

SANIT CITY

COASTAL
REGION



National Institute of Urban Affairs



NFSSM
Alliance



GAMIFICATION ASSEMBLY MANUAL

**URBAN
SANITATION
SYSTEMS**

CITY PROFILE

The city in consideration is a coastal city located in the delta region of the river. The total area of the city is **16.80 sq km**. City has been divided into 32 administrative wards. In 2001, the population of the city was 1,57,837. **The decade population growth is approximately 30%**. The average ground water table depth is 5 m in most part of the city.

According to the census of 2011, the population of the city was recorded 2,00,564 with total number of 41,140 households. There are 24 notified slums in the city and up to 32% of the population resided in the slums. The main source of water for the city is ground water aquifer. **The total water demand (including the losses) is estimated to be 31 MLD.**

CENSUS DATA ON USER INTERFACE & CONTAINMENT UNIT AS IN 2011

Household practicing open defecation - 19%

Individual household toilet coverage - 58%

Community toilet coverage - 23%

Number of community toilets block - 9

Number of public toilet block - 15

CENSUS DATA ON CONVEYANCE & TREATMENT AS IN 2011

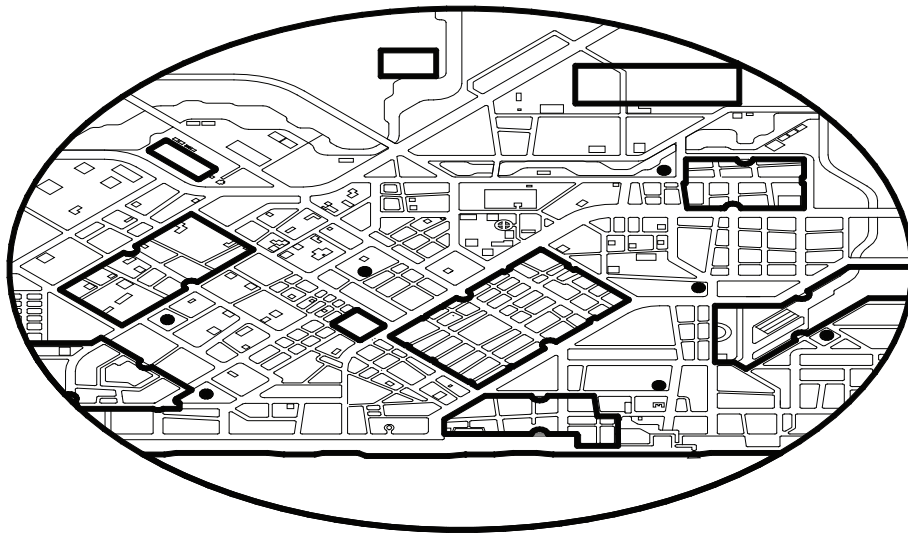
Sewerage connections - 57%

Area covered by pucca drain - 81%

Waste water generated - 12 MLD

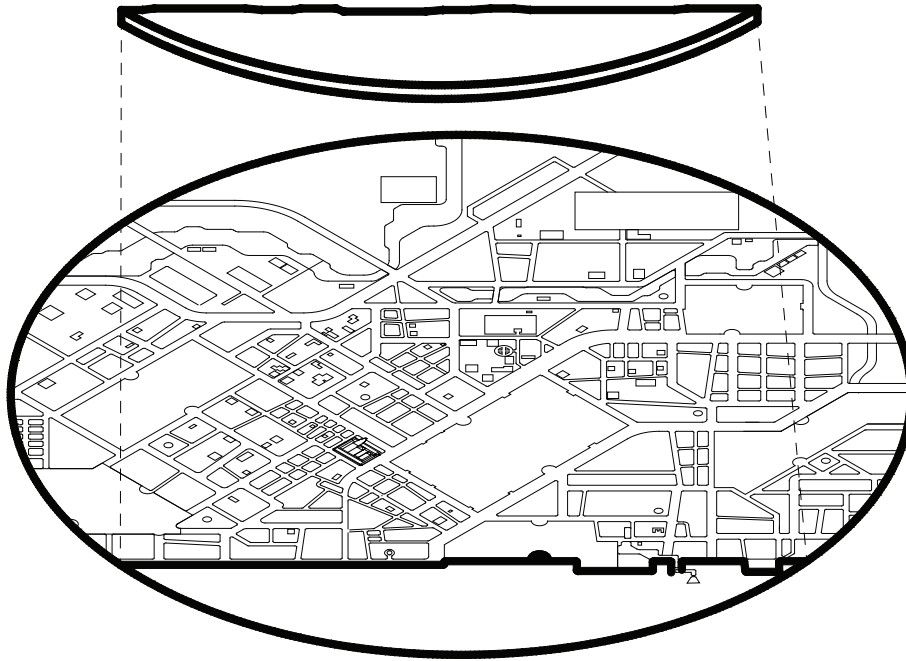
STP designed capacity - 15 MLD

Water flowing through storm water drains - 10 MLD



Following are the steps to assemble the gamification model and get acclimatize with the coastal city.

Place circular base over the poster to begin



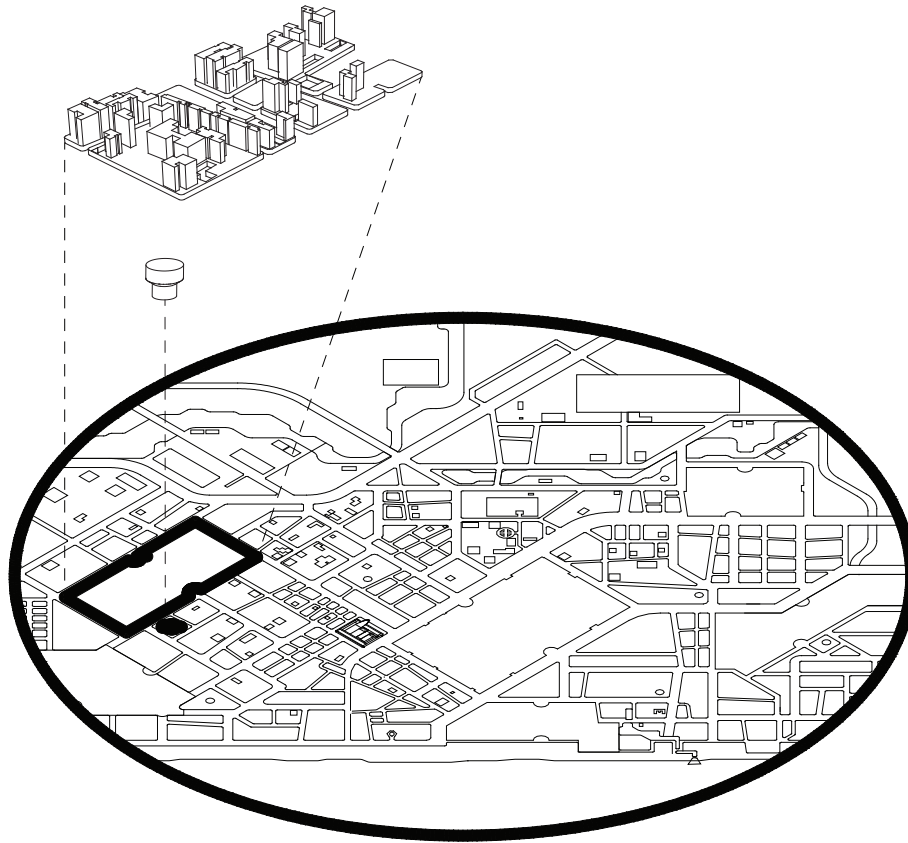
DELTA

This zone is defined by the coastal stretch within the Municipal limits which is very important recreational area for pilgrims, visitors and local community. It acts as a buffer during the festival which absorbs the crowd through occasions and it is important area of activity in the morning and evening. Running at a length of 9 kms, the beach at city forms the entire South-eastern edge of the city and influences the city's maritime climate.

