



Operationalizing FSM Regulations at City Level: A Case study of Warangal City

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GREATER WARANGAL MUNICIPAL CORPORATION

వరంగల్ మహానగర పాలక సంస్థ



*Administrative Staff
College of India*
Leadership through Learning

Warangal city - Overview

- Population: 0.8 million; Area : 472 sq.km
- Second largest city in the state of Telangana
- Slum pop – 30% (180)
- Historical and cultural city - potential for tourism
- City has many lakes/water bodies (sources of drinking water)
- Priority city for growth



Sanitation Situation - Warangal

- Water availability < 100 lpcd
- City has no sewerage system; dependence on onsite options.
- HH having access to onsite toilets: 77%
 - Toilets connected to septic tanks : 59%
 - Pit latrines : 18%
- HH with OD and Insanitary Toilets: 23%



Sanitation Challenges – Warangal

1

Prevalence of
Insanitary toilets





2

High incidence of open defecation

Sanitation Challenges : Warangal

3

Lack of design norms leading to slippage

Toilet builders (masons) are **not trained** in construction of **safe toilets**



Sanitation Challenges : Warangal



Sanitation Challenges : Warangal

Unregulated /unsafe septage handling

No periodic desludging



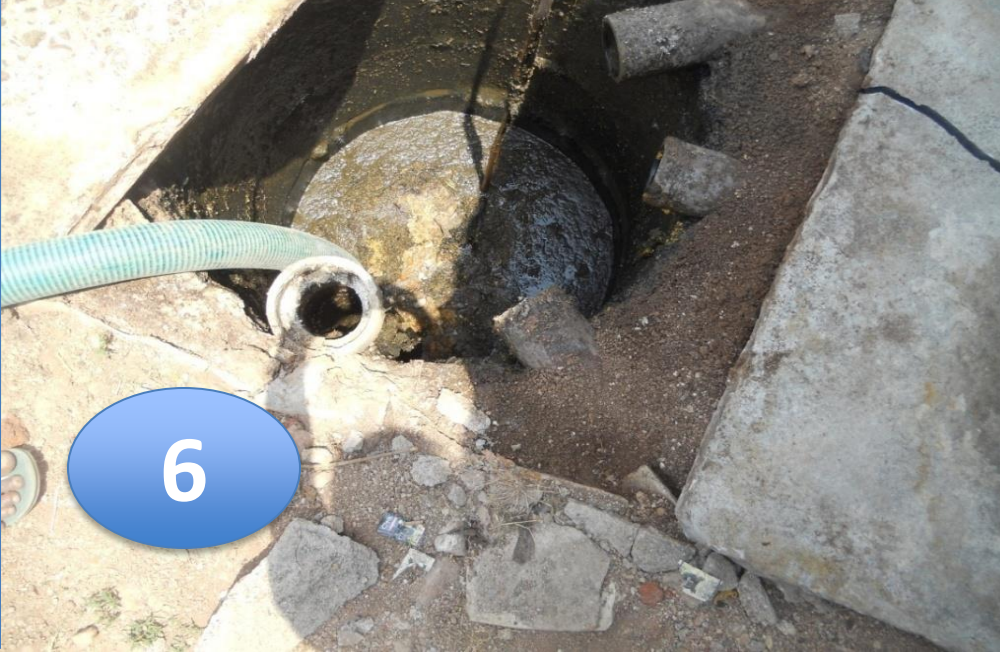


Non usage of Personal Protective Equipment

5



No record keeping /MIS



6





50
73

7



Unsafe transportation and disposal practices

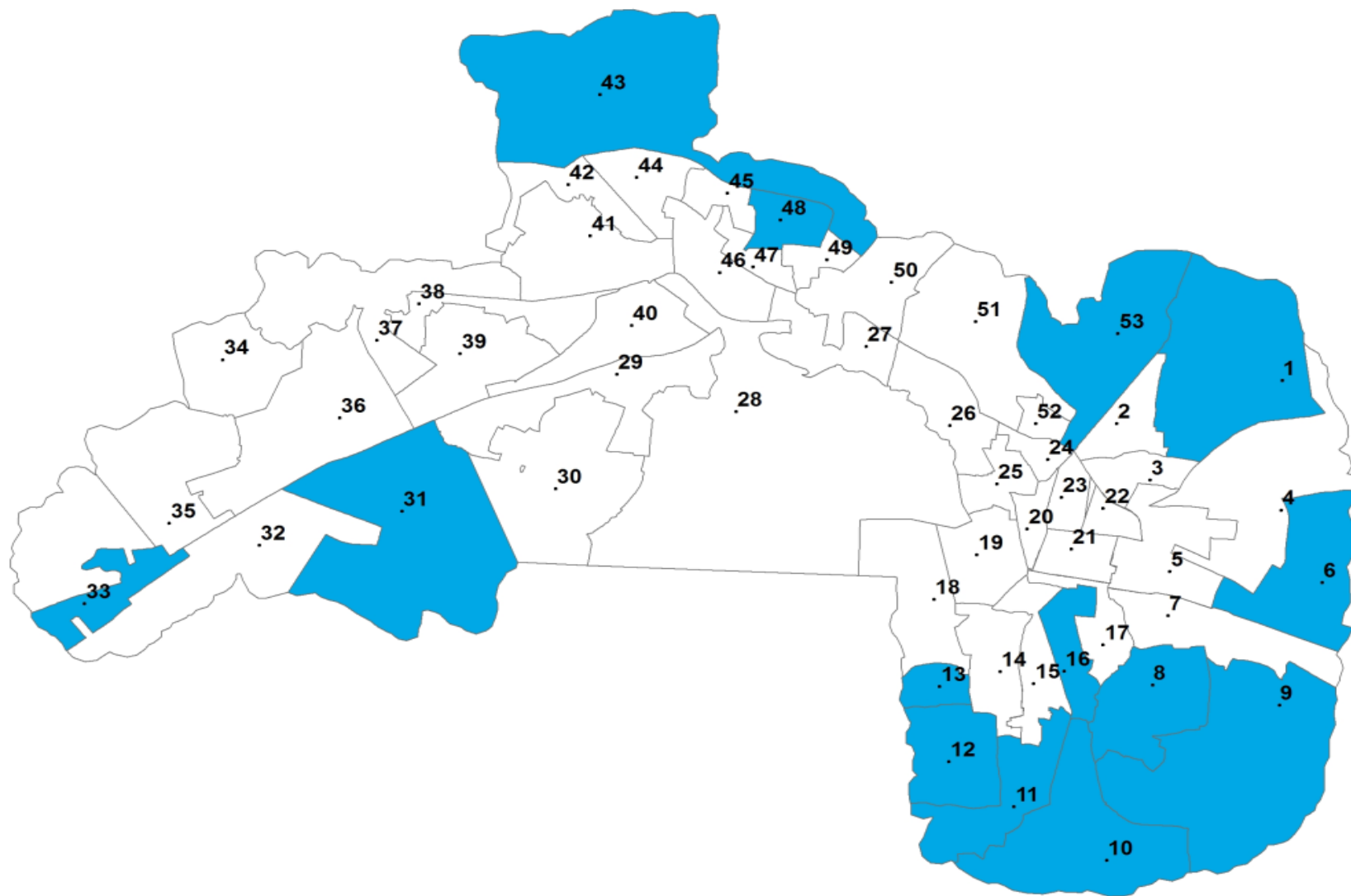


Unsafe disposal practices

8

[Video](#)

