



Draft

SMART CITY PROPOSAL

Ludhiana

FOR THE SMART CITY CHALLENGE





Citizen Poll Ludhiana

Citizen Engagement

Focus Groups

Ward-to-ward surveys

Reach Out Campaigns

The Smart City team actively ran awareness campaigns and collected feedback from **focus groups, popular schools and colleges, commercial areas, public spaces with the local citizens of Ludhiana.**



Engagement program in school



Engagement program in colleges



Reaching out to thousands of citizens on **whatsapp**



Public places like Kipps Market and Gurudwaras



One-on-one interaction with citizens



Awareness booths in Public Places

Online-

facebook.com, myGov.in portal and dedicated website on smartcityludhiana

Phone-

whatsapp and SMS



Looking closely into citizens' suggestions on **facebook**



Completed **essay competition** for vision statement for **Ludhiana**
LUDHIANA RANKED IN TOP 10 CITIES!



85% of respondents think **air in Ludhiana is severely polluted**

59% of respondents said **PHC/CHC doesn't have adequate facilities** to meet their medical needs

68% of respondents reported that there are **no adequate parking facilities** when they go for shopping

Only 35% of respondents get **online service delivery** from all departments

76% of the respondents **don't feel safe during night**

89% of the respondents feel that **public transportation needs to be improved**



4,050 RESPONSES on MyGov

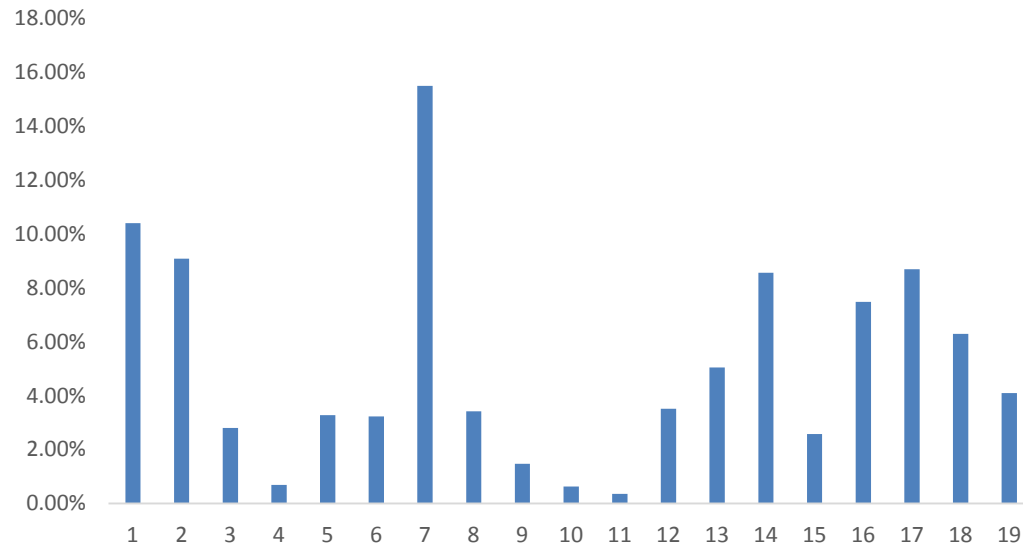
2,206 VISIONS

1,844 VOTES

99,687 SURVEY RESPONDENTS

The following summarizes
feedback from citizen
engagement process – hard
copy survey forms +
www.Mygov.in +
www.smartcityludhiana.in

Top Priorities for citizens of Ludhiana



1. 24 x 7 Power supply
2. Adequate & quality Water supply
3. Business Friendly Environment
4. Citizen participation in Governance and promoting e-governance
5. Dedicated Bicycle tracks in the city
6. Education
7. Environment control – pollution (air / sound / water)
8. Healthcare
9. Industrial area- waste disposal
10. Non-Conventional sources of energy
11. Others (please specify)
12. Parks and Recreation
13. Pollution free Buddha Nala
14. Public Safety and Security on streets
15. Public Transportation
16. Sewage & Drainage
17. Solid Waste Management
18. Traffic Management & Parking
19. Wi-Fi and Internet Connectivity

Environment Control is
Priority 1 for
33.79%



Solid Waste Management, Adequate & Quality power supply and 24x7 Power Supply are the top three items in priority 2 list of the citizens

Traffic Management & Parking also appear in top 5 of Priority 2 list

Number of survey respondents = **99,687**



SWOT Ludhiana

STRENGTHS

Physical and Socio-Economic Features:

- Heart of Punjab, biggest trade business hub of Punjab- **Biggest Cycle manufacturing & parts in India and 2nd largest in the world**
- Connectivity –railways/road- Amritsar-Kolkata(NH-1) and Chandigarh-Ferozepur (NH -95) pass through the city
- Agricultural university and engineering education; health care education including nursing, paramedical
- Manufacturing hub (Agriculture equipment, hosiery, cycle-N, hand pump-N, I, machine tool-N etc.)
- 2001 census - **total literacy rate of Local Planning Area is 78%**
- 63% of the total population - non-workers. Major center for tertiary activities, approx. 84% of the total workers

Infrastructure:

