TN US SP
TAMIL NADU URBAN SANITATION SUPPORT PROGRAMME

REPORT

CITY SANITATION PLAN:
NARASIMHANAICKEN-PALAYAM

January 2016

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Document Team: Rajiv Raman, Shivaram K.N.V.,Priscilla Joshua, Vinitha Murukesan, Ananth Moorthy, Suresh Kumar, Rama Kannan, Snehlata Nath, Niladri Chakraborti, Navamani Ramasamy, Gayathri Sarangan

Editing: Word Lab, IIHS, Bengaluru

Design and Layout: Divya Dhayalan

Production: Shaheena Manoj, Krishnapriyaa P., Govardhan Seshachalam

Team Leader: Kavita Wankhade

Project Director: Somnath Sen

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CONTENTS

CONTENTS (contd)

CONTENTS (contd)

CONTENTS (contd)

Tables

Boxes

Figures

Abbreviations

ADD	Acute Diarrhoeal Diseases
AEO	Assistant Educational Officer
AES	Acute Encephalitis Syndrome
ANC	Ante Natal Care
APL	Above Poverty Line
BCC	Behaviour Change and Communication
BDO	Block Development Officer
BIS	Bureau of Indian Standards
BPL	Below Poverty Line
BSNL	Bharat Sanchar Nigam Limited
BSUP	Basic Service to Urban Poor
CDD	Consortium for DEWATS Dissemination
CI	Controlled Industries
CLTS	Community-Led Total Sanitation
CMCC	Coimbatore Municipal City Corporation
CPHEEO	The Central Public Health and Environmental Engineering Organization
CSR	Corporate Social Responsibility
CT	Community Toilet
CWSS	Combined Water Supply Scheme
DCHB	District Census Hand Book
EM	Effective Microorganism
FC	Fitness Certificate
GH	Government Hospital
GI	General Industries
GO	Government Oder
GoI	Government of India
GoTN	Government of Tamil Nadu
GR	Growth Rate
GSL	Geo Spatial Laboratory
HH	Household
IHHL	Individual Household Latrine
INR	Indian Rupees
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
LMW	Lakshmi Machine Works
LPA	Local Planning Authority
LPG	Liquefied Petroleum Gas

Abbreviations (contd)

mg/l	Milligram per litre
MLD	Million Litres per Day
MTP	Mettupalayam
NA	Not Applicable
O&M	Operation and Maintenance
OD	Open Defecation
OHT	Over Head Tank
ORS	Oral Rehydration Solutions
OSS	On-Site Sanitation System
PAN	Permanent Account Number
PCA	Primary Census Abstract
PHC	Primary Health Centre
PRICOL	Premier Instruments & Controls Limited
PSC	Public Sanitary Conveniences
PSP	Public Stand Post
PT	Public Toilet
RCC	Reinforced Cement Concrete
ROC	Recurring of Current
RTO	Regional Transport Office
SBM	Swachh Bharat Mission
SBR	Sequential Batch Reactor
SHG	Self Help Groups
SHI	Special and Hazardous Industries
SOP	Standard Operating Procedures
SRKV	Sri Ramakrishna Mission Vidyalaya
SSA	SarvaShikshaAbhiyan
STP	Sewage Treatment Plant
SWM	Solid Waste Management
TNEB	Tamil Nadu Electricity Board
TNSTC	Tamil Nadu State Transport Corporation
TNUSSP	Tamil Nadu Urban Sanitation Support Programme
TP	Town Panchayat
TWAD	Tamil Nadu Water Supply and Drainage Board
UGD	Under Ground Drainage
ULB	Urban Local Body
WC	Western Closet

Executive Summary

Executive Summary

Narasimhanaicken Palayam (NNP) is one of the cluster towns selected to implement fecal sludge management in Tamil Nadu. This document presents the City Sanitation Plan (CSP) for NNP which includes a situation analysis of sanitation and related major components such as water supply, storm water drainage, and solid waste management. An action plan to bridge identified gaps is also proposed.

The CSP preparation exercise included various approaches such as secondary data collection, field visits, sample surveys, stakeholder consultations and discussions. TNUSSP baseline studies, a slum vulnerability study, community and public toilet assessments, and a scoping exercise have informed the preparation of this CSP. The data was collected and analysed using primary and secondary data collection methods.

E1.1. Location, Physiography, Demography and Socio-economic Characteristics

NNP town is situated 12 kilometres (km) north of Coimbatore city along Highway No. 67, which runs between Coimbatore and Mettupalayam. The most dominating physiographic feature in the study area is the Kurudi Malai (Kurudi Hills) on the western side. The town has a pleasant climate due to the presence of forests to the north and the cool winds blowing through the Palghat gap in the Western Ghats. The town panchayat (TP) spans an area of 637 hectares and receives an annual rainfall of 606 millimetres, with maximum rainfall received in October and November. The TP does not have a designated forest area and has nine parks and recreational spaces available.

As per Census 2011, NNP is a Class IV town with a population of 17,858 individuals living in 15 wards. This reported population is projected to reach about 31,000 by 2031. Further, the floating population of NNP is about 2,000 on a weekly basis and about 8,000 during festive seasons.

The slum population makes up about 10 per cent of the total population. Scheduled Castes form less than 7 per cent of the total population, while scheduled tribe account for 0.03 per cent of the population. In NNP, 81 per cent of the population is literate.

Ninety-four per cent of the households reported ownership of television sets, while a smaller proportion (29 per cent) reported owning a radio/transistor (Census 2011). Further, 51 per cent of the households owned motorised two-wheelers, while seven per cent of households reported owning a four-wheeler. NNP also has access to a good public transport system as the highway connecting Coimbatore and Mettupalayam goes through the town. In NNP, 97 per cent of the households use electricity for lighting, with the remaining households reporting the use of kerosene fuel.

E1.2. Water and Environmental Services

While local residents mention that there were many ponds in the eastern part of the town about 35 years ago, they are occupied by locals and migrants due to the lack of water in these for many years. At present there are no water bodies, i.e. lakes or ponds, within the town.

Drinking water for NNP is supplied from the Combined Water Supply Scheme (CWSS) and the monthly average quantity of water supplied in a day through this scheme to the town is about 2 to 3 million litres per day (MLD). Since the water from CWSS is intermittent, the TP has installed about 34 borewells and two open wells in the town to draw groundwater supply. Water is treated at the treatment plant at Velliangadu and distributed to nine overhead tanks with an installed capacity of 1.065 MLD. Since the TP receives water from the CWSS source once in three days, this is augmented by the supply from

borewells. Potable (treated) water is supplied once in three days for three hours, and non-potable (ground) water is supplied once in two days.

In NNP, 98 per cent of the households have access to potable water. Within this, 84 per cent of the water sources are within the premises, 15 per cent are near the premises, and one per cent is away from the premises. The local distribution is metered and supplied by the TP. Residents in the TP report the usage of the CWSS supply for potable purposes, while the groundwater-based supply is reserved for other uses in the household.

The current water supply volumes seem to satisfy the population requirements for the future. However, the low OHT storage capacities and the distribution system adopted lead to losses of water and inefficiencies. To prepare for increased demand in the future, it is necessary to have additional sources of water supply, increase storage capacities, protect the sources for non-potable water supply, and reduce water losses and leakages.

Storm Water Drains

On average, 25 per cent of the TP is covered with built-up drains. It joins the main stream that originates in the Kurudi hills and flows across the TP. Heavy manual human intervention is required to clear blocked drains.

Solid Waste Management

Four tonnes of waste are generated every day and 30 pushcarts are used to collect solid waste from households and small establishments. The waste from households and commercial establishments are not segregated at source. There were campaigns that had been organised by the TP to create awareness about source segregation and 'Say NO to Plastics'. The unsegregated waste from households and commercial establishments, silt from drains and other inert materials are collected in trucks and are dumped at the landfill near Pudhupalayam railway line.

E1.3. Sanitation and Wastewater Arrangement

Individual household toilets cover 75 per cent of the town, 20 per cent are dependent on public sanitary conveniences and 5 per cent defecate in the open. Schools have access to toilet facilities and are well-maintained by the urban local bodies (ULBs) or private sanitation workers. Four of the five schools meet the Swachh Vidayalaya norms for schools. Of the two health sub-centres in NNP, the one in Palaiyur has a toilet while the one in Poochiyur does not. In NNP eight offices are functioning and two out of them don't have toilets. Staff and the people visiting these places depend on the nearest public toilets or toilets which are a part of hotel, petrol bunks etc.

Twelve public sanitary conveniences (PSC) constructed under various government schemes serve the local community and floating population. All community toilets are managed by the urban local body (ULB), and sanitation workers of the TP are assigned to clean and maintain the PSCs on a daily basis. There are no user committees for management, nor any system in place of payment on usage. User feedback on these facilities indicates that the majority of the users (85 per cent) were satisfied with the prevailing cleanliness. A similar percentage of people agreed they had to wait for long to use the toilet. Adequate water is an issue raised by a third of users. Importantly, 84 per cent of the users only partially agreed that the toilets were safe to use, with more female users agreeing raising this concern.

Over three fourths of the households are connected to septic tanks, while the rest are connected to improved pits (13 per cent) and two per cent drain their night soil into the drain. All the PSCs in the town are connected to septic tanks for containment of fecal matter. However, since none of these septic tanks are connected to soak pits, the effluents overflow into the surface drains or into the open.

The on-site sanitation systems (OSSs) connected to the households and PSCs are emptied by private cesspool operators. The operators charge households around Rs. 1,000 – Rs.1,500 per truckload of septage emptied. The number of trips depends on the size of the septic tank and the volume to be emptied. Challenges faced by cesspool operators include access to septic tanks as most of them are sealed, solidification of sludge at the bottom, lack of skilled manpower, lack of fecal sludge disposal point and occupational stigma from the community.

The Ukkadam sewage treatment facility in Coimbatore is almost 20 kms away from NNP. Although the decanting station located near Ukkadam Bridge is just 1 km away from the STP, it does not have a proper receiving facility. Therefore, the current disposal mechanism disposes sewage in farmlands in and around the TP.

E1.4. Institutional Arrangements and Municipal Finances

The NNP TP is governed by an elected council consisting of 15 members – one elected from each administrative ward by the voting population. The TP is responsible for maintaining public health and carrying out civic functions including maintaining public sanitation infrastructure, solid waste management, controlling open defecation, and ensuring excreta is not disposed in open drains. The Public Health Section is headed by the sanitary officer and supported by sanitary inspectors, sanitary supervisors and sanitary workers.

A five-year analysis of revenue accounts reveals a steep increase in the assigned revenue in the year 2011-12 due to a steep increase in the stamp duty. Simple average growth of tax revenues has been around 11 per cent, while non-tax revenues grew by 10 per cent. However, the devolutions and other assigned sources have had an annual growth rate of 40 per cent on an average.

Of the three main expenditure heads: establishment expenditure, O&M and debt servicing, O&M, accounts for around 90 per cent. The majority of the O&M expense pertains to maintenance of water supply. Since the water supply is clubbed with the General-Purpose account, the real impact of other expenses is not evident.

Per capita income (which includes Grants) exceeds the per capita expenditure, the per capita own source revenue (OSR) falls short of the per capita expenditure, which is a sign of dependence on devolutions and Grants. Towards augmenting own sources, revenue potential was assessed for property tax, in which all other taxes are subsumed. Property tax is the major source of income for NNP. The average collection is at a commendable stage of 90 per cent and has scope for improvement.

Financial modelling was done to ascertain total sustainable investment of NNP, in line with assumptions and analysis, and was at Rs. 1,050 lakh. Financial modelling analysis indicates that the borrowing capacity works out to 70 per cent of the investment, which is Rs. 735 lakh. The balance is required to be obtained to meet the cost either as a grant or as own contribution.

E1.5. Action Plan for Sanitation Improvement

To improve the current sanitation situation of the TP, a key action plan has been put together which identified containment, conveyance, treatment and disposal as key areas.

In terms of containment, the key action items identified include stopping open defecation in identified wards/locations, conversion of insanitary latrines to sanitary latrines, improving the operation of PSCs and addressing the service needs of the floating population. Activities identified under fecal sludge conveyance include regularising desludging activities, safe emptying of septic tanks, and ensuring fecal sludge is discharged at designated sites only. With respect to treatment and reuse, a treatment facility

for greywater and septic tank effluents and re-use option for fecal sludge after treatment are identified as an action item. Estimated investment for the city sanitation plan is also provided by component along with sources of funds where possible and works out to Rs. 116 lakhs.

Introduction

1. Introduction

This document details the City Sanitation Plan for the Narasimhanaicken-Palayam (NNP) Town Panchayat (TP), in Coimbatore District of Tamil Nadu State. Chapter 1 presents the key geographical features, along with demographic, socio-economic and spatial profile. Chapter 2 presents the details of Water and Environmental Services, while Chapter 3 presents Sanitation and Wastewater arrangements. This is then followed by a brief analysis of the institutions involved in the governance of the Urban Local Body (ULB) and the financial flows to set the context for sanitation service delivery improvements. The last section of the City Sanitation Plan summarises the areas requiring improvements in sanitation delivery and outlines an Action Plan for improved sanitation in the ULB, taking account of the factors above.

1.1. Methods

Towards drafting the City Sanitation Plan, both primary data collection and secondary research was undertaken.

The Scoping Exercise conducted by the Indian Institute for Human Settlements (IIHS) offered baseline information with respect to demography, socio-economic profile, water supply, sanitation and solid waste management in NNP (TNUSSP, 2016). Also, other studies conducted by TNUSSP including Baseline Studies (TNUSSP, 2016), Desludging Operators: An Overview (TNUSSP, 2018), Vulnerability Assessment of Slums in NNP and Periyanaicken Palayam (PNP) (TNUSSP, 2018), and Assessment of Community Toilets and Public Toilets in PNP and NNP (TNUSSP, 2018), have informed the CSP. Further, additional information was taken from the District Census Handbook and Google maps. TP level income and expenditure information was provided by the TP officers.

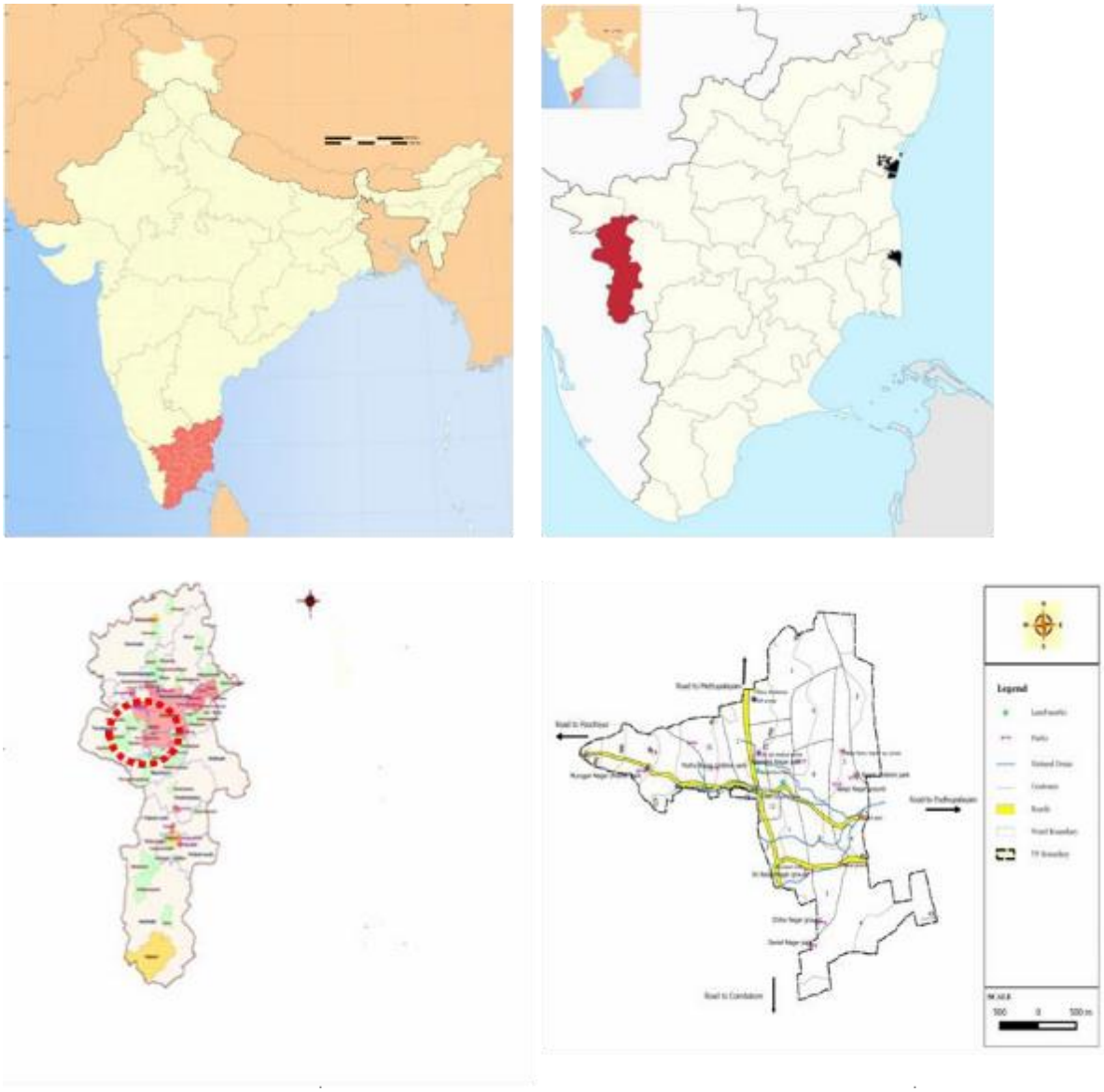
A number of field visits were conducted to interact with the TP officers and community members to understand various aspects including the location of key infrastructure, water supply, water storage and treatment, location of storm water drains, solid waste management systems, and open defecation spots, among others. All information was validated and presented in this CSP.

