# Supplementary Report

# to

# First 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

5 June 2025

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# Report

During the hearing on 26.05.2025, it was mentioned by Hon'ble Chairperson of the commission that the order based on the submission of the "First Report of the Vishwamitri Committee" and submissions by the concerned authorities will be pronounced on 09.06.2025. It was suggested that this committee can submit its supplementary report by 05.06.2025.

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

*Table 1: Information Requested and Received from Concerned Authorities*

| Sr. No. | Information Requested | Information Received |
|---|---|---|
| 1 | Drone survey of Vishwamitri River outfalls from GPCB, September 2024. | Received from GPCB<br>Annexure II<br>(Relevant Pages) |
| 2 | Relevant documents pertaining to the Vishwamitri River in connection with ongoing construction activities under NHSRCL Project (Bullet Train) in the floodplains. | Received from NHSRCL<br><br>Annexure III<br>(Relevant Pages) |
| 3 | Drone survey of Vishwamitri River outfalls from VMC, May 2025. | Received from VMC<br>Annexure IV<br>(Relevant images) |

| | | |
|---|---|---|
| 4 | Detail action plan for plantation from Forest Department. | Pending |
| 5 | Log book of rescue events and other observations related to wildlife activities from Zoo Authorities. | Pending |
| 6 | Drone survey (before & during) of the desilting works at the reservoirs of Ajwa, Pratapura and new detention pond at Dena village. | Pending |

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

*Table 2: Site Visits and Meetings*

| Sr. No. | Date | Events | Particulars |
|---|---|---|---|
| 1 | 28.05.2025 | Site Visit with VMC officials | Works of Eastern Banks |
| 2 | 02.06.2025 | Site Visit with VMC officials | Ajwa, Pratapnagar Reservoir, new detention pond at Dena village |
| 3 | 03.06.2025 | Site Visit with VMC officials | Ongoing Coir work at Sama area opposite Siddharth Bungalows and behind Amdedkar Bhawan, Vadodara |
| 4 | 03.06.2025 | Meeting with VMC officials | At VMC offices |

# Observations and Recommendation

The following are the observation and suggestions of this committee:

1. Information has been received from the NHSRCL as discussed in Table 1 above.
2. However, no action plan or progress report has been received from the NHAI that was requested by this committee.
3. Debris at many locations are still persistent and have not been removed prior to bank stabilization works.
4. It has been suggested that the stretches on the eastern banks that have healthy vegetation and no traces of debris, should not be disturbed.
5. Coir works have been implemented on depositional banks instead of erosional banks. It is the erosional banks with steep slopes that need immediate attention and should be prioritised for stabilization.
6. It is recommended that the plantation of vetiver grass be spaced at 3’ intervals.
7. Systematic de-weeding of invasive species and plantation of native species should be carried out.
8. Native trees should be planted at upper banks across the watershed based on the suggestion of this committee.
9. The emergent and floating vegetation is important for the crocodile hatchlings. This vegetation should not be removed.
10. Emergent islands as a result of ongoing works at many locations are rich in biodiversity and habitats; they should be retained as mini-islands with the use of ecological engineering means.
11. Eco engineering (coco logs) works at toe areas of the bank, prone to scouring, should be installed at erosional banks. However, locations where wild life dens exist should not be disturbed.
12. Removal of debris should be prioritised at all locations beyond the “banks” of the River.

13. A C&D waste processing plant with adequate facilities and capacity should be installed at the earliest.
14. All existing structures, temporary and permanent, within the floodplains should be duly mapped and share with this committee.

The site visits of the ongoing works are in progress and are planned. This committee will submit subsequent reports with the progression of work.

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: Site Visits and Meetings

## 28.05.2025: Site Visit with VMC on Eastern Banks

**Location:** Mangal Panday Bridge, Zoo, Kalaghoda, Palace Ground, Akota Bullet train junction

**Time:** 8:30 am

**Attendee:**

Rohit Prajapati
Jitendra Gavali
Mitesh Panchal

**Discussions:**

1. Natural vegetation has sprouted at many locations along the river including pilot project coir work near Mangal Pandey Bridge. Vetiver grass planted by the agency has not sprouted.
2. It has been observed that many invasive species have naturally sprouted post rain event that will need to be removed manually and plantation of native species to be done under the guidance of experts / botanist / Forest Department.
3. Behind the Zoo, few trees are now in the middle of the river as VMC removes silt from the zoo side bank. It is recommended that these be converted into mini islands with the use of ecological engineering means.
4. It is recommended that tree plantation work be carried out at the earliest at the upper banks of the river in the Kamati Baug-zoo area.
5. A systematic framework for bank stabilization and simultaneous plantation needs to be established.
6. At the confluence Bahucharaji and Bhukhi kaans with the Vishwamitri River needs immediate attention to prevent potential erosion.

7. Any constructions that were carried out to facilitate the movement of the vehicles for the said desilting works should be removed and at least status quo (topography & levels) should be restored.
8. In general, the debris and silt deposited between the pillars of the bridges need to be removed. For example, pillars marked in the image at Akota-Danidia bazar bridge.
9. Dumping of fresh debris and municipal solid waste is still continuing and needs to be checked earliest.
10. This committee was informed that the eastern banks of the Akota area work will start shortly.
11. The junction between the River and Bullet Train at Akota needs to be restored appropriately; remove cement debris / pipes visible in image from river banks.



28/05/25 08:58 AM
22.3115791 73.1939706
Karelibagh, Vadodara, Gujarat


28/05/25 09:14 AM
22.3106960 73.1915973
Sayajiganj, Vadodara, Gujarat


28/05/25 09:40 AM
22.3083806 73.1895367
Anandpura, Vadodara, Gujarat


28/05/25 09:43 AM
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Sayajiganj, Vadodara, Gujarat


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Sayajiganj, Vadodara, Gujarat


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Anandpura, Vadodara, Gujarat


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Sayajiganj, Vadodara, Gujarat


28/05/25 10:21 AM
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Sayajiganj, Vadodara, Gujarat


28/05/25 11:00 AM
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Sayajiganj, Vadodara, Gujarat


28/05/25 11:03 AM
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Moti Baug, Vadodara, Gujarat


28/05/25 11:40 AM
22.2935313 73.1777120
Akota, Vadodara, Gujarat


28/05/25 11:49 AM
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Akota, Vadodara, Gujarat


28/05/25 11:37 AM
22.2935489, 73.1776935
Akota, Vadodara, Gujarat

# 02.06.2025: Site Visit with VMC officials at Ajwa, Pratapnagar Reservoir, detention pond at Dena Village.

**Location:** Ajwa, Pratapnagar Reservoir, Dena

**Time:** 8:30 am

**Attendee:**

Neha Sarwate
Rohit Prajapati
Jitendra Gavali
Mitesh Panchal
Krishnakant Chauhan

**Observations & Discussions:**

1. The spillway work at Ajwa dam mentioned in the Mr. Navalawala High Level Committee report, page no 47-48, point 4.1.2, has not yet begun. The said work was supposed to be completed before the onset of monsoon of 2025. Screenshot is attached herewith.
2. As informed to us by the officials, it is manually not possible to divert the water at Ajwa reservoir below 211’ above MSL.
3. It was informed by VMC officials that desilting work at two locations of Ajwa reservoir are at 30% of the estimated workload.
4. It was informed by VMC officials that desilting at Pratapura reservoir is reported to be twice the existing caring capacity of approx. 5 Lac cubic meters.
5. Desilting work at Dena village in the ravines of Surya river will result in an additional detention pond.
6. Drone survey (before & during) of the desilting works at the reservoirs of Ajwa, Pratapura and new detention pond at Dena village has been requested.
7. Map showing spatial extent of showing desilting works at Ajwa and Pratapura reservoirs has been shared with this committee.

8. Desilting work on the eastern banks along the river in the city area, is being conducted in an adhoc and haphazard manner, between Sama & Mungal Pande Bridge.
9. Desilting work at New Sama Bridge, North western bank of the river has not been conducted at certain patches.
10. Desilting work at South Western bank at New Sama Bridge, needs to be carried out till gabion wall.
11. It has been observed that the desilting work at many locations has created very steep slopes that need to be addressed at the earliest.


02/06/25 09:24 AM
22.3719008 73.4277816
Vadodara, Gujarat


02/06/25 09:40 AM
22.4070289 73.3804056
Kodarvaya, Gujarat


02/06/25 10:07 AM
22.3724281 73.4226403
Vadodara, Gujarat


02/06/25 10:20 AM
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Vadodara, Gujarat


