

9th India International Water Week 2026.

Topic: Inclusive and Equitable Water Governance

Sub- Topic Water Governance Principle: Indicators, Audit and Standards.

Performance Based Assessment of Climate Resilient Storm Water Drainage Indicators and Outcomes from Kosasthalaiyar Basin, Chennai

September 22-26, 2026 | Bharat Mandapam, New



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Key Drivers of Coastal Inundation

Topographical, marine, and urban constraints stalling stormwater evacuation.

Topography & Sea Gradient



Flat Terrain

Negligible slope stalls gravity flow.



Low Ground Level

~2 m MSL leaves zero buffer.



Outfall Head Loss

Minimal head stops discharge.

Tidal & Weather Forces



High Tide Backwater

Rising tides push seawater inland.



Cyclonic Storm Surge

Extreme sea rises reverse flow.



Intense Cloudbursts

Bursts overwhelm drain limits.

Urban & Drainage Deficits



Urban Imperviousness

Paved ground multiplies runoff.



Wetland Sink Loss

Lost natural sponges spike peaks.



Drainage Bottlenecks

Silt and blockages delay flow.

The Historical Cost of Inaction (1996–2023)



1996

Cyclone

| 10 casualties |
\$128.5M
economic loss

2005

Monsoon

| 50 casualties |
\$1,895M
economic loss

2015

Heavy Rain

| 280 casualties |
\$3,500M
economic loss

2021

Depression

| 4 casualties |
\$1,320M
economic loss

2023

Michaung

| 17 casualties |
\$1,320M
economic loss

**Reactive disaster management routinely costs billions.
Proactive governance is an economic imperative.**

COMPREHENSIVE REGIONAL & HYDROLOGICAL MAPPING

Chennai Metropolitan & Kosasthalaiyar Basin Assessment

1. Geographic Location



2. Corporation of Chennai



3. Sub-Basin Boundaries



4. Kosasthalaiyar Basin



5. Inundation Extent



6. Package Work Areas

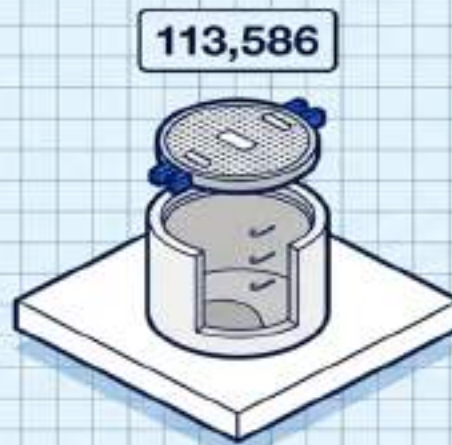


Integrated Urban Flood Management for Chennai Kosasthalaiyar Basin Project - Project cost is Rs. 3,220 Crores - Executed under 46 Packages with ADB Loan

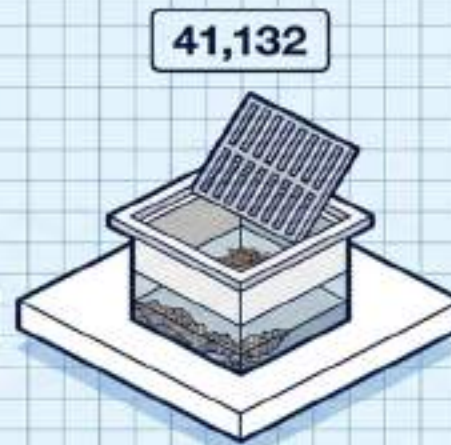
The Physical Footprint: Scaling the Integrated Solution



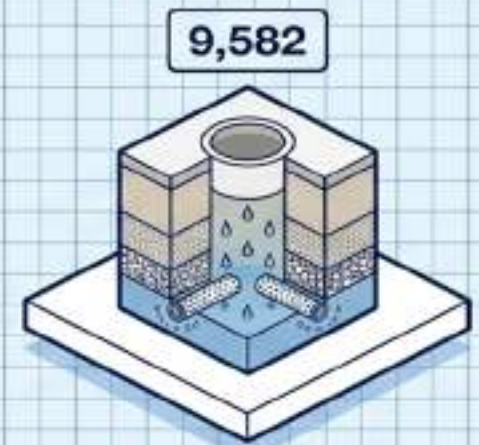
**RCC Rectangular
Stormwater Drains**
(Conveyance)



**Manholes with
FRC/FRP Covers**
(Access & Maintenance)



**Silt Catch Pits with
hinged grating**
(Filtration)



**Rainwater Harvesting
Structures**
(Recharge)

Deployed across 6 highly
dense urban zones.

