No. SIP-04/1/2026-SIP (1)
Government of India
पत्तन, पोत परिवहन और जलमार्ग मंत्रालय
MINISTRY OF PORTS, SHIPPING AND WATERWAYS
(Special Initiatives and Projects)

परिवहन भवन/Parivahan Bhawan,
1, संसद मार्ग/1, Sansad Marg,
नई दिल्ली/New Delhi - 110001
दिनांक/**Dated: 24th June, 2026**

OFFICE MEMORANDUM

Subject: Stakeholder Consultation on the Draft National Water Metro Guidelines, 2026 – reg.

The undersigned is directed to say that the Ministry of Ports, Shipping and Waterways, in consultation with the Inland Waterways Authority of India, has formulated the Draft National Water Metro Guidelines, 2026 for operationalization of Water Metro in coastal and inland waterways.

2. A copy of the aforementioned Draft Guidelines is enclosed herewith for stakeholder consultation.

3. All concerned are requested to examine the draft document and furnish their comments/suggestions/inputs, if any, to this Ministry at sip-psw@gov.in **within 7 days** from the date of issue of this OM.

24/6/26

(Dr. Tarun Kumar Budal)
Deputy Director
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Encl.: As above

To,

All concerned.

DRAFT NATIONAL WATER METRO GUIDELINES, 2026

Contents

1. Background and Context

1.1. Introduction

Rapid growth of Indian cities with increasing population, increased focus on economic activity and rapid urbanization has resulted in transport problems. Urban transport in India is struggling with congestion, air pollution, inadequate public transit options, and high fossil-fuel dependence.Aligned with the objectives of the Harit Nauka Guidelines, the Water Metro prioritizes green transportation by promoting clean-fuel, low-emission vessels. By leveraging energy-efficient inland waterways and adopting electric or hybrid propulsion systems, the initiative aims to significantly reduce the carbon footprint of urban transit.

Rapid growth requires various modes of transportation, but the availability of land for new transport infrastructure is becoming increasingly constrained.The Water Metro model addresses this limitation by utilizing existing navigable waterways to create a robust, reliable, and environmentally sustainable urban transport network. It represents an innovative shift in city mobility, offering safe, efficient, cost-effective, and eco-friendly alternatives to conventional road-based systems.

The Inland Water Transport (IWT) system in India plays a critical role in strengthening urban mobility and regional connectivity. It enhances access to remote or water-locked areas, enables shorter and faster travel by bypassing long road corridors, and helps decongest overburdened road networks. Beyond mobility, IWT contributes significantly to economic growth by lowering transport costs, supporting local livelihoods, and improving the movement of goods and people. It also unlocks substantial tourism potential, particularly in States/Union Territories (UTs) with rich cultural and natural waterways, thereby boosting local economies. As a low-emission, energy-efficient mode, IWT strongly aligns with national goals for sustainable and environmentally responsible transportation. These advantages underscore the Government's continued emphasis on expanding and modernizing IWT as a key pillar of future urban mobility.

1.2. Concept of Water Metro

A Water Metro is a **mechanically propelled, mass passenger transport system/supplementary urban water transport system** operating on inland, coastal, or other water bodies, designed for systematic movement of people and, where applicable, vehicles, and may include passenger vessels and Ro-Pax excluding cruise vessels.

Such systems may **operate across intra-city, inter-city, coastal, and inter-island corridors, on rivers, canals, lakes, backwaters, estuaries, creeks and coastal**

waters and are not restricted to Inland Waterways. Water Metro services generally use**modern, standardized vessel designs equipped with prescribed safety, accessibility, environmental-protection features**, and function as part of an organized public transport network.

1.3. Key Features of Water Metro

1.3.1. Mass Transport Character

i. Services are open to the general public
ii. Operate on scheduled or regulated routes
iii. Intended primarily for public mobility

1.3.2. Vessel Types Included

Water Metro systems **may includePassenger-only vessels and Ro-Pax vessels**(passengers + limited vehicles).Recognizing that Water Metro systems are at a nascent stage of development, sustainability shall be encouraged at the planning and design stage itself. Accordingly, all Water Metro vessels should preferably operate on zero or low-emission designs to provide a safe, reliable and sustainable mobility solution.