1.2. Geographical Settings

1.2.1. Location

NNP town is situated 12 kilometres (km) north of Coimbatore city along Highway No. 67, which runs between Coimbatore and Mettupalayam. Figure 1.1 indicates the location of NNP with respect to the district, state, and national boundaries. The TP is part of an almost fully urbanised corridor extending along the Coimbatore-Mettupalayam Road.

Figure 1.1*:* **Location of NNP**



Source: Wikipedia and TNUSSP, 2016

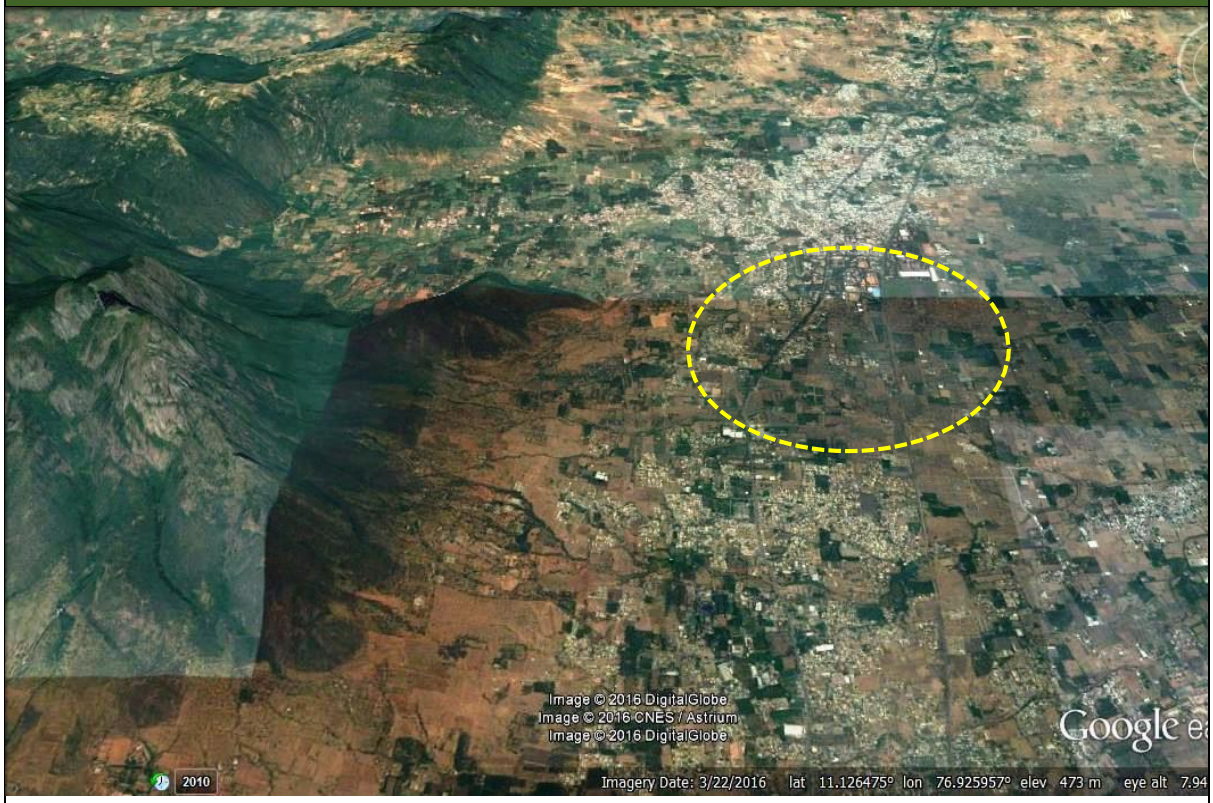
1.2.2. Physiography

The most dominating physiographic feature in the study area is the Kurudi Malai (KurudiHills) on the western side. The highest peak of these hills is about 1,500 metres (m) above mean sea level. One of the peaks at an altitude of 1,440 m is predominantly visible from anywhere in the study area. The Kurudi Hill range is a part of the Thadagam Reserve Forest. These hills have rocky peaks with dense and fairly dense mixed jungle along the slopes towards the foothills. The satellite imagery in Figure 1.2 gives a glimpse of the physiography in the study area.

The northern, southern and the eastern parts of the study area are flat in contrast, with a gradual slope from the west to the east. The streams originating from the Kurudi Hills form most of the natural drainage in this area. River Kousika, flowing on the northern side of the town, is one of the main natural drains. It flows towards the east, for more than 50 km, to join the River Noyyal near Vanjipalayam in Tiruppur District. There is another main natural storm water drain in NNP which joins River Kousika just beyond

the border of the town in the east, near Idikarai town. It has a check dam on it, which is close to the boundary of the town near the railway line.

Figure 1.2: **Satellite Imagery of NNP**



Source: Google Earth, 2016

1.2.3. Climate, temperature and rainfall

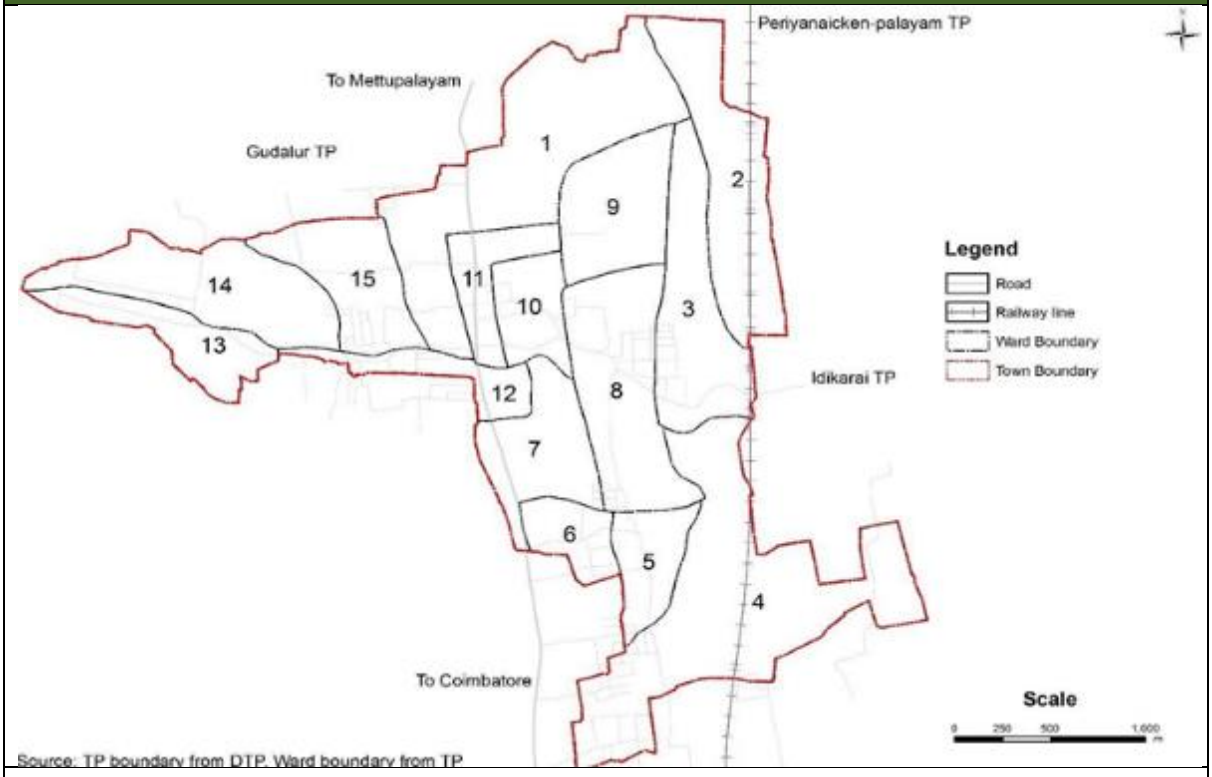
The study area has a pleasant climate due to the presence of forests to the north and the cool winds blowing through the Palghat gap in the Western Ghats. The town has a tropical wet and dry climate (Köppen climate classification), with the wet season lasting from October to December due to the north east monsoon. The mean maximum temperature ranges from 29.3°C (85°F) to 35.9°C (97°F), and the mean minimum temperature ranges from 18.2 °C (68°F) to 23.5°C (76°F).

The town receives rainfall primarily in two parts of the year. After a warm and humid September, the north-east monsoon starts from October lasting till early November (and now December). Apart from this, there is rain during the summer months. The average annual rainfall is around 606 millimetres (23.8 in). The rainfall data from 1971 to 2000 indicates that the maximum rainfall occurs in the months of October and November about 120 mm each month. The northeast monsoon accounts for about half of the total annual rainfall.

1.2.4. Spatial boundary

The area of NNP town is 637 hectares (6.37 sq.km.) as per the LPA Coimbatore. The current administrative ward boundaries are to be verified by the TP. There is no record of change in boundaries over time at the TP Office.

Figure 1.3: **Administrative Map of NNP**



Source: Town boundary supplied by DTP; ward boundaries recreated by GSL/IIHS based on the sketch obtained from TP office2

1.2.5. Statutory status of the TP

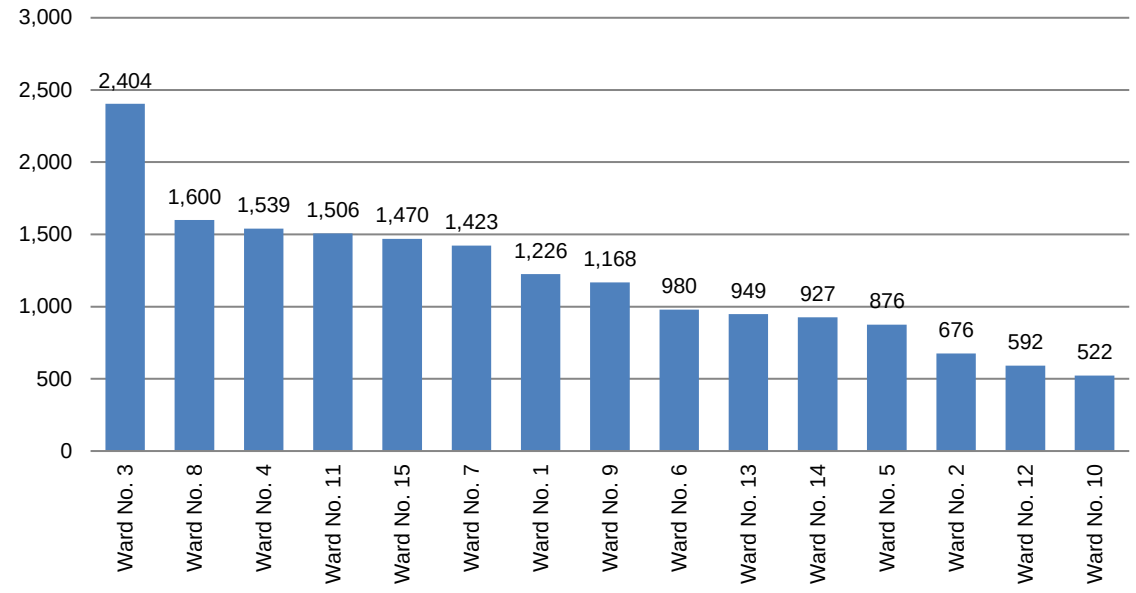
NNP has been a First-grade TP since 1982. It is proposed to be upgraded to Special Grade.

1.3. Demography and Socio-Economic Profile

1.3.1. Resident population

As per the Census 2011, NNP is a Class IV town with a population of 17,858 living in 5,023 households. The town has 15 wards. Ward No. 3 has the maximum number of people (2,404) and WardNo.10 has the least (522). The ward-level population is shown in the Figure 1.4.

Figure 1.4: **Ward Level Population in Narsimhanaicken-Palayam**

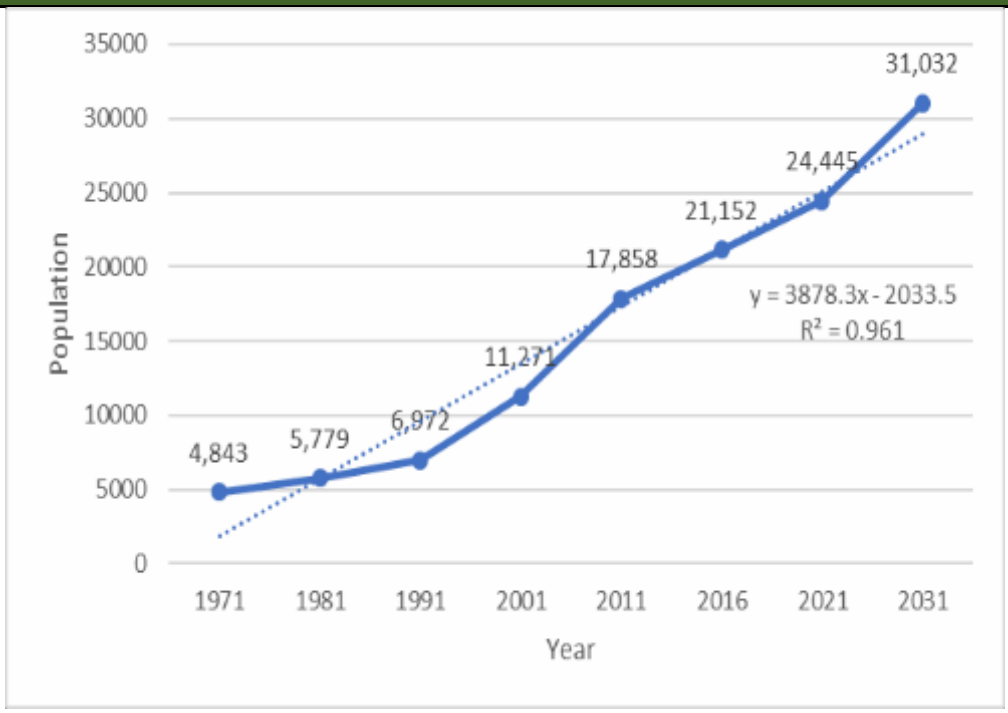


Source: Census, 2011

1.3.2. Population growth

The population of the town has grown the fastest between 1991 and 2011. The projections have assumed increased growth over the next two decades owing to its proximity to Coimbatore city (Figure 1.5).

Figure 1.5: **Population Trends and Projections for NNP**



Source: Census 1971-2011 and TNUSSP Projections

1.3.3. Floating population

In NNP there is an inflow of persons coming in for employment and an additional number coming in during festivals and auspicious days like Mahashivaratri, Amavasya, Christmas, Ramzan, and so on. These visitors are reported mostly from neighbouring areas like Coimbatore, Mettupalayam, and Sirumugai.

Discussions with stakeholders and key informants indicate that an estimated population of 3,000 (+/- 2 per cent) come to NNP on a daily basis for employment. This would make up about 10 – 15 per cent of the population in the TP. It is estimated that about 2,00 persons visit on a weeklybasis for events like festivals, increasing to about 8,000 during major events.

These social and cultural events are organized in institutions that have provision for sanitation facilities (such as churches and choultries). However, there is a significant number of itinerant persons present in NNP who require sanitation services and facilities.

1.3.4. Social Composition

Scheduled Castes form less than 7 percent of the total population, a figure considerably lower than the state urban average of 14 percent. Scheduled Tribes account for only 0.03 percent of the population (PCA, Census 2011). The (numerically) dominant Scheduled Castes are the Arunthathiyars, Chakkiliyans, Adi Dravidas and the Kuravans. Hindus form close to 96 percent of the population of the town, while Christians and Muslims account forcloseto3 percentand1 percent respectively. The dominant languages spoken in the town are Tamil – spoken by 58 percent of the populace, followed by Telugu (25 percent), Kannada (14 percent) and Malayalam (1 percent).

1.3.5. Population density

Official records from the TP Office state that the population of the town (in 2011) is 17,858 and the area of the town is 6.37 square kilometres (sqkm), therefore the gross density of the town is 2,803 persons per sq km. Ward-level density computations are awaiting validation of ward boundaries by the TP Office.

