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MMRDA

Mumbai Metropolitan Region Development Authority

Mumbai Trans Harbour Link Project

Quarterly Progress Report - No.16

(From 1st January 2021 to 31st March 2021)



**Mumbai Trans Harbour Link Project
Quarterly Progress Report No. 16
1st January 2021 to 31st March 2021
Loan Agreement No. ID-P255 (Tranche-I)**

ORGANIZATION INFORMATION

Borrower	Mumbai Metropolitan Region Development Authority	
	Person in Charge	Metropolitan Commissioner, MMRDA
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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.

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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 Acton 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:

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-Classifer (ATCC) and Meteorological Data System (MDS), and Information Dissemination System including Variable message Sign (VMS).
15. CCTV Cameras shall be installed at around three places per 1 km, on Both side of main route and the monitoring of the traffic condition of the whole stretch of MTHL will be almost enabled in the Traffic Control Centre and VMS displays the appropriate information for road users on the collated information.
16. The Information collected by these devices shall be transmitted to the Command Control Centre through the medium of an Optical Fiber Cable laid in MTHL.

Actual (P/R, PCR)

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

2.0 PROJECT IMPLEMENTATION

2.1 Project Scope

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

Table 2.1.1 Comparison of Original and Actual location

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

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 style="text-align: center;"><i>(P/R and PCR)</i></p>
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 style="text-align: center;"><i>(P/R and PCR)</i></p>

2.2 Implementation Schedule

2.2.1 The Original Implementation Schedule

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

Items	Original	Status (P/R and PCR) as on 31 st March 2021
1) Completion of Land Acquisition and Resettlement	March 2019	March 2021
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	June 2020 – September 2021
4) Civil Construction		
Package-1 and Package-2	March 2018 – September 2022	March 2018 – September 2022
Package-3	March 2018 – September 2021	March 2018 – September 2021
Package-4	October 2020 – September 2022	November 2021 – July 2023
5) Defect Liability Period		
Package-1, Package-2 and Package-4	October 2022 – September 2024	October 2022 – September 2024
Package-3	October 2021 – September 2023	October 2021 – September 2023
6) Commencement of Toll Collection	September -2022	September -2022
7) Selection of O&M Organization	October 2020 – September 2021	October 2021 – September 2022

Attachment 6, 7 & 8: Package wise construction schedules (progress) updated at the end of 4th Quarter (January - March 2021).

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	9,629	9,629	-	24,085	24,085		44,234	44,234	
Package-2	10,971	10,971	-	14,628	14,628		33,484	33,484	
Package-3	569	569	-	4,427	4,427		6,996	6,996	
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*	-			6,022		6,022	9,455		9,455
Administration Cost	-			3,170		3,170	4,977		4,977
GST	-			7,782		7,782	12,217		12,217
Import Tax	-			-			-		-
Interest during construction	-			-			-		-
Front End Fee	-			-			-		-
Total	21,422	21,421	-	60,676	43,506	17,170	1,12,785	85,827	26,957

(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	31,822	23,885	-	-	23,885	7,937
FY 2021						
FY 2022						
FY 2023						
FY 2024						
Total	1,12,783	85,826	-	-	85,826	26,957

(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 Biding 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 2021:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
 - i) Package-1: IPC-35 20% Detailed Verification and IPC-36 80% Ad-hoc.
 - ii) Package-2: IPC-29 20% Detailed Verification and IPC-30 80% Ad-hoc.
 - iii) Package-3: IPC-24 20% Detailed Verification and IPC-025 & IPC-026 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 4133.53 Million JPY to MMRDA / JICA in January 2021.

February 2021:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
 - i) Package-1: IPC-36 20% Detailed Verification and IPC-37 80% Ad-hoc.
 - ii) Package-2: IPC-30 20% Detailed Verification and IPC-31 80% Ad-hoc.
 - iii) Package-3: IPC-25 & IPC-026 20% Detailed Verification and IPC-028 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 4289.39 Million JPY to MMRDA / JICA in February 2021.

March 2021:

- 1 GC scrutinized & certified the following invoices claimed by the Contractors:
 - i) Package-1: IPC-37 20% Detailed Verification and IPC-38 80% Ad-hoc.
 - ii) Package-2: IPC-31 20% Detailed Verification and IPC-32 80% Ad-hoc.
 - iii) Package-3: IPC-027 & IPC-028 20% Detailed Verification and IPC-029 & IPC-030 80% Ad-hoc.
- 2 GC has prepared and submitted a total reimbursement claim of 7162.80 Million JPY to MMRDA / JICA in March 2021.
- 3 100% of the Technical Design Modules have been submitted by the Contractors across all the 3 Packages; out of which 95% of the modules have been given "NONO" by the GC & the rest of the modules have been reviewed & commented by the GC. Now, those are pending with the Contractors for further correction and re-submission to the GC.

Contractor's Progress:

Package-1 Physical Progress till 31st March 2021

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
1	Temporary Access Bridge					
1.1	Bridge Deck	2953	Rmt	2953	100%	
2	Test Pile					
2.1	Test Piles	5	No.	5	100%	
3	Permanent Bridge Works - Land/ Interchange Zone					
3.1	Piles	524	No.	336	64.1%	
3.2	Pile Caps	158	No.	59	37.3%	
3.3	Piers	228	No.	102	44.7%	
3.4	Pier Caps	215	No.	97	45.1%	
4	Permanent Bridge Works - Intertidal Zone					
4.1	Piles	312	No.	260	83.3%	
4.2	Pile Caps	76	No.	58	76.3%	
4.3	Piers	148	No.	106	71.6%	
4.4	Pier Caps	148	No.	99	66.9%	
5	Permanent Bridge Works - Marine Zone					
5.1	Piles	403	No.	399	99.0%	
5.2	Pile Caps	79	No.	56	70.9%	
5.3	Piers	160	No.	58	36.3%	
5.4	Pier Caps	160	No.	52	32.5%	
6	Permanent Bridge Works - Total					
6.1	Piles	1239	No.	998	80.5%	
6.2	Pile Caps	313	No.	173	55.3%	
6.3	Piers	536	No.	266	49.8%	
6.4	Pier Caps	523	No.	248	47.4%	
7	Precast Segments					
7.1	Segment Casting	6713	No.	1729	25.8%	
7.2	Segment Erection	446	Spans	47	10.5%	
8	OSD Structural Steel					
8.1	Fabrication	4666	Rmt	2289	49.1%	
8.2	Erection	4666	Rmt	0	0%	

Package-2 Physical Progress till 31st March 2021

S. No	Activity	Total Scope	Unit	Cumulative Achieved Works	% of Work done Against the Total Scope	Remarks
1	Temporary Access Bridge					
1.1	Bridge Deck	2682	Rmt	2682	100%	
2	Test Pile					
2.1	Test Piles	2	No.	2	100%	
3	Permanent Bridge Works - Land/ Interchange Zone					
3.1	Open Foundation	113	No.	102	90.2%	
3.3	Piers	119	No.	72	60.5%	
3.3	Pier Caps	104	No.	27	25.9%	
3.4	Portal Beams- Land	6	No.	4	66.7%	
3.5	Pier Head Segments -Land	42	No.	10	23.8%	
4	Permanent Bridge Works - Intertidal & CRZ Zone					
4.1	Piles	290	No.	288	99.3%	
4.2	Pile Caps	72	No.	72	100%	
4.3	Piers	72	No.	72	100%	
4.4	Pier Caps	18	No.	12	66.7%	
4.5	Pier Head Segments	54	No.	18	33.3%	
5	Permanent Bridge Works - Marine Zone					
5.1	Piles	514	No.	402	78.2%	
5.2	Pile Caps	120	No.	67	55.8%	
5.3	Piers	120	No.	13	10.8%	
5.4	Pier Caps	48	No.	0	0%	
5.5	Pier Head Segments	72	No.	0	0%	
6	Permanent Bridge Works - Total					
6.1	Open Foundation	113	No.	102	90.2%	
6.2	Piles	804	No.	690	85.8%	
6.3	Pile Caps	192	No.	139	72.4%	
6.4	Piers	311	No.	157	50.4%	
6.5	Pier Caps	170	No.	39	22.9%	
6.6	Portal Beams	6	No.	4	66.7%	
6.7	Pier Head Segments	168	No.	28	16.6%	
7	Precast Segments					
7.1	Segment Casting	3142	No.	576	18.33%	
7.2	Segment Erection	208	Spans	6	2.88%	
8	OSD Structural Steel					
8.1	Fabrication	34726	MT	26,698	76.88%	
8.2	Erection	34726	MT	0	0%	

Package-3 Physical Progress till 31st March 2021

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	195	No.	173	88.7%	
1.2	Piers	195	No.	155	79.4%	
1.3	Pier Caps	187	No.	115	61.5%	
1.4	Segment Casting	750	No.	410	54.6%	
1.5	Segment Erection	53	Span	4	7.5%	
1.6	Cast in-situ Slab	114	Span	11	9.6%	

Package-4 (ITS) Progress till 31st March 2021

1. Preparation of Bid Documents for the Package-4 - ITS (Intelligent Transport System) is in progress.
2. 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.
3. The GC submitted first draft Bid Document to the Employer on 2nd November 2020 for review.
4. 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.

