



Standard Operating Procedure (SOP)

For River-Sensitive Gatherings Along Riverbanks

TITLE

Standard Operating Procedure (SOP) for River-Sensitive Gatherings Along Riverbanks

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DISCLAIMER

The actions recommended in this Standard Operational Procedure (SOP) are prepared by referring to standard practices followed in national documents/standards and in some of the developed countries. The States/Departments that intend to follow this SOP should incorporate local conditions and administrative structures, as well as the legal provisions to contextualize the actions recommended.

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ABBREVIATIONS

CPCB	Central Pollution Control Board
CSIR	Central Scientific and Industrial Research
DEE	Department of Environment and Energy
EPA	Environmental Protection Agency
ICT	Information and Communication Technology
NEERI	National Environmental Engineering Research Institute
NGT	National Green Tribunal
NPS	National Park Service
NOC	No Objection Certificate
PCB	Pollution Control Board
PHED	Public Health and Engineering Department
SOP	Standard Operating Procedure
UBA	German Environment Agency

TERMINOLOGY

1. **Carrying Capacity:** refers to the maximum number of individuals that the environment/location can accommodate sustainably.
2. **Development Control Regulations:** is a mechanism that controls the development and use of land.
3. **Ecosystem:** is a geographic area where plants, animals, and other organisms, as well as weather and landscapes, work together to form a bubble of life.
4. **Flood Plain:** is low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.
5. **Impact Assessment:** is a planning and decision-making tool used to assess the potential positive and negative effects of proposed activity.
6. **Native Species:** is a species that is within its known natural range and occurs naturally in a given area or habitat, as opposed to an introduced species or invasive species.
7. **No Objection Certificate:** is a legal document issued by an organization, institute, or an individual to say that they have no objection to the mentioned details in the document.
8. **Riparian buffer:** is an area adjacent to a stream, lake, or wetland that contains a combination of trees, shrubs, and/or other perennial plants.
9. **Riverine Island:** is any kind of landmass within a river that sits above water. It may be an island, a sand bar or a rock.
10. **River Health:** is a measurement of how well a river is able to sustain its natural properties and provide a habitat for natural aquatic life to thrive.
11. **Standard Operating Procedures:** is a set of step-by-step instructions for performing a routine activity.
12. **Third Party Evaluation:** is an impartial evaluation of an organization's activities by an external entity to ensure they meet set standards and benchmarks
13. **Waste Audits:** is a formal, structured process used to quantify the amount and types of wastes being generated by an organization/ event organizers.

GATHERINGS ALONG RIVER BANKS

In the context of the proposed SOP, the concentration of a significant number of people (individuals, groups, or organizations) assembling near or along the river's edge for specific events or purposes results into various sizes of gatherings ranging from small to large. These gatherings could involve diverse activities attracting varied crowd sizes and demographics which sometimes exerts pressure on resources (natural/administrative) beyond their carrying capacity. Several examples of gatherings are riverfront spiritual festivals, celebrating local culture, music, and arts with performances, exhibitions, and food stalls; concerts and theatrical performances drawing thousands of attendees; public gatherings for civic ceremonies, rallies, or environmental awareness campaigns; and riverfront tourist attractions hosting guided tours, river sports/cruises, and nature walk trails, resulting into substantial footfall and interaction of people in different forms along riverbanks.



1

INTRODUCTION

Rivers have been revered ever since communities first started to live beside riverbanks. In addition to providing food as means of subsistence, economic advantages, and transportation; rivers also benefited communities by providing avenues for cultural practices and recreation. Progressively, the interaction of communities with rivers has evolved. The interactions of the limited people residing in small settlements along the river intensified due to population growth, increasing demands, as well as accessibility avenues like roads, bridges etc..

In India, rivers are considered sacred and are worshipped as goddesses and have been considered sacred. Due to this, communities have been gathering along river banks to offer prayers on auspicious occasions at different times of the year. In particular, gatherings have become a hallmark of modern societies, acting as platforms for social interaction, entertainment, and a celebration of togetherness. The allure of the riverside location is evident, as it provides a picturesque backdrop and access to water as a resource.

Rivers around the world host some of the most significant and captivating gatherings, drawing people from diverse backgrounds to participate in a variety of cultural, religious, and festive events. These gatherings often carry deep historical and spiritual significance, creating vibrant celebrations that showcase rich traditions and bring communities together in unique ways. In India, the Magh Mela, Kumbh Mela and Maha Kumbh Mela are mega events that take place along the banks of the Rivers attracting millions of people. In 2019, during the Maha Kumbh Mela, approximately 240 million people visited the river (Kanaujiya, A; Tiwari, V; 2022). It is the biggest among all the Kumbhs that are held along the riverbanks of four Indian cities- Allahabad, Ujjain, Haridwar, and Nashik along the riverbanks every 12 years at a particular astronomically significant time.

Another noteworthy gathering along the river is held in the Kerala state of India during the Onam festival, which unites thousands of people celebrating cultural heritage along the Pamba River. The festival attracts crowds from all over the world, who come to witness the Aranmula Boat Race (a form of river sport) organized by the Kerala tourism department. Similarly, Chhath Pooja is celebrated by communities of the Bihar state across India by taking a holy dip in any river/ waterbody in the vicinity.

Globally, also rivers have been celebrated/worshipped, for example, the Loi Krathong festival celebrated in Thailand involves decorated vessels floating on rivers to symbolize purification and gratitude to water spirits, blending Hindu, Buddhist, and animist traditions. The Dragon Boat Festival of China commemorates poet Qu Yuan's death with races and consumption of sticky rice dumplings on the 5th day of the 5th lunar month. San Antonio's River Walk Parade in Mexico with over 100,000 attendees, fuels the local economy through tourism, benefiting businesses and cultural venues amidst its scenic 15-mile walkway.

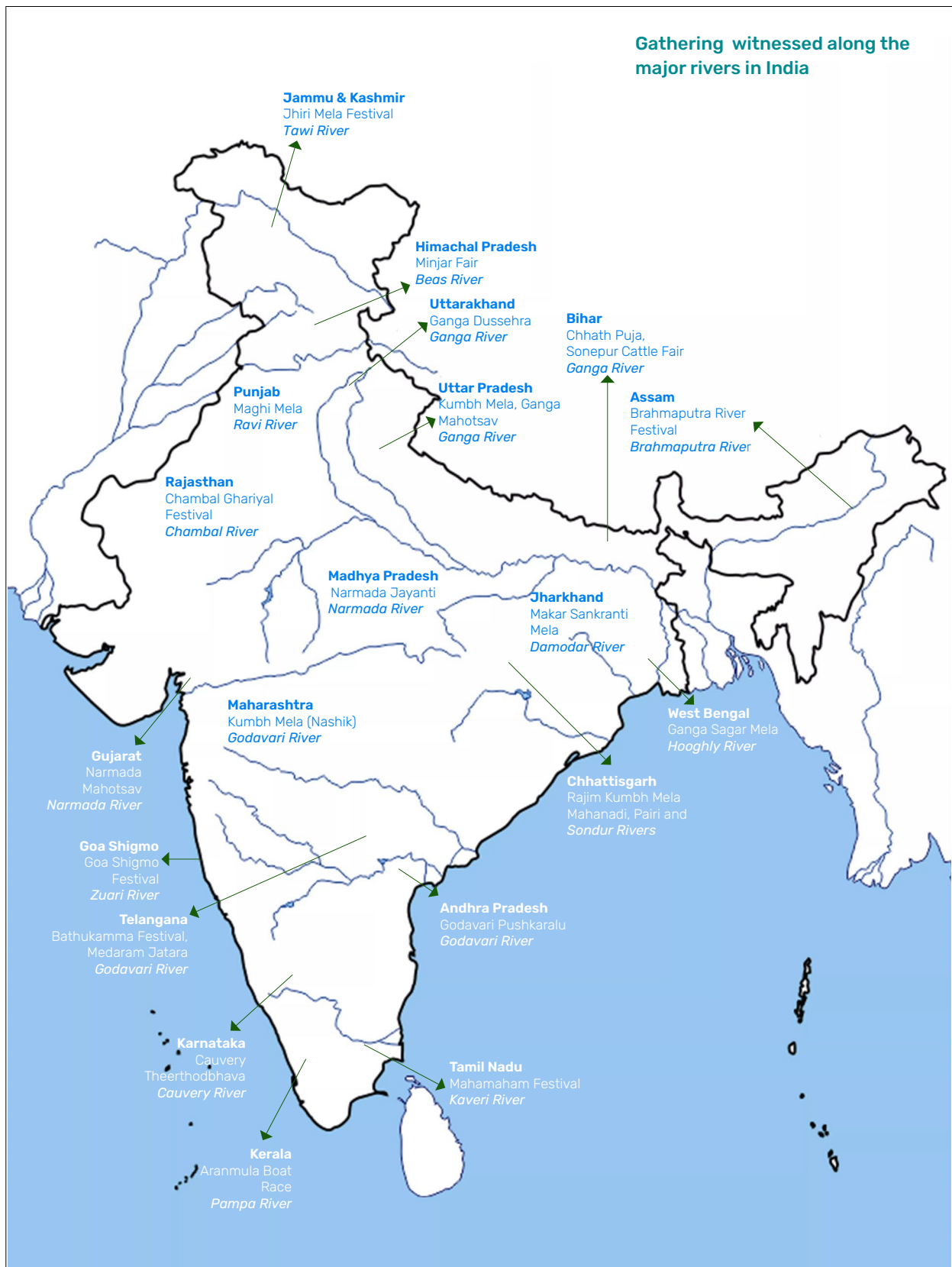
The gathering of the communities on the riverbanks is not new and has not changed. On the contrary, it has intensified and has reached a stage where these gatherings have started to disturb the riverine ecosystem by altering its landscape, impacting the water quality, and most importantly affecting associated biodiversity.

