

Journey from The Classroom to the City



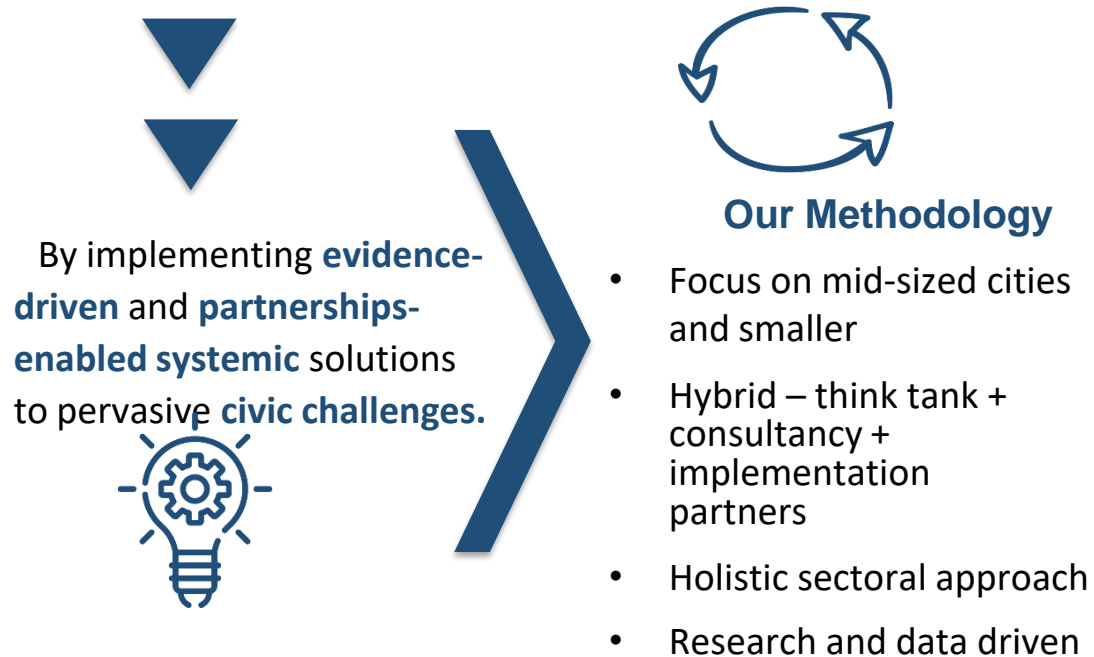
<http://www.carpeindia.org/>

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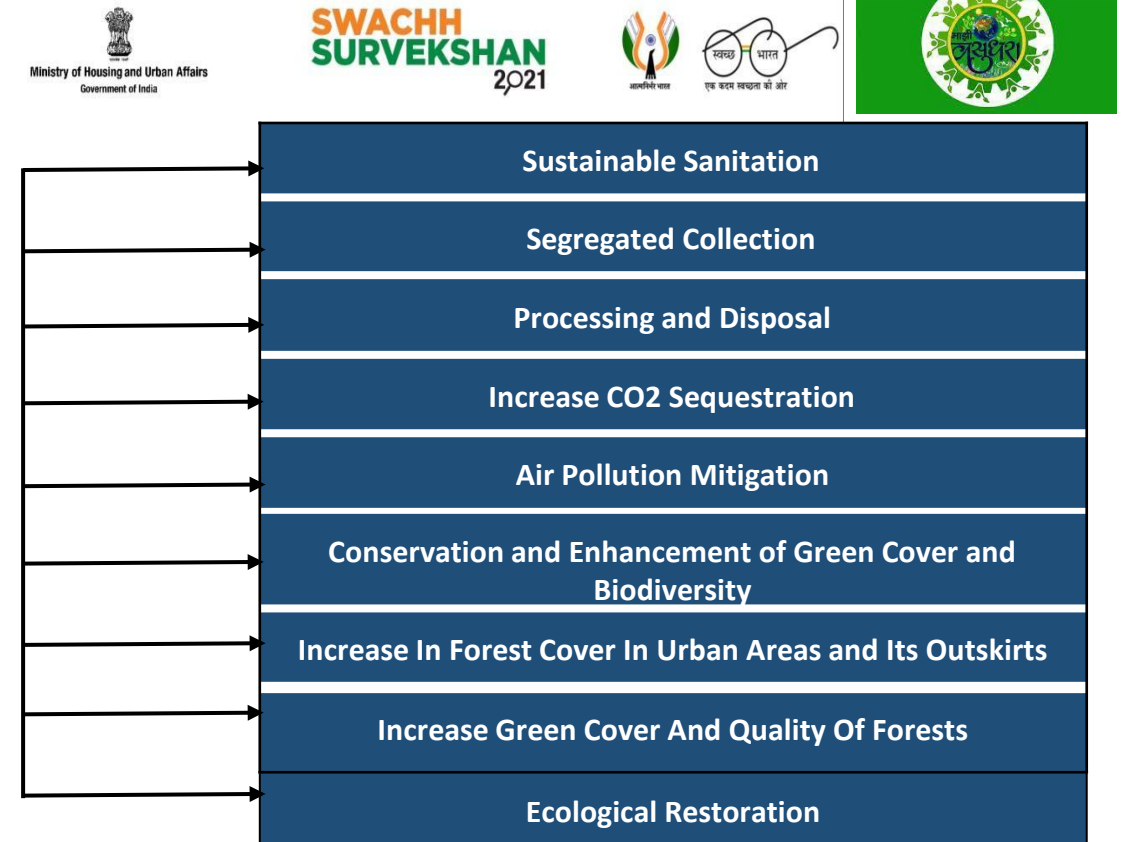
Environmental Systems Solutions for Cities, Towns and Villages

Solid Waste Management | Green Cover Management | Water Body Restoration

Our **vision** is to achieve **inclusive** and **sustainable** villages, towns and cities.



Our services are aligned with the goals of Swachh Bharat Mission, Green India Mission and Majhi Vasundhara



Our services are aligned with the SDGs charted by the United Nations



We deliver services impacting the following sectors to address the challenges:



Solid Waste Management

Grounded in the core principles of waste reduction, resource recovery, capacity building management, and have developed in-house BOTRAM method for transformation of SWM systems has been tried and tested across 14 territories in India and in Bali in Indonesia and Buenos Aires in Argentina. The BOTRAM process helps ULBs implement the MSW Rules 2016 and be ready for the Swachh Survekshan. Cities implementing BOTRAM have consistently performed well on the Swachh Survekshan. BOTRAM stands for the 6 steps we take to overhaul the waste management processes of a city, town or village by utilizing existing government machinery and resources.

