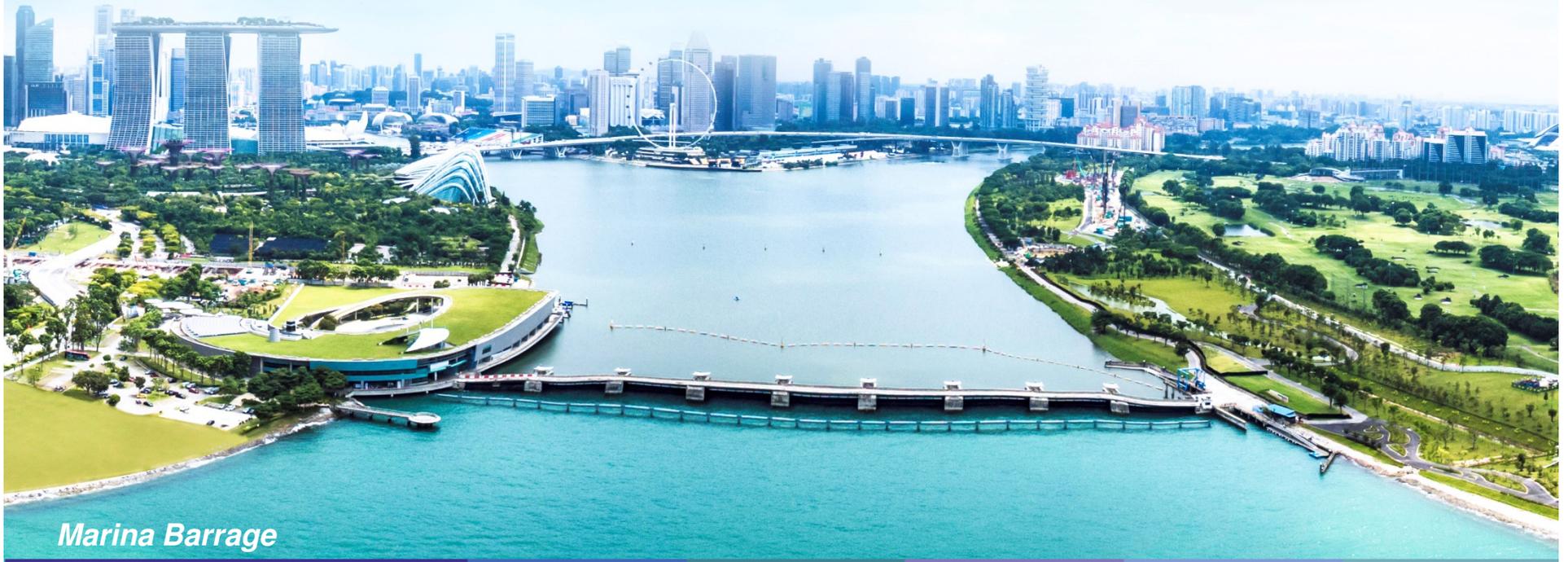


Overview of Singapore's Tuas Water Reclamation Plant