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Rajpura, Gujarat


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Hansapura, Gujarat


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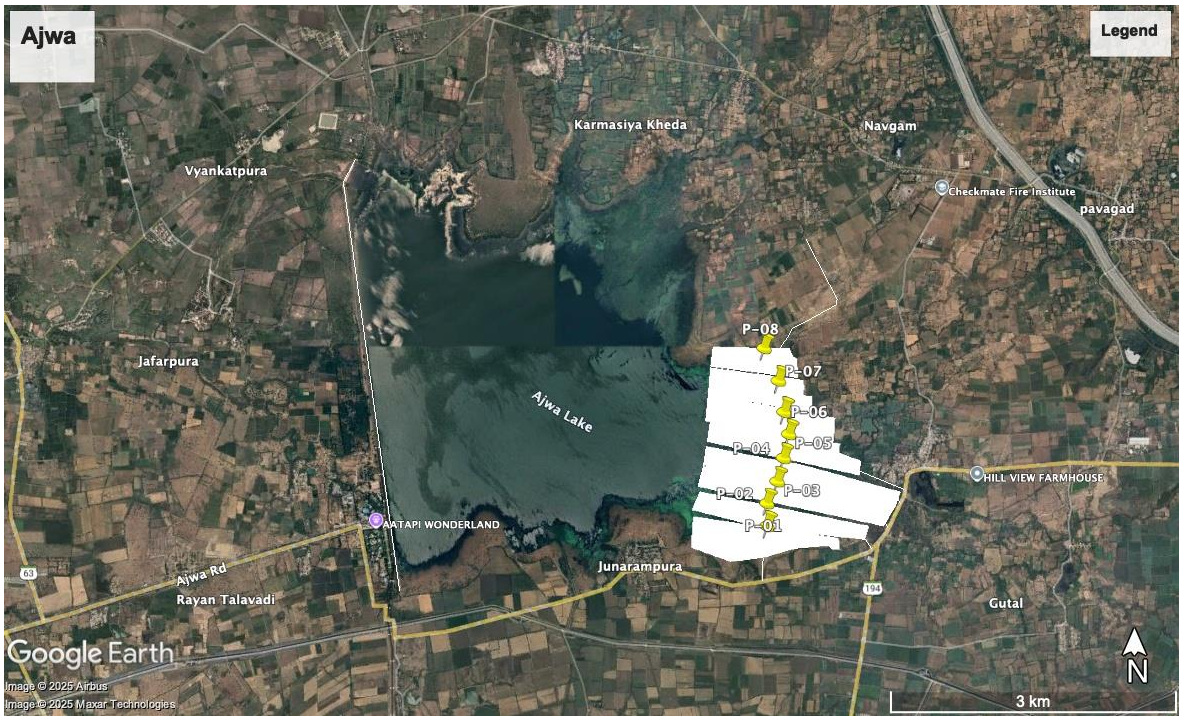
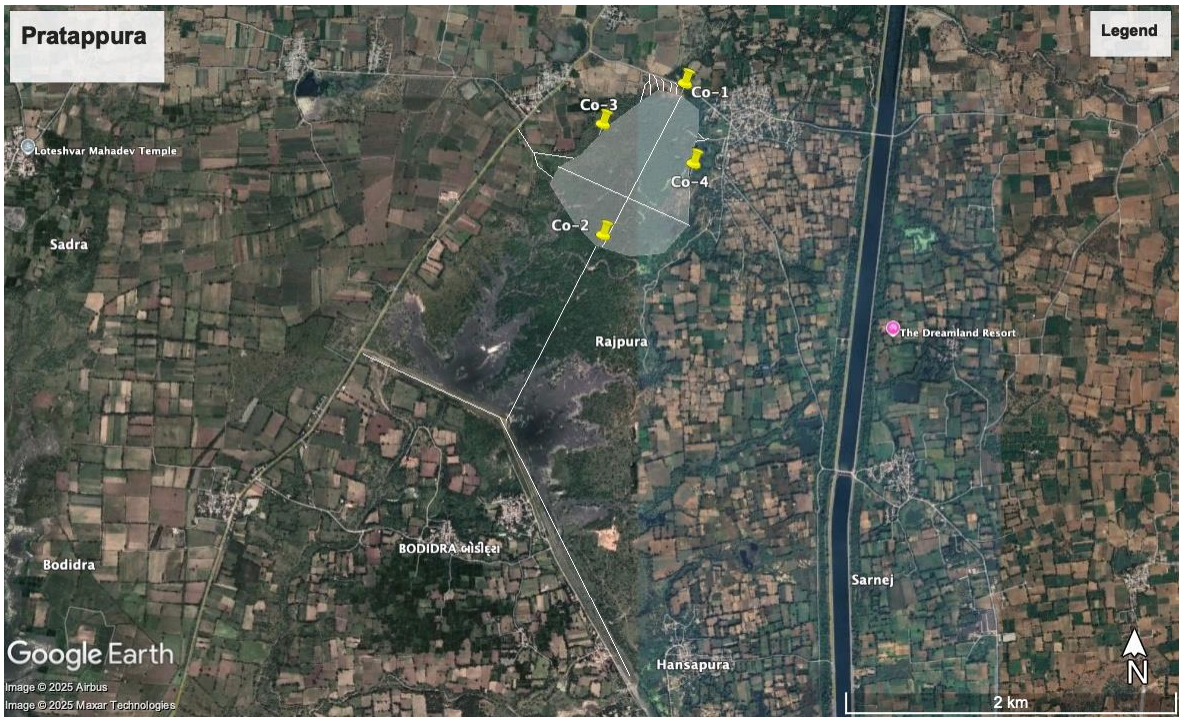
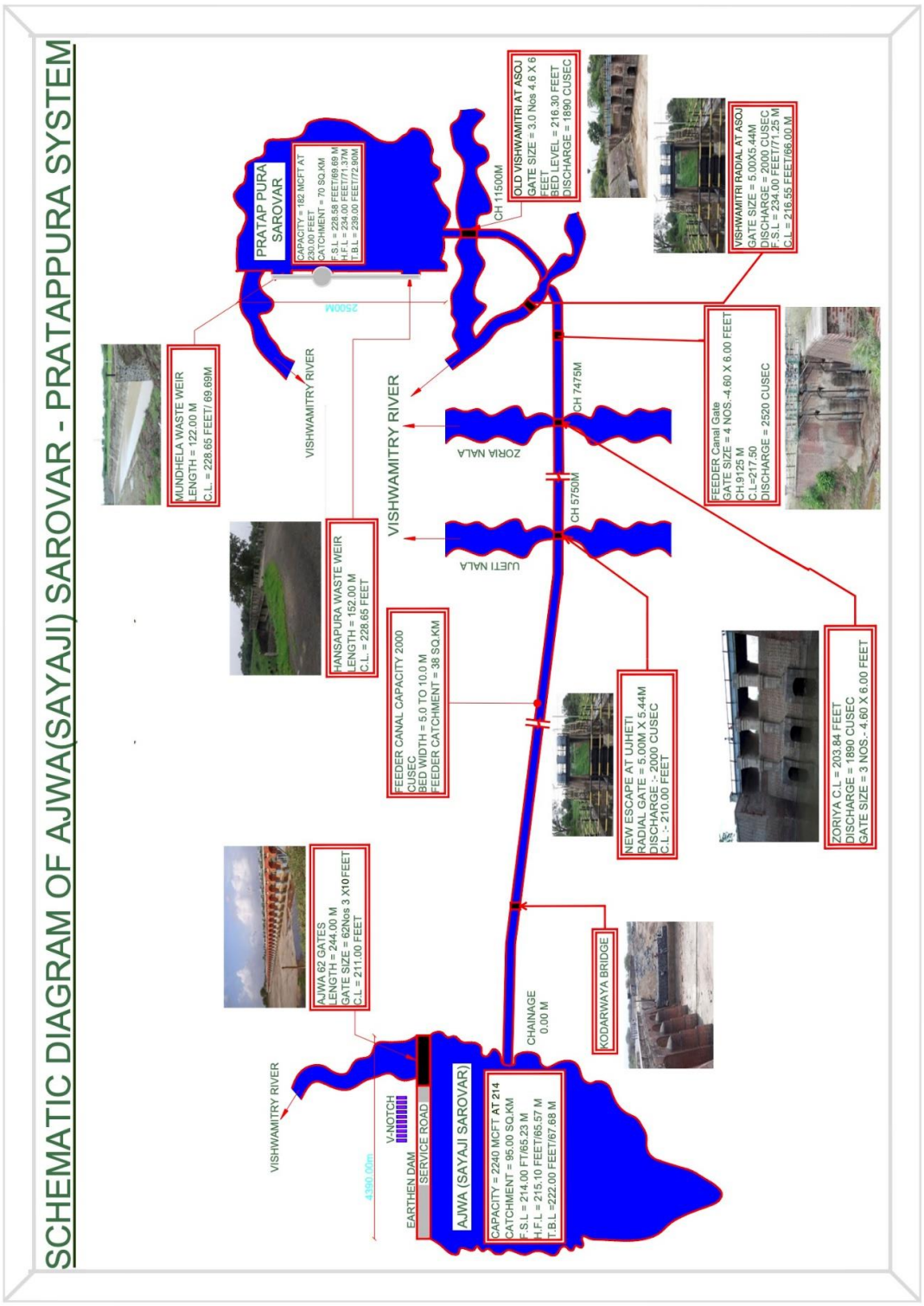
Kotali, Gujarat


Ajwa
Legend
Karmasiya Kheda
Navgam
Vyankatpura
Checkmate Fire Institute
pavagad
P-08
P-07
Jafarpura
Ajwa Lake
P-06
P-04
P-05
HILL VIEW FARMHOUSE
P-02
P-03
P-01
AATAPI WONDERLAND
Junarampura
Ajwa Rd
Rayan Talavadi
Gutal
Google Earth
Image © 2025 Airbus
Image © 2025 Maxar Technologies
3 km
N


Pratappura
Legend
Co-1
Co-3
Loteshvar Mahadev Temple
Co-4
Co-2
Sadra
Rajpura
The Dreamland Resort
BODIDRA બોડીદ્રા
Bodidra
Sarnej
Google Earth
Hansapura
Image © 2025 Airbus
Image © 2025 Maxar Technologies
2 km
N


SCHEMATIC DIAGRAM OF AJWA(SAYAJI) SAROVAR - PRATAPPURA SYSTEM
PRATAP PURA SAROVAR
CAPACITY = 182 MCFT AT 230.00 FEET
CATCHMENT = 70 SQ.KM
F.S.L = 228.58 FEET/69.69 M
H.F.L = 234.00 FEET/71.37M
T.B.L = 239.00 FEET/72.90M
2500M
VISHWAMITRY RIVER
MUNDHELA WASTE WEIR
LENGTH = 122.00 M
C.L. = 228.65 FEET/ 69.69M
HANSAPURA WASTE WEIR
LENGTH = 152.00 M
C.L. = 228.65 FEET
FEEDER CANAL CAPACITY 2000 CUSEC
BED WIDTH = 5.0 TO 10.0 M
FEEDER CATCHMENT = 38 SQ.KM
AJWA 62 GATES
LENGTH = 244.00 M
GATE SIZE = 62Nos 3 X10FEET
C.L = 211.00 FEET
VISHWAMITRY RIVER
V-NOTCH
EARTHEN DAM
SERVICE ROAD
4390.00m
AJWA (SAYAJI SAROVAR)
CAPACITY = 2240 MCFT AT 214
CATCHMENT = 95.00 SQ.KM
F.S.L = 214.00 FT/65.23 M
H.F.L = 215.10 FEET/65.57 M
T.B.L =222.00 FEET/67.68 M
CHAINAGE 0.00 M
KODARWAYA BRIDGE
NEW ESCAPE AT UJHETI
RADIAL GATE = 5.00M X 5.44M
DISCHARGE = 2000 CUSEC
C.L. = 210.00 FEET
UJETI NALA
VISHWAMITRY RIVER
ZORIA NALA
CH 11500M
CH 7475M
CH 5750M
OLD VISHWAMITRI AT ASOJ
GATE SIZE = 3.0 Nos 4.8 X 6
BED LEVEL = 216.30 FEET
DISCHARGE = 1890 CUSEC
VISHWAMITRI RADIAL AT ASOJ
GATE SIZE = 5.00X5.44M
DISCHARGE = 2000 CUSEC
F.S.L = 234.00 FEET/71.25 M
C.L = 216.55 FEET/66.00 M
FEEDER Canal Gate
GATE SIZE = 4 NOS.-4.60 X 6.00 FEET
CH.9125 M
C.L=217.50
DISCHARGE = 2520 CUSEC
ZORIYA C.L = 203.84 FEET
DISCHARGE = 1890 CUSEC
GATE SIZE = 3 NOS.-4.60 X 6.00 FEET

2024, 11-10-2024 & 26-11-2024. Lot of brainstorming took place in the meeting and it was decided to take short term and long term measures to mitigate the effect of Vishwamitri Flood in Vadodara city and its surrounding area under VUDA. Further, on the basis of interactive meetings with the prominent citizens and experts' opinion, (CWC, New Delhi and State Water Resources Department), available documents, data / maps, the consultant SECON's reports, original photographs / videos etc. the following recommendations are made by the Committee. In this context the Committee would also like to recommend that while taking into account the present limitations of the VMC and looking at the vastness of the works it's imperative that Government may like to examine technical and execution capabilities of government agencies/government departments/Municipal corporation and finalise execution agency accordingly, as though fit for the Execution of various works & measures recommended by the committee for efficient flood management in vadodara city.

