by MMRDA and ensured sufficient and timely allocation of funds for smooth implementation.</p>	<p>As updated in MOD dated 03/09/2019 for MTHL- II, the base cost Budget towards RAP Implementation is updated as Rs 1129.3 Cr.</p>
<p><b>i. Environmental Management Plan ("EMP")</b></p> <p>The mitigation measures against air pollution, waste, noise, and water pollution etc. shall be taken during construction and operation phase. Mitigation measures such as installation of noise barrier, appropriate waste management, etc. have been prepared by MMRDA. The mitigation measures are listed in the EMP matrix. (<b>Attachment 2-1</b>). During the detailed design stage, MMRDA, with assistance of the Consultant, will update the EMP, as necessary.</p>	<p>EMP will be updated, if required, in due course of construction activities/progress.</p>
<p><b>j. Environmental Monitoring Plan ("EMoP")</b></p> <p>MMRDA takes overall responsibility for implementation of EMoP. During construction, environmental monitoring will be carried out by contractors under supervision by Construction Supervision consultant. The result shall be reported to the JICA India Office on a quarterly basis as a part of Progress</p>	<p>Environmental Monitoring Plan with the package wise budgeted cost is reported in <b>Attachment 2-3</b>. Environmental Monitoring Results during the construction phase are reported in <b>Attachment 2-4</b>.</p>



Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p>Status Report (PSR) by filling in the Reporting Form of Environmental Monitoring Result. <b>(Attachment 2-4)</b>. After completion of the construction, EMoP shall be implemented by MMRDA, and the results shall be submitted to the JICA India Office semi-annually until two years after complementation of construction. The required amount of estimated environmental monitoring budget is borne by MMRDA.</p>	
<p><b>k. Long Term Bird Monitoring</b></p> <p>MMRDA committed to conduct the long-term monitoring of birds and its habitat in Sewri mudflats with the assistance of hired bird expert. During the long-term monitoring, MMRDA will share information and receive advice from external experts including the one from NGOs and civil society.</p>	<ul style="list-style-type: none"> <li>• MMRDA has entrusted the work of bird monitoring and implementation of Flamingos and birds related mitigation measures &amp; bird monitoring program to Mangrove and Marine Biodiversity Foundation.</li> <li>• Rs. 31.92 Crore deposited to Mangrove foundation, Mumbai for periodical disbursement to BNHS.</li> </ul>

### 3.4 Qualitative and Quantitative Data of Monitoring Indicators

Operation and Effect Indicator EIRR and/ or FIRR

Supporting data for Computing EIRR and/ or FIRR

Indicators	Original (Year 2015)	Target (Year 2024) 2 Years After Commercial Operation
Average Annual Daily Traffic (PCU/ day)	-	47,400
Daily Average Travel Time (min) * 1	61 min	15.8 min
Number of Users (Persons/ year) * 2	-	46,077,504
Cargo Volume (tons/ year) * 3	-	13,511,759

\*1 Section on Sewri – Chirle

\*2 Assumptions: average passengers of car and taxi (2.6 persons), bus (37.2 persons) based on JICA study. Number of passengers of LCV, HCV and MAV is assumed as 1 person each.

\*3 Assumptions: the maximum capacity of respective vehicle (LCV: 1 ton, HCV and MAV: 15 tons) is used for estimation.



<b>EIRR</b>	<b>Original:</b> 15.4% Cost: Project cost (excluding Price Escalation, Tax and Duties and Administration cost) O&M cost, Land Acquisition Benefit: Travel Time cost and Vehicle Operation cost Project Life: 32 Years	<b>Actual: (PCR)</b> _____% Cost: Benefit: Project Life: <b>Attachment(s):</b> <b>Supporting data for computing EIRR</b>
<b>FIRR</b>	<b>Original:</b> 1.5% Cost: Project Cost, O&M cost, Land Acquisition cost Benefit: Toll Revenue Project Life: 32 Years	<b>Actual: (PCR)</b> _____%

### 3.5 Monitoring Plan for the indicators

Monitoring Methods, Section(s)/ department(s) in charge of monitoring, frequency, the term and so forth are given below:

<p><b>Original: (P/M and PCR)</b></p> <p><u>Monitoring Organization</u></p> <p>PIU shall be In-Charge of Monitoring activities for the Project.</p> <p><u>Submission of QPR and PCR</u></p> <p>The timely submission of the following documents is required by MMRDA.</p> <p><b>a. Quarterly Progress Report (QPR):</b> The progress report for the Project should be submitted by MMRDA to JICA on quarterly basis, not later than 30 days after the concerned quarter, in the form of Project Status Report (PSR) attached hereto as per <b>Annex I</b>; Updated status land Acquisition, milestone achieved with respect to Action Plan with Timetable, the monitoring form for environmental and social consideration should also be appended to the PSR. In addition, MMRDA shall also forward the Monthly &amp; Quarterly Progress Reports (including S-Curve Chart) prepared by the Consultant to JICA India Office on regular basis till project completion.</p> <p><b>b. Project Completion Report (PCR):</b> A project completion report should be submitted by MMRDA to JICA promptly, but in any event not later than six months after completion of the Project, in the form of Project Status Report (PSR) attached hereto as per <b>Annex I</b>.</p>
<p><b>Actual: (P/R and PCR)</b></p> <p><b>Monitoring Organization</b></p> <p>PIU for MTHL has been established for monitoring the Project.</p> <p><b>Submission of QPR and PCR</b></p> <p>This QPR No. 21 is submitted for the period of 1<sup>st</sup> April to 30<sup>th</sup> June 2022.</p>

### 3.6 Achievement of the Project Objective

(PCR)



#### 4.0 OPERATION AND MAINTENANCE (O&M) (SUSTAINABILITY)

##### 4.1 O&M and Management

- Organization Chart of O&M
- Operational and maintenance system (structure and the number, qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc.)

**Original: (P/M)**

##### Operation & Maintenance, Toll Management and ITS

MMRDA proposes to engage two separate agencies for O&M and Toll Management System. Though MMRDA will not directly carry out O&M, the overall monitoring over the O&M agency will be the responsibility of MMRDA. O&M Budget will be allocated by MMRDA. O&M and increase in toll rate will be done in accordance with the NHAI's manuals such as "NHAI Works manuals".

**Actual: (PCR)**

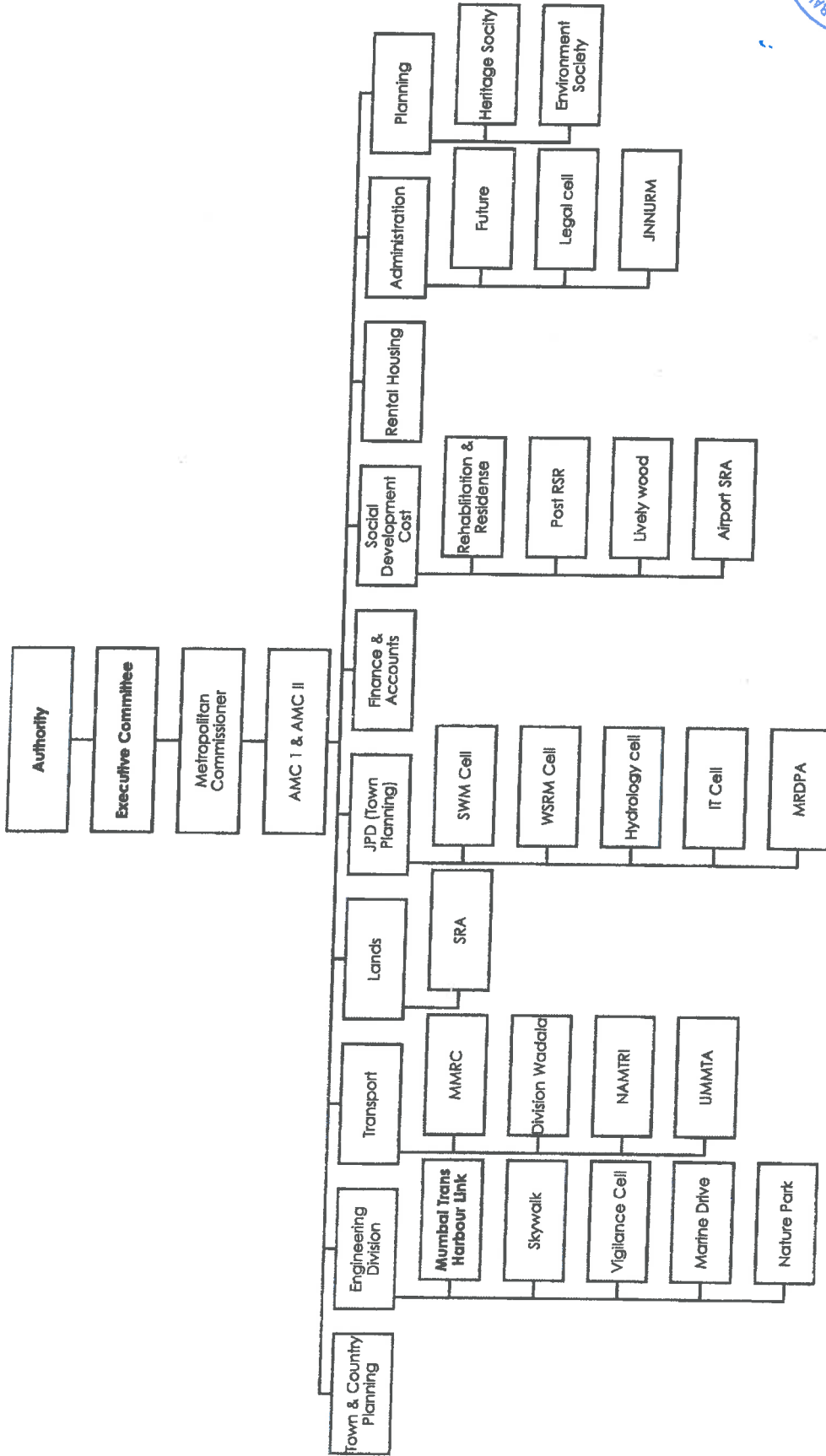
##### 4.2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project, as well as the annual O&M budget.

**(PCR)** This will be reported when the outcome of the above work-study is available.

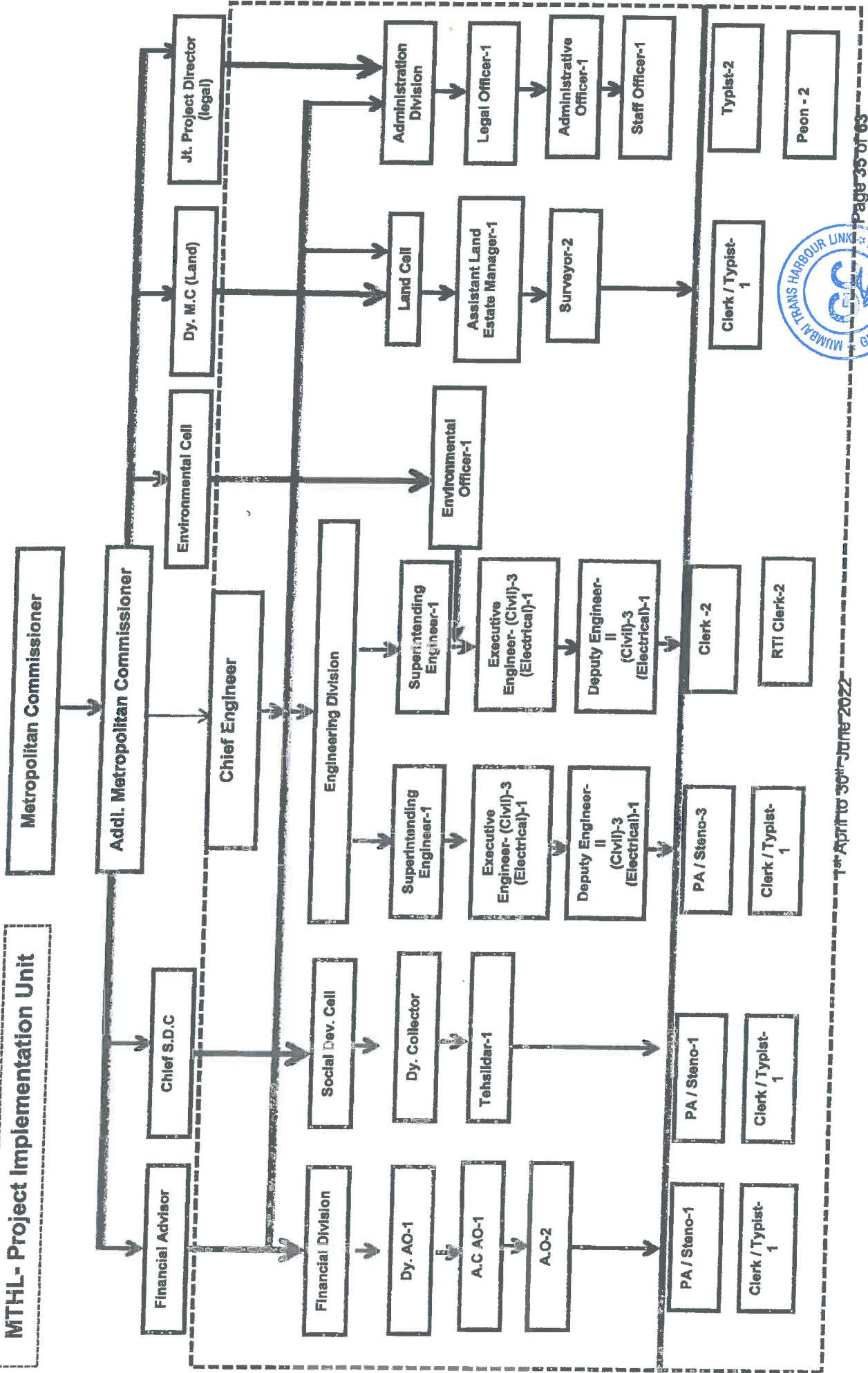


**MMRDA Organization chart**





**MTHL- Project Implementation Unit**



## **Attachment 2- Environmental & Social Impacts Attachments**

- Attachment 2-3 – Envi. Monitoring Plan with Package-wise Estimated Cost**
- Attachment 2-4 – Environmental Monitoring Result Reporting Form**
- Attachment 2-6 – MTHL Land Acquisition Status**
- Attachment 2-8 – RAP Internal Monitoring Form**
- Attachment 2-10 – Schedule of the RAP Implementation**



Attachment 2-3

Environmental Monitoring Plan with Package-wise Estimated Cost

Category	No.	Impacted Area / Receptor	Parameter	Method	Location	Frequency / Year	Cost (Rs.)	Area (sq. m)	Length (m)	Cost (Rs.)	Total Cost (Rs.)	Remarks
Pollution	1	Air pollution SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , O <sub>3</sub> , CO, Ozone	Near Ambient National Ambient Standards, 2019	1. Sewer & Sewer lay area for package I 2. Nava temporary bridge & casting yard in Gachan for package II 3. Gachan & Chitrli for package III	Fortnightly at all locations except 2 locations each near batching plants 4 Times / Year Fortnightly only for 3 months (Jan-2019 to Mar-2019). Then quarterly monitoring as per MOEF and CPCB norms	1,880,000	13,000,000	1,800,000	1,800,000	742,500	17,542,500	P1 contractor team is conducting Ambient air quality monitoring with reference to National Standard under clause 1.2 of Employer's requirement. P2 contractor Monitoring as per EIA of 2015 P3 contractor team is conducting Ambient air quality monitoring with reference to National Standard and clause 1.2 of Employer's requirement.
	2	Water pollution	pH, BOD, DO, Turbidity and O&G	IS / AWWA	1. Sewer & Sewer lay area for package I 2. Nava temporary bridge & casting yard in Gachan for package II 3. Gachan & Chitrli for package III	Quarterly 4 Times / Year Not applicable	810,000	2,400,000	610,000	0	3,210,000	P1 received Consents CTE from Govt. of Andhra Pradesh and City as follows: MFCB Frequency in addition to Environment Report from GC. The NAAQ standards are allowing high rate as that is the usual procedure. The frequency of monitoring is set by us as per the consent parameters as other Statutory requirements or as required by us to ensure we have sufficient data in hands if there are additional claims for Compensation in CS category. Summary / Although the consent conditions for all packages were same at the time of bid, the consent modifications suggested by GC were not accepted by P 2. P1 and P3 accepted the modifications and hence the difference. Second point is P 1 carrying out monitoring as per the consent CTE and CTO. Both other packages have applied for CTE but have not received the same. We expect the monitoring frequency would change after obtaining CTE.
	3	Waste	Volume of waste soil, cutting residue and domestic garbage	Volumetric	1. Sewer & Sewer lay area for package I	Daily	500,000	289,200,000	500,000	600,000	300,900,000	The cost of waste disposal for P1 includes CMO waste, the same etc. from all areas of the project. The consent and norms for waste disposal location is at MCCA approved location Bhuyandarpada, Thane.





No.	Category	Impacts based on ICA Guidelines	Parameters	Method	Location	Frequency's year	Cost (INR)	Cost Page 2 (INR)	Cost Page 3 (INR)	Total cost (INR)	Control Measures & Mitigation	Remarks
4 and 8	Soil Contamination/sedimentation	Heavy Metals & Oil & Grease (5-10 items shall be tested from soil pollution consultant)	IS / Methods Manual Soil Testing in India by Department of Agriculture and Cooperation, January 2011	1. Sewer & Silt bay area for package I 2. Nava temporary bridge & casting yard in Gwhan for package II 3. Gwhan & Chirle for package III	1. Once 1 Time / Year 2. Sediments 4 Times / Year 3. If any spillage / leakage take place from chemical (oil) storage area. *One time grab sample to be collected during Bridge Construction *Pre & Post Monsoon fortnightly	150,000	150,000	150,000	150,000	1,750,000	Soil Pollution Standard in India (MOEF) Cat. 0.01mg/l Lead: 0.01mg/l Chromium (VI): 0.05mg/l Arsenic: 0.01mg/l * Mercury: 0.0005mg/l Copper: 1.25mg/kg (some forms shall be extracted from toluene 25 standard items) *Construction Noise: 85dB(A) *Ambient Noise standards in India (dB (A) 1m) Landscape Area Day Time: 75 (6-22hr) Night Time: 70 (22-6hr) *Commercial Area: Day Time: 65 (6-22hr) Night Time: 55 (22-6hr) *Residential Area: Day Time: 55 (6-22hr) Night Time: 45 (22-6hr) *Silence Zone Day Time: 50 (6-22hr) Night Time: 40 (22-6hr) *Construction vibration: 75dB *Vibration Standards worldwide 1. Commercial / Industrial Area Day Time: 70 (7-20hr) Night Time: 65 (20-7hr) 2. Residential Area: Day Time: 65 (7-20hr) Night Time: 60 (20-7hr)	P2 contractor has considered only Domestic sewage with respect to ground. Other wastes are not considered. Construction wastes will be
5	Noise and vibration	Ambient and road side noise (dB(A) 1m)	IS Standard	1. Sewer & Silt bay area for package I 2. Nava temporary bridge & casting yard in Gwhan for package II 3. Gwhan & Chirle for package III	2 Times / Year Fortnightly	150,000	150,000	369,000	450,000	579,000	Not applicable for Page 1	Not applicable for Page 3
9 and 10	Protected Area / Ecosystem	Vibration (dB L10 or rms/rms)	1. Monitoring of multi conditions including fauna-flora 2. Monitoring of Cutting Tree and replantation/ 3. Monitoring of Mangrove Plantation and record number area appointed by MoEF	Along MTEHL alignment and package I Along MTEHL alignment and mangrove replant area for package II Not applicable for Package III	Quarterly during the construction period 4 Times / Year	6,500,000	6,500,000	0	0	13,700,000	Significant impacts are not caused by the project (Note)	Not applicable for Page 3



No.	Category	Impacted Item as per ICA Guidelines	Parameter	Method	Location	Frequency a year	Cost (INR)	Cost Pkg. I (INR)	Cost Pkg. II (INR)	Cost Pkg. III (INR)	Total Cost (INR)	Remarks	
	Natural environment		4. Monitoring of sedimentation soil density and community survey	1-2: Mangrove density and soil sedimentation 1-3: Benthos Survey 2-1: Cutting trees 3-1: Mangrove density survey in replanted area									
11		Hydrology	Flooding situation	Flood level measurement during high precipitation periods	Not applicable for Package I 2 Locations (CNR at Sewri and Shivaji Nagar) for Package II III Not applicable for Package I Interchange in Shivaji Nagar for Package II Not applicable for Package I Affected area	4 Times / Year	350,000	0	350,000	0	0	350,000	Not applicable for Pkg. I & II Project activities and structures does not cause flooding and impacts on tidal conditions
12	Topography and Geology	Conditions in embankment area	Visual survey about stability of embankment	Not applicable for Package I Interchange in Shivaji Nagar for Package II Not applicable for Package I Affected area	4 Times / Year	115,000	0	115,000	0	0	115,000	Embankment shall be stabilized without any handhole and cracks Not applicable for Pkg. I & II	
13	Local economy	Local economy		As per Actuals									
14	Local conflict of interest	Construction of worker's township	Confirmation of workers list from contractor	2 Locations (Camp site in Shivaji Nagar) for Package I 2 Locations	2 Times / Year	125,000	0	125,000	0	0	125,000	Employment opportunity shall be provided fully	
15	Infectious diseases such as HIV/AIDS	Number of infected patient	Confirmation of health check list from contractor	2 Locations	4 Times / year x 4.5 years	525,000	0	525,000	0	0	525,000	Infection disease rate shall not be caused by the project	
16	Water Environment	Construction worker's condition	Confirmation of safety devices and conditions via interviews	2 Locations (Camp site in Sewri and Shivaji Nagar) for Package I	2 Times / year	500,000	0	500,000	0	0	500,000	"Building And Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996", "The Building and other construction worker's welfare cess Act, 1996" and International standards such as "IPC Performance Standard 2 Labor and Working Conditions" Any accidents are not caused by construction	
17	Accidents	Number of accidents	Confirmation of accidents list from local government and State Traffic Police Department	2 Locations (Camp site in Sewri and Shivaji Nagar) for Package I	4 Times / Year	400,000	0	400,000	0	0	400,000		
	Other						8140500	325,354,000	12,000,000	2,211,500	339,565,500		

The Project for Construction of Mumbai Trans Harbour Link  
Reporting Form of Environmental Monitoring during Construction  
Attachment 2-4

Attachment 2-4

This form is prepared for reporting the monitoring results to IICA India Office. Only minimum required parameters are included in this form, and not all parameters in EMoP are covered.

Monitoring Period - April 2022 to June 2022

1. Environmental Monitoring during Construction for 4.5 years

Area	No. / Item	Parameter	Location	Frequency a year	Item and Standard	Monitoring Result				Remark	
						Location 1- Pkg 1	Location 2- Pkg 2	Location 3- Pkg 3	Location 4		
1	Air pollution	SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	1. Sewri & Sewri bay area for package I	Quarterly monitoring is conducted at all locations.	National Ambient Air Quality Standards (NAAQS)	Sewri	Shivaji Nagar	Chirle			
			2. Nhava temporary bridge & casting yard in Gavhan for package II			10.94	BDL	9			
			3. Gavhan & Chirle for package III			30.42	21	24			
						246.33	76	58			
						51.50	27	26			
						1.42	1.3	0.55			
						1.73	4.2	0.3			
						Zone I	Zone II	Zone III			
						7.7	8.3	Not applicable			
						5.2	6	Not applicable			
2	Water pollution	pH, BOD, DO, Turbidity and O&G	1. Sewri & Sewri bay area for package I	Quarterly	Marine water quality Standards - Class SW-IV Harbour Waters (MPCB)	Sewri Camp Site	Shivaji Nagar Camp Site	Chirle Camp Site			
			2. Nhava temporary bridge & casting yard in Gavhan for package II			5.6	7.6	Not applicable			
			3. Gavhan & Chirle for package III			BDL	BDL	Not applicable			
						1.6	1.5	Not applicable			
						Municipal Solid Waste Management Rules, 2016					
						Generated Concrete and Debris from Construction					
3	Waste	Volume of waste soil, cutting tree and domestic garbage	1. Sewri & Sewri bay area for package I	Dully	Generated waste soil (t) total	Sewri Camp Site	Shivaji Nagar Camp Site	Chirle Camp Site			
			2. Nhava temporary bridge & casting yard in Gavhan for package II			Tree cutting proposal has been submitted and approval from MCGM is awaited. Tree cutting far NIL.	Tree cutting proposal has been submitted and approval from MCGM is awaited. Tree cutting far NIL.	NA			
			3. Gavhan & Chirle for package III			Generated cutting tree (ha) total	Generated cutting tree (ha) total	Tree cutting work completed and Half yearly report submitted to Client (April, 2022)			
			1. Sewri & Sewri bay area for package I			1.0.5 Tonnes for 3 months.	3.5/quarter. It is disposed through CIDCO daily.	2.5 T. for the quarter			
		Schedule Audited by EMS	Muck Testing Done on September 2021 and Reports submitted to GC.								
		Soil Pollution Standard in India (MOEF)									



The Project for Construction of Mumbai Trans Harbour Link  
Reporting Form of Environmental Monitoring during Construction  
Attachment 2-4

Attachment 2-4

This form is prepared for reporting the monitoring results to JICA India Office. Only minimum required parameters are included in this form, and not all parameters in EMOP are covered.

Monitoring Period - April 2022 to June 2022

1. Environmental Monitoring during Construction for 4.5 years

Area	No. Item	Parameter	Location	Frequency a year	Item and Standard	Monitoring Result				Remark
						Location 1- Pkg 1	Location 2- Pkg 2	Location 3- Pkg 3	Location 4	
Pollution	4	Soil Contamination Heavy Metals & /sedimentatio Oil & Grease II	2. Nhava temporary bridge & casting yard in Gavhan for package II	2. Sediments: 4 Times / Year	1. Cadmium: 0.01mg/l	BDL(DI-2)				
					2. total cyanide : not detected	<0.005				
					3. Organic Carbon	0.9				
					4. lead: 0.01mg/l	15		Not applicable for Pkg 3		Hazardous Storage is situated in low lying area at Gavhan area. Due to this reason complete ground area is covered by boulders to avoid further water logging in rainy season. Therefore soil sample is impossible to taken out from in and around the Oil & chemical storage area. Same has witnessed by GC during February-2020 monitoring.
					5. chromium (VI): 0.05mg/l	BDL				
					6. arsenic: 0.01mg/l or 15mg/kg (agri-land soil)	BDL(DI-4)				
					7. total mercury: 0.005mg/l	BDL(DI-2)				
					8. allyl mercury: not detected	Not detected				
					9. PCBs: not detected	Not detected				
					10. copper: 125mg/kg (only paddy field soil)	147				Regarding soil contamination/sedimentation, some items shall be selected from the total 25 standards items during the Detailed Design. Only the selected items shall be reported to JICA, and the rest of items shall be deleted from this form
					11. dichloromethane: 0.02mg/l	Not detected				
					12. carbon tetrachloride: 0.002mg/l	Not detected				
					13. 1,2-dichloroethane: 0.004mg/l	Not detected				
					14. 1,1-dichloroethylene: 0.02mg/l	Not detected				
					15. cis-1,2-dichloroethylene: 0.04mg/l	Not detected				
					16. 1,1,1-trichloroethane: 1mg/l	Not detected				
					17. 1,1,2-trichloroethane: 0.006 mg/l	Not detected				
					18. trichloroethylene: 0.03mg/l	Not detected				
					19. tetrachloroethylene: 0.01mg/l	Not detected				
					20. 1,3-dichloropropane: 0.002mg/l	Not detected				
					21. thiuram: 0.006mg/l	Not detected				
					22. simazine: 0.003mg/l	Not detected				
					23. thiofenacarb: 0.02mg/l	Not detected				
					24. benzene: 0.01mg/l	Not detected				
					25. selenium: 0.01mg/l	Not detected				
					Construction area Standard 85 dB(A) Daytime (Japan standard)					
					Not construction area : Ambient Noise Standard in India (dB(A) Leq) 75 Max.					
					1. Sewri & Sewri bay area for package I		Sewri (ST 200-500) (Industrial area)		Shivaji Nagar (Commercial area)	
					Fortnightly - Noise levels	73.3				63.35
					Day time : 6-22 hr (continuous) dB(A) - 75 DB					
					Noise levels - Night time	67.46				52.69
					Night time: 22-6 hr (continuous) dB(A) - 55 DB					
					2. Nhava temporary bridge & casting yard in Gavhan for package II					
					Ambient and road side noise (dB(A))Aeq					
					2 Times / Year					
					Day time : 6-22 hr (10 min during 9-17 hrs)					68.2
					Night time: 22-6 hr (10 min 22-24 hr)					65.6
					Note: (standard values in Not construction area)					
					1. Industrial Area					
					Day Time: 75 (6-22hr)					
					Night Time: 70 (22-6hr)					
					2. Commercial Area:					
					Day Time: 65 (6-22hr)					
					3. Gavhan & Chirle for package III					
					Fortnightly					



**MTHL Land Acquisition Status (Attachment 2-6):**

The total land required on Navi Mumbai side- 108.09 ha

Land in possession in MMRDA – 106.345 ha

Balance land acquisition- 1.745 ha

Note: The acquisition of 1.745 ha is in progress by CIDCO. The balance acquisition would be likely completed by the end of September 2022.

Land Required in ha		Land Acquired in ha		Balance Land to be acquired in ha	Anticipated date for Land Acquisition	Payment status (Payment made to Land Owners by CIDCO)	Remarks
Govt.	Private	Govt.	Private	Private*			
98.75	9.34	98.75	7.595	1.745	30-09-2022	--	The payment status to the land owners is awaited from CIDCO. The same would be communicated to JICA on receipt of the same.
<b>Total</b>							
108.09		98.75	7.595	1.745			

**\*Portions of Private Land**

Sr. No.	Name of Village	Area (Hectare)	Acquired	Non-acquired
1	Gavhan	0.15	0.15	0.00
2	Jasai	8.72	7.306	1.414
3	Chirle	0.47	0.139	0.331
<b>Total Area</b>		<b>9.34</b>	<b>7.595</b>	<b>1.745</b>





**RAP Implementation Monitoring Form  
For Mumbai Trans Harbour Link Project (MTHL)**

**1. General Information**

a. RAP Implementation Monitoring Results:	Progress Status Report (PSR) for the 2 <sup>nd</sup> quarter of 2022
b. Date of Preparing This form	30-06-2022
c. Person Preparing This form	Name: Robin Sham Position: Engineer and Team Leader Department/Organizations: General Consultants

**2. Scale of Impact****2.1 Project Affected Households (PAHs) and Project Affected Persons (PAPs) for Sewri side**

Total Project Affected Households (PAHs)	231 Hhs	Titleholders: 0 Hhs Non-titleholders: 231 Hhs
Total PAPs	1,282 persons*	Titleholders: 0 persons Non-titleholders: 1,282 persons*
PAHs who need relocation (as residents)	231 Hhs	Titleholders: 0 persons Non-titleholders: 231 (1,088 persons) *
PAPs who do not need relocation (as residents)	0 persons	Titleholders: 0 persons Non-titleholders: 0 persons
Commercial PAPs who need relocation	66 (194 persons) *	Titleholders: 0 persons Non-titleholders: 66 (194 persons) *
Commercial PAPs who do not need relocation	0 persons	Titleholders: 0 persons Non-titleholders: 0 persons

\* - Figures for number of persons do not include no. of family members of few additional PAPs.

**2.2 Structures**

<b>Structures</b>	Residential: 231 Commercial: 65 Residential + Commercial: 1 (counted in Commercial) Community: 9 (Religious Properties 6, Public Toilets 3) Government: 16 (MbPT Structures 9, Occupants of Leased Plots 6 & Police Chowki 1) Total: 322
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**2.3 Fishery**

Categories of Fisher-folks	Identified Number		Total	Remarks
	Mumbai side	Navi Mumbai side		
C1: Fishing stakes and nets in RoW (250 m.)	178	54	232	Funds for 230 nos C1 category fishermen are transferred to the Commissioner of Fisheries on 17.03.2020 for payment to the beneficiaries. 2. The list of balance 2 Nos. of C1 category fishermen are in process of fund transfer to the



QPR No. 21 (April to June 2022) Attachment 2-8

				Commissioner of Fisheries.
C2: Fishing Stakes and Nets within 500 m. of RoW (Southern side)	296	567	863	1. Funds for 496 nos C2 category fishermen are transferred to the Commissioner of Fisheries in 2017-18. 2. The list of balance 367 Nos. of C2 category fishermen are under verification of validity.
C3: Hand Pickers	1498	4051	5549	Funds for 4141 nos of C3 category fishermen are already transferred to the Commissioner of Fisheries and the balance of 1408 Nos. of C3 category fishermen are in process of fund transfer to the Commissioner of Fisheries.
C4: Commercial and Artisanal Fisher-folks (Loss of Time and Increased Operating Costs)	Will be observed during the construction period	Will be observed during the construction period	---	Nil
C5: Fisher-folks with Loss due to Turbidity	Will be observed during the construction period	Will be observed during the construction period	---	Nil
C6: Fisher-folks with Damages due to Accidents	Will be observed during the construction period	Will be observed during the construction period	---	Nil

2.4 Land Acquisition / Transfer

Location	Land Required in Ha.		Land Acquired in Ha.		Balance Land to be acquired in Ha	Remarks
	Govt.	Private	Govt.	Private		
Sewri	10.089	0	10.089	0	0	
Navi Mumbai	98.75	9.34	98.75	7.595	1.745	
<b>Total</b>	<b>118.179</b>		<b>108.839</b>	<b>7.595</b>	<b>1.745</b>	



QPR No. 21 (April to June 2022) Attachment 2-8

3. Monitoring Results

3.1 Sewri Section

Activity	Indicator	Total Target	Progress till Last Quarter	Progress during reporting Quarter	Cumulative Progress till Current Quarter	Cumulative Achievement of Total Target (%)	Remarks, If Any
Resettlement	No. of Residential PAHs provided with Allotment Letters of Alternate Tenements	231	226	0	226	97%	
	No. of Residential PAHs given possession of Alternate Tenements	231	226	0	226	97%	
	No. of Commercial/R+C PAPs provided with Allotment Letters of Alternate Shops/Tenements	66	62	0	62	92%	
	No. of Commercial R+C PAPs given possession of Alternate Shops/Tenements	66	62	0	62	92%	
	No. of Occupants of MbPT Leased Plots provided Compensation	6	6	0	6	100%	
	No. of Religious properties Relocated / Removed	6	6	0	6	100%	
	No. of Other Community properties Relocated / Removed	4	4	0	4	100%	
	No. of Structures in possession of MbPT Dismantled / Cleared	9	9	0	9	100%	
	No. of PAHs/PAPs provided Shifting Charges / Arrangement	297	0	0	0	0%	
Rehabilitation	No. of PAHs / PAPs identified for Livelihood Support in Post Resettlement Assessment						
	No. of PAHs / PAPs provided Livelihood Support under Program-I (to be identified)						
	No. of PAHs / PAPs provided Livelihood Support under Program-II (to be identified)						
	No. of PAHs / PAPs provided Livelihood Support under Program-III (to be identified)						
	No. of new enterprises started						



**Implementation Schedule for Fisher-folks Compensation & Land Acquisition in Navi Mumbai**

**A. Implementation Schedule for Fisher-folks Compensation: -**

Sr. No.	Task Designation	Approving authority	Start Date	Completion Date
1	Approval of fisherfolk's compensation Policy	Fisher-folks Compensation Committee (FCC)	08-10-2015	23-12-2015
2	Approval by MMRDA	MMRDA	10-12-2015	23-12-2015
3	Submission to JICA	MMRDA	--	04-01-2016
4	A detailed list of PAP and compensation plan	1. Detailed list of Fisher-folk PAP up to list 1 (1165 Nos) & 2 (1399 Nos) are finalized by the Fisheries Department. 2. From 2018, FEVC committee is the approval authority of PAF and approved C1- 232 Nos. C2 - 368 Nos and C3- 3481 Nos are approved.	23-12-2015	Up to 30-06-2022 1. Total up to date applications scrutinized = 12669 Nos. 2. Eligible = 6645 Nos. 3. Rejected = 6024 Nos.
	Validation of compensation plan	Fisher-folks Compensation Committee (FCC)	23-12-2015	1. Approval to the Fisher-folk PAP list obtained from Fisheries Department for Fisherfolk from Sewri, Mahul & Trombay (Mumbai side) - 12th September 2017 and 20th November 2018 for C-2 & C3 Category only.



Sr. No.	Task Designation	Approving authority	Start Date	Completion Date
6	Approval of compensation plan	FCC	23-11-2015	28-12-2017
7	Approval by MMRDA	MMRDA	23-11-2015	09-03-2021

**B. Implementation Schedule for Land Acquisition in Navi Mumbai: -**

Land Required In Ha.	Land Acquired In Ha.		Balance Land to be acquired in Ha	The anticipated date for Land Acquisition	Payment status (Payment made to Landowners by CIDCO)	Remarks
	Govt.	Private				
98.75	9.34	98.75	7.595	1.745	30-09-2022	
<b>Total</b>	<b>108.09</b>	<b>106.345</b>	<b>1.745</b>			1. CIDCO is the land acquisition authority for land acquisition for Navi Mumbai 2. MMRDA has paid an amount of INR 59.16 Cr to CIDCO as per their demand. 3. The payment status to the landowners is awaited from CIDCO. The same would be communicated to JICA on receipt of the same.



### Status of JICA'S Concurrency

Sl. No.	Brief description	Procurement procedure	Bid Cost		JICA'S Concurrency on						Contract
			Local Currency (Cr Rs.)	Total (Cr Rs)	PQ Documents	PQ Evaluation	Bid Documents	Technical Evaluation	Financial Evaluation		
1.	Package-1 (CH 0+000 km to CH10+380 km)	ICB with PQ (2P)	7637.30	7637.30	JICA's Concurrency - 9th May 2016	JICA's Concurrency - 22nd Dec 2016	JICA's Concurrency - 4th Jan 2017	JICA's Concurrency - 12th Sep 2017	JICA's Concurrency - 12th Oct 2017	JICA's Concurrency - 15th Feb 2018	
2.	Package-2 (CH 10+380 km to CH18+187 km)	ICB with PQ (2P)	5612.61	5612.61	JICA's Concurrency - 9th May 2016	JICA's Concurrency - 22nd Dec 2016	JICA's Concurrency - 4th Jan 2017	JICA's Concurrency - 12th Sep 2017	JICA's Concurrency - 12th Oct 2017	JICA's Concurrency - 15th Feb 2018	
3.	Package-3 (CH18+187 to CH21+800)	ICB with PQ (2P)	1013.79	1013.79	JICA's Concurrency - 9th May 2016	JICA's Concurrency - 4th Jan 2017	JICA's Concurrency - 4th Jan 2017	JICA's Concurrency - 15th Sep 2017	JICA's Concurrency - 12th Oct 2017	JICA's Concurrency - 15th Feb 2018	
4.	Package-4 Intelligent Transport System	ICB with PQ (2P)	427.00	427.00	JICA's Concurrency - 23rd Aug 2019	NA	JICA's Concurrency - 24th Aug 2021	JICA's Concurrency - 15th Feb 2022	JICA's Concurrency - 21st April 2022	-	



## **Attachment 4- Project Procurement and Financial Status till 30<sup>th</sup> June 2022**



**PROJECT PROCUREMENT AND FINANCIAL STATUS TILL 30<sup>th</sup> JUNE 2022**

Type	Contract	Awarded or Estimated Value (in Rs. Crore)	Current Status	Contractors	Project Commencement Date	Stipulated Project Completion Date	Revised Project Completion Date After granting the Extension of Time (EOT)	% Of Overall Works Progress (Design, Material Procurement and Construction) as per the Primavera Baseline Schedule Updated as of 25th June 2022	% Of Financial Progress till 30 <sup>th</sup> June 2022 (GC Certified) (Excluding Mobilization Advance, Price Adjustment and Work Variation)
CIVIL	Package-1 (CH 0+000 km to CH 10+380 km)	7637.30	Awarded	L&T-HI Consortium	March 2018	21-Sep-2022	30-Sept-2023	82.07%	76.49%
	Package-2 (CH 10+380 km to CH18+187 km)	5612.61	Awarded	DAEWOO-TPL JV	March 2018	21-Sep-2022	27-Sept-2023	81.86%	77.56%
	Package-3 (CH18+187 to CH21+800)	1013.79	Awarded	L&T	March 2018	21-Sep-2021	03-Mar-2023	90.35%	85.68%
ITS	Package-4 Intelligent Transport System (ITS)	427.00	Awarded	Strabag GmbH JV	June 2022	Aug 2023	NA	NA	NA



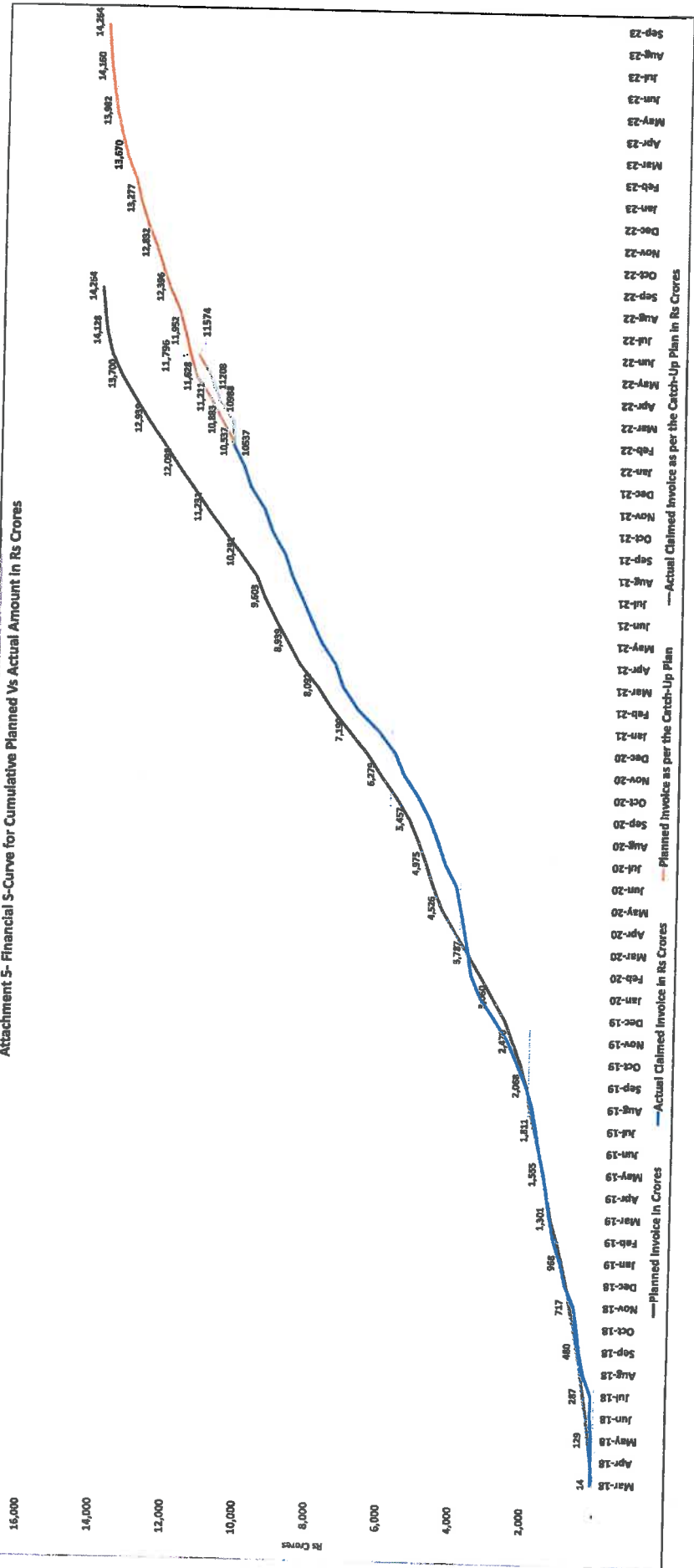


**Attachment 5- Financial S-Curve for Cumulative  
Planned Vs Actual Amount in Rs Crores**





Attachment 5- Financial S-Curve for Cumulative Planned Vs Actual Amount in Rs Crores



**Attachment 6- Package-1's Construction Programme  
Updated as of 25<sup>th</sup> June 2022**





MUMBAI TRANS HARBOUR LINK PACKAGE 1,  
UPDATED REVISED WORK PROGRAMME FOR JUNE 2022



ASECOM : PARCO  
General Consultant for Mumbai Trans Harbour Link Project

Activity ID	Activity Name	Duration	BLT Start	BLT Finish	Actual Start	Actual Finish	Schedule % Complete	Performance % Complete	Start Date	Finish Date	2018	2019	2020	2021	2022	2023
MIRDS1.0	Commissioning Date	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.1	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.2	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.3	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.4	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.5	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.6	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.7	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.8	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.9	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.10	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.11	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.12	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.13	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.14	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.15	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.16	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.17	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.18	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.19	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.20	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.21	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.22	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.23	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.24	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.25	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.26	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.27	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.28	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.29	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.30	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.31	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.32	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.33	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.34	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.35	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.36	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.37	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.38	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.39	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.40	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.41	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.42	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.43	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.44	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.45	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.46	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.47	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.48	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.49	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								
MIRDS1.50	Key Milestones	01-28-Mar-18	01-28-Mar-18	01-28-Mar-18			100%	100%								





**Attachment 7- Package-2's Construction Programme  
Updated as of 25<sup>th</sup> June 2022**











MUMBAI TRANS HARBOUR LINK PROJECT (PACKAGE 2) CONSTRUCTION OF 7.807KM LONG BRIDGE SECTION  
 (CH 10 380 - CH 18 187) ACROSS THE MUMBAI BAY INCL. SHIVAJINAGAR INTERCHANGE  
 UNDER IDENTIFICATION NO MM/RDA/ENG/000753

ANNEXURE-5 CONSTRUCTION UPDATED  
 PROGRAMME\_ABSTRACT (PACKAGE-2)

#	Activity Name	OSD/Project Duration	OSD/Project Start	OSD/Project Finish	Actual Start	Actual Finish	Structure % Complete	Performance % Complete
125	STEEL SPAN ASSEMBLY - MP18 - MP19 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
126	STEEL SPAN ASSEMBLY - MP19 - MP20 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
127	STEEL SPAN ASSEMBLY - MP20 - MP21 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
128	STEEL SPAN ASSEMBLY - MP21 - MP22 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
129	STEEL SPAN ASSEMBLY - MP22 - MP23 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
130	STEEL SPAN ASSEMBLY - MP23 - MP24 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
131	STEEL SPAN ASSEMBLY - MP24 - MP25 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
132	STEEL SPAN ASSEMBLY - MP25 - MP26 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
133	STEEL SPAN ASSEMBLY - MP26 - MP27 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
134	STEEL SPAN ASSEMBLY - MP27 - MP28 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
135	STEEL SPAN ASSEMBLY - MP28 - MP29 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
136	STEEL SPAN ASSEMBLY - MP29 - MP30 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
137	STEEL SPAN ASSEMBLY - MP30 - MP31 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
138	STEEL SPAN ASSEMBLY - MP31 - MP32 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
139	STEEL SPAN ASSEMBLY - MP32 - MP33 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
140	STEEL SPAN ASSEMBLY - MP33 - MP34 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
141	STEEL SPAN ASSEMBLY - MP34 - MP35 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
142	STEEL SPAN ASSEMBLY - MP35 - MP36 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
143	STEEL SPAN ASSEMBLY - MP36 - MP37 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
144	STEEL SPAN ASSEMBLY - MP37 - MP38 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
145	STEEL SPAN ASSEMBLY - MP38 - MP39 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
146	STEEL SPAN ASSEMBLY - MP39 - MP40 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
147	STEEL SPAN ASSEMBLY - MP40 - MP41 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
148	STEEL SPAN ASSEMBLY - MP41 - MP42 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
149	STEEL SPAN ASSEMBLY - MP42 - MP43 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
150	STEEL SPAN ASSEMBLY - MP43 - MP44 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
151	STEEL SPAN ASSEMBLY - MP44 - MP45 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
152	STEEL SPAN ASSEMBLY - MP45 - MP46 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
153	STEEL SPAN ASSEMBLY - MP46 - MP47 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
154	STEEL SPAN ASSEMBLY - MP47 - MP48 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
155	STEEL SPAN ASSEMBLY - MP48 - MP49 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
156	STEEL SPAN ASSEMBLY - MP49 - MP50 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
157	STEEL SPAN ASSEMBLY - MP50 - MP51 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
158	STEEL SPAN ASSEMBLY - MP51 - MP52 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
159	STEEL SPAN ASSEMBLY - MP52 - MP53 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
160	STEEL SPAN ASSEMBLY - MP53 - MP54 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
161	STEEL SPAN ASSEMBLY - MP54 - MP55 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
162	STEEL SPAN ASSEMBLY - MP55 - MP56 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
163	STEEL SPAN ASSEMBLY - MP56 - MP57 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
164	STEEL SPAN ASSEMBLY - MP57 - MP58 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
165	STEEL SPAN ASSEMBLY - MP58 - MP59 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
166	STEEL SPAN ASSEMBLY - MP59 - MP60 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
167	STEEL SPAN ASSEMBLY - MP60 - MP61 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
168	STEEL SPAN ASSEMBLY - MP61 - MP62 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
169	STEEL SPAN ASSEMBLY - MP62 - MP63 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
170	STEEL SPAN ASSEMBLY - MP63 - MP64 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
171	STEEL SPAN ASSEMBLY - MP64 - MP65 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
172	STEEL SPAN ASSEMBLY - MP65 - MP66 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
173	STEEL SPAN ASSEMBLY - MP66 - MP67 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
174	STEEL SPAN ASSEMBLY - MP67 - MP68 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
175	STEEL SPAN ASSEMBLY - MP68 - MP69 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
176	STEEL SPAN ASSEMBLY - MP69 - MP70 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
177	STEEL SPAN ASSEMBLY - MP70 - MP71 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
178	STEEL SPAN ASSEMBLY - MP71 - MP72 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
179	STEEL SPAN ASSEMBLY - MP72 - MP73 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
180	STEEL SPAN ASSEMBLY - MP73 - MP74 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
181	STEEL SPAN ASSEMBLY - MP74 - MP75 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
182	STEEL SPAN ASSEMBLY - MP75 - MP76 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
183	STEEL SPAN ASSEMBLY - MP76 - MP77 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
184	STEEL SPAN ASSEMBLY - MP77 - MP78 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
185	STEEL SPAN ASSEMBLY - MP78 - MP79 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
186	STEEL SPAN ASSEMBLY - MP79 - MP80 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
187	STEEL SPAN ASSEMBLY - MP80 - MP81 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
188	STEEL SPAN ASSEMBLY - MP81 - MP82 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
189	STEEL SPAN ASSEMBLY - MP82 - MP83 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
190	STEEL SPAN ASSEMBLY - MP83 - MP84 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
191	STEEL SPAN ASSEMBLY - MP84 - MP85 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
192	STEEL SPAN ASSEMBLY - MP85 - MP86 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
193	STEEL SPAN ASSEMBLY - MP86 - MP87 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
194	STEEL SPAN ASSEMBLY - MP87 - MP88 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
195	STEEL SPAN ASSEMBLY - MP88 - MP89 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
196	STEEL SPAN ASSEMBLY - MP89 - MP90 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
197	STEEL SPAN ASSEMBLY - MP90 - MP91 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
198	STEEL SPAN ASSEMBLY - MP91 - MP92 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
199	STEEL SPAN ASSEMBLY - MP92 - MP93 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%
200	STEEL SPAN ASSEMBLY - MP93 - MP94 (S)	18-Aug-20	18-Aug-20	20-Aug-20	18-Aug-20	20-Aug-20	100%	100%

Date	25-Jun-22	Revision	R0	Checked	Approved
EMPLOYER:	MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY (MMRDA)	CONTRACTOR:	DAEWOO-TPL JV		

Primary Baseline: [Green Box] Actual Work [Blue Box] Remaining Work [Red Box] Critical Remaining Work [Red Box with Arrow] summary  
 Milestone: [Diamond] % Complete: [Percentage]



ANNEXURE-5 CONSTRUCTION UPDATED PROGRAMME\_ABSTRACT (PACKAGE-2)

MUMBAI TRANS HARBOUR LINK PROJECT (PACKAGE 2) CONSTRUCTION OF 7.807KM LONG BRIDGE SECTION (CH 10 380 - CH 18 187) ACROSS THE MUMBAI BAY INCL SHIVAJINAGAR INTERCHANGE UNDER IDENTIFICATION NO MMRDA/ENG/000753

Sl. No.	Activity Name	Start Date	End Date	Actual Start	Actual End	Actual Finish	Percentage Complete	Gantt Chart																							
								01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
261	MODULE-04, MP201, MP227	05-Feb-20	05-Feb-20	05-Feb-20	05-Feb-20	05-Feb-20	100%																								
262	MODULE-05, MP225, MP226	13-Jul-19	13-Jul-19	13-Jul-19	13-Jul-19	13-Jul-19	100%																								
263	MODULE-06, MP200, MP228	05-Sep-19	05-Sep-19	05-Sep-19	05-Sep-19	05-Sep-19	100%																								
264	MODULE-07, MP202, MP229	01-Oct-19	01-Oct-19	01-Oct-19	01-Oct-19	01-Oct-19	100%																								
265	MODULE-08, MP204, MP230	23-Nov-19	23-Nov-19	23-Nov-19	23-Nov-19	23-Nov-19	100%																								
266	MODULE-09, MP206, MP231	16-Dec-19	16-Dec-19	16-Dec-19	16-Dec-19	16-Dec-19	100%																								
267	MODULE-10, MP208, MP232	08-Jan-20	08-Jan-20	08-Jan-20	08-Jan-20	08-Jan-20	100%																								
268	MODULE-11, MP210, MP233	01-Feb-20	01-Feb-20	01-Feb-20	01-Feb-20	01-Feb-20	100%																								
269	MODULE-12, MP212, MP234	17-Mar-20	17-Mar-20	17-Mar-20	17-Mar-20	17-Mar-20	100%																								
270	MODULE-13, MP214, MP235	03-Apr-20	03-Apr-20	03-Apr-20	03-Apr-20	03-Apr-20	100%																								
271	MODULE-14, MP216, MP236	21-May-20	21-May-20	21-May-20	21-May-20	21-May-20	100%																								
272	MODULE-15, MP218, MP237	08-Jun-20	08-Jun-20	08-Jun-20	08-Jun-20	08-Jun-20	100%																								
273	MODULE-16, MP220, MP238	26-Jul-20	26-Jul-20	26-Jul-20	26-Jul-20	26-Jul-20	100%																								
274	MODULE-17, MP222, MP239	13-Aug-20	13-Aug-20	13-Aug-20	13-Aug-20	13-Aug-20	100%																								
275	MODULE-18, MP224, MP240	31-Sep-20	31-Sep-20	31-Sep-20	31-Sep-20	31-Sep-20	100%																								
276	MODULE-19, MP226, MP241	19-Oct-20	19-Oct-20	19-Oct-20	19-Oct-20	19-Oct-20	100%																								
277	MODULE-20, MP228, MP242	06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	06-Nov-20	100%																								
278	MODULE-21, MP230, MP243	24-Dec-20	24-Dec-20	24-Dec-20	24-Dec-20	24-Dec-20	100%																								
279	MODULE-22, MP232, MP244	11-Jan-21	11-Jan-21	11-Jan-21	11-Jan-21	11-Jan-21	100%																								
280	MODULE-23, MP234, MP245	30-Feb-21	30-Feb-21	30-Feb-21	30-Feb-21	30-Feb-21	100%																								
281	MODULE-24, MP236, MP246	18-Mar-21	18-Mar-21	18-Mar-21	18-Mar-21	18-Mar-21	100%																								
282	MODULE-25, MP238, MP247	07-Apr-21	07-Apr-21	07-Apr-21	07-Apr-21	07-Apr-21	100%																								
283	MODULE-26, MP240, MP248	26-May-21	26-May-21	26-May-21	26-May-21	26-May-21	100%																								
284	MODULE-27, MP242, MP249	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	100%																								
285	MODULE-28, MP244, MP250	03-Jul-21	03-Jul-21	03-Jul-21	03-Jul-21	03-Jul-21	100%																								
286	MODULE-29, MP246, MP251	22-Aug-21	22-Aug-21	22-Aug-21	22-Aug-21	22-Aug-21	100%																								
287	MODULE-30, MP248, MP252	10-Sep-21	10-Sep-21	10-Sep-21	10-Sep-21	10-Sep-21	100%																								
288	MODULE-31, MP250, MP253	30-Oct-21	30-Oct-21	30-Oct-21	30-Oct-21	30-Oct-21	100%																								
289	MODULE-32, MP252, MP254	18-Nov-21	18-Nov-21	18-Nov-21	18-Nov-21	18-Nov-21	100%																								
290	MODULE-33, MP254, MP255	07-Dec-21	07-Dec-21	07-Dec-21	07-Dec-21	07-Dec-21	100%																								
291	MODULE-34, MP256, MP256	26-Jan-22	26-Jan-22	26-Jan-22	26-Jan-22	26-Jan-22	100%																								
292	MODULE-35, MP258, MP257	14-Feb-22	14-Feb-22	14-Feb-22	14-Feb-22	14-Feb-22	100%																								
293	MODULE-36, MP260, MP258	04-Mar-22	04-Mar-22	04-Mar-22	04-Mar-22	04-Mar-22	100%																								
294	MODULE-37, MP262, MP259	22-Apr-22	22-Apr-22	22-Apr-22	22-Apr-22	22-Apr-22	100%																								
295	MODULE-38, MP264, MP260	10-May-22	10-May-22	10-May-22	10-May-22	10-May-22	100%																								
296	MODULE-39, MP266, MP261	29-Jun-22	29-Jun-22	29-Jun-22	29-Jun-22	29-Jun-22	100%																								
297	MODULE-40, MP268, MP262	17-Jul-22	17-Jul-22	17-Jul-22	17-Jul-22	17-Jul-22	100%																								
298	MODULE-41, MP270, MP263	05-Aug-22	05-Aug-22	05-Aug-22	05-Aug-22	05-Aug-22	100%																								
299	MODULE-42, MP272, MP264	24-Sep-22	24-Sep-22	24-Sep-22	24-Sep-22	24-Sep-22	100%																								
300	MODULE-43, MP274, MP265	12-Oct-22	12-Oct-22	12-Oct-22	12-Oct-22	12-Oct-22	100%																								
301	MODULE-44, MP276, MP266	01-Nov-22	01-Nov-22	01-Nov-22	01-Nov-22	01-Nov-22	100%																								
302	MODULE-45, MP278, MP267	20-Dec-22	20-Dec-22	20-Dec-22	20-Dec-22	20-Dec-22	100%																								
303	MODULE-46, MP280, MP268	08-Jan-23	08-Jan-23	08-Jan-23	08-Jan-23	08-Jan-23	100%																								
304	MODULE-47, MP282, MP269	27-Feb-23	27-Feb-23	27-Feb-23	27-Feb-23	27-Feb-23	100%																								
305	MODULE-48, MP284, MP270	16-Mar-23	16-Mar-23	16-Mar-23	16-Mar-23	16-Mar-23	100%																								
306	MODULE-49, MP286, MP271	05-Apr-23	05-Apr-23	05-Apr-23	05-Apr-23	05-Apr-23	100%																								
307	MODULE-50, MP288, MP272	24-May-23	24-May-23	24-May-23	24-May-23	24-May-23	100%																								
308	MODULE-51, MP290, MP273	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	100%																								
309	MODULE-52, MP292, MP274	01-Jul-23	01-Jul-23	01-Jul-23	01-Jul-23	01-Jul-23	100%																								
310	MODULE-53, MP294, MP275	20-Aug-23	20-Aug-23	20-Aug-23	20-Aug-23	20-Aug-23	100%																								
311	MODULE-54, MP296, MP276	08-Sep-23	08-Sep-23	08-Sep-23	08-Sep-23	08-Sep-23	100%																								
312	MODULE-55, MP298, MP277	28-Oct-23	28-Oct-23	28-Oct-23	28-Oct-23	28-Oct-23	100%																								
313	MODULE-56, MP300, MP278	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	100%																								
314	MODULE-57, MP302, MP279	05-Dec-23	05-Dec-23	05-Dec-23	05-Dec-23	05-Dec-23	100%																								
315	MODULE-58, MP304, MP280	24-Jan-24	24-Jan-24	24-Jan-24	24-Jan-24	24-Jan-24	100%																								

**Primary Baseline**    **Critical Remaining Work**    **summary**  
**Actual Work**    **Milestone**  
**Remaining Work**    **% Complete**

**EMPLOYER:** MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY (MMRDA)  
**CONTRACTOR:** DAEWOO-TPL JV

**Date:** 25-Jun-22    **Revision:** R0    **Checked:**    **Approved:**





#	Activity Name	Start/End Dates	Start/End Time	Activity Status	Activity Progress	Date												Performance Complete	
						01	02	03	04	05	06	07	08	09	10	11	12		13
377	MODULE_01_MP185_MP182	30-Dec-21	7-Dec-21	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
378	MODULE_01_MP186_MP183	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
379	MODULE_01_MP187_MP184	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
380	MODULE_01_MP188_MP185	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
381	MODULE_01_MP189_MP186	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
382	MODULE_01_MP190_MP187	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
383	MODULE_01_MP191_MP188	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
384	MODULE_01_MP192_MP189	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
385	MODULE_01_MP193_MP190	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
386	MODULE_01_MP194_MP191	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
387	MODULE_01_MP195_MP192	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
388	MODULE_01_MP196_MP193	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
389	MODULE_01_MP197_MP194	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
390	MODULE_01_MP198_MP195	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
391	MODULE_01_MP199_MP196	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
392	MODULE_01_MP200_MP197	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
393	MODULE_01_MP201_MP198	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
394	MODULE_01_MP202_MP199	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
395	MODULE_01_MP203_MP200	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
396	MODULE_01_MP204_MP201	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
397	MODULE_01_MP205_MP202	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
398	MODULE_01_MP206_MP203	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
399	MODULE_01_MP207_MP204	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
400	MODULE_01_MP208_MP205	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
401	MODULE_01_MP209_MP206	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
402	MODULE_01_MP210_MP207	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
403	MODULE_01_MP211_MP208	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
404	MODULE_01_MP212_MP209	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
405	MODULE_01_MP213_MP210	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
406	MODULE_01_MP214_MP211	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
407	MODULE_01_MP215_MP212	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
408	MODULE_01_MP216_MP213	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
409	MODULE_01_MP217_MP214	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
410	MODULE_01_MP218_MP215	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
411	MODULE_01_MP219_MP216	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
412	MODULE_01_MP220_MP217	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
413	MODULE_01_MP221_MP218	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
414	MODULE_01_MP222_MP219	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
415	MODULE_01_MP223_MP220	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
416	MODULE_01_MP224_MP221	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
417	MODULE_01_MP225_MP222	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
418	MODULE_01_MP226_MP223	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
419	MODULE_01_MP227_MP224	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
420	MODULE_01_MP228_MP225	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
421	MODULE_01_MP229_MP226	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
422	MODULE_01_MP230_MP227	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
423	MODULE_01_MP231_MP228	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
424	MODULE_01_MP232_MP229	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
425	MODULE_01_MP233_MP230	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
426	MODULE_01_MP234_MP231	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
427	MODULE_01_MP235_MP232	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
428	MODULE_01_MP236_MP233	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
429	MODULE_01_MP237_MP234	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
430	MODULE_01_MP238_MP235	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
431	MODULE_01_MP239_MP236	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
432	MODULE_01_MP240_MP237	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
433	MODULE_01_MP241_MP238	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
434	MODULE_01_MP242_MP239	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
435	MODULE_01_MP243_MP240	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
436	MODULE_01_MP244_MP241	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
437	MODULE_01_MP245_MP242	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
438	MODULE_01_MP246_MP243	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
439	MODULE_01_MP247_MP244	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
440	MODULE_01_MP248_MP245	31-Dec-21	18-Jan-22	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

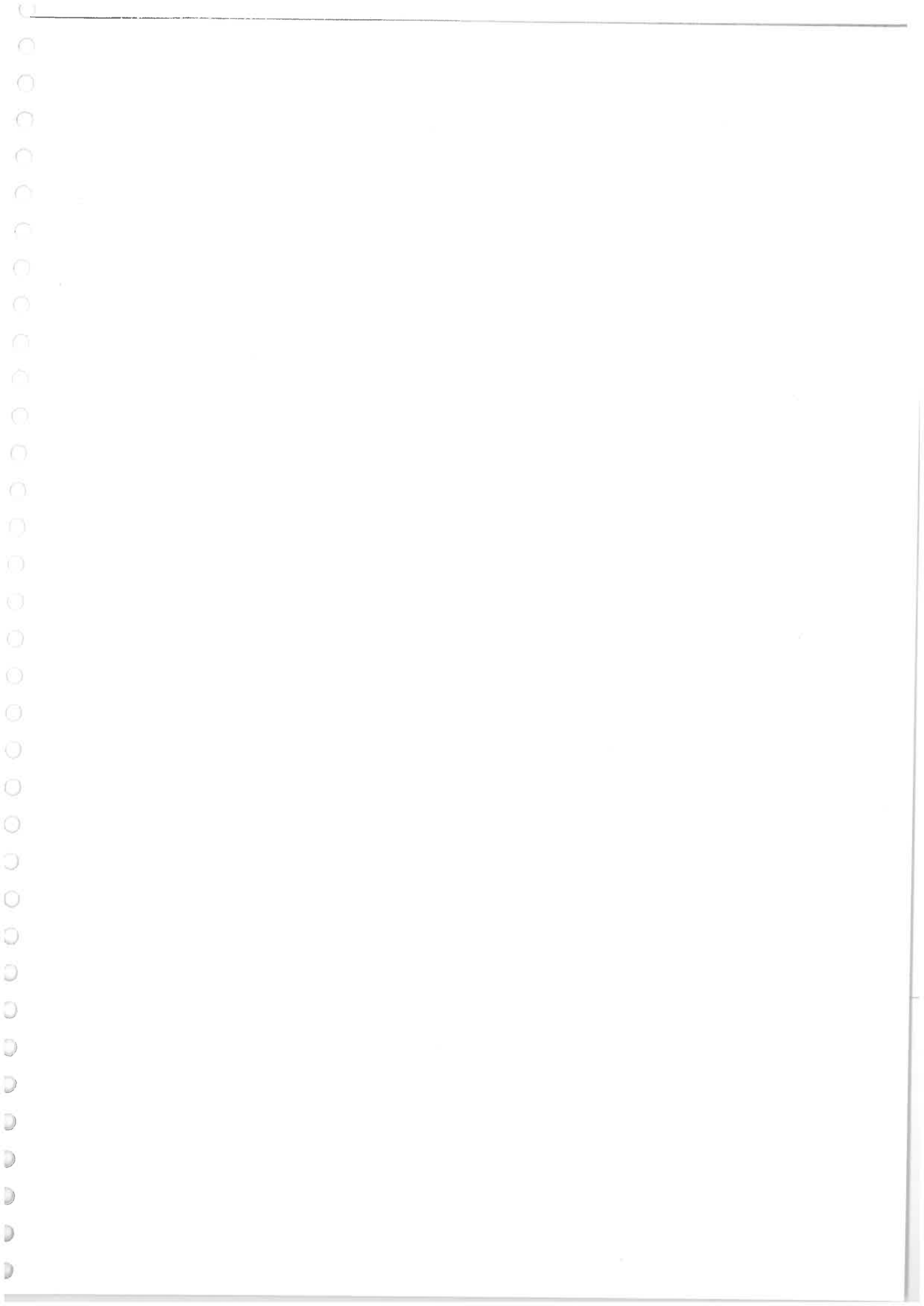
**EMPLOYER:** MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY (MMRDA)  
**CONTRACTOR:** DAEWOO-TPL JV  
 Date: 25-Jan-22 | Revision: R0 | Approved: [Signature]  
 Checked: [Signature]



**Legend:**  
█ Primary Baseline  
█ Actual Work  
█ Remaining Work  
█ Critical Remaining Work  
◆ Milestone  
◆ Summary  
█ % Complete









## **Attachment 8- Package-3's Construction Programme Updated as of 25<sup>th</sup> June 2022**





Project: MTHL-3- Revised Construction Schedule Jun 22									
Activity ID	Activity Name	Original Duration	BL1 Start	BL1 Finish	Start	Finish	Activity % Complete	Schedule % Complete	Performance % Complete
1	Procurement of Mumbai Tons Harbour Link Project	1551	23-Mar-18	03-Jun-23	23-Mar-18	13-Oct-23	91.6%	91.6%	100.0%
	Commencement Date (CD)	0	23-Mar-18		23-Mar-18A	13-Oct-23			
	Milestones (At level of effort)		811	15-Apr-21	03-Mar-23	23-Mar-18A	100%	100%	100%
	Financial Milestone	1510	25-Aug-18	03-Mar-23	23-Mar-18A	13-Oct-23	0%	0%	0%
	Interface Milestone	792	25-Jan-21	16-Aug-22	17-Sep-18A	28-Mar-22	0%	0%	0%
	Delay Events	1178	19-Apr-19	31-Mar-21	19-Apr-18A	25-Jun-22	0%	0%	0%
	Document Submittals	45	251-Dec-18	07-Feb-19	06-Apr-18A	30-Sep-18A	100%	100%	100%
	Employer's Obligation / Land Handover	1153	23-Mar-18	05-Jun-21	23-Mar-18A	25-Jun-22	0%	0%	0%
	Employer Office (Sch 01 - General Item)	797	25-Jan-19	12-Jun-19	19-Apr-18A	30-Sep-19A	100%	100%	100%
	Survey & Geotechnical Investigation Works	346	10-Apr-18	30-Nov-21	28-Apr-18A	30-Jun-22	100%	100%	100%
	Design Works	983	15-Jan-19	13-Sep-22	15-Feb-19A	25-Apr-23	99.38%	94.54%	94.54%
	Procurement Works	1120	02-May-19	10-Feb-22	21-Feb-19A	07-Aug-22	100%	100%	100%
	Co-ordinated Fabrication & Manufacturing Works	883	03-Jun-19	22-Feb-23	28-Sep-18A	11-Oct-23	88.98%	83.19%	83.19%
	Construction Works	1943	25-Dec-18	10-May-22	25-Sep-18A	09-Oct-22	98.0%	98.0%	98.0%
	Preconstruction Activity	983	12-Apr-19	01-Aug-22	12-Apr-19A	01-Aug-22	98.0%	98.0%	98.0%
	Sub Structures (Open Foundation, Pier, Pier Cap)	363	12-Apr-19	16-Apr-22	14-Sep-18A	21-Sep-22	100%	100%	100%
	Main Concreting	454	01-Aug-20	14-Jul-22	25-Aug-19A	30-Sep-21A	100%	100%	100%
	SH-64 Ramps	429	31-Aug-20	07-Aug-22	03-Aug-19A	06-Oct-22	59.4%	57.4%	57.4%
	Chirn NH4B Ramps	316	31-Aug-20	09-Aug-22	21-Aug-19A	31-Jan-23	100%	100%	100%
	Super Structures	024	23-Jul-21	23-Jul-22	11-Sep-18A	24-Jul-23	72.0%	52.6%	52.6%
	Segments Precasting	533	25-Aug-21	21-Sep-22	11-Sep-19A	03-May-22A	0%	0%	0%
	Segments Erection	636	25-Aug-21	14-Jul-22	03-Jun-19A	24-Jun-21	0%	0%	0%
	Cast in Situ	593	31-Aug-21	23-Jul-22	25-Sep-20A	16-Jul-23	77.2%	67.2%	67.2%
	Steel Structure	200	10-May-22	07-Jul-23	01-Jul-22A	24-Jun-23	19.6%	20.9%	20.9%
	Beams Installation	60	14-Jul-21	03-Aug-22	24-Sep-19A	11-Jul-23	27.3%	27.3%	27.3%
	Precast Spans	140	05-Jun-22	09-Aug-22	14-Sep-20A	14-Aug-22	100%	100%	100%
	Expansion Joints	182	15-Jul-21	08-Aug-22	14-Sep-20A	14-Aug-22	100%	100%	100%
	Bridge Deck & M/s. @ Abutment Pier	145	03-Jul-21	11-Jul-22	11-Jul-22A	10-Sep-23	61.0%	61.0%	61.0%
	Crash Barrier & Safety Fence	328	18-Sep-22	11-Jul-23	25-Sep-22	10-Sep-23	0%	0%	0%
	Painting works	292	20-May-22	09-Jun-23	11-Jul-22A	05-Sep-23	38.0%	0%	0%
	RE Wall	14	11-Jul-22	14-Jul-22	11-Jul-22A	19-Oct-23	0%	0%	0%
	RE wall with backfill	83	11-Jun-22	15-Jul-22	01-Jul-22A	10-Jun-23	1.87%	3.3%	3.3%
	At Grade work	105	25-Aug-22	15-Jul-23	03-Jun-22A	03-Aug-23	14.91%	0%	0%
	Area for toll plaza	665	17-Jul-19	04-Jun-22	16-Jul-19A	01-Jul-23	100%	100%	100%
	Earthwork (Cut & Fill)	344	31-Jul-21	04-Jun-22	14-Jul-19A	28-Oct-20A	0%	0%	0%
	Subgrade & Gravel Sub Base	910	15-Jun-21	14-Jul-22	15-Feb-19A	01-Jul-23	100%	97.5%	97.5%
	WMM & DSW	140	30-Jul-21	13-Sep-22	01-Aug-22A	16-Nov-22	0%	0%	0%
	Water Proofing	150	15-Jul-22	08-Mar-22	02-Sep-22A	16-Nov-23	0%	0%	0%
	Asphalt Pavement (Kuro, Traffic, 4th)	38	20-Jun-22	15-Jun-22	08-May-23	08-Sep-23	0%	0%	0%
	Compaction of subgrade	98	25-Jun-22	23-Jul-22	18-Aug-22A	10-Sep-23	0%	0%	0%
	Completion of Interests Activity	252	11-Jun-22	31-Jun-23	11-Jun-22A	11-Oct-23	0%	0%	0%
	Testing & Commissioning Works	208	31-Mar-21	17-Aug-22	25-Jun-22	28-Mar-23	0%	0%	0%
		104	07-Jan-23	02-Mar-23	13-May-23	12-Oct-23	0%	0%	0%

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	J	M	J	A	S	O	N	D				
2023	J	F	M	A	M	J	J	A	S	O	N	D
2024	J	F	M	A	M	J	J	A	S	O	N	D

## Attachment 9- Project Progress Photos for June 2022



**Package 1- Site Progress Photos**



**Photo No. 1: LG- 3 Span Erection at Marine Location looking towards Navi Mumbai**



**Photo No. 2: OSD 2 Span Erection looking towards Navi Mumbai**





Photo No. 3: MP 72 Pier Head Shutter Checking in progress



Photo No. 4: MP 71 OSD -2 Span towards Navi Mumbai





Photo No. 9: EP 15-16 Span Erection using Under Slung in progress



Photo No. 10: LG 1 Pier Head Lifting in progress





Photo No. 11: Median Crash Barrier Reinforcement in progress



Photo No. 12: LG-06 AP 08-09 Span Erection in progress



**Package 2 – Site Progress Photos**



Photo No. 1: LG-3 Wet joint formwork fixing at Span MP 253-255 RHS in progress



Photo No. 2: Pier cap concrete at MP 173ARHS in progress







Photo No. 3: Integral pier head segment scaffolding at MP 188 RHS and LHS in progress



Photo No. 4: Pier reinforcement tying at MP 184 RHS in progress





Photo No. 5: Pier final lift concreting at MP 184 RHS in progress



Photo No. 6: Pier cap concreting at MP 175 RHS in progress





Photo No. 7: Cast in situ slab concreting at Interchange Area in progress



Photo No. 8: Retaining wall backfilling works at ramp Area in progress





Photo No. 9: Segment concrete at Bay-1 in progress



Photo No. 10: Cast in situ slab works at Interchange Area in progress





Photo No. 11: OSD works at Karanja Port in progress

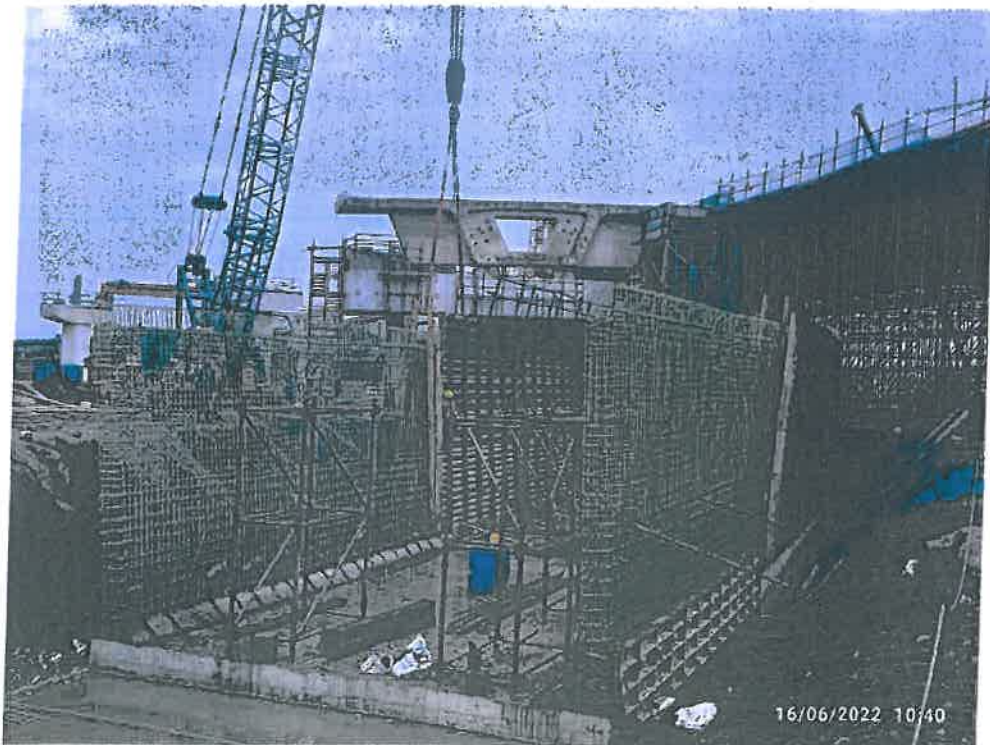


Photo No. 12: Retaining wall formwork fixing at Ramp CA in progress



**Package 3 – Site Progress Photos**



Photo No. 1: Gavan Span RMP 275-276 ROB structural steel Girder erection completed



Photo No. 2: Chirle span RP33-34 Deck slab concrete casting completed





Photo No. 3: Chirle interchange ramp MJ1-2 voided slab concrete casting completed



Photo No. 4: Jasai span JMP 04-05 reinforcement and profile work





Photo No. 5: Pier LMP 273 Bearing Installation survey Inspection work



Photo No. 6: Jasai span LA01-LP01 deck slab concrete pouring work







Photo No. 7: Gavan Span RMP 272-273, Soffit concrete casting completed



Photo No. 8: Chirle RP-35 Bearing installation survey work





Photo No. 9: Chirle span LP32-33 segment erection work



Photo No. 10: Gavan CIS span RMP 271-272 prestressing work





Photo No. 11: Jasai LP-20, Pier 3rd lift concrete work



Photo No. 12: Chirle MJP Loop 2nd layer Geogrid work at CH 0+370 – CH 0+400





No. MMRDA/MTHL-PIU/JICA/QPR-22/1589/2022

Date: 7<sup>th</sup> November 2022

To,  
**Mr. SAITO Mitsunori**  
**Chief Representative,**  
Japan International Cooperation Agency (JICA)  
Mumbai Trans Harbour Link Project (I)  
16<sup>th</sup> Floor, Hindustan Times House,  
18-20, Kasturba Gandhi Marge, New Delhi-110-001

**Sub : Mumbai Trans Harbour Link Project (I) (ID-P255) & (ID-P283)**  
**- Quarterly Progress Report (QPR) No. 22 for July 2022 to**  
**September 2022.**

Sir,

The loan agreement for the Official Development Assistance (ODA) loan for the Mumbai Trans Harbour Link Project (I) is signed between Mumbai Trans Harbour Link Project (I) and Mumbai Metropolitan Region Development Authority (MMRDA) on 31<sup>st</sup> March 2017 & 29<sup>th</sup> March 2020 with MMRDA as a direct borrower of the loan.

