



TADIPATRI MUNICIPALITY



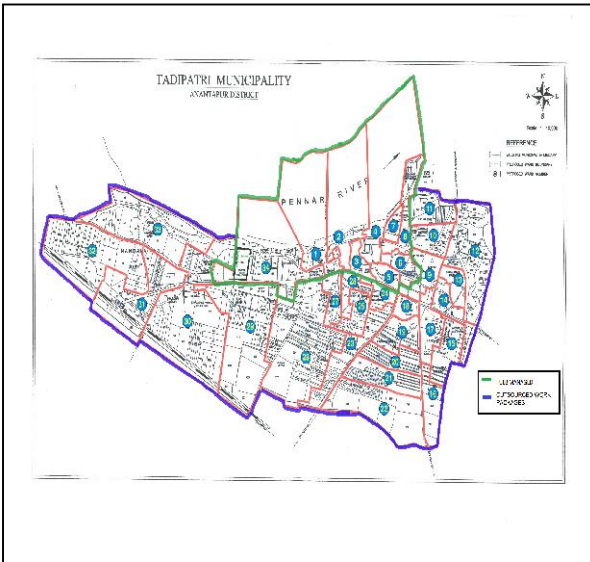
City Plan for Solid Waste Management and
Maintenance of Sanitation

*Implementation of GO 279 and
Real-Time Monitoring System (RTMS)*

Tadipatri City Plan for Solid Waste Management and Maintenance of Sanitation



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Implementation of GO 279 and Real-Time Monitoring System (RTMS)

**Tadipatri City Plan for Solid Waste Management and
Maintenance of Sanitation**

Plan Summary

| City Information | |
|---|--------------------------------------|
| Municipal Area | 7.49Sq. KMs |
| Population | 108249 (2011 Census) |
| House-Holds: | 30415 |
| No. of Gate Points (Residential and Bulk Waste Units) | 21161 |
| Election Wards | 34 |
| Slum Population | 35716 |
| No. of slums | 33 |
| Roads | |
| Open Drains | |
| P. H. Workers: | 190 |
| Daily MSW Generation: | 50 MTs |
| Composting Site Location | Kadapa Road Opp - Gardua Steel Plant |
| Bo Methanation Site Location | - |
| Waste to Energy Plant Location | - |

| Implementation Plan as per GO 279 Programme | |
|---|-----------|
| Total No. of Residential Micro Pockets | 72 |
| No. of Micro Pocket Clusters | 05 |
| No. of ULB managed Residential Micro Pockets and Location / Wards | 18 |
| No. of Micro Pockets - Outsourcing Package-1 (Residential / Residential cum Commercial) Location and Wards | 54 |
| No. of Micro Pockets - Outsourcing Package-2 (Residential / Residential cum Commercial) Location and Wards | - |
| Commercial Work Package - No. of Bulk waste Generators | - |
| No. of Sanitation Workers (including Drivers, Loaders and supervisors) | 190 |
| Waste Transfer Points for Secondary Transportation | 05 |
| No. of Push Carts | - |
| No. of Secondary Transportation Trucks | 05 |
| No. of Refuse Vehicle Compactors | 03 |

Tadipatri City Plan for Solid Waste Management and Maintenance of Sanitation

1. Introduction

This document is the Plan of the Tadipatri Municipality for effective handling of the solid waste and sanitary cleaning activities in the City. The Plan provides a strategic framework and operational details for systematic handling of all the related activities in the solid waste management and sanitation services of the City Administration.

City Vision

'TADIPATRI Urban Area transformed into a neat, clean and litter-free City for best-in-class livability, health standards, environment, tourism and investment attractiveness.'

The plan further enables the Municipality to comply and fully implement the Solid Waste Management Rules, 2016 promulgated by the Ministry of Environment and Forests of Government of India. This Plan is prepared based on the policy framework provided in the GO No. 279 dated: 31/12/2015 and the Operational Guidelines issued by the Department of Municipal Administration and Urban Development, Government of Andhra Pradesh.