**4.1 Short Term Measures - Works to be accomplished before onset of monsoon 2025. (Rs. 1150 Crore)**

4.1.1 Vishwamitri river channel modification / re-sectioning in Vadodara city having about 23.7 km length. It will help to enhance the discharge carrying capacity up to 1100 cumec and there is also requirement of river channel modification / re-sectioning in downstream of the city in total 24 km length from city end to the Pingalwada junction (junction of Vishwamitri & Dhadhar River). (Action To Be Taken by VMC In City Area And VIC, WRD-GOG In Outside City Limit)



4.1.2 For Ajwa Lake, the construction of additional spillway (with vertical gates) just downstream of the existing waste weir with reduction in crest level from 211' to 206' is recommended. Instead of option 3 and 4 mentioned above, this option is advisable as there is sufficient space to construct barrage downstream of waste weir with 25 gates of 26' (W) x 8' (H) size to discharge about 24000 cusec with total length as 240.78 m (790 ft.). Also there is an embankment downstream of the barrage location (height 222'). Therefore no need to construct additional embankments. (Work to be started in the working season 2024-25.( Action to be taken by : Design and drawing By Resources Person-Committee, Approval and issued by Design office SSNNL and Execution by VIC-WRD, GOG)

4.1.3 Dredging along the periphery of both Ajwa and Pratappura Sarovar when level dwindles in summer is recommended. (Action to be taken by VMC)

4.1.4 Storage capacity of Pratappura reservoir can be enhanced by introduction of gates in both the un-gated waste weir. Further dredging shall be done in the periphery of the reservoir during summer. (Action to be taken by VIC-WRD, GOG)

4.1.5 Construction of new buffer / pond and storage near Kotambi Village and near Bhaniyara where depression has been observed on Google map having Govt. land. This will store 2.65 + 3.3 = 5.95 MCM of water. (Action to be Taken by VUDA, VMC)

4.1.6 Increase capacity of Dhanora, Vadodara and Haripura tanks. This will store @ 11.1 MCM of water.(Action to be taken by VIC-WRD, GOG)

4.1.7 Straightening the meandering of Vishwamitri at some places where Govt. land is available. In this portion crocodiles can be rehabilitated temporarily. (Action

# 03.06.2025: Site Visit with VMC officials at Sama area opposite Siddharth Bungalows and behind Amdedkar Bhawan, Vadodara

**Location:** Sama opposite Siddharth Bungalows, Narhari Bridge behind Ambedkar Bhawan

**Time:** 11:00 am

**Attendee:**

Neha Sarwate
Rohit Prajapati
Dr. Ranjitsinh Devkar
Mitesh Panchal

**Observations & Discussions:**

1. Bank stabilization efforts have been conducted without removal of C&D waste and Municipal solid waste. This will deter the river rejuvenation efforts as the pollution will negatively impact the soil health and hence the river ecosystem.
2. The method of installation of coir work looks reasonable acceptable. However, location of works near Siddharth Bungalows and behind Ambedakar Bhawan are both deposition banks.
3. Bank stabilization interventions should be carried out at erosional banks as a priority.
4. Vegetation along the Siddharth Bungalows compound wall should not be disturbed. Even at locations like Mujmahuda bridge eastern bank next to dental collage should not have been disturbed.
5. The emergent and floating vegetation, is imperative for the newly hatched crocodile young ones. This vegetation should not be removed.
6. Historical locations of the crocodile dens should be preserved. The vegetation on either side of the dens stretching to at least twenty to fifty meters should be left undisturbed.

7. Information on organisms rescued dead or alive should be provided.
8. Update on the eggs rescued and shifted for artificial incubation should be provided.
9. A road map of the rehabilitation program for rescued organisms and hatchlings should be made and shared.
10. Vetiver grass need to be planted at 3’ distance, so that other natural vegetation take place.


03/06/25 12:00 PM
22.3188440, 73.1920099
Karelibagh, Vadodara, Gujarat


03/06/25 12:09 PM
22.3209402 73.1919460
Fatehgunj, Vadodara, Gujarat


03/06/25 12:08 PM
22.3201660 73.1909594
Fatehgunj, Vadodara, Gujarat


03/06/25 12:06 PM
22.3208202 73.1914412
Fatehgunj, Vadodara, Gujarat

# 03.06.2025: Meeting with VMC, Bullet Train, Irrigation Department, Forest Department officials

**Location:** VMC Office, Khanderao Market

**Time:** 3:00 pm

**Attendee:**

Neha Sarwate
Rohit Prajapati
Dr. Ranjitsinh Devkar
Mitesh Panchal
Krishnakant Chauhan

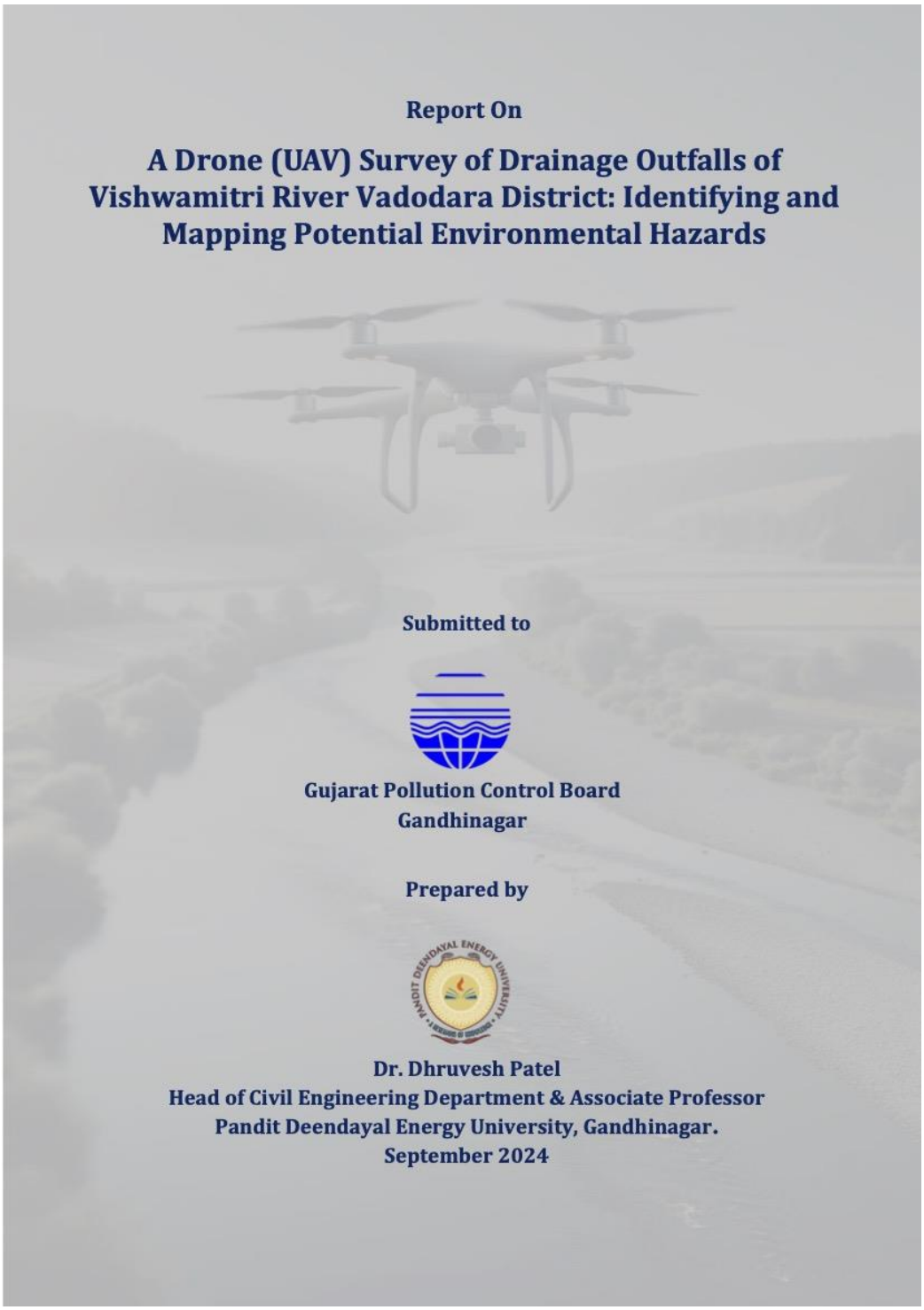
**Discussions:**

1. Bullet Train team have submitted requested report. This committee has received that same on 03.06.2025.
2. Bullet Train officials informed that they have removed some temporary obstructions in the river. The remaining removal of obstacles will be completed latest by 15.06.2025 or earlier in case of a rain event.
3. The desilting and bank stabilization works that were unable to be completed by the VMC and Irrigation Departments in their respective sections due to ongoing work of the Bullet Train, will be under taken by NHSRCL. The images of completed work will be shared.
4. It was reported by the Irrigation Department that out of their stretches of six packages, most of the work has been completed and certain stretches of two packages are in progress.
5. They also informed that the Irrigation Department are not in a position to apply eco engineering to stabilize the banks. Subsequent visit by this committee to the downstream stretches is to be planned.
6. The VMC have reported that they have conducted drone survey to identify sewage and storm water outfalls. They have identified 38

such outfalls along the 24 KM stretch of the Vishwamitri river in the VMC boundaries. Outfalls in tributaries have not been identified.

7. It has been agreed upon that the naturally activated meanders and stormwater ways will not be disturbed.
8. Officials from Forest Department and Zoo have reported that the wildlife volunteers have been rescued and relocated in the zoo. Likewise, the rescued eggs of turtles and crocodiles have also been shifted to the zoo and are under incubation. A log book for the same have been maintained by zoo. The information will be shared with the committee.

# Annexure II: Drainage Outfalls Report by GPCB



## 4. Findings

The UAV reconnaissance along the Vishvamitri River in Vadodara yielded vital data on the occurrence and spatial distribution of drainage outfalls. Utilizing high-resolution imagery and advanced analysis software, the survey successfully identified a total of 51 Outfall and 13 lifting points in the river system. These outfalls were unevenly distributed between the riverbanks, with 33 on the left and 26 on the right including drainage outfall and lift irrigation points. The survey noted that these outfalls were dispersed among several nearby villages, with specific counts being Atladra (10), Kalali (08), Khalipur (11), Maneja (08), Manjalpur (01), Maretha (08), Talsat (10), and Vadsar (8) as detailed in Table 1.

Upon closer examination, the outfalls exhibited a range of structural characteristics. The diameters of these outfall pipes varied considerably. Additionally, there was a significant variation in the Reducing Levels (R.L.) of these outfalls, with the highest R.L. observed at 32m in Manjalpur village, and the lowest at 17m in Khalipur village from mean sea level (MSL).

| Outfall ID | V_01 |
|---|---|
| Latitude | 22°17'9.11"N |
| Longitude | 73°10'16.15"E |
| Projection | WGS84/UTM Zone 43N |
| RL | 27 |
| Side of Bank | Right |
| Distance From Starting Point | 70 |
| Time | 08/11/2023 01:15 PM |
| Village | Atladra |
| Remarks: Drainage or Industrial Outlet and Municipal Solid Waste | |

*Figure 4: Summary of Outfall V_01*

The study further categorized the outfalls into four distinct types: circular pipes, rectangular shapes, trapezoidal, and irregular drainages.

Furthermore, the study provided detailed insights into specific outfalls. For instance, one figure illustrates a minor outlet contributing to an outfall. Similar detailed information for all 51 Outfall and 13 lifting points is comprehensively presented in table 1, facilitating thorough understanding

and analysis.

The effectiveness of the drone survey was not limited to the detection of the outfalls; it also proved instrumental in estimating their dimensional properties. This information is expected to be a key factor in informing future environmental and infrastructural decision-making processes.

## 5. Discussion

The problem of environmental deterioration brought on by the disposal of sewer waste is highlighted by the findings of the drone study conducted in the Vishwamitri River region. The numerous outfalls found along the Vishwamitri river segment serve as a stark reminder of the widespread pollution in this area. It was observed that the highest number of outfalls are situated in the villages of Khalipur and Atladra. This could potentially be linked to the larger presence municipal areas, thus resulting in a higher production of sewer waste.

In addition, the differences in R.L., kind, and size of the outfalls at various sites give us important information about the various approaches and procedures used in garbage disposal. For example, the existence of four distinct kinds of outfalls circular pipes, rectangular drainage systems, trapezoidal drainage systems, and irregular drainage systems indicates that there aren't any set procedures for disposing of sewer water and garbage. Furthermore, the presence of drainage pipes up to one meter in diameter may be a sign of significant waste outflow. It is also important to note the significant differences in flow depth that are observed throughout the day. This may be a sign of time-dependent waste disposal procedures, perhaps connected to municipal area. The notable variations in flow depths also point to a fluctuating amount of rubbish being dumped into the river.