With the implementation of

BOTRAM, we achieved:

- 80% elimination of Garbage Vulnerable Points
- 90% Waste diverted from landfills
- 100% Of sanitation workers and waste picker integrated in the system are trained, certified and job enhanced



**Material Recovery Facility,
Zone 6
Aurangabad**



**Safai Sathis at Material Recovery
Facility, Zone 6 Aurangabad**



Green Cover Management

We believe that nature has the most efficient and robust systems and designs. Our role is to understand and incorporate them in human habitats. We strive to increase the depleting green of cities and towns to combat multiple problems like air quality, water retention, temperature control and as research is increasingly showing, mental health as well. To be to do this, we :

- Increase green cover in an ecologically sound manner to achieve environmental standards by Miyawaki Native Forest Plantation and Ecoscaping
- Support, generate research and data that is relevant to the ecological sector
- Pilot & develop waste water recovery and reuse methodologies to support plantation efforts x municipalities & Through such partnerships we have been able to implement projects such as **Green Aurangabad Mission** and **Green Schools Mission**



**6 months and 1 year old forests planted in Aurangabad by
Miyawaki Native Forest Plantation methodology**



Water Body Restoration

This is our service offering which has been built up on our work in Solid Waste and Green Cover Management. Our latest project is the restoration of the Kham river in Aurangabad. This project is being carried out by us in partnership with Varroc industries and the Aurangabad Municipal Corporation and is aimed at reducing the solid waste and water pollution in the river. This restoration has been designed with a holistic approach tha focusses on restoring and maintaining the health of the river through a long-term commitment from the residents, private and public sector stakeholders. All the restoration efforts have been based on research and application of appropriate technological, social, infrastructural and governance solutions.



Criss Cross Bunds built on the river



**Kham Clean Up Drive led by
residents**

Our **team** is a dynamic group of **60 people** with **sector specific skillsets**.



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Young India Fellow
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Environmental Systems Solutions for Cities, Towns and Villages

Solid Waste Management | Green Cover Management | Water Body Restoration

Some of our partners include:



Awards and Recognition

Winner of Maharashtra State & Kerala State Start-up Awards, and National Start up awards 2020 finalist.



Winner of UnLtd India, Azim Premji Stories of Change, Green India Awards & Ashoka Young Changemakers Finalist amongst others



Certification course and guidance by CSE on Rainwater Harvesting and Decentralized Wastewater Treatment enabled:

- ➔ My understanding of the fundamental principles of water conservation and decentralized waste water treatment systems (DWWTS)
- ➔ Exposure to ecologically sound water management systems.
- ➔ And become part of a network of practitioners.