All vessels shall be mechanically propelled compliant with national framework under Inland Vessel (IV) Act 2021 and rules framed thereunder along with States' rules framed under the IV act 2021, if applicable.

1.3.3. Waterways Covered

Operations are **not limited to notified National Waterways** and may be on State or Union Territory or locally administered water bodies, subject to applicable clearances.

1.3.4. Functional Use

May support daily commuting, tourism, mixed-purpose travel and general public mobility.

2. Rationale for a dedicated Water Metro Guidelines

At present, Mass Rapid Transit Systems (MRTS) frameworks primarily encompass Bus Rapid Transit System (BRTS),Light Rail Transit (LRT), tramways, metro rail, and regional rail systems, with inland waterway-based transport largely remaining outside the formal public transport ecosystem.

The government of India has been giving a lot of importance to the development of urban transport and inland water transport in recent years. In this context, roll out of water metro systems hasthe potential to reduce congestion and provide an eco-friendly

mode of transportation. In order to ensure systematic implementation of water metro systems across the country, it is important to lay down broad principles for the same.

Dedicated Water Metro Guidelineswould provide a structured, coordinated approach between the Centre and States/UTs, positioning waterways as a formal component of public transport alongside existing MRTS modes. The guidelineswould promote an ecosystem-based framework focused on standardization, safety, technical efficiency, and sustainable system design, including a transition to low-emission and green propulsion technologies.

A common framework will encourage**Water Metro systems develop in a coordinated and consistent manner, enabling standardized safety practices, streamlined vessel designs, clear institutional arrangements,scalable and replicable implementation across regions**.

3. Key Characteristics to be Emphasized in Water Metro

3.1. Green, Zero or Low-Emission Fuel-Powered Vessels

IWT, by virtue of lower energy consumption per passenger-kilometer, has the potential to significantly enhance sustainability and cost efficiency within the urban mobility and logistics ecosystem. However, a large proportion of the existing inland vessel fleet in India continues to rely on conventional fossil fuels such as diesel.**Given that the Water Metro ecosystem is at a nascent stage, systems should be encouraged from the outset as low-emission alternatives, with provisions for clean-fuel or hybrid vessel configurations incorporated at the planning and design stage itself.**

Considering the current maturity of vessel designs, availability of proven specifications, operating cost sustainability, and ease of deployment, electric propulsion (including battery-operated and solar-assisted vessels) emerges as the predominant option for Water Metro systems in the near term. While electric-powered vessels may bepresently prioritized, based upon technological developments, fuel availability, cost trends, and safety considerations,**periodical reviews, should be undertaken to enable phased induction of other suitable clean-fuel** propulsion technologies as they achieve operational readiness and commercial viability.

For specific operating conditions—such as **longer trip lengths, higher power or range requirements, challenging waterway characteristics or safety considerations, hybrid vessels may be usedto ensure safe, efficient and reliable operations.**

3.2. Standardization of Vessel Design and Specification

Water Metro systemswill be encouraged to promote**standardized designs and specifications for vessels to the extent possible, for ensuringoperational efficiency, safety, ease of maintenanceand scalability. Designs and specifications indicated by Inland Waterways Authority of India (IWAI) would be encouraged.**

Vessel designs used in Water Metro systems shall be **approved by the Indian Register of Shipping (IRS) or any other classification societyauthorized by DG Shipping and shall facilitate interoperability, safety and economies of scale in manufacturing across different waterways, subject to local waterway characteristics**.

The choice of vessel materials—such as steel, aluminium or reinforced fibre-plastic (FRP)—and structural strength parameters shall be aligned with navigational conditions, hydrological characteristics, draft restrictions, climatic conditions and safety requirements of the concerned waterways.

All vessels intended to carry passengers under Water Metro should mandatorily possess auxiliary power for safety in case of unforeseen conditions.