The local environment is directly threatened by these garbage disposal practices because of the geological and hydrological aspects of the area. Because of the region's rich agricultural environment, permanent water availability, and fertile alluvial soils, sewer from municipal waste may have a negative effect on local agriculture and water quality

Overall, our results highlight how urgently efficient methods for tracking and regulating the release of sewer waste are needed. This entails the creation of uniform procedures for disposing of garbage, vigilant oversight of disposal sites, and robust enforcement of laws against unlawful outfalls. In addition, campaigns should be launched to increase public knowledge of the harm that sewer west does to the surrounding ecosystem and public health. The thorough data obtained from this investigation provide a solid basis for guiding these tactics and choices.

## 6. Recommendations

Based on the findings of this study, we propose the following recommendations:

1. **Standardize Waste Disposal Practices:** It is imperative that all local firms standardize their waste disposal practices due to the variety of outfalls that the investigation found. Strict rules for disposing of rubbish should be established by the Gujarat Pollution Control Board and local government entities. These rules should specifically address the kinds of waste outlets that are used and when they are open.

2. **Regular Monitoring:** It is necessary to set up a routine monitoring system to make sure that trash disposal laws are followed. This study's use of drone technology suggests that it may be useful for monitoring the area and tracking unauthorized outfalls.

3. **Severe Penalties for Non-Compliance:** Strict penalties ought to be implemented in order to discourage municipality from dumping of their sewer and waste unlawfully. For repeat offenders, this may entail severe fines, brief closures, or even permanent closures.

4. **Waste Treatment:** Establishing waste treatment plants on their property should be promoted, if not required, by the government. By doing this, the number of pollutants released into the Vishwamitri would be greatly decreased.

5. **Public Awareness and Education:** Involving the local community in these initiatives is essential. To inform the community about the detrimental impacts of sewer waste on the environment and human health, public awareness campaigns ought to be launched. Additionally, the community should be urged to report any unlawful garbage discharge operations.

6. **Collaboration with Industrial Units:** Establishing regular communication channels with the municipal units is necessary to find workable solutions to this issue. This will guarantee that the suggested solutions are workable and meet the municipal sewer water operating needs.

7. **Sustainability Planning:** Taking into account the possible effects of climate change and the rise in irrigation lifting activity in the area, a long-term sustainability strategy needs to be created. Achieving a balance between municipal area growth and environmental conservation should be the main goal of this plan.

8. **Water Quality Monitoring:** Regular monitoring of the Vishwamitri water quality is necessary to evaluate the effectiveness of these interventions. This can assist in monitoring the execution of strategies and policies and making necessary revisions.

If these suggestions are successfully put into practice, they may considerably lessen the detrimental effects that municipal waste has on the Vishwamitri, protecting the local ecology and guaranteeing the safety and well-being of the local populace.

## 7. Conclusion

An intriguing exercise that has yielded extensive observations on the current state of environmental health in the region is the drone assessment of the Vishwamitri River. The research has exposed a concerning trend of unregulated trash disposal by several municipal west establishments situated throughout the Khari region. The local population's health and way of life are negatively impacted by this disrespect for environmental standards, which also poses major risks to the ecosystem in the area. In conclusion, this report underscores the urgent need to address two critical environmental violations: the discharge of sewer water 51 outfalls into the river by nearby municipal area, and the unauthorized use of this contaminated water 13 irrigation points for irrigation. The resultant vegetables, tainted by the sewer water, pose severe health risks to consumers. It is imperative to enforce a ban on the use of such sewer water for irrigation and to implement strict penalties for those caught engaging in these illegal activities, including nearby farms and farmers.

The study's findings, in particular the identification of 51 outfalls and 13 lift irrigation points, the details of their sizes, kinds, and locations, provide a crucial foundation for upcoming decision-making procedures. Drone technology has also shown to be a very successful tool for doing these kinds of surveys, particularly in remote locations where it provides precise, high-resolution data that would be otherwise hard to obtain. But recognizing the issue and carrying out this study are just the first steps. Putting this knowledge to use is what will determine whether or not our project succeeds. The local government, the Gujarat Pollution Control Board, the local municipality themselves, and the local populace must work together to effectively tackle the issue at hand. We think it is possible to stop this environmental deterioration and work toward the Vishwamitri and the surrounding ecosystem's restoration by putting the recommendations from this study into practice.

In the end, it's critical to realize that the problem at hand is a worldwide environmental disaster that transcends the geographic boundaries of Vishwamitri River. The knowledge gained from this research and the subsequent steps we take can be a useful template for dealing with comparable environmental issues worldwide.

## 8. Acknowledgments

We extend our sincere gratitude to the Gujarat Pollution Control Board (GPCB) for entrusting this important project to us and for their invaluable guidance throughout its duration, in conjunction with the indispensable support of the GPCB regional office in Vadodara. Our heartfelt appreciation goes to the Pandit Deendayal Energy University (PDEU) for equipping us with the requisite advanced drone system and computing facilities that were essential to the successful execution and processing of the survey data. The dedication, expertise, and hard work of our research team are also commendably acknowledged for their substantial role in achieving our objectives. This project epitomizes the significance of collective efforts for environmental conservation, and we dedicate our results to the restoration of the Vishwamitri River ecosystem.

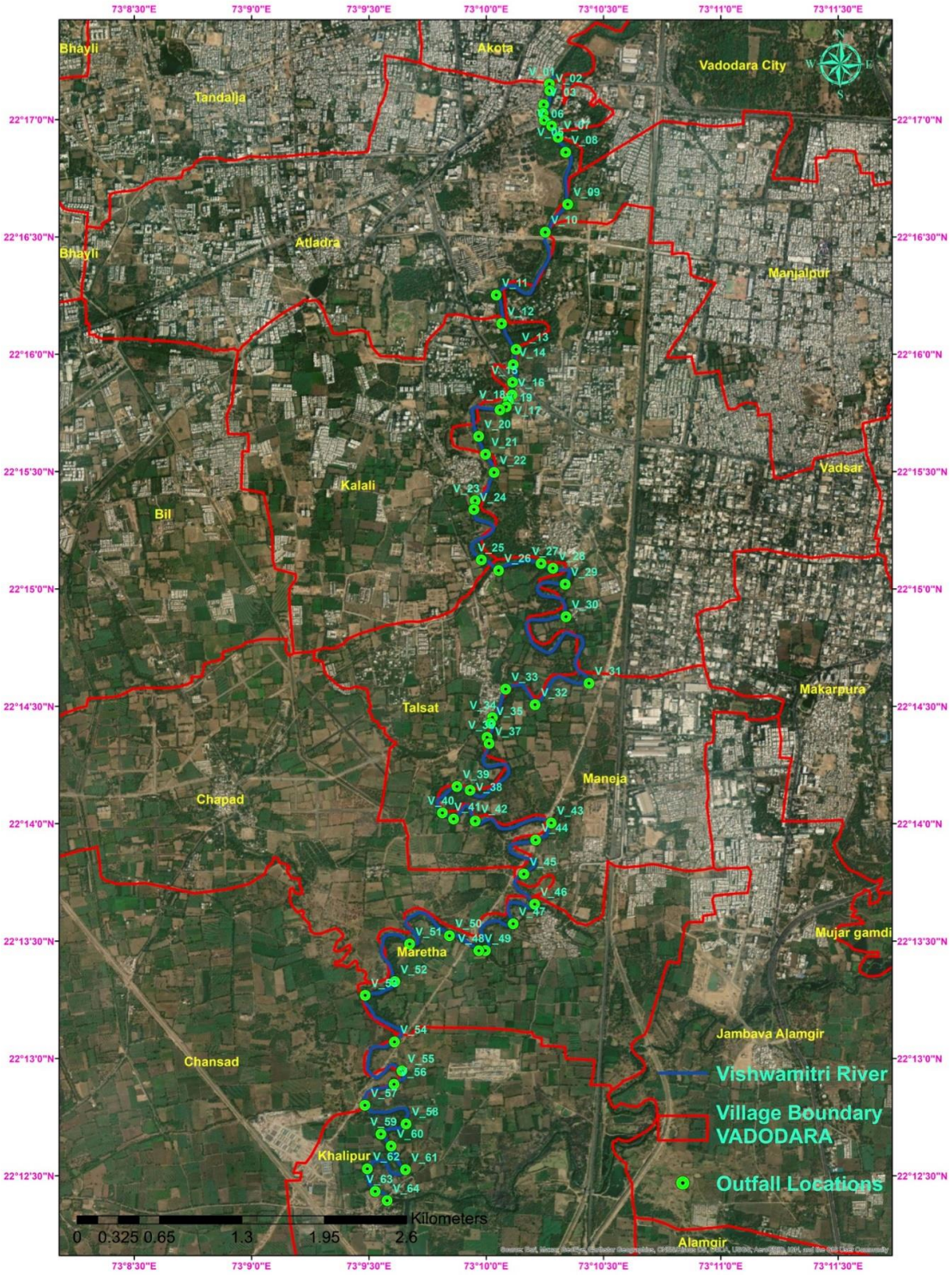
## 9. Appendices

| Sr.NO | ID NO | Latitude | Longitude | Projection | RL (Meter) | Side of Bank | Distance From Origine (Meter) | Time 07-11-2023 and 08-11-2023 | Village | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| **Vishwamitri River** | | | | | | | | | | |
| 1 | Starting Point | 22°17'11.14"N | 73°10'17.33"E | WGS84/UTM Zone 43N | 27 | | 0 | 01:15 PM | Atladra | Starting Point |
| 2 | V_01 | 22°17'9.11"N | 73°10'16.15"E | WGS84/UTM Zone 43N | 27 | Right | 70 | 01:15 PM | Atladra | Drainage or Industrial Outlet and Municipal Solid Waste |
| 3 | V_02 | 22°17'7.42"N | 73°10'16.26"E | WGS84/UTM Zone 43N | 26 | Both | 122 | 01:15 PM | Atladra | Drainage Outlet and Municipal Solid Waste |
| 4 | V_03 | 22°17'3.84"N | 73°10'14.71"E | WGS84/UTM Zone 43N | 31 | Right | 233 | 01:14 PM | Atladra | Drainage or Miscellaneous Outlet and Municipal Solid Waste |
| 5 | V_04 | 22°17'1.60"N | 73°10'14.56"E | WGS84/UTM Zone 43N | 28 | Right | 306 | 01:14 PM | Atladra | Drainage or Miscellaneous Outlet and Municipal Solid Waste |
| 6 | V_05 | 22°16'59.84"N | 73°10'14.83"E | WGS84/UTM Zone 43N | 26 | Right | 350 | 01:14 PM | Atladra | Drainage or Miscellaneous Outlet and Municipal Solid Waste |
| 7 | V_06 | 22°16'58.36"N | 73°10'16.73"E | WGS84/UTM Zone 43N | 28 | Left | 416 | 01:14 PM | Atladra | Drainage or Miscellaneous Outlet |
| 8 | V_07 | 22°16'55.45"N | 73°10'18.38"E | WGS84/UTM Zone 43N | 30 | Left | 505 | 01:13 PM | Atladra | Drainage or Miscellaneous Outlet |
| 9 | V_08 | 22°16'51.61"N | 73°10'20.31"E | WGS84/UTM Zone 43N | 28 | Right | 661 | 01:13 PM | Atladra | Drainage Outlet |
| 10 | V_09 | 22°16'38.31"N | 73°10'20.85"E | WGS84/UTM Zone 43N | 32 | Left | 1080 | 01:12 PM | Manjalpur | Miscellaneous Outlet |
| 11 | V_10 | 22°16'31.20"N | 73°10'15.10"E | WGS84/UTM Zone 43N | 26 | Right | 1350 | 01:11 PM | Atladra | Drainage Outlet |
| 12 | V_11 | 22°16'15.14"N | 73°10'2.56"E | WGS84/UTM Zone 43N | 29 | Right | 2160 | 01:08 PM | Atladra | Drainage or Miscellaneous Outlet |
| 13 | V_12 | 22°16'7.84"N | 73°10'3.94"E | WGS84/UTM Zone 43N | 32 | Right | 2390 | 12:37 PM | Kalali | Miscellaneous or Drainage Outlet |
| 14 | V_13 | 22°16'1.24"N | 73°10'7.67"E | WGS84/UTM Zone 43N | 24 | Left | 2600 | 12:36 PM | Kalali | Miscellaneous Outlet |
| 15 | V_14 | 22°15'57.34"N | 73°10'6.93"E | WGS84/UTM Zone 43N | 29 | Right | 2720 | 12:36 PM | Kalali | Drainage or Industrial Outlet |

