CITY SANITATION PLAN FOR JHANSI

Report 2014

MINISTRY OF URBAN DEVELOPMENT
GOVERNMENT OF INDIA

NAGAR NIGAM JHANSI, INDIA

ADMINISTRATIVE STAFF COLLEGE OF INDIA
HYEDERABAD, INDIA

City Sanitation Plan Jhansi 2014

Administrative Staff College of India

Bella Vista, Hyderabad

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ABBREVIATIONS

ASCI	Administrative Staff College of India
BOD	Biological Oxygen Demand
BPL	Below Poverty Line
BSUP	Basic Services to the Urban Poor
CAA	Constitution Amendment Act
COD	Chemical Oxygen Demand
CPHEEO	Central Public Health and Environmental Engineering Organization
CSP	City Sanitation Plan
CT	Community Toilets
CSTF	City sanitation Task Force
DMHO	District Medical Health Officer
DPR	Detailed Project Report
ESR	Elevated Service Reservoir
FGD	Focus Group Discussions
FY	Financial Year
GIS	Geographic Information System
GoI	Government of India
HHs	Households
HSC	House Service Connections
IEC	Information, Education, Communication
ILCS	Integrated Low Cost Sanitation
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
NRW	Non Revenue Water
NUSP	National Urban Sanitation Policy
ODF	Open Defecation Free
O&M	Operations and Maintenance
PHED	Public Health and Engineering Department
PSP	Public Stand Posts

RWA	Residents Welfare Association
SI	Sanitary Inspector
SLB	Service Level Benchmarking
SJSRY	Swarna Jayanti Shehri Rojgar Yojana
SSA	Sarva Shiksha Abhiyan
SSHE	School Sanitation and Hygiene Education
STP	Sewage Treatment Plant
SWM	Solid Waste Management
ULB	Urban Local Body
UGD	Underground Drainage
WC	Water Closet

UNITS OF MEASURE

lpcd	litres per capita per day
m	metre
MLD	Million Litres per Day
sqm	square metre
TPD	Tonnes per Day

EXECUTIVE SUMMARY

This document presents City Sanitation Plan (CSP) of Nagar Nigam Jhansi (NNJ). Jhansi is one of the eight cities whose CSPs are being prepared by ASCI in partnership with Government of Uttar Pradesh and respective Nagar Nigam.

The CSP process in Jhansi city endeavours to identify the various areas that are affected by various issues with different sectors of sanitation, (viz. sewerage, solid waste management, storm water drainage and water supply) and also to provide guidance towards the solutions of the said issues.

This has been made possible through an extensive participatory approach including field visits, repeated discussions with various stakeholders, sample surveys, etc. Acquiring and assimilation of varied secondary information also formed an important part of the process.

The plan preparation process was carried out using methodology requiring wide range of data in various areas and population groups, to develop robust analysis and produce outputs. The data collection included both primary and secondary sources and detail analysis of them.
The analysis in turn has paved the way for the preparation of the proposal for various strategies to alleviate the sanitary conditions of the places, so that Jhansi city may well overcome the various plaguing issues and thereby a healthy sanitized environment prevails for the citizens.

The report has two major sections –

- **The Situational Analysis**
- **The Sanitation Strategies**

The former section deals with depicting the city and its present status with regards to sanitation. The aim is to highlight the existing conditions regarding access and coverage of sanitary facilities, identify the gaps and striking issues, and understand the behavioural aspects of various sections of the society. This section is covered from Chapter 1 to Chapter 4.

The later section thereafter provides gap identification, strategies and solutions to bridge the identified gaps, mitigate the existing issues, and provide ways and means to aid the sustenance of the existing and proposed strategies and projects.

The Situational Analysis

Chapter 1 gives an introduction to the CSP process, its background, and the objectives behind it. This is followed by the step-by-step methodology of the CSP process, as well as the status of the CSP for the Jhansi city. The process of collection of baseline information – both primary and secondary, has been explained at length. Also presents a review of the policies & programmes that are prevalent and followed in Uttar Pradesh to improve the sanitation conditions in the urban areas. It gives detailed insight into the NUSP 2008 and the sanitation ranking of cities, the MSW 2000 rules, the ILCS scheme, Rajiv AwasYojana, UIDSSMT and 13th FC which have been taken up for the improvement of access and coverage of sanitary facilities.

Chapter 2 deals with the City Profile where the various aspects of the city are discussed in order to get a fair idea about the city itself. Aspects such as location, regional linkages, demography, economic, land use and housing profiles, the slum and squatter settlements are discussed in brief.

Chapter 3 Summarizes the Institutional Arrangements in Jhansi and Finance Information of NNJ. Functions of NNJ and Parastatal bodies and overlap of institutional responsibly is also briefly discussed. Later part of chapter discusses financial information of NNJ related to Water Supply, Sewerage & Drainage and Solid Waste Management.

Chapter 4: Section A covers the Service Profile of Jhansi City. The aim of the chapter is to present a clear picture of the existing systems of sanitation in the city. It contains four sectors; Water supply system, Sewerage & Sanitation, Solid Waste Management and, Storm Water Drainage system of the city. The performance of each of the sectors is evaluated through Service Level Benchmarking (SLB) indicators.In **Section B**discussesSanitation Situation in Jhansi City based on information collected by primary sample survey. In this chapter situation analysis is done both at the Household and community level.

The Sanitation Strategies

Chapter 5 covers the Gap Identification and Analysis. In this chapter four sectors (Water supply system, Solid waste Management Sewerage and sanitation and, Storm water drainage system) are analyzed based on the captured and available information. Within each sector, the gaps and issues in access and coverage are identified, the problem areas are clearly demarcated, and projections are also made for the future years, later part covers the communication need assessment.

Chapter 6 This chapter discusses sanitation consciousness and appropriate IEC & communication methodologies for Jhansi city.

Chapter 7 The City Wide Sanitation Strategies and Roadmap are presented. It provides the vision for the CSP and its goals. Thereafter, recommendations of most appropriate options and basic guiding strategies for Water Supply, Solid Waste Management, Sewerage and Drainage are suggested. Strategies have been provided to improve coverage and access to sanitation facilities in phased manner.Concluding the report budget plan to implement effectively the short term proposal and, overall plan for mid-term and long term is also proposed.

CHAPTER 1. INTRODUCTION

TOPICS OF DISCUSSION

- National Urban Sanitation Policy
- National Rating Scheme for Sanitation
- CSP Research Methodology
- CSP Approach, Scope and process
- Urban Sanitation Policies

1.1. National Urban Sanitation Policy

Vision

"All Indian cities and towns become totally sanitized, healthy and liveable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women."

Keeping this vision in view, the National Urban Sanitation Policy (NUSP) has been formulated by the Government of India in 2008 with a vision to provide appropriate sanitation facilities in all cities and towns, through policy, institutional, technical and financial interventions. Some of the areas to address under NUSP include open defecation free towns, providing access to toilets for poor people, waste water and solid waste treatment and disposal and achieving public health outcomes and environmental standards.

The overall goal of NUSP is to transform Urban India into community-driven, totally sanitized, healthy and liveable cities and towns. Specific goals include:

- Awareness Generation and Behaviour Change
- Achieving OpenDefecationFreeCities
- IntegratedCity-WideSanitation:
    - Reorienting Institutions and Mainstreaming Sanitation
    - SanitaryandSafeDisposal
    - ProperOperation&MaintenanceofallSanitaryInstallations.

Government of India recognizes that sanitation is a state subject and on-ground implementation and sustenance of public health and environmental outcomes require strong city level institutions and stakeholders. Each state and city, respectively needs to formulate its own sanitation strategy in overall conformity with the national policy. In this regard, the UP state has not yet come up with state sanitation strategy to improve and implement the city sanitation plans.

1.2. National Rating Scheme for Sanitation

In order to rapidly promote sanitation in urban areas of the country as envisaged in the NUSP 2008 and to recognize excellent performance in this area, the Ministry of Urban Development (MoUD), Government of India (GoI),has instituted an annual rating and award scheme for cities. The award (Nirmal Shahar Puraskar) is based on the premise that improved public health and environmental standards are two key outcomes that cities must seek to ensure on for their citizens. In doing so, governments in states and cities will need a plan and implement holistic citywide sanitation plans,

thereby putting in place processes that help achieving outputs pertaining to safe collection, confinement and disposal of solid and liquid wastes. Brief details of city sanitation ranking indicators are given below:

1.2.1. Three Categories of Indicators

Theratingexercisewillinvolvethreecategoriesof indicators:

1. **Output Indicators**: Pertain to the city having achieved certain results or outputs in different dimensions of sanitation ranging from behavioural aspects and provision, to safe collection, treatment and disposal with out harm to the city's environment. There are nine main output- indicators accounting for 50 points of the total of 100 points.

2. **Process Related**: Indicators pertain to systems and procedures that exist and are practiced by the city agencies to ensure sustained sanitation. There are seven main process-indicators accounting for 30 points of the total of 100points.

3. **Outcome Related**: Indicators include the quality of drinking water and that of water in water-bodies of city, as also the extent of reduction in sanitation-related and water-borne diseases in the city over a time period. There are three main out come-indicators accounting for 20 points of a total of 100 points.

Table 1: City color coding

No.	Category	Description
1	Red Less than 33 Marks	Cities on the brink of public health and environmental "emergency"; needing immediate remedial action
2	Black 34 – 66 Marks	Needing considerable Improvements
3	Blue 67 to 90 Marks	Recovering but still diseased
4	Green 91 to 100 Marks	Healthy and Clean city

Based on city sanitation ranking methodology, overall marks for Jhansi city as 39.913/ 100, which states the rank is # 103 for Jhansi city out of 423 cities in India. The following chart shows the total points and secured points for the Jhansi city for different indicators. Jhansicityfalls in the black category in the baseline survey. As shown in
Table 2.

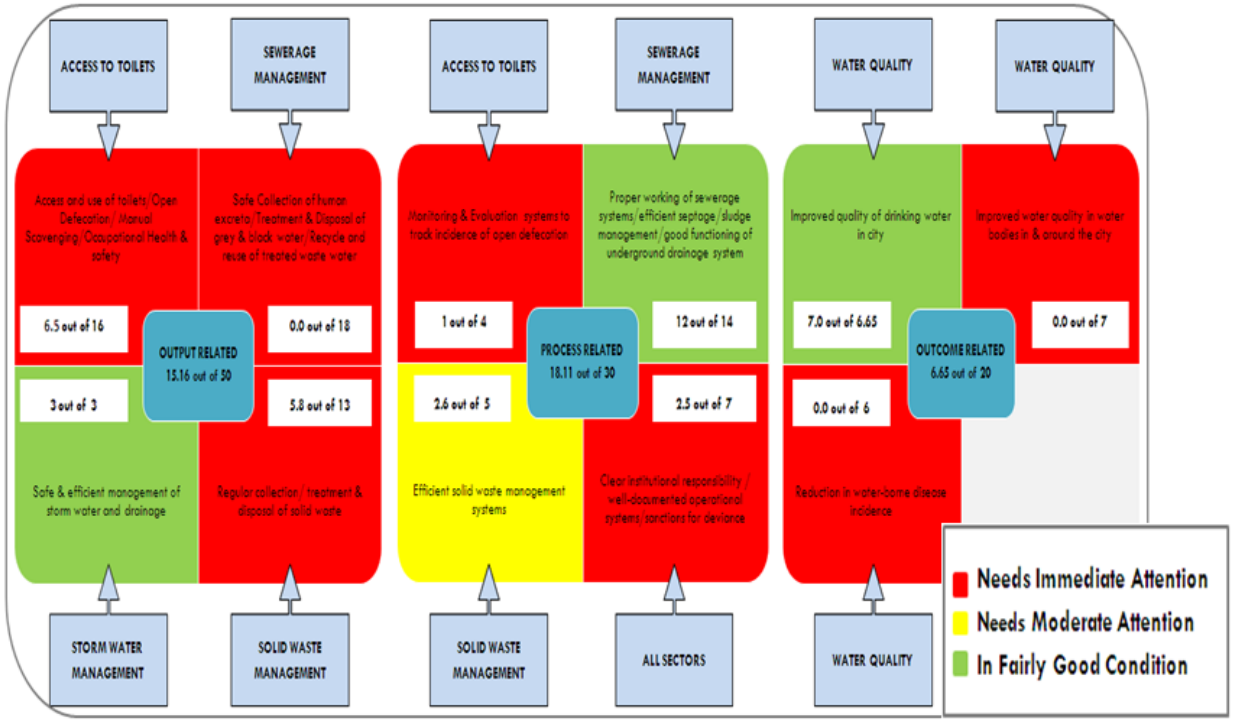
Table 2City Sanitation Rating Chart: Jhansi

CITY SANITATION RATING CHART -JHANSI			
NO	**INDICATORS**	**TOTAL POINTS**	**POINTS SECURED**
1	**OUTPUT RELATED**	**50**	**15.16**
A	No open defecation sub-total	**16**	**6.5**
I	Access and use of toilets by urban poor and other un-served households (including slums) - individual and community sanitation facilities	4	0
II	Access and use of toilets for floating and institutional populations -	4	1.66

	adequate public sanitation facilities		
III	No open defecation visible	4	0.75
IV	Eliminate Manual Scavenging and provide personnel protection equipment to sanitary workers	4	4
B	Proportion of total human excreta generation that is safely collected (6 points for 100%)	6	0
C	Proportion of total black waste water generation that is treated and safely disposed of (6 points for 100%)	6	0
D	Proportion of total grey waste water generation that is treated and safely disposed of (3 points for 100%)	3	0
E	Proportion of treated wastewater that is recycled and reused for non potable applications	3	0
F	Proportion of total storm-water and drainage that is efficiently and safely Managed (3 points for 100%)	3	3
G	Proportion of total solid waste generation that is regularly collected (4 points for 100%)	4	2.75
H	Proportion of total solid waste generation that is treated and safely disposed of (4 points for 100%)	4	0
I	City wastes cause no adverse impacts on surrounding areas outside city Limits (5 points for 100%)	5	3
2	**PROCESS RELATED**	**30**	**18.11**
A	M&E systems are in place to track incidences of open defecation	4	1
B	All sewerage systems in the city are working properly and there is no exfiltration (Not applicable for cities without sewerage systems)	5	0
C	Septage / sludge is regularly cleaned, safely transported and disposed after treatment, from on-site systems in the city (Maximum 10 marks for cities without sewerage systems)	5	10
D	Underground and Surface drainage systems are functioning and are well maintained	4	2
E	Solid waste management (collection and treatment) systems are efficient (and are in conformity with the MSW Rules, 2000)	5	2.6
F	There is clear institutional responsibility assigned; and there are documented operational systems in practice for b)/c) to e) above	4	2
G	Sanctions for deviance on part of polluters and institutions is clearly laid out and followed in practice	3	0.5
3	**OUTCOME RELATED**	**20**	**6.65**
A	Quality of drinking water in city compared to baseline	7	6.7
B	Water quality in water bodies in and around city compared to baseline	7	0
C	Reduction in water-borne disease incidence amongst city population compared to baseline	6	0
	TOTAL	**100**	**39.913**

Thus,oneofthemainobjectivesoftheCitySanitationPlanistoincreasethesanitation rating points of Jhansi in these different indicators, which is only possible after detailed understanding and analysis of the existing situation and ground realities. Based onthesituationalanalysis, keypotentialissuesandgaps are identified and then recommendations are made which are economically feasible andecologically sustainable. Following Figure 1 represents the priority area identified based on points scored in city sanitation ranking.

Figure 1: Priority area Identified



1.3. Objectives of the Jhansi City Sanitation Plan

The City Sanitation Plan (CSP) is aimed at developing and maintaining a clean, safe and pleasant physical environment in Jhansi city to promote social, economic and physical well-being of all sections of the population. It encompasses plan of action for achieving 100% sanitation in the city of Jhansi through demand generation and awareness campaign, sustainable technology selection, construction and maintenance of sanitary infrastructure, provision of services, O&M issues, institutional roles and responsibilities, public education, community and individual action, regulation and legislation.

The CSP is being prepared after carrying out a situation analysis and structured consultation with stakeholders. The plan will attempt to achieve the following objectives:

- To adopt locally suitable methods, technology and materials, and provide necessary facilitation support to Nagar Nigam Jhansi.
- To encourage community and private participation and define their roles in creation and maintenance of sanitation infrastructure, thereby ensuring a sense of ownership.
- To ensure coordination between various departments working in the field of water supply and sanitation, such as departments of health, education, public health & engineering, industry, environment, social development, pollution control boards, etc.
- To ensure an optimum use of funds allocated by the 12th and 13th Finance Commissions for the solid waste management and other sanitation-related projects.
- To promote novel ideas in mobilization of funds including reforms in tax regime, public private partnerships, exploring the private market, user charges, etc.

1.4. CSP Research

1.5. Research Methodology

The current projection City Sanitation Plan for Jhansi city highlights the extent of services provided at city level and proposes strategies to improve the conditions of services with long term, medium term and short terms strategies which areas-most low cost high impact strategies.

A. Research Tools

Data Templates, Survey Formats, Transect Walks along with schedules of interviews (Slums, industrial areas, water bodies), Focus Group Discussions (FGDs), Technical Analysis, Impact, Indicators, Stakeholder Consultations at city level (2-3), etc

Table 3 Different Tools Used For Preparation of Jhansi City Sanitation Plan

Tools Used for the study		
Number	Tasks	Research Tools
1	Social and environmental issues	Literature review Baseline secondary data Consultations/FGDs
2	Policies, acts, operational procedures to address, mitigate and manage the social and environmental issues.	Literature review Secondary information review FGDs Discussions with officials Stakeholder consultations
3	Citizens perception on sanitation, upkeep &s maintenance and environmental impacts.	Literature review Secondary information review Analysis of Rapid survey data FGDs Stakeholder Consultations
4	Existing institutional arrangements in managing sanitation and environmental issues.	Literature review Stakeholder Consultations FGDs Survey data analysis

B. ResearchM e t h o d s & Strategies

The study population that was chosen for the current research study includes population at residential areas, slum areas, institutional areas, schools, hospitals, public areas, industries, market places, commercial areas and understanding the sanitary conditions at these places.

The prime objective of research study in assessing the situation of key potential problems related to sanitary, sewerage, water supply and solid waste management in the city with the chosen research paradigm is only possible with questionnaire interviews. The other assessment includes Focus Group Discussion. This strategy is used on various participant correspondents with in the study area,but taking care to cover entire city population and different possible potential areas those affecting from poor sanitation and sewerage facilities and high rate of open defecation. There is also detailed analysis of policy reviews of various documents in order to get the complete picture of present and future scenario of the city developments.

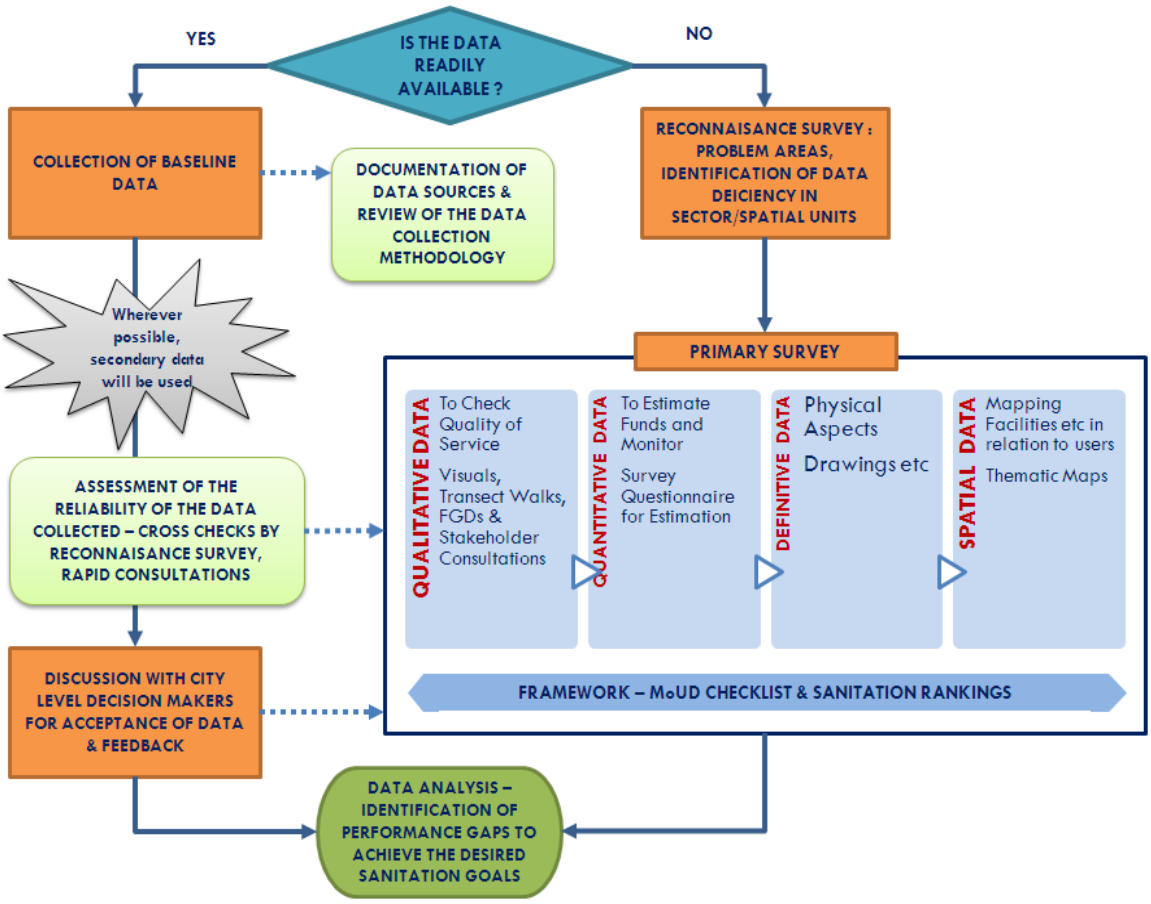
The Questionnaire those used in this project study were of different categories and these categories are

based on the criteria that complete sanitary, sewerage, water supply and solid waste of the city is understood and analysed. The questionnaires are designed so as to get the complete picture and make the situational analysis of the city sanitary conditions – thus different questionnaires are designed for different target areas such as for households include residential, slums and other possible potential areas. The other set of questionnaires target are as such institutions, public areas (community toilets and public toilets), hospitals, schools, commercial/market areas, industries and other potential are as such as slaughter houses and water bodies. Focus Group Discussions are also conducted at slum are as, selected residential areas, with elected representatives and other potential areas to understand the situation of sanitary, sewerage, water supply and solid waste management conditions of the city. The following table illustrates the different activities undertaken by the research team to make a situational analysis and also the focused areas of the questionnaire interviews and the type of tools used together the required information and also the sample sizes at each level to support and further understand the situations.

Table 4Activities undertaken by the research team to make a situational analysis

Sr. No.	Activities	Focussed Areas	Tools	Sampling	Sample Size
1	Household surveys	Household level in residential/slum	Questionnaire	Random Sampling	Upto 500 households
2	Focused Group Discussions	Slum areas, residential areas, elected representatives, and other potential areas	Check list		10 – 12 FGDs
3	Institutions	Collector office, Municipal office, Bus & Rail station, etc.,	Questionnaire	Random Sampling	10 (in Nos)
4	Community Toilets	All potential areas	Questionnaire	Random Sampling	25 (in Nos)
5	Public Toilets	All potential areas	Questionnaire	RandomSampling	10 (in Nos)
6	Hospitals	All Hospitals with 100+ beds (must) or 50 – 100 beds	Questionnaire	Random Sampling	10 (in Nos)
7	School Sanitation	Primary, Secondary, High school and all government schools	Questionnaire	Random Sampling	10-12 (in Nos)
8	Slaughter Houses	Potential areas	Questionnaire	Random Sampling	2-3 (in Nos)
9	Commercial/ market areas	Potential areas (questionnaires for shopkeeper and customers)	Questionnaire	Random Sampling	5-8 (In Nos)
10	Industries	Potential areas	Questionnaire	Random Sampling	10-12 (In Nos)
11	Water Bodies	Potential areas	Questionnaire	Random Sampling	5 (In Nos)

Figure 2: Process followed for Data Assimilation



1.6. CSP Approach, Scope and Process

The step-by-step process followed for the development of CSP of Jhansi city is given in figure 2

1.6.1. Profiling NNJ

As a preparatory work, a preliminary profiling of Jhansi City was carried out using Service Level Benchmarking (SLB) indicators, City Sanitation Ratings, field reconnaissance and secondary data sources to highlight the ODF status, sanitation situation, health indicators and status of current ongoing sanitation related projects.

1.6.2. Stakeholder Analysis

Nagar Nigam Jhansi (NNJ) is in the frontline of implementation and has a key role in ensuring sanitation and should focus on demand responsive approach. Plan formulation through stakeholder consultation will provide the foundation for CSP which has government endorsement as well as an informed civil society to monitor its implementation. To play their participative part, as per the requirements of CSP, institutions, organizations, individuals, NGOs, academics, journals, local councillors, industry owners, consultants, representatives of private sector etc are identified and analyzed the strengths and competencies required for sanitation.

1.6.3. Constituting City Sanitation Task Force 'CSTF'

CSTF has been constituted headed by Mayor of Jhansi Cityto mobilize Stakeholders to elevate the consciousness about sanitation in the mind of government agencies, municipal officials and amongst the people of the city. CSTF will organize a multi-stakeholder, multi-party meeting during the preparatory stage, and take a formal resolution to make the city 100% sanitized. The task force should meet periodically to monitor and guide the process of planning and implementation of city wide sanitation plan.

1.6.4. CSTF Sensitization/Orientation Workshop and Meetings

A sensitisation cum orientation workshop involving identified stakeholders and City Sanitation Task Force was organised on 19 November 2010 at Jhansi to know the concerns of citizen about the city sanitation. Dr B Lall, Mayor, Mr JP Chaurasia, Nagar Ayukt Jhansi chaired the meeting and Col J Jamwal, Advisor, ASCI Hyderabad gave a comprehensive presentation highlighting the importance of sanitation issues relating to toilets access especially in slum areas; awareness generation for changed behaviour and practices; community participation and mobilization to accord sanitation priority at all levels from policy to action on ground; and a number of technical, institutional and financial issues to be addressed in CSP. About seventy five prominent & senior citizen, members of CSTF, NGOs, corporators of various political parties, nagarnigam officials etc actively participated and expressed their views about the state of city sanitation. The list of the participants and summary of their concerns are given in Annexure-3.

Figure 3: CSTF Meetings 19 Nov 2010 at NNJ

Source: ASCI Primary Survey, 2010-12

1.6.5. Situation Analysis and Mapping Current Status

The Situation Analysis, prepared by taking into consideration the ground realities, local conditions, and assessment of the present sanitation situation has been undertaken and broad framework is indicated in Table 5below:

Table 5: Situation Analysis and Mapping Current Status

Sectors	Spatial units	Finances	Institutional
Service levels and benchmarks for: ▪ Solid Waste Management ▪ Water Supply ▪ Storm Water ▪ Drainage Health Situation – Statistics and Anecdotal Comment Environmental Situation – Local and Downstream and Groundwater.	Household Sanitation Slums Public Sanitary Conveniences School Sanitation Institutional Sanitation Map spatially Any city specific areas.	Cost Recovery–Policy–Tariffs–Collections–Budget Transfers. PPPs. Study of current programmes (SJSRY, ILCS, etc)	Institutional Arrangement – Policies, Plans, implementation, management. Staffing, Organization & Competence

1.6.6. Problem Analysis and Assessment of Options

Followed by situational analysis problem and challenges have been identified in coverage, access, treatment and disposal, institutional, financial, social and cultural aspects and capacity concerns. Also reviewed comprehensive range of sanitation and wastewater management options, including industrial and municipal sewerage, sewage treatment , conventional & low cost centralized and decentralized sewerage, separate and combined effluent disposal options, on-site sanitation options, separate programs for schools, public toilets, sanitation in slums, community-based NGO-supported programs etc.

Purpose of options analysis is to identify plausible technical, financial and institutional solutions and will consider (i) unit cost per beneficiary, (ii) maximizing both human and environmental benefits, (iii) sustainability, (iv) a long term plan, (v) government policy including land use zoning, (vi) piloting new approaches, (vii) beneficiary participation, (viii) wastewater as a resource, (ix) lessons learned from the past and (x) political commitment.

1.6.7. Developing and Consolidating CSP

Having completed above steps, CSP has been formulated to articulate Sanitation Goals, specific quantifications both in terms of technical, capacities and financials based on stakeholder consultations and the analysis of choices made depending on costs of capital investments, operation and maintenance, monitoring, and evaluation.

Project priorities for sanitation considered the following:

(i) Serving the un-served urban poor

(ii) Serving the un-served schools

(iii) Serving the un-served public areas

(iv) Institutional capacity building for sustainability and environmental monitoring

(v) Grant elements for demonstration pilot projects for eco-sanitation (private developers)

(vi) Rehabilitation of existing facilities.

(vii) Improvement of existing sanitation (septic tank sludge and effluent treatment).

(viii) Extension of existing sewerage and sewage treatment (as a last priority).

1.6.8. Action Plan and Road Map

Keeping in view the vision and goals, city sanitation action plan and road map has been evolved in terms of short, medium and long term projects and draft CSP is prepared.

1.6.9. CSTF & Stakeholders Meeting and Finalization of CSP

The draft CSP was presented to CSTF & stakeholders at Nagar Nigam Jhansi on September 2012 and the concerns of the stakeholders have been noticed and incorporated in the final report.

1.7. Urban Sanitation Policies

1.7.1. Municipal Solid Waste Rules, 2000

The Municipal Solid Wastes (Management and Handling) Rules, 1999 were published under the notification of the Ministry of Environment and Forests, Government of India . In exercise of the powers conferred by section 3, 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby made the rules to regulate the management and handling of the municipal solid wastes, 2000. The Rules contains four Schedules as given in Table 6

Table 6: Schedule details of MSW Rules 2000

Schedule details of MSW rules, 2000	
Schedule-I	Relates to implementation Schedule
Schedule-II	Specifications relating to collection, segregation, storage, transportation, processing and disposal of municipal solid waste (MSW).
Schedule-III	Specifications for land filling indicating; site selection, facilities at the site, specifications for and filling, Pollution prevention, water quality monitoring, ambient air quality monitoring, Plantation at landfill site, closure of landfill site and post care.
Schedule-IV	Indicate waste processing options including; standards for composting, and incinerations.

The MSW Rules 2000 very categorically state the roles and responsibilities of ULBs, the State Govt, the Union Territory Administrations and the Pollution Control Boards. The role of the ULBs as stated is as follows:

1. Every municipal authority shall, within the territorial area of the municipality, be responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes.
2. The municipal authority or an operator of a facility shall make an application in **Form-I**, for grant of authorization for setting up waste processing and disposal facility including landfills from the State Board or the Committee in order to comply with the implementation programme laid down in **Schedule I**.

3. The municipal authority shall comply with these rules as per the implementation schedule laid down in **Schedule I.**
4. The municipal authority shall furnish its annual report
   a. to the Secretary-in-charge of the Department of Urban Development of the concerned State or as the case may be of the Union territory, in case of a metropolitan city; or
   b. To the District Magistrate or the Deputy Commissioner concerned in case of all other towns and cities, with a copy to the State Board or the Committee on or before the 30th day of June every year.

1.7.2. Integrated Low Cost Sanitation (ILCS)

The programme envisages construction of new sanitary latrines in households not having latrines by adopting the low-cost leach pit system, with an objective to eliminate dry latrines and manual scavenging. The scheme is being implemented with 63% HUDCO loan, 32% Government of India subsidy and 5% of contribution of beneficiary. Initially during the year 1992 the Integrated Low Cost Sanitation Scheme was taken up in 34 municipalities, subsequently extended the programme covering all the Urban Local Bodies in a phased programme.

Table 7 : Revised Guidelines of ILCS Scheme

<table>
<tr><th></th><th>Earlier Provision</th><th>Revised Provision</th></tr>
<tr><td>1.</td><td>The scheme has been taken on a 'whole town basis' and the towns having population less than 5 lakh are being covered</td><td>The earlier programme was town-wise for population upto 5 lakh as per 1981 census which need not be restricted any more as the whole country is to be declared as scavenger free. The new guidelines will cover all towns on "All Town" basis.</td></tr>
<tr><td>2.</td><td>Pattern of Assistance: The HUDCO is providing loan and a mix of subsidy from the Central Government in a synchronized manner as per the following financing pattern.
<table>
<tr><td></td><td>Subsidy</td><td>Loan</td><td>Beneficiary contribution</td></tr>
<tr><td>EWS</td><td>45%</td><td>50%</td><td>5%</td></tr>
<tr><td>LIG</td><td>25%</td><td>60%</td><td>15%</td></tr>
<tr><td>MIG/HIG</td><td>Nil</td><td>75%</td><td>25%</td></tr>
</table></td><td>75% subsidy for the EWS beneficiaries, 15% of State's contribution and 10% of beneficiaries contribution.</td></tr>
<tr><td>3.</td><td>The present unit cost for different categories of sanitary latrines is as follows:-
5 user unit Rs4000.00, 10 user unit Rs6000.00, 15 user unit Rs7000.00 Super structure cost not included.</td><td>Provision of subsidy including the superstructure in case of individual toilets: An upper ceiling of Rs. 10,000/-for complete unit of pour flush units with superstructure.</td></tr>
<tr><td>4.</td><td>No provision of IEC component.</td><td>It is proposed to include the Information, Education and Communication (IEC) component with 1% of the total central allocations under the scheme in each of the financial year with the Ministry. In case the funds retained are not utilized, these may be utilized in the projects.</td></tr>
<tr><td>5.</td><td>No involvement/ participation of NGOs at implementation stage.</td><td>NGOs may be involved by the State Governments in the implementation of the scheme in various activities meant for the benefit of EWS population under the scheme with maximum charges upto 15% over and above the total project cost to be borne by the Centre and States in the</td></tr>
</table>

	Earlier Provision	Revised Provision
		ratio of 5:1 at different stages of implementation.
6.	Technology used for construction and conversion of toilets was as per HUDCO's pattern/recommendation.	Options like septic tank, connecting to small bore or conventional sewer network etc. may also be permitted under the cost ceiling. Technology which can enable to tap local resources should be permitted to be adopted. State implementing agencies may decide the technology best suited for the site/ locality which may be adopted.

