



Systems and Procedures for Urban Sanitation in Tamil Nadu

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This document is produced as part of Tamil Nadu Urban Sanitation Support Programme (TNUSSP). TNUSSP supports the Government of Tamil Nadu (GoTN) and cities in making improvements along the entire urban sanitation chain. The TNUSSP is being implemented by a consortium of organisations led by the Indian Institute for Human Settlements (IIHS).

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SYSTEMS AND PROCEDURES FOR URBAN SANITATION IN TAMIL NADU

1. Introduction

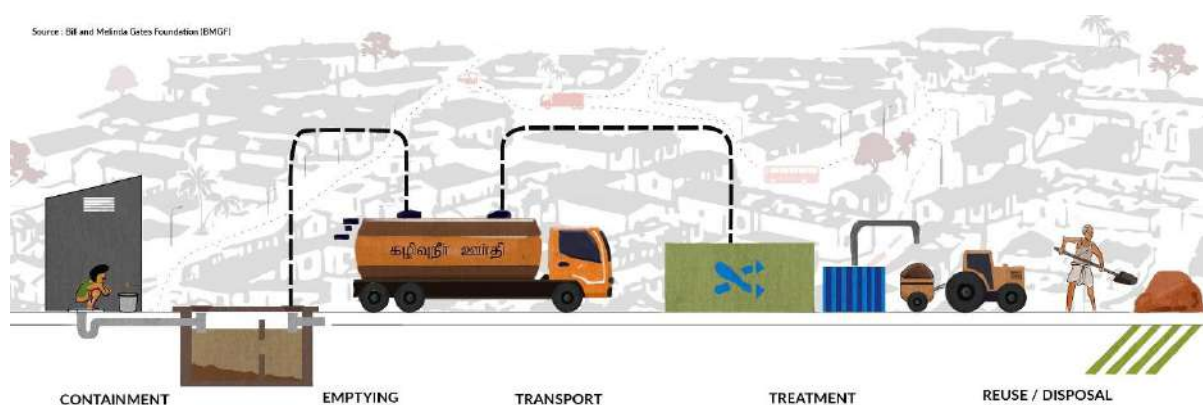
As per 2011 Census, 48.4 per cent of Tamil Nadu's population live in urban areas, making it one of most urbanised states in India. In terms of sanitation arrangements on-site sanitation systems (OSS) remain the dominant household sanitation arrangement, with nearly 67 per cent of urban households¹ connected to septic tanks. Lack of adequate sanitation poses one of the greatest barriers for Tamil Nadu in achieving full development potential and ensuring high standards of public health. Recognising inadequate sanitation as core to improved standards of public health, GoTN prioritised the full sanitation chain, including the strengthening of Fecal Sludge Management (FSM) as an economical and sustainable complement to network based systems.

In order to achieve the Tamil Nadu Sanitation Mission, the Department of Municipal Administration and Water Supply, Government of Tamil Nadu (MAWS, GoTN) aims at scaling up access to safe and sustainable sanitation in all urban areas. As one of the first states to recognise the need for FSM to ensure access to sanitation for all, the Government of Tamil Nadu (GoTN) issued the Operative Guidelines (OG) for Septage Management in 2014.

To support the GoTN in its Sanitation Mission and implementation of the OG, the Tamil Nadu Urban Sanitation Support Programme (TNUSSP) was launched in 2015. TNUSSP, run by a consortium of organisations led by the IIHS, is working the Government of Tamil Nadu (GoTN) to scale FSM across 663 towns and cities in the State.

The programme is focused on effecting improvements along the entire urban sanitation chain, as depicted in the figure below, going beyond the objective of constructing toilets, to ensuring proper containment systems, ensuring regulation of collection of septage from septic tanks and provision of treatment facilities for sustainable and safe disposal of septage.

Figure 1: Sanitation Chain



In the process of implementation of the OG, creation of adequate treatment facilities was recognised as a critical first step, which led to the development of a State Investment plan (SIP). The State prepared the SIP on the basis of two core principles: 1. utilisation of existing treatment facilities through co-

¹ NSSO 76th Round, 2018

treatment of septage with sewage; and 2. adoption of a cluster approach, wherein ULBs are clustered around an existing or new treatment facility. The SIP estimated the investment required to ensure full coverage of sanitation across 663 Urban Local Bodies (ULBs) across five phases. Phases I and II focus on the co-treatment of septage and sewage, and Phase III, IV and V on the creation of Fecal Sludge Treatment Plants (FSTPs). The GoTN is working on Phase I, II and III in parallel. In 2018, Phase III (budgetary allocations) was approved, and construction of FSTPs in ULBs is currently underway.