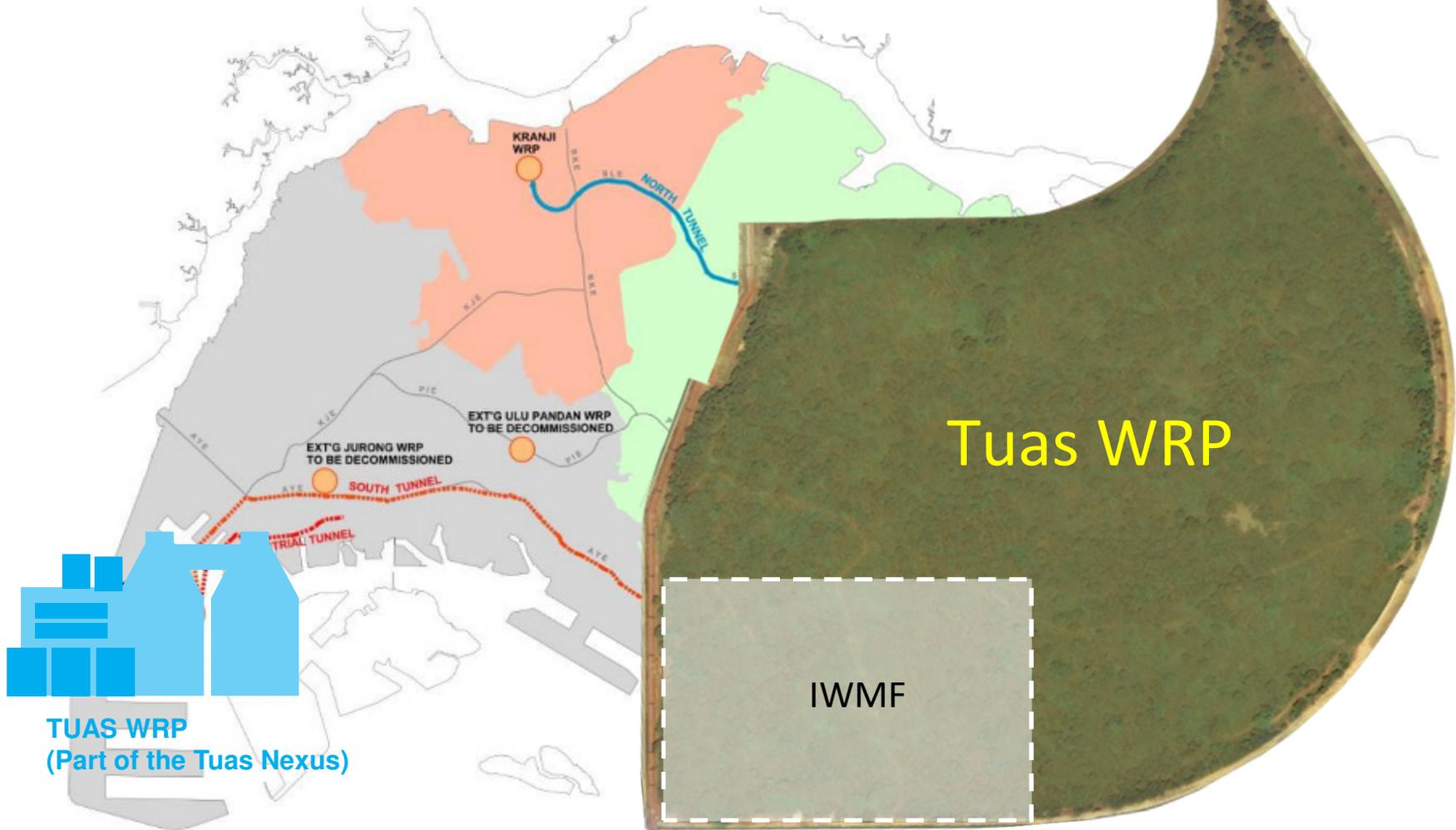
(Part of Deep Tunnel Sewerage System Phase 2)