- **NMT constituting almost 46.5% of total trips** (31.5 % Walk and 15% Cycle trips)
- **Total 6,10,000 Cycles in the city**
- **Surplus Power** - 24X7 power supply, 100% metering, establishing GIS base coordinated maps, Power losses < 6%, designated theft control system
- **Power system is implementing SCADA** being handled by PSPCL
- 87% coverage for water supply, with availability of Surface Water. Total 240355 no. of water connections with 10 hour of water supply daily.
- 61 nos. of new reservoirs built for improving water supply and their capacity (i.e. improvement in water storage (MLD))
- 85% area have sewage connections
- Few existing ICT initiatives like Mobile apps, public grievance system, CRAMET for parking
- 18,7528 traffic challans have been issued till sept 2015 for over speeding, red light jumping, and drunken driving

WEAKNESSES

Physical and Socio-Economic Features:

- Densely populated, unplanned with mushrooming of slums due to migrant population- inhuman living conditions for migrants
- Lack of air connectivity
- Encroachment of public property **25% of population living in slums**

Infrastructure:

- **16 lakh registered vehicles** with 55,000 vehicles (80,000 PCUs) enter city every day
- Inner city area witness total **traffic volume of 150,000 Vehicles (140,000 PCUs)**
- High modal share of auto rickshaws (13% with walk trips and 25% without walk trips, **30,000 auto-rickshaws operate daily**).
- **Bus transport is negligible**, (only 50 buses operating on 5 routes of 70 Km length of the total road length of 1376 Km.
- Dust generation in ports due to cargo handling near the Dry Port
- **High emission levels due to Industries and petrol & diesel driven vehicles** especially autos contributing about 70% of the city pollution, given by PPCB in a report submitted to high court
- Lack of footpaths and cycle tracks. **Only 70 Km of walkways out 300.45 Km of road network.**
- Exploitation of **Ground Water** with **100% dependency** with Deep Bore wells 696 and Shallow Bore wells 299 accounting to 560 MLD
- High amounts of water wastage with no metering or recycling strategies in place
- **NRW > 20%** - The City has about 2.39 lakh authorised and about 1.3 lakh unauthorised connections.
- No effluent collection network in spite of the large industrial land use
- Poor solid waste management - **only about 25% of the City areas are covered by door to door solid waste collection.**
- Many industries have their developed DMP, but disaster management plans pan city are not integrated with city level DMP

OPPORTUNITIES

Physical and Socio-Economic Features:

- Investment Opportunity
- Ludhiana being the cycle manufacturing hub of India, **Cycle can be promoted as an alternative mode of transport**
- **Bicycle and Active Fashion Industry - Expansion in existing Industry**
- Market of luxury goods
- Potential for skill development
- Trade with Neighboring Countries
- Scope for expansion in the Housing for the weaker section
- Large Employment potential-Skilled, semiskilled

Infrastructure:

- Waste to energy generation plant as proposed in existing DPR
- High Work Force Participation Ratio (38.6%) and Shorter trips lengths. (Average trip length of 3.7 Km) indicates the potential for compact and sustainable transport
- Potential for low capacity bus based public transport system
- Renewable energy generation
- Underground of power cables
- Rain water harvesting
- Promotion of CNG fueled transport
- **Promotion of NMT like e-rickshaws** and restriction of autos in city core
- Implementation of 117 MLD CETP (3 Units) by cutting off industrial effluent from domestic sewer network is in implementation stage, but waiting for funds

THREATS

Physical and Socio-Economic Features:

- **Goods from China**
- Industrial Manufacturing Competition (Tirrupar, Tamil Nadu)
- Change in Tax regime
- **Encroachments resulting into congestion in city**
- Personal choice for using Car and less inclination towards using public transport

Infrastructure:

- Pollution-air, water- Impacts of health of citizens
- **Highest Per Capita Vehicle in India** with 21, 23,215 cars being handled daily on the roads with an alarming no. of vehicles regd. In calendar year 2014 = 1,40,000
- **Ludhiana part of top 15 most polluted cities in the world** (WHO data, 2014)
- High accident rate on arterial roads act as deterrent in using NMT as mode of transport
- As per the Seismic Zoning, Ludhiana falls in Seismic Zone IV, a high damage risk zone
- **No storm water network for 90% of the city** causing over burden on sewage network and overflowing and contamination during rains

***“Ludhiana,
the clean and
green bicycle
capital of the
country”***

Vision Ludhiana



**REMOVE CARS/AUTOS
REMOVE POLLUTION
IMPROVE HEALTH
ENSURE PUBLIC SAFETY**

Ludhiana, Kanpur among world's top 10 cities with worst air pollution

India TV news desk [Updated 14 Nov 2013, 06:54:26]

[Share](#)

[Tweet](#)

[G+ Share](#)



[A+](#)

[A-](#)



heart disease and cancer rates.

Many of these cities are among the fastest-growing in the world. And in some, residents burn wood and coal for warmth, releasing additional pollution into the atmosphere.

**SAFE
WALKABLE
HEALTHY
GREEN CLEAN**



VISION to make LUDHIANA A Livable and Lovable City

To provide an enhanced quality of life to citizens of Ludhiana through social well-being, better health and a safe environment with reduced dependence on cars, reduced traffic congestion and better air quality, to strengthen Ludhiana as a business friendly International Manufacturing Hub with sustainable infrastructure that will facilitate job growth for all sections of society; where technology will assist citizens to make their desired choices for day-to-day activities; where citizens have a choice of multiple modes of mobility; where education, sanitation and public health facilities are easily accessible & available; where environment and depleting natural resources are preserved leading to a vibrant urban environment.



