

PUBLIC SANITATION FACILITIES IN TIRUPATI MUNICIPAL CORPORATION*

*Needs
Assessment*

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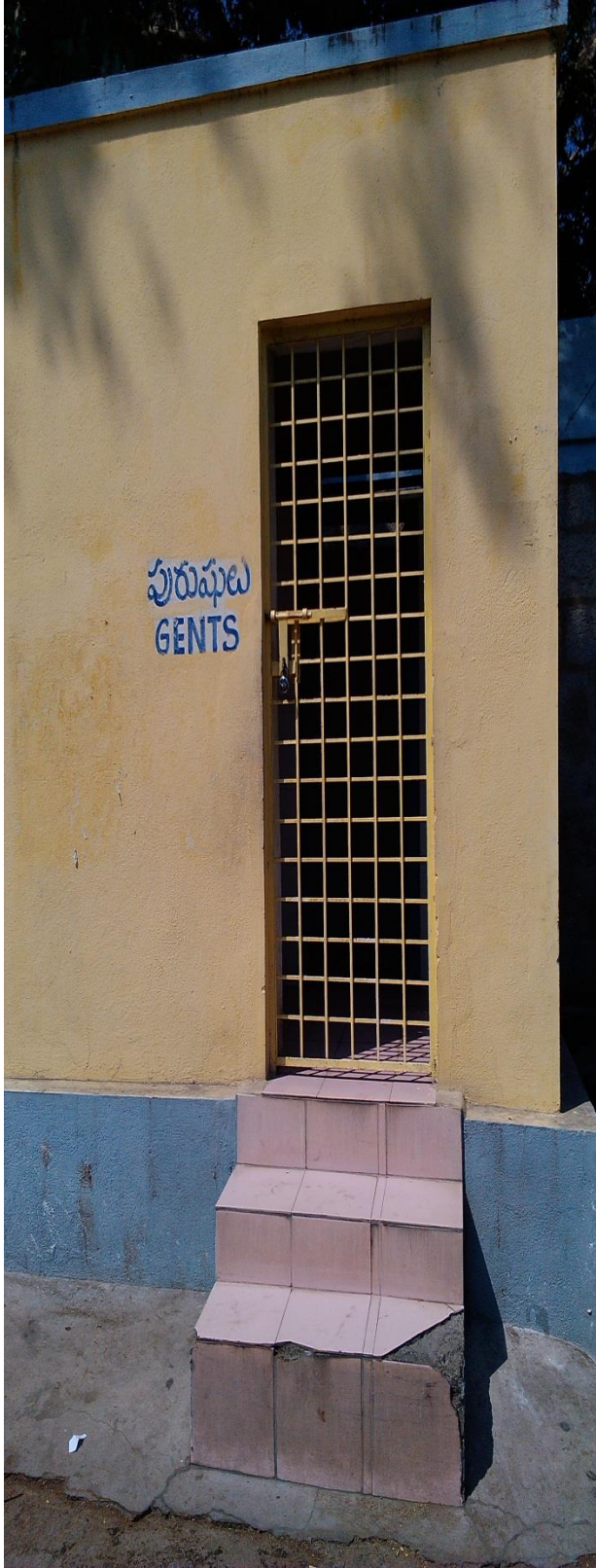
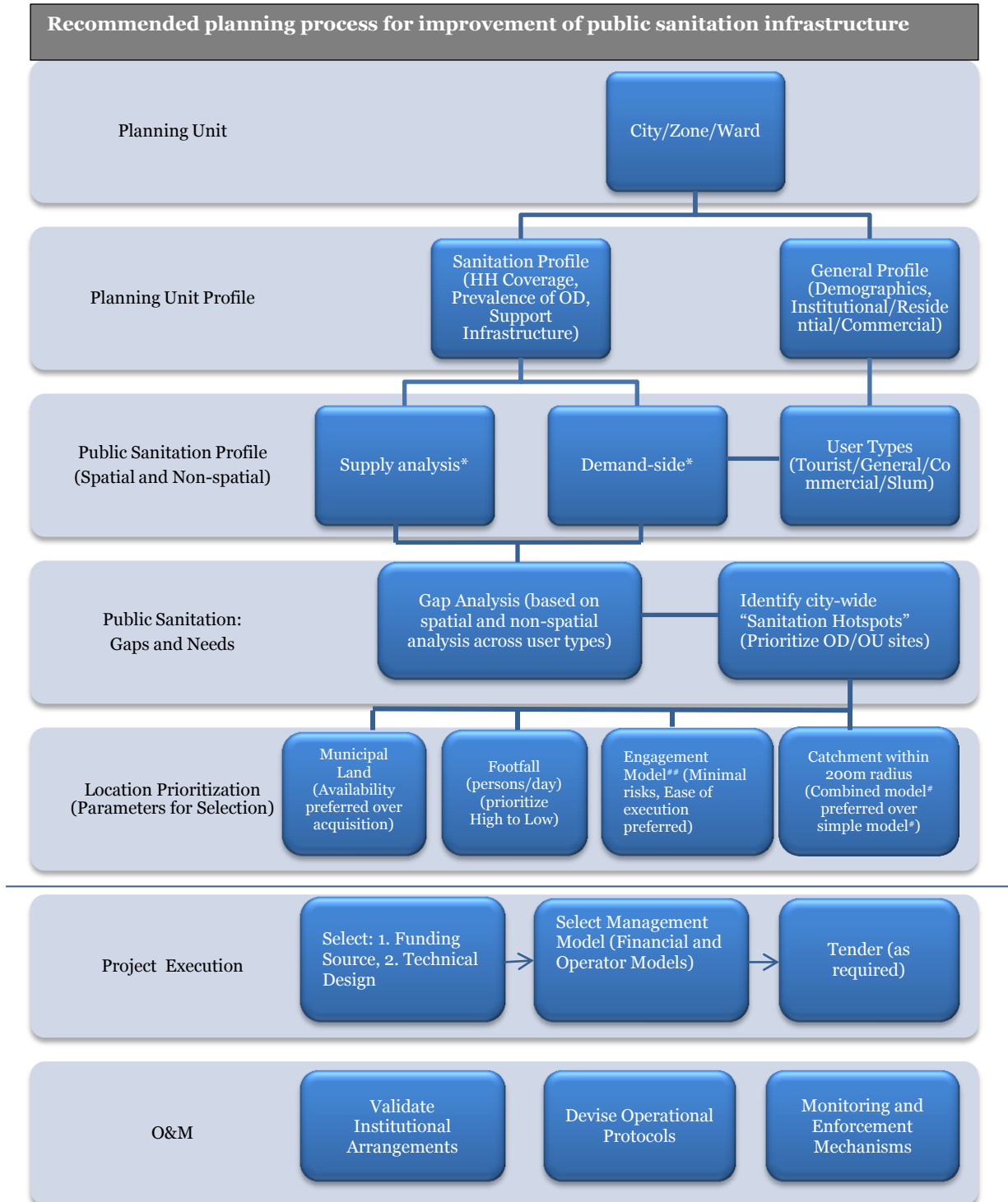


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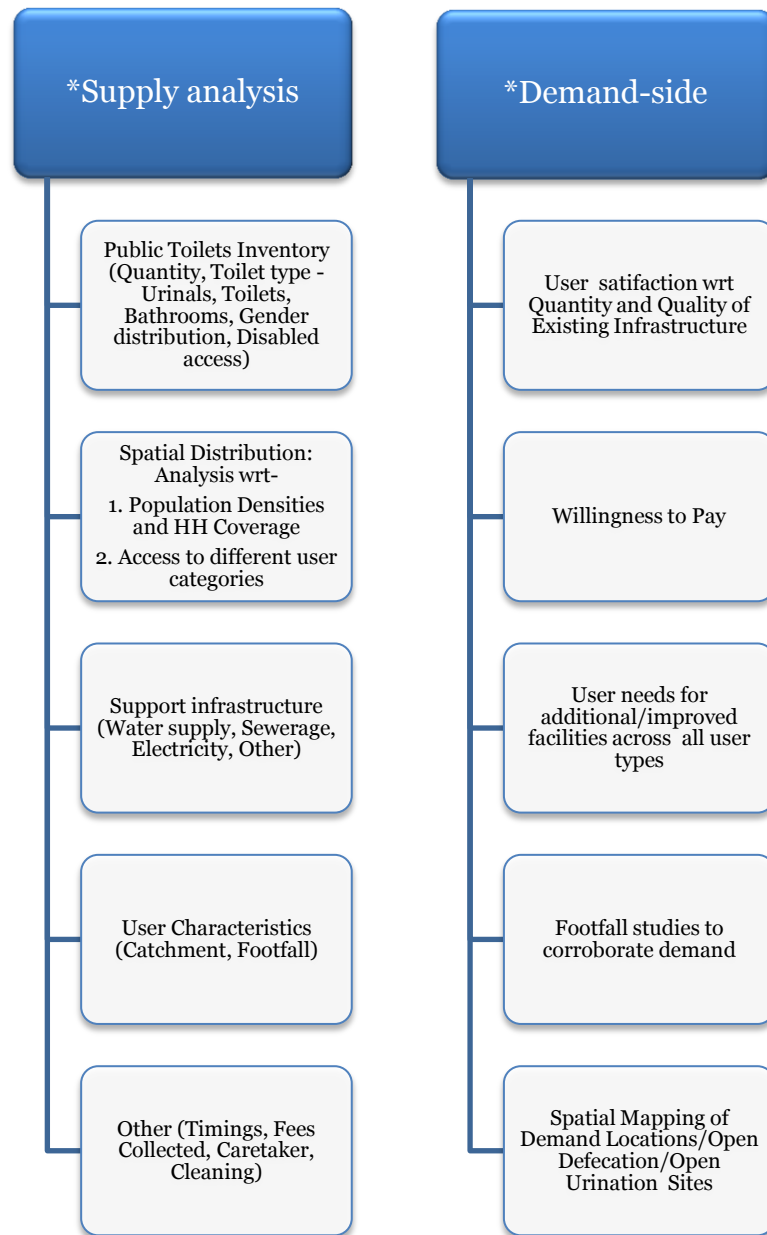
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1. Background

The Status Report submitted in March 2013 presented our findings with respect to the different users of public sanitation facilities as well as an analysis of the sanitation infrastructure available for the different categories.



#Combined model: Multiple catchment (Slum/Commercial/General/Tourist), Simple model: Single catchment
 ##NGO/ Community/ BOT/O&M/Other Institutions/Schemes)



Within Tirupati Municipal Corporation (TMC), four types of primary users were identified for the purposes of detailed demand assessment, viz.,

1. tourists/floating population,
2. slum population,
3. general population, and
4. commercial population.