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 2021	Cumulative
1	Total Man Hours Since Inception	51,42,876	26251274
2	Number of Man-Hours (Accident-Free Man-Hours)	51,42,876	7131060
3	Number of Man-Days	6,42,859	3281407
4	Number of Reportable Fatal Accidents	0	2
5	Number of Non-Fatal Accidents	0	2
6	Number of Near Miss Incidents	8	82
7	Number of First Aid Cases	39	180
8	Number of Dangerous Occurrences	0	1
9	Number of Reportable Sick Cases	0	0
10	Number of Man-Hours Lost	0	96600
11	Number of Man-Days Lost	0	12072
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	0	4
13	Number of Inspections done for Offices & Sites	527	2190
14	Number of Training/ Induction done for Offices & Sites	322	876
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	7,536	19355
16	Details of Safety Committee meetings	3	29
17	No. of toolbox talks	22,064	64142
18	No. of critical excavations.	11	35
19	Pre-employment Medical check-up	3,561	24736
20	No. of Safety Walk down	24	172
21	No. of Safety Inductions completed	3,561	24736

Package-2 Safety Report

Sr. No	Description	From January to March 2021	Cumulative
1	Total Man Hours Since Inception	23,69,752	12343703
2	Number of Man-Hours (Accident-Free Man-Hours)	23,69,752	5876268
3	Number of Man-Days	2,15,442	1123502
4	Number of Reportable Fatal Accidents	0	0
5	Number of Non-Fatal Accidents	0	3
6	Number of Near Miss Incidents	38	117
7	Number of First Aid Cases	19	109
8	Number of Dangerous Occurrences	0	9
9	Number of Reportable Sick Cases	0	1
10	Number of Man-Hours Lost	0	924
11	Number of Man-Days Lost	0	97
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	0	3
13	Number of Inspections done for Offices & Sites	76	848
14	Number of Training/ Induction done for Offices & Sites	80	580
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	8,518	1074
16	Details of Safety Committee meetings	3	33
17	No. of toolbox talks	1,070	5522
18	No. of critical excavations.	0	0
19	Pre-employment Medical check-up	1,245	10752
20	No. of Safety Walk down	11	107
21	No. of Safety Inductions completed	1,262	11011

Package-3 Safety Report

Sr. No	Description	From January to March 2021	Cumulative
1	Total Man Hours Since Inception	5,85,695	2679147
2	Number of Man-Hours (Accident-Free Man-Hours)	5,78,798	578798
3	Number of Man-Days	73,212	334893
4	Number of Reportable Fatal Accidents	0	0
5	Number of Non-Fatal Accidents	1	2
6	Number of Near Miss Incidents	0	12
7	Number of First Aid Cases	8	69
8	Number of Dangerous Occurrences	0	0
9	Number of Reportable Sick Cases	0	0
10	Number of Man-Hours Lost	1,424	1632
11	Number of Man-Days Lost	178	204
12	Number of Reportable Accidents per 100,000 Man-Hours Worked	1	0.07
13	Number of Inspections done for Offices & Sites	45	315
14	Number of Training/ Induction done for Offices & Sites	16	171
15	Daily Average Manpower (Including all Workmen & Staff) for the Month	1,773	8131
16	Details of Safety Committee meetings	3	29
17	No. of toolbox talks	400	4460
18	No. of critical excavations.	0	3
19	Pre-employment Medical check-up	685	5124
20	No. of Safety Walk down	12	109
21	No. of Safety Inductions completed	685	5124

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 has 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)
<p>("Guidelines") (Attachment 2-5).</p>	
<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 gasp the exact impact during construction and operation phase.</p>	<p>Updated Attachments 2-8 and 2-10 are enclosed in the report.</p>
<p>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. 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</p>	<p>Environmental Monitoring Plan with the package wise budgeted cost is reported in Attachment 2-3.</p> <p>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>as a part of Progress Status Report (PSR) by filling in the Reporting Form of Environmental Monitoring Result. (Attachment 2-4). After completion of the construction, EMoP shall be implemented by MMRDA, and the results shall be submitted to the JICA India Office semi-annually until two years after complementation of construction. The required amount of estimated environmental monitoring budget is borne by MMRDA.</p>	
<p>k. Long Term Bird Monitoring</p> <p>MMRDA committed to conduct the long-term monitoring of birds and its habitat in Sewri mud-flats with the assistance of hired bird expert. During the long-term monitoring, MMRDA will share information and receive advices 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	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	Actual: (PCR) _____% Cost: Benefit: Project Life: Attachment(s): Supporting data for computing EIRR
FIRR	Original: 1.5% Cost: Project Cost, O&M cost, Land Acquisition cost Benefit: Toll Revenue Project Life: 32 Years	Actual: (PCR) _____%

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. 16 is submitted for the period of 1st January to 31st March 2021.</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)