Yong Wei Hin
Director, DTSS 2

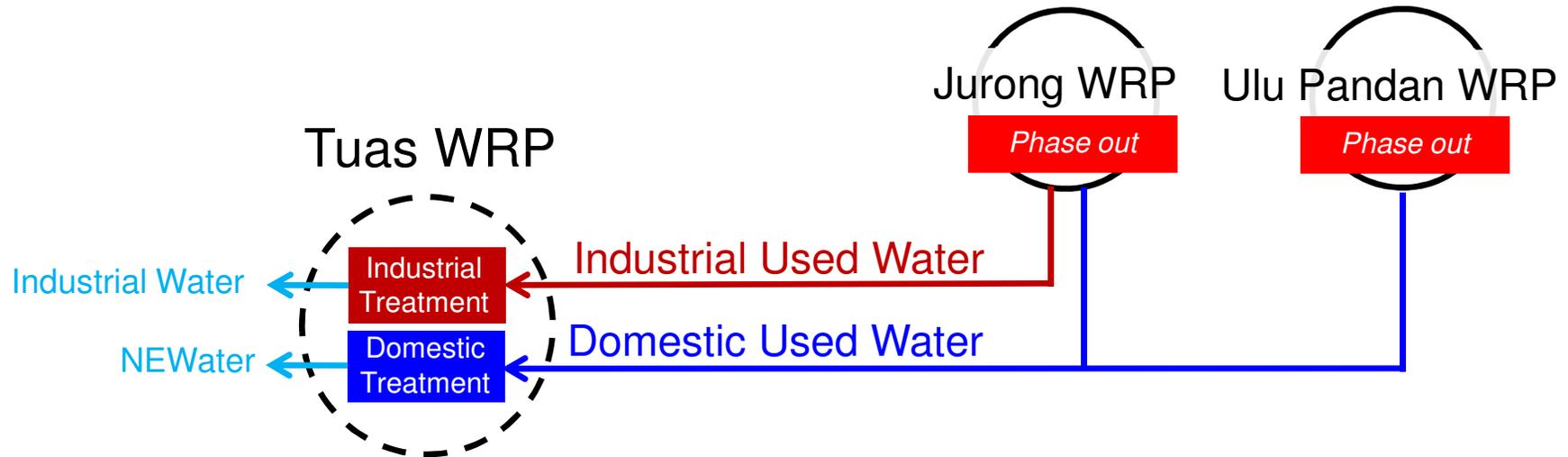


Marina Barrage

Deep Tunnel Sewerage System



Overview of Tuas Water Reclamation Plant



- Unlike Changi WRP, Tuas WRP will treat 2 used water streams, which are conveyed separately.
- Tuas WRP's initial treatment capacity:
 - Used Water Treatment: 176 MGD (800,000 m³/day)
 - ⇒ Domestic Module: 143 MGD (650,000 m³/day)
 - ⇒ Industrial Module: 33 MGD (150,000 m³/day)
 - NEWater Treatment : 25 MGD (114,000 m³/day)

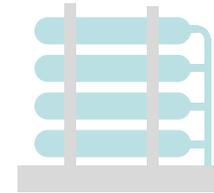
Features of Tuas Water Reclamation Plant



Largest Membrane Bio-Reactor (MBR) Facility in the World



High quality effluent production



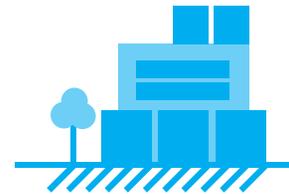
Up to 85% of NEWater recovery from domestic used water



Closing the water loop by recycling from industrial used water



More than double energy recovered from used water



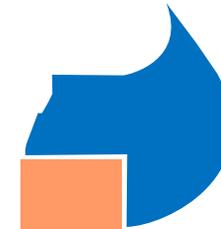
Plant is built "upward" to leverage on natural ventilation and lighting



