

Republic of India
Tamil Nadu Disaster Risk Reduction Agency (TNDRRA)
Chennai Metropolitan Development Authority (CMDA)
Tamil Nadu State Water Resources Department (TNWRD)
Greater Chennai Corporation (GCC)

Republic of India

THE PROJECT FOR FORMULATION OF COMPREHENSIVE FLOOD CONTROL MASTER PLAN IN URBANIZED RIVER BASINS IN CHENNAI

Appendices

February 2025

Japan International Cooperation Agency

Pacific Consultants Co., Ltd.
CTI Engineering International Co., Ltd.
Yachiyo Engineering Co., Ltd.

GE
JR
25-033

Appendix A:

Database and Survey

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A) Database and Survey

1.1 Introduction

Developing a database for the JICA Comprehensive Flood Control Master Plan (CFCMP) in Chennai was a collaborative effort, involving contributions from various local agencies along with JICA's technical support and surveys. This section introduces the developed databases, highlights key considerations about the database, and provides an overview of the survey and purchased data collected during the study for the formulation of the JICA Flood Control Master Plan from March 2022 to February 2025.

JICA contributed several essential GIS layers, including Digital Terrain Models (DTM) and Digital Surface Models (DSM) at resolutions of 0.5m for the entire study area and 2.5m for the Chennai Metropolitan Area (CMA). Additionally, JICA purchased high-resolution (0.3m) orthophotos using MAXAR satellite imagery for the CMA. To support hydrological and flood modeling, JICA also conducted new river cross-section surveys and installed 15 Automatic Water Level Recorders (AWLRs) to collect real-time water level data.

In addition to survey data, several GIS layers were created during the development of the Comprehensive Flood Control Master Plan, including 2D inundation maps for flood hazard mapping and corrected DTM layers for hydraulic modeling. These datasets, along with the collected information, significantly contribute to flood risk management efforts.

The GIS database is hosted on the cloud server BOX, and access has been provided to designated representatives of Counterpart (C/P) agencies, particularly the GIS department, to facilitate official use.

Several key organizations played a vital role in contributing data to this initiative including CRA/TNDRRA (Tamil Nadu Disaster Risk Reduction Agency), GCC (Greater Chennai Corporation), CMDA (Chennai Metropolitan Development Authority), TNWRD (Tamil Nadu Public Works Department, and TNUIFSL (Tamil Nadu Urban Infrastructure Financial Services Limited). In particular, TNUIFSL provides GIS data from projects such as Real-Time Flood Forecasting (RTFF), including benchmark information, existing river cross-sections, river profiles, etc.

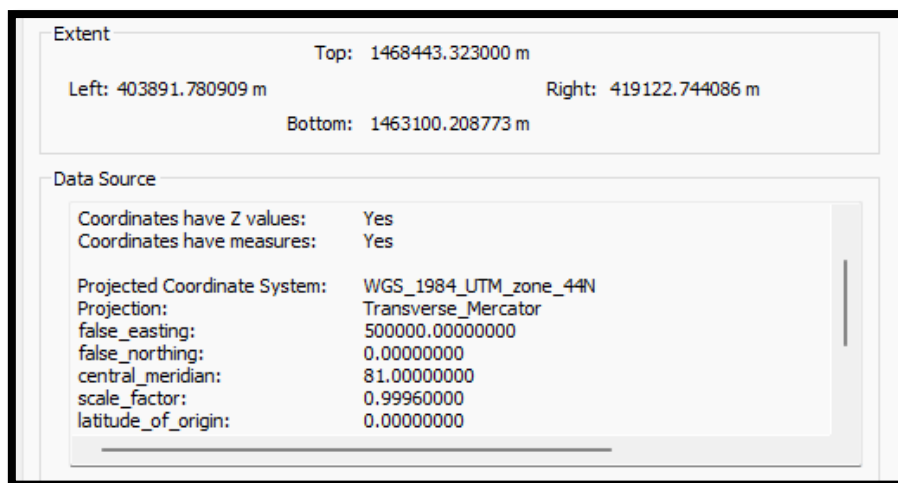
1.2 GIS Database

1.2.1 Coordinate System for GIS Database

The following Coordinate system was applied to GIS data and Remote sensing data in this study:

- Projection: UTM, Zone 44
- Latitude origin: North of the Equator
- Scale factor: 0.9996

- X Coordinate origin: 500000M
- Y Coordinate origin: 0M
- Unit: Meter
- Ellipsoid: WGS84



Source: JICA Expert Team

Figure A-1: Picture Showing the GIS layers Coordinate system

1.2.2 Database and GIS Data/Layers Inventory

The collected data from local agencies, as well as data created by JICA through surveys, purchases, or studies, is classified based on the source of the data and its type. The most important component of this database is the GIS data. This data has been systematically organized to facilitate easy access and usability for ongoing and future analyses.

Presented below is a guide to navigating the directory structure of the GIS database, which includes the compiled data and layers:

00-Basic Layers: This folder includes all the basic GIS layers used in the formulation of the JICA Flood Control Master Plan, such as basin boundaries, rivers, and other important layers. The most useful GIS layers have been consolidated into one folder for easy access. While these layers can be accessed from the individual folders below, they have been gathered in this location for convenience.

01-Admin: Including all GIS layers related to administrative boundaries such as administrative boundaries of GCC, CMA, etc.

02-Basin: For basin and sub-basin boundaries

03-Rivers: For rivers and drainage systems in the study area

04-Urban Area: Including all GIS layers for Chennai city and other urban areas

05-Transport: GIS layers for roads, highways, railways, etc.

- 06-Infrastructures: Important infrastructures and also infrastructures along the rivers in the study area
- 07-Dams and Waterbodies: Including water bodies and major reservoirs in the study area
- 08-Drains and Canals: For macro and micro drainage, man-made canals and SWD
- 09-Flood Hazards: Manual flood inundation observation, collected flood maps, and other flood inundation information for past floods
- 10-Elevation: DEM and other topographic information
- 11-Land Use Land Cover: Collected and developed land use and cover in the study area
- 12-Hydrology and Hydraulics: Such as locations of rain gauges and water level recorders, etc.
- 13-KML Layers: This folder includes layers in the format of KML that can be opened by Google Earth
- 14-Benchmark: Collected benchmarks and Ground Control Points (GCPs)
- 15-Bathymetry: Collected bathymetry data of waterbodies, canals, and coastal areas
- 16-Population: Population distribution
- 17-Socioeconomics: GDP and other items
- 18-Geology: Soil data
- 19-Coastal: Coastline and ICZM maps
- 20-Emergency and Shelters: Layers related to disaster emergency and evacuation shelters
- 21-Orthophoto Images: High-resolution of orthophoto images
- 22-Flood in 2015: A dedicated folder to all GIS layers relevant to the 2015 flood
- 23-JICA Simulations: GIS layers derived from JICA's flood simulations, including model results for flood behavior and inundation scenarios.
- 24-2023 Flood Simulations: GIS layers representing flood simulation data for the 2023 floods, including model-based predictions and flood extent information.
- 25-Photogrammetry: GIS layers based on photogrammetry data, including high-resolution images and 3D models of the study area.
- 26-HEC-Model Results: GIS layers generated from HEC (Hydrologic Engineering Center) modeling, including hydrological and hydraulic analysis results.
- 27-Maps: Various maps related to the flood control master plan, including thematic maps for analysis and decision-making.
- 28-Connecting Drainages: GIS layers for drainage systems connecting rivers and waterbodies

within the study area, focusing on stormwater management.

29-River Widening: GIS layers detailing proposed river widening projects to improve flood control and water flow in key areas.

30-Landmark Buildings: GIS layers marking key buildings and landmarks in the study area, useful for planning and infrastructure development.

40-Working Folder: A collection of various GIS data and resources used during the working phase of the project, including raw data and intermediate analysis results. Basic Information on Design & Cost Estimation

1.3 Collected River Cross Sections and the New JICA Survey

Available river cross-section data has been gathered from various sources. The cross-sections surveyed by TNUIFSL completed during 2020/21, were spaced about 30 meters apart and primarily covered river sections from bank to bank, excluding the floodplain. The collected surveyed river lengths included 16.7 km for the Adyar River, 36.4 km for the Cooum River, 28.5 km for the Kosasthalaiyar River, 48.3 km for the Buckingham Canal, and 76.4 km for the connecting drainage to these rivers.

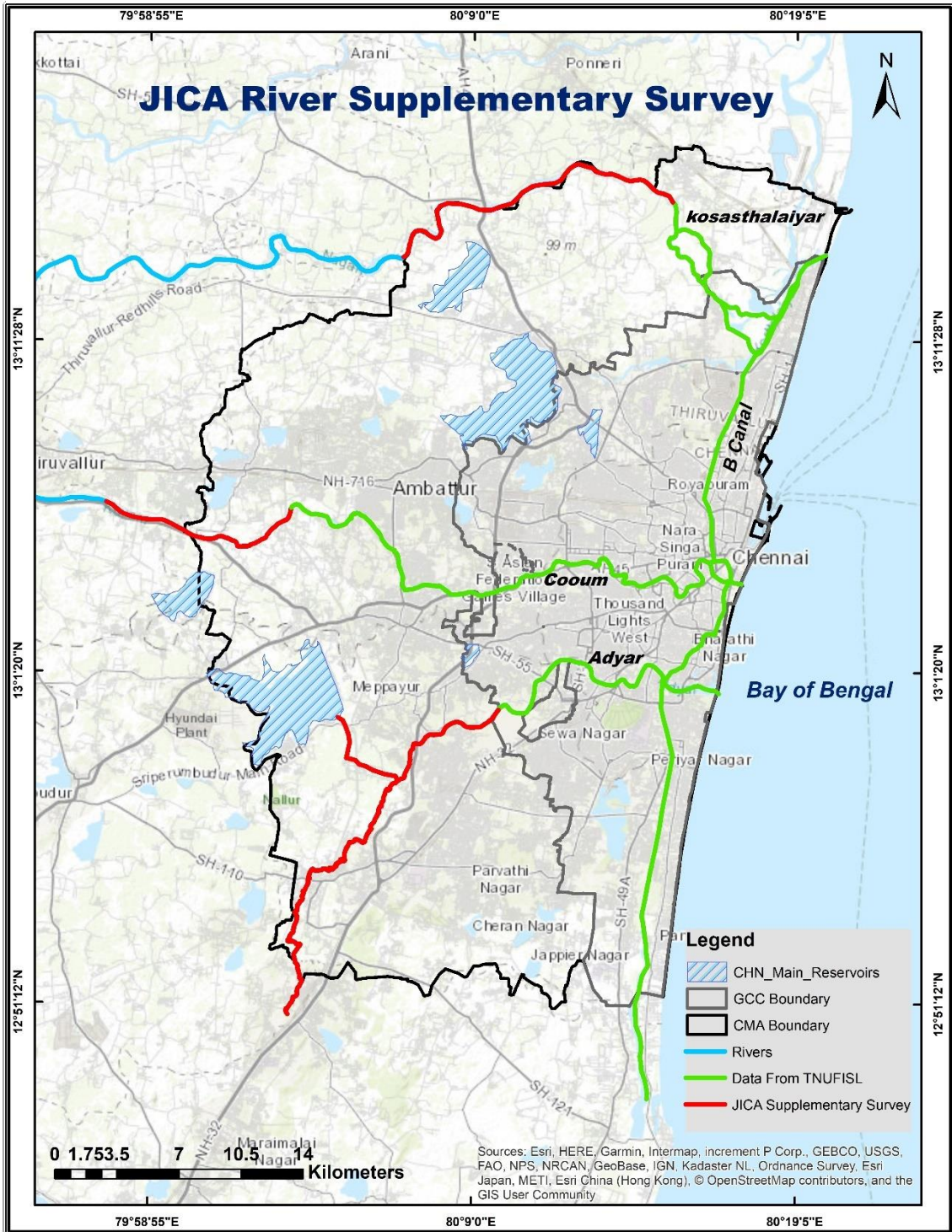
The JICA Expert Team conducted new surveys to fill gaps in the existing river cross-section data. For the section of the river between GCC and CMA areas, where data was missing, a supplementary cross-survey was carried out. A detailed summary of the supplementary survey can be found in the Table A-1.

Table A-1: Supplementary River Cross section Survey by JICA

Name of River/Channel	Alignment Survey (Km)	Length of CS (Km)	No. of Cross Section	Hydraulic Structure Inventory (No)
Adyar River	26.754	28.75	329	18
Chembarambakkam Branch	5.6	4.69	54	4
Cooum River	10.475	16.69	60	4
Kosasthalaiyar River	19.941	41.65	135	9
	14.604	10.86	160	8
	40.958	55.835	457	23

Source: JICA Study Team

Figure A-2 illustrates the river cross-section data in the following manner: the green lines represent the existing and collected river cross-sections from TNUIFSL, while the red lines indicate the alignment of the supplementary river cross-section survey conducted by the JICA.



