

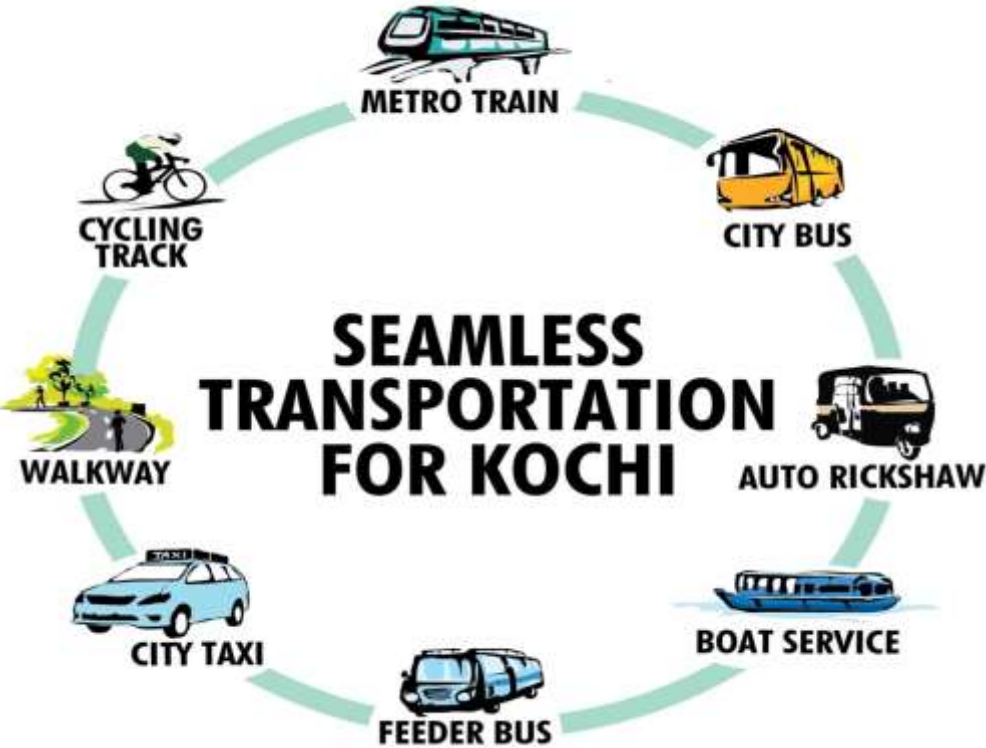


KOCHI WATER METRO PROJECT

Presenter: KMRL
Date: 22 JAN 2021



- **Integrated Urban Water Transport System**
- **Holistic development of the areas being connected by waterways**
- **Augmenting ferry based transport system as modal shift**
- **Reliable, safe and environmentally friendly system**
- **Higher frequency and shorter headway**
- **Multi-modal integration with first and last mile connectivity**
- **Integrated Traffic Management System with dedicated Operations Control Centre (OCC)**



One network !

One timetable !

One Card !



INTER MODAL HUBS PLANNED BY WATER METRO

- Metro – Bus station – Water transport – 3 Locations
- Bus station – Water metro – 12Nos
- Integration with NMT – Walkways, elevated paths, Cycle tracks