1.7.3. Rajiv AwasYojana

The Government has initiated a new scheme called Rajiv AwasYojana (RAY) for the slum dwellers and the urban poor. This scheme aims at providing Central support to States that are willing to assign property rights to slum dwellers. The Government's effort would be to create a Slum-free India through the implementation of RAY.

The Ministry of Housing and Urban Poverty Alleviation (MoHUPA) has prepared Guidelines for Slum Free City Planning to assist the preparatory activities under RAY and this has been circulated to all States/UTs. RAY calls for a multi-pronged approach focusing on the following aspects:

- Bringing existing slum within the formal system and enabling them to avail the same level of basic amenities as the rest of the town/city.
- Redressing the failures of the formal system that lead to the creation of slums; and
- Tackling the shortages of urban land and housing that keep shelter out of reach of the urban poor and force them to resort to extra-legal solutions in a bid to retain their sources of livelihood and employment.

As given in the Slum Free City Planning (SFCP) guidelines, the preparation of Slum-free City Plan will broadly involve survey of all slum notified and non-notified; mapping of slum using the state-of-art technology; integration of geo-spatial and socio-economic data; and identification of development model proposed for each slum. To achieve these things, a systematic approach is essential which will be useful for various other developmental planning initiatives for the urban poor. The present technical manual details the steps to be followed for slum mapping using satellite data, GPS, Total Station Survey in preparing GIS database, MIS development of non-spatial data collected and integration of GIS with MIS to enable generating Plan of Action (PoA) for slum free cities.

1.7.4. Urban Infrastructure Development Scheme for Small & Medium Towns -UIDSSMT

UIDSSMT aims at improvement in urban infrastructure in towns and cities in a planned manner. It subsume the existing schemes of Integrated Development of Small and Medium Towns (IDSMT) and Accelerated Urban Water Supply Programme (AUWSP).

The objectives of the scheme are to:
a) Improve infrastructural facilities and help create durable public assets and quality oriented services in cities & towns
b) Enhance public-private-partnership in infrastructural development and
c) Promote planned integrated development of towns and cities.

The scheme covers the following areas:

1. Urban Renewal i.e redevelopment of inner (old) city areas
2. Water Supply and sanitation
3. Sewerage and Solid Waste Management
4. Construction and improvement of drains/storm water drains
5. Construction/Upgradation of roads, highways/expressways
6. Parking lots/spaces on Public Private Partnership basis
7. Development of heritage areas
8. Prevention & rehabilitation of soil erosion/landslides only in case of Special Category States where such problems are common and
9. Preservation of water bodies.

The sharing of funds is in the ratio of 80:10 between Central Government & State Government and the balance 10% could be raised by the nodal/implementing agencies from the financial institutions.

1.7.5. 13th Central Finance Commission (CFC)

Importantly, the report of 13th CFC released in February 2010 recommended general performance grants and special area performance grants to be linked to performance of ULBs. Moreover, allocations to ULBs would now be linked to divisible pool replacing the previous ad-hoc allocation. It has recommended grants of Rs. 23,111 crore to ULBs during 2010-15, a four-fold growth over the 12th CFC allocation. The 13th CFC recommends state governments and ULBs to focus on improved property tax revenues, urban service standards, strengthened local body framework, improved municipal accounting, introduce system of independent ombudsmen, and put in place a system of electronic transfer of grants to ULBs among other things.

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CHAPTER 2. JHANSI CITY PROFILE

TOPICS OF DISCUSSION

- Introduction
- Demography
- Soil and Topographic Conditions
- Economy
- Urban poverty and slums

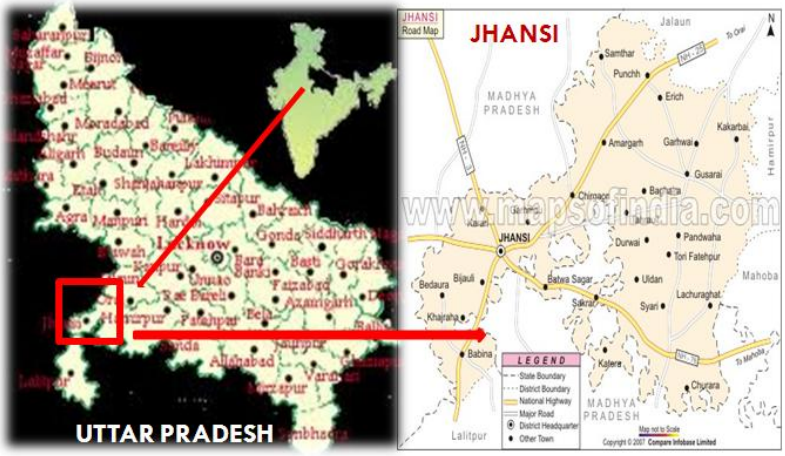
2.1. Introduction

Jhansi is a prominent city of Bundelkhand region of Uttar Pradesh state. Jhansi grew in popularity during the reign of the Marathas because of the heroics of its valiant queen, Rani Lakshmi Bai. She had valiantly fought against the Britishers during the 1857 revolt. Jhansi fort was built in 1613 and today has a wonderful collection of sculptures that depicts the history of Bundelkhand. It is said that Jhansi grew around this fort which crowns a neighboring rock. There are many sculptures of the 9th to 12th centuries found in the Rani Mahal too. The museum of Jhansi houses regional antiques like sculptures, manuscripts, paintings, arms and silver, gold and copper coins.

Jhansi is a major road and rail junction, and is the administrative seat of Jhansi District and Jhansi Division. The original walled city grew up around its stone fort, which crowns a neighbouring rock. The National Highway Development Project, initiated by the government of AtalBehari Vajpayee, has sparked Jhansi's development. The North-South Corridor connecting Kashmir toKanyakumari passes through Jhansi. The East-West corridor also goes through this city, so there has been a sudden rush to infrastructure and real estate development in the city.

Jhansi city is situated between the rivers Pahunj and Betwa between North longitudes 24°11′ and 25°57′and East latitudes 78°10′and 79°25′.It has an average elevation of 284 metres (935 feet).The city has an irregular boundary, northern being contiguous with that of district of Jalaun. In addition, the city is well connected to all other major towns in Uttar Pradesh by road and railway networks.It is about 415 km from Delhi and 292 km fromLucknow, and the gateway to Bundelkhand. Three national highways NH-3, NH-25 and NH-76 pass through the city.\

Figure 4: Location map of Jhansi city



The city encompasses an area of 167 sq km approximately. The entire city is divided into five sanitary circles and subdivided into sixty corporator wards.

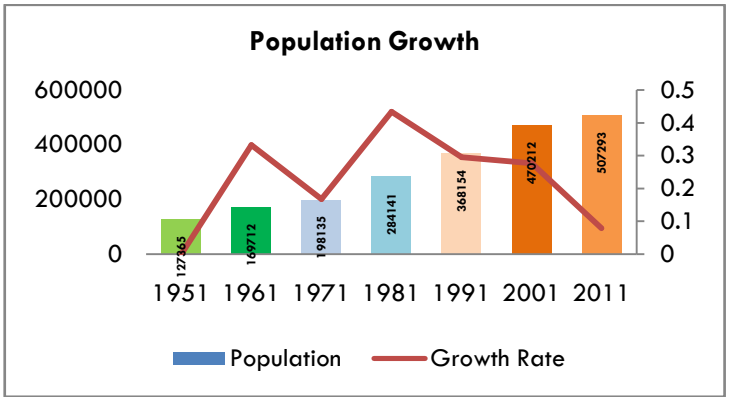
As Jhansi is on a rocky plateau, the temperatures here are extreme. Temperatures reach as low as 1 degree Celsius in winter, it also reaches a maximum of 48 degrees Celsius in summer. Jhansi has lots of monsoon rains that are used for irrigation purposes. The average temperature in the rainy season lies around 36 degrees Celsius while the average rainfall is about 35 inches a year. This should also be considered for any provision of services in order to sustain the local climatic conditions.

2.2. Demography

As per the 2001 Census, the total population of Jhansi was estimated at 4,70,212. The present population in 2011 is 507293. In addition, the Census estimates from 1961 to 2010 were used to project the population for years 2011, 2021 and 2031 for Jhansi city. The population density map of Jhansi is given in Map 1.

Table 8: Population growth in Jhansi

Year	Population	Growth Rate
1951	127365	
1961	169712	33.25%
1971	198135	16.75%
1981	284141	43.41%
1991	368154	29.57%
2001	470212	27.72%
2011	507293	7.89%



Source: Nagar Nigam Jhansi and Census 2011

2.3. Soil and Topography Conditions

The topography of the city also plays a key role in locational analysis for any provision of services and facilities. Jhansi is located in the plateau of central India, an area dominated by rocky reliefs and minerals underneath the soil. It has an average altitude of 284 meters. The city has a natural slope in the north as it lies on the south western border of the vast Tarai plains of Uttar Pradesh. The elevation rises on the south. The land is suitable for citrus species fruits. Crops include wheat, pulses, peas, oilseeds. The region relies heavily on Monsoon rains for irrigation purposes. Under an ambitious canal project (Rajghat canal), the government is constructing a network of canals for irrigation in Jhansi and Lalitpur and some area of Madhya Pradesh.

2.4. Economy

Jhansi is a major commercial, tourist and educational centre in the Bundelkhand region of UP state. There are 245 small scale industries in Jhansi city. In addition, there is a major industrial area at Bijholi (Circle 5). Major industrial units include stone crushing units, fabrication units and furnace industries.

2.5. Urban Poverty & Slums

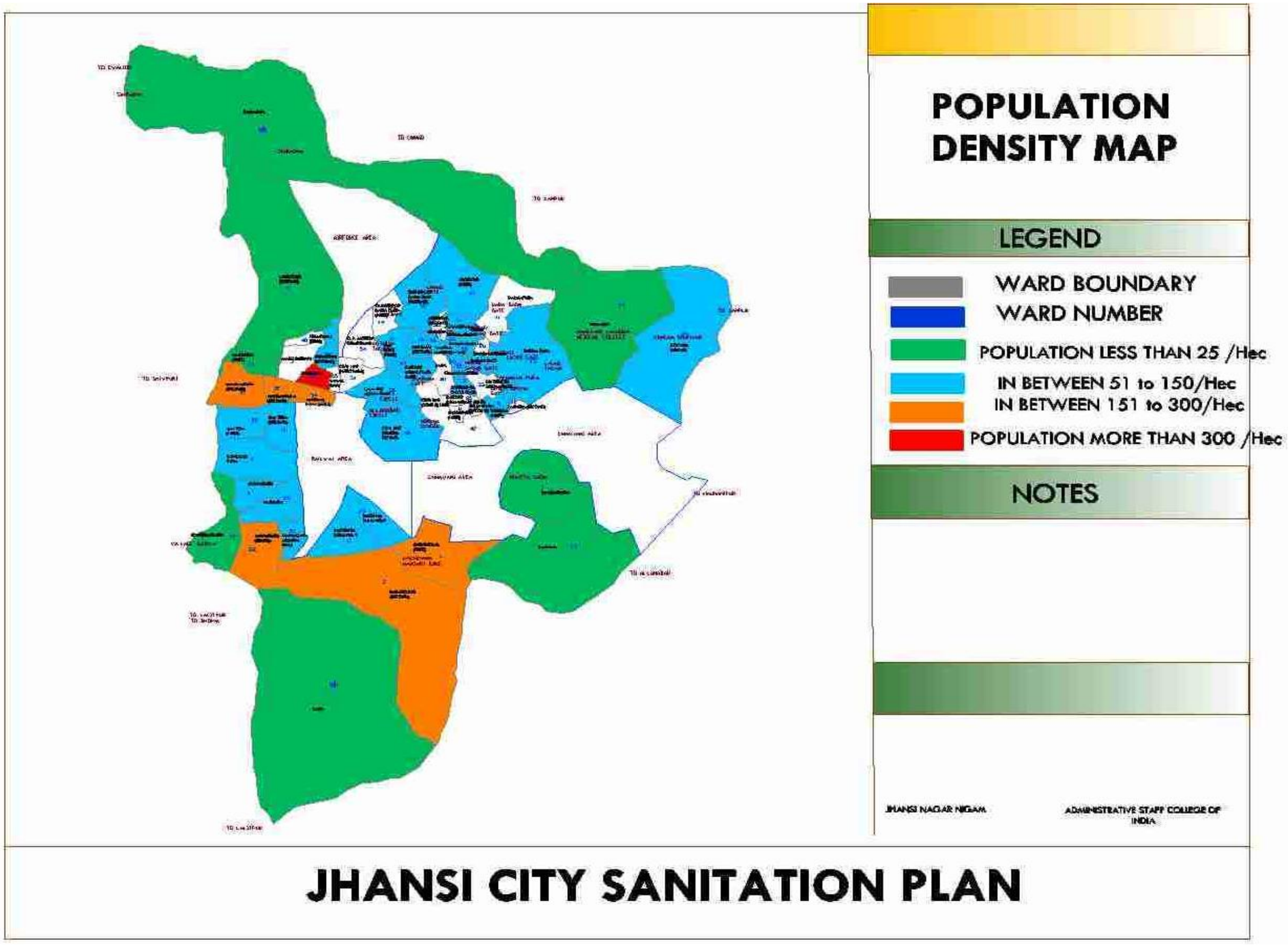
There are a total of 56 slum settlements in Jhansi city. The slum population has increased from 78000 in 2001 to 1,59,127 in 2011.The population details are given in Annexure. The percentage of slum population to total population has increased from 16.5% in 2001 to 26.5% in 2011.The total number of

slum households is approximately 30,000 in 2011. The percentage of slum households to total households is 33% in 2011. The slum location map is given in Map 2.

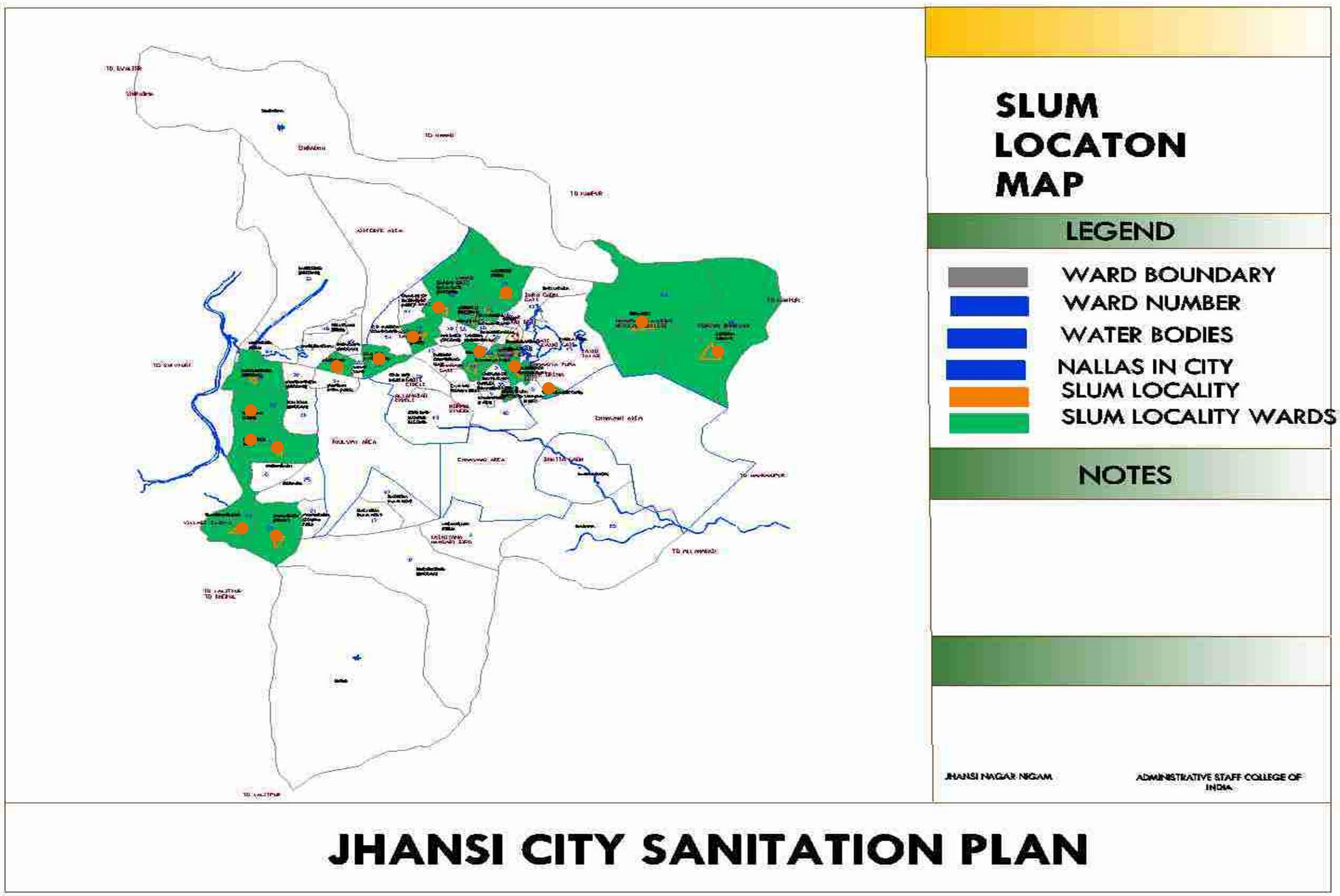
2.5.1. Open Defecation

The areas of open defecation are Gadiyagoan, Masihaganj, outerDatiya gate, Gaudri, Pichore, KonchaBhandar, Jiajigate and Bhattagaon. Map showing open defecation areas is given in Annexure.

Map 1: Population Density Map



Map 2: Slum Location Map



CHAPTER 3. INSTITUTIONAL ARRANGEMENTS AND MUNICIPAL FINANCE

TOPICS OF DISCUSSION

- Institutional arrangements
- Overlap of institutional responsibilities
- Key issues
- Financial information for municipal services

3.1. Institutional Arrangements

The primary responsibility of providing civic services including water supply and sanitation rests with state government and more specifically with local municipal government. Jhansi Division, JalSansthan, UP deals with water supply and sewerage system while NNJ deals with solid waste management, social infrastructure such as community toilets, health and medical services and basic civic services.

3.1.1. Agencies Involved In Providing Urban Services

- Department of Urban Development GoUP
- Director of Local Bodies, GoUP
- Public Works Department
- State Pollution Control Board
- UP Tourism Department
- Superintendent of Police, (Traffic)

3.1.2. Urban Local Bodies

- Nagar Nigam Jhansi (NNJ)
- Jhansi Division, JalSansthan, UP

3.1.3. Parastatal bodies

- UP Jal Nigam
- Jhansi Development Authority (JDA)
- UP Housing and Development Board, Jhansi
- District Urban Development Agency (DUDA)

3.1.4. Functions of the Nagar Nigamin UP

The UP Municipal Corporation Adhiniyam, 1959 as amended from time to time provides for majority of the function listed in the 12th schedule of the constitution. These are:

- Planning for economic and social development
- Roads and bridges
- Public health, sanitation, conservancy and solid waste management
- Fire services
- Urban forestry, protection of the environment and promotion of ecological aspects

- Safeguarding the interests of weaker sections of the society, including the handicapped and mentally retarded
- Slum improvement and up gradation
- Provision of Urban amenities and facilities such as parks, gardens, playgrounds
- Promotion of cultural, educational and aesthetics aspects
- Burials, burial grounds; cremations, cremation grounds and electric crematoriums
- Cattle Ponds; Prevention of cruelty to animals
- Vital Statistics including registration of births and deaths
- Public amenities including street lighting, parking lots, bus stops and Public Conveniences

3.1.5. Nagar Nigam Jhansi (NNJ)

The NNJ is administered under the Uttar Pradesh Municipal Corporation Adhiniyam, 1959. The Act has been amended in 1994 by UP Act 12 of 1994 (wef 30 May, 1994), UP Act 26 of 1995 (wef 30 May 1995) and incorporates the amendments made in 74th CAA, 1992 including the functions given in 12th schedule of the constitution.

The duties and powers of the Corporation and Corporation authorities are detailed in Sections 114 of the said Act. The major functions being performed by Nagar Nigam Jhansi currently are:

- Public health, sanitation, conservancy and solid waste management
- Urban poverty alleviation
- Provision and maintenance of urban amenities and facilities such as parks, gardens, playgrounds.
- Provide and maintain the lighting of the public streets, corporation markets, and public buildings and other places vested in the corporation
- Maintenance of ambulance services
- Registration of vital statistics including births and deaths. Regulation of slaughter houses and tanneries
- Operation and Maintenance of burial grounds, cremation grounds, etc.

Though Water Supply and sewerage are also obligatory functions of Municipal Corporation as per the 12th schedule of 74th Constitutional Amendment Act (CAA), in the case of Jhansi they are looked after by Jhansi Jal Sansthan.

3.1.6. Organizational Structure

The corporation is divided into two wings, viz. elected wing and the administrative wing. The corporation has an elected Mayor-in-Council System. The administrative wing of the corporation is headed by a Municipal Commissioner appointed by state government and supported by two Add. Commissioners also appointed by the state government.

The Nagar Aayukt is the highest administrative body of Jhansi city. The Health Department (Swasth Vibhag) and Engineering Department (Nirman Vibhag) are the two executive bodies responsible for implementation of the solid waste management plan and civil infrastructure in the city, respectively. The Health Department is involved in planning and management of the SWM activities and in providing sanitary facilities to the residents of Jhansi. The Engineering department works in coordination with the Health department and undertakes civil and infrastructure development activities for the city. The Varisht Nagar Swasth Adhikari and the Chief engineer are the senior officers of the Health and Engineering departments respectively, who report to the Nagar Aayukt.

3.1.7. Jhansi Development Authority

The State Government established the Jhansi Development Authority in 1974. It has been responsible since its inception for providing infrastructure related development to Jhansi City as the city expands. It operates primarily at the outskirts of the NNJ area.

3.1.7.1. The major functions of JDA are:

- Overall development of city
- Making & implementation of Master Plan
- Planning for infrastructure for JDA colonies and its construction
- Zoning of the city
- Maintenance of JDA colonies till its handing over to Jhansi Nagar Nigam

3.1.8. UP Jal Nigam

In 1975 Uttar Pradesh Jal Nigam under the Uttar Pradesh Water Supply and Sewerage Act, 1975, was formed. Under the Uttar Pradesh Water Supply and Sewerage Act, 1975, UP Jal Nigam has to carry out the functions of preparation, execution, and promotion of water supply and sewerage schemes, state plans for water supply, sewerage and drainage and to establish standards for water supply and sewerage in the state.

3.1.9. U. P. Housing and Development Board

U.P. Housing and Development Board have been set up under the Act of 1965 in April 1966. It has been established to implement the various housing and development schemes in a planned way and to bring harmony by keeping in mind the state level and national level residential policy and programmes.

The main objectives of U.P. Housing and Development Board are to:

- Make the plan for all residence related activities in the urban areas and to get them implemented fast and in effective way;
- Receive grant and loan from central and state government, commercial bank, financial organizations, public bodies etc;
- Acquire the land and construct roads, electricity, water supply, and other urban facilities and to arrange and distribute the land and constructed houses according to the demand from registered people;
- Make special arrangement for the houses for the backward class and scheduled caste and tribe, security workers and freedom fighters.

3.2. Overlap of Institutional Responsibilities

The multiplicity of organizations involved in providing urban services makes the management of affairs of the city highly complex. It becomes essential to define the roles and responsibilities of each of the Agencies very clearly. The inter-relationships of various departments play an important role in making available good quality of services to the community /citizens of the city. More-over overlapping of some of the functions requires a high level of coordination. The following table indicates the service-wise planning, implementation and operation and maintenance function being carried out by various agencies involved in providing services in Jhansi Urban Area. It will be seen that many services are being provided by more than one agency resulting in avoidable delays at the time of handing over the assets who has to ultimately maintain them.

Table 9 : Institution's Responsibility

Sector	Planning	Implementation	Operation and Maintenance
Land use/ Master Plan/ Building Byelaws	JDA	JDA	JDA
Water supply	UPJN/ JDA/ UPHDB for colonies developed by them/ DUDA for slum area	JHANSI DIVISION, JAL SANSTHAN, UP/ UPJN/ DUDA for slum	JHANSI DIVISION, JAL SANSTHAN, UP
Sewerage		JHANSI DIVISION, JAL SANSTHAN, UP	JHANSI DIVISION, JAL SANSTHAN, UP
Roads/Bridges/Flyovers/RoB/ Multilevel Parking Traffic Control and Management Systems City Public transportation	PWD,JDA,NNJ SP Traffic, RTA,NNJ	NNJ/JDA/PWD/Housing Board/UPSIDC NNJ/Traffic Police	NNJ/JDA/PWD/Housing Board/UPSIDC NNJ/Traffic Police/RTO
Street Lighting	NNJ	NNJ	NNJ
Storm Water Drainage	NNJ	NNJ	NNJ
Solid Waste Management	NNJ	NNJ	NNJ
Parks/Playground/Beautification of Road Intersections/Urban Forest	NNJ, Forest ,JDA,UPHB	NNJ /JDA/Housing Board/Forest	NNJ/JDA/Housing Board/Forest
Air, Water and Noise Pollution Control	SPCB	Pollution Control Board	Pollution Control Board
Slum Development	NNJ,DUDA	DUDA	DUDA
Urban Poverty Programme	NNJ,DUDA	DUDA	DUDA
Housing for EWS	JDA/Housing Board/ DUDA	JDA/Housing Board/ DUDA	JDA/Housing Board, DUDA
Public Conveyance	R.T.O	R.T.O	R.T.O

3.3. Key Issues

Lack of clarity in local functions: The Constitution 74th Amendment Act, 1992 envisages that the functions listed in 12th schedule of the Constitution is entrusted to elected municipalities. This is with a view to minimize ambiguities and overlapping functions between local bodies and other authorities. However, in practice, several agencies are responsible for the functions and in some cases local bodies have no role.

3.3.1. Municipal-Parastatal Coordination

There is a Lack of coordination between urban local bodies and parastatals in areas such as inter-municipal, inter district and inter-state roads, Storm water drainage and sewerage, common amenities like whole -sale markets, truck terminals, bus stations, garbage dumping yards, landfill sites. The real problem is noticed in plan implementation. No clearly defined mechanism exists to take up such works in an integrated manner taking into account the geographical factors.

3.3.2. Managerial Coordination Issues

There are many managers connected with metropolitan service delivery and infrastructure management. All these make the task of metropolitan management highly complex and difficult. In addition to general coordination between urban and rural local authorities, there are several inter-departmental and inter institutional coordination issues, which arise in day to day administration of the metropolitan area.

3.3.3. Jurisdictional Issues

It is very difficult to arrive at a common boundary for all services. The geographical Area required for internalizing the costs and benefits of a service like urban transport, water supply, storm water drainage etc. If such matching is not ensured, there will be perennial problems of service revenues falling short of service costs, increased cost of public administration, and lack of integrated development and imposition of high social cost on the public. Thus it is important that the jurisdictional issues are sorted out carefully.

3.3.4. Grievance Redressal

The Grievance Redressal mechanism in the city is weak and the people are made to run from pillar to post for grievance redressal. There is also no proper platform to provide information to the citizens on all services. Lack of awareness and information is affecting the citizen's access to grievance redressal mechanisms. Though citizen's charters are established for the service providing agencies, majority of the public is not aware of the duties and rights under the same.

3.4. Financial Information for Municipal Service

3.4.1. Financial Profile of the City

The Income – Expenditure Accounts of the Nagar Nigam for the last financial years i.e. year 2009-10, 2010-11, 2011-12 were obtained and have been analyzed for the financial assessment. The current accounting system has been transfer to double entry accrual system i.e. Credit & Debit heads are maintained on cash receipt/ payment basis. Expenses on new projects are treated as Capital Expenditure and expenses towards maintenance are treated as Revenue Expenditure.

Table 10: Financial status of NNJ - Abstract Statement

	FY 2009-10	FY 2010-11	FY 2011-12
Opening Balance	445,203,355.10	259,440,928.76	95,780,802.06
Income			
Income Revenue	61,404,619.00	93,516,905.24	112,226,816.00
Income Capital	293,453,358.00	317,698,180.00	374,777,493.00
Income Suspense	837,567.00		
Grand Total of Income without Opening Balance	355,695,544.00	411,215,085.24	487,004,309.00
Grand Total of Income with Opening Balance (A)	800,898,899.10	670,656,014.00	582,785,111.06

Expenditure			
Revenue Expenditure	264,918,361.70	262,812,493.00	320,537,505.14
Capital Expenditure	260,638,149.00	299,015,783.00	200,509,808.00
Suspense Expenditure	808,255.50	-164,779.00	
Grand Total of Expenses (B)	526,364,766.20	561,663,497.00	521,047,313.14
Grand Total of Expenses Payable (C)	-8,662,422.00	-5,198,139.00	-85,297.00
Grand Total of Net Expenditure (D = (B-C))	517,702,344.20	556,465,358.00	520,962,016.14
Closing Balance (A-D)	283,196,554.90	114,190,656.00	61,823,094.92
Grand Total	800,898,899.10	670,656,014.00	582,785,111.06

Source: Nagar Nigam Jhansi, 2011

3.4.2. Water Supply

Table 11 Cost in Water supply services

COST RECOVERY IN WATER SUPPLY SERVICES	69.26 %
	Rs. Lakh
Financial Information - Operating Expenses	
Regular Staff and administration	212.68
Outsourced/Contract Staff Costs	17.22
Electricity Charges/Fuel Costs	387.42
Chemical Costs	17.20
Repairs/Maintenance Costs	167.00
Bulk (Raw/Treated) Water Charges	0.65
Other Costs	2.00
Total Operating Expenditure	804.17

Source: Nagar Nigam Jhansi, 2011

Financial Information - Operating Revenues	Rs. Lakh
Arrears at the beginning of previous year (2009-10)	1045.99
Revenue demand from user charges	557.00
Revenue demand from tax/cess - Water Service only	0.00
Revenue demand from other revenues (eg. connection costs/Donations etc)	0.00
Total Revenue Demand for previous year	557.00

Source: Nagar Nigam Jhansi, 2011

COLLECTION EFFICIENCY OF WATER SUPPLY RELATED CHARGES	58.84 %
	Rs. Lakh

Total Revenue Demand for previous year (from user charges, taxes etc)	557.00
Collection against arrears (2009-10)	81.95
Collection against the current demand of previous year (2009-10)	327.76

3.4.3. Sewage and Solid Waste Management

Financial information on Sewage and Waste Water Management as well Solid Waste arrangement is not readily available.

CHAPTER 4. SERVICE PROFILEAND SITUATION ANALYSIS

TOPICS OF DISCUSSION

- **Section A: SERVICE PROFILE OF THE CITY**
  - **Water supply system**
  - **Storm water drainage system**
  - **Solid waste management system**
  - **Sanitation facilities**
- **Section B : SITUATION ANALYSIS**

4.1. General Profile

Table 12 below captures the general information of Nagar Nigam Jhansi :

Table 11: General Profile of City

Census	2001	2011
Population	470212	507293
Number of Households	73400	
Family Size	6.6	6.4
Number of Slums	57	57
Number of Slum HHs	31825	
Number of Properties	73400	
Number of Election Wards	60	
City Area (sq km)	168	168
Population Density	2155	
Number of Commercial and other establishments (offices, institutions, markets), Hotels and Restaurants	318	

Source: Nagar Nigam Jhansi, 2011

4.2. Water Supply System

4.2.1. Sources of water

Table 12: Water Supply Sources

List of Surface water sources:	List of Ground water sources:
1. Matateela dam 2. Pahuj dam	(1) Tube well -14 (2) Open well-15 Total -29

Source: Jhansi Division, Jal Sansthan, UP& Nagar Nigam Jhansi, 2011

Almost 66% of the city population gets the piped water supply. The main sources of water are river Betwa and local underground water. Jal Sansthan Jhansi is responsible for water supply and Water Production. The water distribution system map is given in Map 3.

Table 13: Water Production Capacity

Water Production	Installed Capacity of Treatment Plants (MLD)	Volume of water produced (MLD)
Surface Water Sources	12	10
Ground Water Sources	3	3
Other Sources		58.76
Total	15	71.76

Source: Nagar Nigam Jhansi, 2011

4.2.2. Transmission, Distribution and Storage Capacities

Most of the pipelines network is in satisfactory condition but pipelines leakage /wastages occur because of illegal tapings and connections.