Osborn – 8 KLD



Grind Masters Machines Pvt. Ltd., Waluj – 10KLD



Uruli Kanchan Nala Restoration



MIT Aurangabad Nala Restoration



KHAM RIVER RESTORATION – The Research Study in 2020



KHAM RIVER RESTORATION – The Approach



Stakeholder Interviews



Flow Measurement



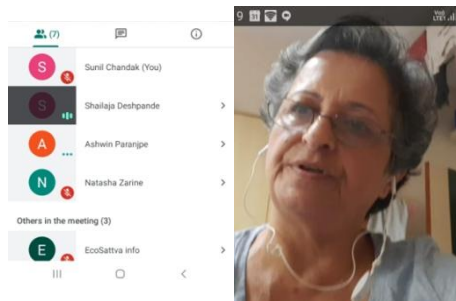
Floristic Assessment



Water Sample Testing



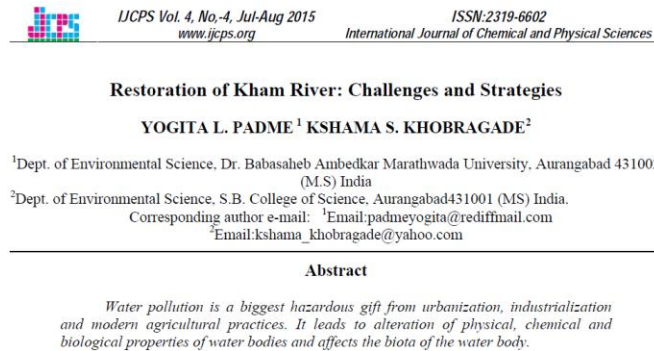
Citizen Surveys



Expert Interactions



Drone Survey

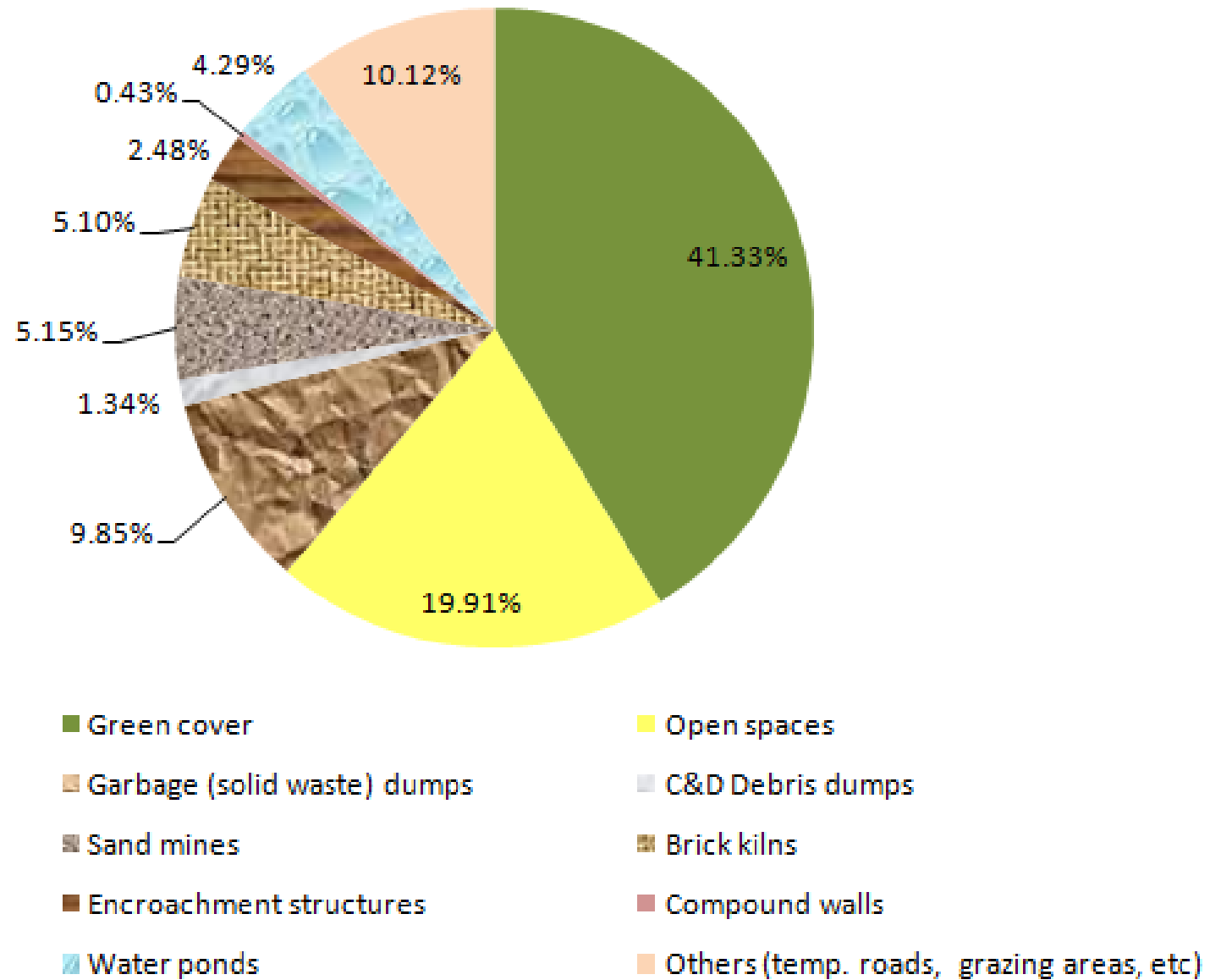


Review of Scientific Studies on Kham

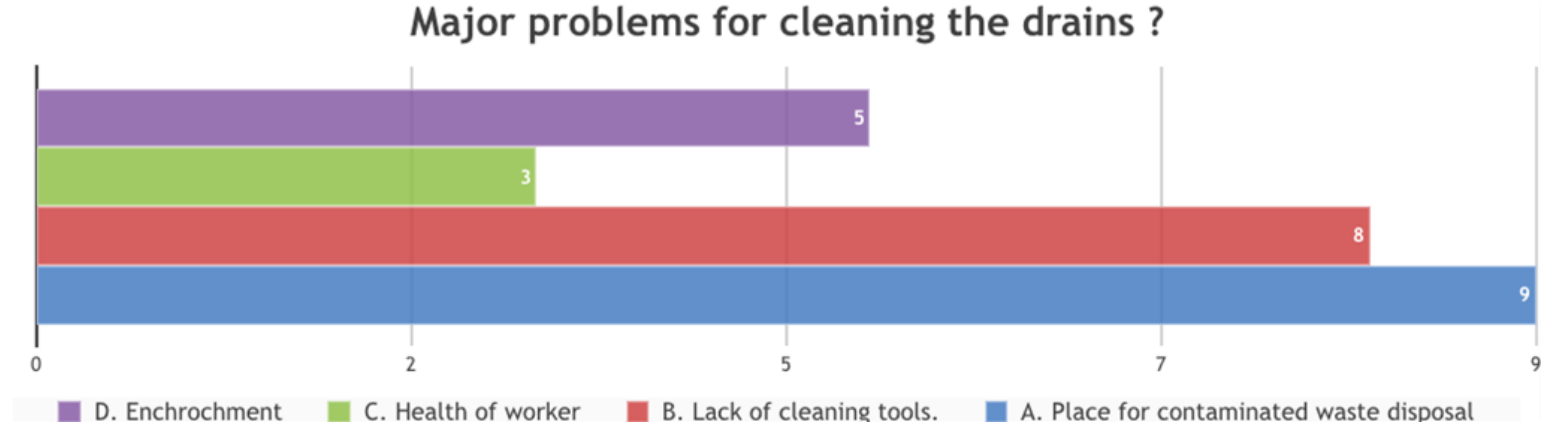
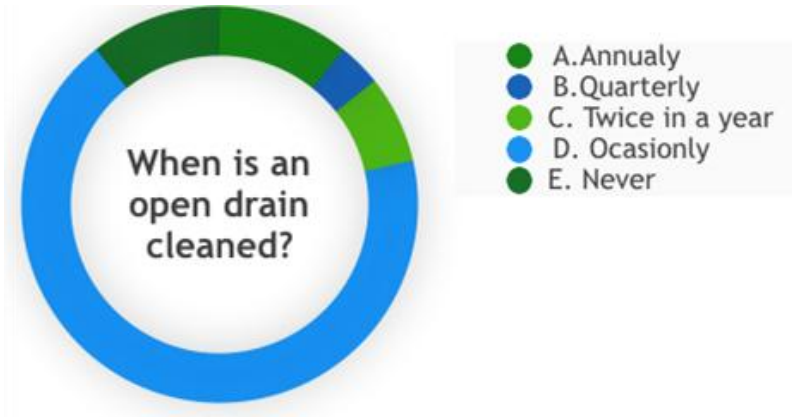


Exploration of appropriate solutions

KHAM RIVER RESTORATION – Research Insights



Survey of Sanitation Supervisors and Inspectors



Respondents randomly selected in city market areas

- ~ 40% of individuals surveyed (600) did not know that the Kham River exists in Aurangabad city, 36% had not heard of Neher-e-Ambari.
- 15% responded that carrying sewage is a function of a river.
- 84.2% said they would be interested in participating in a river/ nala cleaning campaign

Residents Living Close to Bridges in the Study Area

- 62% living along the river for over 10 years
- 83% were not aware of the cleaning schedule and frequency