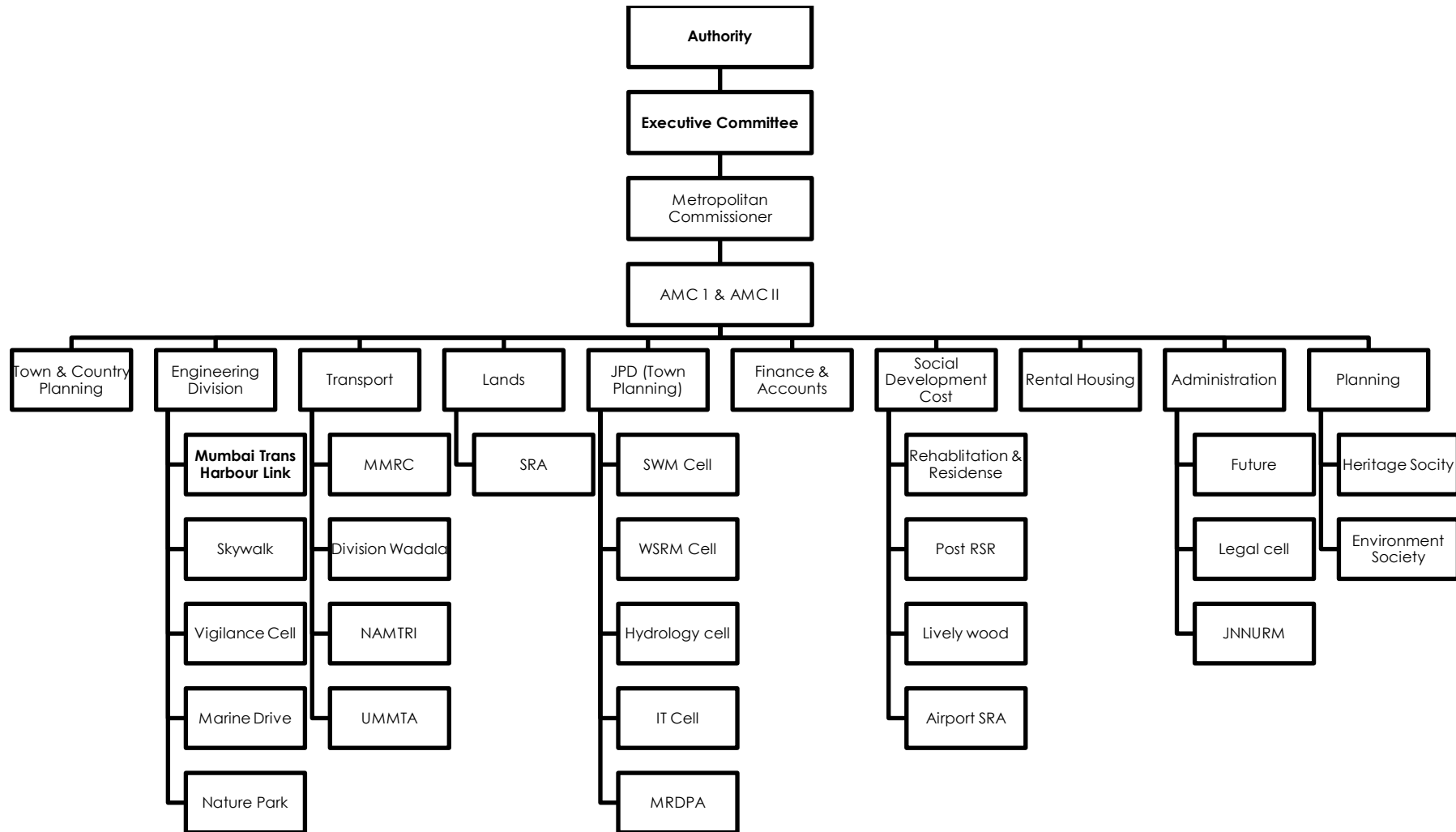
5.3 Lessons Learnt and Recommendations

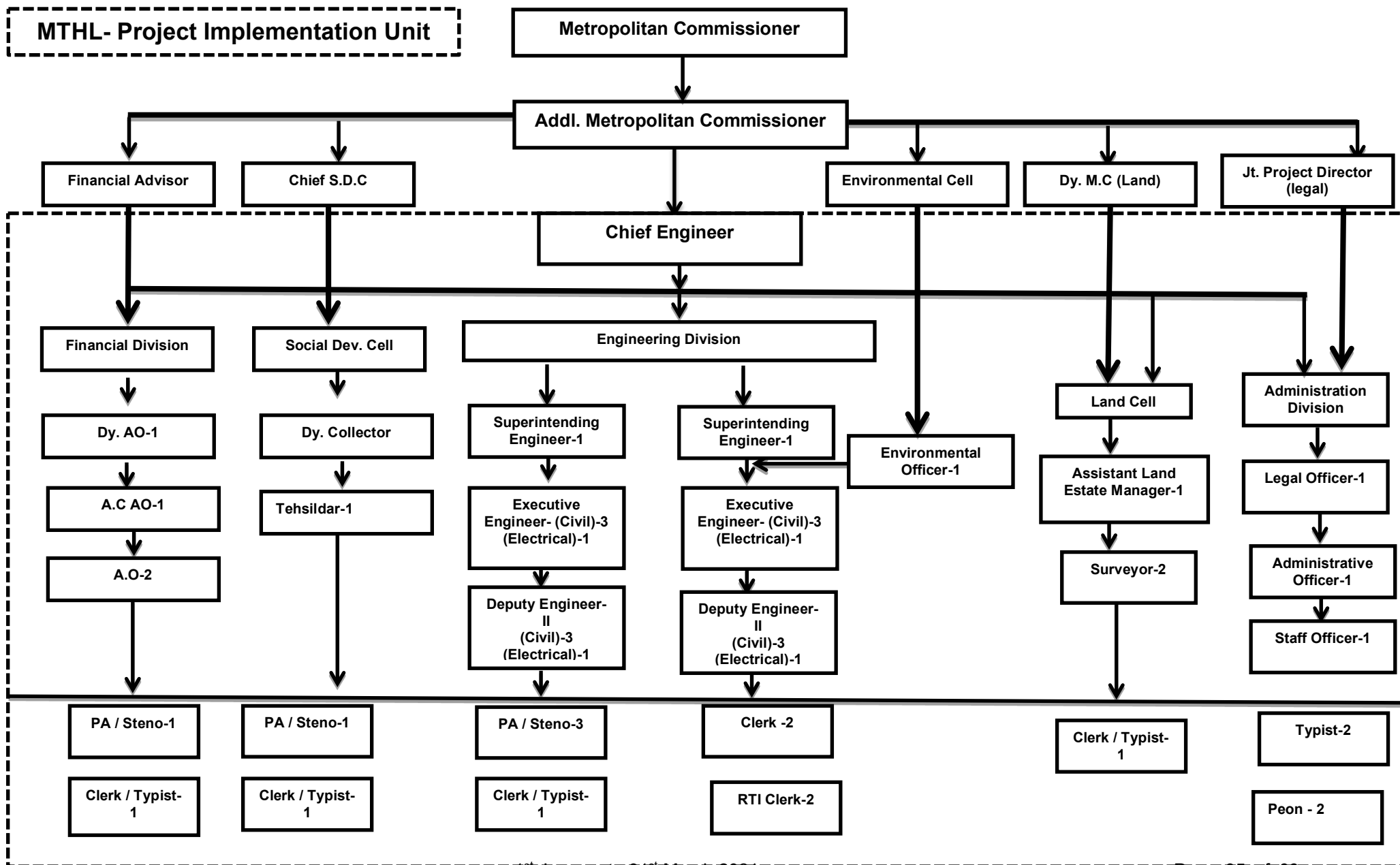
Please raise any lessons learned from the project experience, which might be valuable for the future JICA assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

(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 obatiend CTE and CTO. Both other packages have applied for CTE but haven't obtained it yet. So we expect the monitoring frequency would change after obtaining CTE.
	2	Water pollution	pH, BOD, DO, Turbidity and 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	Soil Pollution Standard in India (MOEF) · Cd: 0.01mg/l · Lead: 0.01mg/l · Chromium (VI): 0.05mg/l · Arsenic: 0.01mg/l · T-Mercury: 0.0005mg/l · Copper: 125mg/kg (some items shall be selected from totally 25 standards items)		
5	Noise and vibration	Ambient and road side noise (dB(A) _{L_{eq}}) Vibration (dB L10 or mm/sec)	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 75,000	54,000 0	150,000 75,000	369,000 400,000	573,000 475,000	- Construction Noise; 85dB(A) - Ambient Noise Standards in India (dB (A) _{Leq}) 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)	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									
	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								
Social environment	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

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 to March 2021
--

1. Environmental Monitoring during Construction for 4.5 years

Area	No.	Item	Parameter	Location	Frequency a year	Item and Stanadard	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 ia 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	7	BDL	13	BDL- Below Detectable Limit
												2. NO ₂ : 80µg/m ³	35	27	26	
												3. PM ₁₀ : 100µg/m ³	173	69	81	
												4. PM _{2.5} : 60µg/m ³	56	31	40	
					5.CO:02mg/m3	1.4	1.3	0.72								
					6.VOCs	1.30		3.6								
	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							1. pH : 6.5-9	7.5	7.2	Not applicable	
				3. Gavhan & Chirle for package III	Not applicable							2. DO: 3 mg/l	5	6.2	Not applicable	
												3. Turbidity: 30 NTU	11.5	13.6	Not applicable	
												4. BOD: 5 mg/l	3.7	BDL	Not applicable	
												5. O & G: 10 mg/l	BDL		Not applicable	
					6.COD	20	16	Not applicable								
	3	Waste	Volume of waste soil, cutting tree and domestic garbage	1. Sewri & Sewri bay area for package I	Daily	Municipal Soil Waste Management Rules, 2013	Sewri Camp Site	Shivaji Nagar Camp Site	Chirle Camp Site							
				2. Nhava temporary bridge & casting yard in Gavhan for package II	4 Times / Year							Generated waste soil (t) total	16745 m3	App. 4000 CuM Collected in jumbo bags and Disposed off in EBB Location.	NA	
				3. Gavhan & Chirle for package III	Once site clearing work/execution part of work start.							Generated cutting treel (ha) total	192 Tons weight of cut wood		In Jan-2021 3 Trees are cut (total 309 trees are cut till dated)	
												Generated domestic waste (t/month) total	5.1 T for the quarter	3.5 T/quarter. It is disposed through CIDCO daily.	1.743 T for the quarter	2.018 M3
												Confirmation of adequate disposal (visualt survey)				
	4	Soil Contamination/sedimentation	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	Muck Testing Done on september 2020 and Reports submitted to GC	Not applicable		Package-III (Kindly check the letter No.Ref No. Mthl/ P3/L&T/GC/LT/HSE-2226/2020 dated on 12.12.2020)					
				2. Nhava temporary bridge & casting yard in	*If any spillage/ leakage take place from chemical, fuel storage area. *One time grab sample to be collected during Bridge Construction *Pre & Post Monsoon at Storage area only							1. Cadmium: 0.01mg/l	0.15	BDL		
				3. Gavhan & Chirle for package III								2. total cyanide : not detected		<0.005		
												3. organic phosphorus: not detected		10.5		
												4. lead: 0.01mg/l	0.77	0.13	Not applicable for package-3	Package-III (Hazardous Storagee is situated in low laying area at Gavan 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.
				5. chromium (VI): 0.05mg/l								0.4	BDL			
				6. arsenic: 0.01mg/l or 15mg/kg (agri-land soil)								<0.01	BDL			
				7. total mercury: 0.005mg/l									BDL			
				8. alkyl mercury: not detected												
				9. PCBs: not detected									BDL			
				10. copper: 125mg/kg (only paddy field soil)								142				
				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													

Regarding soil contamination/sedimentation, some items shall be selected from the total 25 standards items during the Detailed Design. Only the selected items shall be reported to JICA, and the rest of items shall be deleted from this form.