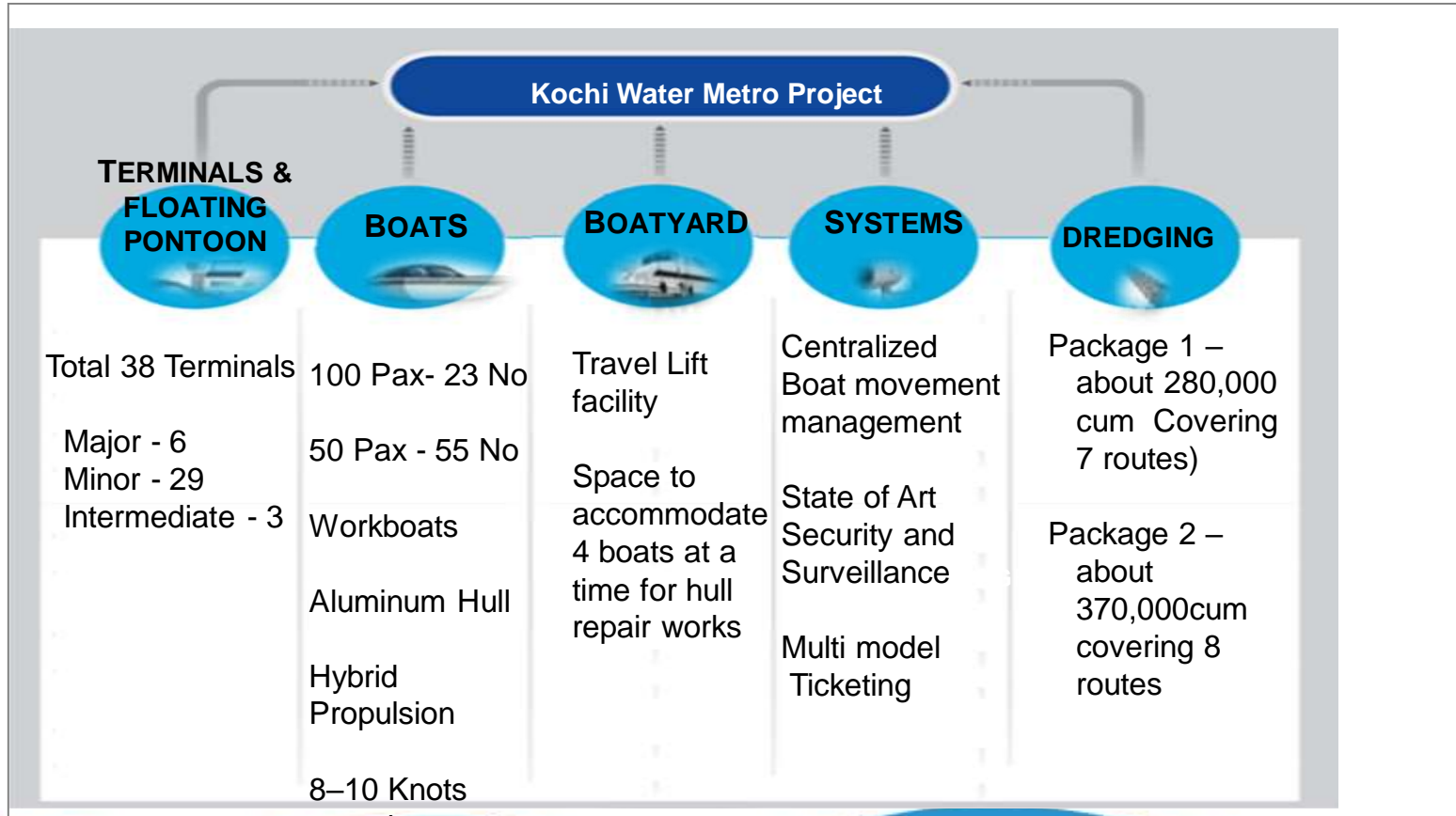


Proposed Project location – Kochi, Kerala

- Kochi Corporation
- 4 Municipalities
- 7 Panchayaths

In 2035 when fully operational the Water Metro Project shall cater to a daily ridership of 1.5 Lac passengers





- **3 types in the order of their size and capacity**
 - Major - 5 Terminals**
 - Intermediate - 9 Terminals**
 - Minor - 31 Terminals**
- **Terminal Design – Paid & Unpaid areas with emphasis on seamless movement of people**
- **Automated fare collection(AFC) Gates**
- **Passenger Counting System – to prevent overcrowding**
- **Waiting area with toilet and washroom facilities**



