



# Implementing Scheduled desludging

## Step-Step Approach - based on experience of cities from Maharashtra

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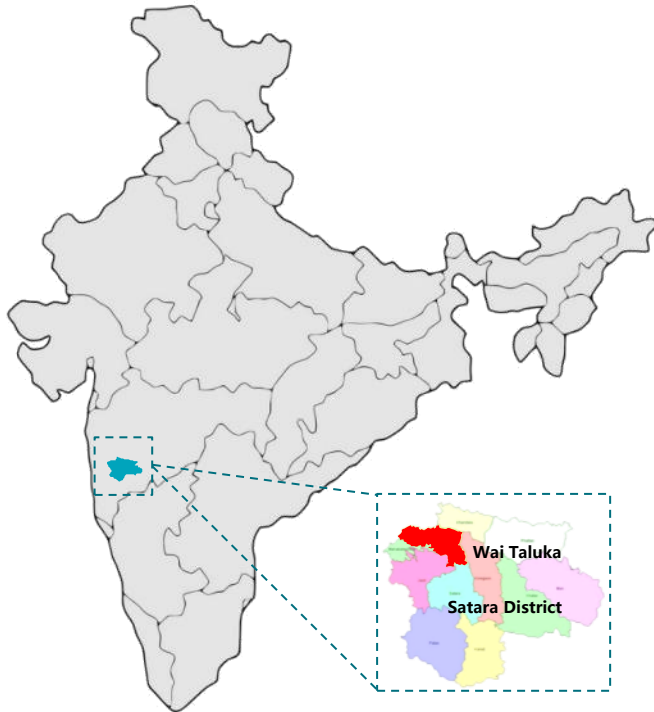
Online Certificate Course  
Leadership Development for Citywide Inclusive Sanitation  
ASCI – ADBI

8<sup>th</sup> October, 2022

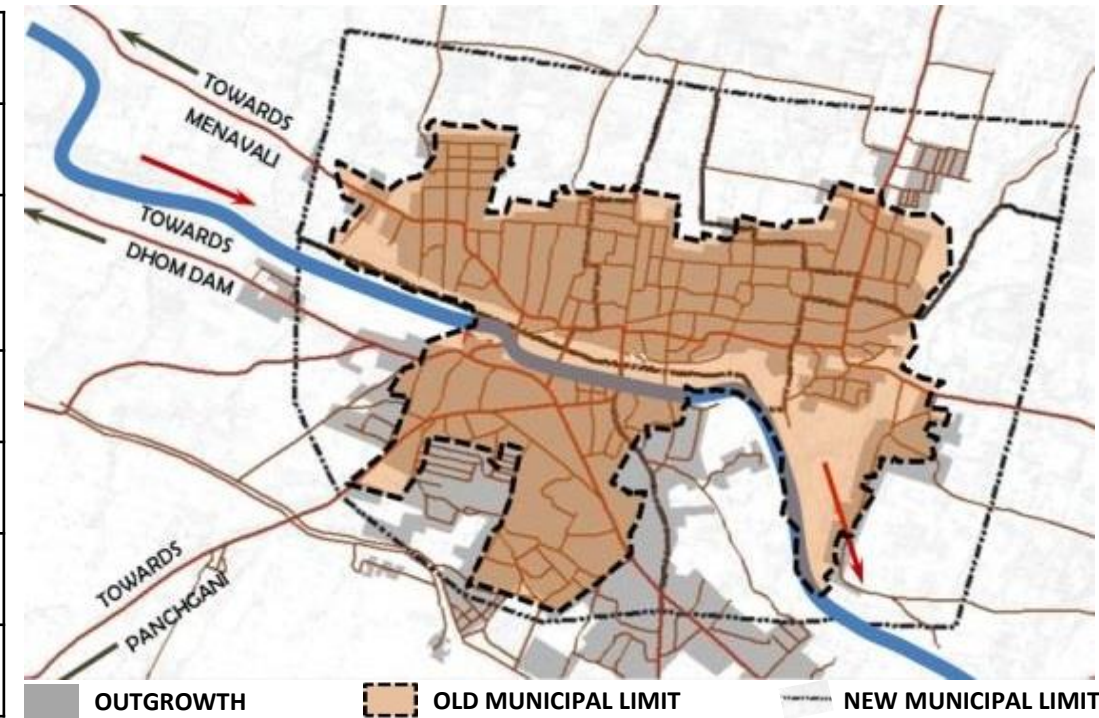


# WAI CITY....

A city moving towards universal access to sanitation



C Class Municipal Council	
District	Satara
Location	95km south of Pune; 35km from Satara
Area	3.54 sqkm
Population (2019)	43,000
Households	8,991
Slum population	4%