In addition, TNUSSP has been supporting the government on other initiatives:

- i) Governance mechanisms to sustain and scale FSM solutions across the State.
- ii) Building capacity to implement FSM of a range of stakeholders including among others government officers, desludging operators and masons;
- iii) Behaviour change towards improved hygiene and safe sanitation practices within urban communities including students;

A key aspect of ensuring sustainability for FSM includes strengthening adequate systems and procedures for FSM, to ensure sustainable FSM service delivery. This includes enhancing existing as well as creating new systems and procedures that can be institutionalised into the government system.

This document maps the existing systems and procedures at the State, regional and ULB level to identify gaps in existing FSM service delivery and lays out a set of recommendations for potential new processes, roles and responsibilities, within the current institutional framework.

While the systems and procedures evaluated below pertain to the state of Tamil Nadu the analysis of the institutional framework and recommendations will be applicable to other Indian states as well.

2. FSM Responsibilities at the State and Regional Levels

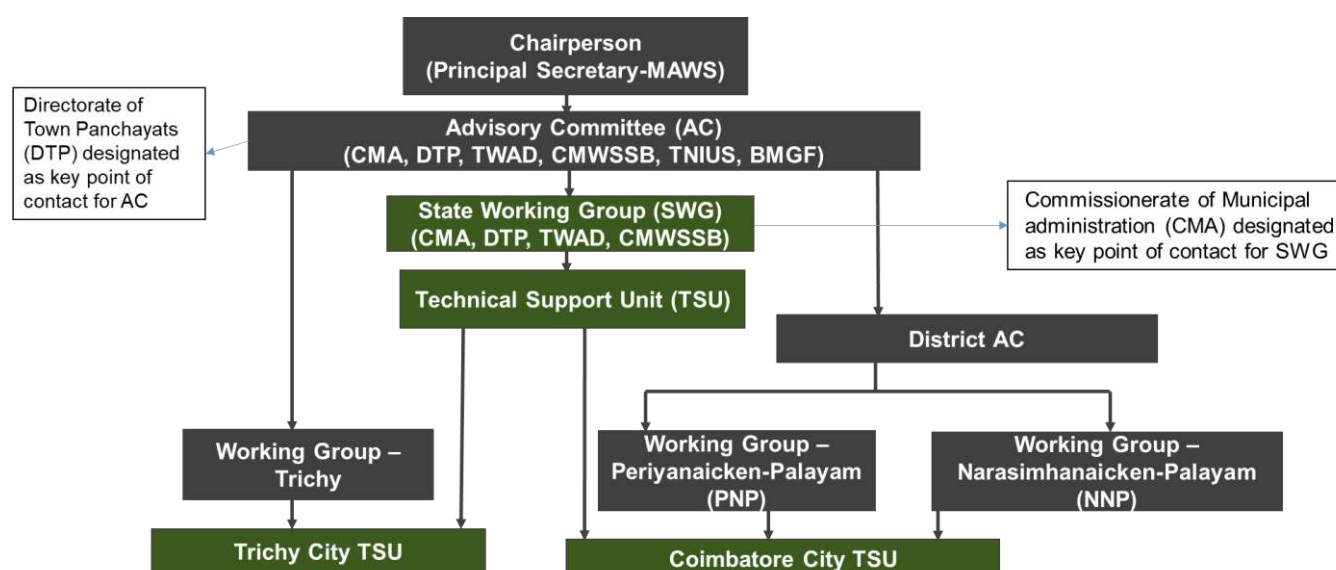
As part of TNUSSP, at the State level, the Municipal Administration and Drinking Water Supply (MAWS) Department has designated an Advisory Committee (AC) for FSM. The AC is chaired by the Principal Secretary (MAWS), and composed of the various departmental heads such as the Commissionerate of Municipal Administration (CMA), Directorate of Town Panchayats (DTP) and Tamil Nadu Water Supply and Drainage Board (TWAD), and other agency representatives/partners.