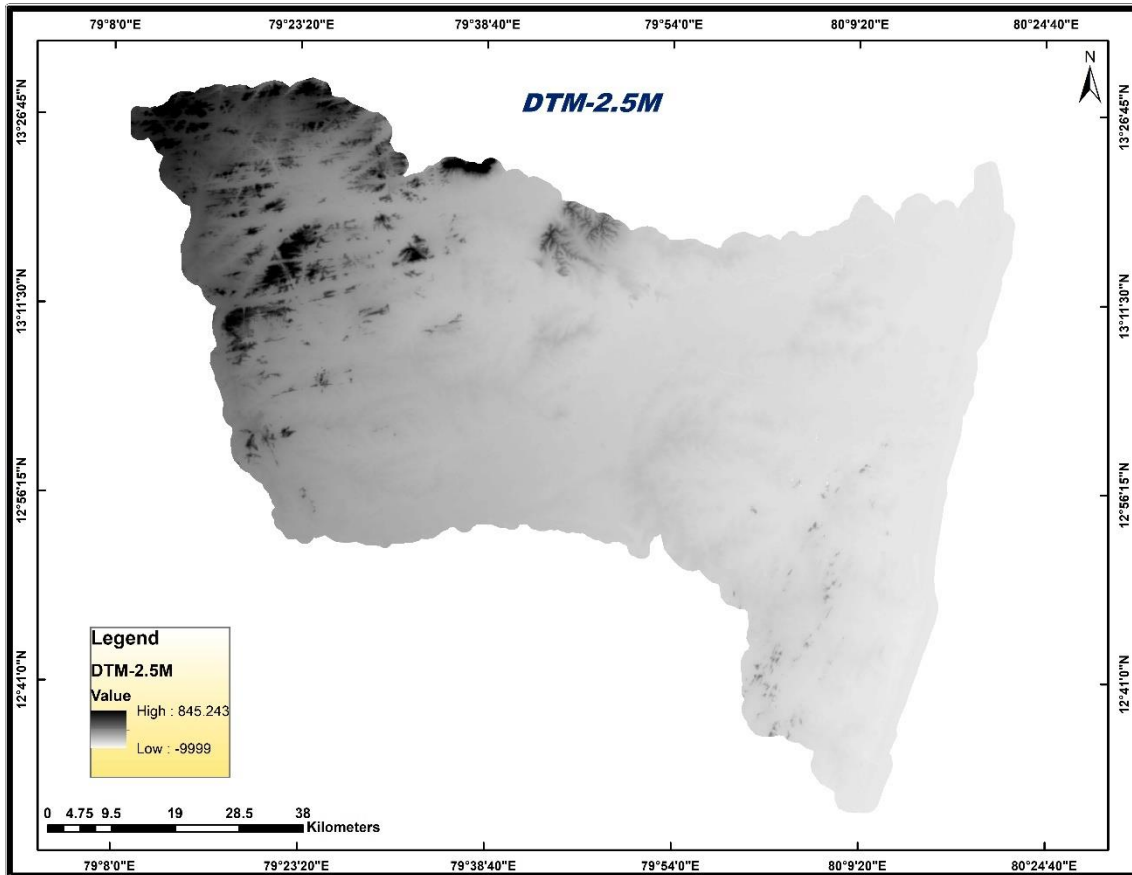
Source: JICA Expert Team

Figure A-2: River Cross-section Survey

1.4 DTM of 2.5 m and 0.5 m (AW3D)

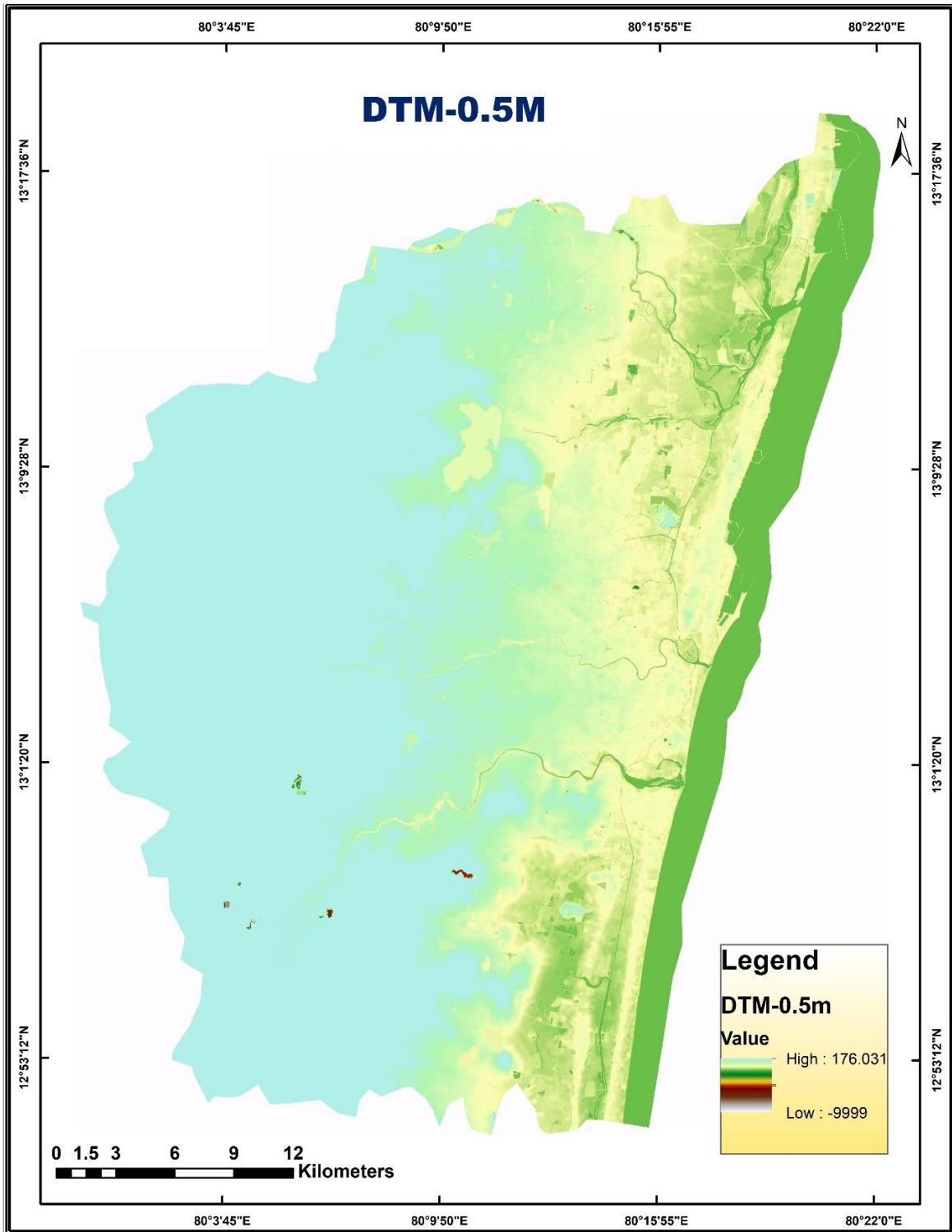
AW3D is a high-resolution global Digital Terrain Model (DTM) dataset created by the Japan Aerospace Exploration Agency (JAXA). JICA has acquired comprehensive coverage of the entire

study area, spanning 6100 km², with a 2.5-meter resolution from the JAXA ALOS DTM and Digital Surface Model (DSM), as shown in Figure A-2. In addition, the team obtained 0.5-meter resolution DTM data from MAXAR for the CMA Boundary, covering 1189 km² with an additional 1-kilometer coastal buffer zone, as illustrated in Figure A-5.



Source: JICA Expert Team using JAXA, RESTEC and NTT Data

Figure A-3: Coverage of 2.5 m DTM



Source: JICA Expert Team using JAXA, RESTEC and NTT Data

Figure A-4: Coverage of 0.5 m DTM

1.4.1 Copyright and Specification of DTM 2.5m and 0.5m

It is important to note that all DTMs used in this study for flood simulation and other activities are sourced from “JAXA, RESTEC, and NTT Data”. All co-end users who have access to the data are permitted to use these data only for the Comprehensive Flood Control Master Plan in Chennai, subject to the following copyright notice:

Article 6. Copyright Notice
You shall display the copyright notice conspicuously to any media which contains the Products as follow.
©JAXA, RESTEC and NTTDATA
In addition, You shall display the aforesaid copyright notice inside of the Products or on/under the Products, for the latter case, any characters, tables or images shall not lap over or otherwise hide the copyright notice.

Source: JICA Expert Team using JAXA, RESTEC and NTT Data

Figure A-5: Coverage of 0.5 m DTM

Below is the specification of ALOS-2.5m Resolution for the Entire Study Area:

Horizontal Resolution : 2.5 M
Product : DTM/DSM
Satellite : ALOS (JAXA)
Horizontal Accuracy : 5m RMSE /7m CE90
Vertical Accuracy : 5m RMSE /7m LE 90

Below is the specification of MAXAR/AW3D-0.5m Resolution for CMA Area:

Resolution : 0.5 M
Product : DTM/DSM
Satellite : MAXAR
Horizontal Accuracy : Absolute 1m RMSE/1.5m CE90 (with GCP)
: Absolute 2m RMSE /3m CE 90 (No GCP)
: Relative 1m RMSE/1.5m CE90
Vertical Accuracy : Absolut 1mRMSE/1.5m LE90 (with GCP)
: Absolute 2m RMSE /3m LE 90 (No GCP)
: Relative 1m RMSE/1.5m LE90

1.5 Orthophoto Images

This data includes high-resolution satellite imagery obtained from the WorldView-3 satellite, specifically seamless ortho-pan sharpened images in GeoTIFF format. This data will be crucial for conducting detailed analyses of the study area. Additionally, the project will provide Chennai

satellite image data in the same seamless ortho-pan sharpened imagery format (8bit GeoTIFF), along with reference files that include photography dates and division map area polygons. Table A-2 provide specification of thus data Please note to copyright notice in tj eprevose section.

Table A-2: WorldView-3 satellite seamless ortho-pan-sharpened image (GeoTIFF)

Item No.	Item	Specification
1	File name	Chennai_ortho_8bit_01.tif~ Chennai_ortho_8bit_45.tif
2	Image Processing	Seamless Orthopan Sharpening
3	Map projections	UTM Zone44 North WGS8
4	File formats	GeoTIFF
5	Ground Resolution	0.3 m
6	image quality	8bit
7	Resampling Method	CC (cubic convolution)
8	Satellite image capture date	March 31, 2020, December 4, 2021, March 22, 2022, June 6, 2022, February 20, 2023, March 4, 2023, April 11, 2023, August 11, 2023, March 18, 2024, April 19, 2024, May 1, 2024
9	Band (GeoTIFF)	3 bands (R,G,B)
10	Sharpening Filter	Done

Source: JAXA, RESTEC, and NTT Data

Appendix B:

Record of Meetings & Training in Japan

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B) Record of Meetings and Training in Japan

1.1 Record of Meetings

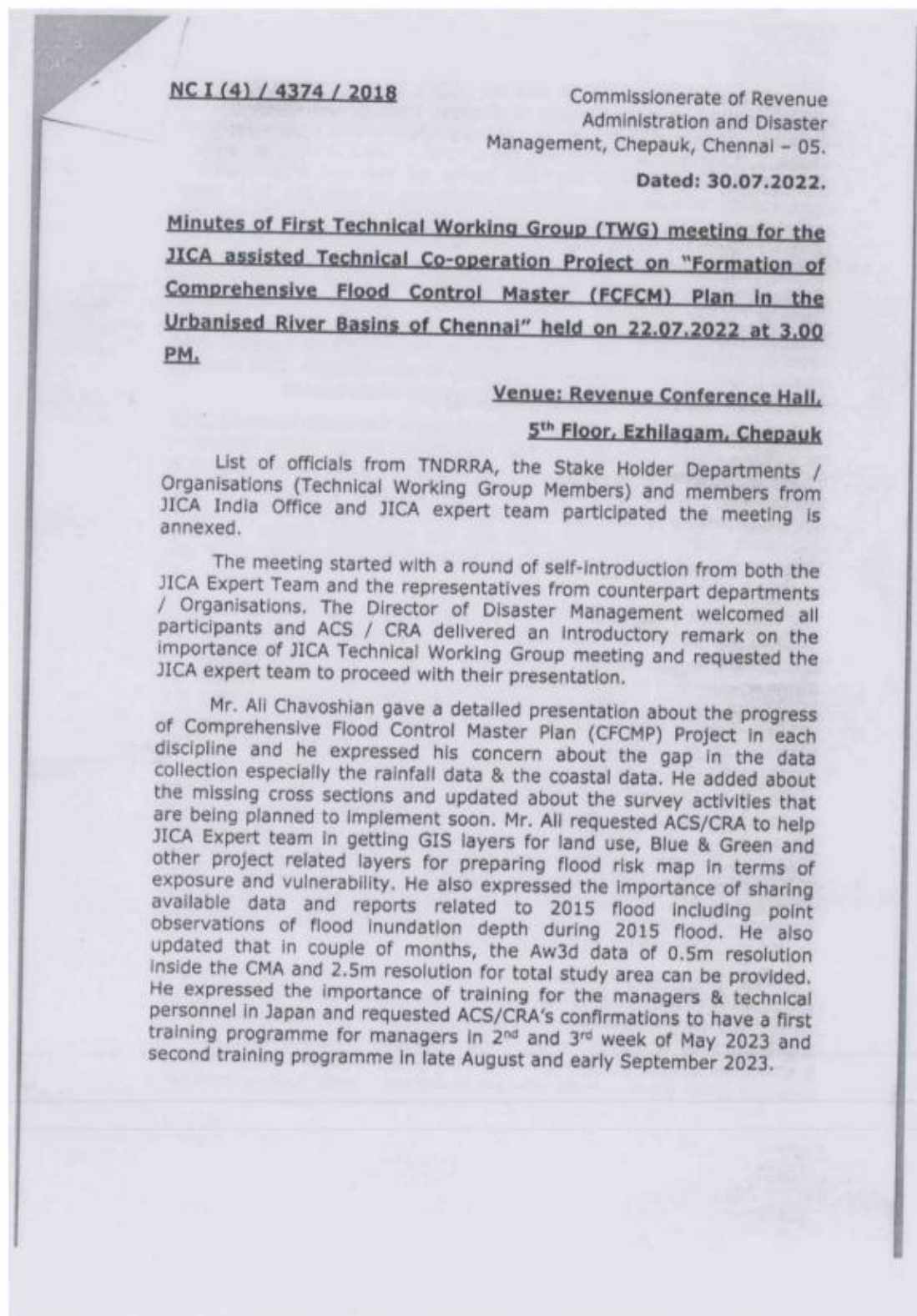
In general, four types of meetings have been organized with various counterparts and stakeholders. These meetings include individual meetings with relevant organizations or experts, Task Team (TT) meetings, Technical Working Group (TWG) meetings, and Steering Committee (SC) meetings. The first two types of meetings were primarily held at the expert level, involving individual experts from counterpart organizations and stakeholders to discuss specific topics or subjects. However, the technical working group and steering committee meetings were organized at a higher official level collectively to review the overall project progress and issues.

Task Teams (TT): Four TTs were formed as part of this project, each focusing on a specific area. Task Team 1 focused on flood disaster management, covering pre-, during-, and post-disaster phases, with the Tamil Nadu Disaster Risk Reduction Agency (TNDRRA) as the main counterpart. Task Team 2 primarily addressed riverine (fluvial) flood control, with the Tamil Nadu Water Resources Department (TNWRD) as the main counterpart. Task Team 3 discussed urban (pluvial) flood control, with the Greater Chennai Corporation (GCC) as the main counterpart. Task Team 4 focused on urban planning and contributions to the 3rd Chennai Urban Development Master Plan, with the Chennai Metropolitan Development Authority (CMDA) as the main counterpart. Initially, task team meetings were held monthly during the early stages of the study. As communication improved, meetings were conducted as needed.

Technical Working Groups (TWG): To ensure coordination among the task teams, a technical working group was established. This group comprised the heads of the respective departments from the four main counterpart organizations. During the early stages of the study, technical working group meetings were held approximately every three months. Later, they were conducted alongside steering committee meetings for better coordination. Records of the first three technical working group meetings, which were organized separately, are included in this appendix.

Steering Committee (SC): The steering committee meetings represented the highest level of coordination for this study. These meetings were held twice a year, with participation from the heads of departments or representatives from the four major counterpart organizations, as well as relevant stakeholders, including representatives from the National Disaster Management Authority (NDMA), officials from the Government of Japan, and representatives from JICA. In total, five steering committee meetings were conducted, some of which were held in conjunction with technical working group meetings. The records of all five steering committee meetings are provided in this appendix.

1.1.1 Minutes of the Technical Working Group Meetings



ACS/CRA thanked Mr. Ali and the JICA's team members for taking special initiative to help Chennai in disaster management especially the flooding problems that the city is currently experiencing during monsoon seasons. ACS/CRA mentioned that the CFCMP is not a project for JICA, it is a project for Chennai city and hence all the line departments / organisations should take additional initiatives to help the JICA team members by providing necessary data and related support for the success of this project. He added that CRA will be the single point of contact for all the data need and insisted the expert team to reach him at any time for any help related to the project. ACS/CRA added that having the first training for the managers during suggested time frame in 2nd and 3rd week of May is confirmed and some managers may also join the 2nd training programme in the late August and early September together with relevant experts and engineers according to the situation. CRA assured for sharing of required data from the concerned organisations.

Member Secretary, CMDA wanted to know the action taken by JICA on CMDA's earlier request to reduce the project period to the maximum possible to facilitate them incorporate the deliverables of the project in the ongoing CMDA's Master Plan III. Mr. Ali Chavoshian replied that they are programming to complete their studies within CMDA area and furnish the report before September 2023 and the remaining studies and final report for the project area will be completed before target period of the project.