INSERTS

STEP - 03

CLUSTERED SETTLEMENTS (RESIDENTIAL)



Typology - A

TYOLOGY - A

Population Density - 5000 per km²



Area - 0.50 km²



Water consumption - 337.5 m³/d



Treated disposal - 108.0 m³/d (40%)



Wastewater generation - 270.0 m³/d



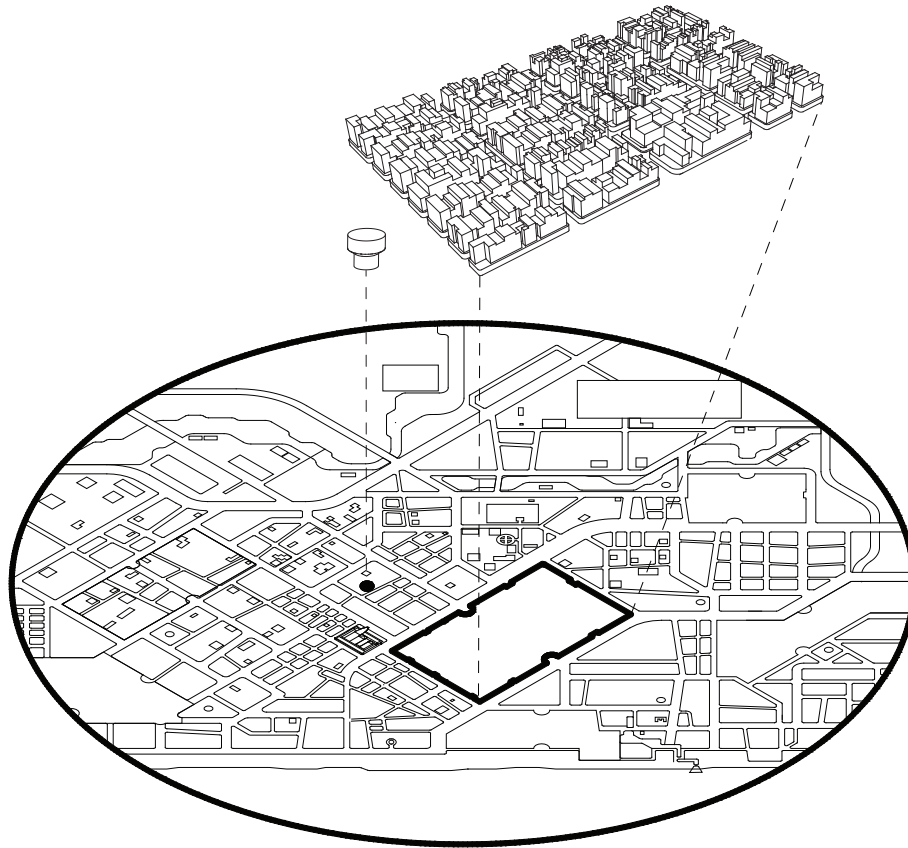
Untreated disposal - 162.0 m³/d (60%)



Legend: 1 km² ■ 5000 Population  500 m³/d  05/15

INSERTS

STEP - 04 PLOTTED (RESIDENTIAL)



Typology - B

TYOLOGY - B

Population Density - 25000 per km²



Area - 0.83 km²



Water consumption - 2801.25 m³/d



Treated disposal - 1345.0 m³/d (60%)