The Quarterly Progress Report (QPR) No. 22 for the Mumbai Trans Harbour Link Project (I) for the period of July 2022 to September 2022 is enclosed herewith for information please.

Thanking you.

Yours faithfully,

Encl.: QPR-22 (July 2022 to September 2022)

  
(S. A. Wandhekar)  
Engineer- In- Chief

**Mumbai Metropolitan Region Development Authority**

Bandra-Kurla Complex, Bandra East, Mumbai 400 051.

EPABX +91 22 2659 0001 / 4000

<https://mmrda.maharashtra.gov.in>



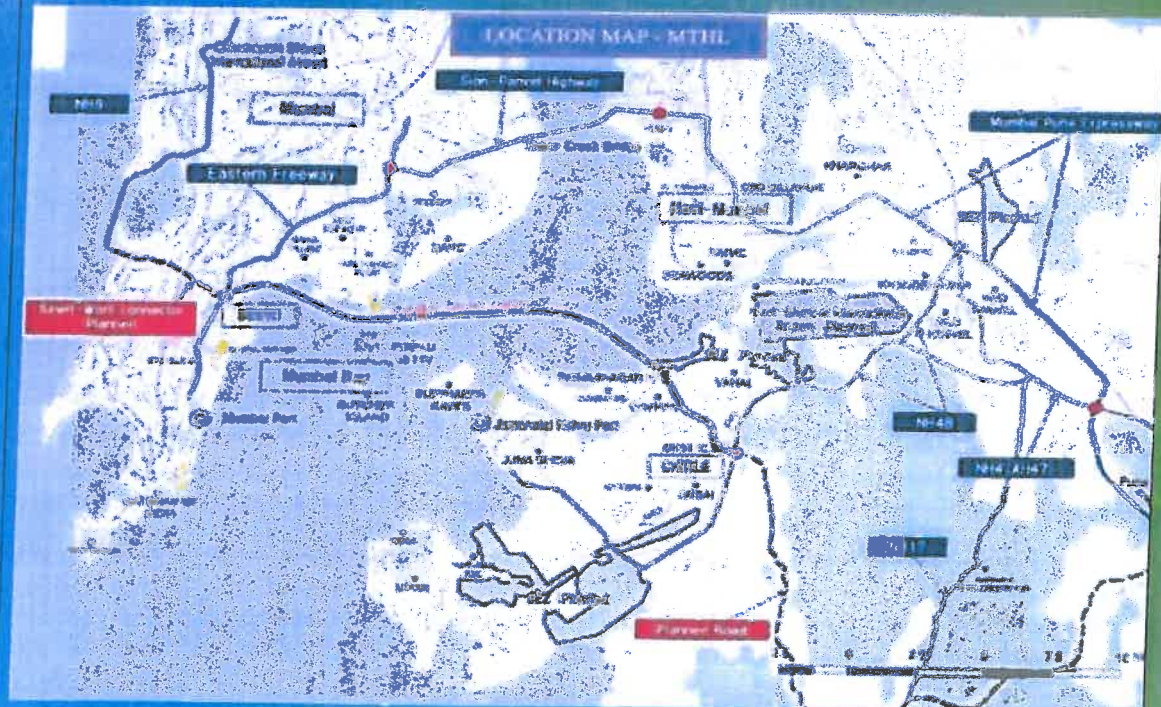
**एम एम आर डी ए**  
**MMRDA**

Mumbai Metropolitan Region Development Authority

# Mumbai Trans Harbour Link Project

Quarterly Progress Report - No. 22

(From 1<sup>st</sup> July 2022 to 30<sup>th</sup> Sep 2022)



**Mumbai Trans Harbour Link Project**  
**Quarterly Progress Report No. 22**  
**1<sup>st</sup> July 2022 to 30<sup>th</sup> Sep 2022**  
**Loan Agreement No. ID-P255 (Tranche-I) & ID-P283 (Tranche-II)**

**ORGANIZATION INFORMATION**

<b>Borrower</b>	<b>Mumbai Metropolitan Region Development Authority</b>	
	Person in Charge	<b>Metropolitan Commissioner, MMRDA</b>
	Contact Address	M.M.R.D.A. New Office Building, Bandra-Kurla Complex, Plot no. R-5, R-6 & R-12, E Block, Bandra (East), Mumbai - 400051 Phone: +91-22-26594000 Fax No:+91-22-2659 1264
<b>Executing Agency</b>	<b>Mumbai Trans Harbour Link Project Implementation Unit</b>	
	Headed by:	<b>Engineer-In-Chief</b> Mumbai Trans Harbour Link Project Implementation Unit
	Contact Address	M.M.R.D.A. New Office Building, Bandra-Kurla Complex, Plot no. R-5, R-6 & R-12, E Block Bandra (East), Mumbai - 400 051 Phone: +91-22-2659 4034 Fax No: +91-22-2659 4179

**Details of JICA Loan**

<b>Source of Finance</b>	JICA ODA Loan Portion:	238,572 million Japanese YEN (JPY)
	Tranche-I:	144,795 million Japanese YEN (JPY) (Loan Agreement signed on 31 <sup>st</sup> Mar 2017)
	Tranche-II:	66,909 million Japanese YEN (JPY) (Loan Agreement signed on 27 <sup>th</sup> Mar 2020)
<b>Terms and Conditions of JICA ODA Loan (Tranche-1)</b>	Repayment Period:	30 years, including 10 years of the grace period.



## DOCUMENT VERIFICATION AND REVISION RECORD

PROJECT NAME		Mumbai Trans Harbour Link Project			
DOC NO.		22	DATE OF ISSUE		18/10/2022
DOC TITLE		Quarterly Progress Report No. 22			
REV No.	DATE OF ISSUE	DESCRIPTION	PREPARED BY	CHECKED BY	APPROVED BY
R0	05/07/2017	Quarterly Progress Report No. 1 (Apr-Jun 17)	J Senthil	Dr T K Sundaram	Dr Robin Sham
R0	05/10/2017	Quarterly Progress Report No. 2 (Jul-Sep 17)	J Senthil	Dr T K Sundaram	Dr Robin Sham
R0	05/01/2018	Quarterly Progress Report No. 3 (Oct-Dec 17)	J Senthil	Dr T K Sundaram	Dr Robin Sham
R0	05/04/2018	Quarterly Progress Report No. 4 (Jan-Mar 18)	J Senthil	Dr T K Sundaram	Dr Robin Sham
R0	24/07/2018	Quarterly Progress Report No. 5 (Apr-Jun 18)	Prashant B	Dr T K Sundaram	Dr Robin Sham
R0	10/10/2018	Quarterly Progress Report No. 6 (Jul-Sep 18)	Prashant B	Dr T K Sundaram	Dr Robin Sham
R1	08/02/2019	Quarterly Progress Report No. 7 (Oct-Dec 18)	Prashant B	J Senthil/ Dr T K Sundaram	Dr Robin Sham
R0	05/04/2019	Quarterly Progress Report No. 8 (Jan-Mar 19)	Prashant B	J Senthil	V. D. Sharma/ Dr Robin Sham
R0	18/09/2019	Quarterly Progress Report No. 9 (Apr-Jun 19)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	13/11/2019	Quarterly Progress Report No. 10 (Jul-Sep 19)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	11/02/2020	Quarterly Progress Report No.11 (Oct-Dec 19)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	25/11/2020	Quarterly Progress Report No.12 (Jan-Mar 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	15/12/2020	Quarterly Progress Report No.13 (Apr-Jun 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	06/01/2021	Quarterly Progress Report No.14 (Jul-Sept 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	12/02/2021	Quarterly Progress Report No.15 (Oct-Dec 20)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	06/05/2021	Quarterly Progress Report No.16 (Jan-Mar 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	30/07/2021	Quarterly Progress Report No.17 (Apr-Jun 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	11/11/2021	Quarterly Progress Report No.18 (Jul - Sep 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	17/01/2022	Quarterly Progress Report No.19 (Oct-Dec 21)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	22/04/2022	Quarterly Progress Report No.20 (Jan - Mar 22)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	12/07/2022	Quarterly Progress Report No.21 (Apr-Jun 22)	Prashant B	Mr. Som Ghosh	Dr Robin Sham
R0	18/10/2022	Quarterly Progress Report No.22 (Jul-Sep 22)	Prashant B	Mrs. Mayil. K	Dr Robin Sham



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## 1.0 PROJECT DESCRIPTION

### 1.1 Project Objective

#### Original:

To improve connectivity in Mumbai Metropolitan region by constructing the Mumbai Trans Harbour Link connecting Mumbai with Navi Mumbai, thereby contributing to mitigation of traffic congestion and promoting regional economic development.

#### Actual (P/R, PCR)

There is no change in the Project Objective.

### 1.2 Necessity of the Project

The Project is consistent with the development policy, sector plan, national/regional development plans and demand of target group of the recipient country.

#### Benefits from MTHL Project

- Saving in travel time for commuters from Mumbai to Navi Mumbai.
- Improved comfort and accessibility between the island and the mainland.
- Reduced operating costs of vehicles due to lesser congestion.
- Smooth traffic flow from Navi Mumbai airport to Mumbai Island.
- Accelerated economic development of Navi Mumbai and nearby regions.
- Greater economic integration of Mumbai Island with Navi Mumbai and extended regions of Pune, Goa, Panvel and Alibaug.
- Improvement in environment and reduced pollution levels.
- Improved safety due to reduction in accidents.
- Improvement in trade competitiveness through faster and improved logistics.
- Accelerated growth of Navi Mumbai.
- Decongestion of Mumbai Island and dispersal of population to Navi Mumbai region & beyond.



#### Necessity of the Project

1. Although the urbanization in India has been rapidly progressing, infrastructure development in the urban areas has not caught up its progress. Particularly, the traffic congestion in the urban areas due to a lack of road network hinders the economic development. Thus, Government of India (GOI) places transport and connectivity as one of the "Growth Enablers" and plans to enhance road network in the "Three Year Action Agenda 2017-2018 to 2019-20 (NITI Aayog)".
2. Mumbai Metropolitan Region, which includes Mumbai and Navi Mumbai, has about 18.4 million people in population as of 2011 (Census 2011) and the population density reaches 20,694 people per square km in the center of Mumbai, which is one of the most overpopulated and high-density cities in the world.
3. Mumbai, the narrow stretch of land that has traditionally been the epicentre of India's commerce, has seen a steady increase in population in the last three decades despite obvious spatial constraints. Thus, the development of Navi Mumbai has been identified as

different type and with different span, viz., PC box girder with 50 m spans which is typically applied on marine viaduct since, it is economical, easy to construct and maintain.

9. On the land portion, the PC box girder having span of generally 30m is used.
10. As far as the location in which long span (150-180 m) is required to cross significant obstacles, such as navigation channels, pipelines and creeks, the steel box girder bridge with steel deck is proposed with large block erection method to shorten the construction period.
11. The project is coded with three lanes of traffic in each direction. The reference toll is presented in the Table 1.3.2 below for each vehicle class in Year 2022 (based on 2015 monetary value reflecting price escalation).

**Table 1.3.2: Base Toll Rates (Rs) for different class of vehicles between Interchanges**

Vehicle Type	Sewri to Shivaji Nagar	Shivaji Nagar to Chirle	Total
Car	180	60	240
Bus	420	130	550
LCV	240	70	310
HCV	420	130	550
MAV	600	180	780

**Intelligent Transport Systems (ITS) and Toll Management System (TMS)**

12. The Toll Management System will be implemented in MTHL to collect tolls from all road users of MTHL. Two types of toll collection method will be adopted: Electronic Toll Collection (ETC) and Manual (paying by cash).
13. The lanes corresponding to these toll collection methods are dedicated ETC lanes and Manual lanes, and Manual system shall be installed to ETC lanes for backup to be able to cope at the time of the trouble of ETC equipment failure.

**Traffic management System**

14. Traffic Management System is a support system to Manage the traffic on MTHL safely and efficiently. The System consists of the information collection system including Closed-Circuit Television (CCTV), Emergency Call Box (ECB), Automatic Traffic Counter-Cum-Classifer (ATCC) and Meteorological Data System (MDS), and Information Dissemination System including Variable message Sign (VMS).
15. CCTV Cameras shall be installed at around three places per 1 km, on Both side of main route and the monitoring of the traffic condition of the whole stretch of MTHL will be almost enabled in the Traffic Control Centre and VMS displays the appropriate information for road users on the collated information.
16. The Information collected by these devices shall be transmitted to the Command Control Centre through the medium of an Optical Fiber Cable laid in MTHL.

Actual (P/R, PCR)

There is no change in the Rationale of the Project Design.



## 2.0 PROJECT IMPLEMENTATION

### 2.1 Project Scope

Refer Table 2.1.1 and 2.1.2 for details on Scope of the Project.

**Table 2.1.1 Comparison of Original and Actual location**

<b>Location</b>	<b>Original: (P/M)</b> Mumbai Metropolitan Region Development Authority, Mumbai, State of Maharashtra	<b>Actual: (P/R and PCR)</b>
-----------------	----------------------------------------------------------------------------------------------------------	------------------------------

**Table 2.1.2 Comparison of Original and Actual Scope**

Items	Original	Actual
<b>Construction work: 6-lane Marine Bridge Road (21.8 km)</b>		
Package-1 Ch 0+000- 10+380 (10.380 km)	<ul style="list-style-type: none"> <li>1 Interchange (Sewri)</li> <li>Viaduct superstructure (Marine Portion: PC Box Girder &amp; Steel Box Girder with Steel Slab Land Portion: PC Box Girder &amp; PC-I Girder)</li> <li>Viaduct Substructure (RC Concrete Structure)</li> <li>Viaduct Foundation (Bored piles)</li> <li>Road Furniture and roadside facilities (Traffic Signs and Pavement Marking, Traffic Safety Devices, Crash Barrier, Drainage Structures, Noise Barriers, View Barriers)</li> </ul>	(P/R and PCR)
Package-2 Ch 10+380- 18+187 (7.80 km)	<ul style="list-style-type: none"> <li>1 Interchange (Shivaji Nagar)</li> <li>Viaduct superstructure (Marine Portion: PC Box Girder &amp; Steel Box Girder with Steel Slab Land Portion: PC Box Girder &amp; PC-I Girder)</li> <li>Viaduct Substructure (RC Concrete Structure)</li> <li>Viaduct Foundation (Bored piles)</li> <li>Road Furniture and roadside facilities (Traffic Signs and Pavement Marking, Traffic Safety Devices, Crash Barrier, Drainage Structures, Noise Barriers, View Barriers)</li> </ul>	(P/R and PCR) Actual: No View Barriers
Package-3 Ch 18+187- 21+800 (3.61 km)	<ul style="list-style-type: none"> <li>2 Interchanges (State Highway-54, National Highway-4B)</li> <li>Viaduct superstructure (Marine Portion: PC Box Girder &amp; Steel Box Girder with Steel Slab Land Portion: PC Box Girder &amp; PC-I Girder &amp; Steel Truss Girder for Rail-over-Bridges (ROB))</li> </ul>	(P/R and PCR) Actual: No Noise

Items	Original	Actual
	<ul style="list-style-type: none"> <li>• Viaduct Substructure (RC Concrete Structure)</li> <li>• Viaduct Foundation (Bored piles)</li> <li>• Cutting Section (6-lane with Slope Protection)</li> <li>• Road Furniture and roadside facilities (Traffic Signs and Pavement Marking, Traffic Safety Devices, Crash Barrier, Drainage Structures, Noise Barriers, View Barriers)</li> </ul>	Barriers & View Barriers
Package-4 ITS (Intelligent Transport System)	<ul style="list-style-type: none"> <li>• Administrative Buildings</li> <li>• Toll Booths (1 for main alignment and each on and off rumps for 3 interchanges)</li> <li>• Traffic Management System (Traffic Control Centre, Closed Circuit Television (CCTV), Meteorological Observation System (MET), Emergency Call Box (ECB), Automatic traffic Counter-cum-Classifer (ATCC), Variable Message Sign (VMS))</li> <li>• Highway Lighting (Whole sections Low-positioned lighting for some sections)</li> <li>• Electrical Powering System including HV/ LV Ring Network across the Bridge.</li> </ul>	(P/R and PCR)
Consulting Services	<ul style="list-style-type: none"> <li>• Tender Assistance</li> <li>• Construction Supervision</li> <li>• Facilitation of Implementation of Environmental Management Plan (EMP), Environmental Monitoring plan (EMoP).</li> </ul>	(P/R and PCR)



## 2.2 Implementation Schedule

### 2.2.1 The Original Implementation Schedule

**Table 2-2-1 Comparison of Original and Actual Schedule**

Items	Original	Status (P/R and PCR) as on 30 <sup>th</sup> Sep 2022
1) Completion of Land Acquisition and Resettlement	Mar 2019	Dec 2022
2) Consulting Services		
a) Selection of Consultant	May – Dec 2016	May – Dec 2016
b) Consultancy Works	Dec 2016 – Sep 2024	Dec 2016 – Sep 2024
3) Selection of Contractor		
Package-1, Package-2 & Package-3 (Civil)		
a) Pre-Qualification Process	May – Dec 2016	May – Dec 2016
b) Main Bidding	Jan– Dec 2017	Jan – Dec 2017
c) JICA's Concurrence of Contract	Feb-2018	Feb-2018
Package-4 (ITS)		
a) Pre-Qualification Process	Single Stage Bidding as concurred by JICA	
b) Main Bidding	June 2019 – Sep 2020	Jan 2021 – Dec 2021
4) Civil Construction		
Package-1 and Package-2	Mar 2018 – Sep 2022	Mar 2018–Sep 2023 (Extended)
Package-3	Mar 2018 – Sep 2021	Mar 2018 – Mar 2023 (Extended)
Package-4	Oct 2020 – Sep 2022	June 2022 – Aug 2023
5) Defect Liability Period		
Package-1 and Package-2	Oct 2022 – Sep 2024	Oct 2023 – Sep 2025
Package-3	Oct 2021 – Sep 2023	Apr 2023 – Mar 2025
Package-4	Oct 2022 – Sep 2024	Sep 2023 – Aug 2025
6) Commencement of Toll Collection	Sep 2022	Oct 2023
7) Selection of O&M Organization	Oct 2020 – Sep 2021	Oct 2022 – Sep 2023

**Attachment 6, 7 & 8:** Package wise construction schedules (progress) updated at the end of 2<sup>nd</sup> Quarter (July – Aug - Sep 2022).

### 2.2.2 Reasons for changes of the schedule and their effects to the Project

(P/R and PCR)

No change in the Implementation Schedule except the selection of O&M Organization timeline.

## 2.3 Project Cost

### 2.3.1.a Comparison of Originally Planned and Actually Incurred Cost by ITEM

Table 2.3.1.a.(I) Originally Planned Cost by ITEM

Cost Breakdown	Foreign Currency Portion			Local Currency Portion			Total		
	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)	Total (Rs. mil)	JICA Portion (Rs. mil)	Others (Rs. mil)	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)
Package-1	34,398	34,398	0	45,376	45,376	0	105,713	105,713	0
Package-2	26,513	26,513	0	32,617	32,617	0	77,774	77,774	0
Package-3	759	759	0	8,276	8,276	0	13,766	13,766	0
Package-4 (ITS)	0	0	0	1,444	1,444	0	2,269	2,269	0
Package-5 (Geotechnical Investigation)	0	0	0	166	0	166	260	0	260
Dispute Boards (Package-1, 2, 3 & 4)	63	63	0	45	45	0	134	134	0
Price Escalation	2,251	2,251	0	7,133	7,133	0	13,460	13,460	0
Physical Contingency	6,398	6,398	0	9,506	9,489	17	21,338	21,312	26
Consulting Services	1,650	1,650	0	1,587	1,587	0	4,145	4,145	0
Land Acquisition*	0	0	0	11,293	0	11,293	17,748	0	17,748
Administration Cost	0	0	0	4,898	0	4,898	7,698	0	7,698
GST	0	0	0	18,238	0	18,238	28,663	0	28,663
Import Tax	0	0	0	13,435	0	13,435	21,114	0	21,114
Interest during construction	2,942	0	2,942	0	0	0	2,942	0	2,942
Front End Fee	477	0	477	0	0	0	477	0	477
<b>Total</b>	<b>75,451</b>	<b>72,032</b>	<b>3,419</b>	<b>154,013</b>	<b>105,967</b>	<b>48,046</b>	<b>317,501</b>	<b>238,572</b>	<b>78,929</b>

Note - 1. Exchange Rate: US\$1=Rs. 71.9, US\$1=JPY 113.0, Rs.1 = JPY 1.57

2. Price Escalation (a) Foreign Currency Portion: 1.83% p.a.

(b) Local Currency Portion: 4.13% p.a.

3. Physical Contingency: 10%

4. Base Year for Cost Estimation: Dec 2018

\* Base Cost for Land Acquisition considered in the year 2016 was INR 9,062,669,696.

The base cost has been revised to INR 11,293 million considering Price Escalation and 10% Physical Contingency.



**Table 2.3.1.a.(ii) Actually Incurred Cost by ITEM**

Cost Breakdown	Foreign Currency Portion			Local Currency Portion			Total		
	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)	Total (Rs. mil)	JICA Portion (Rs. mil)	Others (Rs. mil)	Total (JPY mil)	JICA Portion (JPY mil)	Others (JPY mil)
Package-1	30,848	30,848	-	37,634	37,634		89,000	89,000	
Package-2	23,624	23,624	-	23,422	23,422		59,801	59,801	
Package-3	633	633	-	6,601	6,601		10,664	10,664	
Package-4 (ITS)	-		-	-			-		
Package-5 (Geotechnical Investigation)	-			196		196	308		308
Dispute Boards (Package-1, 2, 3 & 4)	-			-			-		-
Price Escalation	-			4	4		6	6	-
Physical Contingency	-			-			-		-
Consulting Services	253	253		362	362		1,262	1,262	
Land Acquisition*	-			7,601		7,601	11,933		11,933
Administration Cost	-			3,112		3,112	4,886		4,886
GST	-			15,495		15,495	24,328		24,328
Import Tax	-			-			-		-
Interest during construction	-			154		155	242		242
Front End Fee	-			1,869		1,869	2,935		2,935
<b>Total</b>	<b>55,358</b>	<b>55,358</b>	<b>-</b>	<b>96,451</b>	<b>68,022</b>	<b>28,428</b>	<b>205,365</b>	<b>160,733</b>	<b>44,632</b>

**Note - 1.** Exchange Rate: Rs.1 = JPY 1.57 for MMRDA Portion only

**2.** Price Escalation (a) Foreign Currency Portion: 1.83% p.a.

(b) Local Currency Portion: 4.13% p.a.

**3.** Physical Contingency: 10%

**4.** Base Year for Cost Estimation: Dec 2018

\* Base Cost for Land Acquisition considered in the year 2016 was INR 9,062,669,696.

The base cost has been revised to INR 11,293 million considering Price Escalation and 10% Physical Contingency.



**2.3.1.b Comparison of Originally Planned and Actually Incurred Cost by YEAR**

**Table 2.3.1.b.(i) Originally Planned Cost by YEAR (All Figures are in JPY mil)**

Cost Breakdown	Total	JICA Portion				Others (MMRDA Portion)
		Tranche I	Tranche II	Tranche III	Sub Total	
FY 2017	12,679	10,134	0	0	10,134	2,545
FY 2018	30,771	22,707	0	0	22,707	8,064
FY 2019	72,379	56,816	0	0	56,816	15,563
FY 2020	92,944	55,138	16,040	0	71,178	21,765
FY 2021	66,397	0	50,869	0	50,869	15,527
FY 2022	27,683	0	0	20,113	20,113	7,570
FY 2023	3,723	0	0	565	565	3,158
FY 2024	10,925	0	0	6,189	6,189	4,735
<b>Total</b>	<b>317,501</b>	<b>144,795</b>	<b>66,909</b>	<b>26,868</b>	<b>238,571</b>	<b>78,929</b>

**Table 2.3.1.b.(ii) Actually Incurred Cost by YEAR (All Figures are in JPY mil)**

Cost Breakdown	Total	JICA Portion				Others (MMRDA Portion)
		Tranche I	Tranche II	Tranche III	Sub Total	
FY 2017	13,738	9,232	-	-	9,232	4,506
FY 2018	26,813	21,695	-	-	21,695	5,118
FY 2019	40,410	31,014	-	-	31,014	9,396
FY 2020	31,822	23,885	-	-	23,885	7,937
FY 2021	54,057	43,284	-	-	43,284	10,773
FY 2022	38,524	12,864	18,758	-	31,622	6,902
FY 2023						
FY 2024						
<b>Total</b>	<b>205,364</b>	<b>141,974</b>	<b>18,758</b>	<b>-</b>	<b>160,732</b>	<b>44,632</b>

(Note) 1. Exchange Rate used: Rs.1 = JPY 1.57 for MMRDA Portion only

2. Fiscal Year starting from 1<sup>st</sup> April and ending on 31<sup>st</sup> Mar.

**2.3.2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.**

(P/R and PCR)

There is no major gap between the original and actual cost.





## 2.4 Organization for Implementation

### 2.4.1 Executing Agency

**Original:**

**Executing Agency**

Mumbai Metropolitan Region Development Authority (MMRDA) was established on 26<sup>th</sup> Jan 1975 in accordance with the Mumbai Metropolitan Development Act, 1974 to make Mumbai Metropolitan Region (MMR) a destination for economic activity by promoting infrastructure and regional planning. MMRDA takes all the necessary measures, required from time to time, in an effective manner and be fully responsible for the Project implementation. After completion of the Project, MMRDA continues to be responsible for the efficient operation and maintenance of the Project.

The GoM appointed MMRDA as the implementing/ executing agency of MTHL vide Government Resolution dated 4<sup>th</sup> Feb 2009 and further the ownership of MTHL would be with MMRDA vide Government Resolution dated 8<sup>th</sup> June 2011.

**Organization's Role**

To construct, execute, carryout, improve, work, develop, administer, manage, control or maintain in MMR all types of roads, highways, express routes, paths, streets, bridges, sideways, tunnels and other infrastructure, works and conveniences, approach road, etc.

Under the Project, MMRDA is responsible for all the tendering process including employment of consultants, as well as for the construction process.

**Project Implementation Unit (PIU)**

The PIU is in charge of the Projects. The PIU is headed by Chief Engineer, comprising of 6 Divisions/Cells (Finance Division, Social Development Cell, Engineering Division, Land Cell, Administrative Division and Environmental Cell), Supervision/ ITS Consultant and supporting staff.

**Procurement**

MMRDA shall have to adopt the JICA's Standard Bidding Documents of the latest version, as stipulated in Section 4.01 (2) of "Guidelines for Procurement under Japanese ODA Loans.

Procurement of goods and services, except for consulting services, converted by the Japanese ODA Loan should be implemented in accordance with "Guidelines for Procurement under Japanese ODA Loans", dated in Apr 2012. Employment of consultants should be implemented in accordance with "Guidelines of Employment of Consultant under Japanese ODA Loans", dated in Apr 2012. "Principles of Procurement under the Project" is attached for a brief explanation of the above Guidelines.

**Actual, if changed: (P/R and PCR)**

There is no change made in the original Organisation Set-up & Implementation methods. Refer Annexure III Organisation Chart.



**2.4.2 Contractor(s)/ Supplier(s), and Consultant(s) and their Performance:**

**2.4.2.1 Procurement & Consultant**

**Table 2.4.2 Procurement of Contractor(s)/ Supplier(s) and Consultant(s)**

Contract Package	Selection Method		
	Original: (P/M)	Actual: (P/R and PCR)	
<b>Construction Works</b>			
1	<b>Package-1:</b> From CH 0+000 - To CH 10+380 (10.38 km)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	No Change
2	<b>Package-2:</b> From CH 10+380 - To CH 18+187 (7.80 km)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	No Change
3	<b>Package-3:</b> From CH 18+187 - To CH 21+800 (3.61 km)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	No Change
4	<b>Package-4:</b> To install ITS (Toll Management System and Highway Traffic Management System)	International Competitive Bidding Process (With PQ, Single stage with two envelopes)	International Competitive Direct Bidding Process without Pre-Qualification
5	<b>Package-5:</b> To conduct the geotechnical investigation	Local Competitive Bidding Process	No Change
<b>Consulting Services</b>			
1	Consulting Service for Supervision	Short List Method (QCBS)	No Change



### 2.4.2.2 Performance

#### Consultant's Progress:

##### July 2022:

- 1) GC scrutinized & certified the following invoices claimed by the Contractors:
  - i) Package-1: IPC-52 and 53 20% Detailed Verification and IPC-55 80% Ad-hoc.
  - ii) Package-2: IPC-50 20% Detailed Verification and IPC-51 80% Ad-hoc.
  - iii) Package-3: IPC-46 20% Detailed Verification and IPC-47 80% Ad-hoc.
  - iv) Package-4: The Contractor started the Geotechnical Survey Works at the Gavhan location, and the design/ drawings phase has been begun since June 2022.
- 2) GC/Employer didn't submit any reimbursement claim in July 2022.

##### August 2022:

- 1) GC scrutinized & certified the following invoices claimed by the Contractors:
  - i) Package-1: IPC-54 & 55 20% Detailed Verification and IPC-56 & 57 80% Ad-hoc.
  - ii) Package-2: IPC-51 20% Detailed Verification and IPC-52 80% Ad-hoc.
  - iii) Package-3: IPC-47 20% Detailed Verification and IPC-48 80% Ad-hoc.
  - iv) Package-4: Contract was signed on 4<sup>th</sup> Aug 2022.
- 2) GC has prepared and submitted a total reimbursement claim of 10717.45 million JPY to MMRDA / JICA in Aug 2022.(Please refer Annexure-1)

##### September 2022:

- 1) GC scrutinized & certified the following invoices claimed by the Contractors:
  - i) Package-1: IPC-56 & 57 20% Detailed Verification and IPC-58 80% Ad-hoc.
  - ii) Package-2: IPC-52 & 53 20% Detailed Verification and IPC-53 80% Ad-hoc.
  - iii) Package-3: IPC-48 20% Detailed Verification.
- 2) GC has prepared and submitted a total reimbursement claim of 8194.45 million JPY to MMRDA / JICA in Sep 2022. (Please refer Annexure-2)
- 3) 100% of the Technical Design Modules across all the 3 Packages have been given "NONO" by the GC.
- 4) Approximately 99.95% of the Construction (GFC – Good For Construction) Design Modules across all the 3 Packages have been given "NONO" by the GC.

Package-1 – 100%, Package-2 – 99.95%, Package-3 -100%



**Contractor's Progress:****Package-1 Physical Progress till 30<sup>th</sup> Sep 2022**

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
<b>1</b>	<b>Permanent Bridge Works - Land/ Interchange Zone</b>					
1.1	Piles	523	No.	523	100.00%	
1.2	Pile Caps	158	No.	142	89.87%	
1.3	Piers	228	No.	207	90.79%	
1.4	Pier Caps	228	No.	199	87.28%	
<b>2</b>	<b>Permanent Bridge Works - Intertidal Zone</b>					
2.1	Piles	312	No.	312	100%	
2.2	Pile Caps	75	No.	75	100.00%	
2.3	Piers	146	No.	146	100.00%	
2.4	Pier Caps	146	No.	146	100.00%	
<b>3</b>	<b>Permanent Bridge Works - Marine Zone</b>					
3.1	Piles	403	No.	403	100%	
3.2	Pile Caps	80	No.	80	100.00%	
3.3	Piers	162	No.	140	86.42%	
3.4	Pier Caps	162	No.	144	88.89%	
<b>4</b>	<b>Permanent Bridge Works - Total</b>					
4.1	Piles	1238	No.	1238	100%	
4.2	Pile Caps	313	No.	297	94.89%	
4.3	Piers	536	No.	493	91.98%	
4.4	Pier Caps	536	No.	489	91.23%	
<b>5</b>	<b>Precast Segments</b>					
5.1	Segment Casting	6713	No.	5536	82.47%	
5.2	Segment (Span) Erection+ Cast-in-Situ Slab	478	No.	321	67.15%	
<b>6</b>	<b>OSD Structural Steel</b>					
6.1	Fabrication	53703	MT	53703	100%	
6.2	Assembly (Large Blocks)	53703	MT	23330	43.44%	
6.3	OSD Span Erection	38	No.	10	26.32%	
<b>7</b>	<b>Crash Barrier</b>					
7.1	Crash Barrier - Median	20405	Rmt	2340	11.47%	
7.2	Crash Barrier - Outer	31077	Rmt	501	1.61%	

Package-2 Physical Progress till 30<sup>th</sup> Sep 2022

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
<b>1</b>	<b>Permanent Bridge Works - Land/ Interchange Zone</b>					
1.1	Open Foundation	113	No.	113	100%	
1.2	Piers	119	No.	119	100%	
1.3	Pier Caps	105	No.	105	100%	
1.4	Portal Beams- Land	6	No.	6	100%	
1.5	Pier Head Segments -Land	42	No.	42	100%	
<b>2</b>	<b>Permanent Bridge Works - Intertidal &amp; CRZ Zone</b>					
2.1	Piles	280	No.	280	100%	
2.2	Pile Caps	72	No.	72	100%	
2.3	Piers	72	No.	72	100%	
2.4	Pier Caps	18	No.	18	100%	
2.5	Pier Head Segments	54	No.	54	100%	
<b>3</b>	<b>Permanent Bridge Works - Marine Zone</b>					
3.1	Piles	504	No.	504	100%	
3.2	Pile Caps	120	No.	118	98%	
3.3	Piers	120	No.	112.62	94%	
3.4	Pier Caps	48	No.	34	71%	
3.5	Pier Head Segments	74	No.	39	53%	
<b>4</b>	<b>Permanent Bridge Works - Total</b>					
4.1	Open Foundation	113	No.	113	100%	
4.2	Piles	784	No.	784	100%	
4.3	Pile Caps	192	No.	190	99%	
4.4	Piers	311	No.	303.62	98%	
4.5	Pier Caps/ Portal Beams	177	No.	163	92%	
4.6	Pier Head Segments	170	No.	135	79%	
<b>5</b>	<b>Precast Segments</b>					
5.1	Segment Casting	3142	No.	2576	82%	
5.2	Segment (Span) Erection + Cast-in-Situ Slabs	272	No.	171	63%	
<b>6</b>	<b>OSD Structural Steel</b>					
6.1	Fabrication	34726	MT	34,726	100%	
6.2	Assembly (for Large Block)	34726	MT	9863	28.40%	
6.3	OSD Span Erection	32	No.	7	22%	
<b>7</b>	<b>Crash Barrier</b>					
7.1	Crash Barrier - Median	15614	Rmt	720	4.61%	
7.2	Crash Barrier - Outer	20945	Rmt	30	0.14%	

**Package-3 Physical Progress till 30<sup>th</sup> Sep 2022**

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
<b>1</b>	<b>Permanent Bridge Works</b>					
1.1	Open Foundations	221	No.	221	100.00%	
1.2	Piles	24	No.	24	100.00%	
1.3	Pile Caps	4	No.	4	100.00%	
1.4	Piers	242	No.	237	97.93%	
1.5	Pier Caps	189	No.	181	95.77%	
1.6	Segment Casting	834	No.	834	100.00%	
1.7	Segment (Span) Erection	59	No.	48	81.36%	
1.8	Cast in-situ Slab	108	No.	88	81.48%	
1.9	Rail Overbridge (ROB) Span	20	No.	7	35.00%	
1.10	Crash Barrier – Median	5500	Rmt	596	10.84%	
1.11	Crash Barrier - Outer	9000	Rmt	0	0%	

**Package-4 (ITS) Progress till 30<sup>th</sup> Sep 2022**

1. Letter of Acceptance (LOA) was issued to Strabag GmbH and Strabag AG JV on 5th May 2022. The Package-4 Contract was signed on 4th Aug 2022.
2. Preliminary design and drawings are submitted for Civil works, ITS & Electrical works for review and approval.
3. Safety, Quality, and Detailed works programme submitted for review and approval.
4. Request for Mobilization advance submitted.
5. The Contractor has commenced the Geotechnical Survey Works at Gavhan location.

Please refer **Attachment 9 - Site Progress Photos** showing the development of the project.



**Health & Safety and Environment (HSE)**

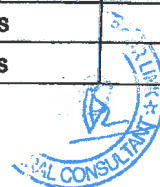
The HSE Plans have been submitted by the respective construction agencies for the Packages which are being monitored by the GC on a regular basis.

**Package-1 Safety Report**

S No.	Description	Unit	Jul-Aug-Sep 2022	Cumulative
1	Average Daily Manpower (all Workmen & Staff)	Numbers	3,454	2,759
2	Man-Days Worked	Days	4,82,452	61,24,635
3	Man-Hours Worked	Hours	38,59,620	5,24,52,099
4	Accident-Free Man Hours	Hours	33,02,136	18,10,908
5	Fatal Accidents (Reportable)	Incidents (Nos.)	0	5
6	Fatality Cases.	Fatalities (FAT)	0	6
7	Lost Time Injury Incidents (Reportable)	Incidents (Nos.)	1	8
8	Lost Time Injury Cases (Persons Injured)	# Injured Persons	1	10
9	Restricted Work Medical Case	RWMC (#Incidents)	0	0
10	Medical Treatment Cases	MTC (#Incidents)	0	1
11	First Aid Cases.	FAC (#Cases)	22	301
12	Near Miss Incidents.	NMI (#Incidents)	7	123
13	Dangerous Occurrences.	DO (#Numbers)	1	5
14	Reportable Sick Cases (Succumbed due Covid)	Sick (#Persons)	0	2
15	Man-Hours Lost	Hours	1,048	2,96,576
16	Man-Days Lost	Days	131	37,081
17	Reportable Incident Frequency Rate / Million Man Hours	# (FAT+ Injuries)/MMH	0.74	0.31
18	Reportable Incident Severity Rate / Million Man Hours	Days Lost/MMHr	106.91	706.95
19	Total Injury Incident Frequency Rate / 1M Man Hours	TIFR	0.74	0.32
20	Toolbox Talks	Sessions	14,173	1,37,573
21	Safety Walk down Inspections (Joint & CFT)	Numbers	20	227
22	Routine Safety Inspections (Safety Team with Reports)	Numbers	96	4,034
23	Total Observations Raised (Safety)	Numbers	8,060	83,423
24	Health & Hygiene Inspections	Numbers	12	52
25	Total Observations Raised (Health & Hygiene)	Numbers	73	520
26	Training Sessions done for Offices & Sites	Sessions	451	3,077
27	Personnel Attended Training Sessions (Classroom & Site)	Persons	6,415	37,793
28	Contractor Safety Committee Meetings	Numbers	3	36
29	Critical Excavations	Numbers	6	86
30	Pre-employment Medical check-ups	Persons	2,716	40,370
31	Safety Inductions completed	Persons	2,716	42,257
32	Mock drills Conducted	Numbers	2	32
33	Contractor's Internal Audits Conducted	Numbers	4	49

1<sup>st</sup> July to 30<sup>th</sup> Sep 2022

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Package-2 Safety Report

S No.	Description	Unit	Jul-Aug-Sep 2022	Cumulative
1	Average Daily Manpower (all Workmen & Staff)	Numbers	2,792	2,075
2	Man-Days Worked	Days	2,12,157	2,547,113
3	Man-Hours Worked	Hours	23,33,727	28,509,625
4	Accident-Free Man Hours	Hours	16,04,405	929,005
5	Fatal Accidents (Reportable)	Incidents (Nos.)	0	0
6	Fatality Cases.	Fatalities (FAT)	0	0
7	Lost Time Injury Incidents (Reportable)	Incidents (Nos.)	2	11
8	Lost Time Injury Cases (Persons Injured)	# Injured Persons	2	11
9	Restricted Work Medical Case	RWMC (#Incidents)	0	6
10	Medical Treatment Cases	MTC (#Incidents)	0	12
11	First Aid Cases.	FAC (#Cases)	4	175
12	Near Miss Incidents.	NMI (#Incidents)	50	350
13	Dangerous Occurrences.	DO (#Numbers)	0	15
14	Reportable Sick Cases (Succumbed due Covid)	Sick (#Persons)	0	3
15	Man-Hours Lost	Hours	616	5,648
16	Man-Days Lost	Days	77	706
17	Reportable Incident Frequency Rate / Million Man Hours	# (FAT+ Injuries)/MMH	2.51	0.386
18	Reportable Incident Severity Rate / Million Man Hours	Days Lost/MMHr	92	25
19	Total Injury Incident Frequency Rate / 1M Man Hours	TIFR	2.51	1.017
20	Toolbox Talks	Sessions	1,182	11,894
21	Safety Walk down Inspections (Joint & CFT)	Numbers	11	172
22	Routine Safety Inspections (Safety Team with Reports)	Numbers	324	1,596
23	Total Observations Raised (Safety)	Numbers	1,800	22,109
24	Health & Hygiene Inspections	Numbers	0	4
25	Total Observations Raised (Health & Hygiene)	Numbers	0	16
26	Training Sessions done for Offices & Sites	Sessions	145	1,187
27	Personnel Attended Training Sessions (Classroom & Site)	Persons	3,023	22,846
28	Contractor Safety Committee Meetings	Numbers	3	51
29	Critical Excavations	Numbers	0	0
30	Pre-employment Medical check-ups	Persons	886	16,917
31	Safety Inductions completed	Persons	918	17,252
32	Mock drills Conducted	Numbers	3	42
33	Contractor's Internal Audits Conducted	Numbers	0	0





## Package-3 Safety Report

S No.	Description	Unit	Jul-Aug-Sep 2022	Cumulative
1	Average Daily Manpower (all Workmen & Staff)	Numbers	529	428
2	Man-Days Worked	Days	67,129	7,93,050
3	Man-Hours Worked	Hours	5,37,031	63,44,490
4	Accident-Free Man Hours	Hours	5,37,031	5,37,031
5	Fatal Accidents (Reportable)	Incidents (Nos.)	0	0
6	Fatality Cases.	Fatalities (FAT)	0	0
7	Lost Time Injury Incidents (Reportable)	Incidents (Nos.)	1	3
8	Lost Time Injury Cases (Persons Injured)	# Injured Persons	1	3
9	Restricted Work Medical Case	RWMC (#Incidents)	0	0
10	Medical Treatment Cases	MTC (#Incidents)	0	0
11	First Aid Cases.	FAC (#Cases)	9	124
12	Near Miss Incidents.	NMI (#Incidents)	9	37
13	Dangerous Occurrences.	DO (#Numbers)	0	1
14	Reportable Sick Cases (Succumbed due Covid)	Sick (#Persons)	0	0
15	Man-Hours Lost	Hours	24	2,216
16	Man-Days Lost	Days	3	277
17	Reportable Incident Frequency Rate / Million Man Hours	# (FAT+ Injuries)/MMH	6	0.473
18	Reportable Incident Severity Rate / Million Man Hours	Days Lost/MMHr	19	44
19	Total Injury Incident Frequency Rate / 1M Man Hours	TIFR	6	0
20	Toolbox Talks	Sessions	552	8,190
21	Safety Walk down Inspections (Joint & CFT)	Numbers	12	181
22	Routine Safety Inspections (Safety Team with Reports)	Numbers	42	605
23	Total Observations Raised (Safety)	Numbers	541	771
24	Health & Hygiene Inspections	Numbers	6	8
25	Total Observations Raised (Health & Hygiene)	Numbers	31	43
26	Training Sessions done for Offices & Sites	Sessions	49	317
27	Personnel Attended Training Sessions (Classroom & Site)	Persons	827	1,008
28	Contractor Safety Committee Meetings	Numbers	3	47
29	Critical Excavations	Numbers	0	9
30	Pre-employment Medical check-ups	Persons	951	10,528
31	Safety Inductions completed	Persons	951	10,585
32	Mock drills Conducted	Numbers	3	41
33	Contractor's Internal Audits Conducted	Numbers	3	12



**3.0 BENEFITS DERIVED FROM THE PROJECT (EFFECTIVENESS)**

**3.1 Operational and Physical Condition**

(This section will be developed when the operational plan is available)

Facilities (P/R and PCR)	Description of condition (P/R and PCR)	Problems, its Background and Remedial Action Plan (P/R and PCR)
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**3.2 Precautions (Measures to be adopted/ Points which require special attention)**

Original Issues and Countermeasure(s)	Actual Issues and Countermeasure(s)
<p><b>3.2.1 General Issues</b></p> <p><b>1. Toll Arrangement/ Toll Rate</b> Fixed toll rate as per the type of vehicle will be levied for the road users after the completion of the Project. An appropriate tolling policy/ rates will be finalized in consultation with the state government prior to the completion of Civil works.</p> <p><b>2. Operation and Maintenance</b> MMRDA proposes to appoint separate agencies for Operation &amp; Maintenance of the bridge and for Toll Management System. Both the agencies for O &amp; M and Toll Management System may be appointed through open tendering process. Overall monitoring of the two agencies would be done by MMRDA in-house through a separate cell which could be constituted for the purpose. MMRDA has confirmed to allocate an adequate budget for engaging the Contractors.</p>	<p>(P/R and PCR)</p> <p>Appropriate Tolling Policy/ Rates finalization is in progress.</p> <p>A single Operation and Maintenance Contractor finalization is in progress.</p>
<p><b>3.2.2 Environmental and Social Consideration</b></p> <p><b>a. CRZ Clearance</b></p> <p>i. Supplemental EIA has been approved by MMRDA and disclosed on the website of JICA. A supplemental EIA report has been disclosed also on the website of MMRDA.</p> <p>ii. Furthermore, renewed CRZ Clearance has been obtained in January 2016.</p> <p>iii. In accordance with the conditions for CRZ Clearance, appropriate measures shall be taken, and necessary budget</p>	<p>(P/R and PCR)</p> <ul style="list-style-type: none"> <li>• MMRDA has disclosed Supplemental EIA &amp; SIA on MMRDA website.</li> <li>• The renewed CRZ clearance was granted on 25/1/2016 from MoEF&amp;CC and the approval conditions have been imposed on the Contractors as the Employer's requirements. MMRDA has actively monitored the compliances of the approval conditions and maintained them throughout the construction phase.</li> <li>• MMRDA appointed Mangroves &amp; Marine Biodiversity Foundation for bird monitoring</li> </ul>

<p>shall be secured by MMRDA.</p>	<p>and implementation of Flamingos and bird monitoring program for the MTHL project during the construction as well as the long-term monitoring after the construction.</p> <ul style="list-style-type: none"> <li>• Rs 91.42 Crore has been transferred to Mangroves &amp; Marine Biodiversity Foundation, Mumbai for the development &amp; conservation of mangrove area and its afforestation. Such funds will be managed by the Mangrove Foundation of Maharashtra State.</li> <li>• As per the renewed CRZ clearance condition, IIT Mumbai has been appointed for the DPR study to develop a Mahul creek Effluent Treatment Plant (ETP). Rs 4.98 Crore was secured for IIT services. The Draft DPR has been reviewed and approved.</li> <li>• Proposal of extension for CRZ clearance submitted vide reference no MCZMA 2022/08/CR-246/3719 dated 4<sup>th</sup> Aug-2022. (Please refer Annexure-3)</li> </ul>
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**b. Required Permits**

The Permits to be obtained by MMRDA/ Contractors and the present status is given in the following Table.

**Table 3.2.2 Present Status of some Important Permits**

Clearance Required	Approving Authority	Responsible Organization	Obtained by when	Remark /Status
Mangrove Cutting	Hon. Bombay High Court	MMRDA/ Contractor	Approval received from Hon. Bombay High Court on 28 <sup>th</sup> Nov 2016	Mangrove cutting operation was completed with full compliance and as of now, no further follow up work is required.
Tree Cutting /Transplantation	Respective Tree Authorities	Contractor for respective Packages	-	<p><b>Pkg-1:</b> Tree Cutting/ Transplantation permission from the Garden Dept., MCGM obtained on 24<sup>th</sup> Dec 2020.</p> <p><b>Pkg-2:</b> Tree Cutting/ Transplantation permission obtained &amp; completed.</p> <p><b>Pkg-3:</b> Forest Department issued a concurrence on 19/05/2019. CIDCO's permission for Tree Cutting/ Transplantation obtained on 25<sup>th</sup> Nov 2019.</p>



Clearance Required	Approving Authority	Responsible Organization	Obtained by when	Remark /Status
Consent to Establish	Maharashtra Pollution Control Board	Contractor for respective Packages	Pkg-1-18.07.2018 Pkg-2-16.08.2018 Pkg-3-29.05.2019	

### 3.3 Environmental and Social Impacts

Major environmental and social impacts have occurred during project implementation (e.g. involuntary resettlement, poverty reduction, impacts on the natural environment).

Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p><b>1. Establishment of Effective Environmental and Social Cell in PIU</b></p> <p>MMRDA confirmed that Social Development Cell (2 Officers), Land Cell (3 Officers), and Environmental Cell (2 Officers) had been set up.</p>	<p>Cell is established by MMRDA (Annexure III, Organization chart)</p>
<p><b>2. Rehabilitation and Land Acquisition Issues</b></p> <p><b>a. Affected Area and Population</b></p> <p>Due to the Project, 1282 non-titleholders will be involuntary resettled, and 108.4379 ha of land will be handed over by CIDCO.</p>	<p><b>Sewri:</b> Involuntary resettlement in Sewri section has been further validated by Social Development Cell of MMRDA. Out of 297 Project Affected Households (PAHs) have given consents as follows:</p> <ul style="list-style-type: none"> <li>• 164 PAHs Kanjurmarg for residential</li> <li>• 25 PAHs Kanjurmarg for commercial</li> <li>• 7 PAHs (Satsangi Plot) Kanjurmarg for Commercial</li> <li>• 1 PAHs (commercial to residential) for Bhakti Park</li> <li>• 100 PAHs HDIL Kurla for residential</li> </ul> <p><b>Navi Mumbai:</b> CIDCO has been finalizing the land acquisition closely monitored by Land Cell of MMRDA.</p> <p>CIDCO has possessed 106.3542 ha of land and handed over to MMRDA, except private land of 2.0837 ha.</p> <p>0.3937 ha land is under acquisition out of balance 2.0837 ha land. CIDCO is planning to acquire the balance ROW land of with the help of Collector, Raigad.</p>

Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p><b>b. Entitlement Policy</b></p> <p>MMRDA prepared the entitlement matrix for resettlement of non-title holders in Sewri, which meets the Resettlement and Rehabilitation Policy for Mumbai Urban Transportation Project (1997, amended in 2000) and JICA guidelines for Environmental and social considerations (2010) ("Guidelines") (Attachment 2-5).</p>	<p>There have been no changes during the enforcement. As per the Attachment 2-5 of JICA MoD, MMRDA has committed to enforce the agreed/ approved policy.</p>
<p><b>c. Compensation to Project affected Fishermen</b></p> <p>Detailed baseline survey will be undertaken by MMRDA in order to identify fishermen who are affected by the Project. Based on the result of the baseline survey, MMRDA will compensate them in accordance with compensation policy prior to the construction. Monitoring will be conducted by MMRDA with assistance of the Consultant to gasp the exact impact during construction and operation phase.</p>	<p>Updated Attachments 2-8 and 2-10 are enclosed in the report.</p>
<p><b>d. Implementation Schedule</b></p> <p>The Implementation schedule for land acquisition, resettlement and rehabilitation is attached as per Attachment 2-10.</p>	<p>Updated Attachment 2-10 is enclosed in the report.</p>
<p><b>e. Grievance Redressal Mechanism</b></p> <p>Grievance Redressal Committee ("GRC") set under MMRDA will deal with grievances raised by PAPs in Sewri and fishermen to be affected by the Project. Any grievances raised by PAPs whose land is acquired by CIDCO shall be resolved by CIDCO.</p>	<p><b>Sewri:</b> FLGRC (Field Level Grievance Redressal Committee) and SLGRC (Senior Level Grievance Redressal Committee) were set as per the RAP and in operation. Compensation Committee has been constituted to address the issues of Compensation to Lease Holders at Sewri. <b>Fishermen:</b> GRC for resolving grievances of the fisherfolk was set up as per the compensation policy and is in operation.</p>
<p><b>f. Internal Monitoring</b></p> <p>Internal Monitoring of the Resettlement</p>	

Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p>Action Plan (RAP) implementation will be conducted by MMRDA in accordance with the RAP with necessary assistance of the consultant. RAP Internal Monitoring Form (Attachment 2-8) will be submitted to JICA on a quarterly basis as a part of PSR during the RAP implementation.</p>	<p>Internal Monitoring updates are mentioned in Attachment 2-8.</p>
<p><b>g. Qualitative Independent Evaluation</b></p> <p>An Independent Evaluation Agency will be hired by MMRDA for evaluation of RAP implementation. An external evaluation report will be submitted to MMRDA at mid-term and end-term. MMRDA would submit the evaluation report to JICA in a timely manner.</p>	<p>Updated Attachment 2-10 is enclosed in the report.</p>
<p><b>h. RAP Implementation Budget</b></p> <p>The amount of estimated resettlement and compensation budget is Rs.906.26 Cr MMRDA informed to the JICA Mission that RAP implementation cost would be borne by MMRDA and ensured sufficient and timely allocation of funds for smooth implementation.</p>	<p>As updated in MOD dated 03/09/2019 for MTHL- II, the base cost Budget towards RAP Implementation is updated as Rs 1129.3 Cr.</p>
<p><b>i. Environmental Management Plan ("EMP")</b></p> <p>The mitigation measures against air pollution, waste, noise, and water pollution etc. shall be taken during construction and operation phase. Mitigation measures such as installation of noise barrier, appropriate waste management, etc. have been prepared by MMRDA. The mitigation measures are listed in the EMP matrix. (Attachment 2-1). During the detailed design stage, MMRDA, with assistance of the Consultant, will update the EMP, as necessary.</p>	<p>EMP will be updated, if required, in due course of construction activities/progress.</p>
<p><b>j. Environmental Monitoring Plan ("EMoP")</b></p>	

Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<p>MMRDA takes overall responsibility for implementation of EMoP. During construction, environmental monitoring will be carried out by contractors under supervision by Construction Supervision consultant. The result shall be reported to the JICA India Office on a quarterly basis as a part of Progress Status Report (PSR) by filling in the Reporting Form of Environmental Monitoring Result. (Attachment 2-4). After completion of the construction, EMoP shall be implemented by MMRDA, and the results shall be submitted to the JICA India Office semi-annually until two years after complementation of construction. The required amount of estimated environmental monitoring budget is borne by MMRDA.</p>	<p>Environmental Monitoring Plan with the package wise budgeted cost is reported in Attachment 2-3. Environmental Monitoring Results during the construction phase are reported in Attachment 2-4.</p>
<p><b>k. Long Term Bird Monitoring</b></p> <p>MMRDA committed to conduct the long-term monitoring of birds and its habitat in Sewri mudflats with the assistance of hired bird expert. During the long-term monitoring, MMRDA will share information and receive advice from external experts including the one from NGOs and civil society.</p>	<ul style="list-style-type: none"> <li>• MMRDA has entrusted the work of bird monitoring and implementation of Flamingos and birds related mitigation measures &amp; bird monitoring program to Mangrove and Marine Biodiversity Foundation.</li> <li>• Rs. 31.92 Crore deposited to Mangrove foundation, Mumbai for periodical disbursement to BNHS.</li> </ul>

### 3.4 Qualitative and Quantitative Data of Monitoring Indicators

Operation and Effect Indicator EIRR and/ or FIRR

Supporting data for Computing EIRR and/ or FIRR

Indicators	Original (Year 2015)	Target (Year 2024) 2 Years After Commercial Operation
Average Annual Daily Traffic (PCU/ day)	-	47,400
Daily Average Travel Time (min) * 1	61 min	15.8 min

Indicators	Original (Year 2015)	Target (Year 2024) 2 Years After Commercial Operation
Number of Users (Persons/ year) * 2	-	46,077,504
Cargo Volume (tons/ year) * 3	-	13,511,759

\*1 Section on Sewri – Chirle

\*2 Assumptions: average passengers of car and taxi (2.6 persons), bus (37.2 persons) based on JICA study. Number of passengers of LCV, HCV and MAV is assumed as 1 person each.

\*3 Assumptions: the maximum capacity of respective vehicle (LCV: 1 ton, HCV and MAV: 15 tons) is used for estimation.

<b>EIRR</b>	<b>Original:</b> 15.4% Cost: Project cost (excluding Price Escalation, Tax and Duties and Administration cost) O&M cost, Land Acquisition Benefit: Travel Time cost and Vehicle Operation cost Project Life: 32 Years	<b>Actual: (PCR)</b> _____% Cost: Benefit: Project Life: <b>Attachment(s):</b> Supporting data for computing EIRR
<b>FIRR</b>	<b>Original:</b> 1.5% Cost: Project Cost, O&M cost, Land Acquisition cost Benefit: Toll Revenue Project Life: 32 Years	<b>Actual: (PCR)</b> _____%

### 3.5 Monitoring Plan for the indicators

Monitoring Methods, Section(s)/ department(s) in charge of monitoring, frequency, the term and so forth are given below:

**Original: (P/M and PCR)**

#### Monitoring Organization

PIU shall be In-Charge of Monitoring activities for the Project.

#### Submission of QPR and PCR

The timely submission of the following documents is required by MMRDA.

- a. **Quarterly Progress Report (QPR):** The progress report for the Project should be submitted by MMRDA to JICA on quarterly basis, not later than 30 days after the concerned quarter, in the form of Project Status Report (PSR) attached hereto as per **Annex I**; Updated status land Acquisition, milestone achieved with respect to Action Plan with Timetable, the monitoring form for environmental and social consideration should also be appended to the PSR. In addition, MMRDA shall also forward the Monthly & Quarterly Progress Reports (including S-Curve Chart) prepared by the Consultant to JICA India Office on regular basis till project completion.
- b. **Project Completion Report (PCR):** A project completion report should be submitted by MMRDA to JICA promptly, but in any event not later than six months after completion of the



Project, in the form of Project Status Report (PSR) attached hereto as per Annex I.

Actual: (P/R and PCR)

#### Monitoring Organization

PIU for MTHL has been established for monitoring the Project.

#### Submission of QPR and PCR

This QPR No. 22 is submitted for the period of 1<sup>st</sup> July to 30<sup>th</sup> Sep 2022.

### 3.6 Achievement of the Project Objective

(PCR)

## 4.0 OPERATION AND MAINTENANCE (O&M) (SUSTAINABILITY)

### 4.1 O&M and Management

- Organization Chart of O&M
- Operational and maintenance system (structure and the number, qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc.)

Original: (P/M)

#### Operation & Maintenance, Toll Management and ITS

MMRDA proposes to engage two separate agencies for O&M and Toll Management System. Though MMRDA will not directly carry out O&M, the overall monitoring over the O&M agency will be the responsibility of MMRDA. O&M Budget will be allocated by MMRDA. O&M and increase in toll rate will be done in accordance with the NHAI's manuals such as "NHAI Works manuals".

Actual: (PCR)

### 4.2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project, as well as the annual O&M budget.

(PCR) This will be reported when the outcome of the above work-study is available.



## 5.0 EVALUATION

### 5.1 JICA and Borrower / Executing Agency performance

**JICA:**

(PCR)

**Borrower/ Executing Agency:**

(PCR)

### 5.2 Overall Evaluation

Please describe your evaluation on the overall outcome of the project.

