

Fourth Report of the Vishwamitri Committee

(Constituted by the Hon'ble Gujarat State Human Rights Commission)

In the Matter of

HRC/2024/PRESS/205/Vadodara City/legal-1

13 February 2026

Map of Dhadhar Basin

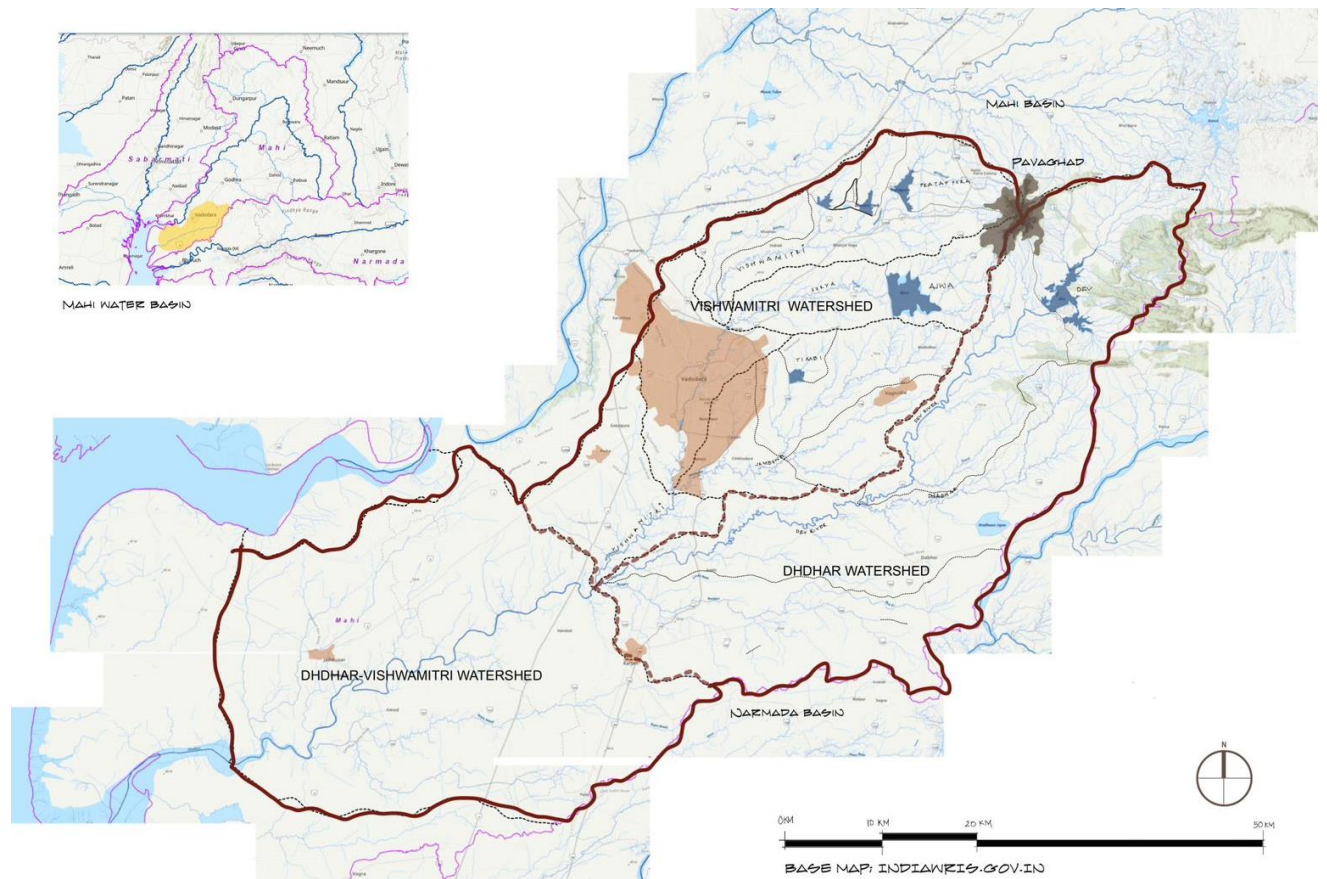


Table of Contents

Progress	4
Summary of Reports 1, 1A, 2, 3	11
Observations and Recommendations	19
1. Construction & Demolition (C&D) Waste Management	20
2. Municipal Solid Waste Management (SWM)	21
3. Sewage Treatment	22
4. Encroachments	22
5. Planning and Design	24
6. Riverine Corridor	26
7. Groundwater Management	27
8. Biodiversity	28
9. Operation, Maintenance, Monitoring	30
10. Governance and Processes	30
Annexure I: Visits, Meetings, and Discussions	32
20.09.2025: Meeting with Mr. B. N. Navalawala (Chairman of the High Level Committee), VMC officials, and Irrigation Department Officials	32
20.09.2025: Meeting with Regional Officer, GPCB Vadodara	34
24.09.2025: Meeting with VMC Officials	35
25.09.2025: Site Visit to Erosion Locations - Behind Sayajibaug Zoo and Bandstand with VMC Officials.	36
16.10.2025: Field Visit to Upstream Areas with VMC Officials.	41
10.11.2025: Meeting with Municipal Commissioner and VMC Officials.	47
18.11.2025: Meeting with VMC SWM Team and Consultants - Facile Maven.	49
28.11.2025: Joint Inspection of Sewage Treatment Plants (STPs).	50
28.11.2025: Meeting with the Officials from the Irrigation Department, and VMC Officials.	52
05.12.2025: Joint Inspection of Sewage Treatment Plants (STPs).	54
06.12.2025: Field Visit with VMC SWM Team and Consultants Facile Maven for Sample Pit.	55
09.12.2025: Field Visit with VMC SWM Team and Consultants Facile Maven for Sample Pit.	57
20.12.2025: Meeting with Municipal Commissioner, VMC Officials, CREDAI Representatives, GPCB Regional Officer.	59
Annexure II: Drone Survey of Jambua to Makarpura Kaans (Selected Images).	62
Annexure III: Drone Survey of Masiya GIDC to Vadsar Kaans (Selected Images).	66
Annexure IV: Drone Survey of TB Hospital to Vasna Kaans (Selected Images).	70

<i>Annexure V: Drone Survey of Mangaleshwar Zampa to Kamtibaug Kaans (Selected Images).</i>	74
<i>Annexure VI: Drone Survey of Panira Pole to Mangaleshwar Zampa Kaans (Selected Images).</i>	77
<i>Annexure VII: Drone Survey of Bhukhi Kaans (Selected Images).</i>	81
<i>Annexure VIII: Vishwamitri Revival and Rejuvenation Project report by VMC to Government of Gujarat</i>	88
<i>Annexure IX: C&D Vishwamitri Action Plan Report (Draft- Selected Images)</i>	112
<i>Annexure X: Minutes of Meeting with Municipal Commissioner, VMC Officials, CREDAI Representatives, and GPCB Regional Officer, dated 20.12.2025</i>	122
<i>Annexure XI: Check Dams in the Upstream Areas, Irrigation Department</i>	125

Progress

After the Third Report, this Committee continued the monitoring of the ongoing works by the VMC and Irrigation Department and made suggestions towards the same.

The table below shows the information requested and awaited from concerned authorities.

Table 1: Information Requested and Not Received from Concerned Authorities

Sr. No.	Information Requested	Information Received
1	Location and quantification of C&D waste dumping in the floodplain area, and action plan for removal.	Awaited
2	Reports and Observations submitted by the appointed wildlife volunteers, experts, and NGOs.	Awaited
3	Spatial intervention action plan for crocodiles and other wildlife: <ol style="list-style-type: none"> a. Locations of crocodile deaths that have occurred after January 2025. b. Post-mortem reports of crocodile deaths along with the inference drawn by the concerned authorities. c. Information on rescue, capture and/or translocation of crocodiles, if any. d. Cause of deaths of Fishes on and around 03.05.2025 in the river near Dena bridge (NH 48). We were informed about this by the wildlife volunteers during our visit on 03.05.2025. e. Cause of fire near Mangal Pandey bridge on 03.05.2025. 	Awaited

4	Biodiversity expert's suggestions action plan.	Awaited
5	Detail action plan for plantation from Parks & Gardens, and VMC.	Awaited
6	Related documents, location specific designs, execution, operation and maintenance plan for bank stabilization using gabion walls.	Awaited

The table below shows the information requested and received from concerned authorities.

Table 2: Information Requested and Received from Concerned Authorities

Sr. No.	Information Requested	Information Received
1	Floodplain maps (5 and 10 year return period) created by SECON.	Received from VMC
2	Maps of ongoing "desilting" and "resectioning" works across the 4 sections in VMC jurisdiction and 6 packages in the downstream areas under the jurisdiction of the Irrigation Department - print and soft copy.	Received
3	Drone videos dated February 2025, March 2025, April 2025, May 2025 (2), of before, during and post "desilting" and "resectioning" works in respective jurisdictions.	Received
4	Drone survey of Vishwamitri River outfalls from GPCB, September 2024.	Received from GPCB

5	Relevant documents pertaining to the Vishwamitri River in connection with ongoing construction activities under NHRCL Project (Bullet Train) in the floodplains.	Received from NHRCL
6	Drone survey of Vishwamitri River outfalls from VMC, May 2025.	Received from VMC
7	Log book of rescue events and other observations related to wildlife activities from Zoo Authorities.	Received but Need detailed data
8	Post mortem reports of 3 species: flapshell turtle, checkered keelback, monitor lizard.	Awaiting reports of crocodile deaths.
9	Details of coir installations to address erosion – GPS locations, extent and quantifications, including photographs.	Drone videos received.
10	Drone survey of the desilting works from the reservoirs of Ajwa, Pratapura to Pingalwada, dated 10.06.2025, 11.06.2025, 22.06.2025, 29.06.2025, 30.06.2025, 11.07.2025, 14.08.2025, and 16.08.2025.	Received from VMC and Irrigation department.
11	Drone survey of 2024 floods.	Received from VMC.
12	Photographs of Action taken by NHRCL towards removal of silt at Bullet Train Columns as per Reports of Vishwamitri Committee and discussions during meetings.	Received from NHRCL.

13	Periodic drone surveys after rain events of the desilting works from VMC, at the reservoirs of Ajwa, Pratapura and new detention pond at Dena village, and within VMC boundaries.	Received from VMC.
14	Periodic drone surveys after rain events of the desilting works from Irrigation Department, downstream of Maretha.	Received from Irrigation Department.
15	NHAI action plan for pre monsoon and post completion of works.	Received Reports from NHAI.
16	Superimposition of bullet train project activity / interventions (temporary / permanent) on the floodplain map.	Received from NHSRCL.
17	Related documents, Tender, Specification, Fixing details, operation and maintenance plan for bank stabilization using gabion walls.	Received Locations, length of gabions, tender.
18	Related documents, Tender, Specification, Fixing details, operation and maintenance plan for bank stabilization using coir and coco logs addressing wildlife concerns.	Received from VMC.
19	Irrigation Department Completion Report.	Received.
20	Brief Action Taken Report on Issue of Obstruction to Dhadhar River Flow at Sadad Village, Padra Taluka, Vadodara District.	Report Received.
21	Data pertaining to aquifer (confined and unconfined) and subsurface flow regimes.	Received for Vadodara District.

22	Waterlogging locations of July 2024 within VMC areas.	Received from VMC.
23	Map of land parcels with ownership (public and private) within the demarcated 5-year and 10-year floodplain maps.	Received from VMC.
24	Contour (topography) data of the entire Watershed.	Received from VMC.
25	Drone surveys of works done in the tributaries – Bhukhi and its tributaries, Bahucharaji, Mashia kaans, Ruparel kaans, Undera – Gotri kaans, T.B. Hospital – Vasna kaans, Kalali kaans, Gotri-Bhayali kaans, Maneja Kaans, Airforce kaans, Vasna – Banco kaans, Jambuva and its tributaries, etc. (as per document received from VMC).	Received from VMC.
26	Superimposition of highway project (NH48) activity / interventions (temporary / permanent) on the floodplain map.	Received from VMC.
27	Superimposed map of all existing structures (temporary and permanent) within the demarcated 5-year and 10-year floodplain maps.	Received from VMC.
28	Copy of PowerPoint Presentation submitted to Government of Gujarat by VMC	Received from VMC.
29	Drone videos of the meanders and ox-bows	Received from VMC.

30	List of check dams in upstream areas	Received from Irrigation Department.
----	--------------------------------------	--------------------------------------

The table below logs the course of events which have been elaborated upon later as Annexure I.

Table 3: Site Visits and Meetings

Sr. No.	Date	Events	Particulars
1	20.09.2025	Meeting with Mr. B.N. Navalawala, VMC officials, and Irrigation Department Officials	GERI Compound
	20.09.2025	Meeting with Regional Officer of GPCB	GPCB, Vadodara Office
2	24.09.2025	Meeting with VMC officials	VMC Office
3	25.09.2025	Site Visit with VMC officials	Behind Zoo and Bandstand
4	16.10.2025	Field Visit with VMC officials	Ajwa, Pratapura, Vadadla, Haripura reservoirs
5	10.11.2025	Meeting with VMC officials and MC	VMC Conference Room
6	18.11.2025	Meeting with VMC – Solid Waste Management (SWM) officials and their Consultant Facile Maven	VMC Office

7	28.11.2025	Joint Inspection of Sewage Treatment Plants (STPs)	Atladara
8	28.11.2025	Meeting with the Collector, Officials from the Irrigation Department, and VMC Officials	Collectorate
9	05.12.2025	Joint Inspection of Sewage Treatment Plants (STPs)	Tarsali, Gajrawadi
10	06.12.2025	Field Visit with SWM Dept. and Facile Maven for sample pits	Behind Akota Crematorium
11	09.12.2025	Field Visit with SWM Dept. and Facile Maven for sample pits	Sama Bharwadvas
12	20.12.2025	Meeting with VMC officials, Municipal Commissioner, and CREDAI representatives	VMC Conference Room

Summary of Reports 1, 1A, 2, and 3

News coverage in Indian Express, Ahmedabad, dated 30.08.2024, "Name Change, DPR & 14 years later, Vishwamitri revamp still on paper". Based on this article a Suo Motu notice was issued to the Vadodara Municipal Corporation (VMC) by the Gujarat State Human Rights Commission (GSHRC). On 12.03.2025, the GSHRC has taken note of the letter dated 03.03.2025 of the Concerned Citizens of Vadodara and issued another notice to the concerned authorities. On the hearing dated 01.04.2025, the GSHRC constituted a Committee comprising of 1. Dr Neha Sarwate, Environmental and Urban Planner; 2. Rohit Prajapati, Environment Activist, Researcher, and Writer; 3. Dr Ranjitsinh Devkar, PhD, Zoologist; 4. Dr Jitendra Gavali, PhD, Botanist; 5. Mitesh Panchal, Architect and Urban Planner to oversee the rejuvenation works in the Vishwamitri River and submit their reports.

Based on multiple site visits, drone surveys, document reviews, ecological assessments, and consultations with concerned authorities, the Committee reviewed the ongoing efforts for rejuvenation of the Vishwamitri River in the context of the National Green Tribunal Order dated 25.05.2021 (O.A. No. 228/2020).

The following are the consolidated observations and recommendations of the previous reports submitted to support a science-based, ecosystem-centric approach to river rejuvenation.

A. Consolidated Observations

1. Limited Scope of Current Interventions

Current interventions by the Vadodara Municipal Corporation (VMC) and the Irrigation Department remain largely confined to riverbanks and fail to address the river as an integrated system. Critical components such as

floodplains, ravines, wetlands, oxbows, tributaries, confluences, natural stormwater channels (*kaans*), and meanders continue to remain outside the scope of action. While these efforts represent an initial step toward compliance with the NGT Order, their limited spatial and ecological scope undermines effective river rejuvenation.

2. Debris, Desilting, and Floodplain Alterations

The predominant focus on desilting and soil removal overlooks the ecological role of riverine sediments. In contrast, construction and demolition (C&D) waste, municipal solid waste, and sewage—the principal pollutants—persist at multiple locations, including sites recorded in joint GPCB inspections (2017, 2019, and 2021).

Debris has often not been removed prior to bank stabilisation works, resulting in altered floodplain topography and compromised ecological restoration. Ad-hoc filling, levelling, and construction of compound walls along riverbanks, ravines, and floodplains (e.g., Jetalpur Road–Bhimnath Bridge stretch, Jail Road, Fast Track Court Road, Sama Chetak Bridge to name a few) have disrupted natural surface flows and contributed to flooding and waterlogging, particularly during the 2024 monsoon.

3. Ecological Engineering and Bank Stabilisation

Ecological engineering measures, including coir works, have frequently been applied on depositional banks rather than erosion-prone banks. Steep and vulnerable banks—which should not have been disturbed—were altered in several locations, increasing erosion risk, especially during monsoons.

Toe protection using coco-logs should have been applied to erosion-prone banks while avoiding disturbance to wildlife dens. Naturally reinstated waterways observed after initial rain events should be formally recognised, notified, and protected, with realignment of stabilisation measures accordingly.

4. Vegetation, Plantation, and Biodiversity

Riverine vegetation—particularly emergent and floating plants—is critical for biodiversity, including crocodile hatchlings, birds, insects, and aquatic fauna, and should not be removed. Emergent islands formed during recent works are biodiversity-rich habitats and should be retained and stabilised as mini-islands through ecological engineering approaches.

Systematic removal of invasive species and plantation of native species is necessary. Vetiver grass, where used, should follow a spacing of 3 feet. Native trees should be planted along upper banks across the watershed based on ecological suitability.

Field observations indicate plantation of single-species or avenue-style trees within riparian zones, primarily for aesthetic purposes. Such practices are contrary to biodiversity conservation. A clear distinction must be maintained between natural vegetation, guided afforestation, and plantation, with emphasis on long-term nurturing, adaptive management, and scientific monitoring by qualified ecological teams.

5. Biodiversity Significance and Wildlife Concerns

The Vishwamitri River and its riparian corridor form a critical ecological system supporting groundwater recharge and exceptional biodiversity. Studies by The Maharaja Sayajirao University of Baroda and Gujarat Ecology Society confirm that the upper watershed (Pavagadh hills) supports dry deciduous forests, while the riverine corridor sustains a complex food web of flora and fauna.

The river supports diverse insects, amphibians, reptiles, birds (resident and migratory), mammals, fishes, molluscs, turtles, and crocodiles. The presence of a healthy breeding population of *Crocodylus palustris* (mugger crocodile) within city limits is globally rare. Other aquatic reptiles, including

the Indian flapshell turtle (*Lissemys punctata*, Schedule I species), are also prevalent.

Heavy machinery used for desilting and debris removal causes unavoidable disturbance, necessitating safeguards. Crocodiles were observed across multiple locations during morning hours (0930–1100 hrs); however, scientific studies are required to assess stress levels. Successful breeding should be used as a benchmark of zero-stress conditions.

Incidents of wildlife mortality, including accidental deaths during operations and the disposal of pig carcasses into the river (09.07.2025), raise serious ecological and public health concerns. Such acts violate environmental norms and require investigation, accountability, and strict enforcement.

6. Sewage and Storm Water Outfalls, and Water Quality

Drone surveys identified 38 sewage and stormwater outfalls along the 24 km stretch of the river within VMC limits; outfalls into tributaries remain unmapped. Most outfalls do not meet prescribed standards.

Key gaps include the absence of an interim action plan to address untreated and partially treated sewage, inadequate STP performance evaluation, lack of comprehensive sewage mapping, and over-reliance on inlet–outlet sampling instead of stage-wise assessment. Future STP design and expansion must consider 50-year population projections, including floating populations induced by development.

7. Infrastructure Impacts and Floodplain Governance

Major linear infrastructure projects—including NH-48 expansion, the Mumbai–Delhi Expressway, and the Bullet Train Project—have created temporary and permanent obstructions within riverbeds, floodplains, and natural drainage paths, contributing to flooding and waterlogging in 2024.

Claims of mitigation (e.g., box culverts at Sadad village) require verification, as photographic evidence indicates continued obstruction of east–west surface flows across the Dhadhar floodplains. Remedial plans and statutory permissions remain pending.

There is an urgent need for enforceable guidelines governing activities within and adjacent to floodplains. Preparation of a superimposed floodplain–land parcel map (public and private) remains pending despite repeated deliberations and must be expedited.

8. Gabion Walls and Structural Interventions

Tender documents and proposed locations for gabion walls have been shared by the VMC. While detailed designs are proposed to be based on site-specific soil testing, further deliberation is essential before implementation.

Clarity is required on exact locations and extents (beyond bridges), site-specific designs, and necessity under modified post-desilting flow regimes. Gabion designs must avoid permanent ecological damage, and alternative bank stabilisation methods should be explored wherever feasible.

All proposed locations must be superimposed with mapped crocodile dens and basking sites, with a minimum 50 mt. influence zone flagged and mitigated. Construction access routes must ensure zero disturbance to wildlife habitats.

9. Institutional and Systemic Gaps

The Committee identified systemic shortcomings including inadequate staffing with relevant subject expertise, excessive outsourcing of core statutory functions, and delays in service delivery and grievance redressal. The complexity of the Vishwamitri–Dhadhar watershed necessitates

integrated planning across ecological, hydrological, social, and administrative dimensions.

B. Consolidated Recommendations

1. Treat the Vishwamitri River as a complete ecological system, including floodplains, ravines, wetlands, oxbows, tributaries, *kaans*, and riparian zones across the entire watershed from Pavagadh to the Gulf of Khambhat.
2. Adhoc re-carpeting of roads in the absence of topographic considerations have led to rise of road levels, resulting in waterlogging during rainy days. No increase in levels of roads should be allowed in the absence of topographical studies. A comprehensive road network plan of the entire city should be formulated that integrates all natural water networks (river, tributaries, ponds, *kaans*, wetlands, and oxbows).
3. Prioritise complete removal of debris and C&D waste across floodplains before undertaking bank stabilisation.
4. Protect stretches with healthy native vegetation from disturbance.
5. Apply ecological engineering only at erosion-prone locations, avoiding wildlife habitats and dens.
6. Retain emergent vegetation and biodiversity-rich islands using nature-based stabilisation methods.
7. Implement scientific, multi-species native plantation plans with a minimum five-year monitoring framework.
8. Conduct comprehensive biodiversity documentation and year-round ecological monitoring.
9. Investigate wildlife mortality incidents and strictly prohibit dumping of carcasses into the river.

10. Prepare and implement a holistic sewage management plan, including outfall mapping, STP performance audits, and future-ready infrastructure.
11. Prepare a superimposed floodplain–land parcel map and enforce a moratorium on floodplain development until regulations are finalised.
12. Strengthen urban and environmental planning departments with qualified professionals and reduce reliance on outsourcing mandatory functions.
13. Formulate a watershed-scale regional and land-use plan based on historical data, ecological restoration trajectories, and geo-hydrology.
14. Create dedicated monitoring and inspection cells to ensure effective implementation and compliance.
15. Respect and document the river’s natural recuperative responses before planning further interventions, avoiding over-engineering and irreversible impacts.
16. Establish a semi-statutory, state-level Vishwamitri–Dhadhar Watershed Authority with multidisciplinary expertise.
17. The effective implementation of the ongoing and recommended works need a robust team of efficient and qualified professionals from diverse fields. Hence, to address the ongoing initiatives along with the recommended systemic modifications for the efficient and effective functioning, recruitment of appropriate staff and personnel should be the foremost priority. Without this, the vision of rejuvenating the Vishwamitri River to address flooding and waterlogging, in letter and spirit, will remain as wishful thinking.