Table 14: Water supply network

Data	Total	Working	Not working/disconnected
No. Of Power Bores	2563	2493	70
No. Of Bore wells	14	12	2

No. Of Storage Reservoirs	12 CWR + 15 OHT = 27 Nos.
Length of Distribution Network	287 km.
Number of PSPs (Public Stand Posts)	578 nos.
No. Of water tankers	32 nos.
Total water Supplied daily	71.18 MLD

Source: Jhansi Division, Jal Sansthan, UP& Nagar Nigam Jhansi, 2010

4.2.3. Coverage

Table 15: Coverage of Water Supply

	Metered Functional	Metered Non-Functional	Unmetered	Total
Domestic Connections	12497	18745	410	31652
Bulk supply Apartments	0	4	0	4
Bulk supply Layouts/Societies	0	0	0	0
Non domestic incl. commercial/Indus/Instl.	186	278		464
Public taps	0	0		
Total Number of Water Supply Connections	12683	19027	410	32120

Source: SLB Data, Nagar Nigam Jhansi

4.2.4. Water Consumption

Table 16: Water Consumption

Water Consumption	Volume of water billed (MLD)

Domestic Connections	36.34
Bulk supply Apartments	4.14
Volume of water billed from Bulk supply Layouts/Societies	0
Non domestic Connections	1.2
Public taps	0
any other sources	0
Total	41.68

Source: SLB Data, Nagar Nigam Jhansi

4.2.5. Water Quality

Table 17: Treated Water Quality Surveillance

Treated Water Quality Surveillance	Total Samples taken	No of Samples Passed
Residual Chlorine tests	15020	15020
Physical and Chemical tests	26	26
Total Samples taken for Bacteriological tests	26	26
Total Number of Samples taken for all types of tests	15072	15072
Quality of Water Supplied (%)	100%	

Source: SLB Data, Nagar Nigam Jhansi

Water Treatment

Table 18: Water treatment plants

Location of WTP	Distance from City "Km"	Designed / Installed Capacity (MLD)	Production
1. Babeena old WTP 2. Babeena new WTP 3. Pahuj WTP	28 Km. 28 Km. 8 Km.	45 MLD 110 MLD 13.6 MLD	40 MLD 102 MLD* 10 MLD

*Approx. 25 MLD supplied to Jhansi city
Source: Jhansi Division, Jal Sansthan, UP& Nagar Nigam Jhansi, 2011

4.2.6. Tariff Structure and Customer Services

4.2.6.1. Water tariff is 101.65 per month

4.2.6.2. Customer services

Table 19: Redressal of complaints

Efficiency of Redressal of Complaints	%	83.8%
Complaints received during the year	Number	2190
Complaints resolved within 24 hours during the year	Number	1835

Source: SLB Data, Nagar Nigam Jhansi

4.2.7. Staff Structure

Table 20: Staff Structure

Staff Information		
	Sanctioned	Working
Senior Management	1	1
Engineers	11	10
Clerks/Accountants	28	31
Work Inspectors/Meter Readers	0	0
Electricians/Fitters	2	2
Lines men/plumbers	12	12
Labourers/Cleaners	66	71
Total	120	127

Source: SLB Data, Nagar Nigam Jhansi

4.2.8. Water Supply SLB Indicators

Table 21: Water Supply SLB Indicators

WATER SUPPLY SLB INDICATOR		
Indicator	SLB	Value
Coverage of water supply connections (%)	100	34.8 %
Per capita available of water at consumer end (L)	135	79.3
Extent of metering of water connections (%)	100	39.5 %
Extent of Non-Revenue Water (%)	20	41.9 %
Continuity of water supply (hrs)	24	3.0
Efficiency in redressal of customer complaints (%)	80	83.8 %
Quality of water supplied (%)	100	100 %
Cost recovery in water supply services (%)	100	69.3 %
Efficiency in collection of water supply related charges (%)	90	58.8 %

Source: SLB Data, Nagar Nigam Jhansi

4.3. Sewerage, Drainage and Sanitation

4.3.1. Waste Water Generation

Table 22: Waste Water Generation

	Volume of water consumed (MLD)	Volume of waste water generated (MLD)
Domestic Connections	36.34	29.072
Bulk supply - Apartments	4.14	3.312
Layouts/Societies	0	0
Non domestic Connections	1.2	0.96
Public taps	7.12	5.696
free supplies (other connections)		
Total	48.8	39.04

Source: SLB Data, Nagar Nigam Jhansi

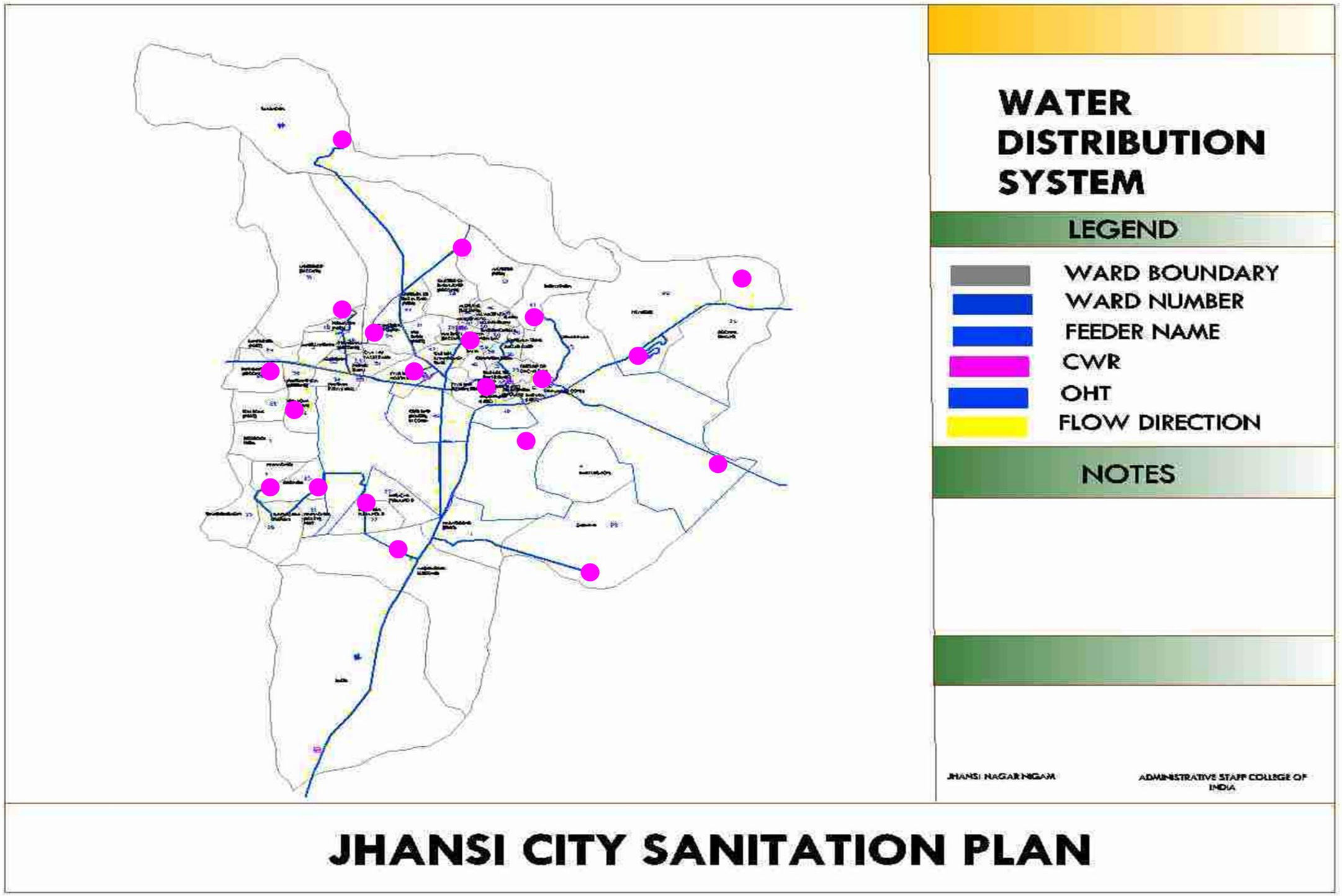
4.3.2. Sanitation Coverage

Table 23: Sanitation Coverage

Sanitation Coverage	Number	%
Total Number of Properties in the City	91000	
Properties with toilets	60000	65.93
Households dependent on functional community toilets	2900	3.18
Total Number of Properties without access to toilets	62900	69.12

Source: SLB Data, Nagar Nigam Jhansi

Map 3: Water Distribution System



4.3.3. SLB Indicators

Service level indicators for sewerage system are as follows.

Table 24; Sewerage SLB Indicators

SEWERAGE SERVICE INDICATOR VALUES		Unit %
Indicator	SLB	Value
Coverage of Toilets	100	69.1 %
Coverage of wastewater network services	100	-
Collection efficiency of wastewater networks	100	-
Adequacy of wastewater treatment capacity	100	-
Extent of reuse and recycling of treated waste water	20	-
Quality of wastewater treatment	100	-
Efficiency in 48address of customer complaints	80	-
Extent of cost recovery in wastewater management	100	-
Efficiency in collection of sewerage charges	90	-

Source: SLB Data, Nagar Nigam Jhansi

4.3.4. Storm Water Drainage Systems

Being situated on high ground, the city of Jhansi has always been well drained because of the natural slope. There is no serious problem of water logging or overflows during monsoon and water gets drained out very quickly. There are five major nallas in five circles i.e. 'Talaya Nalla' (Circle 1), 'Natwali Nalla' (Circle 2), 'V.R. Pump Nalla' (Circle 3), 'Kachha Pulka Nallah' (Circle 4) and 'School PurNallah' (Circle 5) which connects to LaxmiTalab and from there, waste water finally goes to either Parisa Canal or Pahunj river.

The condition of small drains are satisfactory in developed colonies whereas the condition of big drains/nallas are bad being very old and generally get damaged during annual cleaning process by JCBs.

Major problem in the city is cleaning of nallas as 70% of nallas in Circle 1, Circle 2 and Circle 3 are encroached upon and same is the case with 50% of nallas in Circle 4 and 5. Residents have constructed houses/terrace on the nalla that hamper the proper cleaning and maintenance. This has been a serious problem over a period of time and needs immediate attention of the concerned authority.

Table 25: Length of pucca/kutcha/storm water/open drains

Type	Length (km.)
Length of pucca drains(Km)	1703
Length of Kutcha Drains (Km)	512
Length of storm water drains(Km)	719
Total Length of open drains(Km)	2419
Total Length of Road Network	1722

Source: Nagar Nigam Jhansi, 2011

4.3.4.1. Drains in City

There are 63 drains in the city of which 36 big and 27 small drains. It has been observed that the local residents dump their domestic solid waste in the nearby drains. There is no regular arrangement of cleaning of these drains. Drains annual cleaning starts from 1st April every year before the start of monsoon season.

The storm water drains within the city are constructed of natural stones while those towards the outskirts are made of earth (kuchha drains). A list of primary and secondary drains is given in Annexure.

Water logging is prevalent in some of the areas during the rainy season like Sangam Vihar at Minor Canal, Gadiya Gaon etc.

4.3.5. Coverage of Storm Water Drainage

Table 26: Coverage of Storm Water Drainage

Coverage of Storm Water Drainage Network	61.37%
Total Length of Road Network	277 km
Total Length of Pucca covered drains	170 km

Figure 5: Water Logging at Gadiyagaon

Source: ASCI Survey, 2011-12

4.4. Solid Waste Management

4.4.1. Generation of Solid waste

The waste generated from the city includes household waste, commercial waste, bio-medical waste and industrial waste.

Following are the major sources of generation of waste at city level:

- Residential establishments,
- Commercial establishments,
- Hotels & Restaurants,
- Bazaar and vegetable markets,
- Industrial establishments,
- Hospitals and dispensaries,
- Slaughter houses,
- Street sweeping,
- Drain silt and
- Construction debris.

About 300 MT of solid waste is generated every day in the city, which comes out to be about 500 grams per capita per day. For the purpose of solid waste management the city is divided into 5 sanitary wards/circle. Each sanitary ward/circle comprises 12 wards and is managed by a Sanitary Inspector.

Table 27: Waste Generation

Category	MT / Day	MT / Month
Residential	85	2550
Street Sweeping	150	4500
Commercial Establishments	10	300
Hotels/Restaurants/Marriage/Banquet Hall	25	750
Markets (e.g. Vegetable markets, mandis)	10	300
Other (construction & demolition waste, horticulture waste, drain silt)	20	600
Total	300	9000

Source: Nagar Nigam Jhansi, 2011

a. Residential Establishments

The residents in the residential areas dump their household waste outside their homes and in some cases in Dumper Placer (DP) containers or on the streets (open dumps). The open dumps are not designated by NNJ and are only temporary dumping places. As a pilot project, door to door collection has started in six wards but it is not being managed systematically because most the collected garbage is further dumped on roadside as shown below in Figure 3.2. The estimated total daily waste generated is around 85 MT from residential establishments.

Figure 6: Waste lying on the streets near Nehru Park, Jhansi

Source: ASCI Survey, 2011-12

b. Commercial Establishments

The commercial establishments are identified in the areas of Civil Lines, Nanak ganj, Chaman ganj, Talpura, Masiha ganj, Shivaji Nagar, Awas Vikas, Nandanpura, Isaitola, Nainagarh, Nai Basti, Taksal, Gusaipura, Parwaran, Sarafa, Jharna Gate. These areas are mixed zones comprising of commercial (shops and markets) and residential areas as well as hotels and restaurants.

The waste from these establishments is accumulated in Dumper Placer (DP) containers or on the roads/streets side(open dumps) in the morning hours (7.00-11.00 AM.). Nagar Nigam Safai Karamcharis clean the roads/streets and market places and dump the waste in the nearby DP containers (if available)/open dumps. The estimated total waste generated from these areas is around 30 MT/day.

c. Hotels/Restaurants/Dhabas/Guest houses/Banquet/Marriage Halls

The waste from these establishments is mostly includes left-over food and disposable crockery. Workers from these establishments dump the wastes at nearby DP container/open dump from where the same is transported to designated dumpsite by Nagar Nigam. An estimate of the total waste generated from hotels, restaurants, dhabas, guest houses and banquet/marriage halls is 25 MT/day. The number of hotels/marriage halls in Jhansi city is given in Annexure.

d. Street Sweeping

Street sweeping starts in the morning at 7 AM and continues up to 12 PM. The sweepers are provided with jharoo(brooms), pans, favda, handcarts, panji (bamboo stick used to clean drains) and gayti (pointed favda to clean roads). They collect the waste on road/street sides, which is then transported to the nearby dustbins by means of handcarts and then transported to open dumping sites.

e. Drain Silt

Being situated on high ground, the city of Jhansi has always been well drained because of natural slope. But, of late, the drainage is inadequate as it is unable to cope with the developing demands of the city. The total length of pucca drains is 55 Km of which 14 Km is flushed daily.

At places, the waste generated from various sources is disposed off in storm water drains, which degrades over a period of time, thus becoming a part of the drain silt. The drains are cleared of the accumulated solid waste almost daily in few parts of the city. At other parts, the waste is left unattended for months and cleared before the monsoon season or when complaints are received from the local residents.

The cleared waste is left for drying for one to two days adjacent to the drains and then transported to the secondary collection points, from where they are disposed off to the dumpsites. The drain silt constitutes about 3.33% of the MSW generated in Jhansi city.

f. Construction and Demolition Sites

This waste varies from time to time depending upon the construction or demolition activities in Jhansi city. A major portion of this waste is generally used in reconstruction activities or for filling up of the low lying areas. The individual generating construction waste generally engages the services of private bullock carts or tractors to collect the construction waste and dump it elsewhere in the city for a nominal cost. As such, there are no standard practices for disposal of construction waste in Jhansi city.

4.4.2. Segregation of waste

There is no segregation of waste at source practiced in Jhansi.

4.4.3. Waste Collection

a. Primary Collection of Waste

Table 28: Waste Collection

Covered by Door to Door Collection	
Households	48963
Hotels and Restaurants	0
Commercial Establishments (institutions, offices)	0
Any other establishments (incl. markets)	0
Total	48963

Source: SLB Data, Nagar Nigam Jhansi

The primary collection of waste refers to door to door collection of waste or collection of wastes in the community waste bins either by the resident themselves or by the sanitary workers. There is no organized arrangement for door-to-door collection of waste in almost whole city except for some parts in the city. Community bins are also not available at convenient locations for depositing the waste. The waste from households, restaurants, shops is being dumped on the roads/streets side or thrown into the nalla, open drains, open spaces etc. It was also observed that the condition around the DP containers or dustbins is unhygienic and anaesthetic. There are a total of 419 DP containers/dustbins of which 305 dustbins are cleaned up every day. System of door to door collection is currently not in function and that need to be started again on priority.

Figure 7: Waste dumped outside the DP container at Khushipura slum, Jhansi

Source: ASCI Survey, 2011-12

Table 29: List of containers for solid waste disposal

S. No.	No. of Dustbins	No. of Handcarts	No. of big Containers	No. of small Containers	No. of Wells	Dumping Site, Open Dumping
1.	38	89	30	16	20	1. Outside Badagaon gate
2.	14	94	28	10	33	Aligol
3.	35	92	54	30	60	-
4.	26	128	44	20	60	Mailakitauriya
5.	35	128	33	24	42	-
Total	150	631	189	100	215	3

Source: Nagar Nigam Jhansi, 2011

Door to door collection was taking place in 6 wards (only households) as a pilot project by a private agency M/s APR Project Private Ltd. Around 7500 households are covered by door to door service. The places where door to door collection is taking place include Prem nagar, Narsingh RaoTauriya ward no. 44, Topekhana Bazar, Taraganj, Ambedkar Nagar, Taalpura, Civil Lines, Seepri Bazar, Nagar Nigam Campus-ward no. 52, New raiganj, Cantonment area, ward no. 6, Bara bazar ward no. 21, Pratap pura Nagar-ward no. 25, ward no. 45.System of door to door collection is currently not in function and that need to be started again on priority.

Figure 8: Door to door collection done in Taalpura, Nehru Park, Jhansi

Source: ASCI Survey, 2011-12

The waste collection timings generally range from 7.00 A.M. and 2.00 P.M. Irregular street sweeping is undertaken in most of the wards. In some areas it is done once a day like Narsingh Rao Tauriya, ward no. 60, Tope khana Bazar, Taraganj, Ambedkar Nagar, Taalpura, Civil Lines, Seepri Bazar, Bara Bazar etc.

A summary of the collection methods from each of the waste generation source is given below:

- Old Jhansi, which is very densely populated, comes under circle 1 & 2 and has very narrow streets. Mostly MIG and LIG families are staying in these two circles. Waste generated from households is stored at non-cemented, empty places (open dumps) with no defined boundaries called dhalaos in local parlance. Tractors and three wheelers are used to transport the waste to nearby dumpsite (Khanti) located in Narayan Baam Road (Kallan Sahai Khanti) and Aligole. Approx. 70 to 90 MT of waste is generated from these two circles every day.
- Waste management at Circle 3 & 4 is more efficient as compared to Circle 1 & 2. This can be attributed to broader roads and literate population residing in these circles. Mostly MIG and HIG families are residing here. Here, there are more number of DP containers as compared to open dumps. Waste from residences, commercial places is dumped in the DP containers which are lifted by DP trucks and transported to the nearby Khanti. Dumpsite for circle 4 & 5 is Kallan Sahai Khanti and Sujay Khan Khanti. Approx. 60-70 MT of waste is generated from these two circles every day.
- Circle 5 comprises of slum and LIG households located at the outskirt of the city. There are no dhalaos or DP containers and most of the residents dump their household waste on the streets/roads side or kuccha drains. Safai karamcharis from NNJ collect the waste dumped outside once in three days at the open dump site from where it is lifted by trucks and tractors and transported to the nearby Khanti for circle 5 behind Gardia village. Being located at the outskirt and poor people are living here, it is the most neglected circle of the Nagar Nigam. The estimated waste generated from this circle is 35 MT per day.

b. Secondary Waste Collection System

The MSW collected from each of the primary collection points mentioned above is transported to the DP containers (if available) or open dumps, which are the secondary collection points identified in Jhansi city. Most of the waste is transported manually (by means of handcarts) to the secondary collection points. In some cases, JCB loaders are used for transferring the waste into the tractor trolleys, which in turn are used to transport the waste to Khanti. In addition, the JCB loaders are also used to transfer the construction and demolition waste as and when a complaint is filed with Nagar Nigam.

The major secondary collection points are located at Subhash Ganj, Machhli Market, Dubey ki Pulia, Inside Lakshmi Gate, Outside Bara Gaon Gate, Inside of Saiyer Gate(Circle 1),Datia Gate, Unnao Gate, NaiBasti, Pathauria, Punch Kuian, Kunj Riyana Tanki(Circle 2),Near PNB Bank, Near SBI, Near Kasai Mandi, Khanderao Gate, Chitra Chauraha, Kambal Mill, Near Bus stand(Circle 3),Sipri Market, Nehru Park, Nandanpura Mohalla, AwasVikas A & B Block(Circle 4),Kastoorba Inter college, Prem Nagar Thana, Mahaveer Shanker Ji Temple, Hasari Depot, Power House, (Circle 5)

The waste is collected from the secondary collection points in three to four trips per day between 7 AM and 2 PM. The estimated collection efficiency is 70%.

4.4.4. Transportation of waste

i) Transportation Equipment/Vehicles

At present, Nagar Nigam Jhansi has close to 63 waste transportation vehicles, used for day-to-day collection/transportation of waste. In addition to these, Nagar Nigam has close to 300 handcarts for transportation of waste. These vehicles make three to four trips per day for collecting and transporting the MSW from secondary collection points to the waste dump sites (khanties). The table below provides the details of each of these collection and transportation vehicles, furnished by NNJ. These vehicles transport about 210 MT/day of MSW.

Table 30: Details of transportation equipment

Vehicles	Number of vehicles used	Capacity of each Vehicle (MT)	Total number of trips made by each vehicle each day to the disposal site	Total quantity of waste collected MT/Month
Lorries	12	3	3	3240
Dumper Placer	5	2	4	1200
Mini Lorries				
Tractor Trailers	14	2	3	2520
Tipper Trucks				
3 Wheeler Auto Tippers				
Total Quantity of waste collected and transported to disposal site				6960
efficiency of collection of municipal solid waste				77.33 %

Source: SLB Data, Nagar Nigam Jhansi

ii) Routing of vehicles

The drivers of vehicles used for transportation of MSW reach the workshop located in Civil Lines (adjacent to NNJ Office) in the wee hours of morning (6.30 a.m.) where they are briefed by respective Sanitary Inspectors regarding the locations from where the waste is to be collected and route to be followed. However, it is confirmed by NNJ that there are no specific routes followed by drivers as the location from where waste is to be lifted but keeps on changing on day to day basis. Based on quantity of waste at a particular location, JCB/loader is allocated along with Tipper. The drivers are required to make entries in logbook in the afternoon when they return from work regarding the amount of fuel used, number of locations visited, timing, etc.

The existing five dumpsites (Khanties) are located within the municipal limits. The vehicles make three to four trips per day to transport the MSW to these Khanties.

iii) Transfer Stations

There is no transfer station as part of the MSW transportation process. The waste collected from secondary collection points is directly sent to the dumpsites (Khanties) located within city limits.

iv) Workshop

The vehicles engaged in transportation of MSW are serviced at a workshop adjacent to NNJ office at Civil Lines. The workshop has a puncture, denting, welding, washing bay and mechanical repairs facilities.

4.4.5. Waste Processing and Disposal mechanisms

This section describes the waste processing and disposal methods for each type of wastes adopted in Jhansi city. Various types of wastes were identified in Jhansi city-recyclables, bio-degradable wastes, and non-biodegradable wastes.

a. Recyclable Wastes

The recyclable wastes (polythene, plastics, paper, cartons, etc.) are segregated manually by rag-pickers. The rag-pickers in turn sell the same to scrap dealers (kabadiwalas) at the nominal rates. However, rag pickers do not exploit the recyclable waste to the maximum extent, thereby allowing them to be a part of the dumpsite waste.

b. Bio-degradable Wastes

Bio-degradable waste is not segregated either at the primary or secondary collection points or at dumping sites. Most of the bio-degradable waste is found to be grazed upon by cattle at temporary open dumps resulting in waste being littered here and there, thereby leading to unhygienic and dirty conditions.

Figure 9: solid waste dumped on roadside, Jhansi

Source: ASCI Survey, 2011-12

c. Non-biodegradable Wastes

Street sweepings and drain silt is a major constituent of the non-biodegradable wastes. This waste is disposed off at the dumping sites along with other wastes without any prior processing.

4.4.6. Dump site

The existing SWM system for Jhansi does not have a designated engineered sanitary landfill for disposal of solid waste. The waste collected from secondary collection points is dumped in an unorganized manner at the four designated dumpsites (Khanties) which are 25-30 years old. Around 250MT/day is dumped at these dump sites while the total waste generated is 300 MT/day. Thus, 50MT/day of waste lies unattended in the city. There is no weighbridge available at these dumpsites. Daily records of waste received at these dumpsites are maintained.

Nagar Nigam Jhansi has identified about 15 acres of land in Bijholi for setting up an Integrated Sanitary Landfill Facility (ISLF). M/s APR Project Private Ltd., Hyderabad is developing ISLF at Bijholi site.

Figure 10: Integrated Solid waste management plant under Construction



Source: ASCI Survey, 2011-12

Table 31: Location of Existing Dumpsites in Jhansi

S. No.	Name/Location of dumpsite (Khanti)	Size(acres)
1	Sipari Maila Kitoriya, Masiha ganj	5
2	Aligole Khanti, Bahar Datiya Gate	5
3	Sujay Khan Khanti, Khirki	2
4	Kallan Sahai Khanti, Narayan Baam Road	4
5	Behind Gadiya Village Khanti	3

Source: ASCI Survey, 2011-12

4.4.7. Quantification and Characterization of Waste

The total waste generation in Jhansi city is 300MT/day (approximately). Since a major portion of the waste is dumped into open drains (nallas), which is eventually converted into drain silt, it is difficult to characterize the waste into its various components.

Table 32: Characterization of MSW in Jhansi

Waste Characteristic	Percentage(%) of total waste
Recyclables (paper, rubber, synthetics, glass and metals)	8
Bio-degradable	42
Inert material (sand, soil, construction waste, drain silt)	50
Total	100

Source: Nagar Nigam Jhansi, 2011

4.4.8. Manpower engaged in MSW Management

Table 33: Manpower engaged for MSW Management

Staff Information	Sanctioned	Working
Senior Management-Health Officer	1	1
Sanitary Inspector	10	7
Sanitary Supervisor	27	25
Maistries / SafaiKaramchari	539	408
Cleaners/Drivers	9	4
Labourers		
Others Specify		
Total (Sanctioned)	586	445

Source: SLB Data, Nagar Nigam Jhansi

4.4.9. SLB Indicators

Service level Benchmark for Municipal Solid Waste Management for Jhansi Municipal Corporation is as follows.

Table 34: Solid Waste Management SLB Indicators

Solid Waste Management Indicators		
Indicators	SLB	Result Unit %
Household level coverage of solid waste management services	100	53.6 %
Efficiency of collection of municipal solid waste	100	77.3 %
Extent of segregation of municipal solid waste	100	-
Extent of municipal solid waste recovered	80	-
Extent of scientific disposal of municipal solid waste	100	-
Extent of cost recovery in solid waste management services	100	-
Efficiency in collection of solid waste management charges	90	-
Efficiency in redressal of customer complaints	80	-

Source: SLB Data, Nagar Nigam Jhansi

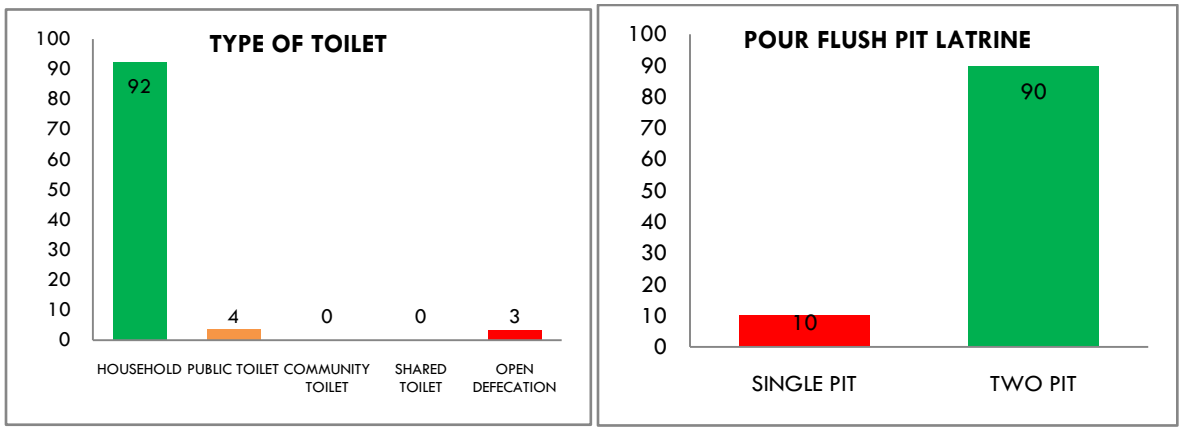
Section B: Situation Analysis

A survey was conducted of around 300 households in the notified slum areas to know the present sanitation situation of the city. The average household size is around 5.3. An analysis of the survey results was done and is as below:

4.5. Sanitation Situation at Households

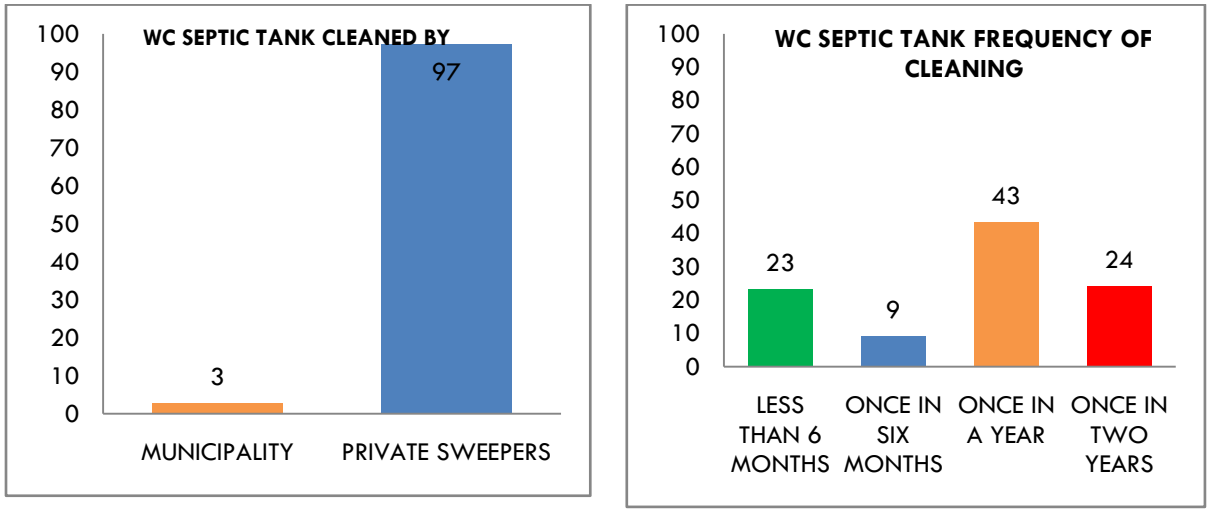
4.5.1. Type of toilet

Almost 92 % of households are having access to individual toilets 4% households have access to public toilets and 3 % households reported for practicing open defecation. Those having individual toilets out of them 90 % are having two-pit latrine and 10% are with single pit latrine.



Source: ASCI Survey, 2011-12

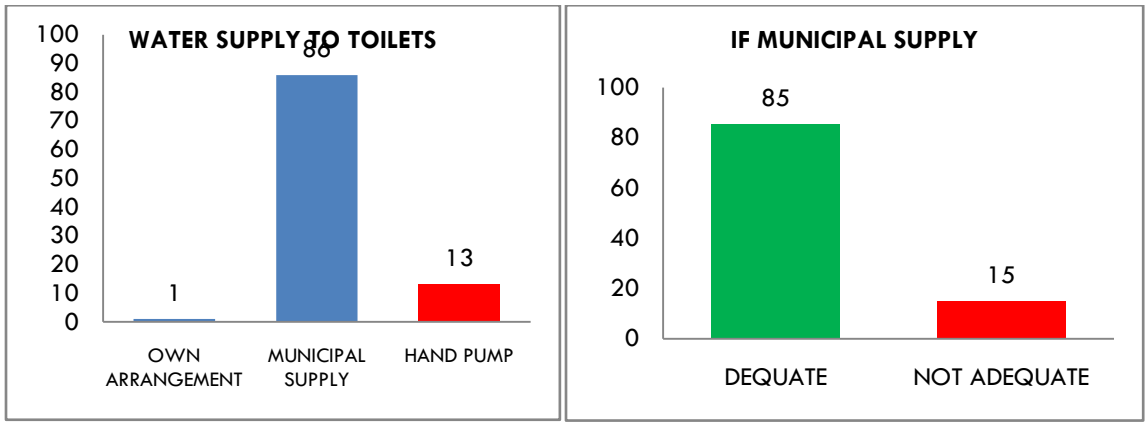
Cleaning of toilets and is majorly executed with the help of private sweepers although frequency of cleaning of toilets is not very encouraging. Only 23% HHs reported to clean toilets in span of less than 6 months. More than 60% HHs clean their toilets once in a year or two.



Source: ASCI Survey, 2011-12

4.5.2. Water supply to toilets

The people are dependant mostly on the municipal water supply. 13 % of HHs have to fetch water from hand pumps. Those who access municipal water supply 85% of then reported to receive adequate water while 15% HHs do not receive adequate water supply.



Source: ASCI Survey, 2011-12

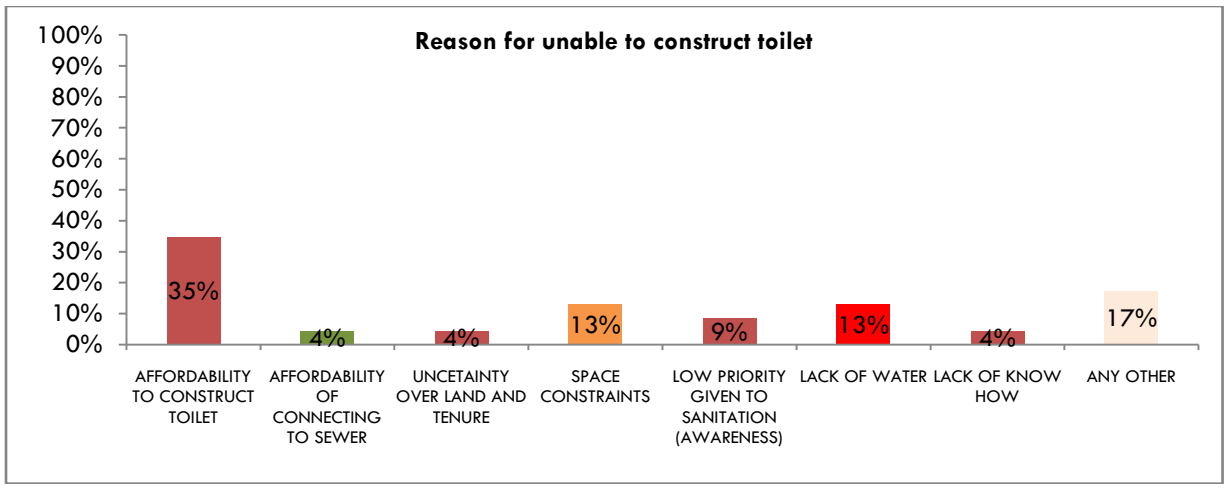
4.5.3. HHs depending on community toilets

Almost 4000 household are using Public/Community toilets. People prefer monthly pass for using these toilets. It has been noticed that children are not allowed to use the community toilets and thus children defecate openly in the drains near to their houses.

The community toilet are shown on Map 4.