LUDHIANA Jiven Main Vekhan
"My Vision for Ludhiana"

STRATEGIC BLUE PRINT

Solution



Pollution

The Most Bike Friendly City in India

Healthy and Thriving

Safe and Walkable

Improved Air Quality

Reduced Traffic Congestion

Ludhiana 2025

Convergence with

Make In India

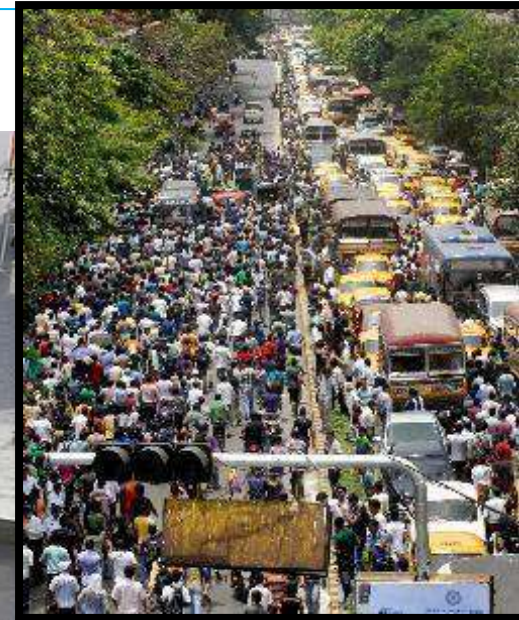
Swach Bharat Mission

Digital India

Amrut

STRATEGIC BLUEPRINT 2025

The Most Bike Friendly City



STRATEGIC BLUEPRINT 2025

Healthy and Thriving City



STRATEGIC BLUEPRINT 2025

Safe and Walkable



STRATEGIC BLUEPRINT 2025

Improved Air Quality



STRATEGIC BLUEPRINT 2025

Reduced Traffic Congestion



STRATEGIC BLUEPRINT 2025

Technologically Innovative City



STRATEGIC BLUEPRINT 2025

Economically Resilient City



STRATEGIC BLUEPRINT 2025

Controlled Growth in the City



GOALS AND SUB GOALS

Re-discover the Bicycle capital of the world



- Bicycle manufacturing hub of the world - *Align with "Make in India"*
- Innovative and indigenous solutions like bamboo bicycles
- Participation by citizens in biking culture
- Healthier and more active lifestyle
- Improve health metrics

Enhance Health + Wellness of citizens



- Promote healthier mobility options – like Bicycles, e-rickshaws
- Reduce pollution and vehicular congestion
- Mitigate industrial pollution
- Provide better integrated healthcare facilities to citizens –inclusive care, smart hospitals

Reduce Traffic Congestion

- Integrated Traffic Management Systems (IMS)
- Make streets pedestrian and bike friendly
- Improve existing Public Transport
- Reduce dependence on privately owned vehicles

GOALS



Clean + Green the city

- Switch from diesel and petrol to electric and renewable sources
- Alternative sources of energy for public space lighting - 10% of the Smart City's energy requirement should come from solar energy
- Integrated Solid Waste Management Strategy- **Align with "Swachh Bharat Mission"**
- Waste to energy



Ensure Public Safety

- Responding effectively to traffic patterns, disasters, security breeches
- Crime prevention and monitoring, and protecting citizens and public assets
- Street lighting to ensure walkable environment
- Emergency response
- Law enforcement for traffic rules, pedestrian rights and safeguarding right of way for bike riders



Enable E-Governance

- GIS based mapping
- Smart Metering
- Smart Monitoring
- App based and telephonic citizen grievance redressal system – plus into existing system available on MCL website - Single emergency help line
- 24x7 Information kiosks

***1 or 2 PAN city initiatives that
are ICT enabled and improve
public service***

pan-city

Ludhiana

PAN CITY PROJECT 01

GPS enabled 'Smart' E-Rickshaws

to replace diesel autos running in the city. The initiative will **reduce pollution, congestion, health and safety problem** in the city and provide a **better livelihood** to drivers. **Local manufacturing in Ludhiana** will also contribute to the auto parts manufacturing industry.



PAN CITY PROJECT 02

Building upon ongoing project of

GIS mapping of MCL properties

to levy property tax, this initiative looks at expanding the initiative by **linking it with NPR initiative**, building a **robust command center for future operations**. These systems can also be used by **police, fire departments, election department and in disaster management etc.**

Civic body goes innovative to recover dues

HI-TECH MC uses geographic information system to identify houses defaulting on utility bills, a survey was conducted in Block 27 recently and it was found that of total 2,233 houses in the area, only 1,426 had authorised connections

Harshraj Singh
h.singh@punjabnews.com

LUDHIANA: In a bid to recover water and sewerage bills from tax defaulters, the Ludhiana municipal corporation (MC) has started conducting surveys through geographic information system (GIS) and scrutinising unauthorised connections.