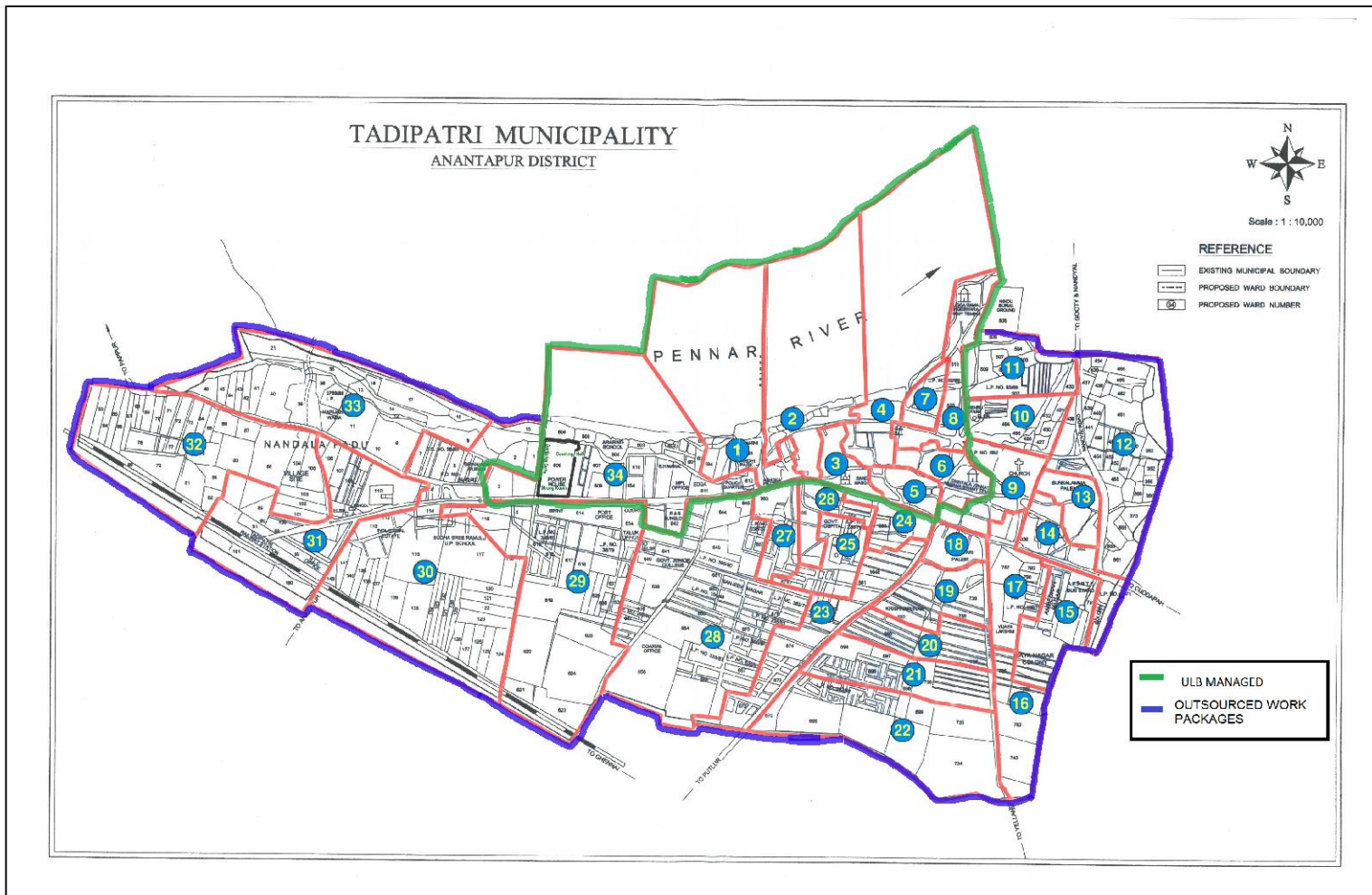
As per the instructions of the Hon'ble Chief Minister of Andhra Pradesh, the plan envisages shifting from the practice of worker outsourcing to that of Outsourcing Complete Work Packages. The plan is primarily aimed at achieving:

- Better delivery of Services
- Compliance to MSW rules & NGT directives.
- Availing better technology, management methods and capital through private, social sector and CSR participation
- Overall positive impact on the living environment by mitigating pollution and environmental hazards.