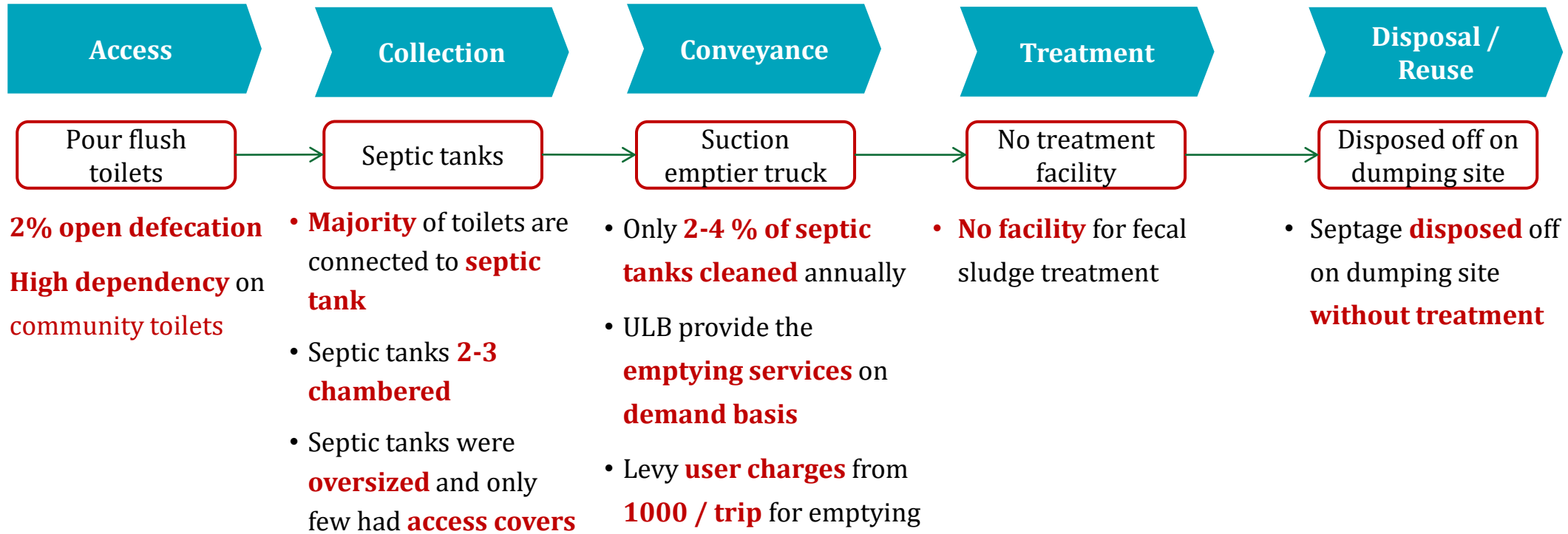
Administrative Map, Wai

- The town is known in Maharashtra for its **Ghats** on the **banks of River Krishna** and around **250 temples**.
- This **city is representative of 4000+ small and medium cities** of India.