The Project for Construction of Mumbai Trans Harbour Link
Reporting Form of Environmental Monitoring during Construction

Attachment 2-4

1. Environmental Monitoring during Construction for 4.5 years

Monitoring Period - January to March 2021

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.

S.No.	Parameter	Frequency	Standard	Monitoring Location				Remarks	
				Location 1	Location 2	Location 3	Location 4		
	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							BDL	
	23. thiobencarb: 0.02mg/l							BDL	
	24. benzene: 0.01mg/l							BDL	
	25. selenium: 0.01mg/l							BDL	
5	Ambient and road side noise (dB(A)LAeq)	1. Sewri & Sewri bay area for package I	Fortnightly	Construction area Standard 85 dB(A) daytime (Japan standard) Not construction area : Ambient Noise Standard in India (dB(A) LAeq)	Sewri (ST 200-500) (Industrial area)	Sea Section (ST5000-5500) Migratory Bird Area (no standard on sea section)	Shivaji Nagar (Commercial area)		
		2. Nhava temporary bridge & casting yard in Gavhan for package II	2 Times / Year	Day time : 6-22 hr (continuous) dB(A)	70	72.6	66.8		
		3. Gavhan & Chirle for package III	Fortnightly	Night time: 22-6 hr (continuous) dB(A) (only sea section) Day time : 6-22 hr (10 min during 9-17 hrs) Night time: 22-6 hr (10 min 22-24 hr)	64	64.7	65.3		
		Note (standard values in Not construction area)							
		1. Industrial Area							
		Day Time: 75 (6-22hr) Night Time: 70 (22-6hr)							
		2. Commercial Area:							
		Day Time: 65 (6-22hr) Night Time: 55 (22-6hr)							
		3. Residential Area:							
	Day Time: 55 (6-22hr) Night Time: 50 (22-6hr)								
	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)	Shivaji Nagar (Commercial area)	Chirle		
				Day time : 6-22 hr (continuous)		Not Applicable	Not applicable		
				Night time: 22-6 hr (continuous)					
		Note (standard values in Not construction area)							
		1. Commercial /Industrial Area							
Day Time: 70 (7-20hr) Night Time: 65 (20-7hr)									
1. Monitoring of mudflat conditions including fauna-flora 2. Monitoring of Cutting Tree and replantation/transplantation area	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)	Sea Section (ST5500-16000)	Shivaji Nagar side (app. ST16000-19000)	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)			N/A	N/A		
			(1) Number of species of bird						
			(2) Number of species of fish (3) Estimated number of Flamingo						
		1-2: Mangrove density and community survey							

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.

2.2020

**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 EMOF are covered.

Monitoring Period - January to March 2021
--

1. Environmental Monitoring during Construction for 4.5 years

Category	No.	Topic	Description	Frequency	Criteria for evaluation	Monitoring Results			
						Actual	Target	Remarks	
Natural Environment	6	Protected Area	3. Monitoring of Mangrove Plantation area appointed by MoEF 4. Monitoring of sedimentation soil and ecological parameter (25 items on EIA main text Table 6.1.15 for soil and 7 items such as 1) Net primary productivity, 2) Chlorophyll-a, 3) Phosphate, 4) Nitrate, 5) Nitrite, 6) Particulate Organic Carbon, 7) SiO2)		(1) Number of species of mangrove				
					(2) Density of mangrove (xx trees/10m x 10m)				
					1-3: Benthos Survey				
					(1) Number of species and quantity by species	533 Species and 314 No/m2			
					2-1: Cutting tree confirmation	Total 309 trees have been till March 21.	All the tree cutting and mangrove cutting had been carried out as per approval received from GC and MMRDA and job was completed in 2018 itself and after that no trees and mangroves have been cut till date	Approved By Both CIDCO and Forest Dept (both Alibaug and Uran (regional office))	
					(1) Number of cutting tree and species				
					3-1: Mangrove survey in the replant area			Nil	
					(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	880			
					(2) Chlorophyll-a: <4mg/m3	4.7			
					(3) Phosphate: 0.1-90µg/l	283			
					(4) Nitrate: 1.0-500µg/l	765			
					(5) Nitrite: <125µg/l				
(6) Particulate Organic Carbon: 10-100mg/m ³									
(7) SiO2: 10-5,000µg/l	4801								
Hydrology	7	Flooding situation	Not applicable for Package I	4 Times / Year	Criteria for evaluation Project activities and structures does not cause flooding and impacts on tidal conditions	Sewri	Shivaji Nagar		
			2 Locations (CRZ at Sewri and Shivaji Nagar) for Package II		Monitoring of flooding situation	No Flooding	No flooding	No Flooding	
			Not applicable for Package III						
Topography and Geology	8	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	Chirle	
					Monitoring of embankment	done			
Local conflict of interests	9	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	
					Number of hired workers by community	418 in Jan 21, 443 in Feb 21 and 434 in March 21	125-150		
Infectious diseases such as HIV/AIDS	10	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	Shivaji Nagar Camp Site		
					Confirmation of health check record and inspect project site	During this quarter 124 no. COVID 19 positive cases reported who have been treated and discharged in this quarter	Health Checks carried out but HIV/AIDS parameter is not there.	Regular Health check up is carried out by site Doctor. HIV-AIDS awareness program has conducted for workman by an NGO called	
Labour Environment	11	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"	Sewri Camp Site	Shivaji Nagar Camp Site	Gavan Camp site	
					Site Visual Inspection	All provisions as per BOCW have been provided. *2350 nos. of Food meals (lunch & Dinner) provided to workmen from BOCW, * Face mask provided to workmen, * Calcium & Vitamins tablets provided to workmen to boost up the immunity of workmen, * Sanitizers & Liquids soaps also provides to different location for workmen. *Daily temperature Check of workmen at site and colony is conducted. Daily sanitisation at work site, of working equipment and the buses used for communitine is conducted	Conforming with BOCW Act 1996	Conforming with BOCW Act 1996	
Other	12	Accident	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	Sewri Camp Site	Shivaji Nagar Camp Site	Chirle/Other area	
					Number of recorded accident	NIL	NIL	Nil	

MTHL Land Acquisition Status (Attachment 2-6):

Total land required on Navi Mumbai side- 108.09 ha

Land in possession in MMRDA – 106.5 ha

Balance land acquisition- 1.59 ha

Note: The acquisition of 1.59 ha is in progress by CIDCO. The balance acquisition would be likely completed by the end of June 2021.

Land Required in ha		Land Acquired in ha		Balance Land to be acquired in ha	Anticipated date for Land Acquisition	Payment status (Payment made to Land Owners by CIDCO)	Remarks
Govt.	Private	Govt.	Private	Private*			
98.75	9.34	98.75	7.595	1.745	30-06-2021	--	The payment status to the land owners are 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) of 1 st quarter of 2021
b. Date of Preparing This form	30-03-2021
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
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2.3 Fishery

Categories of Fisher-folks	Identified Number		Total	Remarks
	Mumbai side	Navi Mumbai side		
C1: Fishing stakes and nets in RoW (250 m.)	178	54	232	Funds for 230 nos C1 category fishermen are transferred to 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

QPR No. 16 (Jan-Mar 2021) 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 Commissioner of Fisheries in the 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 Commissioner of Fisheries and balance 1408 Nos. of C3 category fishermen are in process of fund transfer to Commissioner of Fisheries.
C4: Commercial and Artisanal Fisher-folks (Loss of Time and Increased Operating Costs)	Will be observed during construction period	Will be observed during construction period	---	Nil
C5: Fisher-folks with Loss due to Turbidity	Will be observed during construction period	Will be observed during construction period	----	Nil
C6: Fisher-folks with Damages due to Accidents	Will be observed during construction period	Will be observed during 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	