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For ensuring, 100% service delivery as envisaged in the plan, the city adopts a Real-time Monitoring System (RTMS) through which Internet of Things (IoT) and Electronic Devices are deployed for field monitoring of the Service Delivery. The Service Delivery Efficiency is monitored on real-time basis from the office of the Commissioner and the State Secretariat.

2. City map indicating ULB managed and outsourced work packages



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3. Operational Work Plans as per GO 279 Operational Guidelines

3.1. Standard Norms for Waste Management Collection and Transportation Activities

- ❑ **Primary Waste Collection and Sanitation Services @ Residential Micro pockets**
 - Gate-to-gate Collection of source Segregated Waste – 2 Bin (wet & hazardous); 1 bag (dry)
 - Push Cart Method of primary collection of - 1 per Micro pocket
 - 2 Workers per Micro pocket - 3 workers per Micro pocket adjoining main roads
- ❑ **Secondary Transportation @ Residential Micro pockets**
 - 15 Micro pockets - Cluster for Secondary Transportation Truck / Waste Compactor
 - 4 loaders and 1 driver for each cluster
- ❑ **Waste Collection and Transportation @ Commercial & Bulk Areas**
 - Direct Transfer to Trucks (3 tonne) / Compactors (4.5 / 10 tonne)
 - No. of Vehicles based on Waste quantities

3.2. Residential / Residential cum Commercial Area Solid Waste Management

Solid Waste Handling Activities

- Gate-to-Gate Primary Collection and Transportation of Source Separated Waste (Wet, Dry and Hazardous) from the Residential Areas.

Sanitary Cleaning Activities

- Manual Sweeping, Litter Picking and Sanitation of Residential Areas and Main Roads and Public Places, and Mechanical Sweeping of select stretches of the main roads, wherever feasible.
- Cleaning of Shallow Surface Drains, Cutting and removal of weeds, shrubs and Unwanted Vegetation
- Disinfectants Spraying and Vector Control

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| No. of Micro Pockets | No. of Gate Points for Coverage | No. of Households and Petty Shops (Residential Area) | No. of Clusters | No. of Transfer Points for Secondary Transportation |
|----------------------|---------------------------------|---|-----------------|---|
| 72 | 21161 | 30415 | 05 | 05 |

3.3. Commercial and Bulk Waste Area Solid Waste Management

| Solid Waste Handling Activities | |
|---|---|
| <ul style="list-style-type: none"> • Gate-to-Gate Primary Collection and Transportation of Source Separated Waste (Wet, Dry and Hazardous) from the Commercial and Bulk Waste Areas. • Direct Transfer to the Secondary Transportation Truck / Refuse Vehicle Compactor • Collection and Transportation of Construction and Demolition Waste | |
| Names of Main and arterial roads, major streets and market areas | CB Road, Main Bazar, Putlur Road, Yellanuru Road, Nandyala Road |
| No. of Apartments and Gated Communities(more than 20 Dwelling Units) | 07 |
| No. of Shopping malls, hotels, restaurants, cinema halls, marriage and function halls, shops, retail outlets, hostels, offices, religious places, commercial complexes, markets etc. | Shopping malls : 04 Hotels :150 Restaurants :03 Cinema halls :05 Marriage and function halls :07 Commercial complexes :05 Markets :01 Religious places :14 |

3.4. Street Sweeping (mechanical and manual – Night Sweeping)

| |
|--|
| <ul style="list-style-type: none"> • Mechanical sweeping of the entire road lengths, from one end to the other end, at the Kerbs of the road stretches that are well paved with black top or cement concrete and with the Kerbs on the sides finished with stones or concrete. • Manual Sweeping and Litter picking on the pavements, foot paths and public places |
|--|