(PCR)

### 5.3 Lessons Learnt and Recommendations

*Please raise any lessons learned from the project experience, which might be valuable for the future JICA assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.*

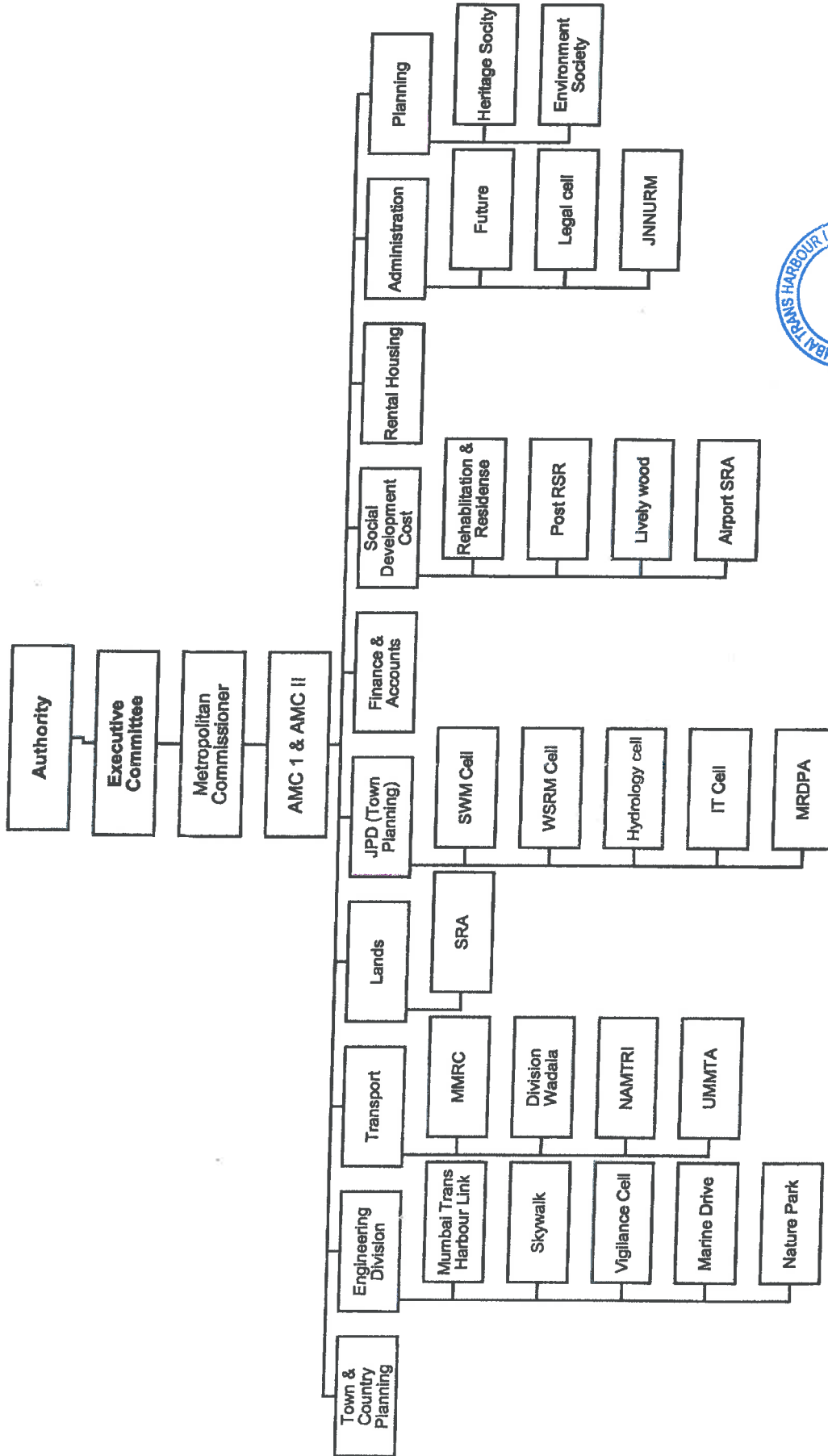
(PCR)



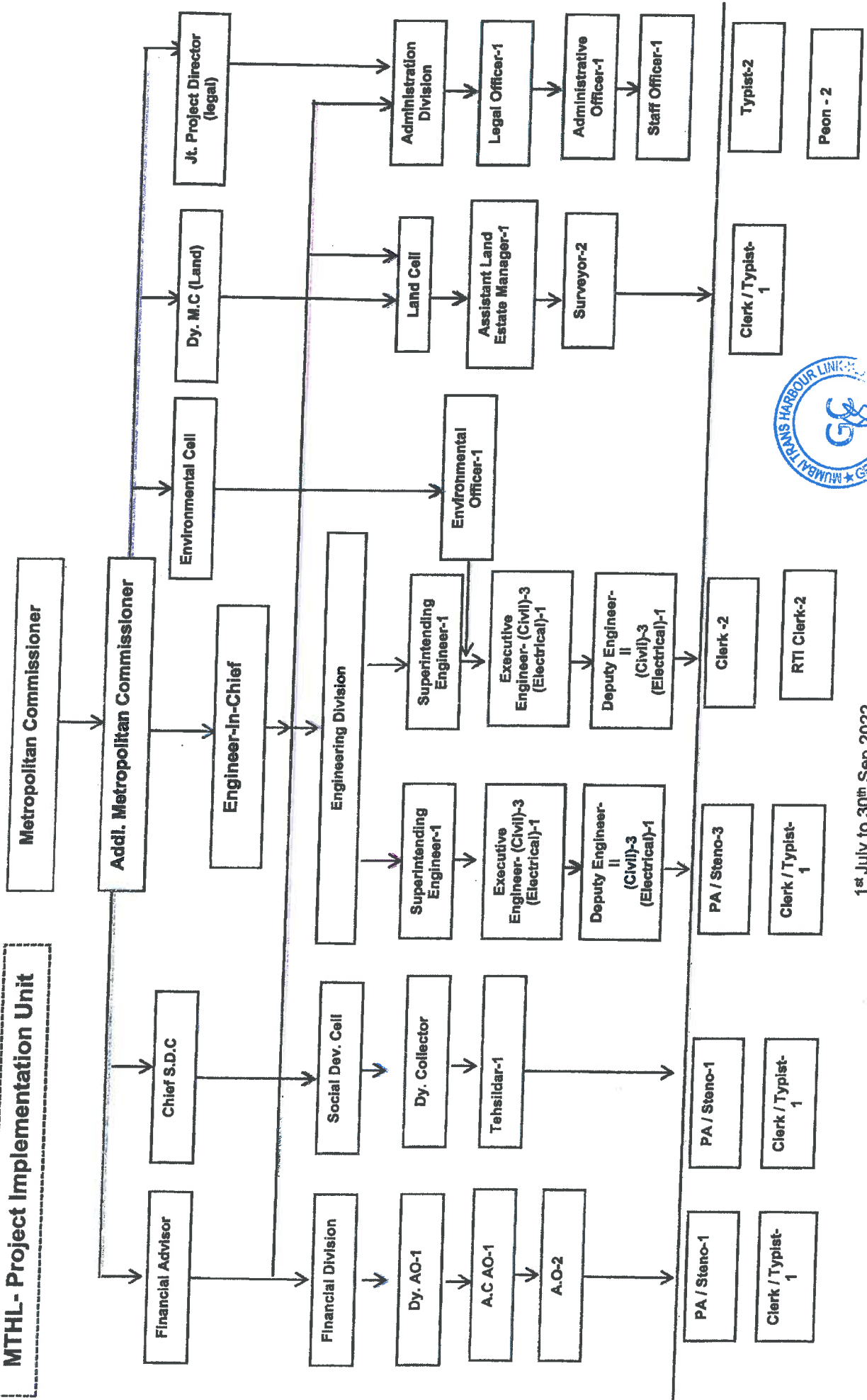
# Attachment 1- MMRDA & PIU Organization Chart



**MMRDA Organization chart**



**MTHL- Project Implementation Unit**



1<sup>st</sup> July to 30<sup>th</sup> Sep 2022

## **Attachment 2- Environmental & Social Impacts**

**Attachment 2-3 – Envi. Monitoring Plan with Package-wise Estimated Cost**

**Attachment 2-4 – Environmental Monitoring Result Reporting Form**

**Attachment 2-6 – MTHL Land Acquisition Status**

**Attachment 2-8 – RAP Internal Monitoring Form**

**Attachment 2-10 – Schedule of the RAP Implementation**





Attachment 2-3

Environmental Monitoring Plan with Package-wise Estimated Cost

No.	Category	Impacted Parameter on PCA Guidelines	Parameter	Method	Location	Frequency a year	Cost (INR)	Cost Pkg.1 (INR)	Cost Pkg.2 (INR)	Cost Pkg.3 (INR)	Total Cost (INR)	Cost Pkg.1 (INR)	Cost Pkg.2 (INR)	Cost Pkg.3 (INR)	Remarks
1	Air pollution	SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , O <sub>3</sub> , CO, (6 items)	National Ambient Air Quality Standards, 2009	1. Sawri & Sewri bay area for package I 2. Thane temporary bridge & casting yard in Gadhwa for package II 3. Gadhwa & Chirke for package III	Fortnightly at all locations except 2 locations each near Stuching plants 4 Times / Year Fortnightly only for 3 months (Jan-2019 to Mar-2019), then quarterly monitoring as per AQAR and CPCB norms	1,884,000	15,000,000	1,800,000	742,500	17,542,500					P1 contractor team is conducting Ambient air quality monitoring with reference to National Standards and clause 1.2 of Employer's requirement. P2 contractor Monitoring plan has been designed as per BIA of 2015 P3 contractor team is conducting Ambient air quality monitoring with reference to National Standards and clause 1.2 of Employer's requirement. P1 received Consents CTE & CTO from MPCB and they are following MPCB frequency in addition to frequency set by Environment Expert from CPCB. The High priority are showing High rate of start to the usual frequency. The frequency of monitoring is set by us which varies for different parameters as either Statutory requirements or as required by us to ensure that sufficient data is being generated for additional studies for comparison to CS category. Summary: Although the contract conditions for all packages were same at the time of bidding. Later modifications suggested by CTO were not accepted by P1 and P2 accepted the same and hence the differences. As per P1 carry out monitoring as per the obtained CTE and CTO. Both other packages have applied for CTE but haven't obtained it yet. So we expect the monitoring frequency would change after obtaining CTE.
2	Water pollution	PH, BOD, DO, Turbidity and Oac	IS / ANWWA	1. Sawri & Sewri bay area for package I 2. Thane temporary bridge & casting yard in Gadhwa for package II 3. Gadhwa & Chirke for package III	Quarterly 4 Times / Year Not applicable	810,000	2,490,000	810,000	0	3,210,000					Water Pollution not applicable for Pkg.3 Mumbai water quality Standards - Class SVI-IV Freshwater (MPCB) - PH: 6.5-9 - DO: 3 mg/l - Turbidity: 30 NTU - BOD: 5 mg/l - O & C: 10 mg/l
3	Waste	Volume of waste soil, cutting tree and domestic garbage	Volume	1. Sawri & Sewri bay area for package I	Daily	500,000	299,280,000	500,000	500,000	300,300,000					The cost of waste disposal for P1 includes C&D waste, Pile stock etc. from all areas like, interchanges, Intermodal and marina. The disposal location is at MCOH approved location Bhayandrapur, Thane.

No.	Category	Impact of Item as per EIA/EMP	Parameters	Method	Location	Frequency & Year	Cost (INR)	Cost Paid (INR)	Cost Paid 2 (INR)	Cost Paid 3 (INR)	Total Cost (INR)	Standard Control Pollution Control Board (SCPCB) Ministry of Environment & Forest (MoEF)	Remarks
4 and 8	Soil Contaminates/sedimentation	Heavy Metals & Oil & Grease IS / Methods Annual Soil Testing in India by Ministry of Agriculture and Cooperation, January 2011 (5-10 items shall be selected from soil pollution standards)	1. Sewri & Sewri bay area for package I 2. Union temporary bridge & castor yard in Gavan for package II 3. Gavan & Chirle for package III	4 Times / Year Once after clearing work/operation part at work start.	150,000	150,000	150,000	100,000	1,750,000	1,750,000	Standard Control Pollution Control Board (SCPCB) Ministry of Environment & Forest (MoEF) Hazardous Solid Waste Management Rules, 2013 Generated waste shall be reused or disposed at designated site. Site have been identified and the location for Fig-1 is at Rajmatar Park in Thane. For Fig-2 & 3 is in New Mumbai at Puhank Node area from Raj Junction along the Anar Marg.	7/ contractor has considered only Domestic garbage with respect to CDDO. Other wastes are not considered. Construction wastes will be	
5	Noise and Vibration	Ambient and road side noise (dB(A) <sub>Leq</sub> )	1. Sewri & Sewri bay area for package I 2. Union temporary bridge & castor yard in Gavan for package II 3. Gavan & Chirle for package III	Half yearly 2 Times / Year Fornightly	150,000	54,000	150,000	369,000	572,000	572,000	Self Pollution Standard in India (MOEF) Cd: 0.01mg/l Lead: 0.01mg/l Chromium (VI): 0.05mg/l Arsenic: 0.01mg/l T-Hg: 0.001mg/l Copper: 135mg/kg (Some items shall be analyzed from locally TIS standards forms) -Construction Noise (IS:4761(A) -Ambient Noise Standards in India (IS (A) <sub>Leq</sub> ) 1. Industrial Area Day Time: 75 (6-23hr) Night Time: 70 (23-6hr) 2. Commercial Area Day Time: 65 (6-23hr) Night Time: 60 (23-6hr) 3. Residential Area: Day Time: 55 (6-23hr) Night Time: 45 (23-6hr) 4. Silence Zone Day Time: 50 (6-23hr) Night Time: 40 (23-6hr) -Construction Vibration (IS:4761(B) -Vibration Standards worldwide 1. Commercial / Industrial Area Day Time: 70 (7-20hr) Night Time: 65 (20-7hr) 2. Residential Area: Day Time: 65 (7-20hr) Night Time: 60 (20-7hr)	Not applicable for Fig. 1	
9 and 10	Protected Area / Ecogreen	1. Monitoring of soil conditions including fauna-floa 2. Monitoring of Cutting Tree and replantation/ Transplanting area 3. Monitoring of Mangrove Plantation and record number and species MoEF	1. Along MTHL alignment and mangrove replant area for Package I 2. Along MTHL alignment and mangrove replant area for package II 3. Not applicable for Package III	Quarterly during the construction Period 4 Times / Year	6,500,000	720,000	6,500,000	0	13,700,000	13,700,000	Significant impacts are not caused by the project (None)	Not applicable for Fig. 3	







Category	No.	Impact of Item as per IEC in Conditions	Parameters	Method	Location	Frequency a year	Cost (INR)	Cost Pkg.1 (INR)	Cost Pkg.2 (INR)	Total Cost (INR)	Remarks		
Natural environment	11	Hydrology	4. Monitoring of sedimentation soil and ecological parameters as per Supplemental EIA Table 6.1.15 for soil and 7 items such as 1) Neopramy productivity, 2) Chlorophyll-a, 3) Phosphate, 4) Nitrate, 5) Nitrite, 6) Particulate Organic Carbon, 7) SOC	1-2) Mangrove density and community survey	Not applicable for Package I	350,000	0	350,000	0	350,000	Not applicable for Pkg. 1 & 3		
				1-3) Baseline Survey	Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
				2-1) Cutting trees confirmation	Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
				3-1) Mangrove survey in the replanted area	Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
					Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
					Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
					Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
					Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
					Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
					Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
Social environment	12	Topography and Geology	Flooding situation	Flood level measurement during high precipitation periods	2 Locations (CRZ at Sewri and Shivaji Nagar) for Package II	4 Times / Year	115,000	0	115,000	115,000	Embankment shall be stabilized without any silt/silt and erosion		
				Visual survey about stability of embankment	Not applicable for Package I	0	0	0	0	0	0	0	Not applicable for Pkg. 1 & 3
				Construction of worker's township	2 Locations (camp site in Sewri and Shivaji Nagar) for Package II	2 Times / Year	125,000	0	125,000	0	125,000	125,000	Employment opportunity shall be provided fairly
				Number of infected diseases such as HIV/AIDS	2 Locations (camp site in Sewri and Shivaji Nagar) for Package II	4 Times / Year x 4.5 years	525,000	0	525,000	0	525,000	525,000	Infection disease rate shall not be caused by the project
				Construction worker's condition	2 Locations (camp site in Sewri and Shivaji Nagar) for Package II	2 Times / year	500,000	0	500,000	0	500,000	500,000	"Building And Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996", "The Building and other construction workers' welfare cess Act, 1996" and International standards such as "IPC Performance Standard 2 Labor and Working Conditions"
Other		Accidents	Number of accidents	Confirmation of accidents list from local government and State Traffic Police Department	2 Locations (camp site in Sewri and Shivaji Nagar) for Package II	4 Times / Year	400,000	0	400,000	400,000	Any accidents are not caused by construction		
				<b>Total</b>			<b>8140500</b>	<b>325354000</b>	<b>12,000,000</b>	<b>2,211,500</b>	<b>339,565,500</b>		

Monitoring Period - July to Sept 2022

1. Environmental Monitoring during Construction for 4.5 years

Monitoring Period	Monitoring Parameters	Monitoring Frequency	Monitoring Location	Monitoring Method	Monitoring Results	Remarks
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	1. Muck: 1 Time / Year 2. Sediments: 4 Times / Year *If any spillage/ leakage take place from chemical, fuel storage area. *One time grab sample to be collected during Bridge Construction *Pre & Post Monsoon at Storage area only	1. Sewri & Sewri bay area for package I	Sediment sample at Sewri	BDL [DU-2]	Not applicable
			2. Nhava temporary bridge & casting yard in Cavham for package II	BDL [DU-1]	Not applicable	
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	7	0.17	Not applicable for package-3	Hazardous Storage is situated in low lying area at Cavham area. Due to this reason complete ground area is covered by boulders to avoid further water logging in rainy season. Therefore soil sample is impossible to taken out from in and around the Oil & chemical storage area. Same has witnessed by GC during February-2020 monitoring.
			10. copper: 125mg/kg (only paddy field soil)	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	11. dichloromethane: 0.02mg/l	BDL		
			12. carbon tetrachloride: 0.002mg/l	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	13. 1,2-dichloroethane: 0.04mg/l	BDL		
			14. 1,1-dichloroethylene: 0.02mg/l	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	15. cis-1,2-dichloroethylene: 0.04mg/l	BDL		
			16. 1,1,1-trichloroethane: 1mg/l	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	17. 1,1,2-trichloroethane: 0.005 mg/l	BDL		
			18. trichloroethylene: 0.03mg/l	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	19. tetrachloroethylene: 0.01mg/l	BDL		
			20. 1,3-dichloropropane: 0.002mg/l	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	21. thuran: 0.006mg/l	BDL		
			22. simazine: 0.003mg/l	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	23. thibencarb: 0.02mg/l	BDL		
			24. benzene: 0.01mg/l	BDL		
Pollution	4 Soil Contamination/Sedimentation Heavy Metals & Oil & Grease	3. Cavham & Chirle for package III	25. selenium: 0.01mg/l	BDL		
			25. selenium: 0.01mg/l	BDL		
Noise and vibration	5 Noise and vibration	1 Location Gavham area for package III	1. Sewri & Sewri bay area for package I	Sewri (ST 200-500) (Industrial area)	Sea Section (STS5000-5500) Migratory Bird Area (no standard on sea section)	Shivaji Nagar (Commercial area)
			2. Nhava temporary bridge for package II	NA	71.3 63.9	Not applicable
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	2. Night time: 22-6 hr (continuous) dB(A)			
			3. Day time: 6-22 hr (continuous) dB(A)			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	Day time: 6-22 hr (continuous) dB(A)			
			Night time: 22-6 hr (10 min during 9-17 hrs) (only sea section)			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	Day time: 6-22 hr (10 min during 9-17 hrs)			
			Night time: 22-6 hr (10 min during 9-17 hrs)			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	Note (standard values in Not construction area)			
			1. Industrial Area			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	Day Time: 75 (6-22hr)			
			Night Time: 70 (22-6hr)			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	2. Commercial Area:			
			Day Time: 65 (6-22hr)			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	Night Time: 55 (22-6hr)			
			Construction area Standard 75 dB daytime (Japan standard)			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	Not construction area : Vibration Standard (Japan Standard along the road)			
			Day time: 6-22 hr (continuous)			
Noise and vibration	5 Noise and vibration	3. Gavham & Chirle for package III	Night time: 22-6 hr (continuous)			



Noise monitoring is not carried out in Monsoon.

1. Environmental Monitoring during Construction for 4.5 years

Monitoring Period - July to Sept 2022
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Area	No.	Item	Parameter	Location	Frequency a year	Item and Standard	Monitoring Result			Remarks		
							Location 1 - Fig 1	Location 2	Location 3- Fig 3			
1	Air pollution	SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	1. Sewri & Sewri bog area for package I 2. Nivve temporary bridge & casting yard in Gawhan for package II 3. Gawhan & Chirte for package III	Quarterly monitoring is conducted at all locations.	(Standard for 24hrs: Industrial and Residential)	Sewri	Shivaji Nagar	Chirte	9.54	BDL	14	BDL - Below Detectable Limit
									24.90	24	35	
									182.36	79	74	
									38.09	34	40	
									1.20	1.4	0.71	
									1.38	2.4	1.05	
									Zone I	Zone II	Zone III/ Package-03	
									Marine water quality Standards - Class SW-IV Harbour Waters (MRCB)			
									1. Sewri & Sewri bog area for package I	Quarterly		
									2. Nivve temporary bridge & casting yard in Gawhan for package II	4 Times / Year		
3. Gawhan & Chirte for package III	From march -2019 onwards monitoring is conducted quarterly as per MOEF and CPCB norms											
2	Water pollution	pH, BOD, DO, Turbidity and O&G	1. Sewri & Sewri bog area for package I 2. Nivve temporary bridge & casting yard in Gawhan for package II 3. Gawhan & Chirte for package III	Not applicable	1. pH : 6.5-9 2. DO: 3 mg/l 3. Turbidity: 30 NTU 4. BOD: 5 mg/l 5. O & G: 10 mg/l 6.COD	Zone I	Zone II	Not applicable	7.5	7.5	Not applicable	
									4.8	6	Not applicable	
									11.3	16.3	Not applicable	
									2.8	BDL	Not applicable	
									BDL(DI-2)	BDL	Not applicable	
									21	12	Not applicable	
									37.86 Tonnes for 3 months	Shivaji Nagar Camp Site	Chirte Camp Site	
									3103 m3 for 3 months	Apr. 2000 Cont. Collected in jumbo bags and Disposed off in EBB Location.	NA	
									Generated domestic waste (Y month) total			
									Confirmation of adequate disposal (visit survey)			
3	Waste	Volume of waste soil, cutting tree and domestic garbage	1. Sewri & Sewri bog area for package I 2. Nivve temporary bridge & casting yard in Gawhan for package II 3. Gawhan & Chirte for package III	Once site cleaning work/execution part of work start.	Generated cutting tree (ha) total	3.5 T/quarter. It is disposed through CIDCO daily.	2.5 T for the quarter	1.875 M3				
								Tree cutting work completed and Half yearly report submitted to Client (April, 2022)	Both of forest and CIDCO area (234+75) = 309			



Monitoring Period - July to Sept 2022

1. Environmental Monitoring during Construction for 4.5 years		Monitoring Period - July to Sept 2022		Kindly check the letter No. Ref No. MMB/ F3/L&T/CCLT/HSE-2226/2020 dated on 12.12.2020	
Category	Activity	Frequency	Method	Location	Remarks
6	<p>Protected Area</p> <p>1. Monitoring of mudflat conditions including fauna-flora</p> <p>2. Monitoring of Cutting Tree and replantation/transplantation area</p> <p>3. Monitoring of Mangrove Plantation area appointed by MoEF</p> <p>4. Monitoring of sedimentation soil and ecological parameter (25 items on EIA main text Table 6.1.15 for soil and 7 items such as 1) Net primary productivity, 2) Chlorophyll-a, 3) Phosphate, 4) Nitrate, 5) Nitrite, 6) Particulate Organic Carbon, 7) SiO2)</p>	<p>Along MTHL alignment and mangrove replant area for Package I</p> <p>Along MTHL alignment and mangrove replant area for package II</p>	<p>Quarterly during the construction period</p> <p>4 Times / Year</p>	<p>Standard is not existing, but quantity and quality should not be worsen</p> <p>Sewri side (ST500-5500)</p> <p>Sea Section (ST5500-16000)</p> <p>Shivaji Nagar side (app. ST16000-19000)</p>	<p>Regarding protected area (CRZ and Important Bird Area) and ecosystem, detailed long-term monitoring plan will be established during baseline survey of birds. This tentative monitoring form shall be updated based on the detailed long-term monitoring plan.</p>
		<p>shall be converted from mm/s to dB</p>	<p>1. Commercial /Industrial Area</p> <p>Day Time: 70 (7-20hr)</p> <p>Night Time: 65 (20-7hr)</p> <p>1-1. Flame-Flora (number of species and quantity)</p> <p>(1) Number of species of bird</p> <p>(2) Number of species of fish</p> <p>(3) Estimated number of flamingo</p> <p>1-2. Mangrove density and community survey</p> <p>(1) Number of species of mangrove</p> <p>(2) Density of mangrove (xx trees/10m x 10m)</p> <p>1-3: Benthos Survey</p> <p>(1) Number of species and quantity by species</p> <p>2-1: Cutting tree confirmation</p> <p>(1) Number of cutting tree and species</p> <p>3-1: Mangrove survey in the replant area</p> <p>(1) Number of species of mangrove</p> <p>(2) Density of mangrove (xx trees/10m x 10m)</p> <p>4. Ecological Parameter</p> <p>(1) Net primary Productivity : &lt;1,500 mgC/m<sup>2</sup>/day at surface</p> <p>(2) Chlorophyll-a: &lt;4mg/m<sup>3</sup></p> <p>(3) Phosphate: 0.1-50µg/l</p> <p>(4) Nitrate: 1.0-500µg/l</p> <p>(5) Nitrite: &lt;125µg/l</p> <p>(6) Particulate Organic Carbon: 10-100mg/m<sup>3</sup></p> <p>(7) SiO<sub>2</sub>: 10-5,000µg/l</p>		
Natural Environment	Ecosystem				



Monitoring Period - July to Sept 2022

1. Environmental Monitoring during Construction for 4.5 years

7	Hydrology	Flooding situation	Not applicable for Package I	4 Times / Year	Criteria for evaluation Project activities and structures does not cause flooding and impacts on tidal conditions	Sewri	Shivaji Nagar		
			2 Locations (CR2 at Sewri and Shivaji Nagar) for Package II Not applicable for Package III			Monitoring of flooding situation	No Flooding		
8	Topography and Geology	Conditions in embankment area	2 Locations (1. Embankment of Inner Change in Shivaji Nagar and 2. Cutting area at toll gate in Chirle)	4 times / year x 4.5 years	Criteria for evaluation Embankment shall be stabilized without any landslide and crease Monitoring of embankment	Shivaji Nagar	Shivaji Nagar Camp Site	Chirle	Rock filling activity is carried out as per requirement.
			2 Locations (major camp site in Sewri and Shivaji Nagar)			Criteria for evaluation Employment opportunity shall be provided fairly Number of hired workers by community Criteria for evaluation Infection disease rate shall not be caused by the project	Sewri Camp Site 680 workmen Sewri Camp Site		
9	Local conflict of interests	Construction worker's township	2 Locations (major camp site in Sewri and Shivaji Nagar)	4 times / year x 4.5 years	Criteria for evaluation Employment opportunity shall be provided fairly Number of hired workers by community Criteria for evaluation Infection disease rate shall not be caused by the project	Sewri Camp Site 680 workmen Sewri Camp Site	Shivaji Nagar Camp Site 125-150 Shivaji Nagar Camp Site	Chirle	Regular Health check up is carried out by site Doctor.
			2 Locations (major camp site in Sewri and Shivaji Nagar)			Confirmation of health check record and inspect project site	Doctor on call checks site specific infections, minor and major incidents. 24x7 ambulance service. ERT team with trained first aiders available		
10	Infectious diseases such as HIV/AIDS	Number of infected patient	2 Locations (major camp site in Sewri and Shivaji Nagar)	4 times / year x 4.5 years	Criteria for evaluation Confirmation of health check record and inspect project site	Sewri Camp Site 680 workmen Sewri Camp Site	Shivaji Nagar Camp Site 125-150 Shivaji Nagar Camp Site	Chirle	Regular Health check up is carried out by site Doctor.
			2 Locations (major camp site in Sewri and Shivaji Nagar)			Criteria for evaluation Building And Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996, "The Building and other construction worker's welfare cess Act, 1996" and International standards such as "IFC Performance Standard 2 Labor and Working Conditions"	Distribution of Safety Kits to 225 Workers Medical Camp organised, wherein > 500 workers were consulted. 220 No. of Malaria tests carried out.		
11	Labour Environment	Construction worker's condition	2 Locations (major camp site in Sewri and Shivaji Nagar)	2 times / year x 4.5 years	Criteria for evaluation Building And Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996, "The Building and other construction worker's welfare cess Act, 1996" and International standards such as "IFC Performance Standard 2 Labor and Working Conditions"	Weekly site inspection 3 RTI reported 3	Shivaji Nagar Camp Site	Chirle/Other area NIL	
			2 Locations (major camp site in Sewri and Shivaji Nagar)			Site Visual Inspection	Conforming with BOCW Act 1996		
12	Accident	Number of accidents	2 Locations (major camp site in Sewri and Shivaji Nagar)	4 times / year x 4.5 years	Criteria for evaluation Any accidents are not caused by construction Number of recorded accident	3 RTI reported 3	Shivaji Nagar Camp Site	Chirle/Other area NIL	
			2 Locations (major camp site in Sewri and Shivaji Nagar)			Site Visual Inspection	Conforming with BOCW Act 1996		
Other									



This form is prepared for reporting the monitoring results to JCA India Office. Only minimum required parameters are included in this form, and not all parameters in EMoP are covered.



1. Environmental Monitoring during Construction for 4.5 years

Sl. No.	Parameter	Frequency	Method	Remarks	Monitoring Period - July to Sept 2022	Compliance
6	Protected Area		3. Monitoring of Mangrove Plantation area appointed by MoEF 4. Monitoring of sedimentation soil and ecological parameter (25 items on EIA main text Table 6.1.15 for soil and 7 items such as 1) Net primary productivity, 2) Chlorophyll-a, 3) Phosphate, 4) Nitrate, 5) Nitrite, 6) Particulate Organic Carbon, 7) S(CO2)	(1) Number of species of mangrove (2) Density of mangrove (ex trees/10m x 10m) 1-3: Benthon Survey (1) Number of species and quantity by species 2-1: Counting tree confirmation (1) Number of cutting trees and species 3-1: Mangrove survey in the replant area (1) Number of species of mangrove (2) Density of mangrove (ex trees/10m x 10m) 4. Ecological Parameter (1) Net primary Productivity : <1,500 mgC/m <sup>2</sup> /day at surface (2) Chlorophyll-a : <4mg/m <sup>3</sup> (3) Phosphate: 0.1-50µg/l (4) Nitrate: 1.0-500µg/l (5) Nitrite: <125µg/l (6) Particulate Organic Carbon: 10-100mg/m <sup>3</sup> (7) S(CO <sub>2</sub> ): 10-5,000µg/l	Dominant - <i>Avicennia</i> sp. EIA - Not distributed. Flora, fauna, Phytoplankton, zooplankton, benthos 1. Tree Cutting: 413 trees (Till September 2022) 2. Transplanting : 483 Trees (Till September 2022) CRZ-Cost assigned to PD GC to integrate PD and environmentals 3 500 4.5 6 1 1.38 30.02	not required not required not required not required not required not required not required
7	Hydrology	4 Times / Year	Not applicable for Package I 2 Locations (CRZ at Sewri and Shivaji Nagar) for Package II Not applicable for Package III	Criteria for evaluation Project activities and structures does not cause flooding and impacts on tidal conditions Monitoring of flooding situation	Sewri No Flooding Shivaji Nagar No Flooding	
8	Topography and Geology	4 times / year x 4.5 years	2 Locations (1. Embankment of Inner Causeway in Shivaji Nagar and 2 Cutting area at toll gate in Chito)	Criteria for evaluation Embankment shall be stabilized without any landslide and cracks Monitoring of embankment	Shivaji Nagar Shivaji Nagar Camp Site	Chitra Rock filling activity is carried out as per agreement.
9	Local conflict of interests	4 times / year x 4.5 years	2 Locations (major camp site in Sewri and Shivaji Nagar)	Criteria for evaluation Employment opportunity shall be provided fully Number of hired workers by community	Sewri Camp Site 690 workmen	Chitra Shivaji Nagar Camp Site 125-150
10	Infectious diseases such as HIV/AIDS	4 times / year x 4.5 years	2 Locations (major camp site in Sewri and Shivaji Nagar)	Criteria for evaluation Infectious disease rate shall not be caused by the project Confirmation of health check record and report project site	Sewri Camp Site 690 workmen	Chitra Shivaji Nagar Camp Site 125-150 75 Regular health check up is carried out by site Doctor.
11	Labour Environment	2 times / year x 4.5 years	2 Locations (major camp site in Sewri and Shivaji Nagar)	Criteria for evaluation Providing All Other Construction Workers (Registration of Employment and Conditions of Services) Act, 1997 - The building and other construction worker's welfare care Act, 1996" and International standards such as "IFC Performance Standard 2 Labor and Working Conditions" Site Visual Inspection	Shivaji Nagar Camp Site Distribution of Safety kits to 225 Workers Medical Camp organized, wherein > 500 workers were consulted. 250 No. of malaria tests carried out.	Shivaji Nagar Camp Site Gavan Camp site
12	Accident	4 times / year x 4.5 years	2 Locations (major camp site in Sewri and Shivaji Nagar)	Criteria for evaluation Any accidents are not caused by construction Number of recorded accident	Weekly site inspection 3 RRT reported	Shivaji Nagar Camp Site Shivaji Nagar Camp Site NIL Conforming with BOCW Act 1996 Conforming with BOCW Act 1996
Other						Chitra/Other area NIL

### MTHL - ROW Land Acquisition Status (Attachment 2-6):

The total land required on the Navi Mumbai side is 108.4379 ha

Land acquired by MMRDA – 108.0442 ha

Land in possession of MMRDA – 106.3542 ha

Balance land acquisition – 0.3937 ha

Note: The acquisition of 0.3937 ha of ROW land is in progress and likely to complete by the end of December 2022.

ROW Land Required in ha (for Package- 2 & 3)	ROW land acquired by MMRDA In ha	ROW Land in possession of MMRDA in ha	Balance ROW to be handed over (Possession to be taken + Under acquisition)	Anticipated date for 100% ROW Land Acquisition	Remarks
108.4379	108.0442	106.3542	2.0837 (1.6900+0.3937)	31-12-2022	The payment status to the land owners is awaited from CIDCO. The same would be communicated to JICA on receipt of the same.



QPR No. 22 (July to Sep 2022) Attachment 2-8

Activity	Indicator	Total Target	Progress till Last Quarter	Progress during reporting Quarter	Cumulative Progress till Current Quarter	Cumulative Achievement of Total Target (%)	Remarks, If Any
	No. of Structures in possession of MbPT Dismantled / Cleared	9	9	0	9	100%	
	No. of PAHs/PAPs provided Shifting Charges / Arrangement	297	0	0	0	0%	
Rehabilitation	No. of PAHs / PAPs identified for Livelihood Support in Post Resettlement Assessment						
	No. of PAHs / PAPs provided Livelihood Support under Program-I (to be identified)						
	No. of PAHs / PAPs provided Livelihood Support under Program-II (to be identified)						
	No. of PAHs / PAPs provided Livelihood Support under Program-III (to be identified)						
	No. of new enterprises started						





QPR No. 22 (July to Sep 2022) Attachment 2-8

Activity	Indicator	Total Target	Progress till Last Quarter	Progress during reporting Quarter	Cumulative Progress till Current Quarter	Cumulative Achievement of Total Target (%)	Remarks, If Any
Grievance Redress	No. of Grievances Received by FLGRC	4					
	No. of Grievances Disposed by FLGRC	3	1	0	1	100%	
	No. of Grievances Received by SLGRC	1	0	0	0		
	No. of Grievances Disposed by SLGRC	0					
Post Resettlement Assistance	No. of CHSs Registration helped						
	No. of CHSs provided Tenements for Social Amenities						
	No. of CHSs' Maintenance Fund Invested						
	No. of CHSs' Office Bearers provided training						



**SUMMARY OF FISHER FOLKS OF MTHL PROJECT (Influence Zone of 24 villages)  
Up to 30-09-2022**

Sr.No.	Village Name	Total number of forms Received	Total approved eligible family units			
			C1	C2	C3	Total
1	Bamandongri	273	1	1	28	30
2	Belapur	110	0	5	15	20
3	Belpada	1185	0	7	478	485
4	Diwale	455	12	201	52	265
5	Ganeshpuri	276	0	37	35	72
6	Gavhan	2162	0	14	1317	1331
7	Jasai	926	0	0	18	18
8	Jawale	51	0	1	0	1
9	Kombadbhuja	413	1	23	134	158
10	Kopar	994	2	5	228	235
11	Karave	178	0	44	67	111
12	Mahul	1062	129	77	604	809
13	Moha	475	22	25	134	181
14	Mora	818	0	102	375	477
15	Morave	539	14	21	88	123
16	Nhava	1646	0	32	307	339
17	Sarsole	266	0	30	83	113
18	Sewri	305	0	1	72	73
19	Shelghar	241	0	0	15	15
20	Shivajinagar	202	1	4	61	66
21	Trombay	1208	49	219	823	1091
22	Ulwe	218	1	3	14	18
23	Uran & Hanuman Koliwada	683	0	11	600	611
24	Vahal	411	0	2	1	3
<b>Total</b>		<b>15097</b>	<b>232</b>	<b>865</b>	<b>5548</b>	<b>6645</b>
Total applications						15097
Duplicate/Repeated Application						2428
Net Applications						12669
Approved applications						6645

**Grievance Redressal Committee (GRC) for Fisher-folk Compensation**

No. of Cases referred to GRC	No. of Cases		No. of Cases Rejected	No. of Cases under Consideration
	Allowed	Compensation Paid		
Nil	Nil	Nil	Nil	Nil



**Implementation Schedule for Fisher-folks Compensation & Land Acquisition in Navi Mumbai**

**A. Implementation Schedule for Fisher-folks Compensation: -**

Sr. No.	Task Designation	Approving authority	Start Date	Completion Date
1	Approval of fisherfolk's compensation Policy	Fisher-folks Compensation Committee (FCC)	08-10-2015	23-12-2015
2	Approval by MMRDA	MMRDA	10-12-2015	23-12-2015
3	Submission to JICA	MMRDA	--	04-01-2016
4	A detailed list of PAP and compensation plan	1. Detailed list of Fisher-folk PAP up to list 1 (1165 Nos) & 2 (1399 Nos) are finalized by the Fisheries Department. 2. From 2018, FEVC committee is the approval authority of PAF and approved C1-232 Nos. C2 - 368 Nos and C3-3481 Nos are approved.	23-12-2015	Up to 30-09-2022 1. Total up to date applications scrutinized = 12669 Nos. 2. Eligible = 6645 Nos. 3. Rejected = 6024 Nos.



Sr. No.	Task Designation	Approving authority	Start Date	Completion Date
5	Validation of compensation plan	Fisher-folks Compensation Committee (FCC)	23-12-2015	<ol style="list-style-type: none"> <li>1. Approval to the Fisher-folk PAP list obtained from Fisheries Department for Fisherfolk from Sewri, Mahul &amp; Trombay (Mumbai side) – 12th September 2017 and 20th November 2018 for C-2 &amp; C3 Category only.</li> <li>2. Approval to the Fisher-folk PAP list obtained from Fisheries Department for Fisherfolk of Navi Mumbai of C2 &amp; C3 on 25th April 2018.</li> <li>3. Validation of compensation is in progress and would be completed in phases.</li> </ol>
6	Approval of compensation plan	FCC	23-11-2015	28-12-2017
7	Approval by MMRDA	MMRDA	23-11-2015	09-03-2021



**B. Implementation Schedule for Land Acquisition in Navi Mumbai: -**

ROW Land Required in ha (for Package-2 & 3)	ROW Land Acquired by MMRDA in ha	ROW Land in possession of MMRDA in ha	Balance ROW to be handed over (Possession to be taken+ Under acquisition)	Anticipated date for 100% ROW Land Acquisition	Remarks
108.4379	108.0442	106.3542	2.0837 (1.6900+0.3937)	31-12-2022	The payment status to the land owners is awaited from CIDCO. The same would be communicated to JICA on receipt of the same.



### Status of JICA'S Concurrence

Sl. No.	Brief description	Procurement procedure	Bid Cost		JICA'S Concurrence on					
			Local Currency (Cr Rs.)	Total (Cr Rs)	PQ Documents	PQ Evaluation	Bid Documents	Technical Evaluation	Financial Evaluation	Contract
1.	Package-1 (CH 0+000 km to CH10+380 km)	ICB with PQ (2P)	7637.30	7637.30	JICA's Concurrence - 9th May 2016	JICA's Concurrence - 22nd Dec 2016	JICA's Concurrence - 4th Jan 2017	JICA's Concurrence - 12th Sep 2017	JICA's Concurrence - 12th Oct 2017	JICA's Concurrence - 15th Feb 2018
2.	Package-2 (CH 10+380 km to CH18+187 km)	ICB with PQ (2P)	5612.61	5612.61	JICA's Concurrence - 9th May 2016	JICA's Concurrence - 22nd Dec 2016	JICA's Concurrence - 4th Jan 2017	JICA's Concurrence - 12th Sep 2017	JICA's Concurrence - 12th Oct 2017	JICA's Concurrence - 15th Feb 2018
3.	Package-3 (CH18+187 to CH21+800)	ICB with PQ (2P)	1013.79	1013.79	JICA's Concurrence - 9th May 2016	JICA's Concurrence - 4th Jan 2017	JICA's Concurrence - 4th Jan 2017	JICA's Concurrence - 15th Sep 2017	JICA's Concurrence - 12th Oct 2017	JICA's Concurrence - 15th Feb 2018
4.	Package-4 Intelligent Transport System	ICB with PQ (2P)	427.00	427.00	JICA's Concurrence - 23rd Aug 2019	NA	JICA's Concurrence - 24th Aug 2021	JICA's Concurrence - 15th Feb 2022	JICA's Concurrence - 21st Apr 2022	JICA's Concurrence - 13th Oct 2022



1st July to 30th Sep 2022

**Attachment 4- Project Procurement and Financial  
Status till 30<sup>th</sup> Sep 2022**



## PROJECT PROCUREMENT AND FINANCIAL STATUS TILL 30<sup>th</sup> SEP 2022

Type	Contract	Awarded or Estimated Value (in Rs. Crore)	Current Status	Contractors	Project Commencement Date	Stipulated Project Completion Date	Revised Project Completion Date After granting the Extension of Time (EOT)	% of Overall Works Progress (Design, Material Procurement and Construction) as per the Primavera Baseline Schedule Updated as of 25 <sup>th</sup> Sep 2022	% of Financial Progress till 30 <sup>th</sup> Sep 2022 (GC Certified) (Excluding Mobilization Advance, Price Adjustment and Work Variation)
CIVIL	Package-1 (CH 0+000 km to CH 10+380 km)	7637.30	Awarded	L&T-IHI Consortium	Mar 2018	21-Sep-2022	30-Sep-2023	85.87%	84.12%
	Package-2 (CH 10+380 km to CH18+187 km)	5612.61	Awarded	DAEWOO-TPL JV	Mar 2018	21-Sep-2022	27-Sep-2023	84.48%	82.51%
	Package-3 (CH18+187 to CH21+800)	1013.79	Awarded	L&T	Mar 2018	21-Sep-2021	03-Mar-2023	84.35%	87.74%
ITS	Package-4 Intelligent Transport System (ITS)	427.00	Awarded	Sirabag GmbH JV	June 2022	Aug 2023	NA	NA	NA



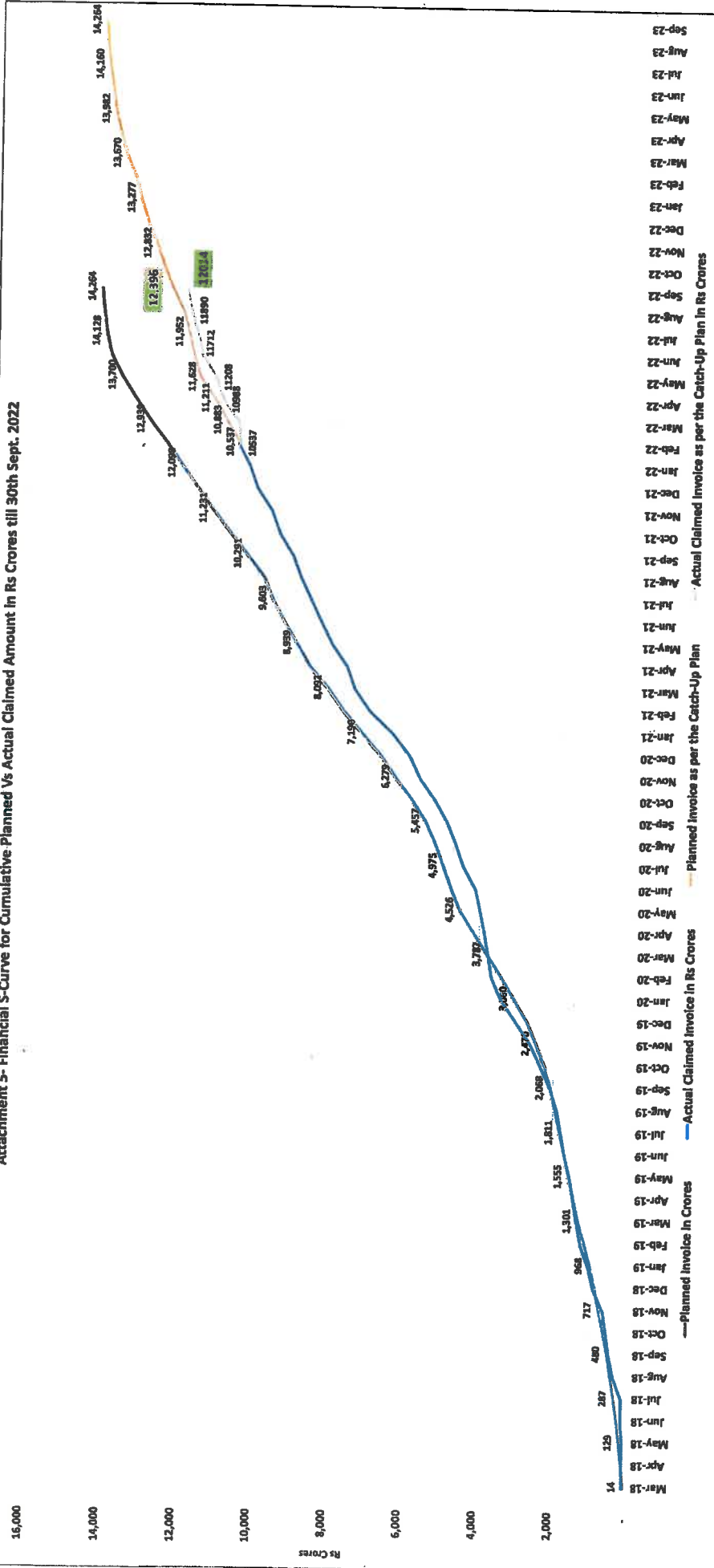


**Attachment 5- Financial S-Curve for Cumulative  
Planned Vs Actual Amount in Rs Crores**





Attachment 5- Financial S-Curve for Cumulative Planned Vs Actual Claimed Amount In Rs Crores till 30th Sept. 2022



—Planned Invoice in Rs Crores      —Actual Claimed Invoice in Rs Crores  
 —Planned Invoice as per the Catch-Up Plan      —Actual Claimed Invoice as per the Catch-Up Plan in Rs Crores

**Attachment 6- Package-1's Construction Programme  
Updated as of 25<sup>th</sup> Sep 2022**







**Attachment 7- Package-2's Construction Programme  
Updated as of 25th Sep 2022**











MUMBAI TRANS HARBOUR LINK PROJECT (PACKAGE 2) CONSTRUCTION OF 7.807 KM LONG BRIDGE SECTION  
 (CH 10+380 - CH 18+187) ACROSS THE MUMBAI BAY INCL. SHVAJI NAGAR INTERCHANGE  
 UNDER IDENTIFICATION NO MMRD/ENG/000753

ANNEXURE-5 CONSTRUCTION UPDATED  
 PROGRAMME\_ABSTRACT (PACKAGE-2)

#	Activity Name	Original Duration	Start	End	Actual Start	Actual End	Actual Finish	Estimate % Complete	Performance % Complete	2017	2018	2019	2020	2021	2022
184	MODULE 10, MP204 - MP250	190	15-Jun-19	16-Apr-20	05-Oct-19	11-Jun-20	11-Jun-20	100%	100%						
185	MAIN BRIDGE PILE FOUNDATION, COSE 15+800-15+814 FROM MP204 TO MP250	346	20-Oct-19	27-Nov-19	09-Nov-19	21-Feb-20	21-Feb-20	100%	100%						
186	MODULE 14, MP311 - MP327	46	17-Aug-19	27-Nov-19	09-Nov-19	21-Feb-20	21-Feb-20	100%	100%						
187	MODULE 15, MP230 - MP231	77	08-Mar-19	26-Aug-19	05-Aug-19	25-Oct-19	25-Oct-19	100%	100%						
188	MODULE 16, MP210 - MP217	113	05-Oct-18	08-Mar-19	05-Aug-19	14-Mar-19	14-Mar-19	100%	100%						
189	MODULE 17, MP248 - MP244	94	20-Mar-18	17-Jun-19	05-Oct-19	04-Jun-20	04-Jun-20	100%	100%						
190	MODULE 41, MP210 - MP248	74	21-Jun-19	26-Mar-20	15-Oct-19	28-Aug-20	28-Aug-20	100%	100%						
191	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+814-15+868 FROM MP250 TO MP310	417	23-Sep-19	05-Jun-20	05-Jun-20	05-Jun-20	05-Jun-20	100%	100%						
192	MODULE 42, MP311 - MP327	345	12-Feb-20	05-Jun-20	05-Jun-20	05-Jun-20	05-Jun-20	100%	100%						
193	MODULE 43, MP311 - MP312	277	27-Sep-19	05-Jun-20	05-Jun-20	05-Jun-20	05-Jun-20	100%	100%						
194	MODULE 44, MP311 - MP312	225	05-Sep-19	05-Jun-20	05-Jun-20	05-Jun-20	05-Jun-20	100%	100%						
195	MODULE 45, MP313 - MP312	313	30-Oct-19	05-Jun-20	05-Jun-20	05-Jun-20	05-Jun-20	100%	100%						
196	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+868-15+912 FROM MP310 TO MP318	551	19-Jun-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
197	MODULE 46, MP315 - MP320	340	12-Oct-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
198	MODULE 47, MP315 - MP320	282	23-Feb-20	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
199	MODULE 48, MP315 - MP320	148	09-May-20	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
200	MODULE 49, MP311 - MP315	82	21-Aug-20	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
201	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+912-15+944 FROM MP318 TO MP413	878	27-Nov-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
202	MODULE 50, MP325 - MP330	80	30-May-20	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
203	STEEL MODULE 41, MP312 - MP313	338	27-Nov-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
204	STEEL MODULE 41, MP313 - MP314	188	30-Jul-20	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
205	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+944-15+988 FROM MP318 TO MP318	728	24-Sep-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
206	MODULE 51, MP311 - MP317	158	18-Jun-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
207	MODULE 52, MP314 - MP312	302	24-Nov-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
208	MODULE 53, MP314 - MP317	395	22-Jun-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
209	MODULE 54, MP314 - MP312	94	19-Apr-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
210	MODULE 51, MP314 - MP318	107	04-Oct-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
211	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+988-15+1040 FROM MP318 TO MP413	1135	28-Oct-19	04-Nov-20	01-Oct-19	01-Oct-19	01-Oct-19	100%	100%						
212	MODULE 55, CAP BOTTOM SLAB, COSE 15+800-15+814 FROM MP223 TO MP250	308	17-Jun-19	12-Dec-19	12-Dec-19	12-Dec-19	12-Dec-19	5%	0%						
213	MODULE 56, MP231 - MP227	118	22-Sep-19	12-Dec-19	12-Dec-19	12-Dec-19	12-Dec-19	0%	0%						
214	MODULE 57, MP230 - MP232	41	15-Aug-19	12-Dec-19	12-Dec-19	12-Dec-19	12-Dec-19	0%	0%						
215	MODULE 58, MP230 - MP231	44	16-Aug-19	12-Dec-19	12-Dec-19	12-Dec-19	12-Dec-19	0%	0%						
216	MODULE 59, MP230 - MP231	44	16-Aug-19	12-Dec-19	12-Dec-19	12-Dec-19	12-Dec-19	0%	0%						
217	MODULE 60, MP230 - MP231	44	16-Aug-19	12-Dec-19	12-Dec-19	12-Dec-19	12-Dec-19	0%	0%						
218	MODULE 61, MP230 - MP231	44	16-Aug-19	12-Dec-19	12-Dec-19	12-Dec-19	12-Dec-19	0%	0%						
219	MODULE 62, CAP BOTTOM SLAB, INTERCHANG 14+800-14+800 FROM MP2108 TO MP2238	186	06-Apr-19	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
220	MODULE 63, MP204 - MP207	53	25-Sep-19	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
221	MODULE 64, MP216 - MP212	29	05-Sep-19	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
222	MODULE 65, MP220 - MP217	74	10-May-19	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
223	MODULE 66, MP222 - MP217	55	09-Oct-19	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
224	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+814-15+868 FROM MP318 TO MP318	427	08-Oct-19	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
225	MODULE 68, MP204 - MP203	29	14-Jun-20	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
226	MODULE 69, MP204 - MP203	29	14-Jun-20	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
227	MODULE 70, MP310 - MP310	13	20-Sep-20	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
228	MODULE 71, MP310 - MP310	13	20-Sep-20	18-Jul-20	18-Jul-20	18-Jul-20	0%	0%							
229	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+868-15+912 FROM MP318 TO MP318	427	08-Jun-20	17-Feb-21	17-Feb-21	17-Feb-21	0%	0%							
230	STEEL MODULE 41, MP317 - MP317	27	02-Oct-20	17-Feb-21	17-Feb-21	17-Feb-21	0%	0%							
231	STEEL MODULE 42, MP317 - MP317	118	02-Jun-21	17-Feb-21	17-Feb-21	17-Feb-21	0%	0%							
232	STEEL MODULE 43, MP318 - MP318	104	07-Jun-20	17-Feb-21	17-Feb-21	17-Feb-21	0%	0%							
233	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+912-15+944 FROM MP318 TO MP318	308	22-Oct-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
234	MODULE 67, MP311 - MP317	158	20-Sep-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
235	MODULE 68, MP316 - MP312	158	20-Sep-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
236	MODULE 69, MP316 - MP312	111	10-Aug-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
237	MODULE 70, MP316 - MP312	65	14-May-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
238	MODULE 71, MP315 - MP315	68	10-Jun-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
239	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+944-15+988 FROM MP318 TO MP413	1119	27-Oct-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
240	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+988-15+1040 FROM MP318 TO MP413	1119	27-Oct-19	21-Jun-20	21-Jun-20	21-Jun-20	0%	0%							
241	MODULE 51, MP315 - MP327	345	12-Feb-20	21-Jun-20	21-Jun-20	21-Jun-20	100%	100%							
242	MODULE 52, MP316 - MP312	277	27-Sep-19	21-Jun-20	21-Jun-20	21-Jun-20	100%	100%							
243	MODULE 53, MP315 - MP315	54	03-Jun-19	21-Jun-20	21-Jun-20	21-Jun-20	100%	100%							
244	MODULE 54, MP315 - MP315	148	09-May-20	21-Jun-20	21-Jun-20	21-Jun-20	100%	100%							
245	MAIN BRIDGE PILE FOUNDATION, INTERCHANG 15+1040-15+1144 FROM MP413 TO MP413	328	04-Mar-19	08-Aug-20	08-Aug-20	08-Aug-20	100%	100%							
246	MODULE 72, MP311 - MP327	158	18-Jun-19	08-Sep-20	08-Sep-20	08-Sep-20	100%	100%							

**Project Baseline Bar** █ Critical Remaining Work █ Summary █  
**Actual Work** █ Milestone ◆  
**Remaining Work** █ % Complete █

**EMPLOYER:** MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY (MMRDA)  
**CONTRACTOR:** DAEWOO - TPL JV

**Date:** 26-Sep-22 **Revision:** R0 **Checked:**  **Approved:**





**MUMBAI TRANS HARBOUR LINK PROJECT (PACKAGE 2) CONSTRUCTION OF 7.807 KM LONG BRIDGE SECTION (CH 10+380 - CH 18+187) ACROSS THE MUMBAI BAY INCL. SRIVAJI NAGAR INTERCHANGE UNDER IDENTIFICATION NO MNRD/AVENG000753**

**ANNEXURE-S CONSTRUCTION UPDATED PROGRAMME ABSTRACT (PACKAGE-2)**

#	Activity ID	Activity Name	Original Est. Duration	Actual Start	Actual Finish	Schedule % Complete	Performance % Complete	2017	2018	2019	2020	2021	2022
247	MOULDES MP101-1 MP102												
248	MOULDES MP103-1 MP104												
249	MOULDES MP105-1 MP106												
250	MOULDES MP107-1 MP108												
251	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP208 TO MP225		168	16-Apr-20	29-Jun-20	100%	100%						
252	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP226 TO MP243		177	16-Apr-20	29-Jun-20	100%	100%						
253	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP244 TO MP261		177	16-Apr-20	29-Jun-20	100%	100%						
254	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP262 TO MP279		177	16-Apr-20	29-Jun-20	100%	100%						
255	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP280 TO MP297		177	16-Apr-20	29-Jun-20	100%	100%						
256	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP298 TO MP315		177	16-Apr-20	29-Jun-20	100%	100%						
257	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP316 TO MP333		177	16-Apr-20	29-Jun-20	100%	100%						
258	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP334 TO MP351		177	16-Apr-20	29-Jun-20	100%	100%						
259	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP352 TO MP369		177	16-Apr-20	29-Jun-20	100%	100%						
260	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP370 TO MP387		177	16-Apr-20	29-Jun-20	100%	100%						
261	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP388 TO MP405		177	16-Apr-20	29-Jun-20	100%	100%						
262	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP406 TO MP423		177	16-Apr-20	29-Jun-20	100%	100%						
263	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP424 TO MP441		177	16-Apr-20	29-Jun-20	100%	100%						
264	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP442 TO MP459		177	16-Apr-20	29-Jun-20	100%	100%						
265	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP460 TO MP477		177	16-Apr-20	29-Jun-20	100%	100%						
266	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP478 TO MP495		177	16-Apr-20	29-Jun-20	100%	100%						
267	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP496 TO MP513		177	16-Apr-20	29-Jun-20	100%	100%						
268	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP514 TO MP531		177	16-Apr-20	29-Jun-20	100%	100%						
269	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP532 TO MP549		177	16-Apr-20	29-Jun-20	100%	100%						
270	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP550 TO MP567		177	16-Apr-20	29-Jun-20	100%	100%						
271	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP568 TO MP585		177	16-Apr-20	29-Jun-20	100%	100%						
272	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP586 TO MP603		177	16-Apr-20	29-Jun-20	100%	100%						
273	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP604 TO MP621		177	16-Apr-20	29-Jun-20	100%	100%						
274	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP622 TO MP639		177	16-Apr-20	29-Jun-20	100%	100%						
275	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP640 TO MP657		177	16-Apr-20	29-Jun-20	100%	100%						
276	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP658 TO MP675		177	16-Apr-20	29-Jun-20	100%	100%						
277	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP676 TO MP693		177	16-Apr-20	29-Jun-20	100%	100%						
278	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP694 TO MP711		177	16-Apr-20	29-Jun-20	100%	100%						
279	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP712 TO MP729		177	16-Apr-20	29-Jun-20	100%	100%						
280	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP730 TO MP747		177	16-Apr-20	29-Jun-20	100%	100%						
281	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP748 TO MP765		177	16-Apr-20	29-Jun-20	100%	100%						
282	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP766 TO MP783		177	16-Apr-20	29-Jun-20	100%	100%						
283	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP784 TO MP801		177	16-Apr-20	29-Jun-20	100%	100%						
284	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP802 TO MP819		177	16-Apr-20	29-Jun-20	100%	100%						
285	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP820 TO MP837		177	16-Apr-20	29-Jun-20	100%	100%						
286	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP838 TO MP855		177	16-Apr-20	29-Jun-20	100%	100%						
287	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP856 TO MP873		177	16-Apr-20	29-Jun-20	100%	100%						
288	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP874 TO MP891		177	16-Apr-20	29-Jun-20	100%	100%						
289	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP892 TO MP909		177	16-Apr-20	29-Jun-20	100%	100%						
290	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP910 TO MP927		177	16-Apr-20	29-Jun-20	100%	100%						
291	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP928 TO MP945		177	16-Apr-20	29-Jun-20	100%	100%						
292	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP946 TO MP963		177	16-Apr-20	29-Jun-20	100%	100%						
293	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP964 TO MP981		177	16-Apr-20	29-Jun-20	100%	100%						
294	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP982 TO MP999		177	16-Apr-20	29-Jun-20	100%	100%						
295	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1000 TO MP1017		177	16-Apr-20	29-Jun-20	100%	100%						
296	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1018 TO MP1035		177	16-Apr-20	29-Jun-20	100%	100%						
297	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1036 TO MP1053		177	16-Apr-20	29-Jun-20	100%	100%						
298	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1054 TO MP1071		177	16-Apr-20	29-Jun-20	100%	100%						
299	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1072 TO MP1089		177	16-Apr-20	29-Jun-20	100%	100%						
300	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1090 TO MP1107		177	16-Apr-20	29-Jun-20	100%	100%						
301	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1108 TO MP1125		177	16-Apr-20	29-Jun-20	100%	100%						
302	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1126 TO MP1143		177	16-Apr-20	29-Jun-20	100%	100%						
303	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1144 TO MP1161		177	16-Apr-20	29-Jun-20	100%	100%						
304	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1162 TO MP1179		177	16-Apr-20	29-Jun-20	100%	100%						
305	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1180 TO MP1197		177	16-Apr-20	29-Jun-20	100%	100%						
306	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1198 TO MP1215		177	16-Apr-20	29-Jun-20	100%	100%						
307	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1216 TO MP1233		177	16-Apr-20	29-Jun-20	100%	100%						
308	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1234 TO MP1251		177	16-Apr-20	29-Jun-20	100%	100%						
309	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1252 TO MP1269		177	16-Apr-20	29-Jun-20	100%	100%						
310	MAN BRIDGE PILE CAP - WEST SIDE - 15*18.810 FROM MP1270 TO MP1287		177	16-Apr-20	29-Jun-20	100%	100%						

**EMPLOYER: MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY**

**CONTRACTOR: DABOOO - TPL JV**

**Summary**

- Project Baseline Bar
- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone
- % Complete

Date	Revision	Classified	Approved
25-Sep-22	R0		







MUMBAI TRANS HARBOUR LINK PROJECT (PACKAGE 2) CONSTRUCTION OF 7.807 KM LONG BRIDGE SECTION  
(CH 10+380 - CH 18+187) ACROSS THE MUMBAI BAY INCL. SHIVAJI NAGAR INTERCHANGE  
UNDER IDENTIFICATION NO MMRD/AVENG000753

ANNEXURE-4 CONSTRUCTION UPDATED  
PROGRAMME\_ABSTRACT (PACKAGE-2)

#	Activity ID	Activity Name	Original Bl. Project Start	BL Project Finish	Actual Start	Actual Finish	Schedule % Complete	Performance % Complete	2018	2019	2020	2021	2022	2023
488		MODULE 33, CRASH BARRIER & GUARDRAILS	140 27-Feb-21	18-Sep-21	01-Apr-21	18-Sep-21	100%	100%						
489		MODULE 34, CRASH BARRIER & GUARDRAILS	128 31-May-21	23-Oct-21	01-Apr-21	26-Sep-22	100%	100%						
500		CRASH BARRIER & GUARDRAILS	471 14-Jun-20	04-Aug-21	30-Aug-20		100%	100%						
501		CRASH BARRIER & GUARDRAILS	130 18-Aug-20	04-Aug-21			100%	100%						
502		MODULE 35, CRASH BARRIER & GUARDRAILS	60 26-Sep-20	20-Feb-21	20-Aug-21		100%	100%						
503		MODULE 36, CRASH BARRIER & GUARDRAILS	151 11-Jun-20	20-Jun-20	18-Sep-22		100%	100%						
504		MODULE 37, CRASH BARRIER & GUARDRAILS	148 20-Sep-20	18-Sep-21			100%	100%						
505		INTERCHANGE RETAINING STRUCTURE	130 20-Sep-20	18-Sep-21			100%	100%						
506		MODULE 38, CRASH BARRIER & GUARDRAILS	171 14-Jun-20	20-Jun-20	11-Jun-22		100%	100%						
507		MODULE 37, CRASH BARRIER & GUARDRAILS	128 20-Sep-20	18-Sep-21	11-Jun-22		100%	100%						
508		MODULE 38, CRASH BARRIER & GUARDRAILS	154 20-Sep-20	18-Sep-21	11-Jun-22		100%	100%						
510		MODULE 39, CRASH BARRIER & GUARDRAILS	128 06-Sep-21	18-Sep-21			100%	100%						
511		MODULE 40, CRASH BARRIER & GUARDRAILS	136 30-Oct-20	08-Apr-21			100%	100%						
512		MODULE 41, CRASH BARRIER & GUARDRAILS	126 14-Oct-20	13-Feb-20			100%	100%						
514		MODULE 42, CRASH BARRIER & GUARDRAILS	130 10-Feb-20	18-Aug-20			100%	100%						
515		MODULE 43, CRASH BARRIER & GUARDRAILS	124 11-Apr-20	27-Aug-20			100%	100%						
516		MODULE 44, CRASH BARRIER & GUARDRAILS	68 24-Jun-20	08-Nov-20			100%	100%						
517		MODULE 45, CRASH BARRIER & GUARDRAILS	76 11-Jun-20	08-Nov-20			100%	100%						
518		MODULE 46, CRASH BARRIER & GUARDRAILS	101 08-Nov-20	15-May-21			100%	100%						
519		MODULE 47, CRASH BARRIER & GUARDRAILS	30 09-Feb-20	24-Aug-20			100%	100%						
520		MODULE 48, CRASH BARRIER & GUARDRAILS	41 11-Jun-20	24-Oct-20			100%	100%						
521		MODULE 49, CRASH BARRIER & GUARDRAILS	244 10-Jun-20	23-Sep-21			100%	100%						
522		MODULE 50, CRASH BARRIER & GUARDRAILS	418 01-Oct-20	23-Sep-21			100%	100%						
523		MODULE 51, CRASH BARRIER & GUARDRAILS	508 10-Sep-20	17-Feb-22			100%	100%						
524		MODULE 52, CRASH BARRIER & GUARDRAILS	348 10-Sep-20	04-Mar-22			100%	100%						
525		MODULE 53, CRASH BARRIER & GUARDRAILS	434 07-Sep-20	28-Sep-22			100%	100%						
526		MODULE 54, CRASH BARRIER & GUARDRAILS	508 24-Aug-20	26-Feb-22			100%	100%						
527		MODULE 55, CRASH BARRIER & GUARDRAILS	65 23-Mar-22	22-Sep-22			100%	100%						
528		MODULE 56, CRASH BARRIER & GUARDRAILS	130 23-Mar-22	21-Sep-22			100%	100%						
529		MODULE 57, CRASH BARRIER & GUARDRAILS	2450 23-Mar-18	21-Mar-23	23-Mar-18		96.87%	96.87%						
530		MODULE 58, CRASH BARRIER & GUARDRAILS	2490 23-Mar-18	21-Mar-23	23-Mar-18		96.37%	96.37%						
531		MODULE 59, CRASH BARRIER & GUARDRAILS	1644 23-Mar-18	23-Sep-22	23-Mar-18		100%	100%						
532		MODULE 60, CRASH BARRIER & GUARDRAILS	1644 23-Mar-18	23-Sep-22	23-Mar-18		100%	100%						
533		MODULE 61, CRASH BARRIER & GUARDRAILS	1644 23-Mar-18	23-Sep-22	23-Mar-18		100%	100%						
534		MODULE 62, CRASH BARRIER & GUARDRAILS	1644 23-Mar-18	23-Sep-22	23-Mar-18		100%	100%						
535		MODULE 63, CRASH BARRIER & GUARDRAILS	1644 23-Mar-18	23-Sep-22	23-Mar-18		100%	100%						
MTHL-PKG2-RAMBOLL DESIGN PROGRAMME_20092022_APPROVED_MPR_53														

Project Baseline Bar	Critical Remaining Work	Summary	Date	Revision	Checked	Approved
Actual Work	Milestone		26-Sep-22	R0		
Remaining Work	% Complete					
EMPLOYEE: MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY			CONTRACTOR: DAEWOO - TPL JV			

**Attachment 8- Package-3's Construction Programme  
Updated as of 25<sup>th</sup> Sep 2022**







## Attachment 9- Project Progress Photos for Sep 2022



**Package 1- Site Progress Photos**

**Photo No. 1: LG-07 AP 40-41 installation in progress**



**Photo No. 2: OSD 2 SPAN 1SOUTH MP 69-70 loading out in progress**



**Photo No. 3: A view of erected OSD -4 Span**





Photo No. 4: MP 113 S Pier Head Shuttering



Photo No. 5: BP 33 Cast in situ Shutter Checking





Photo No. 6: BP 33 Portal Pier Cap in progress



Photo No. 7: AP 35 Pier cap casting in progress





Photo No.8: EP 08-09 Top slab Cast in situ reinforcement in progress



Photo No. 9: MP 13 gantry lifting segment in progress





Photo No. 10: SE, MMRDA factory visit to Vada for composite girder



Photo No. 11: BP 33 portal pier cap casting in progress





Photo No. 12: A view of Sewri I/C from LPN 01 looking towards to the sea





**Package 2 – Site Progress Photos**



Photo No. 1: LG-1 Load Testing at MP 148A- MP 148B LHS in progress



Photo No. 2: Segment concreting at Bay-3 in progress





Photo No. 3: Outer Crash barrier formwork alignment at Span MP 222-223 LHS in progress



Photo No. 4: Pier cap concrete at MP 185 RHS in progress





Photo No. 5: Pile reinforcement cage inspection at MP 240 R Substation in progress



Photo No. 6: Median side crash barrier formwork fixing at Span MP 234-235 LHS in progress





Photo No. 7: Pier 1st lift concrete at MP 174 RHS in progress



Photo No. 8: Pile cap concrete at MP 171 LHS in progress





Photo No. 9: Integral pier head segment concrete at MP 190 LHS in progress



Photo No. 10: 7th OSD span erection at Span MP 178-179 LHS in progress





Photo No. 11: Segment concreting at Bay-1 in progress



Photo No. 12: Web concrete at Ramp JM in progress



**Package 3 – Site Progress Photos**



**Photo No. 1: Gavan ROB structural works in progress**



**Photo No. 2: Gavan superstructure works in progress**





Photo No. 3: Toll-plaza area ground clearance works in progress



Photo No. 4: Jasai viaduct works in progress







Photo No. 5: Chirle Interchange works in progress



Photo No. 6: Gavan ROB span RMP 274-275 deck concrete completed





Photo No. 7: Chirle Pier RP 28 L final lift shuttering works in progress



Photo No. 8: Chirle Pier cap LP 30 pedestal & seismic arrester pre-pour inspection works in progress





Photo No. 9: Chirle MJP Loop FDD inspection works in progress



Photo No. 10: Jasai ROB Span RP26-27 Girder's Erection completed





Photo No. 11: Jasai ROB Span LP25-26 Girder's Erection works in progress



## Annexure-1 JICA Reimbursement backup-Aug-22



**Reimbursement details for the month of Aug-2022 (Annexure-1)**

<b>Date of Disbursement</b>	<b>Amount of Disbursement in JPY</b>
12-Aug-22	JPY 88,65,96,523
12-Aug-22	JPY 72,89,55,950
12-Aug-22	JPY 34,33,99,348
12-Aug-22	JPY 22,97,22,845
12-Aug-22	JPY 1,24,56,66,862
12-Aug-22	JPY 1,38,42,41,854
12-Aug-22	JPY 89,02,76,572
12-Aug-22	JPY 8,02,15,015
12-Aug-22	JPY 30,83,77,793
12-Aug-22	JPY 16,82,91,883
12-Aug-22	JPY 10,72,16,192
12-Aug-22	JPY 1,32,69,881
12-Aug-22	JPY 68,54,60,567
16-Aug-22	JPY 1,51,22,72,162
16-Aug-22	JPY 87,45,60,133
16-Aug-22	JPY 40,42,12,162
16-Aug-22	JPY 1,36,45,436
16-Aug-22	JPY 36,39,65,964
16-Aug-22	JPY 21,86,39,966
16-Aug-22	JPY 10,10,53,041
16-Aug-22	JPY 34,11,254
19-Aug-22	JPY 3,43,89,227
19-Aug-22	JPY 2,26,56,982
19-Aug-22	JPY 5,38,57,469
19-Aug-22	JPY 4,30,99,888
<b>Total Amount</b>	<b>10717.45 Million JPY</b>



## **Annexure-2 JICA Reimbursement backup-Sept-22**



### Reimbursement details for the month of Sep-2022

Date of disbursement	Amount of Disbursement in JPY
06-Sep-22	JPY 32,24,88,971
06-Sep-22	JPY 8,70,89,495
06-Sep-22	JPY 3,71,56,813
06-Sep-22	JPY 10,58,102
06-Sep-22	JPY 30,58,21,682
06-Sep-22	JPY 1,24,27,36,098
06-Sep-22	JPY 21,85,06,012
06-Sep-22	JPY 98,91,031
06-Sep-22	JPY 52,08,53,904
06-Sep-22	JPY 1,75,89,24,445
06-Sep-22	JPY 67,71,38,065
06-Sep-22	JPY 2,00,77,169
06-Sep-22	JPY 1,00,85,86,340
06-Sep-22	JPY 35,81,51,885
06-Sep-22	JPY 1,19,57,92,464
06-Sep-22	JPY 43,01,82,140
<b>Total Amount</b>	<b>8194,45 Million JPY</b>





## **Annexure-3 Extension of Validity for CRZ Clearance**



To

The Member Secretary,  
Maharashtra Coastal Zone Management Authority  
Environment Department, 15<sup>th</sup> floor  
New Administrative Building,  
Mantralaya, Mumbai 400032

**Name of work:** Mumbai Trans Harbour Link (MTHL) Project

**Sub:** Extension of validity of CRZ Clearance

- Ref:**
1. MMRDA letter No. MMRDA/MTHL-PIU/CRZ Extension/1338/2022 dated 04/08/2022.
  2. MMRDA letter No. MMRDA/MTHL-PIU/CRZ Extension/1360/2022 dated 11/08/2022.