1.3.6. Population in slums

As per the Census 2011, NNP is a Class III town with a population of 17,858 inhabitants in 5,023 households. The town has 15 wards. According to the General Particulars, TP, 2013, there are 710 Below Poverty Line (BPL) households, of which 520 are in slums and 190 are in non-slum areas. The slum-wise distribution of the BPL households is as follows.

Table 1.1: **Slum locations and Households: Slum Locations and Households**

Sl. No.	Slum Area Name	Ward Number	No of Households
1	Harijan Colony	1	120
2	Poochiyur Harijan Colony	2	45
3	Pudhupalyam Harijan Colony	3	85
4	Rakkipalayam Harijan Colony	4	20
5	Ambedkar Nagar	5	30
6	Omsakthi Nagar	6	98
7	Harijan Colony	7	78

Table 1.1: **Slum locations and Households: Slum Locations and Households**			
Sl. No.	**Slum Area Name**	**Ward Number**	**No of Households**
8	Union Road South	8	44
	All slums		520
Source: TP Office			

There are eight slums in NNP. Primary field observations indicate that 70 per cent of the houses are built with *pucca* materials like bricks. The remaining households are semi-*pucca*or *kachcha* (made of impermanent materials like biomass). Some of the homes were built under the Basic Services for the Urban Poor (BSUP) Scheme. Three in four households do not have legal tenure (*patta*) for their houses. All households are reportedly paying house tax and subscription for their electricity connection. The slum settlements in NNP have established access to the road network to Mettupalayam and Coimbatore (NH67). All the slums are covered by the arterial and sub-arterial roads which connect to the National Highway. Men and women in the slums are employed as daily wage labour. The urban poor in this TP commonly work in small factories, as masons, and as cooks in hotels. The average wage for men per day is Rs. 250–500 and Rs.250–300 for women.

A slum vulnerability assessment was done to check key development parameters such as health, education, livelihood, basic infrastructure facilities, and social capital leading to different vulnerability across slums in contiguous TPs such as Periyanaicken-Palayam (PNP). To undertake this assessment, slum-level primary data was collected through a focused group discussion with around 10 key informants from the community, and participatory observation of the slum. The vulnerability assessment matrix is as follows:

Table 1.2: **Slum vulnerability matrix-NNP**

Name of the slum	Ward No	TP	Status of slum			No. of NGOs/CBOs operating in the slum	Condition of approach road to slum	Basic Amenities				Availability of minorities	Availability of BPL HHs	Availability of identity proofs	Adults and children Education	Employment pattern	% of children as child labor	Status of health and health services					No. of functional AWC within slum	Composite (Total Score = 42)
			Authorization	Location	Migration			Housing	Toilet	Water supply	Drainage	Electricity							Availability of PHC facility	Health seeking behavior	Service coverage	Outreach services	Disease outbreak in past 1 year		
Arijana Colony	7	NNP	0	2	0	0	0	1	1	1	1	0	0	1	0	1	2	0	1	0	0	1	0	2	15
MGR Nagar (Union Road) South	8	NNP	0	2	0	1	0	1	2	1	1	0	0	0	1	1	1	0	2	1	0	2	0	2	16
Murugan Nagar	14	NNP	0	1	0	1	0	1	2	1	1	0	0	0	0	1	1	0	2	1	0	1	0	2	15
Rakkipalayam	6	NNP	0	1	0	1	1	1	1	1	1	0	0	0	0	1	2	0	2	1	0	1	0	2	16
Pullurpalayam	9	NNP	0	2	0	1	2	1	1	1	1	0	0	0	1	1	1	0	2	1	0	1	0	2	19
Dhanalakshmi nagar	8	NNP	0	1	0	1	1	1	1	1	1	0	0	0	0	1	2	0	1	1	0	1	0	1	15
Ambedkar Nagar	8	NNP	0	1	0	0	1	1	1	1	1	0	0	0	0	1	2	0	2	0	0	1	0	2	15
Balachalagr Nagar	3	NNP	0	1	0	1	2	1	2	1	2	0	0	1	0	0	2	0	2	1	0	2	0	2	20

Vulnerability assessment of slums in NNP

Most Vulnerable | Moderately Vulnerable | Less Vulnerable

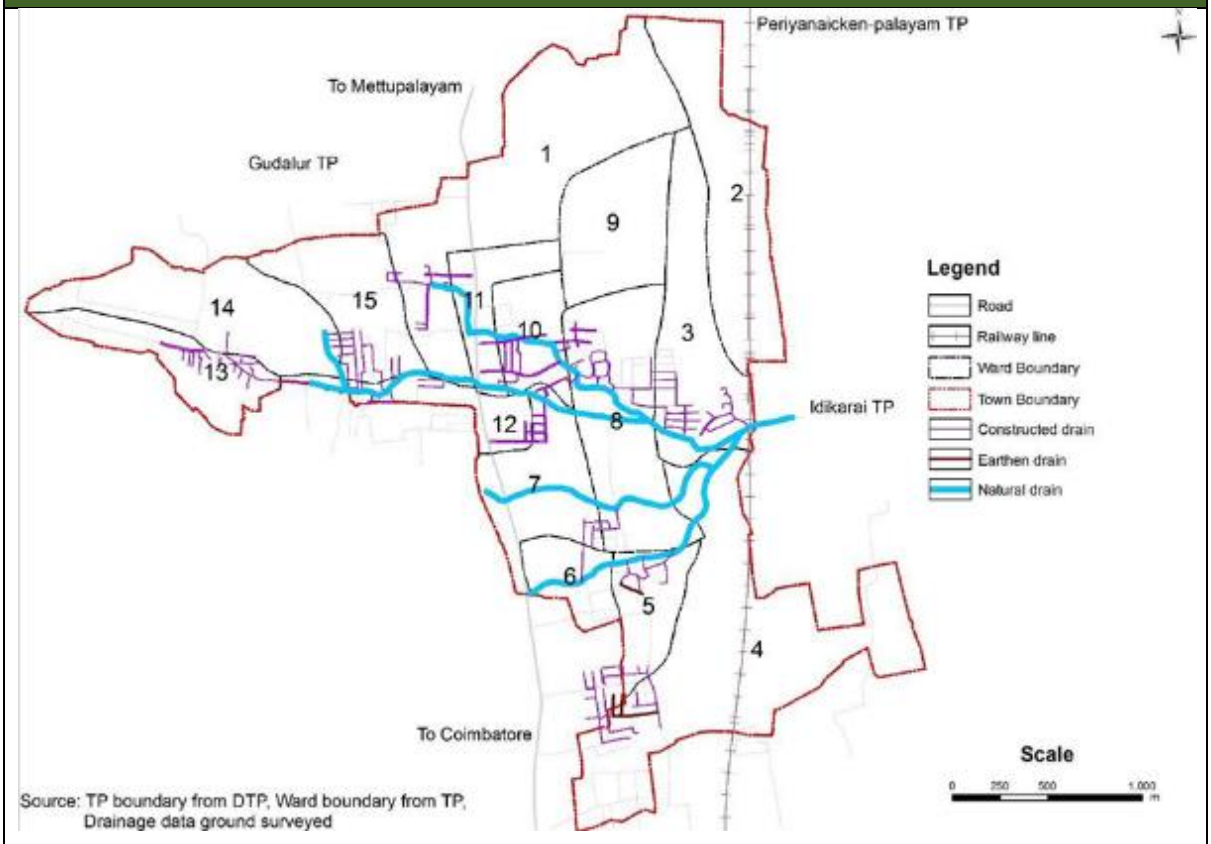
Source: Slum vulnerability study 2017

1.4. Drainage and water bodies

The main natural drainage channel in the town joins River Kousika further downstream at Idigarai. River Kousika, flowing on the northern side of the town, is one of the main natural drainage channels in the area.

Currently, there are no water bodies, i.e. lakes or ponds, within the town. However, local residents mention that there were many ponds in the eastern part of the town about 35 years ago. Om Shakti Nagar in Ward No. 8 and MGR Nagar in Ward No. 3, adjoining the check-dam area of Pudhupalayam, were once ponds. Due to the lack of water in these ponds for many years, they were filled up and occupied by locals and migrants. Now most of the residents living in this area have a formal *patta*. Being a low-lying area, Om Shakti Nagar experiences flooding during heavy rain, even today. The TP officials make arrangements to pump out stagnant water in such events. Murugan Nagar, a part of Ward No.13, which is right near the foothills of the KurudiHills, was a continuation of the natural stormwater drain arising from the hills about 35 years ago. It was encroached by the public and now most of the land is legal tenure in private hands.

Figure 1.6: **Drainage Map for NNP**



Source: TNUSSP, 2016

1.5. Forest, parks and recreational spaces

In NNP there are nine parks and recreational spaces available. Two of them are parks, two of them are playgrounds and the remaining five are children's parks. No designated forest area exists in this TP. There are no toilet facilities in (or in the vicinity of) these parks and recreational spaces.

1.6. Connectivity and Transportation

1.6.1. Public transport system

NNP has access to a good public transport system as the highway connecting Coimbatore and Mettupalayam goes through the town. The frequency of buses in either direction is high (one every 10 minutes during the day). Rail connectivity needs to be accessed from the neighbouring PNP, with the passenger train running five times a day between Coimbatore and Mettupalayam.

1.6.2. Individual transport

The Census 2011 reports that 51 percent of the households own motorised two-wheelers. Seven per cent of households reported owning a four-wheeler.

1.7. Ownership of assets and access to social services

Ninety-four percent of the households reported ownership of television sets, while a smaller proportion (29 per cent) reported the owning aradio/transistor (Census 2011). Radio ownership was significantly lower in wards 7 and 10.

Landline telephones are owned by about 6 per cent of the households in the TP, while mobile phone ownership was reported by nearly 73 percent of households (Census 2011). While mobile phone penetration was uniform across all wards, it was noted that Ward 14 reported low ownership (only36 per cent).

Ownership of two-wheelers by households was lowest in wards 5,8,10 and 14, and higher than the TP average in wards 1, 2, 3, 4, 7, 9, 11 and 14. Ownership of four-wheelers was also reported to be significantly higher in wards 4 and11.

Ownership of computers was reported by 19 percent of the households, with wards 12 and 13 reporting relatively low ownership (less than 10 per cent) and Ward No. 2 exhibiting high a level of ownership (greater than 50 per cent).

Based on asset ownership, about one in every eight households in the TP owned all the four assets above (vehicles, communication, entertainment and computers), while one in every 50 households did not own any of these. The asset-less households were reported more in wards 7, 13 and 14.

Use of LPG as fuel for cooking was reported by 89 percent of the households in NNP. Penetration of LPG was highest in wards 4, 5 and12, and lowest in wards 2, 8 and 14.Use of firewood as fuel was reported to be relatively high in wards 2, 3 and 6. Census 2011 data indicates that 97 percent of the households in NNP use electricity for lighting, with the remaining households reporting use of kerosene fuel.

1.8. Literacy and Employment

In NNP, 81 percent of the population is literate. Female literacy is marginally lower at 77 percent. Wards 2, 3, 7, 8, 13 and 14 have a lower proportion of total literates as well as female literates.

Of the total population of 17,858 (Census 2011), there are 6,919 main workers (39 per cent) gaining employment for more than 180 days annually;10,201 non-workers (57 per cent) and a small number of marginal workers (less than 4 per cent).Female non-workers form 66 per cent of the town’s non-working population.

2

Water and Environmental Services

2. Water and Environmental Services

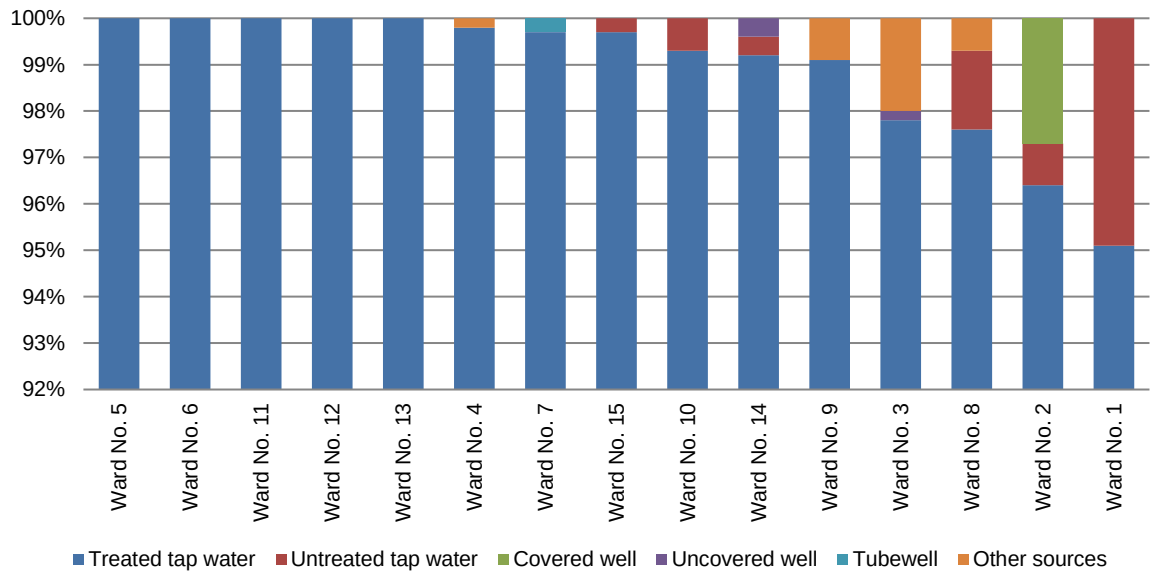
2.1. Water

2.1.1. Access to potable water sources

According to data from Census 2011, the source of drinking water for 99 percent of households is piped supply from a treated source. Another 0.5 percent receive piped water from an untreated source and the rest depend on groundwater sources like tube wells, open wells and hand pumps. Around 84 percent, i.e. about 4,219 households, have the source within their premises, 15 percent of households have a source near their premises, and one percent access a water source away from where they live.

Analysis of ward-level data from Census 2011 shows that wards 5, 6, 11, 12 and 13 have 100 percent access to treated tap water. The majority of the houses (60) dependent on untreated piped supply are in Ward No. 1.

Figure 2.1: **Sources of Drinking Water (Ward-Level) in NNP**



Source: Census, 2011

2.1.2. Sources of potable water

Drinking water for NNP is supplied from the Combined Water Supply Scheme (CWSS) through the Pillur II water scheme (Athikadavu) by the Tamil Nadu Water Supply and Drainage Board (TWAD)Board. The quantity of supply varies daily. The monthly average quantity of water supplied in a day through this scheme to the town is about 2 to 3 million litres per day (MLD).Since the water from CWSS is intermittent, the TP has installed about 34 borewells and two open wells in the town to draw groundwater supply.

2.1.3. Arrangements for potable water supply

Treatment

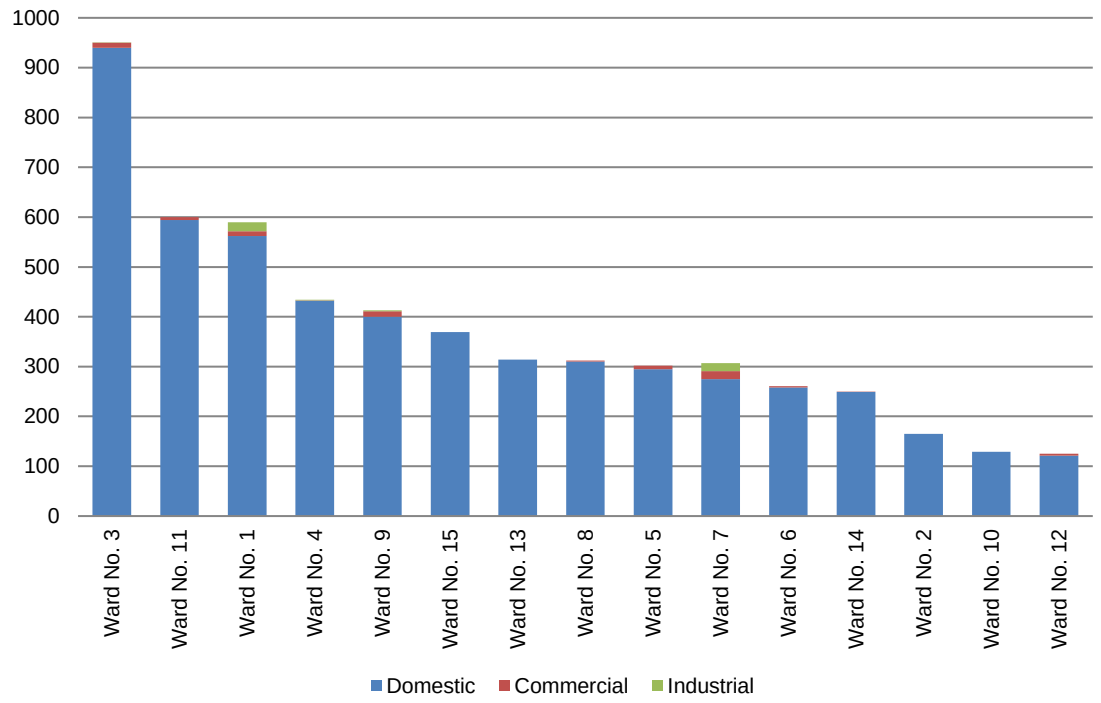
Water is treated at the treatment plant at Velliangadu (close to the source –Pillur Dam) and tested for physical, chemical and biological parameters at regular intervals. The water received by the TP is of

good quality and hence, no additional treatment of this water is carried out, except for occasional chlorination during the monsoon season.