Social Equality

EFFECTIVE STORM WATER MANAGEMENT TRAINING FOR DRAIN DE-SILTING AND CONSERVANCY WORKERS

Date: 07-03-2025

Venue: Zone II Office, Manali



Gender Equality

EMPOWERING TRANSGENDER RESILIENCE RESCUE, RELIEF AND REHABILITATION IN DISASTER RESPONSE

Date: 25-09-2024

Venue: Anna Maligal Auditorium,
Greater Chennai Corporation



Stormwater Drain (SWD) Construction: Before vs. After Impact Assessment

Field Verification Records: 4 Critical Stretches

Comparative Monsoon Evaluation



Subsurface & Right-of-Way Constraints



01 • SUBSURFACE MAZE

- **Congested Utilities**
Dense multi-utility subterranean maze.
- **Missing As-Builts**
Unmapped legacy network records.
- **Utility Relocation**
High-cost pipeline realignment delays.



02 • CORRIDOR ENCROACHMENT

- **Illicit Inflows**
Unauthorized raw sewage discharge.
- **Right-of-Way Limits**
Land settlement corridor encroachments.



03 • GOVERNANCE & LAW

- **Agency Friction**
Multi-jurisdictional permit bottlenecks.
- **Strict Compliance**
Mandatory environmental mitigation controls.

The Multi-Dimensional Governance Framework

True governance audits outcomes against national benchmarks, not just financial outlays.



Performance Scorecard vs National Benchmarks

100% Benchmarks Exceeded (8/8)

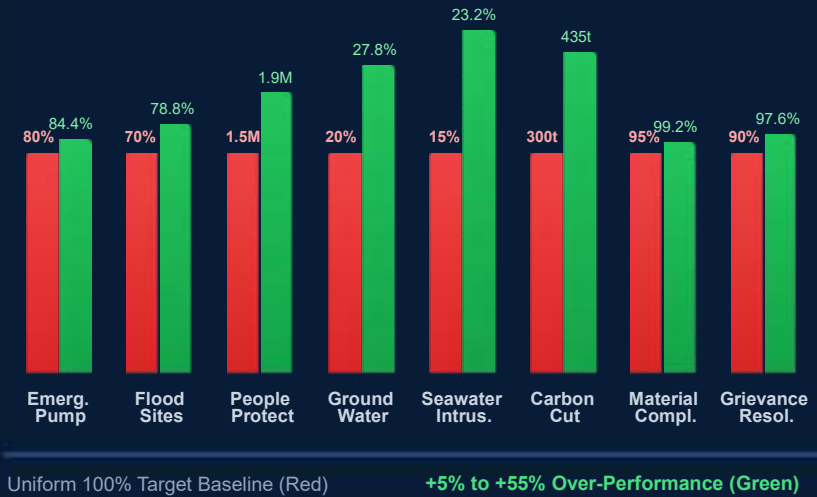
Performance Indicator	Target	Benchmark Source	Achieved	Status
Reduction in Emergency Pumping	> 80%	Central Water Commission (CWC)	84.4%	Exceeded
Reduction in Flooded Locations	> 70%	Jal Shakti Abhiyan (CWC)	78.8%	Exceeded
Population Protected	1.5M	Project Completion Framework	1.9M	Exceeded
Groundwater Level Increase	> 20%	Atal Bhujal Yojana (CGWB)	27.8%	Exceeded
Seawater Intrusion Reduction	> 15%	CGWB Coastal Aquifer Guidelines	23.2%	Exceeded
Carbon Emission Reduction	> 300 t/y	Project Climate Action Metric	435.3 t/y	Exceeded
Material Compliance Rate	> 95%	CPWD / BIS Standards	99.2%	Exceeded
Grievance Resolution Rate	> 90%	Smart Cities Mission SLAs	97.6%	Exceeded

Key Performance Insight: The IUFMKBP has successfully surpassed all eight benchmark targets, establishing a national gold standard in climate resilience, infrastructure compliance, and civic water governance.