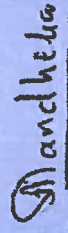
Sir,

Mumbai Metropolitan Region Development Authority has submitted application for Extension of CRZ Clearance vide letter dated 04/08/2022 & online submission having file no. MCZMA 2022/08/CR-246/3719 on Maharashtra Coastal Zone Management Authority official website.

In view of above, it is requested to take this project on agenda during the next scheduled meeting of MCZMA to consider the proposal of extension of CRZ clearance at the earliest please.

Thanking you,

Yours faithfully,

  
(S. A. Wandhekar)  
Engineer In Chief

  
21-9-22  
मुख्य निर्देश (च. प्र.)  
पर्यावरण व आवासीय विभाग, मुंबई  
महाराष्ट्र, भारत. पिन ४०००३२



## Annexure VII

## Mumbai Metropolitan Region Development Authority

C - 14 / 15, MMRDA Office Bulding  
 Bandra Kuria Complex, Bandra (E).  
 Mumbai - 400051  
 PAN : AAATM7106R

given for  
 Budget  
 22-23  
 31/1/23

## EXPENSES ON MTHL

Group Summary

1-Apr-2022 to 31-Dec-2022

Page 1  
Figures in Crores

Particulars	Opening Balance	Transactions		Closing Balance
		Debit	Credit	
Administrative Charges (MTHL)	1.15 Dr			1.15 Dr
Advertisement & Publicity (MTHL)	0.35 Dr			0.35 Dr
Civil Work (MTHL) - Package-I	5,739.24 Dr	1,962.29	294.97	7,406.56 Dr
Civil Work (MTHL) - Package-II	4,828.02 Dr	995.50	123.21	5,700.31 Dr
Civil Work (MTHL) - Package-III	908.63 Dr	150.57	25.42	1,033.78 Dr
Civil Work (MTHL) - Package-IV		21.35		21.35 Dr
Compensation to Fisheries (MTHL)	118.91 Dr	74.32	2.54	180.70 Dr
Compensation to Leaseholders-MTHL	13.25 Dr			13.25 Dr
Counter Guarantee Fees (MTHL) (MOF)	135.81 Dr	23.88		159.69 Dr
Deposit with CIDCO for MTHL	11.21 Dr			11.21 Dr
Forex Loss/ Gain Against JICA Loan No IDP-255	487.97 Cr			487.97 Cr
Forex Loss/ Gain on Mobilisation Advance (MTHL)	29.44 Cr			29.44 Cr
Front End Fees for JICA Loan (MTHL)	27.23 Dr			27.23 Dr
General Consultants Fees (MTHL)	130.59 Dr	34.79	0.02	165.36 Dr
General Consultants Fees (MTHL) - Taxable	4.69 Dr	16.67		21.36 Dr
Geotechnical Investigation (MTHL)	19.60 Dr			19.60 Dr
Interest & Bank charges on JICA Loan (MTHL)	15.44 Dr	9.75	3.74	21.45 Dr
Land Acquisition Cost (MTHL)	857.43 Dr	4.83	4.83	857.43 Dr
Land Acquisition Cost (MTHL) Taxable	60.21 Cr	84.01	0.61	23.19 Dr
Legal Charges (MTHL)	0.09 Dr			0.09 Dr
Other Miscellaneous (MTHL)	80.55 Dr	1.14		81.69 Dr
Professional Charges (MTHL)	0.12 Dr			0.12 Dr
Repairs & Maintenance (MTHL)	0.08 Dr			0.08 Dr
Security Deposits - Land (MTHL)	11.10 Dr			11.10 Dr
Service Tax on Mobilisation Adv. on MTHL	3.07 Dr			3.07 Dr
Stamp Duty Reimbursement (MTHL)	0.10 Dr			0.10 Dr
Surveys & Studies (MTHL)	47.47 Dr	0.10		47.57 Dr
<b>Grand Total</b>	<b>12,376.50 Dr</b>	<b>3,379.21</b>	<b>455.33</b>	<b>15,300.38 Dr</b>

15336

TAKEM

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Office of the Additional Principal Chief Conservator of Forests,  
Mangrove Cell, Mumbai  
And Executive Director, Mangrove and Marine Biodiversity  
Conservation Foundation of Maharashtra  
302, Wakefield House, 3<sup>rd</sup> Floor, Ballard Estate, Above Britannia & Co. Restaurant, Fort,  
Mumbai-400 001



Ph: 022-2694984 / 85 Email: [ccfmmumbai@gmail.com](mailto:ccfmmumbai@gmail.com) / [ccfmangrove@mahaforest.gov.in](mailto:ccfmangrove@mahaforest.gov.in)

MFN/DDR&CB/ 462 /2021-22

Date: - 03.02.2022


To,  
The Engineer in Chief  
MTHL-PIU  
MMRDA

**Sub:** Report regarding the mangrove plantation carried out as a part of the MMRDA-MTHL Project

**Ref:** Minutes of the third PIC meeting with respect to the Bird Monitoring Programme of the MTHL Project

With reference to the above subject, during the third PIC meeting of the Bird Monitoring Programme of the MTHL Project, it was decided that a report regarding the 200 hectare mangrove plantation carried out by the Maharashtra Forest Dept. through the funds provided by MMRDA (as compensatory afforestation) should be submitted to the MMRDA.

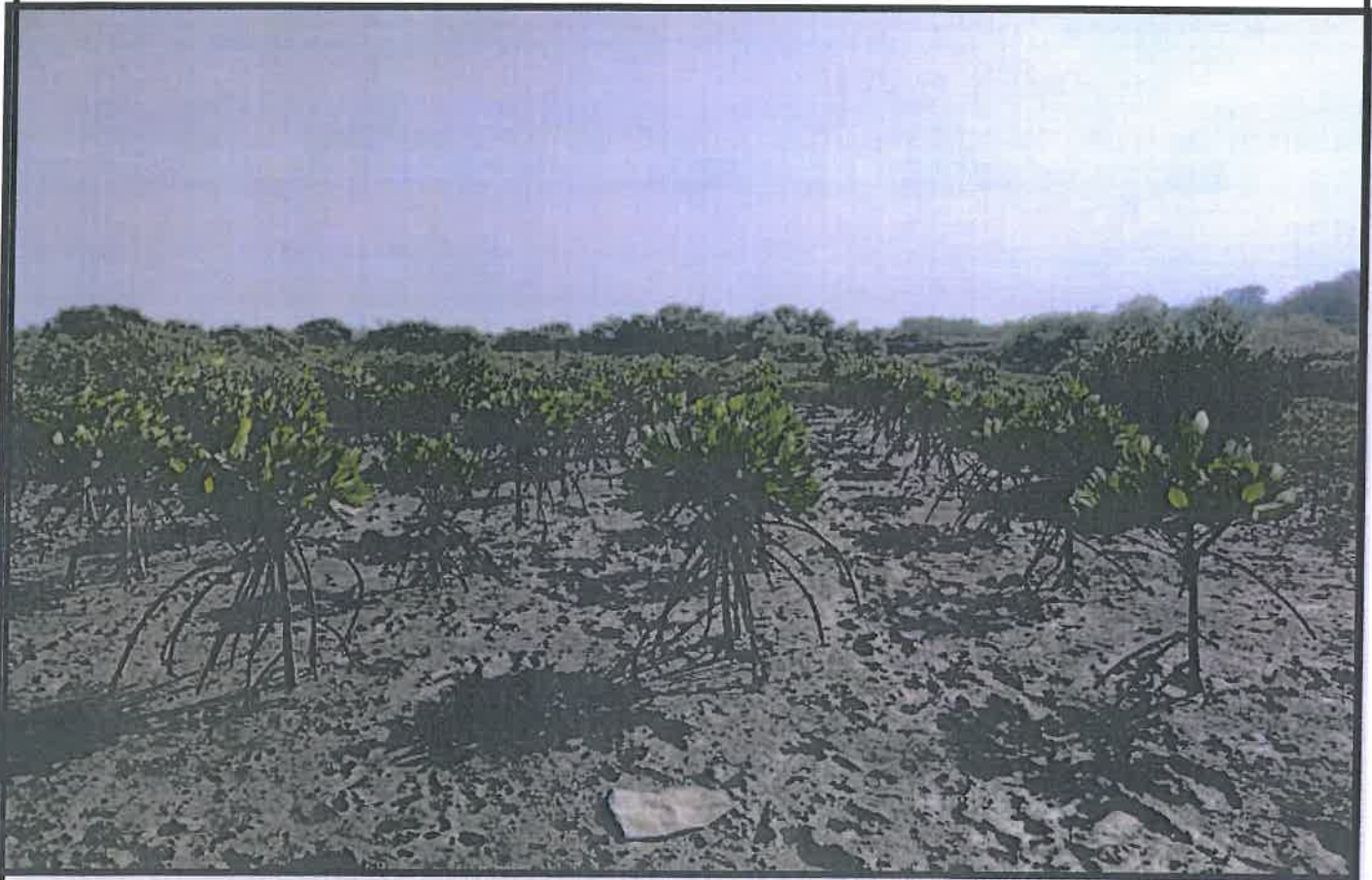
In this regard, kindly find attached the said report with this letter.

  
(Virendra Tiwari) 3/2/22  
Addl. Principal Chief Conservator of Forests,  
Mangrove Cell, Mumbai &  
Executive Director, Mangrove Foundation



Annexure VIII

# MMRDA – MTHL Mangrove Restoration Report



**Mangrove Cell**

**Forest Department of Maharashtra**



## About Project

Mangrove plantation in lieu of the mangrove area likely to be affected during the construction of Mumbai Trans Harbour Link (MTHL) project.

AS per the CRZ clearance for MTHL Project MMRDA was instructed to restore 5 times the mangroves cut/ disturbed by the project. As per the mandate, 200 hectares of plantation was carried out as compensatory Afforestation. All the plantations done under the project are maintained for the period of five years as per approved estimate and amount received.

For this MMRDA had requested mangrove Cell to prepare a mangrove plantation program 200 hectares. Mangrove Cell had identified 200 hectares area for mangrove plantation and total amount of Rs 49,59,822 was paid vide T O dated 9.05.2016 for 30 hectares. Further amount of Rs. 4,56,29,600 was paid vide cheque no 216609 dated 13.10.2016 for 170 hectares. The mangrove planation involves plantations of 4444 sapling per hectare and therefore total of 888800 saplings and additional 20 percent causality was replaced for the period of three years as per the estimate.



## Details of Restoration work

Sr No	Division	Year	Range	Place	S. No	Ha	Survival percentage	GPS Locations
1	Dahanu	2016-17	Boisar	Mouje Pamtembi	161	15	71.02	19.571982; 72.821682
2			Saphale	Mouje Karwela	47	15	72.00	19.553711; 72.845790
3		2017-18	Boisar	Chandigaon	729	10	64.05	19.936829; 72.730574
4			Boisar	Pamtembi	161	10	75.20	19.805105; 72.705118
5			Boisar	Salwad	107	10	68.0	19.810528; 72.715928
6			Saphale	Makunsar	283/A	20	63.50	19.604865; 72.763378
7	MMCU		TCFS	Kanjur	275 C.S.N 657A	10	20	19.065557; 72.565564
8			TCFS	Mulund/ Bhandup	157 C.S.N 1318	15	57	19.084174; 72.580663
9	Dahanu	2018-19	Palghar	Shirgaon	1287	10	54.09	19.688655; 72.711506
10			Palghar	Dhansar I	64	20	46	19.708259; 72.732071
11			Palghar	Dhansar 2	64	25	51.1	19.709843; 72.727397
12			Boisar	Navapur	161	10	71.87	19.800481; 72.692326
13			Boisar	Salwad	107	10	69.79	19.810528; 72.715928
14			Saphale	Karwela	47	20	82	19.552433; 72.841222



**Mouje Pamtemhi (2016-17)**

**Survey No. 161**





**Mouje Karwela (2017-18)**

**Survey No.47**



# Chandigaon (2017-18)

## Survey No.729



**Pamtembhi (2017-18 )**

**Survey No.161**



# Salvad (2017-18)

## Survey No.107



# Makunsar (2017-18)

Survey No.283/A





Latitude: 19.604865  
Longitude: 72.763378  
Elevation: 7.3747 m  
Accuracy: 7.6 m  
Time: 22-12-2021 16:23  
Note: makunjar

Prepared by: Makunjar



Latitude: 19.605047  
Longitude: 72.763248  
Elevation: 8.6819 m  
Accuracy: 5.9 m  
Time: 22-12-2021 16:24  
Note: makunjar

Prepared by: Makunjar



# Kanjurmarg(2018-19)

Survey No.275



**Mulund/ Bhandup(2018-19)**

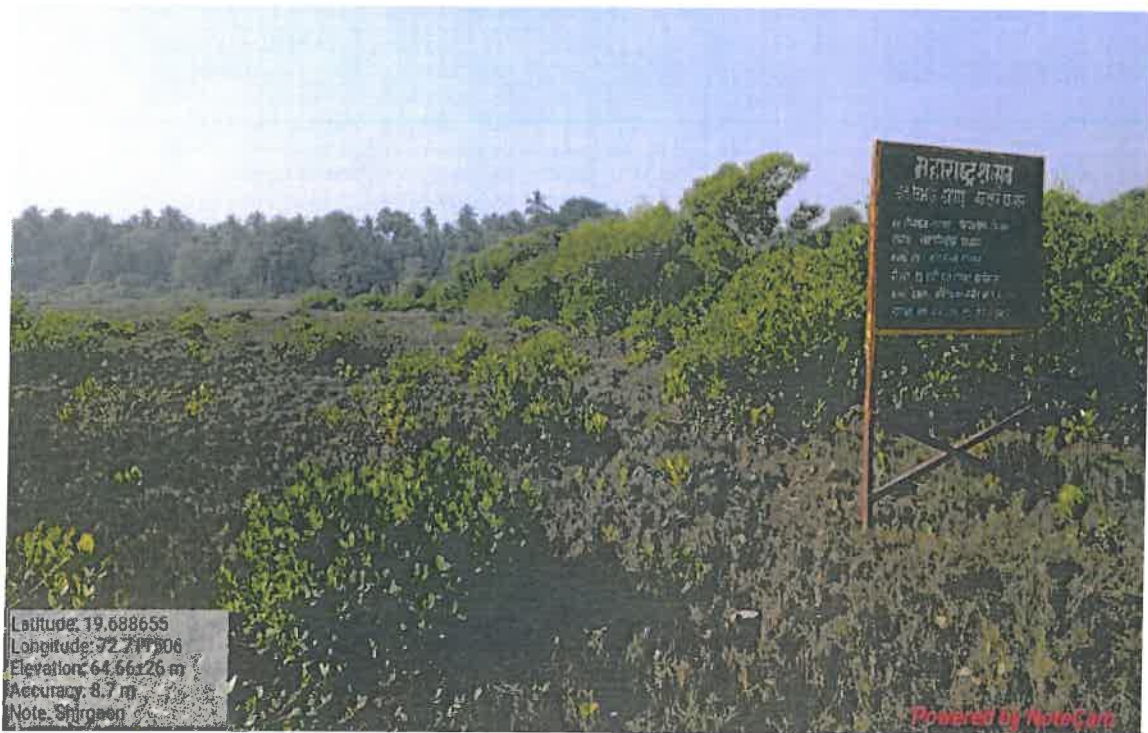
**Survey No.275**





# Shirgaon (2018-19)

## Survey no-1287



# Dhansar 1 (2018-19)

## Survey No-64



## Dhansar 2 (2018-19)

### Survey No-64



# Navapur (2018-19)

## Survey No-161



**Salvad (2018-19)**

**Survey No-107**



# Monitoring and Mitigating the Impacts of Mumbai Trans-Harbour Link on Flamingos and other Avifauna and Formulating a Conservation Blueprint for the Sewri–Nhava Seascape

Fifth Annual Report

2021–2022

Submitted to

Mangrove and Marine Biodiversity Conservation Foundation of  
Maharashtra



Submitted by



"Conservation of nature, primarily biological diversity,  
through action based on research, education and public awareness."

Hornbill House, Shaheed Bhagat Singh Road

Opposite Lion Gate, Fort, Mumbai 400 001

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Tel - 91-22-22821811

2022



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Trans-Harbour Link on Flamingos and other  
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2022





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#### **Disclaimer**

The observations represented in this report are based on study duration mentioned in the report. The observations may change or vary depending upon on further surveys and thus it should not be used as a stand alone report.

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<b>Abbreviations</b>	
BPS	Bhandup Pumping Station
DPS	Delhi Public School
FCS	Flamingo Count Survey
IBA	Important Bird Area
IBCN	Indian Bird Conservation Network
IUCN	International Union for Conservation of Nature
LC	Least Concerned
MMRDA	Mumbai Metropolitan Region Development Authority
MTHL	Mumbai Trans-Harbour Link
NRI	Non-residential Indian Complex
NT	Near Threatened
PoM	Post-Monsoon
PrM	Pre-Monsoon
TCS	Transact Count Survey
TSC	Training Ship Chanakya
VU	Vulnerable
WCS	Wetland Count Survey

## Summary

The migratory bird population in wetlands was increased from the winter till spring afterwards their numbers were relatively low during summer migration season. On the other hand, the resident bird populations showed variations across seasons ranged from 316 to 1701 individuals. A large congregation of the Lesser flamingo was recorded inhabiting at DPS (11800) and TSC wetlands (7500) whereas Greater flamingo congregation was observed mainly at BPS wetland (800). Previously they were seen inhabiting nearby Non-Residential Indian complex (NRI) wetland for roosting (Apte et. al 2018 and 2019).

A gradual change in the abundance of migratory birds was observed at Thane creek from November (123468) to April (40930). Abundance of migratory shorebirds reached its peak in January (137237) whilst the lowest number of individuals were recorded in May (3789). On the other hand, resident bird population was more or less stable throughout season ranging from 798 to 1967 individuals. We found that the migratory shorebirds showed preference towards certain areas of the creek such as mudflats near Ghansoli and Vashi.

The lesser flamingo population was lowest in October and November 2021 while later on population increased remarkably until April. Overall, average 55166 (SD =  $\pm 21836$ ) Lesser flamingos were recorded in creek, ranged from 16422 to 81917, excluding October and November counts. On the other hand, Greater flamingo abundance in 2021-22 was highest in past four years, ranged from 6015 to 49755, average 10009 (SD =  $\pm 13597$ ). At both the construction sites Lesser flamingos were predominantly higher in number than Greater flamingos. Overall, both the species of the flamingos were observed to prefer Sewri mudflats over Nhava throughout the season. Maximum Lesser flamingos were recorded at Sewri (24200) and Nhava (14385) and Greater flamingos at Sewri (2817) and Nhava (227).

In total, 97 behaviour recording sessions were carried out (35 at creek/feeding site, 41 at wetlands/roosting sites and 21 at construction site) along with data on different disturbance regimes. During these sessions, 7675 behaviour videos of 10 migratory shorebird species were recorded. Out of that 2181 videos were recorded at construction site, 2812 at feeding site and 2682 at roosting site.



## Introduction

Mumbai is located in the Konkan Plains of the northern Western Ghats. Due to its key geographic position and abundant natural resources, Mumbai has always been a centre of development since the colonial period. It is the financial capital of the nation, and the ninth most populous city in the world, with a current population of 26.6 million (UN 2012). The Mumbai Metropolitan Region Development Authority (MMRDA), the planning authority for Mumbai Metropolitan Region (MIMR), has predicted in its 40-year concept plan that the city would have 44 million inhabitants spread over 1050 sq. km by 2052, which is almost double the present area 603 sq. km (Kamdar 2014). This means there will be tremendous pressure on the already shrunken natural habitats, especially mangroves, coastal mudflats and remnant patches of the natural forests, which will eventually impact the biodiversity (Nagendra et al. 2012). Given the coastal features of the city, the disappearance of the mangroves

and mudflats may leave the city not only vulnerable to local environmental issues such as floods, toxic runoffs, siltation and reduction in the groundwater, but also to global disasters such as cyclones, tsunamis and sea-level rise due to global climate change (Kleppel et al. 2006). Alongside the environmental concerns, Mumbai also faces the inevitable need for development.

The Mumbai Trans Harbour Link (MTHL), the 22-km bridge connecting Southern Mumbai (at Sewri) with Southern Navi Mumbai (at Nhava Sheva), is one such developmental project that is set to bring Mumbai closer to its satellite city. The alignment passes over Sewri Mudflat, which is key wintering ground for migratory shorebirds, and is identified as an Important Bird Area (IBA) by the Indian Bird Conservation Network IBCN, (Rahmani et al. 2016). In addition, part of Thane Creek is declared as the Thane Creek Flamingo Sanctuary. The intertidal mudflats in this creek harbour a large congregation of waterbirds including ducks, waders and large proportion of the South Asian population of Lesser Flamingo *Pheonicopterus minor*, a Near Threatened species (Vijayan et al. 2008).

Habitats along this Indian coasts such as creeks, mangroves, mudflats, salt marshes and wetlands harbour rich coastal and marine biodiversity. This western coast is also considered as the main wintering grounds for the waders migrating from Central or South Asia (Balachandran 2006). The MTHL project is likely to affect waterbirds of Sewri Mudfat, Thane Creek and wetlands of Navi Mumbai. Hence, MMRDA has approached BNHS to monitor the impacts of the bridge on flamingos, other avifauna and marine fauna, and suggest a mitigation plan for the conservation of waterbirds and their habitats. The study duration is of 10 years (2017-2027) and is focusing on long-term examination of the ecology of shorebirds and marine benthic fauna with respect to human disturbances, particularly the MTHL bridge construction.



## Objectives

1. Estimate the occupancy and abundance of avifauna during pre-construction, construction and post-construction period.
2. Understand the migration pattern and population demographic of the migratory avifauna.
3. Understanding the biological and physicochemical parameters of the foraging grounds of flamingos and waders
4. Study the heavy metal concentration and accumulation in the birds and their food chain
5. Conduct bird conservation training programme for staff involved in construction work of MTHL
6. Study the impact of construction on the foraging habitat (post project monitoring) for suggesting and implementing the restoration measures.



## Methodology

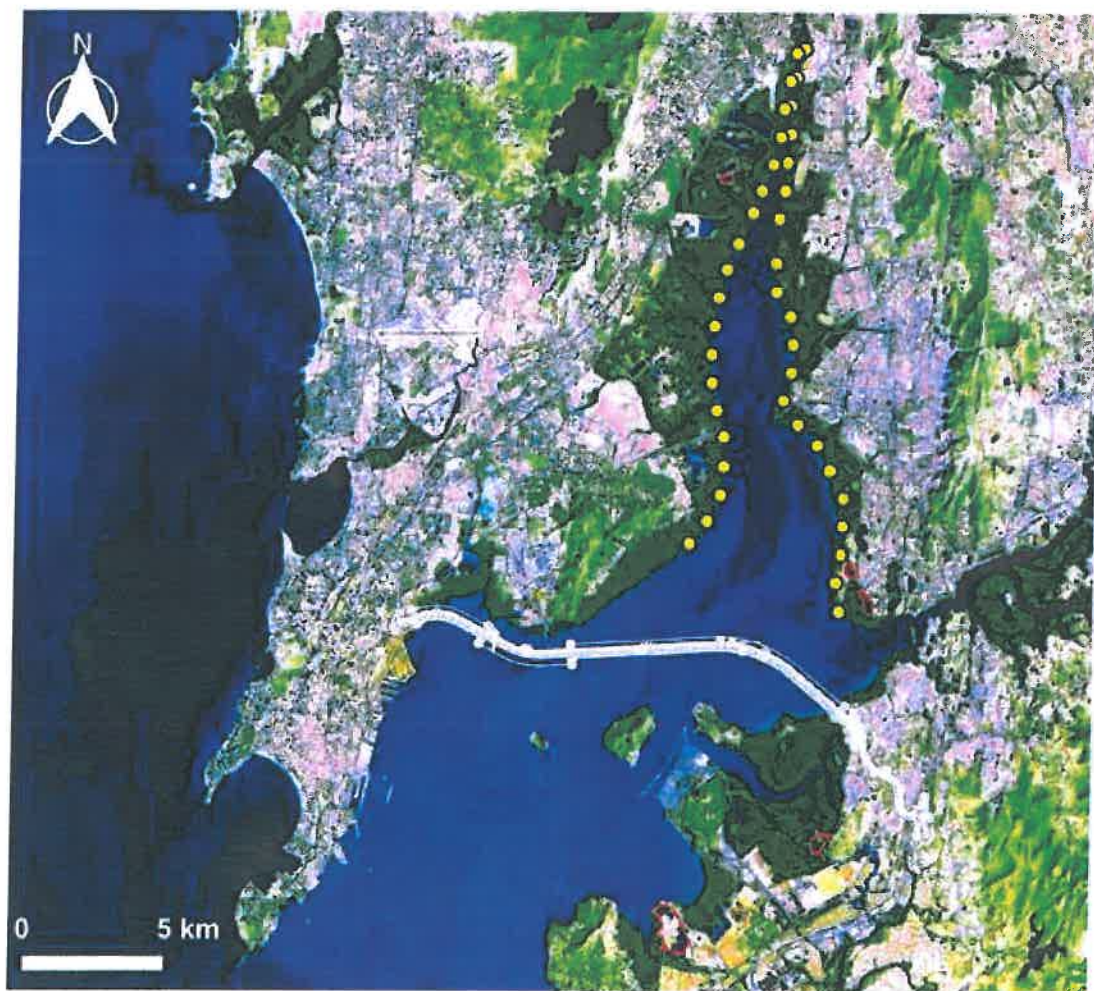
### Study site

This study was carried out in six inland wetlands (high tide roosting sites)— Training Ship Chanakya (TSC), Bhandup Pumping Station (BPS), Non-Residential Indian (NRI) complex, Mankhurd saltpans, Kharghar wetland, and Belpada mangrove and three mudflats (low tide feeding sites) — the east and west banks of Thane Creek, mudflats of Sewri and Nhava-Sheva.

### Bird sampling

We counted shorebirds during high tide at high tide roosting sites following WCS protocol and during low tide at foraging sites following TCS protocol. In addition, flamingos were counted separately during low tide at feeding sites using FCS protocol. We also recorded shorebirds behaviour at roosting, feeding and construction sites. Bird ringing was carried out at high tide roosting sites during high tide (for details of the sampling protocol, please refer to Apte et al. 2018 and 2019 —unpublished reports).

All these surveys were conducted between October 2021 to May 2022. We did not complete some of the surveys in September 2021 and January 2022 due to heavy rain and COVID-19 pandemic respectively.



**Fig. 1. Land use and land cover map of study area with study sites:** Land use and land cover map of the study area was developed using Landsat 8 satellite imagery (January 2018; band combinations = 7, 5 and 3). Wetlands are highlighted with red polygons and the transects with yellow circles. Forest and mangroves appear in shades of green, the darker colour indicates healthy and dense vegetation; urban areas are marked with cyan or purple; and soil colours vary from dark to light brown; moist soils are darker

## Results

### Wetland Count Survey (WCS)

In all, a total of 79 species (51 migrants and 28 residents) of shorebirds were recorded from the wetlands/ high tide roosting sites. Migratory shorebird abundance increased gradually till March followed by a sharp decrease in April and May during return migration (Fig. 2). Overall, maximum number of migratory shorebirds were recorded in March (34014) and only 528 individuals were observed in October (Fig. 2). A considerable amount of variation was observed in the number of resident shorebirds throughout the seasons in which most abundance was recorded in the month of January 2022 (1701) and least in October 2021 (316) (Fig. 3).

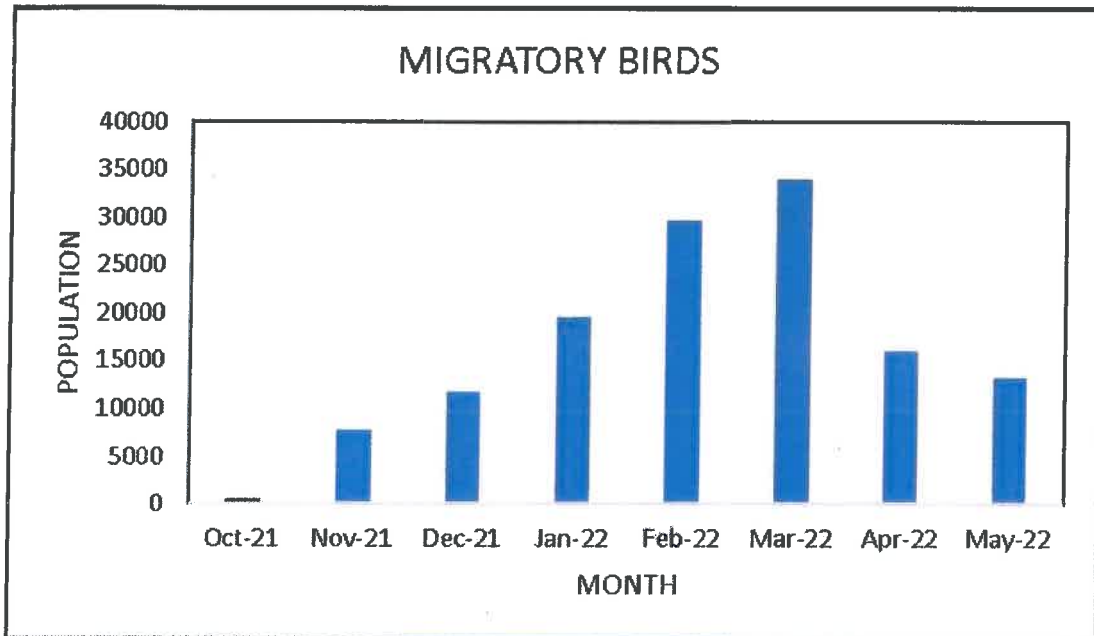


Fig. 2: Migratory shorebird abundance in the wetlands from Oct 21–May 22

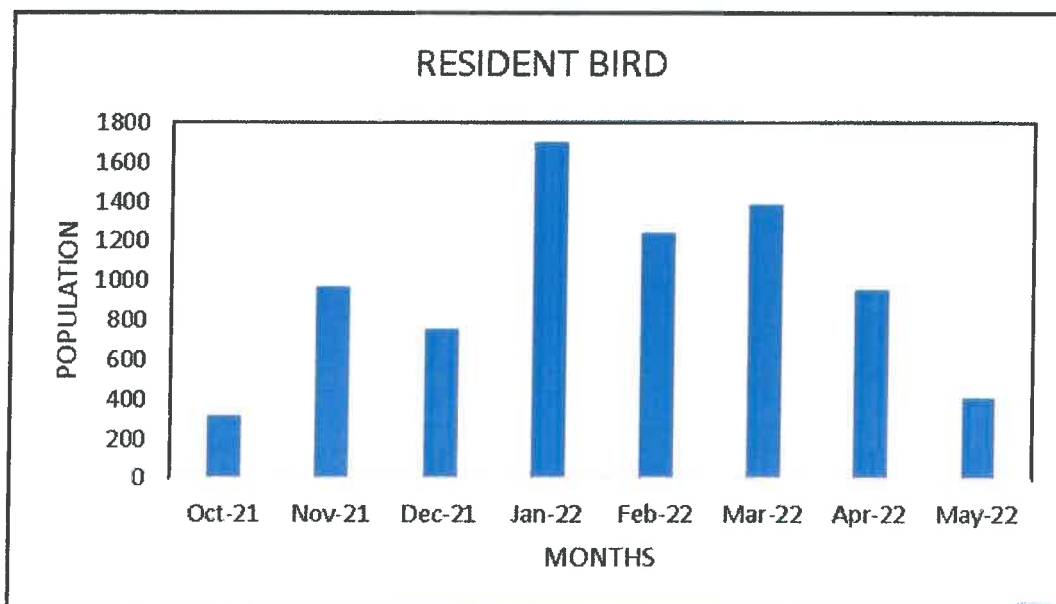


Fig. 3: Resident shorebird abundance in the wetlands Oct 21–May 22





Among all the wetlands, DPS (12075 in March) and Mankhurd (15785 in February) supported a substantially high number of migratory shorebirds, followed by BPS (8234) and TSC (7404) in January 2022. We observed that the overall abundance of shorebirds increased sharply from December till late March and started decreasing steadily (Fig. 4).

As observed in 2020-21, DPS and TSC were the most preferred high-tide roosting sites for Flamingos in 2022 as well. In contrast, BPS and NRI favoured higher number of Greater flamingos than Lesser flamingos

(Table 1). These observations highlight the importance of the network of wetland/high-tide roosting sites in the long run for the conservation of migratory shorebirds.

**Table 1:** Maximum count of Flamingos observed at each wetland from Oct 2021-May 2022.

Site	Lesser flamingo	Greater flamingo
Belpada	0 (November)	1 (November)
BPS	335 (January)	800 (January)
TSC	7500 (May)	135 (February)
NRI	2 (April)	172 (February)
DPS	11800 (March)	120 (March)
Khargar	0 (May)	0 (May)
Mankhurd	0 (May)	0 (May)

We observed temporal variation in species richness across all wetlands from November 2021 to April 2022. The highest species richness was observed in BPS and TSC (29 species at both the wetlands) in January 2022.

We recorded nine Near-threatened and one Endangered (IUCN 2022). species during this study (Table 2).

**Table 2:** Threatened species recorded during wetland survey.

Sr. No.	Threatened species	IUCN status
1	Painted Stork ( <i>Mycteria leucocephala</i> )	NT
2	Lesser Flamingo ( <i>Phoeniconaias minor</i> )	NT
3	Black-headed Ibis ( <i>Threskiornis melanocephalus</i> )	NT
4	Black-tailed Godwit ( <i>Limosa limosa</i> )	NT
5	Eurasian Curlew ( <i>Numenius arquata</i> )	NT
6	Great Knot ( <i>Calidris tenuirostris</i> )	EN
7	Curlew Sandpiper ( <i>Calidris ferruginea</i> )	NT
8	River tern ( <i>Sterna aurantia</i> )	NT
9	Bar-tailed Godwit ( <i>Limosa lapponica</i> )	NT



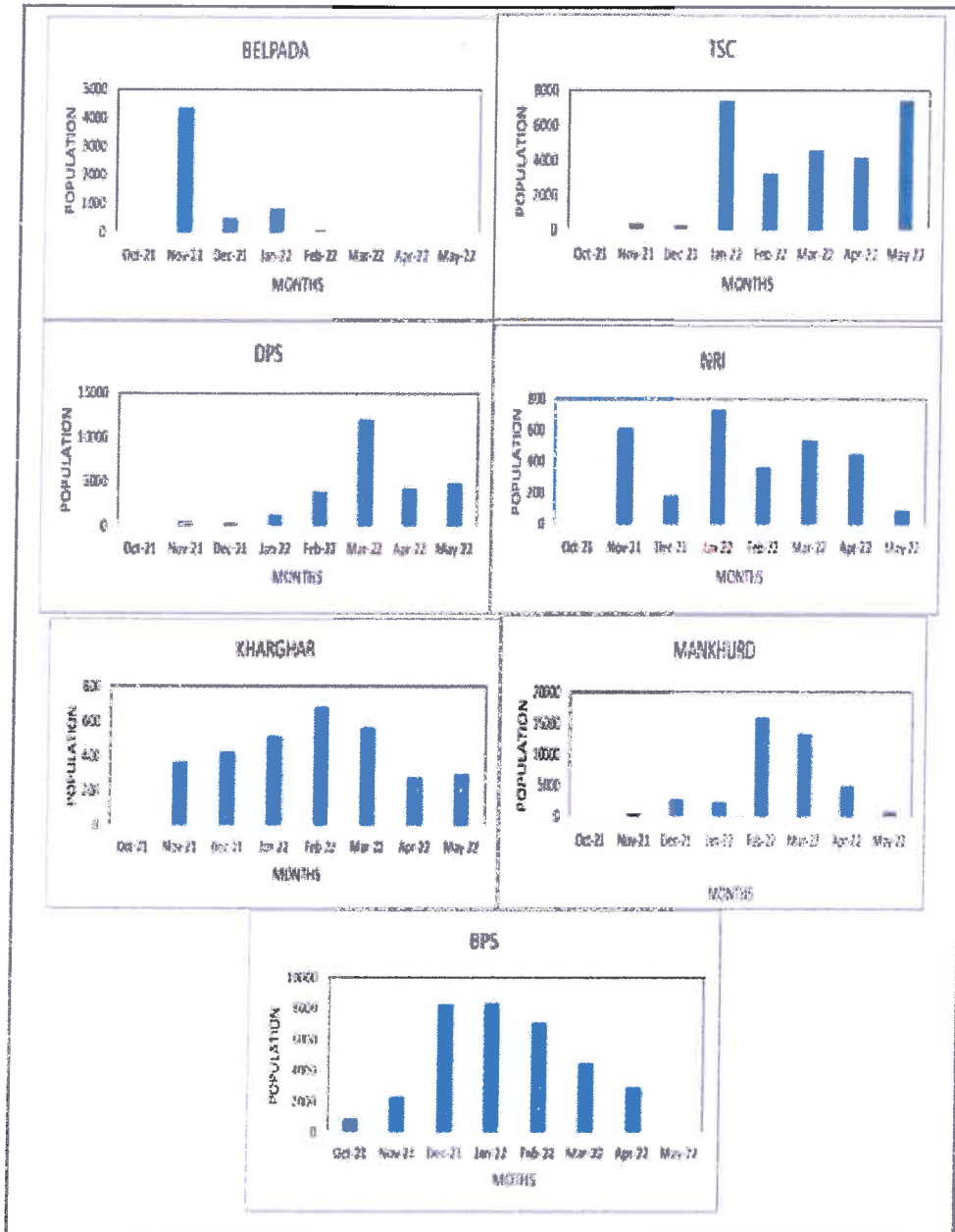


Fig. 4: Site-specific abundance of the shorebirds in the wetlands Oct 21–May 22

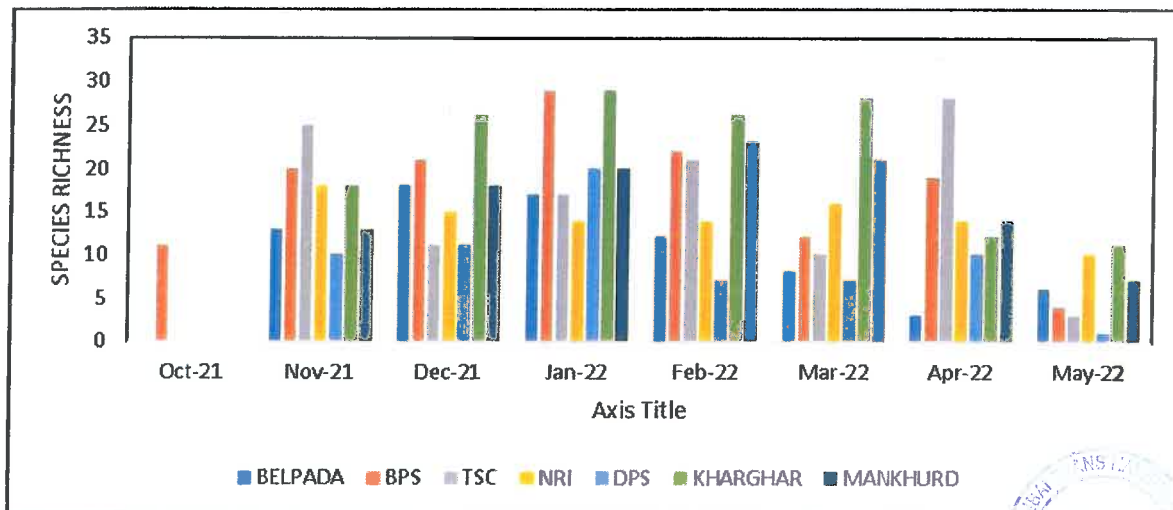


Fig. 5: Species richness of migratory shorebirds in the wetlands Oct 21–May 22



### Transect Count Survey (TCS)

#### Thane Creek

We recorded a total of 65 species of waterbirds and raptors in the creek between October 2021 and May 2022. Among these, 47 species were migratory (43 shorebirds species and 4 raptor species), and 18 were resident birds. Resident bird abundance was relatively lower than that of migratory birds.

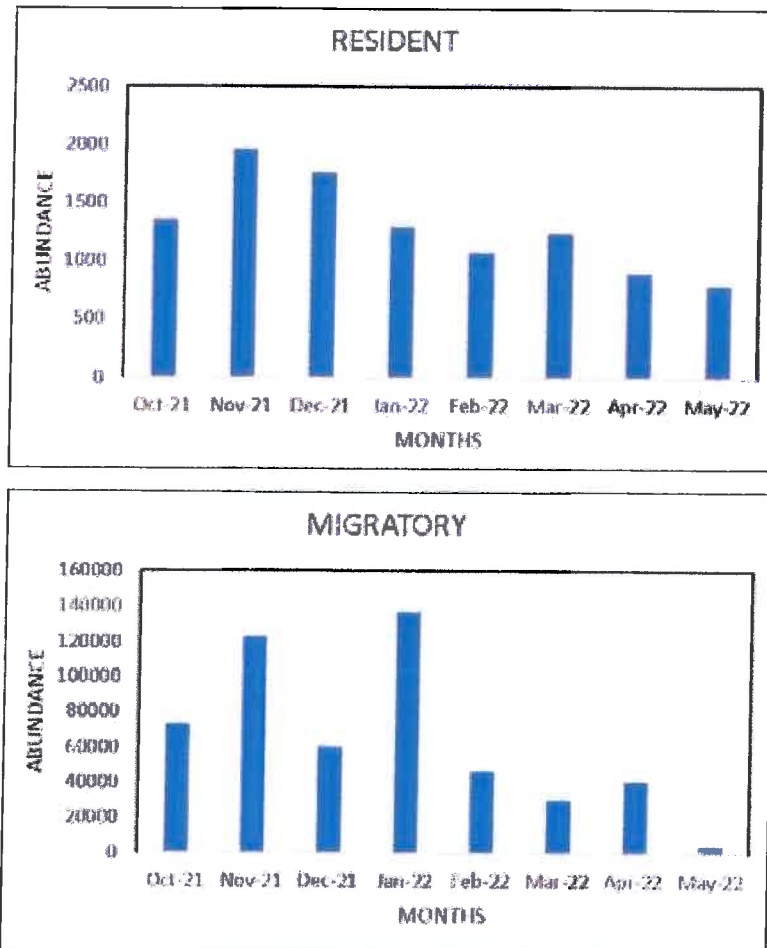


Fig. 6: Abundance of migratory shorebirds and resident birds in the creek Oct 21–May 22

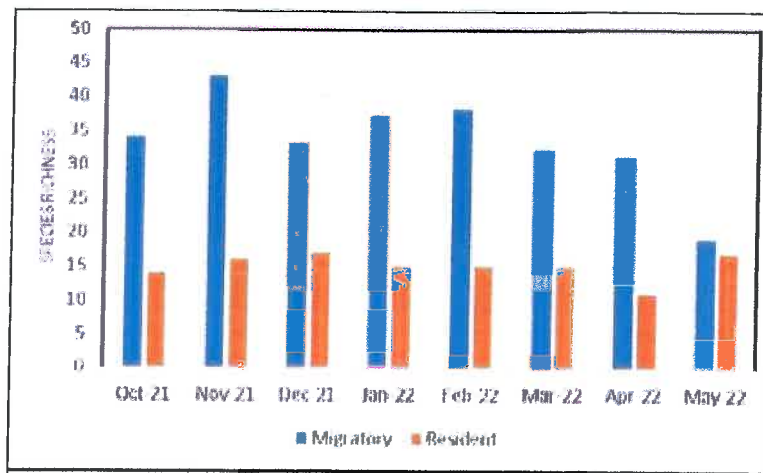


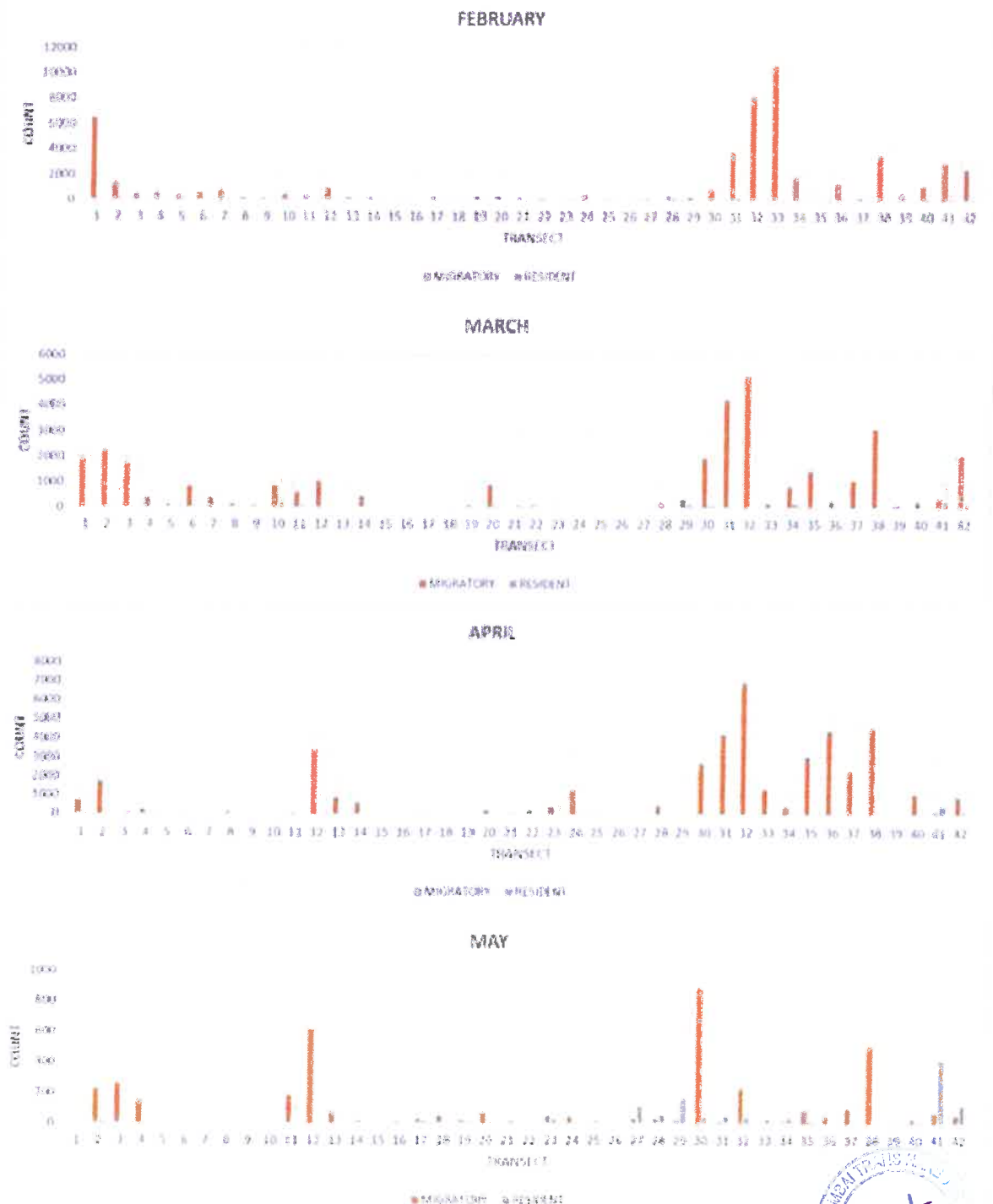
Fig. 7: Species richness of migratory shorebirds and resident birds in the creek Oct 21–May 22



Migratory shorebird population in the creek attained a peak in January (1,37,237 individuals) with a substantial contribution of waders. Most notable was Little Stint (*Calidris minuta*) — a total of 57,201 individuals were observed in November 2021.

Overall, species richness of migratory shorebirds was greater throughout the surveys (mean= 33.38, SD= 6.99) than resident birds (mean= 15, SD= 1.93) (Fig. 7).

A similar spatial distribution pattern was observed in the creek as seen in 2020-21. The largest congregations were found at Ghansoli (T1 and T40) and Vashi (T31-T33 and T36-T39) (Fig. 8). It indicates that the shorebirds have predominantly preferred the east bank of the creek over the years.



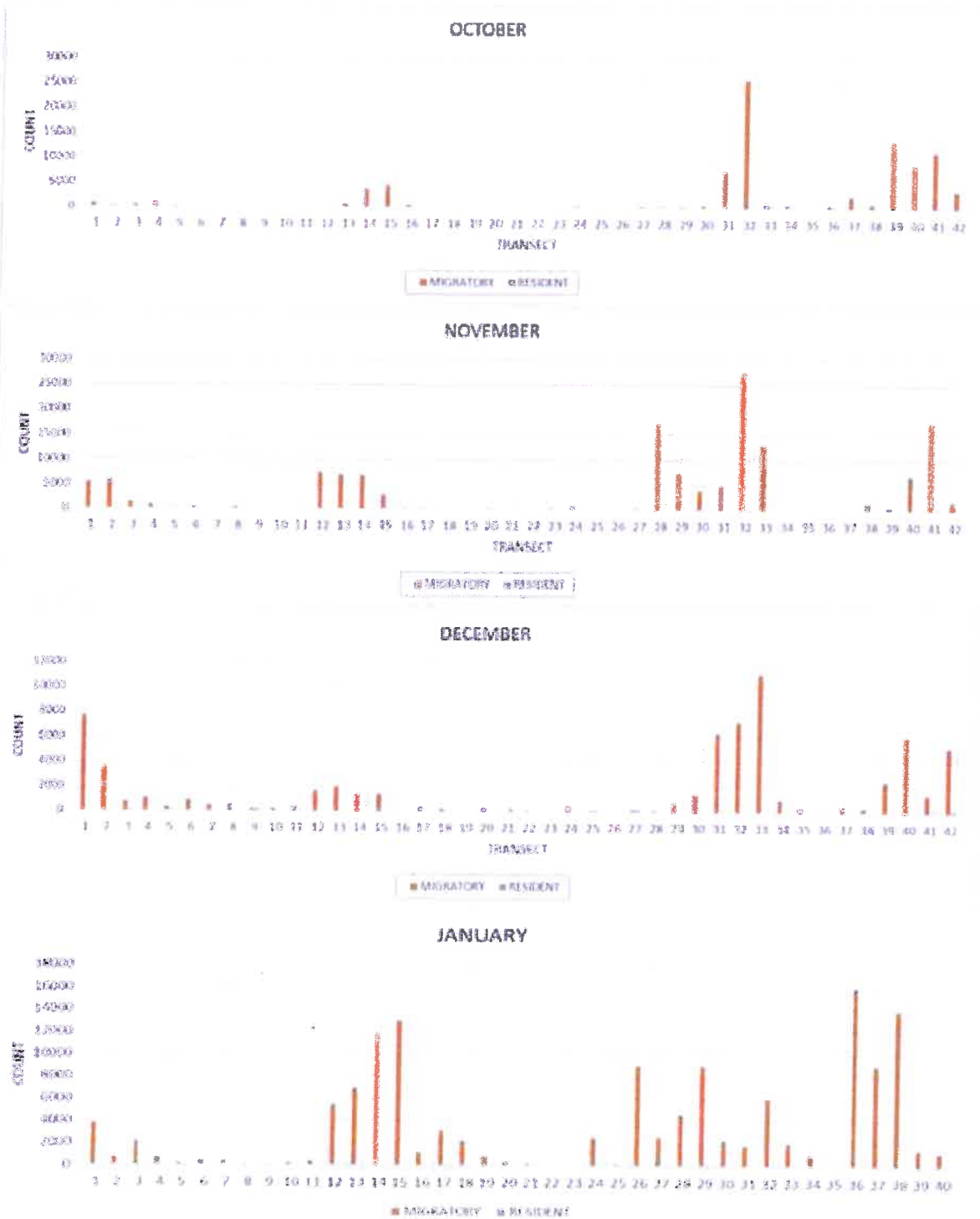


Fig. 8: Abundance of migratory and resident birds in Thane Creek, and Sewri and Nhava-Sheva mudflats Oct 21–May 22

Migratory shorebird counts were highest in November 2021 at Sewri (17456) and December 2021 at Nhava-Sheva (5171) mudflats, and thereafter the numbers declined gradually (Fig. 9).

The number of species at Sewri was highest in December (18), whereas only 14 species were recorded at Nhava-Sheva. The species richness of resident birds remained rather steady throughout the seasons (Fig. 10). We could not conduct bird surveys at construction sites during January month as these sites were prohibited due to Covid - 19 pandemic norms.



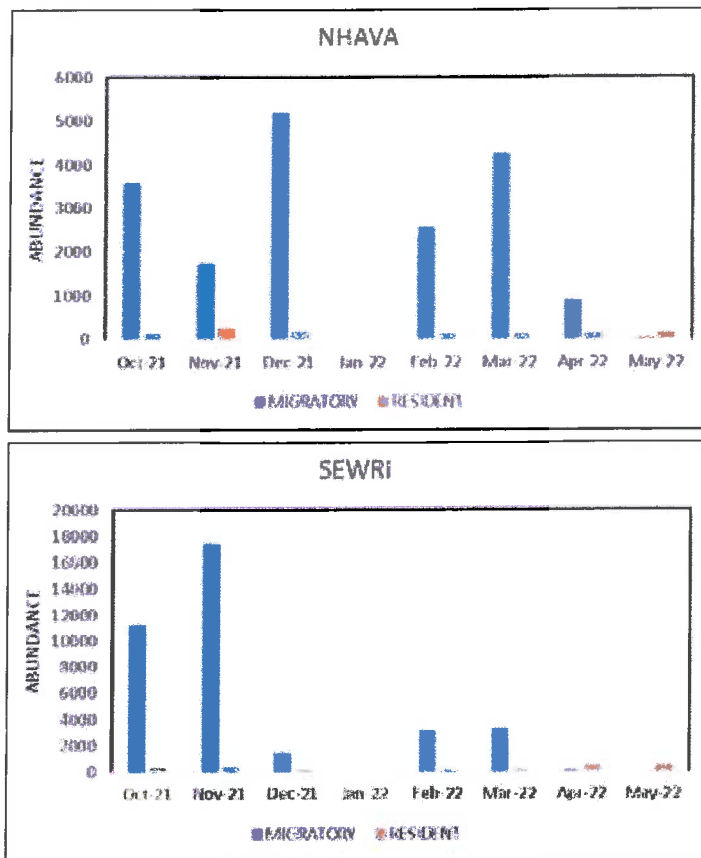


Fig. 9: Abundance of migratory and resident birds at Sewri and Nhava-Sheva mudflats Oct 21-May 22

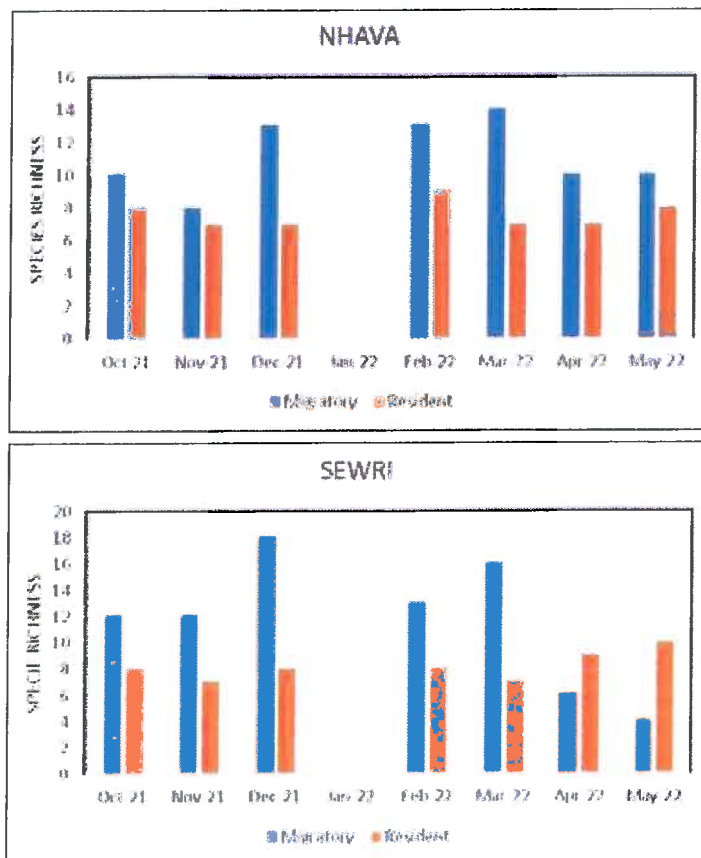


Fig. 10: Species richness at Sewri and Nhava-Sheva mudflats Oct 21-May 22



## Flamingo Count Survey (FCS)

### Abundance of flamingos in the Creek

The highest number of Lesser flamingos were estimated in April 2022 (81970) and the lowest in October (25) and November (44) 2021. The lesser flamingo population increased gradually from December 2021 (16422) to April 2022, but the number reduced to almost half in May 2022 (48360) (Fig.11). In April 2022, the number of adult lesser flamingos (73.6%) were substantially higher than that of juvenile (11.8%) and subadult (14.6%) population.

In contrast to previous years, Greater flamingos returned in superior numbers in 2022. The lowest number of individuals were recorded in the month of October 2021 (6015) which was still higher than the numbers estimated in the previous year. Maximum population of Greater flamingos occupied the creek in January 2022 (49755) (Fig. 12).

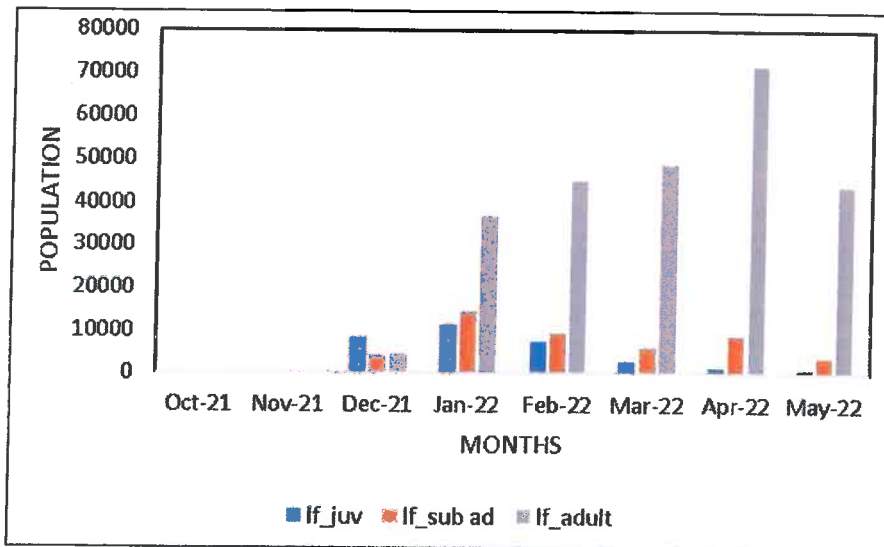


Fig. 11: Population of Lesser Flamingos recorded from Thane Creek Oct. 21–May 22

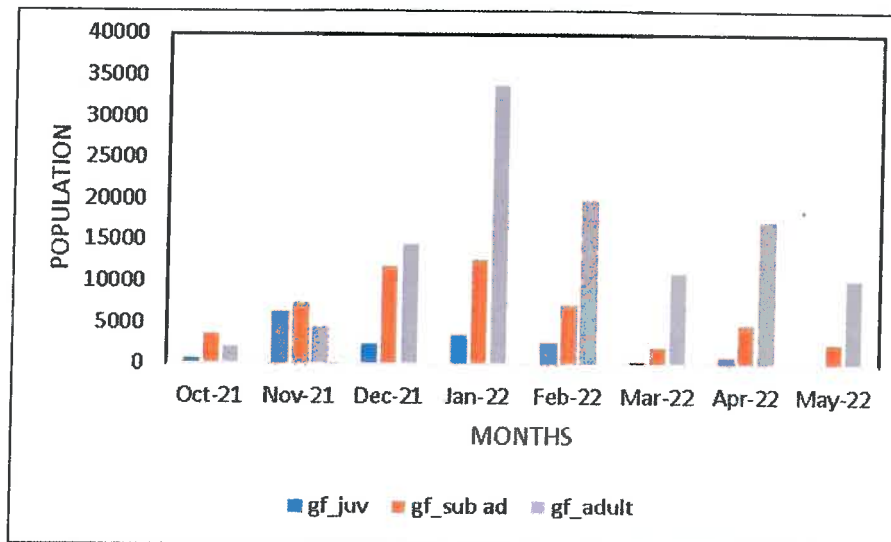


Fig. 12: Population of Greater Flamingos recorded from Thane Creek Oct. 21–May 22



The behavioural study of Lesser flamingo *Phoeniconaias minor* for season (September 2022 to May 2022) was analysed (Fig. 16) separately for three sites respectively i.e., construction site, feeding site, and roosting sites. Feeding activity was recorded highest in the construction site (88.91%). Movement activity was highest in construction site (89.76%) followed by that in feeding site (88.98%) whereas resting activity was markedly higher in the roosting site (23.40%). Maintenance and vigilance aspects were highest in the roosting site respectively (22.84%, 7.98%.) followed by that in feeding site (5.072%). Frequency of vehicles were prominently higher in Construction sites (9.07%) followed by that in roosting sites (0.40%). Construction activity was only found in the construction sites (1.64%). Other peoples were recorded more frequently in the construction sites (11.24%). Aggression behaviour was higher at construction site (0.08%) followed by that in feeding site (0.01%). Birdwatchers were major disturbances at all the roosting sites (7.01%).

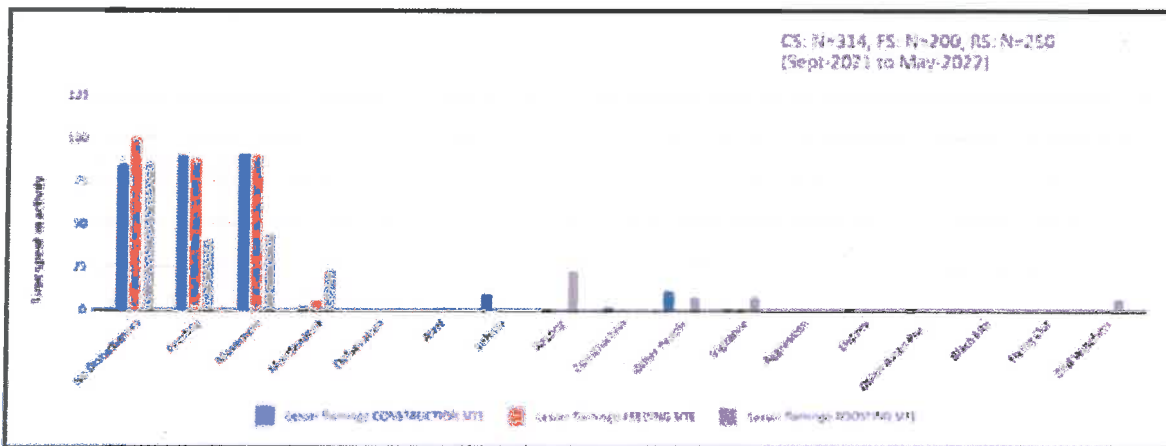


Fig. 16: Activity budget of Lesser flamingo at feeding, roosting and construction site

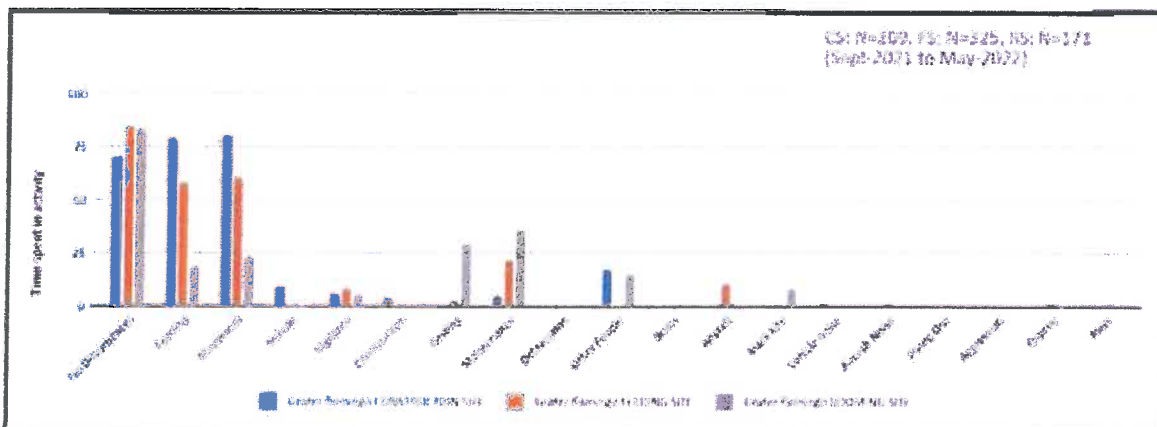


Fig. 17: Activity budget of Greater flamingo at feeding, roosting and construction site

The behavioural study of Greater flamingo *Phoenicopterus roseus* for season (September 2022 to May 2022) analysed (Fig. 17) separately for all the sites. Frequency of no disturbance was higher in feeding site (85.25%) followed by that in roosting site (83.88%). Movement was highest in construction site (80.09%) followed by feeding site (60.61%). Vehicles were highest in construction site (9.52%) followed by that in feeding site (0.46%). Vigilance was highest in feeding site (8.62%) followed construction site (5.88%). Resting activity was prominently higher in roosting site (29.38%) followed by feeding site (2.56%). Maintenance was highest in the roosting site (36.58%) followed by that in feeding site (21.06%).





## Bird ringing

We ringed and flagged migratory shorebirds in 82 trapping sessions conducted from October 2021 to September 2022 at high tide roosting sites, viz, TSC, BPS saltpan, BPS mangrove, Ghatkopar Pumping Station and Mankhurd. In total, 8296 shorebirds (waders) were ringed and flagged. (Table 4 and 5).