With changing lifestyles, and human behaviour, the challenges of government institutes to maintain the natural identity of rivers during gatherings are increasing. The non-availability of guidelines specifically for managing gatherings along riverbanks poses a significant threat to the delicate riverine ecosystems and undermines the sustainable co-existence of both the rivers and the gatherings. Therefore, a dedicated SOP that helps institutes take necessary actions during gatherings is highly recommended.

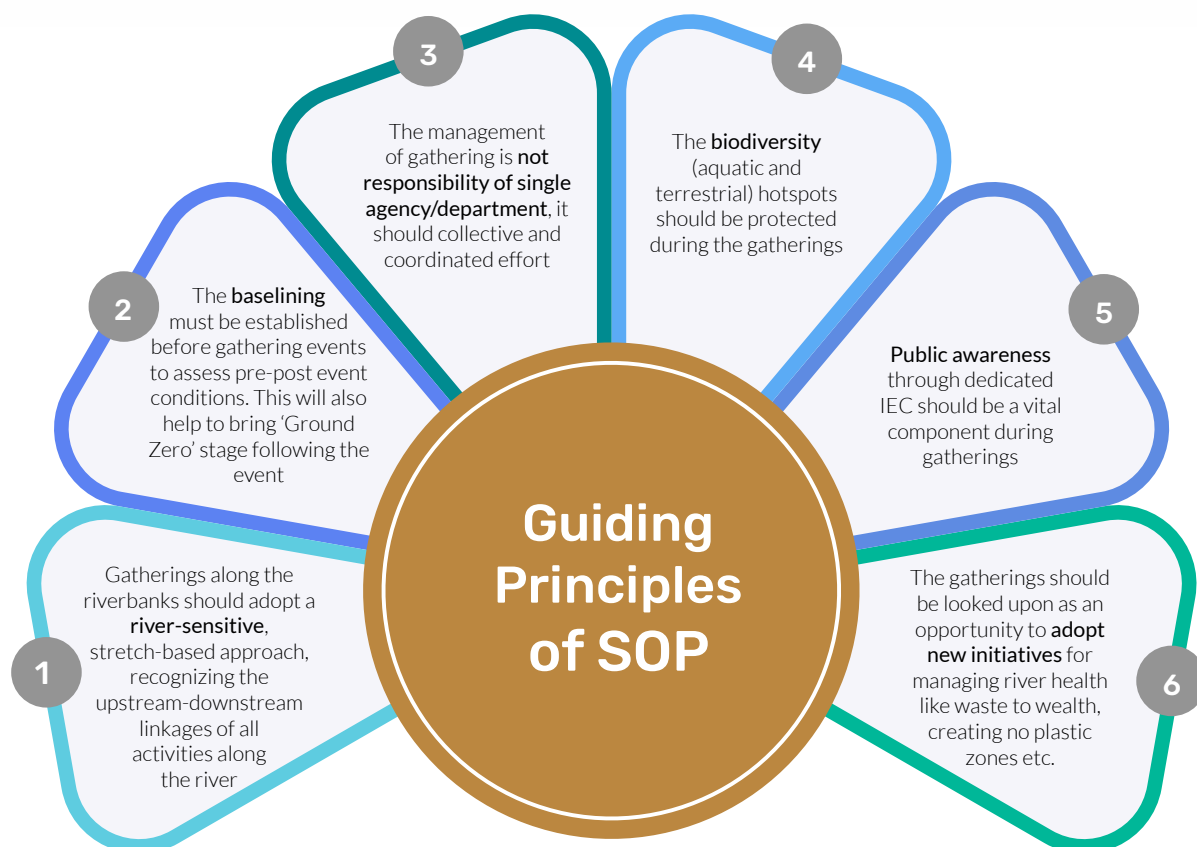
NGT, 2017 Direction

During the Kumbh Mela 2016 event held in Prayagraj City, efforts were made by authorities to protect the biodiversity, including relocation of certain species to safer habitats. However, the scale and duration of the event made it difficult to sustain. Noticing the impact of large gatherings on the river's health, the National Green Tribunal (NGT) in 2017 directed the Uttarakhand and Uttar Pradesh governments to formulate guidelines for any religious activities on the ghats of the Ganga or its tributaries.

The following map illustrates a variety of religious and cultural gatherings that take place along rivers across different states in India.



The following are six indicative guiding principles proposed under this SOP



1.1 Rationale and Objectives

Currently, the management of gatherings along the riverbanks is confined to crowd control, stampede handling, and maintaining law and order situations. Limited attention is given to water, sanitation, and solid waste management arrangements at the event location. However, the river, which takes center stage and is the most affected during gatherings, is not given due attention. Moreover, there is no Standard Operating Procedure (SoP) to help authorities to effectively plan and organize gatherings so that the riverine ecosystem is least affected. The review of existing SOPs or guidelines issued by authorities related to gatherings does not give directions on maintaining the river's health, the biodiversity around it, or the floodplain on which the event takes place. The situation is fairly similar in other countries, with the exception of a few developed countries that have some provisions on permitted/non-permitted activities. Interestingly, in Europe, the impacts due to outdoor sports, leisure, and recreational activities have been ranked among the top ten threats to freshwater ecosystems¹ (Schafft, M. et al. 2021).

Thus, while gatherings along the riverbanks encourage community spirit, provide avenues for cultural exchange, and fuel the local economy, they also pose threats to the entire riverine ecosystems. Recognizing this challenge and also a gap in adequate directions, a dedicated SOP tailored to river-friendly event planning is required.

Objectives of the SOP

1. To streamline/standardize the process of organizing river sensitive gatherings along the riverbank
2. To minimize the event's environmental footprint
3. To identify and promote better management practices/approaches for organizing events along the river banks
4. To define the roles and responsibilities of all line departments involved in gathering events
5. To recommend action points to follow pre, during and post-event to restore the site to its natural state as much as possible

1.2 Target Audience

This SOP is prepared for administrators and functionaries of different departments, who are responsible for management of events on banks of rivers passing through their administrative territory. It also aims to serve as a guidance note for all event organizers (government or private) to minimize the adverse impact of gatherings on the riverine ecosystem.

The SOP essentially focuses on Floodplain, River Water Quality, and Bio-diversity, which are affected most due to the gatherings. The indicative actions to be followed before, during, and after the events aim to protect the overall riverine ecosystem within the influence of the event.

It is proposed that the executive powers to operationalize this SOP are with the District Magistrate (DM) / SDM as most of the departments (para-statal and municipal) will be within their jurisdiction. A detailed responsibility matrix showing desired actions during large gatherings is included in section 2.1 of this document.

1.3 Scope of Managing Gathering for River health

In India, sizable gatherings usually exceed the natural carrying capacity of event sites and resources. A makeshift and necessary infrastructure (which is usually inadequate) facility is provided. However, it is not clear how the estimates for the influx of people in these gatherings along riverbanks is made. Additionally, the carrying capacity of space with respect to gatherings is usually not gauged or if at all it is, it is not rational.

Currently, there are no scientific measures or standards being followed in India to understand the crowds/gatherings in public/open spaces. As per Oberhagemann, D 2012, the maximum density of people that can be allowed is only 2 persons/m² in case of rainy and slippery conditions. For static (immobile) crowd, 5 persons/m² is the maximum allowable limit, even allowing 6 persons/m² is high risk. The densities of 5-6 persons/m² must not be exceeded for static crowds. For the dynamic/moving crowd, the acceptable limit is 1.5 persons/m² and the critical limit is reached at 2 persons/m².

To effectively manage large gatherings, urgent guidance is required on comprehensive measures such as stricter regulations on waste disposal, promotion of eco-friendly practices during festivals, and initiatives to raise awareness about the importance of preserving river ecosystems.

The planning of gatherings along river banks broadly falls under two categories and demands short and long term planning.

Short-term planning primarily applies to non-recurring events that last for a day or few days (weekly). These events require temporary and purpose-specific preparedness and infrastructure.




Long-term planning is required for events like Kumbh, Magh Mela, etc., which are recurring in nature and happen at fixed time intervals and may last for months. Such events usually occur at fixed locations and therefore, need feasible infrastructure, depending upon the popularity, periodicity of the event, terrain, weather, and crowd gathering.