PS Ghuman, commissioner, Zone D, said: "Recently a GIS survey was conducted in Block 27, which includes Atam Nagar, Kartar Nagar, New Kartar Nagar, Adarsh Nagar and Model Town extension. It was found that of total 2,233 houses in these areas, only 1,406 properties had authorised water supply connections."

Ghuman said of 1,606 houses, which had authorised connections,

GIS SYSTEM

As per the system, every property will get a unique identity number. Once the number is fed into the system, all information, including owner's name, address and details such as electricity and water connection numbers, will be available to assess the bills.



PS Ghuman, commissioner, Zone D

1,426 houses were paying bills."

Harjit Singh, superintendent, MC, said: "The MC teams had visited different areas of the city where people had given pending dues so that they could not face any disconnection of water supply."

He said five to six illegal connections were disconnected on Thursday, while some defaulters had paid dues as they did not want disconnection of water supply.

"Earlier, it was difficult to

sources said the civic body was yet to recover around ₹150 to ₹200 crore from defaulters as there were several people who had failed to submit sewerage and water supply bills while many were enjoying facilities by getting illegal connections.

They said a city-based private firm had prepared data through satellite pictures of the properties and the MC officials were cross checking the properties which did not have valid sewerage and water connections. "It will take four more months to prepare the data of the entire city with GIS," Ghuman said. He appealed to the people concerned to regularise their unauthorised connection by paying the required fee, otherwise connections will be disconnected.

SHINGAR CINEMA TO PAY ₹1.5 LAKH FOR FAILING TO PAY BILLS

LUDHIANA: Taking a strict note on those failing to pay water and sewerage bills, the municipal corporation issued a notice to Shingar Cinema, one of the old cinemas of the city, and directed it to pay around ₹1.5 lakh for not paying the charges.

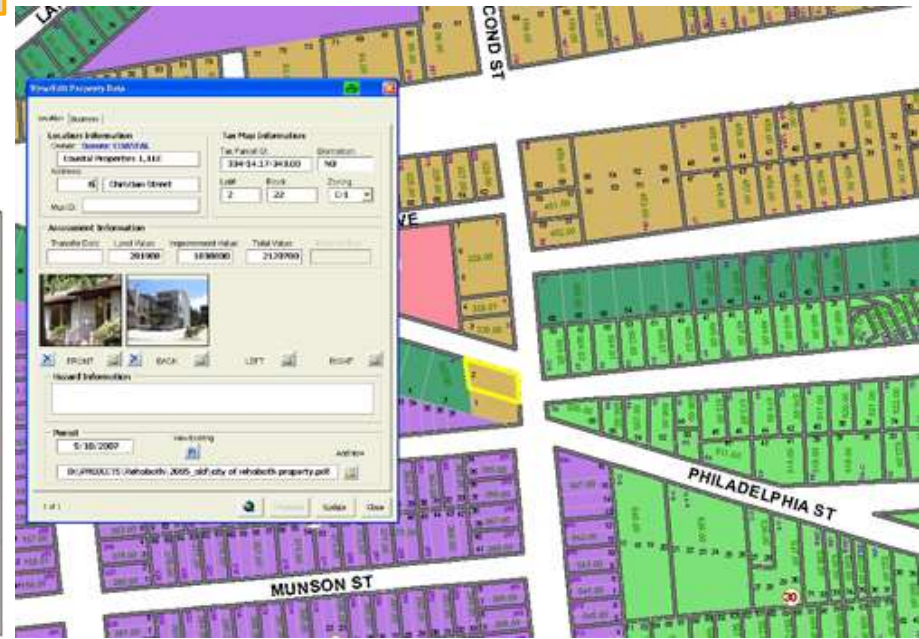
Sources said the cinema authorities had failed to pay the charges for water and sewerage for long time.

Executive engineer Rajinder Singh said: "We

have given seven days time to Shingar Cinema to pay the pending dues of ₹1.5 lakh."

On the other hand, Gurcharan Singh, an official of the cinema, claimed that they were paying water and sewerage charges to the MC regularly.

It was learnt that MC commissioner Pradeep Kumar Agarwal has given directions to all zonal commissioners to recover pending dues from all the defaulters.