- Type of hull – Twin-screw Aluminium Catamaran
- Propulsion - Hybrid Electric
- Battery Chemistry – Lithium Titanate Oxide (LTO)
- Boat Capacity – 23 no of 100 pax & 55 no. of 50 pax
- Speed of the boats : 8 to 10 knots
- Diesel operation: only emergency and for higher speed regimes

General

Hull Material	Aluminium
Superstructure Material	FRP
Vessel Type	Passenger Ferry
Classification	Dual Class (DNV-GL & IRS)
DNV	+1A, IN(1,2) METRO FERRY BATTERY POWER)
IRS	+IWL, +IY, ZONE2, FERRY

DIMENSIONS

Length OA	24.8 m
Beam (OA)	6.4 m
Depth (MLD)	1.7 m
Draft(MLD)	0.9m

PERFORMANCE

Design Speed (Hybrid Mode)	10 Knots
Service Speed (Electric Mode)	8 Knots
Service Speed (Diesel)	8 Knots

PROPULSION SYSTEM

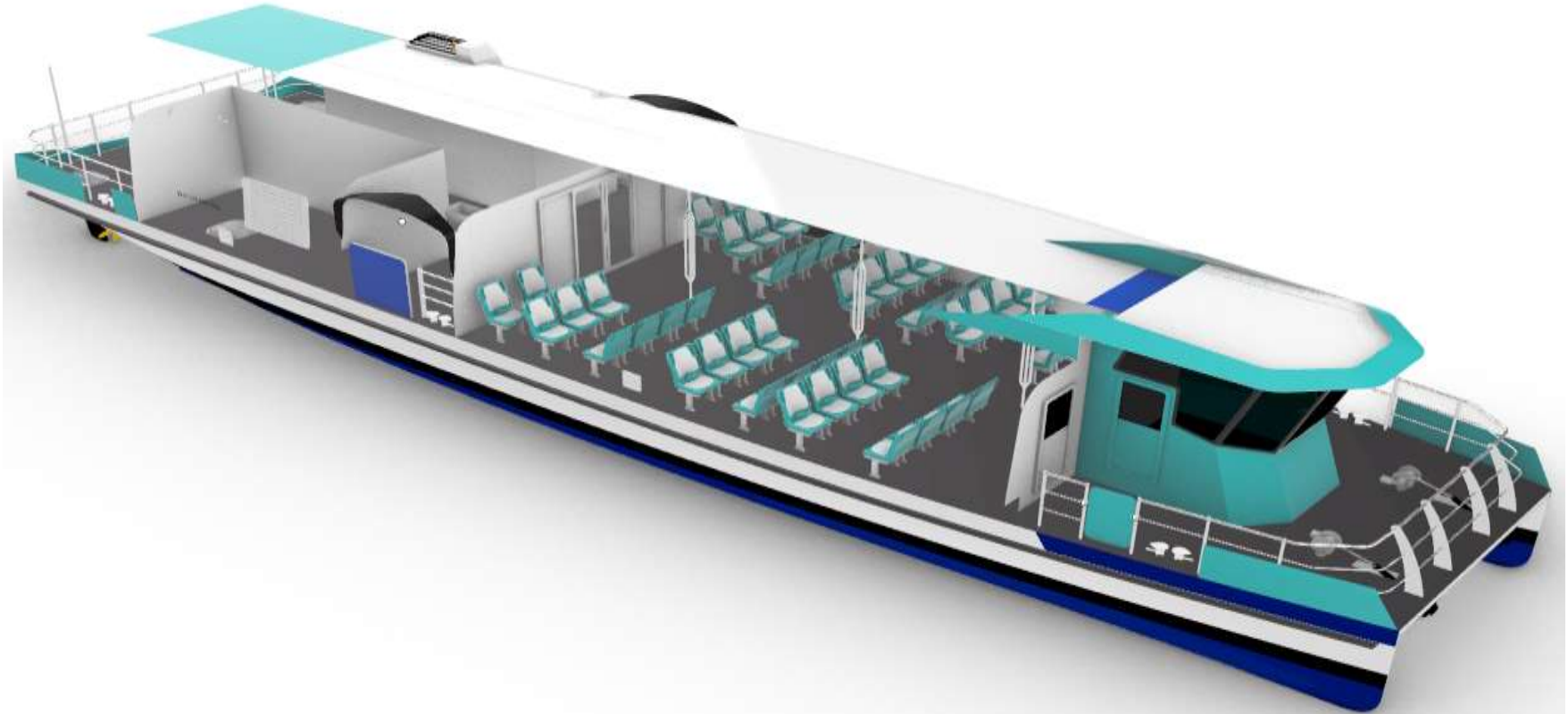
Type	Hybrid Twin Screw
Diesel Generators	2 x 40 KW
Propellers	Ni-Al bronze