Storage

The water reaching the town from the CWSS is stored in Over Head Tanks (OHTs) and these are distributed spatially around the town. Under the Athikadavu-I scheme, five OHTs were constructed to store water. Later, with increasing demand, four more OHTs were constructed under a second scheme. Therefore, the town has nine OHTs with a total installed capacity of 1.065 MLD. Each of the OHTs has service areas as detailed in Figure 2.2.

Figure 2.2: **Water Service Connections (Ward-Level) in NNP**



Source: TP Office, July 2016

Distribution

The TP receives water from the source (CWSS) once every three days. The storage facility – OHT – is not even sufficient for a day's supply of drinking water. Thus, on the days that CWSS water is available to the town, the storage and distribution to households is managed such that each distribution line is assured about three hours of drinking water supply. On the days that treated water is not available from the CWSS, the TP supplies water accessed from the ground water infrastructure, pumping it to the same nine OHTs and using the same distribution lines. While CWSS water is supplied every three days, the groundwater-based supply is carried out every two days.

Current data from the TP indicates that there are 5,522 water supply connections out of which 5,413 are domestic, 71 are commercial and 38 are industrial connections. There are also 147 public stand posts which serve the urban poor within the town.

Due to variation in flow and frequency of flow, there is no continuous supply of drinking water daily. Potable (treated) water is supplied once in three days for three hours, and non-potable (ground) water is supplied once in two days.

Metering and tariff

The TP provides water service connections to households, establishments and industries on payment of a fixed one-time connection charge. A monthly user fee is levied for all the supplies by the TP. However, this is charged at a fixed flat rate and is not on a volumetric basis, despite the presence of metering facilities. Since the installed meters are faulty, tariff is charged on a notional average basis rather than an actual basis. The user charge varies according to the type of connections. The details of connection charges and monthly water supply charges across each type are provided in Table A.2 of Annexure 1.

As per the TP's records, 100 per cent of the water tax for all connections is collected and no arrears remain. The reported annual expenditure on provision of water supply by the TP is Rs. 97.64 lakh. Of this, Rs. 33.30 lakh is paid to the TWAD Board for the supply of Athikadavu water from the CWSS every year. As the tariff and collection from consumers do not match this, the TP bears a significant part of this cost from its budget

2.1.4. Duration and quality of water

Drinking water from the CWSS supplied to the town is treated at source using clari-flocculation and rapid sand filters. The water supplied through CWSS is tested once a month by the TP, and complies with the standards prescribed for drinking water. A sample of the drinking water quality test results carried out by the TP is presented in Annexure 1 (Table A.1).

Residents in the TP report usage of the CWSS supply for potable purposes, while the ground water-based supply is reserved for other uses in the household. It is also a fact that since water is supplied continuously and users are being charged a fixed monthly fee, there is no incentive to conserve water (except in times of scarcity) and there is ample scope for water conservation.

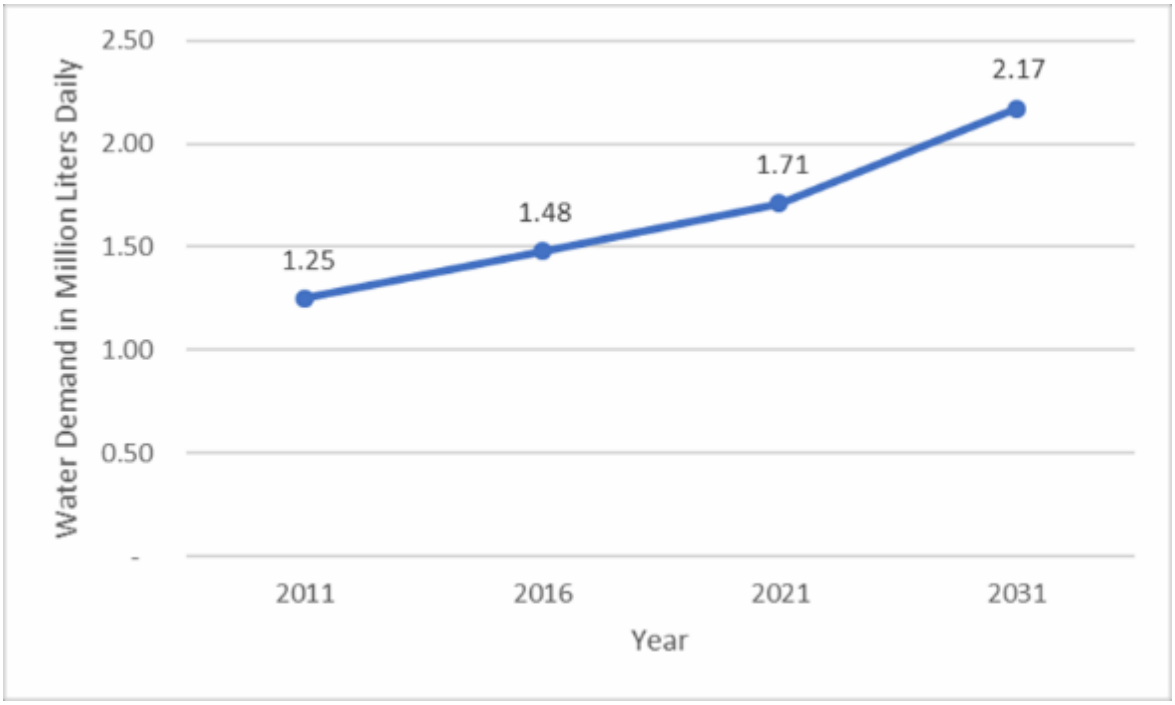
While the residents report availability of sufficient water in different parts of the town, in summer the water supply hours and quantum become less. Households cope by augmenting their storage and storing enough water for the forthcoming week on supply days.

There are a few private water suppliers in the TP who supply water for construction activities and for drinking during lean months. Discussions with stakeholders suggest that households that are economically better-off prefer to buy water from private water suppliers at the rate of Rs.200–300 for 1,000 litres of water. Private borewell water treated by reverse osmosis is the source for such suppliers.

2.1.5. Projected demand for drinking water

The current and projected demand for drinking water for the TP is presented in Figure 2.3.

Figure 2.3: **Projected Demand for Drinking Water in NNP**



Source: TNUSSP Projections, 2016

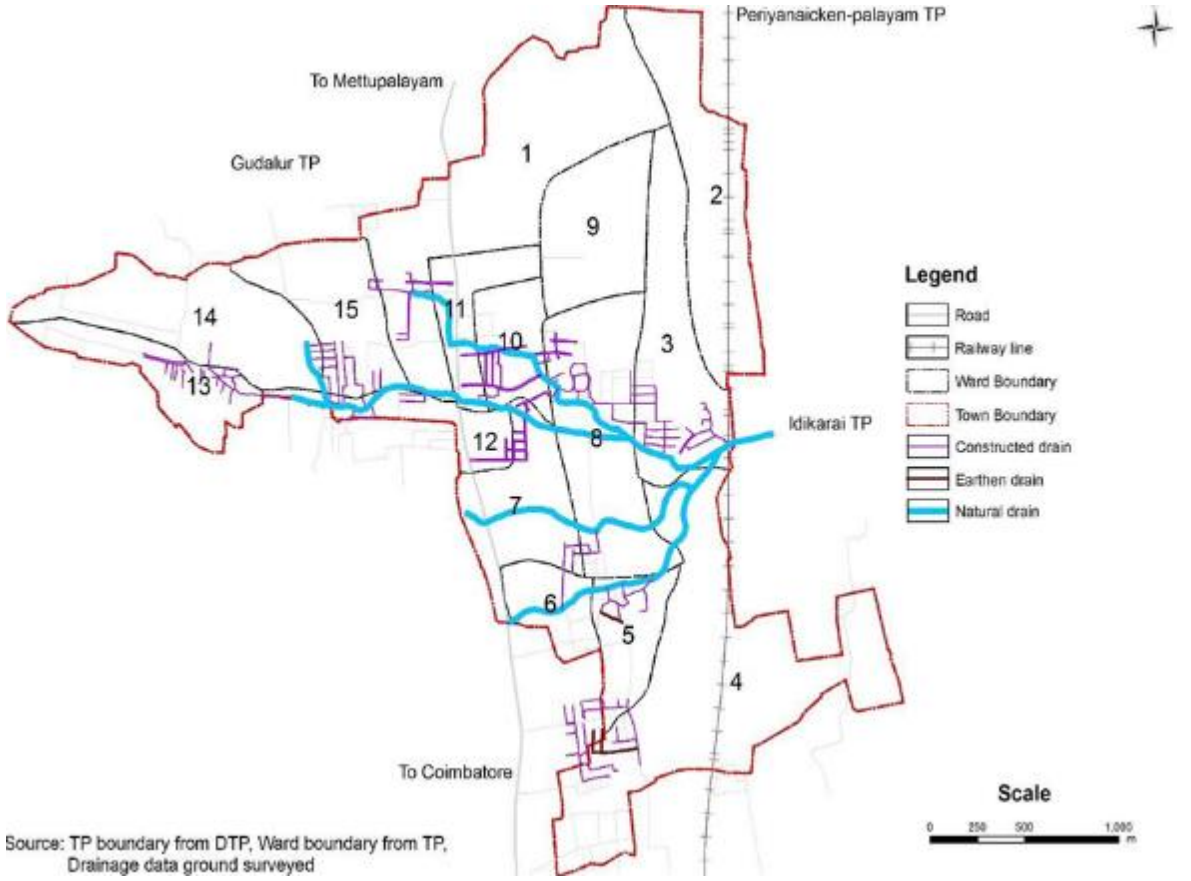
The current water supply volumes seem to satisfy the population requirements for the future. However, the low OHT storage capacities and the distribution system adopted lead to losses of water and inefficiencies. To prepare for increased demand in the future, it is necessary to have additional sources of water supply, increase storage capacities, protect the sources for non-potable water supply, and reduce water losses and leakages. Rejuvenation of the existing distribution network and protection of groundwater sources is required.

2.2. Storm water drains

2.2.1. Natural drains and built up drains

There is very good coverage of built-up drain networks around the TP, constructed under the (Jawaharlal Nehru National Urban Renewal Mission (JNNURM). The built-up drains run for 9.57 km, covering almost all the streets of the TP. These connect or have their outfalls in the natural drainage channel running through the TP as shown in Figure 2.4. As per the TP, there are no areas under its territory which falls under the category of 'areas prone to flooding'.

Figure 2.4: **Drainage Map of NNP: Built-Up and Natural**



Source: Map prepared by keystone based on TP office data, 2016

2.2.2. Flow calculations

The area of the town is 6.97 sqkm and the average annual rainfall is 606 mm. As 1 mm of rainfall = 1 litre of water/m², the total volume of annual rainfall is estimated to be 3860.22 million litres. Assuming 25 per cent of the town area to be built up (including hard surfacing) which contribute to the surface run-off, it is estimated that about 965 million litres of rainwater in the town needs to be effectively drained every year to avoid flooding (the average number of rainy days is 38).

2.2.3. Upkeep of drains

Dumping of household waste including kitchen waste, plastic bags, plastic bottles, wrappers of chocolates, biscuit packets etc. in the drains affects the flow of drain water. Heavy human intervention is required in the case of blockage in drains, and very often these sanitation workers have to do it manually by entering the drainage.

2.3. Solid waste management

The NNP has taken initiatives to collect solid waste, but so far it has not been able to initiate any treatment or resource recovery. Primarily, it is the lack of land for a resource recovery facility that has limited the TP.

There are 15 wards, 6,747 assessed households,80 industries,92 commercial establishments and 7 educational institutions in NNP. The quantity of solid waste generated in the TP is estimated to be 4 tonnes per day (NNP TP Office).

2.3.1. Arrangements and collection for solid waste

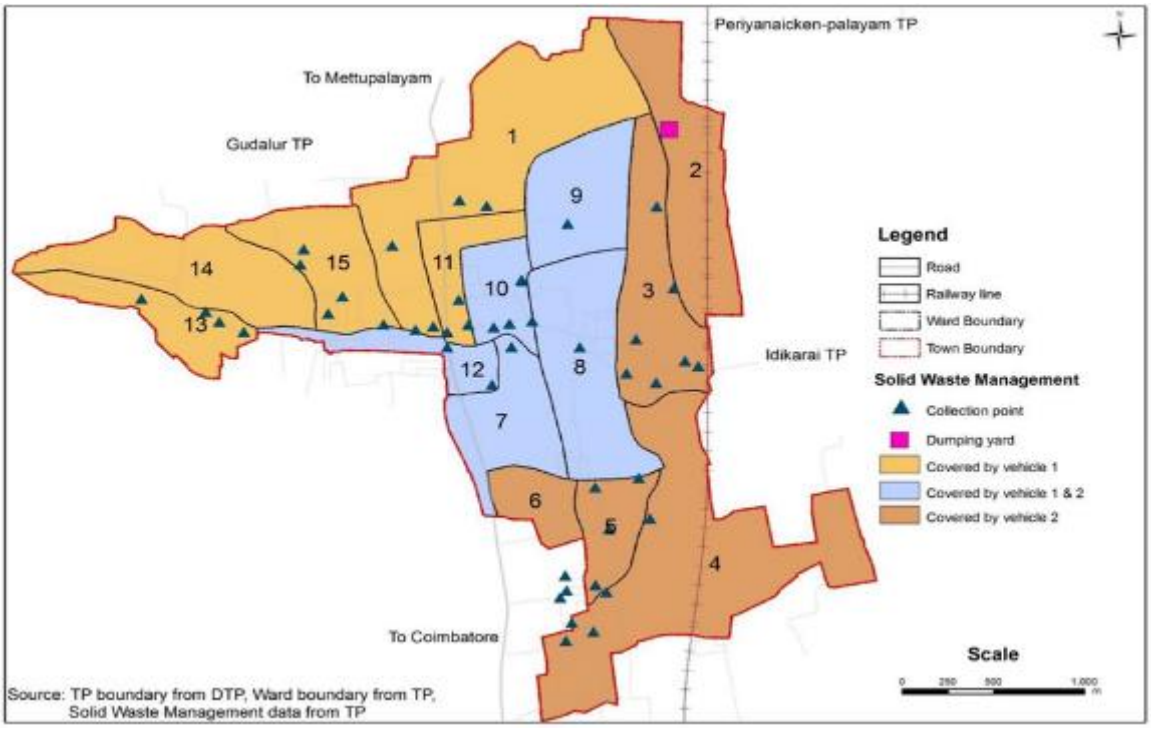
Primary collection

TP has 30 pushcarts that are used to collect solid waste from households and small establishments that are situated within the wards. Each pushcart is supplied with four bins, each with a capacity of 25 kilograms (kg).

The collection of solid waste is carried out by the sanitation workers of the TP between 6 am and 1pm. The sanitation workers blow their whistle when they get into the residential area, and the residents bring their waste in their dustbins and drop it into the 25kg bin on the pushcart. Some residents, who are busy getting ready for work, keep their bins outside their houses. These bins will be taken and emptied by the sanitation worker.

Two female sanitation workers are allotted for each pushcart to collect waste from the households until the four bins are filled. As there is a designated route map for the sanitation worker to follow, they collect waste accordingly and empty the bins into the large drums that are placed on street corners. Once the pushcart bins are emptied, the workers go on a second round of collection from the remaining houses.

Figure 2.5: **Solid Waste Management Map of NNP**



Source: TNUSSP, 2016

Secondary collection

After the primary collection of waste from the households, the sanitation workers reach a common transfer point to empty their pushcart bins into the large drums or constructed bins or cement rings that

are placed at the street corners. There are 48 such transfer points in the15 wards. Two tractors are allotted for secondary collection – each with a capacity of 1.9 tonnes. These vehicles reach the transfer points at a stipulated time to collect the waste that is dumped into the larger bins.

There are no hospitals in NNP. The general waste (non-infectious) from clinics is collected along with the waste from the hotels and other commercial establishments, which is collected directly through waste collection trucks.

Table 2.1: **Vehicle Details for Primary and Secondary Waste Collection**

S.No.	Vehicle	No.	Capacity in tonnes / Cart	No. of trips/day	Total capacity / day in tonnes
Primary collection					
1	Pushcarts	30	0.05	2	3
Secondary collection					
2	Tractors	2	1.9	1	3.5 – 4
Source: NNP TP Office, July 2016					

2.3.2. Arrangements for segregation of solid waste

The waste from households and commercial establishments are not segregated at source. There were campaigns that had been organised by the TP to create awareness about source segregation and "Say NO to Plastics".