- Three top challenges due to proximity to nala: foul odour, flies and mosquitoes, stray animals
- 27% stated that they do not receive regular collection of waste
- 16% admitted to dumping waste in the nala/ river

Riverfront EcoPark at Cantonment Bridge

Rationale: This is the existing site of Varroc's intervention and a point of entry into Aurangabad city

Focus: Ecological Restoration, public engagement, green space creation.

Outcome: ~14000 m² of area covered in greening, 90-100 no. of species planted, ~20,000 no. of saplings

Upstream Interventions on the River & Nala

Rationale: Demonstrating upstream and systemic interventions that address the root causes of Kham River pollution and degradation, and clean out legacy waste.

Focus: Mechanical Cleaning of river & Nala, Pitching of Banks, Solid Waste Management Planning & Awareness, In-situ Waste Water Treatment, Barricading & Plantation

Outcome: 15 kms stretched cleaned, 5 kms pitched, 100 no. of sanitation workers trained, ~44 no. of GVPs eliminated

City-wide Kham River Campaign

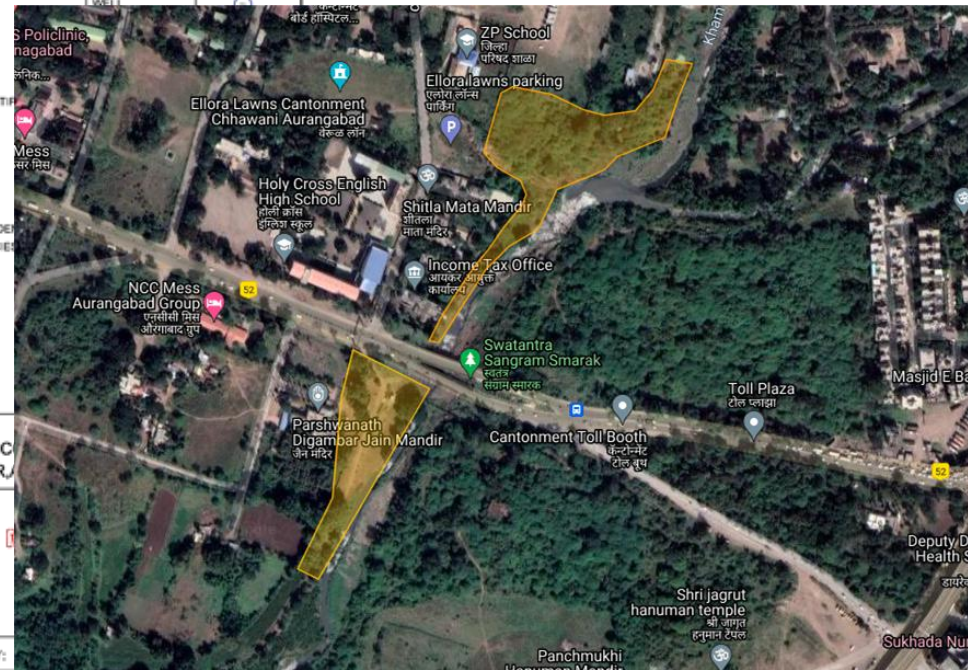
Rationale: Building a broad-based network and movement to support all interventions and create ownership regarding the Kham