During the month of April, one-on-one interviews were conducted with 1000 persons falling within the first three categories. 250 users classified as tourists, 250 users categorised as general population and 500 users working in commercial establishments were interviewed. Please note that Focus Group Discussions and one-on-one interviews with persons residing in slum settlements in TMC were **not** interviewed in this round of field work.

In this segment, we will analyse the demand assessment findings across the different user types and contrast the demand against the existing supply of public sanitation facilities to arrive at additional public sanitation needs in the city. We will also highlight key open defecation/urination areas that require immediate attention in terms of pushing the city forward towards achieving an open defecation free status. We will also identify existing sanitation facilities that require retrofitting or refurbishment. Towards this end, we have also adopted a detailed service evaluation matrix to assess sanitation delivery across the different user categories. This matrix will be instrumental in selection of locations for construction/refurbishment of sanitation facilities in the city.





2. Tourist population

2.1 Demand assessment findings

As per the CSP, the floating/tourist population is approximately 55,000 persons per day. For statistical robustness, it was decided **initially** to interview 1%, or 500 persons; and to make sure that perspectives and issues of women are taken into account, it was decided that 50%, i.e. 250 persons interviewed should be women. Given the paucity of time and resources, a total of 250 tourists were interviewed, with half of these being women. Piloting of the final questionnaire used was done in February 2013 and modifications were made accordingly.

Based on deliberations with TMC officials, data obtained from the geo-tagging exercise and initial pilots, the list of **toilet complexes** used primarily by tourists was drawn up. These complexes are located inside the RTC bus stand and inside and opposite the railway station. The complex opposite the railway station is Vishnuvasam pilgrim amenities centre. Albeit the toilet complex can only be used by pilgrims residing there, inclusion of this complex in the sample provides an interesting point of comparison. While the complexes in and around the railway station are located in Ward 14, those in the RTC bus stand fall under Ward 13.

Table 1 Descriptive statistics of users of toilet complexes

Parameter	Total number of tourists (n=250)	Additional Remarks
Location of interview		
1. Inside the railway station (near reservation counter, 2 complexes)	68	
2. Opposite the railway station, Vishnuvasam pilgrim amenities centre	62	
3. Inside the RTC bus stand: Srihari complex (1 &2)	64	
4. Inside the RTC bus stand: Srinivasa complex (1 &2)	56	
Gender division		
1. Male	250	
2. Female	250	
Gender division within each site		
Inside railway station		
1. Male	0	
2. Female	68 (100%)	
Opposite railway Station		
1. Male	6	
2. Female	56	
Srihari Complex		
1. Male	63	
2. Female	1	
Srinivasa Complex		

1. Male	56	
2. Female	0	
Place of origin of tourists		As 100% of persons interviewed were not from Tirupati questions relating to their employment status, place of work, frequency of visiting public toilets in the city and whether there was a facility near the workplace are irrelevant. Also questions relating to time taken to walk to the facility and changes in user fees over time are were redundant.
1. From Tirupati town	250 (100%)	
2. Outside Tirupati town	0	
Reason for visiting Tirupati		
1. Pilgrimage/temple visit	244 (97.6%)	
2. Education purpose	3	
3. Business	1	
4. Hospital visit	1	
5. Wage labour	1	
Time taken in waiting to use the toilet facility		
1. No wait	188 (75.2%)	
2. Less than 5 minutes	41	
3. 5-10 minutes	20	
4. More than 10 minutes	1	
Usage of toilet complex		
1. Urinals	26	
2. Urinals and toilet	15	
3. Toilet	156 (62.4%)	
4. Toilet and shower	4	
5. Urinals, toilet and shower	38	
6. Shower	11	
User fees paid		No fees was paid for the toilet complex inside Vishnuvasam Pilgrim Amenities Centre All 26 persons who used the urinals in the toilet complex paid either INR 2, 3, or 4
1. No fees paid	62	
a. Urinals, toilet	15	
b. Toilet	9	
c. Shower	1	
d. Urinals, toilet, shower	37	
2. Urinals: INR 2	21	
3. Urinals: INR 3	2	
4. Urinals INR 4	3	
5. Toilet: INR 3	4	
6. Toilet: INR 4	1	
7. Toilet: INR 5	142	
8. Toilet INR 5, Shower INR 10	5	
9. Shower INR 10	10	
Condition of the toilet complex		Please note: Responses for railway station are female responses Responses for Vishnuvasam are also largely female Responses for Srihari and Srinivasam are male
1. Inside Railway Station		
a. Cleanliness		
- Fair	16	
- Good	20	
- Poor	32 (47%)	
b. Privacy		
- Fair	15	
- Good	23	
- Poor	30	
c. Amount charged		

- Correctly priced	31	Perception of cleanliness as 'good' is much higher (80% and 70% respectively) in the pilgrim amenities centre is much higher (for cleanliness, 47% inside railway station, 60% and 7% inside the RTC bus stand).
- Overpriced	37	
2. Vishnuvasam		
a. Cleanliness		
- Fair	9	
- Good	50 (80%)	
- Poor	3	
b. Privacy		
- Fair	17	
- Good	43 (70%)	
- Poor	2	
c. Amount charged		
- Correctly priced	NA	
- Overpriced	NA	
3. Srihari Complex		
a. Cleanliness		
- Fair	4	
- Good	60	
b. Privacy		
- Fair	17	
- Good	46	
- Poor	1	
c. Amount charged		
- Correctly priced	50	
- Overpriced	16	
4. Srinivasa Complex		
a. Cleanliness		
- Fair	46	
- Good	7	
- Poor	3	
b. Privacy		
- Fair	41	
- Good	3	
- Poor	12	
c. Amount charged		
- Correctly priced	34	
- Overpriced	22	
Type of toilet in respondents' homes		
1. Indian toilet/Flush	90	
2. Pit Latrine	19	
3. Pour and Flush Latrine	133	
4. Western toilet	8	
Type of toilet preferred in public toilet complexes		
1. Indian toilet/Flush	81	
2. Pit Latrine	18	
3. Pour and Flush Latrine	145	
4. Western toilet	6	
Level of satisfaction with facility		
1. Very Satisfied	5	
2. Satisfied	183	
3. No opinion	1	
4. Dis-satisfied	61	

<p>Level of satisfaction across sites</p> <ol style="list-style-type: none"> 1. Inside railway station <ol style="list-style-type: none"> a. Satisfied b. Dis-satisfied 2. Vishnuvasam Pilgrim Amenities Centre <ol style="list-style-type: none"> a. Very satisfied b. Satisfied c. Dis-satisfied 3. Srihari Complex <ol style="list-style-type: none"> a. Satisfied b. Dis-satisfied c. No opinion 4. Srinivasa Complex <ol style="list-style-type: none"> a. Satisfied b. Dis-satisfied 	<p>49 19</p> <p>5 53 4</p> <p>58 5 1</p> <p>23 33</p>	<p>Reasons for dis-satisfaction are lack of water, water logging and foul smell in the facility.</p>
<p>Changes needed to improve the toilet facility</p> <ol style="list-style-type: none"> 1. 24 hour power supply 2. 24 hour water supply 3. Improving infrastructure of the facility 4. Miscellaneous 5. Maintain cleanliness 	<p>1 17 133 19 2</p>	<p>Improvement in infrastructure includes replacing door, fixing bulbs/lights, repairing tubs, sinks, mugs etc. Miscellaneous include providing hand wash soap, room fresheners, doormats, western style toilet for the aged and use of phenol for cleaning</p>
<p>Are you willing to pay more for improvement</p> <ol style="list-style-type: none"> 1. 24 hour power supply 2. 24 hour water supply <ol style="list-style-type: none"> a. Yes b. No 3. Improving infrastructure of the facility <ol style="list-style-type: none"> a. Yes b. No 4. Miscellaneous <ol style="list-style-type: none"> a. Yes b. No 	<p>No</p> <p>1 16</p> <p>48 84</p> <p>3 16</p>	<p>No comment = 1</p>
<p>Do you think facilities should be free for everyone?</p> <ol style="list-style-type: none"> a. Yes b. No c. Yes – children or handicaps or ladies d. Yes – poor people 	<p>3 216 30 1</p>	

2.2 Needs Assessment for Tourist/Floating Population

Based on discussions with the TMC officials, the tourist corridor in the city was identified as an approximately 2 km road distance, spanning the city's Railway Station in Ward 14, Vishnuvasam Pilgrim Amenities Complex in Ward 14, the RTC Bus Stand in Ward 13 up to Srinivasam Pilgrim Amenities Complex in Ward 13.