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	141	0	141	62%	
	No. of Residential PAHs given possession of Alternate Tenements	231	139	0	139	60%	
	No. of Commercial/R+C PAPs provided with Allotment Letters of Alternate Shops/Tenements	66	21	0	21	30%	
	No. of Commercial R+C PAPs given possession of Alternate Shops/Tenements	66	20	0	20	26%	
	No. of Occupants of MbPT Leased Plots provided Compensation	6	5	0	5	84%	
	No. of Religious properties Relocated / Removed	6	1	0	1	17%	Jivdani Mandir allotment letter given
	No. of Other Community properties Relocated / Removed	4	0	0	0	0%	
	No. of Structures in possession of MbPT Dismantled / Cleared	9	0	0	0	0%	
	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)						

QPR No. 16 (Jan-Mar 2021) Attachment 2-8

Activity	Indicator	Total Target	Progress till Last Quarter	Progress during reporting Quarter	Cumulative Progress till Current Quarter	Cumulative Achievement of Total Target (%)	Remarks, If Any
	No. of new enterprises started						
Grievance Redress	No. of Grievances Received by FLGRC	4					
	No. of Grievances Disposed by FLGRC	1					
	No. of Grievances Received by SLGRC	0					
	No. of Grievances Disposed by SLGRC	0					
Post Resettlement Assistance	No. of CHSs Registration helped						
	No. of CHSs provided Tenements for Social Amenities						
	No. of CHSs' Maintenance Fund Invested						
	No. of CHSs' Office Bearers provided training						

SUMMARY OF FISHER FOLKS OF MTHL PROJECT (Influence Zone of 23 villages) Up to 31-03-2021						
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	24	135	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	1207	49	219	822	1090
22	Ulwe	218	1	3	14	18
23	Uran & Hanuman Koliwada	683	0	11	600	611
24	Vahal	411	0	2	1	3
Total		15096	232	863	5549	6644
Total applications						15096
Duplicate/Repeated Application						1651
Net Applications						13445
Approved applications						6644

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 fisher-folks' 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	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 - 367 Nos and C3- 3481 Nos are approved.	23-12-2015	Up to 31.03.2021 1. Total up to date applications scrutinized = 13445 Nos. 2. Eligible = 6644 Nos. 3. Rejected = 6801 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	Anticipated date for Land Acquisition	Payment status (Payment made to Landowners by CIDCO)	Remarks
Govt.	Private	Govt.	Private	Private			
98.75	9.34	98.75	7.595	1.745	30-06-2021	--	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	May 2021
2.6	Notice of PAPs for shifting (Sewri Section)	December 2018	May 2021
2.7	Allotment of dwelling units to PAP's	September 2016	May 2021
2.8	Shifting of PAPs to resettlement Colony	December 2018	May 2021
2.9	Transfer of compensation / allowance/ assistance to PAPs	December 2018	Dec. 2021
2.10	Creation of Community Revolving fund (within 3 months post handing over)	April 2019	Dec. 2021
2.11	Assessment of economic rehabilitation needs by individual household (within 6 months after handing over)	September 2019	June 2021
2.12	Registration of Co-operative housing societies transfer of maintenance funds. (6 months period)	December 2019	June 2021
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	June 2021

*Expected to receive the Occupation Certificate of Kurla Bhandari R&R site from SRA Department by May 2021.

Attachment 3- JICA's Concurrence Status

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)	181.49	181.49	JICA's Concurrence - 23rd August 2019	-	-	-	-	-

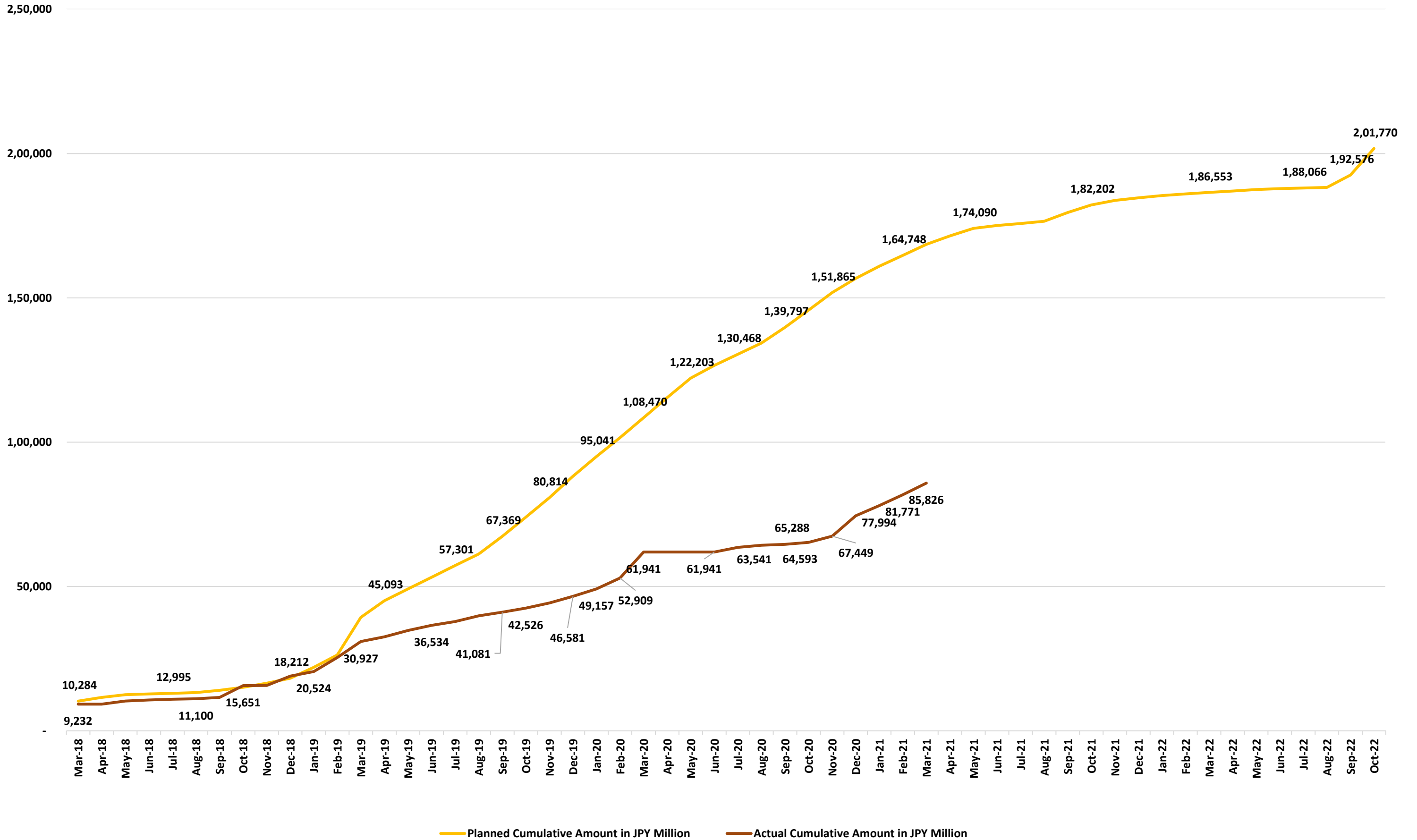
Attachment 4- Project Procurement and Financial Status till 31st March 2021

PROJECT PROCUREMENT AND FINANCIAL STATUS TILL 31st MARCH 2021

Type	Contract	Awarded or Estimated Value (in Rs. Crore)	Current Status	Contractors	Project Commencement Date	Stipulated Project Completion Date	% of Overall Project completion (Design/ Procurement/ Construction) till 25 th March 2021	% of Overall Financial Progress (Including Mobilization Advance) till 31 st March 2020
CIVIL	Package-1 (CH 0+000 km to CH 10+380 km)	7637.30	Awarded	L&T-IHI Consortium	March 2018	Sep 2022	48.55%	50.76%
	Package-2 (CH 10+380 km to CH18+187 km)	5612.61	Awarded	DAEWOO-TPL JV	March 2018	Sep 2022	40.30%	52.18%
	Package-3 (CH18+187 to CH21+800)	1013.79	Awarded	L&T	March 2018	Sep 2021	53.33%	63.80%
ITS	Package-4 Intelligent Transport System (ITS)	181.49 (Estimated)	Design Stage	--	June 2021 (Estimated)	Sep 2022	NA	NA

Attachment 5- S-Curve for Cumulative Planned Vs Actual Amount in JPY Million

Attachement 5 - S-Curve for Planned Vs Actual Cumulative Amount till 31st March 2021 in JPY Millions