The WRM (Hydrology & Flood control) Expert, TNDRRA on behalf of TNDRRA thanked JICA India Office for having considered their request to conduct additional field survey for the cross sections for stretches of Adyar, Cooum and Kosasthalaiyar rivers where the cross sections are not provided by CRRT or WRD and also to install gauging stations along the rivers to validate the outputs from the hydrological models of the ongoing RTFF & SDSS project. He also requested to include Araniar and Gummidipoondi sub basin areas of Chennai basin in the study Area in which rapid urbanisation is taking place in order to manage the flood risk in Chennai basin area effectively and reduce the fiscal requirement of the Government in implementing the mitigation measures and also towards rescue, relief and reconstruction phases of post disaster scenario. Member Secretary, CMDA informed that the boundary of the third master plan is going to be the same as the second master plan and hence requested JICA team to complete the study and report for the CMDA area before September 2023 as already planned.

Ms. Noriko Sakurai from JICA India office extended her thanks to ACS/CRA and all the departments for all the support that has been given so far. She also added about the importance of this project by saying that it is going to be first flood control project for JICA in India and going to be a showcase project at national level & it's going to be the framework for different urban areas in India who are facing the similar flooding problem.

Decision Points:

- The Next TWG meeting can be held on 21st October, 2022.
- Tentatively the second Steering committee meeting will be conducted on 7th September 2022 by inviting all members.
- Regarding training programme for the Executives and Managers, it is decided to keep it in 2nd & 3rd week of May 2023 and for the technical personnel and experts it will be in late August or early September 2023.
- Request of adding adjoining sub basins of Chennai basin to the project was discussed and concluded that it is not necessary since the boundary of the third master plan is going to be the same as the second master plan.
- Additional survey support for missing cross sections, setting up gauging stations from WRD has been requested from TNDRRA side and JICA expert team accepted to do the needful help.
- As per the data requested for IMD rainfall data, other available cross sections, coastal data, land use map of 2019, observed flood depth point data of 2015, GIS layers of infrastructures and urban facilities which are necessary for exposure and vulnerability analysis etc., TNDRRA will take necessarily follow up to provide the requested data.
- It is decided that all the line departments/organisations have to update their ongoing, planned projects related to CFCMP project and share the same to the JICA expert team.

ACS / CRA summed up various decisions taken in this meeting and instructed all member department officials representing to TWG meeting need to conduct their group meeting and address all issues and the same set of officers should attend subsequent meetings regularly for the sake of continuity without deputing other officers. The meeting came to an end with the vote of thanks to all by Director, Disaster Management.

Sd/-S.K.Prabakar,
Additional Chief Secretary /
Commissioner of Revenue Administration &
State Relief Commissioner.

Sd/-S.K.Prabakar
02/08/2022

Assistant Commissioner - V,
for Additional Chief Secretary /
Commissioner of Revenue Administration &
State Relief Commissioner.

P. S. Srinivasan
02/08/2022

First Technical Working Group (TWG) meeting of the JICA assisted Technical Cooperation Project on "Formulation of Comprehensive Flood Control Master Plan in Urbanised river basins of Chennai".

Date and Time: 22.07.2022 @ 3.00 PM
Venue: Revenue Conference Hall,
5th Floor, Ezhilagam,
Chepauk, Chennai -5.

In Chair: Thiru. S. K. Prabhakar, I.A.S.,
Additional Chief Secretary /
Commissioner of Revenue
Administration & State Relief Commissioner.

List of Participants:

Sl. No.	Name	Designation
I FLOOD DISASTER MANAGEMENT Group		
1.	Thiru. S. A. Raman, I.A.S.,	Director, TNDRRRA
2.	Thiru. M. I. Shakir Saleem	Assistant Commissioner (R&R), TNDRRRA
3.	Tmt. G. R. Divyashri	Assistant Commissioner - V, TNDRRRA
4.	Thiru. T. Kanthimathinathan	WRM (Hydrology & Flood Control) Expert, TNDRRRA
II RIVERINE FLOOD CONTROL Group		
5.	Thiru. A. Muthiah	Superintending Engineer, WRD, Palar Basin Circle, Chepauk.
III STORM WATER DRAINAGE Group		
6.	Thiru. B. Vishnuchandran, I.A.S.,	Joint Commissioner of Municipal Administration, DMA
7.	Thiru. G. Srinivasan	Executive Engineer, DMA
8.	Thiru. V. Murugesan	Executive Engineer & Tambaram City Municipal Engineer, Tambaram
9.	Thiru. P.V. Ravichandran	Executive Engineer & Avadi City Municipal Engineer, Avadi
10.	Thiru. B. Sivakumar	Executive Engineer, SWD, Greater Chennai Corporation
11.	Thiru. K. Gnanasekar	Assistant Executive Engineer, Rural Development & Panchayat Raj
12.	Thiru. V. Balagangatharan	Assistant Executive Engineer, Commissionerate of Town Panchayat

13.	Thiru. N. Anandaraaj	Assistant Executive Engineer, Greater Chennai Corporation
IV URBAN PLANNING Group		
14.	Thiru. Anshul Mishra, I.A.S.,	Member Secretary, CMDA
15.	Tmt. U. Manimekalai	Senior Planner, TNUHDB
16.	Tmt. K. Anusuya	Deputy Planner, CMDA
17.	Thiru. L. Gopalakrishnan	Deputy Director, (Town Planning), DMA
18.	Tmt. Jyolsna S. Pai	Assistant Planner, CMDA
19.	Thiru. D. Prithiviraj	Planning Assistant, CMDA
20.	Thiru. Sheik Sadagathulla	Assistant Director, (Town Planning), Rural Development and Panchayat Raj
21.	Dr. M. Pratheeps	Climate & Environment Specialist, CMDA
V JICA EXPERT TEAM		
22.	Ms. Noriko Sakurai	JICA India Office
23.	Mr. Vipul Mishra	JICA India Office
24.	Mr. Ali Chavoshian	JICA Expert Team
25.	Mr. Yulchi Yamaguchi	JICA Expert Team
26.	Mr. Takashi Sakakibara,	JICA Expert Team
27.	Mr. Hidefumi Tsukamoto	JICA Expert Team
28.	Mr. M. Anil Kumar	JICA Expert Team
29.	Thiru. N. Balamurugan	JICA Expert Team Local Coordinator
30.	Online Participants	JICA Expert Team

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Commissionerate of Revenue
Administration
and Disaster Management,
Chepauk, Chennai - 05

Minutes of the Meeting

Minutes of the Second Technical Working Group (TWG) meeting for the ongoing JICA assisted Technical Co-operation Project on "Formulation of Comprehensive Flood Control Master Plan (FCFCMP) in the Urbanised River Basins of Chennai" held on 13.03.2023.

Venue: Revenue Conference Hall,
5th Floor, Ezhilagam,
Chepauk.

Time: 3.00 P.M. to 4.00 P.M. (IST)

List of special invitees for the meeting, the officials from TNDRRRA, members of the Technical Working Group from the stake holders departments and JICA Expert Team participated in the meeting is annexed.

At the outset, the Additional Chief Secretary / Commissioner of Revenue Administration extended a warm welcome to all the participants and emphasised the need and importance of this Technical Co-operation Project. Mr. Ali Chavoshian, Team Leader, JICA Expert Team invited Ms. Sakurai (JICA India Office Representative), who attended the meeting virtually, to give opening remarks. Ms. Sakurai briefed about JICA's willingness to collaborate with Tamil Nadu in the implementation of long term flood mitigation measures. Dr. Ali Chavoshian made a presentation on the following agenda points for the meeting.

1. Review of the JICA Project Structure and Timelines
2. Outline of Task Team Activities and the Way Forward
 - 2.1 Task Team 1: Disaster Risk Management
 - 2.2 Task Team 2: Riverine Flood Management
 - 2.3 Task Team 3: Urban Flood and Drainage
 - 2.4 Task Team 4: Urban Planning
3. Other Activities and Brief Discussion on the Table of Contents of the Interim Report
4. Updates on Two Field Visits to Japan in May and July
5. Discussion

During the presentation, Dr. Ali Chavoshian explained about the JICA Project Structure and the time schedule for the completion of the project and emphasised for the effective collaboration of each task teams for the timely completion of the project. Dr. Sandeep Saxena, IAS, Addl. Chief Secretary to Government, TNWRD shared information about ongoing activities within WRD and expressed willingness to support the JICA's project for formulation of Comprehensive Flood Control Master Plan (CFCMP). Mr. Kanthimathinathan highlighted the importance of DTM and referred to a study by IITM with three available DTMs (MAXOR, JAXA, CARTOSAT) in respect of Chennai Metropolitan Area in flood modelling and requested for required further follow-up for quality outputs. Mr. Anshul Mishra, Member Secretary, CMDA expressed satisfaction with the inundation maps provided by JICA for Cooum and Adyar basins and requested to continue it for other basins to cover entire GCC and existing CMA. Dr. Sameeran also expressed willingness to support the JICA CFCMP within GCC.

The following are the outcomes of the discussion and decisions made:

1. The JICA study area is limited to four basins covering an approximate area of 5100km², including GCC area (432 km²) and existing CMA area (1189 km²) completely and about 85% of the new CMA area (5904 km²) within these four basins.
2. The importance of discussing the target safety level has been highlighted, and tentative 100-year return periods for riverine floods and 10-year return periods for urban flood drainage have been proposed by TNWRD and CMDA/GCC. The discussion can continue about the design safety level.
3. TNWRD will appoint an official for handling the installed AWLRs and will share reports on optimal use of water use in agriculture and irrigation sectors. TNWRD will appoint a focal expert or a group of experts for any necessary follow-up on issues viz., climate change and flood control measures, which include land acquisition etc.,.
4. The final version of the report by the Advisory Committee on Mitigation and Management of Flood Risk in Chennai Metro (Thiruppugazh committee) will be shared with JICA Expert Team.
5. GCC will cooperate fully with Task Team 3 on Urban flood and drainage for any information related to B canal and also cooperate with organizations or agencies which are responsible for ensuring target safety levels for urban flood drainage, climate change

scenarios, land acquisition for drainage improvement works such installation pumping stations etc.,.

6. CMDA and GCC will support Task Team 4 to develop flood risk maps based on the analysis of hazard, vulnerability and exposure.
7. CMDA will appoint a focal expert or a group of experts to discuss and make decisions on the temporal and spatial scale of the flood risk map and necessary visualization standards for Chennai citizens. They will also share information on ongoing activities towards the 3rd urban master plan and have effective discussions to ensure the contribution of the JICA Flood Control Master Plan to the 3rd Master Plan.
8. JICA requested CRA to follow-up with NDMA / DEA regarding the approval of the first field trip to Japan in May.
9. JICA has expressed interest in reviewing the reports on the pre-feasibility studies for the restoration of Cooum, Adyar and Buckingham Canal initiated by MA & WS department through CRRT with their own funds. In general, JICA is interested in developing long-term collaboration with Tamil Nadu State agencies and moving to the implementation phase of the master plan.

Sd./-S.K.Prabakar,
Additional Chief Secretary /
Commissioner of Revenue Administration
& State Relief Commissioner.

24/03/2023
24/03/2023
5/5

Assistant Commissioner - V,
for Additional Chief Secretary /
Commissioner of Revenue Administration
& State Relief Commissioner.

24/03/23

Annexure

List of Participants:

Second Technical Working Group (TWG) meeting of the JICA assisted Technical Cooperation Project on "Formulation of Comprehensive Flood Control Master Plan in Urbanised river basins of Chennai".

Date and Time: 13.03.2023 @ 3.00 PM

**Venue: Revenue Conference Hall,
5th Floor, Ezhilagam,
Chepauk, Chennai -5.**

In Chair: Thiru. S. K. Prabhakar, I.A.S.,
Additional Chief Secretary /
Commissioner of Revenue
Administration & State Relief Commissioner.

Special Invitees: 1. Dr. Sandeep Saxena, I.A.S.,
Additional Chief Secretary to Government,
Water Resources Department.

2. Thiru. Anshul Mishra, I.A.S.,
Member Secretary, CMDA

Sl. No.	Name	Designation
I	TNDRRA	
1.	Thiru. S. A. Raman, I.A.S.,	Director, TNDRRA
2.	Tmt. G. R. Divyashri	Assistant Commissioner- V, TNDRRA
3.	Thiru.T.Kanthimathinathan	WRM (Hydrology & Flood Control) Expert, TNDRRA
II	GCC	
4.	Dr.G.S.Sameeran, I.A.S.,	Joint Commissioner (Works), Greater Chennai Corporation
5.	Thiru. K.Vijayakumar	Superintending Engineer, SWD, GCC
6.	Thiru. B. Sivakumar	Executive Engineer, SWD, GCC
7.	Thiru. N. Anandaraj	Assistant Executive Engineer, SWD, GCC

III	CMDA	
8.	Dr. M. Pratheep	Climate & Environment Specialist, CMDA
9.	Thiru.D.Prithiviraj	Planning Assistant, CMDA
IV	JICA EXPERT TEAM	
10.	Ms. Noriko Sakurai	JICA India Office (On-line)
11.	Dr. Ali Chavoshian	JICA Expert Team
12.	Thiru.Oheenedayalan,	JICA Expert Team
13.	Dr. Takashi Sakakibara,	JICA Expert Team
14.	Dr. Hidefumi Tsukamoto	Urban Planning Expert, JICA Expert Team
15.	Dr.Yamuguchi	Disaster Management Expert, JICA Expert Team
16.	Dr.Nakummre	River Flood Control Expert, JICA Expert Team
17.	Thiru. N. Balamurugan	JICA Expert Team Local Coordinator
18.	Ms.Jaimol Thomas	Local Co-ordinator, JICA Expert Team

**COMMISSIONERATE OF REVENUE ADMINISTRATION
AND DISASTER MANAGEMENT**

From
Thiru.S.K.Prabakar, I.A.S.,
Additional Chief Secretary/
Commissioner of Revenue
Administration and State Relief
Commissioner,
Chepauk, Chennai – 600 005.

To
JICA Expert Team Office,
CMDA Building, 1st Floor,
West Wing, Tower One, CMDA,
ThalamuthuNadarajanBuilding,
Gandhi Irwin Road,
Egmore, Chennai – 600 008.

Lr. No. NC 1 (4) / 4374 / 2018, Dated: 03.05.2024

Sir,

Sub: Disaster Management – Project for Formulation of Comprehensive Flood Control Master Plan in Urbanized River Basins in Chennai – Chief secretary to Government desires to convene a meeting on **07.05.2024 (Tuesday) at 12.00 noon** - Regarding.

Ref: 1. The Additional Chief Secretary / Commissioner of Revenue Administration and State Relief Commissioner Lr. No. N.C.1(4)4374/201, dated 04.04.2024.
2. The Government Lr. No.5059/DM.2/2024-1, dated 02.05.2024.

I invite kind attention to the references cited.

2) In continuation to the letter 1st cited, it is informed that the Chief Secretary to Government desires to convene a meeting on **07.05.2024 at 12.00 noon** in the Chief Secretary's Conference Hall, 2nd Floor, Main Building, Secretariat, Chennai-9 for apprising the concept and the status of project for "Formulation of Comprehensive Flood Control Master Plan in urbanized river basin of Chennai."

3) It is therefore requested to make it convenient to attend the meeting and make a presentation for apprising the Chief Secretary to Government on the concept and status of the above mentioned project.