area based development

Smart City Features Considered for Site Evaluation

Based on MoUD Criteria



**Robust IT Connectivity
& Digitalization**



**Solar Generated
Electricity**



Underground Electric Wiring



**Innovative use of Parks
& Open Spaces**



**Pedestrian friendly
pathways**



Sanitation



**Intelligent Traffic
Management +
Smart Parking**



**Non-Vehicle
Streets/ Zones**



Solid Waste Management



Walkability & Cycling



Assured Power Supply



**Safety & Security of
Citizens (esp. women &
children)**



**Energy Efficient
Street Lighting**



**Storm Water Reuse +
Rain water harvesting**



Adequate Water Supply



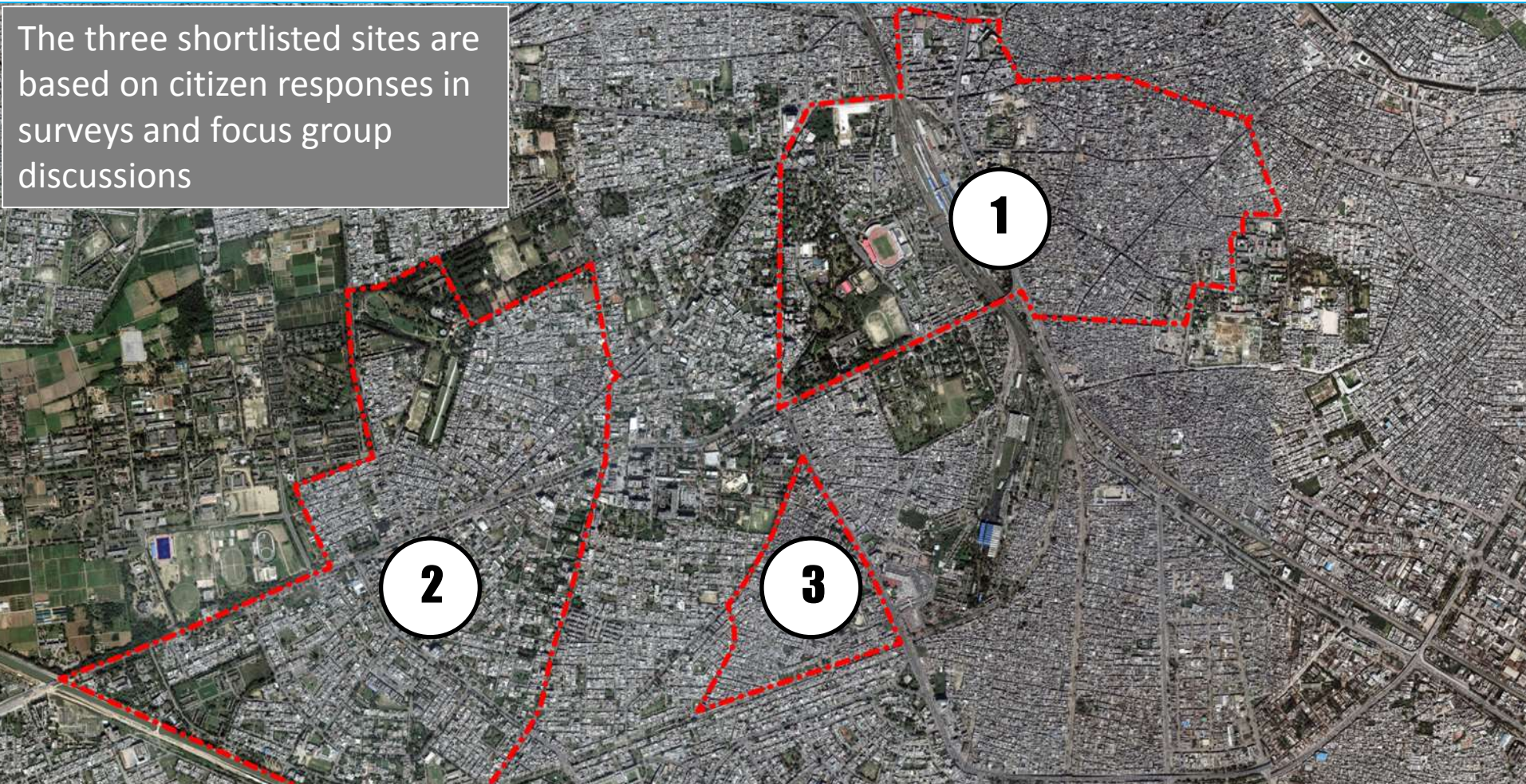
Smart Metering



Waste Water Recycling

AREA BASED DEVELOPMENT – SITE SELECTION

The three shortlisted sites are based on citizen responses in surveys and focus group discussions



Ferozepur Road Area: Retrofitting

Feature	Detail
North	Government College Road
East	Pakhwal Road
South	Sidhwan Canal
West	Punjab Agricultural University
Extent	790 Acres

Slum Rehabilitation Jawahar Nagar: Redevelopment

Feature	Detail
North	Ferozepur Road
East	State highway 95
South	Railway line
West	National Highway
Extent	120 Acres

City Core Revival : Retrofitting

Feature	Detail
North	Chowda Bazar Road
East	Suffian Bagh Road
West	Ludhiana Railway Station
Extent	500 Acres

1 km

1

City Core Revival : Retrofitting

Feature	Detail
Extent	500 Acres
Wards Included	35, 36, 37, 52
Area Character	<ul style="list-style-type: none"> Character dominated by transport hubs – railway station bus stand Busy and chaotic appearance Encroachments along all major roads, esp. in commercial areas Mix of small and medium Industrial area in very close proximity to Residential uses
Primary Land uses %	65% Residential 13-14% Industrial 20% Mixed-use + Commercial+ Institutional
Open space %	2-3%
Slums settlements	1
Projected Population 2017	1,22,185
Health & Education	<ul style="list-style-type: none"> Ramgaria Girls college CMC Ludhiana Govt. senior secondary school Vidya Mandir Civil hospital, CMC Ludhiana
Key Landmarks	<ul style="list-style-type: none"> Chowda Bazar, old city Railway Station

