

No. MMRDA/MTHL-PIU/JICA/QPR-20/ 1156/2022

Date: 28th April 2022

To,
Chief Representative,
Mumbai Trans Harbour Link Project (I)
16th 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. 20 for January 2022 to
March 2022.

Sir,

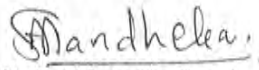
The loan agreement for the Official Development Assistance (ODA) loan for the Mumbai Trans Harbour Link Project (I) is signed between Mumbai Trans Harbour Link Project (I) and Mumbai Metropolitan Region Development Authority (MMRDA) on 31st March 2017 & 29th March 2020 with MMRDA as a direct borrower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

The Quarterly Progress Report (QPR) No. 20 for the Mumbai Trans Harbour Link Project (I) for the period of January 2022 to March 2022 is enclosed herewith for information please.

Thanking you.

Yours faithfully,

Encl.: QPR-20 (January 2022 to March 2022)


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

Mumbai Metropolitan Region Development Authority

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MMRDA

Mumbai Metropolitan Region Development Authority

Mumbai Trans Harbour Link Project

Quarterly Progress Report - No. 20

(From 1st January 2022 to 31st March 2022)



**Mumbai Trans Harbour Link Project
Quarterly Progress Report No. 20
1st January 2022 to 31st March 2022
Loan Agreement No. ID-P255 (Tranche-I)**

ORGANIZATION INFORMATION

Borrower	Mumbai Metropolitan Region Development Authority	
	Person in Charge	Metropolitan Commissioner, MMRDA
	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
Executing Agency	Mumbai Trans Harbour Link Project Implementation Unit	
	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

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

Mumbai Trans Harbour Link Project - Quarterly Progress Report No. 20 (Jan-Mar 2022)

DOCUMENT VERIFICATION AND REVISION RECORD

PROJECT NAME		Mumbai Trans Harbour Link Project			
DOC NO.		20	DATE OF ISSUE		22/04/2022
DOC TITLE		Quarterly Progress Report No. 20			
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



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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:

1st January to 31st March 2022



Demand Analysis

- 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
Total	39,300	103,900	145,500	9,800	29,600	55,000

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

- 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.
- 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

- 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.
- 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.
- 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).
- 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.
- 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-Classifier (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

Location	Original: (P/M) Mumbai Metropolitan Region Development Authority, Mumbai, State of Maharashtra	Actual: (P/R and PCR)
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Table 2.1.2 Comparison of Original and Actual Scope

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



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Items	Original	Actual
Package-4 ITS (Intelligent Transport System)	<ul style="list-style-type: none"> • Administrative Buildings • Toll Booths (1 for main alignment and each on and off rumps for 3 interchanges) • 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)) • Highway Lighting (Whole sections Low-positioned lighting for some sections) • Electrical Powering System including HV/ LV Ring Network across the Bridge. 	(P/R and PCR)
Consulting Services	<ul style="list-style-type: none"> • Tender Assistance • Construction Supervision • Facilitation of Implementation of Environmental Management Plan (EMP), Environmental Monitoring plan (EMoP). 	(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 31 st March 2022
1) Completion of Land Acquisition and Resettlement	March 2019	March 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	January 2019 – May 2019	January 2020 – May 2020
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	May 2022 – July 2023
5) Defect Liability Period		
Package-1, Package-2 and Package-4	October 2022 – September 2024	October 2023 – September 2025
Package-3	October 2021 – September 2023	April 2023 – March 2025
6) Commencement of Toll Collection	September -2022	September -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 4th Quarter (January- February- March 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
Total	75,451	72,032	3,419	154,013	105,967	48,046	317,501	238,572	78,929

(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	19,053	19,053	-	33,499	33,499		66,285	66,285	
Package-2	21,225	21,225	-	22,186	22,186		52,375	52,375	
Package-3	623	623	-	6,534	6,534		9,256	9,256	
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*	-			6,712		6,712	10,538		10,538
Administration Cost	-			4,635		4,635	7,277		7,277
GST	-			12,489		12,489	19,608		19,608
Import Tax	-			-			-		-
Interest during construction	-			-			-		-
Front End Fee	-			-			-		-
Total	41,154	41,154	-	86,617	62,585	24,032	166,761	129,031	37,730

(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
Total	317,501	144,795	66,909	26,868	238,571	78,929

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	53,940	43,167	-	-	43,167	10,773
FY 2022						
FY 2023						
FY 2024						
Total	166,760	129,030	-	-	129,030	37,730

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

2. Fiscal Year starting from 1st April and ending on 31st 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 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)	
Construction Works			
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
Consulting Services			
1	Consulting Service for Supervision	Short List Method (QCBS)	No Change



2.4.2.2 Performance

Consultant's Progress:

January 2022:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
 - i) Package-1: IPC-48 80% Ad-hoc.
 - ii) Package-2: IPC-43 20% Detailed Verification and IPC-44 80% Ad-hoc.
 - iii) Package-3: IPC-41 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 3824.58 million JPY to MMRDA / JICA in January 2022.

February 2022:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
 - i) Package-1: IPC-47 20% Detailed Verification and IPC-49 80% Ad-hoc.
 - ii) Package-2: IPC-44 20% Detailed Verification and IPC-45 & IPC-46 80% Ad-hoc.
 - iii) Package-3: IPC-40 20% Detailed Verification and IPC-42 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 8645.74 million JPY to MMRDA / JICA in February 2022.

March 2022:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
 - i) Package-1: IPC-48 & IPC-49 20% Detailed Verification and IPC-50 80% Ad-hoc.
 - ii) Package-2: IPC-45 & IPC-46 20% Detailed Verification and IPC-47 80% Ad-hoc.
 - iii) Package-3: IPC-41 & IPC-42 20% Detailed Verification and IPC-43 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 2042.10 million JPY to MMRDA / JICA in March 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 GC evaluated the Financial Bid, and the report was sent to the Employer on 28th March 2022 which they further sent to JICA. JICA's concurrence for the Financial Evaluation Report is awaited.



Contractor's Progress:

Package-1 Physical Progress till 31st March 2022

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
1	Permanent Bridge Works - Land/ Interchange Zone					
1.1	Piles	523	No.	520	99.4%	
1.2	Pile Caps	158	No.	99	62.7%	
1.3	Piers	228	No.	165	72.4%	
1.4	Pier Caps	215	No.	154	71.6%	
2	Permanent Bridge Works - Intertidal Zone					
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.	142	97.3%	
3	Permanent Bridge Works - Marine Zone					
3.1	Piles	403	No.	403	100%	
3.2	Pile Caps	80	No.	76	95%	
3.3	Piers	162	No.	114	70.4%	
3.4	Pier Caps	162	No.	110	67.9%	
4	Permanent Bridge Works - Total					
4.1	Piles	1238	No.	1235	99.8%	
4.2	Pile Caps	313	No.	250	79.9%	
4.3	Piers	536	No.	425	79.3%	
4.4	Pier Caps	523	No.	406	77.6%	
5	Precast Segments					
5.1	Segment Casting	6713	No.	4189	62.4%	
5.2	Segment (Span) Erection+ Cast-in-Situ Slab	478	No.	216	45.2%	
6	OSD Structural Steel					
6.1	Fabrication	52726	MT	51712	98.07%	
6.2	Assembly (Large Blocks)	52726	MT	11602	22.0%	
6.3	OSD Span Erection	38	No.	3	7.89%	



Package-2 Physical Progress till 31st March 2022

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
1	Permanent Bridge Works - Land/ Interchange Zone					
1.1	Open Foundation	113	No.	113	100%	
1.2	Piers	119	No.	119	100%	
1.3	Pier Caps	105	No.	92	87.62%	
1.4	Portal Beams- Land	6	No.	6	100%	
1.5	Pier Head Segments -Land	42	No.	42	100%	
2	Permanent Bridge Works - Intertidal & CRZ Zone					
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%	
3	Permanent Bridge Works - Marine Zone					
3.1	Piles	504	No.	504	100%	
3.2	Pile Caps	120	No.	106	88%	
3.3	Piers	120	No.	96.2	80%	
3.4	Pier Caps	48	No.	22	46%	
3.5	Pier Head Segments	72	No.	21	28%	
4	Permanent Bridge Works - Total					
4.1	Open Foundation	113	No.	113	100%	
4.2	Piles	784	No.	784	100%	
4.3	Pile Caps	192	No.	178	92.71%	
4.4	Piers	305	No.	287.2	92.35%	
4.5	Pier Caps/ Portal Beams	177	No.	138	77.97%	
4.6	Pier Head Segments	168	No.	117	68.83%	
5	Precast Segments					
5.1	Segment Casting	3142	No.	1,832	58.31%	
5.2	Segment (Span) Erection + Cast-in-Situ Slabs	272	No.	113	41.54%	
6	OSD Structural Steel					
6.1	Fabrication	34726	MT	34726	100%	
6.2	Assembly (for Large Block)	34726	MT	8749	25.19%	
6.3	OSD Span Erection	32	No.	2	6.25%	



Package-3 Physical Progress till 31st March 2022

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
1	Permanent Bridge Works					
1.1	Open Foundations	219	No.	216	98.63%	
1.2	Piles	No.	36	24	66.67%	
1.3	Pile Caps	No.	6	4	66.67%	
1.4	Piers	No.	242	225	92.98%	
1.5	Pier Caps	No.	189	171	90.48%	
1.6	Segment Casting	No.	834	834	100%	
1.7	Segment (Span) Erection	59	No.	36	61.01%	
1.8	Cast in-situ Slab	108	No.	68	62.96%	

Package-4 (ITS) Progress till 31st March 2022

1. As recommended by the GC, JICA accorded concurrence for Single Stage Bidding (without Pre-Qualification) on 9th 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 2nd November 2020 for review.
3. After reviewing the draft, MMRDA issued the observations on 29th 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 14th June 2021 for a review and further concurrence with JICA.
5. The Employer received JICA concurrence for the revised Bid Documents on 24th August 2021.
6. The Tender has been floated (published) on 3rd September 2021. A Pre-bid Meeting was arranged on 27th September 2021.
7. JICA concurrence for the Technical Evaluation Report received on 15th Feb 2022. The Financial Bid opened on 16th Feb 2022.
8. GC evaluated the Financial Bid, and the report was sent to the Employer on 28th March 2022 which they further sent to JICA. JICA concurrence for the Financial Evaluation Report is awaited.