Figure 1 Tourist Corridor in TMC



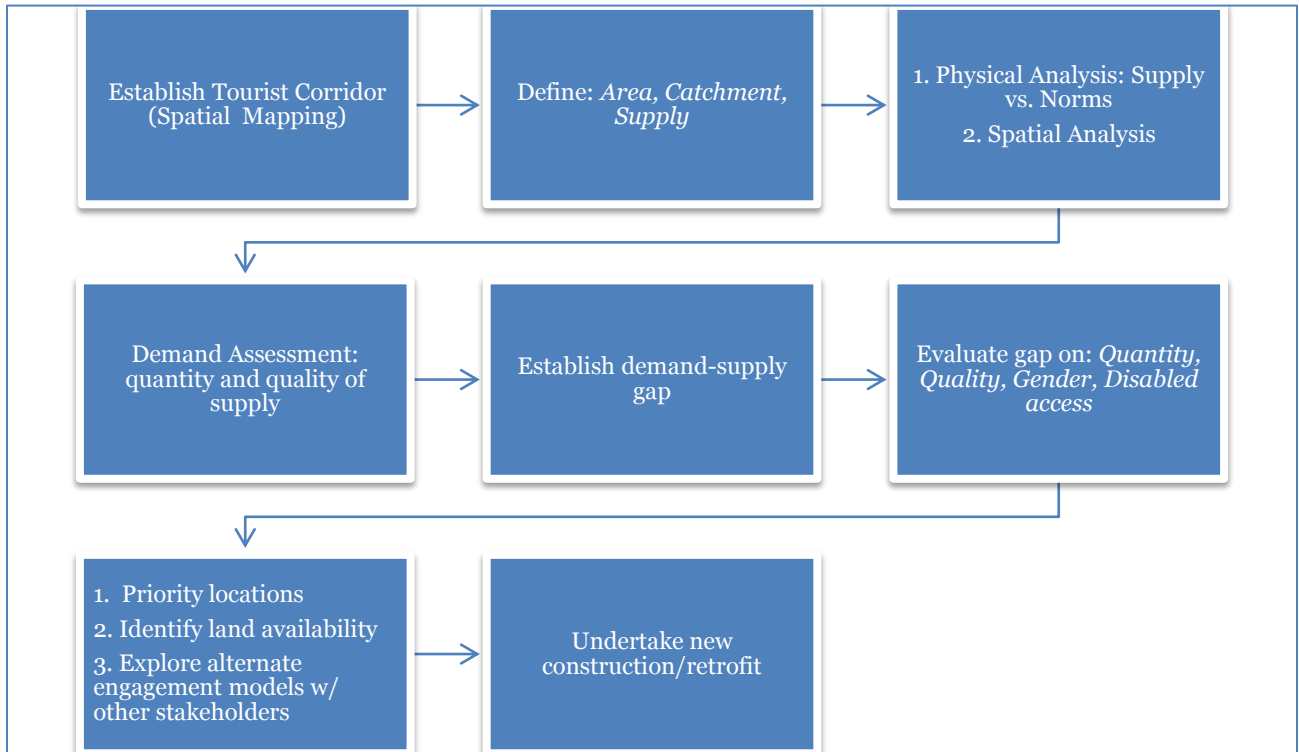
The CSP identifies a daily floating population in the Tirupati city as 55,000 persons/day. According to the MoUD norm of 1 toilet seat per 250 floating population, the public sanitation requirement to cater to the daily floating population along the tourist corridor in Tirupati is 220 toilet seats. The existing supply along this corridor is 212 toilet seats (not including the 144 urinals catering to men and toilets located inside the Railway Station). User catchment appears to be particularly high near the Railway Station and in the RTC Bus Stand. It is also observed that the number of toilet seats for women (121 seats) is higher than that for men (91 seats) along this corridor. The current supply is 8 toilet seats short of the prescribed norm.

2.3 Site Recommendations for TMC

Given the higher user catchment near the Railway Station and in the RTC Bus Stand and also the poorer quality of public toilets in these locations, the recommended strategies for the tourist corridor is:

- Construction of an additional toilet block near the Railway Station or RTC Bus Stand based on land availability
- Refurbish existing public toilets in both locations to meet required quality norms and plug service gaps, if any

2.4 Recommended Planning Process



3. Slum Population

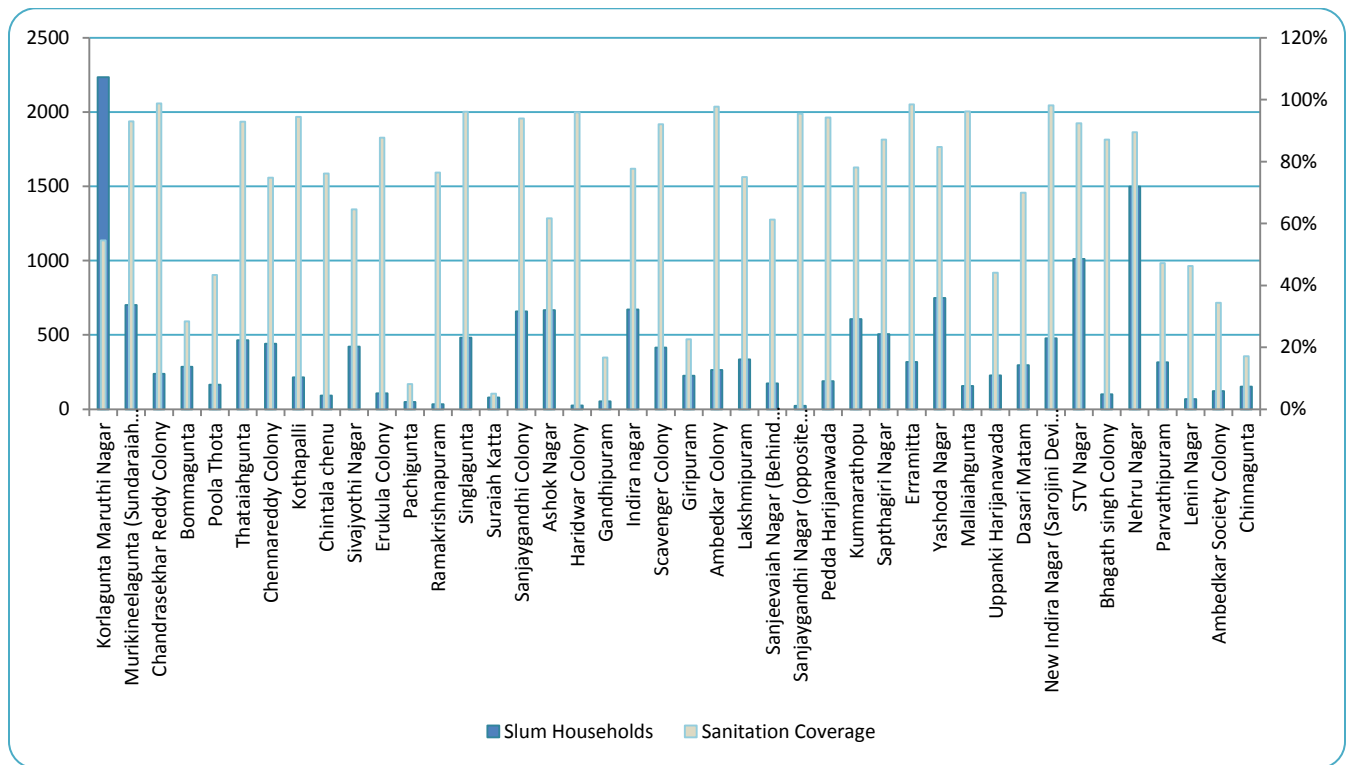
There are 42 slums in Tirupati scattered across different wards within the core city. According to TMC, the total slum population is 76895, constituting 33.69% of the total population.

3.1 Access to sanitation at the slum household level

TMC boasts of a high level of sanitation coverage at the household level across its slums (see Figure 1). Out of the 16308 slum households, 10773 households appear to have own toilets for their household use (66% coverage). These toilets appear to be of the pour-flush/flush variety and connected to septic tanks. Slum areas with more than 80% coverage of own toilets connected to a septic tank facility include: Sundaraiah Nagar, Chandrasekhar Reddy Colony Thataihgunta, Kothapalli, Scavenger Colony, Ambedkar Colony, Sanjaygandhi Nagar, Pedda Harijanawada, Sapthagiri Nagar, Yasodha Nagar, New Indira Nagar, STV Nagar, and Nehru Nagar. On the other hand, slums such as Bommagunta, Pachigunta, Ramakrishnapuram and Suraiah Katta record coverage of less than 10% of own toilets connected to septic tanks.

About 10% of total slum households in TMC (1608 households) have access to shared or community toilets which are of the flush variety and connected to septic tanks.

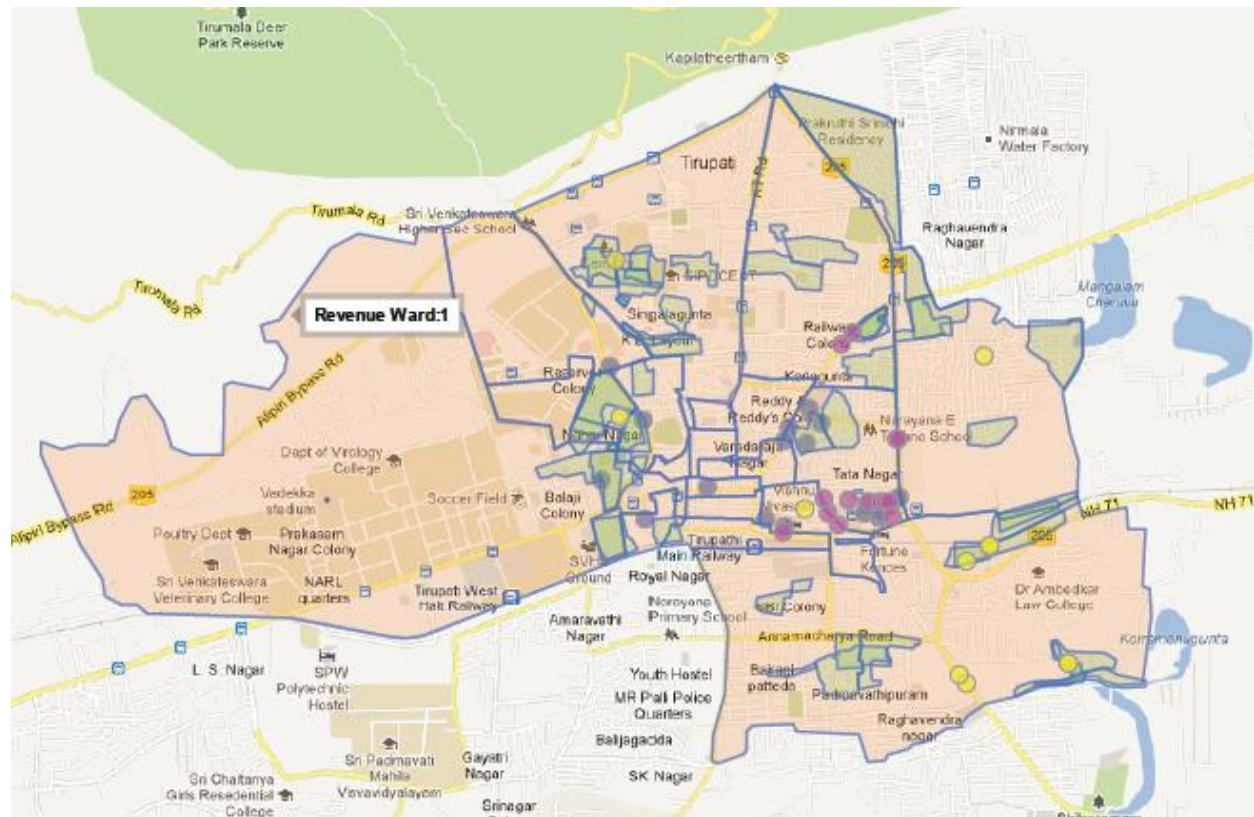
Figure 2 Sanitation coverage of Slum Households in TMC



Source: MEPMA, GoAP

3.2 Access to public sanitation in slums: Spatial analysis

In terms of geographical spread, slums appear to be concentrated in specific wards and not evenly dispersed across the city, with high concentration in revenue wards 6, 19 and 20 (ward 6 has 8 slums, ward 19 has 9 slums, and ward 20 has 8 slums). However, there are no public toilets in wards 6 and 19. Ward 20 boasts of 9 public toilets, but these toilets are managed by TTD and are not accessible to the general public or slum populations in the city. Apart from ward 13, the remaining wards which house the slums in the city have access to only 1 public toilet block (wards 1, 4, and 17) per ward or no access to public sanitation facilities at all (wards 6, 18, 19, and 20). This state of affairs exhibits a clear disregard for recommended service norms on access to public sanitation (least 1 toilet seat for every 50 slum population).