Wastewater generation - 2241.0 m³/d



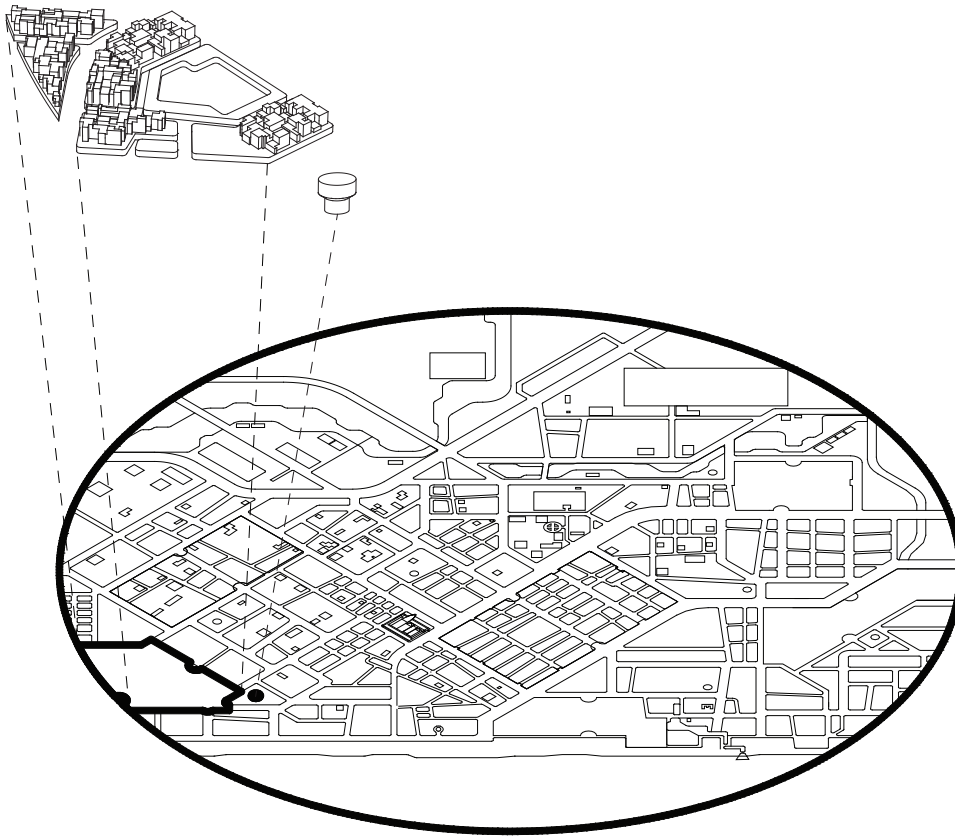
Untreated disposal - 896.0 m³/d (40%)



Legend: 1 km² ■ 5000 Population  500 m³/d  06/15

INSERTS

STEP - 05 SLUM (RESIDENTIAL)



Typology - C

TYOLOGY - C

Population Density - 15000 per km²



Area - 0.35 km²



Water consumption - 367.5 m³/d



Treated disposal - 0.0 m³/d (0%)



Wastewater generation - 294.0 m³/d

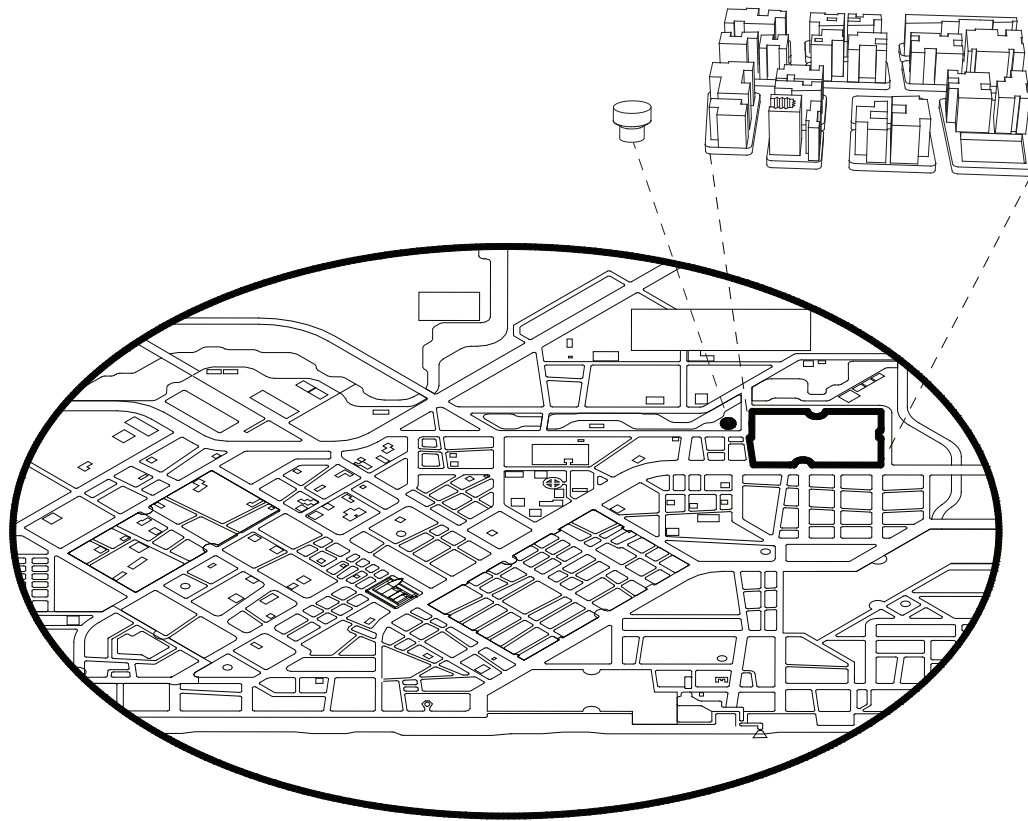


Untreated disposal - 294.0 m³/d (100%)