**Attachment 6- Package-1's Construction Programme
Updated as on 25th March 2021**

**Attachment 7- Package-2's Construction Programme
Updated as on 25th March 2021**

**Attachment 8- Package-3's Construction Programme
Updated as on 25th March 2021**

Activity ID	Activity Name	Original Duration	BL1 Duration	BL1 Start	BL1 Finish	Start	Finish	Activity % Complete	Performance % Complete	Schedule % Complete	Gantt Chart																														
											F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
MTHL Pkg 3_Construction Schedule Mar'21											[Gantt Chart Summary]																														
Procurement of Mumbai Trans Harbour Link Project (Packag											[Gantt Chart Summary]																														
t	Commencement Date (CD)	0	0			23-Mar-18A		100%	100%	0%	Commencement Date (CD), 23-Mar-18A																														
Physical Milestones											[Gantt Chart Summary]																														
KD1001	KD1 [Construction programme, completion of	0	0	18-Sep-18	18-Sep-1	25-Mar-21	25-Mar-21	0%	0%	100%	[Gantt Chart Summary]																														
KD1008	KD 8 [Final completion & handing over]	0	0	21-Sep-21	21-Sep-2	07-Sep-23	07-Sep-23	0%	0%	0%	[Gantt Chart Summary]																														
KD1007	KD 7 [Substantial completion of kerb/traffic sig	0	0	24-Jul-21	24-Jul-21	30-Jul-23	30-Jul-23	0%	0%	0%	[Gantt Chart Summary]																														
KD1006	KD 6 [Substantial completion superstructure (F	0	0	20-Mar-21	20-Mar-21	15-Apr-23	15-Apr-23	0%	0%	100%	[Gantt Chart Summary]																														
KD1005	KD 5 [Substantial completion of pile caps (if a]	0	0	19-Sep-20	19-Sep-2	30-Apr-22	30-Apr-22	0%	0%	100%	[Gantt Chart Summary]																														
KD1004	KD 4 [Substantial completion of foundation, pi	0	0	21-Mar-20	21-Mar-20	30-Apr-22	30-Apr-22	0%	0%	100%	[Gantt Chart Summary]																														
KD1003	KD 3 [NOC for Good for construction drawing f	0	0	15-Jun-19	15-Jun-19	30-Apr-21	30-Apr-21	0%	0%	100%	[Gantt Chart Summary]																														
KD1002	KD 2 [NOC for technical design doc & drawing	0	0	17-Dec-18	17-Dec-1	25-Mar-21	25-Mar-21	0%	0%	100%	[Gantt Chart Summary]																														
Financial Milestone											[Gantt Chart Summary]																														
Interface Milestone											[Gantt Chart Summary]																														
Document Submittals											[Gantt Chart Summary]																														
Employer's Obligation / Land Handover											[Gantt Chart Summary]																														
ROW 75 Ha [CD+180 days]											25-Mar-21, Employer's Obligation / Land Handover																														
Casting Yard 9.16 Ha [CD+120 days]											25-Mar-21, ROW 75 Ha [CD+180 days]																														
E Ob1003	Unobstructed access to casting yard with fenc	0	0	20-Jul-18	20-Jul-18	20-Dec-18A	21-Dec-18A	100%	100%	100%	Unobstructed access to casting yard with fence [4.08 Ha]																														
Employer Office (Sch 01- General Item)											[Gantt Chart Summary]																														
Construction of Employer office											26-Oct-21, Employer Office (Sch 01- General Item)																														
Facility											26-Oct-21, Facility																														
Survey & Geotechnical Investigation Works											[Gantt Chart Summary]																														
Topographical Survey											[Gantt Chart Summary]																														
Geotechnical Investigation work											[Gantt Chart Summary]																														
Design Works											[Gantt Chart Summary]																														
Design Basis Report											[Gantt Chart Summary]																														
Preliminary Design											[Gantt Chart Summary]																														
Geotechnical Interpretative Report Submission & GC Approval (NONO)											[Gantt Chart Summary]																														
Plan & Profile Alignment											[Gantt Chart Summary]																														
Superstructure Design											[Gantt Chart Summary]																														
Foundation & Pier											[Gantt Chart Summary]																														
Abutment & Foundation											[Gantt Chart Summary]																														
Pier Cap											[Gantt Chart Summary]																														
Bearings & Drainage											[Gantt Chart Summary]																														
Pavement Design											[Gantt Chart Summary]																														
Procurement Works											[Gantt Chart Summary]																														
For Main Bridge											[Gantt Chart Summary]																														
Launching Girder with factory testing.....(Using Underslung)											[Gantt Chart Summary]																														
Segments Moulds											[Gantt Chart Summary]																														
Steel Structure											[Gantt Chart Summary]																														
Steel for superstructure											[Gantt Chart Summary]																														
Formwork & staging requirement											[Gantt Chart Summary]																														
Bearings, Expansion joint, Water proofing with factory test											[Gantt Chart Summary]																														
Painting with testing											[Gantt Chart Summary]																														
For Road Works											[Gantt Chart Summary]																														
Earthwork / Cut & Fill											[Gantt Chart Summary]																														
Asphalt											[Gantt Chart Summary]																														
Imported Procurement											[Gantt Chart Summary]																														
Prestressed strand											[Gantt Chart Summary]																														
Co-ordinated Fabrication & Manufacturing Works											[Gantt Chart Summary]																														
Permanent Works fabrication											[Gantt Chart Summary]																														
Permanent Works Assembly											[Gantt Chart Summary]																														