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| Road Stretches | Road Length (inKms.) | Time Schedule |
|-------------------------------------|-------------------------|---------------------|
| 1. Railway Station to Rtc Bus Stand | 4 | 9.00 pm to 11.00 pm |
| 2. Nandyala Road | 2 | 11.00 pm to 2.00 am |
| 3. Putlur Road | 2 | 2.00 am to 3.30 am |
| 4. Yellanuru Road | 2 | 3.30 am to 5.00 am |

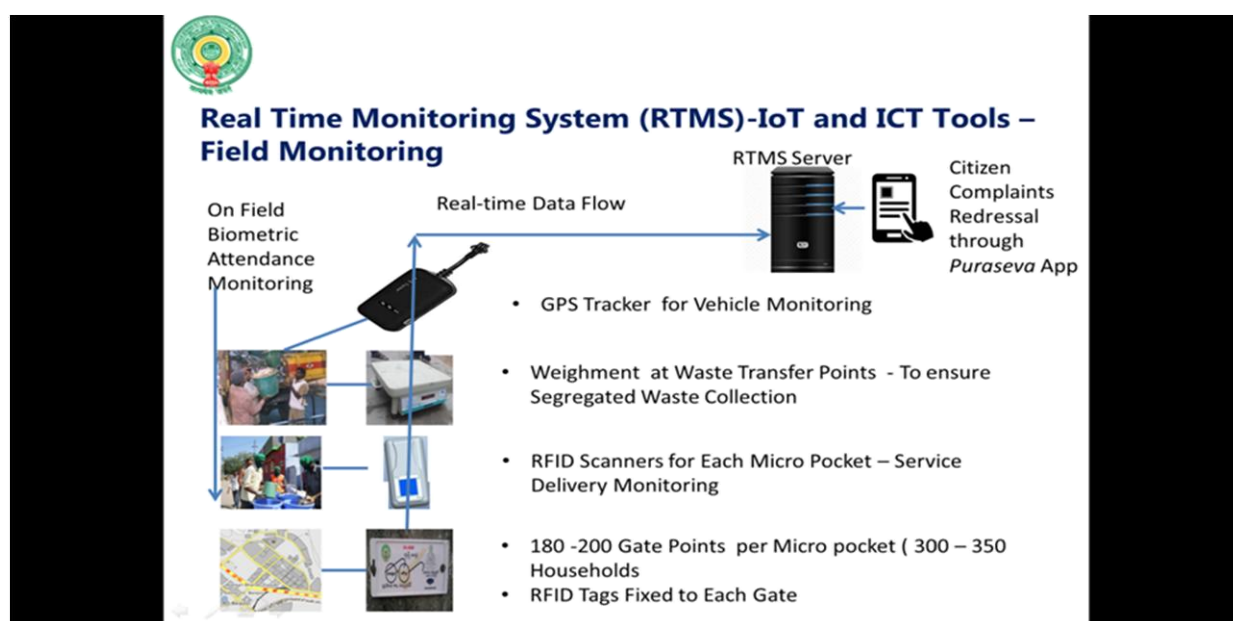
5. Status of Outsourcing of Work Packages (Residential Packages)

| Stage of Outsourcing | Package 1 (Yes/No) | Package 2 (Yes/No) |
|---|-----------------------|-----------------------|
| 1. Council Approval for the Project Estimate | Yes | Yes |
| 2. Administrative Approval Obtained | - | - |
| 3. Technical Sanction Obtained | - | - |
| 4. Tender Floating in process | - | - |
| 5. Tender Evaluation in process | - | - |
| 6. Service Provider Selected with Government Approval | - | - |
| 7. Service Provider Deployed | - | - |

6. Real-Time Monitoring System Framework (RTMS) – An Innovative best practice for real-time monitoring of Service Delivery Efficiency

6.1. Deployment of IoT and Electronic Devices for field monitoring of Solid Waste Management Services in the ULB on daily basis, as an innovative best practice, using technology.