Legend: 1 km²  5000 Population  500 m³/d  07/15

STEP - 06
HOUSING SCHEME (RESIDENTIAL)



Typology - D

TYPOLGY - D

Population Density - 15000 per km²



Area - 0.32 km²



Water consumption - 648 m³/d



Treated disposal - 518.4 m³/d (100%)

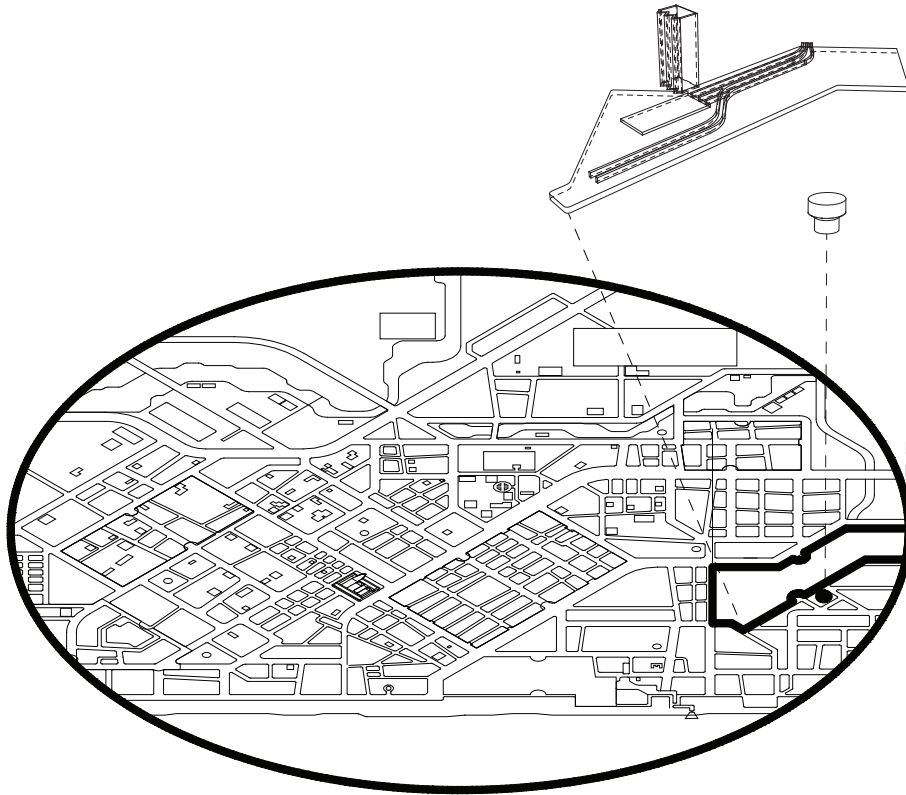


Wastewater generation - 518.4 m³/d



Untreated disposal - 0.0 m³/d (0%)

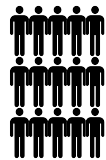




Typology - E

TYOLOGY - E

Floating population - 75000 per day



Area



Water consumption - 1875 m³/d



Treated disposal - 300.0 m³/d (100%)