Septage disposal locations



0 900 1,800 3,600 5,400 7,200 Kilometers





Contamination of storm water drain And water bodies



Contamination of water bodies

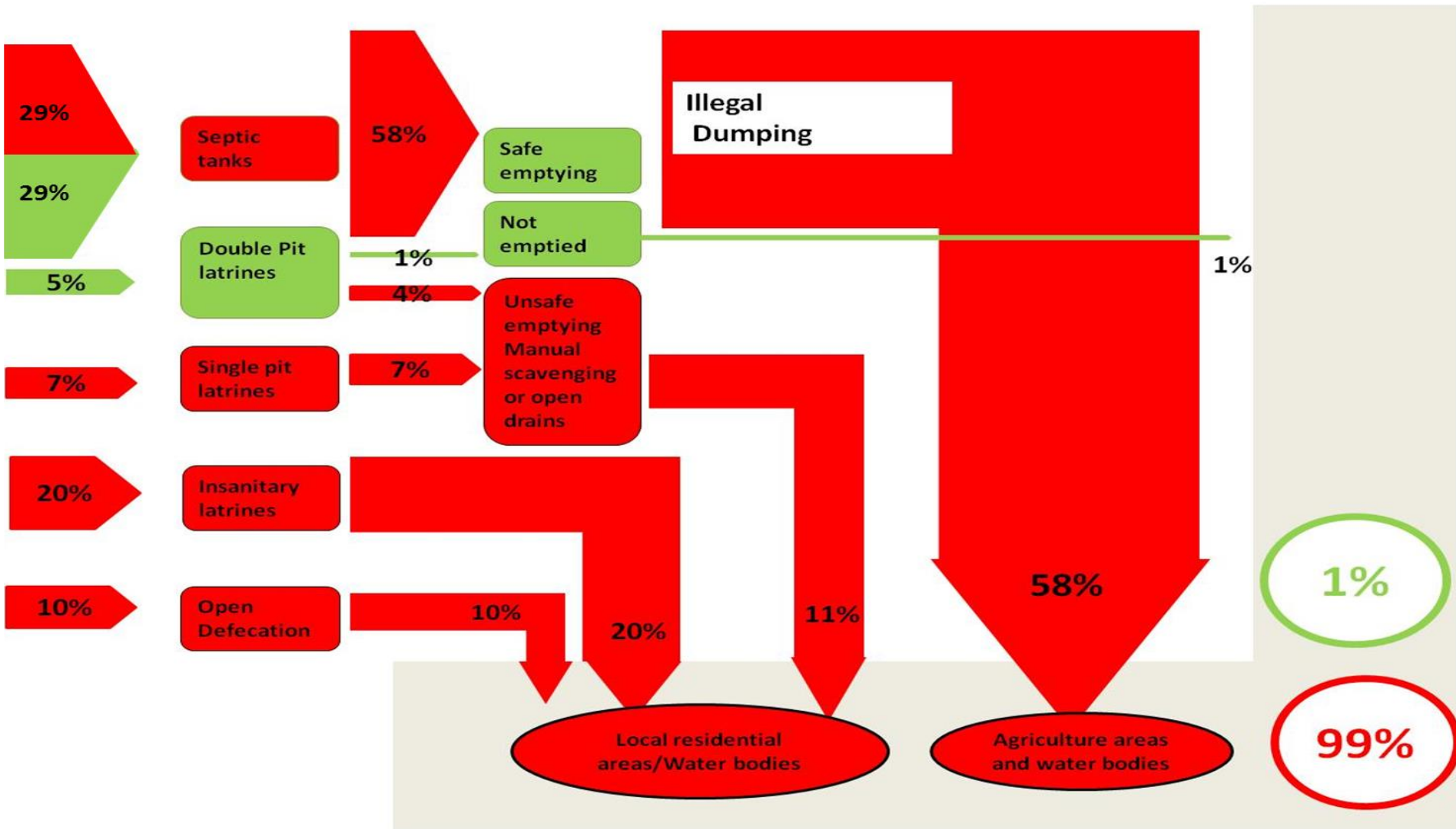


Sanitation Challenges : Warangal

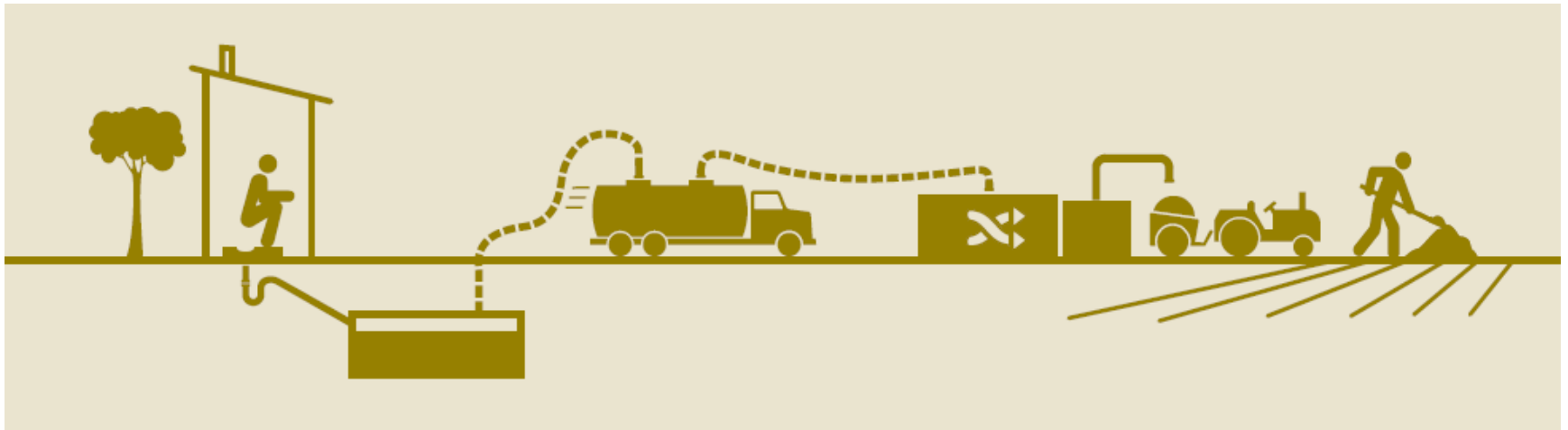
- Cumbersome processes to access sanitation subsidy
- Lack of information to citizens



SFD - Warangal City



REGULATING FECAL SLUDGE AND SEPTAGE MANAGEMENT



Containment

Emptying

Transport

Treatment

Disposal
or reuse



FSM Regulation and Septage Management Guidelines

GWMC passed the resolution on FSM on 25th March 2016
Warangal is the first city to introduce FSM regulation.

Components of Regulations

Design and Construction of Septic Tanks

Conversion of Insanitary Latrines into Sanitary Latrines

Pumping and Desludging

Septage Transportation

Septage Treatment, Disposal and Reuse

Information, Education and Communication (IEC)

Training Programs

Record keeping and MIS

Help Line for Septage Management

Operationalising FSM Regulations

Design And Construction Of Safe Toilets

- Press note released for empanelment of Masons (Toilet Builders)
- Trained the Masons and empaneled them.
- Empaneled masons being deputed for construction of IHHLs.



Notification for Empanelment of Toilet Builders In news papers & GWMC website



Operationalising the FSM Regulations

Design And Construction Of Safe Toilets – Toilet Builder Program



Operationalising the FSM Regulations

Design And Construction Of Safe Toilets– Toilet Builder Program



Distribution of Certificates to Toilet Builders



Toilet construction by trained masons



Survey of HH to assess toilet typology

- 100% Demand Assessment survey in November 2016 to assess the current status of toilet coverage and toilet typology.