3.3. Enhanced Service Quality and Safety Standards

Water Metro systems shall aim to significantly**improvethe quality, reliability and safety of inland water-based passenger transport services**. This can be achieved through a transition towards modern vessels, adoption of advanced navigational and communication systems, compliance with prescribed technical and safety standards, and professionalized operational and maintenance practices.

Emphasis shall be placed on **passenger safety, comfort, accessibility, predictable schedules and service reliability** to position Water Metro systems as a credible and preferred mode of urban public transport.

3.4. Indigenization

Vessels procured for Water Metro systems are to be indigenously built, in line with the objective of promoting domestic manufacturing and self-reliance. Aggregation of demand through standardized designs and bulk procurement should be encouraged to achieve economies of scale, negotiate competitive costs, and progressively enhance local content across the Water Metro ecosystem.

3.5. Integration with Urban Transport and Mobility Networks

Water Metro systems shall be planned and implemented as an integral part of the broader urban mobility framework. **Seamless integration with road networks, metro rail systems, bus services and other urban transit modes shall be prioritized to enable multimodal connectivity.**

Adequate provision shall be made for **last-mile connectivity including pedestrian walkways, non-motorized transport infrastructure, feeder services and intermodal terminals to ensure ease of access and maximize ridership potential**.

4. Planning and Implementation

4.1. Project Planning

4.1.1. Institutional Support and Role of IWAI

For development of Water Metro projects on any National Waterway the Inland Waterways Authority of India (IWAI) will prepare the DPR. IWAI has already conducted many feasibility studies to assess the cargo and passenger traffic potential on many National Waterways. Based on such studies and its technical assessment, IWAI may identify suitable stretches for development of Water Metro projects and undertake necessary project development initiatives.

In cases where a State Government or UT Administration intends to independently develop a Water Metro project on a National Waterway, it shall obtain a No Objection Certificate (NOC) from IWAI, in accordance with Chapter IV – “Functions and Powers of the Authority”, Section 14 of the Inland Waterways Authority of India Act. This requirement is necessary to ensure that the proposed development is aligned with the regulatory framework, navigational requirements, and safety standards applicable to National Waterways.

For development of Water Metro projects on waterways other than National Waterways, IWAI shall provide necessary facilitation and technical support forpreparation of Detailed Project Reports (DPRs), upon receiving a request from concerned State Government/UT Administration.

4.1.2. Proposal Requirements

Proposals for Water Metro systems are to be supported by a comprehensive assessment of transport alternatives, comparing different modes to establish the suitability of Water Metro solutions for the identified corridor. In addition to

Techno-Economic Feasibility Report (TEFR), theDPR should include socio-economic cost–benefit analysis, site and route assessment, land acquisition and rehabilitation requirements and plans, strategies for transit-oriented development (TOD), integration with other urban transport modes and last-mile connectivity plansand identification of potential non-fare box revenue streams to enhance long-term financial viability.Financial Internal Rate of Return (FIRR), Economic Internal Rate of Return (EIRR) and sensitivity analysis shouldbe included in the DPR. Fare determination of water metro transport is a public policy issue and should be aimed at encouraging mass environment friendly public transport. Hence, it should not be seen as a mere tool for enhancing financial viability as this will defeat the very purpose of having a high-capacity mass transit system which brings in greater economic, social and environmental benefits to the region. Therefore, EIRR for any Water Metro project proposal holds greater significance than FIRR.

DPR for the water metro project will be location-specific and will cover diversity of hydrological and geographical conditions across cities along with variations in tidal patterns, sedimentation rates, seasonal water levels, navigational depth, and coastal vulnerability and will require location-specific techno-economic assessments.

DPR for the projectshould make an assessment of alternatives, which includes comparative cost effectiveness analysis with other available urban transport mode.

All concerned statutory clearances required for Water Metro shall be clearly listed out in the DPR.

4.2. Suitability of Cities and Circuits for Water Metro System

Water Metro systems may be considered in cities, regions or specific urban zones that demonstrate **suitable geographic, demographic and mobility characteristics**.