Wastewater generation - 300.0 m³/d

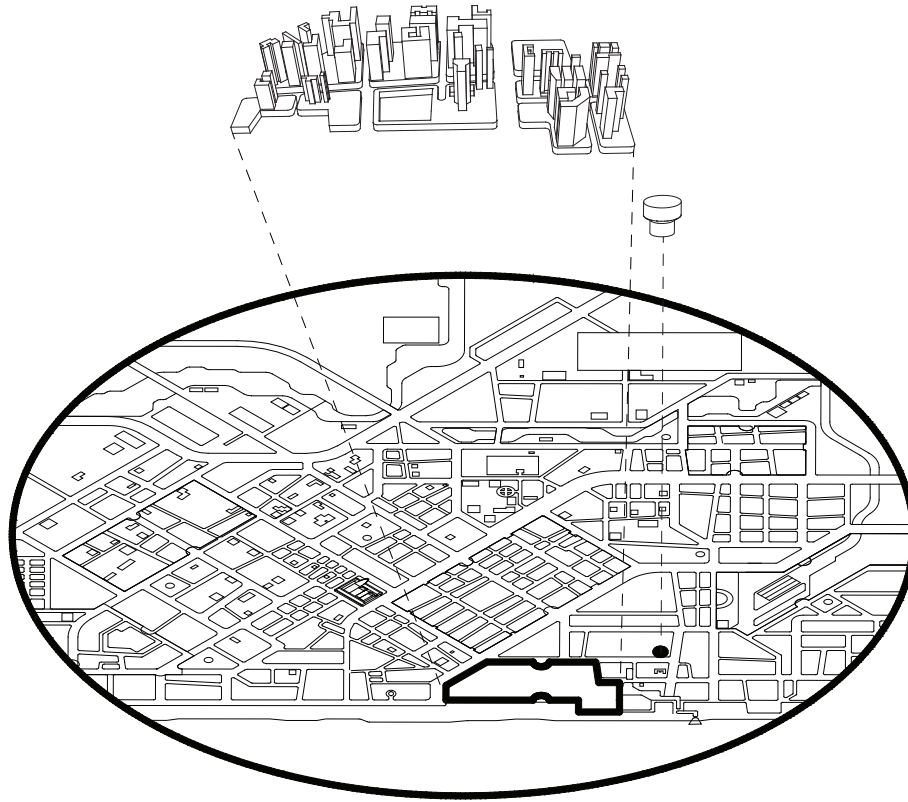


Untreated disposal - 0.0 m³/d (0%)



Legend: 1 km² ■ 5000 Population 500 m³/d 09/15

PUBLIC & SEMI PUBLIC COMMERCIAL ZONE



TYOLOGY - F

Population Density - 15000 per km²



Area - 0.32 km²



Water consumption - 367 m³/d



Treated disposal - 117.6 m³/d (40%)



Wastewater generation - 294 m³/d

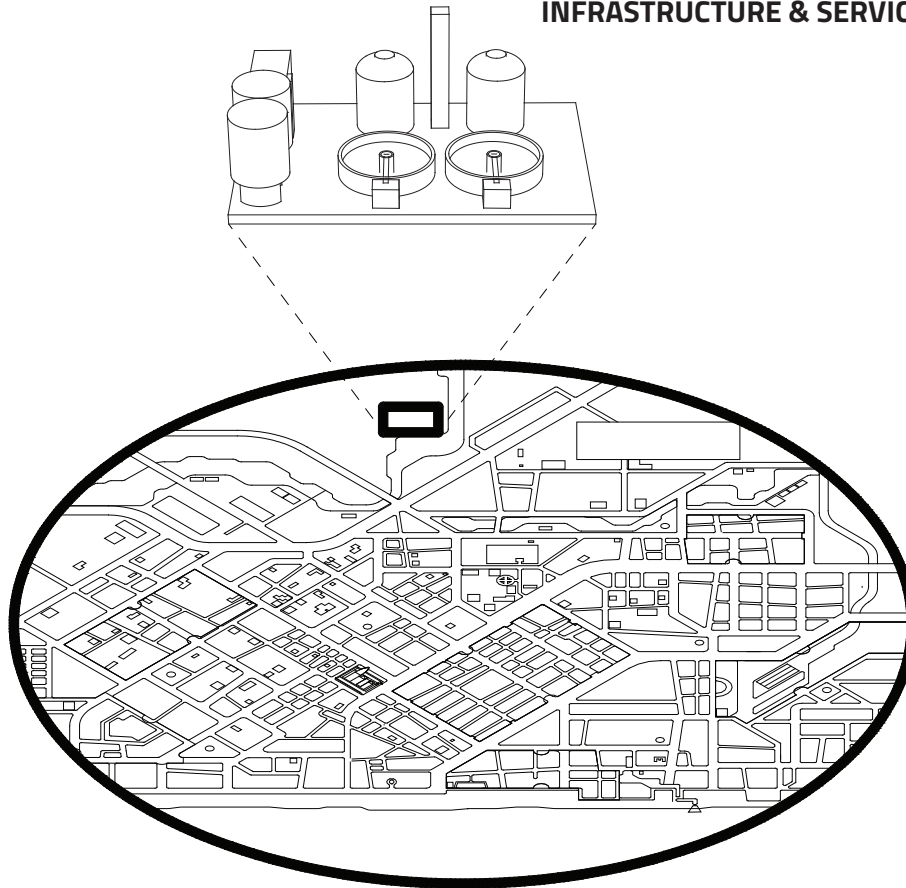


Untreated disposal - 176.4 m³/d (60%)