Yours faithfully

Sd./-S.K.Prabakar

Additional Chief Secretary /
Commissioner of Revenue Administration
& State Relief Commissioner


Assistant Commissioner – V

for Additional Chief Secretary /
Commissioner of Revenue Administration
& State Relief Commissioner



**COMMISSIONERATE OF REVENUE ADMINISTRATION
AND DISASTER MANAGEMENT**

From
Thiru.S.K.Prabakar, I.A.S.,
Additional Chief Secretary/
Commissioner of Revenue
Administration and State Relief
Commissioner,
Chepauk, Chennai - 600 005.

To

1. The Additional Chief Secretary /
Commissioner of Corporation,
Greater Chennai Corporation,
Rippon Buildings,
No.1131, EVR Periyar Salai,
Park Town,
Chennai - 600 0003.
2. The Member Secretary,
Chennai Metropolitan
Development Authority,
No.1, Gandhi Irwin Road,
Egmore,
Chennai - 600 008.
3. The Chief Engineer,
Water Resources Department,
Chennai Region, Chepauk,
Chennai - 600 005.

Lr. No. NC 1(4) / 4374 / 2018, Dated: 03.05.2024

Sir,

Sub: Disaster Management - Project for Formulation of
Comprehensive Flood Control Master Plan in
Urbanized River Basins in Chennai - Chief secretary
to Government desires to have a PPT presentation
on **07.05.2024 (Tuesday) at 12.00 noon** -
Regarding.

Ref: 1. The Additional Chief Secretary / Commissioner
of Revenue Administration and State Relief
Commissioner Lr. No. N.C.1(4)4374/201, dated
04.04.2024.
2. The Government Lr. No.5059/DM.2/2024-1,
dated 02.05.2024.

I invite kind attention to the references cited.

2) It is informed that the Chief Secretary to Government desires to
have a PPT presentation to be made on **07.05.2024 at 12.00 noon** in
the Chief Secretary's Conference Hall, 2nd Floor, Main Building,
Secretariat, Chennai-9 on the status of project for "Formulation of
Comprehensive Flood Control Master Plan in urbanized river basin of
Chennai."

3) Hence, it is requested that a PPT presentation may be made with relevant particulars on the scheduled date and time.

Yours faithfully

Sd./-S.K.Prabakar

Additional Chief Secretary /
Commissioner of Revenue Administration
& State Relief Commissioner



Assistant Commissioner - V

for Additional Chief Secretary /
Commissioner of Revenue Administration
& State Relief Commissioner



1.1.2 *Minutes of the Steering Committee Meetings*

NCI (4) / 4374 / 2018

Commissionerate of Revenue
Administration and Disaster
Management, Chepauk, Chennai – 05.

Dated : 03.05.2022.

Draft Minutes of First Steering Committee meeting for the JICA assisted Technical Co-operation Project on "Formation of Comprehensive Flood Control Master Plan in the Urbanised River Basins of Chennai" held on 21.04.2022 at 11.00 AM.

List of officials from the JICA expert team and the Stake Holder Departments / Agencies participated the meeting in annexed.

The Principal Secretary to Government, Revenue and Disaster Management Department participated the meeting as a special invitee for the First Steering Committee meeting.

PS/CRA extended a warm welcome to Principal Secretary to Government, Revenue and Disaster Management and all the participants and invited Principal Secretary to Government, Revenue and Disaster Management to deliver a brief introductory speech about the project.

The Principal Secretary to Government, Revenue and Disaster Management highlighted about the Governments concern for the project deliverables and requested all the officials participated from the stake holders Departments / Organisations to co-ordinate with JICA Expert Team to get the desired deliverables of the project at the earliest.

The Principal Secretary also strongly requested to share whatever data / study reports related to the JICA project should be shared to TNDRRA in soft or hard copies and TNDRRA should compile them and arrange to share all the data to all stake holders departments as well as JICA Expert Team so that the data / study report available in one particular department / agencies is made available with all other departments and JICA Expert Team. The Principal Secretary further requested JICA Expert Team to use a cloud service sharing files to store all the collected data / study report and share them to the stake holder departments / agencies that varies Geo-spatially.

PS/CRA reiterated the decision taken during the project preliminary appraisal meeting to shrink the time frame of the project so that some of the project deliverables could be fit in to the proposed the third master plan on which CMDA is working. Then, PS/CRA requested JICA Expert Team to brief about the project study area, scope of the project and the

role of each task team formed as per the Minutes of Meetings and Record of Discussions agreed and signed by JICA, TNDRRA, DEA and NDMA.

The Senior Advisor from JICA, Mr. Hitoshi Baba recalled the background of formulation of this Technical Cooperation Project and thanked Government of India and Government of Tamil Nadu for their cooperation in formulating this project and emphasised on importance of this Technical Cooperation Project with JICA assistance. He further briefed about the state of art being practiced in Japan to make their cities resilient to urban floods.

JICA Expert Team showed a video on JICA comprehensive flood control master plan project in Chennai to brief SC members on objectives, scope, outcome of this JICA Project and also main activities and project implementation structure. It is followed by a brief presentation made by TNDRRA Director, Disaster Management, Mr. Kandasamy to provide a review of flood management in Chennai. JICA Expert Team Leader, Mr. Katayama also delivered a presentation on basic technical findings and methodology.

The Water Resources Management Expert, TNDRRA requested Senior Advisor from JICA to consider the adjoining river basins of Araniar, Gumudipoondi and Lower Palar as rapid urbanisation is taking place in the areas like Oragadam, Gumudipoondi, Maraimalainagar for JICA technical co-operation. He also informed that the recently formed Tambaram City Corporation and Avadi City Corporation which are already covered in the Chennai Metropolitan Master Plan II Area should also be included in the Task Team 3 on Storm Water Drainage.

Discussions were held with respect to the configuration of members for the four task teams and rules of procedure regarding project implementation structure proposed by Mr. Ali Chavoshin, Project Technical co-ordinator from JICA and finally it was decided to approve rules of procedure and formulate four task teams with flexibility considering the following members.

Task Team 1: Flood Disaster Management

Sl. No.	Counterpart stakeholder Department / Agency	Name, Designation of the member
1	Tamil Nadu Disaster Risk Reduction Agency	Director, Disaster Management and Experts
2	Water Resources Department	Superintending Engineer, Palar Basin Circle, WRD
3	Greater Chennai Corporation	Deputy Commissioner (Works). GCC

4	Chennai Metropolitan Development Authority	Chief Planner, CMDA
5	Chennai Metro Water Supply & Sewerage Board	Chief Engineer, Projects
6	Highway Department	Superintending Engineer, Chennai circle
7	TN Fire and RSD	Joint Director
8	TN Disaster Response Force	Assistant Commandant
9	Southern Railways	Senior Official, Southern Railways
10	CMRL	Senior Official, CMRL
11	Other relevant organizations	When it is found necessary

Task Team 2: Riverine Flood Control

Sl.No.	Counterpart stakeholder Department / Agency	Name, Designation of the member
1	Water Resources Department	Superintending Engineer, Palar Basin Circle,
2	Greater Chennai Corporation	Superintending Engineer, Storm Water Drainage Department
3	Chennai Metropolitan Development Authority	Deputy Planner
4	Central Water Commission.	Executive Engineer, CWC, Chennai
5	India Meteorological Department	Deputy Director. Regional Metrological Centre, Chennai
6	Chennai River Restoration Trust	Water Resources Expert
7	Department of Environment & Forest	Additional Director of Environment
8	Central Water Commission.	Executive Engineer
9	Institute of Remote Sensing (IRS), Anna University.	When it is found necessary
10	Indian Institute of Technology (Madras), Chennai	When it is found necessary
11	Other relevant organizations	When it is found necessary

Task Team 3: Storm Water Drainage

Sl. No.	Counterpart stakeholder Department / Agency	Name, Designation of the member
1.	Greater Chennai Corporation	Superintending Engineer, Storm Water Drainage Department
2.	Water Resources Department	Superintending Engineer, Palar Basin Circle,
3.	Chennai Metropolitan Water Supply Sewerage Board	Superintending Engineer, Projects
4.	Highway Department	Superintending Engineer, Chennai Circle
5.	Directorate of Municipal Administration	Executive Engineer
6.	Tambaram City Corporation.	Municipal Engineer
7.	Avadi City Corporation	Municipal Engineer
8.	Commissionerate of Town Panchayats	Superintending Engineer
9.	Department of Rural Development.	Executive Engineer
10.	Southern Railways	Senior Official, Southern Railways
11.	CMRL	Senior Official, CMRL
12.	Institute of Remote Sensing (IRS), Anna University.	When it is found necessary
13.	Indian Institute of Technology (Madras), Chennai	When it is found necessary
14.	Other relevant organizations	When it is found necessary

Task Team 4: Urban Planning

Sl. No.	Counterpart stakeholder Department / Agency	Name, Designation of the member
1	Tamil Nadu Disaster Risk Reduction Agency	Water Resources Management Consultant
2	Water Resources Department	Superintending Engineer, Palar Basin Circle, WRD
3	Greater Chennai Corporation	Superintending Engineer (Planning). GCC
4	Chennai Metropolitan Development Authority	Chief Planner, CMDA

5	Directorate of Municipal Administration	Regional Joint Director, Chennai
6	Department of Rural Development	Deputy Director (Head Quarters), Chennai
7	Directorate of town and Country Planning	Deputy Director, Chennai
8	TN Disaster Response Force	Assistant Commandant
9	Southern Railways	Senior Official, Southern Railways
10	CMRL	Senior Official, CMRL
11	Other relevant organizations	When it is found necessary

The Committee members had detailed discussion about the data required by the JICA expert team and the schedule for the meeting of each task teams and the following decisions were taken.

- Four main project counterparts (TNDRRA, CMDA, GCC and WRD) shall provide all relevant available data, information, reports of past and ongoing project as well as GIS layers and maps to JICA Expert Team through TNDRRA.
- Director, (D.M) shall facilitate smooth sharing of data and information between all Stake holder department / agency and the JICA Expert Team
- JICA Expert team will do its best efforts to provide necessary analysis results and some project outcomes for the development of the 3rd CMA master plan in 1.5 years. This will be done based on smooth collection of local data, information and available studies.
- Task team meetings will be organized in a monthly basis and whenever it is necessary in a hybrid format (in person and videoconference). The Technical Working Group (TWG) members from the four main counterpart department / agency will meet at least once in two months. Principal Secretary/Commissioner of Revenue Administration will participate some of TWG meetings.
- The name of representative(s) to attend task team meetings has to be nominated by respective HoDs before 28.04.2022.
- The first meeting of task team 2 and 3 will be organized at CRA conference hall on 28 April from 15:00 to 15:45 and from 16:00 to 16:45 respectively.
- The first meeting of task team 4 will be organized at CMDA conference hall on 5 May from 15:00 to 15:45. The first meeting of the team 1 will be conducted at CRA after 5 May.

- From May onwards meetings of task team 2 and 3 will be organised at CRA conference hall or other places on the last Thursday from 15:00 to 15:45 and from 16:00 to 16:45 respectively. If it falls on holiday the meeting will be organized on the next working day.
- All task teams meeting and TWG will be organized according to above schedule.
- Task Team meetings will be given top priority and no leave of absence is permitted without valid reasons.
- The Project Director (PD) will monitor and facilitate smooth organization of task teams and TWG in cooperation with Co-PD and JICA Expert Team.
- A Suitable office will be provided to JICA Expert Team in CMDA by May 5th equipped with WiFi in a safe and secure environment.
- JICA Expert Team will provide necessary furniture and office items.
- JICA Expert Team may visit organisations namely Tamil Nadu E-Governance Agency, Centre for Climate Change and Disaster Management in Anna University Campus, Institute of Remote Sensing in Anna University campus, National Centre for Sustainable Coastal Management in Anna University campus and Tamil Nadu Wetland Development Authority.
- The next Steering Committee meeting will be convened in shorter interval of proposed once in every 6 months (hopefully in 3-4 months from the 1st SC meeting) as this Steering Committee meeting could not be attended by a few members of the Committee at the high level as the Government Order for constitution of Steering Committee was able to be issued on 20.04.2022.
- A whatsapp group may be formed for each task team by the Co-ordinator of the respective task team

Sd/- M.A.Siddique,

Principal Secretary /
Commissioner of Revenue Administration &
State Relief commissioner.

To
All Participants.

M.A. Siddique 4/5/2022
Assistant Commissioner - V,
for Principal Secretary /

Commissioner of Revenue Administration &
State Relief commissioner.

P. S. S. S.
out of hand

First Steering Committee meeting of the JICA assisted Technical Cooperation Project on "Formulation of Comprehensive Flood Control Master Plan in Urbanised river basins of Chennai".

Date and Time: 21.04.2022 @ 11.00 AM
Venue: Revenue Conference Hall,
5th Floor, Ezhilagam, Chepauk, Chennai

Special Invitee: **Thiru.Kumar Jayanth I.A.S.,**
Principal Secretary to Government,
Revenue and Disaster Management Department.

In Chair : **Thiru.M.A.Siddique, I.A.S.,**
Principal Secretary/Commissioner of Revenue
Administration

Sl. No.	Name	Designation
I	JICA	
1.	Mr. Hitoshi Baba	Senior Advisor, JICA
2.	Mr. Naoko Sakurai	Representative, JICA India Office
3.	Mr.Vipul Mishra	Representative, JICA India Office
	JICA Expert Team	
4.	Mr. Takeshi KATAYAMA	Team Leader
5.	Mr. Kazuhiko NAKAMURA	Deputy TL/Flood & WRM Expert
6.	Mr. Ali CHAVOSHIAN	Technical Co-ordinator / Hydraulics,
7.	Mr. Takashi SAKAKIBARA,	Micro Drainage Expert
8.	Mr. Takashi YUASA,	Project Co-ordinator / DX and GIS Expert
9.	Mr. Hidefumi TSUKAMOTO	Urban Development Expert
10.	Mr. Kiyohiro OKADA	Coastal Management Expert
11.	Mr. Yuusuke YAMASAKI	Hydrologist
12.	Ms. Mika HASEGAWA	Structural Designer and Coordinator
13.	Mr. Hayate OTSUKI	Logistics Co-ordinator
14.	Ms. Soraya ONO	Coastal Management Expert
15.	Mr. Thiru.N. Balamurugan	Local Co-ordinator
16.	Ms. Jimol Thomos	Administration Manager
II	Revenue and Disaster Management Department	
17.	V.Janakiraman	Deputy Secretary to Government

III	Commissionerate of Revenue Administration and Disaster Management	
18.	Thiru.K.S.Kandasamy, I.A.S.,	Director (Disaster Management), T.N.D.R.R.A.,
19.	Thiru.C.Muthukumar,	Joint Director (D.M), T.N.D.R.R.A.,
20.	Tmt.G.Sornam Amutha,	Assistant Commissioner – V, T.N.D.R.R.A.,
21.	Thiru.T.Kanthimathinathan,	Water Resource Management Consultant, (Hydrology & Flood Control) Expert, T.N.D.R.R.A.,
IV	Chennai Metropolitan Development Authority	
22.	Thiru.Anshual Mishra, IAS.,	Member Secretary, CMDA,
23.	Thiru.C.S.Murugan	Chief Planner, Master Plan Unit, CMDA
24.	Tmt.S.Akila	Deputy Planner
25.	Dr.M.Pratheep,	Climate & Environment Expert,
V	Water Resources Department	
26.	Thiru.G.Muralidharan,	Chief Engineer, Chennai Region, WRD,
27.	Thiur.A.Muthiah,	Superintending Engineer, Palar Basin Circle, WRD,
28.	Thiru.Podhupanithilagam	Executive Engineer, Kosasthalaiyar Basin Division
VI	Highways Department	
29.	Thiru.R.Chandrasekar	Chief Engineer
30.	P.Senthil	Superintending Engineer
VII	Greater Chennai Corporation	
31.	Thiru.S.P.Balasubramanian,	Superintending Engineer, Storm Water Department, GCC.,
VIII	Directorate of Municipal Administration	
32.	Thiru.Natarajan	Chief Engineer
33.	Thiru.G.Srinivasan	Executive Engineer,
IX	Commissionerate of Town Panchayat	
34.	Thiur.P.T.Tharmaraj,	Executive Engineer,
X	Directorate of Rural Development	
35.	Mrs.D.Ezhil Kavitha	Executive Engineer,

XI	Tamil Nadu Housing Board	
36.	Thiru.M.L.Rajasekar,	Superintending Engineer (HQ),
XII	Tamil Nadu Urban Habitat Development Board	
37.	Tmt. U.Manimekalai,	Senior Planner, TNUHDB
38.	Thiru.R.Sethapathy,	Chief Engineer, TNUHDB
XIII	Directorate of Environment	
39.	Dr.B.C.Archana Kalyani, IFS.,	Additional Director,
XIV	Tamil Nadu Urban Infrastructure Financial Services Ltd.,	
40.	Thiru.R.Pradeep John,	Senior Manager,
XV	Chennai River Restoration Trust	
41.	Thiru.P.Santhosh Kumar,	Water Resources Specialist

Minutes of the 2nd Steering Committee Meeting for the JICA assisted Technical Co-operation Project on "Formulation of Comprehensive Flood Control Master Plan (CFCMP) in the Urbanised River Basins of Chennai held on 26.10.2022 at 3.00 PM.