2

MISSION FOR ELIMINATION OF POVERTY IN MISSION AREAS (MEPMA), Warangal
Greater Warangal Municipal Corporation,
ODF Survey format - 2016

Name of the ULB: Greater Warangal Municipal Corporation		
Section - 1		
A	S No.	:
B	House no.	:
	Area	:
	Ward No.	:
C	Name of the Owner	:
	Aadhar No	:
	Mobile No	:
D	Is There any family members in the Women' Association or Not?	:
E	If , their Name	:
	1. Association Name	:
	Aadhar No	:
	Bank A/C of the Owner	:
	Branch Name and Bank Name	:
	Is there any toilet in Home	:
	If Not	:
	1. Application status	:
	2. Stage 1	:
	Bill payment done/Not	:
	3. Stage 2	:
	Bill payment done/Not	:
	4. Category: A/B/C. Locked	:
	5. If yes connected to septic tank/ Drainage	:
Section - 2		
House is in the part of HARITHAHARAM		
	A. How many trees have been distributed	:
	B. How many trees are alive	:
	C. Is there any tree in front of House/Not	:
Section - 3		
	Has tap connection/Not	:
	If not, Source of water	:
	Whether they want Rs. 1 Tap connection / Not	:
		Hand pump/ water tank/ public tap

Name of the surveyor _____ Signature _____

Mobile No: _____



Conversion of Insanitary Latrines into Sanitary Latrines

Established a dedicated sanitation help line (S-Line):

- trained staff to support citizens on all aspects of septage management
- including septic tank designs,
- approval process,
- methods of construction,
- contact details of masons and desludging operators etc.

Sanitation Helpline (S-Line)