| Sr.NO | ID NO | Latitude | Longitude | Projection | RL (Meter) | Side of Bank | Distance From Origine (Meter) | Time 07-11-2023 and 08-11-2023 | Village | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | V_15 | 22°15'52.83"N | 73°10'6.78"E | WGS84/UTM Zone 43N | 28 | Both | 2850 | 12:36 PM | Vadsar | Industrial Outlet and Municipal Solid Waste |
| 17 | V_16 | 22°15'49.62"N | 73°10'6.63"E | WGS84/UTM Zone 43N | 26 | Left | 2960 | 12:35 PM | Vadsar | Industrial Outlet and Municipal Solid Waste |
| 18 | V_17 | 22°15'48.11"N | 73°10'5.75"E | WGS84/UTM Zone 43N | 28 | Left | 3000 | 12:35 PM | Vadsar | 02 Industrial Outlet and Municipal Solid Waste |
| 19 | V_18 | 22°15'46.56"N | 73°10'5.16"E | WGS84/UTM Zone 43N | 30 | Left | 3050 | 12:35 PM | Vadsar | Industrial Outlet and Municipal Solid Waste |
| 20 | V_19 | 22°15'45.78"N | 73°10'3.51"E | WGS84/UTM Zone 43N | 27 | Left | 3100 | 12:35 PM | Vadsar | Miscellaneous or Lift Irrigation Outlet |
| 21 | V_20 | 22°15'39.00"N | 73° 9'58.04"E | WGS84/UTM Zone 43N | 28 | Left | 3540 | 12:33 PM | Vadsar | Miscellaneous or Lift Irrigation Outlet |
| 22 | V_21 | 22°15'34.44"N | 73° 9'59.81"E | WGS84/UTM Zone 43N | 28 | Both | 3670 | 12:33 PM | Kalali | Miscellaneous, Drainage Outlet and Municipal Solid Waste |
| 23 | V_22 | 22°15'29.77"N | 73°10'1.99"E | WGS84/UTM Zone 43N | 29 | Left | 3850 | 12:32 PM | Kalali | Miscellaneous or Lift Irrigation Outlet |
| 24 | V_23 | 22°15'22.55"N | 73° 9'57.16"E | WGS84/UTM Zone 43N | 30 | Right | 4110 | 12:32 PM | Kalali | 02 Miscellaneous or Lift Irrigation Outlet |
| 25 | V_24 | 22°15'20.29"N | 73° 9'56.85"E | WGS84/UTM Zone 43N | 25 | Right | 4180 | 12:31 PM | Kalali | Miscellaneous Outlet |
| 26 | V_25 | 22°15'7.43"N | 73° 9'58.73"E | WGS84/UTM Zone 43N | 30 | Right | 4760 | 12:29 PM | Kalali | Miscellaneous Outlet and Municipal Solid Waste |
| 27 | V_26 | 22°15'4.71"N | 73°10'3.16"E | WGS84/UTM Zone 43N | 30 | Right | 4910 | 12:29 PM | Talsat | Miscellaneous Outlet |
| 28 | V_27 | 22°15'6.50"N | 73°10'14.03"E | WGS84/UTM Zone 43N | 32 | Left | 5220 | 12:28 PM | Talsat | Industrial Outlet |
| 29 | V_28 | 22°15'5.28"N | 73°10'17.06"E | WGS84/UTM Zone 43N | 27 | Left | 5325 | 12:27 PM | Talsat | Drainage Outlet |
| 30 | V_29 | 22°15'1.20"N | 73°10'20.19"E | WGS84/UTM Zone 43N | 28 | Left | 5560 | 12:26 PM | Vadsar | Miscellaneous, Lift Irrigation and Drainage Outlet |
| 31 | V_30 | 22°14'52.91"N | 73°10'20.42"E | WGS84/UTM Zone 43N | 29 | Left | 6120 | 11:27 AM | Vadsar | Municipal Solid Waste |
| 32 | V_31 | 22°14'35.92"N | 73°10'26.28"E | WGS84/UTM Zone 43N | 28 | Left | 7460 | 11:24 AM | Maneja | Drainage Outlet and Municipal Solid Waste |

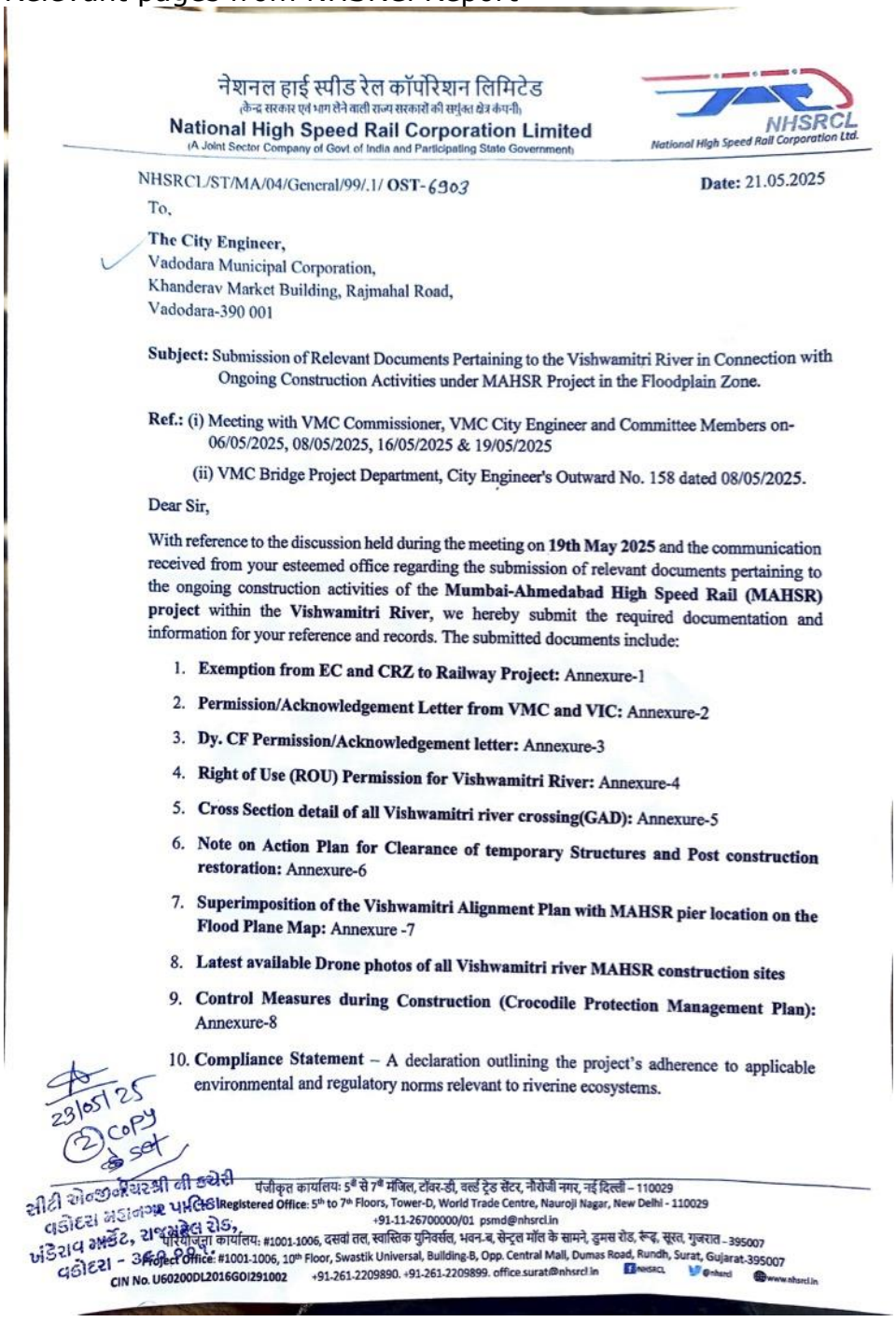
| Sr.NO | ID NO | Latitude | Longitude | Projection | RL (Meter) | Side of Bank | Distance From Origine (Meter) | Time 07-11-2023 and 08-11-2023 | Village | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 33 | V_32 | 22°14'30.44"N | 73°10'12.51"E | WGS84/UTM Zone 43N | 30 | Left | 7950 | 11:23 AM | Maneja | Lift Irrigation or Miscellaneous Outlet |
| 34 | V_33 | 22°14'34.43"N | 73°10'4.99"E | WGS84/UTM Zone 43N | 28 | Both | 8240 | 11:22 AM | Talsat | Municipal Solid Waste and Miscellaneous Outlet |
| 35 | V_34 | 22°14'27.19"N | 73°10'1.58"E | WGS84/UTM Zone 43N | 29 | Right | 8500 | 11:22 AM | Talsat | Municipal Solid Waste |
| 36 | V_35 | 22°14'25.66"N | 73°10'1.09"E | WGS84/UTM Zone 43N | 28 | Right | 8525 | 11:21 AM | Talsat | Drainage and Miscellaneous Outlet |
| 37 | V_36 | 22°14'22.11"N | 73°10'0.18"E | WGS84/UTM Zone 43N | 27 | Right | 8635 | 11:21 AM | Talsat | Miscellaneous or Lift Irrigation |
| 38 | V_37 | 22°14'20.52"N | 73°10'0.73"E | WGS84/UTM Zone 43N | 27 | Left | 8690 | 11:21 AM | Maneja | Lift Irrigation |
| 39 | V_38 | 22°14'8.58"N | 73° 9'55.85"E | WGS84/UTM Zone 43N | 27 | Right | 9480 | 10:56 AM | Maneja | Miscellaneous Outlet |
| 40 | V_39 | 22°14'9.53"N | 73° 9'52.51"E | WGS84/UTM Zone 43N | 27 | Right | 9580 | 10:55 AM | Maneja | Miscellaneous or Lift Irrigation |
| 41 | V_40 | 22°14'2.79"N | 73° 9'48.77"E | WGS84/UTM Zone 43N | 26 | Left | 9880 | 10:55 AM | Talsat | Municipal Solid Waste |
| 42 | V_41 | 22°14'1.21"N | 73° 9'51.66"E | WGS84/UTM Zone 43N | 26 | Right | 9975 | 10:54 AM | Talsat | Lift Irrigation |
| 43 | V_42 | 22°14'0.68"N | 73° 9'57.17"E | WGS84/UTM Zone 43N | 25 | Both | 10200 | 10:53 AM | Talsat | Miscellaneous Outlet and Municipal Solid Waste |
| 44 | V_43 | 22°14'0.22"N | 73°10'16.63"E | WGS84/UTM Zone 43N | 23 | Left | 10950 | 10:52 AM | Maneja | Drainage Outlet |
| 45 | V_44 | 22°13'55.85"N | 73°10'12.65"E | WGS84/UTM Zone 43N | 24 | Right | 11060 | 10:51 AM | Maneja | Miscellaneous Outlet |
| 46 | V_45 | 22°13'47.14"N | 73°10'9.65"E | WGS84/UTM Zone 43N | 24 | Left | 11740 | 10:49 AM | Maneja | Miscellaneous Drainage, and Lift Irrigation Outlet |
| 47 | V_46 | 22°13'39.45"N | 73°10'12.41"E | WGS84/UTM Zone 43N | 22 | Left | 12000 | 10:49 AM | Maretha | Drainage, Lift Irrigation and Municipal Solid Waste. |