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

Sr. No	Description	From January to March 2022	Cumulative
1	Total Man Hours Since Inception	4,904,652	44,053,754
2	Number of Man-Hours (Accident-Free Man-Hours)	4,904,652	7,051,656
3	Number of Man-Days	613,081	5,506,719
4	Number of Reportable Fatal Accidents	0	6
5	Number of Non-Fatal Accidents	1	4
6	Number of Near Miss Incidents	11	113
7	Number of First Aid Cases	29	272
8	Number of Dangerous Occurrences	2	3
9	Number of Reportable Sick Cases	0	0
10	Number of Man-Hours Lost	1,552	292264
11	Number of Man-Days Lost	194	36533
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	1	0.23
13	Number of Inspections done for Offices & Sites	220	3852
14	Number of Training/ Induction done for Offices & Sites	349	2274
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	13,848	3142
16	Details of Safety Committee meetings	3	41
17	No. of toolbox talks	16,532	115622
18	No. of critical excavations.	8	76
19	Pre-employment Medical check-up	2,847	380
20	No. of Safety Walk down	15	251
21	No. of Safety Inductions completed	2,847	38098



Package-2 Safety Report

Sr. No	Description	From January to March 2022	Cumulative
1	Total Man Hours Since Inception	2,931,412	22,811,789
2	Number of Man-Hours (Accident-Free Man-Hours)	1,932,634	965,459
3	Number of Man-Days	266,492	2,075,146
4	Number of Reportable Fatal Accidents	0	0
5	Number of Non-Fatal Accidents	1	8
6	Number of Near Miss Incidents	25	252
7	Number of First Aid Cases	13	160
8	Number of Dangerous Occurrences	2	12
9	Number of Reportable Sick Cases	0	2
10	Number of Man-Hours Lost	1,744	4,012
11	Number of Man-Days Lost	218	483
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	1	0.35
13	Number of Inspections done for Offices & Sites	74	1,151
14	Number of Training/ Induction done for Offices & Sites	107	917
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	10,806	2,295
16	Details of Safety Committee meetings	3	45
17	No. of toolbox talks	1,134	9,940
18	No. of critical excavations.	0	0
19	Pre-employment Medical check-up	1,048	15,180
20	No. of Safety Walk down	12	153
21	No. of Safety Inductions completed	1,053	1,883



Package-3 Safety Report

Sr. No	Description	From January to March 2022	Cumulative
1	Total Man Hours Since Inception	731,082	5,228,100
2	Number of Man-Hours (Accident-Free Man-Hours)	731,082	3,127,751
3	Number of Man-Days	91,385	653,513
4	Number of Reportable Fatal Accidents	0	0
5	Number of Non-Fatal Accidents	0	2
6	Number of Near Miss Incidents	2	24
7	Number of First Aid Cases	12	110
8	Number of Dangerous Occurrences	0	1
9	Number of Reportable Sick Cases	0	0
10	Number of Man-Hours Lost	0	2312
11	Number of Man-Days Lost	0	289
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	0	0.38
13	Number of Inspections done for Offices & Sites	51	804
14	Number of Training/ Induction done for Offices & Sites	15	247
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	2,206	468
16	Details of Safety Committee meetings	2	40
17	No. of toolbox talks	729	6,932
18	No. of critical excavations.	3	6
19	Pre-employment Medical check-up	949	9178
20	No. of Safety Walk down	12	157
21	No. of Safety Inductions completed	949	9178



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>3.2.1 General Issues</p> <p>1. Toll Arrangement/ Toll Rate 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>2. Operation and Maintenance MMRDA proposes to appoint separate agencies for Operation & Maintenance of the bridge and for Toll Management System. Both the agencies for O & 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 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>Single Operation and Maintenance Contractor will be appointed by December 2021.</p>
<p>3.2.2 Environmental and Social Consideration</p> <p>a. CRZ Clearance</p> <p>i. Supplemental EIA has been approved by MMRDA and disclosed on the website of JICA. 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"> • MMRDA has disclosed Supplemental EIA & SIA on MMRDA website. • The renewed CRZ clearance was granted on 25/1/2016 from MoEF&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 maintains throughout the construction phase. • MMRDA appointed Mangroves & Marine



<p>CRZ Clearance, appropriate measures shall be taken, and necessary budget shall be secured by MMRDA.</p>	<p>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.</p> <ul style="list-style-type: none"> • Rs 91.42 Crore has been transferred to Mangroves & Marine Biodiversity Foundation, Mumbai for the development & conservation of mangrove area and its afforestation. Such funds will be managed by the Mangrove Foundation of Maharashtra State. • 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.
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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 th 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>Pkg-1: Tree Cutting/ Transplantation permission from the Garden Dept., MCGM obtained on 24th December 2020.</p> <p>Pkg-2: Tree Cutting/ Transplantation permission obtained & completed.</p> <p>Pkg-3: Forest Department issued a concurrence on 19/05/2019. CIDCO's permission for Tree Cutting/ Transplantation obtained on 25th 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>1. Establishment of Effective Environmental and Social Cell in PIU</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>2. Rehabilitation and Land Acquisition Issues</p> <p>a. Affected Area and Population</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>Sewri: 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"> • 164 PAHs Kanjurmarg for residential • 25 PAHs Kanjurmarg for commercial • 7 PAHs (Satsangi Plot) Kanjurmarg for Commercial • 1 PAHs (commercial to residential) for Bhakti Park • 100 PAHs HDIL Kurla for residential <p>Navi Mumbai: 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. Entitlement Policy</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)
("Guidelines") (Attachment 2-5).	
<p>c. Compensation to Project affected Fishermen</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 grasp the exact impact during construction and operation phase.</p>	<p>Updated Attachments 2-8 and 2-10 are enclosed in the report.</p>
<p>d. Implementation Schedule</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>e. Grievance Redressal Mechanism</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>Sewri: FLGRC (Field Level Grievance Redressal Committee) and SLGRC (Senior Level Grievance Redressal Committee) were set as per the RAP and in operation.</p> <p>Compensation Committee has been constituted to address the issues of Compensation to Lease Holders at Sewri.</p> <p>Fishermen: GRC for resolving grievances of the fisherfolk was set up as per the compensation policy and is in operation.</p>
<p>f. Internal Monitoring</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>g. Qualitative Independent Evaluation</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>h. RAP Implementation Budget</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>i. Environmental Management Plan (“EMP”)</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>j. Environmental Monitoring Plan (“EMoP”)</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 Attachment 2-3. Environmental Monitoring Results during the construction phase are reported in Attachment 2-4.</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. (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>k. Long Term Bird Monitoring</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"> • MMRDA has entrusted the work of bird monitoring and implementation of Flamingos and birds related mitigation measures & bird monitoring program to Mangrove and Marine Biodiversity Foundation. • Rs. 31.92 Crore deposited to Mangrove foundation, Mumbai for periodical disbursement to BNHS.

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.



EIRR	<p>Original: 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</p>	<p>Actual: (PCR) _____% Cost: Benefit: Project Life: Attachment(s): Supporting data for computing EIRR</p>
FIRR	<p>Original: 1.5% Cost: Project Cost, O&M cost, Land Acquisition cost Benefit: Toll Revenue Project Life: 32 Years</p>	<p>Actual: (PCR) _____%</p>

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>Original: (P/M and PCR)</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>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.</p> <p>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.</p>
<p>Actual: (P/R and PCR)</p> <p>Monitoring Organization</p> <p>PIU for MTHL has been established for monitoring the Project.</p> <p>Submission of QPR and PCR</p> <p>This QPR No. 20 is submitted for the period of 1st January to 31st March 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.

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

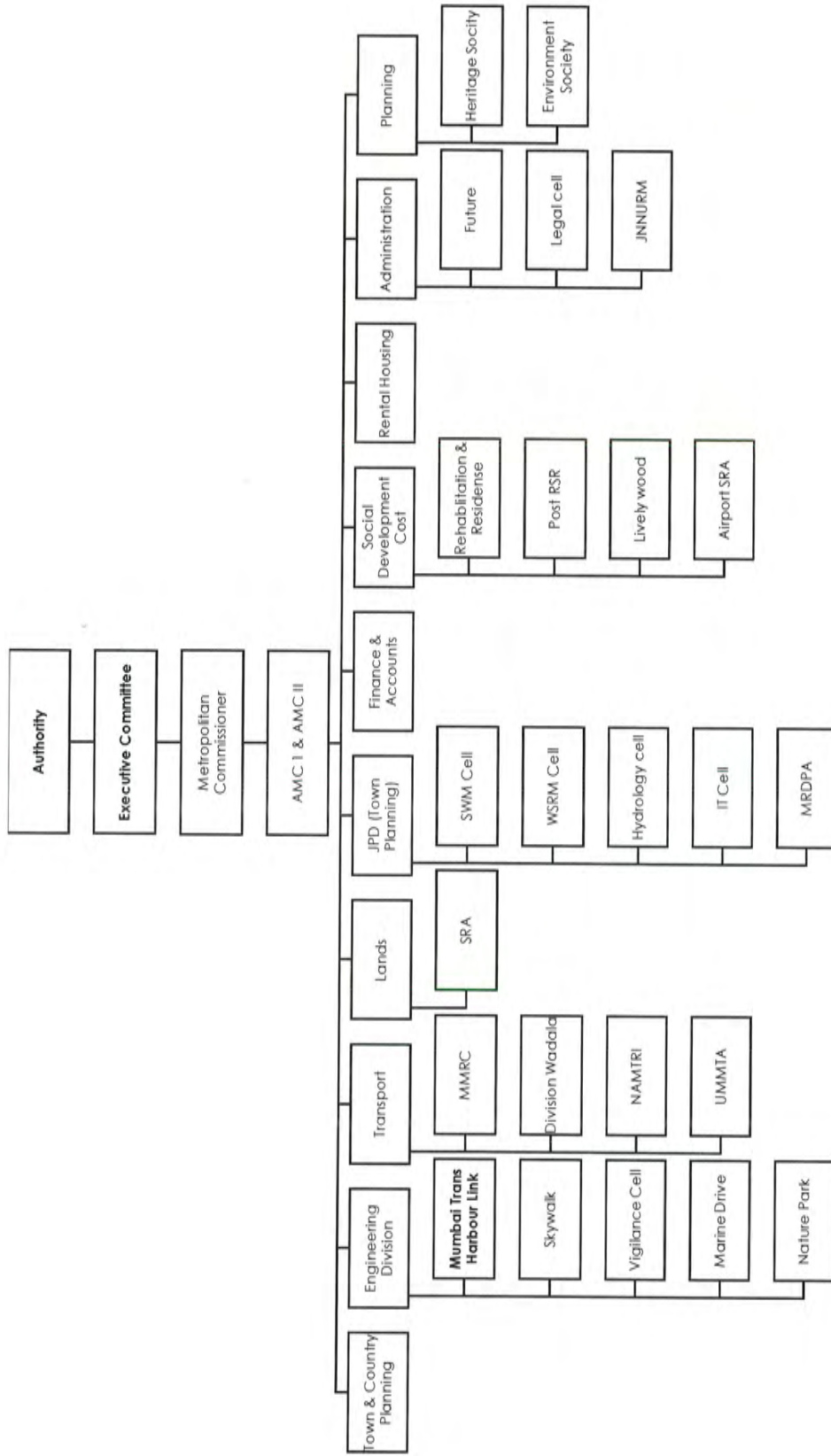
Please raise any lessons learned from the project experience, which might be valuable for the future JICA assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