List of Members, Officials from Indian side and Japanese side participated in the meeting is annexed.

The meeting was chaired by Additional Chief Secretary / Commissioner of Revenue Administration and Disaster Management.

The Principal Secretary to Government, Revenue and Disaster Management Department and the Principal Secretary to Government Housing and Urban Development have participated in the meeting as special invitees.

At the outset, ACS/CRA welcomed all the participants and thanked the Principal Secretaries to Government who have attended the meeting on the request of JICA to facilitate for taking decisions required for the project at Government level and also Senior Advisor from JICA-HQ, Senior Representative from JICA-India office and consultant from NDMA who has participated online. ACS/CRA emphasized on the importance of JICA Project and requested the Principal Secretary to Government, Revenue and Disaster Management to deliver key note address on the need of the project related to Disaster management aspects. Principal Secretary to Government, Revenue and Disaster Management Department highlighted that a data base should be created in the GIS cell of TNDRRRA by collecting all the data collected so far and to be acquired during the course of development of the project, which could be accessed by all the stake holder organisations.

ACS / CRA then requested Senior Advisor from JICA-HQ to deliver the opening remarks. The Senior Advisor JICA-HQ informed about the principles of planning practiced for reduction of flood risk in the country of Japan and their good will to share their experiences and knowledge with Government of India. Mr. Baba informed briefly about the planned field visits and training courses in Japan next year. The event is planned for about 10 high-level officials and senior experts from the second week of May for about 10 days and the second event is for another 10 managers and experts in July / August 2023. He invited managers and experts to participate actively in both events in Japan. He also requested all local stake holders and counterparts for full co-operation with JICA Expert Team for formation of Comprehensive Flood Control Master Plan for the urbanised River basins of Chennai.

The meeting was continued by Director, Disaster Management, TNDRRRA with a briefing about the activities conducted so far in moving to the objectives of the Project. The Director, DM also thanked Senior Advisor, JICA and JICA Expert Team for having come forward to conduct the bathymetric surveys of the cross sections of rivers and to install 15 AWLR in the four major rivers and requested to JICA Expert Team Leader

and Project Manager to deliver about the progress so far made and the future action plan.

Mr. Ali delivered an overall progress report on data collecting and efforts to sorting and sharing them in a cloud-based platform. He also reported on JICA activities for new river cross section survey, installation of 15 AWLR in four major basins as well as providing high resolution DTM for the entire study area. Some issue related to correction of basin boundaries using high resolution of DTM, data quality check and operation and maintenance of AWLR by TNWRD after installation considering warranty period have been discussed and confirmed by CPs. He has also presented the latest progress on riverine flood control study and modelling activities. He finished his presentation by inviting CPs for discussion on key issues such as design safety level and suitable return flood period for master plan, local criteria for consideration of climate change effect and other issues such as land acquisition.

Mr. Sakakibara as the team leader for the task team 3 on urban storm drainage and flood management delivered speech on the latest findings and data inventory of urban drainage. He also raised the issue of design safety level for urban drainage in the master plan. The last speaker from the JICA Expert Team was Mr. Tsukamoto as the Team leader of the Task Team 4 on urban planning to provide the result of study and JICA Expert Team plan to develop a flood risk map to be considered in the 3rd urban master plan by CMDA.

The Principal Secretary, Housing and Urban Development Department informed that CMDA has engaged CUBES as consultant for preparing the frame work of regulations for the developing about 800 acres of private land in which developments were frozen for Airport development. Now, the consultant has come out with recommendations for developments in a pragmatic manner. Principal Secretary, Housing and Urban Development Department requested JICA Expert team to consider same kind of regulations for the flood prone areas to be developed in Chennai.

The meeting was continued by exchange of opinion, question and by the answers of the members, counter parts and Experts from Research Organisations on flood safety level consideration of water level for downstream drainage and timeline to consider JICA study result in the development of 3rd Master Plan for Chennai Metro.

After detailed deliberations the decisions taken during the meeting are summarised below:

1. A cloud-based platform has been developed by JICA as common platform for data sharing among stakeholders.
2. TNWRD will be in-charge of operation and maintenance of 15 installed AWLR by JICA Expert Team considering warranty period.

3. Corrected basin boundaries have been delineated using high resolution DTM and they will be utilized in the master plan.
4. The discussion on the following key questions and key decisions will continue with the relevant CPs during Task Team and Technical Working Group meetings:
 - a. Any technical standards, criteria regarding target flood safety level?
 - b. Which organization(s) can decide the target flood safety level?
 - c. Any local standards or criteria on how to consider impacts of climate change of flood control master plan?
 - d. In flood control measures such as new storage, retarding / holding ponds, river widening, etc., which organization(s) has / have responsibility for land acquisitions?
5. JICA Expert Team will provide result of flood inundation modelling and a high-resolution flood hazard map by the end of September 2023 to be used for development of the 3rd master plan.
6. The order for expansion of Chennai Metropolitan Area (CMA) from about 1200 km² to 5904 km² as Chennai Metropolitan Planning Area (CMPA) has been discussed. The 3rd master plan will provide urban master plan for CMA and regional planning for CMPA. The JICA Expert Team will provide inundation map for the entire CMPA.
7. All task teams meeting and TWG will be organized according to decided schedule either in the first or last Thursday of each month.

The Meeting came to an end with the vote of thanks to the Chair and Participants.

Sd./-S.K.Prabakar,
Additional Chief Secretary /
Commissioner of Revenue Administration
and State Relief Commissioner.

Assistant Commissioner - V,
for Additional Chief Secretary /
Commissioner of Revenue Administration
and State Relief Commissioner.

ANNEXURE

Second Steering Committee Meeting of the JICA assisted Technical Co-operation Project on "Formulation of Comprehensive Flood Control Master Plan (FCFCM) in the urbanised river basins of Chennai"

Date & Time : 26.10.2022 @ 3.00 P.M.
Venue : Revenue Conference Hall,
5th Floor, Ezhilagam, Chepauk,
Chennai – 600 005.

List Participants:

In Chair : **Thiru. S.K.Prabakar, I.A.S.,**
Additional Chief Secretary / Commissioner of
Revenue Administration and State Relief
Commissioner.

Special Invitees : **1. Thiru. Kumar Jayanth, I.A.S.,**
Principal Secretary to Government,
Revenue and Disaster Management
Department.

2. Thir Hitesh Kumar S. Makwana, I.A.S.,
Principal Secretary to Government,
Housing and Urban Development
Department.

Sl. No.	Name	Designation
<u>Indian Side</u>		
I. National Disaster Management Authority nominated		
1.	Mr.Mr.Anuj Tiwari,	Consultant – Member nominated (online participant)
II. Revenue and Disaster Management Department		
2.	Mr.S.A.Raman, I.A.S.,	Director, Disaster Management - Member
3.	Mr.C.Muthukumaran	Joint Director, Disaster Management
4.	Mrs.G.R.Divyashree	Assistant Commissioner – V.
5.	Mr.T.Kanthimathinathan	Water Resource Management Expert

III	Chennai Metropolitan Development Authority	
6.	Mr.Anshul Mishra, I.A.S.,	Member Secretary, CMDA – Member
7.	Ms.V.Sharmilee	Deputy Planner, MPU
8.	Dr.M.Pratheep	Climate & Environment Expert
IV	Rural Development and Panchyat Raj	
9.	Mr.Darez Ahamed, I.A.S.,	Director, DRDA – Member Nominated
10.	Mr.V.Prabakaran	Assistant Director
11.	Mr.K.Ganesh Kumar	Assistant Engineer
V	Municipal Administration and Water Supply	
12.	Dr.K.Sridharan	Deputy Secretary to Government – Member Nominated
13.	Mr.B.Vishnuchandran, I.A.S.,	Joint Commissioner – Member
14.	Mr.B.Sivakumar	Executive Engineer, GCC
15.	Mr.S.Thirumurugan	Executive Engineer, DMA
VI	Tamil Nadu Housing Board	
16.	Mr.M.L.Rajasekar	Superintending Engineer
VII	Tamil Nadu Urban Habitat Development Board	
17.	Mr.S.Chandra Mohan	Superintending Engineer
VIII	Tamil Nadu Urban Infrastructure Financial Services	
18.	Mr.R.Pradeep John	Senior Manager
IX	Chennai River Restoration Trust	
19.	Dr.V.Kalaiarasan	Project Director
20.	Mr.Santhosh Kumar	Water Resource Department
X	Water Resource Department	
21.	Mr.P.Senthilkumar	Special Secretary to Government –
22.	Mr.G.Muralichandran	Chief Engineer, Chennai Region –
23.	Mr.A.Muthaiya	Superintending Engineer, Palar Basin Circle
XI	Highways Department	
24.	Mr.R.Chandrasekar	Chief Engineer, Member
25.	Mr.P.Senthil	Superintending Engineer.
XII	Indian Metrological Department	
26.	Mr.P.Senthamarai Kannan,	Scientist – E
XIII	Institute of Remote Sensing, Anna University	
27.	Prof. D.Thirumalairasan	Director, IRS
XIV	Indian Institute of Technology, Madras (IITM)	

28.	Prof. Balajee Narasimhan	Professor
XV	National Institute of Ocean Technology (NIOT)	
29.	Dr.R.Vijaya	Scientist-G
XVI	National Centre for Coastal Research (NCCR)	
30.	Dr.Tune usha	Scientist-G
31.	Dr.S.K.Dash	Scientist-E
Japanese Side		
1.	Mr.Baba Hitoshi	Senior Advisor, JICA-HQ
2.	Mr.Watanabe Jun	Senior Representative, JICA India Office (Online Participant)
3.	Mr.Hirano Junichi	Deputy Director, JICA - HQ (Online Participant)
4.	Mr.Vipul Mishra	Development Specialist, JICA India Office (Online Participant)
5.	Mr.Ali Chavoshian	Team Leader and Project Manager, JICA Expert Team
6.	Mr.Sakakibara Takashi	Task Team 3 Leader, JICA Expert Team
7.	Mr.Tsukamoto Hidefumi	Task Team 4 Leader, JICA Expert Team (Online Participant)
8.	Mr.Matsui Hiromu	Flood Risk Expert, JICA Expert Team
9.	Mr.Okada Kiyohiro	Coastal Engineering Expert, JICA Expert Team
10.	Mr. Ono Soraya	Coastal Engineering Expert, JICA Expert Team
11.	Mr.Balamurugan. N	Local Coordinator, JICA Expert Team
12.	Ms.Jaimol Thomas	Local Administrator, JICA Expert Team
13.	Mr.Mitra Paren	Technical supporter, JICA Expert Team

Minutes of the 3rd Steering Committee Meeting for the JICA assisted Technical Co-operation Project on "Formulation of Comprehensive Flood Control Master Plan (CFCMP) in the Urbanised River Basins of Chennai held on 06.06.2023 at 3.00 PM.

List of Members, officials from the Indian side and Japanese side who participated in the meeting are annexed.

The meeting was chaired by Additional Chief Secretary / Commissioner of Revenue Administration /State Relief Commissioner who extended a warm welcome to all the participants.

Mr. SAITO Mitsunori, Chief Representative of JICA India Office, and Mr. Anuj Tiwari, Senior Advisor of the National Disaster Management Authority (NDMA), delivered their opening remarks virtually.

During the meeting, the JICA expert team provided a comprehensive update on the progress made in compiling the Comprehensive Flood Control Master Plan including progress made by each Task Teams. This included discussions on various aspects, such as climate change considerations, design safety levels, land acquisition, urban flooding and planning, policy framework, and institutional arrangements. The Master Plan is expected to be incorporated into the 3rd Chennai master plan and other important development plans.

Dr. Ali Chavoshian, Team Leader, outlined the proposed next steps and the roadmap for the project. These steps include a review of the interim report to be furnished by JICA and sharing it with local counterparts as well as a plan for a knowledge sharing seminar to disseminate project results to a wider audience, including participants from other States and major cities in India.

The meeting provided dedicated time for discussions, questions, and clarifications from the participants, fostering an interactive session where ideas were exchanged, and concerns were addressed. Active participation and discussion were observed, expressing expectations for further details in the coming months.

Important discussions and key decisions made during the meeting included the practices of land acquisition in Chennai, prioritizing floodwater storage, clarifying the scope of the JICA Comprehensive Flood Control Master Plan, and emphasizing the importance of techno-legal frameworks and institutional arrangements for urban planning in Chennai.

Following are the key decisions and discussions made:

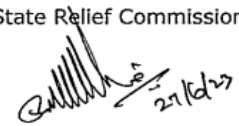
1. It has been emphasized that this study is limited to four major urbanized river basins in Chennai (Adyar, Cooum, Kovalam, and Kosasthaliyar), as well as the existing GCC and CMA area (1189 km²) at the time of the JICA contact.
2. This JICA project consists of two phases: Phase 1 involves conducting a basic study, data collection, supplementary surveys, and proposing flood

control strategies in an Interim Report. Phase 2 includes evaluating various scenarios to develop a Comprehensive Flood Control Master Plan. These decisions highlight the importance of systematic data analysis and collaborative efforts to establish effective flood control measures and ensure the development of a robust master plan for urban development.