2

Ferozepur Road Area: Retrofitting

Feature	Detail
Extent	790 Acres
Wards Included	52, 53, 56
Area Character	<ul style="list-style-type: none"> Regional road Ferozepur passes through the area, with prominent junctions Affluent residential neighbourhoods Infrastructure in good condition Large number of institutes provide good character to the place Recreational spaces in good condition- both city wide parks and pocket parks
Primary Land uses %	80% Residential 10% Commercial
Open space %	15% approx.
slums settlements	1
Projected Population 2017	38,000
Health & Education	<ul style="list-style-type: none"> Govt. college for Boys Next to PAU Khalsa College Next to Swami Dayanand Medical College
Key Landmarks	<ul style="list-style-type: none"> Rose Garden, Leisure Valley Ghumar Mandi, Kipp's Market Bhaibala Chowk, Arti Chowk, Saraba Nagar main Market

3

Slum Rehabilitation Jawahar Nagar: Redevelopment

Feature	Detail
Extent	120 Acres
Wards Included	50 (area 50 acres)
Area Character	<ul style="list-style-type: none"> Slum/ Camp Settlement Poor Condition Commercial Retail unauthorised developed along the fringe – mall road, bus stand Encroachments along the ward boundary abutting mall road, station road
Primary Land uses %	70% Residential approx.
Open space %	3-4% approx.
slums settlements	Camp Settlements primarily
Projected Population 2017	7328 (1600-1700 families)
Health & Education	<ul style="list-style-type: none"> Jawahar Camp Boys School Gurunanak Girls college
Key Landmarks	<ul style="list-style-type: none"> Bus terminal adjacent to site Lajpat Nagar market

Citizen Engagement – Poll for site selection

SMART CITY LUDHIANA
Smart People Make Smart City

City Profile | Citizen Engagement | Smart City Proposal

Vote To Select Area For Improvement

Name:

Gender: ☐ Male ☐ Female

State:

District:

Mobile:

Email:

Please select the most suitable option for Area Based Development (Retrofit or Redevelopment):

A1 - A minimum 500 acres of Existing Area Improvement (Retrofit) zone around Ghumar Mandi and Sarabha Nagar Main Market. The area spans on both sides of Ferozepur Road and is bound by Sidhwan canal in the south. (63.88%)

A2 - A minimum 50 acres of Existing Area redevelopment zone including Jawahar Nagar Camp defined by SH-65 and Bus Terminal to the east, railway line to the south and Ferozepur road to the North. (16.17%)

A3 - A minimum 500 acres of Existing Area Improvement (Retrofit) zone around the Ludhiana Railway Station, Chaura Bazaar and the old city. (20.97%)

Voting Results

A1 - A minimum 500 acres of Existing Area Improvement (Retrofit) zone around Ghumar Mandi and Sarabha Nagar Main Market. The area spans on both sides of Ferozepur Road and is bound by Sidhwan canal in the south. (63.88%)

A2 - A minimum 50 acres of Existing Area redevelopment zone including Jawahar Nagar Camp defined by SH-65 and Bus Terminal to the east, railway line to the south and Ferozepur road to the North. (16.17%)

A3 - A minimum 500 acres of Existing Area Improvement (Retrofit) zone around the Ludhiana Railway Station, Chaura Bazaar and the old city. (20.97%)

© 2015 Smart City Ludhiana / All Rights Reserved 00016770 Powered by webcentric

MY GOV
Let us join this great movement towards Smart City. Realize the hopes and aspirations of the people and take India to greater heights.

Smart City Ludhiana

Which of the existing area in the city is your priority for improvement for Smart City Ludhiana?

IT'S TIME TO CHOOSE!

Please select the most suitable option for Area Based Development (Retrofit or Redevelopment): A1 - Area1; A2 - Area2; A3 - Area3

Area around the Ludhiana Railway Station, Chaura Bazaar and the old city. 42% (111 votes)

Jawahar Nagar Camp Redevelopment 9% (23 votes)

Area along Ferozepur Road including Ghumar Mandi, Rose Garden, Lakshmi Vihar and Sarabha Nagar Market + Khas Market 49% (128 votes)

Total votes: 262

••••• Airtel LTE 7:57 PM 28%

< Chats (1) Smart City Ludhiana

Proud citizens of Ludhiana - We urge you to provide your input. Select an existing area for area-wide development for Smart City Challenge for Ludhiana.

Send SMS to [9200003232](tel:9200003232) to CHOOSE ONE area out of the following:

Type < SMARTLDH 1 > for Ghumar Mandi area
Type < SMARTLDH 2 > for Jawahar Nagar area
Type < SMARTLDH 3 > for Chaura Bazaar area

- MyGov.in
- Smartcityludhiana.in
- Whattsapp
- Booths

Ferozepur Road Area- **Selected area (retrofit)**

Existing Conditions Analysis Plan



Sl. No	Feature	Detail
1	North	Government College Road
	East	Pokhwal Road
	South	Sidhwan Canal
	West	Punjab Agricultural University
2	Area	790 Acres
3	Wards Included	52, 53, 56
4	Primary Land uses %	80% Residential 10% Commercial
5	Open space %	15% approx.
6	No. of slums settlements	1
7	Projected Population 2017	1,20,654
8	Health Education	Next to Swami Dayanand Medical College
	A) Schools	Govt. college for boys Next to PAU Khalsa College
	B) Hospitals	
10	Key Landmarks	Rose Garden, Leisure Valley, Ghumar Mandi, Bhaibala Chowk, Arti Chowk, Sarabha Nagar main Market