The Committee reiterates that without robust institutional capacity, scientific planning, and ecosystem-centric governance, compliance with the NGT Order dated 25.05.2021 and the objectives of the Suo

**Motu proceedings before the GSHRC will remain unattainable.
Subsequent reports will track progress and compliance.**

Observations and Recommendations

To create an Action Plan for the true rejuvenation of the Vishwamitri River, it is essential to follow a well-thought strategic, multi-stage process that is compliant with legal and environmental regulations and the Order dated 25.05.2021 of the National Green Tribunal, Principal Bench in Application O. A. No. 228/2020 (Earlier O. A. No. 49/2016 (WZ)) and Execution Application No. 45/2016 (WZ) (Rohit Prajapati & Anr V/s Secretary, MoEF & CC & Ors.), that defines the river as:

"... The River consists of catchments, floodplains, tributaries, ponds, river-bed and adjoining ravines which, along with the soils and vegetation on both sides, is the river's natural mechanism to retain the additional water, prevent floods and provide habitat for various species. River harbours and interacts with innumerable organisms like microbes, plants and animals. It is a natural, living organic part of a larger ecological system. River is also a network of tributaries, floodplains and ponds spread over its basin and the estuary."

[...] The action plan is to address the issues relating to demarcation, protection of flood plain zone and maintaining minimum environment flow. The other consequential and incidental issues like sewage treatment, management of waste, preventing encroachment, etc. are also covered by the action plan. Demarcation of the entire flood plain zone of the river needs to be undertaken. Further, steps are required for plantation and maintaining the integrity of the river in totality. While directing consideration of all the issues by the applicants, we reiterate the direction for implementation of the "Vishwamitri River Action Plan" including the steps for removal of unauthorised structures, demarcation and protection of flood plain zone and other action points as per the river restoration plan."

Also, implement the Order, dated 22.02.2017, Supreme Court, Writ Petition (Civil) No. 375 of 2012 (Paryavaran Suraksha Samiti & Anrs V/s Union of

India & Ors), Order, dated 22.02.2021, National Green Tribunal, Principal Bench, Delhi, Original Application No. 593 of 2017, (Paryavaran Suraksha Samiti & Anrs V/s Union of India & Ors) and Orders of the National Green Tribunal, Principal Bench, Delhi, in Original Application No. 606 of 2018 in letter and spirit.

Below is a proposed framework of content and processes that need to be included for the preparation of such a plan in a holistic manner. These are categorized into themes and sub-themes as discussed below:

1. Construction & Demolition (C&D) Waste Management

The locations of substantial C&D waste deposition have been long identified, as mentioned in the previous reports, but the extent and quantity, including legacy waste, needs to be determined at the earliest. Inability to do so is one of the biggest hurdles in the rejuvenation efforts. Multiple meetings and field visits have been conducted with the concerned department and their consultants towards the scientific quantification of the waste.

Utmost precautions should be taken to ensure that no wildlife species is endangered during the debris clearing process. Establish critical breeding grounds and habitats for vulnerable species, such as the mugger crocodile, flapshell turtles, and other prominent wildlife to ensure conservation plans are integrated into the debris removal process. Wildlife experts should be consulted and volunteers and rescue teams should be present at the location during debris removal.

A clear strategy needs to be established for the collection, segregation, treatment, processing, and recycling of construction debris removed from the river, her banks, ravines, ponds, and wetlands. Collaborations need to be established between the VMC, academia, NGOs, and industries towards the recycling of C&D waste for building materials,

and other usable products; CSR initiatives could be integrated in this effort.

Collaborations by VMC authorities with architects and planners, and C&D waste generators – builders, developers, construction companies, and local contractors – need to be made to segregate the waste at source, and streamline the debris treatment process, such that no new debris is dumped into the riverine areas. Decentralised collection and segregation facilities should be made zone wise, ward-wise or geographically distributed such that the transportation time is minimised and possibility of dust pollution is reduced. Transportation of segregated debris should be carried out during non-traffic hours or at night, so as to cause minimum disturbance to regular traffic flows.

2. Municipal Solid Waste Management (SWM)

The landfills for municipal solid waste have historically been located in riverine area; the defunct Vadsar landfill on Vishwamitri River and the current location being on Jambuva River, a major tributary of the Vishwamitri River. It is established that leachate from these landfills pollute the water and riverbanks. During the recent 'desilting' initiative by the VMC, substantial solid waste and C&D waste has been removed from the Vadsar location though considerable waste still remains to be cleared. The waste at the Jambuva landfill is overflowing into the river, polluting it further and degrading the riparian areas.

A clear strategy needs to be established for the collection, segregation, treatment, processing, and recycling of municipal solid waste that is removed from the riverine areas. Processing units at Atladara should be upgraded to manage the quantum of waste disposed every day. Collaborations need to be established between the VMC, academia, NGOs, recyclers, and industries towards the recycling of solid waste for usable products; CSR initiatives could be integrated in this effort.

The VMC should collaborate with residential societies, and community organisations to generate awareness and training for segregating at source and provide incentives for the same. Similarly, garbage collection vans should be retrofitted to collect the segregated waste at source and training programs should be conducted with the collecting staff regarding duly putting the segregated waste in the appropriate bins. Composting of biodegradable waste should be encouraged and facilitated at building levels, both for residential and commercial properties. Separator bins should be installed at strategic locations at neighbourhood level for residents to deposit recyclable waste like glass, metal cans, wood, cardboard, batteries, etc. Biomedical and hazardous waste should be addressed separately from regular domestic and commercial waste.

3. Sewage Treatment

The VMC and GPCB have already identified 38 sewage outfalls in the Vishwamitri alone. A thorough documentation of the drainage network, including storm water drains needs to be carried out to identify illegal connections, and outfalls into the tributaries, ponds and wetlands.

Results of the detailed analysis of the observations during field visits to the Atladara, Tarsali, and Gajrawadi STPS's are pending and hence a separate report on Sewage Treatment will be submitted in the subsequent report by this Vishwamitri Committee.

4. Encroachments

Encroachments in the riverine areas to be classified as below and separate strategies and processes need to be applied to address their sensitive nature.

- a. Temporary – consisting of informal settlements, short term and long term C&D waste and MSW landfills.

- b. Permanent – occupation of riverine areas by legally approved buildings developments and Infrastructure projects like the piers and pipelines by larger infrastructure projects like highways, railways, electrical transmission stanchions, water and gas pipelines, etc.

The National Green Tribunal (NGT) has already directed the removal of unauthorized structures to help restore the river's ecosystem and prevent flooding and waterlogging. Depending on the nature of encroachment, the Concerned Authorities should organize a meeting with all the stakeholders to discuss the critical, crucial problem affecting considerable number of people due to flood and waterlogging, to resolve the issues in a systemic manner rather than adhoc actions, and even to comply with the Hon'ble NGT Order dated 25.05.2021. An initial meeting with CREDAI was conducted on 20.12.2025.

To begin with, apply GIS technology and satellite imagery to accurately classify the location of each encroaching structure by type as mentioned above within the boundaries of the mapped floodplains by the VMC. The systematic removal of the encroachments must be carried out after devising a systematic action plan and the execution should be methodical, prioritizing structures that pose the most significant risk to flood management and have clear legal standing for removal, such as recent encroachments or those without proper permissions.

Identify the various stakeholders, property owners, occupants and initiate a dialogue through focussed discussions on the vulnerability of the encroachments, impact on the river system and impacts on them too. Evaluate the extent to which the structures and associated activities—such as construction, debris dumping has degraded the river's ravines, wetlands, and natural storm water ways. Before any action on ground, a thorough survey should be conducted to understand the scope and ecological impact of the structures.

The action plan for the removal of encroachments and the plan for river rejuvenation should be a simultaneous effort that is well integrated in the Development Plan revision process, Local Area Planning initiatives, and Town Planning Schemes as discussed below. A mutually agreed legal process should be initiated through public hearings and stakeholder meetings to arrive at mutually agreed upon solutions. Formal legal notices to be served to the owners or occupants of all identified unauthorised structures. The notice must specify the legal basis for the removal as clearly mentioned in the NGT Order dated 25.05.2021.

The transition process should be transparent with the plan and its environmental benefits be made public to build citizen trust and support. This can help prevent conflicts and garner citizen participation in river rejuvenation.

Successful implementation requires careful planning and proactive measures to manage the social and economic consequences. A rehabilitation and resettlement plan (R&R) for slums and other informal settlements, should be developed as a R&R policy that provides alternative housing options, prioritizing recent redevelopment schemes that were built despite knowledge of flood risks. During the removal of structures, plan should be devised for safeguarding the wildlife, especially crocodiles and turtles, from the impacts of the machinery used. This would require coordination with the Department of Environment and Forest (DoEF), Wildlife Board, and wildlife experts.

5. Planning and Design

A watershed approach for Dhadhar Basin including the Vishwamitri watershed should be adopted and a regional plan for Vadodara eco-region should be devised to integrate the upstream and downstream inter-relationship. The Development Plan and subsequent Local Area Plans (LAP) and Town Planning Schemes (TPS) process for the VUDA limits other urban

areas within the Dhadhar and Vishwamitri watersheds should follow the directives of this regional plan in a cohesive manner.

The river system and her components must be duly recognised and integrated in the Regional and Development Plans. Since the cadastral maps are from the colonial times and the river has undergone many natural and forced changes, the first desirable step would be to reconfigure the base property map to acknowledge the renewed river course and its associated components also need to be notified. Map all existing structures, both temporary and permanent, within the officially demarcated floodplain which is already done to comply with the Order dated 25.05.2021 of the Hon'ble NGT. The Vishwamitri Committee has already recommended this, where the mapping of Dhadhar watershed should be done similar to the Vishwamitri watershed mapping by SECON, as discussed and agreed upon by the concerned authority.

Land use planning and zoning of land parcels (private and public) in floodplain areas should include non-intrusive functions and activities complimenting natural uses with as little construction as possible – ecological parks, wilderness trails, agro forestry, etc. all other existing uses can be deemed as legal non-conforming uses and eventually be phased out in 10 years. The Floor Space Index (FSI) can be reduced to the minimum and tools like TDR (Transfer of Development Rights) and Overlay zones should be employed.

The Regional Plan is an opportunity to re-establish the flow of the river by reconnecting and restoring lost or broken connections of the river systems, where tributaries, kaans, natural waterways, wetlands, and ponds have been disconnected due to encroachments and development activities. The straightened meanders should be reinstated to their near original course as decided by the expert team. As part of the rejuvenation efforts already underway, continue removal of debris from the floodplains the river to

increase its carrying capacity. These efforts should be integrated with the structured debris removal plan.

Master plans for the riverine corridors and networks should provide design regulations for accessibility to river, recreational and educational opportunities, and economic opportunities. A sincere, participatory process (focus group discussions, workshops and charrettes) should be undertaken by a robust team comprising of local experts, academia, planners, landscape architects, urban designers, with property owners, businesses and residents to formulate a plan that is beneficial to all and the river system.

Design guidelines and regulations must be institutionalised as part of the GDCR that are in sync with the above objectives of river rejuvenation. For example, alternative methods should be enforced for the demarcation of property lines, other than compound walls,

6. Riverine Corridor

As and when the debris is removed and the river obtains her territory, the riparian edges, need to be restored in accordance with the erosional and depositional nature of meandering banks. They need to be stabilised, while restoring the natural topography, using ecological engineering methods to ensure a robust riverine structure. This can be done through soil consolidation followed by coir and coco-log applications, plantation of native grasses or open gabions; each technique should be scientifically designed to safeguard the hydrological processes of inundation and recession. The open gabions, specifically, should be designed in layers such that they do not impede the natural flow of water, there is provision for deposition of silt, and they do not impact the wildlife habitat.

The ravines should be designed as shock absorbers that detain water during and post monsoons to increase the storm water carrying capacity of the river, regulate the environmental flows and replenish groundwater tables.

During the non-monsoon season, they can double up as recreational and educational spaces, and habitats for various species. The vegetation and natural stormwater ways help clean the river and increase groundwater recharge.

7. Groundwater Management

The urban areas in the Vadodara ecoregion and beyond heavily rely on groundwater (borewells), in addition to the water supplied by the VMC, for their domestic, commercial, and industrial purposes, leading to overexertion and salinity ingress. The groundwater in Vadodara city now shows traces of fluoride which is a potential health hazard. At the same time, due to rampant urbanisation, the percentage of impervious surfaces have increased resulting in large quantities of storm water runoffs during the monsoon. This leads to waterlogging or sudden inundation in the river resulting in human induced flood events. This coupled with the disturbed top soil layers and shallow aquifers, the water has little opportunity to infiltrate through ground to replenish the ground water tables. With the demand for fresh water increasing over time, the dependency on deeper aquifers increase, leading to irreversible damages in subsurface hydrological systems, sometimes resulting in land subsidence events.

Aquifer mapping is the need of the hour and the basis for decision making to guide urban expansion. Regular monitoring the aquifer levels and water quality should be communicated to the civic society to raise awareness about the conscious use of water to minimise wastage. No new bore wells should be permitted and the existing ones to be phased out in a systematic manner.

Ecological restoration of wetlands, ponds, ravines, kaans, and riparian corridors must be an integral component to any development projects that falls in the vicinity of these entities to enhance infiltration. Incentives can be offered to projects that cause minimum disturbance to the soil-water

connect and adopt nature based solutions (NBS) and ecosystem based approaches (EBA). The water entities that have become derelict must be revived, low lying areas that naturally store water should be notified as wetlands or ponds. The ponds and wetlands that have been lost to development should be restored through similar processes as mentioned in the Encroachments section of this report. All these strategies will enhance infiltration and hence replenish the aquifers. Precautions should be taken to prevent polluting waters from being infiltrated.

Detention and retention ponds in the upstream areas should be created through small scale, ecologically engineered check dams to reduce the intensity of flow due to sudden inundation from release of waters from upstream dams, or heavy rainfall spells causing flash floods. These will also help increase the rate of infiltration.

8. Biodiversity

The rich floral and faunal biodiversity in the Vishwamitri river ecosystem including the presence of many schedule species, is an asset to the city of Vadodara and its eco-region. Increased urbanisation and associated heat island effect coupled with alterations in the riverine structure have had an adverse effect on the floral and faunal habitat over the last few decades.

To protect and conserve the rich biodiversity, a dedicated 5-year plan for safeguarding the flora and fauna in Vishwamitri riverine ecosystem should be devised. A robust team of botanists, zoologists, soil scientists, ecologists, from academia, NGOs and field experts should be constituted for the formulation and effective implementation of the plan. The plan should be time-bound, scientifically guided, and include measurable ecological performance indicators with annual review mechanisms. The key components of such a plan should include and not be limited to:

- a) Baseline ecological survey and GIS-based habitat mapping
- b) Identification of critical habitats and biodiversity hotspots

- c) Restoration of riparian buffers and wetlands
- d) Phased removal of encroachments affecting ecological flow
- e) Invasive species management strategy
- f) Native species reintroduction and habitat enhancement
- g) Water quality improvement measures
- h) Community participation and stakeholder engagement

Annual biodiversity assessment studies of urban and rural stretches of the river should be undertaken to document floral and faunal diversity, monitor population trends of species, identify threatened, endemic, and invasive species, assess habitat degradation and anthropogenic impacts, and creation of a publicly accessible biodiversity database. The study should be conducted in collaboration with recognized academic institutions, ecological experts, forest department officials, and biodiversity boards to ensure scientific rigor and transparency.

Periodic, seasonal weeding and plantation of native species should be mainstreamed as a regular activity of the Parks and Gardens Department within the VMC limits and Forest Department in the upstream and downstream areas. Such activities include periodic removal of invasive and non-native species, seasonal weeding aligned with ecological cycles, plantation of native riparian and wetland plant species, and monitoring of plantation survival rates efforts to improve the floral health. Plantation drives should prioritize indigenous species adapted to the local ecosystem to ensure long-term sustainability. Plantations of native species should be done along the banks of the newly created detention ponds at Dumad and also those resulting from the building of new check dams. Such plantation should also be carried out in the excavated areas of the existing reservoirs at Ajwa and Pratapura.

Scientific Annual Census of crocodiles and key species, including birds, should be undertaken to ensure health and mitigate conflicts. Recommended methods include direct sighting surveys using standardized

protocols, drone-assisted mapping of habitats, use of camera traps in strategic locations, GPS-based habitat documentation, seasonal monitoring of nesting and breeding sites, and data archiving for long-term population trend analysis. NGOs, and field experts, wild life volunteers can be involved this effort. This will support evidence-based conservation planning, improve human-wildlife conflict mitigation strategies, and enhance ecosystem management.

9. Operation, Maintenance, Monitoring

During and post-implementation, a robust monitoring and communication strategy is needed to prevent re-encroachment and ensure long-term success. It is necessary to establish a permanent monitoring system to implement a multi-tiered monitoring framework, possibly including satellite surveillance and regular ground inspections, to prevent future illegal activities. CC TV cameras should be installed at strategic locations to continuously monitor activities in vulnerable areas. Community watch groups can be created to involve citizens and impart a sense of responsibility and accountability. Penalties should be enforced upon for new encroachments to act as a deterrent for potential violators. The District Collector, as the chief custodian, should regularly update the River Rejuvenation Plan to integrate changes and ongoing progress.

10. Governance and Processes

A robust plan requires effective and efficient legal and administrative setup to manage such a crucial, sensitive and complex process. The Concerned Authorities should constitute a multi-departmental committee that would include officials from the Vadodara Municipal Corporation (VMC), Vadodara Urban Development Authority (VUDA), District Collectorate of Vadodara, Department of Environment and Forest (DOEF), Gujarat Pollution Control Board (GPCB), Vishwamitri Committee, and technical experts like hydro-geologists, ecologists, landscape architects, legal counsel, and urban

planners, to oversee the proceedings and guide the decision making and implementation process.

Inspection and surveillance teams must be constituted and existing departments should be adequately staffed with competent and well qualified personnel. It has been observed that there are redundancies, overlaps, and gaps in the roles and responsibilities of certain departments. There is a need to revisit these, reconfigure the departments to streamline the planning, implementation, and monitoring of the rejuvenation plan of the Vishwamitri River. To operationalise the above, resources and funding needs to be secured. Finances for human resources (landscape architects, environmental planners, ecologists, etc) and equipment need to be mobilised.

Efforts and initiatives for the rejuvenation of the Vishwamitri River can be likened to that of a movement towards a larger vision of resiliency and self reliance. These are time intensive and take perseverance and commitment. This committee will submit subsequent reports with the deliberations on the sewage treatment plants, C&D waste action plan, and the progression of work.



Dr. Neha Sarwate,
Environmental and Urban Planner



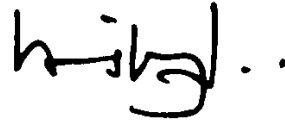
Rohit Prajapati,
Environment Activist, Researcher,
and Writer



Dr. Ranjitsinh Devkar, PhD,
Zoologist



Dr. Jitendra Gavali, PhD,
Botanist



Mitesh Panchal,
Architect and Urban Planner

Annexure I: Visits, Meetings, and Discussions

20.09.2025: Meeting with Mr. B. N. Navalawala (Chairman of the High Level Committee), VMC officials, and Irrigation Department Officials

Location: GERI Compound

Time: 05:00 PM

Attendee:

Rohit Prajapati
Mitesh Panchal
Neha Sarwate
Jitendra Gavali

Discussions:

The following was discussed:

1. Mr. B. N. Navalawala, is the Chairman of the High Level Committee formed by the Government of Gujarat, vide notification number UDUHD/MTN/e-file/18/2024/3155/L-1 Branch – PF1 dated 13.09.2024.
2. Contents of the reports dated 24.05.2025, 05.06.2025, 20.07.2025, and 20.08.2025 were discussed in detail.
3. Mapping of Dhadhar watershed should be done similar to the Vishwamitri watershed mapping by SECON.
4. Property mapping within floodplain areas has been prepared with reference to NGT Order dated 25.05.2021 ([...] *“While directing consideration of all the issues by the applicants, we reiterate the direction for implementation of the “Vishwamitri River Action Plan” including the steps for removal of unauthorised structures, demarcation and protection*

of flood plain zone and other action points as per the river restoration plan.”).

5. Multi stakeholder meetings should be conducted to discuss way forward with respect to properties within the floodplain areas.
6. There is an urgent need for formulation and implementation of guidelines for any projects within the flood plains for safeguarding the river ecosystem. Meanwhile, any form of development activities should NOT be permitted or undertaken by private owners as well as public authorities.
7. C&D waste dumping into ravines and issues pertaining to its removal.
8. Detention ponds and check dams in the upstream areas need to be identified by Irrigation Department. They should share details of all planned interventions including timeframe, with this committee.
9. 'Post monsoon' works ideally commence as soon as the rains recede.
10. A collective screening of the simulation of stormwater runoff resulting from HECRAS modelling software, as early as possible.

20.09.2025: Meeting with Regional Officer, GPCB Vadodara

Location: GPCB Office, Vadodara

Time: 06:00 pm

Attendee:

Rohit Prajapati
Mitesh Panchal
Neha Sarwate
Jitendra Gavali

Discussions:

The following was discussed:

1. Measuring the flow of the river using flow meter or other valid instruments.
2. Data related to water quality of the river at various locations need to be assessed and ideation related to effective instruments to do so.
3. GPCB can share monthly water quality reports of certain locations when required.
4. Joint inspection of STPs can be conducted after the monsoons recede.
5. GPCB can share latest STP performance reports when required.
6. Current generation of sewage vis a vis capacity of existing STPs along with projected sewage generation for at least 3 decades.

24.09.2025: Meeting with VMC Officials

Location: VMC office

Time: 05:00 pm

Attendee:

Neha Sarwate
Mitesh Panchal
Rohit Prajapati

Discussions:

The purpose of this meeting was to follow-up on the status of the progress of work and sharing of data:

1. Property mapping within floodplains.
2. Municipal solid waste and C&D waste mapping within floodplain areas and action plan for removal of the same.
3. Plantation plan and mapping from Parks and Gardens Department
4. Visit to locations where erosion had occurred and updates on coir installations.
5. Detailed design of proposed gabion structures is pending upon soil analysis.
6. Reports by wildlife NGOs and volunteers.
7. Drone surveys to be conducted in tributaries and kaans.

25.09.2025: Site Visit to Erosion Locations – Behind Sayajibaug Zoo and Bandstand with VMC Officials.

Location: Sayajibaug, Vadodara.