# Sanitation Situation – in 2013, when we began work

*When work started*





# Step I :Wai resolved to implement FSSM plan in their cities through a council resolution ...

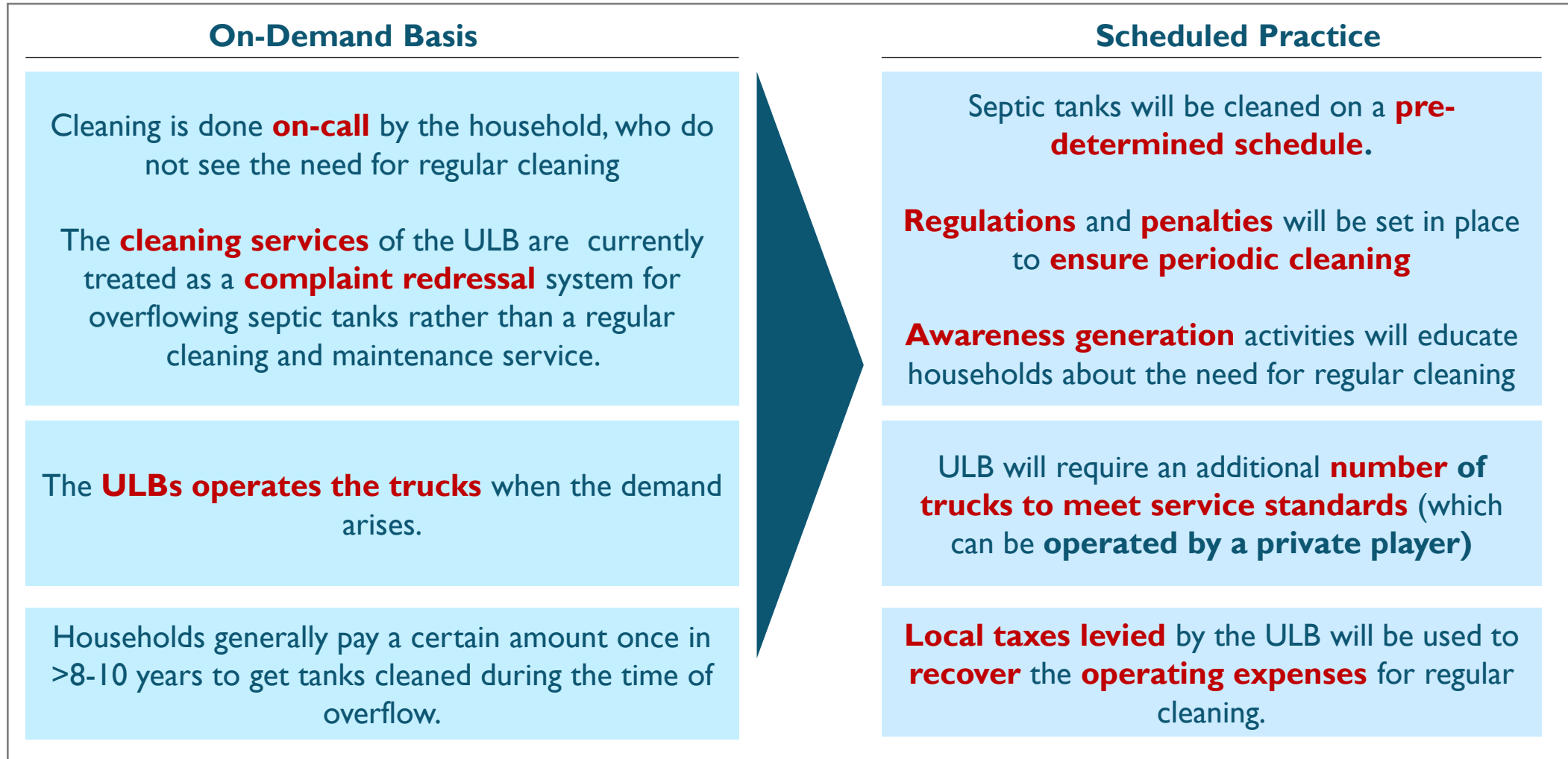


The resolution covers aspects like:

- Citywide FSSM
- Involving Private sector
- Scheduled cleaning
- Land for treatment facility
- Taxes to be levied

**1<sup>st</sup> Cities in INDIA**  
to have passed such a resolution ...

# The idea was to move from a consumer complaint redressal system to a scheduled service ...



# Benefits of Scheduled Emptying ...



**Equitable and inclusive services** - all households / properties are covered by services. The payment is linked to property tax.



**No manual labour** - Removal of need for manual labour due to regular emptying



**Pricing** – Services are offered at lower prices, due to efficiency gains and the pricing is much less than the distress fee that households had to pay previously



**Infrastructure optimization** – Planned schedule and frequency for all. Clustered service visits. More predictable loads for treatment facility and route optimization of trucks



**Behavior change** - Contribution to ODF sustainability as toilet usage can increase



**Environmental benefits** - Likely reduction in BOD in septic tank effluent, as well as lower likelihood of septic tank overflows

# Step 2 : Plan for Scheduled desludging in WAI ...

## 1. Zones of Emptying cycle

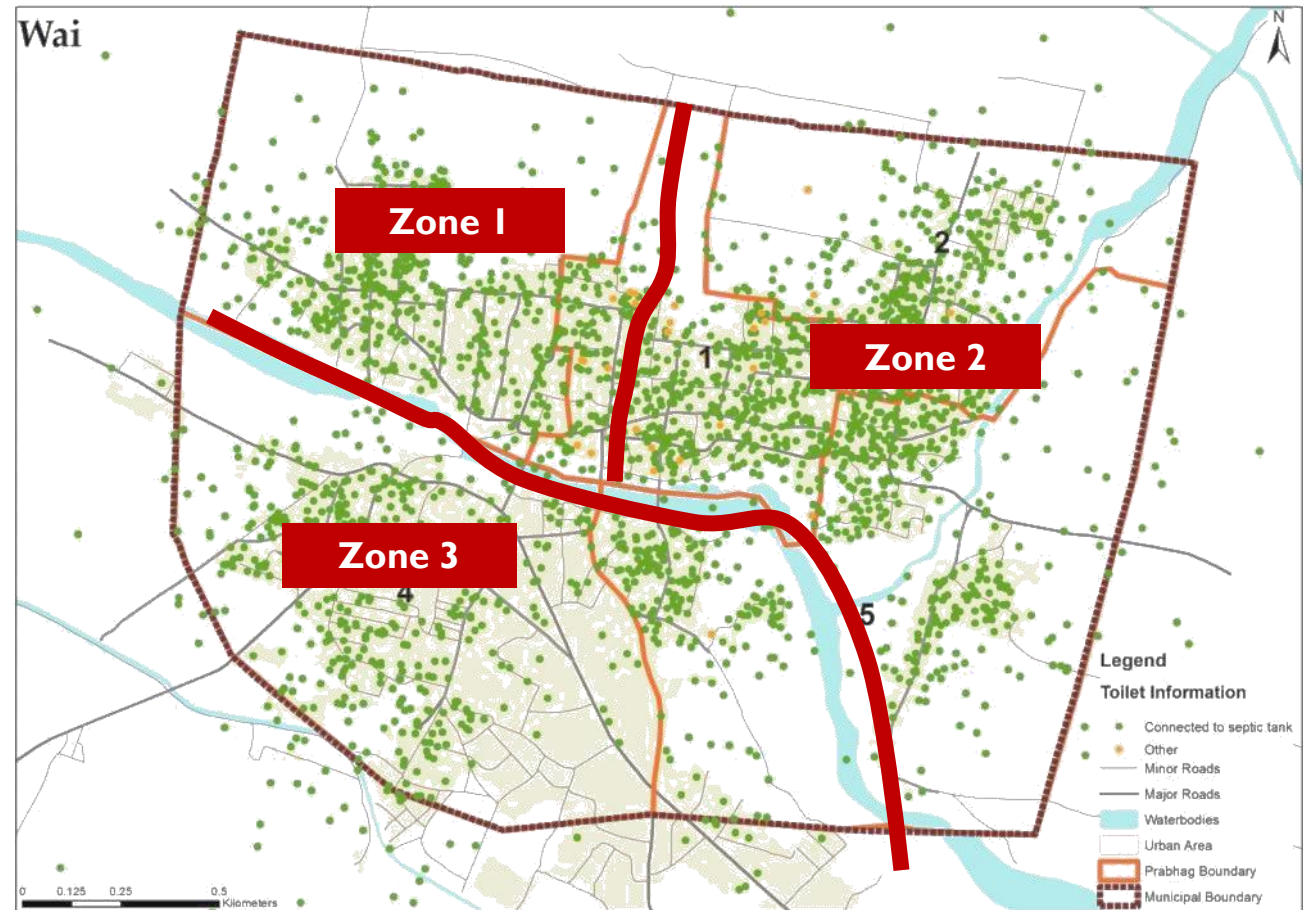
- The city was divided into 3 zones as per the citywide database on toilets and septic tanks.