| Sr.NO | ID NO | Latitude | Longitude | Projection | RL (Meter) | Side of Bank | Distance From Origine (Meter) | Time 07-11-2023 and 08-11-2023 | Village | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 48 | V_47 | 22°13'34.44"N | 73°10'6.91"E | WGS84/UTM Zone 43N | 25 | Left | 12420 | 04:45 PM | Maretha | Lift Irrigation |
| 49 | V_48 | 22°13'27.59"N | 73° 9'59.77"E | WGS84/UTM Zone 43N | 24 | Left | 12840 | 04:34 PM | Maretha | Lift Irrigation |
| 50 | V_49 | 22°13'27.56"N | 73° 9'58.09"E | WGS84/UTM Zone 43N | 23 | Left | 12880 | 04:34 PM | Maretha | Lift Irrigation |
| 51 | V_50 | 22°13'31.39"N | 73° 9'50.59"E | WGS84/UTM Zone 43N | 21 | Left | 13120 | 04:34 PM | Maretha | Lift Irrigation |
| 52 | V_51 | 22°13'29.28"N | 73° 9'40.42"E | WGS84/UTM Zone 43N | 24 | Left | 13830 | 04:36 PM | Maretha | Lift Irrigation or Miscellaneous Outlet |
| 53 | V_52 | 22°13'19.65"N | 73° 9'36.64"E | WGS84/UTM Zone 43N | 22 | Left | 14425 | 03:49 PM | Maretha | Lift Irrigation |
| 54 | V_53 | 22°13'16.14"N | 73° 9'29.07"E | WGS84/UTM Zone 43N | 22 | Right | 14660 | 03:50 PM | Maretha | Drainage Outlet |
| 55 | V_54 | 22°13'4.26"N | 73° 9'36.54"E | WGS84/UTM Zone 43N | 24 | Left | 15190 | 03:52 PM | Khalipur | Miscellaneous Outlet |
| 56 | V_55 | 22°12'56.83"N | 73° 9'38.43"E | WGS84/UTM Zone 43N | 21 | Left | 15875 | 03:54 PM | Khalipur | Lift Irrigation |
| 57 | V_56 | 22°12'53.43"N | 73° 9'36.44"E | WGS84/UTM Zone 43N | 24 | Left | 16040 | 03:55 PM | Khalipur | Lift Irrigation |
| 58 | V_57 | 22°12'48.06"N | 73° 9'29.00"E | WGS84/UTM Zone 43N | 19 | Right | 16350 | 03:04 PM | Khalipur | Lift Irrigation or Miscellaneous Outlet |
| 59 | V_58 | 22°12'43.29"N | 73° 9'39.50"E | WGS84/UTM Zone 43N | 20 | Left | 16790 | 03:01 PM | Khalipur | Lift Irrigation |
| 60 | V_59 | 22°12'40.71"N | 73° 9'33.08"E | WGS84/UTM Zone 43N | 24 | Right | 16980 | 03:00 PM | Khalipur | Lift Irrigation |
| 61 | V_60 | 22°12'37.63"N | 73° 9'35.69"E | WGS84/UTM Zone 43N | 22 | Left | 17050 | 03:00 PM | Khalipur | Lift Irrigation |
| 62 | V_61 | 22°12'31.58"N | 73° 9'39.35"E | WGS84/UTM Zone 43N | 17 | Left | 17340 | 02:59 PM | Khalipur | Lift Irrigation |
| 63 | V_62 | 22°12'31.82"N | 73° 9'29.59"E | WGS84/UTM Zone 43N | 24 | Right | 17680 | 02:51 PM | Khalipur | Miscellaneous or Industrial Outlet |
| 64 | V_63 | 22°12'26.03"N | 73° 9'31.63"E | WGS84/UTM Zone 43N | 23 | Right | 17800 | 02:52 PM | Khalipur | Miscellaneous or Industrial Outlet |
| 65 | V_64 | 22°12'23.68"N | 73° 9'34.66"E | WGS84/UTM Zone 43N | 22 | Right | 17980 | 02:52 PM | Khalipur | Drainage Outlet |
| 66 | End Point | 22°12'23.88"N | 73° 9'35.89"E | WGS84/UTM Zone 43N | 20 | | 18000 | 02:52 PM | Khalipur | Ending Point |
| | Total Kilometer | | | | | | 18 Kilometer | | | |


73°8'30"E
73°9'0"E
73°9'30"E
73°10'0"E
73°10'30"E
73°11'0"E
73°11'30"E
22°17'0"N
22°16'30"N
22°16'0"N
22°15'30"N
22°15'0"N
22°14'30"N
22°14'0"N
22°13'30"N
22°13'0"N
22°12'30"N
Bhayli
Akota
Vadodara City
Tandalja
Atladra
Manjalpur
Vadsar
Kalali
Bil
Talsat
Makarpura
Maneja
Chapad
Mujar gamdi
Maretha
Jambava Alamgir
Chansad
Khalipur
Alamgir
Vishwamitri River
Village Boundary
VADODARA
Outfall Locations
Kilometers
0 0.325 0.65 1.3 1.95 2.6

# Annexure III: NHSRCL Documents

Relevant pages from NHSRCl Report



नेशनल हाई स्पीड रेल कॉर्पोरेशन लिमिटेड
(केन्द्र सरकार एवं भाग लेने वाली राज्य सरकारों की संयुक्त क्षेत्र कंपनी)
National High Speed Rail Corporation Limited
(A Joint Sector Company of Govt of India and Participating State Government)

NHSRCL
National High Speed Rail Corporation Ltd.

NHSRCL/ST/MA/04/General/99/.1/ OST-6903 **Date:** 21.05.2025

To,

**The City Engineer,**
Vadodara Municipal Corporation,
Khanderav Market Building, Rajmahal Road,
Vadodara-390 001

**Subject:** Submission of Relevant Documents Pertaining to the Vishwamitri River in Connection with Ongoing Construction Activities under MAHSR Project in the Floodplain Zone.

**Ref.:** (i) Meeting with VMC Commissioner, VMC City Engineer and Committee Members on-06/05/2025, 08/05/2025, 16/05/2025 & 19/05/2025

(ii) VMC Bridge Project Department, City Engineer's Outward No. 158 dated 08/05/2025.

Dear Sir,

With reference to the discussion held during the meeting on **19th May 2025** and the communication received from your esteemed office regarding the submission of relevant documents pertaining to the ongoing construction activities of the **Mumbai-Ahmedabad High Speed Rail (MAHSR) project** within the **Vishwamitri River**, we hereby submit the required documentation and information for your reference and records. The submitted documents include:

1. **Exemption from EC and CRZ to Railway Project:** Annexure-1
2. **Permission/Acknowledgement Letter from VMC and VIC:** Annexure-2
3. **Dy. CF Permission/Acknowledgement letter:** Annexure-3
4. **Right of Use (ROU) Permission for Vishwamitri River:** Annexure-4
5. **Cross Section detail of all Vishwamitri river crossing(GAD):** Annexure-5
6. **Note on Action Plan for Clearance of temporary Structures and Post construction restoration:** Annexure-6
7. **Superimposition of the Vishwamitri Alignment Plan with MAHSR pier location on the Flood Plane Map:** Annexure -7
8. **Latest available Drone photos of all Vishwamitri river MAHSR construction sites**
9. **Control Measures during Construction (Crocodile Protection Management Plan):** Annexure-8
10. **Compliance Statement** – A declaration outlining the project's adherence to applicable environmental and regulatory norms relevant to riverine ecosystems.

23/05/25
(2) COPY
के set

सीटी इंजीनियरश्री की ओर्डर
वडोदरा महानगर पालिका
खंडेराव मार्केट, राजमहेल रोड,
वडोदरा - 390 001

पंजीकृत कार्यालय: 5वें से 7वें मंजिल, टॉवर-डी, वर्ल्ड ट्रेड सेंटर, नौरोजी नगर, नई दिल्ली – 110029
Registered Office: 5th to 7th Floors, Tower-D, World Trade Centre, Nauroji Nagar, New Delhi - 110029
+91-11-26700000/01 psmd@nhsrcl.in
परियोजना कार्यालय: #1001-1006, दसवां तल, स्वास्तिक युनिवर्सल, भवन-ब, सेन्ट्रल मॉल के सामने, डुमस रोड, रुन्ढ, सूरत, गुजरात - 395007
Project Office: #1001-1006, 10th Floor, Swastik Universal, Building-B, Opp. Central Mall, Dumas Road, Rundh, Surat, Gujarat-395007
CIN No. U60200DL2016GOI291002 +91-261-2209890. +91-261-2209899. office.surat@nhsrcl.in @nhsrcl www.nhsrcl.in

NHSRCL
National High Speed Rail Corporation Ltd.

We affirm that all construction activities undertaken within the Vishwamitri River are in compliance with applicable norms and regulations, and necessary precautions have been implemented to minimize any adverse environmental impact.

If the VMC or Committee require any additional documentation, clarifications, or site presentations, we are ready to provide the same at the earliest convenience.

We appreciate the Committee's efforts to ensure sustainable and environmentally sound development in the Vishwamitri River region and remain committed to full cooperation.

Yours Faithfully,

21/05/25

**(Akshaya Kumar)**
Chief Project Manager /Co-ordination Surat


MAHSR C4 25 Apr 2025 SEC-05 CH-375.4 to CH-382.8km


MAHSR C4 25 Apr 2025 SEC-05 CH-375.4 to CH-382.8km


MAHSR C4 25 Apr 2025 SEC-05 CH-375.4 to CH-382.8km


MAHSR C4 25 Apr 2025 SEC-05 CH-383.8 to CH-389.2km


MAHSR C4 25 Apr 2025 SEC-05 CH-383.8 to CH-389.2km


MAHSR C4 25 Apr 2025 SEC-05 CH-383.8 to CH-389.2km


MAHSR C4 25 Apr 2025 SEC-05 CH-383.8 to CH-389.2km

# Annexure IV: Drone survey of Vishwamitri River outfalls from VMC

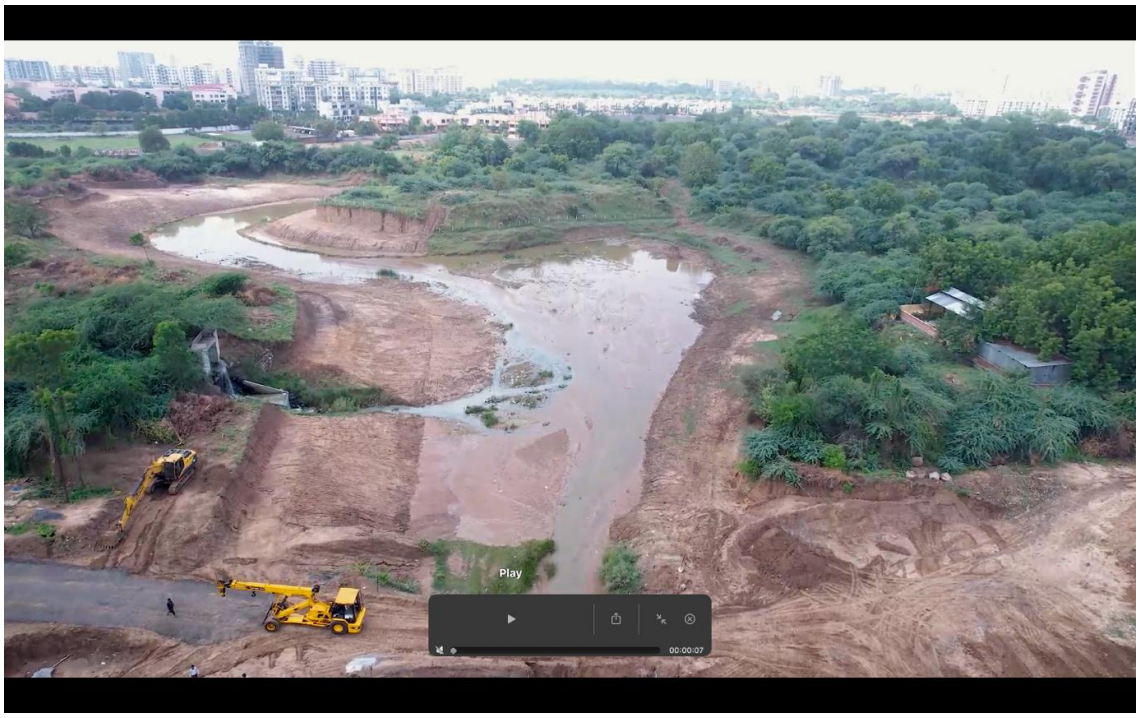
| Package 01 Location Co-ordinate number | | |
|---|---|---|
| | | |
| 40 | 22.2405753, 73.1669709 | |