3. The discussion focused on incorporating the impacts of climate change, specifically changes in rainfall intensity and sea level rise. It has been decided that the JICA Expert Team will consider a +10% increase in rainfall intensity for riverine flood control with a return period of 50 to 100 years, based on the "Advisory Committee Report (2023)." This report suggests that a 20% increase in rainfall should be considered in the design of Storm Water Drainage facilities with a return period of 5 to 10 years. However, further investigation is needed, considering available global data and reports, in the absence of any local policies and reports on this issue.
4. TNWRD will designate a focal person to discuss design safety levels and other issues related to Task Team 2 on riverine flood control.
5. TNDRRRA will facilitate the sharing of the latest dam and water body bathymetry data with the JICA Expert Team, including the latest Elevation-Storage-Area acquired by TNDRRRA recently through the ongoing RTFF & SDSS project.
6. The second training workshop will be organized from August 5th to 12th, with participation of eight officials from Tamil Nadu. The final application forms will be submitted to JICA by June 23rd.
7. An Interim report will be shared to local counterparts for their review and comment.

The meeting concluded with closing remarks from representatives of JICA and the Director of the Tamil Nadu Disaster Risk Reduction Agency (TNDRRRA) and a vote of thanks to the Chair and Participants.

Sd./- S.K.Prabakar
Additional Chief Secretary/
Commissioner of Revenue Administration &
State Relief Commissioner


Assistant Commissioner (R&R)
for Additional Chief Secretary/
Commissioner of Revenue Administration &
State Relief Commissioner


27/6/23

1/2

ANNEXURE

Third Steering Committee Meeting of the JICA assisted Technical Co-operation Project on "Formulation of Comprehensive Flood Control Master Plan (FCFCM) in the urbanised river basins of Chennai"

Date & Time : 06.06.2023 @ 3.00 P.M.
Venue : Revenue Conference Hall,
5th Floor, Ezhilagam, Chepauk, Chennai -
6000 05.

List Participants:

In Chair : **Thiru. S.K.Prabakar, I.A.S.,**
Additional Chief Secretary / Commissioner of
Revenue Administration and State Relief
Commissioner.

Sl. No.	Name	Designation
<u>Indian Side</u>		
I. National Disaster Management Authority nominated		
1.	Thiru.Mr.Anuj Tiwari,	Senior Advisor – Member nominated (Online participant)
II. Revenue and Disaster Management Department		
2.	Mr.S.A.Raman, I.A.S.,	Director, Disaster Management – Member
3.	Mr.C.Muthukumaran	Joint Director, Disaster Management
4.	Mr.T.Kanthimathinathan	Water Resource Management Expert
III Chennai Metropolitan Development Authority		
5.	Mr.Anshul Mishra, I.A.S.,	Member Secretary, CMDA – Member
6.	Mr.C.S.Murugan	Chief Planner
7.	Dr.M.Pratheeps	Climate & Environment Expert
IV Municipal Administration and Water Supply		
8.	Dr.K.Sridharan	Joint Secretary to Government, MAWS Department – Member Nominated
V Water Resources Department		
9.	Thiru.A.Muthiya	Engineer-in-Chief
10.	Thiru.K.Asokan	Chief Engineer, Chennai Region – Member
11.	Thiru.C.Podhupanithilagam	Executive Engineer
12.	Thiru.G.R.Radhakrishnan	Executive Engineer

VI	Greater Chennai Corporation	
13.	Ms.Saranya Ari., I.A.S.,	Deputy Commissioner, Education Member Nominated
14.	Thiru.B.Sivakumar	Executive Engineer
VII	Highways Department	
15.	Tmt.T.Ahila	Deputy Chief Engineer - Member Nominated
VIII	Tamil Nadu Urban Infrastructure Financial Services	
16.	Mr.R.Pradeep John	Senior Manager - Member Nominated
17.	Thiru.G.Sathish Kumar	TQC- GIS
IX	Tamil Nadu Housing Board	
18.	Tmt.G.Poonkodi	Superintending Engineer - Member Nominated
X	Tamil Nadu Urban Habitat Development Board	
19.	Tmt.U.Manimekalai	Senior Planner - Member Nominated
XI	Director of Municipal Administration	
20.	Thiru.N.Kamalanathan	Superintending Engineer - Member Nominated
XII	Director of Town Panchayat	
21.	Thiru.K.Vaithiyalingam	Executive Engineer - Member Nominated
XIII	Director, Rural Development	
22.	Thiru.J.Mani Kumar	Executive Engineer - Member Nominated
XIV	Indian Meteorological Department	
23.	Dr.S.Balachandran	Head, Additional Director, General, Regional Meteorological Centre, Chennai
XV	National Institute of Remote Sensing	
24.	Dr.A.S.Kiran	Scientist 'E'
Japanese Side		
1.	Mr.Saito Mitsunori	Chief Representative, JICA India Office, Online Participation
2.	Mr. Hitoshi Baba	Senior Technical Advisor to JICA

3.	Mr.Takuri Tsuchzya	JICA Head Quarters
4.	Mr.Noriko Sakurai	Project Formulation Advisor, JICA India
5.	Mr.Ali Chavoshian	JICA Expert Team Leader
6.	Mr.Hirom Matsui	JICA Expert Team
7.	Mr.Takashi Sakakibara	Task Team 3 Leader, JICA Expert Team
8.	Mr.Hidefumi Tsukamoto	Task Team 4 Leader, JICA Expert Team
9.	Mr.M.Dheenadayalan	JICA Expert Team
10.	Mr. N. Balamurugan	Local Coordinator, JICA Expert Team

Minutes of the 4th Steering Committee Meeting for the JICA assisted Technical Cooperation Project on "Formulation of Comprehensive Flood Control Master Plan (CFCMP) in Urbanized River Basins in Chennai" held on 07.11.2023 at 3.00 pm in the Revenue Conference Hall, 5th floor, Ezhilagam, Chepauk.

The 4th Steering Committee (SC) meeting for the JICA assisted Technical Cooperation Project on the "Formulation of Comprehensive Flood Control Master Plan in Urbanized River Basins in Chennai (CFCMP)" was held at the Revenue Conference Hall on 7th November, 2023 from 3:00 p.m. to 4:00 p.m. under the chairmanship of the Additional Chief Secretary/Commissioner of Revenue Administration and State Relief Commissioner.

At the outset, the Additional Chief Secretary/Commissioner of Revenue Administration welcomed all the stake holder officials who participated in person and virtually, the delegates who participated virtually and invited JICA expert team to brief about the progress so far achieved and the program to furnish their final report. Opening remarks were delivered by Thiru. Taichi Minamitani from JICA Headquarters and Thiru. Anuj Tiwari, Senior Advisor of the National Disaster Management Authority (NDMA).

Thiru.Ali Chavoshian, Team Leader, JICA expert team presented an overview of the interim report and discussed about the outcomes of consultations with counterpart stake holder organisations such as TNDRA, CMDA, GCC, TNWRD and other stake holders on the interim report, safety level targets and considerations regarding climate change. Discussions also revolved around the project schedule and work plan. The Steering Committee members unanimously agreed to extend the project duration by 6 months, from its original timeline of 2 years.

During the meeting, the following aspects which are very much needed for flood resilient urban planning were discussed, which are to be considered by JICA expert team in their final flood control master plan:

- i. Flood hazard map in the study area using result of 2D flood inundation model,
- ii. Considerations for buffer zones along rivers and channels and around the foreshore of water bodies,
- iii. Lands/zones required for the safe flow of the surplus waters of tanks and water bodies in the study area and land use and cover within these zones,
- iv. Techno-Legal Frameworks for securing and conserving the above zones and integrating it to the master plan,
- v. utilizing existing tanks and water bodies for flood control,
- vi. recommendations for new detention/retarding ponds and flood storage,
- vii. de-siltation and riverbed excavations,
- viii. conservation of existing water bodies and tanks,

- ix. regulations for excess runoff generation due to new development,
- x. confirmation of the modelling results and other statistical analysis by JICA Expert Team so far,
- xi. considering information on B Canal restoration and sustainable flood management and
- xii. focusing studies in the Northern part of the Kovalam basin from Velacheri to Muttukadu.

A tentative 100-year safety level for rivers, a 10-year plan for connecting drainage systems and considerations for climate change were also briefly discussed. Further discussions are planned with JICA and after JICA's confirmation with local counterpart stake holder organisations based on additional technical evidence and information.

Summary of decisions and discussions:

1. Steering committee members approved the project duration to be extended to 2.5 years (Two-and-a-half) from its original 2 years. Steps will be taken to reflect this change in the Record of Discussion (R/D).
2. Local counterpart stake holder organisations expressed appreciation to JICA for drafting the interim report comprehensively. The final interim report will be provided to the counterpart stake holder organisations after considering their comments and suggestions duly confirmed by JICA.
3. All four counterpart stake holder organisations agreed to provide a focal person to the JICA Expert Team to expedite the study, especially from January to June 2024, ensuring close communication between local counterpart stake holder organisations and the JICA Expert team during crucial discussion periods.
4. JICA Expert team will continue discussions on the target safety level and climate change considerations with JICA and local counterpart stake holder organisations, providing more technical evidence and necessary information for decision-making.
5. All counterpart stake holder organisations agreed to continue supporting the JICA Flood Control Master Plan by appointing focal person and providing necessary project-related information and support.

The meeting concluded with closing remarks and vote of thanks from Thiru. S.A. Raman, Director of Tamil Nadu Disaster Risk Reduction Agency (TNDRRA).

Sd./S.K.Prabakar
Additional Chief Secretary /
Commissioner of Revenue Administration
and State Relief Commissioner.


Assistant Commissioner-V
for Additional Chief Secretary /
Commissioner of Revenue Administration
and State Relief Commissioner.


23/11/23

ANNEXURE

Fourth Steering Committee Meeting of the JICA assisted Technical Co-operation Project on "Formulation of Comprehensive Flood Control Master Plan (FCFCM) in the urbanised river basins of Chennai"

Date & Time : 07.11.2023 @ 3.00 P.M.
Venue : Revenue Conference Hall,
5th Floor, Ezhilagam, Chepauk, Chennai -
6000 05.

List Participants:

In Chair	: Thiru. S.K.Prabakar, I.A.S., Additional Chief Secretary / Commissioner of Revenue Administration and State Relief Commissioner.
Special Invitee (through online)	: 1. Dr.Sandeep Saxena, I.A.S., Additional Chief Secretary to Government, Water Resources Department.
Special Invitee (through online)	: 2. Thiru.C. Samayamoorthy, I.A.S., Principal Secretary to Government, Housing & Urban Development Department

Sl. No.	Name	Designation
Indian Side		
I.	National Disaster Management Authority nominated	
1.	Thiru.Thiru.Anuj Tiwari,	Senior Advisor – Member nominated (Online participant)
II.	Revenue and Disaster Management Department	
2.	Thiru.S.A.Raman, I.A.S.,	Director, Disaster Management – Member
3.	Thiru.M.I.Shakir Saleem	Assistant Commissioner (R&R)
4.	Thiru.C.Rajakumar	Assistant Commissioner V (National Calamities)
5.	Thiru.T.Kanthimathinathan	Water Resource Management Expert
III.	Chennai Metropolitan Development Authority	
6.	Thiru.Anshul Mishra, I.A.S.,	Member Secretary, CMDA – Member
IV	Municipal Administration and Water Supply	

7.	Dr.K.Sridharan	Joint Secretary to Government, MAWS Department - Member Nominated
V	Water Resources Department	
8.	Thiru.A.Kannan	Special Chief Engineer, Palar Basin circle
9.	Thiru.C.Podhupanithilagam	Executive Engineer
VI	Greater Chennai Corporation	
10.	Thiru.S.Rajendran	Chief Engineer (General & Storm Water) Member
11.	Thiru.S.Baskaran	Superintending Engineer (Storm Water)
12.	Thiru.B.Sivakumar	Executive Engineer
VII	Highways Department	
13.	Thiru.R.Chandrasekar	Chief Engineer (C&M) - Member
14.	Thiru.K.S.Sadanantham	Assistant Chief Engineer, O/o the Chief Engineer (C&M)
VIII	Environment and Forest Department	
15.	Thiru.Deepak Bilgi, I.F.S.,	Director of Environment
IX	Tamil Nadu Urban Habitat Development Board	
16.	Dr.P.Sankar, I.A.S.,	Managing Director - Member
X	Tamil Nadu Housing Board	
17.	Tmt.G.Poonkodi	Superintending Engineer - Member Nominated
XI	Tamil Nadu Urban Infrastructure Financial Services Limited	
18.	Thiru.R.Pradeep John	Senior Manager - Member Nominated
XII	Chennai River Restoration Trust	
19.	Thiru.S.Ramamoorthy	Project Director
XIII	Director of Municipal Administration	
20.	Thiru.N.Kamalanathan	Superintending Engineer - Member Nominated
XIV	Director of Town Panchayat	

21.	Thiru.S.M.Malayaman Thirumudikari	Additional Director - Member Nominated
XV	Director, Rural Development	
22.	Thiru.P.Anandhraj	Additional Director - Member Nominated
XVI	Indian Meteorological Department	
23.	Dr.B.Geetha	Scientist - D, Regional Meteorological Centre, Chennai
XVII	National Institute of Ocean Technology, Chennai	
24.	Dr.A.S.Kiran	Scientist 'E'
XVIII	Indian Institute of Technology (Madras), Chennai	
25.	Dr.Balaji Narasimhan	Professor, Civil Engineering Department,
Japanese Side		
1.	Thiru.Taichi Minamitani	Chief Representative, JICA India Office, Online Participation
2.	Dr.Hitoshi Baba,	Senior Technical Advisor to JICA, Online Participation
3.	Thiru.Ali Chavoshian	JICA Expert Team Leader
4.	Thiru.Matsul Hiromu	JICA Expert Team
5.	Thiru.Temmyo Tosh yuki	JICA Expert Team
6.	Thiru.Masaki Todo	JICA Expert Team Online Participation
7.	Ms.Miori Masomoto	JICA Expert Team Online Participation
8.	Thiru.Hidefumi Tsukamoto	JICA Expert Team Online Participation
9.	Thiru.M.Dheenadayalan	JICA Expert Team
10.	Thiru.N.Balamurugan	Local Coordinator, JICA Expert Team

**COMMISSIONERATE OF REVENUE ADMINISTRATION AND
DISASTER MANAGEMENT**
TAMIL NADU DISASTER RISK REDUCTION AGENCY

From

Thiru. Rajesh Lakhani, I.A.S.,
Additional Chief Secretary /
Commissioner of Revenue
Administration & State Relief
Commissioner, Ezhilagam
Chepauk, Chennai - 600 005.

To

1. The Additional Chief Secretary to Government,
Water Resources Department,
Secretariat, Chennai - 600 009.
2. The Chair person, & Managing Director,
TamilNadu Urban Infrastructure Financial Services Limited,
No.19, T.P.Scheme Road,
Raja Annamalaipuram,
Chennai - 600 028.
3. The Member Secretary,
Chennai Rivers Restoration Trust (CRRT), No. 6 / 103,
Dr. D.G.S. Dinakaran
Salai, R.A. Puram,
Chennai - 28.
4. The Member Secretary,
National Disaster Management Authority,
NDMA Bhawan,
A1, Safdarjung Enclave,
Government of India,
New Delhi-110 029.
5. The Principal Secretary to Government,
Revenue and Disaster Management Department,
Secretariat, Chennai-600 009.
6. The Principal Chief Secretary to Government,
Municipal Administration and Water Supply Department,
Secretariat, Chennai-600 009.