I. Water Metro planning may be considered in urban or regional contexts that demonstrate inherent **geographic suitability –** presence of **navigable waterways,** availability of continuous or semi-continuous **navigable circuits capable of supporting scheduled services**and **hydrological conditions that can reasonably supportsafe and reliable operations**including manageability of seasonal variations through appropriate design and operational planning.

II. Water Metro systems are most suitable for cities and regions with concentrated populations and directional travel patterns, in line with mass rapid transit planning principles:

a. (**Urban agglomerations or metropolitan regions with populations typically exceeding one million**, where water-based transport can operate as a high-capacity, high-frequency public transport mode;

or

b. **Cities with populations above one lakh** where clearly defined demand or seasonal corridors exist, particularly in tourism-intensive areas or locations with significant existing waterway passenger traffic, indicating established or latent demand);

and

c. Supported by **minimum peak ridership levels that justify mass-transit operations.**

III. Water Metrosystems should be positioned as a complementary mode within the overall urban transport network, particularly in contexts where they can deliver tangible mobility benefits. **Planning priority or threshold relaxations may be considered for**:

a. Cities experiencing severe congestion on road networks, where **water-based transport can offer congestion relief** and improved travel reliability.
b. Corridors where water transport **enables shorter, faster, or more direct journeys by bypassing long, circuitous road or rail routes.**
c. Regions where waterways provide **critical connections across natural barriers, access to remote water-locked habitations reducing dependence on bridges or limited crossing points**.
d. Areas where water transport can meaningfully enhance resilience during floods or infrastructure disruptions.

4.3. System-Based Approach to Planning

Planning and development of Water Metro systems shall follow a system-based, integrated approach, rather than stand-alone interventions.

Water Metro planning shall be **guided by the city's Comprehensive Mobility Plan (CMP**), where available, with a view to ensuring seamless integration with the overall urban transport network. Water Metro circuits may be identified as part of, or in consistency with, the CMP to promote:

I. Multimodal connectivity and interoperability,
II. Optimal modal share between road-based, rail-based and water-based transport,
III. Reduction in congestion and emissions, and
IV. Sustainable urban mobility outcomes

In cities where a CMP is not available, the State/UT Government/IWAI may undertake suitable mobility assessments or studies to establish the role of Water Metro within the broader urban transport framework prior to project implementation.

4.4. Ecosystem Approach to Development

Water Metro systems require an end-to-end ecosystem approach for achieving operational, financial and user-centric success. Accordingly, planning and implementation shall be undertaken with a long-term perspective, encompassing both vessel operations and requisite shore-side infrastructure.

4.4.1. Vessels

a) Water Metro vessels shall take into considerationprovisions ofSection 3 of theseguidelines, including technical compliance,safety, energy efficiency, accessibility and passenger comfort.
b) Adequate provision shall be ensured for support vessels such as dredgers, emergency response and rescue vessels, medical aid vesselsand patrolling vessels to maintain navigability, operational safety, and security across the corridor.
c) Fleet planning shall be integrated with service frequency, terminal capacity, and energy infrastructure to ensure reliable operations.

4.4.2. Pontoons and Jetties

a) Pontoons and jetties shall be designed for appropriate structural strength and buoyancy, accounting for peak passenger traffic, boarding and alighting dynamics and local hydrological conditions.
b) Jetty height and interfacing shall be aligned with vessel freeboard to ensure universal accessibility and safe passenger movement.
c) Selection of construction materials, including concrete, rubber, or composite systems, shall consider durability, lifecycle costs, waterway characteristics, tidal variation, and maintenance requirements

4.4.3. Bunkering and Charging Infrastructure

a) Depending on fleet configuration, suitable low-emission fuel stations, electric charging stations, or swappable battery systems shall be provided to ensure service continuity.
b) Charging interfaces shall be standardized and sized to avoid queuing during operating hours, with night-time or off-peak charging provisions encouraged.
c) Backup and resilience measures including DG sets, Uninterruptible Power Supply (UPS) systems, Automatic Power Factor Controller(APFC) panels, shore power supply, and energy management systems may be incorporated to ensure uninterrupted and efficient operations.