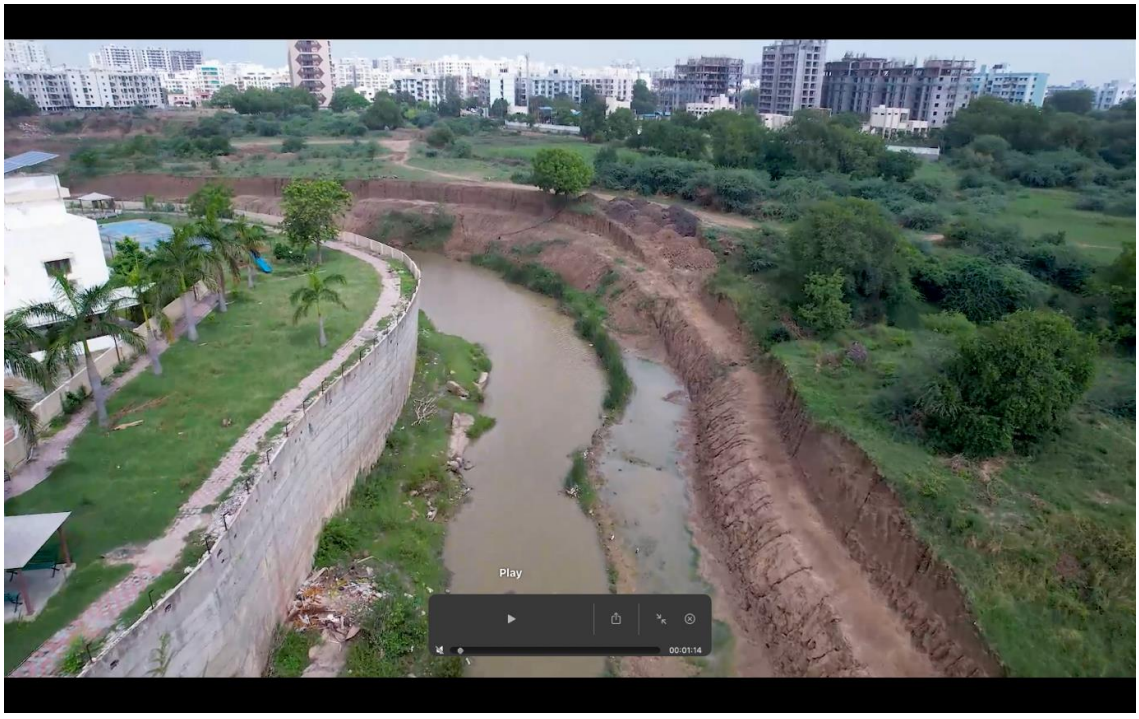
| Package 02 Location Co-ordinate number | | |
|---|---|---|
| | | |
| | | |
| 31 | 22°15'53"N 73°10'05"E | |
| 31A | 22°15'52"N 73°10'07"E | |
| 31B | 22°15'56"N 73°10'06"E | |
| 31C | 22°15'58"N 73°10'06"E | |
| | | |
| | | |
| 32 | 22°16'07"N 73°10'03"E | |
| | | |
| | | |
| 33 | 22°16'30"N 73°10'14"E | |
| 33A | 22°16'28"N 73°10'19"E | |
| | | |
| | | |
| 34 | 22°16'49"N 73°10'14"E | |
| 34A | 22°16'51"N 73°10'19"E | |
| | | |
| | | |
| 35 | 22°16'55"N 73°10'18"E | |
| 35A | 22°17'02"N 73°10'15"E | |
| | | |
| | | |
| 36 | 22°17'03"N 73°10'15"E | |
| 36A | 22°17'07"N 73°10'15"E | |
| | | |
| | | |
| 37 | 22°15'01"N 73°10'21"E | |
| | | |
| | | |
| 38 | 22°15'14"N 73°10'02"E | |

| Package 03 Location Co-ordinate number | | |
|---|---|---|
| | | |
| 13 | 22°18'32"N 73°11'23"E | |
| 14 | 22°18'31"N 73°11'21"E | |
| 15 | Lat 22.2857816, Long 73.1710867 | |
| 16 | Lat 22.288904° Long 73.172506° | |
| 17 | Lat 22.3191434, Long 73.1912861 | |
| 18 | Lat 22.3177204, Long 73.1900580 | |
| 19 | Lat 22.3164376, Long73.1892758 | |
| 19A | Lat 22.3156563, Long 73.1899101 | |
| 20 | 22°17'33.08"N 73°10'47.53"E | |
| 21 | 22°17'33.65"N 73°10'48.02"E | |
| 21A | 22°17'37.15"N 73°10'49.37"E | |
| 21B | 22°17'38.09"N 73°10'49.62"E | |
| 21C | 22°17'39.29"N 73°10'50.07"E | |
| 21D | 22°17'39.78"N 73°10'50.38"E | |
| 21E | 22°17'45.62"N 73°10'52.16"E | |
| 21F | 22°17'46.98"N 73°10'52.51"E | |
| 22 | 22°17'55.85"N 73°10'56.20"E | |
| 23 | | |
| 24 | 22°17'56"N, 73°10'56"E | |
| 25 | 22°18'03"N, 73°10'67"E | |
| 26 | 22°18'08"N, 73°11'01" E | |
| 27 | 22°18'11" N, 73°11'05"E | |
| 28 | 22°18'19"N, 73°11'11" E | |
| 29 | 22°18'45" N, 73°11'22" E | |
| 30 | 22°18'45"N, 73°11'24"E | |
| 30A | 22°18'50"N, 73°11'23"E | |

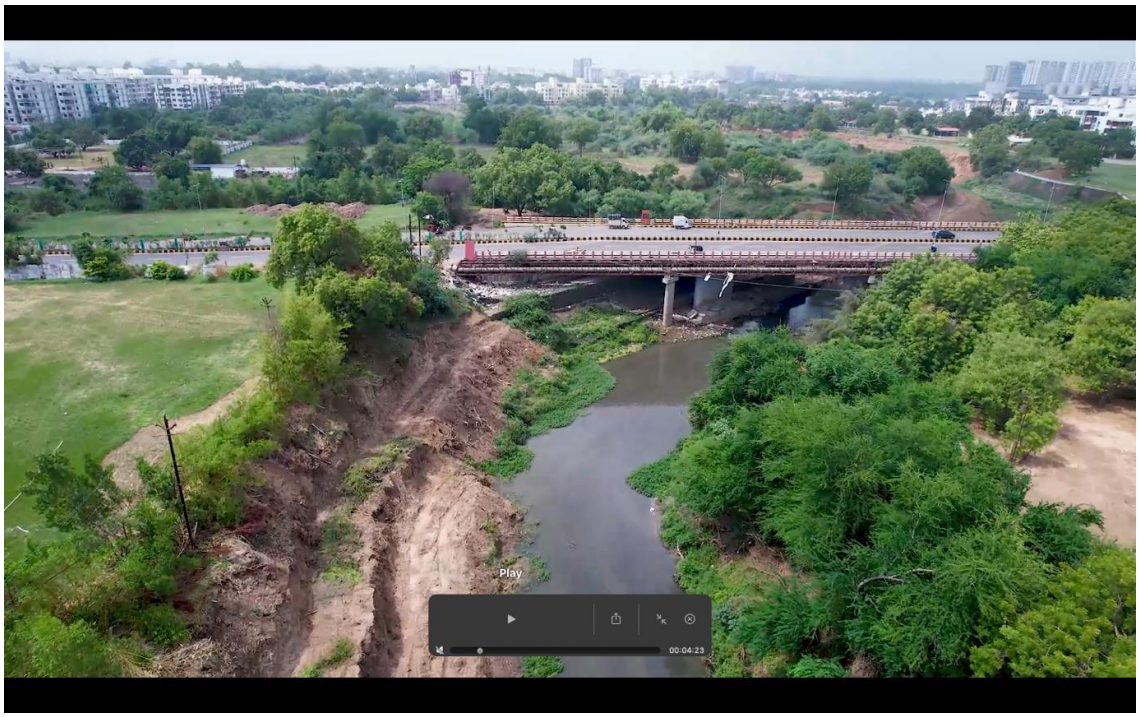
| Package 04 Location Co-ordinate number | |
|---|---|
| Sr. No | Location |
| 1 | 22°21'22.7"N 73°12'48.6"E |
| 2 | 22°21'08.5"N 73°12'27.0"E |
| 3 | 22°21'08.5"N 73°12'27.0"E |
| 4 | 22°20'49.1"N 73°12'35.1"E |
| 5 | 22°20'17.7"N 73°12'17.1"E |
| 6 | 22°20'17.1"N 73°12'12.8"E |
| 7 | 22°20'14.8"N 73°12'05.8"E |
| 8 | 22°19'47.9"N 73°11'50.8"E |
| 9 | 22°19'39.0"N 73°11'52.3"E |
| 10 | 22°19'33.1"N 73°11'44.9"E |
| 11 | 22°19'31.2"N 73°11'43.4"E |
| 12 | 22°19'27.2"N 73°11'42.2"E |