Time: 10:00 am

Attendee:

Mitesh Panchal
Jitendra Gavali

Discussions:

The following were observed and discussed:

1. Felling of garden compound fencing due inappropriate desilting works, aggravated by water flow during rain spells.
2. It was suggested that the VMC should classify the erosion occurred as low, medium, and high across the river length. Accordingly, erosion control and soil stabilisation measures through ecological engineering mechanisms should be formulated.
3. It was observed that certain trees that were exposed during the desilting works and not protected by coir were uprooted. It was suggested that these fallen trees be removed from the course of the river.
4. It was observed that the areas of the bank (near the zoo) that were not stabilised by coir has undergone erosion, while the banks where coir has been installed were stabilised. Additionally, alluvial soil was deposited along the banks on the coir and herbs, grasses and new plant recruits had emerged. It can be surmised that the coir has acted as a reinforcement and contributed to the stabilisation of the banks.









16.10.2025: Field Visit to Upstream Areas with VMC Officials.

Location: Ajwa, Pratappura, Vadadla, and Haripura Reservoirs

Time: 09:00 am

Attendee:

Rohit Prajapati
Mitesh Panchal
Jitendra Gavali
Neha Sarwate

Discussions:

The following was discussed and agreed upon:

1. It was observed that Ajwa, Pratappura, Vadadla, and Haripura reservoirs were at full capacity.
2. It was reported by a local villager that the increased catchment of the Pratappura reservoir prevented floodwaters in Vadodara city and also helped towards groundwater recharge of the surrounding villages, that will eventually contribute towards agricultural and livestock activities.
3. The Dena detention pond was inaccessible due to muddy access road.













10.11.2025: Meeting with Municipal Commissioner and VMC Officials.

Location: Conference Room, VMC

Time: 05:00 pm

Attendee:

Rohit Prajapati
Ranjitsinh Devkar
Jitendra Gavali
Neha Sarwate

Discussions:

The following was discussed:

1. Need to review river beyond the banks. Therefore, conduct a drone survey in the tributaries, oxbows, remaining kaans, and ponds.
2. There is a need to review groundwater data in terms of water levels and quality of water.
3. Location and quantification of debris. The preliminary report by consultant Facile Maven is perfunctory; need to meet with them to systematically conduct the analysis.
4. The functioning of the existing STP's and the discharge into the river. Identify untreated sewage outfalls in the tributaries and river. Devise water reuse policy at local level.
5. Floodplain mapping of tributaries.
6. Mapping of notified and un-notified lakes, and wetlands.
7. Action plan for eroded banks; gabion wall location, design and extent.
8. Action plan for wildlife protection – Forest Department.
9. Parks & Gardens Department can collaborate with GES, MSU Zoology and Botany departments to identify and remove invasive species, scientific trimming, maintenance of wilderness species.

10. Drone survey from Pavagadh would be helpful to identify potential detention and retention ponds via smaller check dams.
11. Identify properties (private and government) that are located within the floodplains.

18.11.2025: Meeting with VMC SWM Team and Consultants - Facile Maven.

Location: VMC Office

Time: 12:30 pm

Attendee:

Rohit Prajapati
Jitendra Gavali
Neha Sarwate

Discussions:

The following was discussed:

1. The report submitted by them is superficial; the quantification of debris at identified locations needs to be sincere and scientific.
2. In the absence of advanced remote sensing maps, physical bore pits need to be dug to identify depth of legacy waste.
3. The Committee members will accompany the team during field visits and pit excavation.

28.11.2025: Joint Inspection of Sewage Treatment Plants (STPs).

Location: Atladara

Time: 12:30 pm

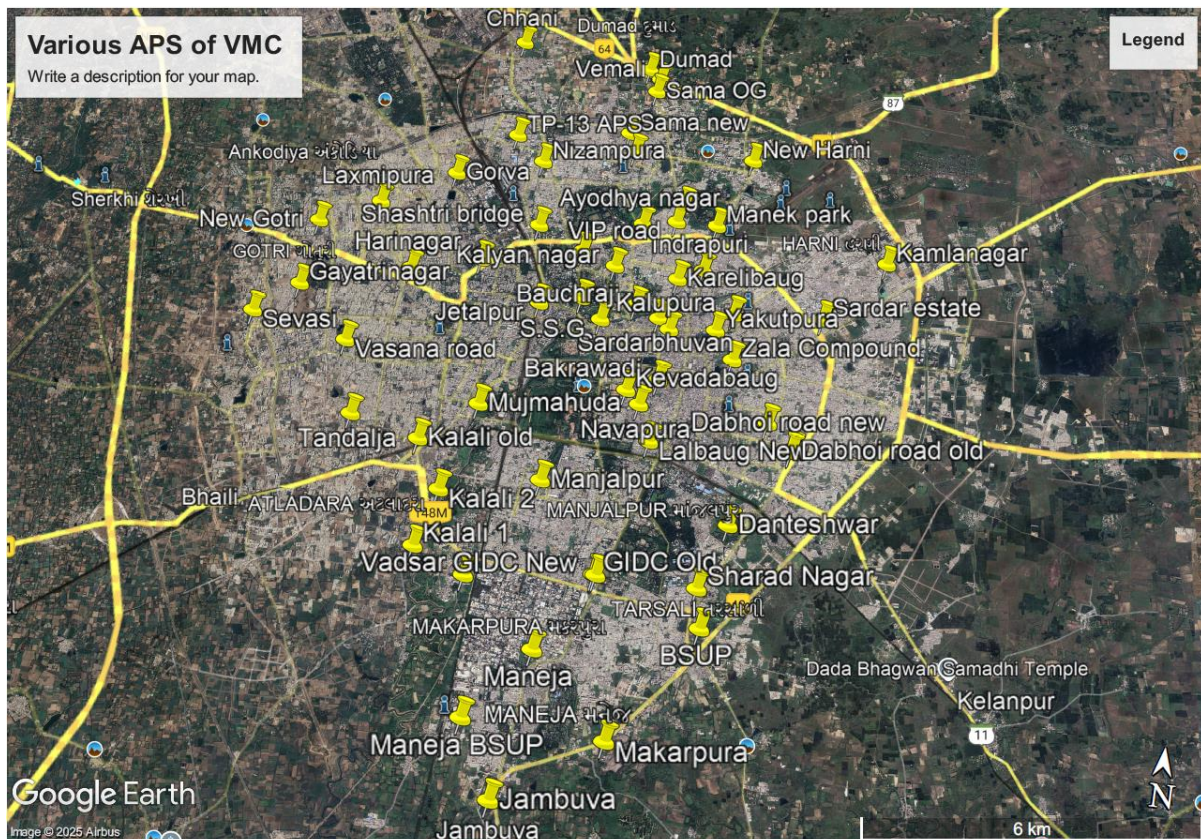
Attendee:

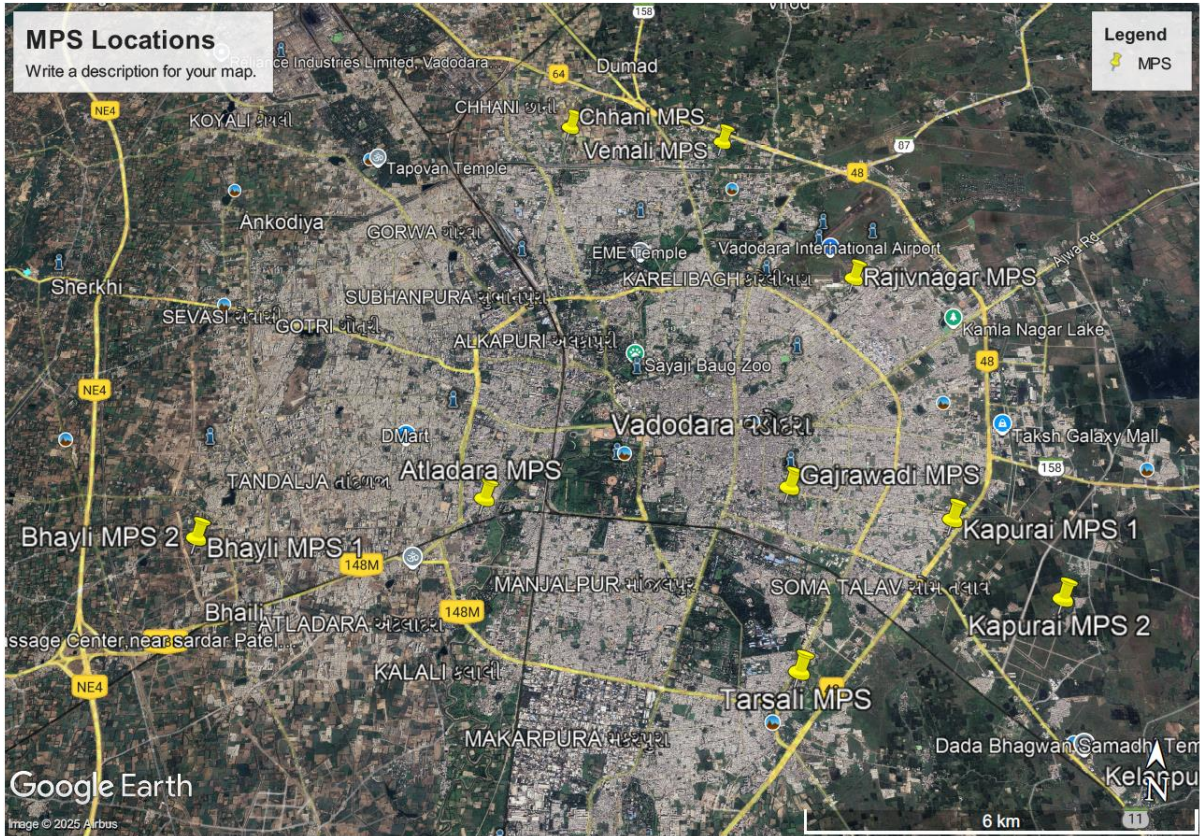
Rohit Prajapati
Jitendra Gavali
Dr. U.D.Patel

Discussions:

The following was discussed:

1. The observations related to the STP's will be shared in the next report.





No	Mun.Corp./A uthoriry	District	Location	Existing STP Capacity (MLD)	Capacity Being Utilized (MLD)
2	3	4	5	6	
	MC	Vadodara	Vadodara Gajarawadi	66	66
	MC	Vadodara	Vadodara Kapurai	43	43
	MC	Vadodara	Vadodara Rajivnagar	78	60
	MC	Vadodara	Vadodara Sayaji garden	16	13
	MC	Vadodara	Vadodara Chhanni	21	21
	MC	Vadodara	Vadodara Atladara (old)	43	13
	MC	Vadodara	Vadodara Atladara (new)	43	25
	MC	Vadodara	Vadodara Kapurai (New)	60	48
	MC	Vadodara	Vadodara Bhayli	45	36
	MC	Vadodara	Vadodara Chhani	50	35
	MC	Vadodara	Vadodara Vemali new	13	5
	MC	Vadodara	Vadodara Atladra new	84	60
	MC	Vadodara	Vadodara Tarsali new	100	55
	MC	Vadodara	Vadodara Undera	21	8
				683	488

28.11.2025: Meeting with the Officials from the Irrigation Department, and VMC Officials.

Location: Collectorate

Time: 04:00 pm

Attendee:

Rohit Prajapati
Jitendra Gavali
Mitesh Panchal

Discussions:

The following was discussed:

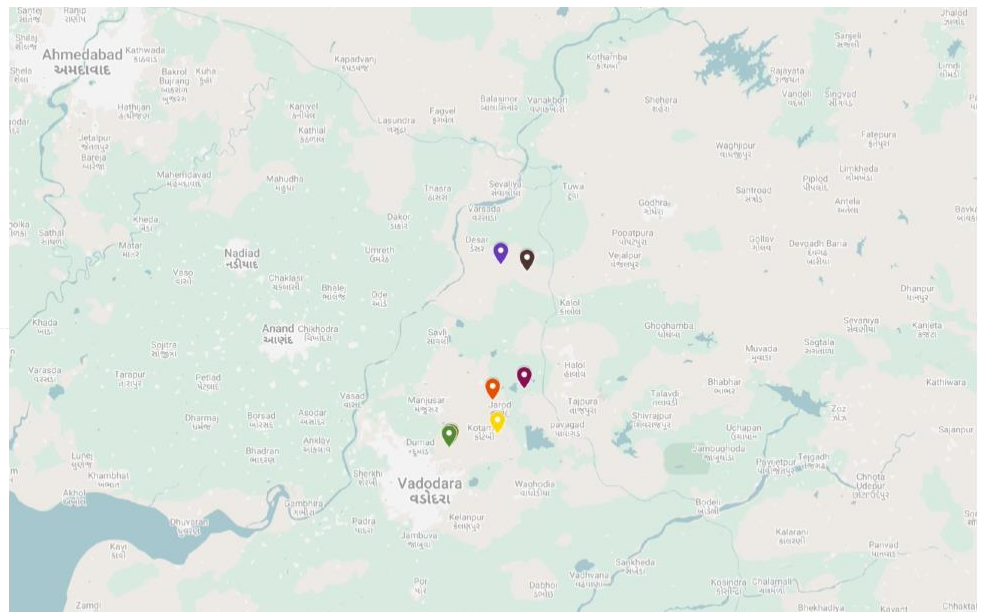
1. New check dams at upper watershed at appropriate locations and repair work of existing ones.
2. Dhadhar watershed mapping similar to the mapping done by SECON for Vishwamitri River.
3. Check dam visit in the upstream should be conducted.
4. Monthly drone to check encroachments in Vadodara Irrigation Circle area.
5. Work order by Collectorate for Dhadhar watershed mapping.
6. Gabion wall locations and design to be received from VMC.
7. C&D waste updates.
8. Paper ball educational innovations for society level waste management.

SHRC Meeting				
Date: 28 11 25				
for Vishwamitri River work at collector office				
Srno	Name	post/dept.	MoNu.	Sign
1	Lakshank Nedunja	DEE,VMC	9725095418	
2	Paival Patani	TDO (VMC)	9909942034	
3	Shaitesh Prajapati	DY TDO (VMC)	9979899646	
4	Jitendra Gavali	Vishwamitri Committee	9725891033	
5	ROHIT PRAJAPATI	" "	9408986452	
6	MITESH PANCHAL	" "	9825025248	
7	RAHUL CHAUHAN	" "	8200526860	
8	Mamish Vasava	" "	9824442404	

Proposed Checkdams

- List
- Analiyara new checkdam
- Intoli New Checkdam
- Jarod New Checkdam
- Bodiro New Checkdam
- Limada na muvada new checkdam
- Ganta new checkdam
- Sukhipura New Checkdam

Proposed Checkdam of Vadodara Irrigation Division



05.12.2025: Joint Inspection of Sewage Treatment Plants (STPs).

Location: Gajrawadi, Tarsali

Time: 12:30 pm

Attendee:

Rohit Prajapati

Jitendra Gavali

Dr. U.D.Patel

Discussions:

The following was discussed:

1. The observations related to the STP's will be shared in the next report.

06.12.2025: Field Visit with VMC SWM Team and Consultants Facile Maven for Sample Pit.

Location: Behind Akota Crematorium

Time: 12:30 pm

Attendee:

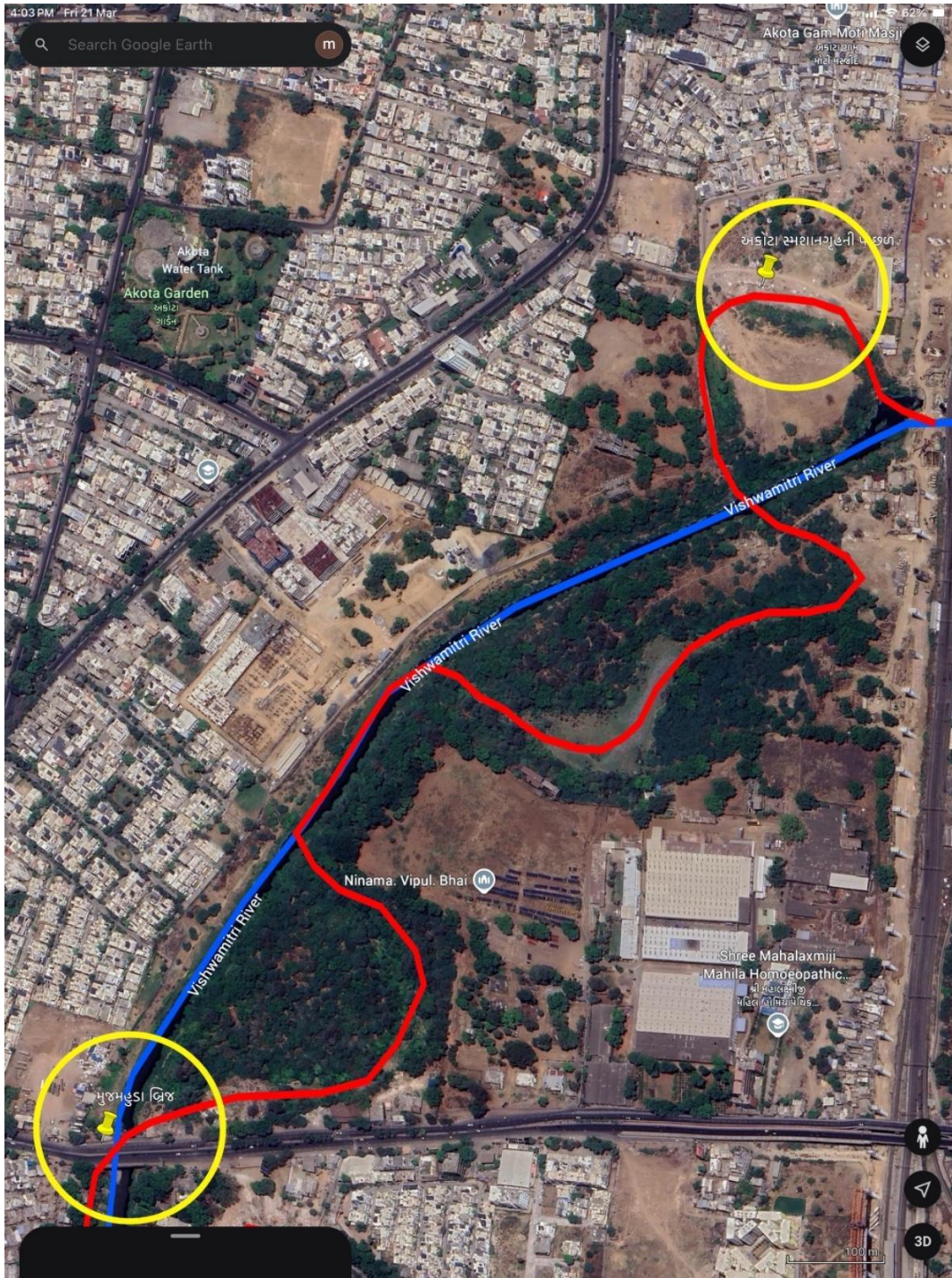
Rohit Prajapati
Mitesh Panchal
Jitendra Gavali

Discussions:

The following was discussed:

1. Minimum pit depth at 2 mt. from new ground level.
2. Debris was identified as 4 mt. depth
3. The presence of certain overhead lines was a limitation to the JCB machine to dig deeper.





09.12.2025: Field Visit with VMC SWM Team and Consultants
Facile Maven for Sample Pit.

Location: Behind Bharwadvas, Sama

Time: 11:30 am

Attendee:

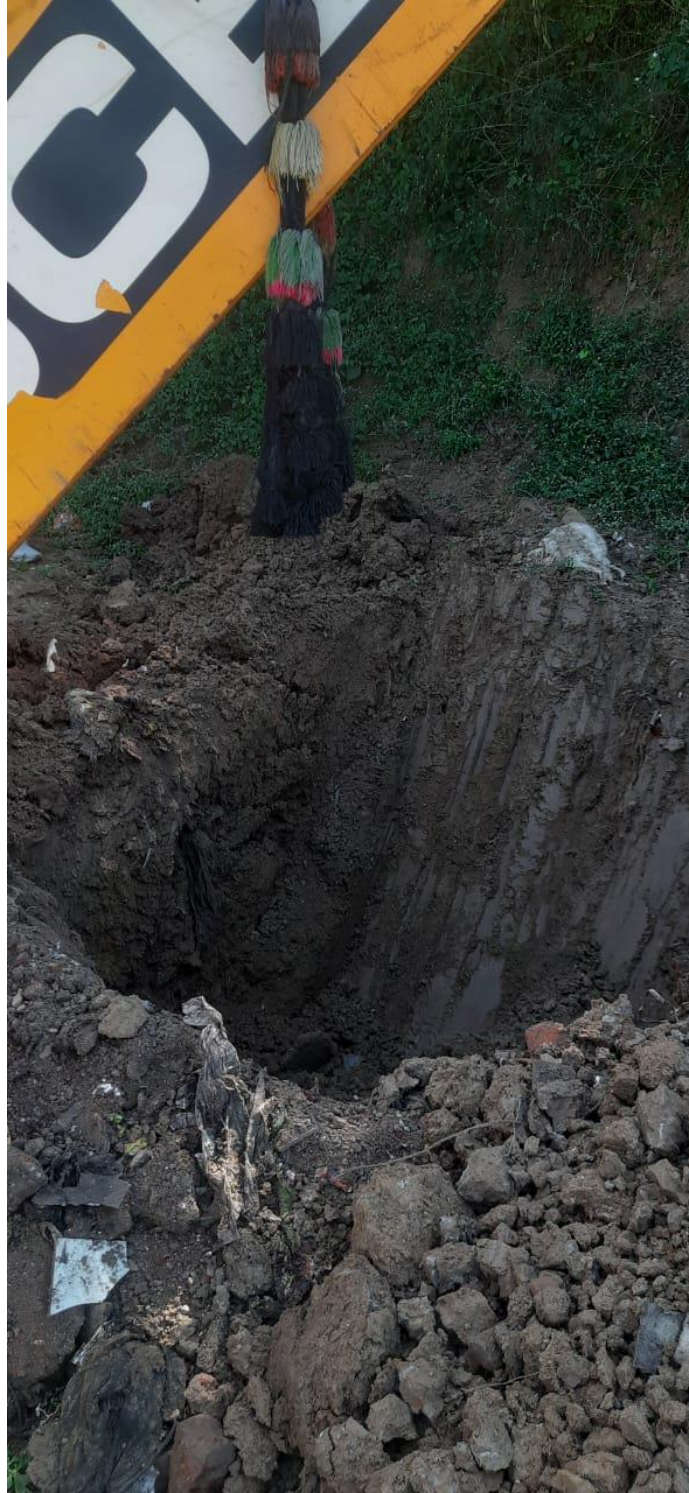
Rohit Prajapati
Jitendra Gavali

Discussions:

The following was discussed:

1. Pits were dug at 2 locations at the same site.
2. Waste identified below 1 mt.





20.12.2025: Meeting with Municipal Commissioner, VMC Officials, CREDAI Representatives, GPCB Regional Officer.