4.4.4. Terminal and other facilities

a) Terminals shall generally include ticketing facilities, waiting areas, Automatic Fare Collection (AFC) systems, passenger information systems, medical aid facilities, and integration with control and command centers.
b) In areas with limited or non-availability of land along the waterfront, innovative solutions such as compact terminals, shared infrastructure, or demarcated dedicated Water Metro jetties with AFC provisions are to be adopted in lieu of conventional spread-out terminal layouts.
c) Terminal design shall prioritize inter-modal integration, universal accessibility, safety, and efficient passenger circulation.

4.4.5. Navigational Aids

Navigation aids are essential for safety in water transport such as buoys, channel markers, and signage for safe operations. Advancement in technology has combined traditional markers (lighthouses, buoys) with modern digital technology (GPS, AIS, smart buoys) to create efficient, smooth maneuvering and to prevent accidents.

4.5. Coordination and Approvals

Given the multi-sectoral nature of Water Metro systems, project planning and implementation shall involve coordination with relevant agencies, including but not limited to urban development authorities, transport departments, inland waterways agenciesand environmental and safety regulators.
Appropriate institutional mechanisms may be established by State/UT Governments to facilitate inter-departmental coordination, timely approvals, and efficient project execution.

5. Suggested Financing Models and Financial Prudence:

While overall project costs are expected to be lower than rail-based MRTS due to limited land-side construction, the induction of low-emission vessels and the supporting energy ecosystem (charging/bunkering, shore power, APFC, resilience) increases upfront capex.
Ridership growth potential and modal shift may be comparatively modest relative to metro rail, and several corridors will serve lower-income users, warranting reasonable, affordable fares to sustain mass-transport utility.

5.1. Funding Models

Various funding models that may be explored include:

I. **Joint State-Central funding:**Under this model, eligible project capital expenditure is shared between the Central Government and the State/UT Government, while operation and maintenance (O&M) expenditure gap, if any, will be borne by the State. *The cost of land and R&R will be borne by the State Govt.*

II. **Fully State-funded:**Projects may be undertaken entirely by the State/UT Government, with both capital and operating expenditures financed through State/UT resources.

III. **PPP-led development:**Water Metro projects may be developed through private participation under appropriate PPP structures. Such projects may, where justified, be supported through Viability Gap Funding (VGF) from the State/UT and/or Central Government. *The cost of land and R&R will be borne by the State/UT Govt.*

IV. **Central-Funded model**: In exceptional cases, where a Water Metro project demonstrates substantial socio-economic impact, regional connectivity benefits, or strategic public interest, the Central Government may considerbearing the entire project cost.

Centre/States/UTs may also leverage multilateral funding, green finance instruments, or other permissible sources to support project implementation.

5.2. Indicative Operations and Maintenance Model

In funding models 1, 2 & 4 under section 5.1, O&M may be **undertaken by an SPV, either through in-house arrangement or outsourcing arrangement including PPP model**.

O&M contracts, where adopted, may be structured under Gross Cost Contract (GCC), Net Cost Contract (NCC), or cost-plus-fee arrangements.

- **Gross Cost Contract (GCC):** Private operator is paid a fixed/variable fee; revenue risk retained by SPV; suitable for fare affordability and service control.

- **Net Cost Contract (NCC):** Operator retains fare revenue and bears revenue risk; SPV sets service and performance standards.

- **Cost-plus-Fee:** Actual audited costs reimbursed with a management fee, used where demand/technology risks are high.

Where projects are implemented under a PPP framework, end-to-end responsibilities including O&M, shall be undertaken by the private concessionaire.

5.3. Revenue Enhancement

The Water Metro System shall strengthen its viability through:

I. Modal shift promotion through integrated ticketing, reliable frequencies, and last-mile connectivity

II. Non-fare box revenues: Advertising, retail, event spaces, waterfront/commercial development, value capture/TOD instruments, and ancillary services (parking, feeder services etc.). Public-private development of shore-side commercial assets to cross-subsidize operations where feasible.