Long-Term Planning for Haridwar-Rishikesh

Authorities are working on revision of the Master Plan for Haridwar-Rishikesh, designating 'no motor' zones in some areas, 'only electric vehicles' in some areas, widening of roads, green belts and beautification, promotion of Information Education Communication (IEC) activities by including religious, charitable, social and educational institutions, plantation in bio-diversity parks along river Ganga and its tributaries, including on the encroached land (after removing such encroachments).

This SOP encompasses protocols for various phases of event planning, execution, and post-event management. It outlines specific actions, responsibilities, and best practices aimed at ensuring environmental sustainability, protecting water resources, and minimizing ecological impacts during such gatherings. It addresses pre-event planning and preparedness, during-event management strategies, and post-event assessment and restoration measures, providing a structured framework for effective and efficient response to environmental challenges associated with large gatherings along riverbanks.

This SOP attempts to cover the three phases of events to ensure an effective and efficient response, sustainable practices and mitigate adverse impacts on the river ecosystem.

-  **Pre-Event (Planning and Preparedness):** These include environmental impact assessments, obtaining necessary permits, setting up waste management and water quality monitoring systems, and conducting participant education campaigns.
-  **During-Event (Monitoring & Management):** This phase will focus on real-time monitoring of water quality, waste management, emergency response protocols, and ensuring participant adherence to sustainable practices.
-  **Post-Event (Assessment and Restoration):** Following the event, actions include thorough site clean-up, waste segregation, recycling efforts, habitat restoration, and post-event monitoring of environmental impacts.

By highlighting specific actions for each aforementioned phase and identifying responsible departments, the SOP ensures an organized approach to managing large gatherings on river banks while prioritizing river health and environmental sustainability throughout the event lifecycle.

Environmental Sustainability: Rivers are complex ecosystems that harbor a diverse array of species and contribute significantly to the surrounding environment. Any disturbance caused by large gatherings can have long-lasting effects on water quality, biodiversity, and overall ecosystem health.

Economic Impact: Large gatherings significantly contribute to the local economy through tourism and commercial activities as well as boost livelihoods. They are also an avenue for cities to earn revenue from different activities. Any adverse environmental impacts of large gatherings could affect the city administration’s reputation, thereby affecting its image. By adhering to river-friendly guidelines, event organizers can ensure that the economic benefits of these gatherings are not overshadowed by negative consequences.

Cultural and Social Responsibility: Large gatherings along the river if not managed, not only damage the environment but also contradict the principles of community responsibility and sustainable development that modern society upholds. This SOP would instill a sense of duty towards both the environment and the community, fostering a more responsible event culture.

To highlight the impacts of the periodic and specific large gatherings that have impacted the health of the river, the following case examples are summarized.

SN.	Large gathering event	Rivers affected	Impact on river ecosystem
1.	The Maha Kumbh Mela (gathering) that takes place every 12 years at four cities-Haridwar, Prayagraj, Nashik, and Ujjain. Millions of devotees from India and abroad take holy bath in rivers on auspicious days.	Ganga, Kshipra, Godavari	<ul style="list-style-type: none"> • During the Kumbh Mela held in Haridwar in 2016, approximately 100 tons of solid waste was generated daily during the event and was dumped daily into the agricultural fields of the Sarai village. After one and a half months, this site contained 7,500 tons of solid waste which started affecting the soil of these agricultural fields. • The Kumbh Mela, held in Prayagraj in 2019, resulted in an alarmingly high level of coliform bacteria in the Ganges.
2.	In Ayodhya city, on the occasion of Ram Navami in Ayodhya city, many thousands of people take bath in the river passing through the city.	Sarayu	<ul style="list-style-type: none"> • Devotees release offerings such as flowers, food, and other materials directly into the water, contributing to contamination and degradation of water quality.
3.	During the Chhath puja festival, millions of devotees gather to offer prayers and make offerings to the sun god.	Ganga and many Indian rivers, waterbodies across India	<ul style="list-style-type: none"> • Devotees release offerings such as flowers, food, and other materials directly into the water, contributing to contamination and degradation of water quality.

4.	The world culture festival was organized by the Art of Living organization on the floodplains. Around 35 lakh national and 20 thousand international audience attended the event.	Yamuna floodplain	<ul style="list-style-type: none"> • Around 170 hectares of the floodplains was impacted. • Nutrition value of the soil was adversely affected. • The NGT fined INR 5 crores to the organization and has decided to monitor the floodplain.
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The aforementioned large gatherings along the river banks OR floodplains have ultimately damaged the river’s health, biodiversity in the surrounding areas and the floodplain ecosystem. There are many such events taking place at different times of the year in India.

1.4 Limitations and Challenges for SOP

This SOP attempts to cover all possible actions that are required to reduce the impact of large gathering events on rivers. However, certain limitations necessitate careful consideration and adaptability. Acknowledging these limitations and challenges, periodic reviews, updates, and stakeholder consultations could improve the SOP’s effectiveness.

Limitations

- 1. Legal Backing:** The actions recommended in the SOP are voluntary in nature and not enforced by any legal provisions at national/state level. If there are any legal provisions, the SOP actions can be integrated within it.
- 2. Different Rules & Regulations:** Regulations governing riverbank events vary across states/regions, requiring customization of SoP to comply with local laws and standards.
- 3. Limited Data/Information:** There is limited documented data/information on the large gathering (except few research) along river banks and their impact on riverine ecosystem. Moreover, the limited stakeholders interactions limits insights into the issues and challenges related to large gatherings, as it has never been pursued with an aim to protect rivers.

Challenges

- 1. Resource Constraints:** To operationalize the SOP, resources including adequate funds, staff, and technical support, are essential. Limited resources may impact the scope or efficiency of environmental management practices.
- 2. Stakeholder Collaboration:** Effective implementation of the SOP relies on collaboration among diverse stakeholders, including event organizers, regulatory agencies, environmental experts, and local communities. Lack of coordination or stakeholder buy-in can hinder its effectiveness.
- 3. Monitoring and Maintenance:** SOPs typically focus on event-specific management but may require integration with long-term monitoring and maintenance strategies to ensure sustained environmental benefits and ecosystem health beyond individual events. For instance, the impact on biodiversity may take a long time to manifest.

1.5 International Best Practices

While formulating SOPs for large gatherings along riverbanks, it is crucial to broaden the perspective beyond domestic experiences by examining international best practices. It offers valuable insights into effective strategies for safeguarding river health during large events while ensuring cultural and social considerations.

Review of various provisions in some of the countries on monitoring of large gatherings indicates that there is monitoring and compliance of laws and guidelines when large gatherings take place along river banks. The following are some of the important points that emerge from the review of international best practices that are followed in the current SOP.

A key factor in these examples is identifying the responsible agencies, and their roles in monitoring overall environmental impact during events. Additionally, studying the permit requirements and procedural frameworks in different countries helps in developing streamlined processes that balance regulatory compliance with event planning efficiency. By integrating global insights into planning and regulatory frameworks, it is possible to foster responsible event management practices

that protect rivers' health while preserving their cultural and natural heritage for future generations.

No.	Country	Existing Regulations
1.	USA	<p>Environmental Protection Agency (EPA): The EPA regulates water quality standards under the Clean Water Act. Any large gatherings along riverbanks must comply with regulations regarding wastewater discharge, pollution prevention, and protection of aquatic ecosystems. Events impacting water quality or discharging pollutants into rivers may require National Pollutant Discharge Elimination System (NPDES) permits.</p> <p>National Park Service (NPS): Events held in the national parks along rivers, such as the Colorado River in Grand Canyon National Park, require permits and adherence to NPS regulations. These permits cover waste management, wildlife protection, conservation of natural resources, and adherence to park regulations to preserve the natural environment during large gatherings.</p>
2.	United Kingdom	<p>Environment Agency: It is responsible for monitoring and regulating water quality, flood risk management, and issuing permits for events impacting rivers. Event organizers must comply with regulations on waste management, pollution prevention, and habitat protection. Events affecting water quality, flood risk, or habitat conservation along rivers require permits. For instance, a riverside concert in London along the Thames River would need permits for waste management, noise control, and environmental impact assessments.</p> <p>Local Councils: They manage permissions and permits for events along riverbanks, ensuring compliance with noise regulations, crowd management, and environmental impact assessments. The Thames Festival in London requires permits from the Greater London Authority and local councils for crowd management, traffic control, and waste disposal along the riverfront.</p>
3.	Australia	<p>Department of Environment and Energy (DEE): It oversees environmental regulations related to water quality, biodiversity conservation, and pollution control. Event organizers must obtain permits and comply with regulations to protect rivers and adjacent habitats. Events impacting water quality or discharging pollutants into rivers require permits. For example, the Sydney New Year's Eve fireworks event near the Sydney Harbour requires permits for waterway protection, waste management, and pollution control.</p> <p>State Environmental Protection Agencies: Each state may have specific regulations and guidelines for managing events near water bodies, including waste management, noise control, and environmental impact assessments. Events along rivers in different states such as the Brisbane River Festival in Queensland require permits for water usage, waste disposal, noise emissions, and environmental impact assessments specific to each state's regulations.</p>
4.	Canada	<p>Environment and Climate Change Canada Permits: Any event impacting water quality, aquatic habitats, or discharging pollutants require permits. For instance, the Ottawa Riverkeeper organizes river clean-up events requiring permits for waste management, pollution prevention, and conservation efforts.</p> <p>Provincial Environmental Agency Permits: Events along rivers such as the Toronto Waterfront Festival in Ontario require permits from provincial agencies for water usage, waste disposal, noise management, and environmental impact assessments</p>
5.	Germany	<p>German Environment Agency (UBA) Permits: Events impacting water quality, pollution control, and conservation efforts require UBA permits. For example, the Rhine in Flames festival along the Rhine River requires permits for waste disposal, noise limits, and protection of natural habitats.</p> <p>State Environmental Authorities Permits: Events in different states such as the Hafengeburtstag festival in Hamburg require permits from state authorities for waterway protection, waste management, noise emissions, and habitat conservation measures.</p>