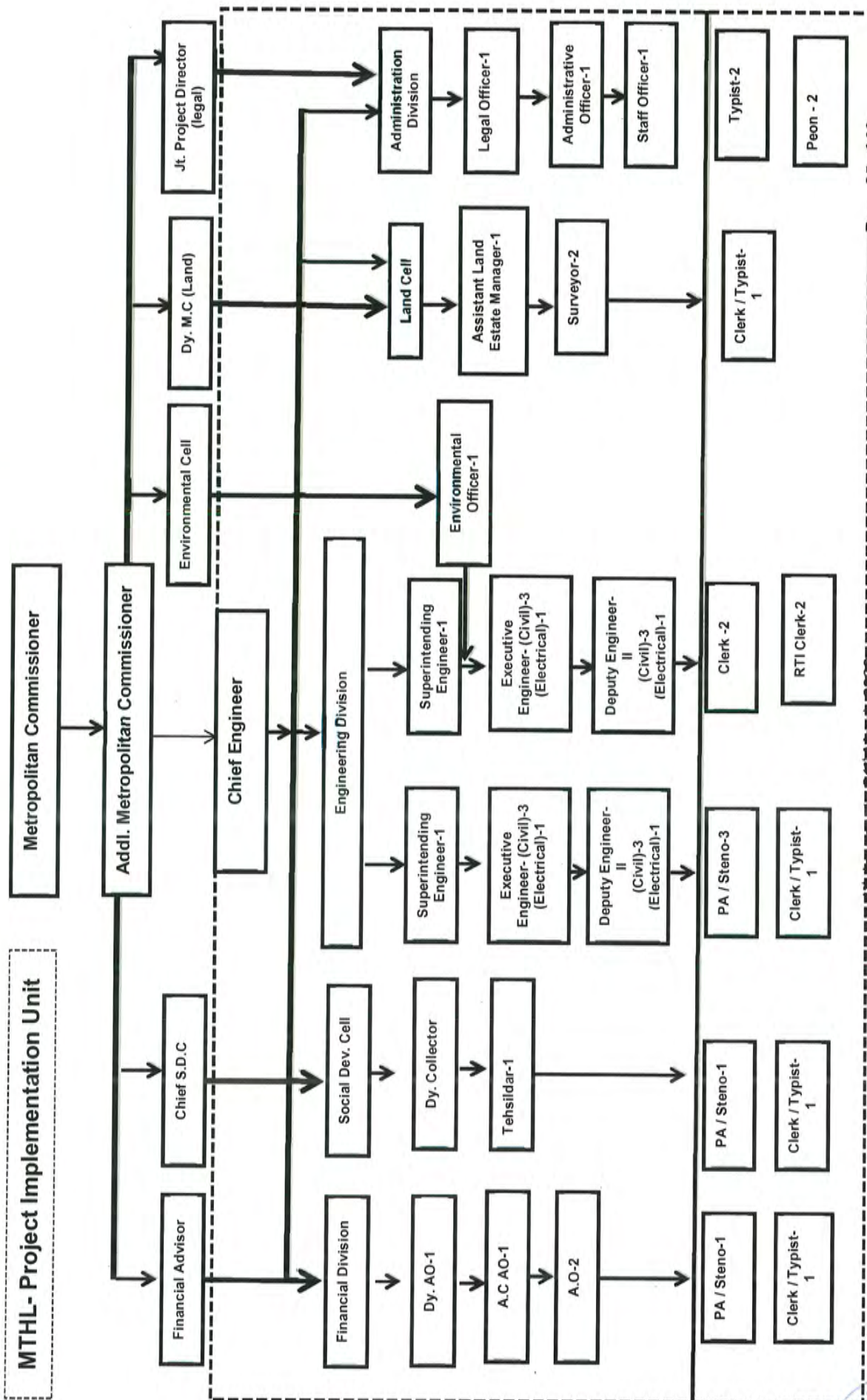
(PCR)

Attachment 1- MMRDA & PIU Organization Chart



MMRDA Organization chart





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**



Environmental Monitoring Plan with Packagewise Estimated Cost

Category	No.	Impacted Item on JICA Guidelines	Parameter	Method	Location	Frequency a year	Cost (INR)	Cost Pkg.1 (INR)	Cost Pkg.2 (INR)	Cost Pkg.3 (INR)	Total Cost (INR)	Standard Central Pollution Control Board (CPCB) - Ministry of Environment & Forest (MoEF)	Remarks	
Pollution	1	Air pollution	SO ₂ , NO ₂ , PM ₁₀ , PM _{2.5} , O ₃ , CO, (6 items)	National Ambient Air Quality Standards, 2009	1. Sewri & Sewri bay area for package I	Fortnightly at all locations except 2 locations each near Batching plants	1,800,000	15,000,000	1,800,000	742,500	17,542,500	National Ambient Air Quality Standards (NAAQS) by Central Pollution Control Board (CPCB)	P1 contractor team is conducting Ambient air quality monitoring with reference to National Standards and clause 1.2 of Employer's requirement.	
					2. Nhava temporary bridge & casting yard in Gavhan for package II	4 Times / Year						(Standard for 24hrs: Industrial and Residential/ Ecological Sensitive area)	P 2 contractor Monitoring plan has been designed as per EIA of 2015	
					3. Gavhan & Chirle for package III	Fortnightly only for 3 months (Jan-2019 to Mar-2019). Then quarterly monitoring as per MOEF and CPCB norms						SO ₂ : 80 / 80µg/m ³	P3 contractor team is conducting Ambient air quality monitoring with reference to National Standards and clause 1.2 of Employer's requirement.	
													NO ₂ : 80 / 80µg/m ³	P 1 received Consents CTE & CTO from MPCB and they are following MPCB frequency in addition to frequency set by Environment Expert from GC. The NAAQ standards are showing High rate as that is the usual procedure. The frequency of monitoring is set by us which varies for different parameters as either Statutory requirements or as required by us to ensure we have sufficient data in hands if there are additional claims for Compensation in C5 category. Summary: Although the contract conditions for all packages were same at the time of bidding. Later 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 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.
													PM ₁₀ : 100 / 100µg/m ³	
													PM _{2.5} : 60 / 60µg/m ³	
													O ₃ : 180 / 180µg/m ³	
													CO: 0.4 / 0.4mg/m ³	
	2	Water pollution	pH, BOD, DO, Turbidity and O&G	IS / AWWA	1. Sewri & Sewri bay area for package I	Quarterly	810,000	2,400,000	810,000	0	3,210,000	Marine water quality Standards - Class SW-IV Harbour Waters (MPCB)	Water Pollution not applicable for Pkg. 3	
					2. Nhava temporary bridge & casting yard in Gavhan for package II	4 Times / Year					pH : 6.5-9			
					3. Gavhan & Chirle for package III	Not applicable					DO: 3 mg/l			
												Turbidity: 30 NTU		
												BOD: 5 mg/l		
												O & G: 10 mg/l		
	3	Waste	Volume of waste soil, cutting tree and domestic garbage	Volumetric	1. Sewri & Sewri bay area for package I	Daily	500,000	299,200,000	500,000	600,000	300,300,000		The cost of waste disposal for P1 includes C&D waste, Pile muck etc. from all areas like, interchange, intertidal and marine. The disposal location is at MCGM approved location Bhayandarpada, Thane.	



Category	No.	Impacted Item on JICA Guidelines	Parameter	Method	Location	Frequency a year	Cost (INR)	Cost Pkg.1 (INR)	Cost Pkg.2 (INR)	Cost Pkg.3 (INR)	Total Cost (INR)	Standard Central Pollution Control Board (CPCB) - Ministry of Environment & Forest (MoEF)	Remarks
					2. Nhava temporary bridge & casting yard in Gavhan for package II	4 Times / Year						Municipal Solid Waste Management Rules, 2013 Generated waste shall be reused or disposed at designated site. Sites have been identified and the location for Pkg. 1 is at Bhayandar Pada in Thane. For Pkg. 2 & 3 is in Navi Mumbai at Pushpak Node near "Teen Taki Junction" along the Amar Marg.	P2 contractor has considered only Domestic garbage with respect to CIDCO. Other wastes are not considered. Construction wastes will be
				3. Gavhan & Chirle for package III	Once site clearing work/execution part of work start.								
4 and 8		Soil Contamination/ sedimentation	Heavy Metals & Oil & Grease (5-10 items shall be selected from Soil pollution standards)	IS / Methods Manual Soil Testing in India by Department of Agriculture and Cooperation, January 2011	1. Sewri & Sewri bay area for package I 2. Nhava temporary bridge & casting yard in Gavhan for package II 3. Gavhan & Chirle for package III	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	150,000	1,500,000	150,000	100,000	1,750,000		
5		Noise and vibration	Ambient and road side noise (dB(A) _{L_{eq}})	IS Standard	1. Sewri & Sewri bay area for package I 2. Nhava temporary bridge & casting yard in Gavhan for package II 3. Gavhan & Chirle for package III	Fortnightly 2 Times / Year Fortnightly	150,000	54,000	150,000	369,000	573,000	-Construction Noise; 85dB(A) -Ambient Noise Standards in India (dB (A) _{L_{eq}}) 1. Industrial Area Day Time: 75 (6-22hr) Night Time: 70 (22-6hr) 2. Commercial Area: Day Time: 65 (6-22hr) Night Time: 55 (22-6hr) 3. Residential Area: Day Time: 55 (6-22hr) Night Time: 45 (22-6hr) 4. Silence Zone Day Time: 50 (6-22hr) Night Time: 40 (22-6hr)	
			Vibration (dB L10 or mm/sec)		1 Location Gavhan area for package III	Half yearly	75,000	0	75,000	400,000	475,000	- Construction vibration 75dB -Vibration Standards roadside 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 Pkg. 1
9 and 10		Protected Area /Ecosystem	1. Monitoring of mudflat conditions including fauna-flora 2. Monitoring of Cutting Tree and replantation/transplanting area 3. Monitoring of Mangrove Plantation area appointed by MoEF	Ocular inspection and quantitative survey 1-1. Fauna-Flora Line-Point census and record number and appeared species	Along MTHL alignment and mangrove replant area for Package I Along MTHL alignment and mangrove replant area for package II Not applicable for Package III	Quarterly during the construction Period 4 Times / Year	6,500,000	7,200,000	6,500,000	0	13,700,000	Significant impacts are not caused by the project Note)	Not applicable for Pkg. 3



