CII National Award for Environmental Best Practices 2026

AFCONS INFRASTRUCTURE LIMITED

MUMBAI AHMEDABAD HIGH SPEED RAIL Package no C-02 (Bullet train), Navi Mumbai, Maharashtra



Uniqueness of the Project



Ashwini Vaishnaw
@AshwiniVaishnaw

Major milestone for the Bullet Train Project!
Breakthrough achieved in the 4.88 km section of Bharat's first undersea tunnel under Thane Creek.



2:52 PM · Sep 20, 2025 · **245.4K** Views

Ministry of Railways, Government of India
20 September 2025

Hon'ble MR Shri Ashwini Vaishnaw reviewed the breakthrough of the Tunnel between Ghansoli and Shilphata (4.881 km) in Maharashtra, marking a major achievement for the Mumbai - Ahmedabad #BulletTrain corridor.





Uniqueness of the Project

- **India's first** High-Speed Rail project (Bullet Train Project) - Length **508 KM -** Maximum Operating Speed - **320 kmph.**
- **India's First Undersea** Tunnel for High-Speed Rail Infrastructure - **21 Km** long Tunnel construction including **7 Km Undersea -** 2 Nos Shafts- **56.6 m deep and 39 m Deep**
- Travel Time - **2 hours 7 minutes** (Reduced by 3.5 to 4 Hours)
- Construction below the **ecologically sensitive** Thane Creek area.
- **Sustainability integrated** into every stage of construction.
- Next Slides show **multiple initiatives** implemented

Date of Commencement	**09-Jun-2023**
Current Status	**NATM Completed**









Various Initiatives / Uniqueness of the Project



Concrete waste recycling system



Use of Tunneling Muck for Segment Casting



Water Conservation / Fresh Water Saving Treated Wastewater for Dust Suppression



Protecting the Thane Creek Flamingo Habitat



Energy Saving

Concrete waste recycling system

Challenge

- Daily generation of concrete washout waste.

Solution

- Installed concrete recycling system at casting yard.
- Recovered sand, aggregates and water.



Benefits

- 8-10 MT C&D waste recycled per day.
- Reduced landfill disposal.
- Conserved natural resources.
- Reused treated water for dust suppression.

Replication Potential

- Can be adopted in every ready-mix concrete and precast facility.

Concrete recycling - Tangible Benefits

Waste recycled
8-10 MT / Day

Daily Savings
₹8,949/day

Annual Savings
₹32.7 Lakhs/year

Sr. no.	Particulars	Recycled Per Day	Rate (₹)	Cost per Day (₹)
	8-10 MT Per Day			
1	Sand	3.37 MT	₹ 1700/MT	₹ 5,729
2	Aggregate	4 MT	₹ 1000/MT	₹ 4000
3	Water	6.8 KL	₹ 58.36/KL	₹ 396
4	**Total Saving from**			**₹ 10,125**
5	**Electricity Consumption**	**84 Units**	**₹ 14/Unit**	**₹ 1176**

Calculation: Net Cost Saving = Material & Water Saving − Electricity Cost = = ₹10,125 − ₹1,176 = **₹8,949 Per day**

Use of tunnelling muck in casting of segments

- Muck Generated from Tunnelling activity
- Sent to Quarry & Aggregates are separated
- Using for Segment Casting