In addition, a State Working Group (SWG) headed by the Joint Commissioner of Municipal Administration (JCMA) and comprising of nodal government officers such as Joint Director (JD), Chief Engineer (CE) and Superintendent Engineer (SE) has been constituted. The SWG meets at regular intervals to provide a forum for coordination across various departments implementing FSM.

The key existing responsibilities of the AC/SWG are:

1. To issue necessary directives and instructions to departmental agencies, and ULBs, to participate in and support FSM activities.
2. Provide for platforms (workshops, meetings, discussions, and working groups) to accelerate and strengthen FSM service delivery in all urban locations in the State.
3. Enlist the cooperation and support of different departments of Government and staff therein, as well of NGOs, and private sector agencies, and citizens to effectively delivery FSM services.
4. Periodically assess the quality of implementation of FSM services, and suggest areas of improvements.
5. Resolve conflicts and problems.

Figure 1: TNUSSP- Working with GoTN



The CMA, DTP and TWAD would be key drivers of FSM at the state level. The JCMA, CE and JD-DTP supported by key engineering/administrative/managerial personnel, would facilitate timely implementation and oversee any FSM-related matters referred up to the state level.

Potential new FSM responsibilities of state level officers would include:

1. Instituting new processes for improving FSM service delivery.
2. Review, approval of design and contract, and sanction of large-scale FSTP construction.
3. Periodic review of FSTP operations and maintenance (O&M).
4. Dispute resolution on appeal.
5. Facilitating training and awareness creation, and grievance redressal.

At the regional level, the authorities include Regional Directorate of Municipal Administrations, Additional Directorate of Town Panchayats and Local Planning Authorities. These authorities function as intermediaries between ULBs and the State. They are involved in the monitoring and supervision of financial and administrative activities, and in the case of smaller ULBs provide additional support in service delivery.

Potential new FSM responsibilities of regional level officers would include:

1. Review and monitoring of FSM activities such as licensing of desludging operators and FSTP O&M.
2. Dispute resolution and review *inter alia* Memorandum of Understanding (MoU) on the usage of common FSTPs and co-treatment at STPs by cluster ULBs.
3. Facilitating training and awareness creation for ULB officers across administrative, engineering and public health cadre to capacitate them with requisite knowledge and skills to implement FSM.
4. Facilitate grievance redressal for ULBs within respective regions.

3. FSM Responsibilities at the ULB Level

3.1 Existing and Proposed FSM Processes, and Roles and Responsibilities

In Tamil Nadu there are three tiers of ULBs namely Municipal Corporations, Municipalities and Town Panchayats. As part of the process mapping exercise for ULBs across Tamil Nadu, TNUSSP has detailed out the FSM processes for one ULB archetype in Tamil Nadu.

A process mapping table for the existing FSM activities along with the corresponding staff, their roles and responsibilities has been developed and presented below. Table 1 highlights the new and modified FSM processes to be taken up and proposed new responsibilities for the existing staff. The section below summarises the FSM processes and recommended improvements presented in the process mapping table (1). The key processes² involved are:

Access and Containment

- i. **Building Plan Approvals:** The process includes the review of the building plan, site inspection, approval of application, calculation of rates and final inspection of the completed building for violations against plan/standards. Review and approval of building permissions (incl. access and containment/treatment systems) for large scale residential/commercial/industrial/institutional developments are referred up to the Local Planning Authority.

Recommendation for Improvement: The building plan review process to include site inspection during construction to ensure that the design of toilets and containment systems comply with the standards set by the Combined Development and Building Rules, 2019³ (CDBR).

- ii. **Provision of New Individual Household Latrines (IHHL) and/or Community Toilet/Public Toilets (CT/PTs):** The process for provisioning of IHHL under government schemes includes an application process, review of designs, final approval for construction and financial assistance.

For CT/PTs, councillors/public raise requests for construction of CT/PT, which is approved and tendered out. The O&M of CT/PTs is either ULB-managed or contracted out to NGOs/SHGs.

Recommendation for Improvement: The sanitation systems are to be inspected against the Combined Development and Building Rules, 2019 (CDBR). The Community toilets infrastructure to be provisioned with inclusive facilities for easy use by the differently-abled and take into consideration safety of women.