| Device | Functional Data input to the RTMS Server (to Software Application) |
|--|---|
| 1. RF ID Tags to be fixed at the gate points of all residential and bulk waste generators | 1. Unique ID of the RF ID tag mapped with the Gate Number to verify if waste collection service is provided at the gate point. |
| 2. RF ID Readers for all the Micro pockets (One each) | 2. Capturing and transmitting the data of the Gate number and the time of service provision at the gate points on real-time basis. |
| 3. Weighing Scales for all the secondary transportation vehicles (Tractor trucks and vehicle mounted refuse compactors) | 3. Weighing and transmitting data on real time basis. a) Micro pocket ID number b) Waste category(Wet, Dry and Others) c) Weight of the bins filled with waste. |
| 4. RF ID cards for all the Micro pockets | 4. Contains the respective Micro pocket number |
| 5. GPS based vehicle tracking Devices for all the secondary transportation Vehicles(Tractor trucks & vehicle mounted refuse compactors) | 5. Tracking and transmitting data on real time basis. a) Vehicle reporting date and time b) RF ID tag number of the waste transfer points in the ULBs c) Vehicle number. |
| 6. Numbering of the HDPE waste collection bins | 6. Stickers /Painting of numbers indicating the micro pocket and bin numbers |



| Device | Quantities Planned to be Deployed |
|--|-----------------------------------|
| 1. Aadhaar based Biometric Attendance Device | 04 |

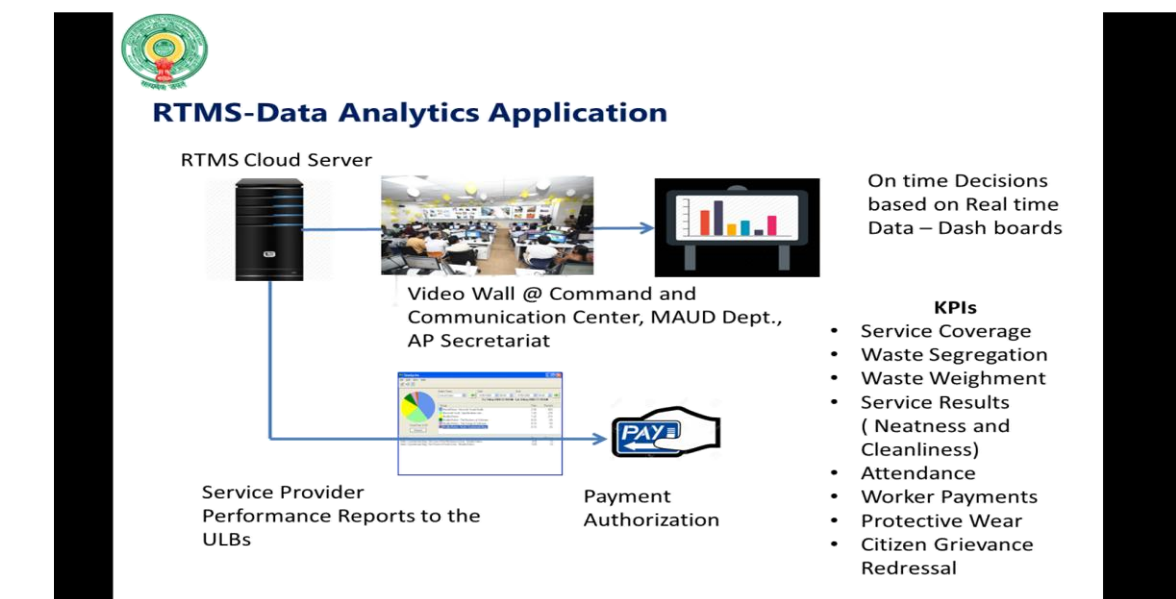
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| | |
|--|---------------|
| 2. RF ID Tags (Gate points and Households) | 21161 & 30415 |
| 3. RF ID Readers-one each for all the Micro pockets | 72 |
| 4. Weighing Scales for all the secondary transportation vehicles (Tractor trucks and vehicle mounted refuse compactors) | 05 |
| 5. RF ID cards for all the Micro pockets | 72 |
| 6. GPS based vehicle tracking Devices for all the secondary transportation Vehicles(Tractor trucks & vehicle mounted refuse compactors) | 05 |
| 7. Numbering of the HDPE waste collection bins as specified by the ULBs | - |
| | |