2.3.3. Arrangements for treatment and disposal of solid waste

The unsegregated waste from households and commercial establishments, silt from drains and other inert materials are collected in trucks and are dumped at the landfill near Pudhupalayam railway line.

2.3.4. Personnel involved in SWM

An experienced sanitation worker is in charge of solid waste management of the TP and he supervises the day-to-day activities of the workers. There is no Sanitary Inspector or Sanitary Supervisor.

There are seven permanent sanitation workers and 45 private workers (10 of whom are male) who are paid daily wages. Primary collection of waste is carried out by the female workers – women in pairs are supplied with a pushcart and assigned to collect waste from households.

These SHG women who are involved in door-to-door collection of waste start their work at 6 am and finish it at 1 pm.

Five male workers, including a driver, are allotted to each truck. The rest of the male workers clean and maintain drains and community toilets. These private workers are paid daily wages. All the sanitation workers, work from 6 am to 3 pm. Waste management activities are carried out on all days of the week. Each worker gets one day off weekly, based on a schedule.

Table 2.2: **Details of Man Power**			
S.No.	**Category**	**Numbers**	**Details**
1	Sanitation Workers	7	Permanent employee
2	Sanitation Workers - SHG	45	Daily wages
3	Truck Driver	2	Daily wages
Source: NNP TP Office, July 2016			

Sanitation and Wastewater Arrangements

3. Sanitation and Wastewater Arrangements

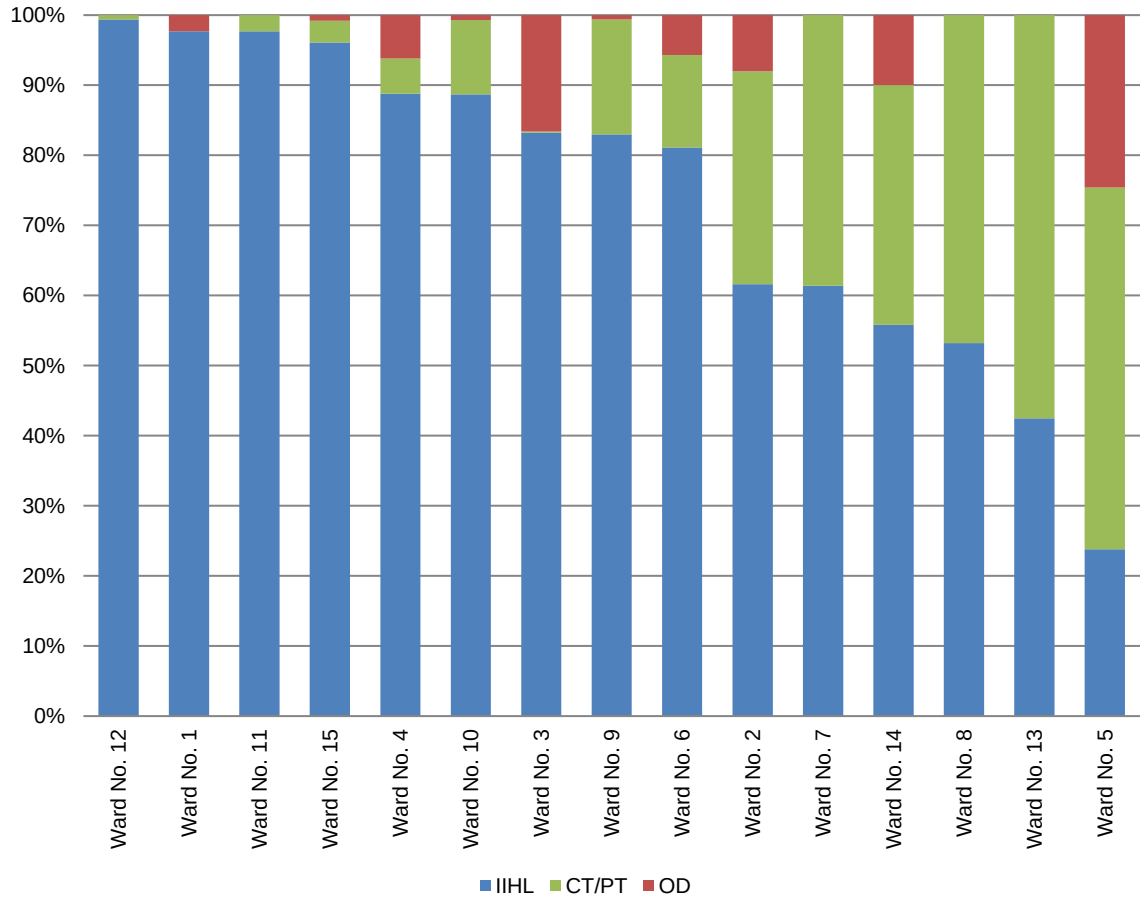
3.1. Access to toilets

3.1.1. Individual toilets

In 2011, of the 5,023 households in the town, 3,782 households – i.e. 75 percent of households – had access to individual toilets, while 974 households (20 per cent) depended on public sanitary conveniences (PSCs) and 266 households (5 per cent) defecated in the open (Census 2011).

Ward-level analysis of the Census 2011 data indicated that the majority of households defecating in the open are in Ward No. 3 and Ward No. 5. Open defecation (OD) is also noticed sparsely in wards 1, 2, 4, 6, 9, 10, 14 and 15. There is a large portion of people dependent on PSCs in wards 2, 5, 7, 8 and 13.

Figure 3.1: **Access to Toilets (Ward-Wise) in NNP**



Source: NNP, 2016

The data available with the TP Office indicates that there are 6,846 households, out of which 487 households do not have access to individual toilets. Wards, 3, 5, 7,8,13 and 14 account for the majority

of toilet less households.

3.1.2. Public sanitary conveniences

In NNP, 12 PSCs were constructed under various government schemes. They serve the local community and floating population, and are evenly distributed across the TP. In total, the PSCs have 64 seats for men, 57 seats for women and 2 seats available separately for the elderly. One PSC block near Pudhupalayam was designed only for women and has eight seats. No public toilet (PT) is available in NNP to cater to the floating population.

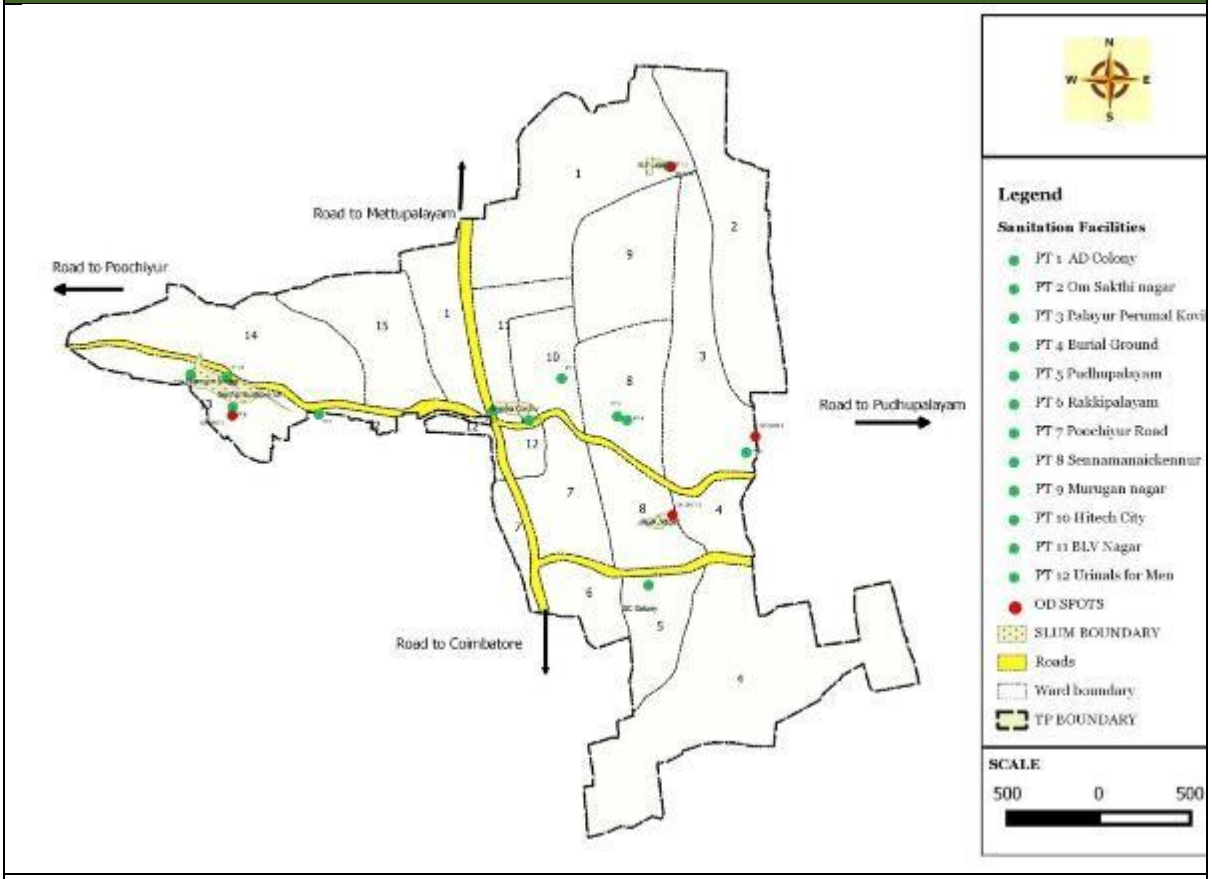
The TP has constructed a separate toilet block –near the Murugan Nagarslum, which is located on the Poochiyur Road – with two seats (western-style closet) for elderly people. Six toilet blocks are located across the slums of Balavinayagar Nagar, Harijan Colony, Murugan Nagar (which includes toilets for those with physical disabilities), Sennamanaickenur and Om Sakthi Nagar. The households in the vicinity of these community toilet (CT) blocks do not have individual household latrines (IHHLs), and the majority of them use the PSC facility on a daily basis. There is a urinal block near the NNP bus-stand, which is closed due to OD and misuse by passers-by. The census 2011 also states that around 19.3% (971 Households out of 5023) households depend on the public and community toilets for their sanitation needs. Out of the 15 wards in NNP, ward 8, 7, 13, and 5 report maximum households using PSCs.

3.1.3. Management arrangements of PSC

All CTs are managed by the urban local body (ULB), and sanitation workers of the TP are assigned to clean and maintain the PSCs on a daily basis. The work of maintaining the PSCs is supervised by the Senior Sanitary worker of the TP. Provision of facilities like water, electricity, and cleaning material ls at these PSCs is also the responsibility of the ULB. There are no user committees for management, nor any system of payment for usage in place. Two toilets blocks had been abandoned due to vandalism in NNP, apart from the bus-stand urinals.

Primary observations identified four OD spots in the TP, scattered across Sennamanaickenur, Pudhupalayam, Balavinayagar Nagar and MGR Nagar slums. Households not utilising the PSC facilities highlight a variety of reasons. Vandalism also makes these facilities less accessible and safe for women and children at night.

Figure 3.2: **Public Sanitary Conveniences in NNP**



Source: Maps prepared by Keystone based on TP office data, 2016

3.1.4. User Perspective of PSC

Preliminary assessment of existing PSCs indicates the following major reasons for dissatisfaction:

1. Unsuitability of timings for some persons
2. Need for exclusive seats for the elderly and children
3. Need for cleanliness and better management
4. Dysfunctional fixtures

A detailed CT/PT assessment conducted revealed the following:

User timing
A detailed assessment of the PSCs by the, City- Technical Support Unit City-TSU presented the usage by time slots in PNP for all users combined. Peak usage is typically between 6am and 8 am, which then stabilises by noon.

User perspective
In NNP, 84 per cent of users partially agreed that there was safety of access. Importantly, more female users (63 percent) than male users (57 per cent) partially agreed to this statement. The majority of the users (85 per cent) were satisfied with cleanliness. A similar percentage of people agreed they had to wait for long to use the toilet. Adequate water is an issue with a third of users.

3.2. Sanitation in establishments

3.2.1. Schools and colleges

Government schools

In NNP, there are five schools. It is common report to identify vandalism as the cause for dysfunctional infrastructure. Unidentified people break into the premises and damage the toilet tap, throw used bottles inside the toilet, and also smash the water over head tank (OHT). Details of sanitation facilities in educational institutions are provided in Annexure 2.

Free sanitary napkins – three per month – are issued to adolescent schoolgirls through the Government Hospital under the Directorate of Public Health in PNP government schools. Incinerators are available in high/middle schools, where used napkins are burnt once in three days for disposal.

Box 3.1: **Menstrual Hygiene in Schools**

To encourage hygienic practices i.e. the use of sanitary napkins, the Government of Tamil Nadu (GoTN) rolled out a scheme called Pudhuyugam (New Era) in March 2012 focused on adolescent school girls in rural areas. Free sanitary napkins are distributed in government schools by the Primary Health Centers. According to this scheme, each girl is eligible to get three packs of sanitary napkins once in two months. (18 packs per year per girl – each pack has six napkins). Menstruating girls in government schools are well aware of this scheme and are making the best use of it. There is a regular and abundantsupplyofthesesanitarynapkinsinthegovernmentschoolsinthetwotowns of NNP and PNP.

In private schools, there are sanitary napkin vending machines that provide the girls with a napkin for Rs.5.

It is found that in government schools in the two towns, the incinerator facilities are good, but are not being used properly due to lack of awareness on the importance of safe disposal. Most of the private schools have incinerators, and the girls are also taught to use them properly. In a few schools which do not have incinerators, used napkins are safely collected by scavengers and burnt every day.

From interactions with school children, it is inferred that in spite of a very adequate supply of sanitary napkins, awareness on proper usage and disposal needs to be focused upon.

Source: Primary interactions, 2016

Generally, the toilets in the government schools are cleaned by temporary sanitation workers of TP. The toilets are regularly cleaned and headmaster verifies and signs off a checklist every day. Recently, the Block Development Office (BDO) has started financing the operation and maintenance (O&M) of toilets in middle and high schools. The TP Office deploys a temporary sanitation worker to clean the toilets in the primary schools.

School toilets are cleaned by the sanitation worker appointed by the school headmaster, and the payment is made by the BDO. The government pays Rs. 750 per month for middle schools and for high schools Rs.1000 is paid per month to the respective person through the ECS- Electronic Clearing System method in his/her account. For purchase of toiletries, Rs.300 will be paid to middle schools and Rs. 500 for high schools.

The containments were reportedly desludged 5, 10 and 15 years back in the high schools, primary schools and middle schools respectively. Swachh Vidyalaya norms are followed by Panchayat Union Primary School, Pudhupalayam and Panchayat Union Primary School, Poochiyur.

In NNP, has two private schools functioning in different locations. Ideal Matriculation School meets the Swachh Vidyalaya norms for provision of toilets, while the other school matches the provision for boys, but not for girls.

3.2.2. Hospitals

The NSN Palayam Health Sub-Centres functions in two places – Palayur and Poochiyur (Annexure 3). These sub-centres have provided services from December 1999 for maternity and general cases. One toilet is available in Palayur, which is cleaned weekly by a panchayat sanitation worker. The containment was de-sludged two years ago. In Poochiyur there is no toilet facility.

Box 3.2: **ADD at the Sub-Center**
The number of outpatients treated for Acute Diarrhoeal Diseases (ADD)in 2015-16 were74 males and 68 females, and these patients were provided with two pockets of ORS and 14 zinc tablets (two per day) and if further treatment was required, they were referred to the PNP Government Hospital.
Source: Health Sub-Centre, Palayur and Poochiyur, July 2016

3.3. Sanitation in public spaces

3.3.1. Government offices

In NNP eight offices are functioning and two out of them do not have toilets. Staff and the people visiting these places depend on the nearest public toilets or toilets which are a part of hotel, petrol bunks etc. The details of users and sanitation facilities are provided in Annexure 4. Most have at least one facility that could be used by either gender, without necessarily providing for each.

3.3.2. Parks, playgrounds and recreational spaces

In NNP, there are nine parks and recreational spaces. Two of them are parks, two of them are playgrounds and the rest are children's parks. There is no forest area in this panchayat. These recreational spaces do not have any communal sanitary facility in the vicinity.