Collection and Conveyance

- iii. **Management of Desludging Operations:** The registration process for private desludging operators involves the submission of license applications along with necessary documents for review and approval. Desludging requests from households are directed to private desludging operators in the absence or unavailability of government trucks. In the case of ULB-run desludging operations, the process includes procurement of desludging trucks, cleaning equipment and safety gears. ULB-owned trucks are systematically scheduled to cater to the desludging requests from CT/PTs, government schools and urban poor locations.

Recommendation for Improvement: De-sludging operators are to be licensed as per the Standard License Agreement and records of licensed operators maintained. ULB-owned trucks are to provide on-demand ULB desludging services to CT/PTs, government schools, urban poor locations.

Treatment

- iv. **Operation and Maintenance of Decanting Stations:** The decanting station is under the purview of the engineering section. The O&M of the decanting station is contracted out to private operators.

² The details of the process of connecting HHs to UGSS and the O&M of UGSS have not been identified. There are no recommendations for improvement to these processes.

³ Revised standards for construction and monitoring of sanitation systems in new buildings in Tamil Nadu

Recommendation for Improvement: Mandatory testing and monitoring of all fecal waste coming into decanting stations to avoid disposal of industrial waste

- v. **Operation and Maintenance of Sewage Treatment Plant (STP):** The O&M of STPs is contracted out to private operators. The monitoring of O&M process, co-treatment and reuse is under the purview of the engineering staff.

Recommendation for Improvement: Co-treatment and reuse to be systematically operationalised at all STPs and overseen by relevant engineering/public health officers. Private contractors and ULB officers to be capacitated for co-treatment and reuse activities. There is a need for exploring reuse options and developing the market for treated products.

- vi. **Construction of Waste Water Treatment Plants (WWTP) at Apartments/Commercial Establishments:** WWTP construction at apartments/commercial establishments is the responsibility of the house/shop owners.

Recommendation for Improvement: The engineering section to inspect if apartments/commercial establishments are provisioned with a WWTP and further check if WWTPs are built as per standards.

- vii. **Construction of Fecal Sludge Treatment Plant (FSTP):** FSTP construction is contracted out to private contractors and regularly monitored by the engineering section.

- viii. **Operation and Maintenance of Fecal Sludge Treatment Plant (FSTP):** A quality assurance plan and service level agreement is to be chalked out between the private contractors and the engineering section. Where relevant, an MoU between FSTP-cluster ULBs is to be operationalised. Private contractors and ULB officers to be capacitated for co-composting and reuse activities. There is a need for exploring reuse options and developing the market for treated products.

The other cross-cutting FSM activities which are being mapped include identifying systems in place for testing of drinking water, connecting to UGD, sanitation workers, capacity building, gender and awareness campaigns for FSM. The aim is to propose activities and staff to regularise health camps, ensure safety/welfare of sanitation workers and women and create awareness on FSM.

The process by which these activities are carried out remains broadly consistent across the different grades of ULBs, but differs in terms of the responsibilities, cadre and sanction limits of officers assigned to particular tasks.

3.2 Organisational Structure and Staffing for FSM Activities

The activities detailed above are currently being delivered across ULBs by two key sections – engineering and public health with support from officers in the administrative and in certain cases revenue sections.

Across all FSM-related activities, the Commissioners/Executive Officers hold the final approval authority. In Municipal Corporations, the Commissioner is supported by the City Engineer (CE) and Assistant Commissioner in the technical review, monitoring and decision-making process. Similarly, in Municipalities and Town Panchayats the Commissioner or Executive Officer is supported by the Municipal Engineer (ME) or Junior Engineer (JE) respectively.

Where activities are not directly undertaken by the ULB, the engineering and public health sections with the approval of the Commissioner/Executive Officer manage the contracting/procurement processes

and subsequent monitoring of vendors/contractors. The administrative sanctions for all activities are provided by the Commissioner/Assistant Commissioner/Executive Officer, whereas technical sanctions are the responsibility of the engineering section (CE/ME/JE⁴).

The role of existing and proposed staff have been detailed out for one ULB in the below table 1. The proposed staff assigned for new responsibilities are mapped in terms of their existing roles while in certain instances staff from other relevant departments have also been assigned to take on the new responsibilities which has been summarised below in the recommendations for improvements

3.2.1 Recommendation for Improvement

The engineering section officers namely Executive Engineers, Assistant Executive Engineers, Assistant Engineers, Junior Engineers have been assigned responsibilities of reviewing sanitation systems in new buildings as per the CDBR, 2019. However, in terms of community/public toilets, Sanitation officers/Inspectors from the health department will also be involved in the inspection of construction of sanitation systems and monitoring of toilets and containment systems to ensure retrofitting insanitary toilets as per the building rules and public health acts.