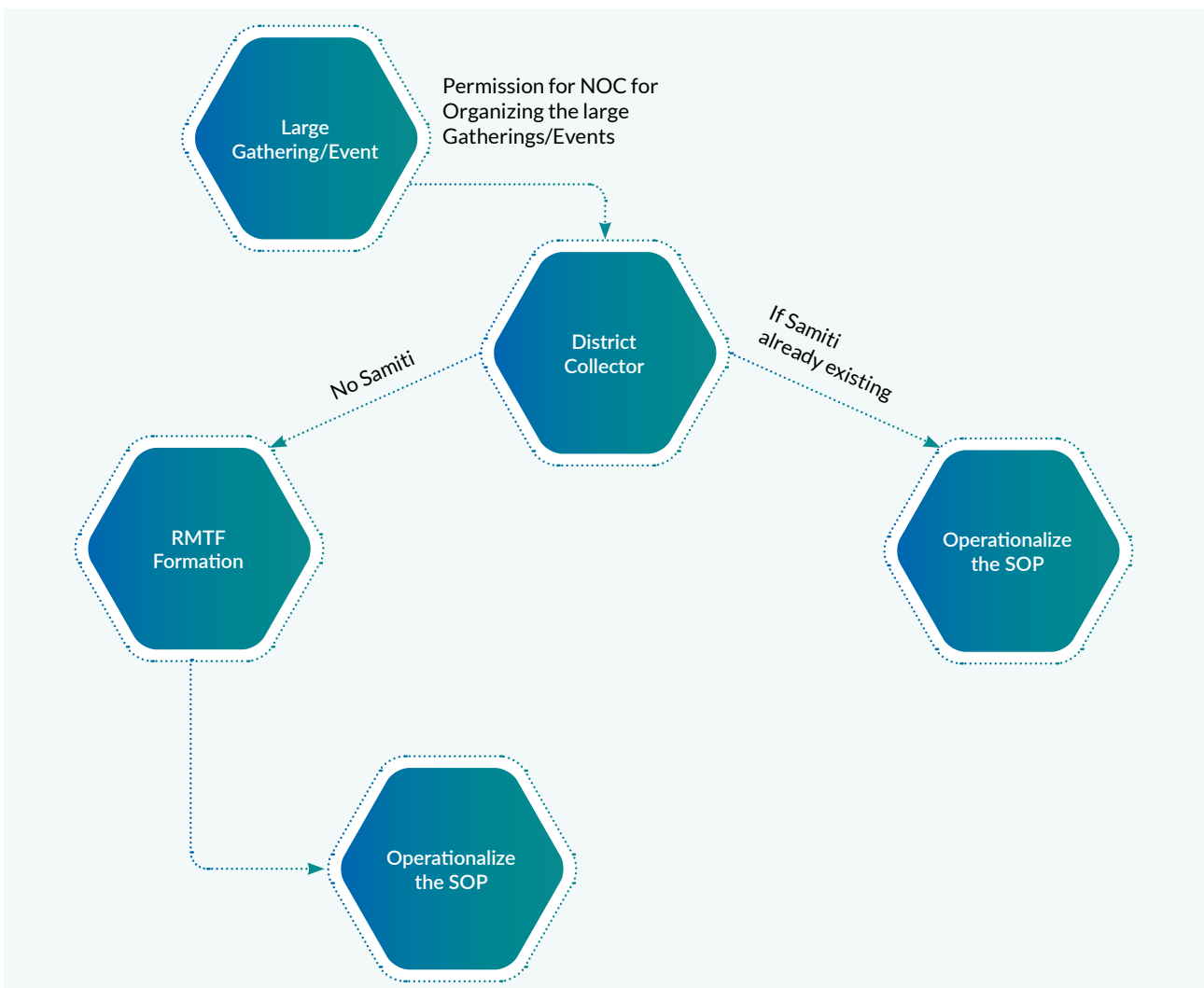
By integrating global insights into our planning and regulatory frameworks, we can foster responsible event management practices that protect our rivers' health while preserving their cultural and natural heritage for future generations.

2

FORMATION OF RIVER MANAGEMENT TASK FORCE (RMTF)

It is recommended that a dedicated River Management Task Force (RMTF) is established and presided over by a competent authority like the District Collector/District Magistrate/Sub-Divisional Magistrate (SDM). The RMTF will oversee the implementation of the SOP and take necessary remedial measures post-event as required. In cases, where committees (Samiti) such as the Magh Mela Samiti or Kumbh Mela Samiti already exist, the established Mela Samitis should operationalize the SOP.

For the Ganga River, the District Ganga Committee (DGC) has already been formed by the NMCG. Therefore, it is proposed that it should be a part of RMTF. The RMTF is composed of specific members with clearly defined roles and responsibilities, relevant to the organization and management of the event/gatherings. The competent authorities should coordinate for effective execution of the defined roles. The details of the RMTF and roles and responsibilities are described in the following section. Below is an indicative organization chart of RMTF



2.1 Composition of the RMTF

SN	Designation/Department	Role in the RMTF	Roles & Responsibilities
1	DM/SDM	Chair	<ul style="list-style-type: none"> Overall co-ordination and facilitation of different permissions required. Issue NOC (as required for Govt. organizers / Pvt. Body) Ensure ground zero.
2	VC, Development Authority	Co-Chair	<ul style="list-style-type: none"> If the event is beyond the municipal corporation boundary, the VC will facilitate necessary permissions. Ensure that no Development Control Regulations (DCRs) provided in the master plan are violated. Prepare the communication plan with list of key contacts.
3	Municipal Commissioner, ULB	Nodal Officer	<ul style="list-style-type: none"> Execution of SOP in coordination with DM and VC. Align all line departments (water supply, wastewater, solid waste etc.) to ensure the preparedness of the event.
4	PD, SPMG (Ganga Basin)/ State Authority for Non-Ganga Basin states	Facilitators (Admin.)	<ul style="list-style-type: none"> Ensure formation and operationalization of RMTF at the district level. Overall facilitation and monitoring of functioning of RMTF.
5	Representatives of NMCG and NRCD	Facilitators (Technical)	<ul style="list-style-type: none"> Providing technical inputs to the RMTF as and when required.
6	DGC chair	Monitoring	<ul style="list-style-type: none"> Unbiased/independent monitoring of the RMTF activities.

Composition of the RMTF: The following is an indicative structure of the RMTF with roles and responsibilities. The same could be reviewed and modified as best fit to the local conditions.



2.2 Roles and Responsibilities of Key Agencies

The following list specifically lays down the responsibilities of key agencies that are immediately responsible for preventing damage to the riverine ecosystem due to large gatherings.

SN.	Designation/ Departments	Role in the RMTF	Pre-event	During-event	Post-event
1.	DFO/Forest Department	Member	<ul style="list-style-type: none"> Demarcation of reserved/ protected areas Evaluate riparian habitats, if any Assess risk (cutting/fire etc.) to forest/vegetation cover due to event Ensure information about variety of vegetation is noted 	<ul style="list-style-type: none"> Prevent damage (cutting trees/ plants), harm to local wild life, encroachment into the forest area Take necessary actions in case of non-permitted activities as per latest Forest Act 	<ul style="list-style-type: none"> Compare pre-post event status of protected areas, forest/ vegetation in riparian zone. Update nodal office in writing about any action required by the Chair Rehabilitation of area as required
2.	CE/ Irrigation and Flood Control	Member	<ul style="list-style-type: none"> Do the preliminary assessment like water levels, water flow in the river Plan any channel diversions, if required, to minimize any damage to the main river channel Strengthening of embankment if required at the proposed site to avoid soil erosion Scientific desilting along the river bed/ canal (if required) 	<ul style="list-style-type: none"> Monitor water level in river No alteration/ damage done to river bed Monitor, if any permanent structures being constructed along the river bank Report to the RMTF for any unplanned/ activities 	<ul style="list-style-type: none"> Assess and repair if any damage caused to embankment/ river protection work Identify if there is any obstruction to water diversion Restore the channel diversion to its original course after appropriate quality measures are checked
3.	Regional officers/ Pollution Control Board	Member	<ul style="list-style-type: none"> Record pre-event river/ other waterbody water quality tests within event stretch (upstream and downstream) Prepare baseline quality report of natural / storm drains (if any) passing through the proposed event site Submit the baseline water quality report to the RMTF 	<ul style="list-style-type: none"> Monitor pollution parameters (air/ water/light/ sound) as per the applicable standards Violation of rules/ norms should be immediately reported to RMTF for necessary actions 	<ul style="list-style-type: none"> Record post-event river/ other waterbody water quality tests within event stretch (upstream and downstream) Submit the water quality report to the RMTF Take necessary actions against the violation of rules for air, water, sound, light by event organizer as compared to the pre-event assessment