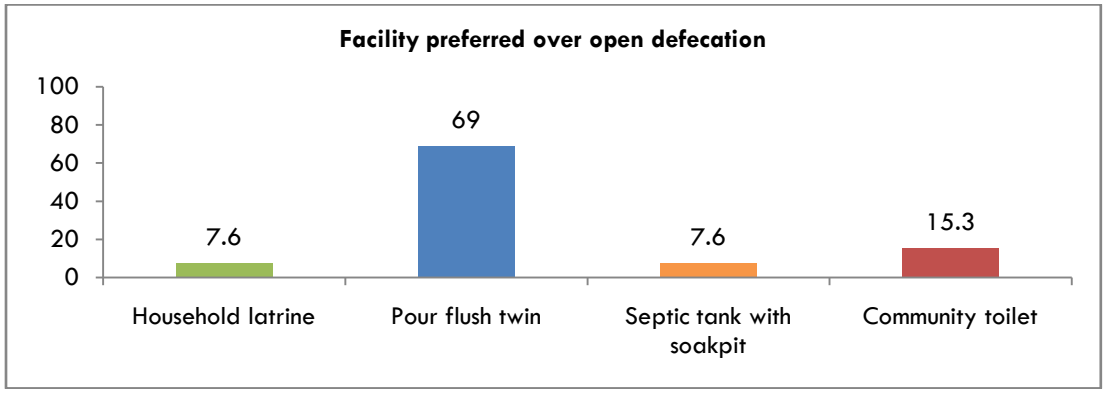
Most of the people are not satisfied with the present O&M system because of lack of facilities and poor maintenance of the community toilet. Around 35% of the people are not able to construct toilet due to affordability and 13% of the people are unable to construct toilet due to space constraint. Similarly 13% HHs mentioned lack of reliable water supply as constrain to construct individual community toilet.

The open defecation areas are shown on Map 5.



Source: ASCI Survey, 2011-12

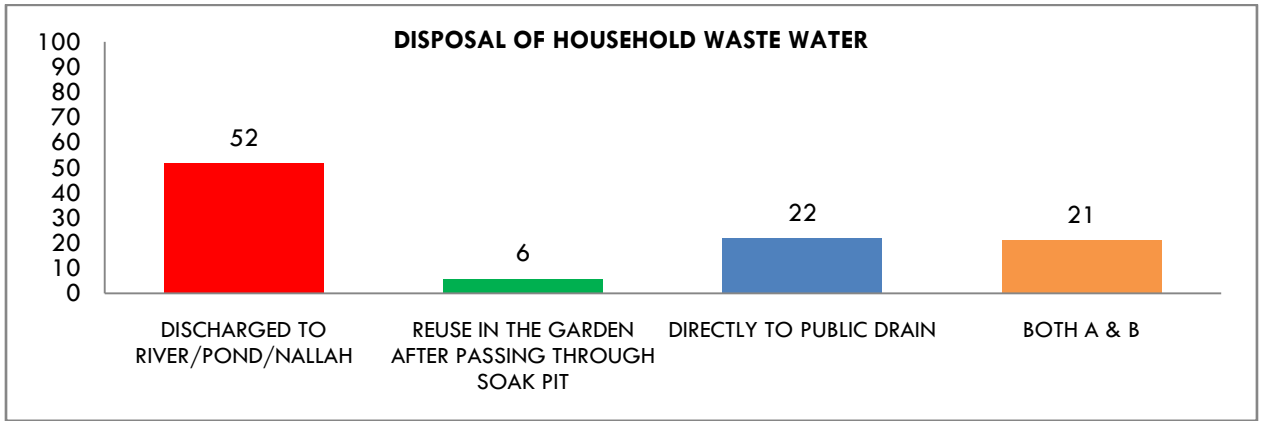
The following graph shows the people preference of types of toilet over open defecation. 69% of the people prefer pour flush toilet over open defecation. Around 15% of the people prefer community toilets.



Source: ASCI Survey, 2011-12

4.5.4. Wastewater disposal

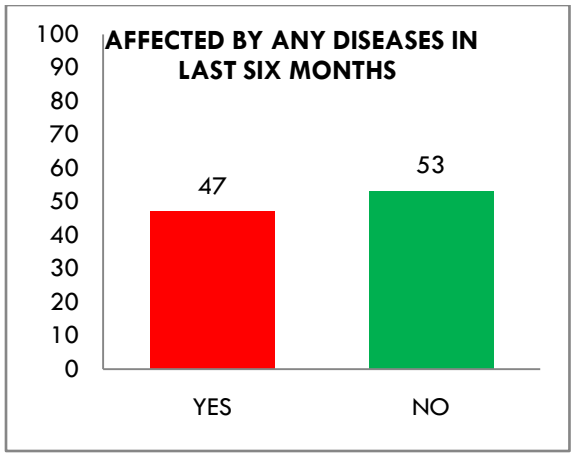
About 52% HHS dispose wastewater (from kitchen/bath/wash other than latrine) directly into public drain/nalla/talab remaining 22% dispose waste water directly into municipal drains and 6% HHs reuse waste water after passing through soak pit.

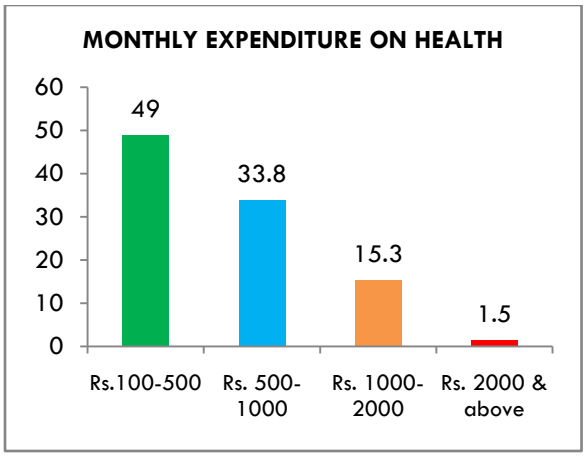


Source: ASCI Survey, 2011-12

4.5.5. Expenditure on Health

According to survey, the diseases which affect the people most are cholera(25%), malaria(25%) and skin diseases (23%).The other diseases found in people are diarrhoea and amoebic dysentery. The graph below shows the percentage of people spending on health: It shows that 49% of the people spend Rs. 100-500 on health. Some 15.3% of the people are even spending Rs. 1000-2000 on health.

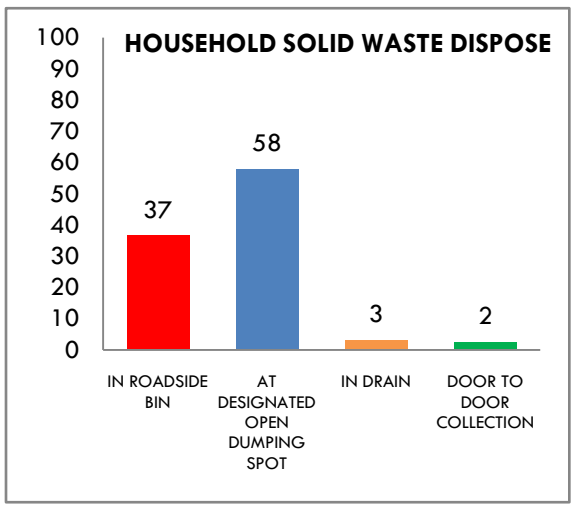


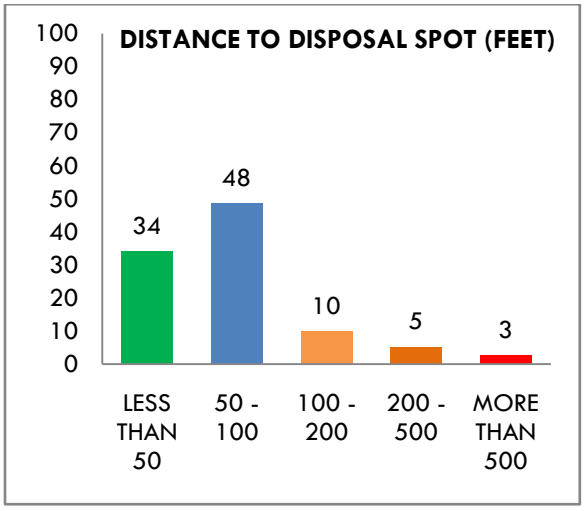


Source: ASCI Survey, 2011-12

4.5.6. Solid waste disposal

The solid waste is disposed at open dumping sites by about 58% of the households and 37% HHs dispose solid waste near roadside bins. Door to door collection of solid waste is collected only from 2% of HHS.



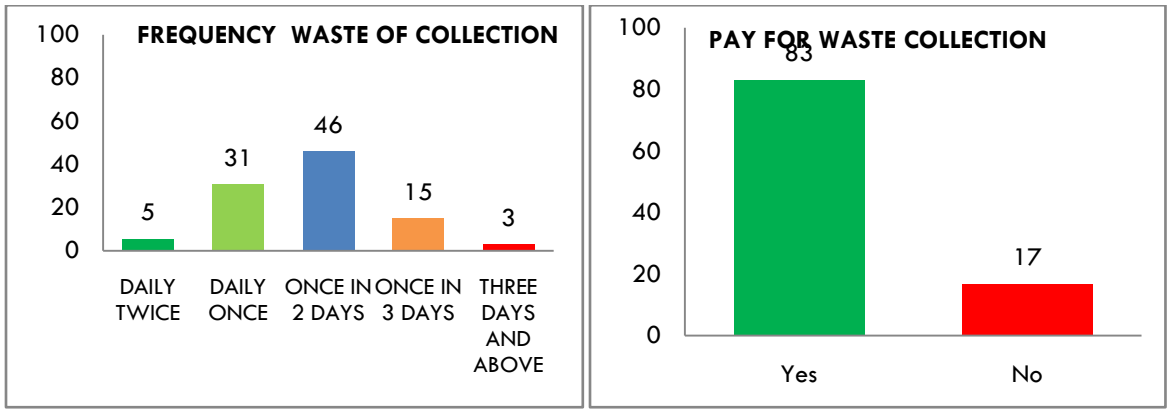


Source: ASCI Survey, 2011-12

The distance to disposal spot is 50-100 ft in most of the cases. The Nagar Nigam Safai Karamcharis lift the waste openly dumped in the residential localities. In few wards where door to door collection has started on pilot project, the residents payRs.10-20 per month.

4.5.7. Frequency of Collection of waste

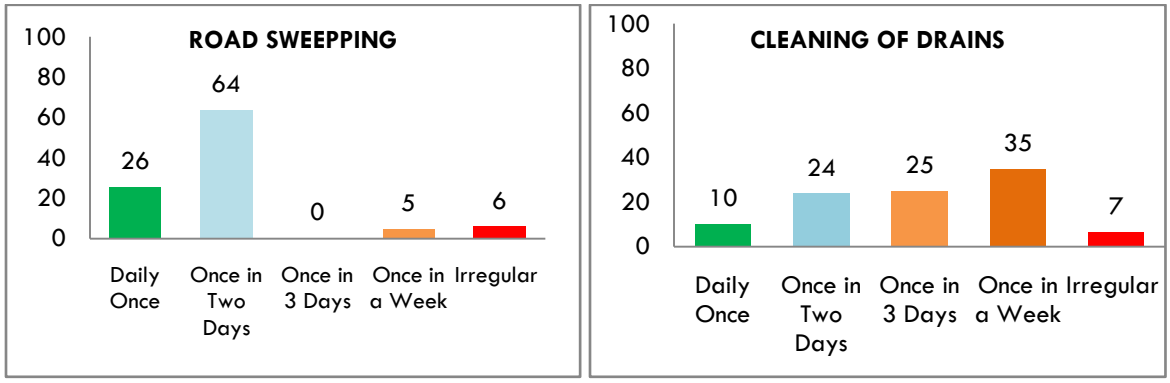
The orientation of citizens towards payment for waste collection is encouraging. 83% of HHs pays for waste collected from the locality. Frequency of waste collection need to be improved, from nearly 50% of HHs waste is collected once in two days and only 31% HHs waste is collected daily.



Source: ASCI Survey, 2011-12

4.5.8. Cleaning of Roads & Drains

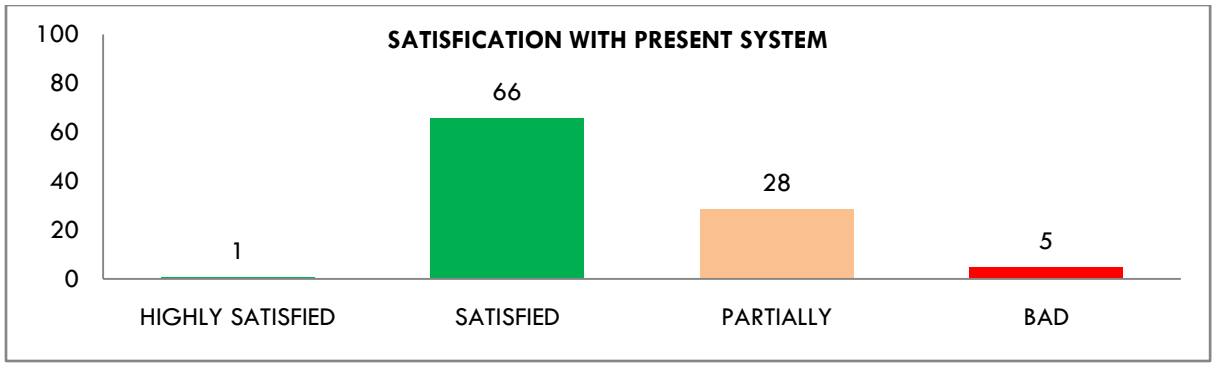
Road sweeping is done once in two days in most of the cases. The drains are cleaned mostly once in a week



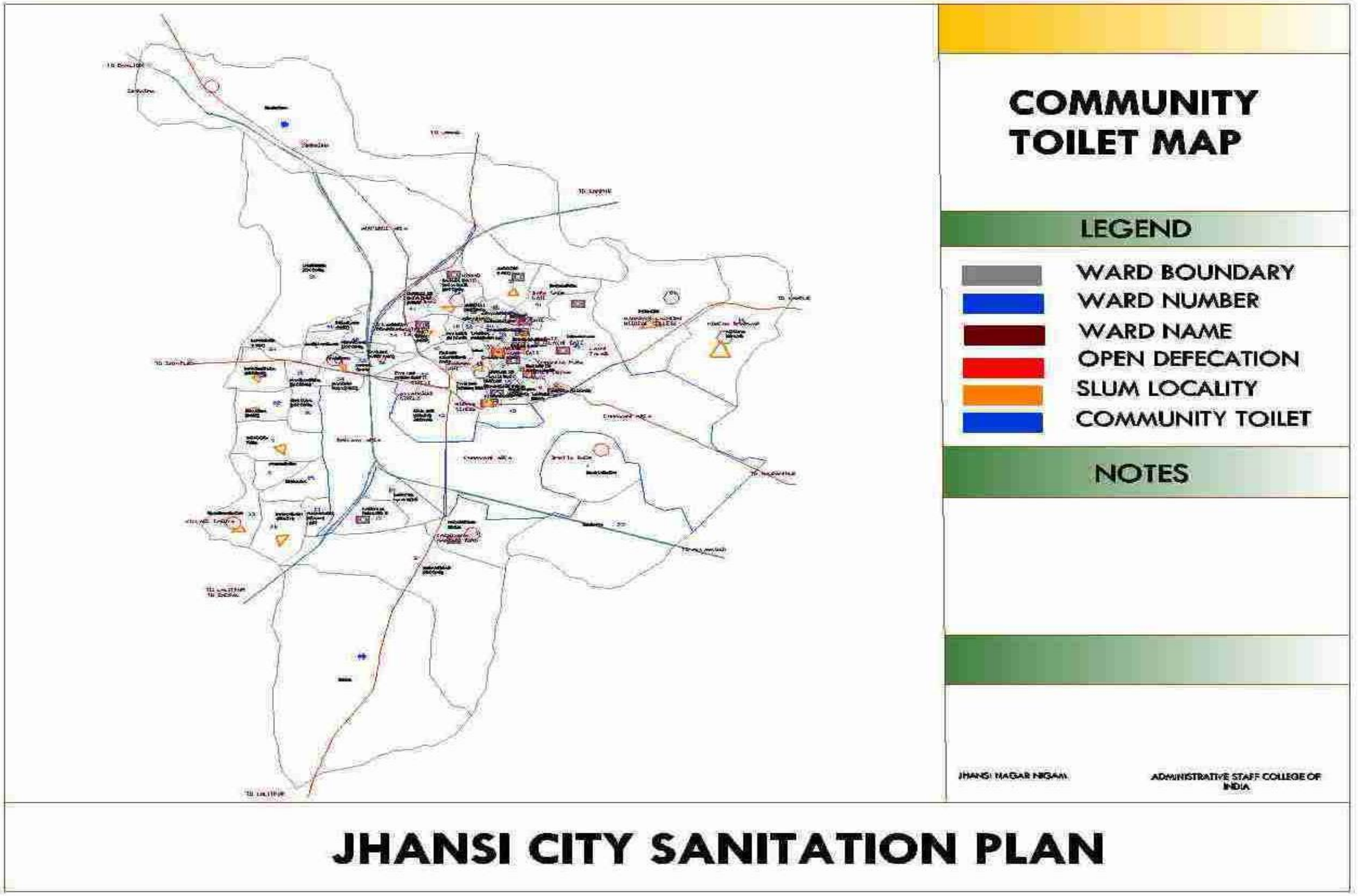
Source: ASCI Survey, 2011-12

4.5.9. Complaint redressal and level of Satisfaction

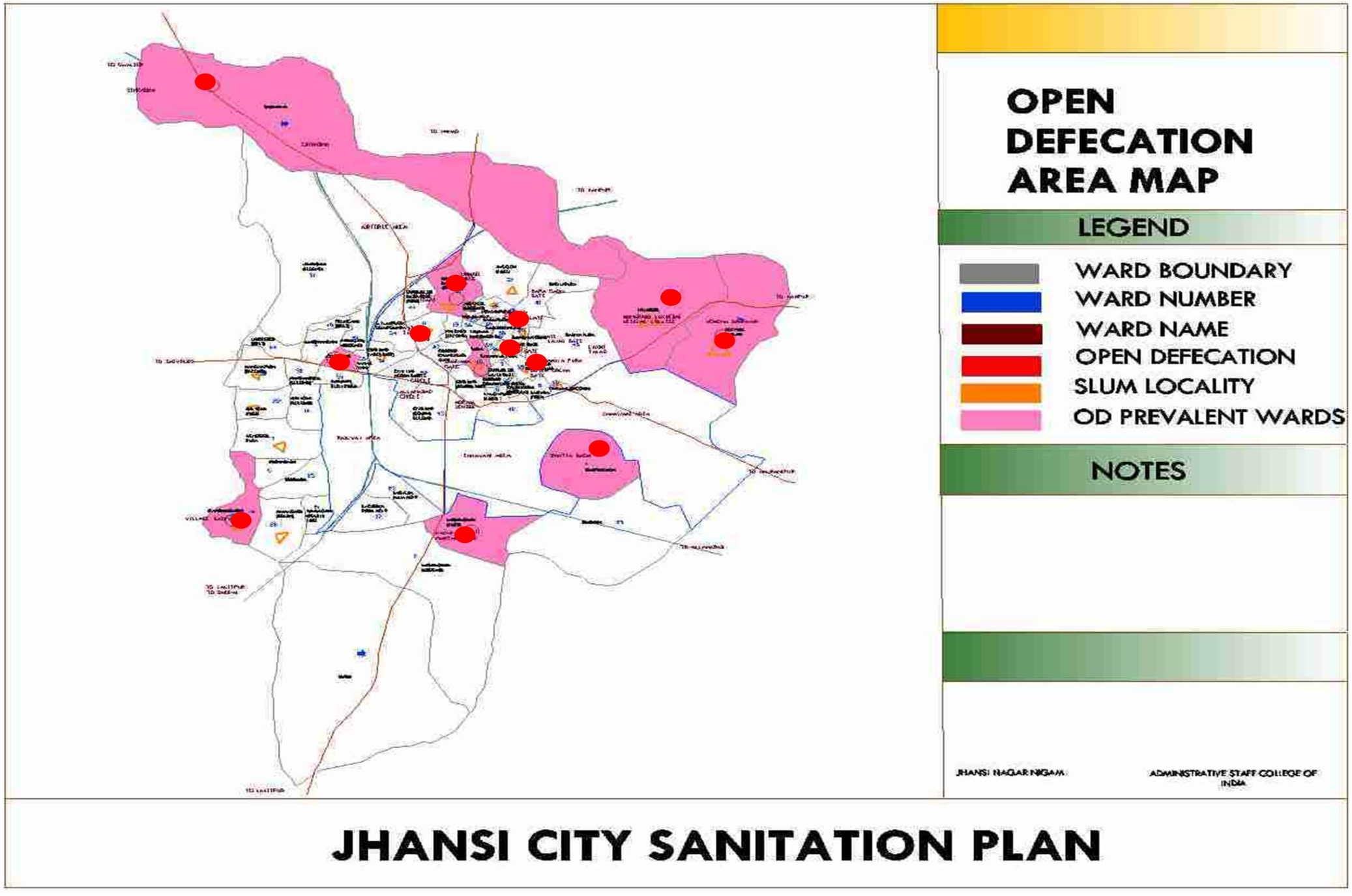
For making civic complaints, the citizen complaint redressal system is in place which is working quite efficiently and effectively. Besides this electronic complaints redressal system, people generally approach the respective ward corporator or the circle sanitary supervisor to lodge their complaints. Water leakages problems are solved within 24 hours, solid waste management problems may take more than a day and sanitation problems takes more than 3 days to be resolved. Overall satisfaction level of customers on municipal services reveals scope for improvement. 30% of HHs are not very satisfied with current sanitation services.


SATISFICATION WITH PRESENT SYSTEM
100
80
60
40
20
0
1
66
28
5
HIGHLY SATISFIED
SATISFIED
PARTIALLY
BAD

Map 4: Community Toilets in City



Map 5: Open Defecation Areas



4.6. Sanitation Situation of Community Toilets

Community toilets have been provided in Jhansi city by Nagar Nigam and NEDA/DUDA. A total of 27 community toilets have been provided by Nagar Nigam. A survey was conducted of 27 community toilets in Jhansi city. Specifically Community toilets at Masiha ganj (Nagar Nigam) and outside Seyar gate(DUDA) are closed. Toilets at Taal pura and Separi bazaar are in damaged condition The survey analysis and findings are as follows:

4.6.1. Type of latrine

The community toilets are pour flush type connected to the septic tanks.

4.6.2. Effluent Discharge

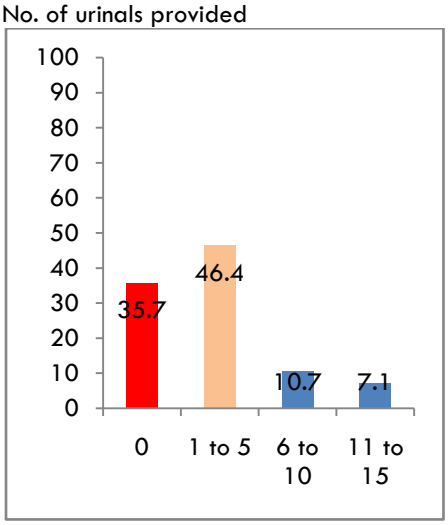
Around 50% of the toilets discharge the effluent into open drains/nalas. The community toilets of New Basti, Seepri bazaar, Collectry, outside Railway station, Ilat chowraha, Khushi pura, Masiha ganj and Nandan pura are discharging their effluent directly into the open drains and nallas.

The community toilets located at bus stand, Khushi pura, Gudri, Lakshmi gate, Bangla ghat, New Basti, Seyar gate and Talpura are having proper septic tanks with soakage pits and discharge their effulent in them.

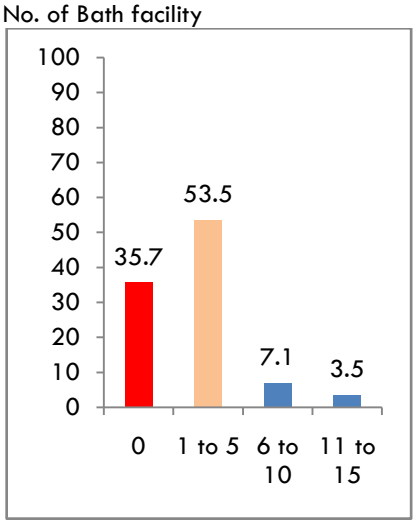
4.6.3. Urinals/Bathing/Washbasin Facilities

Percentage distribution of community toilets according to facility available

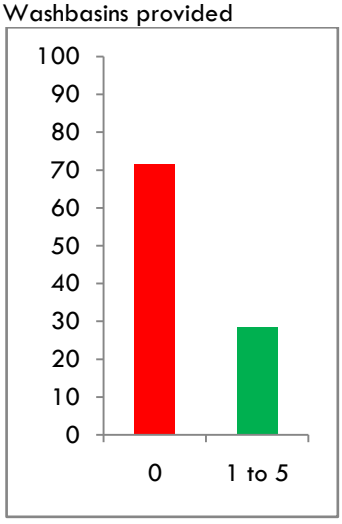
No. of urinals provided



No. of Bath facility

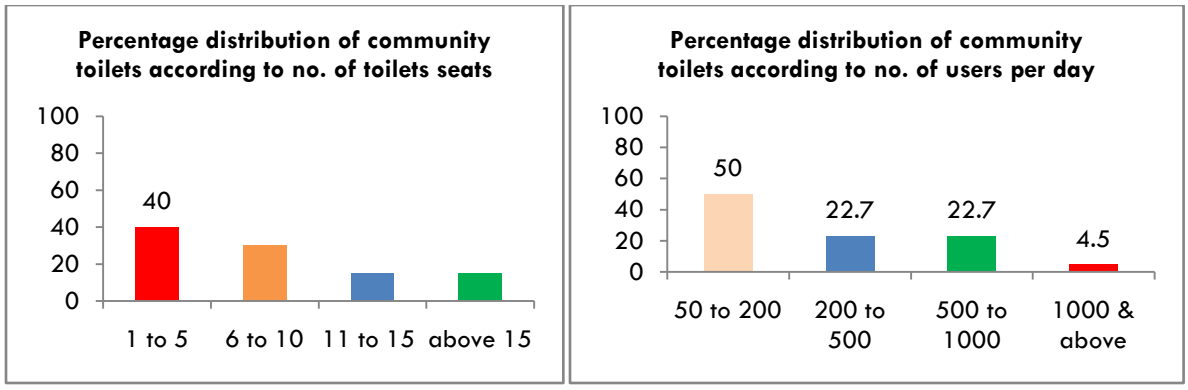


Washbasins provided



4.6.4. Number of toilets seats (male + female)

It shows that 40% of the community toilets have seats 1-5 in number, 30 % have 6-10 in number,15% have 11 -15 in number and 15% have seats above 15 in number. The above graph shows that in about 50% of the community toilets, the number of users per day range between 50 to 200.



Source: ASCI Survey, 2011-12

Figure 11: FGD at Khushipura and Gadiyagaon

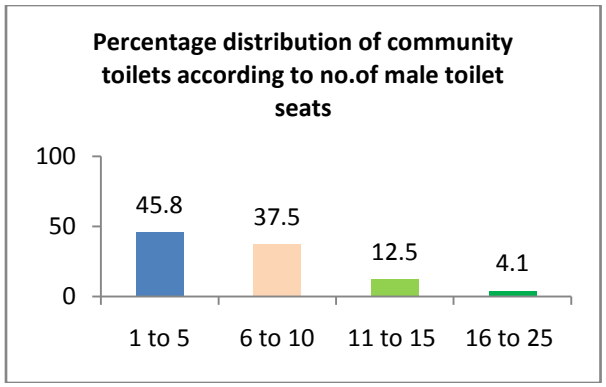
FGD-Khushipura | **FGD-GadiyaGaon**

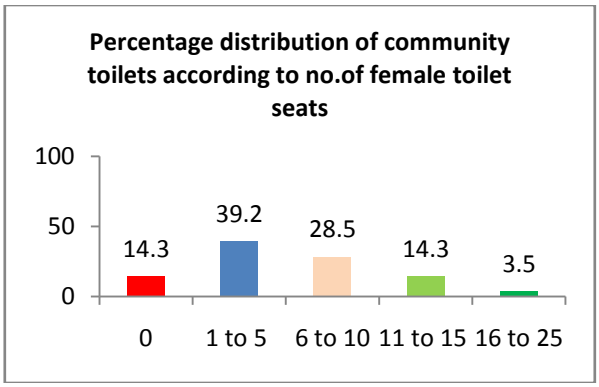
Source: ASCI Survey, 2011-12

4.6.5. Toilet seats for Male & Female

Around 46% of the toilets have male toilet seats 1 - 5 in number. 38% of the toilets have 6 - 10 number of male toilet seats, 13% have 11-15 number of male toilets and only 4% have 16-25 number of male toilet seats.

Around 39% of the toilets have female toilet sears 1 to 5 in number. Some toilets do not have female toilets at all. It shows that the numbers of female toilets are less than the number of male toilets provided.





Source: ASCI Survey, 2011-12

4.6.6. Condition of the toilets

The survey shows that in 44% of the toilets, the condition is bad and in 18% of the toilets it is worse i.e. they are unusable.

4.6.7. Cleaning and O & M Arrangements

According to the survey, 33% of the community toilets are not cleaned at all because there is no proper system in place to ensure their proper upkeep and maintenance. The community toilets in Jhansi city are maintained by Nagar Nigam, DUDA, NEDA and Sulabh but there is no overall control and responsibility ensuring their proper maintenance.

Figure 12: FGD at Community toilet-Khushipura

Source: ASCI Survey, 2011-12

Source: ASCI Survey, 2011-12

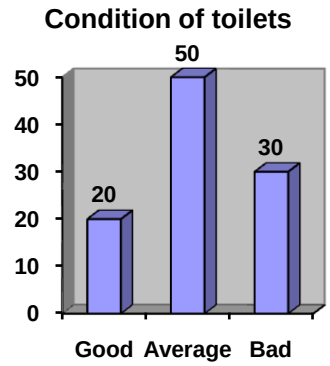
4.7. Sanitation Facilities & Situation In Institutional Areas

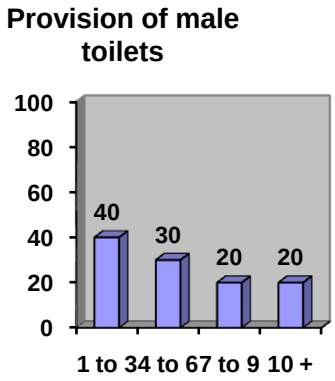
A survey was conducted of around 10 institutions namely Nagar nigam, Jal Nigam, I.S.B.T Jhansi, R.T.O., Jila dhikari Karyalaya, Tehsil, Basic Shiksha Adikari office, Jila Jail, Bal Samaj Kalyan Vibhag and Bhartiya Jeevan bima Nigam. The outcome of the survey as follows:

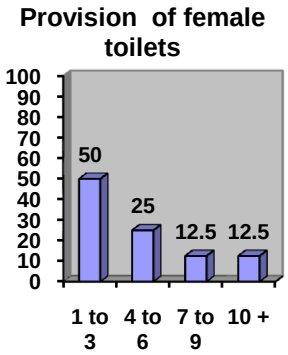
4.7.1. Condition of toilets

About 50% of the toilets facilities are in serviceable and satisfactory condition, 30% are in poor condition and thus not in usable condition and balance 20% are well maintained. There is no provision of separate toilets for males and females in 60% of the cases. The source of water supply is overhead tank.

Toilets at Institutions







Source: ASCI Survey, 2011-12

Around 40% of the institutions have 1-3 number of male toilets. 30% have 4-6 number of male toilets. Around 50% of the institutions have female toilets 1-3 in numbers, 25% have 4-6 in numbers.

4.8. Sanitation Facilities & Situation at Hospitals

Jhansi city has about 250 hospitals and nursing homes. These include government hospitals like Maharani Lakshmi Bai Medical College, district hospital, T.B. hospital, Ayurvedic hospital, and eye hospital and several privately owned hospitals and nursing homes. Most of the prominent hospitals including medical college and district hospital are located in Circle 1. These medical institutions have a total number of 1110 beds with an average occupancy rate of 60 percent. The list of hospitals and nursing homes is given in Annexure.

The medical establishments in Jhansi city generate approximately 0.70 kg/bed/day of total waste of which 0.27 kg/bed/day is bio-medical waste. Hence, the total estimated bio-medical wastes generated in Jhansi city is in the tune of 5-7 MT/day.

Table 35: Details of Hospital waste & Disposal:

Sr. No.	Name of Hospital	Daily waste	Means of Disposal	Remarks
1	Total - 250	5-7 MT/Day	Incineration	NPCC is managing bio- medical waste

Source: Jhansi Nagar Nigam, 2011

A survey was conducted in five hospitals and found that each pay Rs. 2000 to Rs. 7000 depending on the number of beds for the bio-medical waste disposal. The solid bio-medical waste is stored in the twin bins (green and blue) kept in each hospital/nursing home and lifted daily and sent to incinerator for the disposal. On discussion with Secretary, Indian Medical Association, Jhansi, it was noted that bio medical waste is lifted by an NGO viz. **National Pollution Control Company** (NPCC) and transported to

incinerator and for autoclaving at their plant located at the outskirt of city Bijholi. The bio-medical waste is dumped into both the bins (without being segregated) manually by safai karamcharis of hospitals/nursing homes who are illiterate and have no experience in handling of such wastes. NPCC charges Rs. 2.5 per bed/day for medical college and Rs. 3/bed/day for rest of medical institutions. But there is no mechanism for the scientific management of liquid waste and sludge from hospital cesspools. The liquid waste of the hospitals/nursing homes is directly discharged in to the nalas/drains. Also, there is no arrangement decentralised waste water treatment.

4.9. Sanitation Facilities & Situation at Schools

There are a total of 654 government schools in Jhansi city. The table below shows the number of primary, upper primary and higher secondary schools.

Table 36: Schools in Jhansi city

No.	Level	No.
1.	Primary+ EGS	384
2.	Upper Primary	194
3.	Higher Secondary	76
	Total	654

Source: Nagar Nigam Jhansi 2011

Asurvey was conducted of around 30 government schools in the city and it is found that most of the schools are not having toilet facilities. In few schools where toilets are available, their conditions are quite poor and far below the expectations because there is no arrangement of water supply and regular upkeep and maintenance. Moreover in these schools, there is no provision of separate toilets for the female students.

4.9.1. Toilet Facilities

Around 70% of the schools do not have proper toilets/urinals facilities in the premises of schools. In 30% schools where toilets are available, there conditions are pathetic because of non availability of water and staff to ensure their cleanliness and maintenance.