## 2. Emptying Truck: Number and capacity

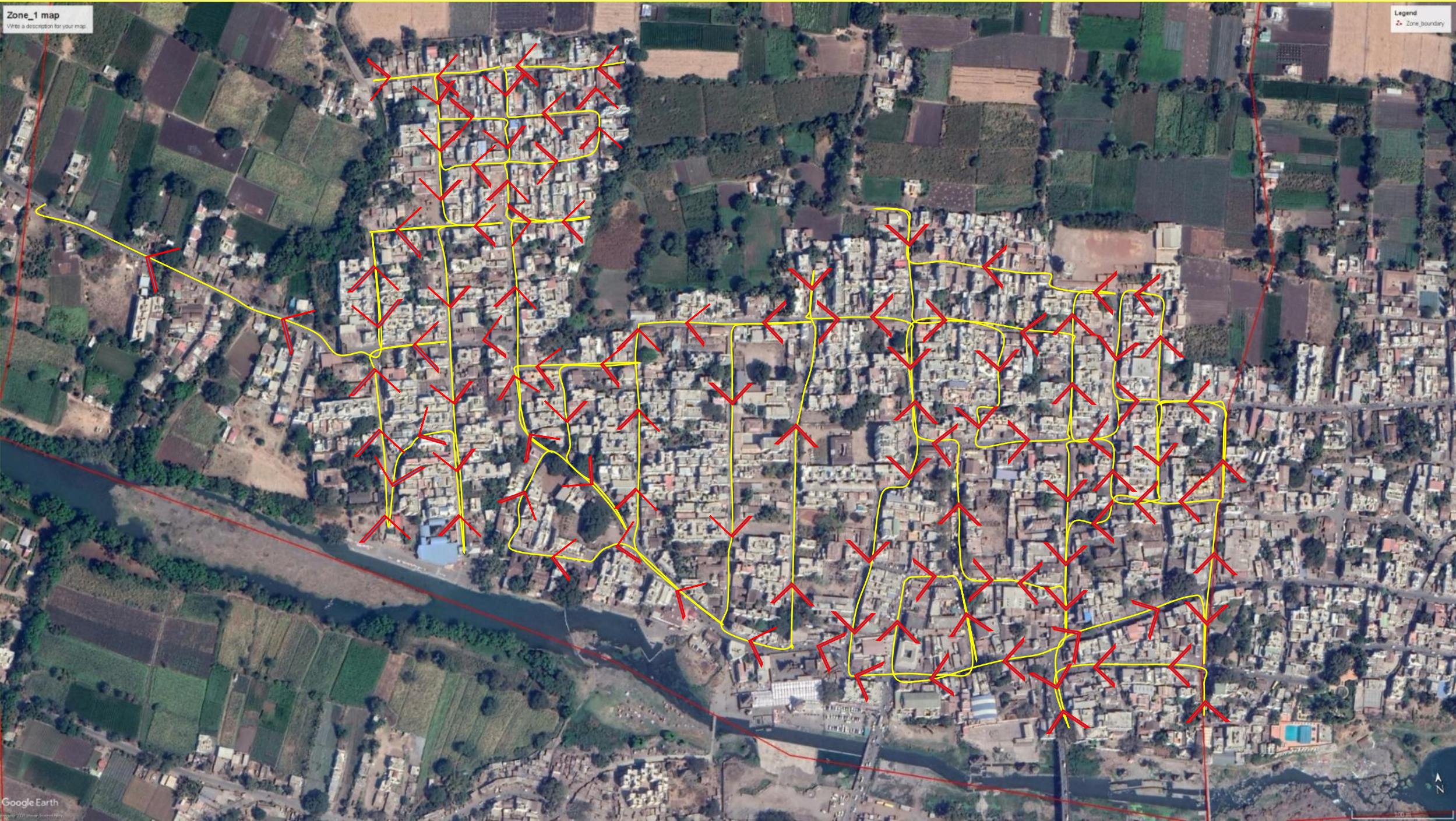
- Number and capacity of vehicles required for desludging operations.