SN.	Designation/ Departments	Role in the RMTF	Pre-event	During-event	Post-event
4.	Ex. Engineer/ Jal Nigam/Jal Kal/Any other para-statal organization managing sewerage infrastructure	Member	<ul style="list-style-type: none"> Assess and arrange adequate necessary water and liquid waste management requirements at the event site Identify any open wastewater drains merging into the river near the event site Make proper Interception and Diversion (I&D) channels for wastewater treatment or in-situ treatment (bio-remediation) solutions for waste carrying drains/ structures Ensure national standards are followed at the event site for the provision of water supply and wastewater disposal 	<ul style="list-style-type: none"> Monitor that the water supply and liquid waste management systems are working properly Rectify any issues/ failures occurring during the event 	<ul style="list-style-type: none"> Remove any temporary arrangements done for water supply Adequate maintenance of wastewater interception and diversion for long term sustainability
5.	Medical & Health officer/ E.E (Public Health) ULB Health and Sanitation Department	Member	<ul style="list-style-type: none"> Assess, plan, and provide adequate provisions for toilets, bathing facilities, and solid waste disposal at event site/s Adopt innovative methods (like bio-remediation, bio-toilets, etc.) for waste handling at the event site 	<ul style="list-style-type: none"> Maintain hygiene, and cleanliness as per standards for toilets and bathing facilities. Regular monitoring of solid waste infrastructure at the event site 	<ul style="list-style-type: none"> Rehabilitate the event site modified with sanitation management facilities
6.	MD/Tourism Department	Member	<ul style="list-style-type: none"> Asses heritage structure/s (if any) and their conditions at event site Ensure necessary provisions (temporary boundary) to protect the sites Estimate the expected footfall based on previous experiences of the event, nature of event (cultural, religious), scale of event Submit the report to the Chair RMTF for planning 	<ul style="list-style-type: none"> Monitor that no damage is done to the heritage structures 	<ul style="list-style-type: none"> Record and submit information of visitors for the event to RMTF for future planning facilitation
7.	Scientific officer/ Fisheries Department	Member	<ul style="list-style-type: none"> Inform the RMTF about status of fishing in terms of richness, quantity of fish catch, Verities if noted, to prevent the event's effect on the fish production 	<ul style="list-style-type: none"> Coordinate with the office of nodal officer for any necessary inputs related to damage to fish production during event 	<ul style="list-style-type: none"> Carry out assessment within the event stretch to observe any impact of event on the fishing Update Samiti Chair for any drastic change observed for necessary actions

SN.	Designation/ Departments	Role in the RMTF	Pre-event	During-event	Post-event
8.	CEO/Head/ leading NGOs/ Group of volunteers	Member/s	<ul style="list-style-type: none"> Support RMTF in designing and implementing awareness campaigns for the event (pre, during and post) Provide necessary inputs to the respective departments for any local observations 	<ul style="list-style-type: none"> Support the administration through the vigilance during the event and update any unusual activities under aforementioned areas for necessary corrections Effective implementation of the awareness campaign during the event 	<ul style="list-style-type: none"> Participate and mobilize manpower to support RMTF in cleaning drives following the event Create appropriate IEC material for dissemination to various target groups based on the learning during the event
9.	Principal Scientist/ Wildlife department	Member	<ul style="list-style-type: none"> Assessment of any protected wildlife species present in and around the event stretch/zone Prepare action plan to protect the wildlife in the area of influence of event Placement of necessary signages at the sensitive sites 	<ul style="list-style-type: none"> Depute wildlife experts, veterinary team, volunteers at the event site as required Manage animal-human conflict, if emerged at event site 	<ul style="list-style-type: none"> Assessment of wildlife for any adverse impact of the event Take necessary actions in case there is any damage to wildlife
10.	Principal Scientist/ Soil and Groundwater department	Member	<ul style="list-style-type: none"> Carry out soil and groundwater testing as per the layout plan of the event site to create baseline information Inform the Health and Sanitation department about status of groundwater and soil conditions to prevent any permanent damages 	<ul style="list-style-type: none"> Support the administration through the vigilance during the event and update any unusual activities under aforementioned areas for necessary corrections 	<ul style="list-style-type: none"> Carry out post event soil and groundwater testing to assess any impact due to the event/gathering Take necessary actions in case there is any adverse impact
11	Principal Scientist/ State Remote Sensing Agency	Member	<ul style="list-style-type: none"> Assess the layout plan based on the latest high resolution satellite imageries Drone surveys of the event site 	<ul style="list-style-type: none"> Monitor pollution plumes during the event Monitor site through drone surveys as per required interval 	<ul style="list-style-type: none"> Compare pre-post event imageries to assess the impact of event on riverine ecosystems Drone surveys of the event site
12	DG/Education Department	Member	<ul style="list-style-type: none"> Plan for the IEC activities to create awareness among citizens using the medium of schools and colleges 	<ul style="list-style-type: none"> Carry out the IEC activities to create awareness among citizens 	<ul style="list-style-type: none"> Share the learnings and good practices from the event with citizens
13	Faith based organizations (to be included in case of religious event)	Member	<ul style="list-style-type: none"> Motivational direction to public at large in planning, in case of religious gatherings, keeping river's health in mind 	<ul style="list-style-type: none"> Provide volunteers to create awareness among citizens for managing the religious offerings/wastes 	<ul style="list-style-type: none"> Support RMTF in conducting post event cleaning activities

2.3 Functions of the RMTF

- **Preparing Plans:** Reviewing the status quo of event location and develop detailed action plans following the SOP to guide event management strategies efficiently.
- **Coordination with Line Agencies/Departments:** communicating with relevant government agencies and stakeholders to ensure seamless coordination and effective implementation of event plans and policies.
- **Monitoring of Operations Management:** Providing clear directives and overseeing the execution of operational tasks during the event to maintain smooth functioning and address any issues promptly.
- **Gathering of Information/Data and Record Keeping:** Collecting relevant data, maintaining accurate records, and documenting event-related specific information for future reference and analysis.
- **Preparation of Web-Enabled Resource Inventory:** Creating an accessible inventory of resources, facilities, and services available for public information and transparency.
- **Information, Updates for Public:** Ensuring timely dissemination of information to the public regarding event details, guidelines, and updates, and facilitating citizen engagement and feedback mechanisms. Developing event related Apps.
- **Resource Management:** Efficiently managing resources such as manpower, infrastructure, waste management systems, and environmental conservation efforts to optimize utilization and minimize waste.
- **Reporting:** Compiling comprehensive reports on event activities, outcomes, challenges faced, and recommendations for improvements, facilitating accountability and informed decision-making for future events.

3

IMPLEMENTATION OF SOP

Organizing river river-friendly large gathering events demands going beyond the management of a crowd with short-term and long-term planning measures. These preparations are crucial to ensure that authorities are fully prepared before the event kicks off, covering aspects from infrastructure setup to environmental protection and safety protocols.

3.1 Pre-event: Planning and Preparedness

Developing a pre-event strategy is essential to minimize the impacts of large gatherings on the riverine ecosystem. Firstly, identify potential hot spots of water pollution, habitat disruption, bank erosion, and wildlife disturbances that are likely to occur due to the event. By evaluating these risks in advance, proactive strategies can be developed to mitigate impacts and ensure regulatory compliance with environmental regulations and permits. It is crucial to understand that not every stretch of the river passing through a city is suitable for hosting events due to environmental, safety, legal, infrastructural, community, and sustainability concerns. Designating specific event zones along the river ensures that gatherings like religious, political, cultural, and private events can be organized safely and responsibly. This approach allows for the protection of the river ecosystem, ensures public safety during events, complies with local regulations, provides the necessary infrastructure, minimizes community impacts, and promotes long-term sustainability through proper planning and management practices.

No objection Certificate (NOC) - The large gatherings along the river banks could be organized by the Government as well as private entities. If a private group is organizing an event that attracts large gatherings, it should be communicated to the relevant authorities to obtain an NOC. The organizers have to specifically indicate that the event will not have any adverse impact on the river ecosystem. NOC should be applied by the event organizer at least two months before the event. This timeline may vary for different types and scales of the event and the local context will also play a role in deciding the timeline. The RMTF can decide their timelines for different levels of events as per the procedures followed for obtaining the NOC at the district level. To obtain the NOC from the competent authority, organizers have to submit a risk assessment report and an action plan by providing the layout plan of the event and provisions for solid and liquid waste management. The plan should include sound and light pollution management at the site during the event so that biodiversity is not affected. The template of action plan is provided in Annexure 1. The RMTF should provide this template to the organizers to prepare the action plan.