The licensing of de-sludging operators and record keeping of de-sludging operations are proposed activities designated to the Sanitation Inspectors/Officers.

In the activities proposed under treatment and reuse, respective zonal level engineers take up the testing, monitoring and implementation activities falling within their zone. In terms of larger activities involving construction, contracting and maintenance of treatment systems the Commissioner with the support of the City Engineer will shoulder the assigned new responsibilities.

Overall, Municipal Corporations and Municipalities have exclusive engineering, public health officers dedicated to sanitation roles while in Town Panchayats⁵, officers, mainly from the engineering cadre, are shared across multiple smaller Town Panchayats. With sanctioned posts for Town Panchayats not having been revised technical officers required to manage sanitation-related tasks at Town Panchayats are limited.

⁴ CE, ME and JE are the head of engineering departments in Municipal Corporations, Municipalities and Town Panchayats respectively.

⁵ smaller urban areas, ie.an area in transition from rural area to an urban area

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
A	Access/Containment				
1	Building permissions for Residential / commercial / institutional buildings: super and sub-structure	Approval of building application	Zone Level - Junior Engineer, Assistant Executive Engineer, Assistant Commissioner , Assistant Engineer - Planning, Assistant Executive Engineer - planning / Executive Engineer - planning/Chief Engineer/Commissioner	The design standards of sanitation systems in the building plans to be reviewed against new Combined Development and Building Rules, 2019 (CDBR)	Assistant Executive Engineer - planning / Executive Engineer - planning
		Review of building plan	Junior Engineer, Assistant Executive Engineer - planning / Executive Engineer - planning, Chief Engineer.		
		Inspection of building on completion	Assistant Engineer / Assistant Executive Engineer - Planning/ Overseer / Technical Assistant	The sanitation systems in the newly constructed buildings to be inspected against the building plan and new Combined Development and Building Rules, 2019 (CDBR)	Assistant Engineer
2	Provisioning of new Individual Household Toilet (scheme-based)	Application for construction of IHHL submitted to Junior engineer for review	Junior Engineer	None	None
		Approval of IHHL application	Commissioner, City Engineer,/Executive Engineer/Assistant Engineer (depending on costs)	None	None

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
		Providing technical support and technical approval for IHHL	Junior Engineer / Technical Assistant	Toilets to reviewed against the building plan and new Combined Development and Building Rules, 2019 (CDBR)	Junior Engineer
		Approval for construction of new IHHL	City Engineer, Assistant Commissioner signing authority supported by Junior Engineer / AEE / EE/ Commissioner	None	None
3	Provisioning of new CT/PT	Approving construction of new CT/PT	Commissioner, City Engineer signing authority supported by Junior Engineer / AEE / EE	The sanitation systems to be inspected against the building plan and new Combined Development and Building Rules, 2019 (CDBR)	Junior Engineer , Sanitation Inspector/Officer
		Providing technical support and technical approval	Junior Engineer / Technical Assistant, Assistant Executive Engineer.		
		Contracting of CT/PT construction. Review of designs and costs submitted.	Chief Engineer/ Executive Engineer / Assistant Executive Engineer supported by Junior Engineer		
4	Operation and Maintenance (O&M) of CT/PT	Procurement of materials and assignment of staff for O&M	Assistant Commissioner supported by Sanitary Officer, Sanitary Inspector, Junior Engineer	Monitoring and inspection of toilets and containment systems to retrofit insanitary toilets as per CDBR, 2019 standards	Sanitation Inspector/Officer
		Contracting of CT/PT O&M.	Assistant Commissioner / Assistant Executive Engineer supported by Junior Engineer		