## 3. Route planning

- Deciding the truck movement within the zone









# Step 3 :Wai council decided to involve private sector for Scheduled desludging ...

**Preliminary discussions with potential private providers to assess interest, concerns**

## **Ownership of assets**

The private party brings their own trucks for emptying and operate them for 3 years.

**Transparent bidding process through government approved process and websites**

## **Performance linked payments**

Payments based on achieving agreed targets of septic tanks emptied

Clauses to ensure safety standards - use of PPE and vigilance against manual scavenging

Fines on non-achievement of targets

**Awareness activities to be done by private contractor**

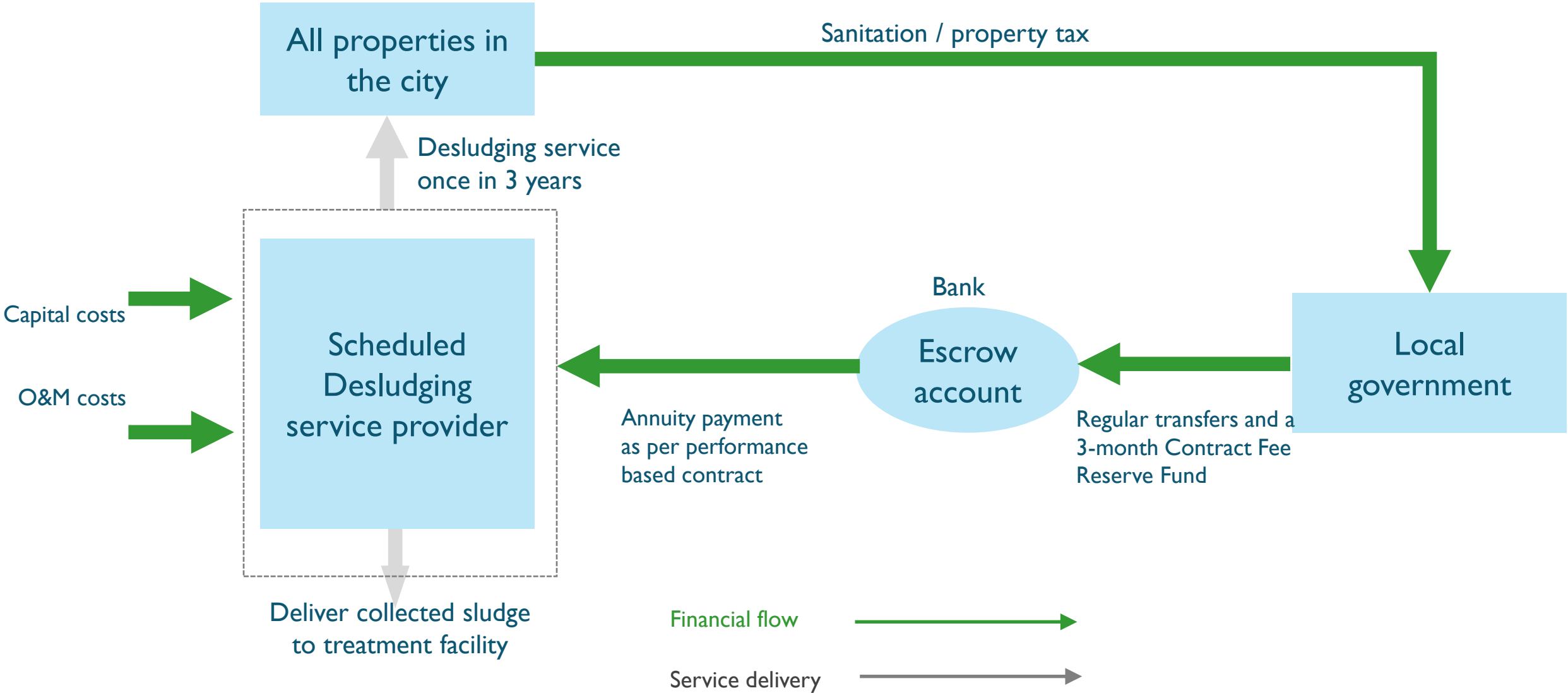
## **Escrow mechanism – reducing late payment risk**