మరుగుదొడ్డి నిర్మించుకొనుటకు
సంప్రదించవలసిన ఫోన్ నెంబర్

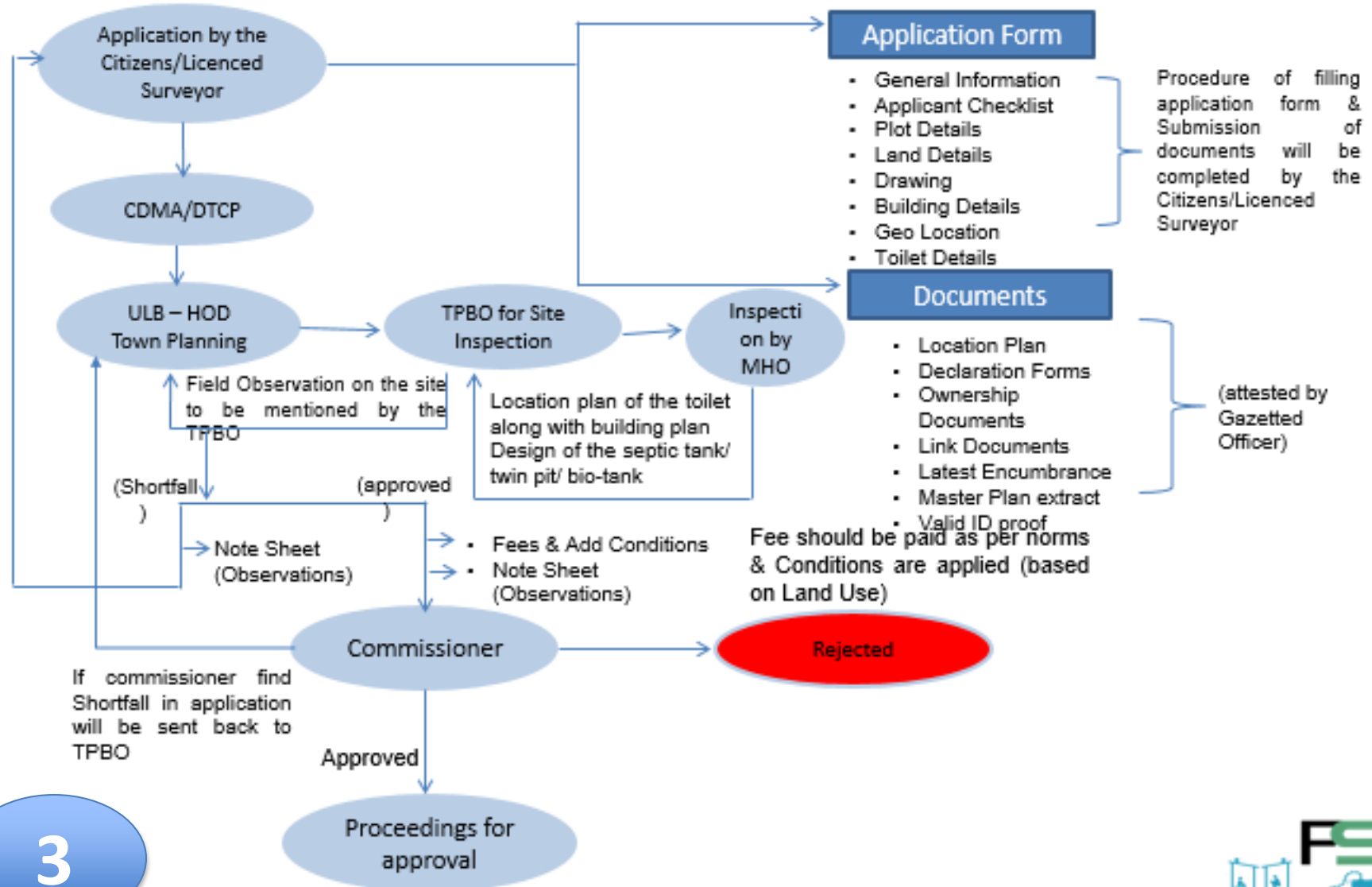
Construct a safe toilet at home

📞 99518 28605



Knowledge Partner: Administrative Staff College of India

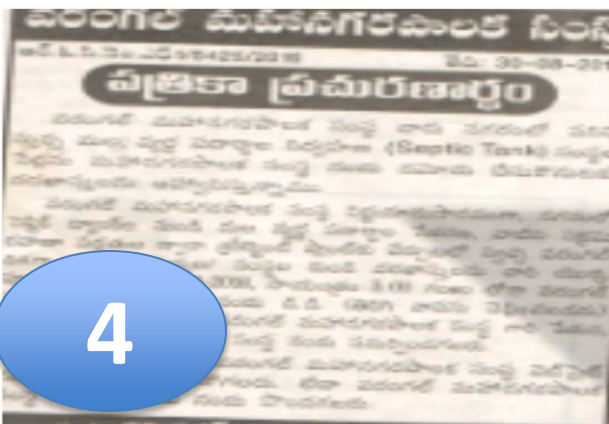
Process reengineering of the building approval system to incorporate toilet design and discharge of waste water according



Operationalising the FSM Regulations

Pumping and Desludging – empanelment and training of desludging operators

Empaneled Feecal sludge operators and two rounds of training (operators & staff) have been conducted by ASCI on use of Personal Protective Equipment



License issued to FSM operator



File No.HLTH-GEN/20/2016-SR AST1 HLT HOF

PROCEEDINGS OF THE COMMISSIONER (FAC) :: GREATER WARANGAL MUNICIPAL CORPORATION

Present: Sri Shahid Masood, B.Com,

Roc.No.HLTH-GEN/20/2016/Permit-03/2016

Dated:27-10-2016.

Sub: Greater Warangal Municipal Corporation – Public Health Branch – License
for collection, Transportation and disposal of septage - Orders – Issued.

Ref: Your application dated 01/09/2016

-o0o-

ORDER:

In accordance with all the terms and conditions of the By-laws / Regulations, Municipal Corporation Act/Rules, the special license conditions accompanying this license and applicable rules and laws of Government of Telangana, permission is hereby granted to.

Shri. Dilli Sampath Rao S/o. Ramana is hereby authorised to undertake desludging of the septic tanks and pits from the individual households, institutions, commercial entities and to transport for disposal at a designated site as notified by GWMC duly following the "Operative Guidelines on Septage Management (Collection, Transportation Treatment and Disposal) in Greater Warangal Municipal Corporation (GWMC) - 2016".

Municipal Health Officer
Greater Warangal Municipal Corporation

To
Copy to the Deputy Commissioner-II (Sanitation), GWMC
Copy submitted to the Commissioner, GWMC for favour of kind information.
Copy submitted to the Hon'ble Mayor, GWMC for favour of kind information.

Received Copy

(Signature)

Signature valid

Digitally signed by SADHYA
SADANALA
Date: 2016.10.28 11:14:49 IST
Reason: I am the author