## Screenshots from Drone Survey

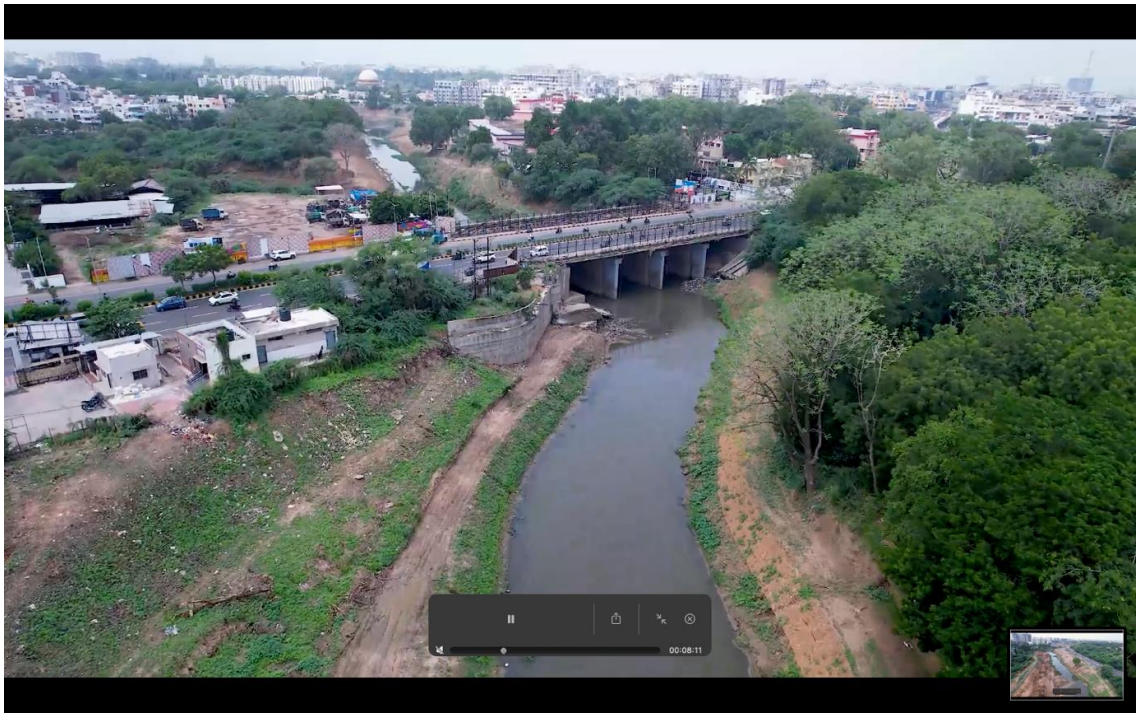


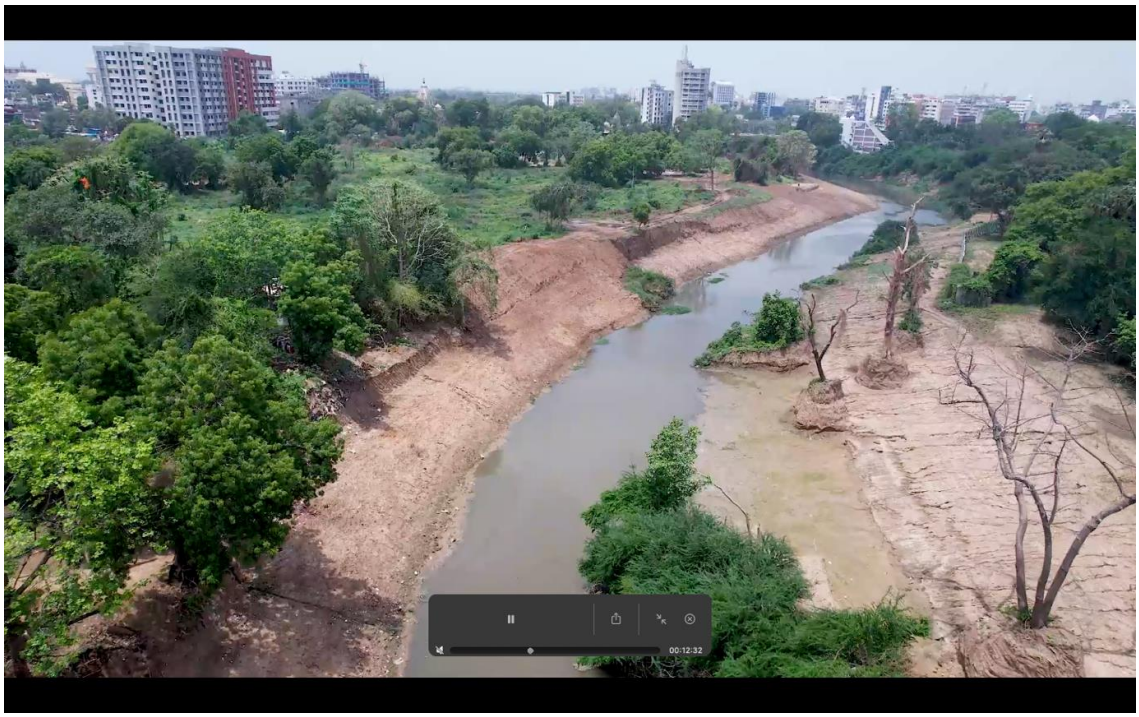

Pause
00:06:00

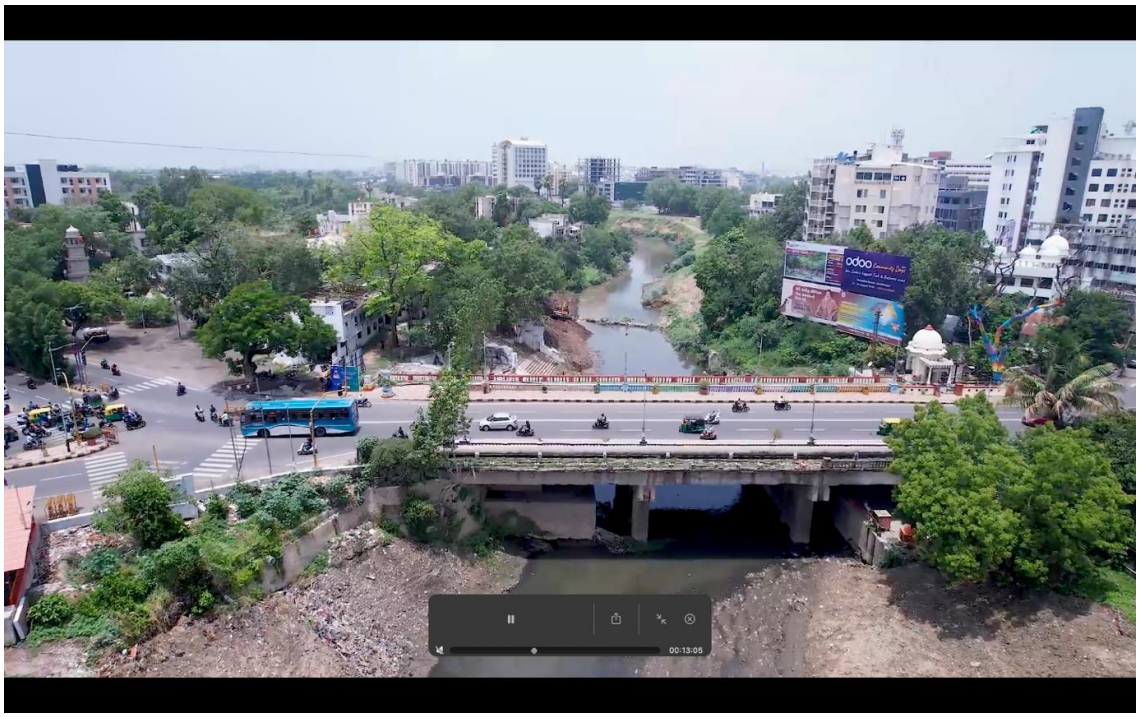

Play
00:04:23

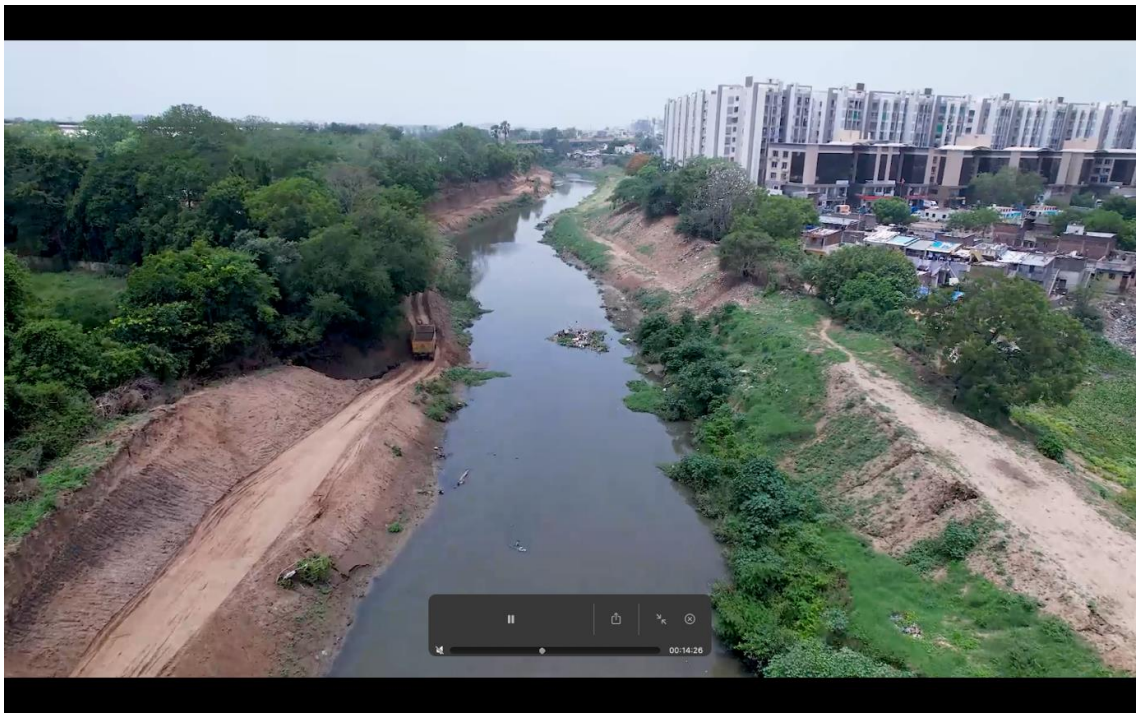

00:07:13


00:08:11

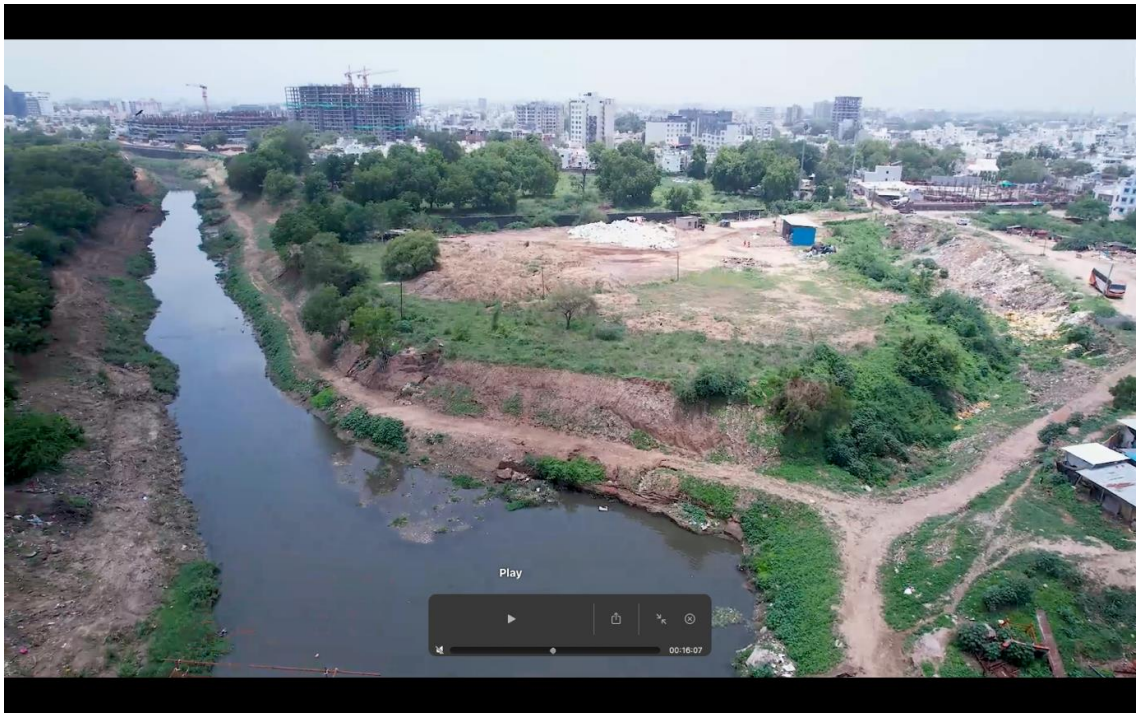

Play
00:10:35


00:12:32


00:13:05


00:14:26


00:16:00


Play
00:16:07


00:19:03


00:21:09


00:24:53