An Escrow account is held by a third party bank.  
ULB needs to maintain a fixed balance in it = 3 months of payment

**Emergency emptying also included in contract**



# Step 4 : Performance Linked Annuity Model (PLAM) for scheduled desludging





# Step 5 : Solar FSTP setup in the city to treat the septage and treated WW reused for urban forest and landscaping ...



Wai, Maharashtra



**Capacity: 70 KLD**  
**Land: 1200 sq mt**

**Funded : BMGF**  
**Commissioned - 2018**

**20+ ML septage delivered** to the treatment facility



# Step 6 : Performance linked Monitoring Mechanism

**Daily report** on septic tanks emptied by Sumeet team to council

This is a white form titled 'सेप्टिक टैंक साफ केव्हाचा फॉर्म' (Septic Tank Cleaning Form) with the number 101. It contains various fields for recording details of the septic tank cleaning process, including the name of the generator, address, and date.

WMC's copy

This is a purple form titled 'सेप्टिक टैंक साफ केव्हाचा फॉर्म' (Septic Tank Cleaning Form) with the number 101. It is a duplicate of the form shown in the WMC's copy, used by the property holder.

Property holder's copy

This is a grey form titled 'सेप्टिक टैंक साफ केव्हाचा फॉर्म' (Septic Tank Cleaning Form) with the number 101. It is a duplicate of the form shown in the WMC's copy, used by the treatment plant operator.

Treatment plant's copy

This is a yellow form titled 'सेप्टिक टैंक साफ केव्हाचा फॉर्म' (Septic Tank Cleaning Form) with the number 101. It is a duplicate of the form shown in the WMC's copy, used by the Sumeet team.

Sumeet team's copy

**Collection and transport record form** Serial No: \_\_\_\_\_

**i. Details of Waste Generator**

- Name :
- Phone Number:
- Address :
- Property Tax Number :
- Type of building : Individual house / Apartment / Commercial complex / Other (specify) \_\_\_\_\_
- Was the Septic tank cover open ( Yes / No)

**ii. Identification of Waste:**

- Volume \_\_\_\_\_ liters
- Type : \_\_\_\_\_ Septic Tank \_\_\_\_\_ Others \_\_\_\_\_
- Source : Residential/Commercial/Restaurant/Others \_\_\_\_\_
- Septic tank cover placed back on Septic tank : Yes / No
- Septic tank emptied : Yes / No
- Any kind of deficiencies, missing pipes or fittings, improper manholes or access covers, any other cracks or damage observed : \_\_\_\_\_

The undersigned being duly authorized does hereby certify to the accuracy of the source and type of Fecal Sludge and septage collected and transported.

Date: \_\_\_\_\_, Time: \_\_\_\_\_, Name and Signature – Property owner: \_\_\_\_\_

**iii) Details of Sumeet Facilities Operator**

- Name of Driver :
- Permit :
- Vehicle License no :
- Truck Capacity :
- Pump Out Date :
- No. of trips taken to empty the septic tank:

The above described wastewater was picked up and hauled by me to the disposal facility named below and was discharged. I certify that the foregoing is true and correct:

Name and Signature of authorized transport agent and title: \_\_\_\_\_

**iv) Acceptance by Wai Municipality's authorized FSTP**

The above transporter delivered the described Fecal sludge and Septage to this treatment facility and it was accepted.

The waste was contaminated with solid waste or other kinds of waste: YES / No

Details (If yes): \_\_\_\_\_

No of trips received at the FSTP for this form: \_\_\_\_\_

Septage received at treatment plant: Date: \_\_\_\_\_, Time : \_\_\_\_\_, Volume : \_\_\_\_\_ liters

Name and Signature of authorized treatment plant operator signatory and title: \_\_\_\_\_

NOTE: SUBJECT TO THE TERMS AND CONDITIONS OF WAI MUNICIPALITY

Add-on online monitoring system added to paper-based monitoring system

# IT enabled monitoring systems for FSSM ...

**“Real time” monitoring**  
No need to process data for results



**Easy to Operate,**  
Reduce paper work,  
Minimize human error



**Monitors performance**  
of FSSM services



**Photo stamping,**  
**Geo stamping,**  
**Signatures**



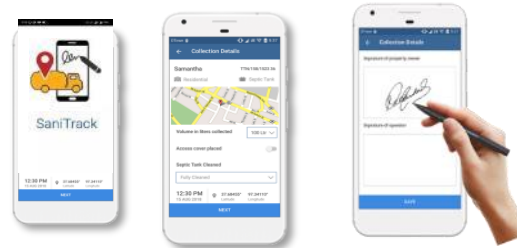
**Unique database**



## SaniTab



## SaniTrack



## SanQ



Logged In User: CEPT Logout

### CONSOLIDATED PROGRESS REPORT

<b>3573</b> Septic Tanks Remaining To Be Desludged	<b>2427</b> Desludged	<b>2168</b> Scheduled	<b>259</b> Emergency
<b>2614</b> Service Visits	<b>230</b> Properties Refused	<b>5066</b> Properties Covered	<b>7445 KL</b> Volume Desludged