Use of tunnelling muck in casting of segments

Casting Yard

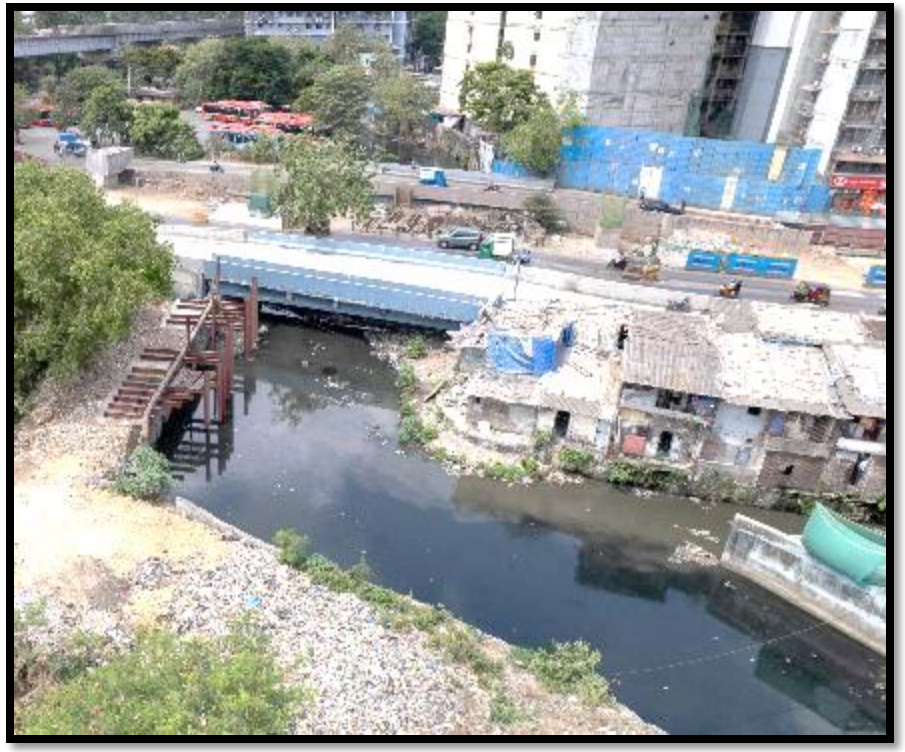


12.76 Million Litres Fresh Water Saved

- Treated **Pant Nagar Nala** water used for TBM operations.
- **220 KL** water requirement per ring.
- 58 rings completed till 28th Sept 2026
- **58 rings X 220 KL/ring = 12,760 KL**
- **12.76 Million Litre of natural fresh water has been saved till date through the reuse of treated Nala water.**
- Water generated from tunnelling operations is **subsequently collected, treated and safely discharged** in compliance with applicable environmental requirements.

Use of treated Nallah water for operations

Pant Nagar Nala

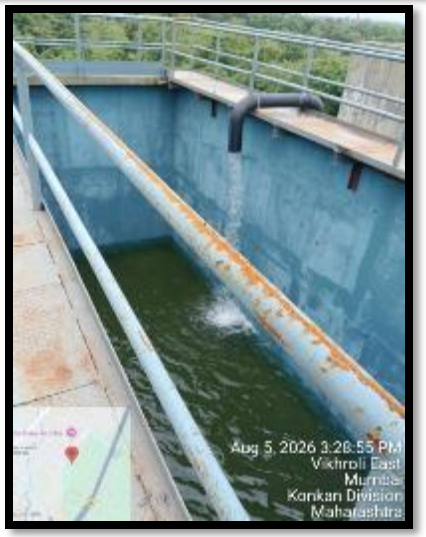


Lifting arrangement



Water Treatment Plant





Use of treated Nallah water for operations











Protecting the Thane Creek Flamingo Habitat

Environmental Challenge

- Tunnel alignment passes below **Thane Creek flamingo ecosystem**.

Risk Mitigation

- Tunnel constructed **25 m below seabed**.
- No surface disturbance to habitat.
- **SEIA** confirmed negligible environmental impact.
- **Joint inspections** carried out with NHSRCL experts.

Outcome

- Biodiversity protected while delivering critical infrastructure.



Source: ZSI

Figure 1 Map of Thane Creek Flamingo Sanctuary



Natural Daylight Utilization

A total of 308 nos. of 400 W lights were installed across the sheds:

Monthly Energy Saving - 44,352 kWh

Monthly Cost Saving - ₹ 3.77 Lacs

1. **Total Connected Load :** 308 Lights X 400 W = 123,200 W or 123.2 kW

2. **Daily Energy Saving (12 Hour Operation)**

   123.2 kW X 12 hr = 1478.4 kWh / day

3. **Monthly Energy Saving (30 days)**

   1478.4 X 30 = 44,352 kWh / month

4. **Monthly Cost Saving**

   Considering electricity tariff = ₹8.50 per unit (kWh)

   44352 X 8.5 = ₹ 3,76,992







By utilizing natural daylight through roof skylights, artificial lighting during daytime operations is not required. This has resulted in significant energy and cost savings.

Replication Potential & Challenges Faced

- Suitable for future high-speed rail corridors.
- Applicable to Metro, Highway and Tunnel projects.
- Waste-to-wealth initiatives can be adopted at all construction sites.
- Biodiversity protection framework can be integrated into sensitive projects.
- Supports ESG, BRSR and Net Zero pathways.
- Water reuse systems can be replicated nationally.

MAHSR C2 demonstrates a scalable and replicable model for sustainable high-speed rail construction, providing a pathway for future infrastructure projects across India

Challenge	Solution	Result
Undersea tunnelling	Advanced TBM & NATM	Safe execution
Flamingo ecosystem	SEIA + monitoring	No habitat impact
Dust generation	Enclosures + sprinklers	Improved air quality
Waste generation	Recycling systems	Circular resource use

Achievement of National & International Sustainability Benchmarks

- ISO **14001:2015.**
- Compliance with applicable **environmental regulations** and **statutory requirements**
- **ESG and BRSR** sustainability reporting frameworks.
- Aligned with **circular economy principles** through waste-to-wealth and resource recovery initiatives.
- Contributes towards **resource efficiency** and **sustainable development** objectives.
- Adopted best practices in **water conservation, waste management, pollution control and biodiversity protection.**
- Reduced **freshwater consumption**, **waste generation** and **environmental footprint** through sustainable construction practices.
- Demonstrates environmental performance comparable with leading global high-speed rail infrastructure projects.

MAHSR C2 demonstrates how world-class infrastructure can be delivered while protecting natural resources, promoting circular economy principles and setting new sustainability benchmarks for future high-speed rail projects in India.

Shapoorji Pallonji



THANK YOU

STAYING COMMITTED MISSION ZERO HARM

AFCONS