Location: VMC Conference Room

Time: 04:30 pm

Attendee:

Rohit Prajapati
Neha Sarwate
Mitesh Panchal

Discussions:

The following was discussed:

1. The Committee presented the need for the meeting and discussed the NGT Order dated 25.05.2021, the GSHRC directives, and the ongoing rejuvenation works – the opportunities and challenges.
2. The areas within the 5 and 10-year floodplains should be put in the public domain.
3. The zoning and regulations of the Development Plans, Town Planning Schemes, GDCR, and all infrastructure projects, should integrate the floodplains and vulnerable (flood and waterlogging) areas.
4. The C&D waste collection and processing units should be decentralised at 4 zones.
5. C&D waste, including legacy waste, to be cleared from the floodplains, ravines, lakes, and wetlands. SWM Department is directed to remove the C&D waste and monitor with the help of GPCB to ensure no new dumping takes place and penalise the defaulters.
6. A CSR initiative in partnership with CREDAI to recycle the excavated debris into innovative building materials.

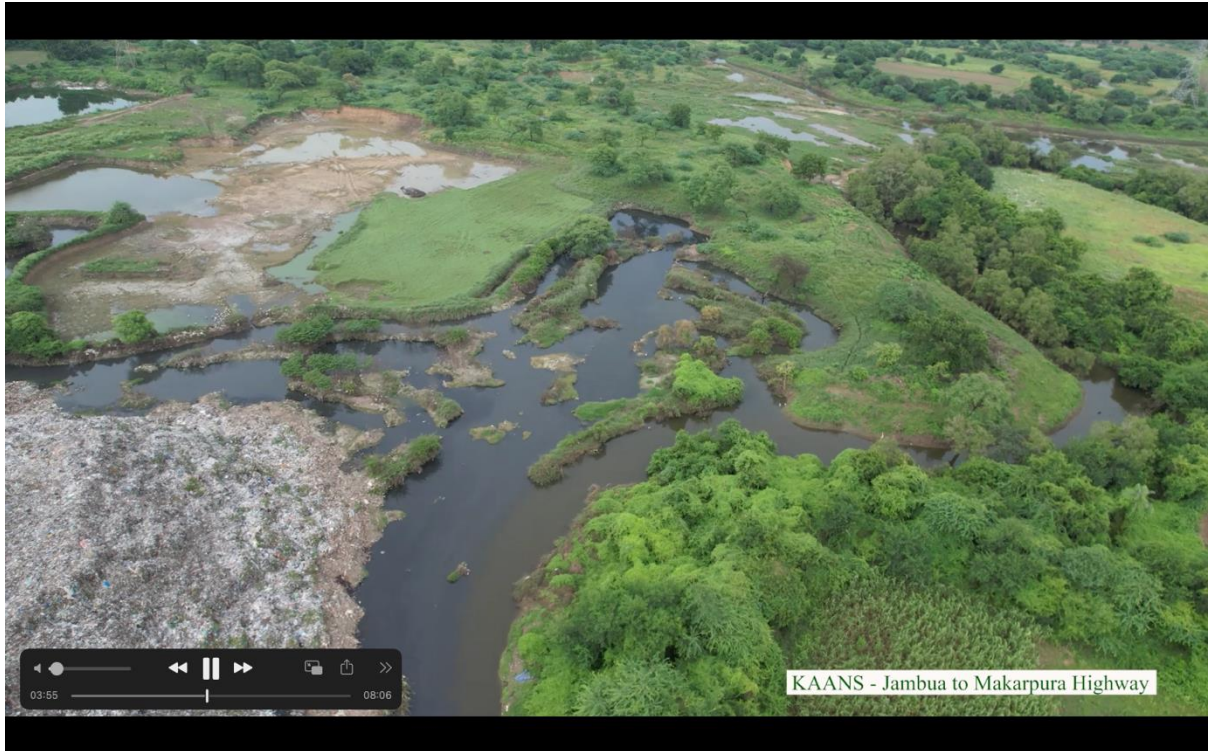
7. Collaborative efforts involving the various builders, developers, contractors, CREDAI, GPCB, and VMC to protect natural storm waterways even in private properties, R&R for appropriate disposal of C&D waste as part of construction permits, alternative methods to demarcate private property limits, other than compound walls, in riverine areas.
8. The VMC along with GPCB has identified drainage flows into the water bodies. These need to be addressed through STPs. The plans for reuse of treated sewage by the industries is in progress.
9. Lakes and wetlands should be protected and rejuvenated and illegal connections into water bodies should be disconnected.
10. Real time monitoring of AQI and dust should be put in the public domain, mitigation strategies at all construction sites and GIDC must be formulated and enforced, in collaboration with GPCB, Town Planning Department.
11. Avenue plantation by CREDAI is underway along major roads and ring roads.

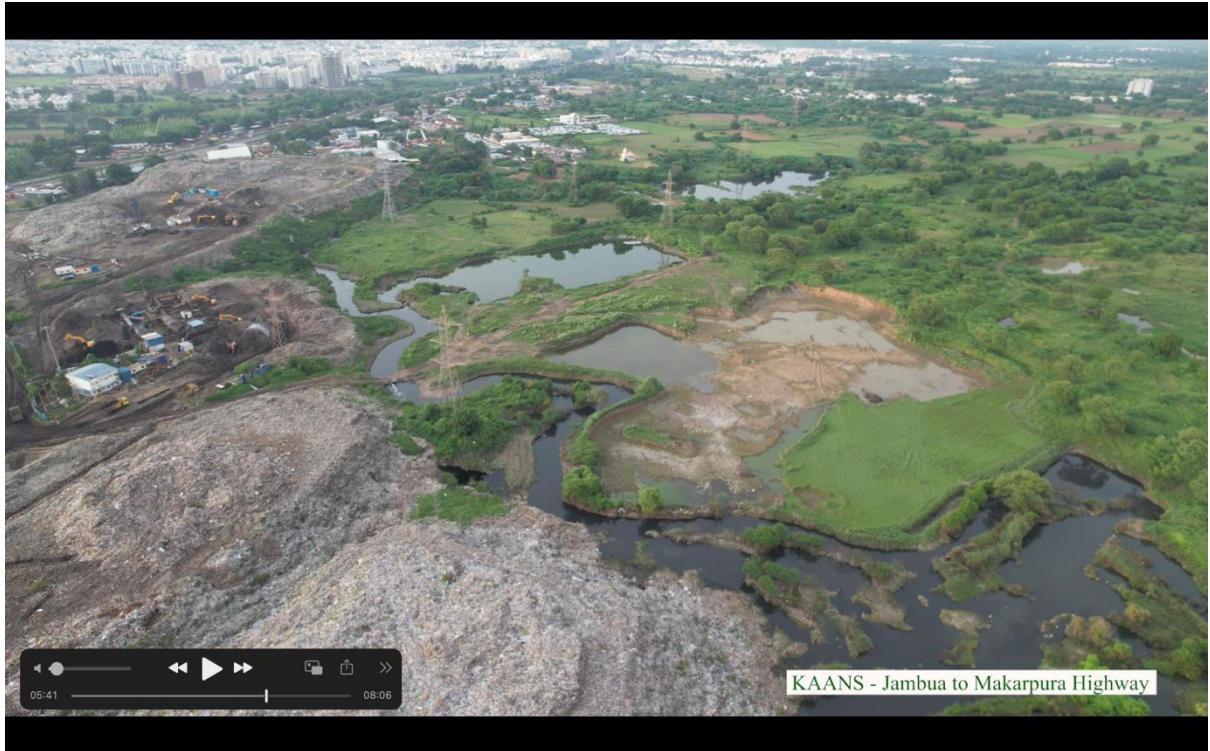




Annexure II: Drone Survey of Jambua to Makarpura Kaans (Selected Images).

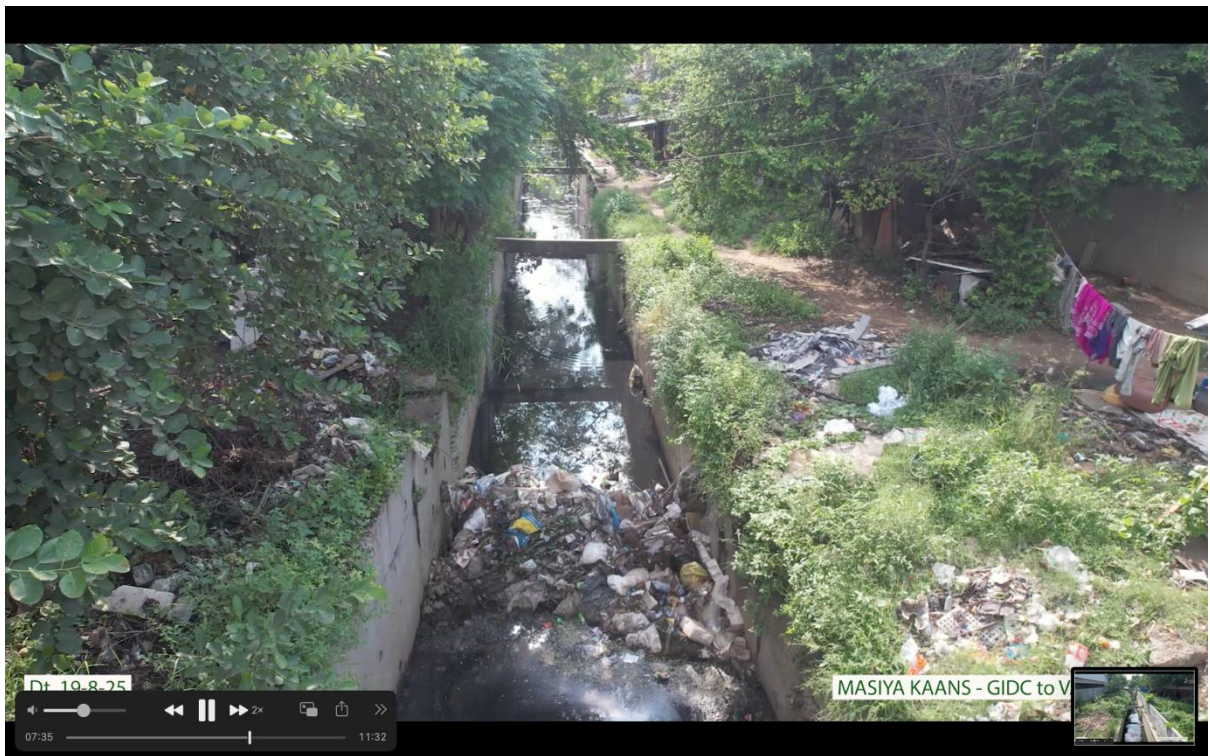


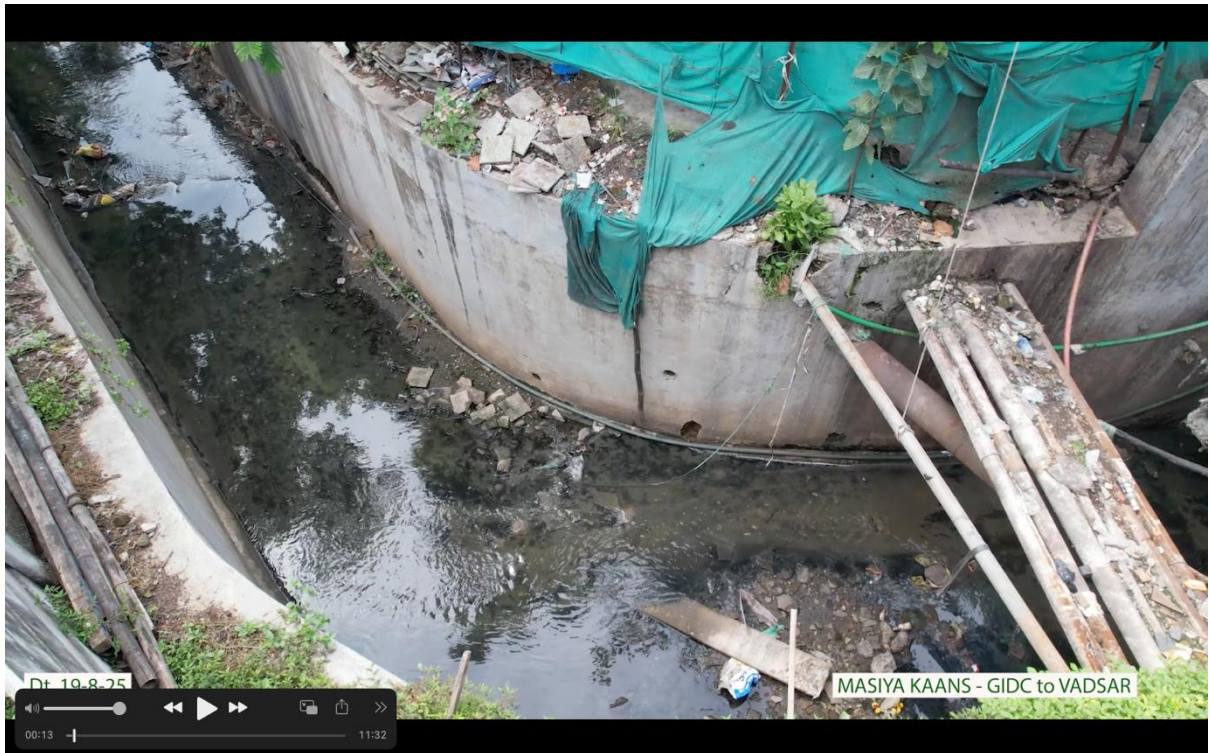
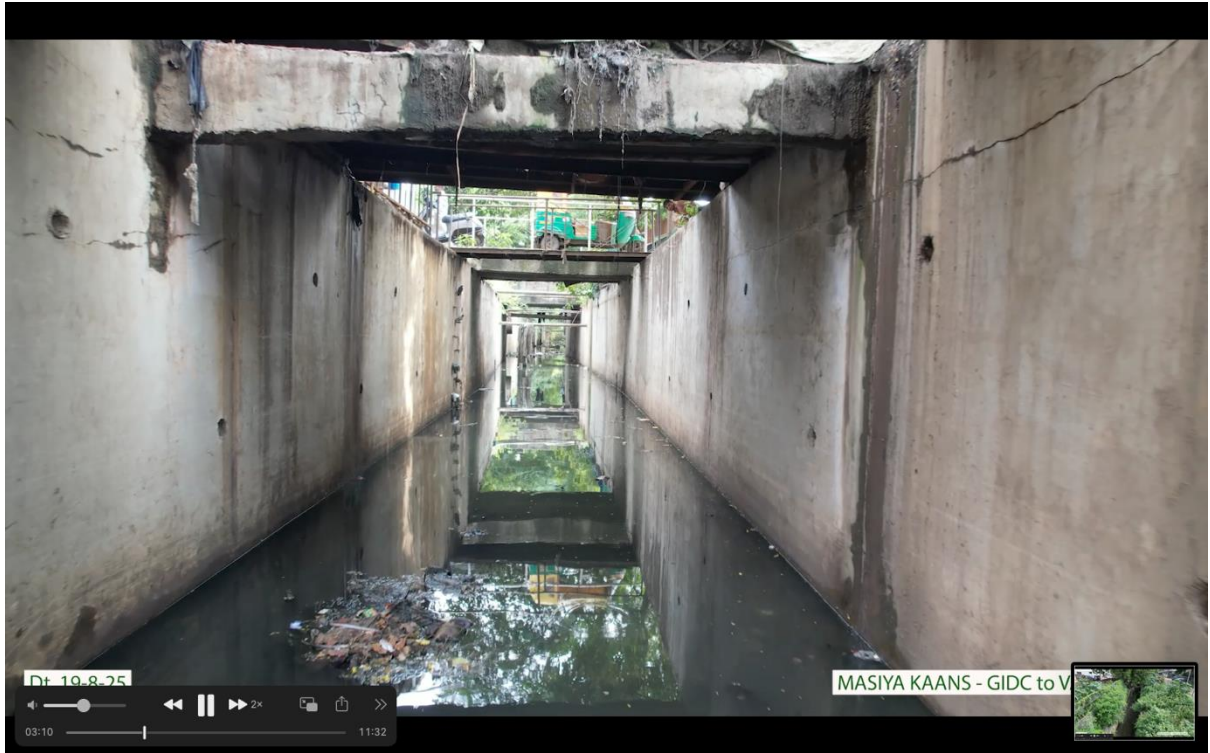


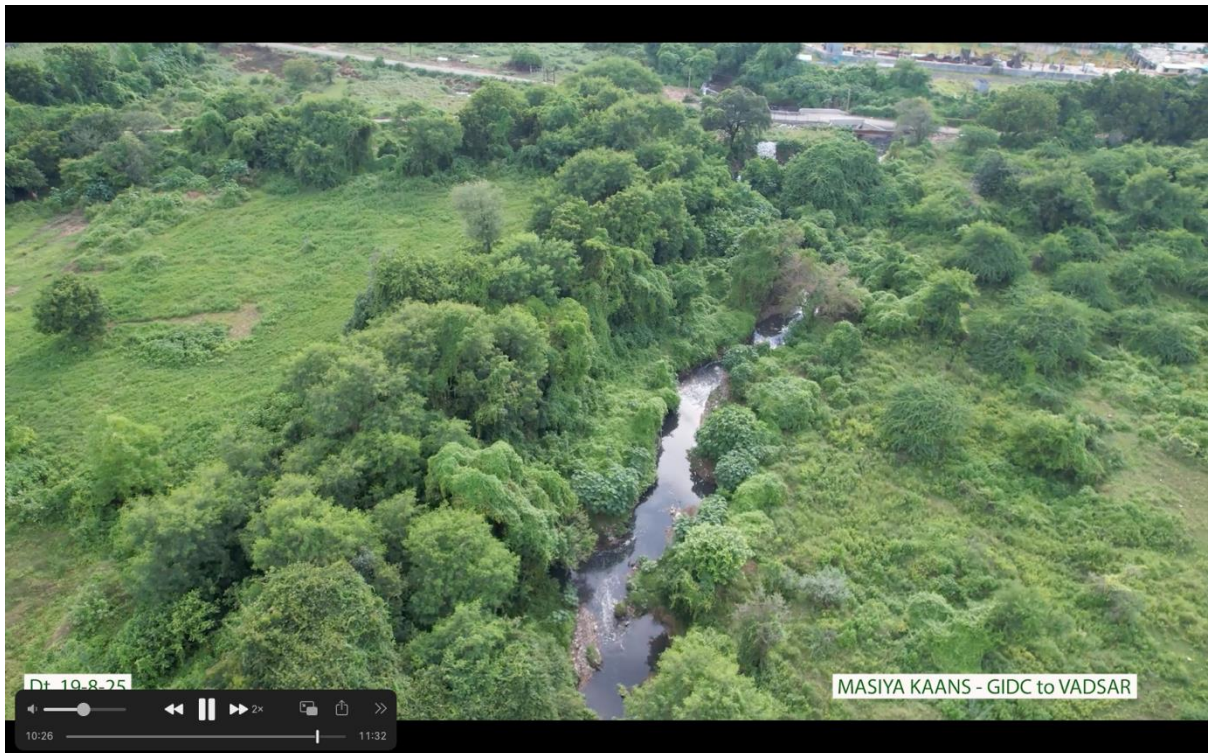
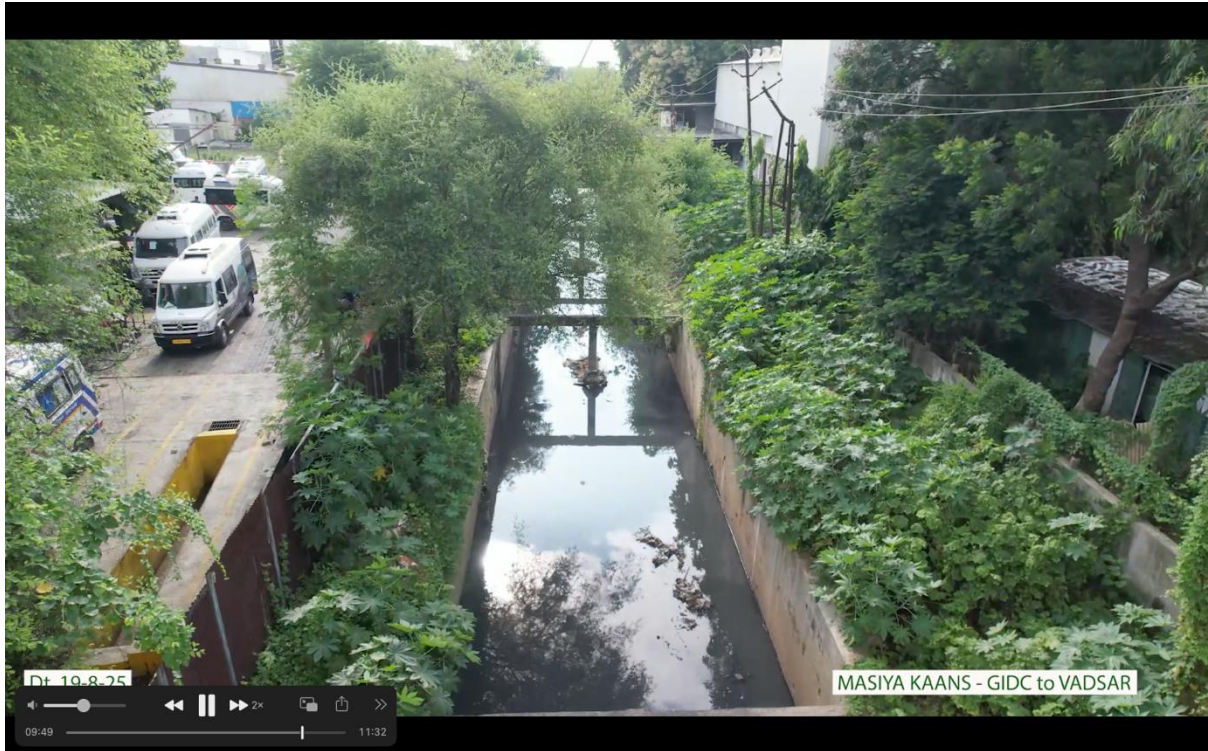