Category	No.	Impacted Item on JICA Guidelines	Parameter	Method	Location	Frequency a year	Cost (INR)	Cost Pkg.1 (INR)	Cost Pkg.2 (INR)	Cost Pkg.3 (INR)	Total Cost (INR)	Standard Central Pollution Control Board (CPCB) - Ministry of Environment & Forest (MoEF)	Remarks
Natural environment			4. Monitoring of sedimentation soil and ecological parameter (18 items on Supplemental EIA 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) SiO ₂)	1-2: Mangrove density and community survey								Detailed monitoring plan will be setup during basic design stage Standard for Soil: Supplemental EIA Table 6.1.15 Standard for Ecological Parameter: - Net primary Productivity <1,500 mgC/m ³ /day at surface - Chlorophyll-a <4mg/m ³ - Phosphate: 0.1-90µg/l - Nitrate: 1.0-500µg/l - Nitrite: <125µg/l - Particulate Organic Carbon: 10-100mg/m ³ - SiO ₂ : 10-5,000µg/l	
				1-3: Benthos Survey									
				2-1: Cutting trees confirmation									
				3-1: Mangrove survey in the replanted area									
Social environment	11	Hydrology	Flooding situation	Flood level measurement during high precipitation periods	Not applicable for Package I		350,000	0	350,000	0	350,000	Project activities and structures does not cause flooding and impacts on tidal conditions	Not applicable for Pkg 1 & 3
					2 Locations (CRZ at Sewri and Shivaji Nagar) for Package II	4 Times / Year							
					Not applicable for Package III								
	12	Topography and Geology	Conditions in embankment area	Visual survey about Stability of embankment	Not applicable for Package I		115,000	0	115,000	0	115,000	Embankment shall be stabilized without any landslide and cracks	Not applicable for Pkg 1 & 3
				Interchange in Shivaji Nagar for Package II	4 Times / Year								
				Not applicable for Package									
	13	Local economy such as employment and livelihood			Affected area		As per Actuals						
	14	Local conflict of interests	Construction worker's township	Confirmation of workers list from contractor	2 Locations (camp site in Sewri and Shivaji Nagar) for Package II	2 Times / Year	125,000	0	125,000	0	125,000	Employment opportunity shall be provided fairly	
	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	525,000	Infection disease rate shall not be caused by the project	
	16	Labour Environment	Construction worker's condition	Confirmation of safety devices and conditions via interviews	2 Location (camp site in Sewri and Shivaji Nagar) for Package II	2 times / year	500,000	0	500,000	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 "IFC Performance Standard 2 Labor and Working Conditions"	
Other	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 II	4 Times / Year	400,000	0	400,000	0	400,000	Any accidents are not caused by construction	
							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

Monitoring Period - January 2022 to March 2022

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.

1. Environmental Monitoring during Construction for 4.5 years

Area	No.	Item	Parameter	Location	Frequency a year	Item and Standard	Monitoring Result				Remark - reasons why the data is exceeding standard - counter measures when the data is exceeding				
							Location 1- Pkg 1	Location 2- Pkg 2	Location 3- Pkg 3	Location 4					
Pollution	1	Air pollution	SO ₂ , NO ₂ , PM ₁₀ , PM _{2.5}	1. Sewri & Sewri bay area for package I	Quarterly monitoring is conducted at all locations.	National Ambient Air Quality Standards (NAAQS) (Standard for 24hrs: Industrial and Residential)	Sewri	Shivaji Nagar	Chirle						
				2. Nhava temporary bridge & casting yard in Gavhan for package II	4 Times / Year										
				3. Gavhan & Chirle for package III	From march -2019 onwards monitoring is conducted quarterly as per MOEF and CPCB norms							1. SO ₂ : 80µg/m ³	9.67	BDL	12
												2. NO ₂ : 80µg/m ³	30.25	21	28
												3. PM ₁₀ : 100µg/m ³	249.17	76	66
												4. PM _{2.5} : 60µg/m ³	63.33	27	31
												5. CO: 0.2mg/m ³	1.38	1.3	0.6
			6. VOCs	1.18	4.2	1.6									
						Benzene is analysed in ambient air									
	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)	Zone I	Zone II	Zone III/ Package-03						
				2. Nhava temporary bridge & casting yard in Gavhan for package II	4 Times / Year										
				3. Gavhan & Chirle for package III	Not applicable							1. pH : 6.5-9	8.1	8.3	Not applicable
												2. DO: 3 mg/l	5	6	Not applicable
												3. Turbidity: 30 NTU	4.3	7.6	Not applicable
												4. BOD: 5 mg/l	BDL(DL+2)	BDL	Not applicable
			5. O & G: 10 mg/l	BDL(DL+2)		Not applicable									
			6. COD		16	Not applicable									
	3	Waste	Volume of waste soil, cutting tree and domestic garbage	1. Sewri & Sewri bay area for package I	MCGM - MTHL 1 - as per	Municipal Solid Waste Management Rules, 2016 Generated Concrete and Debris from Construction	Sewri Camp Site	Shivaji Nagar Camp Site	Chirle Camp Site		Comprehensive waste management plan is implemented with prior approvals of MCGM, PCB and Debris Disposed as authorized for MTHL-1				
												12019.8 Cu.m.	App. 2000 CuM Collected in jumbo bags and Disposed off in FBB Location	NA	
												Generated cutting tree (ha) total	1. Tree Cutting: 384 trees (Till March 2022) 2. Transplanting : 445 Trees (Till March 2022)		Tree cutting work completed and Half yearly report submitted to Client (Aug, 2021)
Generated domestic waste (t/month) total												119.74	3.5 T/quarter. It is disposed through CIDCO daily.	2.75 T for the quarter	
Confirmation of adequate disposal (visual survey)												Schedule Audited by EMS			
2. Nhava temporary bridge & casting yard in Gavhan for package II												4 Times / Year			Muck Testing Done on September 2021 and Reports submitted to GC
3. Gavhan & Chirle for package III	Once site clearing work/execution part of work start.			BDL											
4	Soil Contamination/sediment	Heavy Metals & Oil & Grease	1. Sewri & Sewri bay area for package I	1. Muck: 1 Time / Year 2. Sediments: 4 Times / Year	Soil Pollution Standard in India (MOEF)	Sediment sample at Sewri	0.17	Not applicable for package-3		Hazardous Storage is situated in low laying 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.					
			2. Nhava temporary bridge & casting yard in Gavhan for package II								BDL	BDL			
			3. Gavhan & Chirle for package III	*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							2. total cyanide : not detected		BDL		
											3. Organic Carbon	1.1	BDL		
											4. lead: 0.01mg/l	18		Not applicable for package-3	
											5. chromium (VI): 0.05mg/l		BDL		
											6. arsenic: 0.01mg/l or 15mg/kg (agri-land soil)		BDL		
											7. total mercury: 0.005mg/l		BDL		
											8. alkyl mercury: not detected		BDL		
											9. PCBs: not detected		BDL		

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



The Project for Construction of Mumbai Trans Harbour Link
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Monitoring Period - January 2022 to March 2022

1. Environmental Monitoring during Construction for 4.5 years

Sl. No.	Parameter	Frequency	Standard	Location	Remarks								
5	Noise and vibration	Ambient and road side noise (dB(A) LAeq)	10. copper: 125mg/kg (only paddy field soil)	142	BDL	JICA, and the rest of items shall be deleted from this form.							
			11. dichloromethane: 0.02mg/l		BDL								
			12. carbon tetrachloride: 0.002mg/l		BDL								
			13. 1,2-dichloroethane: 0.004mg/l		BDL								
			14. 1,1-dichloroethylene: 0.02mg/l		BDL								
			15. cis-1,2-dichloroethylene: 0.04mg/l		BDL								
			16. 1,1,1-trichloroethane: 1mg/l		BDL								
			17. 1,1,2-trichloroethane: 0.006 mg/l		BDL								
			18. trichloroethylene: 0.03mg/l		BDL								
			19. tetrachloroethylene: 0.01mg/l		BDL								
			20. 1,3-dichloropropene: 0.002mg/l		BDL								
			21. thiuram: 0.006mg/l		BDL								
			22. simazine: 0.003mg/l		Sea Section (ST5000-5500) Migratory Bird Area (no standard on sea section)		Shivaji Nagar (Commercial area)						
			23. thiobencarb: 0.02mg/l		68.2								
			24. benzene: 0.01mg/l		65.6								
			25. selenium: 0.01mg/l										
			5	Noise and vibration	Ambient and road side noise (dB(A) LAeq)		1. Sewri & Sewri bay area for package I	Fortnightly - Noise levels	Construction area Standard 85 dB(A) daytime (Japan standard) Not construction area : Ambient Noise Standard in India (dB(A) LAeq) 75 Max.	Sewri (ST 200-500) (Industrial area)			
									Day time : 6-22 hr (continuous) dB(A) - 75 DB	70.7			
									Noise levels - Night time	Night time: 22-6 hr (continuous) dB(A) - 55 DB	66.21		
							2. Nhava temporary bridge & casting yard in Gavhan for package II	2 Times / Year					
							3. Gavhan & Chirle for package III	Fortnightly	(only sea section) Day time : 6-22 hr (10 min during 9-17 hrs) Night time: 22-6 hr (10 min 22-24 hr)				
									Note (standard values in Not construction area)				
									1. Industrial Area	Shivaji Nagar (Commercial area) Not Applicable	Chirle		
									Day Time: 75 (6-22hr) Night Time: 70 (22-6hr)		Not applicable		
									2. Commercial Area:				
		Day Time: 65 (6-22hr) Night Time: 55 (22-6hr)											
5	Noise and vibration	Vibration (dB) shall be converted from mm/s to dB	1 Location Gavan area for package III	Half yearly	Construction area Standard 75 dB daytime (Japan standard) Not construction area : Vibration Standard (Japan Standard along the road)	Sewri (ST 200-500) (Industrial area)							
					Day time : 6-22 hr (continuous)								
					Night time: 22-6 hr (continuous)	Sea Section (ST5500-16000)	Shivaji Nagar side (app. ST16000-19000)						
					Note (standard values in Not construction area)		N/A						
					1. Commercial /Industrial Area								
					Day Time: 70 (7-20hr) Night Time: 65 (20-7hr)								
5	Noise and vibration	Vibration (dB) shall be converted from mm/s to dB	Along MTHL alignment and mangrove replant area for Package I	Quarterly during the construction Period	Standard is not existing, but quantity and quality should not be worsen	Sewri side (ST500-5500)	not required	Mangrove Replantation area appointed by State Government					
			Along MTHL alignment and mangrove replant area for package II	4 Times / Year	1-1. Fauna-Flora (number of species and quantity)	Flora/Fauna list maintained for Referral	not required	N/A	Biodiversity list in CEMP/ EMP 2022 updates				
			1. Monitoring of mudflat conditions including fauna-flora 2. Monitoring of Cutting Tree and replantation/transplantation area 3. Monitoring of Mangrove		(1) Number of species of bird	35	not required						
					(2) Number of species of fish	27	not required						
					(3) Estimated number of Flamingo	20000+ Lesser Flamingo is dominant	not required	Approved By Both CIDCO and Forest Dept (both Alibaug and Uran regional office)					
					1-2: Mangrove density and community survey	Avicennia marina	not required						
										Testing for phytoplankton/ zooplankton density and list of fauna attached in original test records available from Ultratech.			
										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.			