**Table 4: Species wise ringing details Oct 21-May 22**

Sl. No.	Scientific Names	Common Names	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	Total
1	<i>Himantopus himantopus</i>	Black winged stilt	0	0	0	0	0	3	1	4
2	<i>Limosa limosa</i>	Black-tailed godwit	5	0	0	6	5	5	0	21
3	<i>Calidris falcinellus</i>	Broad-billed sandpiper	17	75	19	47	14	36	16	224
4	<i>Gallinago gallinago</i>	Common snipe	0	0	1	1	0	0	0	2
5	<i>Anas crecca</i>	Common teal	2	0	0	2	0	0	0	4
6	<i>Tringa nebularia</i>	Common greenshank	9	0	1	7	2	19	4	42
7	<i>Tringa totanus</i>	Common redshank	179	43	96	209	147	149	17	840
8	<i>Actitis hypoleucos</i>	Common sandpiper	31	26	12	10	6	12	15	112
9	<i>Calidris ferruginea</i>	Curlew sandpiper	161	246	205	237	241	298	277	1665
10	<i>Calidris alpina</i>	Dunlin	26	107	65	63	70	23	2	356
11	<i>Numenius arquata</i>	Eurasian curlew	1	0	0	1	0	3	0	5
12	<i>Calidris tenuirostris</i>	Great knot	0	2	3	3	0	0	0	8
13	<i>Phoenicopterus roseus</i>	Greater flamingo	0	0	0	2	1	1	1	5
14	<i>Rostratula benghalensis</i>	Greater painted snipe	0	0	0	0	0	0	1	1
15	<i>Charadrius leschenaultii</i>	Greater sand plover	1	1	0	2	3	1	0	8
16	<i>Tringa ochropus</i>	Green sandpiper	1	0	0	0	0	1	0	2
17	<i>Pluvialis squatarola</i>	Grey plover	0	2	4	1	3	1	3	14
18	<i>Phalacrocorax fuscicollis</i>	Indian cormorant	1	0	0	0	2	0	0	3
19	<i>Charadrius alexandrinus</i>	Kentish plover	0	3	2	1	3	0	0	9
20	<i>Phoeniconaias minor</i>	Lesser flamingo	0	0	0	0	12	18	1	31
21	<i>Charadrius mongolus</i>	Lesser sand plover	236	509	537	271	413	220	191	2377
22	<i>Charadrius dubius</i>	Little ringed plover	1	1	2	0	0	0	0	4
23	<i>Calidris minuta</i>	Little stint	375	232	154	153	272	182	311	1679
24	<i>Sternula albifrons</i>	Little tern	0	0	60	18	26	25	36	165
25	<i>Tringa stagnatilis</i>	Marsh sandpiper	5	1	7	11	14	36	6	80
26	<i>Spatula clypeata</i>	Northern shoveler	0	2	1	0	0	0	0	3
27	<i>Pluvialis fulva</i>	Pacific golden plover	0	0	0	5	1	1	2	9

**Table 4: Species wise ringing details Oct 21-May 22 (contd.)**

Sl. No.	Scientific Names	Common Names	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	Total
28	<i>Calidris canutus</i>	Red knot	0	0	0	1	0	0	0	1
29	<i>Vanellus indicus</i>	Red-wattled lapwing	2	0	0	0	0	0	0	2
30	<i>Areneria interpres</i>	Ruddy turnstone	2	1	0	0	1	4	3	11
31	<i>Calidris pugnax</i>	Ruff	1	0	0	0	0	0	0	1
32	<i>Sternula saundersi</i>	Saunders's tern	0	14	53	54	3	11	10	145
33	<i>larus genei</i>	Slender billed gull	0	0	0	0	1	0	0	1
34	<i>Tringa erythropus</i>	Spotted redshank	0	0	0	0	0	0	1	1
35	<i>Calidris temminckii</i>	Temminck's stint	13	12	0	0	0	3	0	28
36	<i>Xenus cinereus</i>	Terek sandpiper	26	37	63	28	17	18	61	250
37	<i>Numenius phaeopus</i>	Whimbrel	0	1	0	0	0	2	0	3
38	<i>Chlidonias hybrida</i>	Whiskered tern	0	44	0	0	0	0	0	44
39	<i>Tringa glareola</i>	Wood sandpiper	10	3	14	11	7	34	57	136
	<b>Total</b>		<b>1105</b>	<b>1362</b>	<b>1299</b>	<b>1144</b>	<b>1264</b>	<b>1106</b>	<b>1016</b>	<b>8296</b>

**Table 5: Species wise recapture detail**

Sl. No.	Scientific Names	Common Names	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
1	<i>Calidris falcinellus</i>	Broad-billed sandpiper	0	2	0	3	1	1	4	11
2	<i>Tringa nebularia</i>	Common greenshank	0	0	0	0	0	1	0	1
3	<i>Tringa totanus</i>	Common redshank	47	1	10	57	45	79	14	253
4	<i>Actitis hypoleucos</i>	Common sandpiper	0	4	0	2	5	0	3	14
5	<i>Calidris ferruginea</i>	Curlew sandpiper	11	10	10	26	23	36	43	159
6	<i>Calidris alpina</i>	Dunlin	0	1	4	6	2	3	1	17
7	<i>Calidris tenuirostris</i>	Great knot	0	0	1	0	0	0	0	1
8	<i>Charadrius leschenaultii</i>	Greater sand plover	0	0	0	0	0	1	0	1
9	<i>Pluvialis squatarola</i>	Grey plover	0	0	0	1	0	0	0	1
10	<i>Charadrius mongolus</i>	Lesser sand plover	10	10	21	15	37	19	25	137
11	<i>Calidris minuta</i>	Little stint	16	2	3	3	7	3	10	44
12	<i>Sternula albifrons</i>	Little tern	0	0	0	0	1	1	1	3
13	<i>Tringa stagnatilis</i>	Marsh sandpiper	0	1	1	0	0	1	0	3
14	<i>Pluvialis fulva</i>	Pacific golden plover	0	0	0	0	0	0	1	1
15	<i>Areneria interpres</i>	Ruddy turnstone	0	0	1	0	0	0	0	1
16	<i>Sternula saundersi</i>	Saunders's tern	0	0	3	2		2	2	9

**Table 5:** Species wise recapture detail (contd.)

Sl. No.	Scientific Names	Common Names	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
17	<i>Xenus cinereus</i>	Terek sandpiper	2	7	5	4	8	6	24	56
18	<i>Tringa glareola</i>	Wood sandpiper	0	0	1	0	0	1	3	5
<b>Total</b>			<b>86</b>	<b>38</b>	<b>60</b>	<b>119</b>	<b>129</b>	<b>154</b>	<b>131</b>	<b>717</b>

**Table 6:** Species wise resighting details from Oct 2021–Apr 2022

Sl. No.	Scientific Names	Common Names	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
1	<i>Himantopus himantopus</i>	Black winged stilt	0	0	0	0	0	1	0	1
2	<i>Limosa limosa</i>	Black-tailed godwit	0	1	1	0	7	24	10	43
3	<i>Calidris falcinellus</i>	Broad-billed sandpiper	0	1	4	0	0	3	0	8
4	<i>Tringa nebularia</i>	Common greenshank	0	9	5	1	1	1	1	18
5	<i>Tringa totanus</i>	Common redshank	30	38	40	6	35	58	8	215
6	<i>Actitis hypoleucos</i>	Common sandpiper	0	0	0	1	0	1	0	2
7	<i>Calidris ferruginea</i>	Curlew sandpiper	22	35	81	2	23	52	36	251
8	<i>Calidris alpina</i>	Dunlin	0	0	13	2	2	9	1	27
9	<i>Phoenicopterus roseus</i>	Greater flamingo	0	0	0	0	0	1	0	1
10	<i>Charadrius leschenaultii</i>	Greater sand plover	0	0	0	0	1	3	0	4
11	<i>Pluvialis squatarola</i>	Grey plover	1	1	1	0	3	10	9	25
12	<i>Phoeniconaias minor</i>	Lesser flamingo	0	0	0	0	3	0	0	3
13	<i>Charadrius mongolus</i>	Lesser sand plover	17	28	39	2	25	212	45	368
14	<i>Charadrius dubius</i>	Little ringed plover	0	0	0	2	0	0	0	2
15	<i>Calidris minuta</i>	Little stint	15	13	37	2	6	21	12	106
16	<i>Tringa stagnatilis</i>	Marsh sandpiper	0	1	5	1	16	26	0	49
17	<i>Pluvialis fulva</i>	Pacific golden plover	0	0	0	0	0	0	1	1
18	<i>Areneria interpres</i>	Ruddy turnstone	4	0	3	0	0	0	0	7
19	<i>Xenus cinereus</i>	Terek sandpiper	0	1	2	1	4	3	1	12
20	<i>Tringa glareola</i>	Wood sandpiper	0	0	2	2	1	0	0	5
<b>Total</b>			<b>89</b>	<b>128</b>	<b>233</b>	<b>22</b>	<b>127</b>	<b>425</b>	<b>124</b>	<b>1148</b>

A total of 1148 birds were resighted throughout the seasons and maximum number of birds were resighted in March 2022 (425). We also received a few international resighting of birds tagged in our study area again in 2021-22. A Curlew sandpiper (2CF) and a Common redshank (1U9) were resighted in Central Mongolia and Altai regions of Russia, respectively.



### Satellite telemetry

We tagged three Lesser flamingo and three greater flamingos with GSM GPS tags and one Black-tailed Godwit with GSM nano radio tag during the year 2021-22. Black-tailed Godwit named as BALA was the first wader species to be satellite tracked from India for its migratory path. The bird gave us crucial data on its stopover sites along its migratory path.

Bala travelled about 5000 km in 47 days (24<sup>th</sup> March to 11<sup>th</sup> June) to reach the breeding site(s) in Southwestern Siberia, Russia. It used several staging and stopover sites during northward migration and crossed six countries: Pakistan, Afghanistan, Turkmenistan, Uzbekistan, Kazakhstan and Tajikistan. In contrast, southward migration was quick — Bala took just five days (17<sup>th</sup> to 21<sup>st</sup> July) to cover a distance of 4200 km to reach Thane Creek through a few brief stops. (Fig. 18).

Five out of six tagged Flamingos moved to Gujrat in the month of July 2022 and since then they are not in network area and hence have not yet responded, we hope they will give us more data on their breeding sites once they are back in network. (Figs 19 and 20)

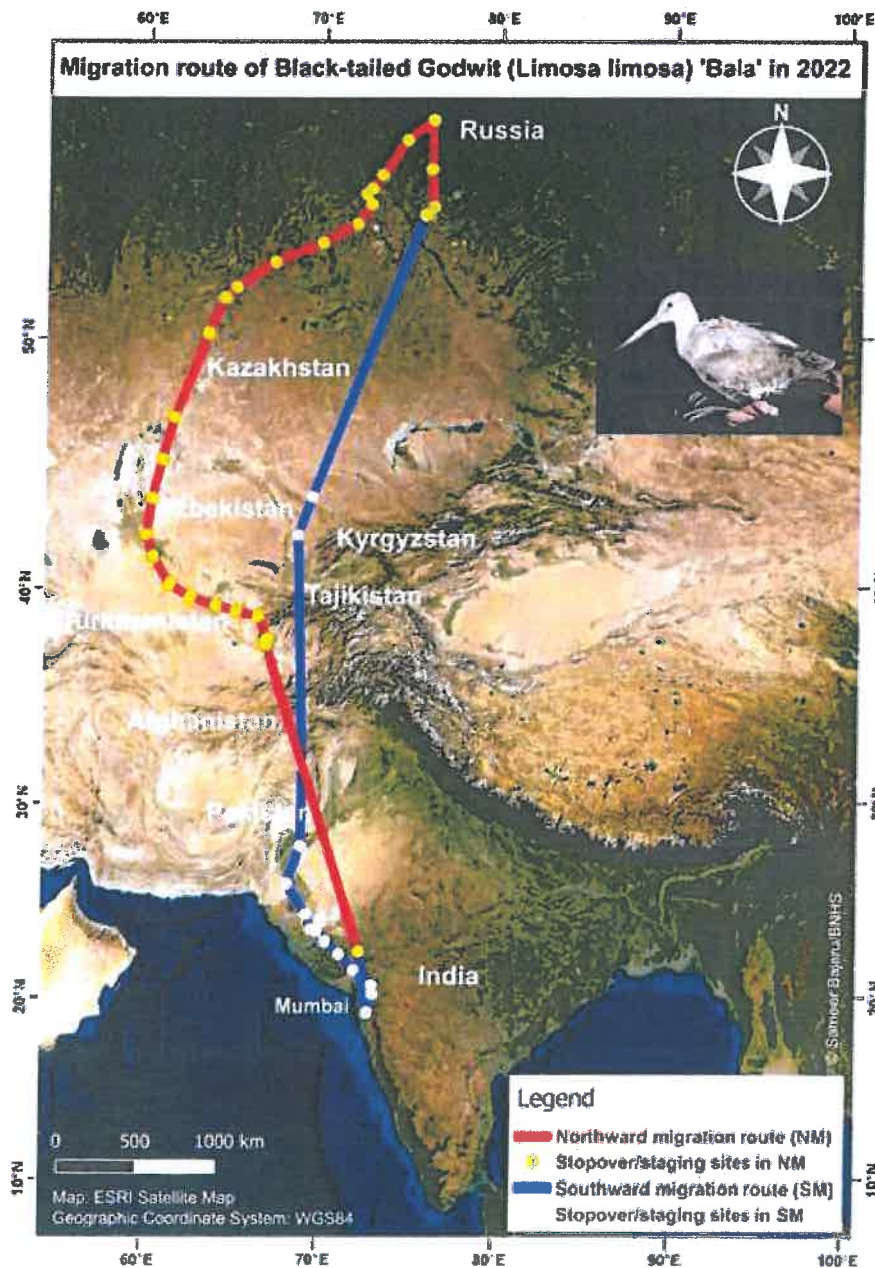


Fig. 18: Complete migration route of Black—tailed godwit “Bala”



Figs 19A and B: Sub-adult "Lester" and juvenile "McCann" Greater flamingo's migration route to Gujarat



For better representation in the report, Creek was divided into two banks- East and West Bank. Sampled transects are combined into eight clusters (E I, E II, E III, E IV, E V, EW I, W I, W II, W III and W IV) to study the macrobenthic distribution pattern. (Table 7).

**Table 7:** Grouping of transects into clusters for data representation

Bank	Transects
East Bank: E I	1,2,3,4
E II	38, 39, 40
E III	35, 36, 37
E IV	31, 32, 33, 34
E V	27,28,29,30
East West Bank: EW I	5,8,9,10
West Bank: W I	11,12,13
W II	14, 15, 16, 17
W III	18, 19, 20, 21
W IV	22, 23, 24, 25

## Observations:

### Thane Creek

Overall macrobenthic density and biomass recorded from Thane creek in present studies was ( $104171.67/m^3$ ,  $1508.78g/m^3$ ). During the entire study period, it was observed that the total macrobenthic density and biomass of East bank was ( $58030.38/m^3$ ,  $961.78g/m^3$ ), East-West bank was ( $1602.46/m^3$ ,  $0.389g/m^3$ ) and West bank exhibited ( $44541.82/m^3$ ,  $546.52g/m^3$ ). 20 benthic groups were observed along the Thane Creek, Sewri, Nhava and wetlands. Polychaete, Oligochaete, Bivalve, Gastropod, Phoronida and Anthozoa were the major contributors to the macrobenthic composition.

### East Bank

In the entire study period, the Post-monsoon season exhibited maximum macrobenthic density and biomass along the clusters E I ( $5715.01/m^3$ ,  $117.71g/m^3$ ), E II ( $13748.75/m^3$ ,  $203.41g/m^3$ ), E III ( $8607.09/m^3$ ,  $527.0g/m^3$ ) E IV ( $6404.06/m^3$ ,  $136.56g/m^3$ ) and E V ( $1928.45/m^3$ ,  $4.31g/m^3$ ). The Pre-monsoon season exhibited the least density and biomass at all the clusters: E I ( $2423.14/m^3$ ,  $0.97g/m^3$ ), E II ( $5197.00/m^3$ ,  $12.07g/m^3$ ), E III ( $8168.00/m^3$ ,  $12.46g/m^3$ ) E IV ( $4405.00/m^3$ ,  $42.98g/m^3$ ) and E V ( $1433.57/m^3$ ,  $5.84g/m^3$ ). The highest values of density were observed during Post-monsoon season for cluster E II ( $13748.75/m^3$ ), whereas least values were observed during Pre-monsoon season for cluster E V ( $1433.57/m^3$ ). The highest biomass was observed in cluster E III during Post-monsoon season ( $527.00g/m^3$ ) Lowest biomass was noted in E I during Pre-monsoon season ( $0.97g/m^3$ ). Polychaete was the most dominating group both density and biomass wise along all the clusters followed by Bivalve, Gastropod Nematode, Phoronida and Brachyura during Post-monsoon.

### E I (Fig.21.1-21.4)

There has been a significant decrease in macrobenthic density and biomass from Post-monsoon season ( $5715.01/m^3$ ,  $117.71g/m^3$ ) to Pre-monsoon season ( $2423.14/m^3$ ,  $0.97g/m^3$ ). Along the cluster, 5 invertebrate phyla were recorded. It was observed that the overall biomass of macrobenthos was higher in the Post-monsoon season ( $9.23g/m^3$ ) than that of the Pre-monsoon season ( $0.32g/m^3$ ).

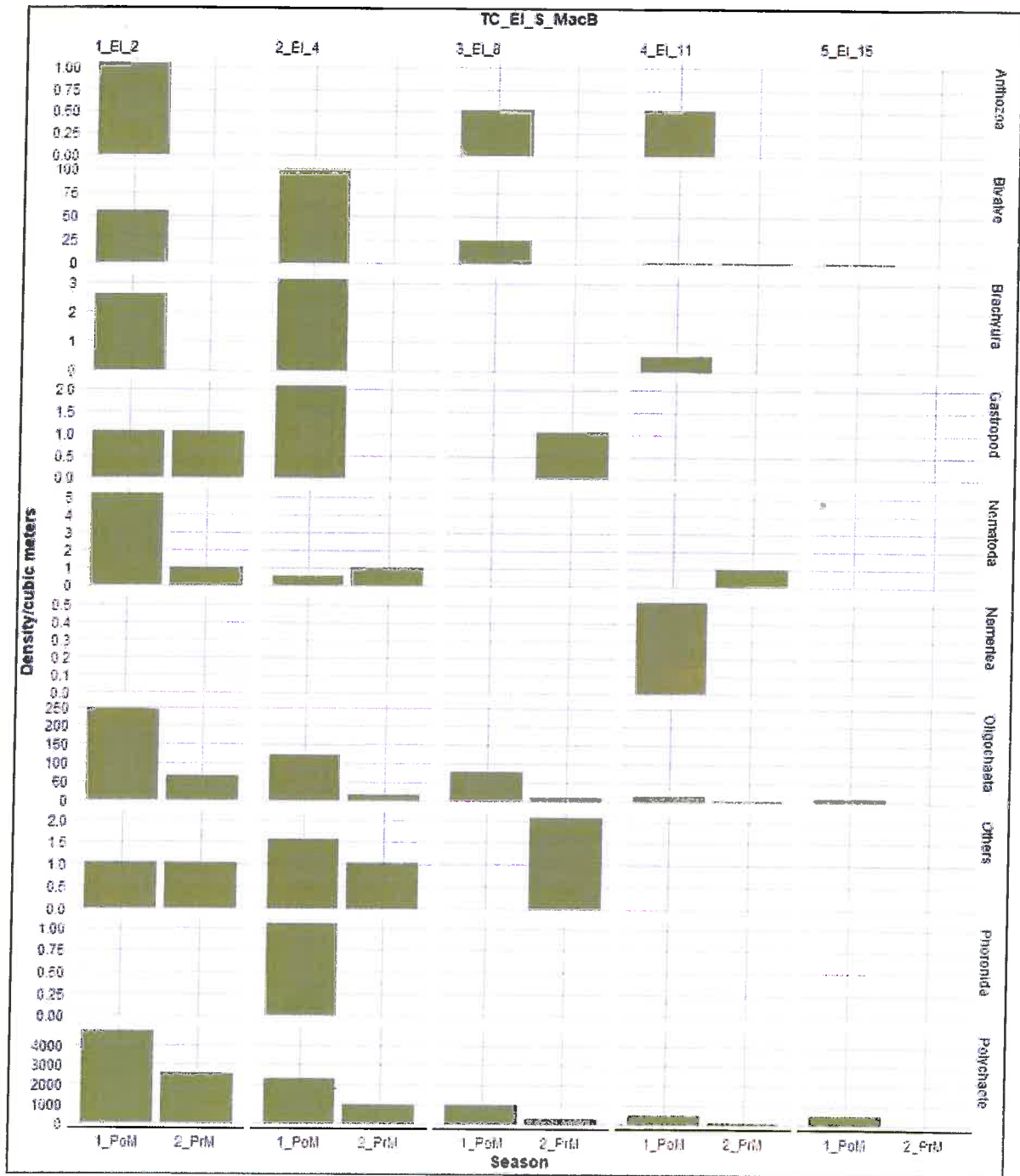


Fig. 21.1: Vertical stratification of macro-benthic density/m<sup>3</sup> in the intertidal mudflats of EI cluster of Thane creek during the study period 2021-22

**Vertical stratification**

The upper stratum 0-2cm depicts the maximum Polychaete density (4592.7/m<sup>3</sup>) followed by Oligochaetes (880.20/m<sup>3</sup>) during the Post-monsoon season.

Brachyura was seen only during Post-monsoon season occupying the upper 0-2 cm stratum. During Post-monsoon season, the highest group diversity was noted within the upper stratum 0-2cm (8 No). Anthozoans were observed during Post-monsoon season up to the upper 8cm. Polychaetes were present within the entire vertical column of 15 cm. Phoronida, Brachyura, Anthozoa, Nemertea were completely absent during the Pre-monsoon months.



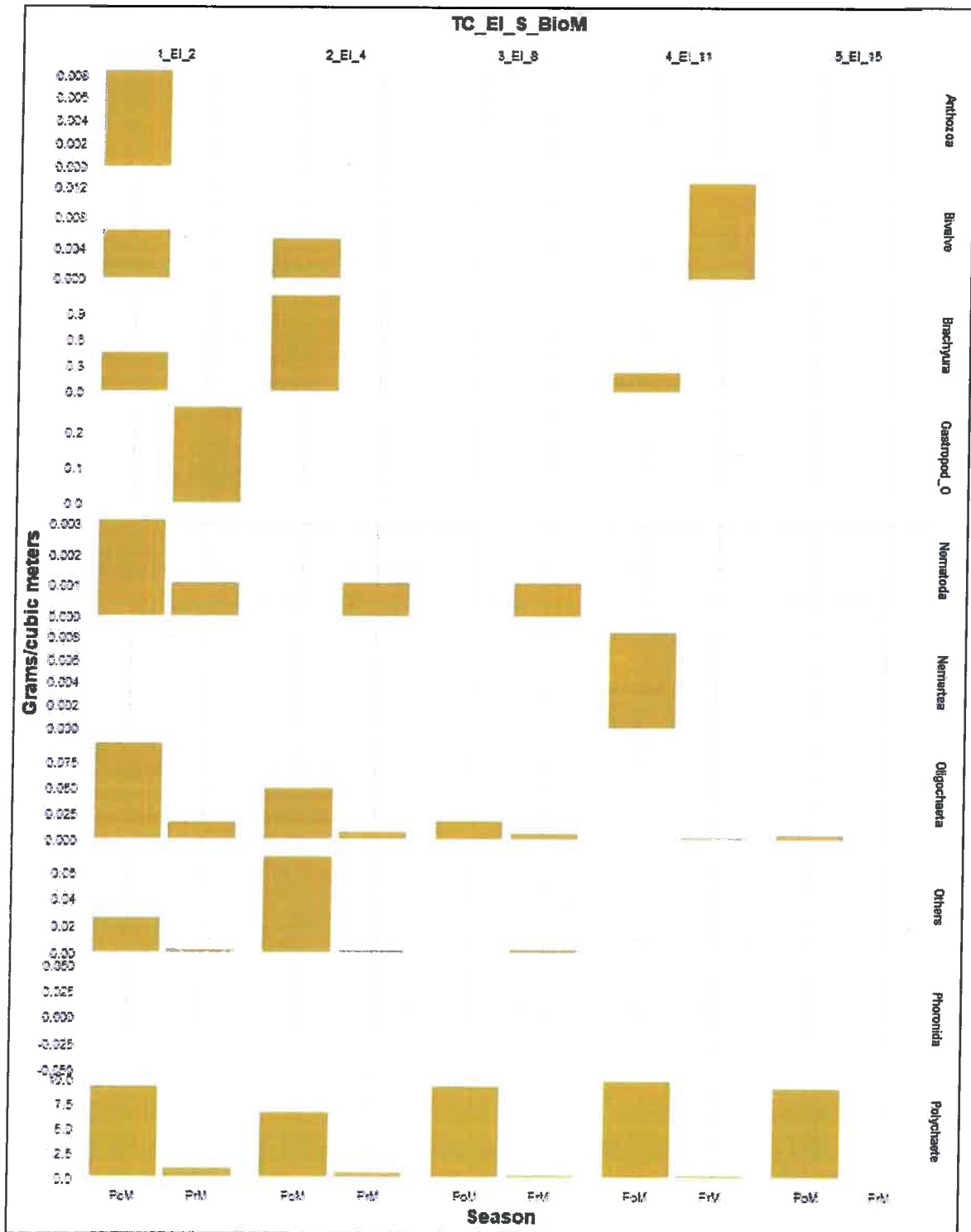
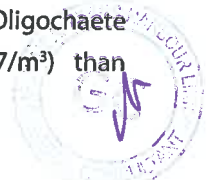


Fig. 21.2: Vertical stratification of macro-benthic biomass g/m<sup>3</sup> in the intertidal mudflats of EI cluster of Thane creek during the study period 2021-22

In the Pre-monsoon season, Crustacean larvae contribute the least to overall biomass (0.02g/m<sup>3</sup>), followed by Oligochaetes (0.03g/m<sup>3</sup>), while in the Post-monsoon season, Polychaete contributes the most (26.27g/m<sup>3</sup>), followed by Brachyura (1.06g/m<sup>3</sup>).

Polychaete (0.26g/m<sup>3</sup>) shows the highest biomass followed by Gastropoda (0.05g/m<sup>3</sup>) and Oligochaete (0.01g/m<sup>3</sup>). It has been observed that Post-monsoon shows significantly higher biomass (9.17/m<sup>3</sup>) than that of the Pre-monsoon season across all the strata (0.32/m<sup>3</sup>).





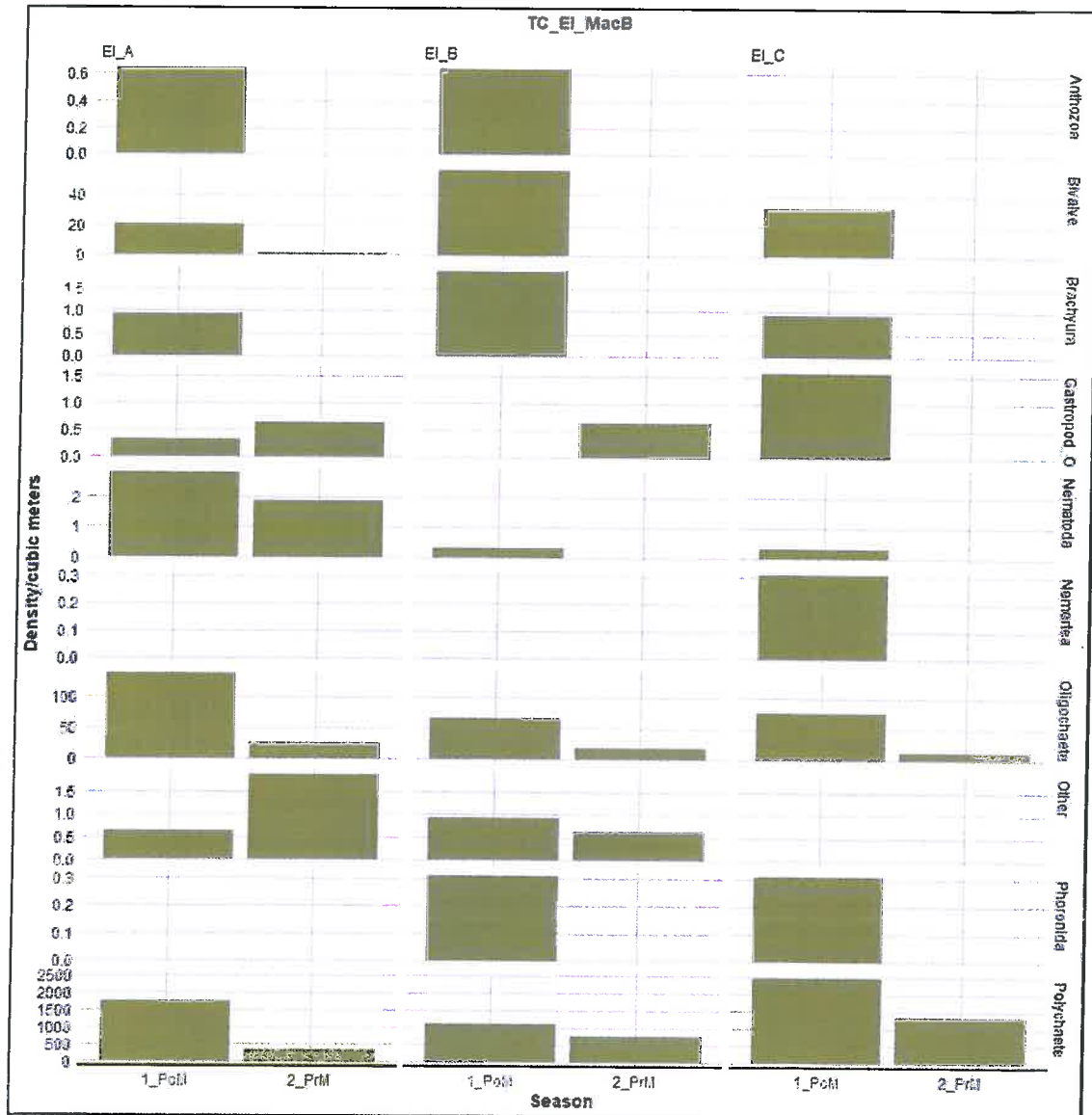


Fig. 21.3: Zonal variation of macrobenthic density/ m<sup>3</sup> in the intertidal mudflats of EI cluster of Thane creek during 2021-22

**Intertidal zonation:**

During the Post-monsoon season, Zone C had exhibited the highest macrobenthic density (2574.06/m<sup>3</sup>) followed by Zone A (1899.07/m<sup>3</sup>) and Zone B (1241.88/m<sup>3</sup>). During the Pre-monsoon season, Zone C had exhibited the highest macrobenthic density (1306.88/m<sup>3</sup>) followed by Zone B (762.51/m<sup>3</sup>) and Zone A (353.76/m<sup>3</sup>). 10 macrobenthic groups were observed during Post-monsoon season while 6 macrobenthic groups were observed in Pre-monsoon season. Polychaete and Oligochaete were observed across all the Zones during both seasons. The maximum contribution to the overall biomass was from Zone A (16.02g/m<sup>3</sup>) followed by Zone C (8.72 g/m<sup>3</sup>) and Zone B (2.97 g/m<sup>3</sup>) during the Post-Monsoon season. Zone C (0.39g/m<sup>3</sup>) showed the highest biomass followed by Zone A (8.72g/m<sup>3</sup>) and Zone B (2.97g/m<sup>3</sup>) during the Pre-monsoon season.

**E II (Fig.22.1-22.4)**

Macrobenthic density and biomass have shown a significant decrease from Post-monsoon season (2869.03/m<sup>3</sup>, 67.80g/m<sup>3</sup>) to Pre-monsoon season (2722.03/m<sup>3</sup>, 4.02g/m<sup>3</sup>) season. There was a decline in the macrobenthic diversity from Post-monsoon season (10 No) to Pre-monsoon season (5 No).



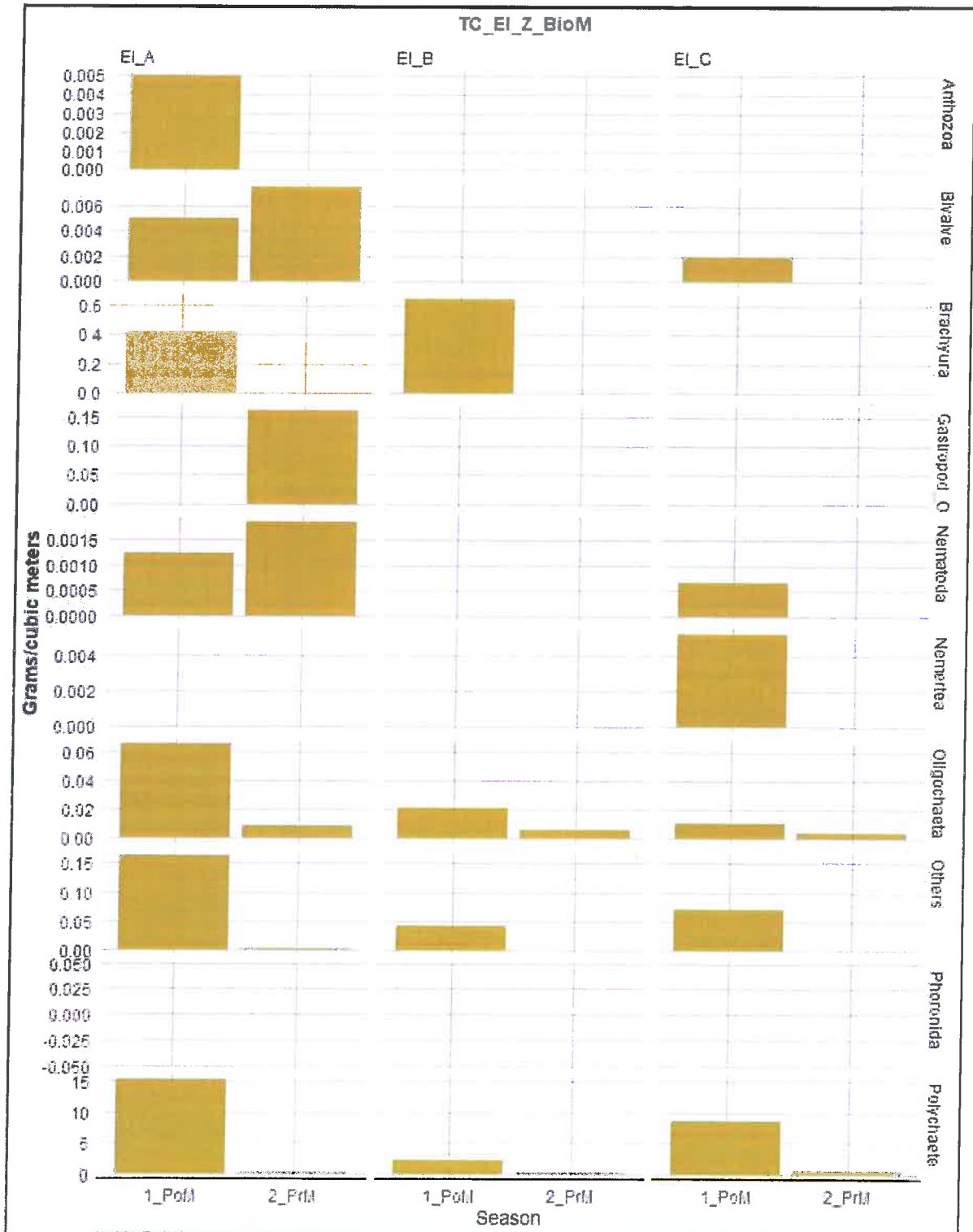


Fig. 21.4: Zonal variation of macrobenthic Biomass g/m<sup>3</sup> in the intertidal mudflats of EI cluster of Thane creek during the study period 2021-22

**Vertical stratification:**

Macrobenthic density has declined vertically from upper stratum 0-2cm to lower stratum 11-15 cm in both the seasons. Polychaete (17039.16/ m<sup>3</sup>, 164.56g/ m<sup>3</sup>) has contributed maximum to the overall macrobenthic density and biomass. Polychaeta, Oligochaeta, Bivalve and Gastropod were observed in all strata during both seasons.



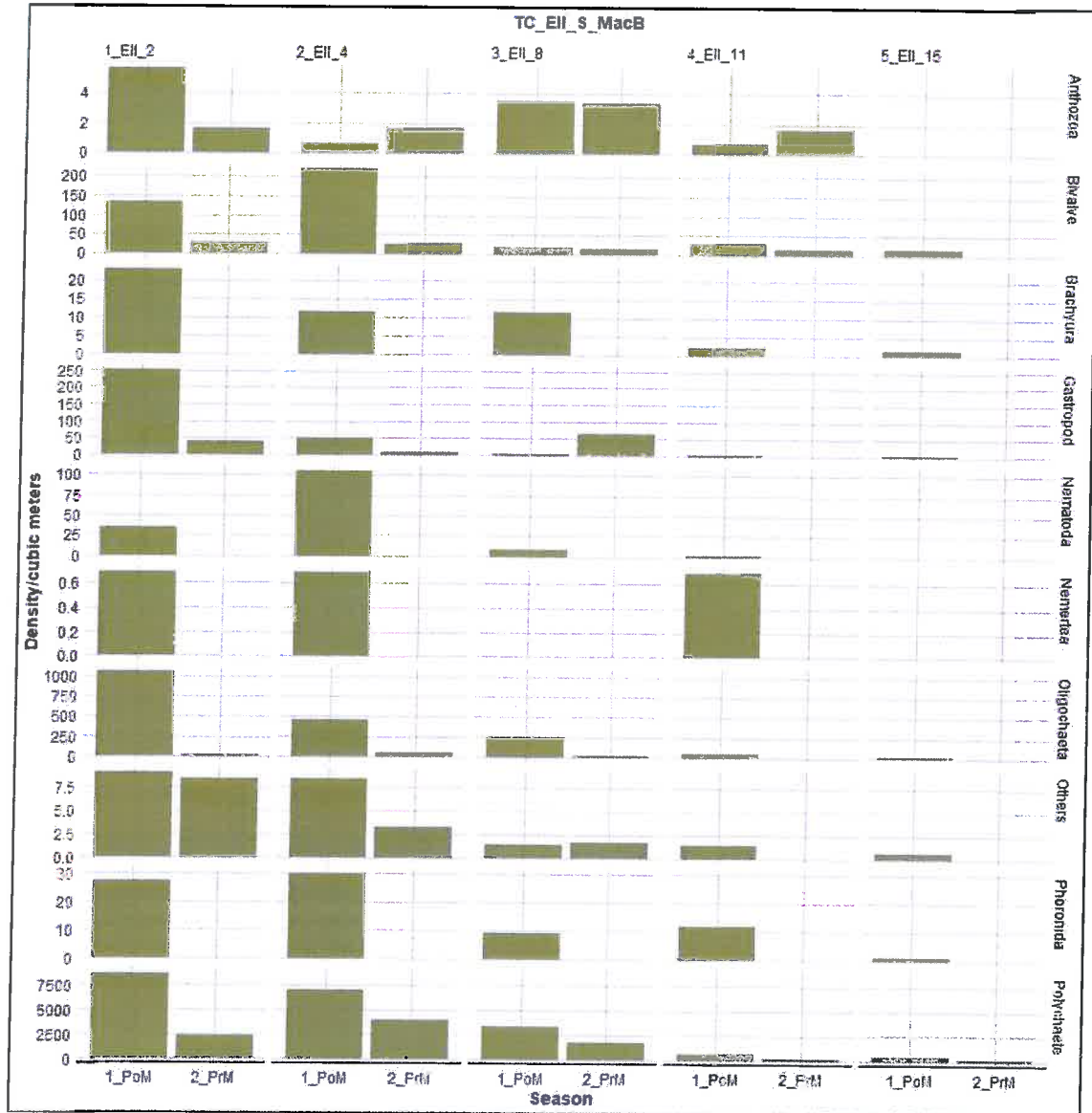


Fig. 22.1: Vertical stratification of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of EII cluster of Thane creek during the study period 2021-22

Polychaete (51.99g/m<sup>3</sup>) shows higher biomass followed by Bivalve (9.62g/m<sup>3</sup>), Gastropod (3.74g/m<sup>3</sup>), Brachyura (1.10g/m<sup>3</sup>), Phoronida (0.42g/m<sup>3</sup>) during the Post-monsoon season. During Pre-monsoon season, the higher biomass was shown by Polychaete (2.86g/m<sup>3</sup>) followed by Bivalve (.46g/m<sup>3</sup>), Gastropod (0.44g/m<sup>3</sup>), Anthozoa (0.26 g/m<sup>3</sup>).

**Intertidal zonation:**

Maximum contribution towards overall macrobenthic density was observed from Zone B (6897.41/m<sup>3</sup>) and the least density was observed from Zone C (5676.74/m<sup>3</sup>) during both seasons. Polychaete density have increased from Zone B (4568.33/m<sup>3</sup>) to Zone A (3938.33/m<sup>3</sup>) in Post-monsoon season. During Pre-monsoon season, Zone C (1788/m<sup>3</sup>) exhibited highest density of Polychaete followed by Zone B (1675/m<sup>3</sup>) and Zone A (1547/m<sup>3</sup>). During Post-monsoon season, Polychaete (155.98 g/m<sup>3</sup>) had maximum contribution to overall biomass followed by Bivalves (28.76 g/m<sup>3</sup>), Gastropoda(11.13 g/m<sup>3</sup>), During the Pre-monsoon season, Polychaete biomass (8.58 g/m<sup>3</sup>) was highest followed by Bivalves (1.37 g/m<sup>3</sup>) and Gastropoda, (1.31 g/m<sup>3</sup>).



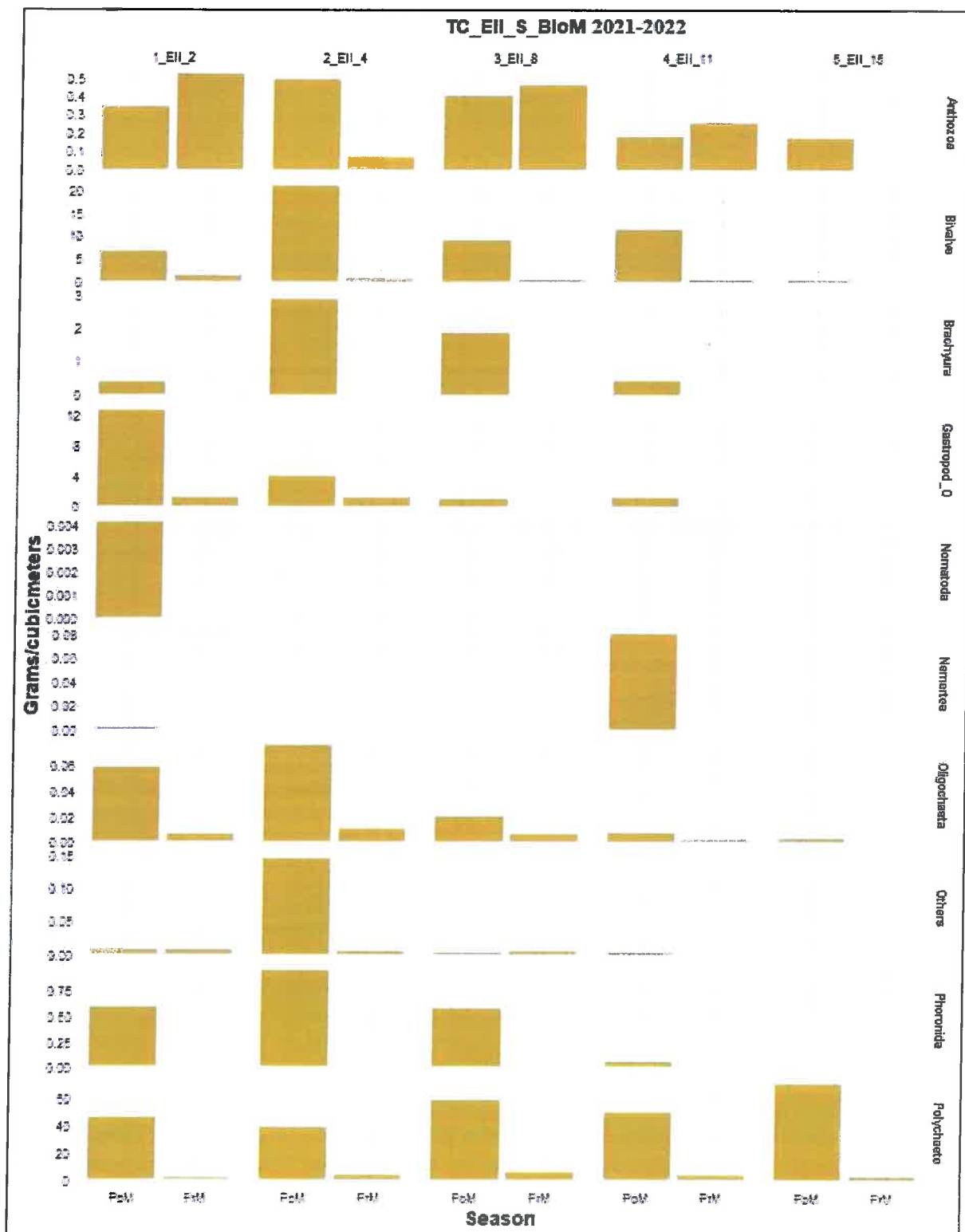
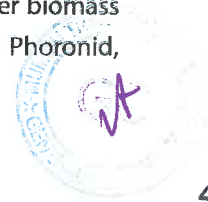


Fig. 22.2: Vertical stratification of macro-benthic biomass g/m<sup>3</sup> in the intertidal mudflats of EII cluster of Thane creek during the study period 2021-22

Zone A (109.69g/m<sup>3</sup>) exhibits the highest biomass followed by Zone B (66.80 g/m<sup>3</sup>) and Zone C (26.91 g/m<sup>3</sup>) in Post-monsoon season while in Pre-monsoon season, Zone C (5.86g/m<sup>3</sup>) shows higher biomass followed by Zone A (3.84g/m<sup>3</sup>) and Zone B (2.37g/m<sup>3</sup>). During the Pre-monsoon season, Phoronid, Brachyura, Nemertea and Nematode were totally absent across all zones.



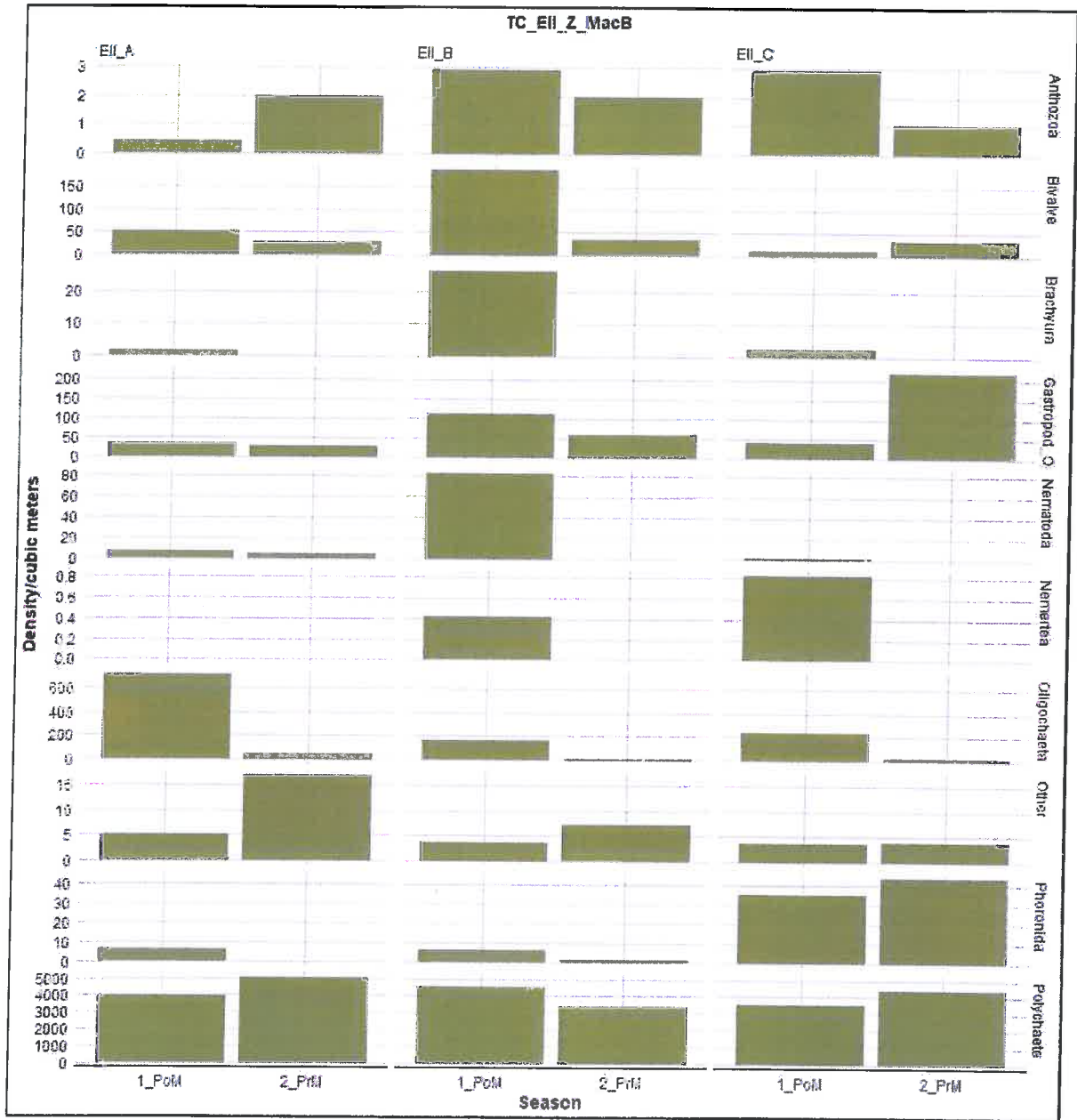


Fig. 22.3: Zonal variation of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of E II cluster of Thane creek during 2021-22

**E III (Fig.23.1-23.4)**

Macrobenthic density had shown a slight decline from Post-monsoon season (8607.08/ m<sup>3</sup>) to Pre-monsoon season (8168.35/ m<sup>3</sup>). Overall, 10 macrobenthic groups were observed along this cluster. Polychaete, Gastropod, Bivalve, Oligochaete and Phoronida were found in both seasons.

**Vertical Stratification**

Uppermost stratum 0-2 cm shows the highest density (10236.11/m<sup>3</sup>) than that of other strata. Macrobenthic density declined vertically from the upper stratum to lower stratum in both seasons. Polychaete shows a declining trend from upper most stratum 0-2 cm to lower most stratum 11-15 cm in both seasons. Nematodes were observed only in the upper stratum 0-2 cm during Pre-monsoon season. Polychaete, Phoronida, Oligochaete, Gastropod were observed in all strata during both seasons. Brachyura, Anthozoa, Nemertea was completely absent in Pre-monsoon season.



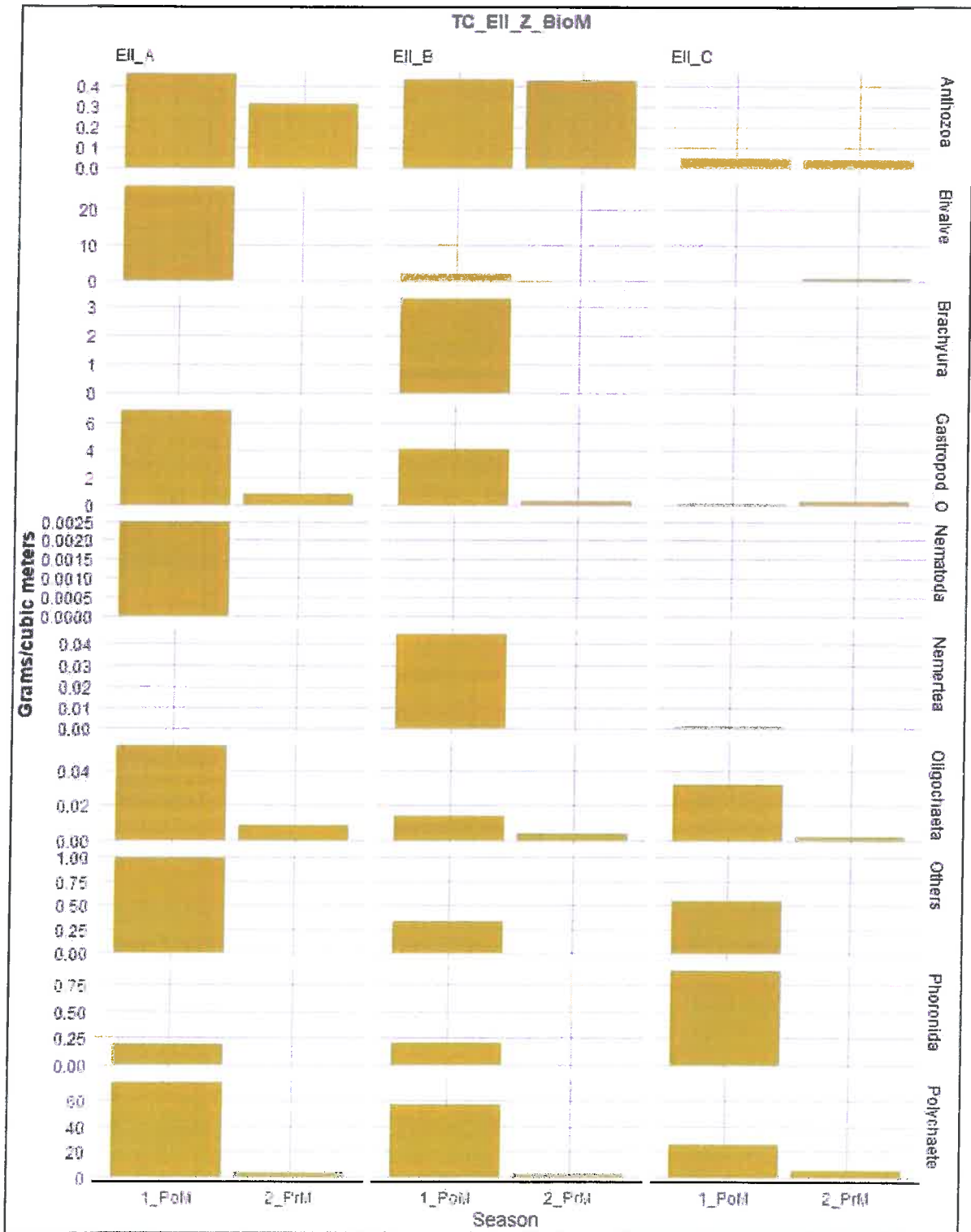


Fig. 22.4: Zonal variation of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of EII cluster of Thane creek during the study period 2021-22

Maximum biomass was noted from the upper stratum 0-2cm during both the seasons (573.89g/m<sup>3</sup>) and the least biomass was observed in the stratum 8-11 cm (14.66g/ m<sup>3</sup>).

**Intertidal zonation**

Maximum macrobenthic density was observed along Zone A during Pre-monsoon season (3551.25/ m<sup>3</sup>) and Zone B in Post-monsoon season (3133.75/m<sup>3</sup>). The least density was recorded along Zone B



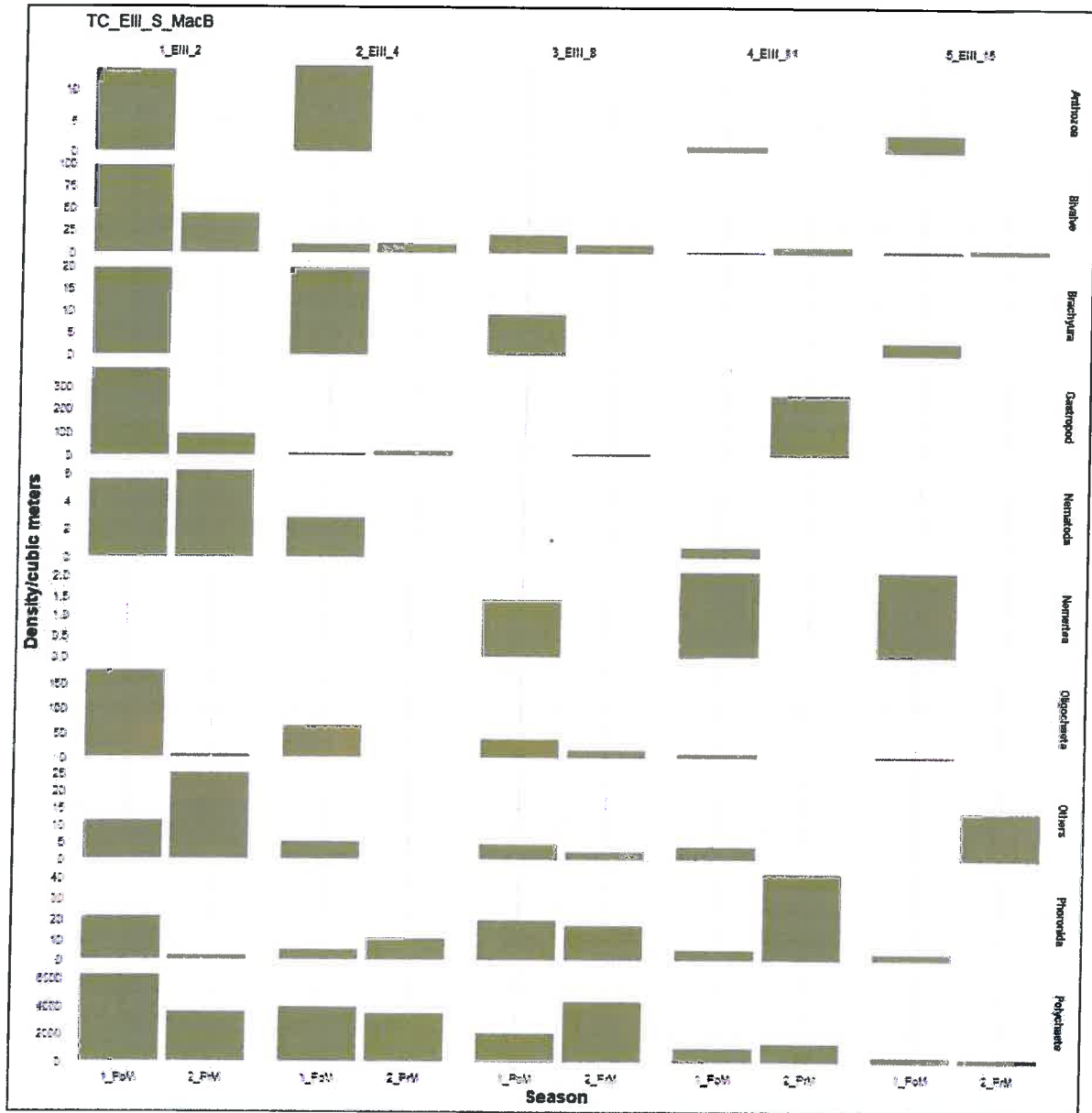
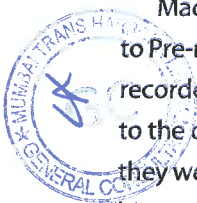


Fig. 23.1: Vertical stratification of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of EIII cluster of Thane creek during the study period 2021-22

during Pre-monsoon season (1750/m<sup>3</sup>) followed by Zone C in Post-monsoon season (2544.59/m<sup>3</sup>). The maximum contribution to the overall biomass was shown by Zone C (377.42g/m<sup>3</sup>) followed by Zone A (91.79g/m<sup>3</sup>) and Zone B (57.79g/m<sup>3</sup>) during the Post-monsoon season. Polychaete (15832.94/ m<sup>3</sup>) has contributed maximum to the overall macrobenthic density across all zones during both seasons, followed by Gastropod (464.88/ m<sup>3</sup>), Oligochaete (186.85/ m<sup>3</sup>).

**E IV (Fig.24.1-24.4)**

Macrobenthic density and biomass has decreased from Post-monsoon season (2134.69/m<sup>3</sup>, 45.52g/m<sup>3</sup>) to Pre-monsoon season (1468.33/m<sup>3</sup>, 14.33g/m<sup>3</sup>). During the study period, 10 macrobenthic groups were recorded from the cluster. During both the seasons, the faunal diversity was more in Zone B as compared to the other zones. Brachyura, Oligochaete, and Sipuncula were observed in Post-monsoon season while they were completely absent in Pre-monsoon season. Gastropods exhibit a higher contribution to overall biomass followed by Bivalve and Polychaete during the Post-monsoon season.



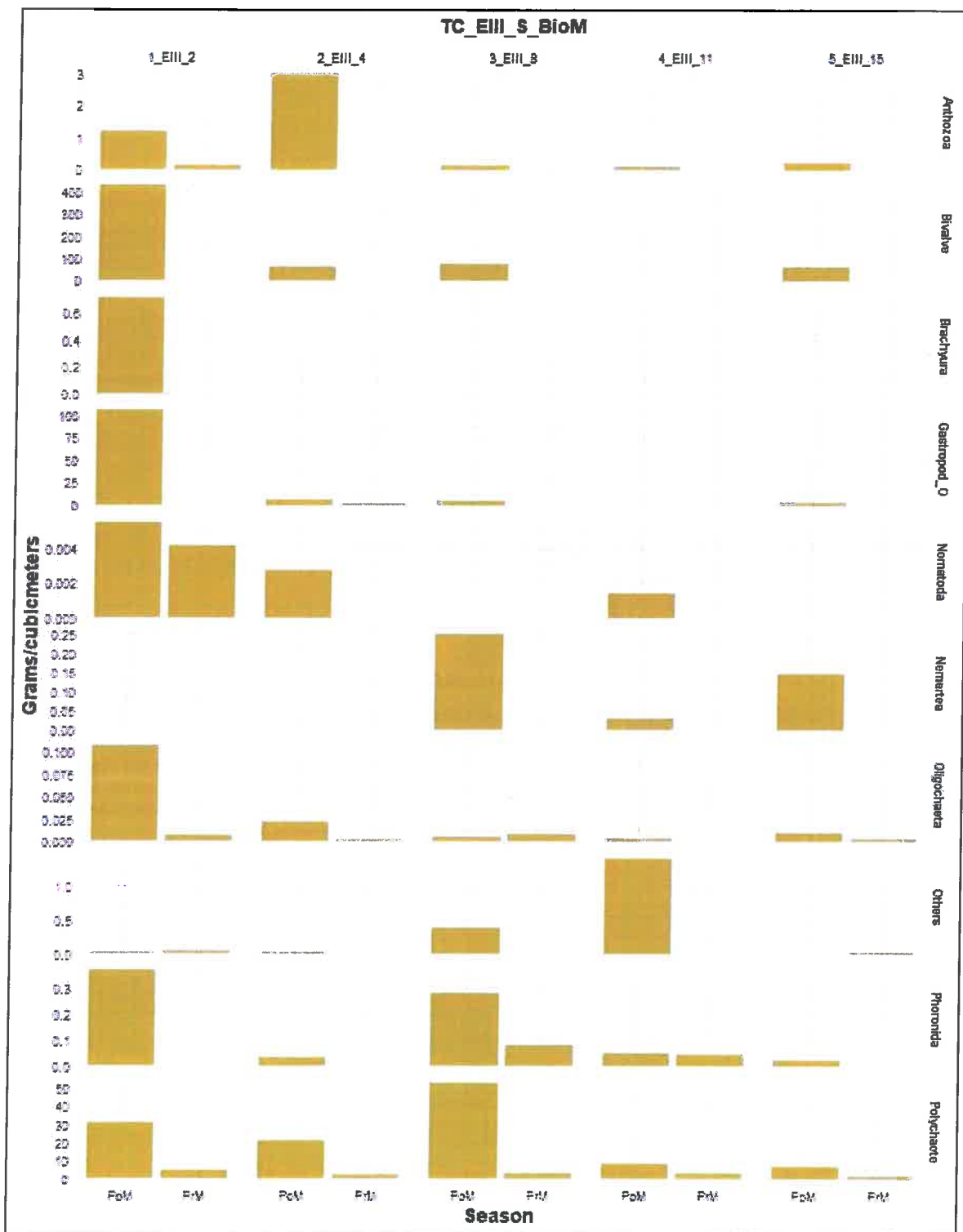


Fig. 23.2: Vertical stratification of macro-benthic biomass g/m<sup>3</sup> in the intertidal mudflats of EIII cluster of Thane creek during the study period 2021-22

**Vertical stratification**

Macrobenthic density showed a decline from upper stratum 0-2cm to lower 11-15cm stratum during both the seasons. Nematode was observed only in upper stratum 0-2 cm during both the seasons. Oligochaete was observed in all strata of Post-monsoon season while in Pre-monsoon season, it was present in all strata except lower strata 8-15 cm. Maximum biomass was noted from stratum 8-11cm (102.53g/m<sup>3</sup>) followed by upper stratum 0-2 cm (53.11g/m<sup>3</sup>), lower stratum 11-15 cm (46.07g/m<sup>3</sup>), 2-4



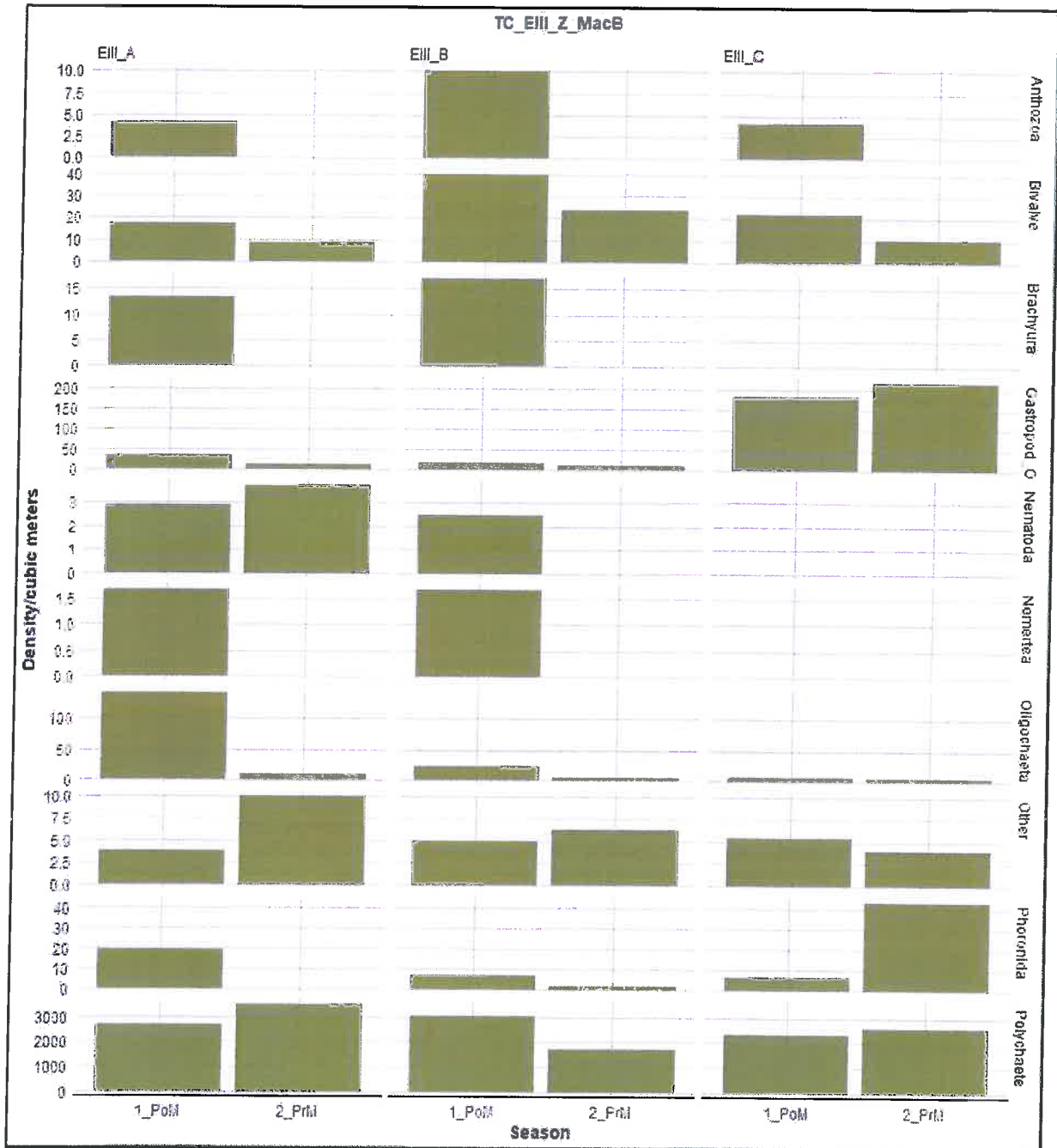


Fig. 23.3: Zonal variation of macrobenthic density/ $m^3$  in the intertidal mudflats of EIII cluster of Thane creek during 2021-22

cm( $24.26g/m^3$ ) and 4-8 cm( $16.01g/m^3$ ) in Post-monsoon season while in Pre-monsoon season upper stratum 0-2cm exhibited highest biomass.

Polychaete showed maximum contribution to overall density in upper stratum 0-2 cm ( $7680.56/ m^3$ ) followed by strata 2-4 cm ( $4276.57/m^3$ ) and stratum 4-8 cm ( $2727.25/ m^3$ ). Brachyura ( $10.93/ m^3$ ) showed the least contribution to the overall density followed by Nematoda ( $11.97/ m^3$ ).