License P#-2016



Operationalising the FSM Regulations

Information, Education and Communication



Operationalizing FSM

- A letter from commissioner to Superintendent of Police for seizing of vehicles by non-empaneled operators /vehicles from Commissioner is being issued.

GREATER WARANGAL MUNICIPAL CORPORATION

To,

The Commissioner of Police,
Warangal Commissionerate,
Warangal.

From,

The Commissioner,
Greater Warangal Municipal Corporation,
Warangal

Sub: Greater Warangal Municipal Corporation – Public Health Branch – Sanitation –
Septage Management in GWMC;

Ref: License for Collection, Transportation, and Disposal of Septage; Orders issued on
27-10-2016

Dear Sir,

The Greater Warangal Municipal Corporation (GWMC) is mandated with the function of “Public Health, Sanitation, Conservancy, and Social Waste Management” in accordance with the Constitutional Amendment Act, 1994. The Municipal Corporation Act has provided comprehensive powers to the Council and Commissioner for effective collection, transportation, treatment and disposal of sewage / septage within municipal jurisdiction.

To promote comprehensive and integrated approach to septage management collection, storage, desludging, transportation, treatment, disposal and reuse in



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Transportation



PPE using by Septage workers while desludging



GPS enabled FSM truck (Vehicle) and carrying sanitation messages

Operationalising FSM Regulations

GPS Module in FSM trucks

The screenshot displays a web browser window at the URL `s1.gps-server.net/tracking.php#`. The main area shows a map of Hanamkonda with three tracked trucks. The sidebar on the left lists the objects with their details:

Object	kph
Ungrouped (3)	
AP 28U 2420 2017-01-05 13:40:48	0
AP 36 W 6453 2017-01-05 14:02:23	0
AP 36 X 7651 2017-01-05 13:53:20	0

The map shows the trucks at the following locations:

- AP 28U 2420 (0 kph) near Old NH202
- AP 36 X 7651 (0 kph) near MG road
- AP 36 W 6453 (0 kph) near Warangal Jn

Other visible roads include 90 Colony Road, Circuit House Road, Hunter Road, 80 FT ROAD, and BRIDGE ROAD. A large lake, Bhadrakali Lake, is also visible.