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 - January 2022 to March 2022

1. Environmental Monitoring during Construction for 4.5 years

Category	Item No.	Parameter	Location	Frequency	Criteria for evaluation	Observed	Remarks		
Natural Environment	6	Protected Area 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) SiO2)	Ecosystem		(1) Number of species of mangrove	Dominant - Avicennia sp.	not required	Nil	
					(2) Density of mangrove (xx trees/10m x 10m)		not required		
					1-3: Benthos Survey	MEIO, Flora, fauna, phytoplankton, zooplankton	not required		
					(1) Number of species and quantity by species	130 Species and 145 No/m2			
					2-1: Cutting tree confirmation	1. Tree Cutting: 384 trees (Till March 2022) 2. Transplanting: 445 Trees (Till March 2022)			
					(1) Number of cutting tree and species	CRZ- Cost assigned to FD			
					3-1: Mangrove survey in the replant area	GC to integrate FD and environmentalist			
					(1) Number of species of mangrove				
					(2) Density of mangrove (xx trees/10m x 10m)				
					4. Ecological Parameter				
					(1) Net primary Productivity : <1,500 mgC/m3/day at surface	500			
					(2) Chlorophyll-a: <4mg/m3	4.5	Shivaji Nagar		
					(3) Phosphate 0.1-90µg/l	3	No flooding		
					(4) Nitrate: 1.0-500µg/l	3			
					(5) Nitrite: <125µg/l	BDL (DL-2)	Shivaji Nagar Camp Site	Chirle	
(6) Particulate Organic Carbon: 10-100mg/m ³	1.1		Rock filling activity is carried out as per agreement.						
(7) SiO2: 10-5,000µg/l	33.13	Shivaji Nagar Camp Site	Chirle						
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	125-150	85	
					2 Locations (CRZ at Sewri and Shivaji Nagar) for Package II	Monitoring of flooding situation	No Flooding	Shivaji Nagar Camp Site	
					Not applicable for Package III		Health Checks carried out but HIV/AIDS parameter is not there.	Regular Health check up is carried out by site Doctor.	
8	Topography and Geology	Conditions in embankment area	2 Locations (1. Embankment of Inter 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 cracks	Shivaji Nagar	Shivaji Nagar Camp Site	Gavan Camp site	
					Monitoring of embankment	In progress	Conforming with BOCW Act 1996	Conforming with BOCW Act 1996	
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	Sewri Camp Site	Shivaji Nagar Camp Site	Chirle/Other area	
					Number of hired workers by community	1. Local labor : Jan 2022 : 885 2. Local labor : Feb 2022 : 900 3. Local Labor : Mar 2022 : 927	Nil	Nil	
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 Infection disease rate shall not be caused by the project	Sewri Camp Site			
					Confirmation of health check record and inspect project site PPE provisions for work, social distancing for covid protocol at work in TBT training. Posters for awareness at Kitchen and Labor camp. Medical camp : 220 Labor Covid Precautions : 1. L&T office and camps : Thermal screening / Sanitation. 2. Fogging : 2 times in a week 3. Pest control : 2 times in a week	Doctor on call checks site specific infections., minor and major incidents . 24x7 ambulance service , ERT team with trained first aiders available		Functional first aid center within MTHL -1 campus. Induction, medical check up and authorization required to begin work for Labor.	
11	Labour Environment	Construction worker's cond	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"	* 4164 labor for 3 months at 11 functional camps. * One mid- day meal introduced as per BOCW act and by Maharashtra state serves 119250 free meals from Jan 22 to Mar 22 *Entertainment (Movie) arranged for 600 labour on Sunday		Biotoilets used for labor camps with biodigestors. A DRDO patented technology used for Solid waste. The bathing and kitchen water was directed to a reed bed for treatment.	
					BOCW Registration of Labor- 943 Labour BOCW kit distribution: 496 Labour				
Other	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	1 RLTI reported		
						Number of recorded accident		While cutting the bracing secondary beam tilted towards IP and resulted cut injury of little, ring and middle finger	



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 June 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	31-07-2022	--	The payment status to the land owners is awaited from CIDCO. The same would be communicated to JICA on receipt of the same.
Total		98.75	7.595	1.745			
108.09							

***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
Total Area		9.34	7.595	1.745



**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 1 st quarter of 2022
b. Date of Preparing This form	31-03-2022
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)	297 Hhs	Titleholders: 0 Hhs Non-titleholders: 297 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

Structures	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
-------------------	---

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 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. 20 (January to March 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	
Total	118.179		108.839	7.595	1.745	

QPR No. 20 (January to March 2022)



QPR No. 20 (January to March 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	197	29	226	97%	
	No. of Residential PAHs given possession of Alternate Tenements	231	197	29	226	97%	
	No. of Commercial/R+C PAPs provided with Allotment Letters of Alternate Shops/Tenements	66	23	38	61	92%	
	No. of Commercial R+C PAPs given possession of Alternate Shops/Tenements	66	23	38	61	92%	
	No. of Occupants of MbPT Leased Plots provided Compensation	6	5	1	6	100%	
	No. of Religious properties Relocated / Removed	6	1	5	6	100%	
	No. of Other Community properties Relocated / Removed	4	0	4	4	100%	
	No. of Structures in possession of MbPT Dismantled / Cleared	9	0	9	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. 20 (January to March 2022)



QPR No. 20 (January to March 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	2	1	1	2	100%	
	No. of Grievances Received by SLGRC	2					
	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 23 villages) Up to 31-03-2022						
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	76	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
Total		15097	232	864	5549	6645
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 31-03-2022 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
			23-12-2015	2. Approval to the Fisher-folk PAP list obtained from Fisheries Department for Fisherfolk of Navi Mumbai of C2 & C3 on 25th April 2018. 3. Validation of compensation is in progress and would be completed in phases.
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	1.745	31-07-2022	--	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.
Total	108.09	106.345	1.745			



Implementation Schedule for SIA (Sewri Section)

Task No.	Task Designation	Start Date	Completion / Forecast Date
1	Preparation of Final SIA		
1.1	MMRDA Approval	October 2015	January 2016
1.2	JICA Approval	November 2015	January 2016
1.3	Posting of project Information on MMRDA		
1.4	Translation and disclosure of entitlement policy in local language to all PAP's	December 2015	January 2016
2	LARP Implementation		
2.1	Grievance redress mechanism established	August 2016	August 2016
2.2	Staff deployment SIA implementation	June 2016	Dec. 2021
2.3	Staff Deployment Public Relation	June 2016	June 2016
2.4	Hiring of Independent Evaluation Agency	November 2018	November 2020
2.5	Preparation and issue of allotment letters to PAPs	June 2018	July 2022
2.6	Notice of PAPs for shifting (Sewri Section)	December 2018	Nov. 2021
2.7	Allotment of dwelling units to PAPs	September 2016	July 2022
2.8	Shifting of PAPs to resettlement Colony	December 2018	Nov. 2021
2.9	Transfer of compensation/allowance/ assistance to PAPs	December 2018	July 2022
2.10	Creation of Community Revolving fund (within 3 months post handing over)	April 2019	July 2022
2.11	Assessment of economic rehabilitation needs by individual household (within 6 months after handing over)	September 2019	July 2022
2.12	Registration of Co-operative housing societies transfer of maintenance funds. (6 months period)	December 2019	July 2022
2.13	Signing of Civil Contract		January 2018
2.14	Notice of Civil works to proceed		March 2018
3	Monitoring & Evaluation		
3.1	Internal Monitoring- Monthly/ Quarterly	June 2016	July 2020
3.2	Independent Evaluation Mid-term and End term evaluation		
	Mid Term	May 2019	June 2020
	End Term	November 2019	July 2022



Attachment 3- JICA's Concurrence Status

1st January to 31st March 2022

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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)	413.88	413.88	JICA's Concurrence - 23rd Aug 2019	-	JICA's Concurrence - 24th Aug 2021	JICA's Concurrence - 15th Feb 2022	-	-

Attachment 4- Project Procurement and Financial Status till 31st March 2022

1st January to 31st March 2022

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PROJECT PROCUREMENT AND FINANCIAL STATUS TILL 31st MARCH 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 March 2022	% Of Financial Progress till 31st March 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	March 2018	21-Sep-2022	30-Sept-2023	74.68%	68.37%
	Package-2 (CH 10+380 km to CH18+187 km)	5612.61	Awarded	DAEWOO-TPL JV	March 2018	21-Sep-2022	27-Sept-2023	72.82%	70.56%
	Package-3 (CH18+187 to CH21+800)	1013.79	Awarded	L&T	March 2018	21-Sep-2021	03-Mar-2023	84.05%	81.73%
	Package-4 Intelligent Transport System (ITS)	413.88	Tender Evaluation Stage	NA	May 2022 (Tentative)	July 2023 (Tentative)	NA	NA	NA