Irrespective of who the organizers (Government, Others) are, a team deputed by the nodal officers of RMTF must inspect the event site to assess the status quo as per the template given in Annexure 2, and prepare a rapid site assessment report. It is recommended that this should be undertaken at least a month before the event, depending upon the scale and type of the event, so that concerned departments can make the necessary arrangements for the event. The assessment should include the following details carried out by designated agencies.

- 1. Physical Conditions:** The baselining must include a layout map showing the status quo of the site where the large gathering event will take place. Use of high-resolution satellite imagery (Indian remote sensing data like CARTOSAT) or drone surveys are highly recommended to compare pre-and post-conditions like floodplain, riverbank status, green cover, and the riparian zone. This should be based on the ground truthing for critical observations/information. The map should depict natural features and man-made structures present at the event site with maximum detail.
- 2. Nature of River:** Determine whether the river adjacent to the event site is seasonal or perennial. This is crucial for understanding the nature of the river and sites where the gatherings can be organized. Identifying the characteristics of the river like meandering, anatomizing among others is crucial to understand the relation of the river with the flood plain and its biodiversity. In case of developed river edges like the Sabarmati River front, the competent authority should be looped in to understand the river's characteristics and identify designated locations for different types of events or gatherings.

3. **Water Level/Flow:** The water level at the time of inspection and at the time of the proposed event should be recorded for the assessment report. This is to understand potential flood risks, depth of water in the site vicinity, and velocity of flow. This information aids in event site selection, infrastructure placement, and ensuring attendee safety (with appropriate signages) during high-water events.
4. **Water quality testing:** Conduct water quality testing by collecting river water samples at upstream and downstream of the proposed event location. RMTF needs to identify different locations where the testing should be done and monitored pre, during and post the event. These locations should be based on the extent of the event along the river stretch and types of activities being held that can pollute the river stretch. The CPCB standards for wastewater discharge are provided in Annexure 3.
5. **Green cover:** Evaluate the green cover, including trees, shrubs, grasses, and any cultivated areas within the event site. Note the density, species diversity, health, and overall condition of vegetation to assess potential impacts during the event and plan for conservation measures if necessary.
6. **Groundwater/Soil conditions:** Assess if adequate sanitation facilities and waste management is available for the event. The groundwater and soil become vulnerable if solid and liquid waste are not managed properly. For example, raw sewage from septic tanks or temporary infrastructures can deteriorate the quality of soil as well as the groundwater. Conduct groundwater and soil quality testing before the event to create the baseline and to compare it post event.
7. **Discharge points/locations and conditions of drains falling in the river:** Identify any direct natural/man-made drainage channels or outlets that discharge into the river near the event site. Evaluate the quantity and quality of discharged water and potential pollution sources to implement necessary measures for water quality protection. Explore the possibility of interception and diversion of the drains flowing into the river and carrying untreated sewage. If diversion is not possible, appropriate decentralized treatments like bioremediation should be adopted.
8. **Wildlife habitat:** Conduct vulnerability assessment to identify and assess the biodiversity hotspot areas along the river bank. This should include both aquatic and terrestrial species like dolphins, turtle hatcheries, migratory birds, nesting sites, burrows, and migration routes, all of which are crucial for biodiversity conservation. The sites should be assigned to three different categories **(a) Prohibited zone, where all the activities are prohibited due to the biodiversity vulnerable area; (b) Minimal Impact zone, where limited activities like controlled walking areas, etc. can be allowed so that there is minimum impact on the biodiversity; (c) Recreational zone,** where more activities can be allowed as long as post event restoration is ensured. It is advisable to come up with measurable indicators for pre- and post-event assessment for biodiversity. Since the assessment has various diverse components that require expertise on bio-monitoring approaches, ecology of various species such as fishes, zooplankton, phytoplankton, periphytons, benthic-invertebrates, mammals, amphibians, reptiles, macrophytes, it is proposed to rope in biodiversity experts/ institutions for providing measurable indicators and carrying out these pre and post assessments.
9. **Riverine Islands:** Riverine islands within the river channel should generally be avoided for hosting large gatherings due to ecological sensitivity. However, for religious or cultural significance, where usage is unavoidable, like the Kumbh Mela in Prayagraj, thorough assessment is crucial. Factors such as island type, soil condition, sedimentation rate, and wildlife habitat must be carefully mapped to minimize environmental impacts and preserve island biodiversity.
10. **Agriculture:** If agricultural activities are being done near the vicinity of the site, document the types of crops, farming practices, and potential use of fertilizers or pesticides. Understanding agricultural activities helps in assessing water contamination risks and implementing best practices for environmental conservation.

The site assessment report is to be submitted to RMTF to provide the site-specific recommendations/ obligatory requirements to be followed by the organizers during the event. In case the event site is in the protected /restricted stretches of the river, the authority may decide to hold the NOC. For effective management of any event, proper planning at macro as well as micro levels is important. This becomes even more critical when the activities of the event are managed by more than one department.

It is highly recommended that at the RMTF level, a system/calendar is prepared for the list of festivals with large gatherings. This calendar should be compiled and monitored at the state level. The cities that have prepared or are preparing the Urban River Management Plan (URMPs) in support with NIUA and NMCG should prepare this calendar of events happening

along the river bank in the city

It is important to understand that, all the events attracting gatherings along the river may not be of large scale. There could also be short-duration, small events for 1-day like musical shows, sports events etc. OR multiple-day events like religious events, locally hosted fairs etc.

Expected crowd size	Duration	Type of gathering/event	Action required
< 25,000	Single day	Cultural fest, marriages, theme parties, etc.	<ul style="list-style-type: none"> A detailed site survey may not be required and only pollution generated during and after the event will be the major issue to be taken care of.
> 25,000 but < 1,00,000	Up-to 2 days	Musical shows, cultural fests, auspicious day rituals, etc.	<ul style="list-style-type: none"> Details to be submitted to the local administration as well as the Tahsildar/Executive Magistrate A detailed site survey may not be required and only pollution generated during and after the event will be the major issue to be taken care of.
> 1,00,000	Up-to or More than 2 days	Kumbh mela, Magh mela, festivals, etc.	<ul style="list-style-type: none"> The organizers of events must submit details to the local administration District/Panchayat/ Municipality. Detailed site analysis and a detailed action plan for the pre-, during and post-event action plan required to reduce the impact on the river, floodplains and biodiversity.

Note*

The numbers for the crowd is indicative and it is suggested to carry out a detailed carrying capacity of the proposed site for the event for gatherings of more than 50,000. The methodology to calculate the carrying capacity is provided in the Section 1.3 above.

3.2 During-event: Monitoring and Management

The relevant guidelines for event organizers will be communicated by the RMTF at the time of issuing the NOC. These guidelines outline responsibilities for both the NOC-issuing authority and the organizers, establishing a mutual obligation to adhere to the instructions provided by the committee for hosting the event.

The NOC issued for organizing the event will include specific instructions from the RMTF. Organizers must adhere to these instructions throughout the event. In addition to ensuring preparations before the event, the responsible authority is tasked with monitoring the organizers' compliance with the RMTF's instructions during the event. To facilitate this, the authority will establish a monitoring mechanism and oversee the following key areas of compliance by the organizers:

1. The responsible authorities will establish a supervising team tasked with ensuring that event activities align with RMTF's instructions, and maintaining environmental and safety standards. For example, sanitation will come under the prevue of the city's sanitation department.
2. Organizers are required to appoint an event in-charge to liaise with authorities, ensuring strict adherence to instructions.
3. The event site plan must align precisely with RMTF's demarcations, covering crucial areas such as biodiversity hotspots, temporary infrastructure, toilet locations, parking zones, food counters, and designated holding areas to streamline event logistics and minimize disruptions.
4. Sound and light systems must strictly adhere to prescribed guidelines to control noise pollution and minimize disturbances to wildlife and nearby communities.
5. Monitoring of adherence to the restrictions of the prohibited zone, minimal impact zone, and recreational zone created for biodiversity management. Existing structures like Ganga Praharies in Ganga stretch should be leveraged for monitoring these activities during the event. For other river stretches, a similar pool of volunteers can be onboarded for the same.

6. Preventing any waste from entering the river is crucial to preserving water quality and protecting aquatic ecosystems. Regular waste audits to identify and address any lapses in waste management practices must be conducted. Existing structures in the city/district like Swachhagrahis (volunteer), etc., can be deployed for monitoring activities throughout the event duration.
7. Water quality parameters must be monitored as prescribed by CPCB downstream to ensure compliance with environmental standards. ICT-based systems (information and Communication Technology) can also be adopted to ensure real-time monitoring of water quality, bio-toilets functioning and solid waste management. Daily reports should be generated and assessed by RMTF to identify any discrepancies.
8. Displaying instructions outlining event dos and don'ts to ensure participant compliance with environmental and safety regulations. If the event site is adjacent to a protected area, strict prohibitions on fires must be enforced to safeguard sensitive ecosystems and habitats.
9. Establish communication protocols and designated communication channels (such as radios, mobile apps, or emergency hotlines) to ensure effective coordination among event staff, security personnel, emergency responders, and participants during flood-related emergencies.