The graph below shows that the solid waste is disposed on open dumpsite and in the drains in most of the cases.

4.9.2. Drinking Water Facility

There is no proper arrangement of drinking water facility in the schools. In few schools there are water storage tanks but they are not functional. Most of the students drink the water from the hand pumps available in the school premises or nearby street.

4.9.3. Drop-out rate

In most of the schools, the students have dropped out or frequently fallen sick due to poor sanitation. The following graph shows the drop-out rate of girls and boys from school:

Fig.3.30: Drop-out rate of students

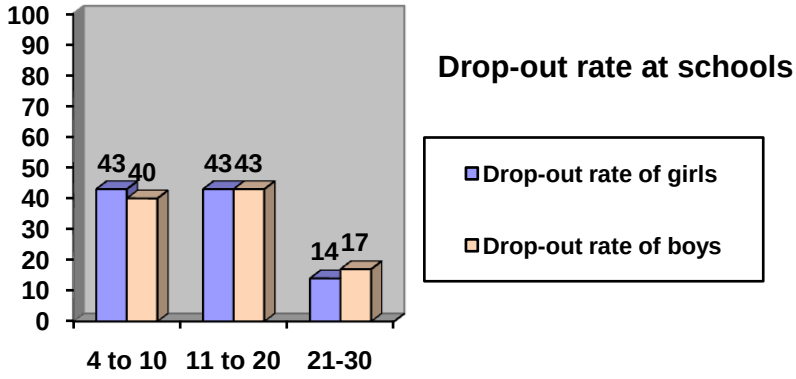


Table 37: Toilet at Primary School,Taalpura

Source: ASCI Survey, 2011-12

4.9.4. Operation and Maintenance

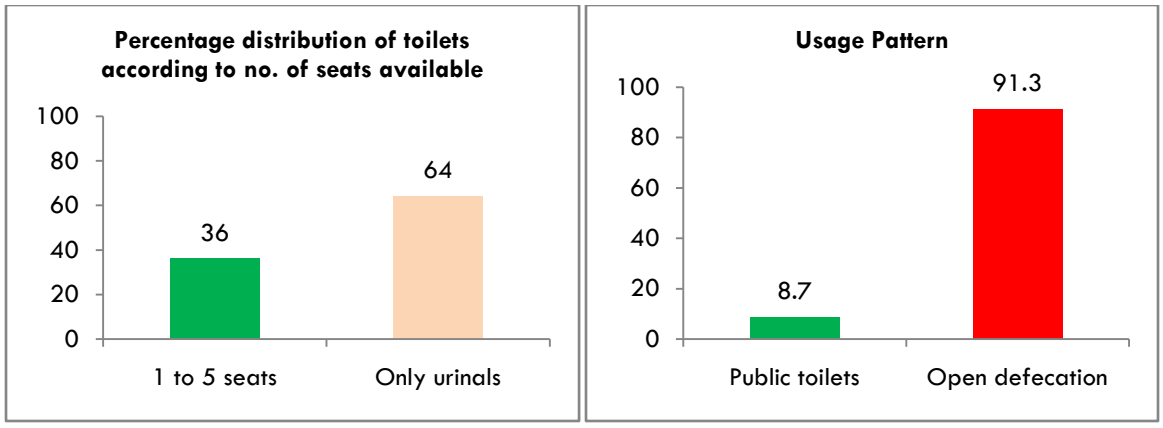
In most of the schools where toilets are available, there is no dedicated employee to clean and maintain them. There is no provision of dustbins in the schools and most of the solid waste is dumped in the open site, road/street side or nearby nallas/drains. On discussion with the teachers, it is found that there is no specified budget allotment for the regular cleanliness and maintenance of the schools. It has been noticed that the services of students are being utilized by the teachers to sweep and clean the areas around the schools.

4.10. Sanitation Facilities & Situation at Commercial/ Market Places

The commercial places in Jhansi city are at Seepri bazaar, Tilyani Bajria, Subhash ganj, Sabji mandi, Fal mandi, Manik chowk, Jawahar chowk etc. The waste from commercial establishments starts accumulating in the nearby open dumps in the morning hours (8.00-11.00 A.M.). There is no facility of door to door collection in these areas. The total waste generated from these areas is around 300 MT/month. Safai Karamcharis from Nagar Nigam clean market places and dump the waste in the nearby DP containers (if available)/open dumps. A portion of the waste generated from the shops and markets is taken away by rag pickers for recycling.

A survey was conducted of 50 shopkeepers from the commercial places and the following results were found.

Availability of Toilets: Almost 68.6% of the commercial area does not have toilets. A survey of the number of seats in the toilets shows that 64% of the shops have only urinals and 36% have 1 to 5 number of seats.



Source: ASCI Primary Survey, 2011

The workers are not allowed to use the toilets. There is no awareness about public toilet in the areas.

Only 8.7% of the shopkeepers use public toilets and 91.3% openly defecate. The people are not willing to have pay and use toilet and if they have to pay, they prefer monthly pass of less than Rs. 20.

Garbage collection: The people throw the waste on the roadside or in the drains. The garbage is not collected regularly. The garbage is collected once in 3 days or and above. The people are not at all satisfied with the present system of solid waste management.

4.11. Sanitation Situation in Industrial Areas

Main industries in the city are stone cutter industry, fabricator industry, furnace industry and rubber industry. In most of the cases, the solid waste is dumped in the nearby dustbins or open areasby the industries itself. Due to the nature of industries, no major hazardous/chemical waste is generated. Also, burnt coal generated by furnace industry is dumped in the nearby open dumps by concerned workers.

The major part of waste generated from industries is sent for recycling or sold to other industries i.e. waste generated by one industry is raw material for the other industry.

4.12. Sanitation Situation at Slaughter Houses

There is one main slaughter house situated in circle no. 3 (BhagyantPura) generating approximately 1.5 to 2 MT/day of waste. In addition, there are a number of unofficially small slaughter houses in Kasai Mandi, generating approximately 1.5 MT/day. These slaughter houses are very dirty and do not follow the basic clean methods of processing meat. The waste from these slaughter houses (skin, horns and bones) is sold to processing or recycling units. The remaining left over solid and liquid waste is directly discharged in the nallas or thrown away in open dumps.

A survey was conducted of slaughter house at **Kasai Mandi** near Khushi pura.

The total waste generated from the slaughter houses in Jhansi city is estimated at 3 MT/ day. However, no official records are being maintained by NNJ on the quantity of waste generated from these slaughter houses.

4.13. Situational Analysis of Water Bodies

There are a number of water bodies around the Jhansi city but three are quite prominent and need definite attention for maintaining the ecological balance.These are LaxmiTalab, Hatiya Tala band Pani Ki Dharansala. These water bodies come under the jurisdiction of Nagar Nigam Jhansi. A survey was conducted of these water bodies and found that the condition of these water bodies is quite poor because most of city nallas/drains are discharging in these water bodies. It is also noticed particularly in case of

Aathiya Talab that most of the nearby residents throw their solid waste in them. It is also seen that people are open defecating around these water bodies. Moreover, it has been ascertained that there is no formal arrangement of their regular upkeep and maintenance. Over the period of time the condition of these prominent water bodies have become worst and thus becoming the major source of water pollution in the heart of city. The location of Water bodies are shown on Map-6.

Figure 13: LaxmiTalab

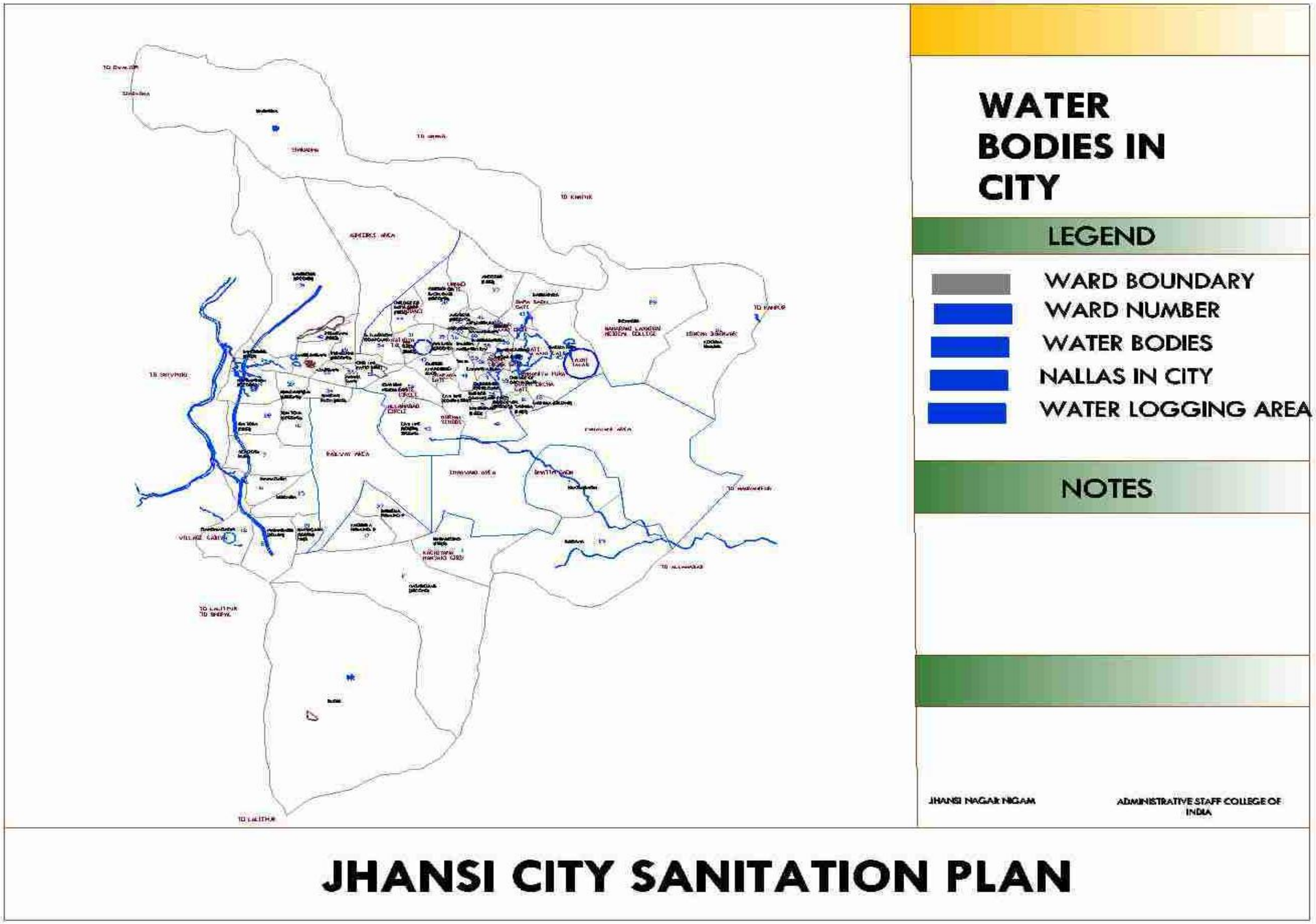
Figure 14: AthiyaTalab

Before Renovation Nov 2010 **After Renovation Sept 2012**

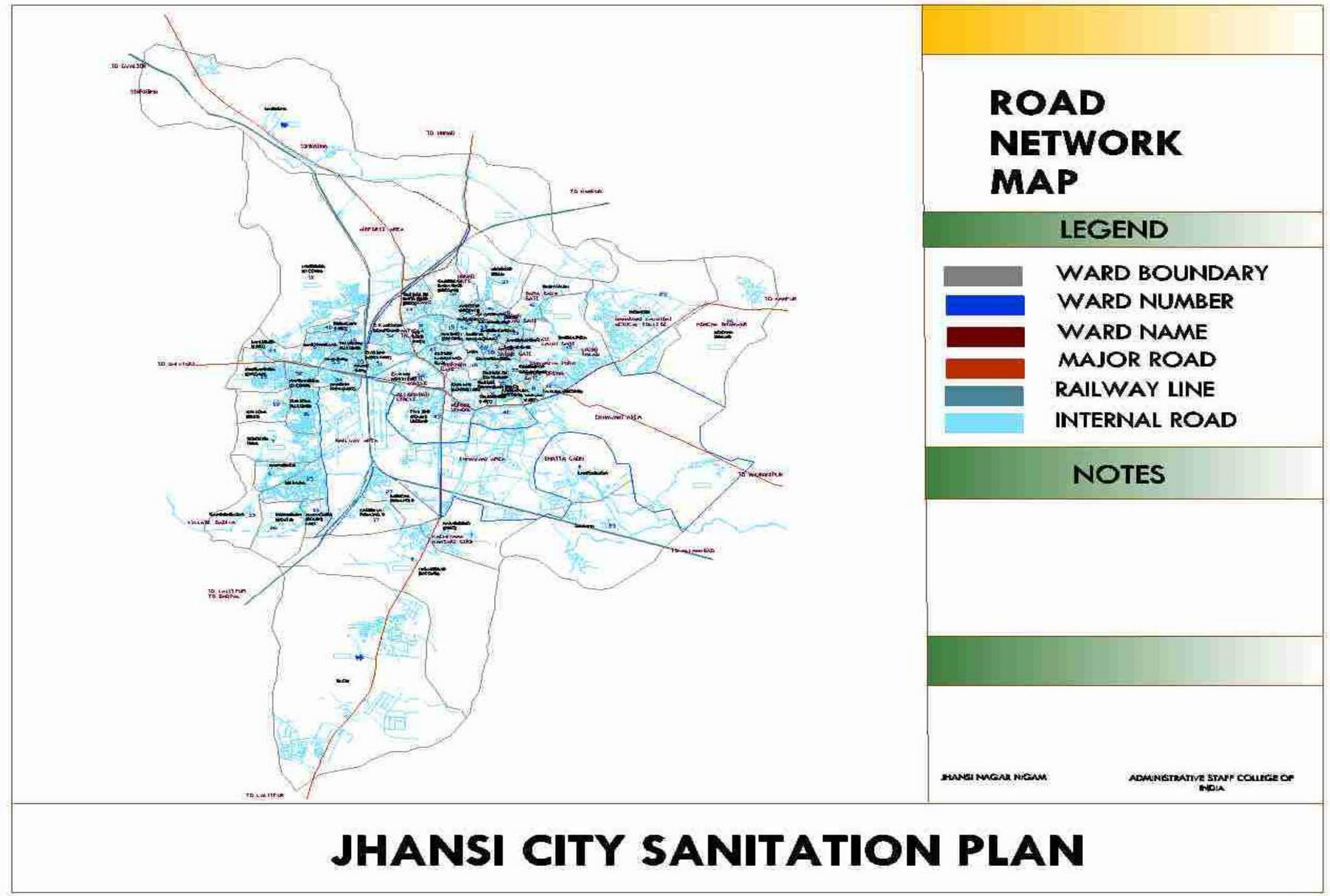
Source: ASCI Survey, 2011-12

Initiatives of Nagar Nigam for restoration of water bodies in the city is going on, in this attempt old filthy Athiya Tall is being renovated in beautiful public place, this can be seen from figure above. Same need to be replicated for other water bodies in the city.

Map 6: Water Bodies



Map 7: Road Network Map



WARD WISE ANALYSIS OF BASIC SERVICES

S.NO	WARD NAME	WARD NO	POPULATION (2001)	POPULATION (2011)	AREA (sq.km.)	DENSITY (persons /sq.km.)	HOUSEHOLDS	SEWER LINE YES/NO	SWM-D 2 D COLLECTION YES /NO/ PARTIAL	NO. OF CONTAINERS	WATER SUPPLY COVERAGE
1	HASARIGRAD	1	6933	7480	0.45	16622	1168	NO	NO	1	NO
2	HASARIGRAD	2	7142	7706	0.46	16752	1204	NO	NO	1	NO
3	OUTSIDE OF	3	8820	9516	1	9516	1486	NO	NO	3	YES
4	BHATTAGAON	4	6710	7239	2.03	3566	1131	NO	NO	4	YES
5	MASEEHAGANJ	5	7500	8092	1	8092	1264	NO	NO	5	YES
6	NAINAGARH	6	8760	8451	1.05	8048	1320	NO	NO	1	NO
7	SCHOOOL PURA	7	7664	8261	1.15	7183	1290	NO	NO	1	NO
8	TALPURA (FIRST)	8	7548	8144	0.8	10180	1272	NO	NO	4	YES
9	KHUSHIPURA	9	7365	7946	0.55	14447	1241	NO	NO	4	YES
10	SIMRADHA	10	8993	9703	35.73	271	1516	NO	NO	1	NO
11	NAI BASTI (FIRST)	11	8050	8685	0.75	11580	1357	NO	NO	1	YES
12	TALPURA	12	6690	7218	0.8	9022	1127	NO	NO	1	NO
13	GANDHIAGAON	13	6722	7252	12.28	590	1133	NO	NO	1	NO
14	KHUSHIPURA	14	7039	7594	0.55	13807	1186	NO	NO	4	YES
15	BIJOLI	15	7657	8261	12.06	684	1290	NO	NO	2	YES
16	ISAI TOLA	16	8975	9683	0.79	12256	1512	NO	NO	5	NO
17	KACHHIYA PULIA	17	6827	7366	1.15	6405	1150	NO	NO	2	NO
18	GADRI	18	8435	9101	1.1	8273	1422	NO	NO	3	YES
19	NAI BASTI	19	7782	8396	0.75	11194	1311	NO	NO	1	YES
20	BANGALA GHAT	20	8993	9703	1	9703	1516	NO	NO	3	YES
21	NAINAGARH	21	7482	8072	0.55	14676	1261	NO	NO	1	NO
22	ISAI TOLA (FIRST)	22	7856	8476	0.78	10866	1324	NO	NO	1	NO
23	SIMRAHA	23	7867	8488	9.93	854	1326	NO	NO	4	YES
24	LAHERGIRD (FIRST)	24	8804	9499	4.92	1930	1484	NO	NO	5	YES
25	HLLRAJRA	25	8489	9159	1	9159	1431	NO	NO	4	NO
26	KOCHHA BHAVAR	26	6869	7411	10.2	726	1157	NO	NO	3	NO
27	BAGICHA PULIA	27	6901	7445	1.2	6204	1163	NO	NO	1	NO
28	NAINAGARH	28	8101	8740	0.55	15890	1365	NO	NO	1	NO
29	PICHHORE	29	8857	9556	7.29	1310	1493	NO	NO	3	NO
30	SAGAR GATE	30	8654	9337	1.1	8488	1458	NO	NO	3	YES

WARD WISE ANALYSIS OF BASIC SERVICES

S.NO	WARD NAME	WARD NO	POPULATION (2001)	POPULATION (2011)	AREA (sq.km.)	DENSITY (persons/sq.km.)	HOUSEHOLDS	SEWER LINE YES/NO	D 2 D COLLECTION YES /NO/ PARTIAL	NO. OF CONTAINERS	WATER SUPPLY COVERAGE
31	LAHERGIRD	31	6966	7516	11.79	637	1174	NO	NO	5	YES
32	NANDANPURA	32	7953	8580	0.5	17160	1340	NO	NO	5	NO
33	OUTSIDE OF	33	7195	7763	1.47	5280	1212	NO	NO	3	YES
34	NANDAN PURA	34	7169	7735	0.5	15470	1208	NO	NO	5	YES
35	OUTSIDE	35	6680	7207	1.48	4869	1126	NO	NO	4	YES
36	ALOGOLE	36	8063	8699	0.62	14030	1359	NO	NO	1	YES
37	ALOGOLE (FIRST)	37	7716	8325	0.63	13214	1300	NO	NO	1	NO
38	CHANNIYA PURA	38	8939	9644	1	9644	1506	NO	NO	3	YES
39	NANDANPURA	39	7486	8077	0.5	16154	1262	NO	NO	5	NO
40	TALIA	40	8902	9604	1.2	8003	1500	NO	NO	3	YES
41	DARIYAPURA	41	8464	9132	0.8	11415	1426	NO	NO	3	NO
42	CIVIL LINE	42	8783	9476	0.73	12980	1480	NO	NO	4	YES
43	CIVIL LINE	43	7947	8574	0.72	11908	1339	NO	NO	4	YES
44	OUTISIDE OF	44	7937	8563	0.62	13811	1337	NO	NO	1	YES
45	DARIYA PURA	45	8032	8666	0.8	10832	1354	NO	NO	3	YES
46	MEWATIPURA	46	8578	9255	1.35	6855	1446	NO	NO	1	YES
47	OUTSIDE	47	8725	9415	1.4	6725	1471	NO	NO	4	YES
48	PREMGANJ	48	7514	8107	0.7	11581	1266	NO	NO	5	NO
49	PREMGANJ	49	6896	7440	0.7	10628	1162	NO	NO	4	NO
50	OUTSIDE OF	50	6673	7199	0.63	11426	1124	NO	NO	1	NO
51	CIVIL LINE (WEST	51	6994	7546	1.2	6288	1179	NO	NO	4	YES
52	CIVIL LINE NORTH	52	7780	8394	1.55	5415	1311	NO	NO	4	YES
53	AZADGANJ	53	6712	7242	0.2	36210	1131	NO	NO	5	NO
54	C. P. MISSION	54	6715	7245	0.75	9660	1132	NO	NO	5	YES
55	NANAK GANJ	55	7166	7731	1.1	7028	1207	NO	NO	5	NO
56	TAURIYA	56	8254	8905	2.4	3710	1391	NO	NO	1	YES
57	MUKARYANA	57	8701	9388	1.15	8163	1466	NO	NO	1	YES
58	DARUBHONDELA	58	8830	9527	1.15	8284	1488	NO	NO	5	YES
59		59	8965	9671	0.7	13815	1511	NO	NO	1	YES
60	LAXMANGANJ	60	8993	9703	0.65	14927	1516	NO	NO	2	YES
		TOTAL	**470212**	**507312**	**151.96**	**3338**	**39724**			**150**	

CHAPTER 5. GAP IDENTIFICATION &SWOT ANALYSIS

TOPICS OF DISCUSSION

- Gap identification
- SWOT analysis

5.1. Gaps Identification

About 300 households particularly in slum areas were surveyed to gauge water and sanitation situation in Jhansi city. Though the data does not claim to yield statistically significant results for Jhansi, there were some interesting findings. About 30% households are not having access to toilets and thus defecating in open. More surprisingly few houses are reporting manual scavenging. There is no door to door collection except in few pockets started recently as pilot project and high proportion of the respondents are dumping solid waste in designated container (if available) or open site on the road/street side. However, 86% of households claimed that Nagar Nigam SafaiKaramcharis pick up the waste from their areas once in two or three days. About 38% of the residents opined that their streets are not swept regularly and 41% complained that drains are either cleaned once a week or irregularly. An overwhelming majority said they take their water and sanitation complaints to elected representatives. Further 53% said they complained directly through face to face interactions with Nagar Nigam officials (sanitary supervisors) and 27% complained on telephone.

Based on the survey analysis and issues raised & expressed by the CSTF & various stakeholders during 'Sensitization & Orientation Workshop' at SadanSabha, Nagar Nigam Jhansi on 19 November 2010, major concerns of the citizen and gaps identified in the present service delivery are as follows:

5.1.1. Water Supply

- **Low per capita water supplied**
  - The per capita water supplied is 85 lpcd against the national benchmark of 135 lpcd.
- **66% coverage of water supply connections**
  - The water supply coverage is 66% of the households.
- **Daily water supply -only 3 hour per day**
  - The water is supplied for 3 hours per day on average.
- **Water Quality**
  - The water quality testing is not as per BIS IS -10500 laid down guidelines and standards

5.1.2. Sewerage & Wastewater Generation

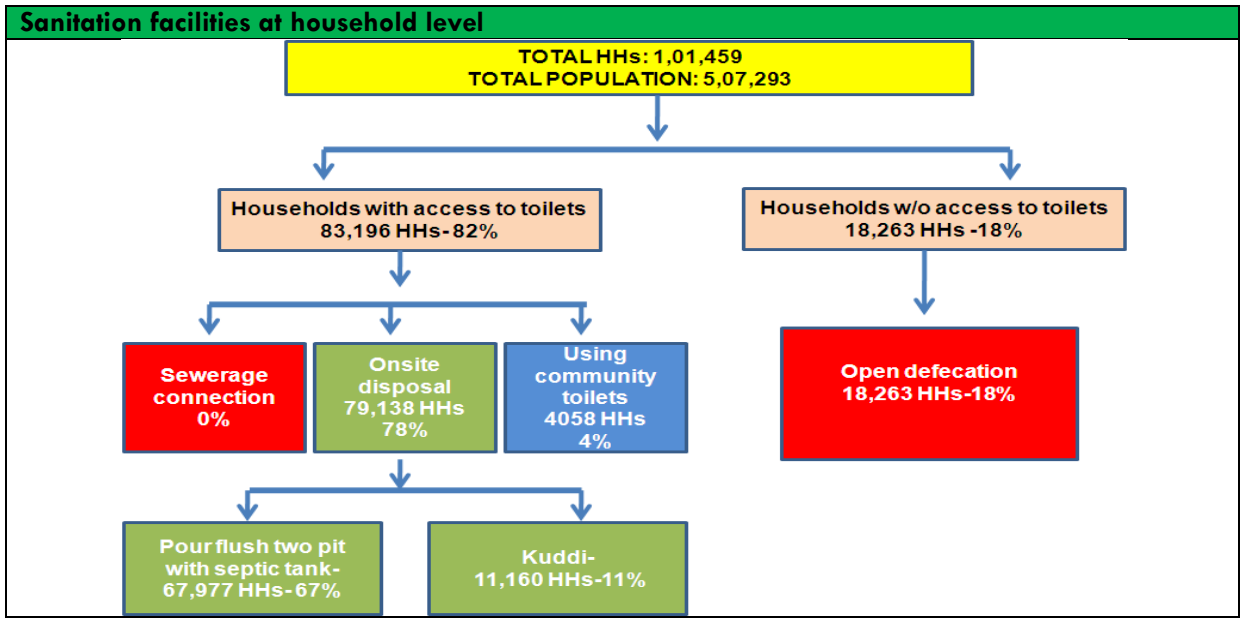
- **No sewerage network and STP services:**
- In Jhansi city, there is no sewerage network and sewerage treatment plant. The households are having septic tanks or kuddis. An integrated sewerage network needs to be laid out in the city.
- **Most of the sewerage goes into the open drains and nallas**
- In maximum households, the toilet flush are not connected to soakpits. The water from septic tanks goes directly into drains which are very unhygienic. Sewer line is urgently needed in Jhansi city.
- There is no system in place for the cleaning of septic tanks and sludge & septage management.
- Most of the city drainage system is clogged with polythenes bags and it should be cleaned regularly.

- The condition of the city drainage system is very poor and need immediate repairs and regular upkeep/maintenance.
- The large drains are being encroached by dwelling units, milk diaries, shopkeepers etc and thus difficult to clean & maintain them. It should be checked so that sanitary conditions of the city are improved.

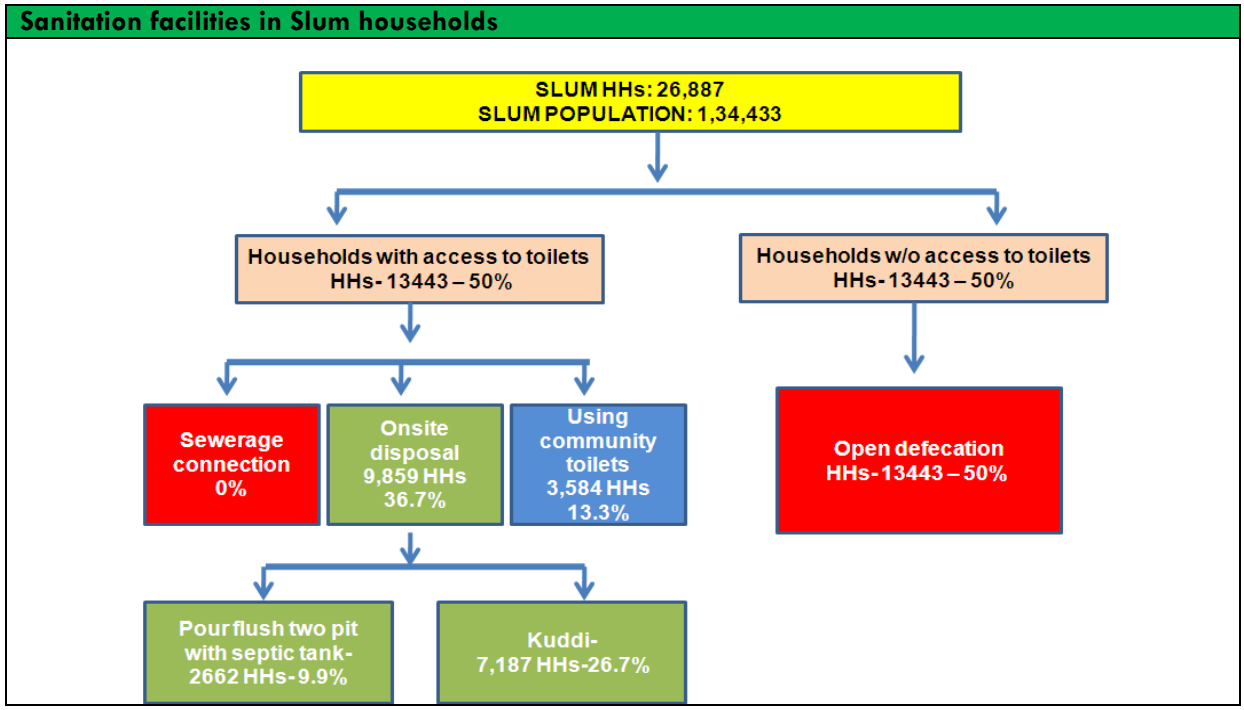
5.1.3. Community toilets &Open Defecation

- Our survey covered 27 (100%) community toilets in Jhansi;merely 26% of these are in fully serviceable condition.
- Community toilets in the city are in dilapidated condition with crumbling building, leaking septic tanks, broken seats, and broken doors, with no water or electricity or maintenance person. Several of these community toilets need to be rebuilt.
- About 62% are reported to be in bad implying that they are in unsanitary or dilapidated condition. Investing in community toilets is a pressing need for the city.
- At present O&M work is being shared by a host of organizations including Nagar Nigam, DUDA, NEDA and Sulabh. No Correlation has been found between condition of toilets and the organization responsible for O&M.
- There is acute shortage of the community toilets in the city and thus compelling the people particularly in slum and LIG areas to defecate in the open. More community toilets should be constructed in the city.
- About 71% of households are having the flush latrines with septic tanks.
- About 50% of slum households are not having access to toilets and thus defecating in open particularly recently included villages in the Nagar Nigam. 30% of slum households are using the 'Khudi' which is a small structure built with bricks and directly discharging the effluent in open nallas.
- Approximately 4000 households are using the services of 27 community toilets in the slum ad non slum areas.
- No proper mechanism for the safe disposal of solid and liquid waste including the sludge & septage of households.

As per NNJ estimates for 2011 Jhansi has a total of 1, 01,459 households in city with a 2011 census population of 5, 07,293. An analysis of the sanitation facilities at the household level is as below:



Source: ASCI Survey, 2011-12



Source: ASCI Survey, 2011-12

5.1.4. Storm Water Drainage

- The drainage system is quite old and need immediate repairs.
- The drainage system is heavily silted because of lack of routine upkeep and regular maintenance.
- Most of the city drains and nallas are discharging in the Laxmi Talab and Athiya Talab and thus polluting the complete environment.

5.1.5. Solid Waste Management

The municipal waste is not disposed off scientifically as per MSW Rule 2000

- There are five open dumping sites in the city which are the major source of pollution.
- No community involvement in managing the solid and liquid waste of the city.
- No city wide door to door collection of solid waste.
- 83% collection efficiency of solid waste.

a. Segregation at source is not practiced

The waste generators in Jhansi city do not segregate the waste prior to disposal. They dump mixed waste into the DP containers, drains, open sites and low-lying areas.

As a standard practice, MSW has to be segregated into bio-degradable and non-biodegradable wastes and disposed off in separate containers to aid in efficient waste processing and disposal mechanisms.

b. No Primary collection of solid waste

Nagar Nigam Jhansi does not provide door-to-door collection service to its residents. The residents of city dump the household waste outside their residences from where sweepers of NNJ collect waste by means of handcarts and dump the same into the DP containers or roadside (open dump).

The Safai Karamcharis employed by the NNJ do street sweeping, collect drain silt & waste, put heaps on roadsides and transport them at nearby open dumps. These unorganized disposal methods have resulted in accumulation of solid waste on roadsides and vacant plots, low lying areas and drains/nallas.

Door to door collection service has to be provided to households as well as commercial establishments. Containers/dustbins should be put near the shops and some agency should be there to collect garbage regularly. The roadside waste collected by street sweepers must be directly dumped into a separate bin at the secondary waste collection point.

c. Secondary storage of solid waste is unorganized

There are very few containers available for secondary storage of MSW. At places where containers are available, either they are rusted or damaged. At other places, waste is dumped on open dumps which have evolved over period of time. In the absence of secondary storage facility for MSW, it is dumped at any location in the vicinity-drains, vacant plots, street corners, low lying areas, or other open areas. Heaps and stretches of un-segregated waste in open areas causes environmentally hazardous and unhygienic conditions across the city, thus, creating conducive conditions for breeding of mosquitoes, insects or grazing by cattle.

Separate coloured bins must be provided at the secondary storage location for bio-degradable and non-biodegradable and recyclable wastes. The bins must be covered and cleared at the scheduled time to prevent storage of waste for a long time and littering of waste outside the bins.

d. Solid waste is transported in open vehicles

Most of the times, solid waste is transported in open trolleys hauled by tractors. These open trolleys are overloaded with waste, resulting in road littering during transportation. The loading and unloading of waste is done manually and safai karamcharis involved in this activity do not use any Personal Protection Equipment (PPE) for their protection.

The waste transportation vehicles must be covered at all times except while loading and unloading activities and the loaded waste should not exceed the capacity of these vehicles.

e. Slaughter house waste is mixed with the MSW

Waste from slaughter houses is dumped along with the MSW in open and low-lying areas. As such, there is no provision for segregation and safe disposal in the city.