Maximize roof space to recover solar energy



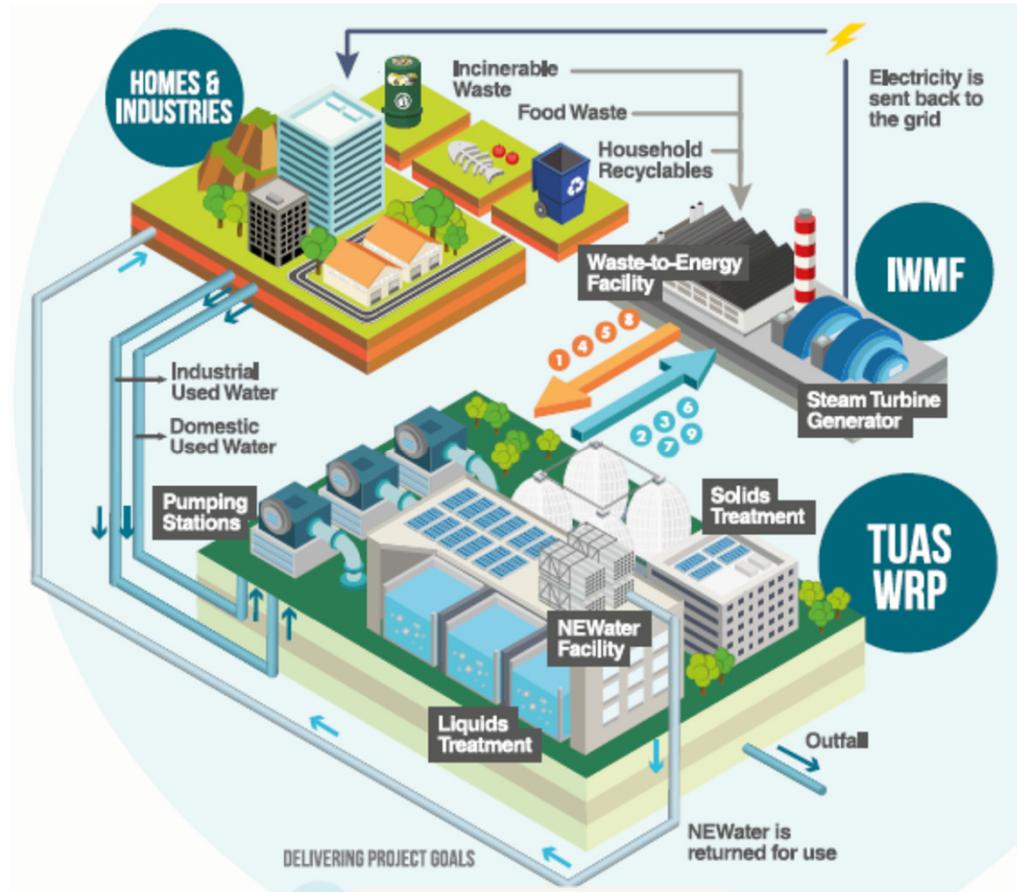
Smart plant requiring less manpower to operate and maintain