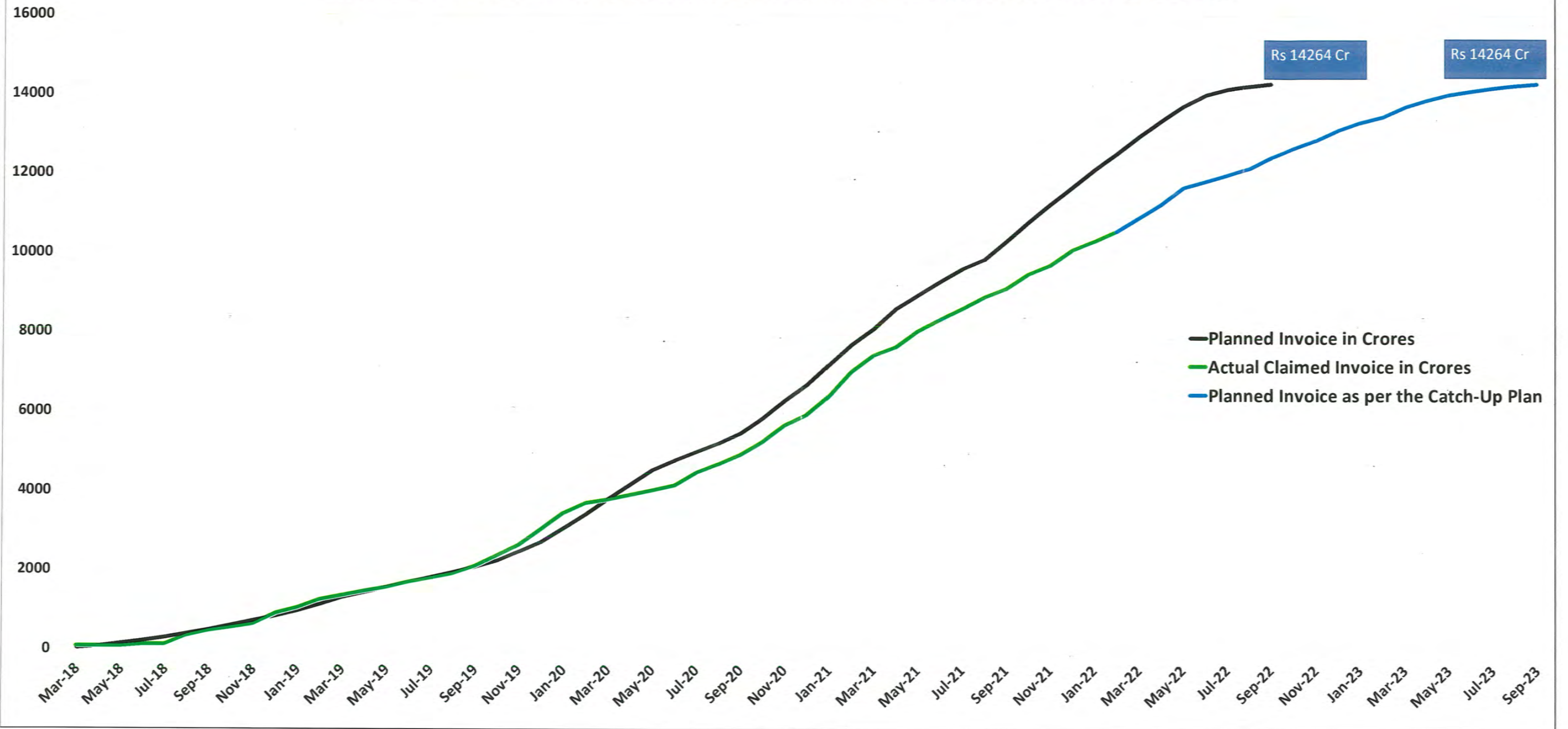
**Attachment 5- S-Curve for Cumulative Planned Vs
Actual Amount in Rs Crores**

1st January to 31st March 2022

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Financial S- Curve - Planned Vs Achieved Invoices in Rs Crores as of 31st March 2022



**Attachment 6- Package-1's Construction Programme
Updated as of 25th March 2022**

1st January to 31st March 2022

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MUMBAI TRANS HARBOUR LINK PACKAGE 1,
UPDATED BASELINE PROGRAMME FOR MARCH 2022



General Consultant for Mumbai Trans Harbour Link Project

Main project schedule table with columns for Activity ID, Activity Name, BL1 Duration, BL1 Start, BL1 Finish, Original Start, Original Finish, Schedule % Complete, Performance % Complete, Variance - BL1 Start Date, Variance - BL1 Finish Date, Total Float, and a Gantt chart grid for years 2018-2024.

Legend for activity types: Actual Level of Effort (blue), Remaining Work (green), Actual Work (orange), Critical Remaining Work (red), Milestone (diamond), summary (arrowhead).

Please note that this Monthly Rolling Plan has been updated based on the actual progress and will not match with Revised Work Program submitted post EOT-04.





MUMBAI TRANS HARBOUR LINK PACKAGE 1,
UPDATED BASELINE PROGRAMME FOR MARCH 2022



General Consultant for Mumbai Trans Harbour Link Project

Activity ID | Activity Name | BL1 Duration | BL1 Start | BL1 Finish | Original Start | Original Finish | Schedule % Complete | Performance % Complete | Variance - BL1 Start Date | Variance - BL1 Finish Date | Total Float | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024

Legend for activity types: Actual Level of Effort, Remaining Work, Actual Work, Critical Remaining Work, Milestone, Summary.

Please note that this Monthly Rolling Plan has been updated based on the actual progress and will not match with Revised Work Program submitted post EOT-04.





MUMBAI TRANS HARBOUR LINK PACKAGE 1,
UPDATED BASELINE PROGRAMME FOR MARCH 2022



General Consultant for Mumbai Trans Harbour Link Project

Table with columns: Activity ID, Activity Name, BL1 Duration, BL1 Start, BL1 Finish, Original Start, Original Finish, Schedule % Complete, Performance % Complete, Variance - BL1 Start Date, Variance - BL1 Finish Date, Total Float, and a Gantt chart grid for years 2018-2024.

Legend for activity status: Actual Level of Effort (blue), Remaining Work (green), Actual Work (red), Critical Remaining Work (red with diamond), Milestone (diamond), summary (arrow).

Please note that this Monthly Rolling Plan has been updated based on the actual progress and will not match with Revised Work Program submitted post EOT-04.