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FSM Tracker

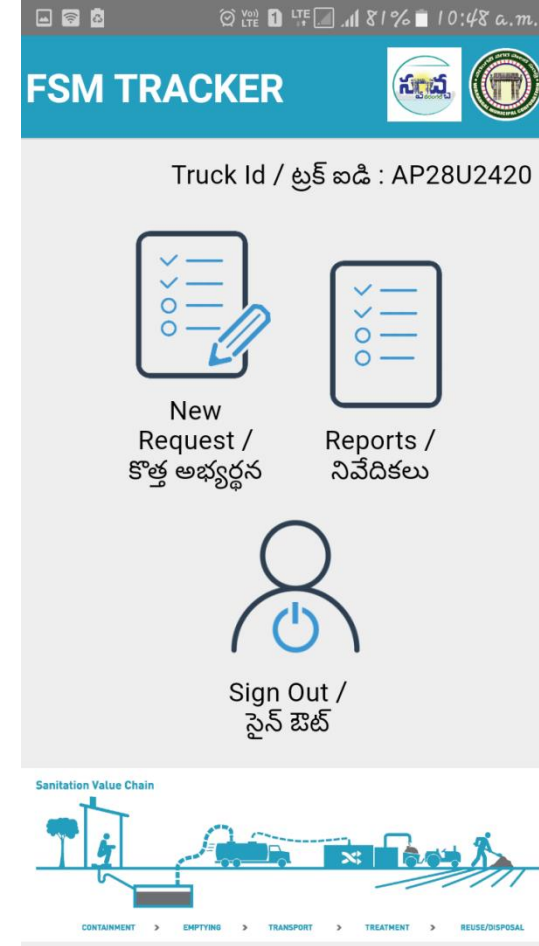
Mobile app

Purpose: Licensed FSM operators are required to report information as per the FSM Regulations .

Users: Desludging Operators

Functionality: This app captures information on septage collection on a real time basis and helps in effective implementation of the regulations.

Send auto alert to citizen and operators regarding next desludging cycle.



Operationalising the FSM Regulations

FSM Tracker



FSM TRACKER

Truck Id / ట్రక్ ఐడి : 1001

Type of Establishment / స్థాపనల రకం
Select / ఎంచుకోండి

Name / పేరు
Name / పేరు

Email / ఇమెయిల్
Email / ఇమెయిల్

House Number / ఇంటి సంఖ్య
House Number / ఇంటి సంఖ్య

Area / ప్రాంతం
Area / ప్రాంతం

City / నగరం
City / నగరం

Type of Containment / కలిగిఉండుట రకం
Select / ఎంచుకోండి

Quantity of Sludge Collected / సేకరించండి బురద
Quantity of Sludge Collected / సేకరించండి బురద

FSM TRACKER

Truck Id / ట్రక్ ఐడి : 1001

Reports / నివేదికలు

Type of Establishment	: Hospitals
Name	: Rao
Aadhar Number	: no
Email	: rao@gmail.com
House Number	: 345
Area	: Ameerpet
Type of Containment	: Double Chamber
Quantity of Sludge Collected	: 2
Next Date of Desludging	: 9/24/2016 12:00:00 AM
Booking Date	: 9/22/2016 1:51:37 PM

Type of Establishment	: Hospitals
Name	: Test 321
Aadhar Number	: no
Email	: test321@gmail.com
House Number	: 123
Area	: Punjagutta
Type of Containment	: Double Chamber
Quantity of Sludge Collected	: 2
Next Date of Desludging	: 9/26/2016 12:00:00 AM
Booking Date	: 9/22/2016 1:10:08 PM

Type of Establishment	: House Hold
Name	: Testing 13
Aadhar Number	: no
Email	: test13@gmail.com
House Number	: 456
Area	: Punjagutta
Type of Containment	: Single Chamber
Quantity of Sludge Collected	: 2
Next Date of Desludging	: 9/25/2016 12:00:00 AM
Booking Date	: 9/22/2016 12:46:28 PM

Type of Establishment	: Schools
Name	: Testing 1
Aadhar Number	: 221133445533
Email	: testing@gmail.com



FSM Tracker

Dashboard

FSM Tracker

[DashBoard](#)

[FSM Operations](#) ▾

[FSM Reports](#) ▾

[Users](#) ▾

[Logout](#)