For instance, the public toilets located in ward 13 are closest in terms of access to the 5 slums located in ward 18. The distance between the public toilet in ward 13 which is closest to the slum Suraiah Katta (located in ward 18) is about 1.2 km and the closest urinal (located within ward 18) is about 810 metres in distance. Similarly, the Pachigunta is a slum area located in ward 6. The closest public toilet to this slum is in ward 5, at a distance of approximately 1 km. In the case of Lenin Nagar and Parvathipuram, both slums located in ward 19, the closest public toilet in ward 13 is at a distance of 1.8km.

Figure 3 Distance between slum Suraiah Katta and closet public toilet/urinal

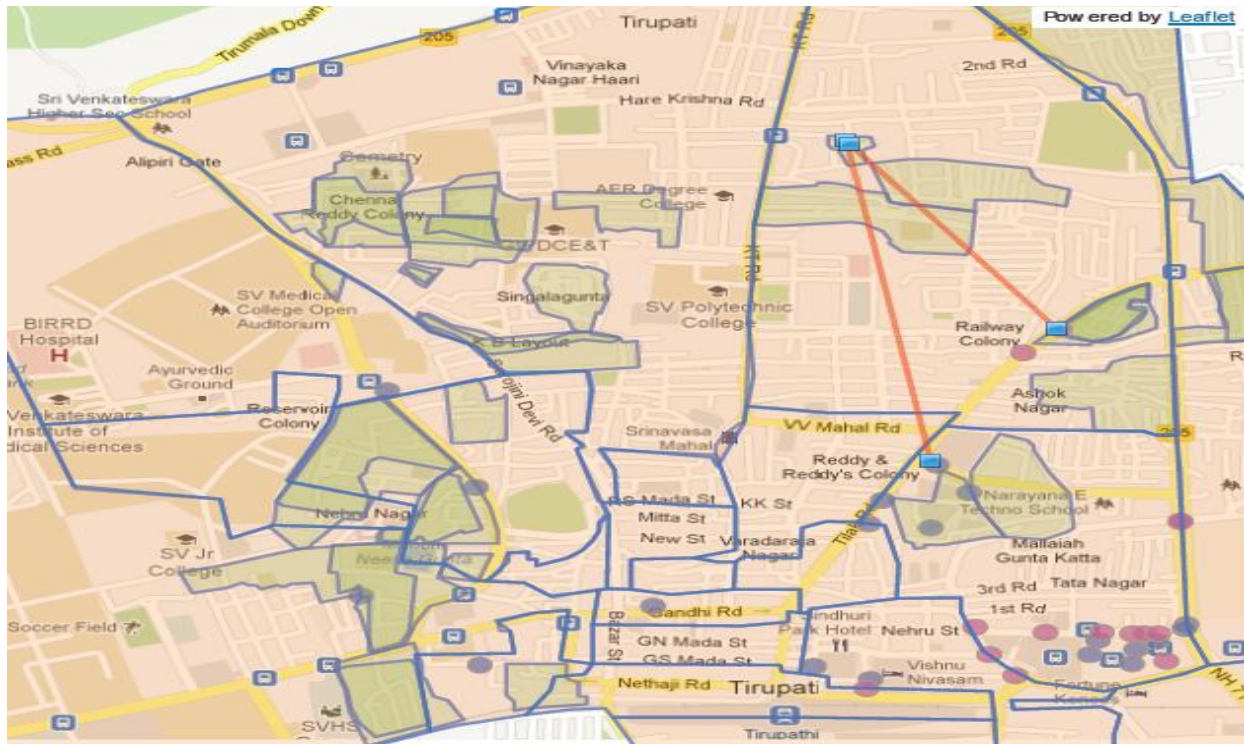


Figure 4 Distance between slum Pachigunta and closet public toilet/urinal

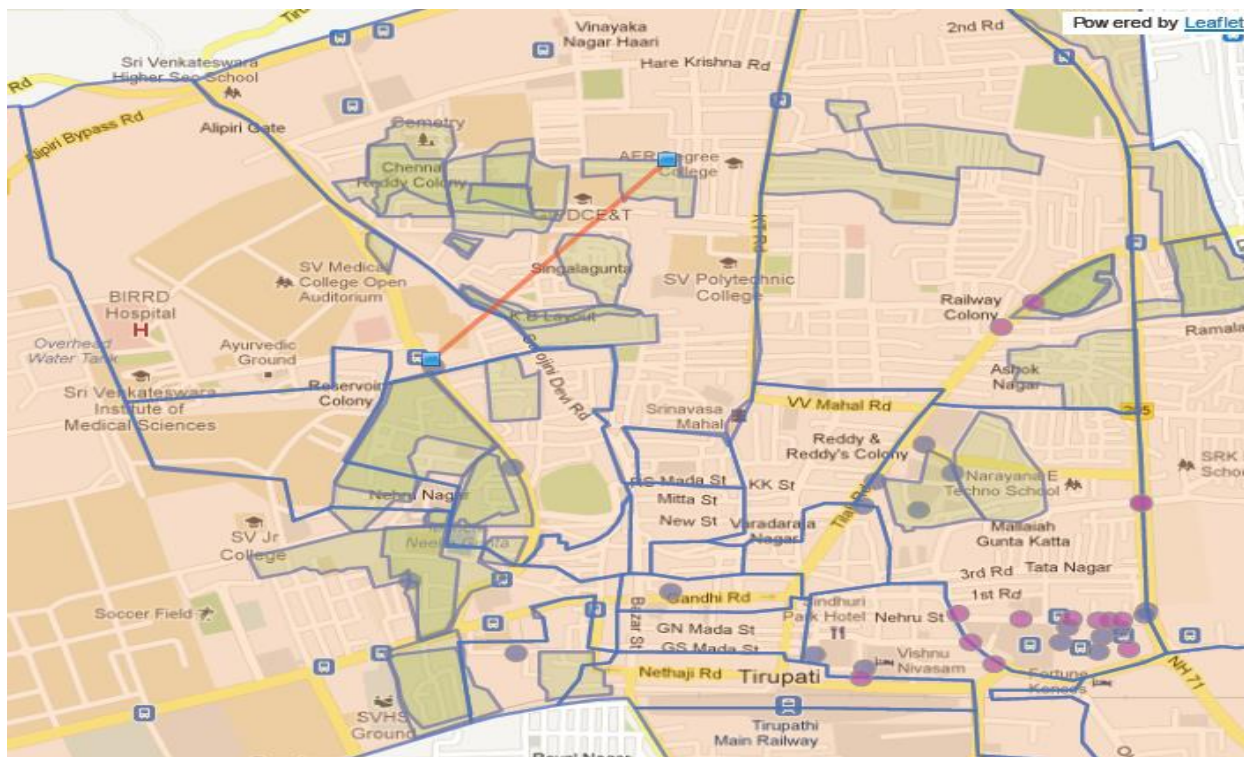
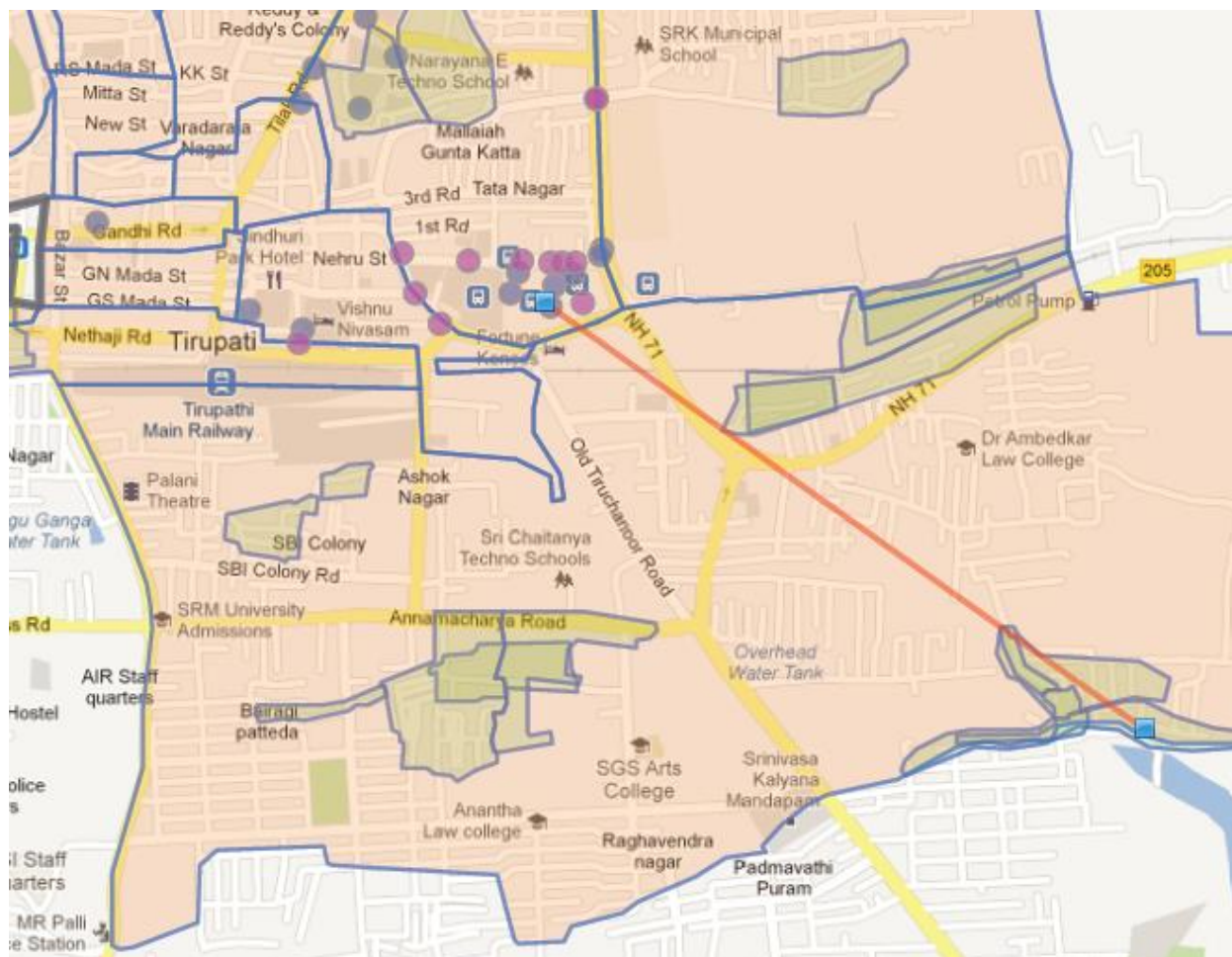


Figure 5 Distance between slum Lenin Nagar-Parvathipuram and closest public toilet



3.3 Slum Population Densities and Sanitation Coverage

Table 1 contains a list of slums with particularly high population densities, exceeding 3000 persons per hectare. Although all of these slums (excepting Parvathipuram) are notified slums, slum statistics indicate that civic services in these slums fall short of prescribed norms for habitation, health and improved quality of life. Poolathota has only partial connectivity sewerage systems, does not have any arrangements for waste disposal and a fairly high prevalence of dry latrines.