LEGEND

- ✱ CITY LEVEL LANDMARK
- AREA LEVEL LANDMARK
- URBAN NODES
- RESIDENTIAL
- COMMERCIAL
- OPEN SPACES
- ROADS

Selected Ferozpur Road Area- Profile

The residents of Ludhiana see the Area-Based Development proposal to be creating the **maximum impact** in the most geographically, economically and socially suitable area of the city. Reasons for selection of this area include:

- The area being a **high significance area locally and regionally** due to its location along the major Ferozpur road
- **Availability of relatively good condition Infrastructure** making it **easier to implement a 100% successful smart pilot project** with lesser capital and time investment **yielding more results, visibility and in shorter time frame**
- The area having an **optimum mix of uses and a diverse user base** making itself suitable for maximum citizen impact.
- The area can lend itself to **the best smart technology led solutions**



Ferozepur Road Area- Selected area (retrofit)

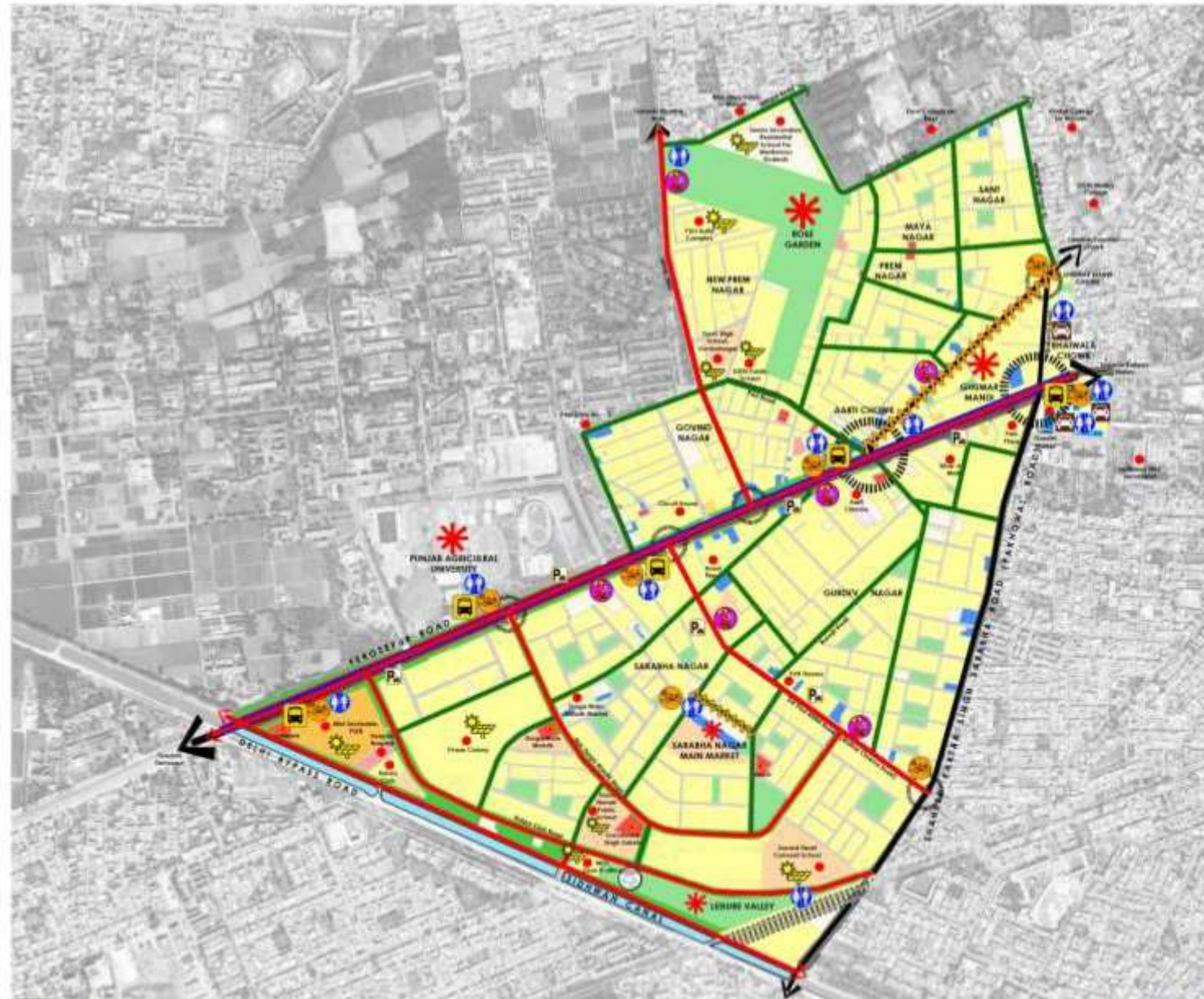
Proposed Structure Plan

PROPOSED PROJECTS

- 01. DEDICATED CYCLE TRACK
- 02. SHARED CYCLE TRACK
- 03. CAR FREE ZONES
- 04. SMART BIKE ZONES
- 05. BRT SMART BUS STOP
- 06. BRTS ROUTE
- 07. MULTI LEVEL PARKING
- 08. SMART PARKING
- 09. WATER HARVESTING POND
- 10. PUBLIC TOILET
- 11. DEDICATED HAWKER ZONE
- 12. SOLAR ROOFS (PUBLIC BLDG)
- 13. FACADE CONTROL
(ALONG COMMERCIAL ROADS WITHIN THE AREA)
- 14. STREETScape IMPROVEMENT
(ALONG MAJOR ROADS WITHIN THE AREA)