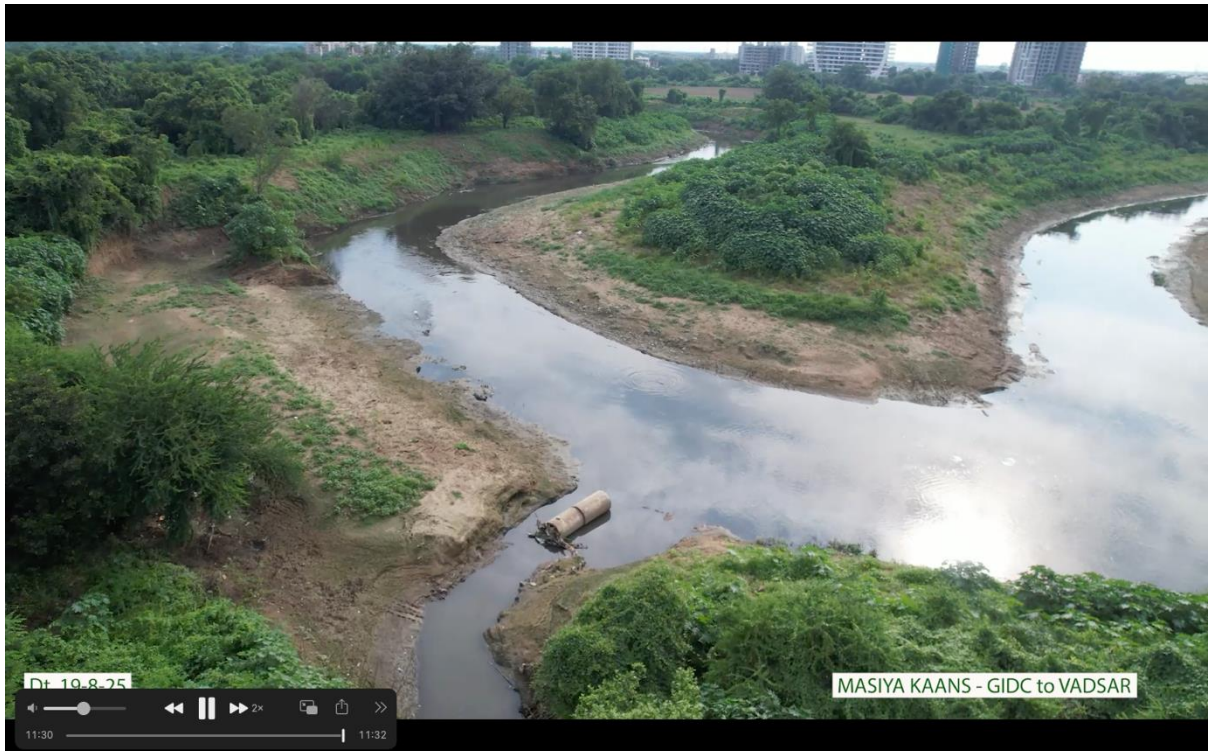
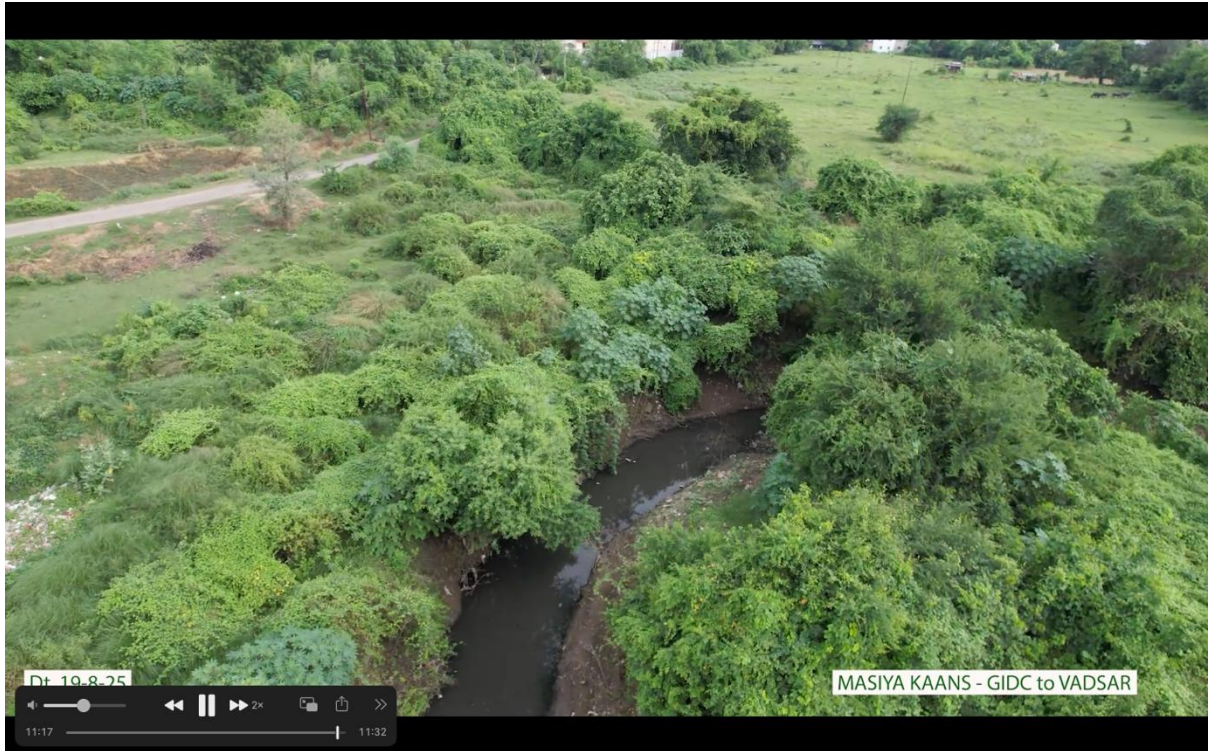


Annexure III: Drone Survey of Masiya GIDC to Vadsar Kaans (Selected Images).

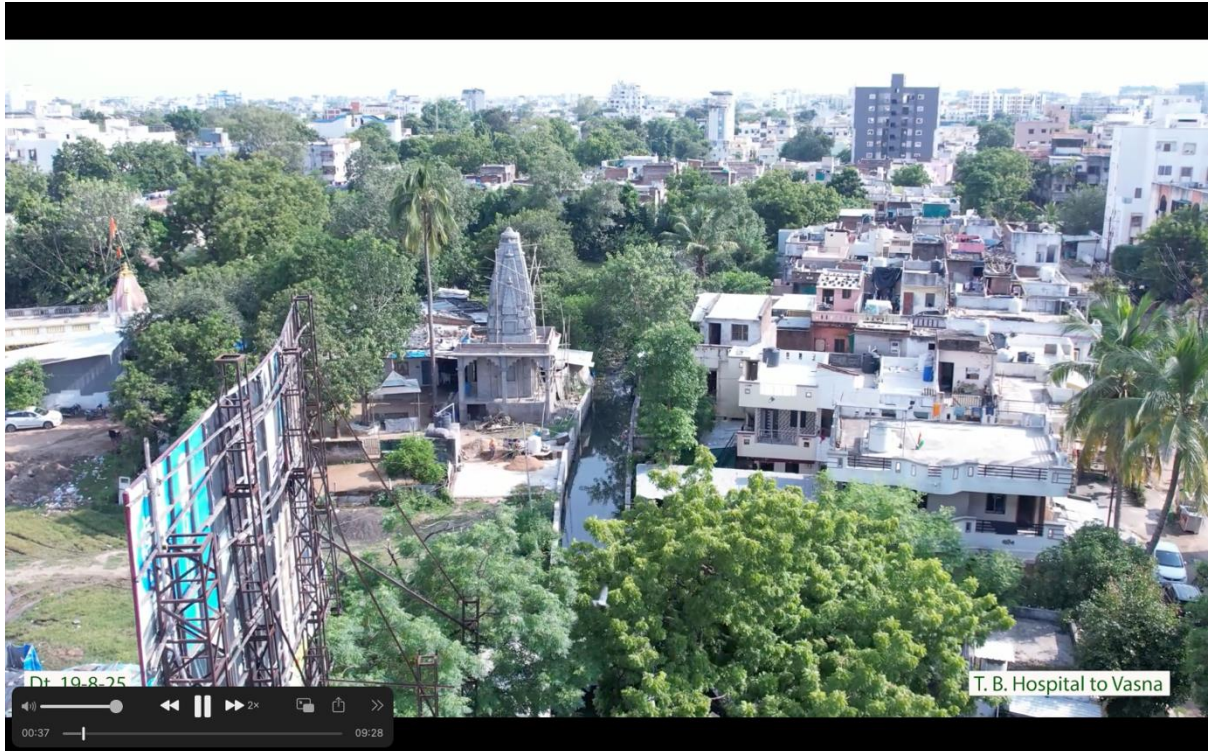


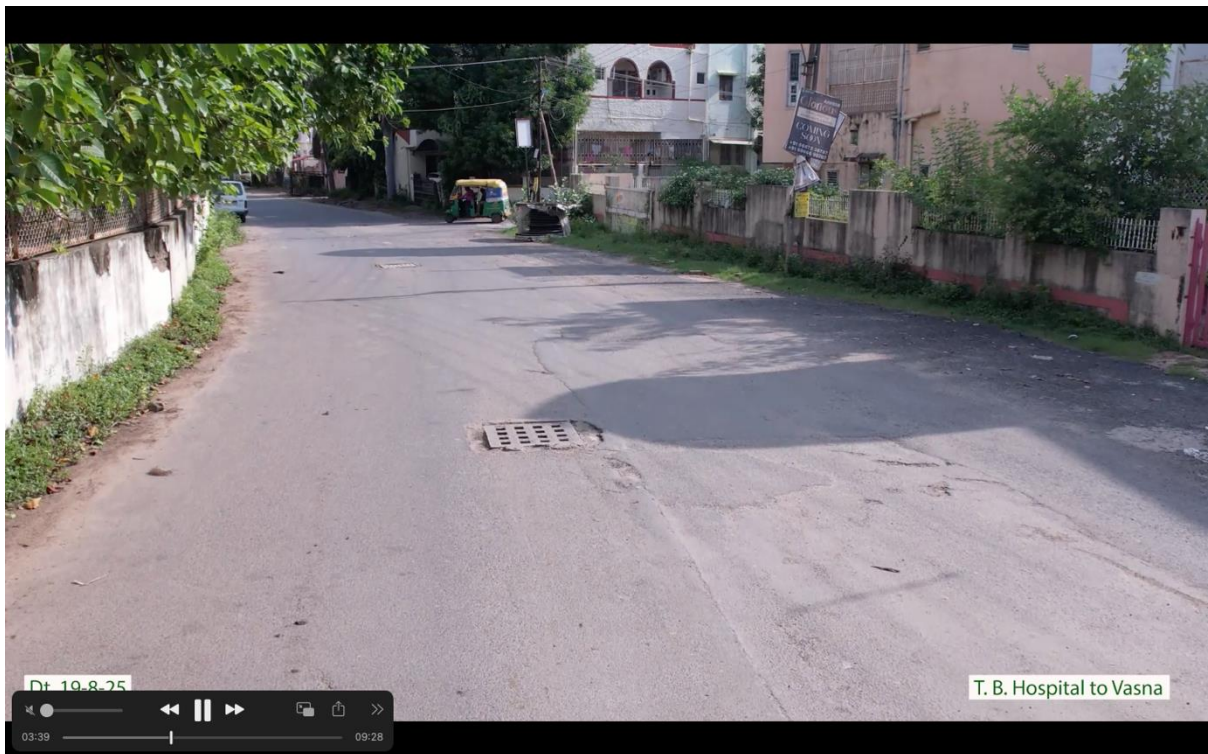


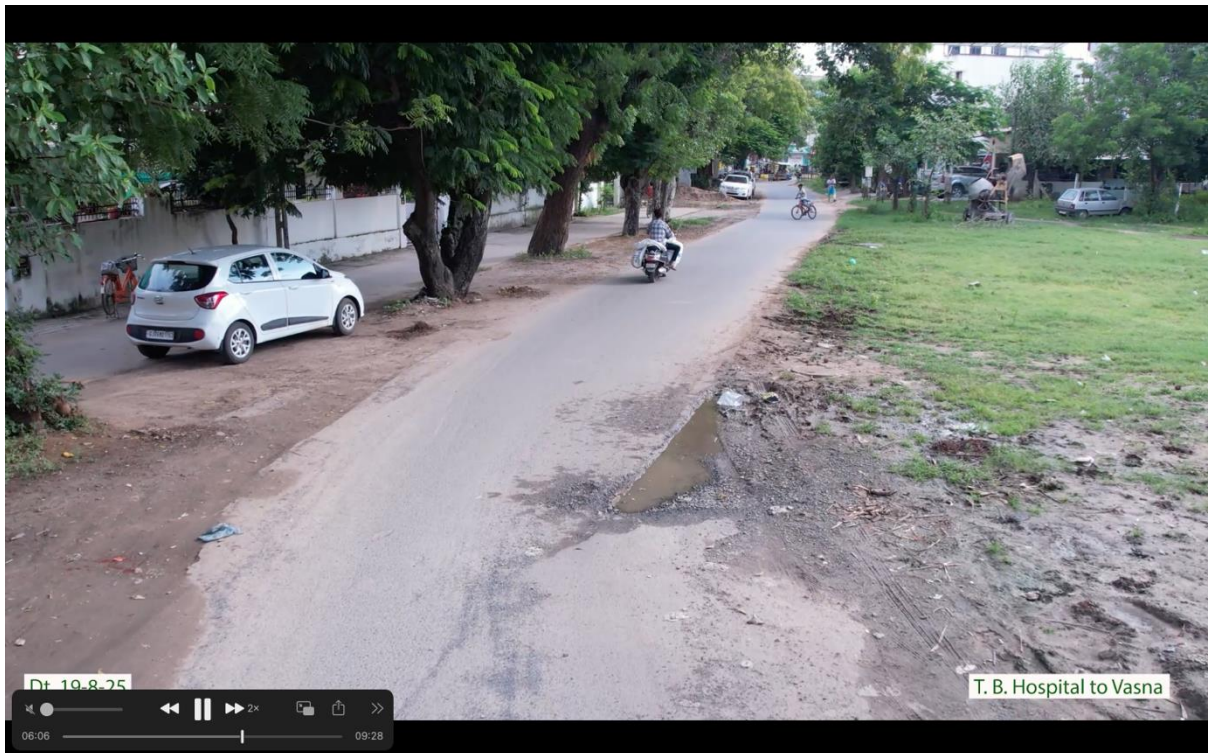




Annexure IV: Drone Survey of TB Hospital to Vasna Kaans (Selected Images).



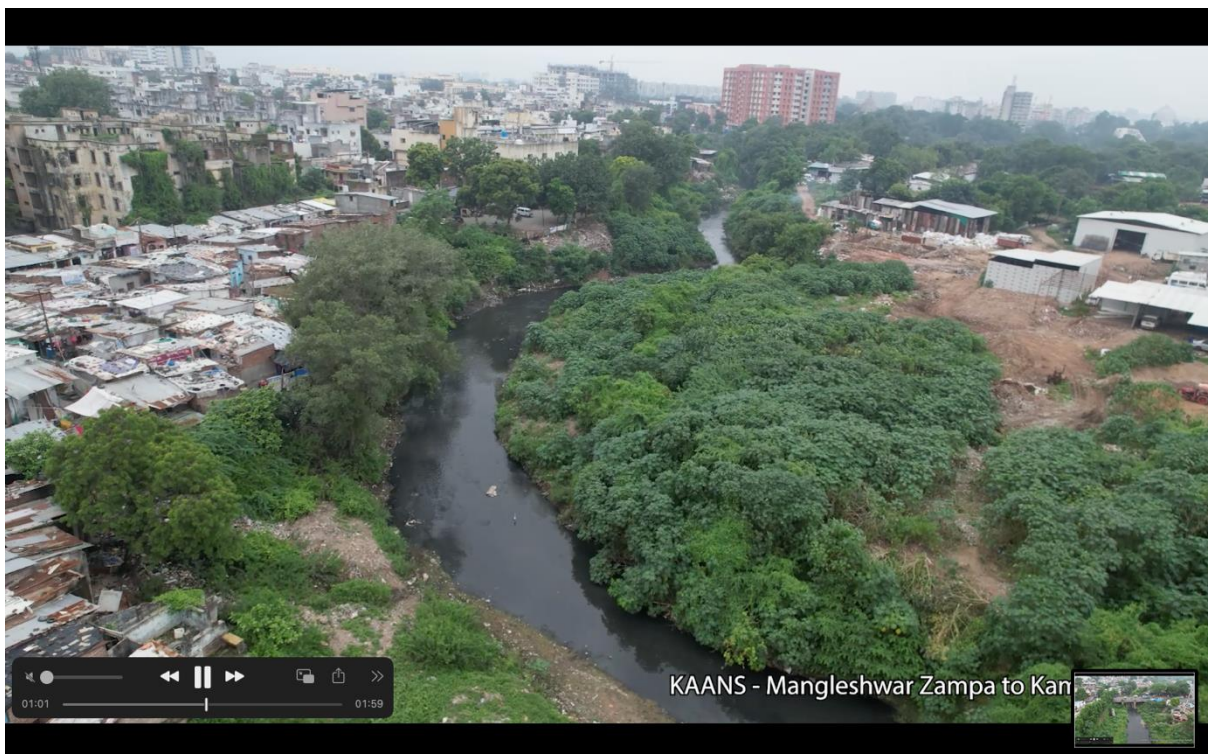


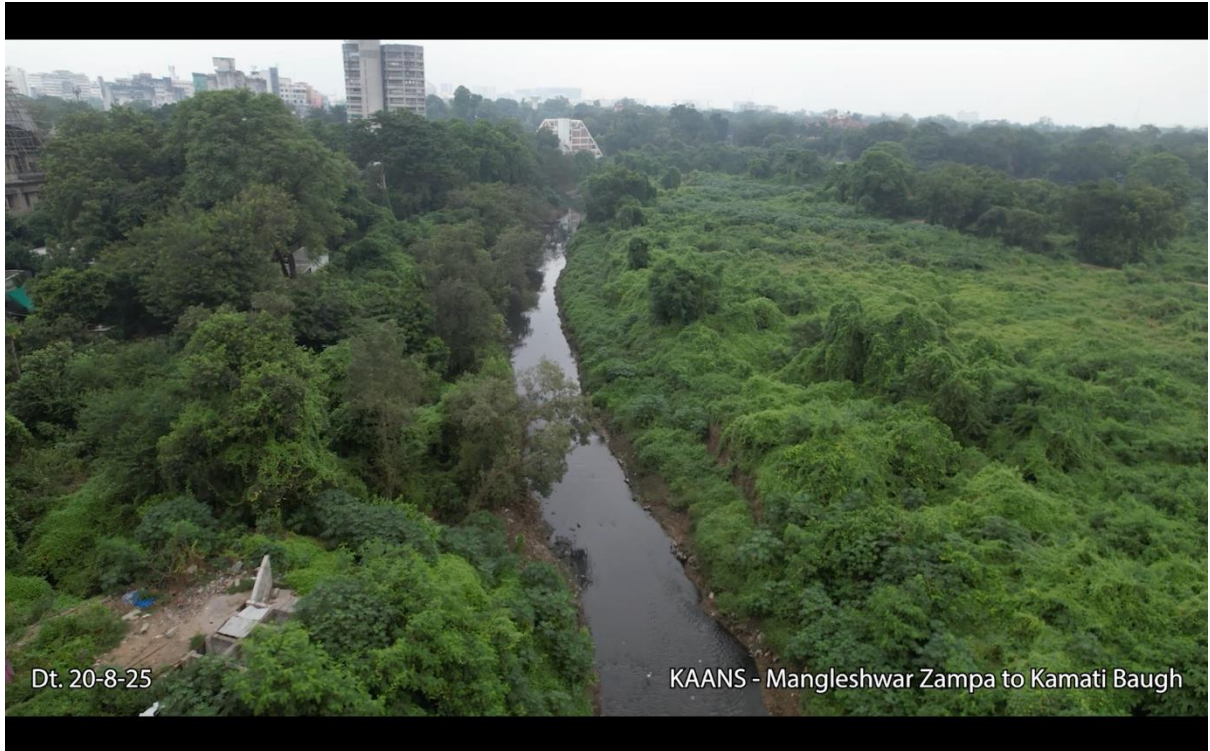




Annexure V: Drone Survey of Mangaleshwar Zampa to Kamtibaug Kaans (Selected Images).