Table 2 Slums with population densities exceeding 3000 people per hectare

Slum	Population	Population Density	No. of Households	Access to Sanitation at HH level	# Public Toilets	Revenue Ward
Poolathota	1033	8608	166	43%	1	17
Kummarathopu	1743	6225	607	78%	0	2&6
Giripuram	8912	5941	226	23%	1	4
New Indira Nagar (Sarojini Devi Nagar)	2688	5600	478	98%	0	5

Thataiahgunta	6575	5479	464	93%	10	13
Dasari Matam	8019	5311	296	70%	0	19
Parvathipuram	2823	5041	316	47%	0	19
Korlagunta Maruthi Nagar	17431	3962	2235	54%	0	20
Suraiah Katta	758	3790	79	5%	0	18
Bhagath singh Colony	1782	3564	101	87%	0	19
Singlagunta	8859	2983	481	96%	0	6
STV Nagar	11949	2958	1012	92%	0	19

From an access to sanitation perspective, Giripuram and Suraiah Katta have less than 25% coverage in terms of access to household level sanitation, while Poola Thota, Korlagunta Maruthi Nagar and Parvathipuram have only 40-50% coverage in terms of access to sanitation. The demand is therefore highest in these 5 slums. Contrast that with existing supply of public sanitation facilities, Poola Thota and Giripuram have access to 1 public toilet facility within the wards in which they are located, while the rest do not have access any public toilet facilities.

3.4 Slum locations with poor access to sanitation

Table 3 lists out slum locations in TMC with extremely poor levels of access to sanitation at the household level (own/shared). This data reveals that about 12 slums locations have less than 50% coverage in terms of household level access.

Table 3 Slums with low levels of access to sanitation

Slum Locations	Population	Population Density	No. of Households	Access to Sanitation at HH level	# Public Toilets	Revenue Ward
Suraiah Katta	758	3790	79	5%	0	18
Pachigunta	498	2075	49	8%	0	6
Gandhipuram	584	1947	54	17%	0	19
Chinnagunta	2273	2418	152	17%	0	2
Giripuram	8912	5941	226	23%	1	4
Bommagunta	2737	1955	285	28%	1	4
Ambedkar Society Colony	429	429	122	34%	0	6
Poola Thota	1033	8608	166	43%	1	17
Uppanki Harijanawada	1791	746	227	44%	0	19
Lenin Nagar	333	951	67	46%	0	19
Parvathipuram	2823	5041	316	47%	0	19
Korlagunta Maruthi Nagar	17431	3962	2235	54%	0	20

3.5 Needs Assessment for Slum Population

Needs assessment in terms of public sanitation across slums in TMC has been carried out entirely based on data gathered by MEPMA, GoAP. The primary indicators of evaluation were: 1. Population Density, 2. Coverage, 3. Prevalence of Open Defecation/Urination, 4. Water Supply, 5. Sewerage, 6. Land availability, 7. Proximity to Public Toilet

All indicators (with the exception of Land availability) were given equal weightage in the evaluation matrix. Land availability as a criterion has not been considered at this stage owing to lack of data.

Scores	Indicators
1	<ol style="list-style-type: none"> 1. Population Density: <i>0-1000 persons/ha</i> 2. Sanitation Coverage: <i>75-100% households</i> 3. Incidence of OD: <i>0% households</i> 4. Water Supply: <i>Full Connectivity</i> 5. Sewerage: <i>Full Connectivity</i> 6. Proximity to Public Toilet: <i>>=10 toilets/ward</i>
2	<ol style="list-style-type: none"> 1. Population Density: <i>1000-3000 persons/ha</i> 2. Sanitation Coverage: <i>40-75% households</i> 3. Incidence of OD: <i>1-20% households</i> 4. Water Supply: <i>Partial Connectivity</i> 5. Sewerage: <i>Partial Connectivity</i> 6. Proximity to Public Toilet: <i>2-10 toilets/ward</i>
3	<ol style="list-style-type: none"> 1. Population Density: <i>>3000 persons/ha</i> 2. Sanitation Coverage: <i>0-40% household</i> 3. Incidence of OD: <i>>20% households</i> 4. Water Supply: <i>-</i> 5. Sewerage: <i>-</i> 6. Proximity to Public Toilet: <i>0-1 toilet/ward</i>

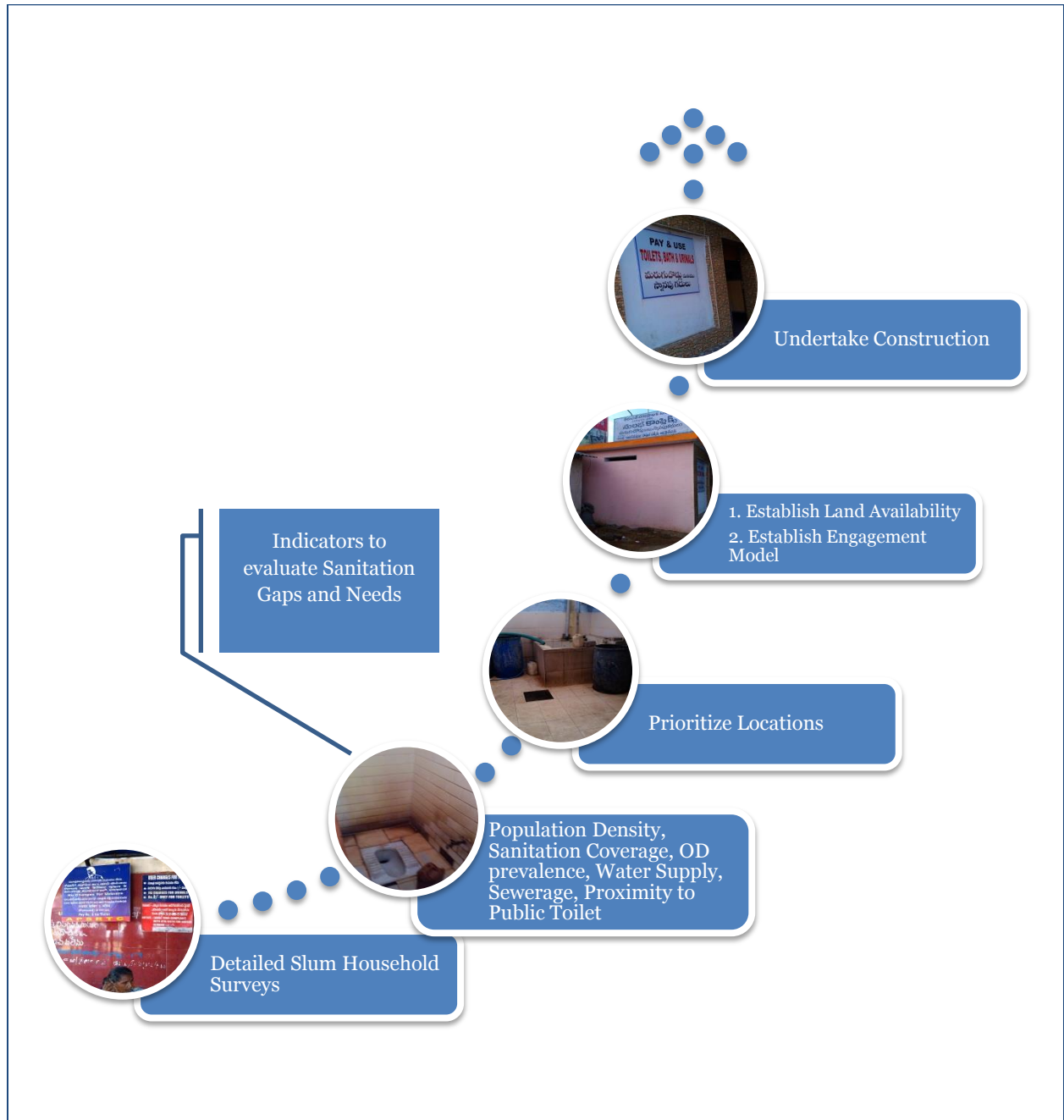
Based on the above matrix, slum locations that received a cumulative score of 10 points or higher were given an assessment “High priority” in terms of shared/public sanitation.

3.6 Recommendations

Based on this evaluation matrix, the following locations were identified as requiring immediate intervention:

1. Sivajyothi Nagar	5. Dasari Matam
2. Gandhipuram	6. Parvathipuram
3. Giripuram	7. Lenin Nagar
4. Kumarathopu	8. Ambedkar Society Colony
5. Uppanki Harijawada	

3.7 Recommended Planning Process



4. General Population

4.1 Demand assessment findings

For the purposes of the study, a ‘general’ user is defined as a person who is not a tourist or working in a commercial area or residing in a slum settlement. During the course of the field work, a total of 250 such general users were interviewed. The interviewee was deemed as a general user, if he or she answered that their place of residence was within the TMC jurisdiction. Interviews were held inside and near the RTC bus stand, in Ward 13. A total of 250 persons were interviewed of which 127 (50.8%) were men. All are residents of Tirupati, and 33 persons (13.2%) were unemployed. Other major occupations of interviews included 34 persons (13.6%) employed with the APSRTC, 28 (11.2%) as wage labour and 16 persons (6.4%) in restaurants.