6.2. Analytical Dashboards Generation – Schema

Based on the Real-time Field Information, the software application generates dash boards on the parameters of:

- Employee Attendance(captured through Aadhaar based biometric device)
- Primary Waste Collection Efficiency (Coverage)
- Transportation Efficiency (Transportation Vehicle Reporting at Transfer Points and maintaining Time Schedule)
- Waste Weighment (Micro pocket wise weighment of Dry, Wet and hazardous waste)
- Handling of Citizen Grievances within the Service Level Agreements (SLA)
- Blackspots Conversion - Black to Green and Green to Black



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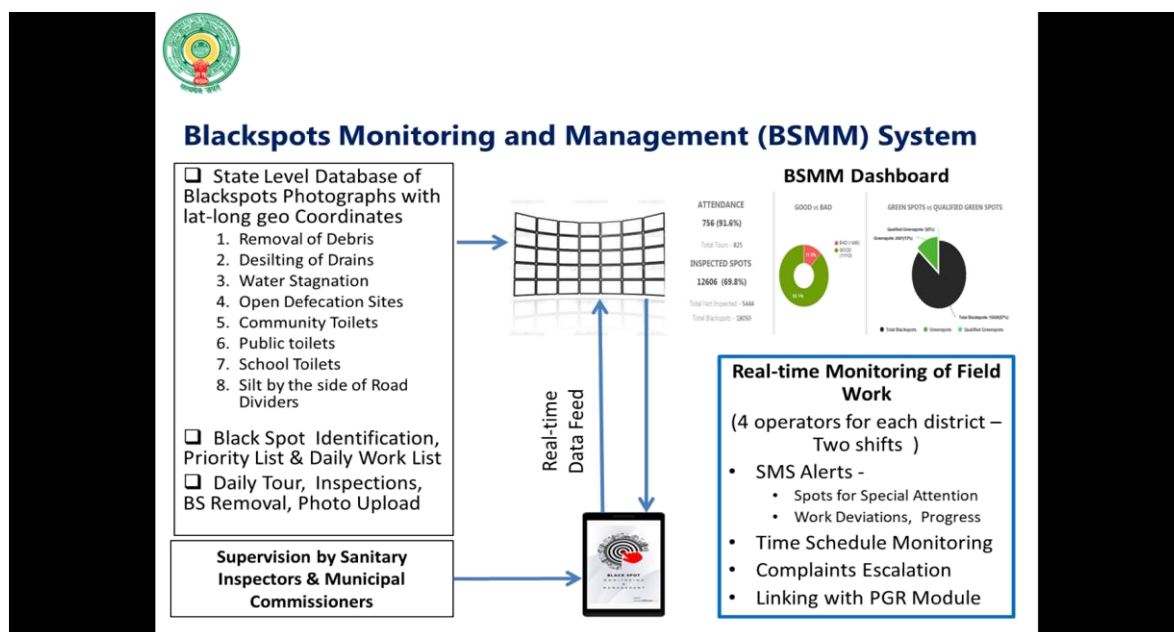
Dashboards are presented for performance analysis at various levels:

- Micro pocket
- Ward
- Work Package
- ULB
- District
- Region
- State

The comparative analysis helps the ULB to benchmark its performance and undertake trouble shooting and continuous improvement activities

RTMS Software application also generates a monthly performance report based on which payment to the outsourced service providers made after effecting penalties for service failures. Based on the performance report, the efficiency of the ULB staff in the ULB managed micro pockets is also monitored

6.3. Black Spot Management and Monitoring



| | ULB Database of Blackspot Photographs | Conversion of Black to Green | Turning of Green to Black |
|--------------------------------------|---------------------------------------|------------------------------|---------------------------|
| 1. Removal of Debris | | - | - |
| 2. Desilting of Drains | | - | - |
| 3. Water Stagnation | | - | - |
| 4. Open Defecation Sites | | - | - |
| 5. Community Toilets | | - | - |
| 6. Public toilets | | - | - |
| 7. School Toilets | | - | - |
| 8. Silt by the side of Road Dividers | | - | - |