#### Intertidal Zonation

Polychaete had contributed maximum to the overall macrobenthic density ( $9926.13/ m^3$ ). Macro benthic density has declined from Zone B ( $2248.44/m^3$ ) during Post-monsoon season followed by Zone C ( $2141.25/m^3$ ) and Zone A ( $2014.37/m^3$ ). During Pre-monsoon season, Zone B ( $2106.6/ m^3$ ) exhibited

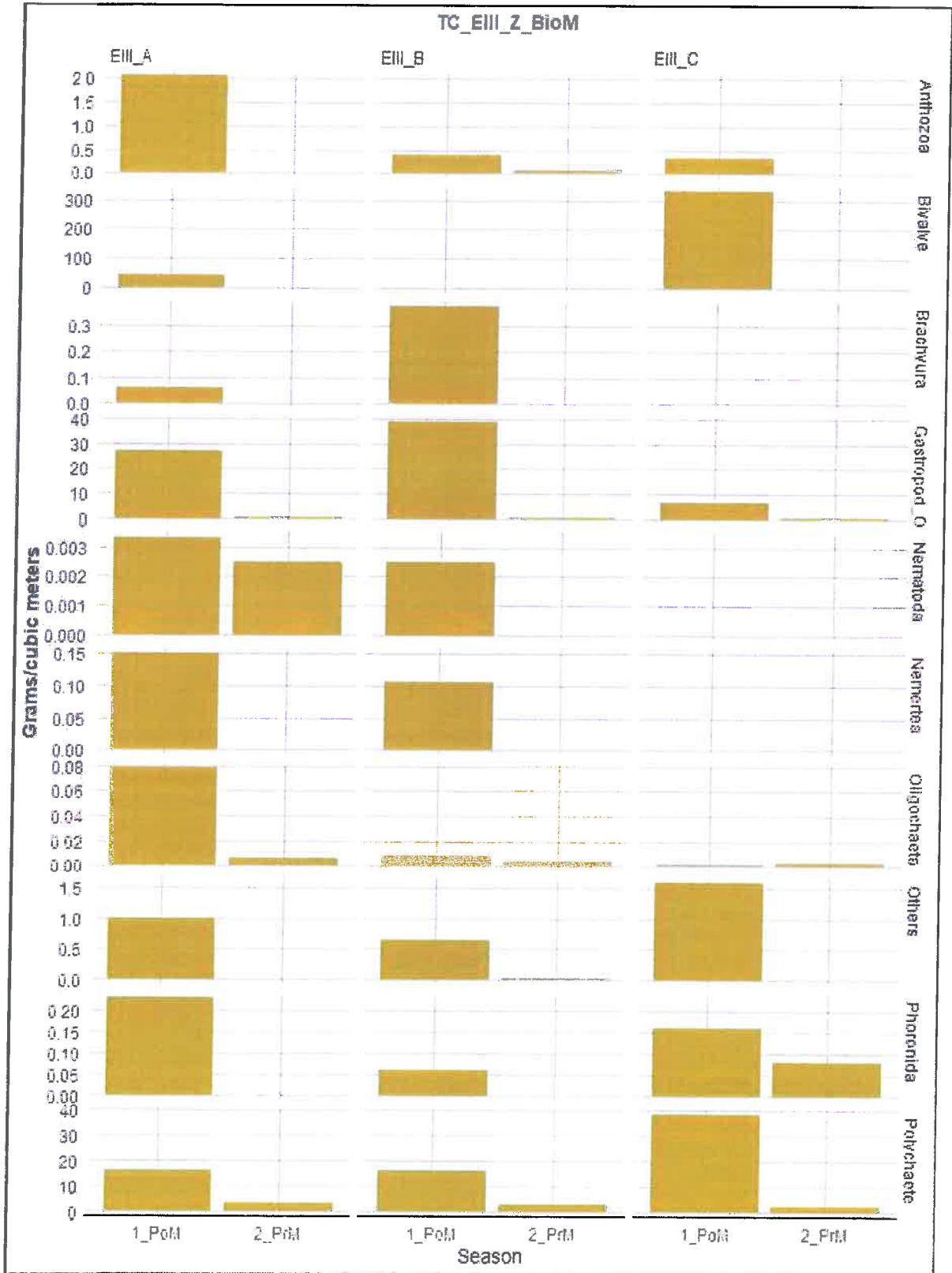


Fig. 23.4: Zonal variation of macrobenthic biomass g/m³ in the intertidal mudflats of EIII cluster of Thane creek during the study period 2021-22

maximum density followed by Zone A (1329.17/m³) and Zone C (969.17/m³). Polychaete, Gastropoda, Bivalve, Nemertea, Oligochaete and Phoronida were observed in all the zones during both the seasons. Zone A (116.58g/ m³) showed maximum contribution to the overall biomass during both the seasons, followed by Zone B (41.6 g/m³) and Zone C (21.33g/m³).



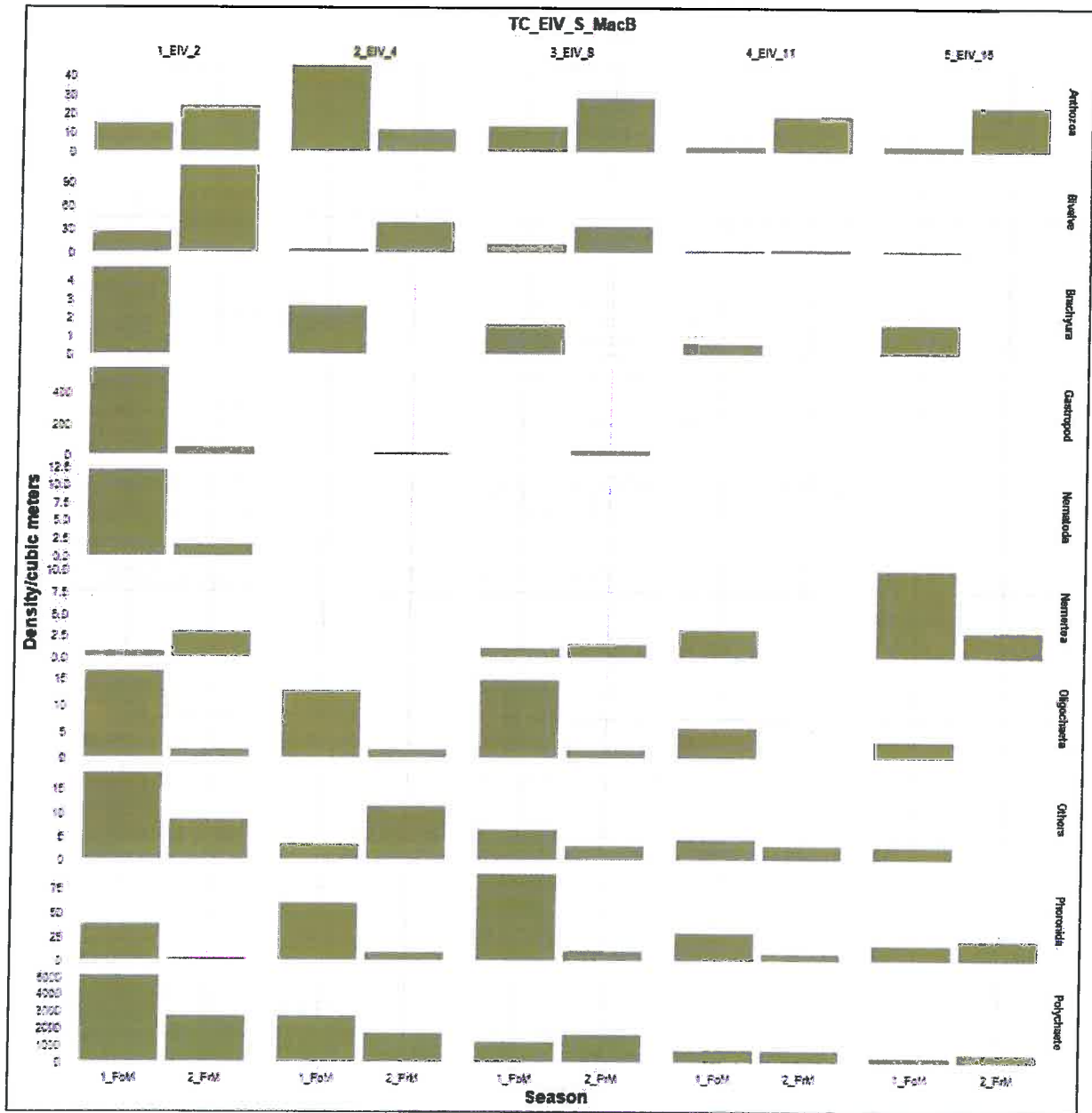


Fig. 24.1: Vertical stratification of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of EIV cluster of Thane creek during the study period 2021-22

**E V (Fig.25.1-25.4)**

Macrobenthic density has shown a decrease in biomass from Post-monsoon season (642.82/m<sup>3</sup>) to Pre-monsoon (477.86/m<sup>3</sup>). During the study period, 10 faunal groups were recorded from the cluster. Faunal diversity has decreased from Post-monsoon (10 No.) to Pre-monsoon (9 No.). Nematode was completely absent during Pre-monsoon.

**Vertical stratification**

Macrobenthic density has declined from upper 0-2cm stratum to lower 11-15cm stratum during Post-monsoon season. Stratum 8-11 cm exhibited maximum macrobenthic density (805.95/m<sup>3</sup>) followed by stratum 2-4 cm (582.15/m<sup>3</sup>) and 11-15 cm (405.95/m<sup>3</sup>) in Pre-monsoon season. It was observed that lower stratum 11-15 cm showed the least contribution to the biomass whereas the upper stratum 0-2 cm showed highest biomass during Post-monsoon. The upper stratum 2-4 cm contributed the



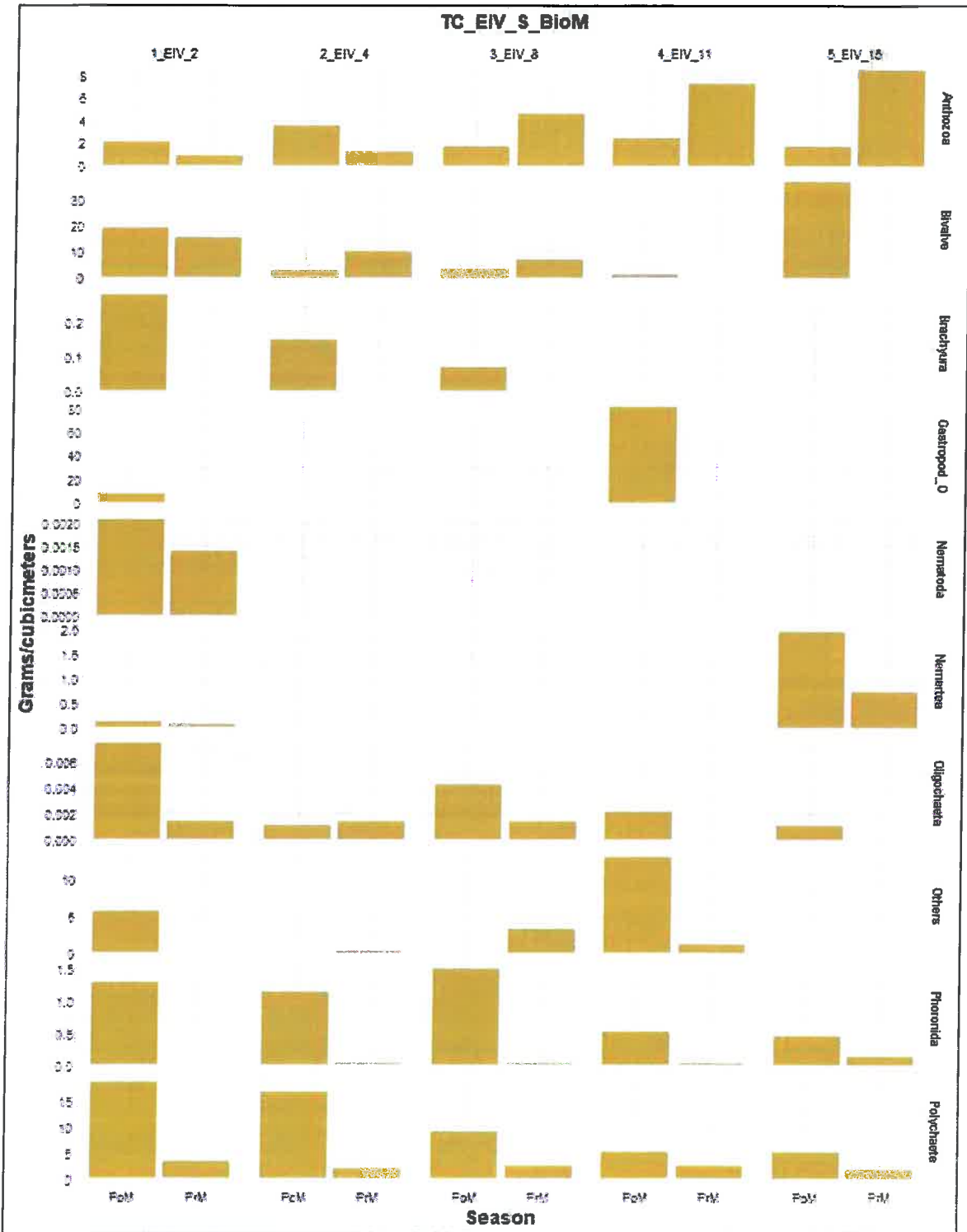


Fig. 24.2: Vertical stratification of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of EIV cluster of Thane creek during the study period 2021-22

least to the overall biomass, whereas the lower stratum 11-15 cm contributed the most during Pre-monsoon.

**Intertidal Zonation**

Macrobenthic density has declined from Zone A (816,26/m<sup>3</sup>) followed by Zone C (608.75/m<sup>3</sup>) and Zone B (503.44/m<sup>3</sup>) in Post-monsoon season. Macrobenthic density has declined from Zone A (595.00/



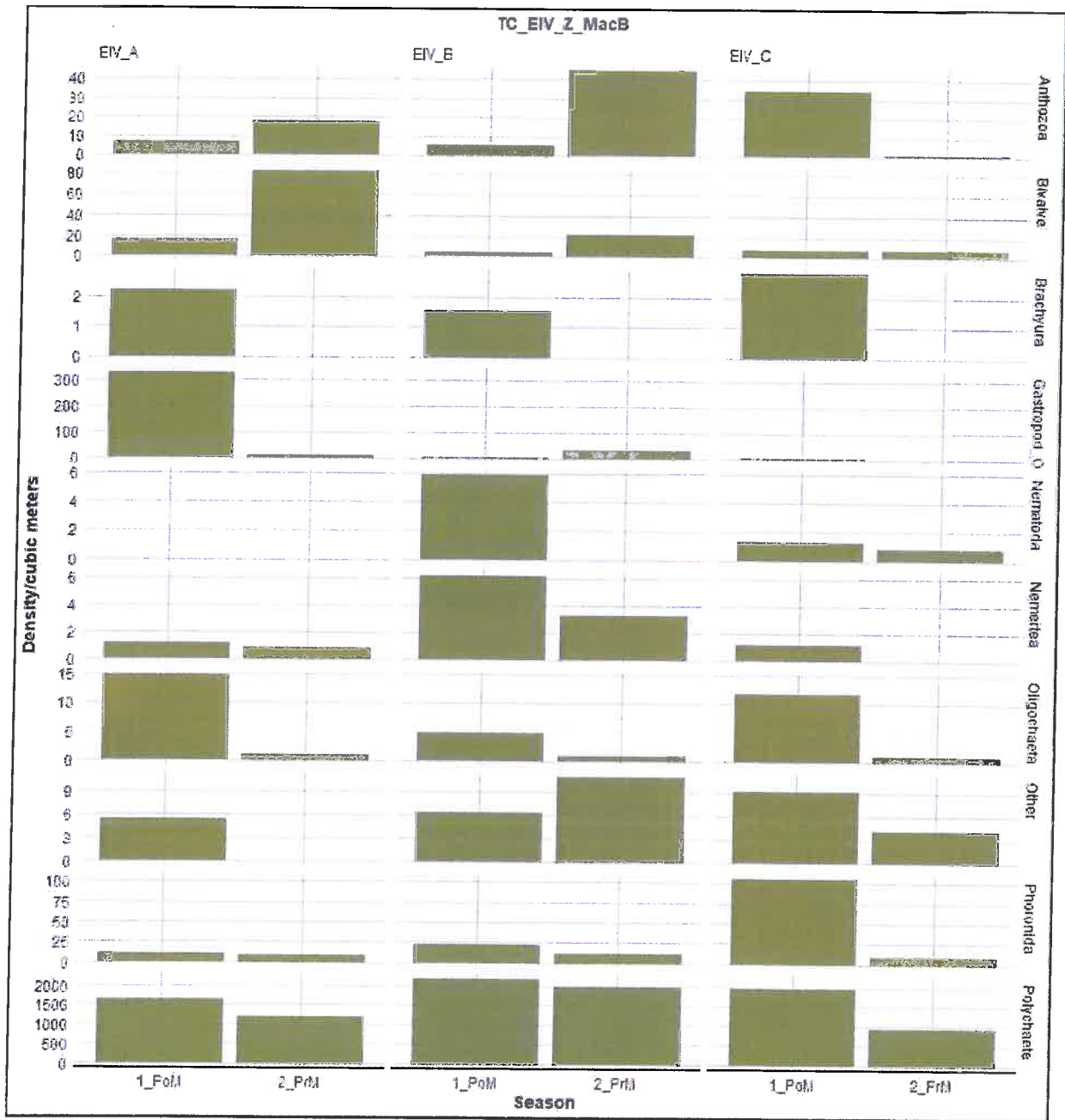


Fig. 24.3: Zonal variation of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of E IV cluster of Thane creek during 2021-22

m<sup>3</sup>) followed by Zone B (565.71/m<sup>3</sup>) and Zone C (272.86/m<sup>3</sup>) in Pre-monsoon season. Zone A (1.59g/m<sup>3</sup>) had exhibited highest biomass during Post-monsoon and Zone B (3.40g/m<sup>3</sup>) during Pre-monsoon. Zone A had exhibited maximum group diversity throughout the season. Polychaete, Gastropod, Bivalve, Brachyura, Anthozoa, Oligochaete and Phoronida were observed in all the seasons, while Nematode was completely absent during the Pre-monsoon. Bivalve was observed only in Zone A during Pre-monsoon season.



**East-West Bank (EW I - Fig.26.1-26.4)**

Over the course of the study period, the maximum macrobenthic density and biomass along EW I (1562.27/m<sup>3</sup>; avg. 0.129g/m<sup>3</sup>), was noted during the Post-monsoon season, whereas Pre-monsoon season showed comparatively less macrobenthic density and biomass (40.23/m<sup>3</sup>; 0.003g/m<sup>3</sup>).

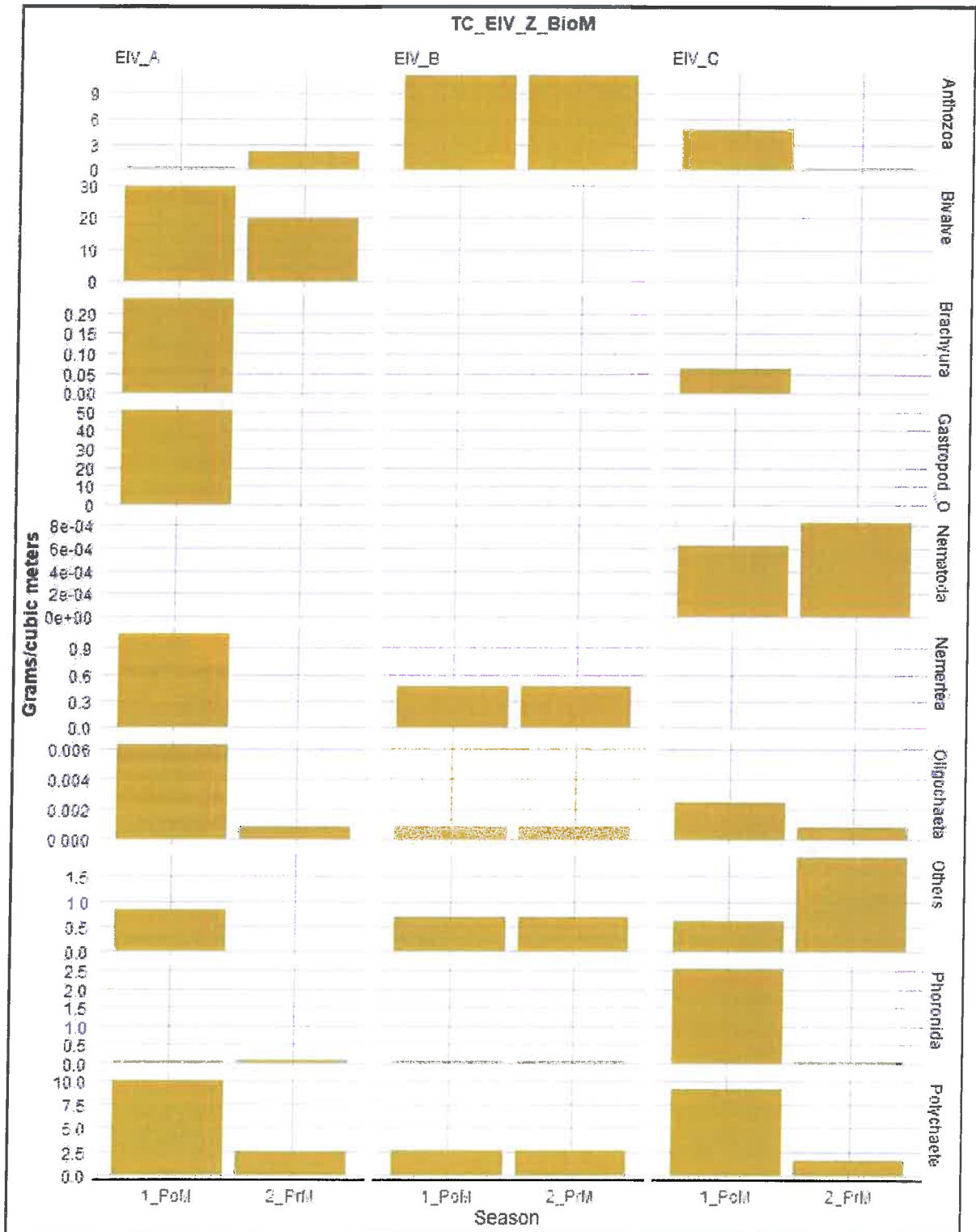


Fig. 24.4: Zonal variation of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of EIV cluster of Thane creek during the study period 2021-22

**Vertical stratification**

Polychaetes were present within all the stratum, with higher density in the upper 0-2 cm stratum during Post-monsoon season (1654.3/ m<sup>3</sup>). Bivalve showed a higher density in the lower stratum 8-11 cm during Post-monsoon season (10.62/ m<sup>3</sup>). Phoronida was present in the upper 0-2 cm stratum. Brachyura was only present in stratum upper 2cm and 4 - 8 cm during Post-monsoon season. Oligochaetes



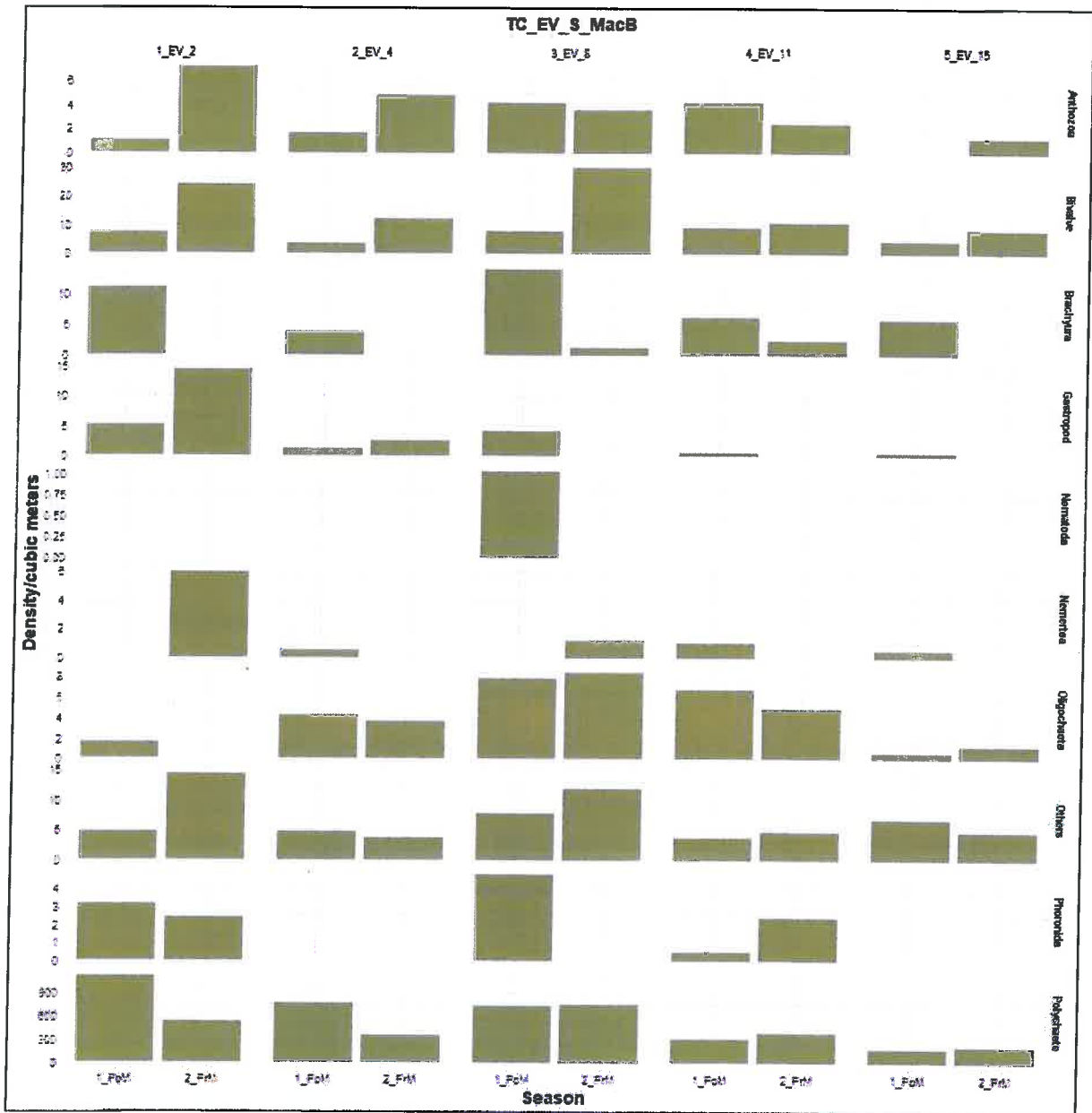


Fig. 25.1: Zonal variation of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of EV cluster of Thane creek during 2021-22

showed a gradual decrease from upper stratum up to 11 cm and completely absent in the lowest 11-15 cm in Post-monsoon season. Stratum 0-2 cm (1821.8/ m<sup>3</sup>) showed higher group diversity (6 no) and abundance followed by stratum 4-8 cm (583.69/ m<sup>3</sup>) and stratum 2-4 cm (508.09/ m<sup>3</sup>). Lower Stratum 11-15 cm showed no group diversity and density except for Polychaete which was present in smaller amount. Anthozoa and Nemertea were completely absent within the entire 15cm column during both seasons.

The biomass of Polychaete was observed to be the highest during Post-monsoon season in stratum 15 cm (0.454545g/ m<sup>3</sup>). Biomass of Oligochaete shows a decreasing trend from the upper stratum (0.02g/ m<sup>3</sup>) to lower (up to 15 cm (0.001g/ m<sup>3</sup>), across both the seasons.

**Intertidal zonation**

There was a high density of Polychaete, during Post-monsoon season in Zone C (1148.25/ m<sup>3</sup>). Zone C during Post-monsoon season showed a higher group diversity (9 no) compared to other zones across



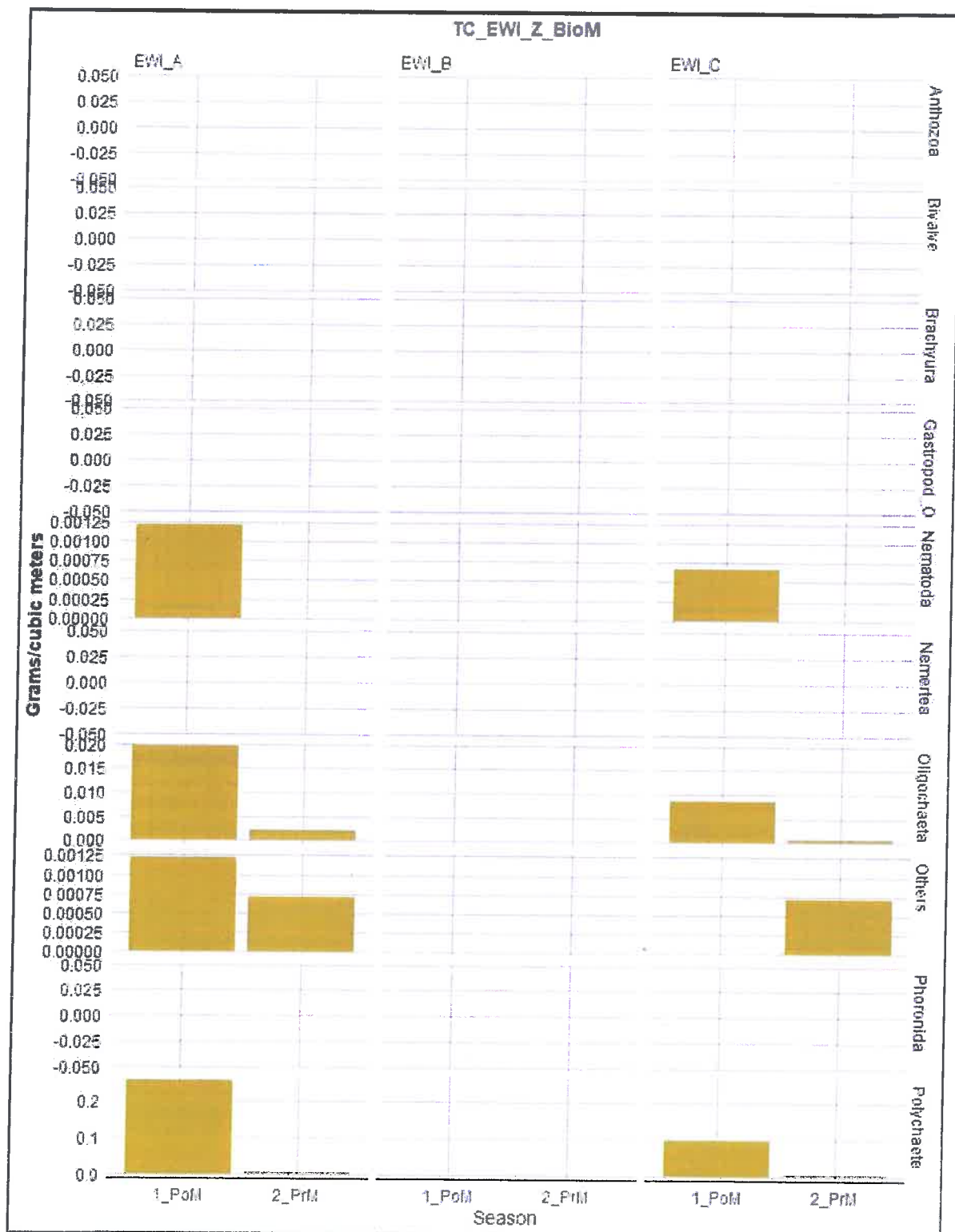


Fig. 26.4: Zonal variation of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of EWI cluster of Thane creek during the study period 2021-22

(52.5 /m<sup>3</sup>). It was also observed that there was a gradual increase in the density of polychaetes from Zone A (447.5/ m<sup>3</sup>) to Zone C (627.5/ m<sup>3</sup>) in both the seasons. Phoronida and Bivalves were only found during Post-monsoon season in Zone C. Anthozoa, Brachyura and Nemertea were completely absent across all observed seasons. Nematoda showed a higher density (44.16 /m<sup>3</sup>) during Pre-monsoon season across all zones, whereas Oligochaete showed higher density (324.5/ m<sup>3</sup>) during Post-monsoon season across all zones. The highest polychaete biomass was observed in Zone C during Post Monsoon





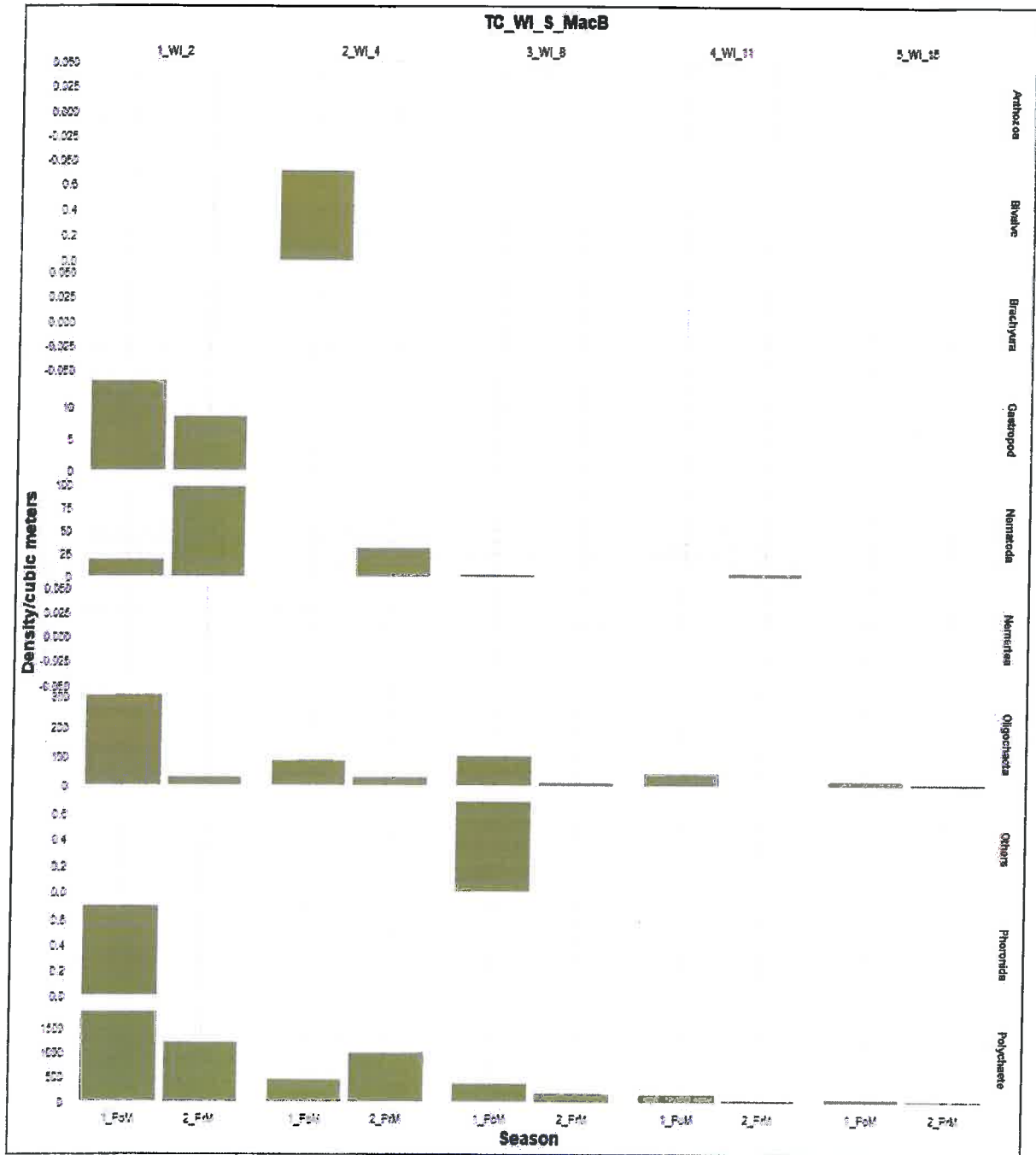


Fig. 27.1: Vertical stratification of macrobenthic density /m<sup>3</sup> in the intertidal mudflats of WI cluster of Thane creek during the study period 2021-22

season (4.76g/ m<sup>3</sup>). The lowest polychaete biomass was observed during Pre-monsoon in the Zone A (0.026g/ m<sup>3</sup>). The biomass of Nematoda was almost same during both the seasons in Zone B and Zone C.

**W II (Fig.28.1-28.4)**

Polychaete was the most dominating group along all the clusters and only faunal group recorded in all seasons. Macrobenthic density and biomass have shown a significant decrease from Post-monsoon season (5272.5/m<sup>3</sup> avg. 14.78g/m<sup>3</sup>) to Pre-monsoon season (2496/m<sup>3</sup>, 0.782 g/m<sup>3</sup>). Along the clusters, 5 invertebrate phyla were recorded.



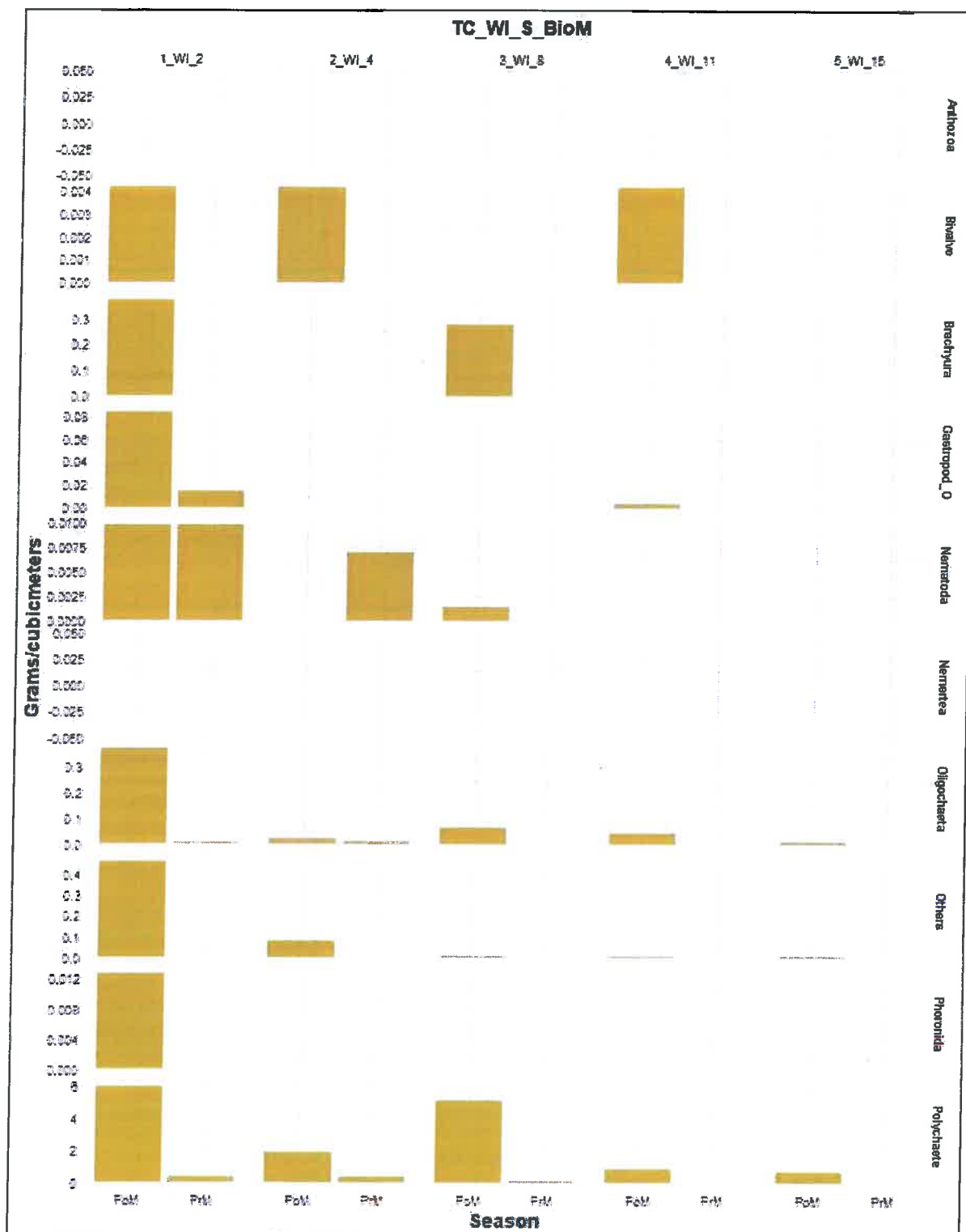


Fig. 27.2: Vertical stratification of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of WI cluster of Thane creek during the study period 2021-22

**Vertical stratification**

The maximum density was observed for polychaetes during Post-monsoon season in upper stratum 2 cm (4592.7/ m<sup>3</sup>), followed by Oligochaeta (880.20/ m<sup>3</sup>) during Post-monsoon season of upper stratum 2 cm. A decreasing trend was observed stratum wise, from upper 0-2 cm to lowered areas of 11-15 cm. Brachyura was only found in Post-monsoon season of stratum 2 cm. Highest group diversity was found in upper stratum 0-2 cm during Post-monsoon season (8 no). Anthozoa was only present during Post-



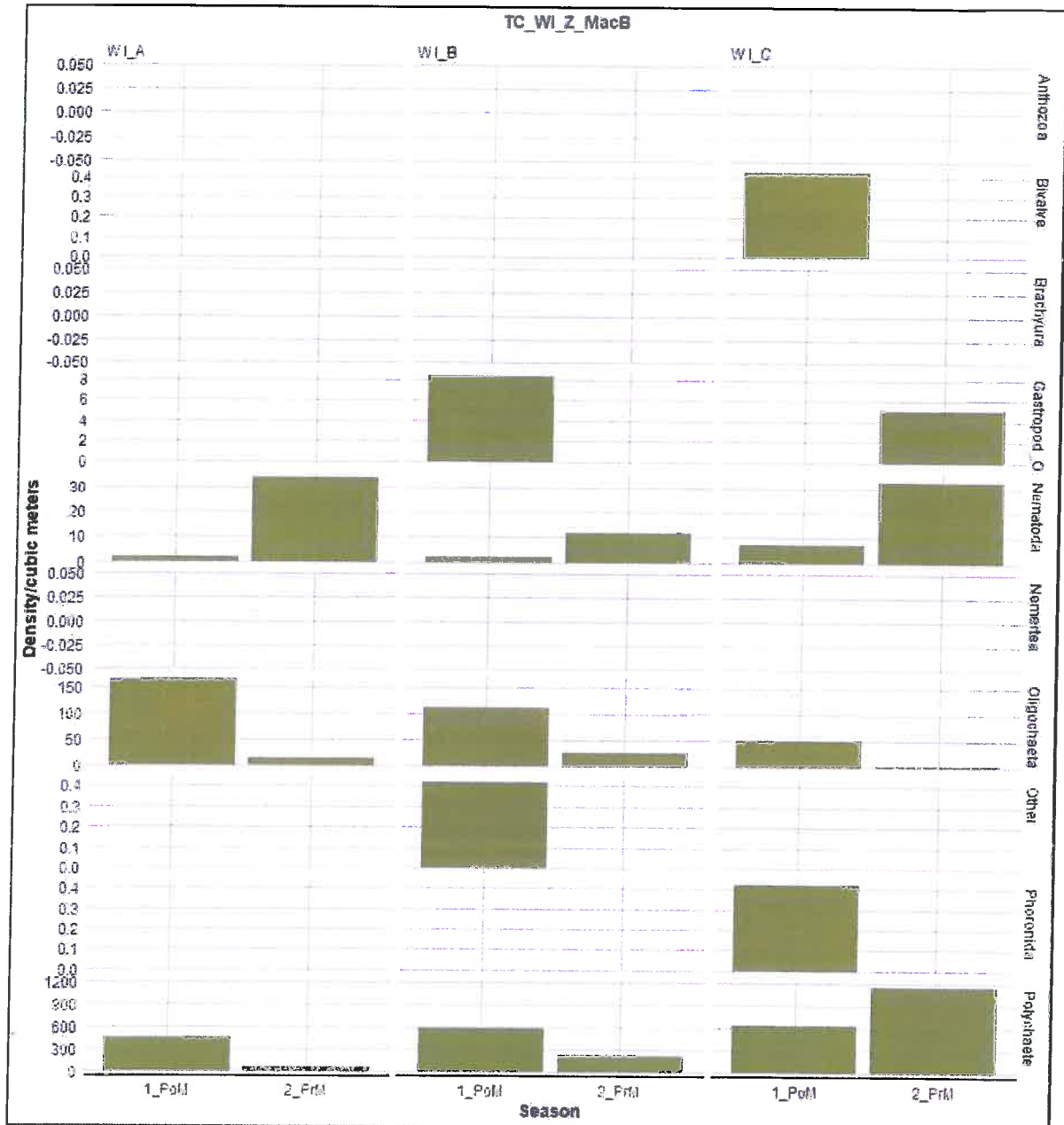


Fig. 27.3: Zonal variation of macrobenthic density /m<sup>3</sup> in the intertidal mudflats of WI cluster of Thane creek during 2021-22

monsoon season from stratum 2 cm to 8 cm and was completely absent in 8cm -15 cm. Polychaete was present in all the stratum followed by Phoronida, Gastropoda and Bivalves.

Polychaete contributes the highest to overall biomass (41.72g/ m<sup>3</sup>) followed by gastropods (27.7g/ m<sup>3</sup>), whereas, Nematoda (0.003g/ m<sup>3</sup>) contributes least to the overall biomass followed by oligochaetes. Upper stratum 0-2cm shows the highest biomass than that of the other stratum followed by upper stratum 2-4 cm. It has been observed that Post-monsoon shows significantly higher biomass (72.28g/ m<sup>3</sup>) than Pre-monsoon across all the stratum (3.91g/ m<sup>3</sup>).

**Intertidal zonation**

In the present study, it was observed that highest density of polychaetes was found during Post-monsoon season in Zone B (1680.31/ m<sup>3</sup>). The lowest density was present in Zone C of Pre-monsoon



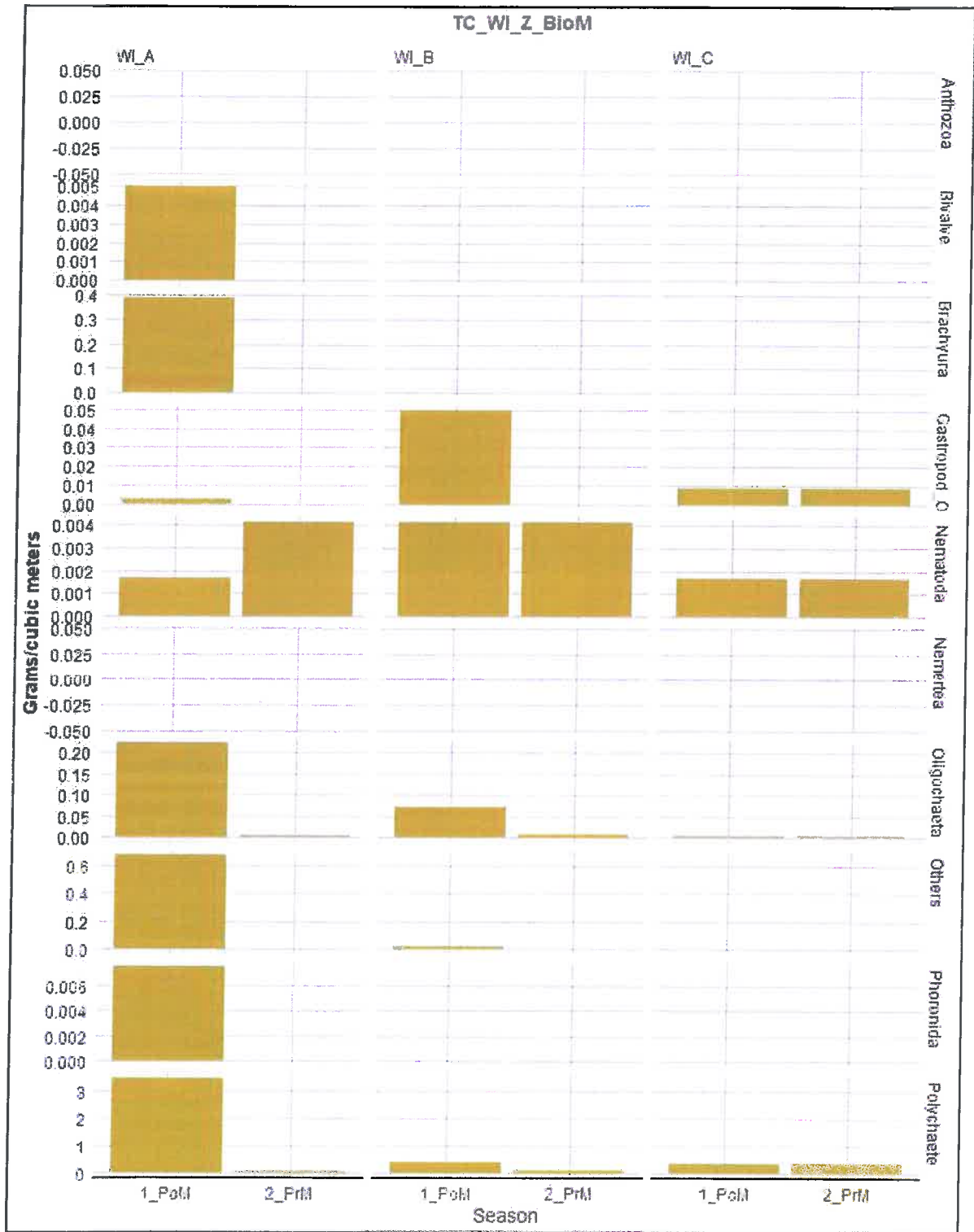


Fig. 27.4: Zonal variation of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of WI cluster of Thane creek during the study period 2021-22

season (679/ m<sup>3</sup>). Brachyura was only observed during Post-monsoon season in Zone B. Anthozoa was found to be only present during Post-monsoon season across all the zones. Nemertea was only present during Post-monsoon season in Zone C. Density of Anthozoa showed a decreasing trend from Zone A (1.25/ m<sup>3</sup>) to Zone C (0.31/ m<sup>3</sup>). Phoronida was absent during Pre-monsoon season of Zone A and Zone B, however it showed a slight increase in density during Pre-monsoon season of Zone C (1/ m<sup>3</sup>). Gastropod was not found in Pre-monsoon season of Zone B. Overall, Zone B had maximum faunal diversity during



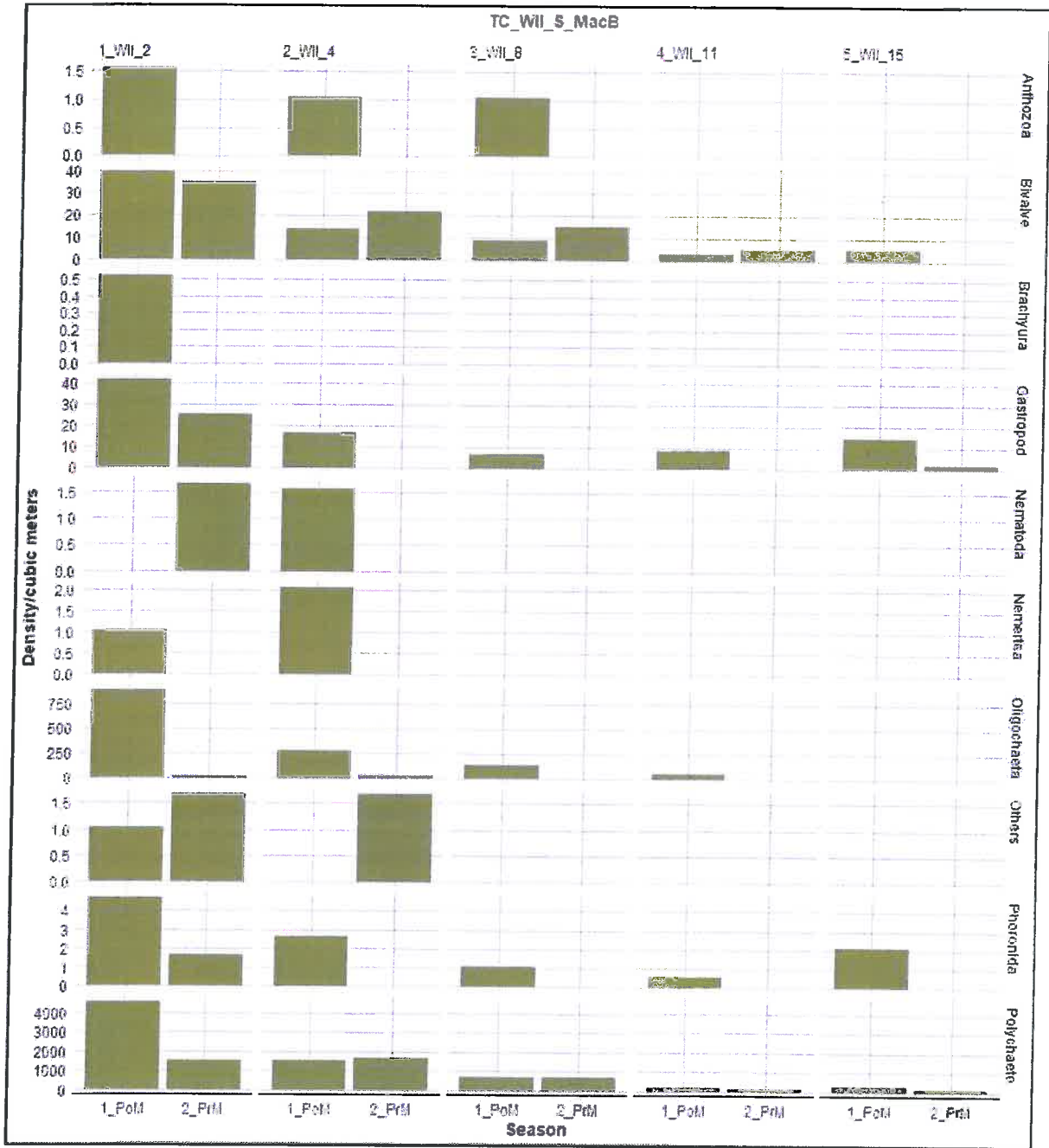


Fig. 28.1: Vertical stratification of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of WII cluster of Thane creek during the study period 2021-22

both the seasons. Polychaete has the maximum contribution to overall macrobenthic density during the entire sampling period (6749/ m<sup>3</sup>).

The highest biomass was observed to be of Gastropoda during Post-monsoon season of Zone A (14.33/ m<sup>3</sup>), followed by Polychaete during Post-monsoon season of Zone B (9.28g/ m<sup>3</sup>), while the lowest biomass was of Phoronida during Post-monsoon season of Zone B (0.0025g/ m<sup>3</sup>) followed by Anthozoa during Post-monsoon season of Zone C (0.0025g/ m<sup>3</sup>).



**WII (Fig.29.1-29.4)**

Polychaete was the most dominating group along all the clusters and only faunal group recorded in all seasons. There was a substantial decline in macrobenthic density and biomass from Post-monsoon

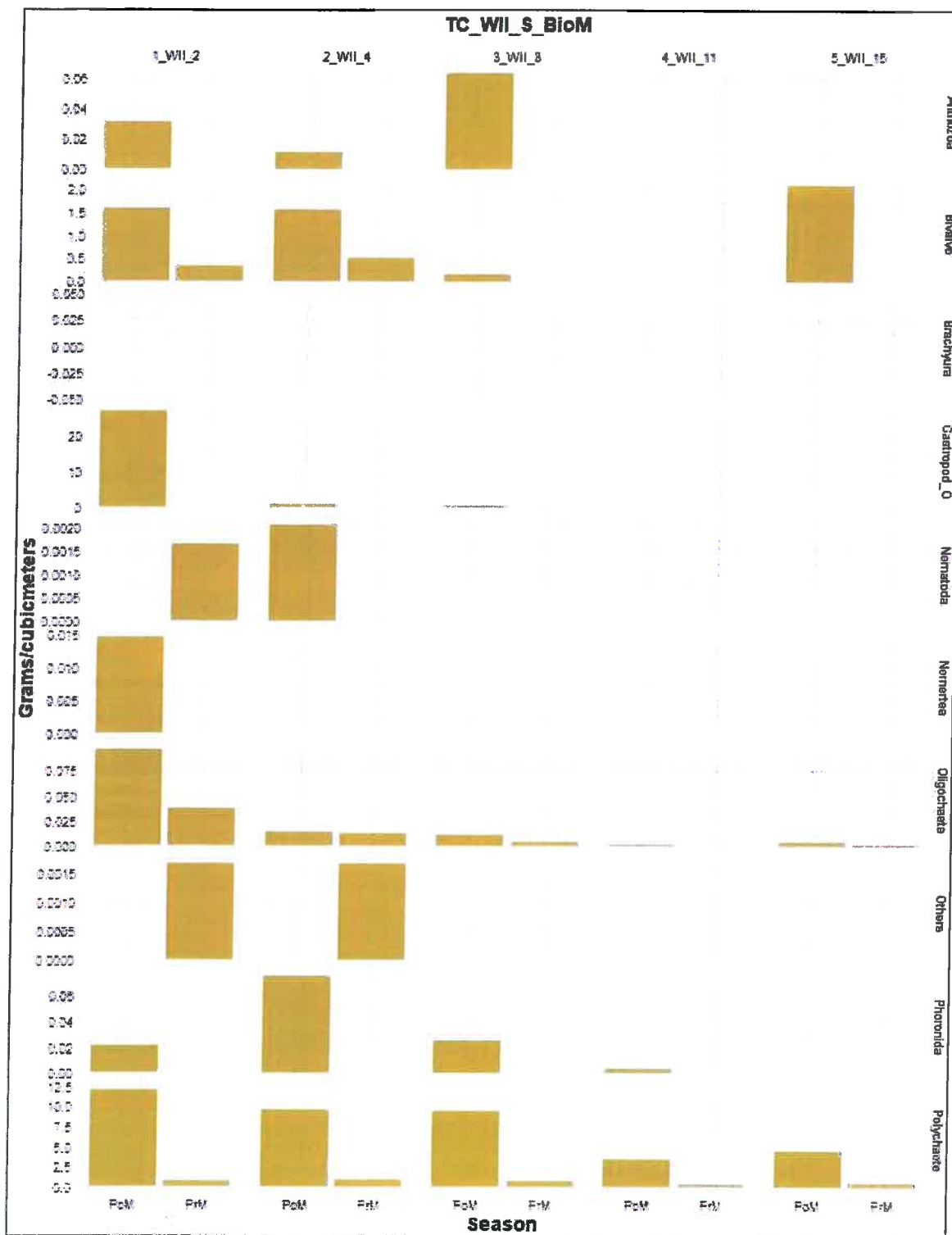


Fig. 28.2: Vertical stratification of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of WII cluster of Thane creek during the study period 2021-22

season (11894.69/m<sup>3</sup>, avg. 127.98g/m<sup>3</sup>) to Pre-monsoon season (3142.8/m<sup>3</sup>, 2.184g/m<sup>3</sup>). Along the cluster, 5 invertebrate phyla were recorded.

**Vertical stratification**

Uppermost Stratum from 0-2 cm shows the highest abundance (9855.7/ m<sup>3</sup>) as well as the highest group diversity amongst all the strata. Polychaete shows a declining trend from upper most stratum



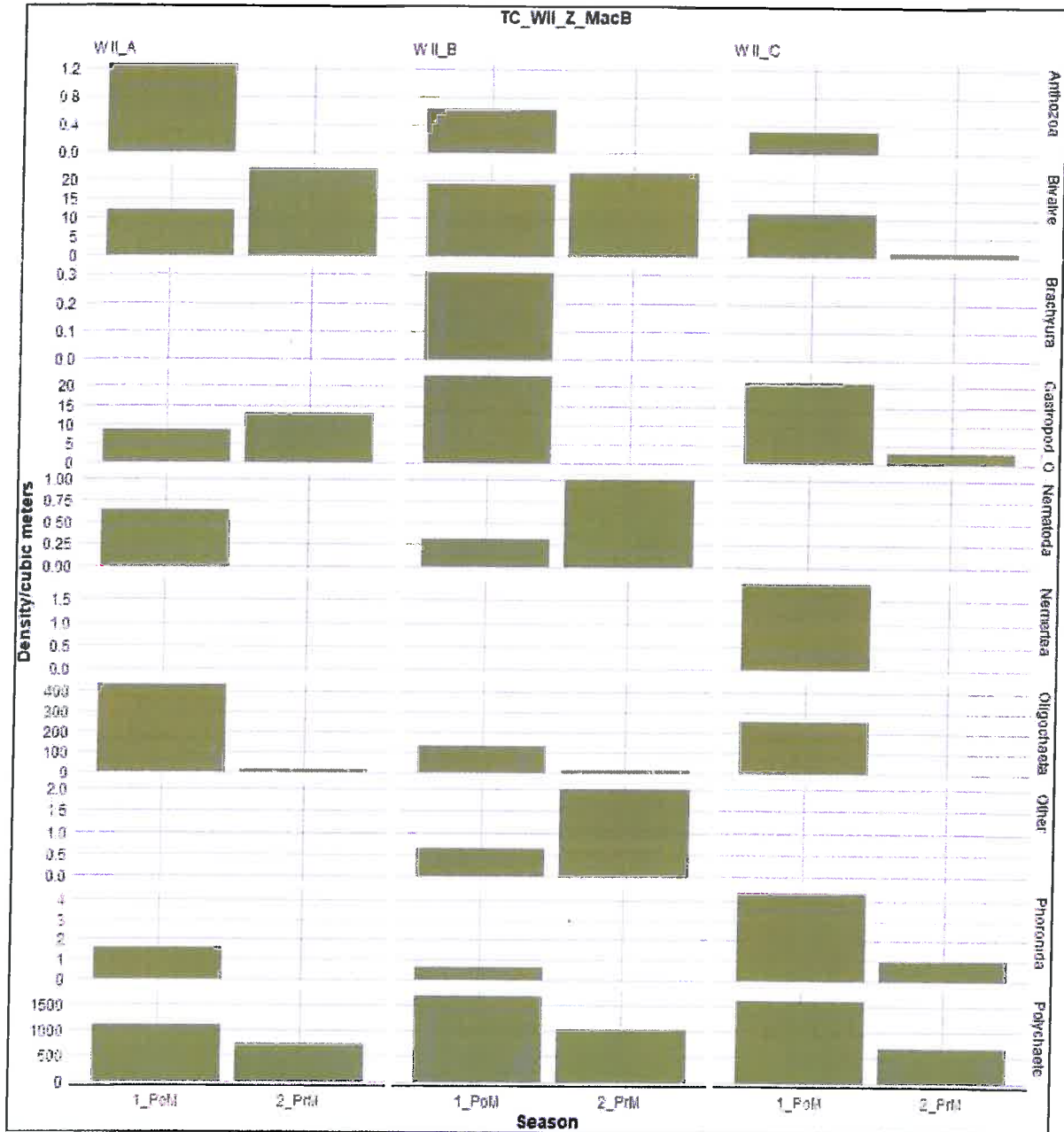


Fig. 28.3: Zonal variation of macrobenthic density /m<sup>3</sup> in the intertidal mudflats of WII cluster of Thane creek during 2021-22

0-2 cm to lowermost stratum 11-15 cm in both the seasons. Nemertea shows a sudden spike in abundance during Pre-monsoon season in lowermost sediment up to 15 cm. Nematoda was completely absent in stratum 4 cm and 8 cm. Anthozoa was present across all the stratum and all the seasons except stratum 11-15 cm of Pre-monsoon season. Apart from Nematoda, other groups such as Anthozoa, Brachyura, Bivalve, Gastropoda, Nemertea, Oligochaete, Polychaete and Phoronida were present across all the stratum. Polychaete shows the maximum biomass in stratum uppermost 0-2 cm (50.33g/ m<sup>3</sup>) during Post monsoon season. The maximum biomass was contributed by Bivalves (258.8g/ m<sup>3</sup>) followed by Gastropods (170.1g/ m<sup>3</sup>) and Polychaetes (136.4g/ m<sup>3</sup>) respectively. The least biomass was observed in Nematoda (0.003g/ m<sup>3</sup>) followed by oligochaetes (0.0362g/ m<sup>3</sup>). Stratum 4-8 cm has maximum biomass in Post-monsoon season (175.10g/ m<sup>3</sup>). The maximum biomass concentration was seen in Post-monsoon season across all the stratum.



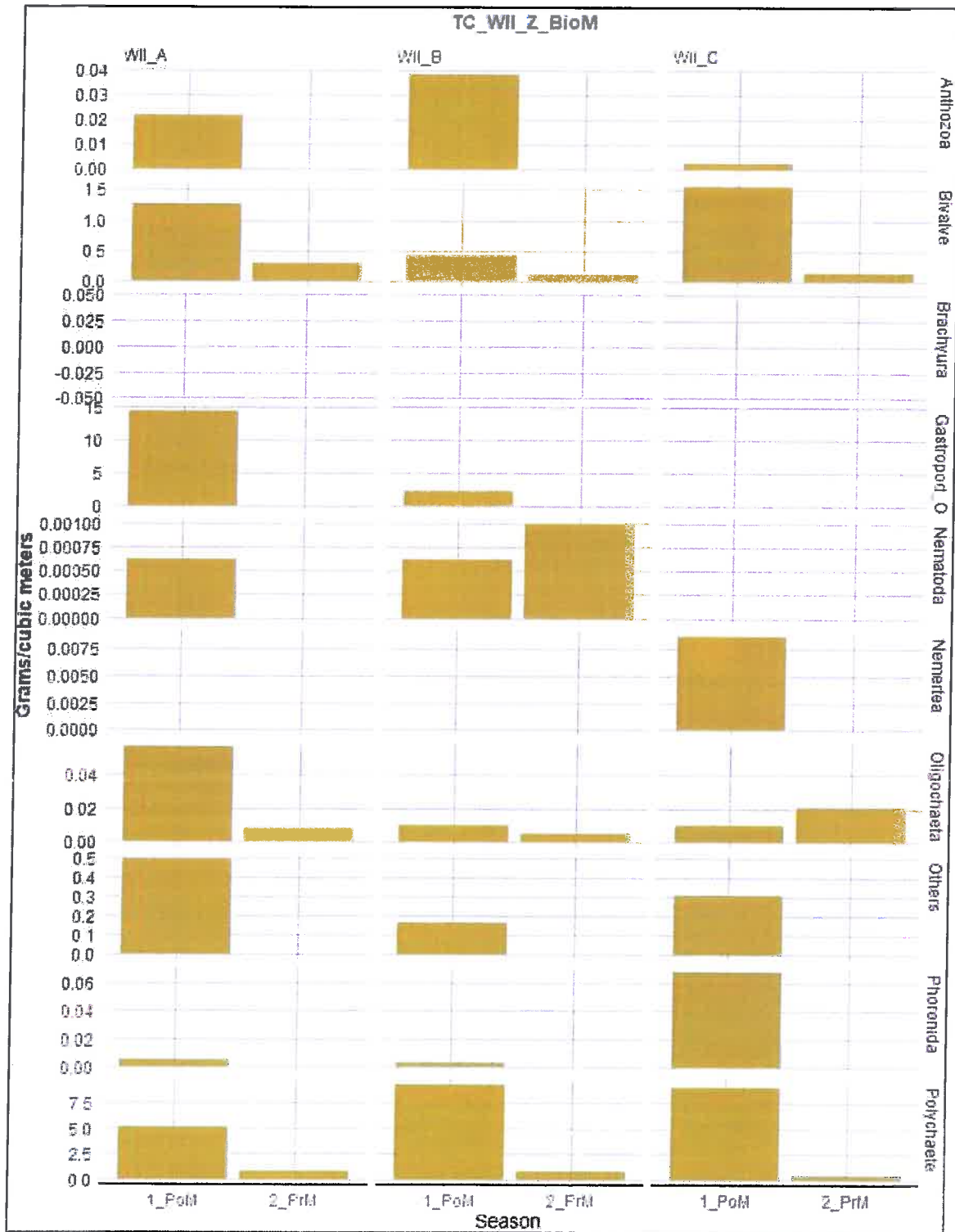
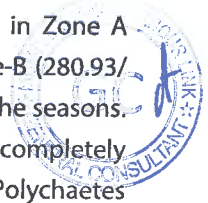


Fig. 28.4: Zonal variation of macrobenthic biomass g/m<sup>3</sup> in the intertidal mudflats of WII cluster of Thane creek during the study period 2021-22

**Intertidal zonation**

The highest density was observed to be in Polychaetes during Post-monsoon season in Zone A (4241.2/ m<sup>3</sup>). Bivalve was found to be in high density during Post-monsoon season in Zone-B (280.93/ m<sup>3</sup>). Oligochaete showed a gradual decrease in density from Zone-A to Zone C across both the seasons. Nematoda was only found in the Post-monsoon season of Zone A and Zone B. Nemertea was completely absent in Zone B during both the seasons. Post-monsoon season has highest density of Polychaetes





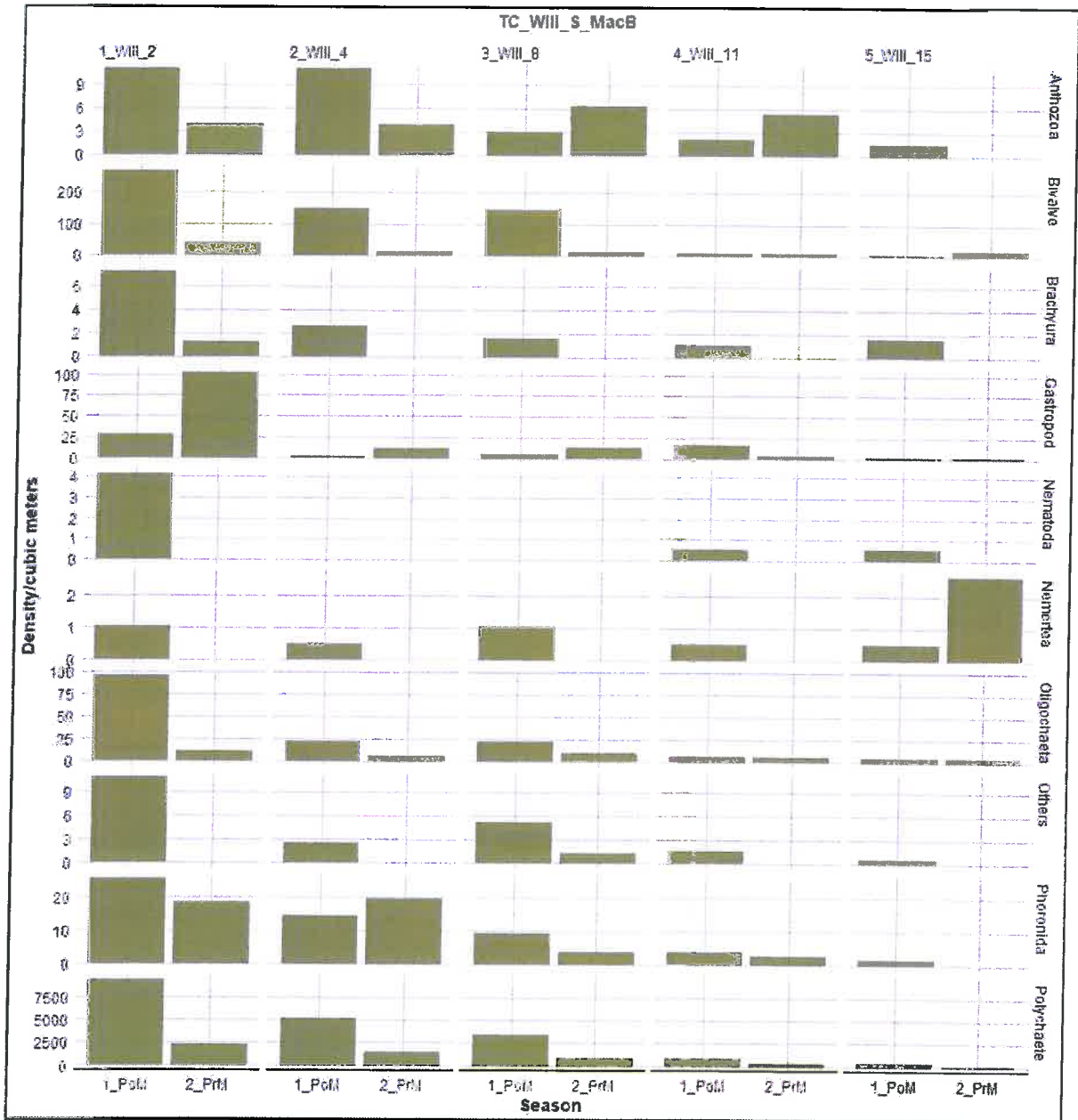


Fig. 29.1: Vertical stratification of macrobenthic density/m<sup>3</sup> in the intertidal mudflats of Will cluster of Thane creek during the study period 2021-22

(11352.18/ m<sup>3</sup>) than Pre-monsoon season in all Zones (3268.29/ m<sup>3</sup>). Phoronida showed a sudden increase in density in the Pre-monsoon season of Zone C (21.21/ m<sup>3</sup>). Maximum contribution to the overall biomass, is by Bivalves (155.3g/ m<sup>3</sup>) followed by Gastropoda (102.04g/ m<sup>3</sup>) and Polychaetes (81.82g/ m<sup>3</sup>) respectively. Decreasing trend in Biomass of Bivalves was observed across all the Zones in Post-Monsoon season. Biomass of Polychaetes during Post-monsoon (78.20g/ m<sup>3</sup>) season was significantly higher than Biomass during Pre-monsoon season (3.62g/ m<sup>3</sup>).