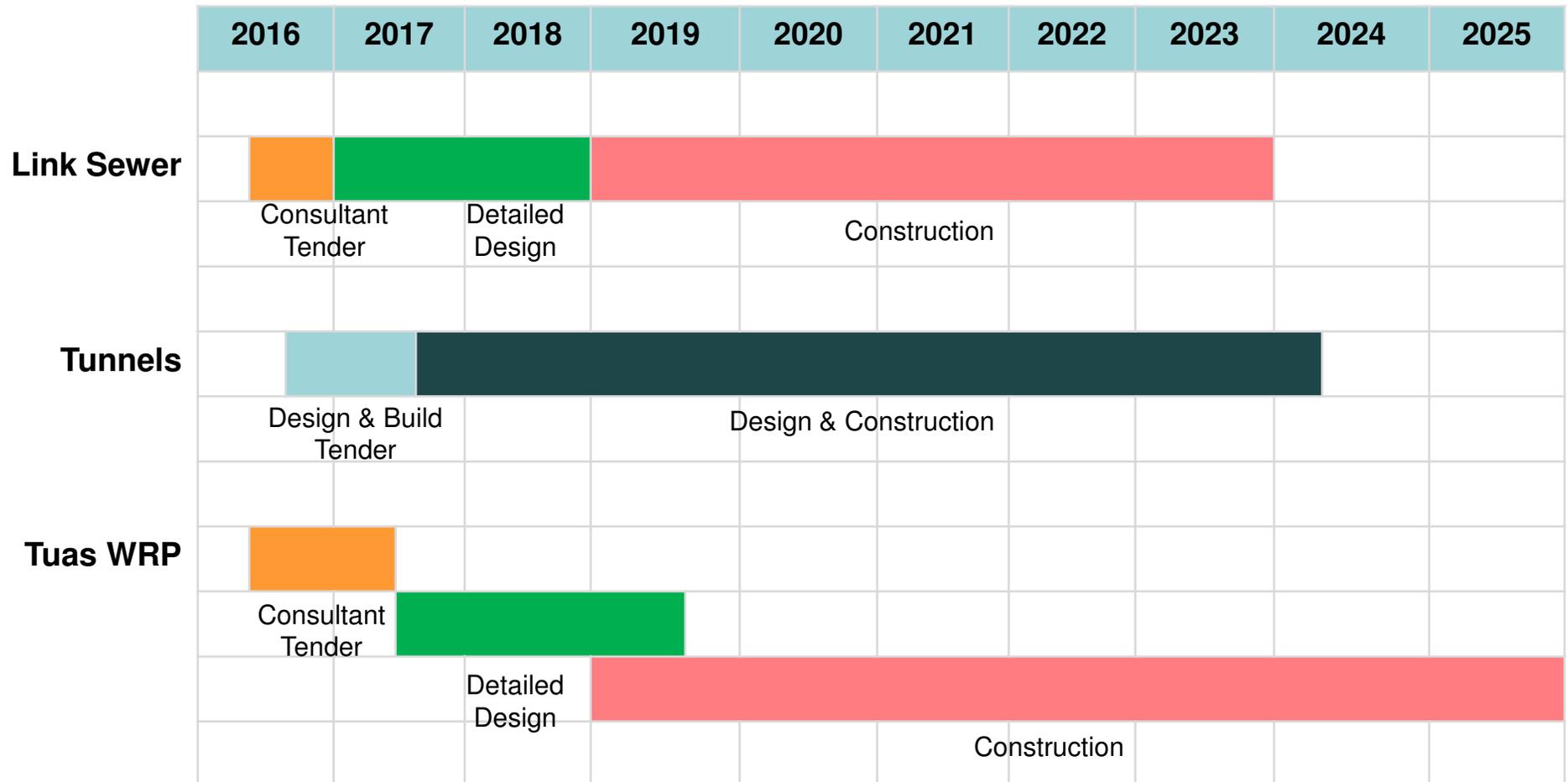
Integrated with NEA's IWMF to leverage on water-energy-waste nexus

Integration of Tuas WRP & IWMF

- ✓ To leverage the **water-energy-waste nexus**
- ✓ First of its kind planned from the ground up (**greenfield project**)
- ✓ **Energy-self-sufficient**
- ✓ Food waste, power supply, steam supply and sludge drier condensate from **IWMF to Tuas WRP**.
- ✓ Dewatered sludge, grit, biogas, water supply and foul exhaust air from **Tuas WRP to IWMF**.



DTSS Phase 2 Project Timeline



Supporting Contracts for Deep Tunnel Sewerage System

Remotely Operated Vehicle (ROV)

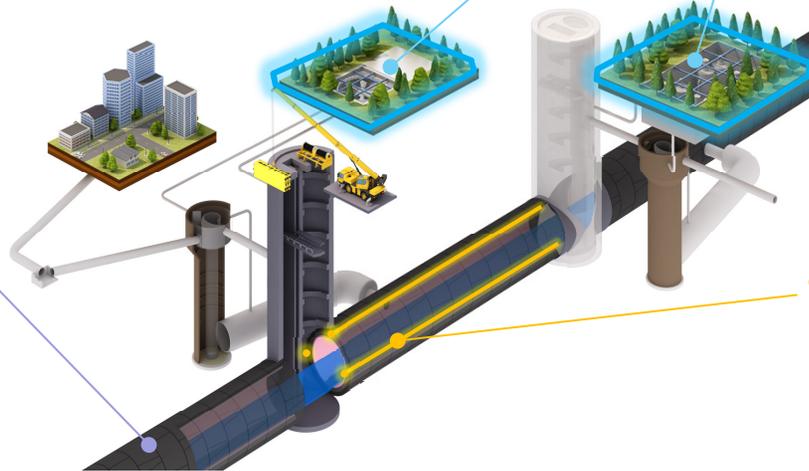
- Inspection of tunnels using crawling/floating ROVs without the need for man-entry
- **Tender in 3Q 2022**