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

Activity ID	Activity Name	Original Duration	BL1 Duration	BL1 Start	BL1 Finish	Start	Finish	Activity % Complete	Performance % Complete	Schedule % Complete	Gantt Chart (F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A)											
Construction Works																						
	Preconstruction Activity	759	271	20-Jul-18	01-Jul-19	26-Sep-18A	27-Nov-21	72.92%	100%	97.83%	27-Nov-21, Preconstruction Activity											
	Sub Structures (Open Foundation, Pier, Pier Cap)	877	539	08-Dec-18	07-Nov-21	30-Sep-18A	24-Feb-22	76.07%	100%	100%	24-Feb-22, Sub Structures (Open Foundation, Pier, Pier Cap)											
	Main Carriageway	788	320	08-Dec-18	24-Jan-20	05-Dec-18A	24-Nov-21	74.26%	100%	100%	24-Nov-21, Main Carriageway											
	RHS-Section 1 (CH 18+187 to CH 18+930)	684	139	08-Dec-18	23-May-1	10-Dec-18A	22-Jun-21	62.6%	100%	100%	22-Jun-21, RHS-Section 1 (CH 18+187 to CH 18+930)											
	LHS-Section 1 (CH 18+187 to CH 18+930)	617	138	10-Dec-18	23-May-1	05-Dec-18A	14-Jun-21	62.6%	100%	100%	14-Jun-21, LHS-Section 1 (CH 18+187 to CH 18+930)											
	RHS-Section 2 (CH 20+170 to CH 21+811)	578	253	27-Feb-19	24-Jan-20	10-Mar-19A	15-Oct-21	78.46%	100%	100%	15-Oct-21, RHS-Section 2 (CH 20+170 to CH 21+811)											
	LHS-Section 2 (CH 20+170 to CH 21+811)	687	287	17-Jan-19	24-Jan-20	13-Apr-19A	24-Nov-21	81.72%	100%	100%	24-Nov-21, LHS-Section 2 (CH 20+170 to CH 21+811)											
	SH54 Ramps	341	289	27-Feb-19	06-Mar-20	25-Apr-19A	23-Jun-21	93.4%	100%	100%	23-Jun-21, SH54 Ramps											
	RHS- JNPT to Mumbai	285	255	09-Apr-19	06-Mar-20	05-Jun-19A	23-Jun-21	88.09%	100%	100%	23-Jun-21, RHS- JNPT to Mumbai											
	LHS- Mumbai to Panvel	337	287	27-Feb-19	04-Mar-20	25-Apr-19A	29-May-21	97.96%	100%	100%	29-May-21, LHS- Mumbai to Panvel											
	Chirle NH 4B Ramps	395	350	20-May-19	05-Sep-2	30-Sep-18A	24-Feb-22	71.28%	100%	100%	24-Feb-22, Chirle NH 4B Ramps											
	RHS- JNPT to Mumbai	363	293	28-Jun-19	20-Jul-20	07-May-19A	11-Jan-22	76%	100%	100%	11-Jan-22, RHS- JNPT to Mumbai											
	LHS- Mumbai to Panvel	395	350	20-May-19	05-Sep-2	30-Sep-18A	24-Feb-22	66.37%	100%	100%	24-Feb-22, LHS- Mumbai to Panvel											
	Chirle NH 4B Loops	214	336	09-Sep-19	07-Nov-21	21-Aug-19A	25-Dec-21	83.52%	100%	100%	25-Dec-21, Chirle NH 4B Loops											
	LHS- Mumbai to JNPT	177	302	19-Oct-19	07-Nov-21	16-Oct-19A	25-Dec-21	73.81%	100%	100%	25-Dec-21, LHS- Mumbai to JNPT											
	RHS- Panvel to Mumbai	214	331	09-Sep-19	02-Nov-21	21-Aug-19A	22-Sep-21	91.84%	100%	100%	22-Sep-21, RHS- Panvel to Mumbai											
	Super Structures	849	601	27-Feb-19	12-Apr-21	11-Sep-19A	11-Feb-23	23.08%	100%	99.78%	11-Feb-23, Super Structures											
	Segments Precasting	623	447	30-Mar-19	09-Nov-21	11-Sep-19A	24-May-22	34.38%	100%	100%	24-May-22, Segments Precasting											
	BED 1 [RHS]-MP328 to MP337 & MP337 to MA2- 10 Spans	331	153	30-Mar-19	29-Oct-19	01-Jan-20A	11-May-21	100%	100%	100%	11-May-21, BED 1 [RHS]-MP328 to MP337 & MP337 to MA2- 10 Spans											
	BED 1 [RHS]-LP6 TO LP19- 13 Spans	406	189	20-Sep-19	30-Apr-20	11-Sep-19A	18-Jan-22	15.38%	100%	100%	18-Jan-22, BED 1 [RHS]-LP6 TO LP19- 13 Spans											
	BED 1 [RHS]-LP26 to LP35- 9 spans	141	141	24-Mar-20	05-Oct-20	11-Dec-21	24-May-22	0%	100%	100%	24-May-22, BED 1 [RHS]-LP26 to LP35- 9 spans											
	BED 2 [LHS]- MP328 to MP337 & MP337 to MA2- 10 Spans	301	153	06-May-19	03-Dec-21	02-Jan-20A	09-Feb-21	100%	100%	100%	09-Feb-21, BED 2 [LHS]- MP328 to MP337 & MP337 to MA2- 10 Spans											
	BED 2 [LHS]-LP6 TO LP19- 13 Spans	189	189	26-Oct-19	05-Jun-20	25-Mar-21	07-Dec-21	0%	100%	100%	07-Dec-21, BED 2 [LHS]-LP6 TO LP19- 13 Spans											
	BED 2 [LHS]-LP26 to LP35- 9 spans	141	141	28-Apr-20	09-Nov-21	29-Oct-21	12-Apr-22	0%	100%	100%	12-Apr-22, BED 2 [LHS]-LP26 to LP35- 9 spans											
	Segments Erection	451	405	26-Aug-19	20-Jan-21	06-Mar-20A	08-Feb-23	7.81%	100%	100%	08-Feb-23, Segments Erection											
	Launching Girder 1 [RHS]-Section 1	156	100	26-Aug-19	25-Dec-21	06-Mar-20A	01-Mar-22	20%	100%	100%	01-Mar-22, Launching Girder 1 [RHS]-Section 1											
	LG shifting & Erection at Section 2-1	25	25	26-Dec-19	24-Jan-20	02-Mar-22	30-Mar-22	0%	100%	100%	30-Mar-22, LG shifting & Erection at Section 2-1											
	Launching Girder 1 [RHS]-Section 2	130	130	25-Jan-20	26-Jun-20	31-Mar-22	29-Aug-22	0%	100%	100%	29-Aug-22, Launching Girder 1 [RHS]-Section 2											
	LG shifting & Erection at Section 3	25	25	27-Jun-20	19-Aug-2	30-Aug-22	27-Sep-22	0%	100%	100%	27-Sep-22, LG shifting & Erection at Section 3											
	Launching Girder 1 [RHS]-Section 3	90	90	21-Aug-20	09-Dec-21	28-Sep-22	10-Jan-23	0%	100%	100%	10-Jan-23, Launching Girder 1 [RHS]-Section 3											
	LG 1 Dismantling	25	25	10-Dec-20	08-Jan-21	11-Jan-23	08-Feb-23	0%	100%	100%	08-Feb-23, LG 1 Dismantling											
	Launching Girder 2 [LHS]-Section 1	120	100	11-Sep-19	07-Jan-20	25-Dec-20A	25-Mar-22	30%	100%	100%	25-Mar-22, Launching Girder 2 [LHS]-Section 1											
	LG shifting & Erection at Section 2	25	25	08-Jan-20	05-Feb-20	02-Mar-22	30-Mar-22	0%	100%	100%	30-Mar-22, LG shifting & Erection at Section 2											
	Launching Girder 2 [LHS]-Section 2	130	130	06-Feb-20	15-Jul-20	31-Mar-22	29-Aug-22	0%	100%	100%	29-Aug-22, Launching Girder 2 [LHS]-Section 2											
	LG shifting & Erection at Section 3-1	25	25	17-Jul-20	05-Sep-2	30-Aug-22	27-Sep-22	0%	100%	100%	27-Sep-22, LG shifting & Erection at Section 3-1											
	Launching Girder 2 [LHS]-Section 3	90	90	07-Sep-20	21-Dec-21	28-Sep-22	10-Jan-23	0%	100%	100%	10-Jan-23, Launching Girder 2 [LHS]-Section 3											
	LG 2 Dismantling	25	25	22-Dec-20	20-Jan-21	11-Jan-23	08-Feb-23	0%	100%	100%	08-Feb-23, LG 2 Dismantling											
	Cast In Situ	559	601	27-Feb-19	12-Apr-21	25-Sep-20A	11-Feb-23	12.56%	100%	99.33%	11-Feb-23, Cast In Situ											
	Main Bridge	417	472	27-Feb-19	07-Nov-21	25-Sep-20A	30-Aug-22	13.36%	100%	100%	30-Aug-22, Main Bridge											
	SH54 Ramps	326	211	12-Feb-20	17-Nov-21	20-May-21	16-May-22	0%	100%	100%	16-May-22, SH54 Ramps											
	Chirle Interchange	374	221	24-Jun-20	12-Apr-21	20-Oct-20A	11-Feb-23	17.5%	100%	97.46%	11-Feb-23, Chirle Interchange											
	Steel Structure	390	419	10-May-19	17-Nov-21	16-Sep-21	16-Dec-22	0%	100%	100%	16-Dec-22, Steel Structure											
	Erection	300	329	10-May-19	06-Jul-20	16-Sep-21	02-Sep-22	0%	100%	100%	02-Sep-22, Erection											
	Deck Surfacing	90	90	08-Jul-20	17-Nov-21	03-Sep-22	16-Dec-22	0%	100%	100%	16-Dec-22, Deck Surfacing											
	Bearings & Expansion Joints	293	201	03-Aug-20	12-Apr-21	26-Nov-20A	02-Jun-23	3.71%	100%	95.99%	02-Jun-23, Bearings & Expansion Joints											
	Precast Segments	265	180	03-Aug-20	17-Mar-21	04-Nov-21A	01-May-23	1.33%	100%	100%	01-May-23, Precast Segments											
	CIS	264	183	07-Sep-20	12-Apr-21	26-Nov-20A	02-Jun-23	9.17%	100%	91.67%	02-Jun-23, CIS											
	Steel Structure	142	142	12-Oct-20	30-Mar-21	12-Dec-22	26-May-23	0%	100%	96.36%	26-May-23, Steel Structure											
	Bridge Ancillaries & Miscellaneous Item	450	274	12-Aug-20	23-Jul-21	21-Feb-22	29-Jul-23	0%	100%	40.31%	29-Jul-23, Bridge Ancillaries & Miscellaneous Item											
	Crash Barrier & Safety fence	401	197	12-Aug-20	12-Apr-21	21-Feb-22	02-Jun-23	0%	100%	99.26%	02-Jun-23, Crash Barrier & Safety fence											
	Painting works	142	133	28-Jan-21	07-Jul-21	15-Feb-23	29-Jul-23	0%	100%	36.25%	29-Jul-23, Painting works											
	kerb, traffic Sign & pavement marking	77	111	03-Mar-21	23-Jul-21	15-Apr-23	14-Jul-23	0%	100%	21.11%	14-Jul-23, kerb, traffic Sign & pavement marking											
	Restoration of removed structure and As-built doc & maintenance manual	61	74	08-Apr-21	07-Jul-21	20-May-23	29-Jul-23	0%	100%	0%	29-Jul-23, Restoration of removed structure and As-built doc & maintenance manual											
	RE Wall	568	557	27-Feb-19	18-Feb-21	06-May-21	04-Apr-23	0%	100%	100%	04-Apr-23, RE Wall											
	Raft	232	264	27-Feb-19	06-Feb-20	06-May-21	07-Mar-22	0%	100%	100%	07-Mar-22, Raft											