Focus: Awareness and Engagement

Outcome: Awareness about the river restoration project, behavioural change, resident participation

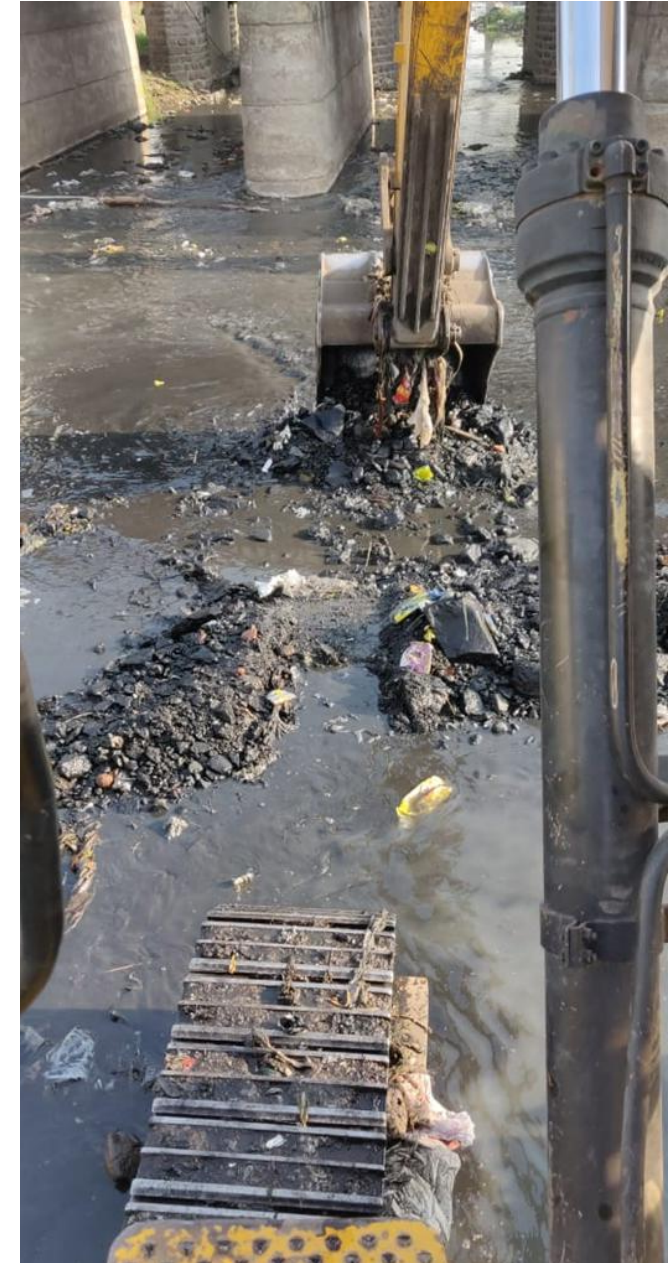


KHAM RIVER RESTORATION – Ecological Riverfront Development

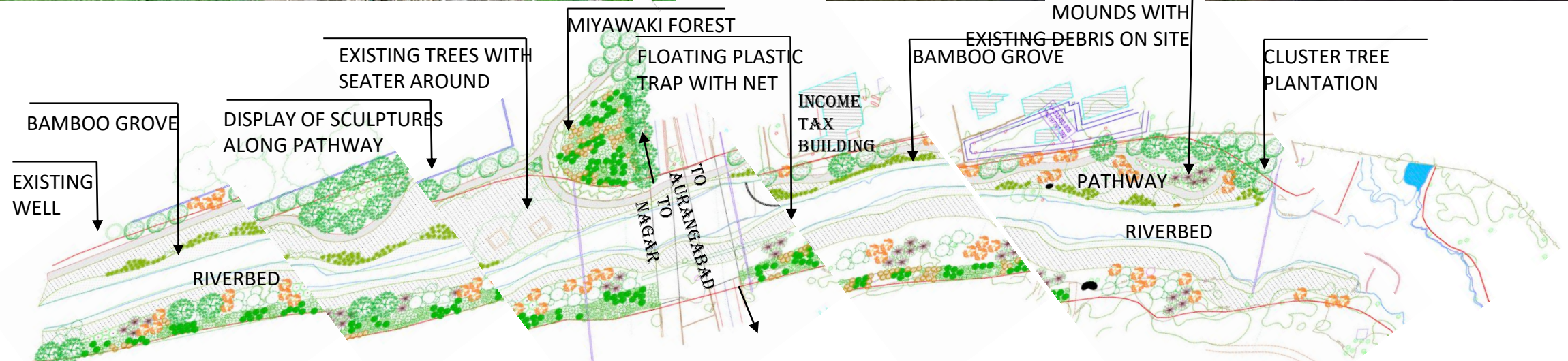




KHAM RIVER RESTORATION – Riverfront Development launch on 25th Jan



KHAM RIVER RESTORATION – Riverfront Development



KHAM RIVER RESTORATION – EcoPark Development



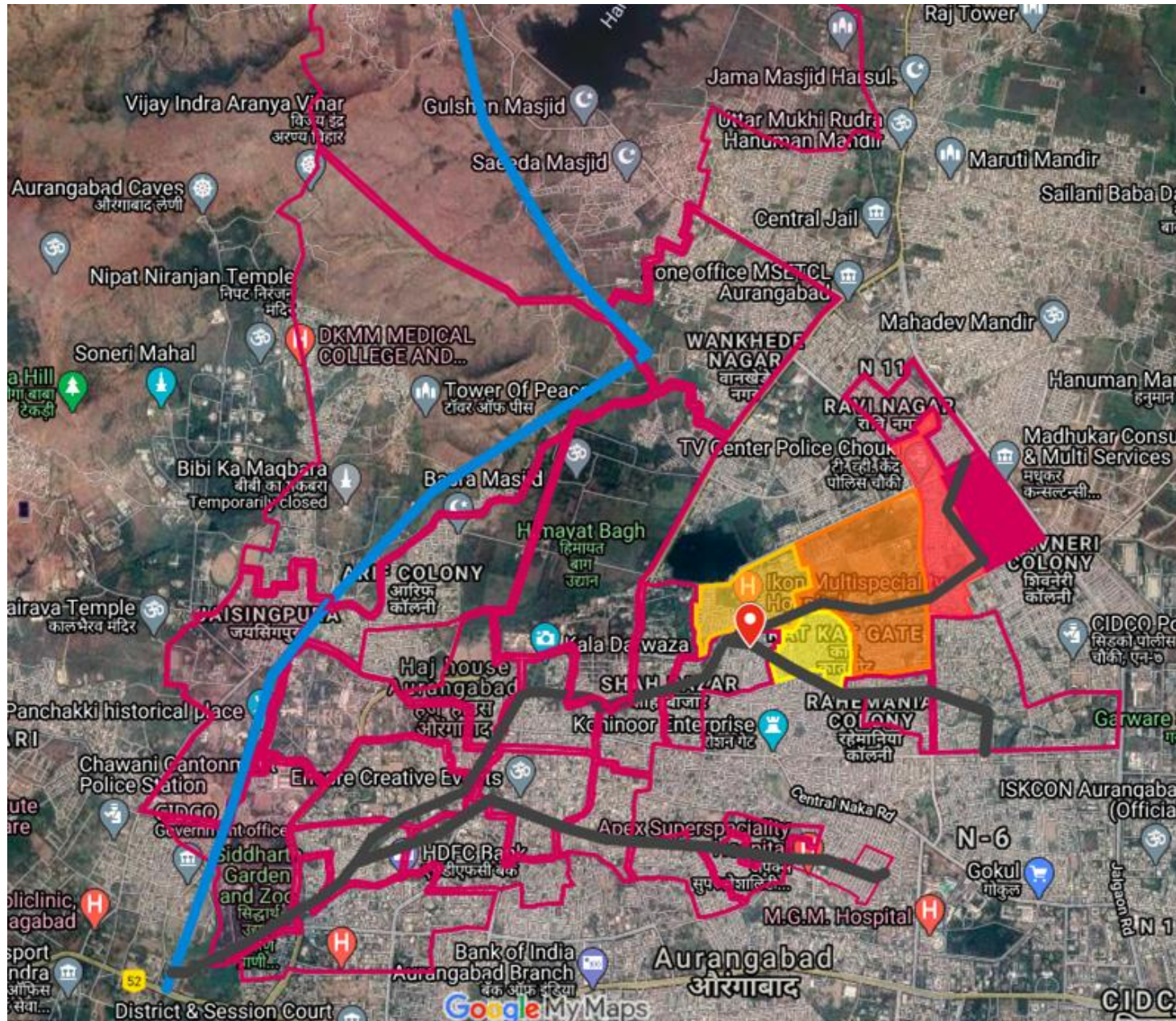
RIVER FRONT DEVELOPMENT.



KHAM RIVER RESTORATION – River Front Development and upstream interventions



KHAM RIVER RESTORATION – Upstream Interventions



- Systemic Interventions for improved SWM in 5 pilot wards (BOTRAM)
 - Route mapping and optimisation
 - Training for safai karmcharis
 - Resident awareness
 - Resource recovery planning
- Plastic Trapping Solutions
 - RfP floated and two vendors shortlisted
- Creation of a Kham River Task Force for cleaning of drains and creating an SOP
- Pilot of technological/ mechanical cleaning solutions
- Barricading
 - Design and execution for bridges, open nalas
 - Data collection

KHAM RIVER RESTORATION – Upstream Interventions



IMPACT: UP TO 90% OF THE WASTE RECOVERY POTENTIAL IS ACHIEVED¹ VERSUS 10-20% WITHOUT THIS INTERVENTION.

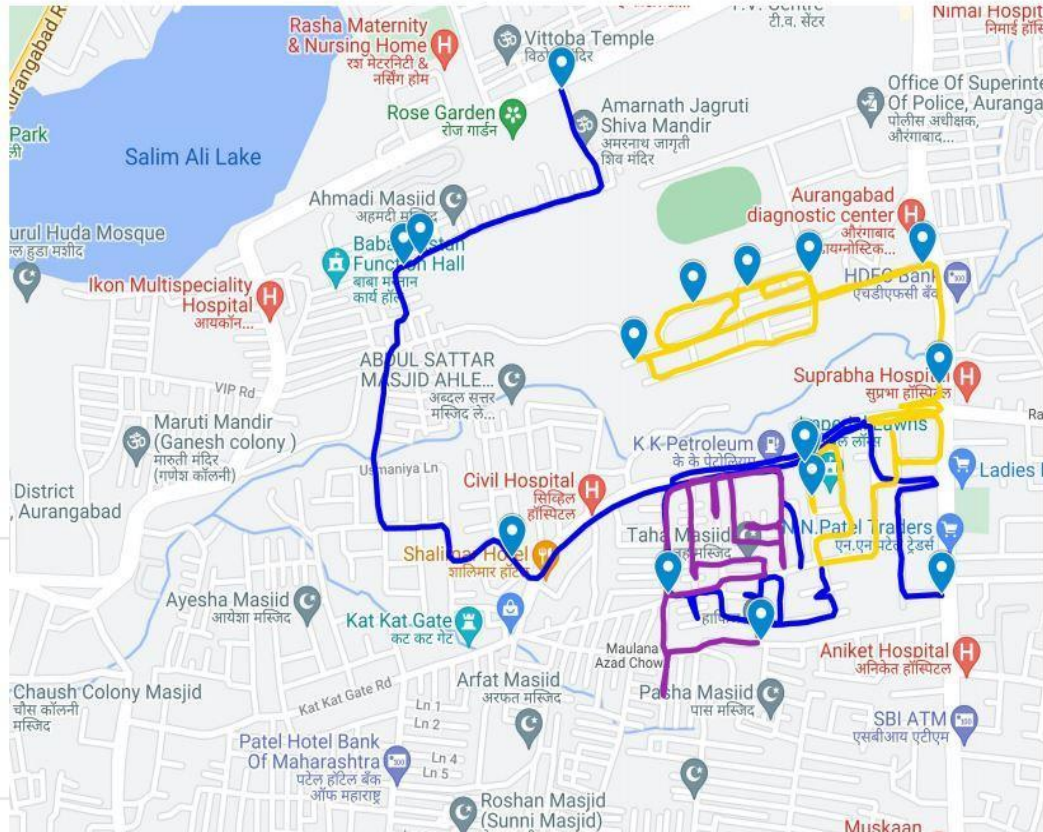
KHAM RIVER RESTORATION – Upstream Interventions