### SPATIAL VIEW

Cumulative

#### Property Details

- Nature of Service
- Type of properties visited
- Vulnerable areas covered

#### Desludging Details

- Last time ST was emptied
- Opened covers for service
- Problems faced during emptying
- Household plan to reseal ST

#### Performance Metric

- PPE Usage
- Two-inch septage left



### Charts: Nature of Service





# Step 7 : Awareness generation a key feature for success of high uptake of FSSM services ...

Paintings / banners in the city by WMC



Household visits by desludger with info. leaflets



Cities circulated small videos

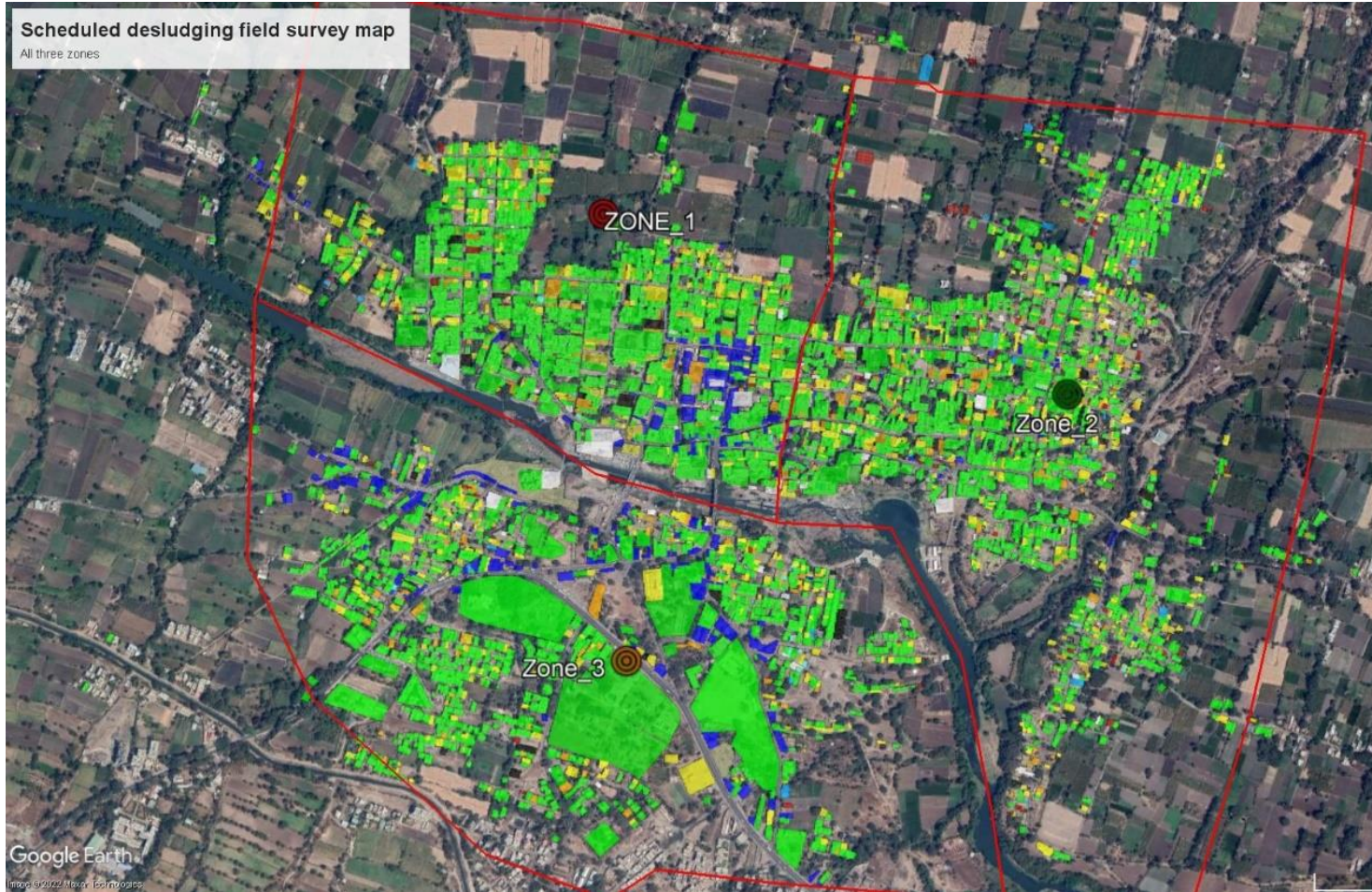


Intimation through SMS





# Citywide FSSM as a “public service” of WMC. WMC has initiated the tender process for 2<sup>nd</sup> round of service ...