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

Activity ID	Activity Name	Original Duration	BL1 Duration	BL1 Start	BL1 Finish	Start	Finish	Activity % Complete	Performance % Complete	Schedule % Complete	Gantt Chart (F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A)											
	Main Carriageway	60	60	27-Feb-19	09-May-1	06-May-21	28-Jul-21	0%	0%	100%	28-Jul-21, Main Carriageway											
	SH54 Ramp	60	60	20-May-19	23-Aug-1	30-Jul-21	26-Oct-21	0%	0%	100%	26-Oct-21, SH54 Ramp											
	NH4B ramp	52	52	09-Sep-19	08-Nov-1	27-Oct-21	27-Dec-21	0%	0%	100%	27-Dec-21, NH4B ramp											
	NH4B loop	60	60	28-Nov-19	06-Feb-20	28-Dec-21	07-Mar-22	0%	0%	100%	07-Mar-22, NH4B loop											
	RE wall with backfill	240	270	10-May-19	24-Apr-20	30-Jul-21	25-May-22	0%	0%	100%	25-May-22, RE wall with backfill											
	Main Carriageway	60	60	10-May-19	05-Aug-1	30-Jul-21	26-Oct-21	0%	0%	100%	26-Oct-21, Main Carriageway											
	SH54 Ramp	60	60	26-Aug-19	08-Nov-1	27-Oct-21	05-Jan-22	0%	0%	100%	05-Jan-22, SH54 Ramp											
	NH4B ramp	60	60	09-Nov-19	18-Jan-20	06-Jan-22	16-Mar-22	0%	0%	100%	16-Mar-22, NH4B ramp											
	NH4B loop	60	66	07-Feb-20	24-Apr-20	17-Mar-22	25-May-22	0%	0%	100%	25-May-22, NH4B loop											
	GSB & WMM	120	120	20-Jan-20	09-Jun-20	17-Mar-22	03-Aug-22	0%	0%	100%	03-Aug-22, GSB & WMM											
	Ashpalt pavement	120	120	29-Sep-20	18-Feb-21	15-Nov-22	04-Apr-23	0%	0%	100%	04-Apr-23, Ashpalt pavement											
	Road Work	1058	587	20-Apr-19	18-May-2	16-Feb-19A	17-May-23	58.6%	58.6%	97.39%	17-May-23, Road Work											
	For At Grade work	1030	523	20-Apr-19	02-Mar-21	16-Feb-19A	15-Apr-23	60.17%	60.17%	100%	15-Apr-23, For At Grade work											
	Compound wall with safety fence	180	180	20-Apr-19	20-Dec-1	16-Sep-21	15-Apr-22	0%	0%	100%	15-Apr-22, Compound wall with safety fence											
	Earth work / Cut & Fill	730	238	20-Apr-19	27-Feb-20	16-Feb-19A	30-Apr-22	62.25%	62.25%	100%	30-Apr-22, Earth work / Cut & Fill											
	Subgrade & Granular Sub Base	240	240	20-Nov-19	28-Sep-2	08-Feb-22	15-Nov-22	0%	0%	100%	15-Nov-22, Subgrade &											
	WMM & DBM	220	220	05-Mar-20	19-Dec-2	24-May-22	04-Feb-23	0%	0%	100%	04-Feb-23, WMM											
	Asphalt Pavement	60	60	21-Dec-20	02-Mar-21	04-Feb-23	15-Apr-23	0%	0%	100%	15-Apr-23, Asphalt Pavement											
	Area for toll plaza	112	146	28-Feb-20	18-Sep-2	16-Feb-19A	08-Sep-22	25%	25%	100%	08-Sep-22, Area for toll plaza											
	For Bridge and ramps	45	45	25-Mar-21	18-May-2	25-Mar-23	17-May-23	0%	0%	0%	17-May-23, For Bridge and ramps											
	Completion of Interface Activity	565	141	19-Sep-20	06-Mar-21	25-Mar-21	20-Feb-23	0%	0%	0%	20-Feb-23, Completion of Interface Activity											
	Provisional Sum	959	924	23-Apr-18	23-Aug-2	30-Nov-18A	31-Mar-23	3.05%	3.05%	73.95%	31-Mar-23, Provisional Sum											
	Testing & Commissioning Works	33	32	26-Jul-21	20-Sep-2	31-Jul-23	06-Sep-23	0%	0%	0%	06-Sep-23, Testing & Commissioning Works											
	ToC1002	2	2	19-Sep-21	20-Sep-2	05-Sep-23	06-Sep-23	0%	0%	0%	06-Sep-23, ToC1002											
	ToC1000	25	25	26-Jul-21	11-Sep-2	31-Jul-23	28-Aug-23	0%	0%	0%	28-Aug-23, ToC1000											
	ToC1001	6	6	13-Sep-21	18-Sep-2	29-Aug-23	04-Sep-23	0%	0%	0%	04-Sep-23, ToC1001											

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

Attachment 9- Project Progress Photos

Package 1- Site Progress Photos



Photo No. 1: A view taken from the Interchange Section looking towards the sea



Photo No. 2: MP 52 OSD Pile Cap Works at the Marine Section in progress



Photo No. 3: Casting of OSD Pile Cap at MP125 – Marine Section in progress



Photo No. 4: Casting of combined Pile cap at Interchange Section in progress



Photo No. 5: C2 Ramp Retaining wall in progress



Photo No. 6: OSD-2 Super Structure Assembling Works in progress



Photo No.7: Inward Material received for OSD 4- NG Fabricated Blocks 1st Lot., Segment No. 01 to 17, 203.2 m at Chirle Yard Site



Photo No. 8: F2 Zone 2 Retaining Wall works in progress



Photo No. 9: Erection of Pier segment for LG-03 at MP81 in progress



Photo No. 10: Casting of Pier cap MP01 North in progress



Photo No. 11: Pier Cap Works at the Marine Section in progress



Photo No. 12: F Ramp Retaining Wall Zone-3 Excavation Works in progress

Package 2 – Site Progress Photos



Photo No. 1: The DB Members & MMRDA officials visited the Pkg-2 site on 24th March 2021



Photo No. 2: Pier head segment scaffolding and reinforcement at MP 229 LHS and RHS respectively in progress



Photo No. 3: Pier 2nd lift concreting at MP 181 LHS in progress



Photo No. 4: LG-2 Segment erection at Span MP 243-244 LHS in progress



Photo No. 5: Pile drilling at MP 151 LHS in progress



Photo No. 6: Pier cap reinforcement works at CAA-1 in progress



Photo No. 7: Portal Beam reinforcement works at MP 252 LHS in progress



Photo No. 8: Segment concreting at Bay-2 in progress



Photo No. 9: Pier concreting at CAP-10 in progress



Photo No. 10: Pile reinforcement cage inspection at the Casting Yard in progress



Photo No. 11: Pile concreting at MP 167 LHS in progress



Photo No. 12: OSD Material inspection at Karanja Port in progress

Package 3 – Site Progress Photos



Photo No. 1: LMP & RMP A2 Abutment backfilling work in progress



Photo No. 2: LP 18 pier reinforcement works in progress



Photo No. 3: LP35 pier shuttering works in progress



Photo No. 4: JMP 4 foundation final checking before concreting



Photo No. 5: RP 36 Pier concrete pouring in progress



Photo No. 6: LP 14 pier cap concrete pouring in progress



Photo No. 7: RP 33 Portal Concrete pouring work in progress



Photo No. 8: PMP11 to PMP12 Voided slab soffit reinforcement in progress



Photo No. 9: RP4-3 Cast in-situ 3 cell box girder Deck slab reinforcement in progress



Photo No. 10: Span LMP 278-279 under slung trestle installation in progress



Photo No. 11: Span LMP 277-278, Segment gluing and temporary pre-stressing work in progress



Photo No. 12: Cross hole sonic logging test at LP35 Chirle location