Legend: 1 km²  5000 Population  500 m³/d  10/15

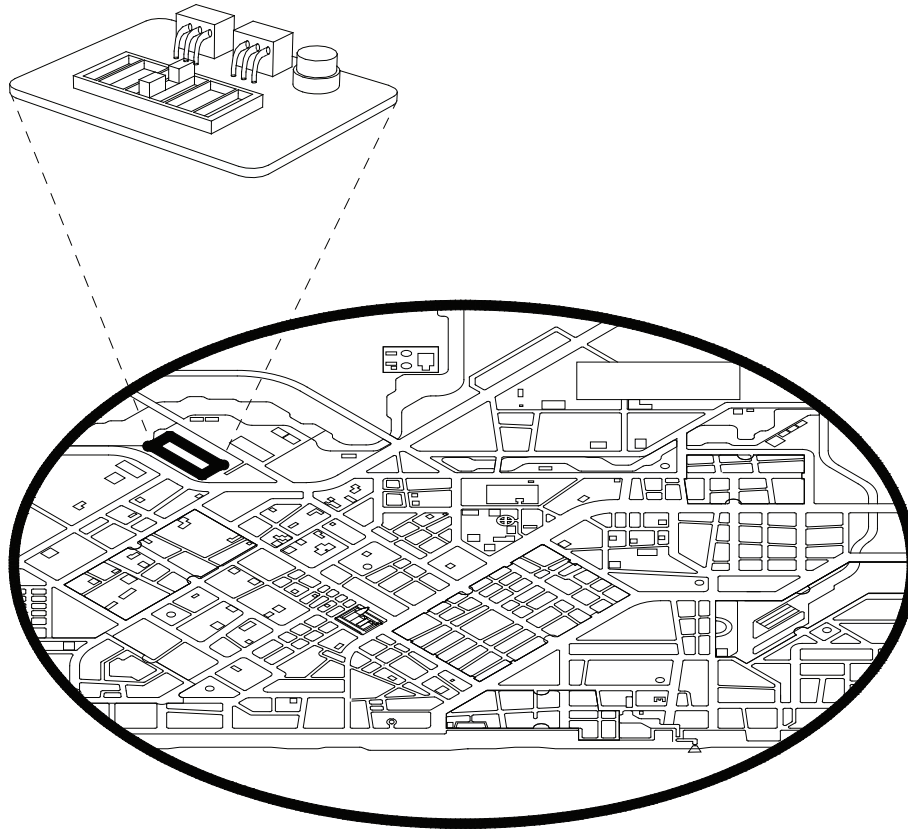
Typology - F



WATER TREATMENT PLANT

Conventional surface water treatment plants consist of several steps in the treatment process. These include: (1) Collection ; (2) Screening and Straining ; (3) Chemical Addition ; (4) Coagulation and Flocculation ; (5) Sedimentation and Clarification ; (6) Filtration ; (7) Disinfection ; (8) Storage ; (9) Distribution.