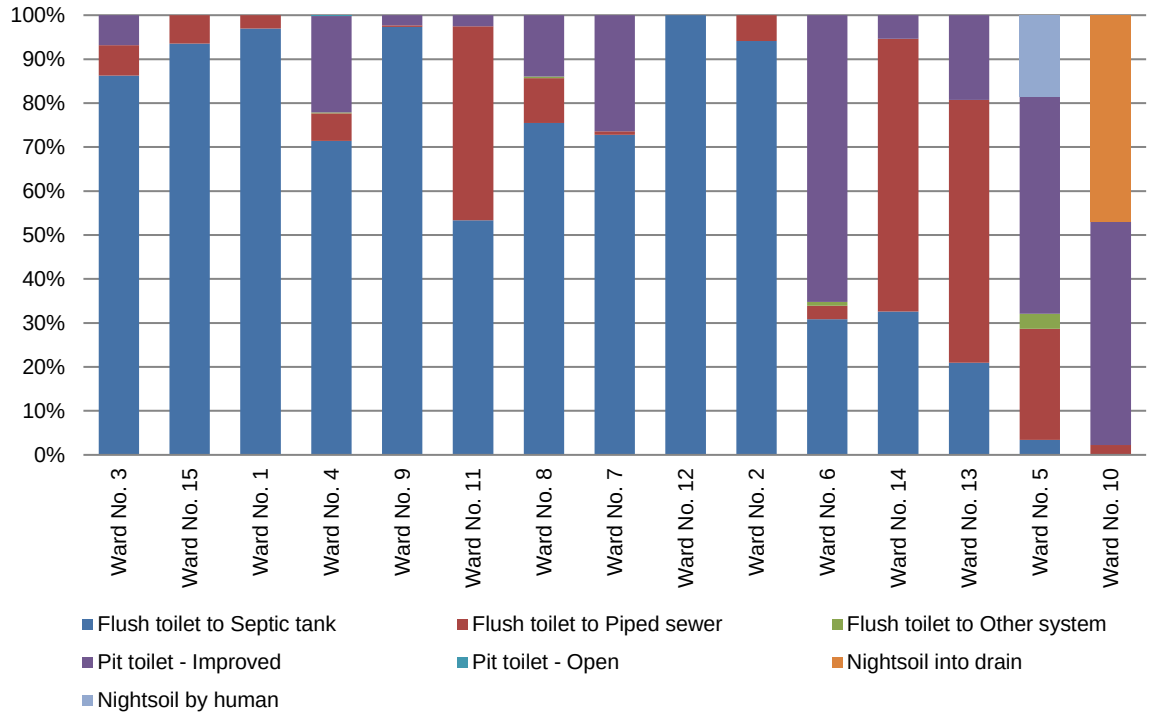
In NNP TP there are three marriage halls. Each one has a seating capacity of 250. While sanitation facilities exist and are disaggregated by gender, whether they are sufficiency is a different question, especially during peak hours.

3.4. Containment

3.4.1. Household arrangements

According to Census 2011,71percent of the individual toilets in NNP were flush-type connected to a septic tank,13 percent were reported connected to piped sewers, less than 1 percent connected to other systems, 13 percent improved pit toilets, and 2 percent drain their night soil into the drain. Since sewers do not exist in NNP, the numbers mentioned connected to these must be wrongly reported, and in reality connected to septic tanks and maybe to the drains.

Figure 3.3: **Wastewater Disposal by Household Toilets (Ward-Wise) in NNP**



Source: Census 2011

All the 13 CTs in the town are connected to septic tanks for containment of fecal matter. It was observed that three septic tanks out of the 13 connected to these toilets are exfiltrating due to blockage or breakage. These three are the ones connected to the PTs located in Om Shakti Nagar, Palaiyur and Sennamanaickenur. None of these septic tanks are connected to soak pits; the effluent from them overflows into the surface drains or into the open.

3.5. Collection and Conveyance

3.5.1. Households

The on-site sanitation systems (OSSs) connected to the households are currently emptied by private cesspool operators. There are four private operators residing within the TP cluster (PNP and neighboring TPs), with eight cesspool vehicles. There are two more sludge operators who come in to the TPs from Vadavalli to provide services to households. Consultations with these six private players indicated that they empty 40-45 truckloads of septage from the household septic tanks/pits in a month, and one service provider regularly empties 50-60 loads per month from the PTs. Since the average size of the cesspool vehicles deployed by the private players is 5 cubic metres, it is estimated that about 500–550 cubic metres of sludge is emptied in a month, i.e. 18–18.5 cubic metres daily (average) from households and PTs. All the desludging operators offer septic tank cleaning in households, commercial and industrial sectors. They also sometimes offer blockage cleaning. The customer profiles ranges from regular households, to commercial hotels, marriage halls, industries, and poultry farms. Prominent industries around Narasimhanaicken Palayam include Kumaran Mills, LMW, Roots, and Shiva Distilleries, among others. A few hotels, namely Hotel Sri Vaishnavi Anandhaas and Sri Amuthaas, are also regular customers of the desludging operators.

The operators charge households around Rs. 1,000 – Rs.1,500 per truckload of septage emptied. The number of trips depends on the size of the septic tank and the volume to be emptied. Private operators advertise their presence by distributing brochures/visiting cards and displaying posters. Households call these private operators whenever their OSSs need to be desludged.

Only two out of the four operators are registered with a ULB (one with Coimbatore City Corporation, and another with Thudiyalur TP).

Some of the key challenges that private cesspool operators face are:

1. Access to the septic tank/pit as most of them are sealed and need to be broken open
2. Since most of the OSSs have an unlined bottom, the sludge solidifies at the bottom and it sometime needs to be scraped/broken manually
3. Lack of skilled operators and drivers
4. Criticism and exclusion from households (desludging is seen as a dirty job)
5. Lack of disposal points in the vicinity(the Ukkadam Sewage Treatment Plant – STP –is too far and is available only to registered operators)

3.5.2. Public sanitation conveniences

The septic tanks connected to PTs are emptied frequently, as the number of people using them is high. The TP has a desludging machine (a tank with a sludge pump) that has to be pulled by a tractor. Earlier, this machine was used by sanitation workers to desludge the septic tanks of PTs, but due to heavy loads, blockages and solidification of sludge in the septic tanks, the TP hires a private operator's cesspool vehicle (with an air compressor) to empty these septic tanks. It is estimated that about 50-60 truckloads of septage is emptied in a month (i.e. about 50 cubic metres) from these septic tanks attached to the PTs.

3.6. Treatment and Disposal of fecal sludge

3.6.1. Treatment

There is no treatment facility available at the TP for treating sewage and septage. The Operative Guidelines for Septage Management in Tamil Nadu issued by GoTN in 2014directs the septage/fecal sludge from PNP Union cluster to be transported to the STP at Ukkadam or the nearest decanting station provided for this STP – in Coimbatore city – for treatment. The installed capacity of the STP at Ukkadam is 70 MLD, and it operates on Sequential Batch Reactor (SBR) technology. The current inflow is reported to be only 35MLD.

The decanting station is located near Ukkadam Bridge and is just 1 km away from the STP. However, it is observed that the designated point provided is just a disposal point and has no infrastructure as mentioned in the Central Public Health and Environmental Engineering Organization (CPHEEO) or the Operative Guidelines. The decanting station has no receiving tanks for septage, no screen chamber or sludge pumps that pump the septage to the STP inlet (as required by the Government of India – GoI – and GoTN guidelines). It has only a drainage channel and a few manually operated gates – these gates are reported not to have been operated since installation. Concrete chambers with four rectangular provisions were provided before the gates, where the desludging vehicles could offload the septage. The septage gets mixed with the sewage flowing in the drainage channel and flows through underground sewerage pipes to the STP. After objections from the local residents, a Reinforced Cement Concrete (RCC) slab cover was provided with two manholes that would reduce odour.

The location has been provided with fencing but left unattended without any person to monitor the

trucks' movements or keep record of the unregistered sludge operators coming in to offload waste.

Desludging operators report that security personnel used to be present a few months back, to check whether the truck is registered to the corporation to legally offload waste, and keep record of the vehicle number and details of service providers. Only sludge operators who have paid Rs.4,500 as the registration fee for three months are allowed to offload the septage collected at this disposal point. It is reported that the Sanitary Inspector and Sanitary Supervisor of Ukkadam make frequent visits to ensure that only registered vehicles offload at the decanting facility. They also inspect the content disposed at the point. So far, no records are accessible at the decanting facility about the trucks coming in to dispose, number of trips made or the type of effluent discharged.

The Coimbatore Corporation has control over the decanting stations, and these are not covered under the O&M of STP. The septage collection vehicles drop in and offload the collected septage from 6 am to 6 pm, and as per the District Collector's order, no vehicle is allowed to dump after the permitted timing. The order places strict restrictions ondisposing oil and chemical effluents at the facility, as these may affect the performance of the STP. It was also reported that the Coimbatore Corporation is proposing to set up a watch room with a trained professional to monitor and prevent the disposal of chemical effluents into the decanting facility.

3.6.2. Disposal

The private cesspool operators identified during the field survey empty septic tanks in the town and discharge their sludge into the agricultural farms. Some of the cesspool operators also own agricultural land. Some of the farmers on the periphery of the town are interested and willing to receive septage in their farms as it is a good soil conditioner, and the offloading provides irrigation water in the drier months. Most of the farm's soil conditioned using the septage from households is used for growing fodder crops (to feed animals). On seeing better yields, it is now being used in fields growing coconut and sugarcane as well.

Box 3.3: Land Application by Farmers

A resident of Vattamallai-palayam has two acres of farm land and also takes care of his relatives' farm. He is one of the farmers who uses septage in his farm for conditioning the soil. A few cess-pool operators approached him to discharge the few loads of septage in his farm. After consulting with other farmers who already using the septage, he also agreed to use it in his farm. But he was very specific in selecting service providers for getting septage free of solid waste like sanitary napkins, covers, shampoo packets etc. He uses the septage to condition his two acres of land in batches, divided it into four patches, in which he grows fodder and coconuts using septage; and maize and banana as using bore well water only- he has grown bananas by application septage only once. This farmer applies sludge only on empty land to improve the top soil condition and does not use septage on standing crops. After applying septage, it will dry for 15 - 30 days after which the land is ploughed. The sludge operators pay him for discharging in his field, a sum of Rs.200 to Rs.300 as it saves them considerable amount of money. This farmer reports receiving about 4-5 loads of septage in a week in season.

Another farmer in Vellapanaicken-palayam who cultivates fodder crops CO3, CO4 and Napier grass, uses septage in his farm but from a specific sludge operator only. He accepts only two loads a week and the sludge operators approach themselves to offload in his land. Unlike the other farmer above, he irrigates land with grown fodder crops and in a controlled flow to prevent damage to ploughed field and he alters the patches after every load. He also said that some cess-pool operators dispose sludge without informing. He irrigates the farm with septage based only on the moisture content in the field.

Source: TNUSSP Primary Assessments, 2016

4 Institutional Arrangements and Municipal Finances

4. Institutional Arrangements and Municipal Finances

4.1. Local governance in NNP

The NNP TP is governed by an elected council consisting of 15 members – one elected from each administrative ward by the voting population. The Chairperson of the TP is elected directly by the voter population and is the head of the local government for the TP. The Chairperson and the council perform the administration through the executive staff of the TP.

The NNP Executive is headed by the Executive Officer, who is assisted by staff to manage the administrative and civic responsibilities of the TP. There are 12 full-time positions, of which one is vacant at the time of this report. The various positions and current staffing are detailed in Annexure 5. There is a large component of labour hired for performing the watch and ward and maintenance functions in the TP.

The Executive Officer and his/her Staff manage the functions of the TP with necessary support from the engineering cell at the District1. There is a Junior Engineer /Assistant Engineer assigned for the TP to oversee the civil works and upkeep. This Engineer is usually responsible for more than one TP and reports to the Assistant Executive Engineer who heads the technical wing (Town Panchayat Engineering Cell) at the District and in turn reports to the Zonal Assistant Director of Town Panchayats who assists the District Collector in the overall administration of Town Panchayats.

4.2. Roles and responsibilities for sanitation

The TP is responsible for maintaining public health and carrying out the civic functions. Within the TP, Public Health Section is responsible for sanitation in the ULBs and is entrusted with the following tasks: monitoring sanitation, reporting to higher authorities on the existing sanitation status, managing solid waste, cleaning of streets, cleaning of community and public toilets, controlling open defecation and maintenance of toilets, assuring that excreta is not disposed of in open drains and creating awareness among the public about better sanitation.

4.3. Personnel involved in SWM

The Public Health Section is headed by the sanitary officer and supported by sanitary inspectors, sanitary supervisors and sanitary workers. There are 8 permanent sanitation workers (all female) and 53 contracted workers who are paid daily wages, which includes 4 male workers. This team manages the environmental sanitation activities like sweeping of streets, cleaning of drains and solid waste collection. A team of SHG women, numbering 30, who form part of this group, are involved in door-to-door collection of waste. The primary collection of waste is carried out by these female workers using 30 pushcarts and 2 motorized carts to get the solid waste to the designated resource recovery park. They start their work at 6 am and finish at 11.30 am. All the permanent workers work from 6 am to 11.30 am and after a lunch break, they work between 2 and 5 pm. In the afternoon, the permanent women workers are engaged in street sweeping.1

4.4. Current financial status

The core activity of the TP includes - generation of own-source revenue through taxes and cesses, management of grants-in-aid and development scheme finances from state and national governments

[1] **District-level administration of TP**: The Collectors are the administrative head of Town Panchayat Administration at the District Level and he is assisted by a Zonal Assistant Director of Town Panchayats. The technical wing (Town Panchayat Engineering Cell) in the District is headed by an Assistant Executive Engineer who is under the direct control of Zonal Assistant Director of Town Panchayats. At sub Zonal level the Junior Engineer / Assistant Engineers, are responsible for implementing the schemes and advising on technical operations in the Town Panchayats.

for carrying out civic and development works is a core activity of TP. The institutional provisions for carrying out these functions are vested in the staff, finances and powers of the TP.

This section presents trends over five years in revenue income and expenditure. The recast accounts of NNP, based on information provided by the ULB, did not contain information related to capital income and expenditure. The analysis has therefore been restricted to only revenue accounts. The detailed analysis is presented in Annexure 5.

The current debt burden on NNP is an outstanding of Rs. 18 Lakhs. The average principal repayment works out to Rs1.99 lakh, which is projected for the next six years (average repayment period).

4.4.1. Revenue and Expenditure

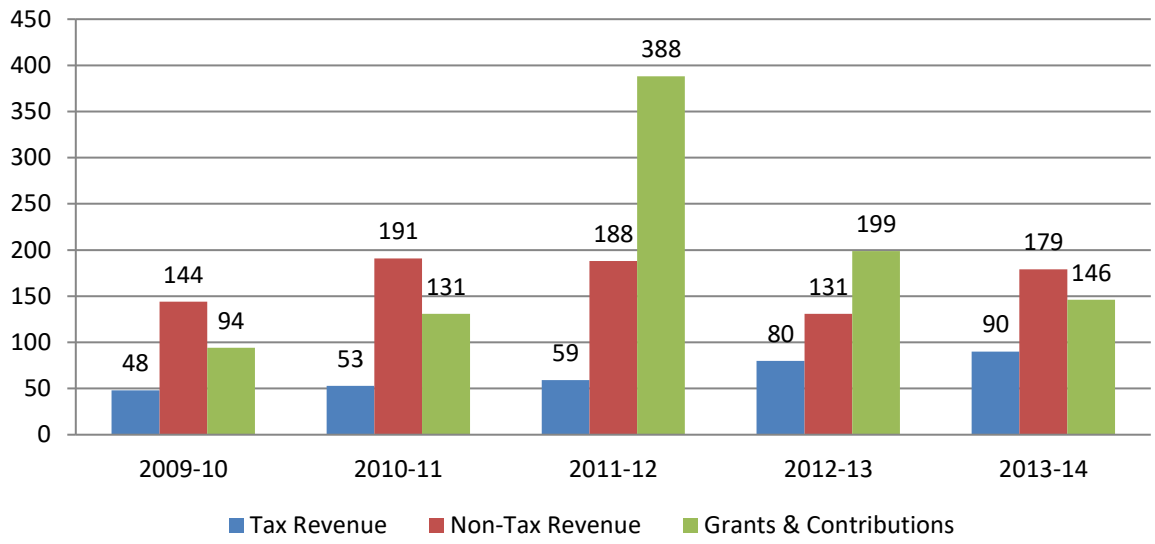
Revenue: Own sources Vs Assigned sources

Own source revenues have been performing well continuously, however there is a steep increase in the assigned revenue in the year 2011- 12, which is due to a steep increase in the stamp duty. The simple average growth of tax revenues has been around 11 per cent, non-tax revenues grew by 10 per cent. However, the devolutions and other assigned sources have had an annual growth rate of 40 per cent on an average, mainly contributed by devolutions (25 per cent) followed by stamp duty (17 per cent).

Table 4.1**:** Trends in Revenue Income of the NNP TP (in Lakh rupees)

	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Tax Revenue	48	53	59	80	90
Non-tax revenue	144	191	188	131	179
Grants and Contributions	94	131	388	199	146
Total	285	375	635	410	415
Source: NNP TP Office, 2016					

Figure 4.1: Trends in Revenue Income of NNP TP (in Lakhs)



Source: NNP TP Office, 2016

The expenditure of a ULB can be broadly classified into establishment, i.e. towards salaries and pensions, O&M (administrative expenses, basic services provided by the ULB, programme expenses, etc.) and towards debt servicing. It is observed that the majority of the expenditure relates to O&M, which constitutes around 90 per cent.