Slaughter house waste should be collected separately and disposed off by controlled incineration, burial, anaerobic digestion and other approved processing methods.

f. Biomedical waste is not managed properly in all healthcare facilities

The private hospitals and nursing homes do not segregate their waste. Although waste is dumped in the dual bin system (green and blue), it is not segregated and is dumped along with MSW.

Biomedical waste segregation, handling and disposal mechanisms adopted by all medical institutions must be strictly in compliance with the Bio-medical Waste Rules.

g. Collection and disposal of construction waste is not appropriate

The construction/demolition waste generated by local residents is transported in tractor trolleys and disposed off in open/low-lying areas in the vicinity, privately.

The construction and demolition waste (from private or NNJ sites) must not be dumped in any open area in an unorganized manner .It must be handled under the guidance of NNJ staff.

h. Disposal of solid waste is not appropriate

The solid waste collected from various sources is disposed off in open dumpsites indiscriminately without segregation or pre-processing. There is no engineered sanitary landfill for safe disposal of solid waste.

According to MSW Rules 2000, biodegradable waste should be processed and converted into compost or used for power generation; recyclables should be segregated and sold to recyclers; no hazardous waste be dumped along with MSW; construction waste to be segregated and used for filling low lying areas and only remaining waste should be dumped into engineered landfill facility.

i. Manual handling of solid waste

Safai karamcharis involved in primary collection of MSW do not use any Personal Protection Equipment (PPEs)such as face masks, disposable gloves, boots, hats, and proper safety clothing (sturdy coloured uniform)to avoid direct contact with waste and reduce the likelihood of on the job injury. Manual handling of solid waste during primary collection is an acceptable practice in Jhansi city.

j. Lack of awareness among city residents and civic authorities

The NNJ staffs is responsible for managing MSW in Jhansi city in accordance with the MSW Rules 2000.The NNJ staff needs to understand the environmental, social and economic implications of an unorganized MSW management system. Likewise, public participation is very essential in successful implementation of the MSW management plan in the city. Therefore, a planned and concerted effort is required to bring about awareness among the public and make them realize their responsibilities as individuals and as a community. In summary, public awareness, community participation, transparent administration, accountability at all levels is the need of hour so as to ensure success of any MSW management plan.

5.1.6. Commercial Areas & Markets

- According to our survey there are very few public toilet facilities in the commercial areas or markets of the city.
- Most of the commercial places and markets are having some arrangement of urinals particularly for gents only. Few shopkeepers use the existing public urinals and maximum people urinate in open drains.
- Sampled respondents have appreciated the idea of pay and use toilets if proper toilet facilities are made available. If they have to pay they prefer monthly pass of Rs.20.
- Our survey results indicate that while on one hand shopkeepers and customers are experiencing difficulties due to lack of access to toilets, the overall willingness for pay per use option was found to be low. In such a situation a behaviour change campaign is first required to create demand for toilets.
- Then it could be recommended to build toilets in commercial areas on pay and use terms. Shopkeepers could opt for monthly passes and customers pay per use.
- Poor solid waste disposal and collection mechanism.
- No arrangement of proper cleanliness of the public toilets and urinals.
- The common and prevalent problems faced by general public in markets areas like Sabzi Mandi, Fal Mandi, Phul Mandi etc is improper garbage disposal causing the blockage of roads, foul smell, clogging of drains/nallas.

5.1.7. Hospital Solid & Liquid Waste Management

- Maximum hospitals do not follow the Bio-medical rules -1998
- The bio-medical waste is lifted by NGO viz National Pollution Control Company to incinerator and for auto claving at their plant at Bijoli.
- No scientific arrangement of treating the bio-medical liquid waste of hospitals and nursing homes. All the bio-medical liquid waste is discharged in nallas/drains.

5.1.8. School Sanitation

- Most of the government primary schools are not having proper arrangement of toilet and drinking water facilities.
- There is no dedicated staff available in the schools for the upkeep, cleanliness and maintenance of toilets and other facilities.
- About 45% of schools are being cleaned by the students.
- About 70% of schools dispose their waste on the roadside or throw in the open site.

5.1.9. Water Bodies

- There are three prominent water bodies in Jhansi city but there is no system in place to ensure their proper upkeep and maintenance.
- Most of the nallas/drains of the city are discharging their wastewater in these water bodies which is completely unhygienicand hazardous for the city.
- There is high risk of waterborne diseases because of accumulation of sludge and wastewater in the water bodies.
- The stagnated water and filth in the water bodies causing the foul smell and acute air pollution in the surrounding areas.

5.2. SWOT Analysis

The importance of SWOT analysis lies in its ability to help clarify and summaries the key issues and opportunities facing a sector. Value lies in considering the implications of the things identified and it can therefore play a key role in helping a sector to set objectives and develop new strategies. The ideal outcome would be to maximize strengths and minimize weaknesses in order to take advantage of external opportunities and overcome the threats. The biggest advantages of SWOT analysis is that it is simple and only costs time to do. It can help generate new ideas as to how a sector can use a particular strength to defend against threats in the performance. If a sector is aware of the potential threats then it can have responses and plans ready to counteract them when they happen. SWOT Analysis is the foundation for evaluating the internal potential and limitations and the likely opportunities and threats from the external environment. It views all positive and negative factors inside and outside the sector that affect the success. A consistent study of the environment in which the sector operates helps in forecasting/predicting the changing trends and also helps in including them in the decision-making process of the particular sector in the context of Jhansi.

Water Supply	
Strengths ▪ Satisfactory coverage ▪ Betwa river flowing nearby the city	**Weaknesses** ▪ Lack of metered connections ▪ Leakages ▪ Using private electric pumps to suck water ▪ Illegal connections ▪ Unwillingness to use water at the consumer end due to contamination in the supply line ▪ Water borne diseases due to poor quality of water supplied
Opportunities ▪ Improving water quality and reducing water borne diseases ▪ Rehabilitation of the existing lines ▪ Constant vigilance to control illegal connections ▪ IEC campaign to overcome illegal connections from rising main and usage of untreated water leading to contamination ▪ Encouraging individual metered connection to increase revenue ▪ IEC to bring forth change in the mindset to go for Individual metered connections	**Threats** ▪ Poor service in some areas ▪ Contamination due to household & commercial waste directly lead to open drains and nallas

Sewerage & Storm Water Drainage	
Strengths ▪ Extensive nallas and drain network ▪ Natural slope facilitates the flow of wastewater in storm water drains and nallas	**Weaknesses** ▪ No sewerage network and sewerage treatment plant 'STP' ▪ Black and gray water not treated ▪ Household and commercial waste directly lead to open drains and nallas
Opportunities ▪ Plan sewerage network and STPs ▪ IEC campaign against throwing garbage in storm water drains	**Threats** ▪ All nallas /drains discharging in water bodies ▪ Stagnated water bodies are major source of pollution and health hazard

Solid Waste Management	
Strengths ▪ New integrated solid waste management project under PPP model is coming up ▪ New vehicles and equipments fleet available ▪ Willingness to pay for the user charges ▪ Grievances rederessal mechanism	**Weaknesses** ▪ No door to door collection ▪ Gap between the waste generated and collected in the city ▪ Five open dumping sites are located inside the city ▪ No system in place for tracking the collection and transportation of the waste
Opportunities ▪ Effective IEC campaign to illustrate and explain the hazards of unscientific disposal of municipal waste can stop the citizens from dumping the garbage in open ▪ Willingness to pay for the user charges can be converted in educating people to give the waste in a segregated manner ▪ CBOs are more than willing to participate in any sort of campaign to improve the quality of life	**Threats** ▪ Gap between generation and collection has let huge amount of garbage in the city leading to public health hazards ▪ Open dumping sites are major public health hazards

Open defecation, community toilets and public toilets	
Strengths ▪ People are more than willing to participate in IEC campaign ▪ Community / Public toilets have been built for the population in the city ▪ Public grievances redressal system in place	**Weaknesses** ▪ No M & E system for tracking Open Defecation ▪ Few community toilets for large slum population ▪ Number of community toilets are in unusable condition ▪ Most of community toilets leading waste to open drains
Opportunities ▪ Increasing number of Community Toilets would bring down the instances of open defecation to a large extent ▪ Rehabilitation of existing Community Toilets ▪ BOT models in building toilets have high chances ▪ IEC &Behavioral Change campaign can bring down the cases of open defecation	**Threats** ▪ Open Defecation has become a major public health hazard ▪ Mosquitoes leading to several diseases and instances of skin diseases

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CHAPTER 6. IEC AND AWARENESS GENERATION

TOPICS OF DISCUSSION

- Elements of IEC and Awareness Generation
- IEC and Awareness Issues
- Action Plan

Information Education Communication (IEC)

IEC campaign and awareness programmes can influence the public behavioural change. A sustained grassroots campaign coupled with adequate mass media exposure is a mix that will deliver the required results. Community participation backed by improved civic services can help Jhansi gain open defecation free status. Neighbourhood groups such as women's self help groups (SHGs) and school children can be sensitized to the issue of open defecation. Having a community monitoring system has been found to be very effective in several cities of southern India. A community level group can be formed to dissuade open defecation. For instance, a group of school children armed with vigils can alert the community to anyone trying to defecate in open. NNJ sanitary inspectors and safaikaramcharies can patrol marked open defecation areas to arrest the practice. Making random visits by NNJ officials to open defecation areas early in the morning can be institutionalized to arrest open defecation.

The City Sanitation Ranking methodology has given weight to reducing water-borne diseases. Reduction in water borne diseases is another key area of focus for the communication strategy. About half of those we polled said they suffered from water-borne disease in past six months. IEC can help in generating awareness required to bring down the incidence of water borne diseases. The IEC campaign can take up personal and community hygiene as key themes. These would include water-borne diseases, other communicable ailments including skin diseases to make it more comprehensive.

In addition an integrated communication campaign to promote awareness and seek participation will comprehensively tackle the issue of sanitation. This campaign will include community participation in O&M of community toilets, segregation of solid waste at source etc. NNJ would be well served with a computerized public complaints resolution system. Citizens could use various means to communicate their grievances and complaints such as phone, internet etc. As of now most citizens said they complained directly through face to face interactions. Computerized complaint resolution system will keep all the records of public complaints. This can be an effective tool for the NNJ to monitor trends of complaints and find out the gaps in service delivery and weak areas. Moreover the robust grievances redressal mechanism will improve the extent of public satisfaction.

6.1. Elements of IEC and Awareness Generation

6.1.1. Communication Channels

The various communication channels used for the awareness campaign can be mass media, newspapers, posters, FM radio, local cable TV channels etc. This campaign should be conducted ward wise in the city under the overall coordination of NNJ.

6.1.2. Campaign Partners

NNJ should conduct the awareness campaign in consultation and partnership with NGOs,, print media like DainikJhansi, Sahara and other vernacular newspapers, local cable TV channels etc.

6.1.3. Public Participation

6.1.3.1. Advisory Committees:

These are constituted to ensure multi-stakeholder involvement in sanitation projects. Members of such bodies can include prominent personalities from academia, arts, culture, social sector, media etc, representatives of donor agencies, relevant heads of departments of NNJ, and even leaders of sanitation workers union. City Sanitation Task Force (CSTF) is one such body which has been constituted as per the guidelines of NUSP at the city level. Another innovative idea gaining traction is of Ward Level Sanitation Action Committees or Ward Committees are to be constituted as per the UP Municipal Corporation (Ward Committees) Rules, 1995. For Jhansi city such a committee can be constituted at ward level to monitor and oversee the progress of sanitation projects. This will ensure the effective public consultations and community participation. A ward level body can be headed by Corporator and comprise of ward members, Safai karamcharies, representatives, officials from NNJ/Jhansi Division, Jal Sansthan, UP, CBOs, RWAs, NGOs, SHGs etc.

6.1.3.2. Public Hearings:

The system of public hearing is considered to be effective in monitoring the progress of projects and resolving citizen grievances. What we propose here is that public consultation is essential during designing of projects. The chances of success of a project are enhanced, as this makes sure the project is designed to benefit as many people as possible. Seeking inputs from people will make them believe that the NNJ is concerned about their sanitary problems.

6.2. IEC and Awareness Issues

6.2.1. Open Defecation

In recent past, sixteen villages located at the outskirt of the city have been included and come under the jurisdiction of Nagar Nigam Jhansi. Most of the households in these areas are not having the provision of any kind of toilets and maximum people open defecate in the fields around these localities.

6.2.2. Community Toilets

There are twenty seven community toilets in the city mainly in slum areas located in circle nos 1, 2 & 5. As of now these toilets are not looked after properly and having several inherent problems. In the worst case scenario these are in dilapidated condition with crumbling building, leaking septic tanks, broken seats, and broken doors, with no water arrangement and no provision of routine upkeep & maintenance. Such toilets are seen in Taalpura, Khusipura and Seepri Bazaar. The community toilets at Masiha ganj and outside Seyar Gate are closed down. Open defecation sites and garbage dumps in the proximity of community toilets are a common sight. Moreover, it has been noticed that in most of community toilets, children are allowed to use the community toilets. The children accompanying their mothers defecate in and around the community toilets in open drains. It is essential to classify toilets based on the survey results to devise a plan of action. Broadly, the toilets would need the following measures. In worst case scenario this may require rebuilding the entire toilets complex. Generally, deteriorating infrastructure such as cracks in septic tanks,

broken seats and doors need to be repaired. Operation and Maintenance of toilets assumes significance in the context of promoting toilet usage. Where the toilets are not maintained properly, people tend to go back to the habit of open defecation. Cleaner and well maintained community toilets will ensure their better usage and in turn arrest the open defecation habit of people. An IEC campaign involving local NGOs and SHGs is recommended to bring the change in the behaviour of people.

6.2.3. Commercial Areas

Commercial areas and markets are lacking the provision of toilets and urinals. Roads and streets sweeping is done irregularly by the Nagar Nigam Safai Karamcharis and waste piles up fast on the roads/streets sides. There is no provision of dustbins in the commercial places/markets and the people tend to throw the waste on the roadside or in the drains/nallas. The waste/garbage in these areas is collected once in two or three days.

6.2.4. Water Supply

Pipe water supply network is there but without any metering. This leads to maximum wastage of water particularly at public stand posts in the slum/LIG areas. Thus there is ample scope for public awareness, as most people don't seem to bother about the optimum utilization of water. To overcome the shortage of water, Jhansi Division, Jal Sansthan , UP has installed about 1000 hand pumps in the slum/LIG areas. Besides this almost 20,000 households have made their own private arrangement of hand pumps. Illegal connections and resultant leakages in the pipeline are very common resulting in mismanagement & supplying of contaminated water to the consumers. In such a scenario it is not unusual that people of Jhansi city prefer the hand pump water to the supplied water for domestic purpose.

6.2.5. Solid Waste Management

There is no arrangement of door to door collection and segregation of municipal waste at source in the city. As a pilot project, door to door collection has been started by M/s A.P.R. Project PrivateLtd in few wards/areas but the process is not well streamlined and regulated. As of now, the municipal waste is unscientifically dumped at five dumping grounds (Khanti) in the city. There is a need to organize the solid waste management on priority and expedite the completion of ongoing integrated solid waste management project.

6.3. Action Plan

The timeframe of the recommended communication strategy is relevant for a period of two to three years from the beginning of implementation. The process can evolve with the scope to incorporate any mid-course changes and improvements, if required. Once initiated, it can take up a wide range of other issues as per the requirements of the city. There is every likelihood of such a process be institutionalized with Public Relations officer positioned at NNJ.

Given the growth and rapidly changing social and economic environment of the cities, it would be imperative for NNJ to develop capacity to assess changes in the situation and adapt strategies accordingly. Timely implementation of the recommendations made in this document will ensure that desired results flow in a sustained manner.

Keeping in view the problems faced by urban poor of the city and scope of city sanitation plan, it is opined that less emphasized area of communication holds a vast potential. There are three important components to the communication strategy:

- **Inter-personal communications: Using opinion leaders**
- **Engaging media and NGOs as partners in promoting sanitation consciousness**
- **Adapting and developing multimedia IEC materials for sanitation campaigns**

Interpersonal means are known to be very effective in behaviour change communications. These are tedious processes to carry out but offer better returns. It is important to understand the needs of the local community and select opinion leaders who could influence the community to furthersanitationconsciousness. These opinion leaders could be local NGOs, corporators, school teachers or any other respected elder. A newspaper advertisement or a public service message on TV without ground level work through opinion leaders will fail to be sustainable in the long run.

Table 38: Action Plan for IEC Campaign & Communication Strategy

PHASE 1 (1-6 MONTHS) 'AWARENESS RAISING PHASE'	**PHASE 2 (1-12 MONTHS) 'FEEDBACK PHASE'**	**PHASE 3 (12-24 MONTHS) 'COMPLIANCE PHASE'**
Short (1 to 2 month) phase aimed at generating high awareness and taking steps to build trust among stakeholders.	***3-4 month phase to enhance trust between stakeholders***	***Consolidating gains and sustaining behaviour change***
1. Health & Hygiene and Government programmes and processes-Goals of City Sanitation Plans etc for all stake holders 2. Status of community toilets, solid waste management, water supply and drain cleaning. 3. Setting out goals and exploring all avenues of improvement including community participation and consultation with officials. 4. Industries and slaughterhouses be made aware of the importance for compliance of waste management.	Information and educational approaches are employed to stress the importance, among other things, of properly designed community toilets, septic tanks and periodic septic tank inspections and dislodging every 3-5 years. Seeking feedback from the residents on status of community toilets their design, solid waste management practices etc. Imposition of user fee on commercial establishments for improved municipal services.	Offering awards and imposing penalties for undesirable behaviours. This phase is a continuing education and promotional phase. Mobilized public opinion is important to push for compliance. Continue promotional activities to trigger the actual adoption of the practices being marketed. Building sustaining process to open channels of communication between NNJ and citizens. Compliance should be sought from industries and slaughterhouses. Imposition of user fee on commercial establishments for improved municipal services. Cleanliness drives targeting non-compliers.
• Organize walk to the wards with local corporators or NNJ officials, meeting/workshop with stakeholders, shopkeepers, RWA, SHG etc. • Making use of the municipal council to further goals of city sanitation plan, discussion between various departments for increased co-ordination. Exploring institutional arrangements for such co-ordination.	• Organize walk in the wards with local corporators or NNJ officials, meeting with stakeholders, shopkeepers, RWA, SHG etc to monitor the progress made. • Seeking feedback from corporators to help effective implementation.	• Organize walk in wards with local corporators or NNJ officials, meetings with stakeholders, Shopkeepers, RWA, SHG etc for sustaining the progress made. • Encouraging further discussion between municipal administration and elected representatives to, furthering co-ordination between various departments for better attainment of CSP goals.
Media options: • Local Cable TV ads (30 secs) • Local newspaper ads • Billboards • Tarpaulin posters mounted on mobile vans	**Media options:** • Local newspaper advertisements • House-to-house visits • Radio/ local cable TV public affairs show	**Media options:** • Continuing radio, TV, print ads • Continuing house to house • visits • Continuing short film showing in theatres

• Leaflets for those attending meetings • News releases in print, radio and TV • Discussions on radio	• Short film/video showing in theatres • Continuing billboards/tarpaulin posters • Continuing news releases in print, radio and cable TV • Feature articles in media	• Continuing billboards but less frequent • Continuing news releases on all platforms • Continuing feature articles

It is important to understand that several recommendations require institutional reforms. There are complex ways in which institutions work including overlapping responsibilities and a lack of mutual co-ordination. Success in the long run will also depend on furthering such reforms. Communications can help identify potential bottlenecks to service delivery

Table 39: Advocacy Action Plan

STAKEHOLDER GROUPS	SOCIO-CULTURAL/BEHAVIOURAL PATTERNS
SLUM INNER CITY	This area is having community toilets with several operation and maintenance challenges Children do not prefer to enter the community toilets; Open defecation by children in drains and open spaces is common. Water Scarcity and poor state of community toilets forces elders also to defecate in open but, it is not very common. People are in some ways constrained in going out to defecate in the inner city areas. Open areas such as vacant plots have become open defecation spots. Most of community toilets discharge their waste into open nallas/drains
SHOPKEEPERS	Jhansi city has a vibrant commercial area General hygiene & sanitation awareness is far below among the shopkeepers; particularly meat, milk products, vegetables/fruits or eatable shops. Most of the shopkeepers throw their waste on the road/street side or in nallas. The nallas get clogged and cleaned at irregular intervals by Nagar Nigam. No provision of dustbins in the commercial areas and markets. Very few public toilets and urinals in the market areas
HIGHER INCOME GROUP RESIDENTS	Door to door collection have started in some areas but not city wide Kutcha open drains are present in many area Sewage lines are not cleaned at regular intervals
LOW INCOME GROUP RESIDENTS	Irregular sweeping of street occasional clearing of drains. Irregular water supply Dumping of solid waste in open on roadside
MUNICIPAL OFFICIALS	Officials should call meetings of shopkeepers specially butchers/eatable vendors to raise their awareness about hygiene and to promote safe practices of waste disposal Nagar Nigam officials need help to enhance their capacities for better implementation of sanitation projects A better co-ordination between various departments such as JalKal, JDA is required Nagar Nigam should look into operational as well as maintenance aspects of community toilets

6.3.1. Messages for Stakeholders

National Urban Sanitation Policy 2008, by the Ministry of Urban Development, Government of India has outlined constitution, roles and responsibilities of City Sanitation Task Forces envisaging multi-stakeholder involvement. Eminent persons from the city (from fields of academics, NGOs, media, art, business etc) are included into this task force. At a more micro level, creation of Ward Sanitation Action Committee sheaded by Corporator of the concerned wards and comprising members from NNJ, office bearers of RWAs, Safai Karamcharies is recommended.

A set of powerful mnemonics related to sanitation could be one of the ways of beginning the process of developing sanitation consciousness- say something like 'swach ghar samridh parivar'. The messages that need to be put across to the stakeholders are as follows:

Table 40 : Messages and Different Channels of Communications to Various Target Audiences

TARGET AUDIENCE	MESSAGES/THEMES	CHANNELS OF COMMUNICATION
Corporator, Commissioner, Engineers	Seeking community inputs for building and repairing community and individual toilets, toilets should be designed for social acceptance. Anti- open defecation and sanitation campaigns How to ensure compliance from people through rewards/Punishments Better co-ordination between various departments including Water Board for implementation of City Sanitation Plan Safe handling of garbage by Sanitation workers Promoting source segregation at source and dump yards	Training Programs for officials from NNJ, Jal Kal Vibhag, DUDA Participation in interactive programmes such as heritage walks etc to promote city sanitation, Council meeting, CSP workshops, Newspaper advertisement calling for meeting/seeking participation in walks Press Conference-sharing the goals and plan of action for CSP with press persons Videos on best practices and their impact
Corporator, NNJ office bearers, Slum residents representing inner city	Consultations on preventing open defecation Consultation seeking inputs of residents on improving community toilets and their usage Safe disposal of Human Excreta Contamination due to Faecal Matter Do not burn garbage Segregation of household waste, and disposal in designated bins Education on Health and hygiene to prevent diseases such as Diarrhoea, GE, Malaria, Scabies Consultation on problems with current toilets, taking stock of the community toilets status Consultation of water supply situation Consultation on Environmental sanitation Consultation on expectations from Municipality	Organize transect walk with local Corporator or officials, RWA Meeting (with the local Corporator) Door to door campaign Newspaper Advertisement calling for meeting Press Conference Short Films on best practices
Corporator, NNJ office bearers, Slum Resident Representing Slum of city Outskirts	Consultation on land tenure, voter ID card address related issues Consultation on problems with community toilets, household toilets, hand washing, Improved sanitation and hygienic practices in community toilets Health Risks due to open defecation Toilet options two pit, septic tank Safe disposal of Human Excreta Health and hygiene, Diarrhoea, GE, Malaria, Scabies Consultation of water scarcity, water quality problems Consultation on expectations form Municipality and how they could be met	Organize transect walk with local Corporator or officials RWA Meeting with local corporators and NNJ zonal officials Door to door campaign Newspaper Advertisements/ calling for meeting/ seeking participation in the transect walks Press Conference Short Films on best practices
Office bearers of Residents Welfare Association Middleclass localities	Consultation on problems with community toilets Consultation on septic tank cleaning Consultation on Environmental sanitation Consultation of water supply situation Consultation of willingness to pay for tricycles etc Consultation on expectations form Municipality	RWA Meetings with concerned officials, Door to door campaigning Newspaper Advertisement calling for meeting Press Conference Short educational videos etc
Water and Sanitation	Display numbers of responsible officials; Sanitation Inspectors prominently in their Zones	Printed pamphlets given with newspapers, newspaper

TARGET AUDIENCE	MESSAGES/THEMES	CHANNELS OF COMMUNICATION
Officials	Establish grievance redressal mechanism. Emphasis on time bound resolution of public grievances	advertisements, painting on Elevated/underground reservoirs Print the phone numbers of responsible officials on the municipal garbage tractors
Water and Sanitation Workers	Importance of safe handling of waste Do not burn garbage Do not dump Garbage on roads leading to dump yard Educating people on waste segregation	Meetings and workshops of Municipal workers
Shopkeepers, Commercial Industrial, Slaughterhouses	Do not dump garbage in by lanes If you need to dispose hazardous waste call the municipality and ask for a tractor. Slaughter house waste disposal consolations	Meeting of the local shopkeeper associations to sort out the problems among themselves, meeting with municipal officials and corporators.
City Wide	Keep house and neighbourhood clean Keep your community toilets clean Boil/Filter the Water before drinking Wash your hands before and after eating/drinking Don't allow mosquitoes to breed in your neighbourhood Immunize children Don't share clothes of persons infected with skin diseases	Road Side Billboards Newspaper, radio and TV Ads City Cable Press conference Know your city and transect walks etc. Short films for screening in Theatres etc.

.....x.....

CHAPTER 7. SECTOR SPECIFIC STRATEGIES

TOPICS OF DISCUSSION

- City-Level Vision and Goals of Jhansi CSP
- City-Level Problem Areas, Strategy and Recommendations
- City-Level Action Plans
    - Technology
    - Finance
    - Institution & Governance
    - Capacity Enhancement and Awareness
    - Inclusiveness

The key challenge looming large at the cities is devising an implementation strategy for the City Sanitation Plan (CSP). The development of the implementation strategy entails detailed planning; initiatives supported by incentives, guidance system / sound financial systems; innovations; context specific solutions, prioritization; supportive context; and most importantly, ownership and leadership. The prime responsibility of implementation of the CSP rests with Nagar NigamJhansi (NNJ), however, it is imperative that NNJ shall engineer and institutionalize the collaborative efforts of all stakeholders involved to help achieve the defined goals as part of the implementation strategy.

The implementation strategy is evolved based on the detailed analysis of the situation in the major sectors of sanitation namely; (a) sewerage; (b) access to sanitation – toilets; (c) storm water and (d) solid waste (*please refer to Chapters 3 and 4*). The sanitation mapping, initial and final analysis of the baseline data, and projection of demand for various sanitation services in the defined sectors have helped identify the level of deficiency in respect of sanitation in Jhansi.

A broad city level strategy for implementation of the City Sanitation Plan for Jhansi is outlined along the five strategic intervention domains namely, (1) Technology Options; (2) Financial Options; (3) Institutional and Governance Options; (4) Capacity Enhancement and Awareness Generation Options; and (5) Inclusive Approach.

7.1. City-Level Vision and Goals of Jhansi CSP

Vision Statement - ***"Jhansi shall be environmentally safe and totally sanitized & liveable city so as to ensure good public health standards, human dignity, and privacy for all citizens"***

The broad goals for Jhansi City shall reflect thus -

- ***Goal 1*** - *The entire population of the city shall have access to toilets in the form of either individual toilets, shared toilets or community toilets, with adequate water supply by 2017;*
- ***Goal 2 -****All major public places shall have adequate number of public toilets in fully serviceable condition by the year 2017;*
- ***Goal 3 -****The quality of drinking water shall be improved and the entire population shall have access to quality drinking water by the year 2017;*
- ***Goal 4 -****All the households shall be connected to the sewerage network, centralized or decentralized by the year 2020*

- ***Goal 5 –*** *All the waste water generated in the city shall be collected and conveyed through an appropriate sewer network to treatment plants, treated to acceptable quality levels and disposed, recycled or reused by the year 2020;*
- ***Goal 6 -****All households as well as non-residential users shall have access either to a door-to-door collection of garbage or to a secondary collection facility within easy accessible distance by the year 2013;*
- ***Goal 7 -****All the solid waste generated in the city shall be segregated, collected, transported and either processed for reuse or disposed of in a sanitary landfill by the year 2013;*
- ***Goal 8 -****The entire sanitation system as visualized above is socially, environmentally and economically sustainable and effectively managed by a capable team in the municipality, maintaining adequate standards of safety for the workers;*

7.1.1. Guiding Principles

The guiding principles for the realization of the vision and hence the defined goals as articulated above are enumerated below –

- **Equity**
- **Sustainability – Technical, Financial, and Environmental**
- **Transparency**
- **Local Adaptability**
- **Improved Public Heath**
- **Inclusiveness**

7.1.2. Framework

The National Urban Sanitation Policy, Uttar Pradesh Urban Sanitation Strategy, and the National Rating and Award Scheme for Sanitation for Indian Cities by Government of India, provide a good framework for defining the guidelines to prepare the City Sanitation Plan and its implementation strategy.

INDICATORS AS PER NUSP	GUIDELINES FOR CSP
OUTPUT RELATED	▪ **Proposals to provide safe access to household sanitation and serve entire population by toilets** ▪ **Proposals for safe disposal of waste water, storm water and solid waste** ▪ **Proposals to meet the national standards for safe disposal of liquid and solid wastes**
PROCESS RELATED	▪ **Proposals to ensure the efficient design of the system in conformity with applicable rules and regulations** ▪ **Proposals to ensure clear devolution of responsibility and accountability in the institutional system** ▪ **Proposals to ensure competent documentation of the operational and monitoring systems** ▪ **Proposals to ensure the formulation of prudent sanctions for deviances / violations of the system both at individual / institutional level and ensure the enactment**
OUTCOME RELATED	▪ **Proposals to ensure the systems facilitate and sustain good public health and environmental conditions**

7.1.3. Timeline

The system shall be designed under the broad framework as per the guidelines for a design period of 30 years; however, the planning shall entail the implementation of the design in phases to meet the ultimate goals of the CSP.

The phased approach aims to navigate through the challenges posed by the limitations in investments, institutional capacities, and community engagement in a proficient manner. The phases and the corresponding timelines are defined as stated below –

Table 41: Phases and Timelines for City Sanitation Strategy

PHASE	YEAR
IMMEDIATE-TERM	2014 - 2016
SHORT-TERM	2014 - 2018
MID-TERM	2014 - 2030
LONG-TERM	2014 - 2044

Table 42: Assumptions for Strategic Planning

	PHASE/YEAR		
	SHORT-TERM 2014 - 2018	**MID-TERM 2018 - 2030**	**LONG-TERM 2031 - 2044**
ASSUMPTIONS	Efforts initiated to eradicate slums and award land tenure and achievement of eradication of slum and award of land-tenure - regular small houses replace slum settlements	Regular Houses for all	Regular Houses for all
	Efforts initiated towards public outreach and education and 80% Literacy rate is achieved	90% Literacy rate is achieved	95% Literacy rate is achieved
	Efforts initiated to generate awareness campaigns to promote better hygiene and sanitation practices and Citizens adopt the better hygiene and sanitation practices	Citizens adopt the better hygiene and sanitation practices and sustain the systems	Citizens adopt the better hygiene and sanitation practices and sustain the systems
	Efforts initiated to regularize the participatory planning and budgeting and participatory planning institutionalized	Participatory planning institutionalized	Participatory planning institutionalized
	Efforts Initiated to enhance employment rates through local adaptively and productivity and 70% of the population is employed and has regular income	90% of the population is employed and has regular income	100% of the population is employed and has regular income
	Efforts initiated to promote 3R Principle - Reduce, Reuse and Recycle and citizens adopt the 3R Principle - Reduce, Reuse and Recycle in all sectors	Water Conservation practices are prevalent; Storm Water Source Control Mechanism are regularized; Reduction/Reuse/Recycle of liquid/solid waste is achieved	Water Conservation practices are prevalent; Storm Water Source Control Mechanism are regularized; Reduction/Reuse/Recycle of liquid/solid waste is achieved
	Efforts initiated to provide 135 lpcd water supply to all citizens and water connections to all has been achieved and 135 lpcd water supply is also achieved	Water connections to all has been achieved and 135 lpcd water supply is also achieved	Water connections to all has been achieved and 135 lpcd water supply is also achieved

7.2. City-Level Critical Problem Areas, Strategy and Recommendations

7.2.1. Sewerage Management

7.2.1.1. Critical Problem Areas

- CRITICAL PROBLEM AREA 1–There is no sewerage network and Sewerage Treatment Plant (STP) in the city.
- CRITICAL PROBLEM AREA 2 – Total sewage generated in the city is untreated and discharged into the lakes and public nalas leading to environmental pollution and health hazards
- CRITICAL PROBLEM AREA 3 – Adverse risk to public health due to improper and non-compliant septic tanks and septage management leading to contamination of water bodies/water supply distribution system and incidences of water borne diseases

7.2.1.2. Strategy

Based on the comprehensive situation analysis executed for the city within the sewerage sector and the identified gaps in the level of service delivery, the targets for service delivery are set across the planning horizon of 30 yrs. Based on the existing sanitation situation, demographic profile of the city including the population density patterns, the socio-economic profile, the topography, and the financial aspects of NNJ, the targets are set for the immediate, short-term, mid-term and long-term phases of the city sanitation planning.