**W IV (Fig.30.1-30.4)**

In terms of Density and Biomass, Polychaete (17950.7/ m<sup>3</sup>, 58.9g/ m<sup>3</sup>) was the most dominating group along the cluster and was recorded in all seasons. The density and biomass for the macrobenthic community had significantly decreased from Post-monsoon season (14306.25/m<sup>3</sup>, 29.92g/m<sup>3</sup>) to Pre-monsoon season (3890.05/m<sup>3</sup>, 4.56g/m<sup>3</sup>). Along the clusters, 5 invertebrate phyla were recorded.

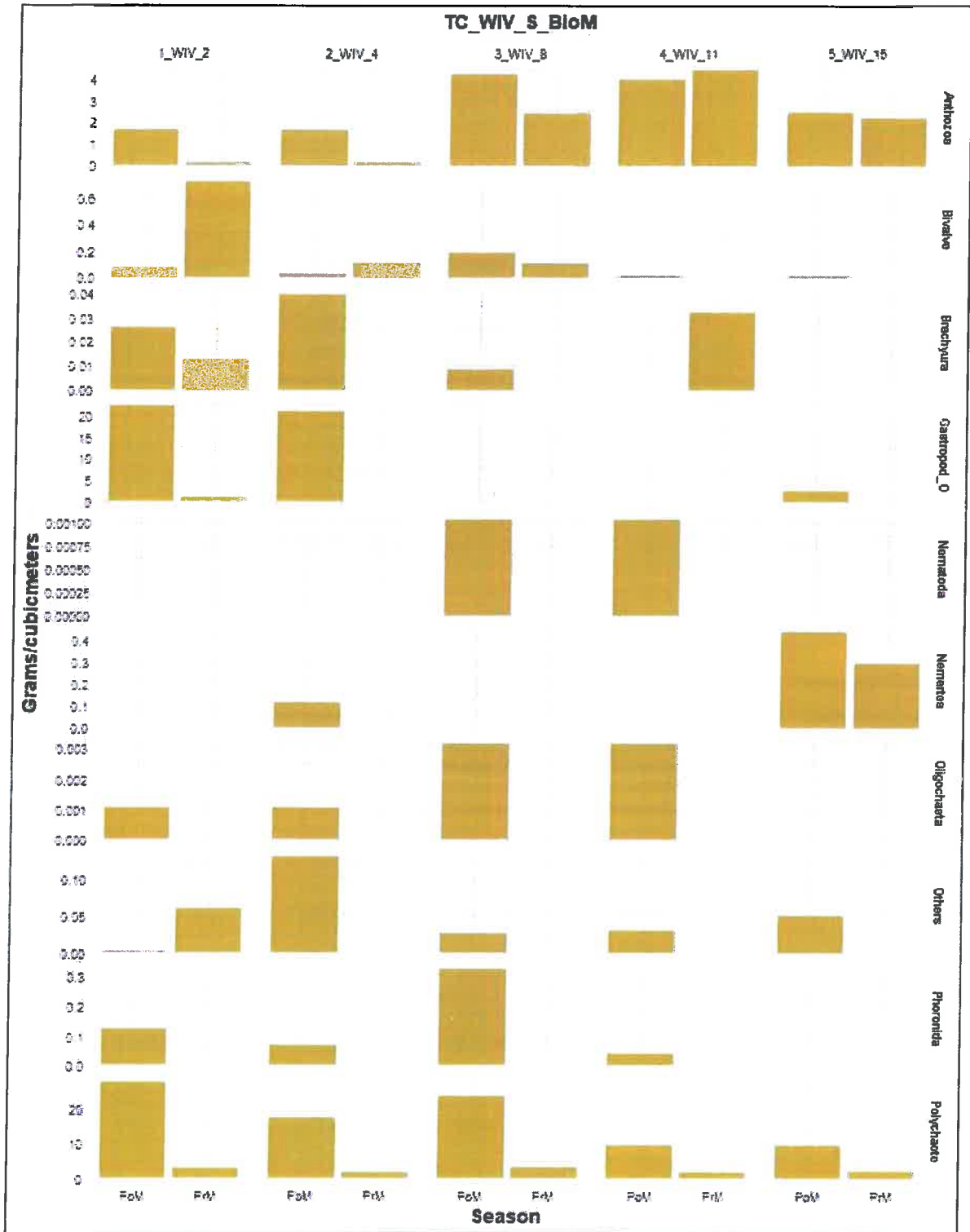


Fig. 30.2: Vertical stratification of macrobenthic biomass  $g/m^3$  in the intertidal mudflats of WIV cluster of Thane creek during the study period 2021-22

Brachyura ( $0.006g/ m^3$ ). Shrimp exhibits the lowest contribution towards biomass ( $0.000067g/ m^3$ ), followed by Nematoda ( $0.00026/ m^3$ ).

**Nhava (Fig.32.1-32.2)**

According to the findings of the current study, it was observed that Polychaete shows the most abundance across all the zones during both the seasons. ( $251.6/ m^3$ ). Unlike, the rest of the results, Pre-



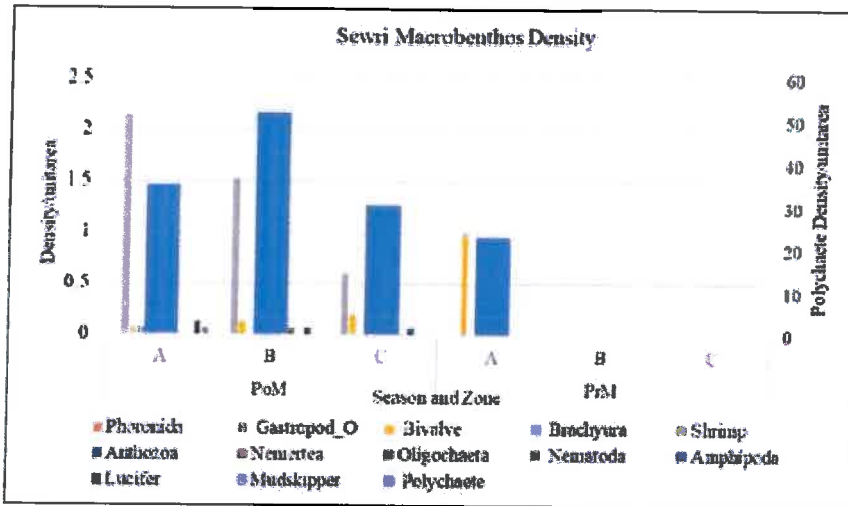


Fig. 31.1: Seasonal variation of macrobenthic density /m<sup>3</sup> of Sewri during the study period 2021-22

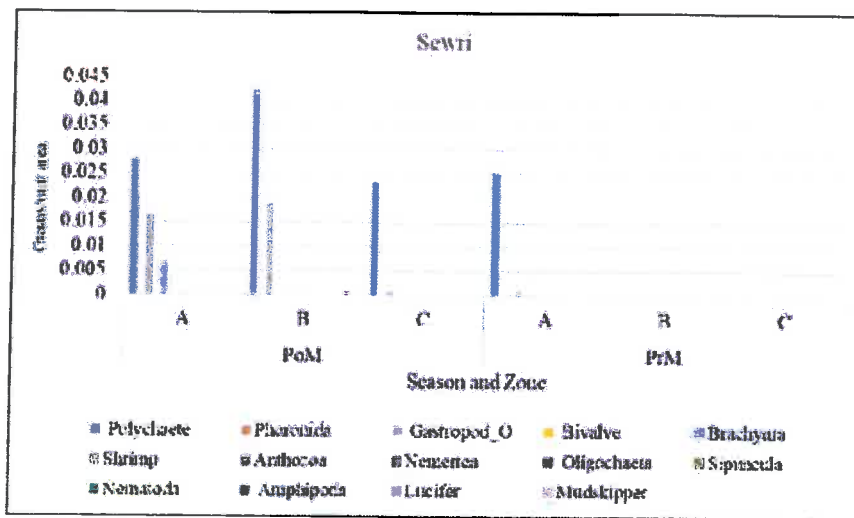


Fig. 31.2: Seasonal variation of macrobenthic biomass g/m<sup>3</sup> of Sewri during the study period 2021-22

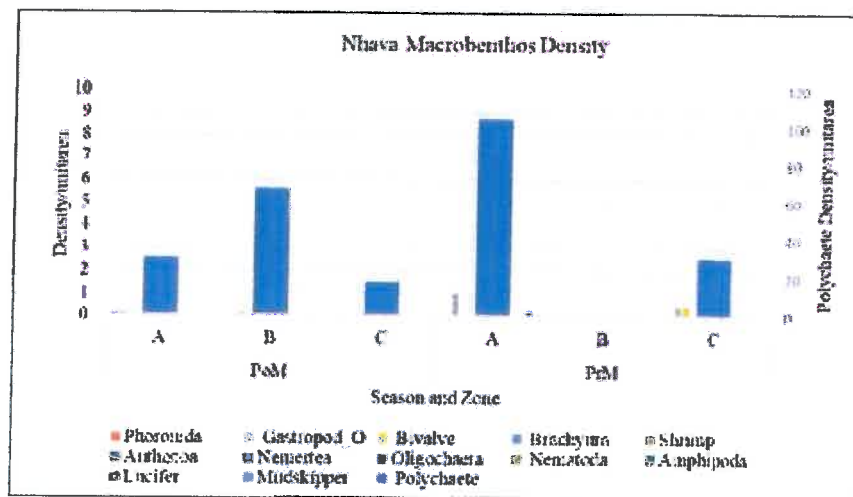


Fig. 32.1: Seasonal variation of macrobenthic density/m<sup>3</sup> of Nhava during the study period- 2021-22



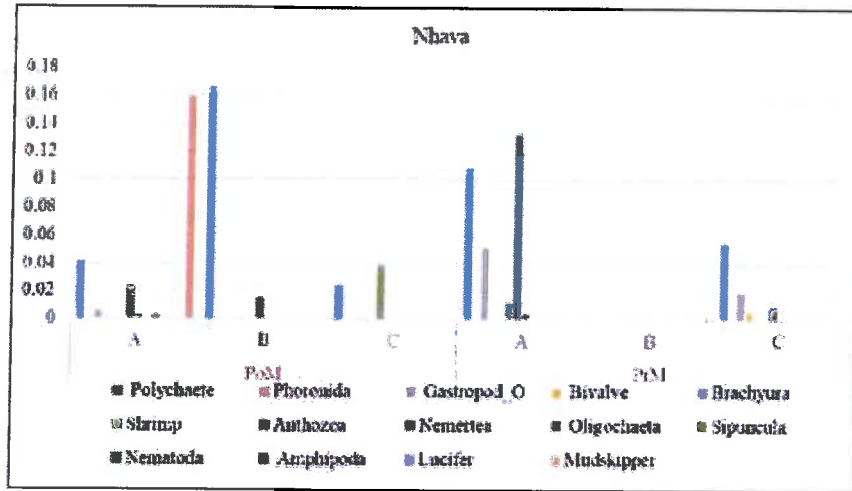


Fig. 32.2: Seasonal variation of macrobenthic biomass g/m<sup>3</sup> of Nhava during the study period 2021-22

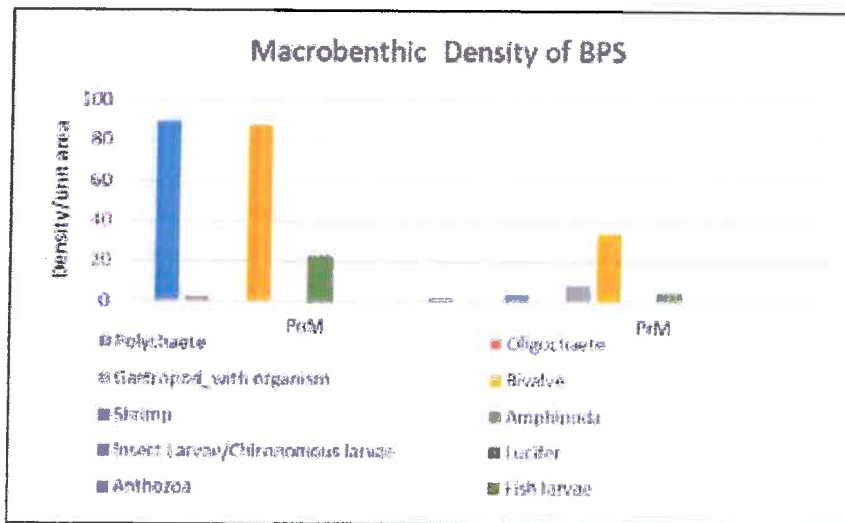


Fig. 33.1: Seasonal variation of macrobenthic density/m<sup>3</sup> in BPS wetland during the study period-2021-22

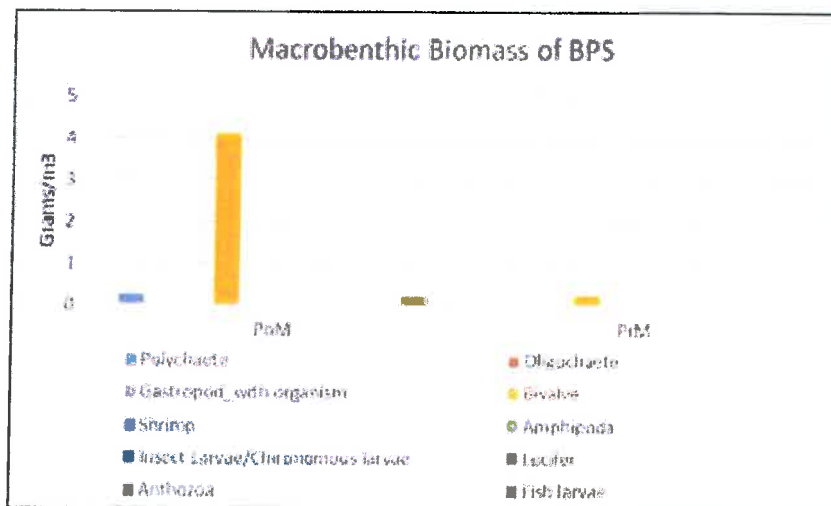


Fig. 33.2: Seasonal variation of macrobenthic biomass g/m<sup>3</sup> in BPS wetland during the study period-2021-22



monsoon season shows more Polychaete density in Zone A. (104.8/ m<sup>3</sup>), However, no Polychaetes or any other groups were observed in Zone-B. Zone-C showed a slight increase in the density of Polychaetes during Pre-monsoon season (30.8/ m<sup>3</sup>), followed by Anthozoa (0.8/ m<sup>3</sup>), Gastropoda (0.4/ m<sup>3</sup>) and Bivalves (0.4/ m<sup>3</sup>). Lucifer was only present in the Zone-A of Pre-monsoon season. Polychaetes dominate the Post-monsoon season across all the zones (116/ m<sup>3</sup>), however it shows an increase in density in Zone-B (67.6/ m<sup>3</sup>) and then decreases rapidly in Zone-C (17.6/ m<sup>3</sup> ). Post-monsoon shows higher group diversity (8 No) than that of Pre-monsoon season (7 No).

Polychaetes contribute highest towards the overall biomass (0.390g/ m<sup>3</sup>), followed by Anthozoa (0.17g/ m<sup>3</sup>), Mudskipper (0.158g/ m<sup>3</sup>) Gastropoda (0.07g/ m<sup>3</sup>) and Shrimp (0.05g/ m<sup>3</sup>). Phoronida exhibits the lowest contribution towards the total biomass (0.0001g/ m<sup>3</sup>) followed by Lucifer (0.0003g/ m<sup>3</sup>).

**Wetlands**

Among all studied wetlands, BPS exhibited maximum density (203.17/m<sup>3</sup>) during the Post-monsoon season whereas NRI exhibited the highest values for density (63.83/ m<sup>3</sup>) during the Pre-monsoon season.

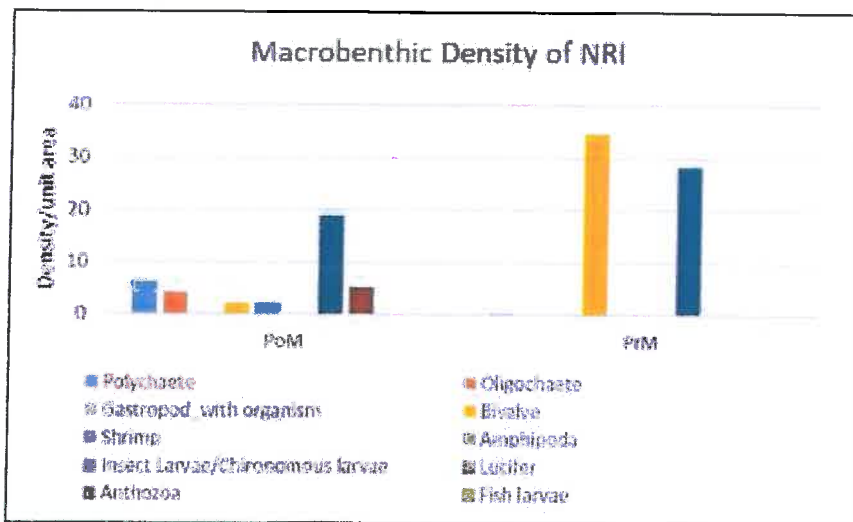


Fig. 34.1: Seasonal variation of macrobenthic density/m<sup>3</sup> in NRI wetland during the study period 2021–22

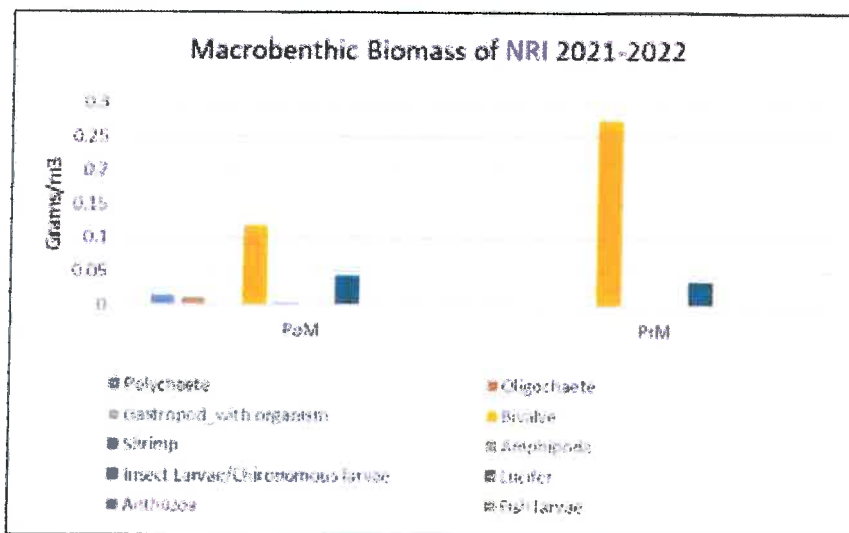


Fig. 34.2: Seasonal variation of macrobenthic biomass g/m<sup>3</sup> in NRI wetland during the study period-2021–22



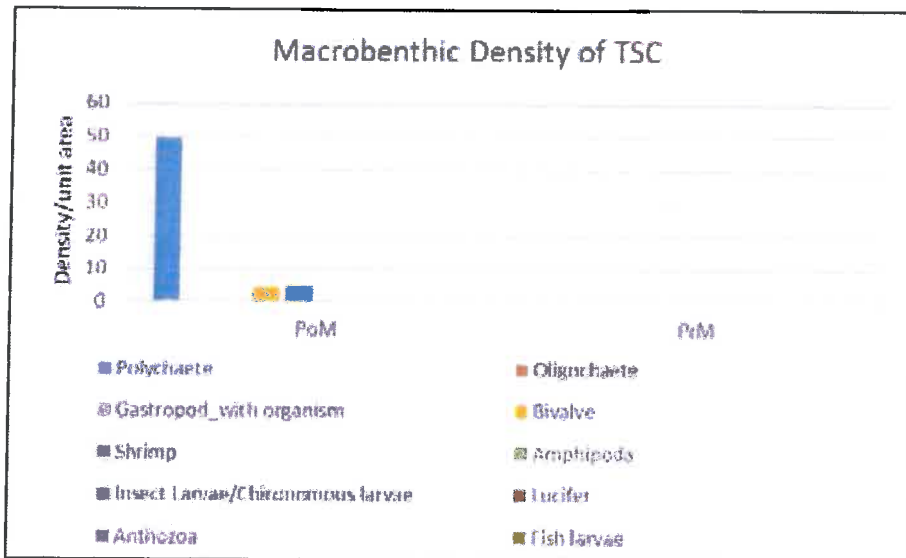


Fig. 35.1: Seasonal variation of macrobenthic density /m<sup>3</sup> TSC wetland during the study period- 2021-22

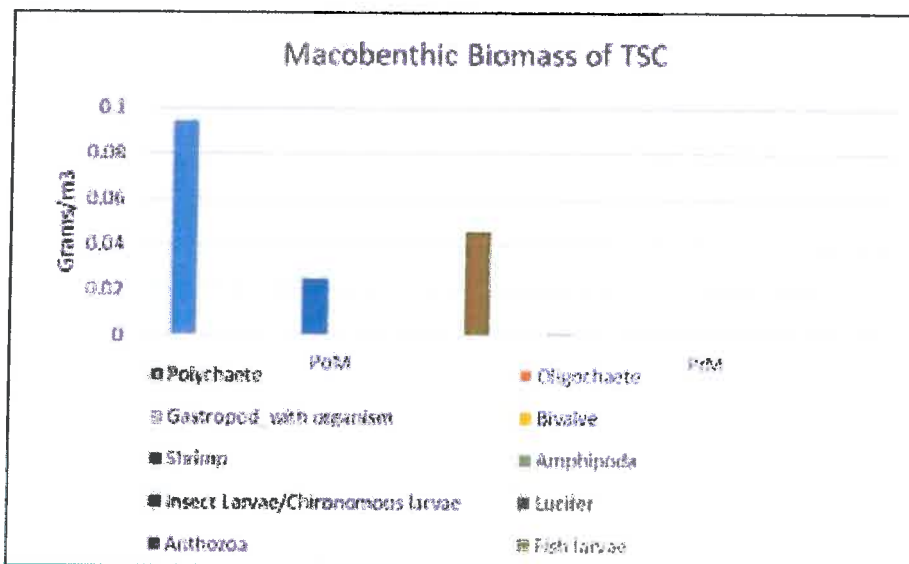


Fig. 35.2: Seasonal variation of macrobenthic biomass g/m<sup>3</sup> in TSC wetland the study period- 2021-22

Biomass values were also counted highest at BPS (4.56 g/ m<sup>3</sup>), during the Post-monsoon season which is found to be contributed majorly by Bivalves. Least values for macrobenthos density were observed at NRI (38.96/ m<sup>3</sup>) during the Post-monsoon months whereas during the Pre-monsoon months TSC (0.48/ m<sup>3</sup>) exhibited the least values.

**Bhandup Pumping Station (BPS): (Fig.33.1-33.2)**

With reference to the season, BPS had exhibited maximum density (203.17/ m<sup>3</sup>) and minimum biomass (4.56g/ m<sup>3</sup>) during the post-monsoon season, whereas minimum density (49.75/ m<sup>3</sup>) and maximum biomass (16.57g/ m<sup>3</sup>) during the pre-monsoon season. Polychaete (89.43/ m<sup>3</sup>, 0.25g/ m<sup>3</sup>) and Bivalve (88.04/m<sup>3</sup>, 4.10/ m<sup>3</sup>) contributed majorly to the macrobenthos assemblage. Gastropod (8.13/ m<sup>3</sup>) was observed only during the pre-monsoon season.



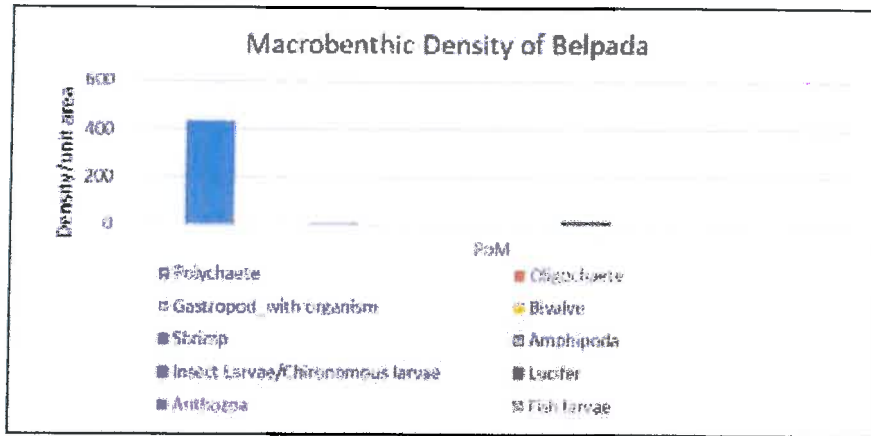


Fig. 36.1: Seasonal variation of macrobenthic density /m<sup>3</sup> in Belpada wetlands the study Period - 2021-22

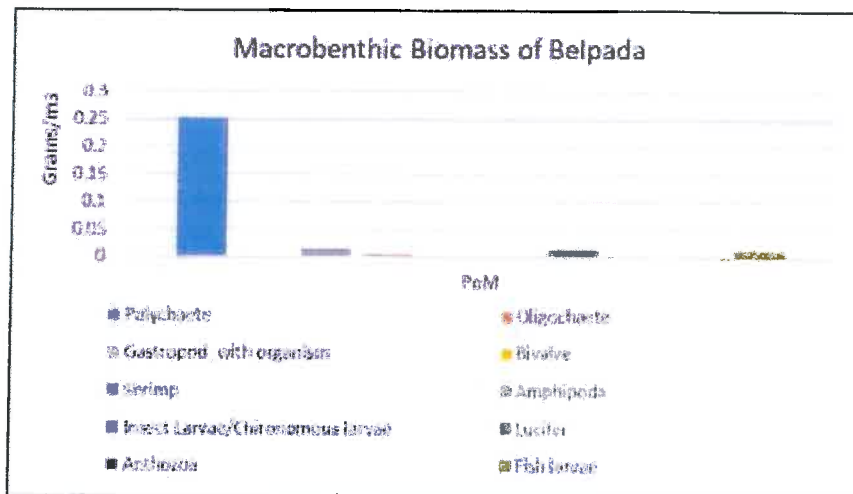


Fig. 36.2: Seasonal variation of macrobenthic biomass g/m<sup>3</sup> in Belpada wetland during the study period-2021-22

**Non-Resident Indian (NRI): (Fig.34.1-34.2)**

Pre-monsoon season exhibited increased values of density and biomass (68.83/ m<sup>3</sup>; 0.32g/ m<sup>3</sup>) when compared to their Post-monsoon values (38.96/m<sup>3</sup>; 0.19g/m<sup>3</sup>). Insect larvae, Oligochaete, Bivalve, Shrimp, Lucifer and Polychaete were recorded from NRI wetland during Post-monsoon season of which only two groups i.e. Insect larvae and Bivalve were observed during the Pre-monsoon season. The most dominating group was Insect larvae (19.00/ m<sup>3</sup>) during the post-monsoon season and Bivalve (34.92/ m<sup>3</sup>) during the pre-monsoon season.

**Training Ship Chanakya (TSC): (Fig.35.1-35.2)**

Macrobenthic density and biomass has shown a gradual decline with season from Post-monsoon (58.63/ m<sup>3</sup>; 0.17g/ m<sup>3</sup>). During the Post-monsoon season polychaete (49.79/ m<sup>3</sup>), shrimp (4.38/ m<sup>3</sup>) and bivalve (4.17/ m<sup>3</sup>) were the dominating the group while, during the pre-monsoon season polychaete (0.29/ m<sup>3</sup>) and amphipod (0.16/ m<sup>3</sup>) were contributing maximum to the overall density.



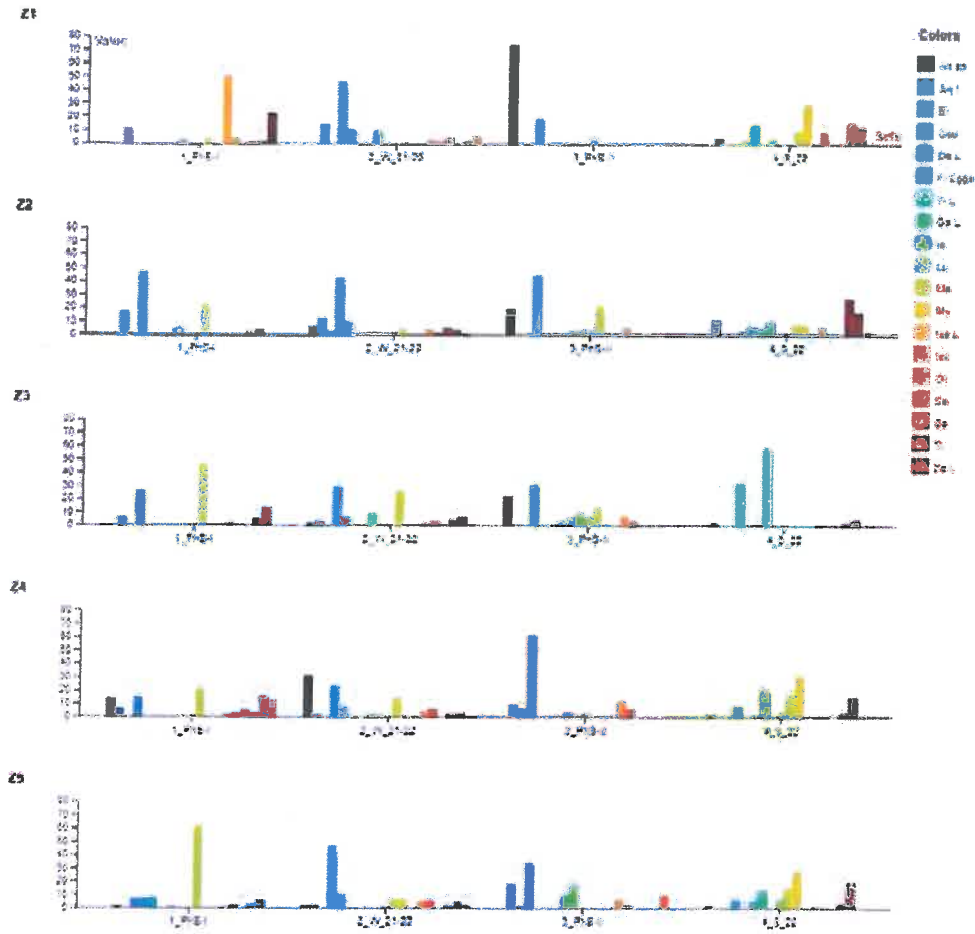


Fig. 37.1: Seasonal Variation in Zooplankton diversity along the five stations of Thane creek during the study period 2021-22

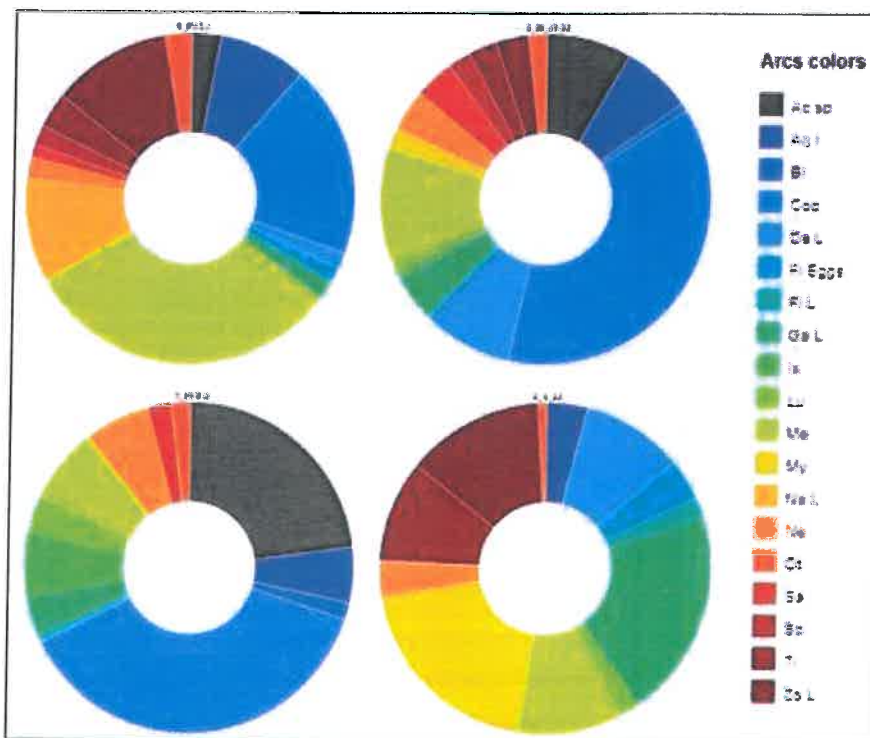


Fig. 37.2: Overall seasonal variation in Zooplankton diversity in Thane Creek during the study period 2021-2022





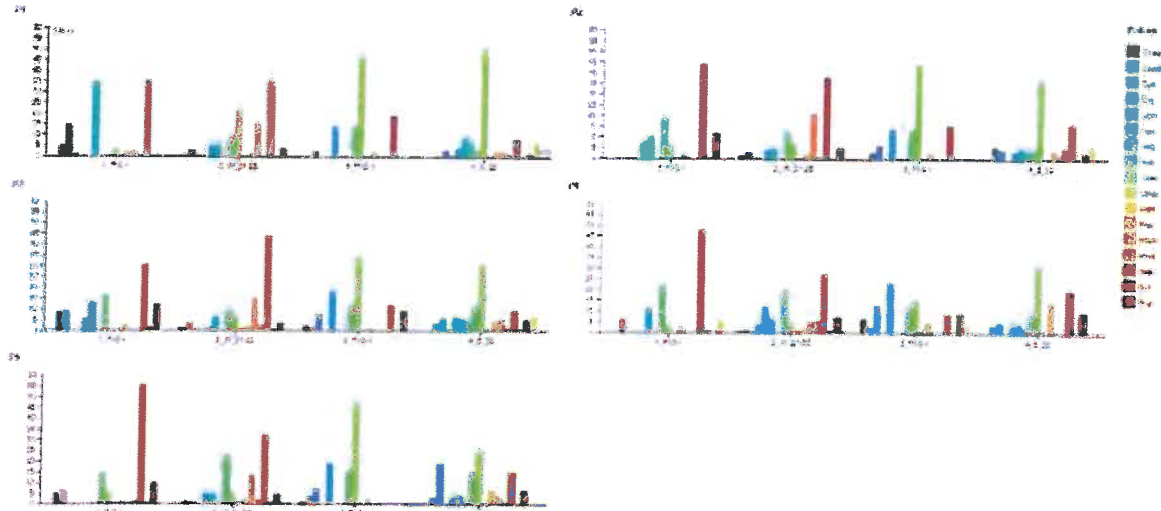


Fig. 38.1: Seasonal Variation in Phytoplankton diversity along the five stations of Thane creek during the study period 2021-22

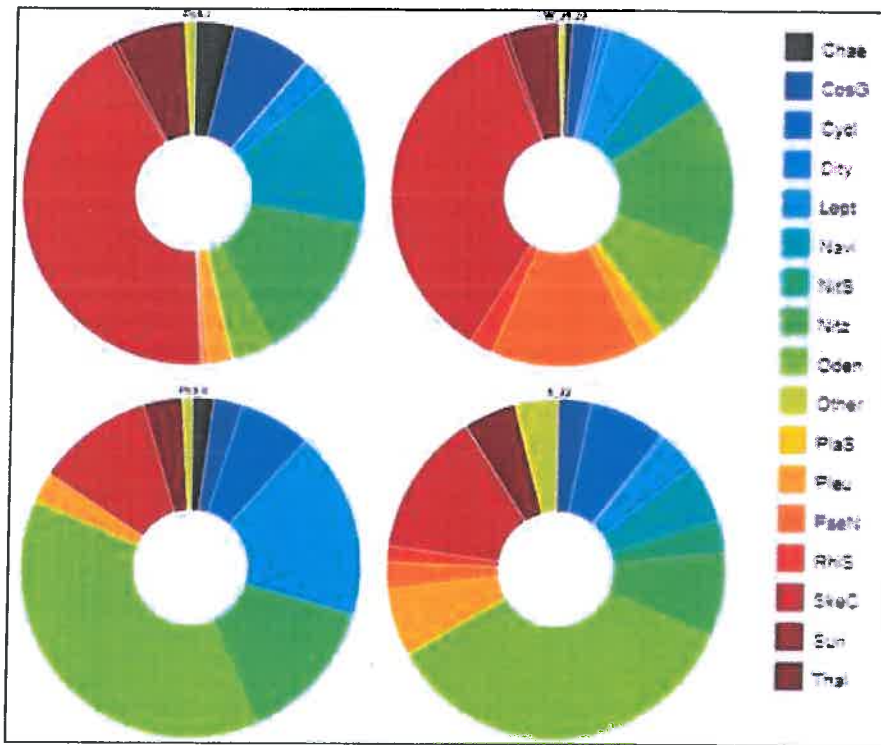


Fig. 38.1: Seasonal Variation in Phytoplankton diversity along the five stations of Thane creek during the study period 2021-22

**Belpada: (Fig.36.1-36.2)**

Sampling was done only during the post monsoon since the land was dry in the pre-monsoon season. It was observed that Belpada had the maximum faunal diversity as compared to other wetlands (7 No.). There was maximum density (453.34/ m<sup>3</sup>) observed as compared to the other wetlands. Polychaete (431.97/ m<sup>3</sup>) was the most dominant group contributing maximum to macrobenthic density followed by insect larvae (9.19/ m<sup>3</sup>) and Gastropod (8.79/ m<sup>3</sup>). Polychaete (0.25g/ m<sup>3</sup>) and Gastropod (0.02g/ m<sup>3</sup>) were found contributed majorly to the overall biomass values.



**Zooplankton (Fig.37.1-37.2)**

The Zooplankton standing stock as observed in the present study and the station-wise variations are summarized in the above given graphical representations.

A total of 18 groups of zooplankton were identified in the entire study period. Copepoda was the most dominating group followed by Medusae, *Acetus sp*, Gastropod larvae and Mysida.

Station Z1 shows that the Nauplius larva was the most abundant group in Phase shift I followed by Zoea larva; On the other hand, Nauplius larva was completely absent in Winter, Phase shift II and Summer season. Copepoda was completely absent in Phase shift I, but rather showed a sudden spike in winter season and Phase shift II and was again completely absent in the summer season. *Acetus sp* was abundantly present in Phase shift II and was otherwise absent in all other seasons.

Station Z2 exhibits that Copepoda was most abundant in Phase shift I, winter, Phase shift II and was completely absent in the Summer season. Medusae was second most abundant group in Phase Shift I.

Station Z3 shows that, *Acetus sp*, was completely absent in Phase shift I and showed a sudden increase in abundance in Winter and Phase shift II and was again completely absent in Summer. Aquatic insects were present in all seasons except phase shift two. Nauplius larva was completely absent in all seasons. Tintinida was present in all seasons except Phase shift two.

Station Z4, shows that *Acetus sp* was only present in Phase shift I and winter and was completely absent in Phase shift II and Summer. Nauplius larva was completely absent in all seasons. Copepoda was most abundant in Phase shift two. Copepoda showed a notable increase in abundance from Phase shift I to Phase shift II and was completely absent in Summer. Medusae was present in all seasons, except Phase shift two.

Station Z5 shows that Medusae are most abundant in Phase shift I and showed a sudden decrease in Winter. It was completely absent in Phase shift II and showed a gradual increase in Summer. Nauplius larva was completely absent in all seasons. *Acetus sp* was completely absent in all seasons except Winter. Copepoda was present in all seasons except summer.

In the entire study period, it was observed that Copepoda has the highest species abundance followed by Medusae and *Acetus sp*. Winter showed the most species diversity while Phase shift II showed the least. Nauplius larvae was only present in Phase shift I and completely absent in the following seasons. Medusae was the most dominant group in Phase shift I and it showed a gradual decrease over the following seasons. Lucifer was completely absent in Phase shift I and was present in the next three seasons.

**Phytoplankton- (Fig.38.1-38.2)**

The phytoplankton composition of Thane creek is summarized, and station wise variations are well elaborated as graphical representations. A total of 19 species of phytoplankton were identified in the entire study period.

During the present study, Station P1 showed that summer season had the most species diversity (14 species) in which *Skeletonema costatum* dominates the first two seasons i.e. Phase Shift-I winter season, followed by *Odontella sp*, which dominates Phase shift II and summer seasons. Phase shift II has the least species diversity. *Coscinodiscus sp.* was present during Phase shift II among all the seasons studied.

For Station P2, maximum diversity was observed during the Summer season with 14 species and the least diversity was observed in Phase Shift-two with only 6 species. *Skeletonema costatum* is the most dominant species during Phase shift I and winter season and *Odontella sp.* is the most abundant species

during Phase shift II and summer seasons. *Chaetoceros sp.* was present only during the winter season. *Coscinodiscus granii* was absent in Phase shift I, appeared during winter and gradually increases until summer. *Pseudo-Nitzschia sp.* was absent in Phase shift I but this species was the second most abundant during the winter season. However, it was not found in Phase shift II and shows a negligible abundance in summer season. *Navicula sp.* was completely absent in Phase Shift II.

Studies of Station P3 show that winter season had the most species diversity whereas the least species diversity was observed in phase shift two. *Skeletonema costatum* shows the most abundance in Phase shift I and winter season, with a slight increase in abundance in winter. While moving from winter season to summer season, *Skeletonema costatum* shows a steep decrease in their abundance. *Odentella sp.* was absent in the Phase shift I and showed an increase in its abundance in winter season and it became the most abundant species in the Phase shift II and summer seasons. *Rhizosolenia setigera* was only present in the winter and summer seasons and winter showed the most abundance.

At Station P4, Winter season showed the high species diversity (15no.) while Phase shift I showed the least (8no.). *Skeletonema costatum* was the most abundant species in the Phase shift I and winter season, however it showed a gradual decrease in the phase shift two and then slight increase in the summer season. *Nitzschia sp* was the second most abundant species in the Phase shift I and winter season, and then showed a gradual decrease in the Phase shift II and summer season. *Chaetoceros sp* was not found in the Phase shift I and summer season, while it showed a minimum abundance in the winter season and Phase Shift II. *Thalassiosira sp.* was absent in Phase shift I and present in other seasons with high abundance.

Station P5, the present study shows most species diversity during the winter (14 no) and the least in Phase shift II (8no.). *Skeletonema costatum* dominates the first two seasons, (Phase shift I and winter seasons), disappeared in Phase shift II and reappeared in the summer season with a moderate abundance. *Odentella sp* was the most abundant species in Phase Shift II and summer season. *Nitzschia sp* was the second most abundant species in Phase shift I and the winter season and then it showed a gradual decrease from winter season to summer season. *Cyclotella sp.* was absent in Phase Shift I and it appeared in winter to summer season with a gradual increase in their abundance.

In the entire study period it was observed that *Skeletonema costatum* has the highest contribution in the assemblage followed by *Odentella sp.*

Phase shift II showed the least species diversity. *Skeletonema costatum* was found to be highest in the first two seasons while it showed a significant decrease for its presence in the next two seasons, whereas *Odentella sp.* had lowest abundance in the first two seasons and it showed drastic increase in abundance in the following seasons. *Nitzschia sigma* was completely absent in the first three seasons, however it showed a slight increase in abundance in Summer. *Navicula* was found to be completely absent in Phase shift two. *Leptocylendrous sp.* Showed a sudden spike in abundance in Phase shift II and again it decreased in the following seasons.



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## Appendix 1. Photo Plate

### PLATE 1: Sites / Habitats



Belpada Wetland



BPS Wetland





Mankhurd Saltpans



NRI Wetland





Sewri Construction site



TSC wetland



**PLATE 2: Congregation of migratory birds at study sites**



**Congregation of Black-tailed Godwit**



**Congregation of Lesser Sandplover, Little Stints, Curlew Sandpiper and Kentish Plovers at Mankhurd Salt pans**







Flock of gulls



Flock of Lesser Whistling ducks at Thane Creek





foraging of Waders, Greater Flamingos and Lesser Flamingos on exposed intertidal Mudflat of Thane Creek



Lesser Flamingos feeding at Thane Creek



**PLATE 3: Migratory and resident birds at study sites**



Eurasian curlew at TSC wetland



Ruddy turnstone at Vashi mudflats of Thane Creek





Long-toed stint with Temminck\_s stint(1)



White stork in Thane Creek



Black-tailed godwit near Ghansoli mudflats



Greater flamingo at Vashi mudflats





Grey heron at Sewri mudflat



Painted stork at Vashi mudflat of Thane Creek



Western Reef Egret at Nhava-Sheva



**PLATE 4: Bird ringing and recoveries**



Tagged Lesser sandplover feeding at Vashi mudflat



Tagged Curlew sandpiper





Setting traps for waders mankhurd saltpan



Bird banding session at BPS





**PLATE 5: Some raptors observed in the study area**



**Brahminy kite at Nhava-Sheva**



**Western Marsh Harrier at BPS**



**Osprey in flight in Thane Creek**



Appendix 2- Checklist of birds recorded from Oct 2021-May 2022

COMMON NAME	SCIENTIFIC NAME	IUCN STATUS	STATUS	BPS	BEL	NRI	TSC	Kha	Man	TC	SEW	NS
Booted Eagle	<i>Hieraetus pennatus</i>	LC	M								+	
Oriental honey buzzard	<i>Pernis ptilorhynchus</i>	LC	R				+					
<b>Pandionidae</b>												
Osprey	<i>Pandion haliaetus</i>	LC	M				+			+		
<b>Rallidae</b>												
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	LC	R				+	+		+		
Common Coot	<i>Fulica atra</i>	LC	R	+		+	+	+		+		
<b>Recurvirostridae</b>												
Black-winged Stilt	<i>Himantopus himantopus</i>	LC	R	+	+	+	+	+	+	+		
Pied Avocet	<i>Recurvirostra avosetta</i>	LC	M	+		+	+			+		
<b>Charadriidae</b>												
Red-wattled Lapwing	<i>Vanellus indicus</i>	LC	R	+	+	+	+	+	+	+		
Pacific Golden Plover	<i>Pluvialis fulva</i>	LC	M	+	+		+	+		+		
Grey Plover	<i>Pluvialis squatarola</i>	LC	M	+	+	+	+		+	+	+	
Little Ringed Plover	<i>Charadrius dubius</i>	LC	M	+	+				+			+
Kentish Plover	<i>Charadrius alexandrinus</i>	LC	M	+	+				+	+		
Common ringed Plover	<i>Charadrius hiaticula</i>	LC	M						+			
Greater Sand Plover	<i>Charadrius leschenaultii</i>	LC	M	+								
Lesser Sand Plover	<i>Charadrius mongolus</i>	LC	M	+	+		+	+	+	+	+	+
<b>Scolopacidae</b>												
Ruff	<i>Calidris pugnax</i>	LC	M	+	+			+				
Common Snipe	<i>Gallinago gallinago</i>	LC	M	+	+	+	+	+				



Appendix 2- Checklist of birds recorded from Oct 2021-May 2022

COMMON NAME	SCIENTIFIC NAME	IUCN STATUS	STATUS	BPS	BEL	NRI	TSC	Kha	Man	TC	SEW	NS
Black-tailed Godwit	<i>Limosa limosa</i>	NT	M	+	+		+	+		+	+	
Bar-tailed Godwit	<i>Limosa lapponica</i>	NT	M	+			+			+		
Whimbrel	<i>Numenius phaeopus</i>	LC	M		+							
Eurasian Curlew	<i>Numenius arquata</i>	NT	M	+	+	+	+		+	+	+	+
Common Redshank	<i>Tringa totanus</i>	LC	M	+	+	+	+	+	+	+	+	+
Marsh Sandpiper	<i>Tringa stagnatilis</i>	LC	M	+	+	+	+	+	+	+	+	
Common Greenshank	<i>Tringa nebularia</i>	LC	M	+	+	+	+	+	+	+	+	+
Green sandpiper	<i>Tringa ochropus</i>	LC	M				+		+	+	+	+
Wood Sandpiper	<i>Tringa glareola</i>	LC	M				+		+	+	+	+
Terek sandpiper	<i>Xenus cinereus</i>	LC	M	+	+	+	+	+	+	+		
Common Sandpiper	<i>Actitis hypoleucos</i>	LC	M	+	+	+	+	+	+	+	+	+
Ruddy Turnstone	<i>Arenaria interpres</i>	LC	M				+		+		+	
Red Knot	<i>Calidris canutus</i>	NT	M						+	+		
Great knot	<i>Calidris tenuirostris</i>	EN	M							+		
Long toed Stint	<i>Calidris subminuta</i>	LC	M	+		+	+					
Little Stint	<i>Calidris minuta</i>	LC	M	+	+	+	+	+	+	+	+	+
Temminck's Stint	<i>Calidris temminckii</i>	LC	M	+					+			
Curlew Sandpiper	<i>Calidris ferruginea</i>	NT	M	+	+		+		+	+	+	+
Dunlin	<i>Calidris alpina</i>	LC	M	+					+	+		
Broad-billed Sandpiper	<i>Calidris falcinellus</i>	LC	M	+			+	+	+	+		
<b>Laridae</b>												
Lesser Black Backed Gull	<i>Larus fuscus</i>	LC	M					+		+		
Pallas's Gull	<i>Larus ichthyaetus</i>	LC	M	+				+		+		



Appendix 2- Checklist of birds recorded from Oct 2021-May 2022

COMMON NAME	SCIENTIFIC NAME	IUCN STATUS	STATUS	BPS	BEL	NRI	TSC	Kha	Man	TC	SEW	NS
Brown-headed Gull	<i>Larus brunnecephalus</i>	LC	M	+	+	+	+	+		+	+	+
Black-headed Gull	<i>Larus ridibundus</i>	LC	M	+		+	+	+		+	+	+
Slender-billed Gull	<i>Larus genei</i>	LC	M	+			+	+		+		
Common Gull-billed Tern	<i>Gelochelidon nilotica</i>	LC	M	+	+	+	+	+		+	+	+
Caspian Tern	<i>Hydroprogne caspia</i>	LC	M	+		+	+	+		+	+	
Common Tern	<i>Sterna hirundo</i>	LC	M							+		
River tern	<i>Sterna aurantia</i>	VU	M	+		+		+				
Little Tern	<i>Sterna albigrons</i>	LC	M	+				+				
Saunders's Tern	<i>Sterna saundersi</i>	LC	M				+		+			
Whiskered Tern	<i>Chlidonias hybrida</i>	LC	M	+	+	+	+			+	+	+
<b>Alcedinidae</b>												
White-breasted Kingfisher	<i>Halcyon smyrnensis</i>	LC	R	+	+	+	+	+	+	+		+
Common Kingfisher	<i>Alcedo atthis</i>	LC	R	+	+	+	+	+		+		
Black Capped Kingfisher	<i>Halcyon pileata</i>	VU	R					+		+		
<b>Jacaniidae</b>												
Phasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	LC	R								+	
<b>Rostratulidae</b>												
Greater painted snipe	<i>Rotratula benghalensis</i>	LC	R						+			
<b>Motacillidae</b>												
Grey Wagtail	<i>Motacilla cinerea</i>	LC	M						+			

R/M = Resident / Migratory, BPS = Bhandup pumping station, BEL = Belpada, NRI = Non-residential Indian Complex, TSC = Training Ship Chanakya, Kha = Kharghar, Man = Mankhurd TC = Thane Creek, SEW = Sewri, NS = Nhava-Sheva, LC = Least Concerned, VU = Vulnerable, NT = Near Threatened.





**CITY AND INDUSTRIAL DEVELOPMENT CORPORATION OF MAHARASHTRA LIMITED**

(CIN - U99999 MH 1970 SGC - 014574)

**REGD. OFFICE:**

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CIDCO Bhavan, CBD Belapur,  
Navi Mumbai - 400 614.

PHONE: 00-91-22-6791 8100

FAX : 00 91-22-6791 8166

Ref. No. NO.CIDCO/Hort/2019/19

Date : 25.11.2019

To,  
Shri. G.G.Ddeshpande,  
Executive Engineer (MMRDA),  
Mumbai Trans Harbour Link (MTHL),  
Bandra Kurla Complex, Bandra East,  
Mumbai - 400051.

**Sub: - Permission for removal of existing trees falling in the alignment of construction of Mumbai Trans Harbour Link (MTHL) Project (CH.18+187-CH.19+607KM and CH.20+087-CH.21+800KM) on Navi Mumbai side.**

**Ref:- MTHL/CIDCO/Tree Removal Permission/19/012/MTHL dt.14.05.2019**

Sir,

With reference to above it is to inform that your request for removal of 348 no of trees falling in the alignment of construction of Mumbai Trans Harbour Link (MTHL) Project (CH.18+187-CH.19+607KM and CH.20+087-CH.21+800KM) on Navi Mumbai side has been considered by the Tree Authority under section 8(3) of the Maharashtra (Urban Areas) Protection and Preservation of Trees Act, 1975 & rules called the Maharashtra (Urban Areas) Protection and Preservation of Tree rules - 2009 & amendment up to 2016 subject to the following conditions.:

- 1) The Tree Authority Committee of CIDCO has granted the permission to cut 266 no of existing trees and to transplant 82 no of existing trees. You should retain 504 no of existing trees. The details are as below;

Sr. No	Description	Tree no.
1	Trees to be cut	1, 3, 4, 5, 6, 7, 8, 9, 12, 13, 15, 16, 17, 18, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 59, 66, 67, 80, 90, 101, 102, 103, 104, 105, 118, 119, 120, 121, 123, 143, 144, 147, 148, 149, 150, 151, 153, 156, 157, 158, 159, 162, 165, 166, 173, 174, 175, 176, 177, 178, 179, 186, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 225, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 277, 278, 279, 289, 325, 327, 330, 336, 346, 350, 355, 356, 363, 367, 382, 384, 385, 386, 387, 389, 390, 391, 401, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436,

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[cidco.maharashtra.gov.in](http://cidco.maharashtra.gov.in) / CIDCO VIGILANCE MODULE NEW / Userlogin.aspx



		437, 438, 439, 440, 441, 444, 445, 447, 449, 450, 451, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 496, 497, 498, 499, 500, 501, 503, 504, 517, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 597, 599, 600, 601, 602, 603, 604, 624, 627, 628, 637, 639, 640, 641, 642, 643, 644, 658, 659, 661, 662, 663, 667, 678, 679, 680, 682, 683, 684, 688, 696, 698, 699, 700, 701, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 715, 730, 731, 744, 745, 754, 756, 758, 760, 761, 762, 773, 775, 776, 778, 779, 780, 783, 784, 785, 786, 787, 789, 790, 792, 793, 794, 795, 797, 824, 825, 826, 827, 831, 832.
2	Trees to be Transplant	2, 14, 19, 20, 21, 58, 65, 68, 79, 91, 122, 152, 154, 155, 160, 161, 163, 164, 274, 275, 276, 324, 326, 328, 329, 331, 332, 333, 334, 335, 347, 348, 349, 354, 357, 364, 365, 366, 383, 388, 413, 448, 452, 598, 638, 647, 660, 664, 665, 666, 668, 669, 670, 671, 672, 675, 676, 677, 681, 685, 686, 687, 689, 690, 691, 692, 693, 694, 695, 697, 702, 714, 732, 743, 755, 757, 759, 777, 781, 788, 791, 796.
3	Trees to be Retain	10, 11, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 54, 55, 56, 57, 60, 61, 62, 63, 64, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 81, 82, 83, 84, 85, 86, 87, 88, 89, 92, 93, 94, 95, 96, 97, 98, 99, 100, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 124, 125, 126, 128, 129, 130, 131, 132, 133, 135, 136, 137, 138, 139, 140, 141, 142, 145, 146, 167, 168, 169, 170, 171, 172, 180, 181, 182, 183, 184, 185, 187, 188, 189, 190, 191, 192, 193, 194, 218, 219, 220, 221, 222, 223, 224, 226, 227, 228, 229, 230, 231, 232, 233, 234, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 280, 281, 282, 283, 284, 285, 286, 287, 288, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 337, 338, 339, 340, 341, 342, 343, 344, 345, 351, 352, 353, 358, 359, 360, 361, 362, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 392, 393, 394, 395, 396, 397, 398, 399, 400, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 442, 443, 446, 453, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 502, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 605, 606, 607, 608, 609, 610, 611, 612, 615, 616, 617, 618, 619, 620, 621, 622, 623, 625, 626, 629, 630, 631, 632, 633, 634, 635, 636, 645, 646, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 673, 674, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 746, 747, 748, 749, 750, 751, 752, 753, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 774, 782, 798, 799, 800, 801, 802, 803, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 828, 829, 830, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858.

2) As per the provision under Section 8(3) (a) of the said Act, you are hereby directed that no tree shall be cut/transplanted until fifteen days (15) after the permission is given by the Tree Authority.



3) It is mandatory on your part to plant 2 no of trees against each tree to be cut. As per the provision of Maharashtra (Urban Areas) Protection and Preservation of Trees (amendment) Act, 2016 the new trees shall be plant within fifteen days from the date of tree (s) is felled.

4) You have to plant 532 no of new trees (against cutting of 266 no of trees) & to transplant 82 no of existing trees at Survey No. 347, Village- Gavhan, Tal-Uran, Dist-Raigad. While planting trees, suitable distance should be kept from the boundary of the plots, so that the newly planted trees will not obstruct the construction of compound wall or any other civil structure in future.

You shall maintain & protect the new tree plantation (532 no of trees) and transplanted trees (82 no of existing trees) for the period of three years & care should be taken so that tree grows properly & give a report to the tree officer about the condition of these trees once in six months for a period of three years as per the form - G under section 9(2).

5) Your attention is kindly drawn to the provisions under section of 21 of the Maharashtra (Urban Areas) Protection & Preservation of Trees Act. 1975, as modified on 9<sup>th</sup> June, 2004.

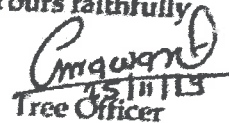
21 (1) Whoever fells any tree or causes any tree to be felled in contraventions of the provision of the Act or without reasonable excuse fails to comply with any order issued or condition imposed by the Tree Officer or the Tree Authority or voluntarily obstructs and member of the Tree Authority or the Tree Officer or any officers and Servants subordinate to him in the discharge of their functions under this Act. Shall, on conviction, be punished with the fine of not less than one thousand rupees which may extend up to five thousand rupees for every offence and also with imprisonment for a term of not less than one week, which may extent up to one year.

(3) The felling or causing of felling of each tree without the Permission of The Tree Authority shall constitute a separate offence.

- 6) At the time of transplanting or cutting of trees, if any social problem occurs, you will have to resolve the same at your end.
- 7) You shall submit the report for Cutting and transplantation of the trees carried out to Tree officer, CIDCO.
- 8) Tree authority Committee, CIDCO has granted the permission for removal of 348 no of trees (To Cut 266 nos and to transplant 82 nos). At the time of actual execution of work, applicant Executive Engineer, MTHI. Project, MMRDA should take care to remove only those trees which are falling in alignment of construction activities.
- 9) The said permission is valid only up to 90 days from the receipt thereof.

Thanking You.

Yours faithfully

  
Tree Officer

(Tree Authority Committee, CIDCO)

You are further requested to execute the work of cutting / Transplanting of trees phase wise and when required.

The remaining 226 (Two Hundred Twenty Six) trees (01, 02, 03, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 26, 27, 28, 29, 30, 31, 32, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 433, 434, 436, 437, 438, 439, 440, 441, 442, 444, 445, 446, 447, 449, 452, 453, 454, 455, 456, 457, 460, 464, 468, 473, 474, 475, 476, 479, 480, 483, 488, 489, 490, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 613, 616, 617, 637, 638, 638A, 638B, 639 to 662, 849 to 910, 1099; 1101, 1101A, 1100, 1102, 1103, 1104 to 1128, 1129, 1130, 1131 ) shall be **Retained** as it is , as per plan attached.

Whoever fells any tree or causes any tree to be felled in contraventions of the provisions of the Act or without reasonable excuse fails to comply with any order issued or condition imposed by the Tree Officer or the Tree Authority or voluntarily obstructs any member of the Tree Authority or the Tree Officer or any Officers and Servants subordinate to him in the discharge of their functions under this Act, shall, on conviction, be punished with the fine of not less than one thousand rupees which may extend up to five thousand rupees for every offense and also with imprisonment for a term of not less than one week. Which may extent up to one year. The felling or causing of cutting of each tree without the permission of the Tree Authority shall constitute a separate offense.

As per provision under section 19 (b) you are directed to plant trees in open spaces as well as R.G. Area as per the norms of Tree Authority before getting occupation /completion certificate of the constructed propose work.

As per direction of the Tree Authority, you are hereby directed to submit the photographs taken while transplanting of trees and the C.D. of the transplantation of the trees, you are also requested to plant indigenous variety of trees having circumference of 6" above and height of 10'-12' above. The list of indigenous variety of trees is enclosed herewith for your ready reference and compliance.

Thanking you.

Yours faithfully,

  
Supt. of Gardens  
& Tree Officer







MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY  
मुंबई महानगर प्रदेश विकास प्राधिकरण

No. ED/MTHL/CRZ Clearance/publish/16

Engineering Division  
Dt. 29<sup>th</sup> Jan 2016

①  
Squik  
29/01/16

To,  
Additional Chief Secretary (Environment)  
Environment Department,  
Govt. of Maharashtra,  
Mantralaya, Mumbai – 400 032

Sub: Mumbai Trans Harbour Link (MTHL) project  
- CRZ Clearance reg.

Ref : Ministry of Environment, Forest and Climate Change, Govt of India letter No.  
F.No.11-65/2012-IA.III Dt. 25<sup>th</sup> January 2016

Sir,

Ministry of Environment, Forest and Climate Change, vide letter referred above, has accorded CRZ clearance to the Mumbai Trans Harbour Link (MTHL) project. The copy of the clearance is submitted herewith for your information for ready reference.

Thanking you,

Yours faithfully,

*Mamdapure*  
(P.D.Mamdapure)  
Engineer-in-Chief

o/c

②  
Squik  
29/01/16

Encl: Copy of CRZ clearance letter

Copy submitted to

The Member Secretary, Maharashtra Pollution Control Board, Sion (E), Mumbai with a request to publish the CRZ Clearance on your website.

Copy submitted for information to,

1. The Secretary (Forest), Revenue & Forest Dept, Govt. of Maharashtra, Mantralaya , Mumbai  
Encl: Copy of CRZ clearance letter
2. The Chairman, Maharashtra Coastal Zone Management Authority, Mumbai  
Encl: Copy of CRZ clearance letter
3. The Director, Bombay Natural History Society, Hornbill house, Dr. Salim Ali Chowk, Shaheed Bhagat Singh Road, Mumbai – 400 001  
Encl: Copy of CRZ clearance letter
4. The Chief Executive Officer, Raigad Zilla Parishad, Alibaug  
Encl: Copy of CRZ clearance letter
5. The Assistant Commissioner (F-South ward), MCGM, 'F/S' ward Office, Jagganath Bhatankar Marg & Dr. B. A. Road Junction, Parel Naka, Mumbai-400 012  
Encl: Copy of CRZ clearance letter
6. The Block Development Officer, Uran - Taluka  
Encl: Copy of CRZ clearance letter
7. Sarpanch, Jasai Village, Tal: Uran, District Raigad
8. Sarpanch, Gavan Village, Tal: Panvel, District Raigad
9. Sarpanch, Chirle Village, Tal: Uran, District Raigad
10. The Block Development Officer, Panvel-Taluka : Encl: copy of CRZ clearance letter.  
Bandra - Kurla Complex, Bandra (East), Mumbai - 400 051.





MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY  
मुंबई महानगर प्रदेश विकास प्राधिकरण

No. ED/MTHL/CRZ Clearance/publish/16

Engineering Division  
Dt. 29<sup>th</sup> Jan 2016

To,  
Additional Chief Secretary (Environment)  
Environment Department,  
Govt. of Maharashtra,  
Mantralaya, Mumbai - 400 032

**Sub: Mumbai Trans Harbour Link (MTHL) project**  
- CRZ Clearance reg.

**Ref :** Ministry of Environment, Forest and Climate Change, Govt of India letter No.  
F.No.11-65/2012-IA.III Dt. 25<sup>th</sup> January 2016

Sir,  
Ministry of Environment, Forest and Climate Change, vide letter referred above, has  
accorded CRZ clearance to the Mumbai Trans Harbour Link (MTHL) project. The copy of the  
clearance is submitted herewith for your information for ready reference.

Thanking you,

Yours faithfully,

*(Signature)*  
(P.D. Miamdapure)  
Engineer-in-Chief

Encl: Copy of CRZ clearance letter

Copy submitted to

The Member Secretary, Maharashtra Pollution Control Board, Sion (E), Mumbai with a request  
to publish the CRZ Clearance on your website.

Copy submitted for information to,

The Secretary (Forest), Revenue & Forest Dept, Govt. of Maharashtra, Mantralaya, Mumbai

Encl: Copy of CRZ clearance letter

The Chairman, Maharashtra Coastal Zone Management Authority, Mumbai

Encl: Copy of CRZ clearance letter

3. The Director, Bombay Natural History Society, Hornbill house, Dr. Salim Ali Chowk, Shaheed  
Bhagat Singh Road, Mumbai - 400 001

Encl: Copy of CRZ clearance letter

4. The Chief Executive Officer, Raigad Zilla Parishad, Alibaug

Encl: Copy of CRZ clearance letter

5. The Assistant Commissioner (F-South ward), MCGM, 'F/S' ward Office, Jagganath Bhatankar  
Marg & Dr. B. A. Road Junction, Parel Naka, Mumbai-400 012

Encl: Copy of CRZ clearance letter

6. The Block Development Officer, Uran - Taluka

Encl: Copy of CRZ clearance letter

7. Sarpanch, Jasai Village, Tal: Uran, District Raigad

8. Sarpanch, Gavan Village, Tal: Panvel, District Raigad

9. Sarpanch, Chirle Village, Tal: Uran, District Raigad

10. The Block Development Officer, Panvel-Taluka : Encl: copy of CRZ clearance letter,  
Bandra - Kurla Complex, Bandra (East), Mumbai - 400 051.

EPABX : 2659 0061 - 04 / 2659 4000 • FAX : 2659 1264 • WEB SITE : <https://mmrda.maharashtra.gov.in>



*(Handwritten notes in Marathi)*  
21/2/16  
स्वीय सहायक  
स्वीय कार्याकारी अधिकारी  
स्वीय कार्यालय परिषद, मुंबई  
22/2/16  
प्रामाण्यवक  
ग्रा. पं. चिर्ले  
21/2/16  
अभिवादन  
मु. पंचायत जासई  
ता. उरण, जि. रा. 2  
21/2/16  
पंचायत समिती, उरण  
22/2/16  
21/2/16  
लिखित  
हाताक्षरित गवळण, ता. उरण  
21/2/16

SP GOVT COLONY P.O <400051>  
E:MS648677871N  
Counter No:1,OP-Code:SGK  
To:THE DIRECTOR,NORTH NATURAL RESOURCES  
MUMBAI, PIN:400003  
From:MUMBAI METROPOLITAN REGION , DEVELOPMENT  
Wt:25grams,  
Amt:17.00 ,01/02/2016 ,11:19  
Taxes:Rs.2.00<<Track on www.indiapost.gov.in



SP GOVT COLONY P.O <400051>  
E:MS648677981N  
Counter No:1,OP-Code:SGK  
To:CHIEF SECRETARY,MAHA POLLUTION CONT  
MUMBAI, PIN:400022  
From:MUMBAI METROPOLITAN REGION , DEVELOPM  
Wt:25grams,  
Amt:17.00 ,01/02/2016 ,11:20  
Taxes:Rs.2.00<<Track on www.indiapost.gov.



SP GOVT COLONY P.O <400051>  
E:MS648677751N  
Counter No:1,OP-Code:SGK  
To:FOREST COMMISSIONER,DURGADEVI  
MUMBAI, PIN:400012  
From:MUMBAI METROPOLITAN REGION , DEVELOPMENT  
Wt:25grams,  
Amt:17.00 ,01/02/2016 ,11:19  
Taxes:Rs.2.00<<Track on www.indiapost.gov.in.



SP GOVT COLONY P.O <400051>  
E:MS648678071N  
Counter No:1,OP-Code:SGK  
To:ADD CHIEF SECRETARY,ENVIRONMENT DEPT  
MUMBAI, PIN:400032  
From:MUMBAI METROPOLITAN REGION , DEVELOPE  
Wt:25grams,  
Amt:17.00 ,01/02/2016 ,11:21  
Taxes:Rs.2.00<<Track on www.indiapost.gov.