**Attachment 7- Package-2's Construction Programme
Updated as of 25th March 2022**



#	Activity ID	Activity Name	Original Duration	BL Project Start	BL Project Finish	Actual Start	Actual Finish	Schedule % Complete	Performance % Complete	2018												2019												2020												2021												2022											
										1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
310		MAIN BRIDGE BEARING_MARINE 13+610~14+800 FROM MB187 TO MB205	272	07-Apr-20	09-Feb-21			100%	0%																																																												
311		MAIN BRIDGE BEARING_MARINE (STEEL) 11+880~13+610 FROM MB171 TO MB186	378	19-May-20	24-Sep-21	22-Dec-21		100%	92.14%																																																												
312		MAIN BRIDGE BEARING_MARINE 10+380~11+880 FROM MB146 TO MB170	106	25-Apr-19	18-Apr-20			100%	0%																																																												
313		MAIN BRIDGE SUPER STRUCTURE BOX GIRDER INSTALLATION	1120	12-Sep-19	01-Mar-22	20-Jul-20		100%	43.49%																																																												
314		MAIN BRIDGE CONCRETE GIRDER INSTALLATION	1092	12-Sep-19	02-Feb-22	20-Jul-20		100%	49.8%																																																												
315		MAIN BRIDGE PC GIRDER LAND 15+890~17+414 FROM MP251 TO MP266	666	12-Sep-19	27-Feb-20	20-Jul-20		100%	65%																																																												
316	CNLGA.1000	Assembly of Structural Parts in Launching Gantry_1	35	12-Sep-19	17-Oct-19	12-Nov-20	17-Feb-21	100%	100%																																																												
317	CNLGA.1005	Assembly of Mechanical Parts in Launching Gantry_1	15	17-Oct-19	01-Nov-19	06-Feb-21	06-Mar-21	100%	100%																																																												
318	CNLGA.1010	Assembly of Structural Parts in Launching Gantry_2	35	12-Sep-19	17-Oct-19	20-Jul-20	25-Dec-20	100%	100%																																																												
319	CNLGA.1015	Assembly of Mechanical Parts in Launching Gantry_2	15	17-Oct-19	01-Nov-19	28-Sep-20	30-Dec-20	100%	100%																																																												
320		MODULE-22_MP266 - MP262	191	01-Nov-19	25-Dec-19	02-Jul-21		100%	98%																																																												
321		MODULE-21_MP261 - MP257	171	02-Dec-19	23-Jan-20	18-Sep-21		100%	50%																																																												
322		MODULE-20_MP256 - MP255	131	31-Dec-19	04-Feb-20	06-Nov-21		100%	50%																																																												
323		MODULE-19_MP254 - MP250	130	11-Jan-20	27-Feb-20	26-Nov-21		100%	50%																																																												
324		MAIN BRIDGE PRECAST GIRDER_CRZ 15+890~17+414 FROM MP226 TO MP250	218	04-Feb-20	25-Sep-20	30-Dec-20		100%	90%																																																												
325		MODULE-18_MP249 - MP246	108	04-Feb-20	28-Mar-20	20-Dec-21		100%	50%																																																												
326		MODULE-17_MP245 - MP241	74	05-Mar-20	27-Apr-20	30-Dec-20	16-May-21	100%	100%																																																												
327		MODULE-16_MP240 - MP237	37	03-Apr-20	21-May-20	13-Apr-21	03-Aug-21	100%	100%																																																												
328		MODULE-15_MP236 - MP232	31	27-Apr-20	19-Jun-20	06-Jul-21	22-Sep-21	100%	100%																																																												
329		MODULE-14_MP231 - MP227	42	27-May-20	25-Sep-20	27-Aug-21	10-Nov-21	100%	100%																																																												
330		MAIN BRIDGE PRECAST GIRDER_INTERTIDAL 14+800~15+890 FROM MP206 TO MP225	94	12-Sep-20	23-Jan-21	25-Oct-21		100%	95%																																																												
331		MODULE-13_MP226 - MP222	39	12-Sep-20	21-Oct-20	25-Oct-21	10-Dec-21	100%	100%																																																												
332		MODULE-12_MP221 - MP217	65	08-Oct-20	20-Nov-20	20-Nov-21	14-Jan-22	100%	100%																																																												
333		MODULE-11_MP216 - MP212	85	09-Nov-20	19-Dec-20	27-Dec-21	27-Feb-22	100%	100%																																																												
334		MODULE-10_MP211 - MP207	85	08-Dec-20	23-Jan-21	31-Jan-22		100%	83.33%																																																												
335		MAIN BRIDGE PRECAST GIRDER_MARINE 13+610~14+800 FROM MP187 TO MP205	130	12-Jan-21	10-Jun-21	19-Mar-22		100%	3.09%																																																												
336	CNLGD.1000	Dismantling of Launching Gantry_1	20	18-May-21	10-Jun-21			100%	0%																																																												
337	CNLGD.1010	Dismantling of Launching Gantry_2	20	12-May-21	03-Jun-21			100%	0%																																																												
338		MODULE-09_MP206 - MP202	54	12-Jan-21	17-Feb-21	19-Mar-22		100%	15%																																																												
339		MODULE-08_MP201 - MP197	29	05-Feb-21	19-Mar-21			100%	0%																																																												
340		MODULE-07_MP196 - MP192	44	08-Mar-21	17-Apr-21			100%	0%																																																												
341		MODULE-06_MP191 - MP187	40	12-Apr-21	18-May-21			100%	0%																																																												
342		MAIN BRIDGE PRECAST GIRDER_MARINE 10+380~11+880 FROM MP146 TO MP170	160	04-Jun-21	02-Feb-22			100%	0%																																																												
343	CNLGA.1020	Assembling of Launching Gantry_1	20	10-Jun-21	03-Sep-21			100%	0%																																																												
344	CNLGA.1030	Assembling of Launching Gantry_2	20	04-Jun-21	26-Jun-21			100%	0%																																																												
345		MODULE-05_MP171 - MP167	40	28-Dec-21	02-Feb-22			100%	0%																																																												
346		MODULE-04_MP166 - MP162	40	29-Nov-21	03-Jan-22			100%	0%																																																												
347		MODULE-03_MP161 - MP157	40	30-Oct-21	04-Dec-21			100%	0%																																																												
348		MODULE-02_MP156 - MP152	40	29-Sep-21	05-Nov-21			100%	0%																																																												
349		MODULE-01_MP151 - MP146	40	28-Jun-21	06-Oct-21			100%	0%																																																												
350		STITCH JOINT CASTING	565	07-Dec-19	12-Feb-22	12-Jan-21		0%	0%																																																												
351		MAIN BRIDGE STITCH JOINT CASTING LAND 15+890~17+414 FROM MP251 TO MP266	262	07-Dec-19	16-Mar-20	08-Jul-21		0%	0%																																																												
352		MODULE-19_MP254 - MP250	105	10-Feb-20	16-Mar-20	29-Nov-21		0%	0%																																																												
353		MODULE-20_MP256 - MP255	128	17-Jan-20	20-Feb-20	10-Nov-21		0%	0%																																																												
354		MODULE-21_MP261 - MP257	145	06-Jan-20	08-Feb-20	23-Sep-21		0%	0%																																																												
355		MODULE-22_MP266 - MP262	175	07-Dec-19	10-Jan-20	08-Jul-21	25-Mar-22	0%	0%																																																												
356		MAIN BRIDGE STITCH JOINT CASTING_CRZ 15+890~17+414 FROM MP226 TO MP250	205	11-Mar-20	13-Oct-20	12-Jan-21		0%	0%																																																												
357		MODULE-14_MP231 - MP227	29	19-Sep-20	13-Oct-20	02-Sep-21	08-Nov-21	0%	0%																																																												
358		MODULE-15_MP236 - MP232	19	02-Jun-20	09-Jul-20	10-Jul-21	20-Sep-21	0%	0%																																																												
359		MODULE-16_MP240 - MP237	19	04-May-20	06-Jun-20	23-Apr-21	31-Jul-21	0%	0%																																																												
360		MODULE-17_MP245 - MP241	41	09-Apr-20	14-May-20	12-Jan-21	12-May-21	0%	0%																																																												
361		MODULE-18_MP249 - MP246	141	11-Mar-20	14-Apr-20	29-Dec-21		0%	0%																																																												
362		MAIN BRIDGE STITCH JOINT CASTING_INTERTIDAL 14+800~15+890 FROM MP206 TO MP225	155	14-Oct-20	10-Feb-21	27-Oct-21		0%	0%																																																												
363		MODULE-10_MP211 - MP207	45	18-Jan-21	10-Feb-21	03-Feb-22		0%	0%																																																												
364		MODULE-11_MP216 - MP212	112	14-Dec-20	05-Jan-21	30-Dec-21	25-Feb-22	0%	0%																																																												
365		MODULE-12_MP221 - MP217	97	14-Nov-20	07-Dec-20	24-Nov-21	12-Jan-22	0%	0%																																																												
366		MODULE-13_MP226 - MP222	28	14-Oct-20	06-Nov-20	27-Oct-21	08-Dec-21	0%	0%																																																												
367		MAIN BRIDGE STITCH JOINT CASTING_MARINE 13+610~14+800 FROM MP187 TO MP205	118	11-Feb-21	21-Jun-21			0%	0%																																																												
368		MODULE-06_MP191 - MP187	24	04-Jun-21	21-Jun-21			0%	0%																																																												
369		MODULE-07_MP196 - MP192	24	17-Apr-21	05-May-21			0%	0%																																																												
370		MODULE-08_MP201 - MP197	13	13-Mar-21	05-Apr-21			0%	0%																																																												
371		MODULE-09_MP206 - MP202	13	11-Feb-21	06-Mar-21			0%	0%																																																												

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	Revision	Checked	Approved
25-Mar-22	RO		



**Attachment 8- Package-3's Construction Programme
Updated as of 25th March 2022**

1st January to 31st March 2022

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Activity ID	Activity Name	Original Duration	BL1 Start	BL1 Finish	Start	Finish	Activity % Complete	Schedule % Complete	Performance % Complete	Earned Value Cost	Planned Value Cost	Schedule Performance	2022												2023			
													J	F	M	April	May	June	July	A	S	O	N	D	J	F	M	April
MTHL Pkg 3_ Revised Constr		1541	23-Mar-18	03-Mar-23	23-Mar-18A	01-Oct-23	89.08%	84.05%	84.05%	Rs6,737,658,644	Rs7,141,151,176	0.94																
Procurement of Mumbai Trans		1541	23-Mar-18	03-Mar-23	23-Mar-18A	01-Oct-23	89.08%	84.05%	84.05%	Rs6,737,658,644	Rs7,141,151,176	0.94																
t	Commencement Date (CD)	0	23-Mar-18		23-Mar-18A		100%	100%	100%	Rs0	Rs0	0.00	Commencement Date (CD), 23-Mar-18A															
Milestones (As level of effort)		899	15-Apr-21	03-Mar-23	23-Mar-18A	01-Oct-23	0%	0%	0%	Rs0	Rs0	0.00																
KD1001	KD1 [Construction program	0	15-Apr-21	15-Apr-21	30-Sep-19A	30-Sep-19A	100%	100%	100%	Rs0	Rs0	0.00																
KD1002	KD2 [NOC for technical des	0	15-Apr-21	15-Apr-21	29-Jun-20A	29-Jun-20A	100%	100%	100%	Rs0	Rs0	0.00																
KD1003	KD3 [NOC for Good for cor	0	30-Apr-21	30-Apr-21	17-Aug-20A	17-Aug-20A	100%	100%	100%	Rs0	Rs0	0.00																
KD1004	KD4 [Substantial completio	0	16-Mar-22	16-Mar-22	27-Nov-20A	27-Nov-20A	100%	100%	100%	Rs0	Rs0	0.00																
KD1005	KD5 [Substantial completio	0	17-Apr-22	17-Apr-22	23-Mar-18A	25-Dec-21A	100%	0%	100%	Rs0	Rs0	0.00																
KD1006	KD6 [Substantial completio	0	22-Feb-23	22-Feb-23	29-Sep-23	29-Sep-23	0%	0%	0%	Rs0	Rs0	0.00																
KD1007	KD7 [Substantial completio	0	22-Feb-23	22-Feb-23	29-Sep-23	29-Sep-23	0%	0%	0%	Rs0	Rs0	0.00																
KD1008	KD8 [Final completion & ha	0	03-Mar-23	03-Mar-23	01-Oct-23	01-Oct-23	0%	0%	0%	Rs0	Rs0	0.00																
Financial Milestone		1498	25-Aug-19	03-Mar-23	23-Mar-18A	01-Oct-23	0%	0%	0%	Rs0	Rs0	0.00																
FM1000	Completion of the works arr	0	25-Aug-19	25-Aug-19	23-Mar-18A	31-Jul-19A	100%	100%	100%	Rs0	Rs0	0.00																
FM1010	Completion of the works arr	0	25-Jan-20	25-Jan-20	23-Mar-18A	31-Jan-20A	100%	100%	100%	Rs0	Rs0	0.00																
FM1020	Completion of the works arr	0	25-Jun-20	25-Jun-20	23-Mar-18A	22-Mar-20A	100%	100%	100%	Rs0	Rs0	0.00																
FM1030	Completion of the works arr	231	25-Jun-20	10-Feb-21	23-Mar-18A	31-May-20A	100%	100%	100%	Rs0	Rs0	0.00																
FM1040	Completion of the works arr	0	31-Mar-21	31-Dec-21	23-Mar-18A	31-Oct-21A	100%	100%	100%	Rs0	Rs0	0.00																
FM1050	Substantial completion of a	167	08-Sep-22	22-Feb-23	15-Apr-23	29-Sep-23	0%	0%	0%	Rs0	Rs0	0.00																
FM1060	Final Completion and Hand	0	03-Mar-23	03-Mar-23	01-Oct-23	01-Oct-23	0%	0%	0%	Rs0	Rs0	0.00																
Interface Milestone		780	25-Jan-21	16-Aug-22	17-Sep-18A	16-Mar-23	0%	0%	0%	Rs0	Rs0	0.00																
Delay Events		1099	19-Apr-18	31-Mar-21	19-Apr-18A	25-Mar-22	0%	0%	0%	Rs0	Rs0	0.00	25-Mar-22, Delay Events															
Document Submittals		45	25-Dec-18	07-Feb-19	06-Apr-18A	30-Sep-19A	100%	100%	100%	Rs74,992,895	Rs74,992,895	1.00																
Employer's Obligation / Land Handc		1153	23-Mar-18	05-Jul-21	23-Mar-18A	25-Mar-22	0%	0%	0%	Rs0	Rs0	0.00	25-Mar-22, Employer's Obligation / Land Handover															
Employer Office (Sch 01- General lter		797	25-May-19	01-Apr-22	25-Jan-19A	20-Jul-22	99.84%	97.51%	97.51%	Rs138,804,765	Rs142,125,741	0.98	20-Jul-22, Employer Office (Sch 01- General lter)															
Survey & Geotechnical Investigator		346	19-Apr-18	12-Jul-19	19-Apr-18A	30-Sep-19A	100%	100%	100%	Rs242,300,773	Rs242,300,773	1.00																
Design Works		983	15-Jan-19	30-Nov-21	25-Apr-18A	30-Jun-22	100%	100%	100%	Rs159,122,500	Rs159,122,500	1.00	30-Jun-22, Design Works															
Procurement Works		1142	02-May-19	13-Sep-22	15-Feb-19A	22-May-23	96.36%	92.24%	92.24%	Rs1,398,565,005	Rs1,460,968,686	0.96																
Co-ordinated Fabrication & Manufra		867	03-Jun-19	10-Feb-22	21-Feb-19A	04-May-22	100%	73.14%	73.14%	Rs210,281,187	Rs287,490,448	0.73	04-May-22, Co-ordinated Fabrication & Manufacturing Works															
Construction Works		1333	25-Dec-18	22-Feb-23	26-Sep-18A	29-Sep-23	85.34%	80.66%	80.66%	Rs4,513,591,519	Rs4,774,150,134	0.95																
Preconstruction Activity		952	25-Dec-18	10-May-22	26-Sep-18A	14-Sep-22	0%	0%	0%	Rs0	Rs0	0.00	14-Sep-22, Preconstruction Activity															
Sub Structures (Open Foundation, Pie		968	12-Apr-19	01-Aug-22	14-Nov-18A	16-Jun-22	98.88%	96.63%	96.63%	Rs2,987,701,382	Rs3,057,303,276	0.98	16-Jun-22, Sub Structures (Open Foundation, Pier, Pier Cap)															
Super Structures		644	25-Mar-21	23-Jan-23	11-Sep-19A	30-Jun-23	42.26%	34.8%	34.8%	Rs159,822,983	Rs194,058,912	0.82																
Bearings Installation		169	15-Oct-21	09-Nov-22	04-Nov-20A	20-Jan-23	61.07%	2.55%	2.55%	Rs172,195	Rs4,131,562	0.04	20-Jan-23, Bearings Installation															
Bridge Ancillaries & Miscellaneous lte		417	03-Dec-21	11-Feb-23	25-Mar-22	28-Sep-23	5.57%	0%	0%	Rs0	Rs4,289,983	0.00																
RE Wall		173	11-Jun-22	18-Jan-23	01-Dec-21A	25-Mar-23	0%	14.68%	14.68%	Rs63,539,855	Rs0	0.00	25-Mar-23, RE Wall															
At Grade work		1097	17-Oct-19	06-Dec-22	16-Feb-19A	12-Sep-23	100%	86%	86%	Rs1,302,355,105	Rs1,514,366,401	0.86																
Water Proofing		164	20-Jan-23	15-Feb-23	03-Feb-23	13-Sep-23	0%	0%	0%	Rs0	Rs0	0.00																
Asphalt Pavement, Kerb, traffic sign		167	28-Jan-23	21-Feb-23	15-Feb-23	29-Sep-23	0%	0%	0%	Rs0	Rs0	0.00																
Compound wall with safety fence		281	11-Jun-22	22-Feb-23	03-Oct-22	29-Sep-23	0%	0%	0%	Rs0	Rs0	0.00																
Completion of Interface Activity		275	31-Mar-21	17-Aug-22	25-Mar-22	16-Mar-23	0%	0%	0%	Rs0	Rs0	0.00	16-Mar-23, Completion of Interface Activity															
Testing & Commissioning Works		133	07-Jan-23	02-Mar-23	29-Mar-23	01-Oct-23	0%	0%	0%	Rs0	Rs0	0.00																