Table 4 Descriptive statistics of general users of toilet complexes

Parameter	Data (n= 250 persons)	Additional remarks
Frequency of visiting public toilets 1. Every day 2. 3-4 times a week 3. Once a week 4. Rarely 5. NA	203 (81.2%) 2 2 40 3	81% of respondents stated that they used public facilities every day. The focus of analysis is on this group.
Frequency of visiting public toilets and location of toilet close to workplace 1. Everyday, no toilet nearby 2. Everyday, toilet nearby 3. Everyday, not aware	60 124 (49.6%) 19	Those who stated that there was no facility were employed or resided in (majority responses) Alipiri, Balaji Colony, Bhavani Nagar, Jeevakona, Karkambadi, Mangalam, Sainagar and Thiruchanur. Those who used the toilet everyday largely worked in and around the RTC bus stand and used the toilet complexes inside (Srihari, Srinivasa & Edukonda) and outside (Sulabh International). 78 of the 124 persons (62%) had used the same toilet facilities for over a year.
Time taken to walk to the facility 1. Everyday users, with toilet nearby a. 0.5 km (2-5 minutes) b. 1 km (10 minutes) c. 2 km 2. Everyday users, no toilet nearby a. 0.5 km (2-5 minutes) b. 1 km (10 minutes) c. 2 km d. 3 km e. 5 km 3. Everyday users, not aware of toilet facility nearby	89 (71%) 66 (53%) 1 4 33 (55%) 12 10 1 1 18 (94%)	For persons working in the area, time taken to reach the facility was less than 5 minutes. For the majority, reaching the toilet complex was less than 10 minutes.

a. 0.5 km b. 1 km		
Has the price of using the facility changed over time? 1. Do not remember 2. No 3. Yes 4. NA	42 204 (81.6%) 1 3	Majority of respondents stated that price of using the facility had not changed
Places where there is an urgent need to build a public sanitation facility. What type of facility? 1. Alipiri: toilet 2. Behind the bus stand: toilet 3. Balaji colony: toilet 4. Bhavani nagar: toilet 5. Channa reddy colony: urinals 6. Chintakalaya Street:urinals 7. Gandhi circle: urinals and toilets 8. Korlagunta: urinals and toilets 9. Near Group Theatres: toilets 10. Sainagar: toilet	7 5 9 5 4 4 18 5 17 5	These are the options with more than three responses.
Overall opinion of urinals 1. Good 2. Not good 3. No privacy for ladies 4. NA 5. Crowded	93 151 2 3 1	
Time taken in waiting to use the toilet 1. No wait 2. Less than 5 minutes 3. 5-10 minutes	189 (75.6%) 49 12	234 (93.6%) of respondents used the toilet in the facility.
User fees 1. None 2. Toilet: INR 5 3. Urinals: INR 2	10 224 16	This needs to be further checked, as all facilities in that area charge for usage of urinals, toilets and showers.
Condition of the toilet 1. Cleanliness a. Fair b. Good c. Poor 2. Privacy a. Fair b. Good c. Poor 3. Amount charged a. Correct b. Too much c. NA	104 65 81 106 41 103 112 132 6	
Type of toilet in respondents' homes 1. Indian toilet/Flush 2. Pit Latrine	77 17	

3. Pour and Flush Latrine	156	
4. Western toilet	-	
Type of toilet preferred in public toilet complexes		
1. Indian toilet/Flush	62	
2. Pit Latrine	10	
3. Pour and Flush Latrine	178	
4. Western toilet	-	
Level of satisfaction with facility		Main reason for dissatisfaction was lack of water, water logging and foul smell.
1. Satisfied	100	
2. Dis-satisfied	150	
Three changes needed to improve the facility		
1. Water supply improvement	53	
2. Infrastructure improvement	112	
3. Improve cleanliness	64	
4. NA	18	
5. Miscellaneous	3	
Willingness to pay for improvements		Three fourths of the respondents were not willing to pay for improvements to the facility.
1. Yes	61	
2. No	188 (75%)	Respondents were WTP for improvements to infrastructure within the range of INR 1-4. NO respondents were WTP for improvements to water supply.
Should the facility be free for everyone?	211 (84%)	
1. No	36	
2. Yes – children, ladies, handicap	3	
3. Yes - everyone		

4.2 Needs assessment for General Population

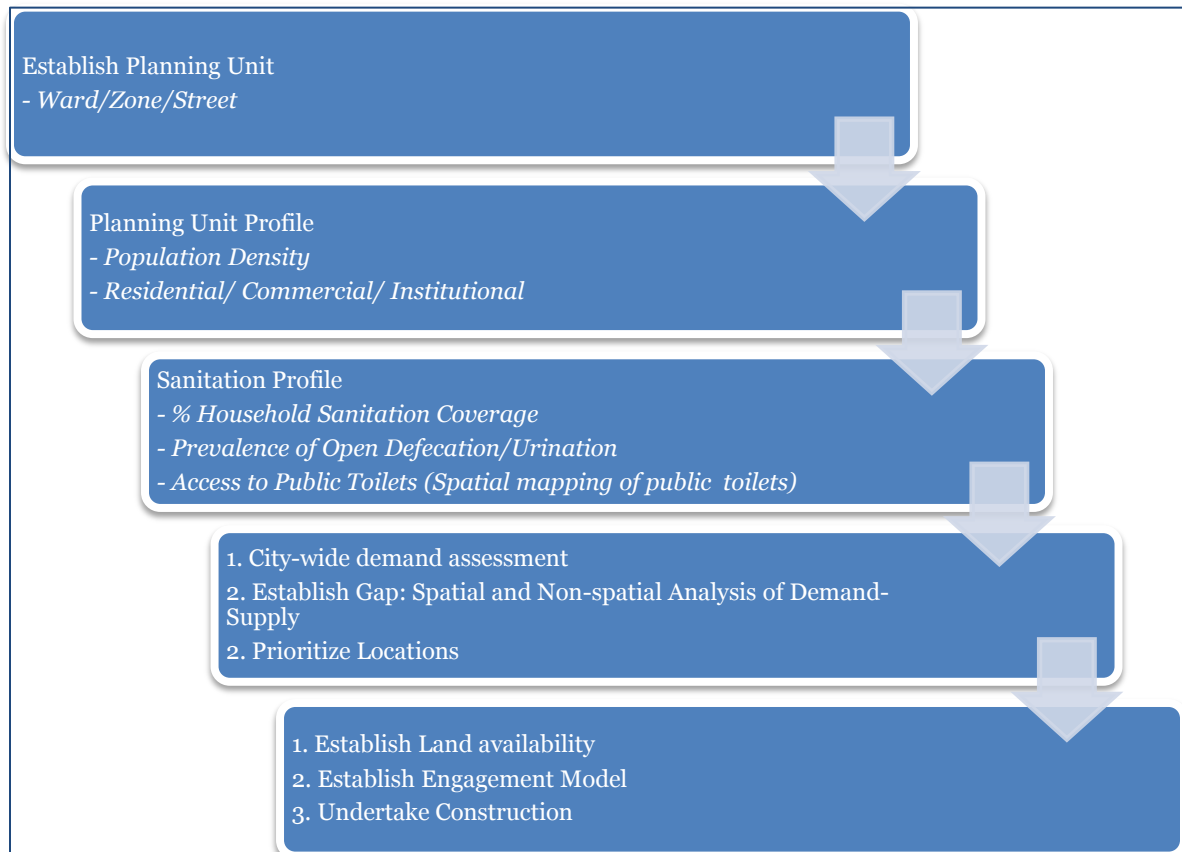
Assuming the unit of planning at a ward level, the primary indicators for evaluation include: 1. Population Density, 2. Public Toilets, 3. Composition of ward (%Residential/%Commercial), 4. Access to sanitation at a household level.

Owing to data limitations across all indicators, wards were selected for intervention only on the basis of presence of public toilets.

4.3 Recommendations

1. Wards 18 and 19 have high concentration of commercial areas as well as slum locations but no public toilets. Hence, these wards comprise the highest priority for intervention
2. Wards 8 and 12 have high population densities but no public toilets and hence require intervention as well

4.4 Recommended Planning Process



5. Commercial Population

5.1 Demand assessment findings

As per government records, commercial establishments include shops, go-downs, hotels and lodges, restaurants, private offices, hostels, cinema halls, ATMs and parking lots. **For the purposes of the study, it was decided to consider only shops and go-downs as commercial establishments.** The assumption made here is that the other above-mentioned establishments will have toilets within their premises. Also note that parking lots and ATMs were excluded from the sample, because they were too few in number. Discussions with TMC officials indicated that 90% of establishments on the following streets were either shops or go-downs (commercial establishments): Beri Street (Ward 1), Prakasam Road (Ward 1 and 2), Tilak Road (Ward 10, 13), Mosque Road (Ward 18, 10), Mosque Road (Ward 18, 10), Gandhi Road (Ward 11, 15, 16), Karnal Street (Ward 15), KT Road (Ward 6, 18), Devendra Theatre Road (Ward 18), Porla Street (Ward 13, 18), Bandla Street (Ward 13), RTC Bus Stand (Ward 13), AIR Bypass Road (Ward 19) and Rayalcheru Road (Ward 19).

These streets correspond to the following wards: 1, 2, 10, 11, 13, 15, 16, 18 and 19 (a total of 9 wards). A reconnaissance visit to the above-mentioned streets was undertaken and the questionnaire was piloted in a few select sites (Prakasam Road, Tilak Road, Devendra Theatre Road).