3.3 Post-event: Assessment and Restoration

As the event approaches in the final stage/near completion, the RMTF should initiate the restoration efforts. In this stage, collaborating with local community members, NGOs, and other organizations actively engaged in cleaning and restoration activities. The following actions should be undertaken post-event:

1. Restore event sites to their natural state by removing temporary structures, dismantling event infrastructure, and restoring disturbed areas through revegetation and soil stabilization practices. In case of restoring or introducing the vegetation, it is crucial to use native species of that particular region. Conduct a comprehensive assessment of floodplain areas to identify any erosion, sedimentation, or flood-related impacts resulting from the event. Reinforce erosion control structures such as vegetative barriers, erosion control blankets, and riprap to address any damage or wear and tear.
2. Ensure that the organizers have completed the post-event clean-up from the event site and surrounding areas. If any deviations found in terms of waste management, the RMTF can take necessary actions like penalizing the organizers, or banning them from conducting the event for a certain number of years.
3. Conduct a detailed waste audit to quantify event-generated waste, identify recyclable materials, and ensure proper disposal of hazardous waste according to environmental regulations.
4. Establish post-event monitoring protocols to track river water levels, sedimentation rates, and vegetation recovery in impacted floodplain areas over time.
5. Conduct thorough inspections for any chemical spills or hazardous material residues post-event. Implement remediation measures, soil testing, and appropriate disposal of contaminated materials following environmental regulations.
6. Ensure proper treatment and disposal of any remaining event-generated wastewater, adhering to water quality standards and environmental guidelines to prevent pollution of water bodies.
7. Continue monitoring river water quality post-event as per the CPCB standards, especially downstream of event sites, to detect any pollutant discharges and take corrective actions promptly.
8. Conduct post-event assessments of sensitive habitats, wildlife corridors, and nesting sites to evaluate any disturbances or impacts resulting from the event activities. Monitor wildlife activity and behaviour post-event, particularly in areas where disturbances were noted during the gathering. Report any wildlife sightings or concerns to relevant conservation agencies for follow-up. It is suggested to carry out the enhancement/restoration of biodiversity in the lean periods especially in case of mega events like Magh mela, kumbh, etc.

9. Share post-event reports, success stories, and conservation outcomes with participants, stakeholders, and the public through media channels, community forums, or educational programs to foster ongoing support for river health and biodiversity conservation efforts.
10. RMTF can also consider conducting a third-party evaluation in case of unavailability of required resources with the city or RMTF.

4 DOCUMENTATION AND REPORTING

Once the large gathering event is over, it is crucial to compile a detailed post-event assessment report that delves into various aspects related to environmental impacts, conservation efforts, mitigation measures, and recommendations for future events. This report should provide a comprehensive overview of how the event/gathering affected the surrounding environment, including any positive or negative impacts on ecosystems, water quality, air quality, wildlife habitats, and waste generation. It should also highlight the conservation initiatives undertaken during the event, such as recycling programs, energy-saving measures, and habitat protection efforts.

Furthermore, conducting a debriefing session with RMTF members, event staff, volunteers, and stakeholders is crucial. This session offers an opportunity to reflect on lessons learnt from the event, celebrate successes, identify challenges faced, and brainstorm opportunities for improving environmental management practices in future events. Discussing key takeaways, best practices, areas for improvement, and innovative ideas can inform future planning and ensure continuous enhancement of environmental sustainability efforts in event management.

5 CAPACITY BUILDING

For the effective implementation of this SOP, it is highly recommended to organize training for the RMTF members who are responsible for organizing the large gatherings along river banks. This process involves providing specialized orientation programs covering a range of topics such as

- Adverse impact of large gathering on the riverine ecosystem (if not well managed)
- Environmental regulations
- Event management protocols as per current
- Waste management options
- River water quality monitoring protocols, and emergency response procedures specific to riverbank events.

RMTF members, other officials, and other stakeholders involved in the event need to develop technical skills in areas like crowd control, sanitation management, biodiversity conservation, and sustainable resource utilization to ensure minimal environmental impact during events.

Additionally, capacity-building efforts focus on stakeholder engagement, communication strategies, and community outreach to foster cooperation and compliance with SOP guidelines among event organizers, attendees, and residents.

Continuous monitoring, evaluation, and updating of skills and knowledge are integral to adapting to evolving challenges and ensuring successful and environmentally responsible large gatherings along river banks.

6

CHECKLIST TO IMPLEMENT SOP

The following is a ready-to-refer checklist that is followed by the task force. The area of interest should be as per the layout map of the event site and action plan, and the stretch of river falling within the event influence. The details relevant to the checklist are provided in the Table of RMTF section.

Pre-event

1. Issue of NOC for the event / Necessary permissions (as laid down in SOP)
2. Review of the event layout plan by RMTF
3. Physical conditions of the event – Carry out a drone survey (pre-event/post-event)
4. River flow data (especially during the event)
5. Determine the river water quality – pH, BOD, COD, DO, F-coliform tests
6. Riparian buffer identification
7. Soil and groundwater test (covering the entire stretch of event influence)
8. Identify direct discharge points into river, waterbody
9. Prepare a status report for any specific issue to be considered during the event

During-event

1. Physical monitoring of all discharge points into the river
2. River water quality testing at suitable locations (covering the entire stretch of event influence)
3. Deployment of volunteers (e.g., Nadi Mitra) for monitoring various activities (e.g., specific bio-diversity under stress by the event)

Post-event

1. Refer to the layout plan, compare pre and post-event drone imageries
2. Follow steps 2 to 7 of the Pre-event checklist
3. Prepare status report
4. Issue notices for violations, if any
5. Prepare a rehabilitation/restoration plan of the damaged area in the event area
6. Third-party evaluation of the event site (by an agency, which is neutral and vocal)



LIST OF ANNEXURES

Annexure 1: Sample format to be filled by the organizer for NOC

1. Name of Event (if any): _____
2. Type of the event/gathering:
 - a. Cultural/Spiritual
 - b. Sports
 - c. Tourism
 - d. Mela/Recreation
 - e. Other _____
3. Date and Duration of Event: _____
4. Proposed location name with geographical coordinates: _____
5. Organizers Details
 - a. Name _____
 - b. Organization Name _____
 - c. Contact Details _____
6. Expected no. of persons in gathering/processions etc. _____
7. Date/s, time of peak gathering: _____
8. Any temporary structure planned for the event. (If so, what structure and intended purpose) _____
 - a. Stage/Platform
 - b. Water and sanitation provisions (drinking water, toilets, urinals, solid waste etc.)
 - c. Commercial activities (no. of shops/stalls)
 - d. No. of food stalls _____, Expected food waste/day _____kg/day / TPD
 - e. Platforms for recreational/sport activities (for example in Mela)
9. Are there any fireworks proposed in the event?
10. How many volunteers will be available for event management

11. The organizer has to prepare a detailed action plan before conducting the event without harming the river's health and river ecosystem. The plan should be submitted to RMTF. The comprehensive action plan will have the following components:

1. **Riverbank protection:** The event may potentially damage river banks and result in erosion of the bank. For this, erosion control measures, such as planting native vegetation along riverbanks, installing erosion control structures like riprap or gabions, and using temporary barriers such as sandbags, especially in flood-prone areas are required. These measures are vital to mitigate soil erosion risks.
2. **Floodplain protection:** Floodplains are an integral part of the river and support agriculture activities and groundwater conservation. Its stability should be ensured before hosting events or gatherings, especially by reducing the potential for mishaps caused by soil instability/soil collapse. The measures to stabilize the land should not be performed with concrete layering; instead, porous material should be used for ground compacting. The flood response system involves essential mitigation equipment such as life jackets to ensure safety, and jetties for efficient embarkation and disembarkation during emergencies.
3. **Sanitation (Liquid and Solid Waste) Management:** This is very critical for the river's health. A detailed assessment with inputs from different stakeholders is required to estimate the waste quantity.
 - **Liquid Waste Management:** A detailed assessment of the existing sanitation facility is needed by taking inputs from different stakeholders. The assessment should comprise of number of toilets required as per the expected visitors, and a location plan to discourage open defecation in flood-prone areas or along river edges.
 - For assessing the number of toilets/urinals required, following data need to be captured: floating population, duration and timing of gatherings, gender-based user category, number of families staying, peak usage time, facility utilized (WC, urinals, washrooms), preference for type of toilet.
 - Above data used for planning the toilet facilities in the event area needs to be analyzed by integrating the demand and supply database. While demand side input on location would indicate the location where the toilets need to be provided, supply side input provides the number of existing toilets in the vicinity and number of toilets to be provided.
 - Since there are no existing guidelines for toilet provision for large gatherings, the organizers can follow the norms provided in the CPHEEO Manual on Sewerage and Sewage Treatment, MoUD, 2013 for public toilets. (Norm is provided in Annexure 4.)
 - The assessment should also include the type of toilet facility to be provided like mobile toilets, automated toilets, etc. and the number of cesspool vehicles required to prevent sludge spillage and uphold sanitation standards consistently throughout the event.
 - Implement reliable and proven septage management techniques to complement sanitation efforts. Convert any untreated drains to tapped ones or install onsite treatment facilities such as bioremediation, floating wetlands, etc.
 - Provision for treatment and disposal of wastewater other than sewage needs to be included in the action plan.
 - Mapping and provision of human resource required to carry out the activities listed above.
 - **Solid Waste Management:** Protocols for handling, storage, and use of chemicals or hazardous materials during event preparations:
 - The categorization of waste e.g. **(a) Non-biodegradable/dry waste comprising of bottles, clothes, etc., (b) Bio-degradable waste like food, flowers, etc. (c) Bio-medical waste from health centers and (d) Hazardous waste like chemicals, etc.** and its management plan. A standardized color coding system should be adopted to make it easily identifiable to the users and collectors for proper segregation, collection, transportation, and treatment.
 - A comprehensive solid waste management system that includes sorting, recycling, and proper disposal methods to minimize environmental impact.
 - Waste collection bins to be provided every 25 m alternatively on either side (i.e., at 50 m intervals on one side) along the road within the event area, community, and vending area at appropriate locations. Bins shall be placed at an interval of 50 m (i.e., at 100 m intervals on one side) alternatively on either side of the road along approach roads outside the event area.
 - If high-volume footfall is expected during this event, the waste collection and transfer process can be proposed to be carried out three times a day (every 8 hours).