Before



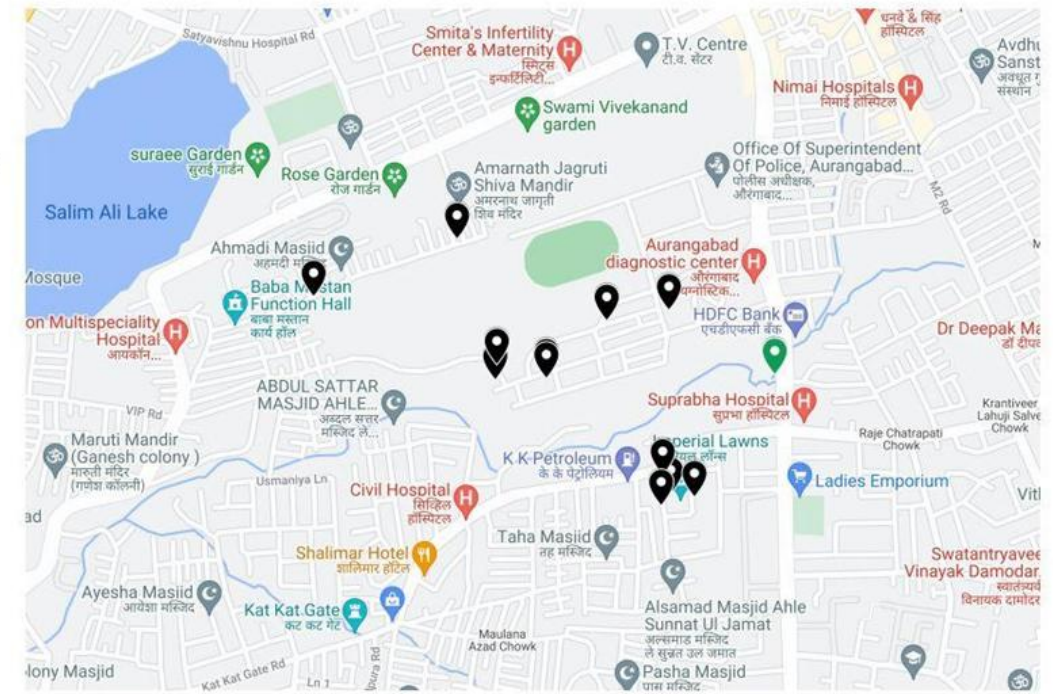
KHAM RIVER RESTORATION – Upstream Interventions



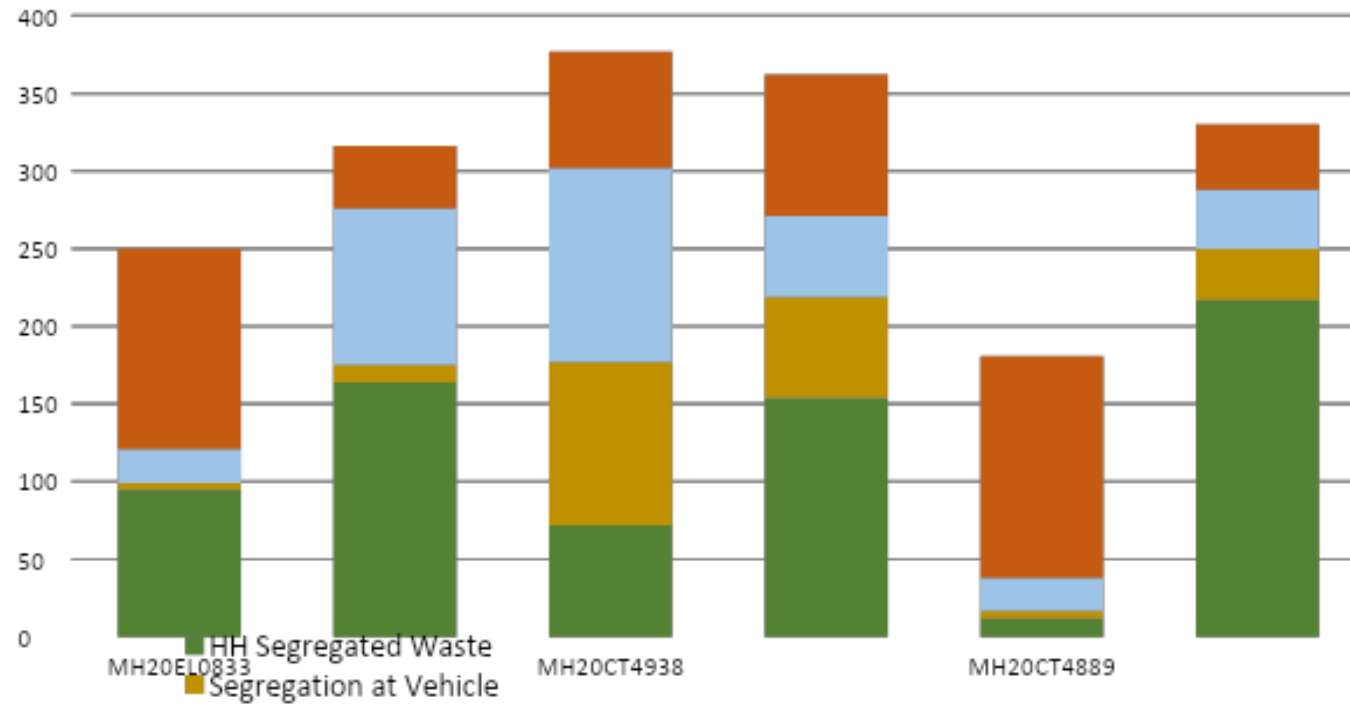
Z3_W27_GVP_Map

Untitled layer

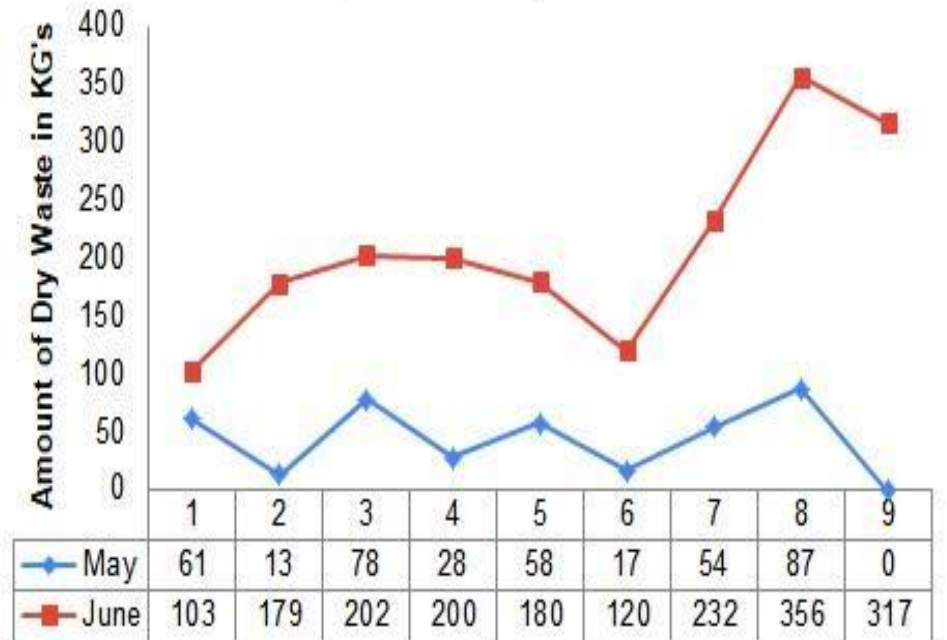
- Point 1, Sp office
- Point no 2, Meman house nala
- Point no.3, MSEB POLL GVP
- Point no.04,Galli no.01
- Point no.05, Relaybal classes gvp
- Point no6,Wing 23 gvp
- Point 7,Police colony wing 23
- Point no 8, police colony nala
- Point no 9, police ground gvp
- Point 10,police ground get
- Point no 11, Shatabdi nagar gvp
- Point no12, police sabhgruh gvp
- Gvp.13,Shatabdi nagar yashkig hospital javal