During the field visit, a total of 500 persons , 229 males and 271 females working in **shops** were interviewed. 17 sites were chosen, spread across Wards 1, 11, 13, 14, 15, 18 and 19. 6 out of the total 500 shops were in existence since the last 40 years, 29 shops for the last 20-30 years, and an overwhelming majority (93%) over the last ten years. Nearly half of the shops (48%) were sole proprietorships, 32% were leased/rented or part of a franchise, and 19% were part of a private partnership. **Please note that none of the commercial establishments visited had an attached toilet. Hence questions relating to type of toilet, usage details and water supply details are redundant.**

The distribution of interviews was as follows:

Table 5 Location of interviews

Sn	Location	Ward	Number of respondents	Gender	Shops visited (main product/service sold)
1	AIR Bypass Road	19	20	20 Male	Kirana shop, xerox, electronics
2	Annamaya Circle	19	23	23 Female	Fancy items, books, clothes, medicines, juice, cell phones, stationery
3	Prakasam Road	1, 11	18	18 Female	Books, Cell phones, Clothes, Fast Food, Cool drinks, coconuts
3	Bandla Street	13	40	19 Male, 21 Female	Fruits, tailor, footwear, Xerox, sweets
4	Beriveedi	1	5	5 Female	Auto stand, kirana shop
5	Devendra Theatre Road	18	40	23 Male, 17 Female	Bike mechanic, tiffin centre, medicines, kirana shop,

					cutting shop, shutters
6	Gandhi Road	11	87	44 Male, 43 Female	Clothes, fancy items
7	KT Road	18	42	21 Male, 21 Female	Medicines, tea shop, gift articles, herbal products
8	Karnal Street	15	11	10 Male, 1 Female	Spare parts, electronic goods, ATM
9	Mosque Road	18	20	2 Male, 18 Female	Xerox, gift articles, clothes
10	Near Gandhi Circle	13	19	19 Female	Fancy items, Kirana shops, gift articles, mobiles, xerox
11	Near RTC Bus Stand	13	2	2 Female	Cool drinks
12	RTC Bus Stand	13	22	22 Male	Kirana shops
13	Netaji Road	15	3	3 Male	Electronics, furniture
14	Opposite Railway Station	14	1	1 Male	Cool drinks
15	Porle Veedi	13	45	25 Male, 20 Female	Clothes, Tailor, Jewellery
16	Rayalcheeru Road	19	39	20 Male, 19 Female	Kirana shops, spare parts, xerox
17	Tilak Road	13	40	19 Male, 21 Female	Auto covers
	Total		500	229 Male, 271 Female	

Table 6 Descriptive statistics of commercial establishments

Site/Location (n=..)	Details	Additional details
Closest facility available, type, time taken to walk		
AIR by pass road (20)	AIR by pass road, toilet	10 minutes, 1 km
Annamayya circle (23)	<ol style="list-style-type: none"> AIR by pass road, toilet (8) Residence (5) RC Road, Ritu Bazaar, toilet (10) 	10 minutes, 1 km NA 10 minutes, 1 km
Bandla Street (40)	<ol style="list-style-type: none"> Koneru Street, Town Bank, toilet (15) Inside Koneru Road, 1 toilet, 1 urinal (2) Inside bus stand, toilet (6) Inside Masjid, 1 toilet, 1 urinal (2) Inside Railway Station, toilet (10) Sridevi Complex, toilet (5) 	10 minutes, 1 km 10 minutes, 1 km 10 minutes, 1 km 10 minutes, 1 km 10 minutes, 1 km
Beriveedi (5)	<ol style="list-style-type: none"> Mada Street, Govindaraju Temple, toilet (3) Beri Street, Govindaraju Temple, toilet (1) Residence(1) 	5 minutes, 0.5 km 5 minutes, 0.5 km NA
Devendra Theatre Road (40)	<ol style="list-style-type: none"> Residence (21) Leelamahal Centre, urinals (1) Near TMC, toilet (17) Tirumala Road, urinals (1) 	10 minutes, 1 km 5-10 minutes, 1 km 15 minutes, 2 kms
Gandhi Road (87)	<ol style="list-style-type: none"> Gandhi Road, toilet (20) Residence (2) Govindaraju Temple, Mada street, toilet (31) Govindaraju Temple, beside 	5- 10 minutes, 0.5-1 km NA 5-10 minutes, 0.5-1 km 5-10 minutes, 0.5-1 km

	<p>Museum, toilet (7)</p> <p>5. Koneru Street, toilet (5)</p> <p>6. Korla Street, toilet (2)</p> <p>7. Pasupathi Cloth Show Room, 11 toilets, 3 urinals (14)</p> <p>8. Opposite Pasupathi Complex, Gandhi Road, toilet (2)</p> <p>9. RS Junction, 1 toilet, 2 urinals (3)</p> <p>10. Sunnappu Veedhi, toilet (1)</p>	<p>5-10 minutes, 0.5-1 km</p> <p>5-10 minutes, 0.5-1 km</p> <p>5-10 minutes, 0.5-1 km</p> <p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p>
KT Road (42)	<p>1. Residence (27)</p> <p>2. Lotus Hospital Road, urinals (1)</p> <p>3. Market Centre, urinals (13)</p> <p>4. Behind Mother Hospital, urinals (1)</p>	<p>NA</p> <p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p>
Karnal Street (11)	<p>1. Residence (8)</p> <p>2. Govindaraju temple, toilet (1)</p> <p>3. Koneru Street, Town Bank, toilet (1)</p> <p>4. Railway Station, toilet (1)</p>	<p>NA</p> <p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p> <p>5 minutes, 0.5 km</p>
Mosque Road (43)	<p>1. Residence (36)</p> <p>2. Suvidha Complex, near Sridevi Complex (7)</p>	<p>NA</p> <p>10 minutes, 1 km</p>
Near Gandhi Circle (19)	<p>1. Residence (4)</p> <p>2. RTC Bus stand, toilet (15)</p>	<p>NA</p> <p>10 minutes, 1 km</p>
Near RTC bus stand (2)	<p>1. RTC Bus stand, toilet (2)</p>	<p>10 minutes, 1 km</p>
Netaji Road	<p>1. Koneru Street, Town Bank, toilet (1)</p> <p>2. Govindaraju Temple, Mada Street, toilet (1)</p> <p>3. Govindaraju Temple, beside museum, toilet (1)</p>	<p>10 minutes, 1 km</p> <p>5 minutes, 0.5 km</p> <p>5 minutes, 0.5 km</p>
Opposite Railway Station	<p>1. Koneru Street, Town Bank, toilet (1)</p>	<p>5 minutes, 0.5 km</p>
Porla Veedi (45)	<p>1. Inside Govinda swamy temple, toilet (22)</p> <p>2. Beside Porla Street, toilet (23)</p>	<p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p>
Prakasam Road (18)	<p>1. Opposite Jockey Showroom, Prakasam Road, toilet (4)</p> <p>2. Ambedkar Bhavan, Prakasam Road, toilet (1)</p> <p>3. Near Music College, Prakasam Road, toilet (11)</p> <p>4. Mada Street, Govindaraju Temple, toilet (1)</p> <p>5. Aditya Tower, toilet (1)</p>	<p>5 minutes, 0.5 km</p> <p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p> <p>5 minutes, 0.5 km</p> <p>10 minutes, 1 km</p>
Royalcheru Road (39)	<p>1. Residence (6)</p> <p>2. RC Road, Ritu Bazaar, toilet (33)</p>	<p>NA</p> <p>10 minutes, 1 km</p>
RTC Bus stand (22)	<p>1. RTC bus stand, toilet (22)</p>	<p>10 minutes, 1 km</p>
Tilak Road (40)	<p>1. Bandla Veedi, toilet (1)</p> <p>2. Near petrol bunk, toilet (4)</p> <p>3. Sridevi Complex, toilet (35)</p>	<p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p> <p>10 minutes, 1 km</p>
Waiting time to use the facilities		<p>73% stated that 7 am to 12 noon was the time facilities were most crowded.</p>
1. No wait	<p>359 (72%)</p> <p>32</p>	

2. Less than 5 minutes	109	
3. NA		
User fees		375 out of 391 persons (95%) stated that user fees had not changed in the recent past. Please note that 391 persons is being used here, after discarding NA responses.
1. No fees for urination	130	
2. Urinals – INR	2	
2	257	
3. Urinals – INR	109	
5		
4. Toilet – INR	5	
5		
5. NA		
Where is there an urgent need to build a facility? What type of facility should this be?		
<ul style="list-style-type: none"> • Those establishments in AIR By Pass Road, wanted toilets in Annamayya Circle and vice-versa. • Those in Bandla Street and Beriveedi, wanted a toilet on their street. • Majority of those in Devendra Theatre Road wanted toilets opposite the fish market and Tirumala main road, followed by toilets on Tilak Road and near and opposite Sai Baba temples. • Establishments on Gandhi Road, said that building a toilet on their road was critical. 5 persons wanted a toilet on Govindaraju temple street, 4 on Nalugukalla Mandapam road and near AGK building respectively • Majority of persons working on KT Road, wanted a toilet near the Hanuman temple, and old maternity road • Persons working on Karnal road said there was a need for toilets either on Karnal Road or Netaji Road • Respondents wanted a complex near the Masjid on Mosque Road, and near the petrol pump on Gandhi circle. Respondents interviewed near and in the RTC bus stand, also felt that there was an urgent need for a facility near Gandhi circle • Establishments on Porle veedi felt that facilities should be constructed besides Porle Veedi, while those on Prakasam Road identified three sites on Prakasam Road where toilets could be built- near Ground Complex, SP Office and Ambedkar Bhavan (in order of majority of responses) • Persons working in shops on Rayalcheru Road wanted a facility near Railway Gate, while those on Tilak Road, wanted a complex on Bandla Veedhi, near the petrol pump, Ammavaru Temple and near Ashalatha Hospital 		

5.2 Needs Assessment for Commercial Population

With road as a unit of planning, the primary indicators of evaluation were: 1. Commercial Establishment Density, 2. Proximity to Public Toilets, 3. Proximity to Urinal

All indicators (with the exception of commercial density) were given equal weightage in the evaluation matrix. Commercial density as a criterion has not been considered at this stage owing to lack of data.