- Successful completion of first 3-Year Scheduled desludging cycle covering the entire city
- Total of 3600+ septic tanks serviced
- Total Properties covered : 6800+
- Operations fully Mechanized Scheduled and monitored through SaniTab / SaniTrack
- Scheduled desludging has now been mandated as a part of ODF++ protocol and Swachh Survekshan under SBM 2.0

Tender has been floated and bids received for second round of scheduled desludging.  
Technical evaluation is ongoing ...



# Impact : Improvement in groundwater and river water quality due to scheduled desludging

## Improved performance of septic tanks after desludging resulting in improved drain water quality flowing into river



- Reduction in Nitrogen, Total Suspended solids and Organic loads in septic tanks effluent after desludging them



- Reduced concentration from septic tank effluent helped in reducing the discharge of nitrogen and TSS into the open drains
- 50-60% decrease in the value of TSS in desludged areas
- 50-60% decrease in BOD load in drains in desludged areas



- Regular desludging services will eventually improve the quality of river water and ground water as the quality of drain water and supernatants will improve

# Management of full sanitation service chain resulted in safe sanitation for all by 2022

Situation as of now



- City has **attained ODF status** and **sustained** the same
- **85% IHHT coverage** and **toilet credit** has been explored
- All **Community toilet seats** have been made **functional, O&M assigned to private sector**
- **Toilet and septic tank database** has been generated
- **1<sup>st</sup> round of Scheduled desludging** of septic tanks completed and **2<sup>nd</sup> round to be initiated through private sector**
- **Sanitation tax** levied for **financing O&M** of emptying services
- **Payment** to contractor through local taxes using **escrow mechanisms**
- **SaniTab/ SaniTrack** Online monitoring **systems**
- Septage **treatment plant** is **being set up** in Wai
- **20 Million litres** of septage has been treated
- **Solar powered FSTP** and **SanQ** online quality monitoring system
- **Reuse of treated water** in at FSTP and SWM site for landscaping .
- **Urban forest** to be developed to **mitigate carbon emissions**

**Engagement with Women at HHs, ULB and Service provider level and Sanitation worker safety**

**Institutionalization of all the activities through council resolutions, finance commitments and Training sessions with ULB officials**





# These steps have been demonstrated by CWAS in these cities that have become models for CWIS-FSSM / ODF++ . . .



Wai, Sinnar, Kolhapur, Satara, Khopoli, Igatpuri, Narkhed and many more . . .

## Comprehensive City Sanitation planning



## Pioneer cities in India to implement citywide scheduled emptying of septic tanks



## City Wide Inclusive Sanitation



Scheduled emptying of septic tanks



Involving Private sector for emptying operations



Levying a Sanitation tax to support operations



Faecal Sludge and Septage treatment facility (FSTP)



Use of Own (DBO) / Philanthropy funds for FSTPs



Reuse of treated wastewater



Online monitoring systems for emptying and treatment



Municipal council commitment and leadership



Gender inclusivity in sanitation



Involvement of SHGs



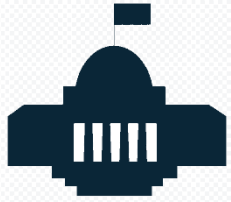
San Workers training



Equitable Services for Slums and Vulnerable areas



# Summary - Key factors for successful implementation of Scheduled Desludging ...



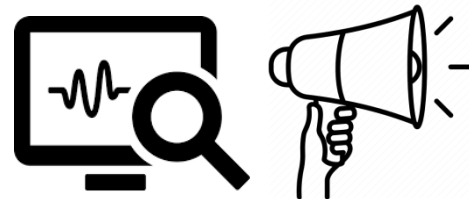
## Providing scheduled desludging service as a Municipal Service

- Like provision of SWM door to door collection service
- Promote supply driven approach and not demand driven.
- The onus of desludging the septic tank must not be on the HHs



## Higher degree of desludging acceptance rate linked to indirect cost recovery

- Avoid/ user chargers based model (Based on international experiences)
- Should promote indirect cost recovery mechanism such as sanitation tax or sewerage tax as percentage of property tax.



## Proper monitoring and IEC campaigns

- Involving various stakeholders for Awareness generations i.e. Citizens, NGOs, ULB officials, SHGs, etc.
- Paper based or IT based monitoring systems





Partnerships and Collaboration to attain Scale . . .

# BILL & MELINDA GATES *foundation*



Government of  
Maharashtra



**CWAS** CENTER  
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AND DEVELOPMENT  
FOUNDATION

CEPT  
UNIVERSITY

  
**NFSSM**  
Alliance



# Thank you

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## About us

The Center for Water and Sanitation (C-WAS) at CEPT University carries out various activities – action research, training, advocacy to enable state and local governments to improve delivery of services.

**CWAS** CENTER FOR WATER AND SANITATION

**CRDF** CENTRE FOR RURAL DEVELOPMENT FOUNDATION

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