BATTERY

Type	LTO
Capacity	~ 120 KWh

PASSENGERS

Passengers	100
Wheelchairs	2
Crew	4
HVAC	Fully Air conditioned Passenger space
NAV EQUIP	Radar, Thermal Camera ABLS, Echo Sounder DMR, CCTV



- MATERIAL** - **CONCRETE**
- CORE** - **EXPANDED POLY STYRENE (EPS)**
- SIZE** - **20m X 4.8m (for 100 pax boats) & 15m X 4m (for 50 pax boats)**

Features

- **People Friendly Design**
- **Lightweight Aluminium Gangway for Pontoon to shore transition**
- **Provision for Solar panel on top of pontoon roof**
- **Eco friendly lighting**
- **Pedestals for Water, Electric supply & SOS**
- **Navigational Aids**
- **Boat charger**

- **Operational Control Centre**
Single point command and control for the full fleet of vessels
- **Automatic Boat Location System**
Passenger information system with live boat tracking
- **Intelligent Integrated Communication System**
Digital mobile radio (dedicated communication channel)
- **Passenger Counting System**
Restricting passengers based on boat capacity
- **Automatic Fare Collection**
- **Surveillance : CCTV cameras on boat and terminals**

- **76.2 kms Route length**
- **Area of operation – National Waterways (40%), Cochin Port Trust waters (33%), Existing routes under Irrigation (20%) and others (7%)**
- **Water depth required -2 to -2.50m CD in Channels , -1.50m CD in approach and jetty pockets**
- **Navigational buoys and night navigational assistance**
- **Water weeds and floating waste management**
- **Minimal dredging involved – 0.65 million cum**
- **Average maintenance dredging - 0.23 million cum per year**





Item	Status
Statutory approvals	All statutory approvals received. Environmental Clearance from MoEF&CC received
Construction of terminals	<ul style="list-style-type: none"> • 16 terminals awarded • 11 Terminals construction in progress • 4 Terminals ready for operation from 15th Feb'21 • Remaining 22 terminals–tender under approval from KfW
Hybrid – Electric boats	<ul style="list-style-type: none"> • 23Nos, 100 pax boats Design work completed • First boat delivery on 15 February 2021. • 30 Nos, 50 pax boats tender to be published in Jan'21
Floating pontoons	<ul style="list-style-type: none"> • Awarded to Marinetek , Finland • Delivery, installation and commissioning from 10 Feb'21
Dredging	<ul style="list-style-type: none"> • Work in progress by Tebma Marine, Chennai
ITMS	<ul style="list-style-type: none"> • Work awarded to Amnex, and in progress