Table 43: Targets for Service Delivery Levels in Sewerage Management Sector

COMPONENT OF SERVICE	DESIRED LEVEL OF SERVICE DELIVERY	EXISTING LEVEL OF SERVICE DELIVERY	TARGETS FOR SERVICE DELIVERY LEVELS			
			IMMEDIATE-TERM 2014-2016	SHORT-TERM 2014-2018	MID-TERM 2014-2030	LONG-TERM 2014-2044
Collection of Waste Water						
Coverage of Sewer Network (% of city area)	*100%*	*0%*	***Feasibility Study***	***25% (Demand until 2017)***	***50% (Demand until 2030)***	***100% (Demand until 2042)***
Household Connection to Network	*100%*	*0%*	***Feasibility Study***	***25% (Demand until 2017)***	***50% (Demand until 2030)***	***100% (Demand until 2042)***
Compliance of Septic Tanks to CPHEEO Standards	*100%*	*0%*	*25%*	***50% (Demand until 2017)***	***100% (Demand until 2030)***	***100% (Demand until 2042)***
Conveyance of Waste Water	*100%*	*0%*		***25% (Demand until 2017)***	***50% (Demand until 2030)***	***100% (Demand until 2042)***
Treatment Capacity of STPs	*100%*	*0%*		***25% (Demand until 2017)***	***50% (Demand until 2030)***	***100% (Demand until 2042)***
Cost Recovery						
Extent of Cost Recovery	*100%*	*0%*		*25 %*	*50%*	*100%*
Efficiency in Collection of Sewage Charges	*100%*	*0%*		*25 %*	*50%*	*100%*
Customer Service						
Efficiency in redressal of customer complaints	*80%*	*0%*	*80%*	*80%*	*80%*	*80%*

The strategy adopted to achieve the aforementioned targets in the service delivery shall include the sewerage network system for use in the immediate phase while engaging in the assessment of further requirement in both the sewer network coverage and treatment and disposal systems. The possibility of a judicious blend of centralized and decentralized systems to meet the demands of the city shall be thoroughly investigated. The technology and service delivery options shall be designed to ensure the sewerage is managed efficiently through the entire cycle of operations originating at the generation of wastewater and culminating in the ultimate disposal.

All stages of the complete cycle are carefully planned to extend services to the entire city population cutting across all sections of the society and all levels of the settlements. The several options are designed with a focus on energy efficiency and overall sustainability of the system, keeping in mind the existing limitations of technical, financial and social capacities of NNJ. The service delivery options shall enmesh the community participation and NGO involvement to complement NNJ capacities.

Given the fact that the city is largely characterized by population with a low awareness in terms of the available sewerage management services and also the adverse impacts of the current malpractices leading to disintegration of health and environment; hence the proposals shall bear in mind the requirement for generation of awareness in the community alongside the provision for educating theses masses. This approach shall ensure sustainability of the proposed systems. (*Please refer to Chapter 6 for awareness generation strategy*).

7.2.2. Design Premises

The proposals shall be based on the following parameters –

- **Projected Populations and**
- **Projected Households,**
- **Existing Situation vis-à-vis the Key Issues at Ward Level**
- **Projected Sewerage Generation**[1]
- **Existing Institutional Capacities**
- **Existing Financial Capacities**

Table below represents the design inputs for the development of the sewerage management system with respect to the projected populations considering the growth and development patterns within the city –

Table 44: Design Inputs - Sewerage Management System

YEAR	PROJECTED POPULATION	WATER DEMAND (MLD) (@ 150 LPCD	SEWERAGE GENERATION (MLD) @ 80% OF WATERDEMAND	SOLID WASTE GENERATION (TPD) @ 0.45 KG PER CAPITA
2012				
2015	625,305	93.80	75.04	281.39
2020	674,504	101.18	80.94	303.53
2025	727,750	109.16	87.33	327.49
2030	785,283	117.79	94.23	353.38
2035	847,370	127.11	101.68	381.32
2040	914,303	137.15	109.72	411.44
2045	986,405	147.96	118.37	443.88

[1] The sporadic maximum sewage contributions from the floating population, during festivals and major events in the city, are considered and compounded with the regular city-level sewage quantities towards peak load considerations for design purposes. The proposed system shall provide for the buffer capacity to address the intermittent extreme waste loads.

The table below presents the requirement for the septage collection vehicles as part of the septage management process –

Table 45: Assessment of Septage Collection Vehicle Requirement

No. of Households Connected to Septic Tanks	60000
Septage Clearance Frequency	Once in 2 years
No. of Septic Tanks To Be Cleared Every Year	30000
No. of Operation Days in a Year	300
Septage Generation @ 2 cum/septic Tank/pit /year	60000
Daily Septage Generation (cum)	165
Total No. of Septic Tanks to be Cleared Every Day	100
CPHEEO Norm for Requirement of Septage Collection Vehicle	1 Vehicle for Clearing 3 Septic Tanks in a Day
Total No. of Septage Collection Vehicles Required	**33**

The type of vehicle required depends on factors such as the septage generation in a day as well as the width of access routes to the households connected to septic tanks. The overall strategy of integrating septage management into either sewerage or solid waste management will also have a greater bearing on the requirement assessment for the number and type of the septage collection vehicles.

7.2.2.1. Design Phases

PHASE	DESIGN COMPONENTS
IMMEDIATE-TERM (2014-2016)	▪ Connections to the households; ▪ Initiate primary collection and conveyance system ; ▪ Initiate septage management system ▪ Feasibility study for decentralized waste water treatment systems as a permanent solution
SHORT-TERM (2014-2018)	▪ Finalize collections to households and the conveyance system ▪ Intermittent decentralized waste water treatment systems for existing waste generation; ▪ Finalize decentralized waste water treatment systems if found feasible ▪ Treatment and Disposal ▪ Septage Treatment & Disposal
MID-TERM (2014-2030)	▪ Augmentation of the system to meet the demands of the growing population ▪ Replacements of components and operation & maintenance
LONG-TERM (2014-2044)	▪ Augmentation of the system to meet the demands of the growing population ▪ Replacements of components and operation & maintenance

7.2.2.2. Recommendations

7.2.2.2.1 Solution for the Critical Problem -'The coverage of sewerage network in the city is grossly deficient and the willingness of households to connect is low'

Immediate Action Directives

- **As an immediate measure it is recommended that NNJ release a '*tender*' requesting expression of interest and subsequent award of the contract of building of sewerage network and pumping stations to a *Private Service Provider* (PSP) on Built, Operate and Transfer (*BOT*) basis.**

Feasibility Study

- **Feasibility study shall be conducted to investigate the suitability of technologies in the decentralized systems or onsite solution in the city based on (1) area available within the plot, (2) topography and gradient – ease and energy efficient sewer network development potential, (3) population densities – present and future, (4)hydraulic and organic load, (5) energy efficiency and financial considerations, (6) recycle and reuse potential,(7) waste to energy considerations, (8) carbon-credits and Clean Development Mechanism value assessment potential, (9) financing models and operator models and (10) willingness of households to adopt, operate & maintain the system**

DPR

- **Based on the findings of the feasibility study, NNJ may release a notice to invite expression of interest to prepare a DPR to conceptualize and design the decentralized systems in the city which shall also include - (1) design of streamlined connection mechanism , along with the master map of the conveyance system, supporting reliable collection service (2) development of capacity management, operation & maintenance program (CMOM) and Sewer Connection Assessment Program (SCAP)**

Administrative and Regulatory Measures

- **Institutionalizing of the Household Connection Mechanism–The connection will be undertaken by certified plumper, who is authorized by NNJ. Training courses for the plumber is to be organized by NNJ at the end of which the '*certification and license*' shall be provided.**
- **Institutionalizing Monitoring and Evaluation (M&E) Mechanisms – M&E mechanisms for the design implementation/asset development as well as operation & maintenance of the assets shall be developed under the technical wing of NNJ supported by a dedicated team of engineers and laborers to handle the O&M of the system. '*Training and certification*' of the technical team and laborers shall be organized by NNJ which shall include the use of sophisticated instrumentation required for the O&M.**
- **Develop and Regularize Municipal Bye-Law– Municipal Bye-Laws or Building Codes shall be introduced to make connectivity mandatory for grounds situated in a defined distance from the next sewer line. Grounds, with exceeding distance maybe allowed installing onsite systems. Connectivity applies for all black or grey water outlets.**
- **Develop and Conduct Awareness Generation Campaigns– Campaigns shall be conducted to propagate the benefits of better hygienic and sanitation practices and also advocate the efficiency and benefits of the sewerage management systems designed for the community. Through the campaigns, NNJ shall encourage the residents to connect to the existing and proposed network through financially sustainable mechanisms and cross-subsidy mechanisms;**
- **Ring Fence Sector Specific Budgets–Budgets shall be established and the dedicated Sewerage Sectoral Unit under the Sanitation Department shall develop the costs and the tariff structures in consultation with the Finance & Accounts Department and the Strategic Communications Cell (working closely with the communities) in order to promote efficient '*cost recovery mechanisms*'. '*Impact benefit tax*' is also proposed to be levied upon regularization of services.**
- **Establish Connection Fee – Each ground will be provided with a nominal connection fee, which is to be reinvested into the system for capital investment and not for O&M cost. Connection for lower income groups shall be subsidized.**

7.2.2.2.2 Solution for the Critical Problem – 'The sewage treatment and disposal system in the city is lacking and the total sewage generated in the city is untreated leading to environmental pollution and health hazards'

Immediate Action Directives

- **As an immediate measure it is recommended that NNJ release a tender requesting expression of interest and subsequent award of the contract to a *Private Service Provider* (PSP) on Design, Build, Operate and Transfer (*DBOT*) basis to – (1) built STP to meet the demands of the short-term phase with a horizon of year 2018.**

Feasibility Study

- **Feasibility study shall be conducted to investigate the suitability of technologies in the decentralized systems or onsite solution in the city –based on (1) area available within the plot, (2) topography and gradient – ease and energy efficient sewer network development potential, (3) population densities – present and future, (4)hydraulic and organic load, (5) energy efficiency and financial considerations, (6) recycle and reuse potential, (7) waste to energy considerations, (8) carbon-credits and Clean Development Mechanism value assessment potential, (9) financing models and operator models, and (10) willingness of households to adopt, operate & maintain the system**

DPR

- **Based on the findings of the feasibility study, NNJ may release a notice to invite expression of interest to prepare a DPR to conceptualize and design the decentralized systems in the city which shall also include - ((1) design of '*O&M Manuals for the treatment facilities*' , covering aspects of State Wide Emergency Programs for municipal sewerage treatment facilities, (2) development of '*planned maintenance management system*', (3) Development of '*process control manual'* for the STPs (4) Design of the '*laboratory and the pertinent manuals*'**

Administrative and Regulatory Measures

- **Establishing Dedicated Sectoral Unit – It is recommended to establish a '*dedicated unit for Sewerage Sector*' under the Sanitation Department. The technical wing and the O&M unit developed under this sectoral unit shall be manned by technically competent resources certified through institutionalized '*training and certification*' programs to handle O&M and M&E ;**
- **Institutionalizing Capacity Building – '*Training calendar*' shall be developed and regular training programs shall be conducted to upgrade the skills of the resources in technical and O&M wing in accordance with the calendar schedule; '*vocational training units*' shall be established to train the community to participate in the O&M of the sewerage systems in their locality;**
- **Develop and Conduct Awareness Generation Campaigns– Campaigns shall be conducted to propagate the benefits of better hygienic and sanitation practices and also advocate the efficiency and benefits of the sewerage management systems designed for the community. Through the campaigns, NNJ shall '*encourage the community to participate in the O&M*' activities/plan of the sewerage systems in their respective areas;**
- **Establish Cost Recovery Mechanisms – Effective '*cost and tariff structures*' shall be institutionalized, impact benefit taxes shall be designed and imposed on the citizens to meet the O&M expenses and if feasible capital costs as well, hence ensuring the financial viability**

7.2.2.2.3 Solution for the Critical Problem – 'Adverse risk to public health due to improper and non-compliant septic tanks and septage management leading to contamination of water bodies/water supply distribution system and incidences of water borne diseases'

Feasibility Study

In order to establish a sustainable septage clearance and management system for the city, a study shall be conducted to assess the possibility of integrating the septage management into the sewerage or the solid waste management system. It may be recommended to strategize the management separately for the existing and the future septic tanks.

'Premises' – The septage clearance from the *existing septic tanks* shall be integrated with the solid waste management primary collection system and the septage either disposed to the solid waste management

facility or the STP site. The septage treatment again shall be integrated either with the solid waste treatment or the sewerage treatment process.

'Premises' – The septage clearance from the *future septic tanks* shall be integrated into the sewerage network system, while the septage treatment shall be integrated either with the solid waste treatment or the sewerage treatment process.

The scope of the feasibility study shall include –

- **Assessment of the ward wise demand for desludging facilities and the feasibility of separation of black and grey water;**
- **Assessment of the septage characteristics in ward-wise and sewerage zone-wise manner in the city so its potential of integration into sewerage treatment or solid waste treatment may be established;**
- **Assessment of the potential of use of septic tanks as interceptor tanks for the sewerage systems – assess the design options of septic tanks for the new constructions so connection to the sewer network is feasible;**
- **Assessment of the potential of the waste to energy options to ascertain the viability of the integration of septage treatment into the sewerage or solid waste treatment process**
- **Assessment of the vehicle options to collect septage along with solid waste to make the system more financially viable and sustainable.**

DPR

- **Based on the findings of the feasibility study, NNJ may release a notice to invite expression of interest to prepare a DPR for the – (a) rehabilitative and up-gradation works of the existing septic tanks and (b) planning and design of the new septage management system that shall integrate the septage management with either sewerage or solid waste management. The scope shall include – (1) Procedures for rehabilitation of septic tanks to arrest seepage as well as upgradation into interceptor tanks to integrate into proposed off-site sewerage system , (2) develop design guidelines for eth septic tanks to be adopted by the city so septage management system including clearance & treatment gradually can be integrated into the future/proposed off-site sewerage system(s) or solid waste systems, (3) develop GIS based asset registry system for septage management and the computerized maintenance management plan coupled with comprehensive M&E system - this system shall track all maintenance activities in addition to facilitating a central repository of areas of complaints and general maintenance;**

Administrative and Regulatory Measures

- **Develop and Conduct Awareness Generation Campaigns– Campaigns shall be developed and conducted to propagate the benefits of integration of the existing septic tanks into the off-site sewerage systems so it may increase the acceptance of the procedures by the community and their willingness to pay for the management services may be reinforced;**
- **Regularize Municipal Bye-Laws and Building Codes – Municipal bye-laws and building codes shall be developed and enforcing mechanism shall be institutionalized by NNJ to promote sustainable septage management system for the city. The directive shall (1) mandate the stringent compliance mechanism for the design of septic tanks along with the approval of new constructions; (2) Regulatory oversight mechanisms to penalize the citizens violating the establishing regulation and standards; (3) Approve construction of septic tanks only if CPHEEO guidelines are followed (certification mechanism), which include - (i) includes only the discharge of black water (toilets), (ii) does not exceed population density of 300 capita/hectare, (iii) exclude use of soak pits in areas with impermeable soil, hardrock or high groundwater table.**
- **Institutionalize Incentive Schemes–Incentives shall be introduced in the form of property tax rebates in order to achieve connectivity (can be linked with sewerage issue!)**

7.2.3. Access to Toilets

7.2.3.1. Critical Problem Areas

- **CRITICAL PROBLEM AREA 4** - Inadequate number and inappropriately designed, operated and maintained individual and community toilets in urban poor areas leading to open defecation and eventual health and environmental risks.

7.2.3.2. Strategy

Based on the comprehensive situation analysis executed for the city within the access to toilet sector and the identified gaps in the level of service delivery, the targets for service delivery are set across the planning horizon of 30 yrs. Based on the existing sanitation situation, demographic profile of the city including the population density patterns, the socio-economic profile, the topography, and the financial aspects of NNJ, the targets are set for the immediate, short-term, mid-term and long-term phases of the city sanitation planning.

Table 46: Targets for Service Delivery Levels in Access to Toilets Sector

COMPONENT OF SERVICE	DESIRED SERVICE DELIVERY	EXISTING SERVICE DELIVERY	TARGETS FOR SERVICE DELIVERY LEVELS			
			IMMEDIATE-TERM 2014-2016	SHORT-TERM 2014-2018	MID-TERM 2014-2030	LONG-TERM 2014-2044
Coverage of Toilets						
Individual Toilets (toilets per every household)	*1*	*0.69*	*0.75*	*1*	*1*	*1*
Community Toilets (seat per every user)	*1 in 35*	*115*	*1in 75*	*1 in 35*	*1 in 35*	*1 in 35*
Public Toilets (seat per every user)	*1 in 100*	*1 in 300*	*1 in 175*	*1 in 100*	*1 in 100*	*1 in 100*
Condition of Toilets						
Individual Toilets (% in working condition)	*100%*	*44%*	*100%*	*100%*	*100%*	*100%*
Community Toilets (% in working condition)	*100%*	*30%*	*75%*	*100%*	*100%*	*100%*
Public Toilets in (% in working condition)	*100%*	*50%*	*75%*	*100%*	*100%*	*100%*
Toilets in Schools (% in working condition)	*100%*	*30%*	*75%*	*100%*	*100%*	*100%*

The strategy adopted to achieve the aforementioned targets in the service delivery shall include the rehabilitation and upgradation of the existing sanitary facilities for use in the immediate phase while engaging in the assessment of further requirement in the individual and community category as well as toilets in municipal schools, commercial and market areas.

Given the fact that the city is largely characterized by population with a low awareness in terms of the available sewerage management services and also the adverse impacts of the current malpractices leading to disintegration of health and environment; hence the proposals shall bear in mind the requirement for generation of awareness in the community alongside the provision for educating theses masses. This approach shall ensure sustainability of the proposed systems. (*please refer to Chapter 6 for awareness generation strategy*)

7.2.3.2.1. Design Premises

The proposals shall be based on the following parameters –

- **The Population Densities**
- **Development Pattern of the City – Present & Future Land-Use**

- **Opportunities of means of livelihood**
- **Existing Institutional Capacities**
- **Existing Financial Capacities**
- **Existing Situation vis-à-vis the Key Issues at Ward Level**

Based on the primary survey and the focus group discussions conducted in the slum areas the following assumptions have been defined to strategize the improvement of access to toilets –

Table 47: Assumptions for provision of Toilet Facilities in Slum Areas

PERCENTAGE OF HOUSEHOLDS WITHOUT ACCESS TO TOILETS	STRATEGY
30%	Develop individual toilets w/support of different schemes ILCS/RAY/KAY/BSUP
20%	Develop shared toilets - 1 toilet amongst 5 households
20%	Willing to develop individual toilets if assured water supply / sewerage management
30%	Develop Community Toilet Complexes - 1 seat per every 35 users

Based on the above assumptions, the design inputs for the interventions to improve the access to toilets in the city of Jhansi are presented in subsequent sections.

Table 48: Design Inputs - Access to Toilets Strategy

	City Wide
Population	597636
Households	90551
Households without access to toilets	28100
No. of individual toilets required	**8430**
No. of shared toilets required	**5620**
No. of CTCs required	**24**

7.2.3.2.2. Design Considerations

The various boundary conditions that influence the design of the community toilets and enhance the acceptability levels amongst the community and also promote sustainability of the developed assets and the overall sanitation system are presented below -

- **Location**
- **Proximity to settlements – preferably 100-200 m**
- **Visibility**
- **Safety aspect**
- **Near sewage lines**
- **Co-location – compatible use**
- **Signage**
- **Directional and Labeling**
- **Gender Sensitive Design**
- **Women and children specific**
- **Disability Access**
- **Elderly User Access**

- **Well-lit / ventilated**
- **Environmentally Sustainable**
- **Energy Considerations**
  - High degree of natural lighting
  - Low energy light fittings
  - Use of solar power
  - Passive ventilation
  - Recycled, recyclable, renewable and locally sourced source materials
- **Water Considerations**
- **Grey Water Flushing**
- **Low-flow/water less urinals**
- **Recycling of storm water for flushing**

7.2.3.2.3. Design Phases

Table 49: Design Phases - Access to Toilets Sector

PHASE	DESIGN COMPONENTS
IMMEDIATE (2014-2016)	Detailed survey of existing facilities to initiate rehabilitation and augmentation Repairs and up gradation of the existing toilets; Design & Construction of the new facilities in areas with no sanitation facilities Initiation of septage management
SHORT-TERM (2014-2018)	100% coverage and infrastructure development Design of System to handle the human excreta
MID-TERM (2014-2030)	Finalization of septage management Augmentation of the system to meet the demands f eth growing population Repairs & Maintenance
LONG-TERM (2014-2044)	Augmentation of the system to meet the demands of the growing population Repairs & Maintenance

7.2.3.3. Recommendations

7.2.3.3.1 Solution for the Critical Problem – 'Inadequate number and inappropriately designed, operated and maintained individual and community toilets in urban poor areas leading to open defecation and eventual health and environmental risks'

Immediate Action Directives

- **It is recommended to release a notice to invite expression of interest for the design, rehabilitation and up-gradation of the existing toilet facilities on a Rehabilitate, Operate and Transfer (ROT) basis in People Public Private Participation (PPPP[2]) mode in the immediate phase with a horizon of year 2014 in the wards listed below. The community toilet facilities in the listed wards are in need of repairs and have inadequate capacity and design to handle the expected demand in the urban poor areas in compliance to established design guidelines by Ministry of Housing and Urban Poverty Alleviation and the design standards through relevant Government Orders. The scope shall also include the survey of the remaining city and ascertain the exact numbers and location for rehabilitation and up-gradation sanitation facilities**

[2]In the PPPP mode, people shall be treated as customers rather than as beneficiaries and hence shall contribute towards both the capital and O&M investments as far as possible. People shall also be actively involved in the O&M activities leading to an enhanced sense of ownership and ultimate sustainability. The capital investment may also be in the form of labor, material as well.

- **Launch a pilot project for the usage of mobile toilets as (a) temporary solution for CTCs wherever in-situ development of slums or relocation of the community is planned under RAY or areas where land tenure issues are flagged, (b) seasonal need for additional toilet seats is prevalent in area with floating population and (c) place constraint does not allow any permanent solution. The project can be trialed in model Wards and will provide (A) a need assessment at the outset (B) develops an Operator model and a Financial Model for the capital investment as well as O&M cost, (C) prepares a septage management plan (if direct connection to the sewerage system is not given) and (D) implements the Ward level pilot project.**

Feasibility Study

- **The feasibility study shall be conducted to ascertain the model of toilets to be adopted in the city to address the access to toilets issue. – Shared/community/mobile. The scope shall include –(1) ward wise identification of demand for toilet facilities, (2) assessment of the land availability at household,/community/ward level in the areas which are prone to open defecation(3) assessment of opportunities for rain water harvesting systems and use of water thus tapped for operational & maintenance activities, (4) Based on the database of spatial distribution of inadequacy of the toilet facilities , (5) the willingness to pay by the community and their participation interest levels in the O&M of the sanitation facilities in order to develop operator and finance models**

DPR

- **Based on the findings of the feasibility study, NNJ may release a notice to invite expression of interest to prepare DPR. It is recommended to evolve a city-wide strategy through DPR, yet the city-wide plan shall be broken down into packages to ensure phase-wise development in order to ease the financial burden. The DPR is detailed as under -**

- DPR for the construction works of new toilets which shall include – (1) Design of toilets as per the design guidelines by Ministry of Housing and Urban Poverty Alleviation and the design standards through relevant Government Orders, (2)Detailing the construction procedure of shared toilets, and community toilets (b) Design the faecal sludge management system including clearance & treatment gradually integrating into the future/proposed off-site sewerage system(s) (c) Develop asset registry for toilet management and the computerized maintenance management plan coupled with comprehensive M&E system –this system shall track all maintenance activities in addition to facilitating a central repository of areas of complaints and general maintenance

Administrative & Regulatory Measures

- **It is recommended to '*establish a dedicated unit for Toilets Sector*' under the Sanitation Department to streamline the design, construction, operation & maintenance processes within the sector with regular O&M training programs for the both the NNJ officials and O&M team and the community and regular helpline.**
- **Develop and Conduct Awareness Generation Campaigns– Campaigns shall be conducted to propagate the benefits of better hygienic and sanitation practices and encourage the residents to adopt toilet facilities through financially sustainable mechanisms and cross-subsidy mechanisms. Along the lines of the National School Sanitation Initiative (NSSI), the awareness campaigns to promote behavioral change shall lay emphasis on personal hygiene, proper sanitation, clean toilet habits, safe drinking water, separate toilets for girl child, disposal of waste water, human excreta disposal/toilets, waste water recycling, waterless urinals, waste segregation, and compositing, food hygiene and creation, and conservation of green spaces. Schools shall be adopted as the prime media for the campaign.;**
- **Regularize Municipal Bye-Laws and Building Codes– Municipal bye-laws and building codes shall be developed to encourage "Water Reuse Strategy," for utilization of the recycled water/waste water in the operation and maintenance of the toilet facilities; punitive measures shall be enforced to discourage the open defecation practices; Building codes enforced to adopt the prescribed design standards for toilets;**
- **Develop and Institutionalize MIS System– NNJ shall promote the documentation and mapping of the system. An asset register shall be maintained and the computerized maintenance management plan shall emphasize on the preventive and corrective maintenance; this system shall track all maintenance activities in addition to facilitating a central repository of areas of complaints and general maintenance;**

Financial Mechanism Interventions

- **Institutionalize Sector Specific Budgets– Budgets shall be established; and the dedicated Toilet Sector Unit under the Sanitation Department shall develop the costs and the tariff structures in consultation with the Finance & Accounts Department and the Strategic Communications Cell (working closely with the communities on area up gradation plans) in order to promote efficient cost recovery mechanisms;**
- **NNJ shall assist in the construction of new shared toilets in densely populated areas at the rate of one (1) toilet for every five (5) households through micro-financing in areas lacking the basic services in the immediate and short-term phase with a horizon of year 2018;**

7.2.4. Storm Water Management

7.2.4.1. Critical Problem Areas

- **CRITICAL PROBLEM AREA 5** - Inadequate storm water drainage network along with poor maintenance and non-integration of source control measures with the existing storm water drainage network leading to a considerable number of water logging areas and ultimately unhygienic condition.

7.2.4.2. Strategy

Based on the comprehensive situation analysis executed for the city within the storm water management sector and the identified gaps in the level of service delivery, the targets for service delivery are set across the planning horizon of 30 yrs. Based on the existing sanitation situation, demographic profile of the city including the population density patterns, the socio-economic profile, the topography, and the financial aspects of NNJ, the targets are set for the immediate, short-term, mid-term and long-term phases of the city sanitation planning.

Table 50: Targets for Service Delivery Levels in Storm water Management Sector

COMPONENT OF SERVICE	DESIRED SERVICE DELIVERY	EXISTING SERVICE DELIVERY	TARGETS FOR SERVICE DELIVERY LEVELS			
			IMMEDIATE-TERM 2014-2016	SHORT-TERM 2014-2018	MID-TERM 2014-2030	LONG-TERM 2014-2044
Coverage of Drainage Network	*100%*	*61%*	*70%*	*90%*	*100%*	*100%*
Incidences of Water Logging / Flooding	*Nil*	*20*	*15*	*10*	*Nil*	*Nil*

The strategy adopted to achieve the aforementioned targets in the service delivery shall include a decentralized approach to storm water management in addition to the centralized storm water drain network to manage the run-off. This approach entails the introduction of systems that temporarily store or permanently remove storm water from the location of rainfall on impervious areas. New and evolving methodologies involving 'source controls'[3], green infrastructure, rain water harvesting methodologies, low impact development and best management practices are recommended to be adopted.

The objective of the said approach is to reduce storm water flow into the centralized storm water drain system while increasing soil infiltration and pollutant removal, providing urban ecological restoration opportunities, and increasing overall green spaces within watersheds. *This shall facilitate the ground water recharge.* There are three major source control techniques – (**a**) detention, (**b**) retention, and (**c**) bio retention/bio filtration and available technological source control measures include blue roofs, rainwater harvesting, vegetated controls, permeable pavements, and green roofs. Each source control technique provides certain benefits that can be matched to the city's needs –

[3] 'Source Controls' is the term used to emphasize their location at the place where runoff is generated.

Table 51: Benefits of Source Control Techniques

BENEFITS	DETENTION	RETENTION	BIO-FILTRATION
Reduces Drain Overflows	X	X	X
Reduces Potable Water Consumption		X	
Reduces Flooding	X	X	X
Reduces Backups	X	X	X
Reduces Direct Discharges		X	X
Reduces Strain on Drains	X	X	X

Potential source control strategies and initiatives are listed as below –

Table 52: Source Control Strategies

BUILDINGS AND LOTS
Performance Standards for New Development
Performance Standards for Existing Buildings
Low- and medium-density residential controls
RIGHT OF WAY
Road reconstruction design standards
Sidewalk design standards
Right of way buildout
OPEN SPACE
Green Infrastructure - green streets, rain gardens and swales

Table 53: Source Control Initiatives

STRATEGY	DESCRIPTION	EFFECT
Blue Roof 2-in / 1-in Detention	Install roof top detention systems	Cost Effective method to detain water
Green Roof	Install a green roof on at least 50 percent of a roof	Cost-effective storage or removal of runoff from new rooftops
Rain Water Harvesting	Methodologies to capture run-off	Cost-effective storage or removal of runoff from impervious surfaces
Side walk Bio-filtration	Vegetated Controls	Reduction in annual run-off from catchment area
Greening of Parking Lots	Implement vegetation and storm water controls in new parking lots	Reduction in annual run-off from catchment area
Porous Parking Lots	commercial and community facility parking lots to plant street trees and perimeter and interior landscaping that will detain water or infiltrate to the soil as feasible.	Retention of storm water and reduction in run-off
Porous Concrete Sidewalk	porous pavement on publicly-owned parking lots	Retention of storm water and reduction in run-off
Green Street	New zoning amendment requires street tree plantings	Cost-effective infiltration of street storm water
Permeable Pavements	Install and monitor porous pavement on publicly-owned lots and new construction of roads	Retention of storm water and reduction in run-off

7.2.4.3. Recommendations

7.2.4.3.1 Solution for the Critical Problem – 'Inadequate storm water drainage network along with poor maintenance and non-integration of source control measures with the existing

storm water drainage network leading to a considerable number of water logging areas and ultimately unhygienic condition'

Immediate Action Directives

- **It is recommended that NNJ coordinate with the sewerage & solid waste management department and prioritize the activity of prevention of indiscriminate dumping of solid waste and waste water discharge into the drains;**

Feasibility Study

- **It is proposed to conduct a study to ascertain the feasibility of integrating the water bodies in the city into the future storm water drainage network system as rain water harvesting (RWH) structures to reduce the capacity requirement encumbrance on man-made drains as well as create a continuous drainage network;.**
- **It is also proposed to study the feasibility of constructing rain water harvesting structures / source controls in low-lying areas to address the storm water issue since the areas cannot be integrated into the surrounding drainage network owing to the undulating levels;**
- Conduct hydraulic modelling studies in few selected pilot areas of the city in order to improve the water retention potential within the city and decrease the run-off load for low lying areas as well as the downstream areas of river
- Assessment of the following parameters with respect to water bodiesand the low-lying areas – **(a)** water quality analysis **(b)** influent characteristics **(c)**ground infiltrationcharacteristics and sub-strata soil investigations **(d)** sedimentation analysis
- **It is proposed to study the techno-economic feasibility for developing the water-bodies as recreational facilities considering the importance of Jhansi as a strategic tourist location**

DPR

- **Based on the findings of the feasibility study, NNJ may release a notice to invite expression of interest to prepare DPR. The DPR is detailed as under -**
- DPR for the– (**1**) Design and construction works of new storm water drainage network, (**2**) design and construction works of source controls in the low-lying areas(b) Design and construction works of recreational facilities – water bodies (c) Develop asset registry for storm water management and the computerized maintenance management plan coupled with comprehensive M&E system – thissystem shall track all maintenance activities in addition to facilitating a central repository of areas of complaints and general maintenance

Administrative & Regulatory Measures

- **It is recommended to establish a dedicated unit for Storm Waste Sector under the Sanitation Department to streamline the design, construction, operation & maintenance processes within the sector; personnel management system & Sanitation worker's training program shall be implemented to conduct occupational safety and health training campaigns to educate the sanitary workers with respect to the benefits of adopting best operating practices;**
- **Municipal Bye-Laws shall be enforced to encourage the residents to adopt the practices of source control initiatives to promote reduce, reuse and recycle principle; Regulatory Mechanisms (polluter pays) shall be enforced to discourage open dumping of waste;**
- **Awareness generation campaigns shall be conducted to propagate the benefits of source control initiatives;**
- **NNJ shall develop and institutionalize the MIS system to document and map the drainage network system. An asset register shall be maintained and the computerized maintenance management plan coupled with comprehensive M&E system shall emphasize on the preventive and corrective**

maintenance; this system shall track all maintenance activities in addition to facilitating a central repository of areas of complaints and general maintenance.

Financial Mechanism Interventions

- **It is recommended to initiate incentives for adopting the source control initiatives;**
- **Sector specific budgets shall be established; and the dedicated Storm Water Sectoral Unit under the Sanitation Department shall develop the costs and the tariff structures in consultation with the Finance & Accounts Department and the Strategic Communications Cell (working closely with the communities on area up gradation plans) in order to promote efficient cost recovery mechanisms. Impact benefit tax is also proposed to be levied on properties in areas where services are provided.**

7.2.5 Solid Waste Management

7.2.5.1 Critical Problem Areas

- CRITICAL PROBLEM AREA 6– The household coverage of solid waste management services as well as the overall collection efficiency is inadequate and deficient. The solid waste management services are inadequate particularly in the slum areas as well as the public places resulting in adverse health and environmental impacts. Also there is no provision of scientific treatment of municipal solid waste.

7.2.5.2 Strategy

Based on the comprehensive situation analysis executed for the city within the SWM sector and the identified gaps in the level of service delivery, the targets for service delivery are set across the planning horizon of 30 yrs. Based on the existing sanitation situation, demographic profile of the city including the population density patterns, the socio-economic profile, the topography, and the financial aspects of NNA, the targets are set for the immediate, short-term, mid-term and long-term phases of the city sanitation planning.

Table 7.2.4.3-1: Targets for Service Delivery Levels in Solid Waste Management Sector

COMPONENT OF SERVICE	DESIRED LEVEL OF SERVICE DELIVERY	EXISTING LEVEL OF SERVICE DELIVERY	TARGETS FOR SERVICE DELIVERY LEVELS		
			2014-2018	2014-2030	2014-2044
Household Coverage	100%	20%	100%	100%	100%
Segregation at Source	100%	0%	100%	100%	100%
Collection Efficiency of MSW	100%	80%	90%	100%	100%
Extent of Reuse & Recovery	80%	10%	100%	100%	100%
Extent of Treatment	100%	80%	100%	100%	100%
Extent of Scientific Disposal	100%	80%	100%	100%	100%)
Extent of Cost Recovery	100%	10%	100%	100%	100%

COMPONENT OF SERVICE	DESIRED LEVEL OF SERVICE DELIVERY	EXISTING LEVEL OF SERVICE DELIVERY	TARGETS FOR SERVICE DELIVERY LEVELS		
			2014-2018	2014-2030	2014-2044
Efficiency in Collection of Sewage Charges	100%	30%	100%	100%	100%
Efficiency in redressal of customer complaints	80%	50%	80%	80%	80%

The strategy adopted to achieve the aforementioned targets in the service delivery shall include the coverage of entire households in the city under the collection services – primary and secondary collection network. The cost recovery mechanisms need to be strengthened.. The service delivery options shall enmesh the community participation and NGO involvement to complement NNJ capacities.