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
5	Converting insanitary toilets to sanitary toilets	Identifying and directing households with insanitary toilets to close illegal outlets.	Assistant Commissioner supported by Sanitary Officer, Sanitary Inspector, Junior Engineer	Monitoring and inspection of toilets and containment systems to retrofit insanitary toilets as per CDBR, 2019 standards	Sanitation Inspector/Officer
B	Collection & Conveyance				
6	Registration/Licensing of Desludging Operators	Review of licensing applications along with necessary documents	Sanitary Officer / Assistant Executive Engineer (SWM)	De-sludging operators to be licensed with Municipal Corporation as per the Standard License Agreement and record keeping	Sanitation Inspector/Officer
		Approval of licenses for desludging operators	Sanitary Officer + Assistant Commissioner (AC) / Assistant Executive Engineer(AEE) (SWM), Chief Engineer.		
7	Operation and Maintenance (O&M) of desludging services	Approval of desludging trucks purchase	Commissioner signing authority Supported by CE, Executive Engineer, Assistant Executive Engineer (SWM)	None	Sanitation Inspector/Officer
		Procurement of desludging trucks and safety gears for desludging. Asset control	Commissioner, Chief Engineer / Executive Engineer, Assistant Executive Engineer (SWM)	None	Sanitation Inspector/Officer
		Providing on-demand ULB desludging services	Sanitary Inspector+ AEE (SWM)	Providing on-demand ULB desludging services to CT/PTs, government schools, urban poor locations	Sanitation Inspector/Officer

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
8	Monitoring of Desludging Operations	Monitoring of hotspots to prevent unsafe disposal and spillage	Sanitary Inspector / Officer + Assistant Commissioner Supported by Sanitary Staff	Potentially monitoring through GPS enabled devices	
C	Treatment & Reuse				
9	Operation and Maintenance of Decanting Stations	Review and approval of O&M contract	Commissioner, City Engineer, Assistant Commissioner (Zonal), Assistant Executive Engineer (Mechanical)	None	None
		Contracting of decanting station O&M.	Assistant Executive Engineer, Junior Engineer (Zonal Level)	None	Sanitation Inspector/Officer
		Operation and Maintenance	Private	Testing and monitoring inflow/outflow of fecal sludge coming into decanting station	None
10	Construction of WWTPs at commercial establishments	Review of design	Assistant Executive Engineer (Zonal)	Inspect if STPs are built as per standards	Assistant Executive Engineer (Zonal)/Executive Engineer (Planning)
		Approval of design	Commissioner, Chief Engineer, Executive Engineer (Planning)		

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
		Operation of WWTP	Junior Engineer (Zonal)	Monitoring of apartments and commercial establishments to check for provisioning of WWTP	Junior Engineer (Zonal)
11	Construction of Sewage Treatment Plants (STP)				
12	Operation and Maintenance of Sewage Treatment Plant (STP)	Contracting of STP O&M	Commissioner Supported by Engineering Staff	None	None
		Monitoring operation and maintenance, co-treatment and re-use at STP.	Junior Engineer / Assistant Executive Engineer Supported by Engineering Staff	Monitor co-treatment and reuse as per the O&M protocol	Assistant Executive Engineer
		Procurement of materials and assignment of staff for O&M	Junior Engineer / Assistant Executive Engineer Supported by Engineering Staff + Assistant Commissioner	None	None
		Managing operation and maintenance, co-treatment and re-use activities at STP.	Junior Engineer / Assistant Executive Engineer / Executive Engineer/ Chief Engineer, Supported by Engineering Staff + Assistant Commissioner	Implement and monitor co-treatment and reuse as per the O&M protocol	Assistant Executive Engineer

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
		Liaise with Pollution Control Board	Junior Engineer / Assistant Executive Engineer Supported by Engineering Staff + Assistant Commissioner	Implement and monitor co-treatment and reuse as per the O&M protocol	Assistant Executive Engineer
13	Construction of Fecal Sludge Treatment Plant (FSTP)	N/A	N/A	Review of designs and costs submitted	City Engineer, City Health Officer, Sanitation Inspector/Officer
		N/A	N/A	Oversee and approve contracting of FSTP construction.	Commissioner/Council
14	Operation and Maintenance of Fecal Sludge Treatment Plant (FSTP)	N/A	N/A	Where relevant, Memorandum of Understanding (MoU) between ULBs within a cluster with a common FSTP, to be reviewed, approved and signed	Commissioner, City Health Officer
				Operationalise/ execute MoU.	Sanitary Officer/ Inspector