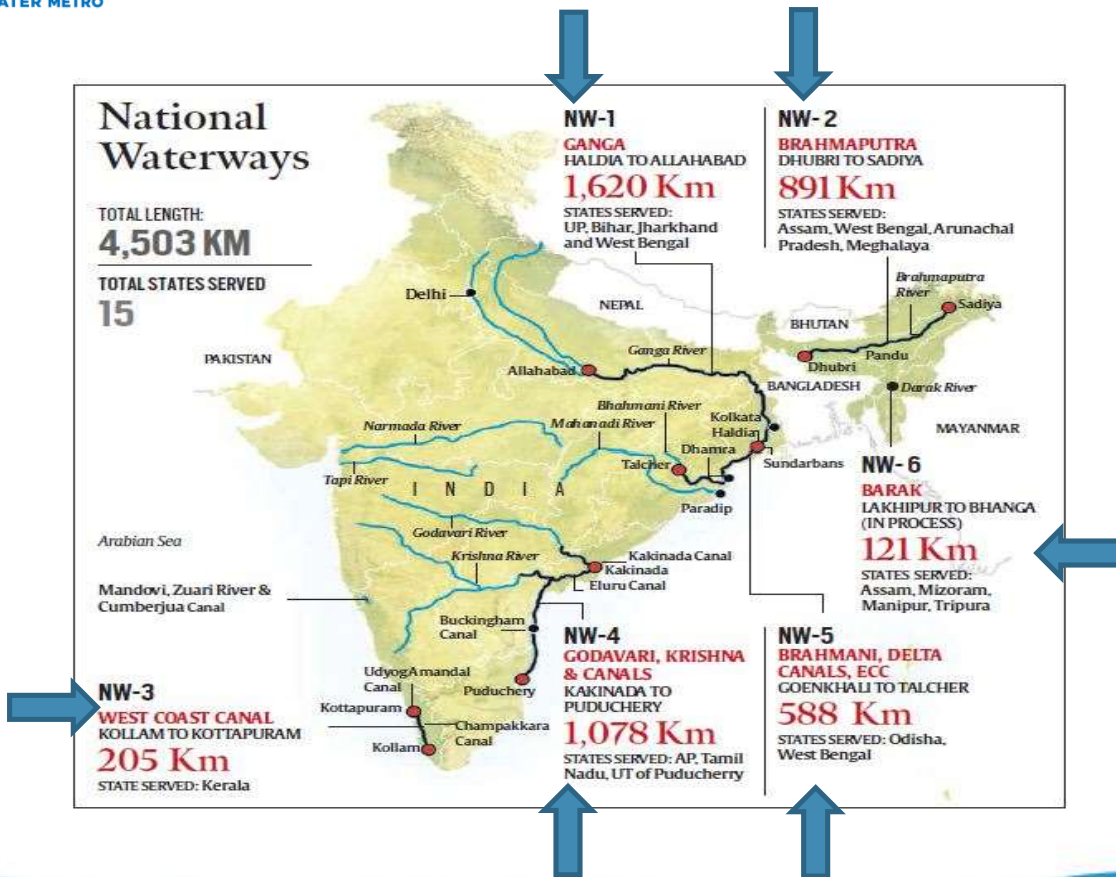
Item	Status
Land Acquisition	<ul style="list-style-type: none">• All government lands in possession• LA in progress for 14 private lands
Emergency Response cum Work Boat	<ul style="list-style-type: none">• 4
Boatyard	<ul style="list-style-type: none">• In 2 Acres land
Fuel Station	<ul style="list-style-type: none">• BPCL

- **Better connectivity to islands**
- **Decongestion on roads**
- **Increased Tourism potential**
- **Reduced travel time and increased reliability**
- **Inter- modal connectivity**
- **Passenger centric terminals and boats**
- **Green and Clean mobility Corridor**
- **Socio-economic development of islands**
- **Enhanced employment opportunities**

- **First of its kind with 78 Nos of battery operated fleet under one umbrella**
- **No Via duct required**
- **Different set of safety/statutory rules & regulations**
- **Flexibility to reach interior islands**
- **Travelling experience through scenic waterways**
- **Limited flexibility to accommodate higher number of passenger**
- **Higher safety precautions /regulations**
- **Additional operating conditions like current, weather, waves, weed, siltation etc**



POTENTIAL AREA & CITIES



POTENTIAL CITIES

- VARANASI
- SRINAGAR
- AMARAVATI
- GOA
- KOLKATA
- AYODHYA
- MUMBAI
- HYDERABAD
- BHOPAL

Any city with Lakes, Rivers, back waters



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