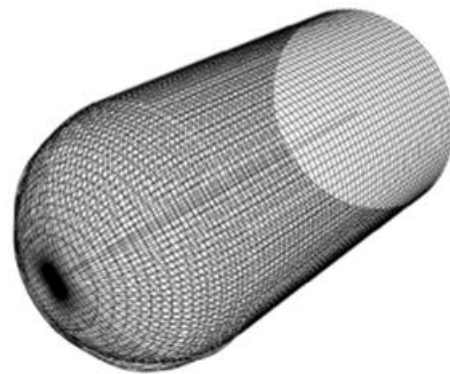
KHAM RIVER RESTORATION – Upstream Interventions



Awareness Impact on Dry Waste- Ward 27



KHAM RIVER RESTORATION – Upstream Interventions STF, plastic trapping, awareness

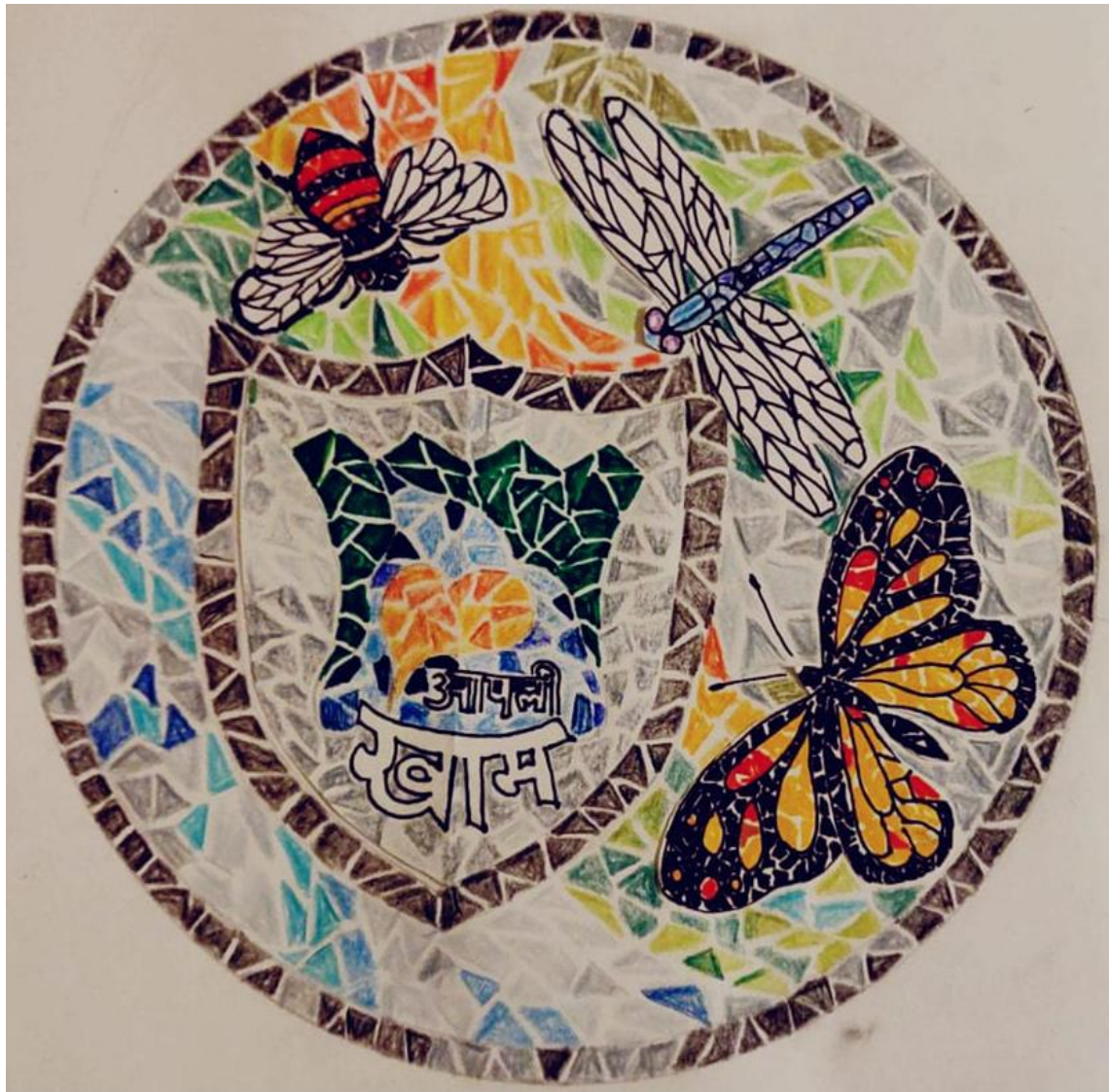


KHAM RIVER RESTORATION – Upstream Interventions



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UAL CAMERA

KHAM RIVER RESTORATION – City-wide Campaign



**5 DAYS LEFT TO SUBMIT YOUR DESIGNS FOR THE
WALL MURAL DESIGN COMPETITION!**

Leave your artistic mark along
Aurangabad's Kham river.



THEME :

**Kham River - an interactive design that can serve as a
selfie point along with the theme of the river.**

CLICK ON THE POST LINK TO SUBMIT YOUR DESIGNS.

LAST DATE FOR SUBMISSION :