█ Actual Level of Effort
 █ Remaining Work
 █ Critical Remaining Work
 ◆ Milestone
 ◆ summary



Attachment 9- Project Progress Photos for March 2022

1st January to 31st March 2022



Package 1- Site Progress Photos



Photo No. 1: OSD 4 N span 3 Girder Transporting to MP 126 N through Barge



Photo No. 2: LG 6 EP 22-23 Segment lifting in progress



Photo No. 3: LG 08 MP 54-55 S Segment lifting in progress



Photo No. 4: LG 05 FP 04-05 Segment lifting in progress





Photo No. 5: A view of MTHL Bridge taken from the LG-8 looking towards Navi Mumbai



Photo No. 6: EP 14 Cast In-Situ Shuttering work in progress



Photo No. 7: Segments Shifting to L-3 & 4 in progress



Photo No.8: OSD-1 assembly works in progress



Photo No. 9: BP 13 Pier Reinforcement in progress



Photo No. 10: AP 41 Portal Beam Shuttering Works in progress



Photo No. 11: MP 68 S Pier Shuttering Works in progress



Photo No. 12: AP 08 Pier Reinforcement in progress

Package 2 – Site Progress Photos



Photo No. 1: LG-3 Wet joint formwork fixing at Span MP 264-265 RHS in progress



Photo No. 2: Cantilever slab and strut concrete in progress at Span MP 256-257 LHS



Photo No. 3: Pier head segment concrete at MP 246 RHS in progress



Photo No. 4: Pier final lift concrete at MP 167 LHS in progress



Photo No. 5: Integral Pier head segment concrete at MP 195 LHS in progress

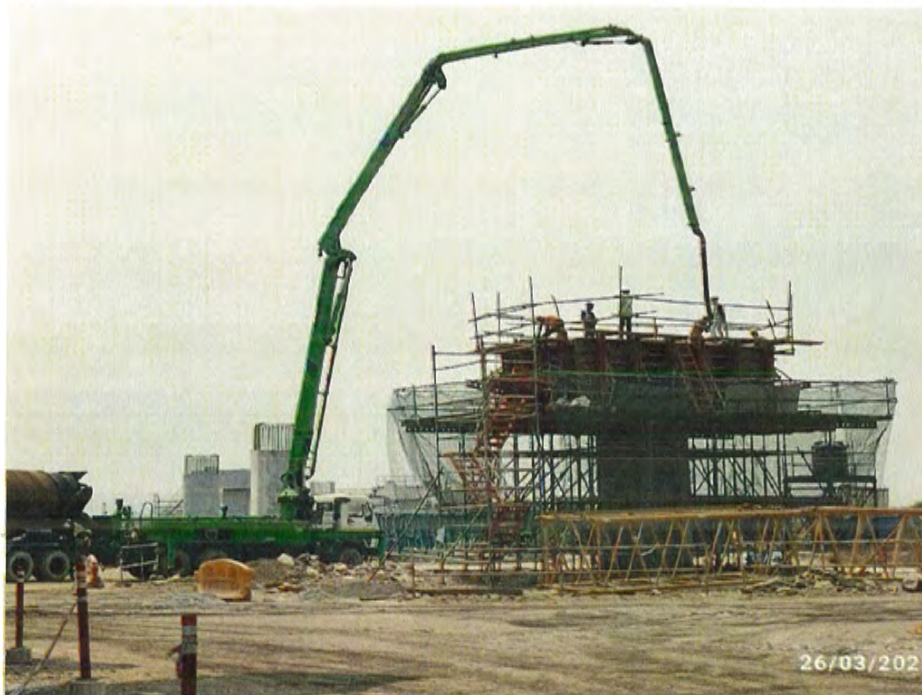


Photo No. 6: Pier cap concrete at JMP-1 in progress



Photo No. 7: Pile cap concrete at MP 175 LHS in progress



Photo No. 8: Retaining wall raft concrete at Ramp CA in progress





Photo No. 9: PC shell wall formwork alignment at MP 183 RHS in progress



Photo No. 10: Pier cap reinforcement tying at MP 177 RHS in progress



Photo No. 11: Cast in situ bottom slab concrete at Ramp AC Span ACP-7 to ACP-8 in progress



Photo No. 12: Pier cap reinforcement tying at CAP-4 in progress

Package 3 – Site Progress Photos



Photo No. 1: Gavan Span RMP 266-267, interface location, segment erection work in progress



Photo No. 2: RMP 274-275 ROB structural steel erection work in progress



Photo No. 3: A view of MTHL Bridge at Gavan area



Photo No. 4: A view of MTHL Bridge at Jasai area



Photo No. 5: A view of MTHL Bridge at Chirle Interchange



Photo No. 6: A view of MTHL Bridge – MPP & JMP Ramps at Chirle Interchange



Photo No. 7: A view of MTHL Bridge – MJP & PMP Ramps at Chirle Interchange



Photo No. 8: DRB Officials Site Visit



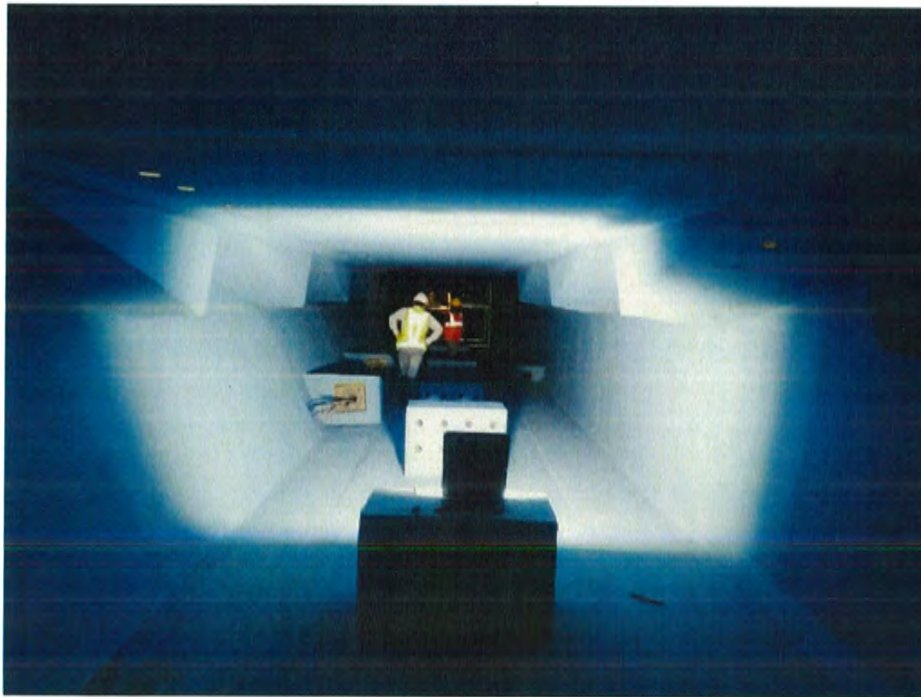


Photo No. 9: Span LMP 281-282 (Segment inner face) Anti-carbonation paint coating work



Photo No. 10: Gavan span RMP 269-270 1st stage prestressing work in progress



Photo No. 11: Jasai JM Ramp RE wall Panel erection in progress



Photo No. 12: Rock fill embankment work at CH 19+440 to CH 19+500 RHS in progress