5.4. Cost Optimization and Sustainability

Toenhance efficiency and long-term viability, Water Metro projects are to **explore cost-optimization measures across planning, infrastructure, and operations**including, **fleet and service rationalization, efficient infrastructure and OPEX management.**

The objective is long-term financial sustainability, with any operating losses transparently managed and progressively reduced through efficiency gains, revenue diversification, and targeted support.

6. Fare Policy

Fare policies shall be formulated within the existing relevant statutory framework and shall be guided by corridor-specific considerations including projected ridership, demand growth potential, affordability, target user demographics and income profiles, and the intended end use of the servicesuch as daily urban commuting or tourism-oriented travel. **The primary objective shall be to ensure affordable, inclusive access to public transport services, with operational sustainability being pursued without prioritizing revenue maximization over user accessibility and affordability.**

7. Legal Framework

Shipping and navigation on National Waterways involving mechanically propelled vessels fall under Entries 24 &30 of the Union List in Schedule VII of the Constitution. Therefore, the Inland Waterways Authority of India (“IWAI”), a

statutory authority constituted under the IWAI Act, 1985, is empowered for development and regulation of infrastructure on National Waterways.

For waterways other than National waterways, IWAI has advisory functions with respect to inland water transport under Section 14(2) of the IWAI Act. Inland waterways other than National waterways and mechanically propelled vessels plying therein, fall under Entry Number 32 of the Concurrent List (in Schedule VII of the Constitution).

Based on the above framework, the regulation of all mechanically propelled inland vessels is governed by the provisions of the Inland Vessels Act, 2021 ("IV Act"), and other relevant Acts, Rules and guidelines.

Under Inland Vessels Act, 2021 ("IV Act") and Inland Waterways Authority of India Act, 1985 ("IWAI Act"), the Central Government has, through the Rules, prescribed standards relating to construction, design, manning, pollution control, and safety, which all mechanically propelled vessels must comply with while plying on inland waterways (Annexure – I).

The Central Government sets standards for inland vessels under the IV Act which are implemented by the State/ UT Governments and their authorities. Establishment and operations of water metro systems should be in compliance with all applicable central/state/UTs legal frameworks.

8. Monitoring of Performance

Projects shall be monitored against Key Performance Indicators relating to safety, punctuality, ridership, service quality, environmental performance and on the indicators decided by the administering authority. Independent audits, third-party inspections, and public disclosure of key performance information shall be undertaken.

9. GuidelinesReview and Revision

These guidelines shall be periodically reviewed, to ensure continued relevance and effectiveness. The review process shall take into account**evolving alternative fuel and propulsion technologies, changes in demand patterns and ridership behavior, operational experience, cost and financing considerations, and developments across the broader Water Metro ecosystem.**

Based on such reviews, suitable revisions may be undertaken to adapt the guidelinesto emerging technologies, regulatory changes, best practices, and lessons learnt from

implementation, with the objective of enabling responsive, future-ready, and sustainable Water Metro systems.

Annexure-I

Statutory Framework

Instead of reproducing provisions, provide a matrix of applicable laws:

- Inland Vessels Act, 2021
- Inland vessels (Construction and Survey) Rules
- Inland Vessels (Safe Navigation, Communication and Signals) Rules
- Inland Vessels (Registration and Certification) Rules
- Inland Vessels (Prevention and Containment of Pollution) Rules
- Inland Waterways Authority of India Act, 1985
- National Waterways act, 2016
- Merchant Shipping Act (where applicable for coastal waters)
- Environment Protection Act, 1986
- CRZ Notification (for coastal projects)
- Electricity Act and CEA Regulations
- Rights of Persons with Disabilities Act, 2016
- State Maritime Board/ State Inland Water Transport Laws
- Urban Transport and Transit-Oriented Development Policies
- IRS (Indian Register of Shipping)