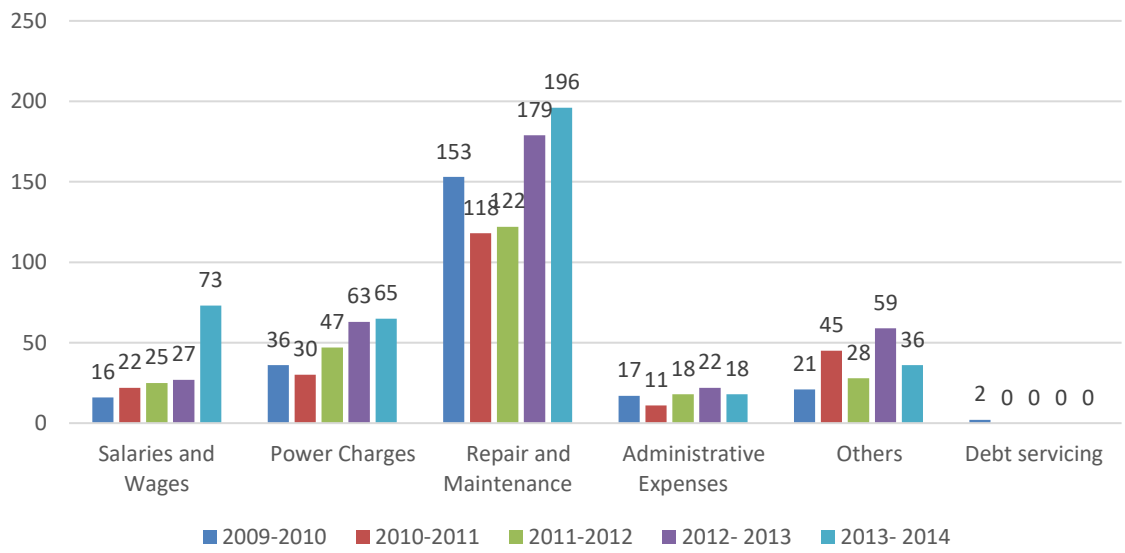
Table 4.2: Trends in Revenue Expenditure of the NNP TP (in Lakh rupees)

	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Salaries and Wages	16	22	25	27	73
Operations and Maintenance					
Power Charges	36	30	47	63	65
Repair and Maintenance	153	118	122	179	196
Administrative Expenses	17	11	18	22	18
Others	21	45	28	59	36
Debt servicing	2	0	0	0	0
Total	245	225	239	351	387

Source: NNP TP Office, 2016

Further analysis of O&M expenditure reveals that majority of the O&M expense pertains to maintenance of water supply. Since the water supply is clubbed with the General-Purpose account, the real impact of other expenses is not evident. Streetlight maintenance has been incurring more expense over the years. The other items of expenditure are Heavy Vehicles Maintenance, and charges to the TWAD Board (for water supply).

Figure 4.2: Trends in Revenue Expenditure of NNP TP (in Lakhs)



Source: NNP TP Office, 2016

Per capita income and expenditure

The per capita income and expenditure of NNP was estimated and analysed. While the per capita income including Grants exceeds the per capita expenditure, the per capita OSR (own source revenue) falls short of the per capita expenditure, which is a sign of dependence on devolutions and Grants. Clearly, income is higher than the expenditure, which is a positive trend and gives room for more investments. However, there is a need for improving the own sources, which will increase the financial stability of NNP.

4.4.2. Operating ratio

Operating Ratio, which is indicated by the formula total expenditure / total revenue, indicates the financial soundness of a ULB. It simply implies that if the Revenue Expenditure is less than the Revenue Income, the ULB has surplus, which could be leveraged for further investments. This is a very crucial indicator of a municipal balance sheet, as this indicator would determine its borrowing capacity. The operating ratio of NNP for the last five years is given as:

Table 4.3: **Operating Ratio**						
Sl. No.	**Operating Ratio**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**
1	Total Revenue Income	285	375	635	410	415
2	Total Revenue Expenditure	245	225	239	351	387
3	TE / TR	0.86	0.60	0.38	0.86	0.93
Source: NNP TP office 2016						

In each of the past five years, NNP has made sufficient surplus, which could have been used for further investments. However, no account relating to capital expenditure was provided, and hence an analysis based on the same was not possible.

A prudent financial management strategy would not be to deploy revenue surplus to capital expenditure. It needs to get leveraged so that the investments can multiply, and the surplus can be used for repayment of debt.

4.4.3. Revenue potential

Revenue potential was assessed for property tax, in which all other taxes are subsumed.

4.4.4. Property tax

Property tax is the major source of income for NNP. Therefore, it is of the utmost importance to bring as much property as possible into the tax net, and have a strong tax base and collection efficiency. We have analysed NNP's performance in these respects.

Assuming there are four persons per household, and given the Census 2011 data, NNP seems to be covering nearly all properties under the tax assessment. The collection performance for the 2012-2015 period is presented below.

Table 4.4**: Demand and Collection Performance - Property Tax**			
Particulars	**Financial Year**		
	2012-13	**2013-14**	**2014-15**
Total Properties Assessed (no)	5,556	5,986	6,333
Arrears - Demand (Rs)	6,77,543	5,35,179	8,53,434
Arrears - Collection %	66%	77%	82%
Current - Demand (Rs)	52,15,584	57,99,941	63,27,668
Current Collection %	94%	87%	92%
Source: DCB Statements for 2012-13 to 2014-15. NNP			

The performance of both current and arrears collection has been steadily increasing. The average collection is at a commendable stage of 90 percent, and has scope for improvement.

4.4.5. Borrowing capacity and investment capacity

This section attempts to put forth the financial trends during the last five years to project for the future. The model has assumed the investment needs for water supply (augmentation), sanitation (extension of drains and need for treatment facility) and roads (extension) on an iterative basis. The total sustainable investment of NNP[2], in line with assumptions and analysis, is Rs. 1,050 lakh. Financial Modelling analysis indicates that the borrowing capacity works out to 70 per cent of the investment, which is Rs. 735 lakh. The balance is required to be obtained to meet the cost either as a grant or own contribution.

4.4.6. Conclusion

Discussions held with the officials of NNP and the analysis of their financials conclude the following:

1. Proper accounting system needs to be followed, which will clearly bring out accrued income.
2. Currently, the database regarding water connections, municipal properties and finer details on municipal issues are lacking. It is important to develop a strong database.
3. NNP is a town panchayat with limited revenue sources, be it in the form of property tax or others. However, infrastructure investments are at current prices, and do not change with varying status of ULBs. Therefore, for TPs like NNP, it is preferred to take an approach that would best suit them in all aspects, financial aspect in particular, and that would still yield the same benefits. Being a small town, a more customised approach towards capital budgeting would be required, and low-cost solutions are required to meet infrastructure gaps, as the capacity to borrow is less compared to current trends of infrastructure financing.
4. Periodic revision of property tax needs to be addressed to have a sustained revenue inflow. This is more relevant in the context of the TP being an agglomeration of Coimbatore.

[2] Sustainable Investment – This is the order of investment possible by NNP, that is arrived at, after incorporating the maximum debt that the finances of NNP can withstand. The balance is taken as grant. (Can be own contribution too, subject to availability of funds for capital investment).

5 Action Plan for City Sanitation and Estimated Investments

5. Action Plan for City Sanitation and Estimated Investments

The sanitation situation in NNP and the broader context presented in the earlier sections forms the basis for consultation and discussions in charting the way forward to secure the full chain of sanitation in the TP. On the basis of the situation analysis, the weaker elements in the full cycle of safe sanitation were identified, summarised across three broad themes – Containment, Wastewater Generation and Conveyance, Treatment/Reuse – to develop a matrix of potential improvements, as detailed in Table 5.1 below.

Table 5.1: **Key Elements Necessary to achieve MuzhuSugadharam**

Sl. No.	Containment	Fecal Sludge Conveyance	Treatment/Reuse
1	Need to stop OD in identified wards/locations	Regularise de-sludging activity	Treatment facility for greywater and septic tank effluents
2	Insanitary toilets need to be converted	Safe emptying of septic tanks	Re-use for agriculture after treatment only
3	Improve operation of CT/PT	Ensuring fecal sludge is discharged at designated sites only	
4	Address floating population service requirements		

Source: TNUSSP Analysis, 2016

The elements identified were classified into the following:

1. Elements for which solutions were known and tested –*Ready for action*
2. Elements that are being addressed by the TP or other stakeholders at the moment, but could benefit from supporting/enabling actions –*A supporting /enabling action*
3. Elements for which one has technical or managerial solutions but not tried out locally or to scale – *Requiring a pilot approach*
4. Elements which required enhanced information/data before moving it to classes 1 or 2 – *Need for studies*

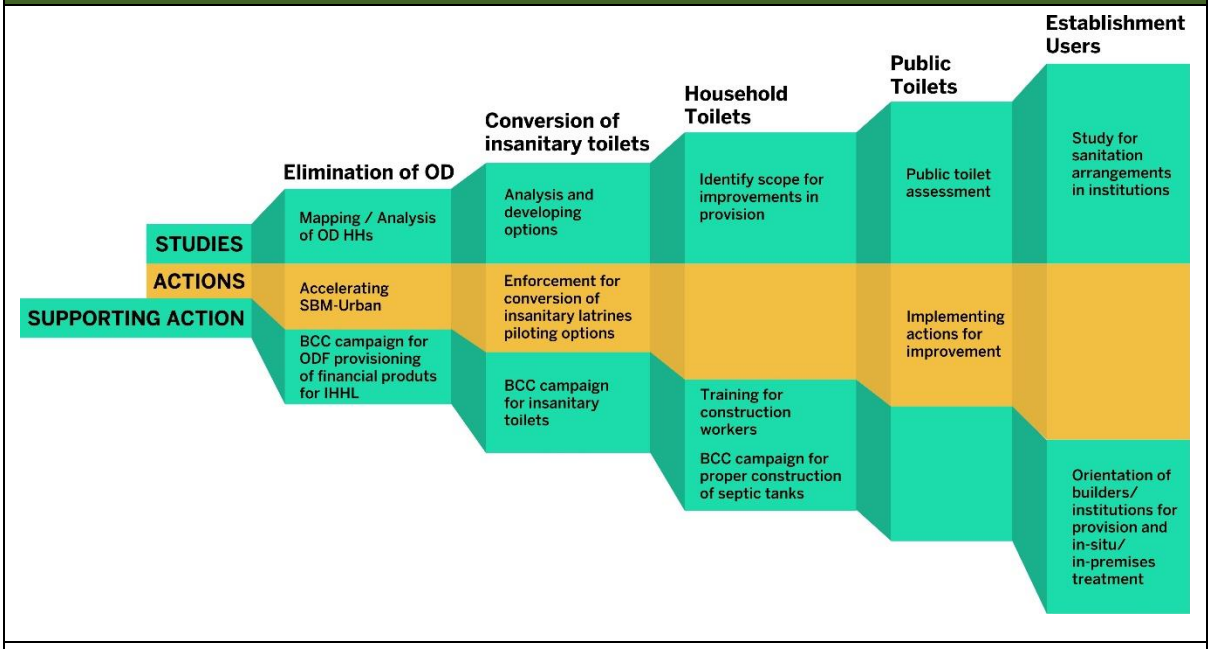
These different classes were felt to require different approaches, skillsets and timelines, and have thus been building blocks of the draft action plan for improving sanitation outcomes in the TP.

These enabled the definition of more concrete/objective set of activities to be defined within each class and addressing the element identified in Table 5.1. These are presented for the three thematic areas of the sanitation chain.

5.1. Containment

The actions proposed to address the elements identified for improvement in the 'Containment' side are presented in Figure 5.1.

Figure 5.1: **Draft Action Matrix for Improving** Containment



Source: TNUSSP Analysis, 2016

The elimination of OD requires some preparatory work in identifying the households that are practicing this. Preliminary work on this has been taken up already by the TP through discussions and interactions in the slums. It was felt that this requires a more targeted and nuanced approach. An alternative approach would be to use an approach like Community-Led Total Sanitation (CLTS) for behaviour change. The OD situation will also be impacted by improving the CT experience.

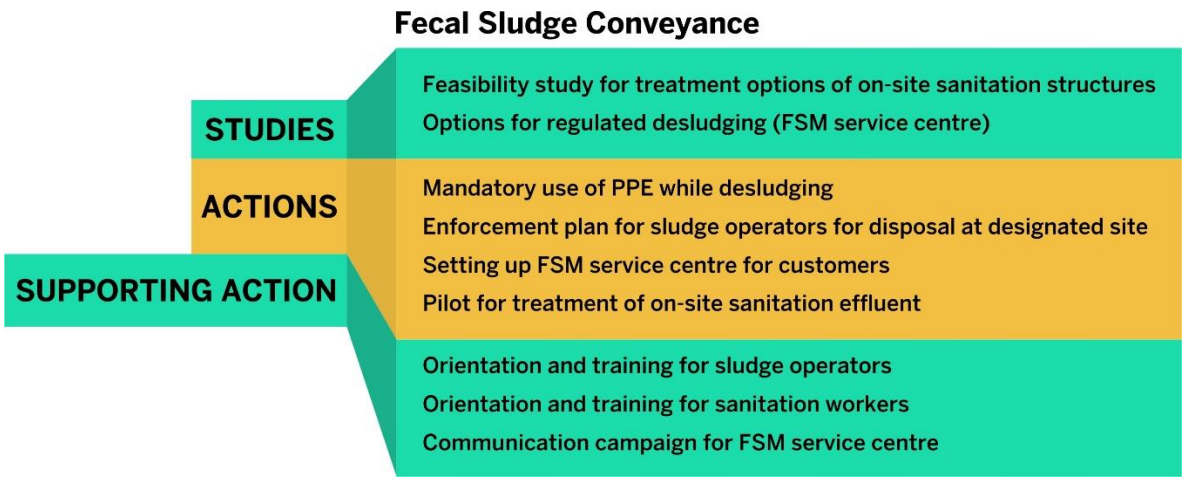
The ongoing Swachh Bharat Mission (SBM) campaign places this in the radar of activities, but for the TP executive to achieve this within a year, accelerated efforts are required. Preliminary examination of financial support by utilising the SHG network is also a possibility.

The containment structures that give rise to insanitary outcomes and risk public health need to be curbed and corrected. Since these are in contravention of existing building rules, enforcement is a possibility for the future. This would require creating awareness amongst households and masons, supplemented with training to enable compliance with construction standards. However, legacy structures will need attention and a two-pronged approach of using Behaviour Change and Communication (BCC) with the residents and simultaneously testing out (pilots of) technical options for household-level and neighborhood-level solutions is felt to be optimal.

5.2. Fecal Sludge Conveyance

The proposed actions to address elements identified for improvement in the fecal sludge 'Conveyance' part of the sanitation chain are presented in Figure 5.2.

Figure 5.2: **Draft Action Matrix for Improving Fecal Sludge Conveyance**



Source: TNUSSP Analysis, 2016

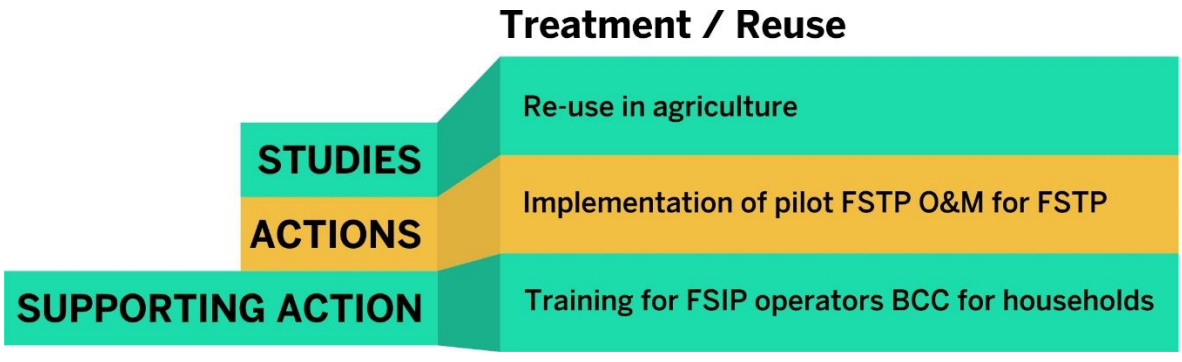
This activity is currently undertaken by private players. The Operative Guidelines promulgated by the State recommend the registration of these service providers to enable light-touch regulation for optimal public health outcomes. The guidelines also mandate disposal at designated sites and this needs to be enforced. In light of the proposed fecal sludge treatment plant facility coming up in the area, coordination is also advised between the ULBs involved.

As in other industries, worker safety is an issue requiring focus and continued efforts in the sanitation sector. This would be enabled through a mix of training and communication.

5.3. Treatment / Reuse

The actions proposed to address the elements identified for improvement in the 'Treatment/reuse/disposal' part of the sanitation chain are presented in Figure 5.3.