Target vs Achievement Analysis

Indexed to 100% Target Baseline

Target Achieved



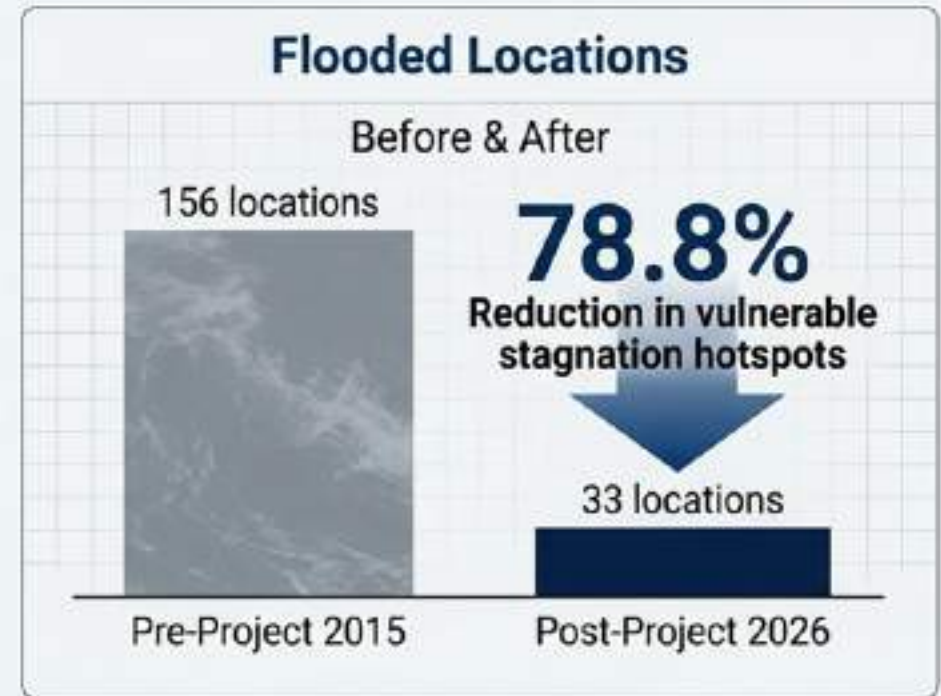
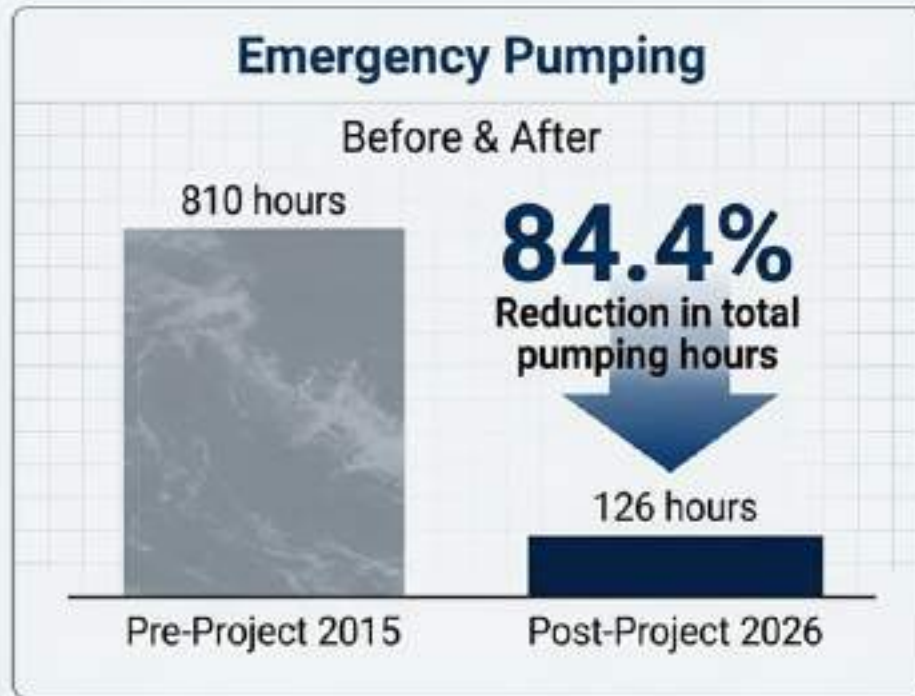
Engineering Excellence: Quality at Source Audit

Material	Target Compliance	Tests Conducted	Pass Rate
Concrete Cubes	>95%	2,850	99.2%
Steel Reinforcement	>95%	950	99.2%
Soil & Aggregates	>95%	500	99.2%
Water Quality	>95%	150	98.7%

4,450 total third-party material tests conducted, with all non-compliant works (17 km) strictly rejected and recast at the contractor's cost.



Primary Impact: Restoring Gravity-Driven Flow



Pumping per major event collapsed from 4.5 hours to 0.7 hours.

The engineering worked: High-precision topography mapping allowed gravity-based flow to replace energy-intensive, reactive pumping.

PROJECT BENCHMARK & MULTILATERAL VALIDATION

Merits & Global Recognition

Urban Climate Resilience & Infrastructure Model



ADB Recognition

Ranked among premier urban infrastructure initiatives across Asia.



IFI Replication Value

Reviewed by KfW and World Bank for high-impact international transfer.



Inter-City Replication

Studied for adoption across Delhi, Bengaluru, Mumbai, Kochi, and Kolkata.



Model Benchmark

Standard-setting scalable, resilient, and inclusive urban flood mitigation.



EST Award 2025

Global Enhancing Society Award

Recognized for integrating gender equity and social equality principles into resilient infrastructure.



Multilateral Validation

Social & Gender Inclusion

Pan-India Scalability