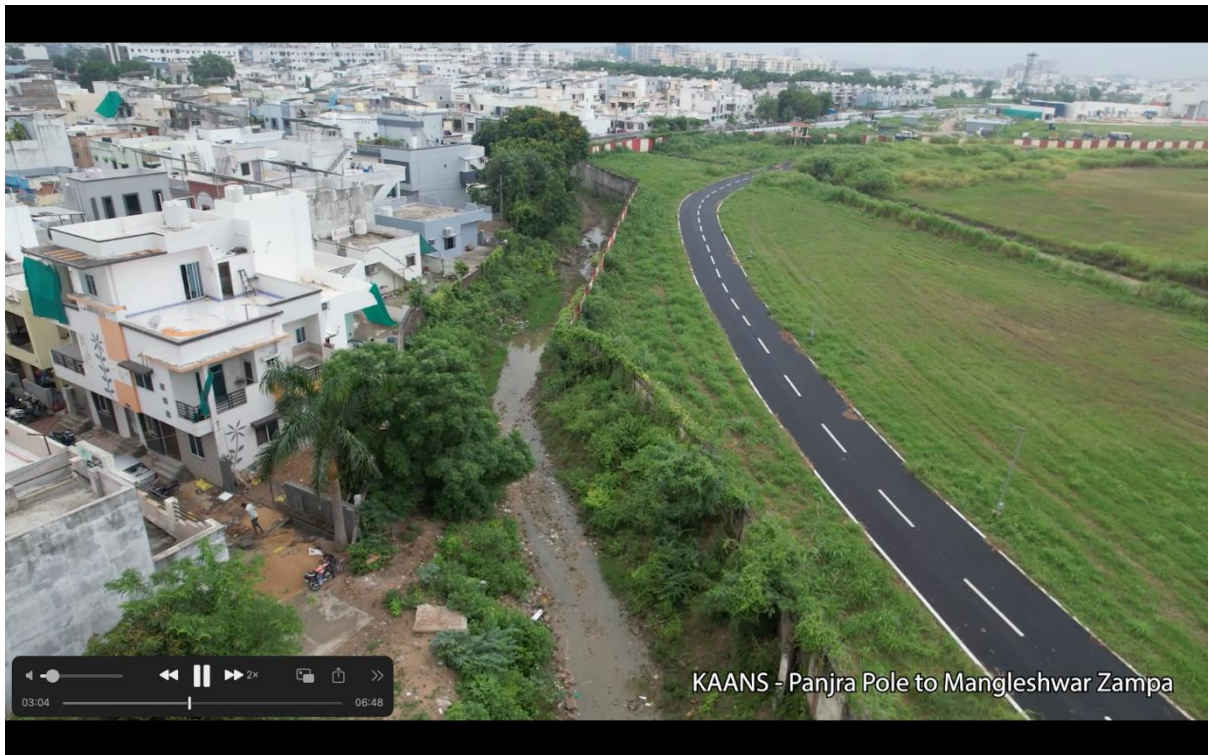


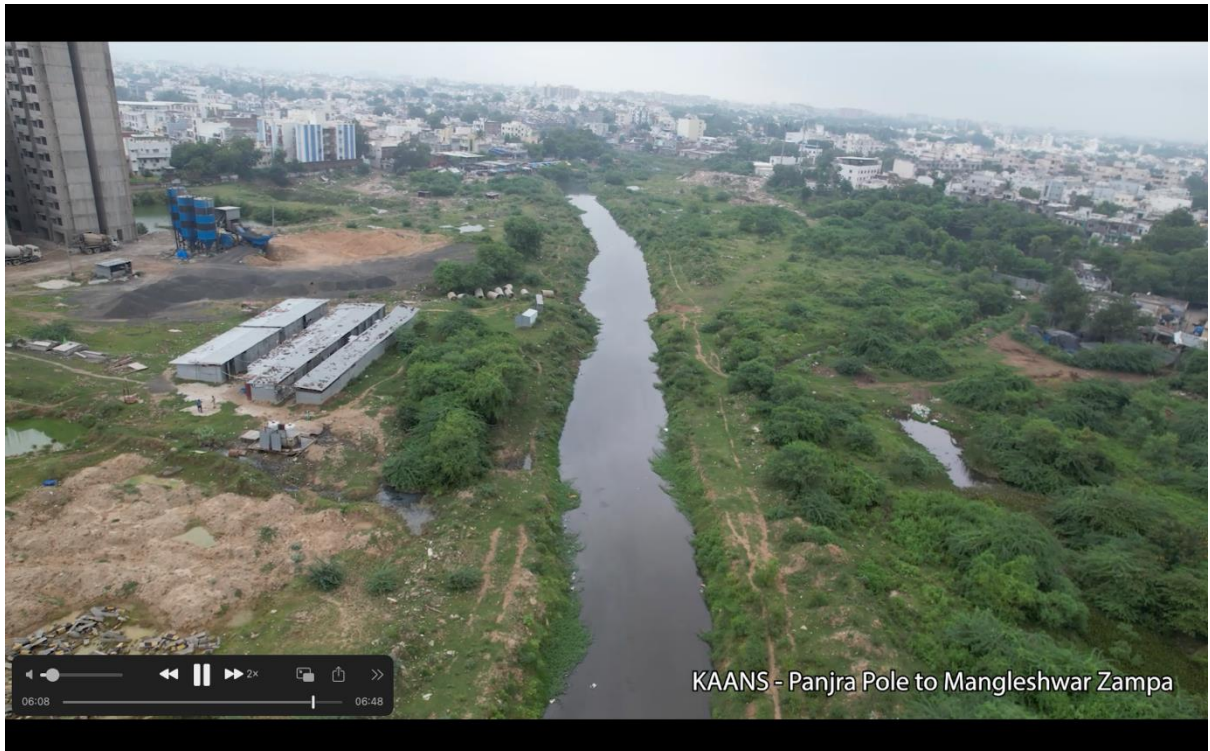
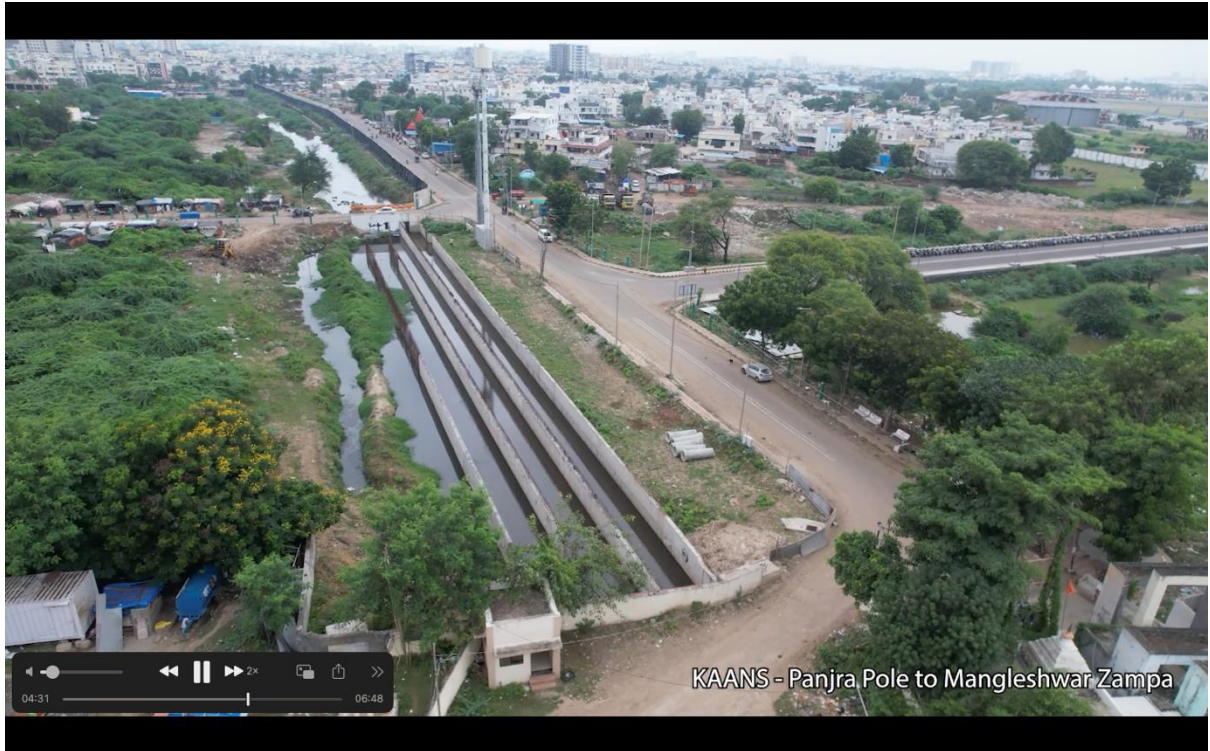




Annexure VI: Drone Survey of Panira Pole to Mangaleshwar Zampa Kaans (Selected Images).



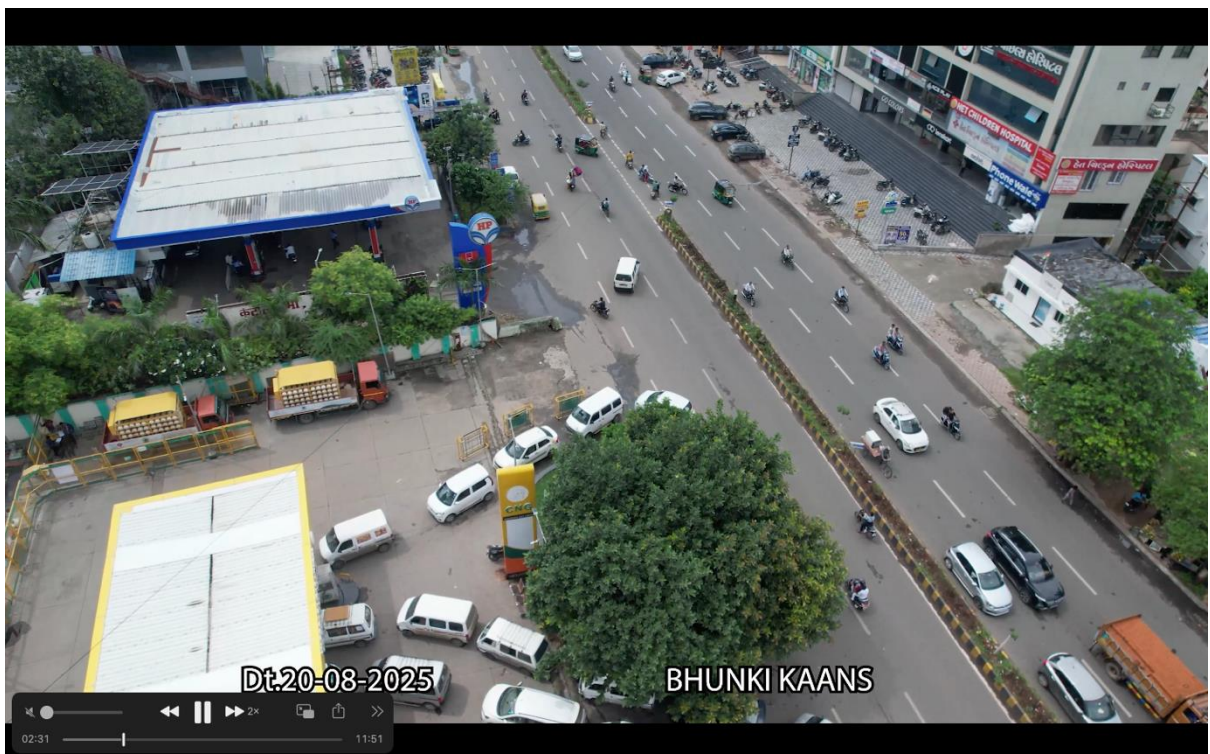


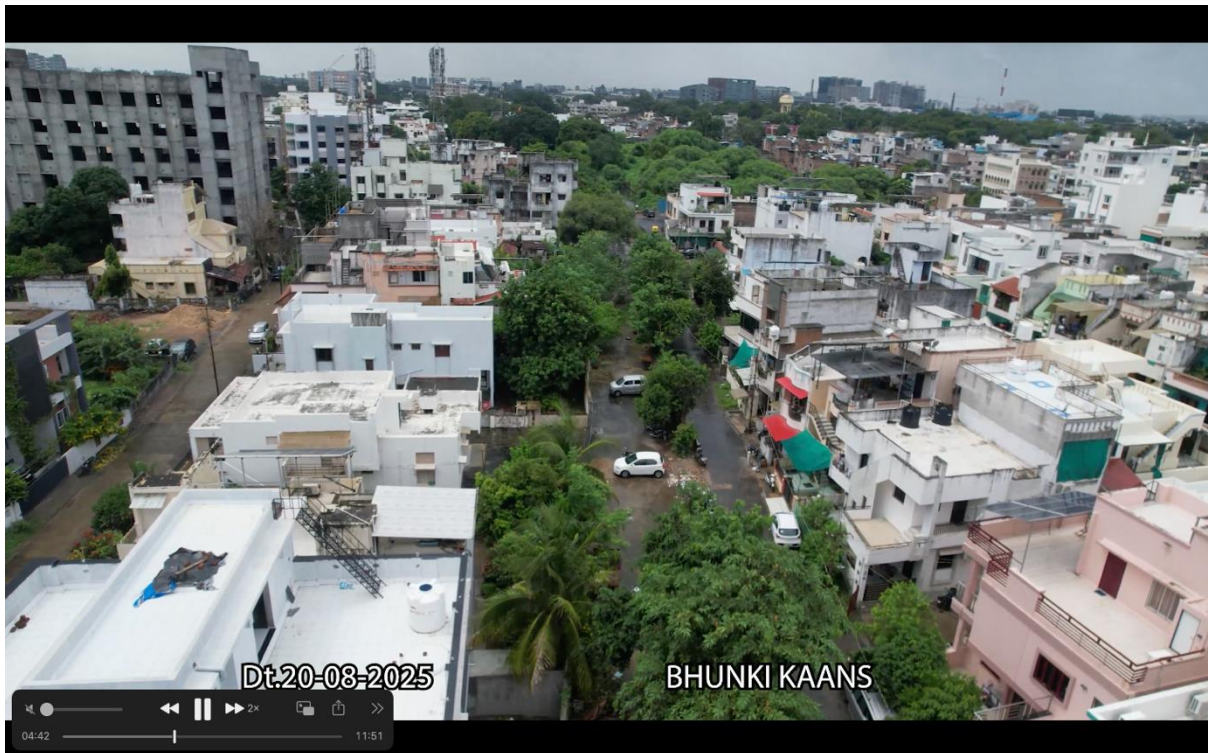


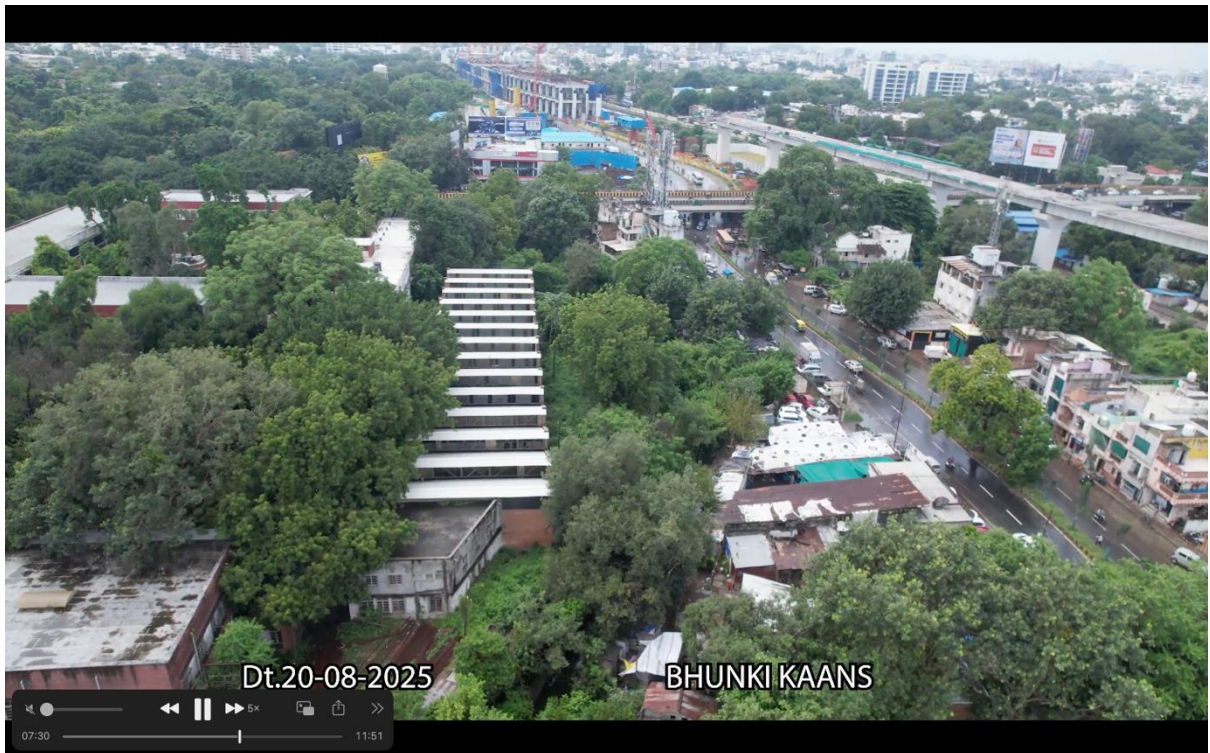


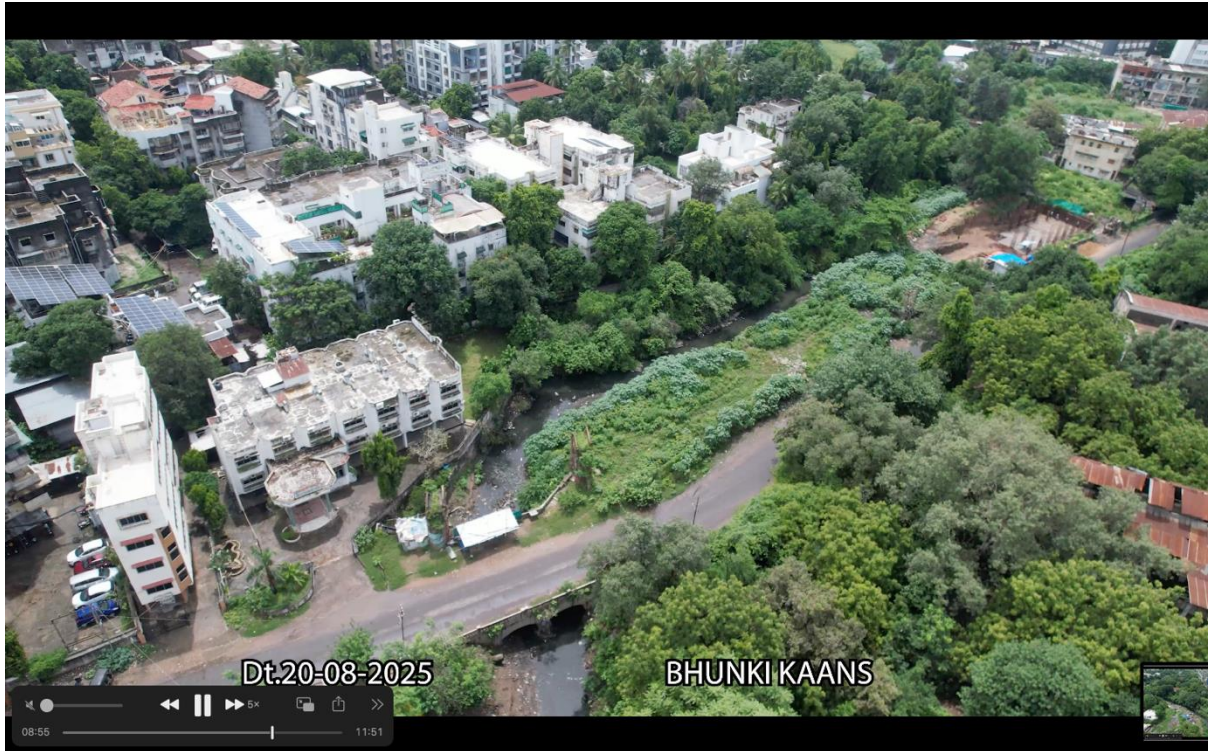
Annexure VII: Drone Survey of Bhukhi Kaans (Selected Images).















Annexure VIII: Vishwamitri Revival and Rejuvenation Project report by VMC to Government of Gujarat



Content

- | | |
|----|--|
| 01 | Vishwamitri Flood Mitigation and Prevention Committee |
| 02 | Map indicating the Vishwamitri, Dhadhar and Jambuva rivers as well as Ajwa and Pratappura Reservoirs |
| 03 | Short Term Measures: Details of the work to be done before next monsoon |
| 04 | Long Term Measures: Work to be done in the next 2-3 years |
| 05 | Vishwamitri Desilting Works |
| 06 | Details about the Vishwamitri Revival Project |

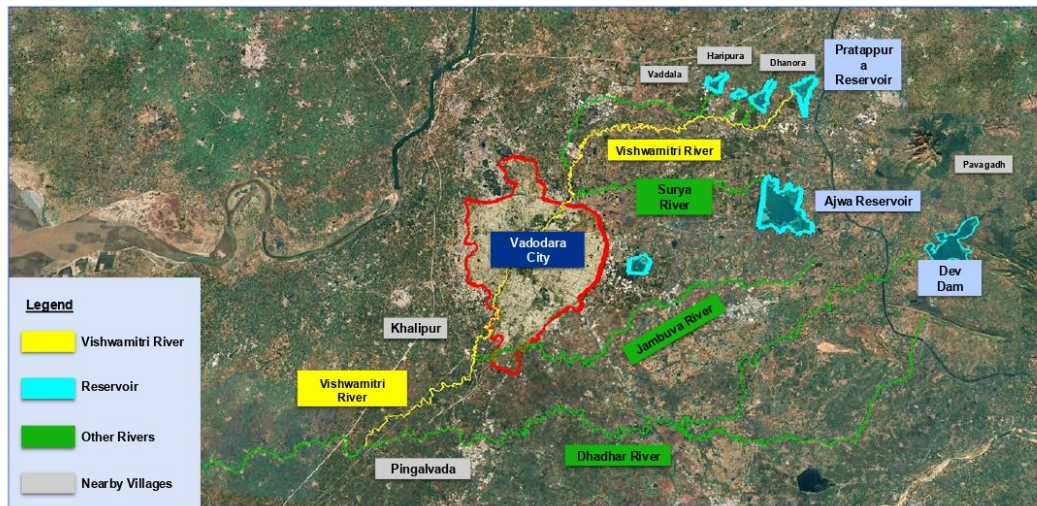
Vishwamitri Flood Mitigation and Prevention Committee

- In **August 2024**, Vadodara city and its surrounding areas experienced heavy rainfall, leading to significant urban flooding.
- To prevent future occurrences and mitigate the risk of loss of life and property, it is essential to review the water sources in Vadodara and its vicinity and implement effective measures for excess water disposal.
- Consequently, the government has established a **high-level committee**, effective from 13/09/2024, to devise and oversee flood prevention strategies.

1	Shri B. N. Navalawala, Former Secretary, Government of India	Chairman
2	Shri S. S. Rathore, Advisor to Hon. Chief Minister	Co-Chairman
3	Shri N. N. Rai, Chief Engineer, Central Water Commission	Member
4	Prof. Gopal Bhatti, Civil Engineering, M. S. University	Member
5	Municipal Commissioner, Vadodara Municipal Corporation	Member Secretary

3 | 49

Map indicating the Vishwamitri, Dhadhar and Jambuva rivers as well as Ajwa and Pratappura Reservoirs



4 | 49

Short Term Measures: work to be done before Monsoon

SN	Details of Work	Responsibility	Status
1.	Dredging work at Ajwa and Pratappura lakes	VMC	Work partly completed
2.	Resection/Desilting of major storm water channels in Vadodara city	VMC	Work completed
3.	Development of an Early Warning System	VMC	Under DPR Preparation
4.	Protection of river bridges in the city	VMC	Work Order Issued
5.	Construction of a bypass storm channel parallel along the National Highway no. 48	NHAI & VMC	Work ongoing
6.	Resection work on the Vishwamitri River	VMC & State Irrigation	Work completed
7.	Construction of new buffer lakes at Kotambi and Bhaniara	VUDA & VMC	Feasibility Study: to be undertaken by VUDA

5 | 49

Long Term Measures: Work to be done in the next 2-3 years

SN	Details of Work	Responsibility	Status
1.	Afforestation in the upstream catchment area of Vadodara city	VMC	Work Started
2.	Rainwater harvesting work in Vadodara city	VMC	Work is in progress
3.	Work to divert treated sewage waste through trunk lines	VMC	DPR preparation
4.	Work to increase the capacity and interlink lakes in Vadodara city	VMC	Work is in Progress
5.	Inspection of the structural stability of Ajwa-Pratappura Dam by experts	VMC & State Irrigation	Geophysical Survey Done, Report Awaited

6 | 49

Vishwamitri Rejuvenation and Desilting

- River length in the city: **24.7 kms**, outside the city: **25 kms**
- Soil extraction done: **18.85 Lakh cubic meter**
- **Start date: 12-03-2025, Completion Date: 15-06-2025 (100 days)**
- More than **250 nos.** Of machinery work together in 4 parts of the River.
- A Total **50 nos.** Of Engineers and Clerical Staff were deployed at site round the clock for the monitoring.
- During the monsoon 2025, due to heavy rainfall in the upper reaches of Ajwa and Pratappura lakes as well as in the city area, the gates of Ajwa and Pratappura lakes were kept open for more than 24 hours, due to which water inflow was observed in the Vishwamitri river. Correspondingly, there was a flow of approximately 500 cumec (17657 cusecs) at Kalaghoda, out of which more than 300 cumec (10170 cusecs) were released from Ajwa and Pratappura lakes together. Correspondingly, the river level at Kalaghoda bridge was recorded as 21.55 feet.
- Before the Vishwamitri clearing and resectioning work, the river level for the same discharge was about 29 feet. (As per old records). Thus, overall, the **river level has come down by 7-8 feet due to the Vishwamitri flood control work.**

Coverage in Print Media: Vishwamitri Rejuvenation and Desilting

વડોદરા ડ્રેટ પેજ
 ૨૦/૦૬/૨૦૨૫
 વડોદરા, કોલકાઠો, કલગહોડા

હાલકાસરો • આજવા સરોવરની સપાટી સિલનમાં ખેલેલીવાર 213.56 ફૂટ થઈ, નદી સરે 21.72 ફૂટ થયા બાદ સરે થટ્ટે વૈશ્વામિત્રી ભયજનક બનવાનો ખતરો ટપ્પ્યો, આજવાના 62 દરવાજા સારે 1 વાગે બંધ કરાતાં નદીની સપાટી 20.63 ફૂટ થઈ કરેલીબાગની જવારાનગર વસાહતનાં 50 લોકોનું સ્થળાંતર કરાયું. પુનમ હોવાથી સપાટીમાં થીનો થટ્ટાઈ થઈ રહ્યો છે

ભાસ્કર દુનસાહસ
વિશ્વામિત્રી 24 ફૂટ ન થાય તે માટે પાલિકાએ આજવાના દરવાજા 2 વાર ખોલી બંધ કર્યા

ભાસ્કર એનાલિસિસ
ગત વર્ષે આજવામાંથી 17657 ક્યુસેક પાણી છોડાતાં નદી 29.06 ફૂટ હતી, હાલ 15900 ક્યુસેક પાણી છોડાતાં સપાટી 20.17 ફૂટ

ભાસ્કર એનાલિસિસ
વિશ્વામિત્રી 24 ફૂટ ન થાય તે માટે પાલિકાએ આજવાના દરવાજા 2 વાર ખોલી બંધ કર્યા

Animals Rescued during Vishwamitri Rejuvenation

- Forest Dept., Fire Services, Wildlife Conservators, NGOs, and Environmentalists participated.
- Vishwamitri River hosts Schedule I species: 442 Mugger Crocodiles (within VMC limits) and Softshell Turtles.
- No human-wildlife conflict or animal injury occurred during operations.
- Snakes and other animals were safely rescued and relocated.