Figure 5.3: **Draft Action Matrix for Improving Treatment/Reuse**



Source: TNUSSP Analysis, 2016

Fecal sludge is already being used in agriculture, albeit without much monitoring or knowledge of the impacts.

A designated site for fecal sludge disposal is required at NNP.A treatment facility has been proposed in the adjoining TP. The O&M of the treatment plant should not become a burden for the TP administration and hence a suitable O&M plan with adequate financial and technical inputs is required. This might require coordination between the TPs to ensure that the users bear part of the costs of treatment and the burden on the manager ULB is bearable.

5.4. Investment estimated for CSP

Towards mapping/analysis of OD households and sanitation arrangements in PNP funds from SBM-U, Corporate Social Responsibility, ULB OSR, ULB grants in aid, user contribution, MLAADS- Member of Legislative Assembly's – Area Development Scheme can be accessed. Details of investments estimated for CSP are presented below.

Table 5.2: Investments Estimated for City Sanitation Plan of NNP

Sl. No.	Activity	Start Year	End Year	Investment Required (Rs.)
1	Mapping of households (HHs)	2017	2017	1,96,402
2	Identification of HH need intervention	2017	2017	1,50,000
	Sub total			3,46,402
Accelerating implementation of SBM-U				
1	Upgrading existing CT/PTs	2018	2020	9,60,000
2	Support construction of new IHHL through provision of financial products	2017	2020	7,22,000
3	Construction of new CT/PTs	2018	2019	50,000
	Sub total			17,32,000
Provisioning of financial products				
1	Supporting development of financial products for enterprises in sanitation	2017	2018	8,90,000
BCC campaign for elimination of OD, conversion of insanitary toilets and proper construction and maintenance of septic tanks				
1	Stakeholder interactions	2018	2019	80,000

Table 5.2: Investments Estimated for City Sanitation Plan of NNP				
Sl. No.	**Activity**	**Start Year**	**End Year**	**Investment Required (Rs.)**
2	Constituting ward / community level committees to promote behaviour change and proper construction and use of toilets	2017	2019	5,30,000
	Sub total			6,10,000
Situation analysis and developing options for insanitary latrines				
1	Pre-feasibility study to identify and assess suitability of different options for conversion of insanitary toilets	2017	2017	7,50,000
Piloting/ enforcement for conversion of insanitary latrines				
1	Supporting conversion of insanitary toilets	2018	2018	4,78,200
2	Supporting policy and institutional changes/policy interventions for conversion of insanitary toilets	2017	2020	
	Sub total			4,78,200
Addressing deficiencies in design of household septic tanks				
1	Addressing deficiencies in design of septic tanks	2018	2019	90,000
CONVEYANCE				
Management of fecal sludge				
1	Pre-feasibility study to identify and assess suitability of different options for treatment of sludge and wastewater from on-site sanitation structures	2017	2018	10,00,000
2	Implementation of FSM collection, treatment and disposal plan	2018	2021	30,80,000
	Sub total			40,80,000
Treatment and disposal of wastewater and fecal sludge				
Enhancing fecal sludge treatment capacity				
1	Pre-feasibility study to identify and assess suitability of different options for treatment of fecal sludge	2017	2017	5,00,000

Table 5.2: Investments Estimated for City Sanitation Plan of NNP				
Sl. No.	**Activity**	**Start Year**	**End Year**	**Investment Required (Rs.)**
2	Creation of fecal sludge treatment and reuse capacity	2017	2019	21,90,000
	Sub total			26,90,000
	Total			1,16,66,602
Source: TNUSSP analysis, 2016				

Annexures

Annexure 1: Potable water quality and charges in Narasimhanaicken-Palayam

Table A.1: **Sample Test Result for Drinking Water Supply, NNP**				
Scheme	Local body			
Source	Surface water		**Date of Collection**	16.08.2015
Location	Ward No. 4, Daniel Nagar		**Date of Receipt**	16.08.2015
S.NO	**Parameter**	**Acceptable limit**	**Permissible limits in the absence of alternate source**	**Results**
PHYSICAL EXAMINATION				
1	Appearance	-	-	Clear
2	Color (pt. co-scale)	5	15	Colourless
3	Odour	Agreeable	Agreeable	None
4	Turbidity Nt units	1	5	3
5	Total dissolved solids mg/l	500	2000	78
6	Electrical conductivity micro mho/cm	-	-	112
CHEMICAL EXAMINATION				
7	pH	6.5-8.5	6.5-8.5	8.18
8	Ph. Alkanity as CaCo3 mg/l	-	-	0
9	Total Alkanity as CaCo3 mg/l	200	600	24
10	Total hardness as CaCo3 mg/l	200	600	33
11	Calcium as Ca mg/l	75	200	9
12	Magnesium as Mg mg/l	30	100	3
13	Sodium as Na mg/l	-	-	9
14	Potassium as K mg/l	-	-	0
15	Iron as Fe mg/l	0.3	0.3	0

16	Manganese as Mn mg/l	0.1	0.3	0
17	Free ammonia as NH_3 mg/l	0.5	0.5	0
18	Nitrite as NO_2 mg/l	-	-	0
19	Nitrate as NO_3 mg/l	45	45	2
20	Chloride as Cl mg/l	250	1000	16
21	Fluoride as F mg/l	1	1.5	0.2
22	Sulphate as SO_4 mg/l	200	400	4
23	Phosphate as PO_4 mg/l	-	-	0
24	Residual Chlorine	-	-	0
BACTERIOLOGICAL EXAMINATION				
25	Fecal coliform	0	0	0
Source: TWAD Board Communication to NNPTP, August 2015				

Table A.2: **Water Charges in NNP**

Sl. No.	**Type of Connection**	**No. of Connections**	**Connection Charge (Rs.)**	**Monthly User Fee** up to 13.5 KL (Rs.)	**Cost per KL** beyond 13.5 KL(Rs.)
1	Household	5,413	7,000	60	1
2	Commercial	71	10,000	135	13
3	Industrial	38	10,000	205	16
	All connections	**5,522**			
Source: NNP TP Office, 2016					
Note: There are 130 public taps provided in low-income areas/slums					

Annexure 2: Sanitation facilities in educational institutions in Narasimhanaicken-palayam

Table A.3: **Sanitation Facility In Healthcare Institutions – NNP**

Sl. No.	Institution	Staff in Service			Doctors in Service			Toilet Seats Availability for Patients			Toilet Availability for Staff			Frequency of Cleaning	By Whom	Containment Desludging interval
		M	F	Total	M	F	Total	M	F	Total	M	F	Total			
1	Health Sub Centre, Palayur	-	1	1	0	0	0	0	0	0	0	1	1	Once weekly	Sanitation worker from Panchayat	Desludged two years back
2	Health Sub Centre, Poochiyur	-	1	1	0	0	0	0	0	0	0	-	-	Not Applicable	Not Applicable	Not Applicable

Source: TNUSSP primary survey, July 2016

Table A.4: **Sanitation Facility in Primary Educational Institutions - NNP**

Sl. No.	Institution	Student Strength			Teacher Strength			No of Toilets Available						Frequency of Cleaning	By Whom	Containment Desludging interval
								For Students			For Staff					
		M	F	Total	M	F	Total	M	F	Total	M	F	Total			
1	Panchayat Union Primary School, Pudhupalayam	30	39	69	1	2	3	1	1	2	0	0	0	Daily	School sanitation worker	Not desludged past 10 years
2	Panchayat Union Middle school, Rakkipalayam	89	112	201	2	7	9	2	7	9	0	1	1	Daily	School sanitation worker	Not desludged past 15 years
3	Panchayat union Primary School, Mariamman Koil St	91	112	203	2	5	7	2	2	4	0	0	0	Daily	School sanitation worker	Not desludged past 10 years
4	Government High School, NSN Palayam	115	126	241	6	9	15	5	7	12	0	0	0	Daily	School sanitation worker	Not desludged more than 5 years
5	Panchayat Union Primary school, Poochiyur	8	18	26	0	1	1	1	1	2	0	0	0	Daily	School sanitation worker	Not desludged more than 10 years

Source: TNUSSP primary survey, July 2016

Annexure 3: Sanitation facilities in healthcare institutions in Narasimhanaicken-palayam

Table A.5: **Sanitation Facility in Higher Secondary Education Institutions - NNP**

Sl. No.	Institution	Students Strength			Teacher Strength			No of Toilets Available						Frequency of cleaning	By Whom	Containment Desludging interval
								For Students			For Staff					
		M	F	Total	M	F	Total	M	F	Total	M	F	Total			
1	Ideal Matriculation Higher Secondary School	221	240	461	-	23	23	6	6	12	-	2	2	Daily	School appointed sanitation worker	Desludging once a year
2	Excel Matriculation Higher Secondary School	280	265	545	1	18	19	6	10	16	-	1	1	Daily	School appointed sanitation worker	Desludging once a year

Source: TNUSSP Primary Survey, July 2016

Annexure 4: Sanitation facilities in public offices and places of significant footfall in Narasimhanaicken-palayam

Table A.6: **Sanitation Facilities in Public Offices - NNP**

Sl. No	Name of the office	No of Staff Working		Toilet Availability	No of Toilet seats / Pans				Ownership of the Building	Water Availability	Electricity	Doors Condition	Super Structure Condition	Sub Structure Condition	Frequency of Cleaning
		M	F		M	F	Gen	Urinal							
1	TP Office	10	0	Yes	2	2	0	3	Owned	Yes	Yes	Good	Good	Good	Daily twice
2	Library, near TP Office	0	1	Yes	0	0	1	0	Owned	No	Yes	Good	Good	Good	Daily
3	BSNL, Ooty road	4	2	Yes	1	1	0	0	Rented	Yes	Yes	Good	Good	Good	Daily
4	TNEB, near KSB Pumps, Ooty Road	6	1	Yes	0	0	1	1	Rented	Yes	Yes	Good	Good	Good	Daily
5	TNEB north, Ooty Road	11	3	Yes	0	0	1	1	Rented	Yes	Yes	Good	Good	Good	Daily
6	Post Office, Rakkipalayam	1	1	No	0	0	0	0	Owned	NA	NA	NA	NA	NA	NA
7	Post Office, Pudhupalayam Road	3	3	Yes	0	0	1	0	Rented	Yes	Yes	Good	Good	Good	Daily
8	Village Administrative Office, TP Office Road	1	1	No	0	0	0	0	Owned	NA	NA	NA	NA	NA	NA

Source: TNUSSP primary survey, July 2016

Table A.7: **Sanitation Facilities in Places with Significant Footfall in NNP**							
Sl. No.	**Institution**	**Seat Capacity**	**No of Toilet Seats/Pans**				**Containment -Desludging Interval**
			M	**F**	**Gen**	**Urinal**	
1	Sri Lakshmi Kalyana mandapam, Pudhupalayam Road	250	2	2	0	0	Newly opened marriage hall six months back
2	Vishnu Mahal, Ooty Road	250	0	0	3	0	Desludged two years back.
3	Angalamman Koil Annadhana Mandapam, near Perumalkoil	250	3	3	0	0	Desludged six years back.
Source: TNUSSP primary survey, 2016							

Table A.8: **Parks and Recreational Spaces in NNP**				
Sl. No.	**Name of the Park/Space**	**Ward No**	**Toilet Facility Exists?**	**Community Toilet / Public Toilet in the vicinity?**
1	Thendral Nagar Children's Park	1	No	No
2	RR Nagar Children's Park	3	No	No
3	Muthu Nagar Children's Park	15	No	No
4	Daniel Nagar Park	4	No	No
5	Rajendra Nagar Park	11	No	No
6	Sri Balaji Nagar Playground	6	No	No
7	Balaji Nagar Playground	3	No	No
8	Murugan Nagar Children's Park	13	No	No
9	Chitra Nagar Playground	8	No	No
Source: TNUSS primary survey, July 2016				

Annexure 5: Staffing and Financials Status of Narasimhanaicken-palayam

Table A.9: **Details of Staff in NNPTP**				
Sl. No.	**Position**	**No. of Sanctioned posts**	**No. of positions occupied**	**Vacancies**
1	Executive Officer	1	1	-
2	Junior Assistant	1	1	-
3	Bill Collector	1	1	-
4	Office Assistant	1	1	-
5	Sanitation Worker (full time) #	8	7	1
6	Sanitation Worker (on contract)*	-	53	-
	Total	**12**	**64**	**1**
#The monthly income ranges between Rs. 18,000–23,000 per month based on seniority.				
*Sanitation workers on contract are paid Rs200–275 (paid on a monthly basis). Their timings of operation are 6 to 11.30 am				
Source: NNP TP, August 2016				

Table A.10: **Revenue Accounts for NNPTP FY 2010-2014**						
Sl. No.		**Financial Year**				
		2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
		Actuals (in lakh rupees)				
A	**Opening Balance**					
1	Revenue income	285	375	635	410	415
2	Revenue expenditure	245	225	239	351	387
3	Surplus/deficit –revenue Account	**40**	**150**	**396**	**59**	**28**

Table A.10: **Revenue Accounts for NNPTP FY 2010-2014**						
Sl. No.		**Financial Year**				
		2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
		Actuals (in lakh rupees)				
B	**Operating Ratio**	**0.86**	**0.6**	**0.38**	**0.86**	**0.93**
1	Capital income	0	0	0	0	0
2	Capital expenditure	0	0	0	0	0
3	Surplus/deficit- capital account	0	0	0	0	0
4	Overall Surplus/deficit- LG account	40	150	396	59	28
	Closing Balance	**40**	**150**	**396**	**59**	**28**
C	**Financial Ratio**					
1	**Debt Servicing Coverage Ratio (DSCR)***	**20.43**	**0**	**0**	**0**	**0**
2	Debt Servicing Ratio (DSR)	0.70%	0.00%	0.00%	0.00%	0.00%
Part I - Revenue Account						
I	**Revenue Income**					
A	**Own Sources**					
	Tax Revenue					
1	Property tax	43	48	52	58	63
2	Water tax	0	0	0	0	0
3	Educational tax	0	0	0	0	0
4	Professional tax	5	6	7	8	9
5	Other taxes	0	0	0	14	18
	Sub-Total (Tax Revenue)	**48**	**53**	**59**	**80**	**90**
	Non Tax Revenue – Others					
1	Development charges	47	42	66	45	93
2	Fees & user charges	44	47	57	54	52

Table A.10: **Revenue Accounts for NNPTP FY 2010-2014**						
Sl. No.		**Financial Year**				
		2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
		Actuals (in lakh rupees)				
3	Interest income	1	2	6	8	2
4	Other income	51	99	59	24	31
5	Rental income	0	0	0	1	0
6	Receivables - market					
7	Receivables - water charges					
8	Receivables - sewerage charges					
9	Lease rentals from land development					
	Sub-Total (Non Tax Revenue)	**144**	**191**	**188**	**131**	**179**
	Tax + Non-Tax Revenue	**191**	**244**	**247**	**211**	**269**
B	**Rev, Grants & Contributions**					
1	Entertainment tax	0	0	0	0	0
2	Devolutions	65	85	74	166	116
3	Other revenue grants	4	1	1	1	0
4	Stamp duty	25	45	313	32	30
	Total Grants & Contributions	**94**	**131**	**388**	**199**	**146**
	Total Revenue Income	**285**	**375**	**635**	**410**	**415**
II	**Revenue Expenditure**					
A	**Salaries/ Wages**					
1	Establishment expenses	16	22	25	27	73
	Total Salary Expenses	**16**	**22**	**25**	**27**	**73**
B	**Operation & Maintenance**					
1	Administrative expenses	17	11	18	22	18

Table A.10: **Revenue Accounts for NNPTP FY 2010-2014**						
Sl. No.		**Financial Year**				
		2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
		Actuals (in lakh rupees)				
2	Other expenses	2	6	3	3	0
3	Program expenses	5	23	4	11	0
4	Power charges	36	30	47	63	65
5	Repairs & maintenance	153	118	122	179	196
6	Sanitation expenses	14	15	20	45	35
7	O&M cost on UGSS					
7	O&M on new projects					
	Total O&M expenses	**228**	**203**	**214**	**324**	**314**
C	**Debt Servicing**	-	-	-	-	-
1	Payable - outstanding loan	2	0	0	0	0
2	Interest - new projects					
	Total Debt Servicing	**2**	**0**	**0**	**0**	**0**
	Total Revenue Expenditure	**245**	**225**	**239**	**351**	**387**
	Surplus /Deficit	**40**	**150**	**396**	**59**	**28**
Source: NNP Trial Balance for FY 2010-2014, TP Office NNP						

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TAMIL NADU URBAN SANITATION SUPPORT PROGRAMME

Tamil Nadu Urban Sanitation Support Programme (TNUSSP) supports the Government of Tamil Nadu and cities in making improvements along the entire urban sanitation chain.

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IIHS CHENNAI: Floor 7A, Chaitanya Exotica, 24/51, Venkatnarayana Road, T.Nagar, Chennai-600017.

044-6630 5500 tnussp@iihs.ac.in www.tnussp.co.in www.facebook.com/TNUSSP