SP GOVT COLONY P.O <400051>  
E:MS648677841N  
Counter No:1,OP-Code:SGK  
To:SECRETARY,REVENUE & FOREST  
MUMBAI, PIN:400002  
From:MUMBAI METROPOLITAN REGION , DEVELOPMENT W  
Wt:25grams,  
Amt:17.00 ,01/02/2016 ,11:20  
Taxes:Rs.2.00<<Track on www.indiapost.gov.in>>



SP GOVT COLONY P.O <400051>  
E:MS648678151N  
Counter No:1,OP-Code:SGK  
To:CHIEF MW,MAHA COASTAL ZONE  
MUMBAI, PIN:400032  
From:MUMBAI METROPOLITAN REGION , DEVELO  
Wt:25grams,  
Amt:17.00 ,01/02/2016 ,11:21  
Taxes:Rs.2.00<<Track on www.indiapost.g





MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY  
मुंबई महानगर प्रदेश विकास प्राधिकरण

No ED/MTHL/CRZ/2016

Engineering Division  
Date: 16/02/2016

To,  
Chief Conservator of Forests,  
Near Micro Wave Tower,  
Bara Banglow Area,  
Thane (East) – 400 603.

- Sub.: Mumbai Trans Harbour Link Road.**  
- CRZ Clearance for Mumbai Trans Harbour Sea Link (MTHL) by  
M/s. Mumbai Metropolitan Region Development Authority Reg.
- Ref.:** Letter obtained from Ministry of Environment & Forests (IA.III Division)  
No. F.No.11-65/2012-IA-III dated 25/01/2016.

Sir,

Ministry of Environment & Forests (IA.III Division) has accorded Costal Regulation Zone Clearance (CRZ) for Mumbai Trans Harbour Link Project vide above referred letter.

As required under point no. 8 of General Conditions, the project proponent – Mumbai Metropolitan Region Development Authority has published CRZ clearance in two local Newspapers i.e. India Express – English language and Loksatta – Marathi language on 29/01/2016. The copies of same are enclosed herewith for your information and record please. A copy of CRZ clearance is also enclosed herewith for your ready reference.

Thanking you.

Yours faithfully,

*Mamdapure*  
(P.D. Mamdapure)  
Engineer-In-Chief

- Encl.: 1. Copy of Notice published in Newspapers.  
2. Copy of CRZ clearance from MoEF.



SF AUDIT BHAYAN PO (400051)

EM917205609IN

Counter No:1, OP-Code:SVM

To:ADDL PRINCIPAL CON,CIVIL LINES

NAGPUR, PIN:440001

From:MMRDA, BANDRA E

Wt:30grams,

Amt:40.00 ,17/02/2016,12:02

Taxes:Rs.5.00<<Track on www.indiapost.gov.in

*JA*  
*tan*



Bandra - Kurla Complex, Bandra (East), Mumbai - 400 051.

EPABX : 2659 0001 - 04 / 2659 4000 • FAX : 2659 1264 • WEB SITE : <https://www.mmrda.maharashtra.gov.in>



MUMBAI, TUESDAY  
27.08.2013

**TENDERS & NOTICES**

**RAJIV GANDHI JEEVANDAYEE AROGYA YOJANA SOCIETY**  
Government of Maharashtra  
Jeevandayee Bhavan, E.S.I.S Hospital Compound,  
Ganpat Jadhav Marg, Mumbai - 400018  
Phone and Fax: 022-24912291  
Email: hc.off1@jeevandayee.gov.in Website: www.jeevandayee.gov.in

**CORRIGENDUM II**

Ref-Tender Notice- RFP for Printing, Packaging, and Distribution of Health Card Stationery across Maharashtra State dated 3rd August 2013. There have been some modifications in the RFP document. The last date of the submission of the Tender is now extended to 31st August 2013 up to 2 PM. The details of the same in bidding for this tender can be seen on our website [www.jeevandayee.gov.in](http://www.jeevandayee.gov.in).

Sd/-  
CEO

**NORTHERN RAILWAY**  
**CORRIGENDUM**  
OFFICE OF THE MEDICAL DIRECTOR,  
NORTHERN RAILWAY CENTRAL HOSPITAL  
BASANT LANE, DELHI-110055  
File No. E/Med/SR/74/13  
Adv.L.No.NRCH/SR/2013/002 Dt.: 08.2013

**ENGAGEMENT OF SENIOR RESIDENTS**

In continuation to previous advertisement published vide Advt. No. NRCH/SR/2013/001 dated 20.07.13 for appointment of Senior Residents, the age limit may be read as:- (1) General- 33 Years (2) OBC- 36 Years (3) SC & ST - 38 Years  
Instead of - (1) General/UR - 33 Years (2) OBC/SC/ST - 38 Years. 1898/13

Serving Customers With A Smile

**MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY**  
MMRDA (A Government of Maharashtra Undertaking)  
Plot Nos. C-14 & 15, Bandra-Kurla Complex, Bandra (E),  
Mumbai - 400 051. Tel. 26590001-04, Fax: 26591264.  
Website: [www.mmrda.maharashtra.gov.in](http://www.mmrda.maharashtra.gov.in)

Name of work : Mumbai Trans Harbour Link Project.  
Ref- letter from Ministry of Environment and Forests dated 19.7.2013.  
Ministry of Environment and Forests, GOI has accorded-Coastal Regulation Zone clearance to the Mumbai Trans Harbour Link Project vide their letter no F.No.11-65/2012-IA-III dated 19.7.2013. Copies of clearance letter are available with the State Pollution Control Board. It can be also downloaded from the website of the Ministry of Environment & Forests at [http:// www.envfor.nic.in](http://www.envfor.nic.in)

Date: 26/08/2013  
Place : Mumbai  
No.ED/MTHL/MoEF/Clearance/13

Sd/-  
Chief Engineer,  
Engineering Division

**PUNJAB STATE TRANSMISSION CORPORATION LIMITED**  
(Regd. Office, PSEB, Head Office, The Mall, Patiala-147001)

**NOTICE INVITING TENDER**

- Type of Tender: Open Tender
- Name & complete address of office giving tender : Chief Engineer / TS, 3rd Floor, Shakti Sadan, PSTCL, Patiala
- Tender Enquiry No.: STQ-1020
- Scope of Work : Manufacture, fabrication, galvanization & supply of 220 KV tower material as per PSTCL Specification STQ-1020 Qty.-8800 MT
- Starting date of downloading from website <https://pstcl.nprocure.com> : Date of Publication
- Last date of downloading from website <https://pstcl.nprocure.com> : 23.9.2013 upto 3.00 PM
- Last date/time for bid submission : 26.9.13 upto 11.00 AM
- Date/time for opening of bids : 26.9.2013 at 2.30 PM
- Cost of specification : Rs. 2500/-
- Mode of Payment : As. per specification
- Tender specification can only be downloaded from website <https://pstcl.nprocure.com>. Details regarding e-Tendering are available on website [www.pstcl.org](http://www.pstcl.org). All the prospective bidders are requested to get their digital signatures, register themselves on the web site <https://pstcl.nprocure.com> and get conversant with the process of on line submission of tenders well in time so as to submit the tender by the due deadline. No request for extension in the due date of tender opening on the above grounds shall be entertained.

C-236/2013 TS Dy. CE/TS (Design), PSTCL, Patiala.

Save Electricity Save Money

**PUNJAB STATE TRANSMISSION CORPORATION LIMITED**  
Regd. Off. : PSEB H.O., The Mall, Patiala-147001  
Office of Chief Engineer/Transmission System, Shakti Sadan, Patiala-147001

**CORRIGENDUM NO-2**

Last date and time for sale of Bid documents, receipt and opening of Tender against Enquiry No. STQ-2012 for Tower Package for the construction of following 400KV lines on turnkey basis:  
1. 400KV S/S Nakodar - 400 KV Wadala Granthian D/C line - 90 Kms.  
2. 400KV S/S Dhuri (Bhalwan) - 400KV S/S Amloh (Near Bhagwanpura) D/c Line - 48Kms has been revised as follows:  
Tender Enquiry No: STQ-2012

	Old Revised Date & Time	New Revised Date & Time
i) Last date of sale of Bid Documents:-	26.08.2013 upto 15.00Hrs.	07.10.2013 upto 15.00Hrs
ii) Last date/time for Bid Submission:-	29.08.2013 upto 11.00Hrs.	10.10.2013 upto 11.00Hrs
iii) Date/Time for Opening of Bids:-	29.08.2013 at 15.00Hrs.	10.10.2013 at 15.00Hrs

Detailed NIT/Corrigendum No. 2 may be down loaded from PSTCL web site: [www.pstcl.org](http://www.pstcl.org).

C-235/2013TS Dy. CE/TS (Design), PSTCL, Patiala

Use Solar Power for Domestic Use

**TATA MEMORIAL HOSPITAL**  
E. BORGES MARG, PAREL, MUMBAI-400 012



**TENDERS & NOTICES**

**RAJIV GANDHI JEEVANDAYEE AROGYA YOJANA SOCIETY**  
Government of Maharashtra  
Jeevandayee Bhavan, E.S.I.S Hospital Compound,  
Bambal Jadhav Marg, Mumbai - 400018  
Phone and Fax: 022-24912291  
Email: hc.off@jeevandayee.gov.in Website: www.jeevandayee.gov.in

**CORRIGENDUM**  
Raj-Tender Notice: RFP for Printing, Packaging, and Distribution of Health Card Stationery across Maharashtra State dated 3rd August 2013. There have been some modifications in the RFP document. The last date of submission of the Tender is now extended to 31st August 2013 up to 2 PM. The details of this same, in bidding for this tender can be seen on our website [www.jeevandayee.gov.in](http://www.jeevandayee.gov.in). Sd/- CEO

**MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY**  
M M R D A (A Government of Maharashtra Undertaking)  
Plot Nos. C-14 & 15, Bandra-Kurla Complex, Bandra (E),  
Mumbai - 400 051. Tel. 26590001-04, Fax: 26591264.  
Website: [www.mmrd.gov.in](http://www.mmrd.gov.in)

**Mumbai Trans Harbour Link Project.**  
Ref: letter from Ministry of Environment and Forests dated 19.7.2013.  
Ministry of Environment and Forests, GOI has accorded Coastal Regulation Zone clearance to the Mumbai Trans Harbour Link Project vide their letter No. F.No.11-65/2012-IA-III dated 19.7.2013. Copies of clearance letter are available with the State Pollution Control Board & 1 copy at <http://www.envfor.dle.in>

Date: 20/08/2013  
Place: Mumbai  
Sd/-  
Chief Engineer,  
Engineering Division  
No.EDMTHL/MoEF/Clearance/13

**PUNJAB STATE TRANSMISSION CORPORATION LIMITED**  
Regd. Off.: PSEB H.O., The Mall, Patiala-147001

**CORRIGENDUM NO.2**  
Office of Chief Engineer/Transmission System, Shakil Sadan, Patiala-147001

Last date and time for sale of Bid documents, receipt and opening of Tender documents Enquiry No. STQ-2012 for Tower Package for the construction of following 400KV lines on turnkey basis:

**NORTHERN RAILWAY CORRIGENDUM**  
OFFICE OF THE MEDICAL DIRECTOR,  
NORTHERN RAILWAY CENTRAL HOSPITAL  
BASANT LANE, DELHI-110005  
File No. E/Med/RSR/774/13  
Adv. No. NRCHSR/2013/02/D1: 06.2013

**ENGAGEMENT OF SENIOR RESIDENTS**  
In continuation to previous advertisement published vide ANN. No. NRCH/RSR/2013/001 dated 20.07.13 for appointment of Senior Residents, the scope limit may be read as: (1) General - 33 Years (2) OBC - 35 Years (3) SC & ST - 33 Years  
Instead of: (1) General/SC - 33 Years (2) OBC/ST - 38 Years. 18/08/13

**Serving Customers With A Smile**

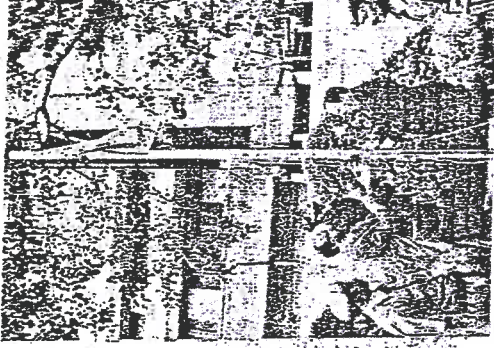
**PUNJAB STATE TRANSMISSION CORPORATION LIMITED**  
Regd. Office, PSEB, Head Office, The Mall, Patiala-147001

**NOTICE INVITING TENDER**

- Type of Tender: Open Tender
- Name & complete address of office giving tender: Chief Engineer /TS, 3rd Floor, Shakil Sadan, PSTCL, Patiala
- Tender Enquiry No.: STQ-1020
- Scope of Work: Manufacture, fabrication, galvanization & supply of 220 KV tower material as per PSTCL Specification STQ-1020 Qty - 8800 MT
- Starting date of downloading from website: <https://pstcl.procure.com>; Date of Publication
- Last date of downloading from website: <https://pstcl.procure.com>; 28.9.2013 upto 3.00 PM
- Last date/time for bid submission: 28.9.13 upto 11:00 AM
- Date/time for opening of bids: 28.9.2013 at 2.30 PM
- Cost of specification: Rs. 2500/-
- Mode of Payment: As per enclosure

**AWARDS**

**Central Bank celebrates Independence Day**



**Malay Mukherjee and Raj Kumar Goyal, Executive Directors, and Capt. S Kannan, C.S.O., seen during flag hoisting ceremony**

Central Bank Of India celebrated 67th Independence Day on August 15, 2013 at its corporate office in Mumbai. Flag hoisting was carried out by Malay Mukherjee and Raj Kumar Goyal Executive Directors. Executives and staff members of the bank were also present on the occasion.

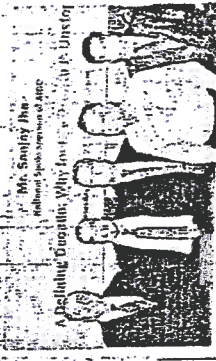


**WEEKLY UPDATE ON THE BEACONS IN INDIA'S PROGRESS**

...al areas. To keep the expansion momentum going, the bank is planning to take its branch network to 800 by the end of current fiscal and "God willing, we will be having 1000 branches by the end of FY15," he said.

The new business units include: Soilmol in Tal area of Pulwama district, Wandevalgam and Ahlan Gadole in Anantnag, Trenz and Fruit Mandi Pritchoo in Shopian. "We have a strong commitment to J&K, our core area of operations. In an effort to make the state financially inclusive, the bank has always ensured to make its presence felt in every block of the state, including unbanked and far flung areas," the Chairman said.

**IMC organises interaction**



An interactive meeting was organised by the Indian Merchants' Chamber, Mumbai on August 22, 2013. The topic was, 'A Defining Decade - Why India's Growth is Unstoppable'. Shailesh Vaidya, President, IMC, said, "The Indian economy is currently facing tough times. The critical growth vs inflation conflict is assuming political overtones, with the biggest sufferer being the economy." Sanjay Jha, National Spokesperson, Congress (I), said, "The probability of the rupee falling drastically is partly global and partly domestic. The reason for the US economy is the main US-Eurozone recovery is bad in the short term, it holds lot of promise over the long term. Unemployment rates are declining and the \$4 trillion that went into the American market is now find...

**NHB profits rise**

National Housing Bank (NHB) announced its annual results for the financial year ended 30th June, 2013. The Bank posted a net profit of 450 crore during the current year as against 38 crore in the previous year, an increase of over 10%. The loans and advances of the Bank increased by 6,113 crore from 28,490 crore to 34,603 crore, an increase of 22%. The Bank's total loan disbursements during the year were 17,63 crore (previous year 14,454 crore), growth of 22% out of which the share in rural housing was about 14%, aggregate amounting to 7,718 crore. Of the total disbursements made during the year, loans up to 15 lakh constituted about 60%. The Bank crossed the cumulative refinancing disbursement of 1,00,000 crore during the year 2012-13.

**IDBI Bank hikes rates**

IDBI Bank has increased interest rates on foreign currency non-resident (NRE) and non-resident external (NRE) deposits across select maturity buckets, aimed at attracting foreign currency inflows from NRI diaspora. Interest rates on FCNR (B) deposits for the term of 3 years and above has been increased by 100 basis points (bp) across all nine currencies. In respect of NRE Deposits, the rates have been hiked for the tenor of more than years up to 7 years by up to 25 bps. The bank is now offering a preferential interest rate of 9.5% on NRE deposits as a result of the above revision. No premature penalty shall be levied on NRI deposits. The revised rates, which took effect from August 20, 2013, shall be valid up to November 30, 2013, subject to review.





**MMRDA**

# MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY

(A Govt. of Maharashtra Undertaking)  
C-14 & 15, Bandra-Kurla Complex, Bandra (E),  
Mumbai - 400 051. Tel. 26594001-04 Fax 26591264  
Email: [ce.mmrda@gmail.com](mailto:ce.mmrda@gmail.com)  
Website : <https://www.mmrda.maharashtra.gov.in>

Sub. : Mumbai Trans Harbour Link Project

Ref. : Letter from Ministry of Environment & Forests  
dated 25/01/2016.

Ministry of Environment & Forests, Govt has granted coastal  
regulation zone clearance to the Mumbai Trans Harbour Link  
Project vide their letter no. F.No.11-65/2012-IA-III dated  
25/01/2016. Copies of clearance letter can be downloaded  
from website of Ministry of Environment & Forests at  
<http://environmentclearance.nic.in>

No.ED/MTHL/MoEF/Clearance/16

Sd/-

Date: 29/01/2016

Engineer-in-Chief

Place: Mumbai

Engineering Division

## CENTRAL PUBLIC WORKS DEPARTMENT NOTICE INVITING E-TENDERS

The Indian **EXPRESS** Sat. 30 January 2016  
e-paper editions [epaper.indianexpress.com](http://epaper.indianexpress.com)

page no. 24



४ कार्ड्स ३ बॉटल लॅप (दु. २-साच. ५)  
 ६ कोर्स ३ ते ७ फेब्रु. २०१६ १५ जागा  
 अधिक माहितीसाठी संपर्क: 9920592150

**CENTRAL PUBLIC WORKS DEPARTMENT  
 NOTICE INVITING E-TENDERS**

The Executive Engineer, Mumbai: Central Division No. II, CPWD, Nirman Sadan, 2nd Floor, Kane Nagar, Antop Hill, Mumbai-37 invites on behalf of President of India online item rate tenders for following works :-

1. NIT No.58/EE/MCD II/2015-16 [Recall]  
 Name of Work :- Addition/Alteration to CGH at S.M.Plot, Sector-VII, Antop Hill, Mumbai-37 during 2015-16. SH:Upgradation of Bldg.No.51 (Flat 10 Nos.2063, 2064, 2066, 2073, 2074, 2075, 2084, 2085, 2087, 2089). Estimated Cost :- Rs.9,68,484/-, Earnest Money :- Rs.19,370/-, Period of completion:- 05 (Five) Months, Last Date and Time of Submission of Tender :- 15.00 hrs. of 06/02/2016 and opening on 06/02/2016 at 3.30 PM

2. NIT No.97/EE/MCD II/2015-16  
 Name of Work :- A/R & M/O to CGH at SPL, Kane Nagar, Sector-II & III, Mumbai-37, during 2015-16. SH:Repairs to internal rooms by plastering and painting. Estimated Cost :- Rs.1,260/-, Earnest Money :- Rs.15,645/-, Period of completion:- 03 (Three) Months, Last Date and Time of Submission of Tender :- 15.00 hrs. of 06/02/2016 and opening on 06/02/2016 at 3.30 PM

3. NIT No.98/EE/MCD II/2015-16  
 Name of Work :- Urgent internal repairs and painting of 35 nos. new allotted vacant and dilapidated quarters of building No.53, 54, 55 and 58 Revenue pool (Income Tax Department). Estimated Cost :- Rs.14,66,365/-, Earnest Money :- Rs.29,327/-, Period of completion:- 06 (Six) Months, Last Date and Time of Submission of Tender :- 15.00 hrs. of 06/02/2016 and opening on 06/02/2016 at 3.30 PM

4. NIT No.99/EE/MCD II/2015-16  
 Name of Work :- Structural repairs to distressed building of CGH, SPL, Kane Nagar in Sector-III, Antop Hill, Mumbai-37 during 2015-16. SH:Minor repairs with external painting to building No.31. Estimated Cost :- Rs.7,41,875/-, Earnest Money :- Rs.14,838/-, Period of completion:- 03 (Three) Months. Last Date and Time of Submission of Tender :- 15.00 hrs. of 06/02/2016 and opening on 06/02/2016 at 3.30 PM

5. NIT No.100/EE/MCD II/2015-16  
 Name of Work :- Special Repair to S.M.Plot, Phase-II, Sector-II, Antop Hill, Mumbai-37 during 2015-16 SH:Repairs to anoholes, gully traps and sewerlines building No.1 to 51. Estimated Cost :- Rs.17,69,072/-, Earnest Money :- Rs.35,384/-, Period of completion:- 12 (Twelve) Months, Last Date and Time of Submission of Tender :- 15.00 hrs. of 06/02/2016 and opening on 06/02/2016 at 3.30 PM

6. NIT No.102/EE/MCD II/2015-16  
 Name of Work :-Aesthetic improvement of CGS Colony at V.Plot, Phase-II, Sector-VII, Antop Hill, Mumbai-37 during 2015-16. SH:Development of pump house area by surface dressing, cement concrete, repairs to sluice chamber, pump house near building No.25 (Section A). Estimated Cost :- Rs.7,37,019/-, Earnest Money :- Rs.14,740/-, Period of completion:- 02 (Two) Months, Last Date and Time of Submission of Tender :- 15.00 hrs. of 06/02/2016 and opening on 06/02/2016 at 3.30 PM

7. NIT No.103/EE/MCD II/2015-16  
 Name of Work :-Providing concertina coil over existing grill compound wall, north side of the building No.186,188 & 189, around the garden at Sector-VI, Kane Nagar, Mumbai-37. Estimated Cost :- Rs.6,92,458/-, Earnest Money :- Rs.13,849/-, Period of completion:- 01 (One) Month, Last Date and Time of Submission of Tender :- 15.00 hrs. of 06/02/2016 and opening on 06/02/2016 at 3.30 PM

Tender forms and other details can be obtained from website [www.tenderwizard.com/CPWD](http://www.tenderwizard.com/CPWD) or [www.cpwd.gov.in](http://www.cpwd.gov.in), [www.tenderhome.com](http://www.tenderhome.com) and [www.eprocure.gov.in](http://www.eprocure.gov.in).

**EX-SERVICEMEN CONTRIBUTORY HEALTH SCHEME (ECHS)**

1. Application invited for appointment of one 'HELPER' each at ECHS Polyclinic Solapur, Osmanabad, Latur and Beed for six months (may extended) on contractual basis.  
 2. Conversant with Hindi and Marathi. min. qualification SSC.  
 3. Fixed salary - Rs 8000 - pm.  
 4. Send application with CV by E-mail Registered Post or through ECHS Polyclinic by 10 Feb 2016 to undermentioned address.  
 Contact 0241-2321233 (working hours) (Excluding Sundays and Gazzated Holidays)  
 ECHS Cell, Station Headquarters  
 PO : Camp, Jamkhed Road, Ahmednagar-414002  
 Contact No: 0241-2323565, 2321233  
 E-mail: echscellstnhqngar@yahoo.com

**मुंबई महानगर प्रदेश विकास प्राधिकरण**  
 (महाराष्ट्र शासन अंगिकृत)  
**MMRDA**  
 सी - ५४ व ५५, वाट-कुर्ना संयुक्त, वांछी (पूर्व), मुंबई-४०० ०५९  
 दूरध्वनी : २६५९४००५-०४ फॅक्स : २६५९५२६४  
 ई-मेल : [ce.mmrda@gmail.com](mailto:ce.mmrda@gmail.com)  
 वेबसाईट : <https://www.mmrda.maharashtra.gov.in>

विषय : मुंबई पारबंदर प्रकल्प  
 संदर्भ : केंद्रीय पर्यावरण विभागाचे दिनांक २५/०१/२०१६ रोजीचे पत्र  
 मुंबई पारबंदर प्रकल्पास केंद्रीय पर्यावरण व वन विभागाने पत्र क्र. F.No.11-65/2012-IA-III दिनांक २५/०१/२०१६ अन्वये सागरी नियंत्रण क्षेत्र विषयक (CRZ) मान्यता दिलेली आहे. सदर पत्राची प्रत केंद्रीय पर्यावरण व वन विभागाच्या <http://environmentclearance.nic.in> या सांकेतिक स्थळावर उपलब्ध आहे.  
 क्र.अभि/मु.पा.प्र/के.प.वि/मान्यता/१६  
 दिनांक : २९/०१/२०१६  
 स्थळ : मुंबई  
 सह/प्रमुख अभियांत्रिकी विभाग



**शुद्धिपत्रक - २**

शहर आणि औद्योगिक विकास महामंडळ (महाराष्ट्र) मर्यादित सिडको नवी मुंबई प्रकल्पग्रस्तांसाठी UPSC (Civil Services) - २०१७ स्थरी परीक्षेच्या तयारी कारता दिव्ही येथील नामवंत कॉचिंग इन्स्टीट्यूटमध्ये नि:शुल्क कोचिंग मूळ जाहिरात दिनांक - २३.१३.२०१५, शुद्धिपत्रक-६-०९.०९.२०१६ सदरील बदल बाटी, पुणे यांनी कळविला आहे.

सिडको नवी मुंबई प्रकल्पग्रस्तांसाठी कौशल्ययुद्धी कार्यक्रम सिडकोतर्फे अंतर्गत पात्र प्रकल्पग्रस्त परवीधरसाठी दिव्ही येथील नामवंत कॉचिंग इन्स्टीट्यूटमध्ये (बाजीराम एंड रवी, अल्टरनेटिव्ह लर्निंग सिस्टिम प्रा.ली., श्रीराम आय.ए.एस.) UPSC Civil Services-2017 - Preliminary and Mains चा रोन्ही स्थरी परीक्षा पूर्व तयारीसाठी उमेदवारांना शुम्भकृत (Sponsor) करण्यात येणार आहे. सदर नामवंत कॉचिंग इन्स्टीट्यूटमध्ये प्रवेशपरीक्षा COMMON ENTRANCE TEST (CIDCO-DELHI-CET-2017) बाटी, पुणे च्या माध्यमाने देण्यात येईल, तर त्पासाठी ऑनलाईन अर्ज मागविण्यात येत आहे.

ऑनलाईनद्वारे अर्ज स्विकारण्याची अंतिम तारीख	दि. १६ मार्च, २०१६
ई- प्रवेश पत्र (Admit Card) मिळवण्याची तारीख	दि. १९ मार्च, २०१६
CIDCO-DELHI-CET-2016 परीक्षेची तारीख	दि. २७ मार्च, २०१६

ऑनलाईन अर्ज करण्यासाठी  
<http://barti.maharashtra.gov.in> > NOTICEBOARD > CIDCO-DELHI-CET-2017 वर क्लिक करा.  
 अधिक माहितीसाठी संपर्क - <http://cidcopap.ces.gov.in> कॉन्सल्ट ६५०५ ८२५२, ६५०५ ८२०३, ६५०५ ८२००

चवस्थायक (पुनर्वसन)  
 CIN - U99999 MH 1977 SGC 0148741  
[www.cidco.maharashtra.gov.in](http://www.cidco.maharashtra.gov.in)

[www.Larsentoubro.com](http://www.Larsentoubro.com)

Registered Office: L&T

**EXTRACT OF STATE  
 FOR THE QUARTERLY FINANCIAL RESULTS**

Particulars	
1	Total Income from Operations (I)
2	Net Profit after tax, minority inte of associates (before extraordin
3	Net Profit after tax, minority inte of associates (after extraordin
4	Equity share capital
5	Reserves (excluding revaluation Balance Sheet of previous year)
6	Earnings per share of ₹ 2/- each (not annualised): (a) Basic EPS (₹) (b) Diluted EPS (₹)
7	Earnings per share of ₹ 2/- each (not annualised): (a) Basic EPS (₹) (b) Diluted EPS (₹)

Notes:  
 (i) The Company reports conso Regulation 33 of the SEBI (L results are available on the C and NSE ([www.nseindia.com](http://www.nseindia.com)) nine months ended December

Particulars	
Total Income from Operations (net)	
Profit before tax	
Profit after tax	

(ii) The above is an extract of the Regulation 33 of the SEBI (Listed Entities) Regulations, 2008 Quarterly Financial Results as respectively and on the Company's website.  
 (iii) The above extract is based on results in newspapers with add March 31, 2015 added to fact

Mumbai  
 January 29, 2016

# Annexure - X

23.11.2021



Ref No: MMRDA/MTHL/P1/GC/EOT-1//2021 /751

Date: 22.11.2021

To,  
The Team Leader,  
M/s AECOM Asia Company Ltd.  
(In Consortium with PADECO Co. Ltd –  
Dar-Al-Handasah - T.Y. Lin International)  
6th floor, A Wing, MMRDA Bldg (Old),  
E-Block, BKC, Bandra (East) Mumbai-51

<b>MTHL</b> General Consultant	
INWARD NO:	MMRDA 1275
DATE	23.11.2021

**Project:** Procurement of Mumbai Harbour Link Project (package 1) Construction of 10.380 Km Long bridge section (CH-0+000 – Ch- 10+380) across the Mumbai bay including Sewri Interchange under Identification NO MMRDA/ENG1/000752

**--- Extension of Time limit to M/s L&T for completion of contract for Pkg-1**

- Ref:-**
1. Contract Agreement: MMRDA/ENG/000752 dated 26.12.2017
  2. MMRDA's Letter of Acceptance (LOA) to M/s L&T-IHI Consortium dated 17.11.2017
  3. GC's letter of Commencement to M/s L&T-IHI Consortium dated 23.03.2018
  4. M/s L&T-IHI Consortium letter to GC 09.04.2021 requesting EOT to contract of Pkg-1
  5. M/s L&T-IHI Consortium letter to GC 24.06.2021 on additional clarification on EOT proposal Pkg-1
  6. GC's recommendation to MMRDA vide letter no. MTHL/P1/GC/MMRDA/LT/CNT-2292/2021 dated 07.09.2021.
  7. MMRDA letter to JICA vide No. MMRDA/MTHL-PIU/P1/EOT-1/0698/2021dt29/10/2021.
  8. Letter from JICA vide No. JICA (ID) 2021-662 dt. 22/11/2021.

Dear Sir,

This has reference to the various letters received by Employer referred above for EOT for MTHL Package 1 Contract. The Contract was awarded to M/s L&T-IHI Consortium with the commencement date 23.08.2018 and as per the Contract; the original completion period is 22.09.2022.

The GC vide their letter dated 07.09.2021, verified the reasons for delay and critical path for completion of the balance work and recommended to MMRDA for approving EOT up to 30.09.2023 (374 days).

It is observed that unavoidable delays beyond the control of Contractor i.e permission from various authorities, realignment at OSD-02 and OSD-03 foundations due to mismatch in ONGC Pipeline and laying of new MbPT pipeline, Covid-19 pandemic restrictions etc is the governing delay affecting the completion of the overall project.

Therefore, the Engineer has recommended an interim Extension of Time for a period of 374 days to be granted to the Contractor under 8.4(b) of the General Conditions of the Contract. The contractor is entitled to claim under the clause 20.1 of GCC and shall be paid the actual costs incurred by him for



**Mumbai Metropolitan Region Development Authority**

Page 1 of 4

Emailed to TL on 23.11.2021

such extension of validity of insurances & PBG etc upon submission of proof of payment to the satisfaction of the Engineer

Employer has received concurrence from JICA for EOT to Package 1 for the period of 374 days i.e. till 30<sup>th</sup> September 2023. Copy of letter of JICA is enclosed herewith for your reference.

In the JICA letter, they have requested MMRDA to setup a mechanism for rigorous review of the safety protocols, processes and mechanism adopted by the contractor to avoid recurrence of safety incidents under the captioned packages. GC is also requested to take note of JICA's point set up a mechanism for rigorous review of the safety at worksite.

This is for your kind information.

Thanking you.

Yours faithfully,  
(Sunil Wandhekar)  
(Sunil Wandhekar)  
Engineer-In-Chief

End: As Above.

TL Fwd to

- ① Chandrakant Bansod
- ② Kishore Raju
- ③ Sim Ashok on 23.11.2021

MTHL			
General Consultant [ Pkg - ]			
Department	A	I	Rmk
Resident Engineer			
Contract Administration			
Quantity Survey / Billing			
Planning & Monitoring			
Quality Control			
Safety / Environment			
Utilities / Social			
Design Related			
Foundation			
Substructure			
Superstructure PC/Steel			
Geotechnical			
Administration			





Japan International Cooperation Agency

JICA (ID) 2021- 652  
November 22, 2021

Mr. Sunil Wandhekar,  
Engineer-in-Chief,  
MMRDA  
Mumbai

**Sub: Mumbai Trans Harbour Link Project (MTHL): ID-P 255 & ID-P 283  
Extension of Time for Package 1**

**Ref: MMRDA/MTHL-PIU/P1/EOT-1/0698/2021 dated October 29, 2021**

Dear Mr. Wandhekar,

This has reference to your captioned letter wherein MMRDA has submitted a proposal for Extension of Time (EoT) for package 1 under the captioned project.

Upon review, it is understood by JICA that the GC of the project has recommended that Extension of Time (EoT) for a period of 374 days (With Revised Completion date as September 30, 2023) shall be granted to the Contractor of Package 1 under 8.4 (b) of the GCC and the same has been accepted and agreed by MMRDA. In view of the above, MMRDA is requested to go-ahead with your proposal and issue the EoT to the contractor of the captioned package in accordance with your proposal.

We wish to take this opportunity to reiterate that amendment to the contract documents concurred by JICA (including amendment in contract price, variations and additional items among others) shall require prior written concurrence from JICA in accordance with the Loan Agreement of the captioned project.

In view of frequent accidents during civil works under Package 1 of the captioned project, we wish to request MMRDA to set up a mechanism for rigorous review of the safety protocols, processes and mechanisms adopted by the contractor to avoid recurrence of safety incidents under the captioned package.

Your kind cooperation in this matter shall be highly appreciated.

Yours sincerely,

  
NAGAI Shinsuke  
Senior Representative

CC:

Mr. Avanish Mishra, Deputy Director General, DEA, Ministry of Finance, New Delhi  
Mr. SUNOUCHI Tatsuhiko, Director, SAD1, JICA HQ, Tokyo



JICA India Office  
16th Floor, Hindustan Times House,  
18-20, Kasturba Gandhi Marg,  
New Delhi- 110001

TEL: (91-11) 4909-7000  
FAX: (91-11) 4909-7001 / 7002 / 7003 / 7004  
URL: <https://www.jica.go.jp/>

JICA(ID) 2021- 419  
September 16, 2021

Mr. Sunil Wandhekar  
Engineer In Chief  
MMRDA  
Mumbai

**Sub: Mumbai Trans Harbour Link Project (MTHL) (ID-P 255)  
Extension of Time for Package 3**

**Ref:**

**Letter No. MTHL/P3/GC/MMRDA/LT/EOT-573/Jica.2021 dated September 16, 2021**

Dear Mr. Wandhekar,

This has reference to the captioned letter wherein MMRDA has submitted a proposal for Extension of Tender (EOT) of Package 3 under the captioned project.

Upon review, it is understood by JICA that the GC of the project has recommended that an interim EOT for a period of 529 days (with completion date as March 3, 2023) to be granted to the contractor of Package 3 in accordance with Clause 8.4 (b) of the GCC and the same has been accepted and agreed by MMRDA. In view of the above, MMRDA is requested to go-ahead with your proposal and issue the EoT to the contractor of the captioned package in accordance with your proposal.

We wish to take this opportunity to reiterate that amendment to the contract document concurred by JICA (including amendment in contract price, variations in scope, additional items etc.) shall require prior written concurrence from JICA in accordance with the Loan Agreement of the captioned project.

Your kind cooperation in the matter will be highly appreciated.

Yours sincerely,



NAGAI Shinsuke  
Senior Representative

CC:

Mr. A.K Mishra, Deputy Director General, DEA, Ministry of Finance, Govt. of India, New Delhi.

Mr. Takuro Takeuchi, Senior Director SAD I, JICA HQ, Tokyo.



## Annexure XII

### MAHARASHTRA COASTAL ZONE MANAGEMENT AUTHORITY

Tel. No. : 2202 9388  
E-mail : [dir1.mev-mh@nic.in](mailto:dir1.mev-mh@nic.in)  
Website: <https://mczma.gov.in/>

No. CRZ 2022/CR 185/TC 4  
Office of the -  
Maharashtra Coastal Zone Management Authority,  
Environment & Climate Change Department,  
15<sup>th</sup> Floor, New Administrative Building,  
Mantralaya, Mumbai- 400 032  
Date: 09<sup>th</sup> December. 2022

To,  
**Director (IA-III),**  
Coastal Zone Regulation,  
Ministry of Environment, Forests & Climate Change,  
Indira Paryavaran bhavan, Jor Bagh Road,  
New Delhi - 110 003.

**Subject:** Proposal for extension of Mumbai Trans Harbour Link (MTHL) project by MMRDA

The Maharashtra Coastal Zone Management Authority in its 161<sup>st</sup> meeting held on 10<sup>th</sup> November, 2022 deliberated the subject proposal for extension of Mumbai Trans Harbour Link (MTHL) project.

2. The Authority noted that the proposal is for implementing the MTHL project. The MTHL was awarded the CRZ clearance by MoEF&CC vide it's letter No. F. No. 11-65/2012-IA.III dated 25<sup>th</sup> January, 2016. General consultant has opined that the CRZ clearance is valid till 24<sup>th</sup> January, 2021. Presently, physical progress is about 83%. Considering Covid 19 pandemic situation, the project timeline has been extended from Sep, 2022 to Sep, 2023. Thus the total extension granted to the contractor is about 12 months.

3. The Authority noted that the main bridge work will be completed by Sep, 2023, however, the dismantling of Temporary Access Bridge (TAB) and other ancillary works will be completed post construction of main bridge as these facilities will be required till end of construction. In view of this, a proposal is submitted for extension for the CRZ clearance for further 3 years.

4. The Authority noted that as per para 4.2 of the CRZ Notification, 2011 amended on 6<sup>th</sup> March, 2018, *the clearance accorded to the projects under this notification shall be valid for a period of seven years from the date of issue of such clearance:*  
*Provided that the construction activities shall commence within a period of five years from the date of the issue of clearance and the construction be completed and the operations be commenced within seven years from the date of issue of such clearance:*

*Provided further that the period of validity may be extended for a maximum period of three years in case an application is made to the concerned authority by the applicant within the validity period, along with recommendation for extension of validity of the clearance by the concerned State / Union Territory Coastal Zone Management Authority";*

5. The Authority noted that the validity of the CRZ clearance is for period of 7 years from the date of issue of CRZ clearance. In the instant case, the CRZ clearance dated 25<sup>th</sup> January, 2016 is valid upto January, 2023. As informed by the MMRDA during the meeting, work of the project is ongoing and physical progress is about 85%.



6. In the light of above, after deliberation, the Authority decided to recommend the proposal to MoEF&CC, New Delhi for extension of the validity of CRZ clearance dated 25<sup>th</sup> January, 2016 for father 3 years from January, 2023 i.e. upto 25<sup>th</sup> January, 2026.

7. Minutes of the meeting attached herewith.

  
(Abhay Pimperkar)

Director, Environment & MS, MCZMA

**Copy for information to:**

1. **Secretary (Environment) & Chairperson, (MCZMA), Environment & CC Department, Room No. 217 (Annex), Mantralaya, Mumbai -32.**
2. **Member Secretary, Maharashtra Pollution Control Board, Kalpataru Point, 3rd and 4th floor, Road No. 8, Sion Cir, opp. PVR Theater, Mumbai -400022**
3. **District Collector, Mumbai City, Old Custom House, Shahid bhagar Sing Marg, Fort, Mumbai - 01**
4. **Municipal Commissioner, Municipal Corporation of Greater Mumbai, Fort, Mumbai - 01**
5. **Engineer In Chief, MTHL project, 2<sup>nd</sup> floor New Administrative building, MMRDA, Engineering Division, E block, BKC, Bandra Kurla Complex, Bandra (E), Mumbai - 51 - You are requested to apply online on Parivesh Portal of MoEF&CC, New Delhi along with this CRZ recommendation letter.**
6. **Select File (TC 4)**





**Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
(MCZMA) held on 10<sup>th</sup> November, 2022**

**MINUTES OF THE 161<sup>st</sup> MEETING OF MAHARASHTRA COASTAL ZONE  
MANAGEMENT AUTHORITY (MCZMA) HELD ON 10<sup>th</sup> NOVEMBER, 2022**

The 161<sup>st</sup> meeting of the Maharashtra Coastal Zone Management Authority (MCZMA) was held under the Chairmanship of Secretary (Environment and Climate Change). In view of present pandemic situation of COVID-19, it was decided to appraise the proposals by using information technology facilities. Hence, the proposals were appraised through Videoconferencing technology on Cisco WebEx platform on 10<sup>th</sup> November, 2022. List of members present in the meeting is at Annexure-I.

**Item No.1:** Proposed infrastructural Post Harvesting facilities to fishermen at Fish Landing Centre, Dhakti Dahanu, Rajpuri, Dighi and Veldur in Maharashtra by Commissioner of Fisheries.

The officials from the office of Commissioner of Fisheries presented the proposal before the Authority. The proposal is for development of infrastructural post harvesting facilities such as construction of jetty, boat yards with ramp, cleaning of navigational channel, fish drying platforms, approach road etc for local fisherman at fish landing centres at Dhakti Dahanu, Rajpuri, Dighi and Veldur. Site specific details of the proposed activities are as follows:

Sr. No.	Location	Proposed activities	CRZ Status as per approved CZMP, 2011
1	Dhakti Dahanu, Tal. Dahanu Dist. Palghar	1) Construction of jetty connected to boat yard I (35m X 05m) 2) Construction of boat yard I (150m X 20m) 3) Construction of boat yard II (75 m X 20m) 4) Ramp connected to boat yard II (70 m X 07m)	CRZ-IB (Intertidal area ) & CRZIVB (Dahanu Creek)

  
Member Secretary

  
Chairman



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3. **District Collector, Mumbai City, Old Custom House, Shahid bhagar Sing Marg, Fort, Mumbai - 01**
4. **Municipal Commissioner, Municipal Corporation of Greater Mumbai, Fort, Mumbai - 01**
5. **Engineer In Chief, MTHL project, 2<sup>nd</sup> floor New Administrative building, MMRDA, Engineering Division, E block, BKC, Bandra Kurla Complex, Bandra (E), Mumbai - 51 - You are requested to apply online on Parivesh Portal of MoEF&CC, New Delhi along with this CRZ recommendation letter.**
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**Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
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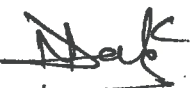
  
Member Secretary

  
Chairman



Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
(MCZMA) held on 10<sup>th</sup> November, 2022

			5) Construction of approach road (90m X 05m)	
2	Rajpuri, Murud, Raigad	Tal. Dist.	<ol style="list-style-type: none"> <li>1) Construction of boat yard I with rubble protection (160m X 15m)</li> <li>2) Construction of ramp connected to boat yard I (120 m X 7m)</li> <li>3) Construction of box culvert underneath boat yard I (45m X 03m)</li> <li>4) Construction of boat yard II with rubble protection (100m X 15m)</li> <li>5) Construction of ramp connected to boat yard II (30m X 10m)</li> </ol>	CRZ-IB (Intertidal area ), CRZ III (Rural area) & CRZ IVB (Vashishti Estuary)
3	Dighi, Shrivardhan, Dist. Raigad	Tal.	<ol style="list-style-type: none"> <li>1) Construction of boat yard (230 m X 20 m)</li> <li>2) Ramp attached to boat yard (40 m X 10m)</li> <li>3) Construction of jetty (50 m X 5 m )</li> <li>4) Jetty head "T" (30 m X 10 m )</li> <li>5) Surfacing of approach road (400 m X 5 m )</li> </ol>	CRZ-IB (Intertidal area) & CRZ IVB (Rajapuri Creek)
4	Veldur, Guhagar, Ratnagiri	Tal. Dist.	<ol style="list-style-type: none"> <li>1) Construction of Pile Jetty (100 m X 05 m )</li> <li>2) Construction of fish drying platform with rubble protection (50 m X 30 m )</li> <li>3) Surfacing / hard paving area (50 m X 30m)</li> <li>4) Clearing of berthing area (200 m X 50 m X 3m)</li> </ol>	CRZ-IB (Intertidal area ), CRZ III (Rural area) & CRZ IVB (Vashishti Estuary)

  
Member Secretary

  
Chairman



**Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
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The proposal was earlier deliberated in 146<sup>th</sup> meeting of MCZMA held on 04.09.2020, wherein the Authority noted the project details along with Rapid EIA report. After deliberation the Authority suggested PP that the recommendation / report of the Central water Power Research Station (CWPRS) needs to be sought on impact of the solid jetty and other structures on the hydrodynamics of the coastal water body at four (4) sites i.e. Dhakti Dahanu, Rajpuri, Dighi and Veldur.

Accordingly, the Commissioner of Fisheries have submitted CWPRS report dated 22.06.2021 which mentions that CWPRS has given recommendation for the proposed structures.

As per the CWPRS report dated 22.06.2021, total 4 coastal sites have been proposed to provide infrastructural facility viz. Dhakti-Dahanu (Dist. Palghar), Rajpuri, Dighi (Dist. Raigad) & Veldur (Dist. Ratnagiri). Since the project is of small magnitude & require need bases solutions for the local fishermen community the comments are offered based on the experience gained from the other fish landing sites and prevailing site conditions. In this regard, the opinion of CWPRS is as follows:

**1) Dhakti Dahanu :**

There is a proposal to develop two boat yard and road connecting the same to the nearby approach. All these facilities are land based and are not interfering with the flow of water. One jetty abutting to the boat yard II and a ramp to approach the boat yard I is being proposed. Since the jetty is going to be pile mounted, its interference with the water will be minimum. Ramping of 70m long is going to be in the water and will partially interfere with the water flow it may also result in the sedimentation on the east side of the ramp. In order to avoid the siltation, two tiers of hume pipes of about one meter diameter should be used to create free flow condition and to avoid siltation. Regular cleaning of the hume pipes should also be made mandatory. Based on the experience gained from the other sites and prevailing site conditions. CWPRS is of the view/opinion for the proposed layout & may be implemented by adopting aforesaid precautions.

**2) Rajpuri:**



  
Member-Secretary

  
Chairman

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4. In order to mitigate the siltation problem due to ramp construction, suggestions of the CWPRS should be implemented in letter and spirit
5. PP to ensure that during construction and operation phase, ecologically sensitive features like mangroves if any, should not be cut/ damaged for the project. If the proposed activities are in 50 m mangrove buffer zone, prior High Court permission should be obtained, as per order dated 17<sup>th</sup> September, 2018 in PIL 87/2006.
6. Natural course of creek/river water should not be hampered due to proposed activities.
7. During construction phase, the project implementing agency should proactively implement all possible appropriate environmental measures to achieve minimum disturbance to coastal ecosystem.
8. The construction debris and dredged material should not be disposed off in the mangrove area & creek water to avoid any adverse impact on marine water quality.
9. PP to ensure that best industrial practices should be followed for fire safety measures and for conservation of coastal environment
10. Debris generated during the construction activity should not be dumped in CRZ area. It should be ensured that debris is processed in a scientific manner at a designated site.
11. The Project proponent should be effectively implement the mitigation measure and Environment Management Plan during construction and operation phase of the project.
12. All other required permission from different statutory authorities should be obtained

Item No.2: Proposed construction of Municipal Dispensary, Health Post Maternity Home, Govt Rest House, shopping Centre & DP Roads on land bearing plot no. 194B of village Ghatkoper (E), N ward, Kurla, Mumbai by PWD & Rare Township

The Authority decided to defer the matter for want of more information.

Item No.14: Proposed construction of 4 lane Bridge Connecting Nariman Point to Colaba/Cuffe Parade by MMRDA

  
Member Secretary



  
Chairman

**Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
(MCZMA) held on 10<sup>th</sup> November, 2022**

The MMRDA officials presented the proposal before the Authority. MMRDA has proposed construction of 4 Lane Bridge connecting Nariman Point to Colaba/Cuffe Parade. The length of the proposed bridge is about 1.8 km with 19 m wide viaduct accommodating 2+2 lanes.

The project involves the connectivity of the two major points of Mumbai city, Nariman point and Colaba. The proposed alignment option starts with up ramp from captain prakash pethe rmarg to give access to traffic travelling from Navy Nagar to Nariman side. Down ramp of approx. 360 m. length is provided for traffic travelling from Nariman side to Mantralaya. There are two proposed down ramps on captain prakash peth marg and wodehouse road to give access to traffic travelling from Nariman side to Navy Nagar and Colaba causeway respectively.

The PP has carried out the CRZ survey (1:4000 scale) through IRS, Chennai (MoEF&CC authorized agency). As per the said CRZ map, the site falls in CRZ IB, CRZ II, CRZ IVA and outside CRZ area.

Sr. no.	CRZ Classification	Area in sqm
1	CRZ IB	671.59
2	CRZ II	2442.58
3	CRZ IVA	18257.27
4	Outside CRZ	1186.25
<b>Total</b>		<b>22557.69</b>

The PP has submitted the EIA / EMP report prepared by M/s Ultra Tech (MoEF accredited). As per the EIA report, the main purpose of this new construction bridge (Sea link) is to connect the traffic from Nariman Point Road to Cuff Parade road which will ease the congestion rate on existing road Cap. Prakash Pethe Marg. The EIA report further states that proposed alignment is not passing through mangroves area. However, around 93 trees present in the median of the road will be transplanted during construction of the bridge resulting in deterioration of biodiversity. Rehabilitation and Resettlement is involved in the project. The study has been conducted and as action plan has been made.

The Authority noted that the proposed alignment of the proposed bridge is situated near to Fishermen settlement (Koliwada) at Colaba end. The Expert



  
Member Secretary

  
Chairman

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(MCZMA) held on 10<sup>th</sup> November, 2022

Members raised concern about the impact of the project on local fishing and livelihood of fishermen. EIA report mentions about the socio-economic impact of the project, which states that communication with the local community (fishermen, boat owners) should be institutionalized and done on regular basis. The project proponent should take appropriate steps to implement Rehabilitation and Resettlement.

When asked about the impact of project on local fishing and livelihood of local fishermen, the MMRDA officials presented that there is no fishing activity along the alignment of the proposed road.

The Authority after deliberation opined that the MMRDA need to submit the revise the EIA report incorporating the details of impact of proposed bridge on fishermen settlement (Koliwada) at Colaba end, local fishing & livelihood of fishermen and its mitigation measures. It is noted that the MMRDA has formulated the fisherfolk compensation policy on December, 2015 for affected fishermen. With respect to project, the MMRDA need to incorporate the details of same in revised EIA report. It was further felt that comments / remarks of the office of Commissioner, Fisheries need to be sought in the matter. Accordingly, the proposal was deferred for want of above said reports.

**Item No.21:** Proposal for Coastal Protection work under Maharashtra Sustainable climate resilient coastal protection and management investment program at Devbaug, Tal. Malvan by MMB.

The Maharashtra Maritime Board (MMB) officials presented the proposal before the Authority. MMB has proposed construction of river bank protection wall along a 1.3 km length using sheet piling. Fencing wall is proposed using laterite stone for land protection along with reclamation work covering area of approx. 15 ha (1 million cubic meter sand from de-siltation activity of Karli river channel). MMB officials presented that the protection wall is critically important in order to save the land from erosion. Project area falls under CRZ IA, III B & IVB.

Expert Member, MCZMA voiced a concern about the impact of project on surrounding biodiversity of the Devbaug and Tarkarli which are well known for its pristine beauty and tourist destination. He raised a concern that aesthetics of the area should not be compromised.

  
Member Secretary

  
Chairman



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The Authority discussed that the project is situated at the Karli Creek side of the village Devbaug which is Critically Vulnerable Coastal area (ecologically sensitive area). Along with coastal protection works, de-siltation of the Karli creek is also proposed. The Authority felt that MMB need to first explore the soft measures for Coastal Protection work. MCZMA in its 160<sup>th</sup> meeting 5<sup>th</sup> August, 2022 has prescribed guidelines pertaining to proposals of anti- sea erosion protections works. MMB need to go through the said guidelines.

In the light of above, the Authority decided that MMB should explore soft measures for Coastal Protection work program at Devbaug, Tal. Malvan, taking into consideration above said guidelines prescribed by the MCZMA in its 160<sup>th</sup> meeting regarding anti-sea erosion protection works. MMB should also clarify about the impact of the de-silting activity in karli creek on local fishing in Karli creek. Accordingly, the proposal was deferred.

**Item No.22: Proposal for extension of Mumbai Trans Harbour Link (MTHL) project by MMRDA**

The MMRDA officials presented the matter before the Authority. The MMRDA is implementing the MTHL project. The MTHL was awarded the CRZ clearance by MoEF&CC vide it's letter No. F. No. 11-65/2012-IA.III dated 25<sup>th</sup> January, 2016.

General consultant has opined that the CRZ clearance is valid till 24<sup>th</sup> January, 2021

Presently, physical progress is about 83%. Considering Covid 19 pandemic situation, the project timeline has been extended from Sep, 2022 to Sep, 2023. Thus the total extension granted to the contractor is about 12 months.

The main bridge work will be completed by Sep, 2023, however, the dismantling of Temporary Access Bridge (TAB) and other ancillary works w3ill be completed post construction of main bridge as these facilities will be required till end of construction. In view of this, a proposal is submitted for extension for the CRZ clearance for further 3 years.

The Authority noted that as per para 4.2 of the CRZ Notification, 2011 amended on 6<sup>th</sup> March, 2018, *the clearance accorded to the projects under this notification shall be valid for a period of seven years from the date of issue of such clearance:*

  
Member Secretary

  
Chairman



Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
(MCZMA) held on 10<sup>th</sup> November, 2022

*Provided that the construction activities shall commence within a period of five years from the date of the issue of clearance and the construction be completed and the operations be commenced within seven years from the date of issue of such clearance:*

*Provided further that the period of validity may be extended for a maximum period of three years in case an application is made to the concerned authority by the applicant within the validity period, along with recommendation for extension of validity of the clearance by the concerned State / Union Territory Coastal Zone Management Authority”;*

The Authority noted that the validity of the CRZ clearance is for period of 7 years from the date of issue of CRZ clearance. In the instant case, the CRZ clearance dated 25<sup>th</sup> January, 2016 is valid upto January, 2023. As informed by the MMRDA during the meeting, work of the project is ongoing and physical progress is about 85%.


In the light of above, after deliberation, the Authority decided to recommend the proposal to MoEF&CC, New Delhi for extension of the validity of CRZ clearance dated 25<sup>th</sup> January, 2016 for father 3 years from January, 2023. i.e. upto 25<sup>th</sup> January, 2026.

**Item No.23:** Proposed quadrupling of Virar-Dahanu Road Railway Project under Mumbai Urban Transport project III, Dist. Palghar by M/s Mumbai Railway Vikas Corporation Ltd.

The Mumbai Rail Vikas Corporation Ltd officials presented the proposal before the Authority. The proposal is for quadrupling of Virar- Dahanu Road Railway project under Mumbai Urban Transport Project - III on Western Railway is one of the components of MUTP-III.

Quadrupling of Virar- Dahanu Road section involves laying of 3<sup>rd</sup> and 4<sup>th</sup> lines parallel to and on the west of existing double line corridor.

The Corridor from Churchgate to Virar consists of minimum quadruple lines, while Virar Dahanu road has only double lines. At present, EMU (Electric Multiple Units) ply upto Virar - Dahanu Road (63.80 km). As existing double line corridor is over saturated, it is not possible to increase number of suburban

  
Member Secretary



  
Chairman

**Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
(MCZMA) held on 10<sup>th</sup> November, 2022**

services in this section. Therefore it is decided to lay one additional pair of line in this section.

Alignment of proposed corridor is planned on west side and parallel to existing line. It will involve minimum land acquisition and diversion of bare minimum forest land as major part of the land require for the project is existing Railway land.

The proposed corridor passes through various villages of vasai, Palghar and Dhanau. It passes through CRZ IA, CRZ IB, CRZ II and CRZ III area as per approved CZMP, 2011., ( MH 87, MH 90, MH 98)

Sr no.	village and taluka	Length (m)	CRZ status
1	Naringi, Kopari, Gaskopari and Shirgoan, Tal Vasai	2960	CRZ II
2	Kasrali, Tal Vasai	2640	CRZ IA
3	Kasrali, Tal Vasai	50	CRZ II
4	Wadiv, Tal Palghar	1100	CRZ IA ( 50 m mangrove buffer zone )
5	Kandarvan and Karavale Tal Palghar	1550	CRZ IA
6	Karavale Tal Palghar	200	CRZ III
7	Karavale Tal Palghar	1025	CRZ IA and CRZ IB
8	Karavale Tal Palghar	475	CRZ III
9	Vangoan, Tal Dahanu	100	CRZ III
10	Kapshi and Asangoan, Tal Dahanu	750	CRZ IA ( 50 m mangrove buffer zone)
11	Asangoan, Tal Dahanu	700	CRZ IB
12	Asangoan, Tal Dahanu	1200	CRZ IA
13	Asangoan and pale, Tal Dahanu	700	CRZ IB
14	Pale, Tal Dahanu	120	CRZ IA ( 50 m mangrove buffer)
15	Pale, Tal Dahanu	2680	CRZ IB
	Total	16250 meter	



*[Signature]*  
Member Secretary

*[Signature]*  
Chairman

Minutes of the 161<sup>st</sup> Meeting of Maharashtra Coastal Zone Management Authority  
(MCZMA) held on 10<sup>th</sup> November, 2022

The PP has submitted the EIA / EMP report prepared by M/s IL&FS Environment Infrastructure and Services Ltd (MoEF accredited consultant). The Authority noted the observations of the EIA report about the impact of the project, mitigation measures for the project. The PP presented that out of 26.51 Ha forest land required for the project and 17.05 Ha land is covered with mangroves.

The Mumbai Rail Vikas Corporation Ltd vide letter dated 7.11.2022 submitted that scope of the project is laying 3<sup>rd</sup> and 4<sup>th</sup> line parallel to existing tracks as it is augmentation of the existing corridor. Existing corridor is in use since 1984 i.e. more than 150 years. Minimum 170 ha of land is required to lay the double the line track for 64 km length. Out of this, 130 Ha of land is owned by Railways and only 48 Ha of land is being acquired for the project. Thus eu to laying of the track parallel to existing corridor, requirement of land is minimum as compared to laying of the corridor on completely new alignment. The corridor from Churchgate to Virar consists of minimum quaruple lines, while Virar Bahanu road has only double lines. At present, EMUs (Electric Multiple Units) ply upto to Virar, while MEMUs( Mainline Electric Multiple Units) serve the double line section of Virar- Dahanu Road ( 63.80 km). As existing double line corridor is over saturated, it is possible to increase number of suburban services in this section. Therefore, it decided to lay one additional pair of lines in this section. This will enable separate corridor for suburban services as is existing for the Churchtage Virar Section. There will be saving of about 1 hour daily in travel time of 5 lakhs passengers. The purpose corridor will serve the requirement of about 2 million population in the section from Virar to Dhanau Road in the Palghar District.

The Authority discussed the project and raised a concern of the area of mangroves to be cut for the proposed activity. The PP presented that the alignment of the railway line is most suitable considering the existence of double line and other land constraints. All possible statutory permissions including Prior High Court permission would be obtained for mangrove cutting. The Authority noted that the quadrupling the Railway line is vital infrastructure project for the public. However, balance needs to strike between the development and environment. The PP need to exercise extra caution with objective to have less impact on the surrounding mangroves and coastal ecology. During the construction phase, all possible efforts/ measures should be taken to maintain the coastal ecology and biodiversity. Necessary training / awareness

  
Member Secretary

  
Chairman



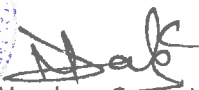
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should be imparted to contractors & workers so that adequate environmental safeguards could be implemented on site, during execution of the project activities.

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

1. The proposed activity should be carried out strictly as per the provisions of CRZ Notification, 2011 (as amended from time to time) and guidelines/clarifications given by MoEF from time to time.
2. PP to ensure that proposed activities should be carried out with exercising extra caution with objective to have less impact on the surrounding mangroves and coastal ecology.
3. Prior High Court permission should be obtained by the PP as per Hon'ble High Court order dated 17<sup>th</sup> Sep, 2018 in PIL 87/2006, since the project involves cutting of mangroves.
4. NoC from the Mangrove Cell should be obtained by the PP. Compensatory mangrove plantation should be carried out in consultation with Mangrove Cell.
5. PP to obtain the prior Forest Clearance under Forest (Conservation) Act, 1980.
6. During the construction phase, all possible efforts/ measures should be taken to maintain the coastal ecology and biodiversity. Necessary training / awareness should be imparted to contractors & workers so that adequate environmental safeguards could be implemented on site, during execution of the project activities
7. PP to ensure that noise and vibration level is within permissible limit during construction phase of the project.
8. PP to strictly ensure that activities of local fisherman communities should not be hampered due to the proposed project.
9. Project proponent should implement Environment Management plan for the project effectively and efficiently during construction and operational phase of the project to ensure that coastal environment is protected. It is also suggested to have a third-party monitoring/Audit of all such management initiatives by Govt agency during and after completion of project from time to time.
10. All recommendation of the socioeconomic, disaster Management studies, traffic studies should be complied with by the MCGM.



  
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11. The PP shall set up a full-fledged inhouse Environment Management Cell for effective implementation of the Environment Management Plan including Mangrove replantation plan, monitoring, as well as Disaster Management Plan.
12. 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.
13. All the other mandatory permission from different statutory authorities should be obtained prior to the commencement of work of project

**Item No.24:** Proposal for additional permission to construct the temporary Gabion wall for access to Arm - 2 and temporary rock filling for access to Arm - 3 of Worli connector of Mumbai Coastal Road project by MCGM

The MCGM officials presented the proposal before the Authority. The MoEF&CC, New Delhi vide letter dated 11<sup>th</sup> May, 2017 has granted the CRZ clearance to the Coastal Road, Mumbai. Further, amended CRZ clearance is also obtained on 18.5.2021 from MoEF&CC, New Delhi due to certain design modifications for smooth traffic movement.

In order to expedite the construction process and achieve the completion of coastal road project, MCGM has proposed temporary construction of gabion walls near Arm 2 and rock fill near Arm 3 of the Worli connector bridge which would facilitate access for the cranes to approach the proposed offshore bridge pier locations during monsoon.

During the monsoon season the operation of marine vessels is not permitted due to high turbulence in the sea. Also the pilling work for construction of the Arm 2 and Arm 3 of the Worli connector bridge of MCRP- South was disturbed due to local fishermen restrictions. This resulted in loss of peak construction period impacting the main bridge and its connecting arms.

The MCGM officials presented that Gabion walls / Rocks will be removed once the construction of Arm 2 and Arm 3 is completed.

The Authority noted that the EMP has been prepared by M/s Building Environment Pvt Ltd (MoEF accredited consultant). As per the EMP, the construction process of gabion walls/ temporary rock fills may have impact on

  
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water quality due to sediment suspension during laying of initial layer of gabion boxes/ rockmass on sea bed. This may cause temporary turbidity in sea water. However, the Worli region represents rocky sea bottom due to which high turbidity is not anticipated. Also the gabion walls / rock fill being temporary structures the construction region is proposed to be restored by removing the gabion boxes / temporary rockfill. Therefore no adverse impact on marine environment is anticipated.

The Authority noted that the project site falls under CRZ I (B) and CRZ IV (A) area as per approved CZMP, 2019 of the Mumbai. As per para 7(iii) of the CRZ Notification, 2019:

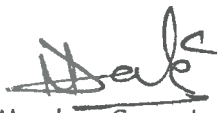
*"For all other permissible and regulated activities as per this notification, which fall purely in CRZ-II and CRZ-III areas, the CRZ clearance shall be considered by the concerned Coastal Zone Management Authority and such projects in CRZ -II and III, which also happen to be traversing through CRZ-I or CRZ-IV areas or both, CRZ clearance shall, however be considered only by the Ministry of Environment, Forest and Climate Change, based on recommendations of the concerned Coastal Zone Management Authority"*

In the light of above, the Authority after deliberation decided to recommend the proposal to MoEF&CC, New Delhi subject to following conditions:

1. This CRZ recommendation is only for temporary construction of gabion walls near Arm 2 and rock fill near Arm 3 of the Worli connector bridge
2. After the completion of the arm 2 and arm 3, the said temporary gabion wall should be removed.
3. Activity of local fishermen should not be obstructed due to proposed activity.
4. All other required permission from different statutory authorities should be obtained

**Item No.25:** Extension of validity of CRZ clearance for proposed construction of new Freight Railway Double Line from JNPT (MH) to Dadri (UP) by DFCCIL

The Dedicated Freight Corridor (DFC) officials presented the matter before the Authority. The proposal is for construction Dedicated Freight Corridor

  
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(DFC) from JNPT (MH) to Dadri (UP) which passes through Raigad, Thane and Palghar districts.

The MCZMA vide letter dated 29.7.2013 granted the CRZ recommendation to the project and MoEF&CC, new Delhi vide letter dated 17.11.2014 granted the CRZ clearance for the project. While granting the CRZ clearance, MoEF, New Delhi in its CRZ clearance put a condition that

"it is noted that 543 mangroves to be removed for the project. The project proponent shall obtain prior permission from Hon'ble High Court of Bombay for cutting or damaging of 543 mangroves"

Subsequently, Hon'ble High Court vide order dated 2<sup>nd</sup> March, 2015 has granted leave (approval) for cutting of 543 mangroves, considering the project as National importance project.

Village	Original		Revised	
	Area	Numbers	Area	Numbers
Payegoan	2.10	225	3.81	1196
Juchandra	0.090	12	0.05	2267
Shirgoan/ Kasarli	4.29	174	5.63	
Tivri	0.92	09	1.14	
<b>Total</b>	<b>7.40</b>	<b>420</b>	<b>10.64</b>	<b>3463</b>

The DFCC vide letter dated 7.11.2022 submitted that as an effect of Covid-19 pandemic office was functioning with limited staff and the further extension of validity beyond 7 years could not be requested in time. The DFCC is the project of national importance being monitored by the PMO. The DFC, with its advantages of speed, higher carrying capacity and reduced cost of transporting freight will aid the country in getting a competitive edge in the exports market and boosting of Indian economy. The project will have overreaching impact on reduction of diesel truck traffic on roads owing to modal shift leading to significant reduction in air pollution. One DFC train will carry a load equivalent of 400 road trucks and has the potential to take nearly 10,000 number of trucks carrying containers off the road per day by 25 DFC trains in initial stages of operation and gradually enhanced to much higher levels at subsequent stages. In Greening of DFC corridor, the project has the potential to plant more

  
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than 5 crores trees all along the entire length of its alignment as well as in its establishments to support the GoI initiatives on green agenda on afforestation.

The Authority noted that as per CRZ amended Notification 6<sup>th</sup> Marcy, 2018

*"(v) The clearance accorded to the projects under this notification shall be valid for a period of seven years from the date of issue of such clearance:*

*Provided that the construction activities shall commence within a period of five years from the date of the issue of clearance and the construction be completed and the operations be commenced within seven years from the date of issue of such clearance:*


*Provided further that the period of validity may be extended for a maximum period of three years in case an application is made to the concerned authority by the applicant within the validity period, along with recommendation for extension of validity of the clearance by the concerned State / Union Territory Coastal Zone Management Authority";*

The Authority noted that the CRZ clearance is granted by the MoEF, New Delhi on 17.11.2014. The 7 years is completed on 17.11.2021. Application is received on 5.9.2022. The DFCC vide letter dated 7.11.2022 submitted that as an effect of Covid-19 pandemic office was functioning with limited staff and the further extension of validity beyond 7 years could not be requested in time. The Authority discussed the matter and noted the national importance of the project. It was noted that DFCC has approached Hon'ble High Court for obtaining permission for cutting of 3043 mangroves. Hon'ble High Court has passed an order dated 29<sup>th</sup> August, 2022 directing the DFCC to approach competent Authority for obtaining permission to remove/ fell 3043 mangrove trees. Considering the necessity of the early completion of the nationally important project and covid-19 period restrictions, the Authority felt that the matter could be sent to MoEF&CC, New Delhi for further appropriate decision.

In the light of above, The Authority after deliberation decided to send the matter to MoEF&CC for further appropriate decision regarding

**Item No.26:** Revalidation for CRZ clearance for storage and fabrication activities to assemble equipment of system packages of 11A, 11B, 12, 15, 16A, 16 B and MMRCL storage package at Wadala, Mumbai by MMRCL



  
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The Authority noted that MCZMA vide letter dated CRZ 2018/ CR 346/ TC 4 dated 26.12.2018 has granted the CRZ clearance to the project activities of storage and fabrication to assemble equipment of system packages of 11A, 11B, 12, 15, 16A, 16 B of Metro Line 3 project at Wadala, Mumbai. As per the specific condition of the CRZ clearance, the recommendation was valid for 3 years from the date of issuance i.e. till 26/12/2021. Further, the MCZMA vide letter dated 1.6.2022 has granted the revalidation for the said CRZ clearance. The Authority noted took note of clearance and validity granted to the project.

**Discussion Items:**

- Hon'ble High Court order dated 20<sup>th</sup> October, 2022 in WP (L) No. 32454/2022 ( Akshay Sthapatya Pvt Ltd & Anr V/s Union of India & ors) and WP No. 2621/2019 ( Samudra Real Estate Pvt Ltd V/s Union of India & Ors)

The Authority took note of the orders dated 20<sup>th</sup> Oct, 2022 passed by the Hon'ble High Court of Mumbai regarding SRA projects of Greater Mumbai and decided to defer the matter for want of more information in the matter.

-----Meeting ended with vote of thanks to chair-----

**Annexure I**

List of members/officials present in the online meeting:

1. Mr. Bhushan Gagrani, ACS, UDD, Member, MCZMA
2. Dr. Mahesh Shindikar, College of Engineering, Pune, Expert Member, MCZMA
3. Mr. Mirashe, Representative from the Industry Dept, Member MCZMA
4. Dr. Anish Andheria, Expert Member, MCZMA
5. Mr. Maruti Kudale, Ex Director, CWPRS, Expert Member, MCZMA
6. Mr. Sunil Bhat, Dyche. MCGM, Member MCZMA
7. Mr. Narendra Toke, Director, Environment & CC and Member Secretary, MCZMA

  
Member Secretary

  
Chairman