- An efficient solid waste treatment facility should be provided outside the large gathering area. The area should not be close to the river's floodplain and other ecosystems like water bodies, lakes, wetlands, riverine islands, drains, etc.
- Organizers should mandate green practices such as reducing single-use plastics, promoting recycling, and encouraging eco-friendly alternatives throughout the event. Prioritization of the use of eco-friendly materials such as earthen cups and leaf plates over single-use plastics during the event should be encouraged. Organizers should also designate a no-plastic zone for areas just adjacent to river bank to minimize the solid waste intrusion in the river.
- Mapping and provision of human resource required to carry out the activities listed above.

4. Noise and Light Pollution - Noise and light pollution can potentially disturb bio-diversity, and defined decibel limits and limitations on illumination must be enforced. The use of firecrackers should be limited. However, green crackers can be used in places other than forests or protected areas but can be used only up to 10:00 PM. No noise-making green firecrackers as per the formulation of CSIR-NEERI, which generates noise of more than 125 dB(A) and light-emitting green firecrackers above 90 dB (A) measured at a distance of 4 meters from the point of bursting can be allowed for the event. Use a microphone or operated fixing 'sound limiter' with an amplifier system (for maintaining the ambient noise level as prescribed for different areas). The nNoise levels in any area/zone shall not exceed the ambient noise level standards which read as follows:

Category of Use	Day Time Limit in dB (A) Leq.	Night Time Limit in dB (A) Leq.
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

- 5. Wildlife Protection:** There must be protocols for responding to wildlife emergencies, such as injured animals or sightings of protected species during the event. Designate trained personnel or liaise with local wildlife rescue organizations for swift response and appropriate actions. Existing Nadi Mitras (river friends) or workforce in the Ganga stretch can be engaged in monitoring the event along the Ganga River. Similar volunteer forces can be onboarded for other rivers. Signage boards (print/digital) should be posted wherever required to update/inform the visitors about the critical areas (waste, bio- diversity, river perspective) to be avoided during the event.
- 6. Temporary Infrastructure:** Designate parking zones located away from the riverbank to minimize traffic congestion near sensitive river ecosystems and ensure smoother event logistics. If public accommodation is needed at the event site, it should be demarcated and positioned at a safe distance from the riverbank. Permanent structures for accommodation are prohibited; instead, tents should be used. Additionally, floating tents are not permitted to be erected.
- 7. Immersion of Idols in Rivers:** In several states, after the festivals, idol immersion in waterbodies (rivers, lakes, oceans, etc.) takes place with large gatherings along banks of waterbodies. In the case of immersion of idols in rivers, guidelines prepared by CPCB for idol immersion in rivers should be followed. Following are some key points from the guidelines.
- Arrangements may be made for the construction of temporary confined ponds with earthen bunds for immersion of idols. After the completion of immersion, supernatant water may be allowed to flow in rivers, as the case may be, after checking for color and turbidity. Lime may be added in temporary confined ponds.
 - Idols should be made from natural materials. Use of traditional clay for idol making rather than baked clay, Plaster of Paris, etc. may be encouraged, allowed, and promoted. Painting of idols should be discouraged. In case idols are to be painted, water-soluble and nontoxic natural dyes should be used. The use of toxic and nonbiodegradable chemical dyes for painting idols should be strictly prohibited.
 - Discarded worship materials (flowers, clothes, leaves, decorating material (made of paper and plastic), etc.) should be removed from idols before immersion. Bio-degradable materials should be collected separately for recycling or composting. Non-biodegradable materials should be collected separately for disposal in unsanitary landfills.

- The leftover material at idol immersion points should be collected for further disposal., within 48 hours of the immersion of idols.
 - The event/puja organizers should be involved in a campaign about the ill effects of the toxic components of coloring materials, not only of the idols but also other decorating materials used during the festive season. Specific leaflets and posters for mass awareness may be prepared and the Pooja committees persuaded to display such posters and distribute leaflets among worshipers.
- 8. IEC Campaign:** Design an impactful IEC campaign to raise awareness about the importance of maintaining the river's health, local biodiversity, and responsible citizen behavior for the rivers, floodplains and wildlife protection. The campaign plan may include, wall paintings, organizing street plays, posters, banners, LED billboards, flyers, etc., along with dedicated social media campaigns.

Annexure 2: Sample format for site report by team designated by Chair RMTF

1. Name of event (if any): _____

2. Date and duration of event: _____

3. Proposed event location/s (Latitudes and Longitudes of edges): _____

4. Day and time of peak crowd gathering: _____

5. Name of the river where the event/gathering is proposed to be held. Also, please mention whether it's a seasonal river or perineal river or is along a constructed river front

6. Please also specify the HFL and current water level of the river _____

7. Is proposed event location a protected site (Yes/No): _____

8. Existing Vegetation at the proposed event site:

Type of vegetation, trees, grass, shrubs and creepers

a. _____

If trees are present, please give details like no. of trees and name of tree species.

b. _____

9. Whether any biodiversity hotspot at the proposed site of the event? If yes, please give details.

10. Does the river stretch at the event site have aquatic and terrestrial life? If yes, please give details

11. Physical condition of the event site like sandy/ hard soil/ rocky, clean/ dirty, natural/ anthropogenically modified etc.

12. Please mention whether toilets with waste disposal facilities are available at the proposed event site. Also, please mention whether the available toilets are sufficient to cater for the requirements during the event.

13. Please mention whether dustbins/waste bins are available at the proposed event site.

14. Please mention if any untapped drain is flowing (upstream or downstream) in the river at the proposed event site. Please also specify whether the drain carries wastewater or stormwater.

15. Please collect river water samples for testing.

16. Please provide photographic evidence of the proposed event site's present situation – (A drone surveys to compare pre and post-event conditions is highly recommended).

Annexure 3: CPCB Standards for Wastewater Disposal

Following are the minimum water quality standards that needs to be achieved for the effluent from the STPs. These parameters include all modes of disposal, whether it is on land or water bodies.

Parameters	Standards			
	Mega & Metropolitan Cities	Class 1 Cities	Others	Deep Marine Outfall
pH	5.5 - 9.0	5.5 - 9.0	5.5 - 9.0	5.5 - 9.0
BOD	10	20	30	30
TSS	20	30	50	50
COD	50	100	150	150
TN	10	15	-	-
TP	1.0	1.0	1.0	-
FC	Desirable - 10 Permissible - 230	Desirable - 230 Permissible - 1000	Desirable - 1000 Permissible - 10,000	Desirable - 1000 Permissible - 10,000

BOD – Bio-chemical Oxygen Demand; TSS – Total Suspended Solids; COD- Chemical Oxygen Demand; TN – Total Nitrogen; TP- Total Phosphate; FC – Faecal Coliform;

Annexure 4: Norms For Sanitary Facilities In Public Toilets

CPHEEO Manual on Sewerage and Sewage Treatment, MoUD, 2013

NO	Sanitary Unit	For Male	For Female
1.	Water Closet	One per 100 persons up to 400 persons; for over 400 add at the rate of one per 250 persons or part thereof.	Two for 100 persons up to 200 persons; over 200 add at the rate of one per 100 persons or part thereof.
2.	Ablution Taps	One in each W.C.	One in each W.C.
3.	Urinals	One for 50 persons or part thereof.	Nil
4.	Wash Basins	One per W.C. and urinal provided	One per W.C. provided

Note

It may be assumed that two-thirds of the number are males and one-third females

One water tap with drainage arrangements shall be provided for every 50 persons or part thereof in the vicinity of water closet and urinals.

*At least 50% of female WCs may be Indian pan and 50% European WC



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