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
				Contracting of FSTP O&M	Commissioner supported by City Engineer
				Monitoring operation and maintenance, co-composting and re-use at FSTP	Assistant Executive Engineer
D	Other Activities				
15	Testing of Drinking Water	Surface, tube well, open well water testing at regular frequency for potability	Assistant Executive Engineer (Water works), Sanitation Inspector/Officer, Clerk.		Assistant Executive Engineer, Junior Engineer.
		Liaise with Pollution Control Board	PCB officials to be identified.		Chief Engineer, Assistant Executive Engineer, Junior Engineer.
16	BCC - Awareness - FSM	N/A		Campaign on regular desludging	City Health officer, Sanitation Inspector/Officer, SBM – Co-Supervisor, Animator .
		N/A		Mission level programs such as SBM	SBM – Co-Supervisor
17	Sanitation workers	N/A		Welfare of organized and unorganized sanitation workers	City Health Officer
		N/A		Safety of sanitation workers	City Health Officer, Sanitary Officer/ Inspector

Table 1: Systems and Procedures for FSM in Tamil Nadu					
No.	FSM Processes	Existing FSM Activities	Existing Staff	Proposed Activities	Proposed Staff
		N/A		Health camp	City Health Officer, Sanitary Officer/ Inspector
18	Capacity Building (Training)	N/A		For all staff	Assistant Commissioner (Personnel)