9 | 49

Site Visits by Hon'ble Chief Minister and Hon'ble Home Minister of Gujarat



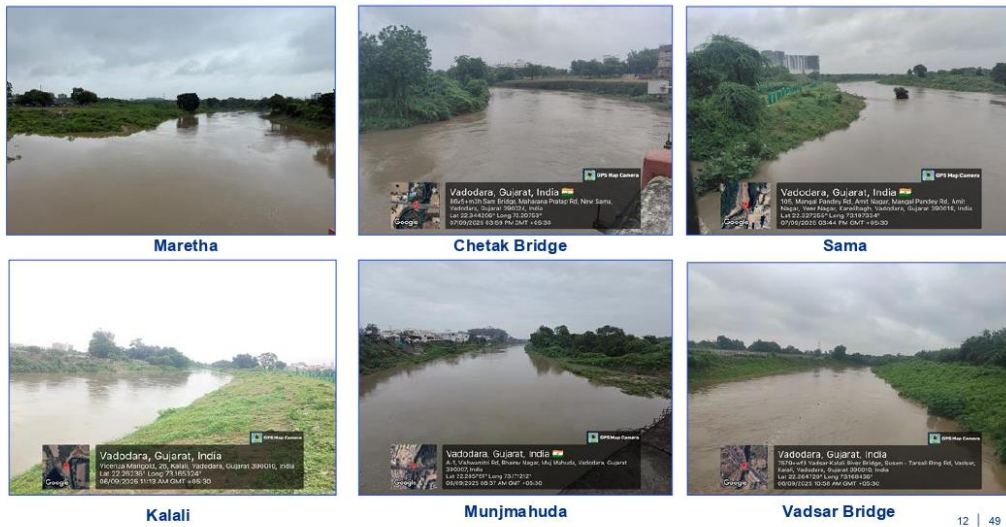
10 | 49

During the work and after work site pictures



11 | 49

Images of Vishwamitri Riverbank from 5th and 6th September 2025, when water level rose up to 21 feet



12 | 49

Riverbank Stabilization Works

Purpose of Coir Installation:

- Stabilizes soil and prevents erosion.
- Provides basking areas for aquatic species.
- Supports maintenance of green cover along the riverbank.

Progress Overview:

- **Estimated Coverage:** 135,000 sq. m.
- **Completed Work:** 120,000 sq. m.



13 | 49

Byproducts Obtained from the Vishwamitri Project

Plastic

- The plastic is sent to the recycling plant at Attadara.
- Total Plastic Waste Generated: **967 MT**
- The plastic will be used as ingredient for road construction work: **45 Rmt stretch is done**



14 | 49

Byproducts obtained from the Vishwamitri Project

Wood

- Used in cremation
- Quantity: 415 MT



Kalali Smashan

15 | 49

Byproducts obtained from the Vishwamitri Project

Construction and Demolition Waste

- Sent for crushing at the recycling plant at Atladara
- It is plan to use for preparing 1) Paver block 2) Curb Stone 3) Chamber Cover



Soil

- Use for creating "Linear Park" and "Nagarvan" at Bill and for embankment protection.
- Excavated Soil distribution free of cost in vicinity area of city. Vis NGO, VMC Garden plot, Religious Institute. Etc.



16 | 49

Benefits of Works Completed by VMC before Monsoon 2025

Year	Total Rainfall of the season		Rainfall Percentage with respect to last 10 years Avg. Rainfall
	City	Catchment of Ajwa & Pratappura Sarovar	
Average	893.00 mm	909.00 mm	—
2024	1708.00 mm	1796.00 mm	200 %
2025	1020.80 mm	1369.00 mm	150 %

Monsoon 2025 Impact

- Heavy rainfall in upper catchments and city led to Ajwa & Pratappura lake gates being open for over 24 hours.
- Resulted in ~500 cumec (17,657 cusecs) flow at Kalaghoda; over 300 cumec (10,170 cusecs) released from both lakes.

River Level Reduction

- Vishwamitri river level at Kalaghoda bridge recorded at 21.55 ft.
- Previously, same discharge resulted in ~29 ft level.
- Indicates a 7–8 ft reduction due to flood control and resectioning works.

Buffer & Storage Capacity Enhancements

- **Dena Lake:** New 25 Cr. litre (250 ML) capacity lake created as buffer for Surya River.
- **Pratappura Lake:** Capacity increased by 116.4 Cr. litres (1164 ML) for flood absorption and water supply.
- **Ajwa Lake:** Capacity increased by 48 Cr. litres (480 ML) for flood absorption and water supply.

17 | 49

Ajwa Dam visit on 6th September 2025, when river level rose up to 21 feet



18 | 49

Photo Gallery: Vishwamitri Projects

19 | 49

Site Inspection with Officials



20 | 49

Site Inspection and Consultation with Environmentalists



21 | 49



Components

1	Creating a Buffer Lake at Dena village
2	Dredging of Pratappura Lake
3	Dredging of Ajwa Lake
4	Rainwater Harvesting Wells (RWH)
5	Dredging and making outlets for Lakes in the City
6	Cleaning, Dredging & Upgradation of storm water channels in the city and nearby areas
7	Vishwamitri Revival and Rejuvenation Project

23 | 49

Creating a Buffer Lake at Dena Village

- **Removal of 2.5 lakh cubic meters Sediments**
- Area: 50,000 square meters is to be deepened by 5 Meters
- Work Started on: 24-02-2025
- Progress : **2.50 lakh cubic meters (100% completed)**
- **25 Cr. Litre Capacity New Lake Created**
- Approximately 3 Hitachi excavators and 20 dumpers were being used in this operation.



During Work



After work Lake Formation (Picture dated 05/09/2025)

24 | 49

Dredging of Pratappura lake

Project Scope:

- Targeted excavation: 20 lakh cubic meters of soil.
- Deepening planned over 3,00,000 sq. m area by 5–7 meters.
- Goal: Increase lake storage capacity by 2.0 billion liters.

Progress Update:

- Work started on **04-03-2025**.
- As of **19-06-2025**, 11.64 lakh cubic meters excavated (58 completed).
- 116 Cr. liters (1164 ML) capacity added for flood buffering and city water supply.

Execution Details:

- Approx. 17 Hitachi excavators, 14 JCBs, and 90 dumpers deployed at own cost.
- Remaining work to resume post-monsoon.



After work Lake Formation (Picture dated 05/09/2025)
25 | 49

Dredging of Ajwa Lake

Project Scope:

- Targeted excavation: 15 lakh cubic meters of soil.
- Deepening planned over 15,00,000 sq. m area by 1.5 meters.
- Goal: Increase lake storage capacity by 1.5 billion liters.

Progress Update:

- Work started on **04-03-2025**.
- As of **19-06-2025**, 4.88 lakh cubic meters excavated (33% completed).
- 4.8 Cr. liters (48 ML) capacity added for flood buffering and city water supply.

Execution Details:

- Approx. 10 Hitachi excavators, 15 JCBs, and 75 dumpers deployed at own cost.
- Remaining work to resume post-monsoon.

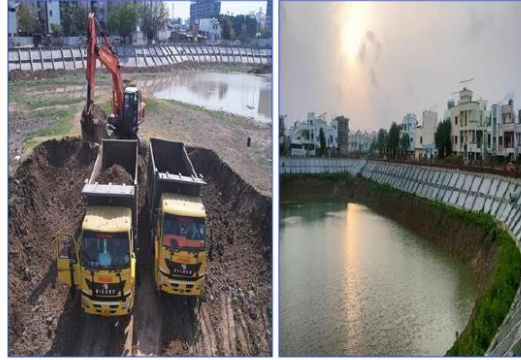


After work Lake Formation (Picture dated 05/09/2025)
26 | 49

Dredging of different lakes of the city (2.5 Lac Cu. Mtr.)

SN	Name of lake	Zone	Current Status
1	Vaans lake	South	Completed
2	Chhani lake	North	Completed
3	Vemali lake	North	Completed
4	Undera lake	West	Completed
5	Karodiya lake	West	Completed
6	Subhanpura lake	West	Completed
7	Bhimmath lake	West	Completed
8	Ramnath lake	East	Work in-progress
9	Jijmata lake	South	Work in-progress
10	Kapurai lake	South	Work in-progress
11	Vithalnagar lake	East	Yet to Start
12	Dashama lake	West	Yet to Start
13	Masiya lake	South	Yet to Start
14	Padam lake	South	Yet to Start
15	Airport lake	East	Not Feasible
16	Kanchan bhagat lake	South	Not Feasible

Vaans Lake



During Work

After Work (05/09/25)

Total	Completed Work	In Progress	Yet to start	Not Feasible
16	7	3	4	2

27 | 49

Rainwater Harvesting

- Approximately **526 rainwater harvesting (RWH) well** structures are planned in government-owned buildings and waterlogging-prone areas.
- Large RWH structures have a capacity of **24,000 liters per hour**.
- Small RWH structures have a capacity of **6,000 liters per hour**.

Total	Completed Work	In Progress	Feasibility Survey in progress
526	147	296	83

- Nearly **450 rainwater harvesting structures** have been constructed in private buildings, **Government and Semi-government offices, health center, ward office, low-lying area, etc.** over the last 2 years.



28 | 49

Making outlets of different lakes (11 lakes)

SN	Name of the Lake	Zone	Current Status
1	Kapurai lake	South	Work Completed
2	Ghaghratia lake	South	Work Completed
3	Kashivishwanath lake	North	Work Completed
4	Bhayli lake	West	Work Completed
5	Atladara lake	West	Work in Progress
6	Vemali lake	North	Work in Progress
7	Bil Lake	West	Work in Progress
8	Ramnath lake	East	Survey in Progress
9	Kalali lake	West	Survey in Progress
10	Sarsiya Lake	East	Survey in Progress



Total	Completed Work	In Progress	Survey in Progress
10	4	3	3

29 | 49

Cleaning and Dredging of storm water channels of the city and nearby areas

- Total length of the storm water channel: 180 kms
- Purpose: To Mitigate flood and to Recharge ground water
- Progress till date: **180 km length completed (100% completed)**



Gotri-Bhayli Channel



Ankhol Channel

30 | 49

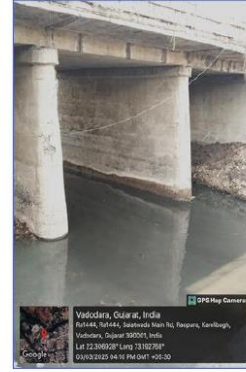
Cleaning and Dredging of storm water channels in the city and nearby areas (180 Kms.)



Before



On-going



After

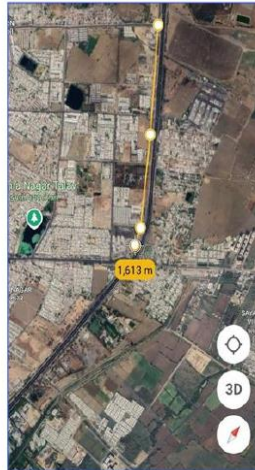
Cleaning of Bahucharaji Kaans/Dredging

31 | 49

Upgradation of storm water channel of NHA1



Panjarapol to Ajwa Road



	South Zone	East Zone	Total
Total	33	38	71
Work Complete	25	15	40



Darjipura

32 | 49

Picture Gallery: Lake Dredging Works

33 | 49

Dena Lake



34 | 49

Ajwa Lake



35 | 49

Ajwa Lake



36 | 49

Pratappura Lake



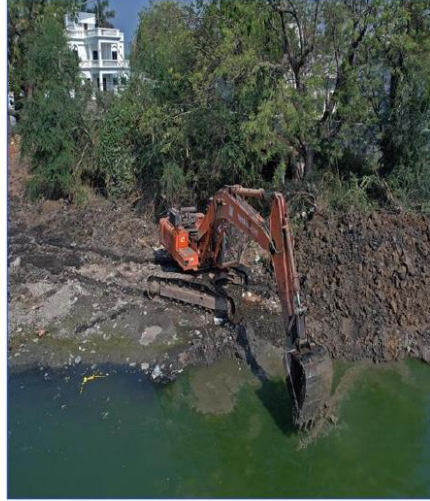
37 | 49

Vemali Lake



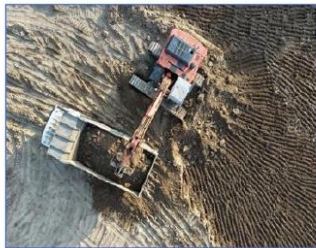
38 | 49

Undera Lake



39 | 49

Vaans Lake



40 | 49

Picture Gallery: Cleaning Works

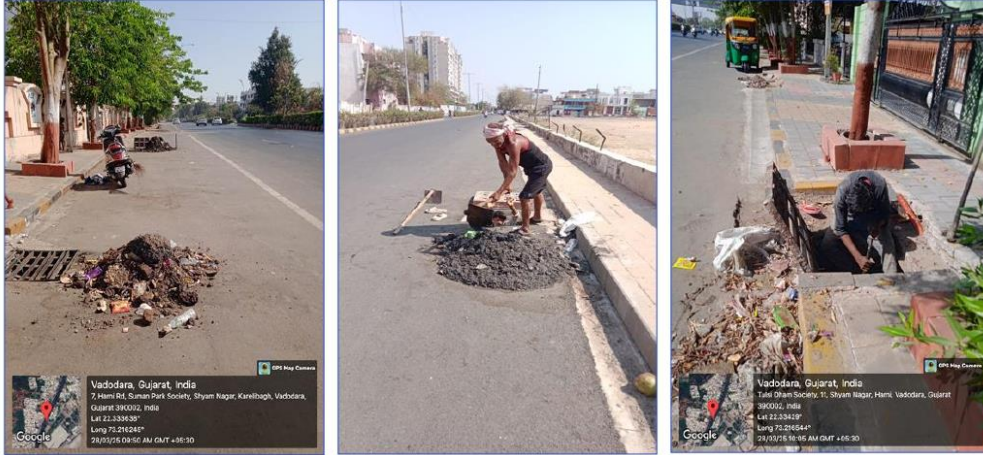
41 | 49

Storm Water Channel Cleaning



42 | 49

Cleaning of Machine holes



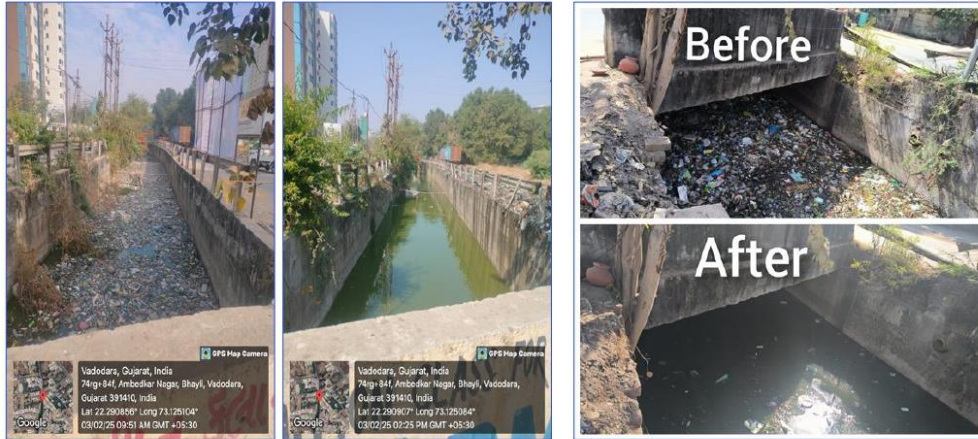
43 | 49

Before & After Images – East Zone



44 | 49

Before & After Images – West Zone



Stormwater Channel and Culvert - from Priya Theatre towards Bhayli

45 | 49

Before & After Images – North Zone



Stormwater Channel behind M.S. University

Kasamala Crematorium Bridge

Bahucharaji Bridge

46 | 49

Before & After Images – South Zone



47 | 49

Reuse of Soil at VMC Sites



Linear Park at Sevasi



Linear Park at Gorwa - Panchwati

48 | 49

Annexure IX: C&D Vishwamitri Action Plan Report (Draft- Selected Images)



Facile Maven Private Limited

Document Details

Name of Report	: Preparation of Action Plan and Assignment of Survey Work for Removal of Legacy Waste from 13 Identified Locations Along the Vishwamitri River.
LOI No.	: S.W.M.O.No.: - 685
Date of Issuance of LOI	: 01/09/2025
Client (& its division, if any)	: Vadodara Municipal Corporation
Contact Person	:
Contact Details	:
Project Code	:
Report No.	: FMSurat/VMC/SWM-ActionPlan/XX/2025
Version	: R0

Rev. No.	Date	Description	Prepared by	Approved by
00	XX/11/2025	Action Plan Report	Er	

Project Team Members at FMPL

The following table encloses all the team members involved in the success of this project.

No.	Name	Designation
1	Dr. Harshul J. Parekh	Managing Director
2	Dr. Bhasker V. Bhatt	Chief Operating Officer
3	Er. Bipinchandra Shah	Senior Manager
4	Er. Shivang Jariwala	Sr. Engineer (Env.)
5	Er. Avi Sharma	Jr. Planner (SWM)
6	Er. Aarya Dalal	Assistant Engineer (SWM)
7	Er. Kaushal Patel	Jr. Environmental Engineer
8	Er. Vidhi Kansara	Jr. Environmental Engineer
9	Er. Niralee Patel	Jr. Environmental Engineer
10	Mr. Purushottam Jagtap	GIS analyst
11	Er. Vijay Patel	Head Draftsman
12	Er. Akshay Chinai	Draftsman
13	Er. Yashasvi Patel	Junior Draftsman

1 Introduction

Debris or Construction and Demolition (C&D) waste constitutes a significant portion of the total solid waste generated in urban areas and requires systematic management to minimize environmental impacts and promote resource recovery. Rapid urbanization, large-scale infrastructure development, and continuous redevelopment in Vadodara have led to a substantial increase in the quantity of C&D waste being produced. Improper handling and unscientific disposal of such waste not only cause degradation of land and aesthetics but also contribute to air and water pollution. Therefore, a structured and implementable C&D Waste Management Action Plan is essential to ensure efficient collection, segregation, transportation, recycling, and safe disposal of this waste in compliance with the Construction and Demolition Waste Management Rules, 2016 and its subsequent amendments.

1.1 Need of the Project

The proposed project is essential to address the accumulated debris along the Vishwamitri Riverside, which poses significant environmental, aesthetic, and operational challenges. The need arises from the following key considerations:

1. To ensure identification, removal, and scientific management of scattered debris and waste along the river.
2. To implement a strategic system for managing scattered debris waste accumulated along the Vishwamitri riverside, through location mapping, organized transportation, and scientific processing at C&D waste management plant.
3. To ensure compliance with NGT (O.A. No. 228/2020) directives for systematic removal and monitoring of legacy waste.
4. To promote public awareness and community participation for responsible waste disposal practices.
5. To restore the ecological and aesthetic value of the Vishwamitri River through debris clearance and pollution control measures.
6. To address the growing C&D waste generation through the development of an organized collection network and scientific processing facility.

1.2 Aim and Objective of the Study

Aim:

“To ensure systematic removal and scientific management of scattered Debris waste along the Vishwamitri River in compliance with NGT directives, promoting environmental protection and sustainable urban cleanliness.”

Objectives:

- To identify and plan for scientific removal and management of scattered debris and waste accumulated along the Vishwamitri Riverside.

- **To assess and quantify the accumulated waste volume** at identified locations and formulate a detailed plan for its efficient transportation to the authorized C&D waste management facility at **XXX Location**.
- **To align daily waste transportation with the processing capacity** of the authorized C&D waste management facility to ensure smooth operations and minimize the risk of backlog accumulation at the plant.
- **To estimate the cost, timeline, manpower, and equipment requirements** for the transportation of waste, ensuring effective coordination with the designated C&D waste processing facility.
- **To promote public awareness and community participation** by encouraging responsible waste disposal practices and compliance with approved waste management systems.
- **To ensure compliance with NGT (O.A. No. 228/2020) directives** through structured removal, monitoring, and reporting of legacy and scattered waste management activities along the Vishwamitri Riverside.
- **To restore and enhance the ecological integrity and aesthetic value** of the Vishwamitri River corridor through debris clearance, pollution mitigation, and environmental rejuvenation measures.

1.3 Study Area Description

The Vishwamitri River originates from the Pavagadh hills in the Panchmahal District of Gujarat and flows primarily along the western side of Vadodara city before merging into the Dhadhar River. The river derives its name from the revered sage Vishwamitra.



Figure 1-1 Map showing Vishwamitri River flowing through Vadodara

Source: https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.researchgate.net%2Ffigure%2Ffigure%2Froute-of-river-Vishwamitri-Vadodara-Gujarat-India_fig2_280726931&psig=AOvWaw0Wm9INr2-

4 Existing Scenario and Approach

4.1 Overview of C&D waste along Vishwamitri River

The Vishwamitri River, flowing through Vadodara city, has been subjected to environmental pollution due to unregulated disposal of C&D waste along its banks. Unauthorized dumping of debris such as soil, bricks, concrete, and mixed waste has led to degradation of riverbank ecosystems and unpleasant river side aesthetics.