Given the fact that the city is largely characterized by population with a low awareness in terms of the available sewerage management services and also the adverse impacts of the current malpractices leading to disintegration of health and environment; hence the proposals shall bear in mind the requirement for generation of awareness in the community alongside the provision for educating theses masses. This approach shall ensure sustainability of the proposed system. Refer to Chapter 6 for IEC & Awareness Campaign strategy.

7.2.5.3 Recommendations

7.2.5.4 Solution for the Critical Problem 6 –

> 'The household coverage of solid waste management services as well as the overall collection efficiency is inadequate and deficient in urban poor areas leading to the dumping of solid waste in open areas and drains resulting in health and environmental risks'

Immediate Action Directives

In order to achieve 100% coverage the private concessionaire who holds the contract for the city shall be enforced to implement the services and complete the ISWM plant as per the contract.

IEC campaigns shall be initiated to promote segregation at source and also support the primary collection and secondary collection processes.

Administrative and Regulatory Measures

It is recommended to establish a dedicated unit for Solid Waste Sector under the Sanitation Department to streamline the design, construction, operation & maintenance processes within the sector; personnel management system & Sanitation worker's training program shall be implemented to conduct occupational safety and health training campaigns to educate the sanitary workers with respect to the benefits of adopting best operating practices;

Municipal Bye-Laws shall be developed to encourage the residents to adopt the practices of solid waste reduce, reuse and recycle; Regulatory Mechanisms (polluter pays) shall be enforced to discourage open dumping of waste;

Awareness generation campaigns shall be conducted to propagate the benefits of better hygienic and sanitation practices and encourage the residents to adopt solid waste management systems through financially sustainable mechanisms and cross-subsidy mechanisms

NNJ shall develop and institutionalize the MIS system to document and map the collection & transportation system. An asset register shall be maintained and the computerized maintenance management plan coupled with comprehensive M&E system shall emphasize on the preventive and corrective maintenance; this system shall track all maintenance activities in addition to facilitating a central repository of areas of complaints and general maintenance.

Financial Mechanism Interventions

Sector specific budgets shall be established; and the dedicated Solid Waste Sectoral Unit under the Sanitation Department shall develop the costs and the tariff structures in consultation with the Finance & Accounts Department and the Strategic Communications Cell (working closely with the communities on area up gradation plans) in order to foster efficient cost recovery mechanisms. Impact benefit tax is also proposed to be levied on properties where services are provided.

7.3. Action Plans

7.3.1. Technology Options

The technology and service delivery options shall be designed to ensure the sanitation services are managed efficiently through the entire cycle of operations. All stages of the complete cycle are carefully planned to extend services to the entire city population cutting across all sections of the society and all levels of the settlements. The several options are designed and phased keeping in mind the existing limitations of technical, financial and social capacities of NNJ. The service delivery options shall enmesh the community participation and NGO involvement to complement the NNJ capacities

Table 2: Technology Action Plan

PHASE	SEWERAGE	TOILETS	STORM WATER	SOLID WASTE	QULAITY OF WATER
Immediate 2012-2014	☐ Initiation of Collection and Conveyance System ;	☐ Detailed Survey of existing facilities to initiate rehabilitation and up gradation	☐ Finalize repairs and up gradation of the storm water drains in the flood prone areas;	☐ Finalize Primary Storage and Primary Collection System;	☐ Detailed study to determine and map the contamination points / lengths
	☐ Intermittent Measures for Septage Clearance	☐ Finalize the Repairs and up gradation of the existing toilets;	☐ Initiate the source control strategies and initiatives	☐ Initiate Secondary Storage, Collection and Transport System;	☐ Initiate the casing works for water supply pipes at the contamination points / lengths
	☐ Feasibility study for DEWATS as a permanent solution	☐ Initiate the Design & Construction of the new facilities in areas with no sanitation facilities	☐ Initiate the construction of the new drains;	☐ Initiate Sanitary Landfill for existing Waste and Treatment Facility;	☐ Initiate the shifting of the hand-pumps/stand-posts from the contaminations points
	☐ Intermittent DEWATS for existing waste generation areas served by Septic tanks;	☐ Initiation of phasing out of the septic tanks	☐ Initiate the procurement of the maintenance equipment and devices;	☐ Initiate the Transfer Station	☐ Initiate training programs for household water purification mechanisms

	☐ **Finalize DEWATS if found feasible**	☐ **Initiate the Design of System to handle the human excreta**	☐ **Initiate the outfall drain structures / RWH structures / supporting activities**		☐
Short-Term 2012 – 2017	☐ **Finalization of collection & Conveyance System** ☐ **Initiate the Treatment and Disposal mechanisms – sewerage zone wise** ☐ **Intermittent arrangements for Septage Treatment & Disposal**	☐ **Finalize 100% Coverage of toilets and supporting Infrastructure Development** ☐ **Finalize the System to handle the human excreta**	☐ **Finalize and operationalize RWH structures / ground water recharge initiatives** ☐ **Finalize Construction Works** ☐ Source Control Installations ☐ New Drains ☐ Outfall structures ☐ **Finalize procurement of the maintenance equipment**	☐ **Finalize Secondary Storage, Secondary Collection and Transport** ☐ **Finalize and operationalize the transfer station** ☐ **Finalize Construction Works** ☐ Compost Plant ☐ Sanitary Landfill ☐ **Finalize the Capping of Sanitary Landfill for existing Waste** ☐ **Initiate the operations of Integrated Solid Waste Management Facility (ISWM)**	☐ **Finalize the casing works for water supply pipes at the contamination points / lengths** ☐ **Finalize the shifting of the hand-pumps/stand-posts from the contaminations points** ☐ **Initiate training programs for household water purification mechanisms** ☐ **Repairs and Maintenance**
Mid-Term 2012 – 2031	☐ **Phasing out of Septic Tanks by institution of DEWATS / connections to central sewer system** ☐ **Augmentation of the system to meet the demands of the growing population** ☐ **Replacements/repairs of components & maintenance**	☐ **Finalization of phasing out of Septic Tanks** ☐ **Augmentation of the system to meet the demands of the growing population** ☐ **Replacements/repairs of components & maintenance**	☐ **Augmentation of the SDM system to meet the demands of developing city** ☐ **Replacements of components as per the maintenance plan**	☐ **Augmentation of the MSW system to meet the demands of growing population** ☐ **Annual Phases of the ISWM facility** ☐ **Replacements of components as per the maintenance plan**	☐ **Regular / Periodic / Preventive repairs and maintenance**
Long-Term 2012 – 2042	☐ **Augmentation of the system to meet the demands of the growing population** ☐ **Replacements/repairs of components & maintenance**	☐ **Augmentation of the system to meet the demands of the growing population** ☐ **Replacements/repairs of components & maintenance**	☐ **Augmentation of the SDM system to meet the demands of developing city** ☐ **Replacements of components as per the maintenance plan**	☐ **Augmentation of the MSW system to meet the demands of growing population** ☐ **Finalization of the Annual Phases of the ISWM facility** ☐ **Replacements of components as per the maintenance plan**	☐ **Regular / Periodic / Preventive repairs and maintenance**

7.3.2. Financial Options

The implementation of the City Sanitation Plan necessitates substantial financial resources and the corresponding strategic planning for resource generation. The financial strategy shall encompass Capital Investment Plan, Operations & Management (O&M) Expenditure Layout and the financial assessment for the critical support activities like Community Mobilization, Awareness Workshops and Capacity Enhancement to ensure sustainability of the planned sanitation services.

The strategy shall align itself along the paradigm that the resource generation shall broadly target the funds earmarked for water and sanitation development within NNJ and the Uttar Pradesh State Government budgets; however, it shall also access the funds from the 13th Finance Commission and other Center and State schemes for sanitation improvement.

7.3.2.1. Capital Investment Plan

A conceptual capital investment plan is presented below which is corresponding to the strategic actions in the various sectors that are defined in the earlier sections. The unit rates considered for the calculation purposes are provided as Annexure. This section outlines the annual capital expenditure (capex) required, ***An annual inflation factor of 5% is applied for all capital expenditure (from 2012-13 onwards)***

Table 3: Capital Investment Plan

		SHORT-TERM ACTION PLAN (2014-2018)	MID-TERM ACTION PLAN (2019-2030)	LONG-TERM ACTION PLAN (2031-2044)
	Population	597636	674504	785283
	Incremental Population		76868	110779
	Households	90551	102198	118982
	Incremental Households		11647	16785
NEW SERVICES				
1	**Household Toilets**			
	Strategy	**Address the deficiency**	**Address the additional requirement for the incremental population**	**Address the additional requirement for the incremental population**
	Individual Toilets	8430	3494	5035
	Shared Toilets	5620	2329	3357
	Capital Investment Estimate	140,500,000	58,233,333	83,923,485
2	**Community Toilets**			
	Strategy	**Address the deficiency**	**Address the requirement for the incremental population**	**Address the requirement for the incremental population**
	Community Toilets	24	10	14
	Capital Investment Estimate	9610200	3983160	5740366
3	**Public Toilets**			
	Strategy	**Address the deficiency**	**Address the additional requirement for the incremental population**	**Address the additional requirement for the incremental population**
	Public Toilets	25	3	3
	Capital Investment Estimate	9975000	997500	1097250

	TOTAL CAPITAL INVESTMENT-TOILETS	160,085,200	63,213,993	90,761,101
4	**Centralized Sewerage System**			
	Strategy	**Address the deficiency**	**Address the additional requirement for the incremental population**	**Address the additional requirement for the incremental population**
a	Household Connections	90551	11647	16785
	Capital Investment Estimate	362203636	46586667	67138788
5	**Septage Management System**			
	Strategy	**Address the deficiency**	**Address the additional requirement for the incremental population**	**Address the additional requirement for the incremental population**
a	Vacuum Trucks	33		
	Capital Investment Estimate	2640000		
b	Septage Sludge Drying Beds			
	Capital Investment Estimate			
c	Office and Ancillary Units	Lumpsum	Lumpsum	Lumpsum
	Capital Investment Estimate			
	TOTAL CAPITAL INVESTMENT-WASTE WATER	***2640000***		
6	**Storm Water Management System**			
	Strategy	**Address the deficiency**	**Address the additional requirement for the incremental population**	**Address the additional requirement for the incremental population**
a	Source Controls			
	Capital Investment Estimate			
b	Storm Water Drain Network	107 km		
	Capital Investment Estimate	256800000		
c	Supporting Infrastructure		Pumping Stations/Culverts/CD Works	
	Capital Investment Estimate	12840000		
	TOTAL CAPITAL INVESTMENT-STORM WATER	269640000		
	TOTAL CAPITAL INVESTMENT	432,365,200	63,213,993	90,761,101

7.3.2.2. Operations and Management Expenditure Plan

In addition to the Capital Investment; recurring financial resources requirement is envisaged to support the O&M of the various sanitation service facilities. The O&M Expenditure layout is presented below; please refer to Annexure for the unit rate analysis for both the CAPEX and the O&M expenditure for all the sanitation service sectors. The annual O&M inflation is taken at seven (7%) percent; all rates are as per 2011 rates for the tasks detailed in the unit rate analysis Annexure –

As can be assessed from Table 6-4, O&M expenditure for Centralized Sewer System and MSW Management System would be a significant burden on NNJ's finances. It is evident that NNJ would be demanded to introduce tariff structure and charge user fees for the various sanitation services that it would provide, as outlined in the CSP

Table 4: O&M Expenditure Plan

		SHORT-TERM ACTION PLAN (2014-2018)	MID-TERM ACTION PLAN (2019-2030)	LONG-TERM ACTION PLAN (2031-2044)
Population		597636	674504	785283
Incremental population			76868	110779
Households		90551	102198	118982
Incremental households			11647	16785
1	**Community Toilets**			
	Total Capital Investment Estimate	9610200	3983160	5740366
	Total O&M Expenditure Estimate	2167714	3066171	4360991
2	**Public Toilets**			
	Total Capital Investment Estimate	9975000	997500	1097250
	Total O&M Expenditure Estimate	2250000	2475000	2722500
	GRAND TOTAL O&M EXPENDITURE ESTIMATE - TOILETS	***4417714***	***5541171***	***7083491***
3	**Centralized Sewerage System**			
	Total Capital Investment Estimate	362203636	46586667	67138788
	Total O&M Expenditure Estimate	21732218	24527418	28555745
	GRAND TOTAL O&M EXPENDITURE ESTIMATE – WASTE WATER	***21732218***	***24527418***	***28555745***
5	**Storm Water Management System**			
	Total Capital Investment Estimate	269640000	0	0
	GRAND TOTAL O&M EXPENDITURE ESTIMATE – STORM WATER	13482000		

7.3.2.3. Cost Recovery Options

It is recommended to explore the possibility of levying user charges for the services, globally; user charges for sewerage disposal services are normally based on water charges, i.e., a set percentage of the water charge that has typically varied between 50-80% of user water charges. It is proposed that NNJ shall levy a 50% sewage disposal surcharge to the user water charges. As regards MSW services, it is recommended that NNJ levy a monthly user fee as indicated in the table below, this fee could vary for users belonging to various economic slabs and would also depend on the land-use category. However, it is recommended that user charges for the urban poor shall be levied with effect from2013-14, i.e., after r's citizens have witnessed a significant improvement in waste water disposal services. With the above

indicated user charges, NNJ would generate substantial revenue per annum, which shall enable NNJ to undertake capital expenditure programs.

It is further proposed that NNJ shall investigate the possibility of a judicious alignment of impact benefit fee closely with expected property owner benefits. The total revenues thus generated shall aim to cover annual O&M expenditure, and also partly/substantially fund capital replacement in the long-term. The recommendations are presented thus –

Table 5: Property Based Tax Options

PROPERTY BASED TAX		
	TAX ID	**VALUE**
1	***Solid Waste Benefit Tax***	3% of Annual Ratable Value (ARV) of the Property
2	***Drainage Benefit Tax***	3% of Annual Ratable Value (ARV) of the Property

7.3.2.4. Financing Sources

It is established that Government of India (GoI) and Government of Uttar Pradesh (GoUP) are both open to financially supporting the implementation of City Sanitation Plans. The table below presents the several scenarios of financing sources and the options that may be explored with each of the source –

Table 6: Financing Source and Related Options

FINANCING SOURCE	OPTIONS
13TH FINANCE COMMISSION	Pooling of the 13th Finance Commission Grants for Sanitation Services Improvement Projects;
STATE FINANCE COMMISSION	The grants from State Finance Commission support the operational revenue expenses of the corporation while funding the provision of basic services to Urban Population including urban poor;
JAWAHARLAL NEHRU NATIONAL URBAN RENEWAL MISSION (JNNURM), GOI	The Urban Infrastructure and Governance component of JNNURM has fund allocations for developing sanitation services.
MINISTRY OF HOUSING AND URBAN POVERTY ALLEVIATION (MOHUPA)	The construction of individual and shared toilets finds funding through the schemes of MoHUPA
INTEGRATED LOW COST SANITATION (ILCS), MOHUPA	Funding for the development of basic sanitation services - Central Contribution - 75% of Capital Expenditure; State Contribution - 15% of Capital Expenditure; Beneficiary - 10% of Capital Expenditure; Currently ILCS supports the construction of individual toilets for economically weaker sections of society.
RAJIV AWAS YOJANA (RAY), MOHUPA	RAY assures Central Grants for slum redevelopment and achieves basic sanitary services in an inclusive approach; the possibility of the financial support under the IHSDP/RAY schemes of GoI for waste water disposal and MSW within Jhansi 's urban poor settlements may well be examined.
SARVA SHIKSHA ABHIYAN (SSA), MINISTRY OF HUMAN RESOURCE DEVELOPMENT (MOHRD), GOI	MoHRD is developing a manual on school sanitation under the SSA component. The SSA component has considerable funding for school sanitation.
SARVAJANIK PRASADHAN YOJANA	A state-sponsored scheme that provides 100% grant to ULBs to build public toilets.
INTERNATIONAL DONORS/FUNDING AGENCIES	Funding from World Bank, ADB, WWF and the likes shall be aimed at and considerable efforts made to bring in the funding to develop sanitation projects in an inclusive approach.
URBAN LOCAL BODIES (ULB) EQUITY	ULB shall earmark an explicit budget for the sanitation services improvement; It shall establish tariff structure for the sanitation services provided and levy sanitation cess as part of the property tax; the user charges and the sanitation cess revenues hall be directed to the sanitation

FINANCING SOURCE	OPTIONS
	department for utilization for funding sanitation improving projects in the long-term besides tackling the operation & maintenance costs.
PUBLIC PRIVATE PARTNERSHIP (PPP)	PPP shows greater promise in bringing in major capital investment and finances required to develop basic sanitation services for the urban population including the urban poor. The following PPP options shall be considered to employ their services appropriately - (a) service contracts; (b) performance-based service contract; (c) a management contract for operations and maintenance (O&M); (d) BOOT/BOT/ROT Contracts; (e)Joint Ventures between State Government/ULB and the private company. In the event of weak financial situation and greater financial burden on the Municipal Finances, PPP model shall be explored to support the equity contribution of ULB in the total capital expenditure.
BENEFICIARY CONTRIBUTION - PUBLIC PRIVATE PEOPLE PARTNERSHIP (PPPP)	PPPP shall be promoted as a sustainability model in order to garner support of the beneficiaries in both the capital investments and the O&M investments. This shall aim at increasing the sense of ownership and hence ensure sustainability of the services; In the event of weak financial situation and greater financial burden on the Municipal Finances, PPPP model shall be explored to support the equity contribution of ULB in the total capital expenditure. This move shall be supported by reforms in the Governance structure that involves greater community participation and hence promote greater accountability and transparency.
NGO	NGO involvement shall be encouraged in the sanitation services sectors especially the access to toilets; Appropriate contract models shall be developed to attract their contributions in both the development and O&M activities.

7.3.3. Institutional & Governance Options

The improvement in the urban infrastructure and hence the quality of urban life is explicitly associated with sound and reliable management and governance practices. The good management is facilitated by a committed and balanced institutional framework while the better governance practices stem from a persuasive policy framework.

It is the goal of the CSP to recommend the promotion of institution structures that provide the platform for management efficiency and the development of the good governance framework that shall effect sustainable and inclusive infrastructure development.

The institutional and governance action plan that shall dictate the accountability of the institution in service delivery vide clear roles and responsibilities. The governance framework shall infuse more accountability, transparency and participatory planning.

The following diagram illustrates the broad instrumental outcomes of the detailed action plan that follows -

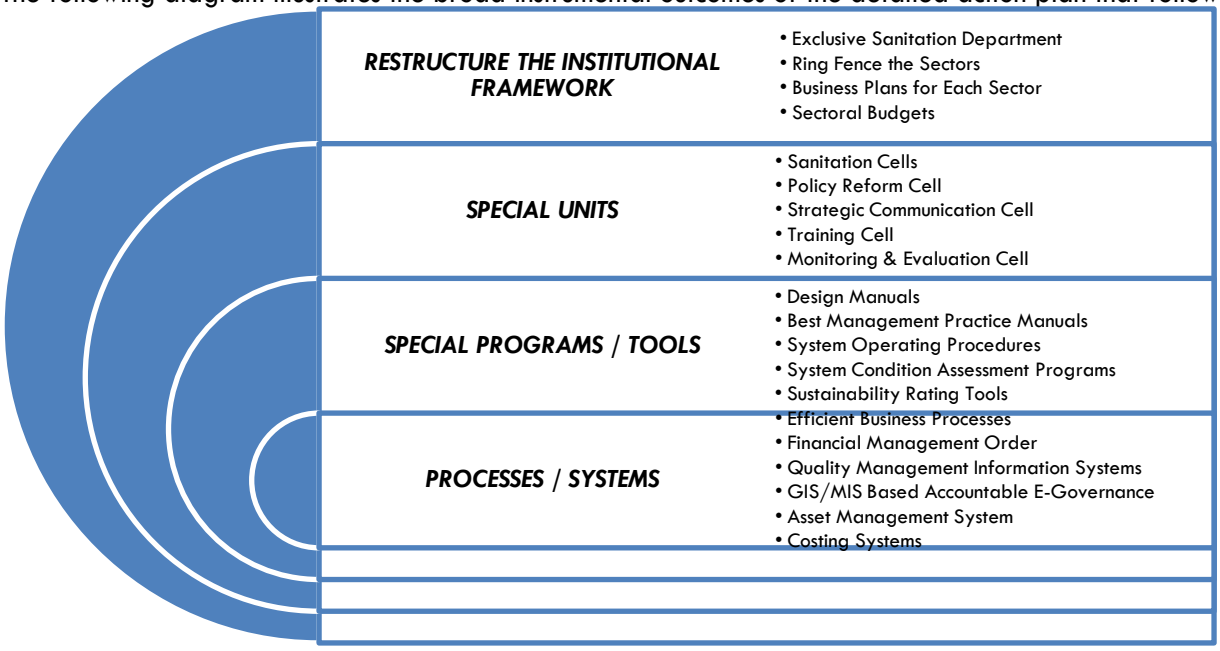

Table 7: Institutional and Governance Action Plan

PHASE	COMPONENTS
Short-Term 2014-2018	▪ **Initiate the restructuring of the institutional framework as per the recommendation in the CSP with the help of institutional development expert and streamline the operations** ▪ **Corporatize the various sectors under the sanitation department – 'Ring Fence' the sectors (WSS, Solid Waste and Toilets) with supporting technical services and O&M units** • Water Supply & Sewerage (Water Supply, Sewerage & Storm Water Units) • Solid Waste and • Toilets • Establish Sectoral Budgets • Create Business Plans for each sector • Develop Costing systems (costs & tariff structures) in collaboration with the Finance & Accounts Department, Strategic Communication Cell working with communities • Develop Asset Management system ▪ **Establish a dedicated 'Policy Reforms' unit to continually implement policy reforms that will support accountable governance and regulatory oversight of the local bodies, service providers and the citizens as well to achieve sustainability of the ever dynamic infrastructure development** • Achieve the objectives of Model Municipal Law through incentivized transition plan resulting in devolution of fiscal powers and authority • Achieve the E-Governance using GIS/MIS • Initiate Property Tax Management System using GIS • Sector Regulations – Quality & Fiscal Standards • Monitoring & Evaluation performance • Enforcement Mechanisms - of rules, by-laws, municipal codes & building codes • Realize transparency, disclosure and citizen education • Promote Private Sector participation and investment ▪ **Revamp the business processes and the financial management order of the '*Finance & Accounts Department*' by putting in place new accounting standards as per the directive of C&AG – '*Accounting and Budget Formats for Local Bodies*'**

PHASE	COMPONENTS
	• Implement Double Entry Accounting System (DEAAS) • Revamp Audit & Account Procedures for each sector • Adopt Budgeting and Accounting Formats for each sector • Set up quality management information systems (MIS) • Set up & develop contract management team • Develop financial operating Plans (FOP) for each sector ▪ **Develop the design manuals, best management practices (BMP) manual, system operating procedures, O&M Manuals, Condition Assessment Programs (CAPs'), sustainability rating tools for each sector in collaboration with the technical and O&M experts;** ▪ **Initiate the empanelment process for technical experts, third party technical review agencies to assist with the preparation of design manuals/BMP manual/O&M Manuals/SOP/CAP and periodic reviews of the efficiency of the systems** ▪ **Develop the strategic communication cell that shall ensure community participation and implement participatory planning –** • Confederate community representatives and link to city Ward committees; • Form neighbourhood groups; • Organize focused group discussions regularly and steer meetings to plan area upgrading solutions; • Promote community oversight committees and community contracting arrangements to involve the community in implementation activities – means of livelihood, sense of ownership and sustainability of systems in the corresponding areas; • Pave way for community O&M systems; • Promote system to utilize community to collect user charges; ▪ **Establish Monitoring Cell and develop the M&E mechanisms and the coordination framework with parastatal and State agencies** ▪ **Establish the training cell and implement capacity enhancement strategy** ▪ **Establish Capacity, Management, Operation & maintenance Program (CMOM)** ▪ **Initiate the staffing plan for the various sectoral units through re-organization of existing staff, new-hires and transfers from state agencies –** • Fill the top hierarchical level of both the technical services and O&M unit • Initiate the staffing upto 50% at the mid-hierarchical level and supplement with the private consultants • Initiate the staffing upto 70% at the low-hierarchical level and supplement with the staff of the private service provider/concessionaire ▪ **Complete the staffing plan for the Finance & Accounts departments –** • Financial Analyst • Accounts Specialist • Tax Expert • Public Finance & Legal Advisor – Financing arrangements/Concession Agreements • Infrastructure Insurance Experts • Micro-credit Product Development Specialists ▪ **Complete the staffing plan for the Strategic Communication Cell –** • Social Development Experts • Community Organizers ▪ **Finalize the staffing plan for the Policy Reform unit –** • Planners • Policy Advisors

PHASE	COMPONENTS
	• Legal Advisors / Retired Judges / Policy Analysts ▪ **Finalize the staffing Plan for monitoring cell which will work with external sector specific experts and third party agencies** ▪ **Establish the sanitation cells at the city level as part of the state sanitation strategy**
Mid-Term 2019 - 2030	▪ **Finalization of the staffing plan across all sectors and departments** ▪ **Review the procedures and implement amendments** ▪ **Review the Policy Reforms and implement amendments** ▪ **Reprocess the empanelment** ▪ **Review and update the various manuals and operating procedures** ▪ **Review and reengineer the M&E mechanisms**
Long-Term 2031 - 2044	▪ **Finalization of Review and update mechanisms** ▪ **Finalization of successful Institutional Structure and business operations & processes** ▪ **Achievement of Municipal Model Law objectives in totality** ▪ **Successful implementation of City Financial Viability Mechanism** ▪ **Establishment of Participatory Planning Process** ▪ **Establishment of accountable governance framework**

7.3.4. Capacity Enhancement & Awareness Generation Options

The assessment of NNJ institutional set up has identified a major shortfall both in terms of resources and staff skills. The deficiency necessitates a thorough planning to develop forceful mechanisms that will enhance the capacities of NNJ.

Participation from stakeholders throughout the city ensures good governance by augmenting the limited capacity of NNJ by community based resources; awareness generation campaigns shall impart the education and the knowledge sharing vital for local capacity building.

The action plan details the approaches and technologies adopted and the new roles and responsibilities defined to improve the service delivery system.

Table 8: Capacity Enhancement & Awareness Generation Action Plan

PHASE	CAPACITY ENHANCEMENT	▪ AWARENESS GENERATION
Short-term 2014-2018	▪ **The Environmental Vision for Jhansi agar Nigam can be jointly drafted in a workshop supported by ASCI and subsequently approved by the Council;** ▪ **Initiate the establishment of a permanent management representative responsible for environmental management;** ▪ **Finalize the Inventory of all relevant regulations;** ▪ **Initiate the assessment of the training needs regularly and to**	▪ **Pilot awareness campaign to be conducted in two (2) wards** ▪ **Awareness Campaign strategy to be developed** ▪ **Initiate the Knowledge Exchange between ULB's and communities using either the web based knowledge platform or focused group discussions** ▪ **Prepare effective IEC material for awareness campaign** ▪ **Initiate School Sanitation Workshops**

PHASE	CAPACITY ENHANCEMENT	▪ AWARENESS GENERATION
	develop training calendar and program to impart trainings to staff across all categories; ▪ Budget allocation for training and environmental activities; ▪ Initiate the creation of a training database capturing a record of the name, position and function of the employee as well as the content, duration and date of the training programme participated in including participant feedback about the relevance and efficiency of the course to the roles and responsibilities; ▪ To implement an internal and external communication protocol and train the ULB staff in accordance to the plan; ▪ Establish HR Working Group ▪ Initiate the formation of HR Department, and design of HR Policies, Performance linked Incentive Programs; Induction Program; ▪ Finalize the Formulation of HR Policy for the ULB and Finalize the Induction Training Curriculum; ▪ Develop Staffing Plan & Strategy and initiate recruitment in accordance; ▪ Initiate the development of HR Information System ▪ Initiate the development of Knowledge Exchange Mechanism among cities using the web based knowledge platform ▪ Environmental Awareness Workshop for the ULB staff and elected representatives resulting in identification and prioritisation of all environmental aspects; ▪ Create a State Level Steering Committee on Human Resource Development (HRD) ▪ Prepare a City level Urban Management Plan; ▪ Training Programme and training on Urban Management for the ULB	▪ Initiate workshops on sanitation and related infrastructure ▪ Involve NGOs to work continuously with the community to bring about change. ▪ The consultants have a local partner who is involved from land use and infrastructure survey, stakeholder consultations, issue and target group identification, deciding the strategies for awareness campaign and pilot awareness campaign in 2 wards. There are other NGOs who are also involved as part of the CTF. Thus several local NGOs are oriented to local sanitation issues and awareness needs. ▪ Institutionalize the role of CTF to disseminate the information on sanitation issues, projects undertaken and progress of each component ▪ Press release of sanitation scenario of the city ▪ Involve media in demonstrating healthy sanitation practices ▪ Finalize school sanitation program – train school children and make them aware of the sanitation situation and need for healthy sanitation practices ▪ Social mobilization by creating women's group and sensitise them about sanitation related issues ▪ Create *area sabhas*/community groups specifically targeting their sanitation needs ▪ Interpersonal Communication (IPC) to be used to reach out larger public ▪ Build up institutional capacity of NNJ to conduct awareness campaigns as part of their agenda ▪ Address the tenure security issues of urban poor which in turn help them build basic services of permanent nature ▪ Develop Information Management System

PHASE	CAPACITY ENHANCEMENT	AWARENESS GENERATION
	▪ Establishment of a State level Urban Management Institute ▪ Monitoring of cities with the ICD	
Mid-Term 2019 - 2030	▪ Lateral recruitment of key positions ▪ Update and upgrade Training Calendar and Training Programs ▪ Update the HR Policies and Incentive programs ▪ Conduct Environmental Workshops ▪ Update the City level Urban Management Plan ▪ Update and upgrade Monitoring & Evaluation Systems ▪	▪ NNJ and the CTF have to periodically take feedback from the community groups and provide necessary support. ▪ Update IEC material and the sanitation awareness programs ▪ Update Information Management System
Long-Term 2031 - 2044	▪ Lateral recruitment of key positions ▪ Update and upgrade Training Calendar and Training Programs ▪ Update the HR Policies and Incentive programs ▪ Conduct Environmental Workshops ▪ Update the City level Urban Management Plan ▪ Update and upgrade Monitoring & Evaluation Systems	▪ A long term and permanent effect on awareness can be made by sustained effort from the NNJ and community. ▪ The CTF is recognized as a body holding the sanitation campaign for Jhansi . The CTF will also ensure long term influence in the sanitation scenario of Jhansi ▪ NNJ and the CTF have to periodically take feedback from the community groups and provide necessary support.

7.3.5. Inclusive Approach

Traditionally, the net of service providers has excluded the urban poor, weaker sections, migrants, and the like. The CSP shall advocate an approach that shall ensure infrastructure planning shall serve all irrespective of the diverse situation of income, education and use. Participatory Planning processes shall be emphasized upon as critical elements of the sanitation infrastructure planning. This shall provide a strong impetus to sustain projects. The approach shall ensure regular and meaningful community participation to foster community ownership and consensus

The action plan shall detail the propositioned approaches and corresponding mechanisms to achieve inclusiveness in infrastructure planning at the city-level –

Table 9: Inclusive Approach Action Plan

PHASE	COMPONENTS
SHORT-TERM 2014-2018	Community Mobilization Strategy shall be defined by the Strategic Communication Cell, NNJ; Implement the Community Mobilization Mechanism to enable the inclusion of the needs & demands of the community in the CSP – Task 1. Transect Walks, Social Mapping and Ward & Slum Profiling; Task 2. Social and Gender Audits; Task 3. Confederating Community Groups & Linking to Ward Committees Task 4. Development of a SHG for each ward

PHASE	COMPONENTS
	Task 5. Form Neighbourhood Groups Initiate GIS based information management systems to create central repository of community ideas, needs and prioritization of projects information Institute Community Oversight Committees & Community Contracting Cell to involve communities in construction & O&M activities; Design & Implement Participatory Planning Process in line with the Participatory Law, JNNURM Reforms, MoUD; Initiate the institutionalization of the periodic meetings between Local Government and the community as part of participatory planning and review; Identify NGO's with community mobilization skills, planning & implementation experience and establish contracting mechanism to institutionalize their participation; Establish guidelines to translate the community participation into budget allocations and formalize the participatory budgeting; Task 6. Allocate budgets to implement pilot scale projects with Community based organizations; Task 7. Allocate budgets to establish and institutionalize CBOs' Initiate the development of microfinance model to enable the urban poor to extend services within their areas; Task 8. Awareness Campaign to encourage households to invest in connections and in-situ work of basic services; Task 9. SHG to help with group loans and savings accounts of individuals that serve as collaterals; Task 10. NGO's and the Strategic Communication cell to help State owned Banks to establish community mobilization cells to help design interventions and ensure high repayment rates; Initiate the development of a revolving fund for poor through State Urban Infrastructure Fund to help with the micro-financing options; Establish Guidelines and Initiate the Microenterprise Models in the service delivery Task 11. Provide Basic Services as microenterprises Task 12. O&M shall be the SHG/CBO's responsibility Task 13. Livelihood Mechanism Cross-subsidy mechanisms to finalize the connection fees and tariff structures/user charges; Establish capacity building initiatives to train the communities in the construction and O&M of the facilities Citizen Report Cards and feedback mechanism to be institutionalized and formalized;
Mid-Term 2019 - 2030	Update and upgrade the mechanisms; Improve the participatory planning process & participatory budget mechanisms based on monitoring and evaluation; Review and reengineer the City Vocational Training Units and Curriculum;
Long-Term 2031 - 2044	Update and upgrade the mechanisms; Improve the participatory planning process & participatory budget mechanisms based on monitoring and evaluation; Review and reengineer the City Vocational Training Units and Curriculum; Achievement of Municipal Model Law objectives in totality Successful implementation of City Financial Viability Mechanism Establishment of Participatory Planning Process Establishment of accountable governance framework