Scores	Indicators
1	<ol style="list-style-type: none"> 1. Proximity to Public Toilet: <i>0-0.25km</i> 2. Proximity to Urinal: <i>0-0.25 km</i>
2	<ol style="list-style-type: none"> 1. Proximity to Public Toilet: <i>0.25-0.5km</i> 2. Proximity to Urinal: <i>0.25-0.5 km</i>
3	<ol style="list-style-type: none"> 1. Proximity to Public Toilet: <i>>0.5km</i> 2. Proximity to Urinal: <i>>0.5 km</i>

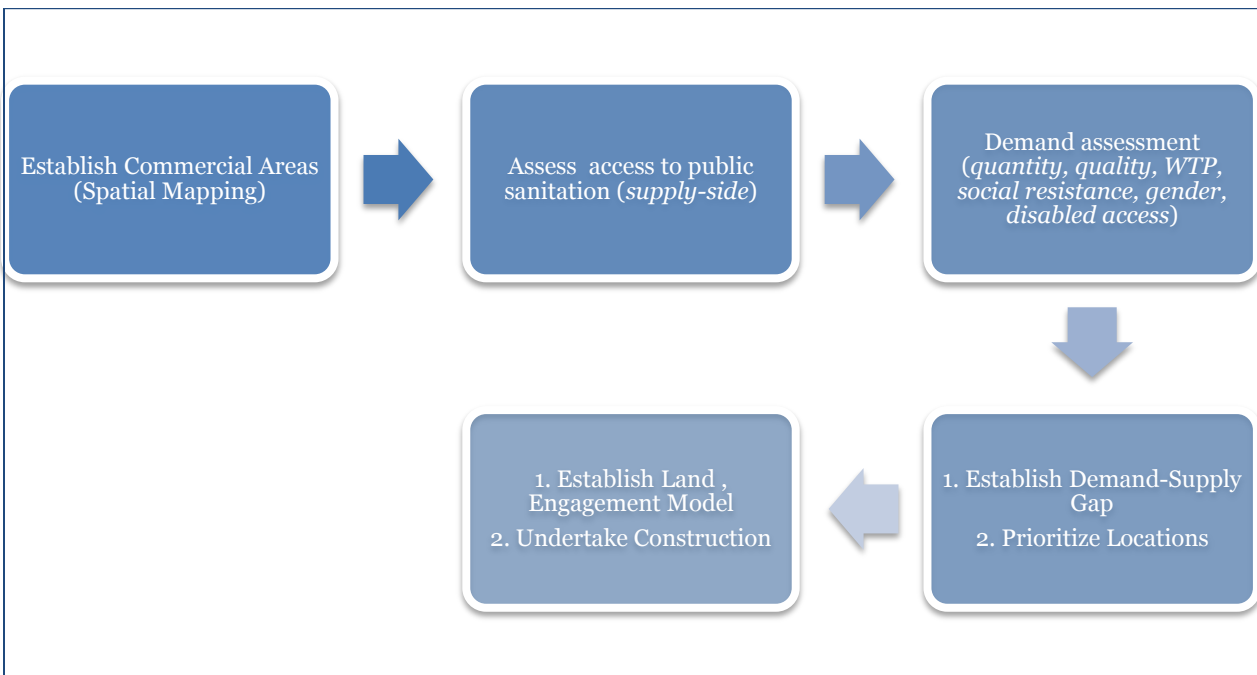
Based on the above matrix, commercial locations that received a cumulative score of 7 points or higher were given an assessment “High priority” in terms of public sanitation.

5.3 Recommendations

Based on this evaluation matrix, the following locations were identified as requiring immediate intervention:

1. Prakasam Road (Ward 1,11)
2. KT Road (Ward 18)
3. Rayalcheeru Road (Ward 19)
4. AIR Bypass Road (Ward 19)

5.4 Recommended Planning Process



6. Areas of Open Defecation/Urination

Based on reconnaissance visits carried out by our field team in the city, the following locations were identified as areas with highest prevalence of Open Defecation and Urination. In the city's efforts to achieve ODF status, these are the locations that require highest priority in terms of sanitation intervention:

Location	Revenue Ward
IS Mahal Talkies Road	4
Chenna Reddy Colony	6
IRCTC Reservation Counter	14
Uppanki Harijanawada	19
Srinivasapuram	19
Behind Booma Theatre	19
Parvathipuram-Lenin Nagar	19
Near Pratap Theatre Complex	
Near Passport Office	

7. Retrofitting Existing Public Sanitation Facilities

Based on the observations of the field team, the condition and maintenance of open urinals in the city are rather poor. Sanitation facilities in the following locations have been identified for refurbishment given the particularly high user catchment in these locations and the corresponding need for additional and better facilities.

Location	Retrofit
Railway Station	Convert Open Urinals to Toilets/Urinals
Bus Stop	Convert Open Urinals to Toilet/Urinals

8. Final Site Selection Process

Based on our city-wide analysis (demand-supply analysis of current infrastructure) of public sanitation facilities in Tirupati, approximately 25 locations were identified as “sanitation hotspots” that required immediate intervention by the city. For each location, potential footfall was arrived at based on similar location in Tirupati. The locations were categorized as direct or combined models – direct model refers to a homogenous user group and combined model refers to multiple user groups. The locations were further prioritized based on discussions with TMC officials on Jun 12, 2013. The site prioritization process takes into account factors such as:

1. Prevalence of Open Defecation/Open Urination
2. Land availability
3. Potential for creating engagement models for different user groups
4. Ability to complete project within limited time frame

Table 7 provides the prioritization of the final sites selected for purposes of expansion of public sanitation facilities in Tirupati.

Table 7 Final Site Selection Matrix for TMC

S No	Location	Category	Catchment category	Field & CSP findings	Improvement type	Potential footfall (persons/day)	Land availability	Remarks	Note on Consultant Prioritization	Consultant Prioritization	TMC Prioritization*	Risk level*	Combined prioritization***
1	Opposite Kences Hotel (existing toilet)	Combined model	Tourist, Transit hub	Open urination	Retrofit	1000	Municipal land	On the storm water drain	Requires working with TMC only	High	High	Low	1
2	Gandhi Road	Direct model	Commercial	Open urination	Retrofit	500	Municipal land	Road margin	Requires working with TMC only	High	High	Low	1
3	Old TPPM School (Behind proposed multi level car parking site)	Combined model	Commercial, Tourist	Open urination & defecation	New asset	500	Municipal land		Requires working with TMC only	High	High	Low	1
4	APSRTC Bus Stand (inside)	Combined model	Tourist, Transit hub	Open urination	Retrofit	1000	To be clarified		Requires working with TMC only, requires heavy engagement with other agencies - APSRTC, but has potential for multiple institution model	High	High	Low	2
5	Behind Bhooma Theatre (scavenging lane)	Combined model	Commercial, General	Open urination & defecation	New Asset	300	To be clarified			High	High	Low	3

S No	Location	Category	Catchment category	Field & CSP findings	Improvement type	Potential footfall (persons/day)	Land availability	Remarks	Note on Consultant Prioritization	Consultant Prioritization	TMC Prioritization*	Risk level**	Combined prioritization***
6	Adjoining Group Theatre	Combined model	Commercial, Tourist	Open urination	New asset	300	To be clarified	Road margin	Requires land acquisition	High	High	High	3
7	Gandhipuram	Combined model	Slum, general	Open defecation	New asset	300	To be clarified	Inside the school	Low HH toilet coverage	High	Medium	High	1
8	Giripuram	Direct model	Slum	Open defecation	New asset	300	To be clarified		Low HH toilet coverage	Medium	Medium	High	2
9	KT Road, front of MORE Supermarket	Combined model	Commercial, general, Slum	Open urination	New asset	300	Municipal land	On the storm water drain	Requires working with TMC only	High	Medium	Low	2
10	Krishnapuram Tana, behind SV café	Combined model	Commercial, general	Open urination	New asset	500	Municipal land	Side margins of existing commercial complex	Requires working with TMC only, but expect resistance from local level people	Medium	High	Medium	1
11	Urinals adjoining Rail reservation Counter and toilets inside reservation center premises	Combined model	Tourist, Transit hub, commercial	Open urination	Retrofit	1000	Requires acquisition		Requires heavy engagement with other agencies - IRCTC, but has potential for multiple institution model	High	High	Medium	1
12	Uppanki Harijanwada slum	Direct model	Slum	Open defecation	New asset	100	To be clarified	Inside the school	Low HH toilet coverage, requires heavy engagement with other agencies - school, but	High	Medium	Low	1

S No	Location	Category	Catchment category	Field & CSP findings	Improvement type	Potential footfall (persons/day)	Land availability	Remarks	Note on Consultant Prioritization	Consultant Prioritization	TMC Prioritization*	Risk level**	Combined prioritization***
									has potential for multiple institution model, located along the railway tracks				
13	Rayalcheru Road	Combined model	Commercial, general	Open urination	New asset	300	To be clarified	Near Palani theater	Location-specific solution	Medium	High	Medium	2
14	Chenna Reddy Colony	Combined model	General, Slum	Open defecation	New asset	100	To be clarified			Medium	Medium	Medium	2
15	IS Mahal Talkies Road	Combined model	General, Slum	Open defecation	New asset	200	To be clarified			Medium	Medium	Medium	2
16	Sivajyothi Nagar	Direct model	Slum		New asset	100	To be clarified		Less than 50% HH toilet coverage	Medium	Medium	Medium	3
17	Ambedkar Society Colony	Direct model	Slum		New asset	100	To be clarified		Less than 50% HH toilet coverage	Medium	Medium	Medium	3
18	Parvathipuram	Direct model	Slum	Open defecation	New asset	100	To be clarified		Low HH toilet coverage, non notified slum	High	Medium	Medium	2
19	Lenin Nagar	Direct model	Slum	Open defecation	New asset	100	To be clarified		Less than 50% HH toilet coverage, non notified slum, OD observed	Medium	Medium	Medium	3

S N o	Location	Category	Catchment category	Field & CSP findings	Improvement type	Potential footfall (persons/day)	Land availability	Remarks	Note on Consultant Prioritization	Consultant Prioritization	TMC Prioritization*	Risk level**	Combined prioritization***
20	Raithu Bazaar at junction of AIR Bypass Road & RC Road	Combined model	Commercial, Slum. General	Open urination	New asset	500	To be clarified	Located in TUDA jurisdiction	Requires heavy engagement with other agencies - TUDA, but has potential for multiple institution model	High	High	Medium	1
21	Kumarathoppu, behind Police Quarters	Direct model	Slum		Retrofit	100	Municipal land		Demand is low and user catchment requires detailed verification	Low	Medium	Low	2
22	Dasari Matam	Direct model	Slum		New asset	100	To be clarified		High HH toilet coverage	Low	Low	High	3
23	Chintalachen	Direct model	Slum	Open defecation	New asset	50	To be clarified		Slum located along the railway tracks	Low	Low	Low	3
24	AIR Bypass Road	Combined model	Commercial, general	Open urination	New asset	300	To be clarified	On the storm water drain	Might require engagement with Passport office / private land owners, but got pilot for multiple institution model	Medium	High	High	3
25	Indira Nagar slum	Direct model	Slum		Retrofit	100	To be clarified	On the storm water drain	Demand is low and user catchment requires	Low	Medium	Low	3

S N o	Location	Catego ry	Catchm ent categor y	Field & CSP finding s	Improvem ent type	Potential footfall (persons/ day)	Land availabil ity	Remar ks	Note on Consultan t Prioritizat ion	Consultan t Prioritizat ion	TMC Prioritizati on*	Risk level* *	Combined prioritizatio n***
									detailed verification				

*Based on discussions and field knowledge, ** for Consultant completing within project time frame, *** requires formal acceptance by TMC