Approximately 13 locations along the Vishwamitri riverside were identified as sites with noticeable accumulation of C&D waste. The survey included visual inspection, drone survey, photographic documentation, and estimation of waste volume based on drone survey data. The identified locations, along with their coordinates, are listed in the table below:

Table 4-1 Identified C&D Waste Locations along Vishwamitri River

Sr. No.	Location Name / Area	Latitude	Longitude
1	Sama Motanath Bridge	22°20'58.42"N	73°12'23.28"E
2	Anandnagar Society, Sama Gam	22°12'12.9"N	73°11'58.1"E
3	Navi Nagri – Bharvad Vas – Sama	22°20'11.0"N	73°11'57.9"E
4	Near Siddharth Bungalows, Vishwamitri River	22°20'17.6"N	73°12'13.1"E
5	Behind Aghora City Centre, Mangal Pandey Road	22°19'52.18"N	73°11'49.12"E
6	Near North Zone Collection Centre (Near VUDA Office)	22°19'27.0"N	73°11'40.6"E
7	Narhari Bridge	22°19'04.5"N	73°11'25.0"E
8	Kala Ghoda Bridge	22°18'29.1"N	73°11'19.6"E
9	Bhimnath Bridge, Near Sayaji Hotel	22°18'21.0"N	73°11'10.5"E
10	Behind Akota Smashan, Railway Bridge	22°17'36.7"N	73°10'39.05"E
11	Mujmahuda Bridge	22°17'08.7"N	73°10'39.1"E
12	Atladara Manjalpur Bridge	22°16'29.6"N	73°11'34.7"E
13	Vadsar Bridge	22°15'48.3"N	73°10'06.6"E

Source: As mentioned in L.O.I. received from VMC dated 01/09/2025

The accumulated waste mainly includes:

- Excavation debris and construction spoils
- Broken bricks, tiles, and concrete blocks
- Mixed solid waste including plastics and inert materials

Table 2-2 Details of MSW Treatment facilities in VMC

Sr. No.	Project	Capacity (TPD)	Status	Tender Type / Quantity	Contract Period
1	Plastic Waste Management	100	Ongoing	PPP Based	20 Years
2	Bio-Mining of Legacy Waste	2,000	Ongoing	5.0 Lakh MT	14 Months (Excl. Monsoon)
3	Material Recovery Facility at Atladara TPS	50	Ongoing	-	-

Source: SWM department, VMC

Reference images of the surveyed locations are provided below:

1. Navi Nagri – Bharvad Vas – Sama



2. Behind Aghora City Centre, Mangal Pandey Road



3. Narhari Bridge



4. Behind Akota Smashan, Railway Bridge



5. Mujmahuda Bridge



4.3 Approach

Proper management and removal of the accumulated C&D waste is critical to ensure hygiene, prevent environmental degradation, and maintain aesthetic and sanitary conditions along the Vishwamitri riverside. For approaching this, following project methodology has been considered:

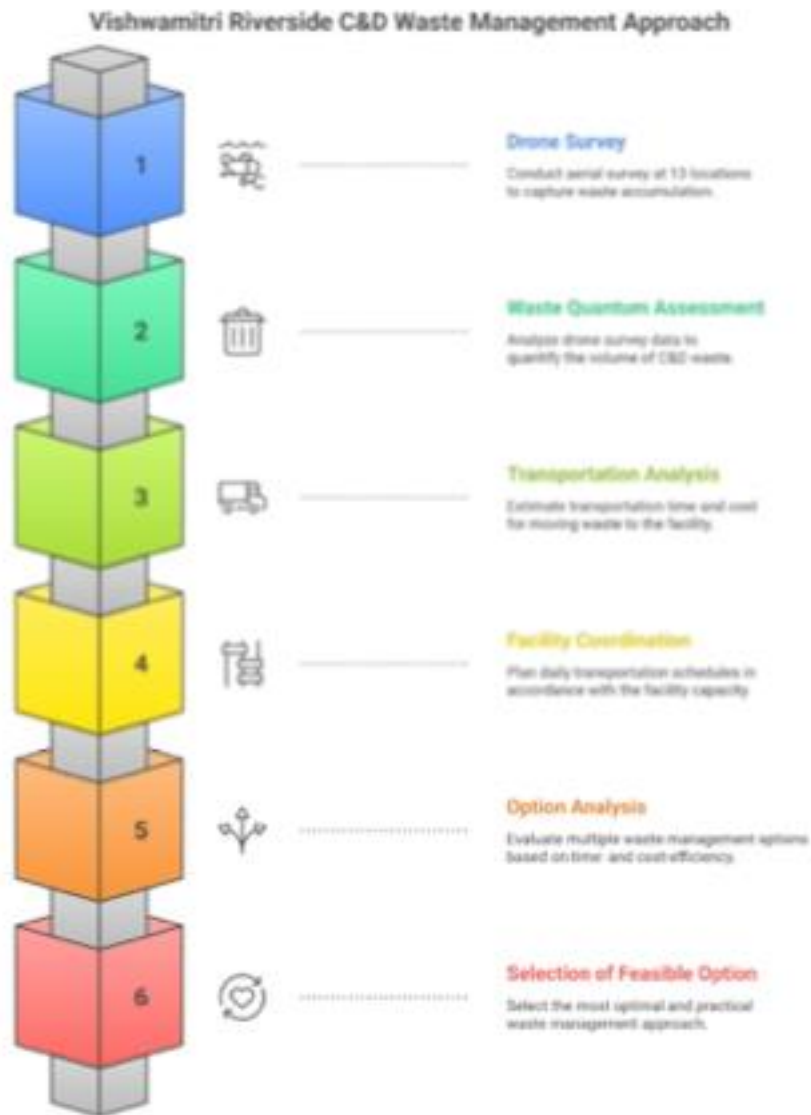



Figure 4-1 Approach for C&D waste management alongside Vishwamitri River in Vadodara






5.4 Waste Accumulation Mapping


From the processed drone imagery, specific waste accumulation pockets were identified where at all locations. These pockets were delineated on the Ortho mosaic base maps and exported as GIS-compatible KML files, enabling easy visualization and analysis in Google Earth App.

Each waste pocket was assigned a unique identification code, and attributes such as location coordinates, estimated area, and waste type (brick, concrete, soil, debris, etc.) were recorded. Representative waste accumulation pockets identified through the drone survey at selected locations are detailed in the table below for reference and further analysis:

Table 5-1 Images of identified pockets at

Sr. No.	Location Name	Image for Reference	Total No. of Pockets
1	Behind Akota Smashan, Railway Bridge (B/h Akota)		

Sr. No.	Location Name	Image for Reference	Total No. of Pockets
2	Bhimnath Bridge, Near Sayaji Hotel (Bhimnath Bridge-3)		
3	Mujmahuda Bridge		
4	Narhari Bridge (Narhari)		
5	Behind Aghora City Centre, Mangal Pandey Road (Nr. Agora city centre)		
6	Near Siddharth Bungalows, Vishwamitri River (Siddharth Bungalow)		

Sr. No.	Location Name	Image for Reference	Total No. of Pockets
7	Vadsar Bridge (Vadsar)		

5.5 Quantification of C&D Waste

The volumetric estimation of C&D waste was carried out using drone-derived elevation data combined with manual interpretation. By comparing surface elevation differences between waste-filled areas and surrounding ground levels, the approximate volume of accumulated waste was calculated. These calculations were validated with field measurements wherever feasible.

Sr. No.	Location	Total Pocket	Cut Volume	MT
1	Atladara	1	51.70	52
2	BH Akota	31	1407.47	876
3	BH Vuda	12	57.64	26
4	Bharwadwas	12	497.98	26
5	Bhimnath Bridge-1,2	6	287.19	288
6	Bhimnath Bridge-3	8	987.73	988
7	Chetak Bridge	2	4.79	5
8	Kalaghoda	10	22.57	23
9	Mujmahuda-1,2	9	523.60	524
10	Narhari	31	771.93	772
11	Nr Agora City Centre	8	157.55	158
12	Siddarth Bunglow	16	697.34	698
13	Vadsar-1	4	9.65	10
14	Vadsar-2	5	668.35	669
			Total	6,150

The estimated quantities obtained from the drone analysis are crucial inputs for logistics planning and resource allocation. Based on the quantification results, approach roads have been proposed to each identified site to facilitate easy transportation and removal of the waste. This strategic planning ensures that collected waste can be efficiently transported to the designated C&D waste processing facility for further treatment and recycling.

Annexure X: Minutes of Meeting with Municipal Commissioner, VMC Officials, CREDAI Representatives, and GPCB Regional Officer, dated 20.12.2025

ક્ર. પ્રો. ના. નં. 3458
તા. 20/11/26

વિશ્વામિત્રી સમિતિ & CREDAI Minutes of Meeting (MoM)

વિષય :- વિશ્વામિત્રી નદી પૂર નિયંત્રણ તથા નિવારણ કામગીરીઓનાં માટે રાજ્ય માનવ અધિકાર આયોગ દ્વારા ગઠિત વિશ્વામિત્રી સમિતિ, વડોદરા મહાનગરપાલિકા, GPCB તથા CREDAI સાથે વિશ્વામિત્રી નદી તેની આસપાસના વિસ્તારો, કોતરો, વરસાદી કાંસો સહિત વિવિધ મુદ્દાઓ પર ચર્ચા

ઉપરોક્ત વિષય પરત્વે તા:- ૨૦/૧૨/૨૦૨૫ નાં રોજ કોન્ફરન્સ હોલ, ખંડેરાવ માર્કેટ, વડોદરા મહાનગરપાલિકા ખાતે માન. મ્યુનિસિપલ કમિશનરશ્રીના અધ્યક્ષસ્થાને ગુજરાત માનવ અધિકાર આયોગ દ્વારા ગઠિત વિશ્વામિત્રી સમિતિ, CREDAI, GPCB તેમજ વડોદરા મહાનગરપાલિકાના ટાઉન પ્લાનિંગ વિભાગ, ફ્યુચરસ્ટિક પ્લાનિંગ સેલ (વિશ્વામિત્રી શાખા), સોલીડ વેસ્ટ મેનેજમેન્ટ વિભાગ વગેરે સાથે રૂબરૂ મીટીંગનું આયોજન કરવામાં આવેલ, જેમાં ચર્ચા થયેલ વિવિધ મુદ્દાઓની વિગતો નીચે મુજબ છે.

1. રાજ્ય માનવ અધિકાર આયોગ દ્વારા ગઠિત વિશ્વામિત્રી સમિતિ દ્વારા NGT O.A.No.228/2020 (Western Bench) માં નિર્દેશિત હુકમ સંદર્ભે પ્રેઝન્ટેશન કરવામાં આવેલ.

1.1 સરકારશ્રી દ્વારા ગઠિત તેમજ માન. નવલાવાલા ના અધ્યક્ષ સ્થાને વિશ્વામિત્રી નદી પૂર નિયંત્રણ તથા નિવારણ સમિતિ દ્વારા સૂચિત કરવામાં આવેલ કામગીરીઓ પૈકી વિશ્વામિત્રી નદી Resectioning તથા Desilting ની કામગીરી પૂર્ણ કરીને નદીની વહન ક્ષમતા 750 CUMEC થી વધારીને 1150 CUMEC કરવામાં આવેલ છે, જે કામગીરી schedule 1 હેઠળ આરક્ષિત મગર તેમજ વિવિધ જળચર પ્રાણીઓ સાથે કોઈ જાનહાનિ વગર ખૂબ સારી રીતે તેમજ ઉદાહરણરૂપ થયેલ છે, તેમજ સમિતિ દ્વારા સદરને Documentry રૂપે વિવિધ રાષ્ટ્રીય તેમજ આંતરરાષ્ટ્રીય પ્લેટફોર્મ પર લઈ જવામાં આવશે.

1.2 વિશ્વામિત્રી નદી સંલગ્ન કામગીરીઓ માટેના સલાહકારશ્રી મે. સિકોન દ્વારા ફ્લડ ઇવેન્ટનો અભ્યાસ કરીને 5 વર્ષ તથા 10 વર્ષ ફ્લડ લાઇન મેપ તૈયાર કરવામાં આવેલ, જે દર્શાવવામાં આવેલ, જેમાં પૂર આવ્યેથી નદીની આસપાસ જ્યાં સુધી પૂરનાં પાણીનો ફેલાવો થાય છે તે નિર્દેશિત કરવામાં આવેલ અને તેને DP પ્લાન માં સમાવેશ કરવા અર્થે સૂચન કરવામાં આવેલ છે જેથી flood prone વિસ્તાર identify કરી શકાય અને તે જગ્યાએ વિવિધ નિયંત્રણ પણ મૂકી શકાય.

1.3 સમિતિ દ્વારા વિશ્વામિત્રી નદી આસપાસ flood plain વિસ્તાર તેમજ તેના કોતરો તફપરાંત વરસાદી કાંસો, તળાવો વગેરેમાં વર્ષોથી dump થયેલ Construction & Demolition Waste ને સંપૂર્ણ lifting કરીને યોગ્ય વ્યવસ્થાપન કરવા અર્થે જણાવેલ તેમજ સદર બાબતે GPCB દ્વારા પણ તેઓના રિપોર્ટ થકી solid waste management વિભાગને જાણ કરવામાં આવેલ છે, જે કામગીરી સત્વરે હાથ ધરી પૂર્ણ કરવા અર્થે સૂચના આપવામાં આવેલ અને ફરીથી C & D waste ડમ્પિંગ ન થાય તે માટે સઘન મોનીટરિંગ તથા ડિફેલેટરો પર 85૩ ટંકનીય કાર્યવાહી કરવા અર્થે જણાવેલ.


1.4 સમિતિ દ્વારા CSR initiative થકી C&D waste ને recycle કરીને innovative building materials બનાવવા અર્થે પણ સૂચન કરેલ.

1.5 સદર ઉલ્લેખિત બાબતો અંગે શહેરના બિલ્ડર્સ, developer and contractor સાથે સમયાતરે CREDAI, GPCB તેમજ વડોદરા મહાનગરપાલિકા સાથે સચુંકત મીટીંગ થાય તે માટે સૂચન થયેલ, જેમાં Protect natural storm waterways even in private properties, Rules & Regulations for appropriate disposal of C&D waste as part of construction permits, Exemplary actions

against defaulters, Alternative methods to demarcate private properties - no compound walls near river અંગે ચર્ચા થયેલ અને તે બાબતે યોગ્ય અમલવારી તે થાય તે માટે જણાવેલ.

2. CREDAI દ્વારા Construction and Demolition માટે શહેરના 4 ઝોન માં ઝોન દીઠ collecting/dumping location નિયત કરવા અર્થે રજૂઆત કરેલ જેથી વિવિધ સ્થળેથી યોગ્ય રીતે ટ્રાન્સપોર્ટ થઈ જરૂરી વ્યવસ્થાપન કરી શકાય.
3. CREDAI દ્વારા સલાહકારશ્રી મે. સિકોન દ્વારા ફ્લડ ઇવેન્ટનો અભ્યાસ કરીને તૈયાર કરવામાં આવેલ 5 વર્ષ તથા 10 વર્ષ ફ્લડ લાઇન મેપને પબ્લિક ડોમેન માં મુકવા અર્થે જણાવેલ છે જેથી ડેવલપર તથા જાહેર જનતાને પણ સદર બાબતે જાણ થઈ શકે, રિવર Mapping માં VMC, VUDA તેમજ સરકાર શ્રી દ્વારા હાલમાં નવીન બનાવવામાં આવનાર GDCR રૂલ્સમાં પણ સદર બાબતે જરૂરી સુધારો થઈ શકે તે માટે રજૂઆત કરેલ.
4. CREDAI દ્વારા તેઓના તમામ સભ્યોને તેમજ તેમના પ્લોટકોર્મથી શહેરના તમામ રિડેવલપમેન્ટ તેમજ નવીન બાંધકામમાંથી નીકળતા C & D waste નું યોગ્ય વ્યવસ્થાપન થાય તેમજ વડોદરા મહાનગરપાલિકાના નિયત થયેલ લોકેશન પર C & D waste dispose થાય તેમજ ત્યારબાદ અટલાદરા સ્થિત C & D waste processing facility ખાતે યોગ્ય પ્રોસેસિંગ થાય તે અંગે સૂચના આપવામાં આવી.
5. વિધામિત્રી નદીમાં પ્રવેશતા સુએઝ outflow પોઇન્ટ પણ GPCB સાથે સંકલન માં રહીને identify થઈ ચૂક્યા છે જે મુજબ તેને સંદતર બંધ કરવા અંગે વિવિધ કામગીરીઓ પ્રગતિ હેઠળ છે તેમજ વિવિધ આયોજનો હાથ ધરવામાં આવેલ છે, વડોદરા મહાનગરપાલિકા દ્વારા અત્યાર સુધી ૬૪ MLD જેટલો સુએઝ પાણીનો જથ્થો ડાયવર્ટ કરીને ટ્રીટમેન્ટ ફેસિલિટી સુધી પહોંચાડવાની કામગીરી પૂર્ણ કરેલ છે તથા બાકીનો ૧૬ MLD સુએઝ પાણીને ડાયવર્ટ/પ્રોસેસિંગ કરવા માટે વિવિધ કામગીરીઓ હાથ ધરવામાં આવેલ છે, તેમજ ૬ સ્થળોએ માઇક્રો STP પણ બનાવવા અર્થે જણાવેલ જેથી ડિસ્પોઝ થતા સ્થળેથી જ યોગ્ય ધારાધોરણ મુજબ ટ્રીટમેન્ટ આપી ડિસ્પોઝ કરી શકાય.
6. વડોદરા શહેરમાં હયાત તમામ તળાવો તેમજ અન્ય વોટર બોડીની યોગ્ય જાળવણી થાય તેમજ તેનું Rejuvenation થાય તે માટે યોગ્ય કાર્યવાહી કરવામાં આવનાર છે, સદર ખાતે પ્રવેશતા સુએઝ outflow ને પણ સંદતર બંધ કરવામાં આવશે, તેમજ illegal drainage connection અંગે પણ દંડનીય કાર્યવાહી કરવામાં આવે તે બાબતે સૂચના આપવામાં આવેલ.
7. હવા પ્રદૂષણ અંગે પણ ચર્ચા થયેલ જેમાં AQI ના રિયલ ટાઈમ મોનીટરીંગ તેમજ તેના ડેટા પબ્લિક ડોમેન માં મુકવા અર્થે જણાવેલ, તેમજ CREDAI સમૂહ હેઠળના તેમજ વિવિધ બાંધકામ સાઇટ ખાતે Dust Pollution અંગે જરૂરી કામગીરી થાય તેમજ સદર અંગે ટાઉન પ્લાનિંગ શાખા દ્વારા સઘન ચેકીંગ કરવામાં આવશે તેમજ પેનલ્ટી પણ કરવામાં આવશે, ઉક્ત સિવાય વિવિધ ઔદ્યોગિક વિસ્તારો તેમજ GIDC માં પણ GPCB દ્વારા સમયાંતરે સદર બાબતે જરૂરી ચેકીંગ હાથ ધરવામાં આવે, વડોદરા મહાનગરપાલિકા દ્વારા AQI ના કન્ટ્રોલ માટે Smog Gun Vehicle વસાવવા અંગેની કાર્યવાહી હાથ ધરવામાં આવેલ છે, જેનો ઉપયોગ હોટસ્પોટ પર કરવામાં આવશે.
8. શહેરના વિવિધ રોડ, રીંગ રોડ તેમજ આઉટગોથ વિસ્તારોમાં આવેલ મુખ્ય રોડ પર Avenue Plantation માટે સૂચના આપવામાં આવી, જેમાં CREDAI દ્વારા વિવિધ સ્થળોએ કામગીરી કરવામાં આવનાર છે.

આમ, ઉપરોક્ત વિવિધ પ્રકારના મુદ્દાઓ પર ચર્ચા કરવામાં આવેલ છે, અને પુનઃ CREDAI સાથે મીટીંગ
નું આયોજન કરવા અર્થે સૂચના આપવામાં આવેલ.


શ્રી. સિદ્ધી ઇજનેર
ફેનેજ પ્રોજેક્ટ વિભાગ
વડોદરા મહાનગરપાલિકા

નકલ સવિનય રવાના:-

- ૧) માન. મ્યુનિસિપલ કમિશનર શ્રી તરફ જાણ સારું
- ૨) HOD શ્રી, ટાઉન પ્લાનિંગ અને ડેવલપમેન્ટ વિભાગ
- ૩) કાર્યપાલક ઇજનેર શ્રી, ફ્યુચરસ્ટિક પ્લાનિંગ સેલ
- ૪) કાર્યપાલક ઇજનેરશ્રી, તમામ ઝોન, સોલિડ વેસ્ટ મેનેજમેન્ટ વિભાગ
- ૫) સોલિડ વેસ્ટ મેનેજર, સોલિડ વેસ્ટ મેનેજમેન્ટ વિભાગ
- ૬) RO શ્રી, GPCB તરફ જાણ સારું
- ૭) નાયબ કાર્યપાલક ઇજનેર શ્રી, ફેનેજ પ્રોજેક્ટ
- ૮) શ્રી રોહિત પ્રજાપતિ, પર્યાવરણવિદ વિશ્વામિત્રી સમિતિ
- ૯) શ્રીમતી નેહાબેન સરવટે, પર્યાવરણવિદ વિશ્વામિત્રી સમિતિ
- ૧૦) પ્રમુખ શ્રી, CREDAI

Annexure XI: Check Dams in the Upstream Areas, Irrigation Department

Sr No.	Name of Checkdam
1	Construction of Amaliyara Checkdam across Surya River near village Amaliyara, Taluka:- Vadodara, District:- Vadodara
2	Construction of Intoli Checkdam across Surya River near village Intoli, Taluka:- Waghodia, District:- Vadodara
3	Construction of Sukhalipura Checkdam across Surya River near village Sukhalipura, Taluka:- Vadodara, District:- Vadodara
4	Construction of Bodidra Checkdam across Vishwamitri River near village Bodidra, Taluka:- Waghodia, District:- Vadodara
5	Construction of Jarod Checkdam across Vishwamitri River near village Jarod, Taluka:- Waghodia, District:- Vadodara
6	Construction of Amaliyara-2 Checkdam across Surya River near village Amaliyara, Taluka:- Vadodara, District:- Vadodara
7	Construction of Intoli-2 Checkdam across Surya River near village Intoli, Taluka:- Waghodia, District:- Vadodara
8	Construction of New Check dam near Village Ghansar on tributary of Surya River at Ta. Halol Dist. Panchmahal.
9	Construction of New Check dam near Village Madar on tributary of Surya River at Ta. Halol Dist. Panchmahal.
10	Construction of New Check dam near village Jitpura on tributary of Surya River at Ta. Halol Dist. Panchmahal.
11	Construction of New Check dam near Village Hansapura on Vishwamitri River at Ta. Waghodiya Dist. Vadodara.
12	Construction of New Check dam near Village Kamrol on Vishwamitri River at Ta. Waghodiya Dist. Vadodara.
13	Construction of New Kamrol-2 Check dam near Village Kamrol on Vishwamitri River at Ta. Waghodiya Dist. Vadodara.
14	Construction of New Check dam near Village Khandiwada on Vishwamitri River at Ta. Waghodiya Dist. Vadodara.
15	Construction of New Check dam near Village Nurpura on tributary of Vishwamitri River at Ta. Halol Dist. Panchmahal.
16	Construction of New Jarod-2 Checkdam across Vishwamitri River near village Jarod, Taluka:- Waghodia, District:- Vadodara
17	Construction of New Checkdam across Vishwamitri River near village Haripura , Taluka:- Waghodia, District:- Vadodara

Annexure XII: Selected Drone Images of Straightened Meanders and Disconnected Ox-bows

