

Case Study

Navi Mumbai International Airport (NMIAL)

Integrated Sewage Treatment & Wastewater Management System

Location

Ulwe, Navi Mumbai, Maharashtra

Sector

Large Infrastructure | Aviation

Delivered by

Enhanced WAPP Systems (India) Pvt. Ltd.

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Project Overview

Navi Mumbai International Airport is one of India's most ambitious greenfield aviation infrastructure projects.

To support large-scale airport operations, **a robust, future-ready wastewater management system** was required—capable of meeting strict environmental, operational, and regulatory standards

Wappsys was entrusted with delivering a **high-performance, compliant, and sustainable solution.**

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Project Overview

EPC Contractor

Larsen & Toubro Limited – Construction Division

End User

Navi Mumbai International Airport Ltd. (NMIAL)

Project Location

Dapoli–Targarh Road, Ulwe, Navi Mumbai, Maharashtra

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Project Scope Summary

The scope included a complete
end-to-end wastewater treatment solution

- ▶ High-capacity Sewage Treatment Plants (STPs)
- ▶ Advanced biological treatment systems
- ▶ Chemical dosing systems for process control
- ▶ Solid waste and inlet protection systems
- ▶ Operation & Maintenance (O&M) support
- ▶ Plumbing, integration, and interfacing works

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Treatment Philosophy & Technology

Given the airport's operational sensitivity, space constraints, and reuse requirements, SBR with Ultrafiltration (UF) was selected.

Why SBR + UF?

- ◀ Compact footprint
- ◀ High treatment efficiency
- ◀ Handles fluctuating loads
- ◀ Consistent reuse-quality treated water

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Sewage Treatment Capacity

STP – 1

Technology
SBR + UF

Capacity
1,000 KLD

Key Features
Automated, reuse-ready output

STP – 2

Technology
SBR + UF

Capacity
4,500 KLD

Key Features
High-load handling, UF polishing

Total Installed Capacity 5,500 KLD

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Chemical Dosing Systems

- ◀ Quantity: 8 Nos
- ◀ Dosing Capacity: 0–30 LPH
- ◀ Make: **Prominent / LMI / Equivalent**

Applications

- ◀ pH correction
- ◀ Nutrient dosing
- ◀ Process optimization
- ◀ Membrane protection

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Solid Waste & Inlet Protection

◀ Anti-Clogging Units: 2 Nos

Designed to

- ◀ Prevent choking of downstream equipment
- ◀ Protect pumps, membranes, and reactors
- ◀ Reduce operational downtime
- ◀ Improve system reliability

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Execution Scope

- ◀ Detailed system engineering
- ◀ Coordination with L&T site teams
- ◀ Mechanical, electrical & instrumentation supply
- ◀ Integration with MEP & plumbing systems
- ◀ Testing, commissioning & performance validation
- ◀ Training and structured handover

Additional plumbing works executed for site-specific requirements.

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Operations & Maintenance (O&M)

Duration: 24 Months (2nd Year O&M)

Scope Includes

- ⌂ Routine STP operations
- ⌂ Preventive & breakdown maintenance
- ⌂ Process optimization
- ⌂ Compliance monitoring
- ⌂ Defect liability support

Ensuring long-term performance stability.

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Project Challenges

- ⌂ High hydraulic load requirements
- ⌂ Zero tolerance for system failure
- ⌂ Strict environmental compliance norms
- ⌂ Integration with ongoing construction activities
- ⌂ Need for reliability & redundancy in airport operations

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Solutions Implemented

- ◀ Modular SBR systems for phased operations
- ◀ UF filtration for superior effluent quality
- ◀ Redundant dosing & inlet protection
- ◀ Robust automation & control systems
- ◀ Dedicated O&M strategy for lifecycle efficiency

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Project Outcomes

- ◀ 5,500 KLD advanced sewage treatment capacity
- ◀ Treated water suitable for reuse
- ◀ Reduced environmental footprint
- ◀ High operational reliability
- ◀ Full regulatory & client compliance

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Project Value

Total Project Value

INR 18.24 Crores (Approx.)

Includes supply, installation,
commissioning, additional works, and O&M.

Conclusion

This project sets a benchmark for **large-scale wastewater management in critical infrastructure.**

By combining advanced treatment technology, precise execution, and long-term operational support, Wappsys delivered a sustainable, future-ready solution for one of India's most significant aviation developments.