LEGENDS

- * CITY LEVEL LANDMARK
- AREA LEVEL LANDMARK
- URBAN NODES
- RESIDENTIAL
- COMMERCIAL
- OPEN SPACES
- ROADS



Ferozepur Road Area- Selected area (retrofit)

Key Interventions

Vehicle Free zones

Pedestrian and bike friendly streets

Bicycle highway along canal

Speed Limit cap of 25km/hr

Multi use Multi level car parking

Essential features as per MoUD requirement

AREA BASED DEVELOPMENT

Dedicated Cycle Tracks shared with Footpaths + Public Bike Sharing



AREA BASED DEVELOPMENT

Streetscape Improvements and Beautification
Including footpaths, landscape, signage and bioswale on Ferozpur road



AREA BASED DEVELOPMENT- OTHERS

Rooftop Solar Panels



Hoarding free city & Digital Hoarding



Public Toilets (10 nos.)



AREA BASED DEVELOPMENT

Elevated Bus rapid transit system with Smart Bus Stops

Network length: 98.76 kms.



Fleet requirement: 166 with 95% fleet utilization.



ridership for 2015-16: 43386 passengers/day



Cross section with 70m R.O.W



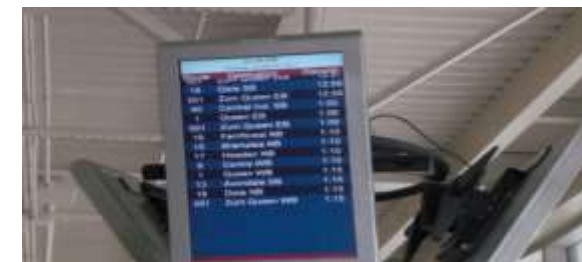
P.I.S at bus stop



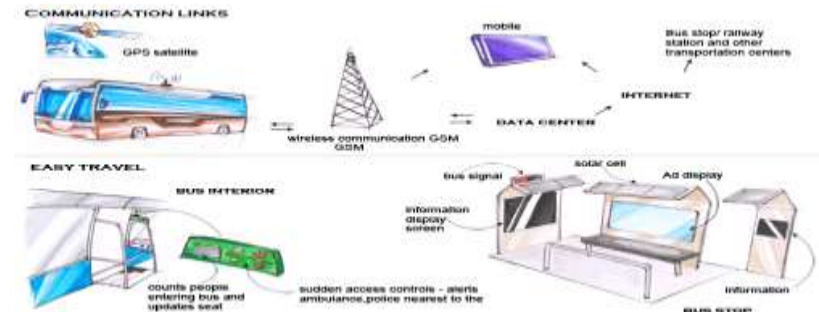
Real time P.I.S in bus

DPR already prepared for BRTS along Ferozepur road. Integrating plan with other traffic management proposals.

Real time P.I.S at stations



P.I.S in mobile



AREA BASED DEVELOPMENT- TRANSPORTATION

ROB at Pokhwal Road and FOB



Smart on street parking -300 bays

Area wide- E-rickshaws



MLCP at 3 locations



AREA BASED DEVELOPMENT- TRANSPORTATION

Bus shelters



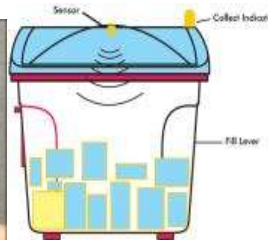
ATCS intersections



AREA BASED DEVELOPMENT- SOLID WASTE MANAGEMENT



Integrated Solid waste Management system



AREA BASED DEVELOPMENT- INFRASTRUCTURE PROJECTS

Undergrounding Power cables



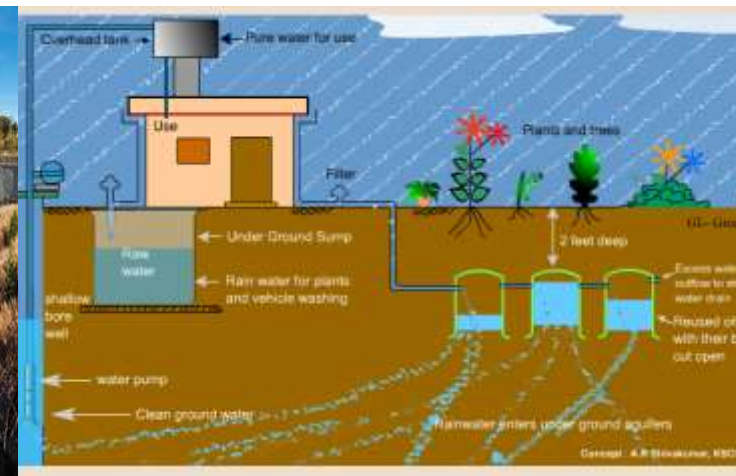
Storm Water network



Street Lighting



Rain water harvesting



AREA BASED DEVELOPMENT- INFRASTRUCTURE PROJECTS

Water Supply System



Water Storage facility

Water distribution network

Replacements of Valves

SCADA System

Smart Meters system

Waste Water System