MEICA (Conveyance)

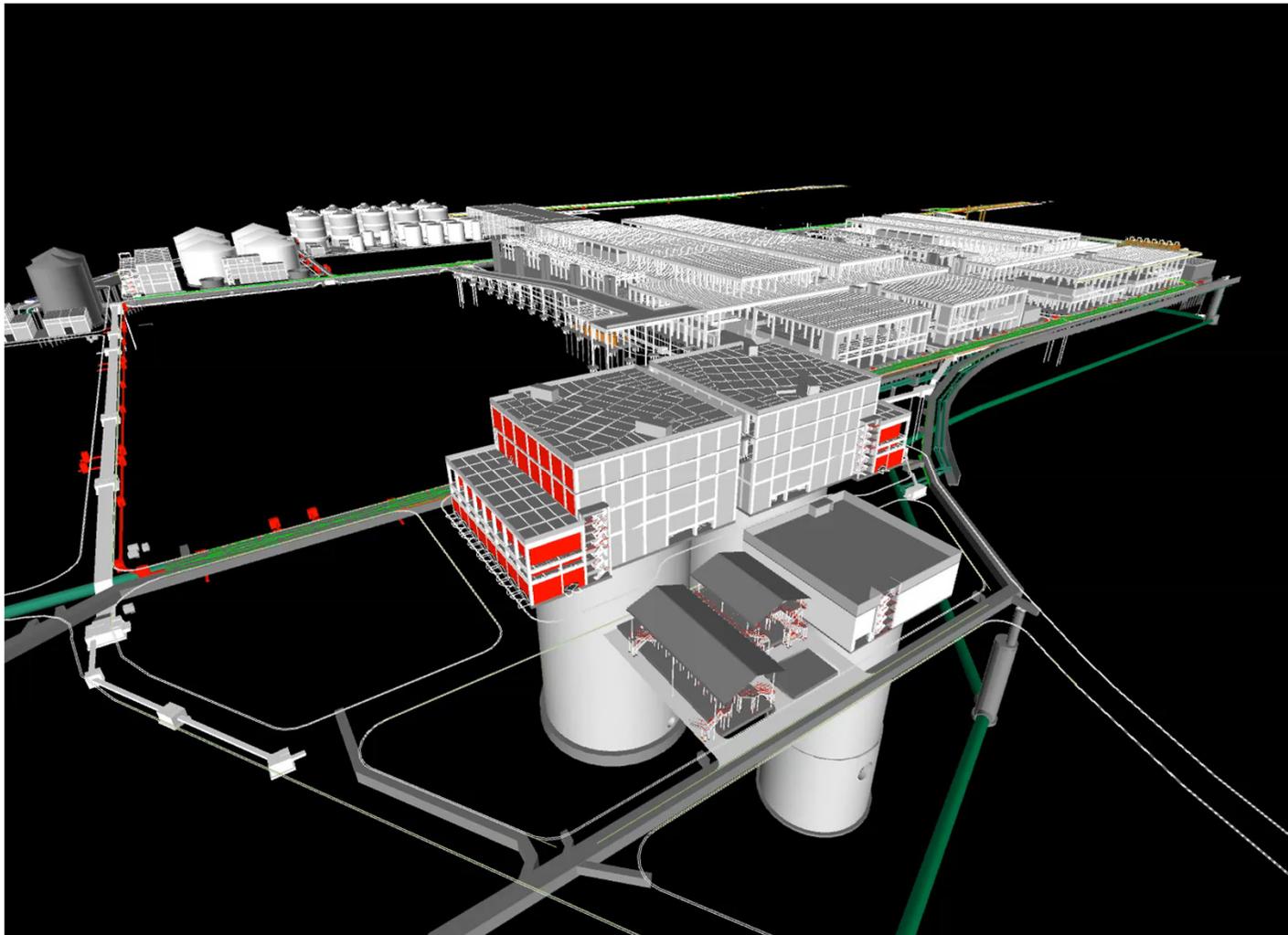
- DTSS 2 involves the extraction and treatment of odorous air at odour control facilities (OCFs), or air jumpers (AJs) to convey air from the incoming link sewer to the deep tunnel and to push it along the tunnel to next available OCF.
- 13 AJs and 4 OCFs were identified for the DTSS 2 conveyance network.
- **Tender in 4Q 2019C**
- **Contract period from 2Q 2020 to 4Q 2023**