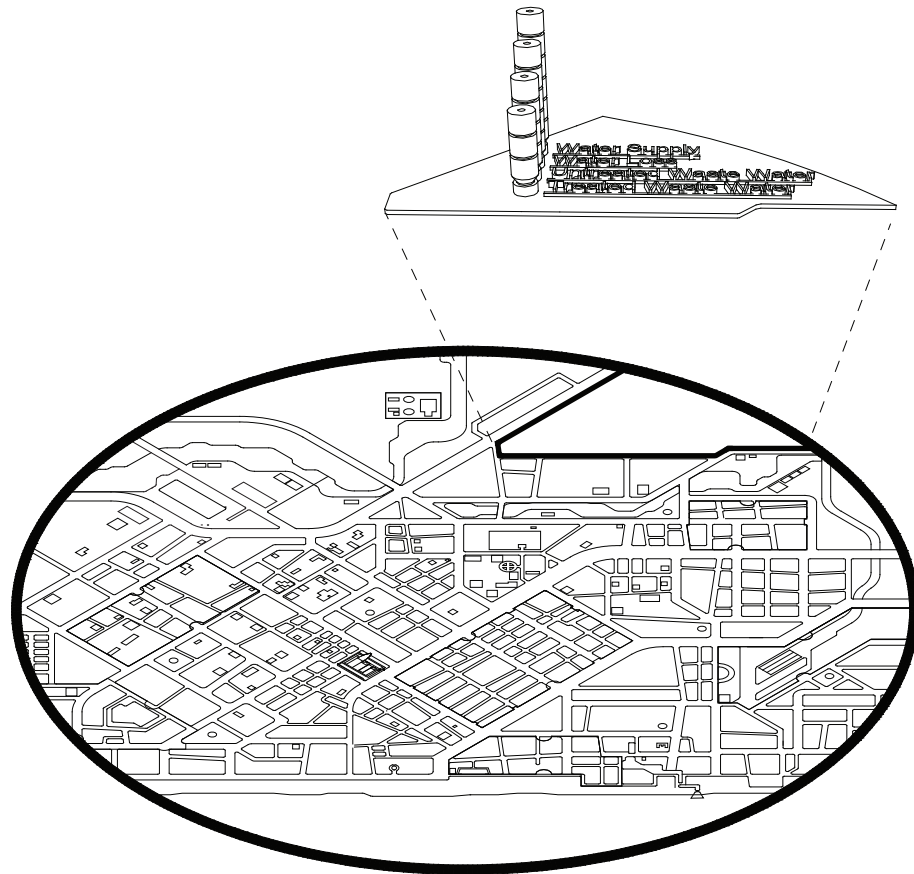
WTP



SEWAGE TREATMENT PLANT

A sewage treatment plant operates by circulating air to encourage the growth of bacteria to break down sewage. The goal being to deliver much cleaner, more environmentally friendly effluent. Sewage treatment generally involves three stages, called primary, secondary and tertiary treatment. The city has a 15 MLD capacity of STP on back of River. Majority of the commercial establishments are connected to the sewage network and in coming years the residences in the old city will be connected to the network.

STP



INFOGRAPHICS

At present, the city water supply is 27 MLD out of which 55 % is water loss. 28 Wards are fully covered under piped water supply and 4 wards are partially covered. Total waste water generation is 15 MLD of which 7 MLD is conveyed through the existing sewer lines.

FAECAL SLUDGE & SEPTAGE MANAGEMENT

DESCRIPTION	NUMBER	UNIT
Person per household	5	No.
Household connected to septic tank	58%	
Number of community toilets (2020)	16	
Number of Public toilets (2020)	21	

SIZE OF SEPTIC TANK		
Households	3	KL
Community toilet blocks	7	KL
Public toilet blocks	4	KL








DE-SLUDGING FREQUENCY		
Households	3	Years
Community toilet blocks	7	Months
Public toilet blocks	4	Months

TRUCK SIZE AVAILABLE - 3000 L & 8000 L		
Trips per day		
3000 L	3	No.
8000 L	1	No.

Assumptions - Number of working days in a year = 290

Inferences drawn from the stakeholder consultation for planning of FSSM

LEGENDS

-  Existing centralised sewer system
-  Green fields
-  Open grounds
-  Individual septic tank
-  Community septic tank
-  Individual treatment plant
-  Proposed sewer system

LIST OF ACRONYMS

- %** Percentage
- °C** Degree Celsius
- °F** Degree Fahrenheit
- CT** Community Toilet
- m³** Meter cube
- MLD** Million liter per day
- FSM** Faecal Sludge Management
- FSSM** Faecal Sludge & Septage Management
- km** Kilometer
- lpcd** Liter per capita per day
- Kld** Kilo Liter per day
- Lts** Liters
- FSTP** Faecal Sludge Treatment Plant
- PT** Public Toilet
- SBM** Swachh Bharat Mission
- WTP** Water Treatment Plant
- STP** Sewage Treatment Plant