7. The Principal Secretary to Government,
Housing and Urban Development Department,
Secretariat, Chennai - 600 009.
8. The Member Secretary,
Chennai Metropolitan Development Authority,
No.1, Gandhi Irwin Road, Egmore,
Chennai-5.
9. The Managing Director,
Chennai Metropolitan and Water Supply and Sewerage Board,
1st floor, Urban Administrative Building,
MRC Nagar,
Chennai - 600 028.
10. The Director,
Rural Development and Panchayat Raj Department,
Panagal Building, 4th and 5th floor,
Jeenis Road, Saidapet,
Chennai - 600 015.
11. The Commissioner of Town Panchayats,
7th & 8th Floor, Urban Administrative Building,
75, Santhome High Road,
R.A.Puram, Chennai - 600 028.
12. The Managing Director,
Tamil Nadu Urban Habitat Development Board,
No.5, Kamarajar Salai,
Chepauk, Chennai - 600 005.
13. The Director of Municipal Administration,
11th Floor, Urban Administrative Building,
75, Santhome High Road,
R.A.Puram, Chennai - 600 028.

14. The Managing Director,
Tamil Nadu Housing Board,
CMDA Complex,
E&C Market Road,
Koyambedu, Chennai - 600 107.
15. The Director
Environment Department
No.1 Jeenis Road,
Panagal Building,
Ground Floor, Saidapet.
16. The Deputy Director General,
Regional Meteorological Centre,
IMD, No.50/6, College Road,
Nungambakkam
Chennai-600 006.
17. Engineer in Chief & Chief Engineer
(General)
Water Resources Department,
Chepauk, Chennai - 5.
18. The Chief Engineer,
Water Resources Department,
Chennai Region,
Chepauk, Chennai -5.
19. The Chief Engineer (G),
Highways Department,
76, Sardar Patel Road,
HRS Campus, Guindy,
Chennai 600 032.
20. The Superintending Engineer,
Storm Water Drainage,
Greater Chennai Corporation,
Rippon Building,
Chennai - 600 003.
21. JICA India Office,
16th floor, Hindustan Times House,
18-20 Kasturba Gandhi Marg,
New Delhi- 110 001.

Lr No. Project / 4374 / 2018, dated: 20.01.2025.

Sub: Disaster Management - Urban Flooding - JICA's Technical Co-operation Project for Formulation of Comprehensive Flood Control Master Plan [FCFCM] in Urbanised River basins of Chennai - Fifth Steering Committee meeting proposed on 18.12.2024 at 12.00 Noon- Minutes of the meeting communicated - Reg.

Ref: This Office Lr. No. Project / 4374 / 2018, dated: 12.12.2024.

I enclose the Minutes of the meeting for **5th Steering Committee Meeting on JICA assisted Technical Cooperation Project for "Formulation of Comprehensive Flood Control Master Plan (CFCMP) for the Urbanised River Basins in Chennai"** held on 18.12.2024 at 12.00 Noon in the Conference Hall of SEOC at Ground Floor of Ezhilagam for necessary action.

Yours faithfully

Sd/-Rajesh Lakhani

Additional Chief Secretary /
Commissioner of Revenue Administration
State Relief Commissioner


Assistant Commissioner (R&R)

for Additional Chief Secretary /
Commissioner of Revenue Administration
State Relief Commissioner

Sr. Sr.
24/11/2024

Minutes of the 5th Steering Committee Meeting on JICA assisted Technical Cooperation Project for "Formulation of Comprehensive Flood Control Master Plan (CFCMP) for the Urbanised River Basins in Chennai".

Date: 18.12.2024
Time: 12:00 noon to
01.45 pm

Venue: Conference Hall,
State Emergency
Operation Centre (SEOC),
Chennai -5.

The 5th Steering Committee Meeting for the JICA assisted Technical Cooperation Project on the Formulation of a Comprehensive Flood Control Master Plan for Urbanized River Basins in Chennai was held under the chairmanship of Additional Chief Secretary / Commissioner of Revenue Administration. Mr. TAKAHASHI Akito, Senior Representative of the JICA India Office, delivered opening remarks emphasizing the importance of this collaboration.

The list of officials participated the meeting from Indian side and Japanese side is annexed.

Dr. Ali Chavoshian, Team Leader, JICA Expert Team presented the draft final results of the JICA Comprehensive Flood Control Master Plan.

He provided an overview of the key components of the plan, integrated fluvial and pluvial control measures, non-structural measures, cost and economic analysis, strategic environmental assessments, and a phased implementation plan and recommendations. He highlighted that the plan supports the Third Urban Development Master Plan for Chennai (by CMDA) Mr. TAKAHASHI Akito briefly elaborated on the prioritization criteria for project selection, which include both administrative and technical criteria. He also shared tentative timelines for project formulation, including the following steps to be done in certain timeline: Presentation of the Master Plan to the TN State, Soft approval of the Master Plan by TN, Finalization of the priority project, Procurement of DPR consultant by TN, Preparation & Approval of PPR by TN, TOR mission for feasibility study by JICA, Draft DPR submission by TN, Feasibility Study by JICA, Final DPR by TN, Appraisal mission by JICA and Loan Agreement signing. The decision points emerged during the course of discussions are listed below:

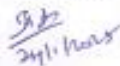
1. It was observed that the draft report contains only details on riverine flood control aspects. Other components need to be elaborately studied in detail.
2. For example development parameters have not been detailed at micro level and sufficient analysis are to be made for development index.

3. The underground river concept was not found to be suitable for Chennai city's topography.
4. JICA will submit the draft report for review by the counterparts (C/P) as soon as possible. The relevant C/Ps will provide feedback within 3-4 weeks after receiving the draft.
5. TNWRD can be considered as the implementation agency for the JICA's proposed project to mitigate flood risk in Chennai and its expanded area.
6. The tentative schedule for the process of getting clearance by DoEA/ MoF and implementation of the proposed project has to be finalised by WRD in consultation with Finance Department.
7. The residual risk after implementation of the project has to be described in the final report.
8. Other high-level authorities will be briefed on the project to move forward with a mutually agreed timeline for ODA project formulation for flood mitigation.

The meeting concluded with vote of thanks by the chair.

Sd/-Rajesh Lakhani
Additional Chief Secretary /
Commissioner of Revenue Administration
State Relief Commissioner


Assistant Commissioner (R&R)
for Additional Chief Secretary /
Commissioner of Revenue Administration
State Relief Commissioner


Sd/-
27/1/2015

Annexure

List Participants:

- In Chair** : **Thiru.RajeshLakhani, I.A.S.,**
Additional Chief Secretary /
Commissioner of Revenue Administration and
State Relief Commissioner. (**Chairman, Steering
Committee**)
- Special Invitees** :
1. **Dr. Manivasan, I.A.S.,**
Additional Chief Secretary to Government,
Water Resources Department.
 2. **Tmt. P. Amudha, I.A.S.,**
Additional Chief Secretary to Government,
Revenue and Disaster Management Department.
 3. **Dr.T.G. Vinay, I.A.S.,**
Managing Director,
Chennai Metropolitan, Development Authority,

Sl.No.	Name	Designation
Indian Side		
I National Disaster Management Authority nominated		
1.	Thiru. Chandan Singh,	Under Secretary, NDMA - Member nominated (Online Participant)
2.	ShreyalHumoney,	(On line participant)
3.	ArchanaGoswami,	(On line participant)
4.	AnshilKikani,	(On line participant)
II Tamil Nadu Disaster Risk Reduction Agency		
5.	Thiru.V.Mohanachandran, I.A.S.,	Director (Disaster Management), TNDRA, Member
6.	Thiru.C.Muthukumaran,	Joint Director (DM),
7.	Thiru. M.I.ShakirSaleem,	Assistant Commissioner(R&R)
8.	Thiru.T.Murugan	Assistant Commissioner(DMR)
9.	Thiru.T.Kanthimathinathan	Water Resource Management Expert
III Chennai Metropolitan Development Authority		
10.	Thiru.N.Ravikumar,	Chief Planner - Member nominated,
11.	Dr.P.Jayapal,	Senior Planning Advisor (Third Master Plan)
12.	Ms.Permamani,	Environmental Planner, Master Plan

	Unit,
IV Municipal Administration and Water Supply	
13. Dr.K.Sridharan,	Joint Secretary (consultant), MA&WS Department - Member Nominated,
V Water Resources Department	
14. Thiru.C.Podhupanithilagam,	Superintending Engineer, Pala Basin Circle - Member nominated,
VI Greater Chennai Corporation	
15. Thiru.S.Baskaran,	Superintending Engineer (Storm Water Drainage) - Member nominated,
16. Thiru.N.Anandaraj,	Assistant Executive Engineer (Storm Water Drainage)
VII Tamil Nadu Urban Habitat Development Board	
17. Thiru. S.LalBahadur,	Chief Engineer - Member nominated,
18. Thiru. N.Kalidoss,	Board Secretary,
VIII Department of Environment	
19. Thiru. R.Sethukumar,	Deputy Director, SIEAA - Member Nominated,
IX Tamil Nadu Urban Infrastructure Financial Services Limited	
20. Thiru.R.Pradeep John,	Senior Manager - Member Nominated,
X Director of Municipal Administration	
21. Thiru. B.K.Ramesh,	Assistant Executive Engineer - Member Nominated,
XI Director of Town Panchayat	
22. Thiru.K.Vaithiyalingam	Executive Engineer - Member Nominated,
XII Director of Rural Development	
23. Thiru.P.Anandhraj	Additional Director - Member Nominated,
Japanese Side	
1. Mr. TAKAHASHI Akito,	Senior Representative, JICA India Office Chief Representative,
2. Dr. TODO Masai,	Senior Advisor, JICA-HQ,
3. Mr. Mishra VIPUL,	JICA India Office,
4. Ms. AOTA Yuka,	JICA India Office,
5. Mr. Shubham SRIVASTAVA,	JICA India Office,
6. Mr. HONDA Shinji,	JICA Expert Team,

7.	Dr. Ali CHAVOSHIAN (JICA Expert Team)	JICA Expert Team,
8.	Thiru. N.Balamurugan	Co-ordinator, JICA Local Team,
9.	Thiru. J.Murali,	JICA Local Team.

1.2 Training in Japan

Two training and study tours were organized in Japan for representatives of counterpart organizations as part of the JICA Master Plan Project. These programs aimed to enhance participants' understanding of Japan's experience and expertise in comprehensive flood management, focusing on river basin planning, macro and micro drainage coordination, and the integration of urban planning with flood mitigation strategies. The training sessions were conducted by JICA Tokyo, JICA Hokkaido, and PACIFIC CONSULTANTS CO., LTD. (PCKK), providing an in-depth learning experience on Japan's best practices in managing urban flood risks. Participants were exposed to a range of approaches that have been successfully implemented in Japan, offering valuable insights that could be adapted to improve flood management in their respective regions.

The first training program took place from May 7th to 17th, 2023, with eight participants actively engaging in lectures, case studies, and field visits that covered holistic watershed management and the strategic coordination between drainage infrastructure and urban planning. This program introduced participants to various aspects of flood risk management, including advanced forecasting techniques, infrastructure resilience measures, and policy frameworks that support effective flood mitigation. The sessions were designed to provide a comprehensive understanding of how Japan addresses urban flood challenges through a combination of engineering solutions and regulatory planning.

The second training was conducted from May 13th to 18th, 2024, further reinforcing the knowledge gained in the first program while introducing additional insights into the formulation of a comprehensive flood control master plan for urbanized river basins in Chennai. This training built upon the previous year's discussions and focused on the practical application of flood management strategies in the context of Chennai's unique hydrological and urban conditions. Participants had the opportunity to engage with Japanese experts, visit critical flood control infrastructure, and analyze case studies that highlighted the effectiveness of integrated flood risk management.

Both training programs combined classroom sessions, site visits, expert lectures, and interactive discussions, allowing participants to gain firsthand knowledge of Japan's successful flood management approaches. The structured learning environment enabled meaningful exchanges between Japanese specialists and international participants, fostering discussions on how best to tailor these strategies to Chennai's specific flood mitigation efforts. The following sections provide details on the schedule, curriculum, and the list of participants for each training program.

1.2.1 *The First Training in Japan from 7 to 17 May 2023*

Table B-1: Schedule of the program

Date		Activities	Accom.
7-May	Sun	Depart from India, Arrival to Japan (Chennai-Tokyo)	Tokyo
8-May	Mon	(AM) Orientation	Tokyo
		(PM) Courtesy Call to JICA & MLIT Lecture: MLIT and Dr. Takeuchi	
9-May	Tue	(AM) Move from Tokyo to Sapporo	Sapporo
		(PM) Lecture: Sapporo River Office and Dr. Baba	
10-May	Wed	(AM) Site visit: Civil Engineering Research Institute for Cold Region and Horohira Bridge and Slicegate and Nakanoshima Elementary school etc. in flood risk area	Sapporo
		(PM) Site visit: Jozankei Dam and Hoheikyo Dam	
11-May	Thu	(AM) Site visit: Moree Swamp Park and Sapporo bridge and canal sluice and Ishikari Kakoukyou bridge	Sapporo
		(PM) Site visit: River Museum and spillway sluice and Barato canals and Kariki drainage pump station	
12-May	Fri	(AM) Site visit: Kitahiroshima District Disaster prevention station Higashionosato Retarding Pond and Maizuru Retarding Pond	Sapporo
		(PM) Site visit: pump station and Hokkaido Ballpark F Village	
13-May	Sat	Preparation for Presentation	Sapporo
14-May	Sun	Move from Sapporo to Tokyo	Tokyo
15-May	Mon	(AM) Lecture: Edogawa River Office	Tokyo
		(PM) Site visit: Metropolitan Area Outer Underground Discharge Channel Site visit: Koshigaya Lake town	
16-May	Tue	(AM) Preparation for Presentation	Tokyo
		(PM) Presentation, Follow-up and Evaluation of Training	
17-May	Wed	Depart from Tokyo, Arrive to India (Tokyo-Chennai)	India

Table B-2: Curriculum of program

Name of curriculum	Instructor	Category	Aim
Basic Concept of Flood Control Master Plan in Japan	Mr. KONAMI Takahiro Water and Disaster Mgmt. Bureau, MLIT	Lecture	● To understand the basic concepts on policy development in flood control in Japan
Integrated Flood Risk Management: Basic Concepts and the Japanese Experience	Mr. TAKEUCHI Kuniyoshi Professor Emeritus of Yamanashi University	Lecture	● To understand the basic concepts and countermeasures against flood-related disasters in Japan
Development of the downstream of Ishikari River basin and history of flood control, river development plans and flooding assumption methods, cooperation among related organizations management agencies, etc.)	Mr. FUJIKURA Atsushi Mr. KAWAGISHI Tomoki Sapporo Development and Construction Department, Hokkaido Regional Development Bureau, MLIT	Lecture	● To understand the flood risk of urban areas and flood control countermeasures from upstream to downstream in Japan
Overview of similarities between Chennai and Sapporo, and visit places during the stay	Dr. BABA Hitoshi JICA Senior Advisor	Lecture	● To understand the way to utilize flood control experience in Japan based on similarities b/w Sapporo and Chennai
Visit to river experiment facilities and design of river management infrastructure	Mr. OHGUSHI Hiroya Mr. KAKINUMA Takaharu Civil Engineering Research Institute for Cold Region	Site visit	● To understand that flood control plans are formulated based on hydraulic, scientific analysis
Flood protection in urban areas, management of flumes and drainage of urban areas, rainwater harvesting and watershed flood control, effective use of river space ① Horohira Bridge ② SluicgateS ③ Nakanoshima Elementary School (rainwater harvesting facility)	Mr. MIYAZAKI Toshiyuki Sapporo River Office, Sapporo Development and Construction Department, Hokkaido Regional Development Bureau, MLIT	Lecture	● To understand the flood risk of urban areas and flood control countermeasures downstream in Japan