Figure 2: Organisational Structure and Staffing – Municipal Corporation

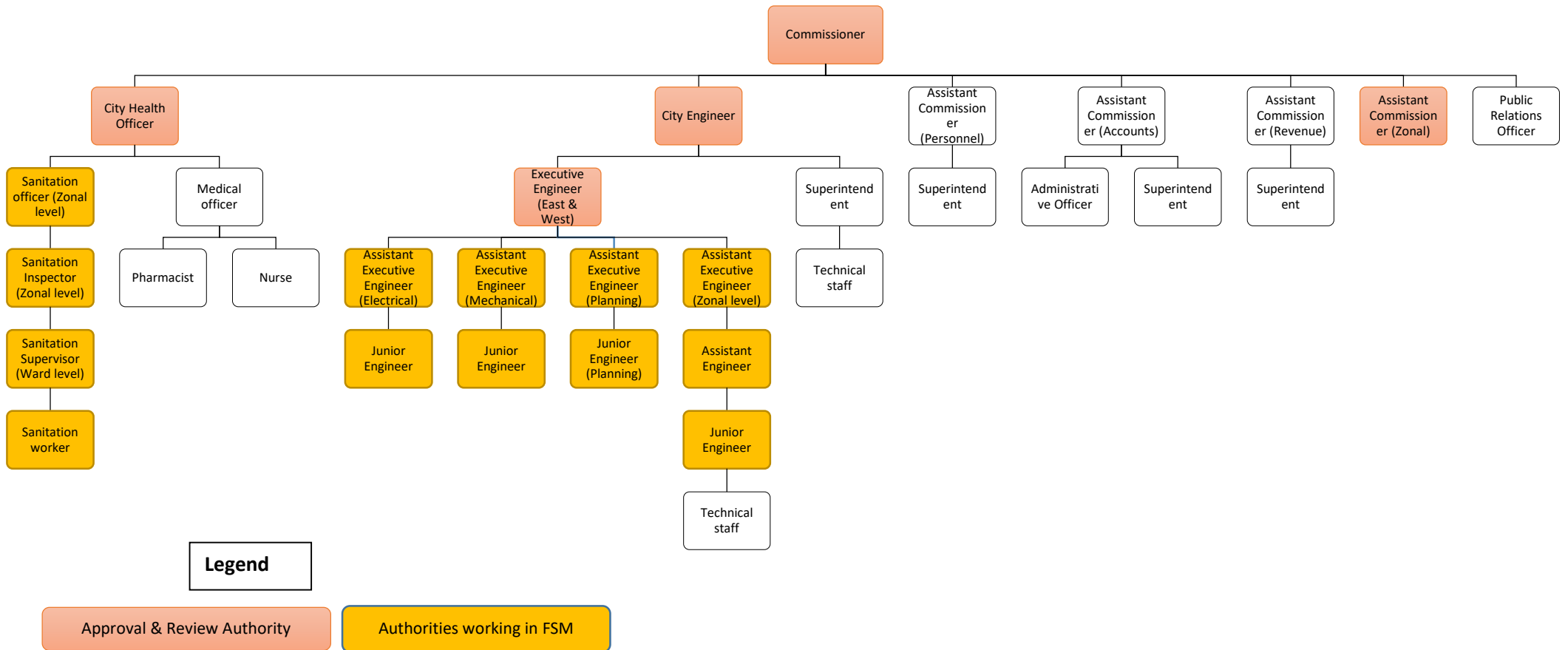


Figure 3: Organisational Structure and Staffing – Municipalities

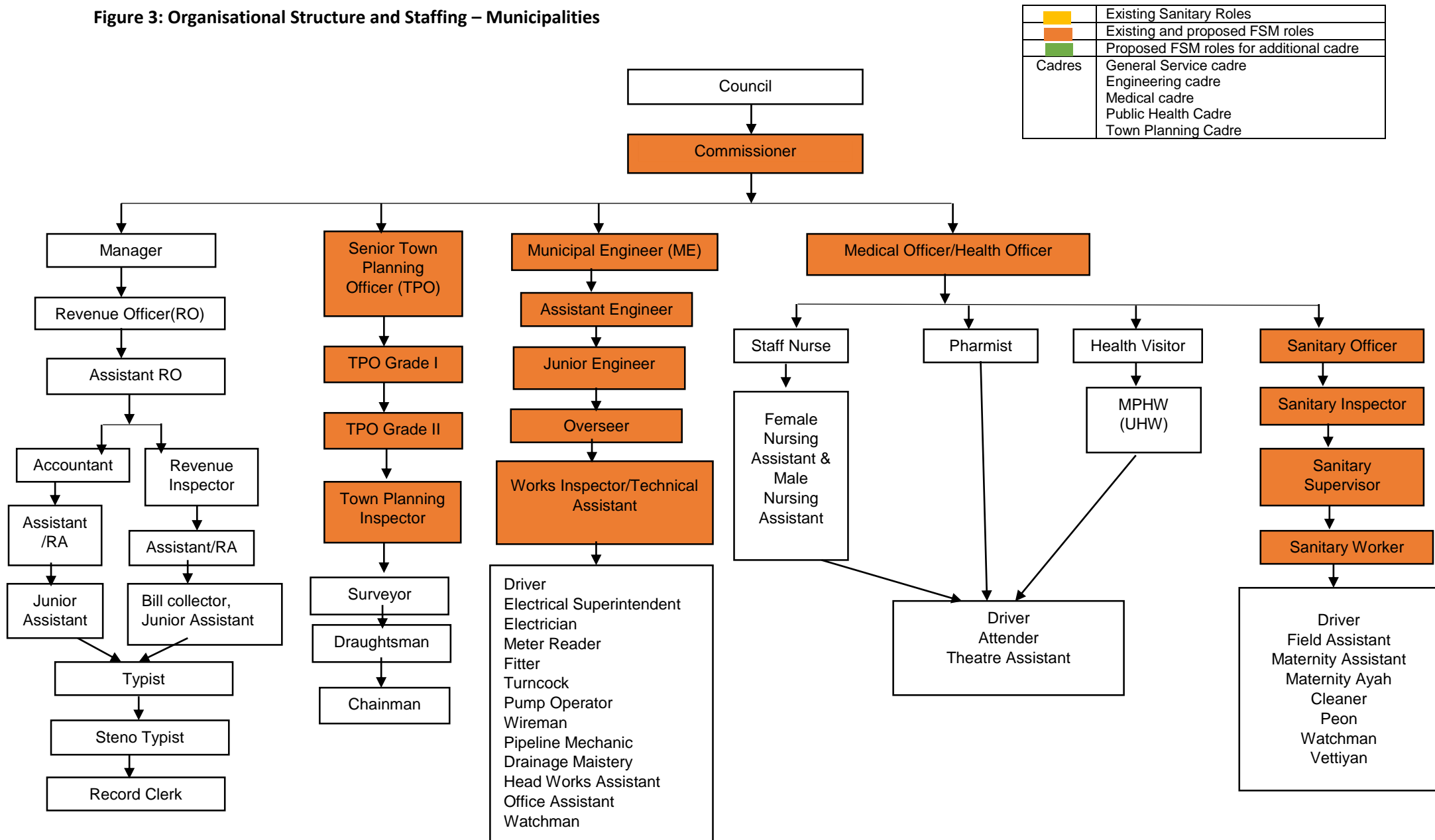


Figure 4: Organisational Structure and Staffing – Town Panchayats