Tunnel Integrity Monitoring System (TIMS)

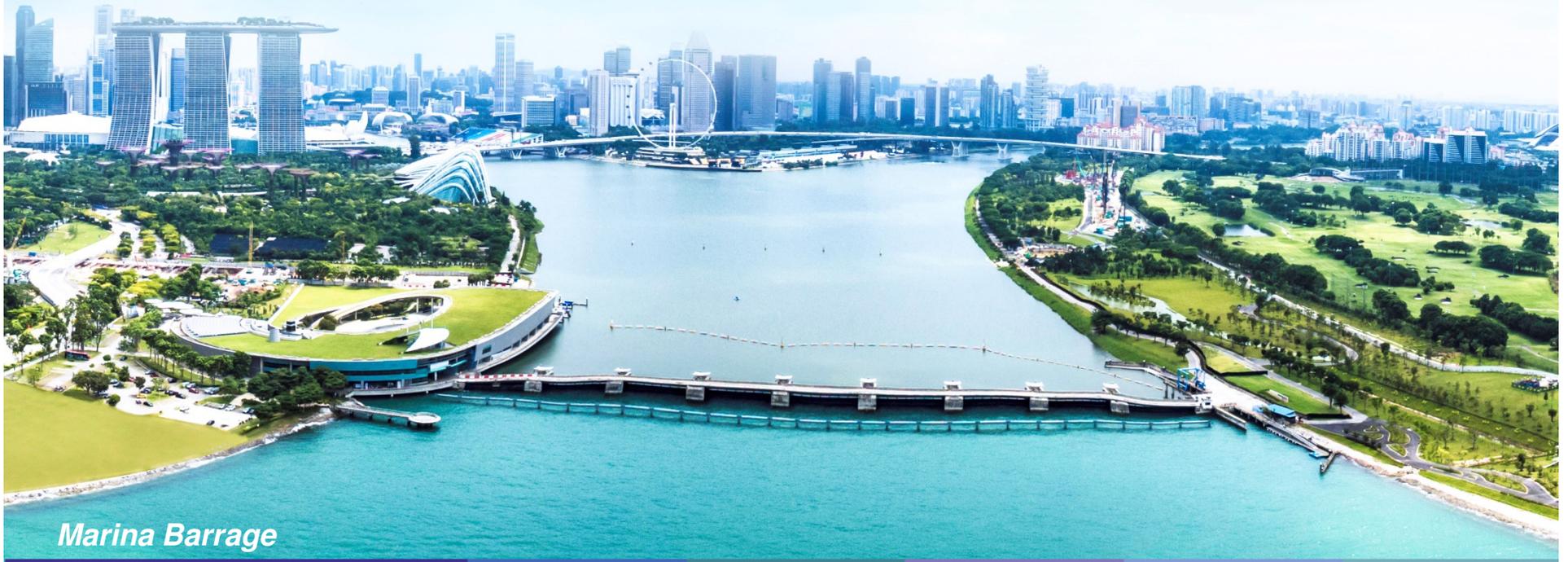
- Fibre Optic Sensing System installed along tunnels and shafts to monitor structural integrity without the need for physical entry and inspection. Possibility to monitor vibrations and link to SCADA
- **Pre-Q exercise in 4Q 2018; Tender in 2Q 2019**
- **Contract period from 3Q 2019 to 4Q 2023**



Tuas Water Reclamation Plant



Thank You



Marina Barrage