Name of curriculum	Instructor	Category	Aim
Flood control function of Jozankei Dam and multi-purpose dam	Mr. SAITOH Kouji Toyohira River Dam Integrated Management Office, Sapporo Development and Construction Department, Hokkaido Regional Development Bureau, MLIT	Lecture	<ul style="list-style-type: none"> ● To understand the way to utilize dams for several purposes, e.g. flood control, irrigation use, portable drinking water use
Flood Control and Environmental Conservation at the Toyohirakyo Dam			
Development of Sapporo through the Toyohira River Delta and Cutoff canals	Mr. MIYAZAKI Toshiyuki Sapporo River Office, Sapporo Development and Construction Department, Hokkaido Regional Development Bureau, MLIT	Site visit	<ul style="list-style-type: none"> ● To understand the outline of cut-off channel at the downstream of Ishikari River ● To understand the function of Barato Canal both at normal/flooding time ● To understand the flood risk of urban areas and flood control countermeasures from upstream to downstream in Japan
Cut-off Channel of Ishikari River, use of remaining old river channels, and management of hillside levees			
Flood control function of canal sluice gates and their use for fisheries and other purposes			
History of flood control and fishery at Ishikari River Mouth Bridge			
History of the Ishikari River according to the exhibition in the museum Function of the spillway sluice gate and fisheries compensation			
Flood storage function of Barato Canal, confluence of three rivers and drainage			

Name of curriculum	Instructor	Category	Aim
Drainage infrastructure in the Sapporo metropolitan area through Kariki Drainage Pump Station and other drainage facilities			
What is a disaster prevention station? How many are there in Japan? What are their roles?	Mr. MATSUMOTO Takuya Chitose River Office, Sapporo Development and Construction Department, Hokkaido Regional Development Bureau, MLIT	Site visit	<ul style="list-style-type: none"> ● To understand disaster preparedness center in natural disaster ● To understand the history and function of flood control low flatland
History of Chitose River flood control, role of reservoirs			
① Dongnosato Retarding Pond ② Maizuru Retarding Pond			
Drainage measures for flat areas			
Formulation of land use regulations in urban planning, mechanisms for rainwater harvesting through disaster prevention reservoirs, etc., and actual consultations with river administrators			
Function of Edogawa River Office	Mr. SUGAMA Daijiro Edogawa River Office, Kanto Regional Development Bureau, MLIT	Lecture	<ul style="list-style-type: none"> ● To understand the function of Drainage pumping station, Metropolitan Area Outer Underground Discharge Channel etc.
Metropolitan Area Outer Underground Discharge Channel and Drainage pumping station		Site visit	
Koshigaya lake town	Koshigaya City	Site visit	<ul style="list-style-type: none"> ● To understand a large-scale flood control reservoir aiming to improve flood control measures

Table B-3: Participants of the program

Name	Organization	Position
Mr. MOHAMMED IBRAHIM Shakir Saleem	Govt. of Tamil Nadu	Assistant Commissioner, Tamil Nadu Disaster Risk Reduction Agency
Mr. CHELLAMUTHU SANKARALINGAM Murugan	Govt. of Tamil Nadu	Additional Secretary (Technical), Housing and urban Development Department
Mr. ASHOKAN Muthaiya	Govt. of Tamil Nadu	Superintending Engineer, Water Resources Department
Mr. SIDDHA ANANTHAIAN Raman	Govt. of Tamil Nadu	Director of Disaster Management, Tamil Nadu Disaster Risk Reduction Agency
Mr. CHINNATHAMBI Podupani Thilagam	Water Resource Department	Executive Engineering, Kosasthalayar Basin Division
Mr. CHIDAMBARAM Muthukumran	Govt. of Tamil Nadu	Joint Director of Disaster Management, Tamil Nadu Disaster Risk Reduction Agency
Mr. BALAN Shankaravelu	Greater Chennai Corporation	Superintending Engineer, Bridges/Coordination
Mr. Vishu Mahajan	Greater Chennai Corporation	Deputy Commissioner, Revenue and Finance

1.2.2 *The Second Training in Japan from 13 to 18 May 2024*

Table B-4: Schedule of the program

Day	Date		Activities	Accom.
NA	11-May 12-May	Sat Sun	Depart from India, Arrival to Japan (Chennai-Tokyo) *NDMA Participant from Delhi to Tokyo	Tokyo
1	13-May	Mon	(AM) Orientation including official registration in the program, completing necessary forms for insurance and bank account, and other necessary guidance, etc. (PM) Courtesy Visit to JICA-HQ* & MLIT** followed by a lecture at MLIT and visiting MLIT Disaster Management Room	Tokyo
2	14-May	Tue	(AM) Site visit 1: Urayama Dam in the upstream of Arakawa River (PM) Site visit 2: Transverse Levee Section: Onari Bridge Lecture: Arakawa Chisui Museum AMOA Site visit 3: Iwabuchi Water Gate and Arakawa Lock Gate	Tokyo
3	15-May	Wed	(AM) Site visit 1: Metropolitan Area Outer Underground Discharge Channel (PM) Site visit 2: Ayase River Discharge Channel and Oosagami Regulating Pond	Tokyo
4	16-May	Thu	(AM) Site visit 1: Yoroizeki Waterfront Square and Onmawashi Park Regulating Pond (PM) Lecture: Tsurumi River Basin Center Site visit 2: Nissan Stadium and Flood Wall near Ashiho Bridge	Tokyo
5	17-May	Fri	(AM) Lecture and Site visit: Water gate management center Lecture: JICA (PM) Lecture from JICA senior expert and Presentation from Indian Participants	Tokyo
NA	18-May	Sat	Depart from Tokyo, Arrive to India (Tokyo-Chennai)	India

Table B-5: Curriculum of program

Title and Lecturer/Coordinator	Category	Contents
<p>Basic Concept of Flood Control Master Plan in Japan</p> <p>Water and Disaster Mgmt. Bureau, MLIT</p>	Lecture	<p>To know the principles of river development in Japan, formulation of master plan, key perspectives, implementation processes, and evaluation methods as well as recent initiatives like land use regulations influenced by flood risk.</p> <p>Following the lecture, discussions will be conducted by the Indian delegation to exchange views on the challenges faced in the Chennai and enhance mutual understanding of the issues.</p>
<p>MLIT Disaster Management Room</p> <p>Water and Disaster Mgmt. Bureau, MLIT</p>	Site Visit	<p>To comprehend the process, available information and data in Disaster Management Office, including its functions in river management and disaster management.</p>
<p>Visiting Urayama Dam</p> <p>Arakawa Dam Mgmt., Japan Water Agency</p>	Site Visit	<p>The focus is on understanding the vital role of dam operations and flood control measures in mitigating flood risk including flood control mechanisms, the water allocation, operational strategies, and the status and challenges associated with past water releases.</p>
<p>Onari Bridge Arakawa Lock Gate</p> <p>JICA Expert Team</p>	Site Visit	<p>Sometimes, widening the river in the midsection is feasible, but such actions can impact downstream areas. For instance, considering the potential for widening in the middle section highlights the contrast with the challenges of widening the channel downstream, especially within densely populated urban areas.</p>
<p>Introduction to Flood Control Projects in the Arakawa River System</p> <p>Arakawa River Office, Kanto Regional Development Bureau, MLIT</p>	Lecture	<p>To gain insight into context and development of flood control initiatives for the Arakawa River system, with a specific focus on their role in Tokyo's urban development. This includes examining the impact of flood control projects, such as spillways, on the capital's growth. Additionally, providing an overview of key projects that have contributed to this endeavor, such as upstream dam clusters and midstream floodplain developments.</p>
<p>Iwabuchi Water Gate and Arakawa Rock Gate</p> <p>JICA Expert Team</p>	Site Visit	<p>During site visits, attendees will explore landmarks such as the Iwabuchi Water Gate and Discharge Channel, as well as the Arakawa River Lock Gate. For a better understanding of Arakawa River System.</p>
<p>Metropolitan Area Outer Underground Discharge Channel</p> <p>Edogawa River Office, Kanto Regional Development Bureau, MLIT</p>	Site Visit	<p>To understand the function and significance of the Discharge Channel within metropolitan flood control measures. Additionally, to explore the positioning of rivers and their tributaries, challenges posed by urbanization, necessitating flood control infrastructure, and collaborative measures with stakeholders beyond flood control.</p>

Title and Lecturer/Coordinator	Category	Contents
<p>Ayase River Discharge Channel</p> <p>JICA Expert Team</p>	<p>Site Visit</p>	<p>To learn about the overview and role of drainage channels in lowland and slow-flowing urban rivers in Japan, similar to the target river in Chennai, which have achieved in-basin drainage through the use of urban land-use practices.</p>
<p>Osagami Regulating Pond</p> <p>Koshigaya City</p>	<p>Site visit</p>	<p>To comprehend the overview and function of regulating reservoirs in low-lying, slow-flowing urban rivers in Japan, akin to those in Chennai. These reservoirs aim to store rainwater and river-flood water by redirecting water from urban rivers.</p>
<p>Yoroizeki Waterfront Square</p> <p>JICA Expert Team</p>	<p>Site Visit</p>	<p>During the observation, participants will examine the upstream river channel profile, assess the status of widening and straightening efforts, and explore other river channel modifications. Additionally, they will observe the utilization of the old river channel for recreation.</p>
<p>Onmawashi Park Regulating Pond</p> <p>Kawasaki Flood Control Center, Yokohama Kawasaki Flood Control Office</p>	<p>Site Visit</p>	<p>During the field visit, participants will observe the utilization of old river channels for underground storage. Additionally, they will observe land use regulations and efforts to conserve agricultural land in lowland areas along the river.</p>
<p>Comprehensive Flood Control in the Tsurumi River Basin & Visiting Tsurumi River Basin Center</p> <p>Keihin River Office, Kanto Reg. Develop. Bureau, MLIT</p>	<p>Lecture</p>	<p>To learn about the overall view of the comprehensive flood control measures of the Tsurumi River system, particularly the history and background of flood control projects in response to rapid urbanization.</p>
<p>Multipurpose Retarding Project (Nissan Stadium)</p> <p>JICA Expert Team</p>	<p>Site visit</p>	<p>To observe the normal use of the multi-purpose retarding ponds.</p>
<p>Floodwall near Ashiho Bridge</p> <p>JICA Expert Team</p>	<p>Site visit</p>	<p>To learn about examples and challenges of flood control measures in the downstream flowing through high-density urban areas.</p>
<p>Drainage measures in Koto Ward</p>	<p>Lecture</p>	<p>Participants will study the advancement of flood control projects in Koto Ward's rivers, focusing on the roles of drainage pump stations, water gates, and other urban drainage facilities.</p>

Title and Lecturer/Coordinator	Category	Contents
Tokyo Metropolitan Government, Koto Flood Control Office		
Comprehensive Flood Control in Japan JICA Senior Advisor	Lecture	Participants will explore the historical context of comprehensive flood management and delve into the processes and lessons learned during the practical implementation of land use regulations and rainwater harvesting, with a particular focus on involvement by the private sector.

Table B-6: Participants of the program

No.	Name	Affiliation	Position
1	Mr. SAKTHI KAIVALYAN Prabakar	Commissionerate of revenue Administration and Disaster management, Tamil Nadu(CRA/TNDRRA)	Additional chief secretary(ACS), IAS
2	Mr. SELVAN Saravanan	Chennai Metropolitan Water Supply & Sewerage Board(CMWSSB)	Executive Director, IAS
3	Mr. SINGH Chandan	National Disaster Management Authority (NDMA)	Under Secretary
4	Mr. SOMASUNDARAM Rajendiran	Greater Chennai Corporation(GCC)	Chief Engineer (General)
5	Mr. SING ARAVELU Baskaran	Greater Chennai Corporation(GCC)	Superintending Engineer
6	Mr. RAJU Arunmozhi	Tamil Nadu Water Resources Department (TNWRD)	Executive Engineer
7	Mr. GOVINDARAJULU RAMALINGAM Radhakrishna	Tamil Nadu Water Resources Department (TNWRD)	Executive Engineer

1.3 Video Clip to Introduce Project

Two introductory videos are produced for the project activities.

Table B-7: Two Video Clips

	1st Video	2nd Video
Completion date	May 31, 2022	May 31, 2023
Contents	<ul style="list-style-type: none"> ● Overview of Tamil Nadu State and Chennai Area ● Project Counterparts ● Project Objectives ● Project Outputs ● Project Implementation Structure ● Steering Committee Functions and Members ● Project Stages and Activities ● Methodology for Flood Control in Japan 	<ul style="list-style-type: none"> ● Flood Characteristics in Chennai River Basins ● Challenges of Flood Risk Management ● Paradigm Shift Proposed by JICA ● Project Stages and Activities ● Supplementary Survey ● Digital Terrain Model (DTM) 2.5m and 0.5m Resolutions ● Accurate Basin Delineation ● Digital River Network ● Detailed Study of the Rainfall Patterns for Major Floods from 1976 to 2021 ● Developing Flood Hazard Maps ● Activity progress of each Task Team ● Examples of Countermeasures based on Japanese Experiences
Release date to CPs	April 21, 2022 (1 st SC meeting)	June 13, 2023

1.4 National Seminars on JICA Project

Two national seminars were organized/contributed under the JICA project.

In September 2022, a National Seminar on Urban Flood Mitigation was held at the India Habitat Centre, New Delhi, organized by the National Disaster Management Authority (NDMA) and the Coalition for Disaster Resilient Infrastructure (CDRI). The seminar brought together key stakeholders, including representatives from NDMA, CDRI, the Ministry of Housing & Urban Affairs, municipal officials from major cities, international experts from JICA, and researchers from leading institutions.

A Knowledge Sharing Seminar on flood management was successfully organized on 21 August 2024 at the Radisson Blu Hotel, Chennai City Centre. The seminar brought together key stakeholders, including officials from water resource departments, disaster management authorities, city corporations, and municipalities from major cities across India. The primary objective of the seminar was to share experiences and best practices in developing a comprehensive flood control master plan and to explore how such methodologies could be applied to large cities in India. The discussions focused on integrating riverine flood control measures with urban drainage systems while ensuring coordination with disaster risk management strategies.

The seminar emphasized the increasing challenges posed by river and urban flooding, particularly in highly flood-prone Indian cities that have experienced severe flood events in recent years. With the combined effects of climate change and rapid urbanization exacerbating these issues, the need for a well-structured flood control master plan has become imperative. Japan has gained extensive experience in managing urban floods through the development of comprehensive flood control plans, which are recognized globally for their effectiveness. JICA, through its ongoing Technical Cooperation Project in Chennai, has been working to improve both fluvial and pluvial flood management in the region. The seminar served as a platform for sharing Japan's experiences and methodologies, while also facilitating discussions on how similar strategies could be implemented in other Indian cities.

The seminar concluded with a wrap-up session summarizing the key takeaways and recommendations for moving forward. One of the critical outcomes of the seminar was the recognition of the need for enhanced collaboration between Indian cities, national agencies, and international partners such as JICA and ADB. Participants acknowledged the significance of developing city-specific flood control master plans while ensuring alignment with broader regional and national strategies. JICA reaffirmed its commitment to supporting Indian cities in their flood management efforts and expressed its willingness to facilitate further technical cooperation and capacity-building initiatives.