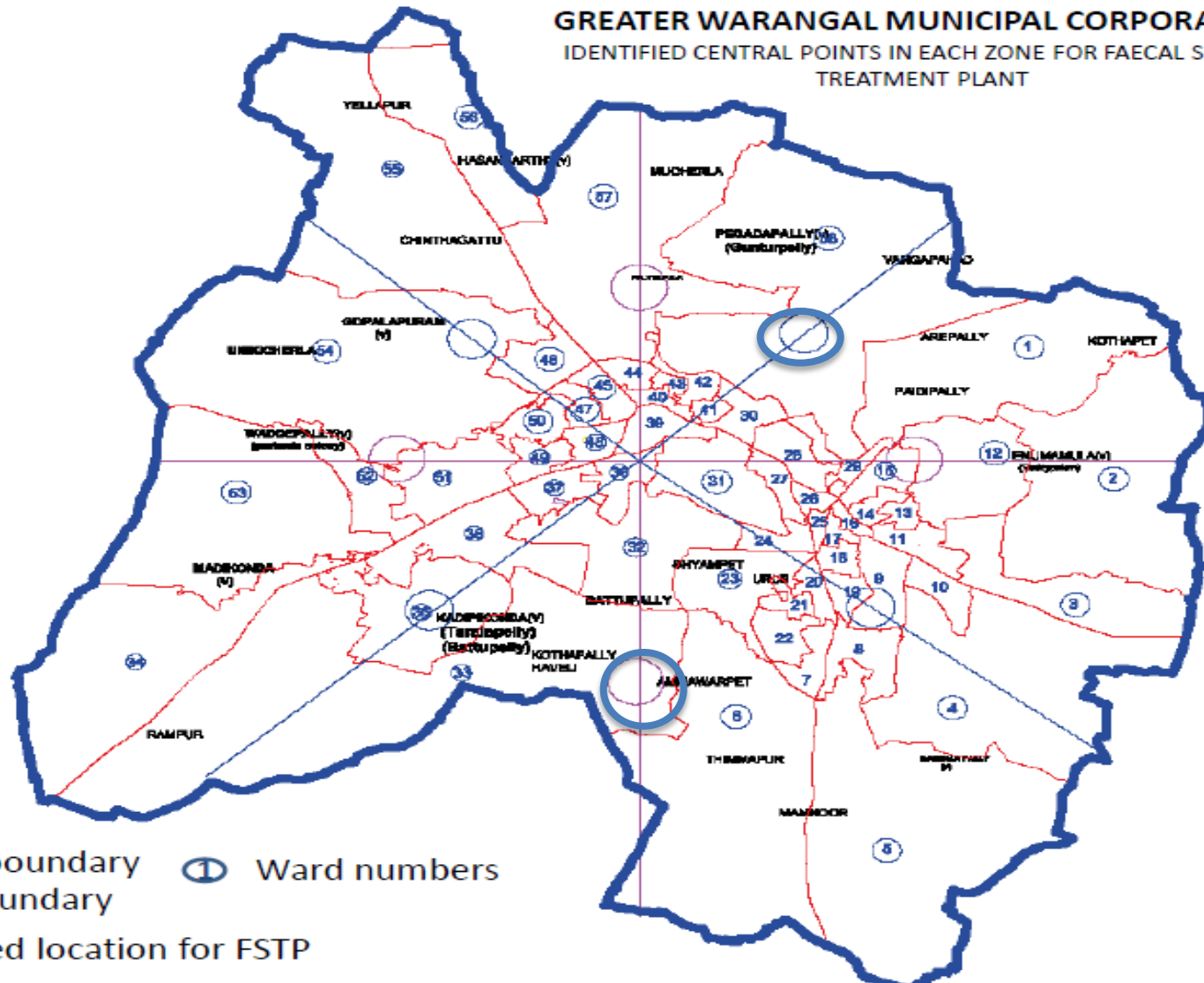
FSM Truck Details

[Download Excel](#)

#	FSMID	FSM Name	TruckId	Truck DriverName	Operator Id	Operator Name	Aadhar Number	Email	Mobile no	Booking Date	HouseNO	Area	City
1	100180	RD collage	1008	Narasimha Rao	10008	Mr Dilly Sampath Rao			9059910298	06/01/2017	2-2-126	Naimnagar	Hnk
2	100179	Raju	1006	Srinivas	10008	Mr Dilly Sampath Rao			9966451421	05/01/2017	22-7-62	Dr colony 1	Wgl
3	100178	Rsinivas	1008	Narasimha Rao	10008	Mr Dilly Sampath Rao			8328234215	05/01/2017	15-2-287	Rangampeta	Warangal
4	100177	G kranthikumar	1002	Yakaiah	10006	Mr Vijay Singh so Satveen Singh	245788015763		7386053753	04/01/2017	25-3-60/1	Somedi	Gwmc
5	100176	Kumar	1008	Narasimha	10008	Mr Dilly			9866898141	04/01/2017	5-11-269	Naimnagar	Hnk

Treatment Plant - Locations

GREATER WARANGAL MUNICIPAL CORPORATION
IDENTIFIED CENTRAL POINTS IN EACH ZONE FOR FAECAL SLUDGE
TREATMENT PLANT



LEGEND

- GWMC boundary
- Ward boundary
- Identified location for FSTP
- Ward numbers

Proposed site for FSM Treatment plant



Fecal Sludge Management–Technology Options

7

FSTP – (Anaerobic treatment system)

Capacity – 10 kl/day pilot plant (scaled to 40-60 kl /day)

Land – 2 acres – 5 acres

Capex – 75-80 lakhs

Opex - Rs 9 lakhs/annum; 8 % escalation every year.