10 MAY, 2021



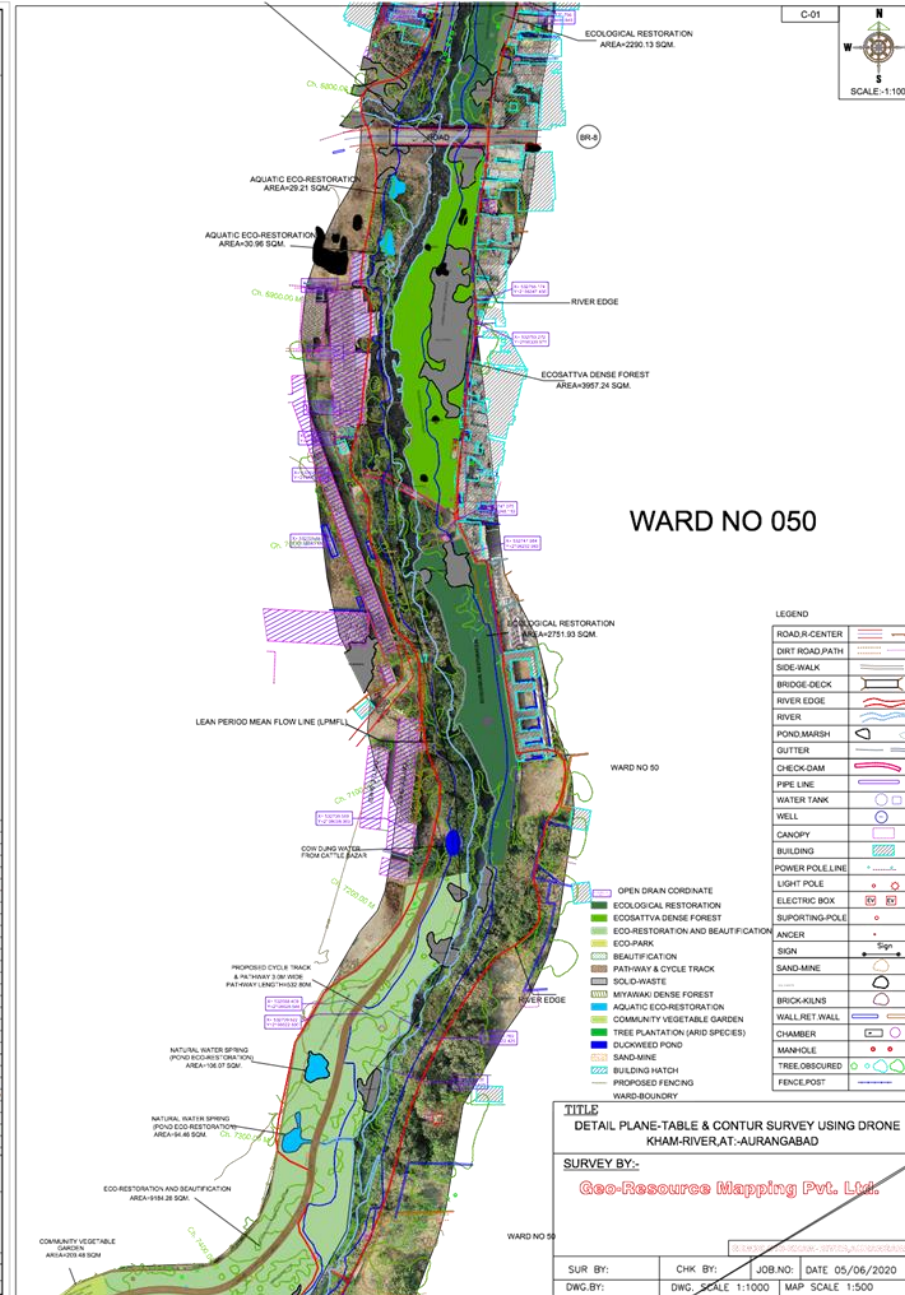
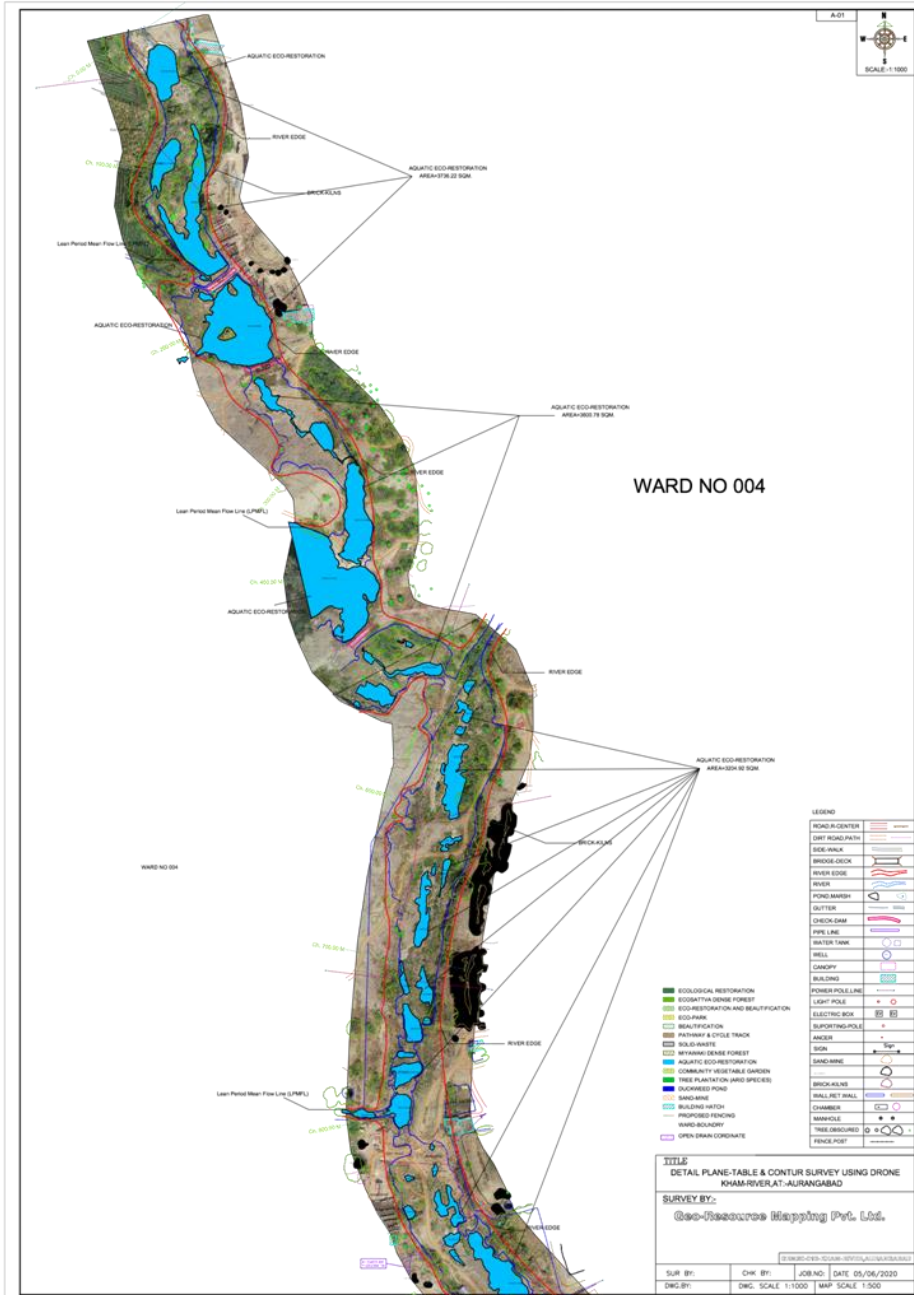
KHAM RIVER RESTORATION – City-wide Campaign



KHAM RIVER RESTORATION – Saturday Review Meetings at Site



KHAM RIVER RESTORATION – Way Forward



~80,000 sq mtr for riverfront development and restoration including:

- Diversion of Sewage
- Watershed Development & Restoration of ponds and springs
- Urban connectivity through cycle & walking tracks
- Eco-restoration & biodiversity corridors
- Community Gardens and recreational spaces
- Heritage structures integration

KHAM RIVER RESTORATION – Way Forward



Pitching and barricading along the river



Equipment for cleaning & treatment



River gauging stations



Plastic trapping and recovery



Broadening heritage/ tourism circuit



Bunds/ dams - water retention



THANK YOU

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