PPP Structure

- *Option 1*

VGF – 50 %

Private sector investment – 50 % + 10 year full O & M

Bid parameter – Annual payments by GWMC

- *Option 2*

Capex and opex – private sector

Annuity payment – GWMC

Period 10 years



Fecal Sludge Management–Technology Options

Co-Treatment Option – Biomethanation

- **Co-Treatment through bio methanation – Bio degradable MSW and Septage**
 - **Capacity – 100 TPD**
 - **Land – 5 acres**
 - **PPP structure**
 - DFBOT Model
 - Capex – 100 % operator
 - Opex – 100 % operator
 - Bid period – 10 years
 - Bid parameter – revenue share to GWMC



Sanitation Helpline (S-Line)

Launched in May 2016, it is integrated into GHMC systems

8



New toilet construction

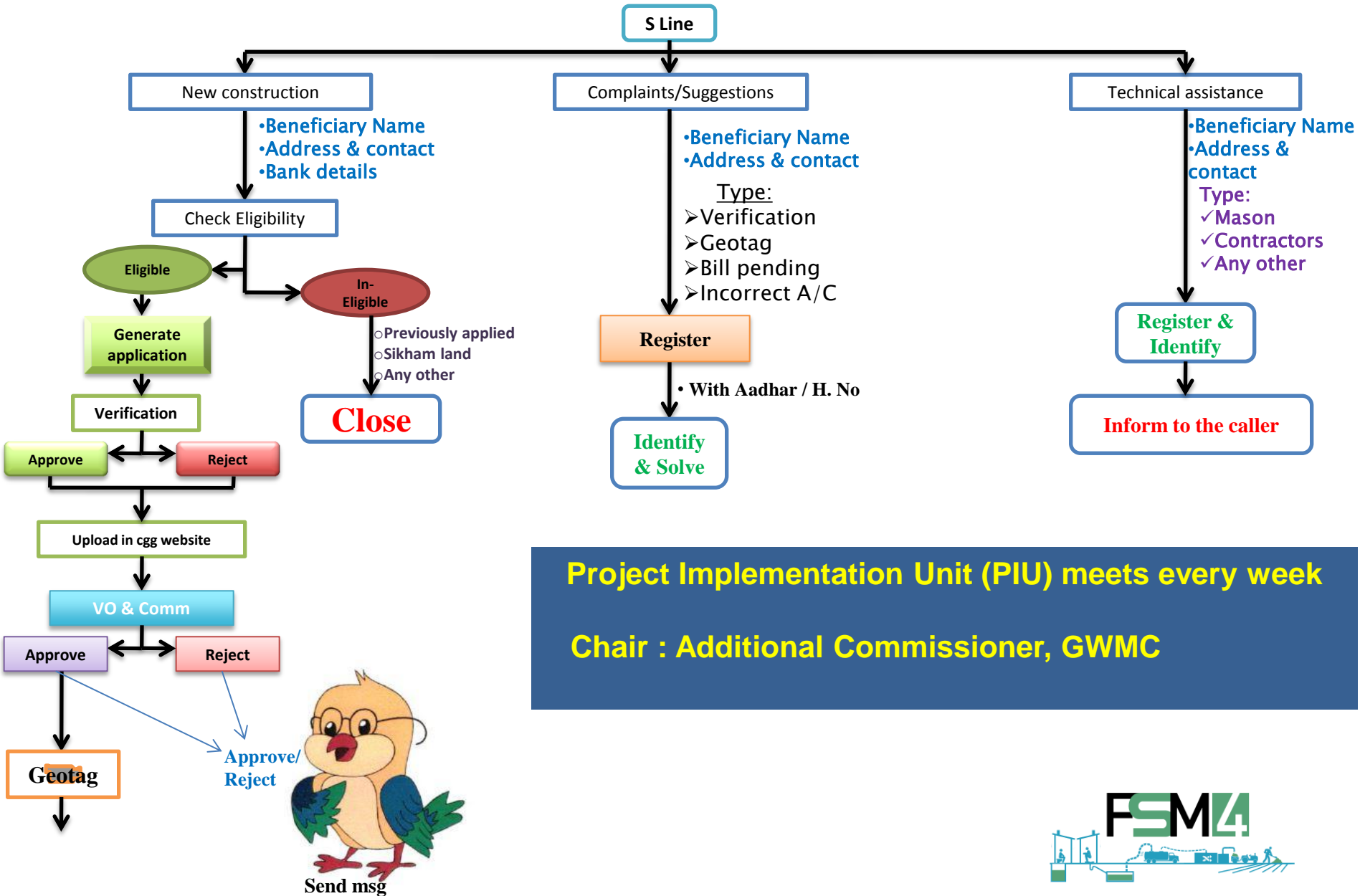
Desludging and Complaints

Technical Assistance



Sanitation Helpline (S-Line)

Process Flow



Recommendations

- Evidence based advocacy in support of regulations
- Stakeholder consultations and alignment with the programme.
- Training of stakeholders
- Land for FSTP needs to be identified early in the project.
- Monitoring and periodic review
- ICT tools to track progress
- PPP models work in FSM



Takeaway

- Regulation is pre-requisite for comprehensive city wide sanitation improvement
- Warangal has initiated systems and processes for successfully operationizing FSM regulations.
- Systems, processes and tools are replicable
- Warangal experience can be scaled up

