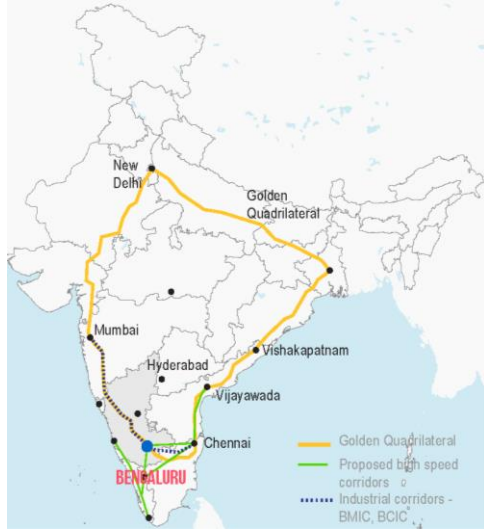# SMART CITY PROPOSAL, Bengaluru

CITY PROFILE

City context & Demographics

POPULATION
9.8 Million (2015)

AREA OF CITY – 709.5 sq km
198 wards

POPULATION DENSITY
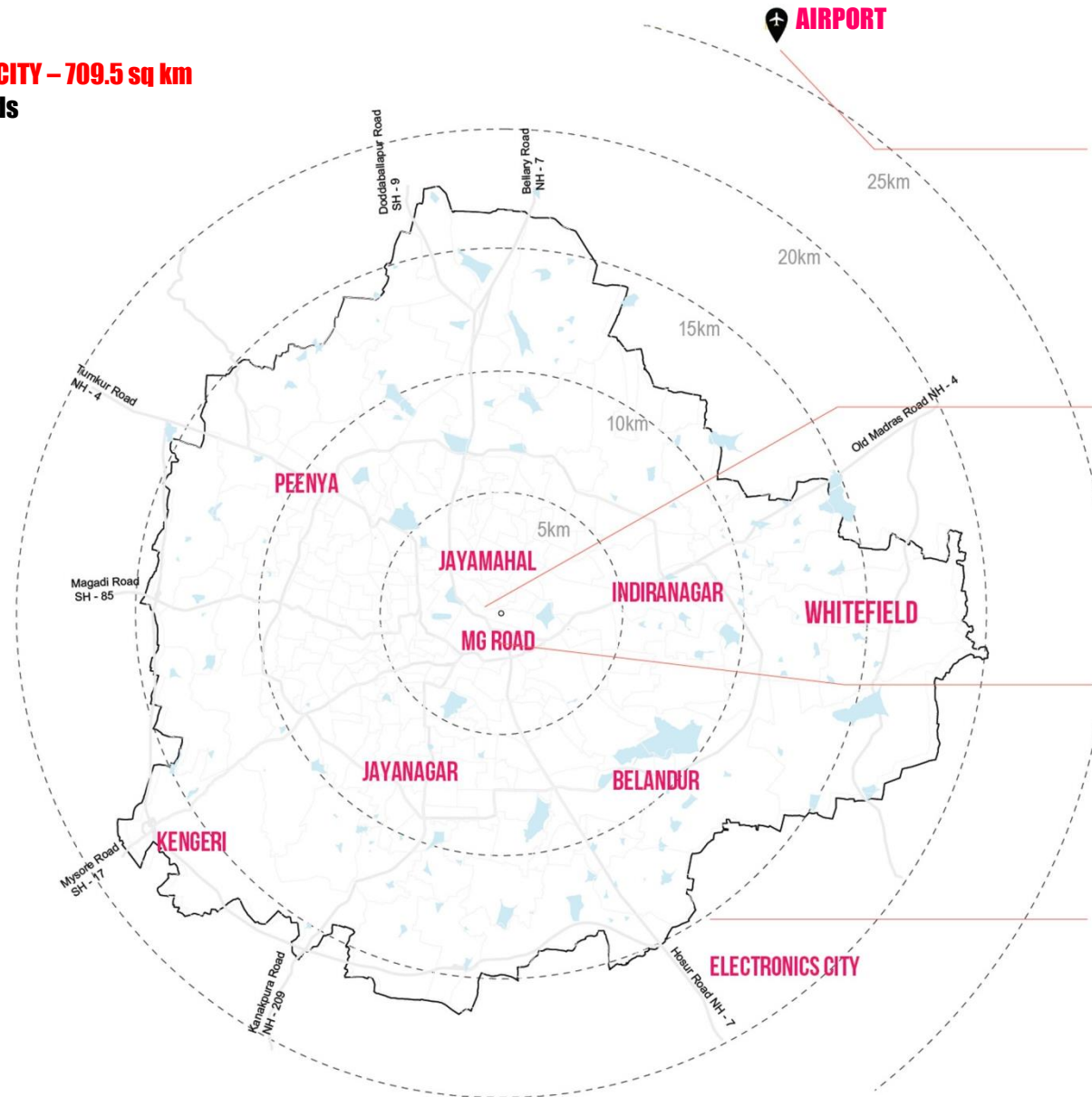4378 persons/ sq km

Literate males
3,595,059

Literate females
3,082,135

Sex ratio – 923 females for every 1000 males

DECADAL GROWTH RATE
42.6% Pan City

<100 % 0.1 -25 26 -50 50 -150 151-315%

✈ **AIRPORT**

Doddaballapur Road SH - 9

Bellary Road NH - 7

Tumkur Road NH - 4

Old Madras Road NH - 4

Magadi Road SH - 85

Mysore Road SH - 17

Kanakpura Road NH - 209

Hosur Road NH - 7

25km
20km
15km
10km
5km

PEENYA

JAYAMAHAL

INDIRANAGAR

WHITEFIELD

MG ROAD

JAYANAGAR

BELANDUR

KENGERI

ELECTRONICS CITY

Kempegowda International Airport

Vidhana Soudha - State legislature building

Commercial Street and Brigade road

Electronics city - IT industry
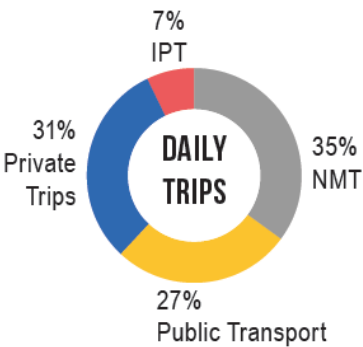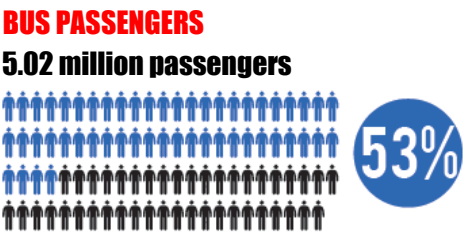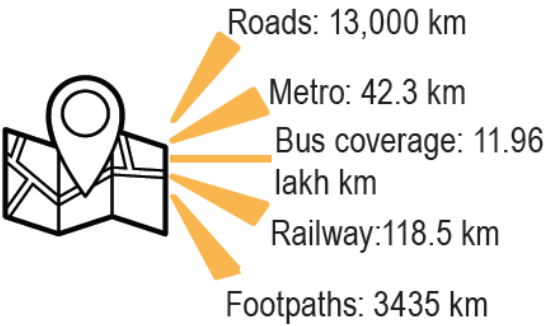
SMART BENGALURU

CITY PROFILE

Transportation & Connectivity

Operational routes
Proposed alignment
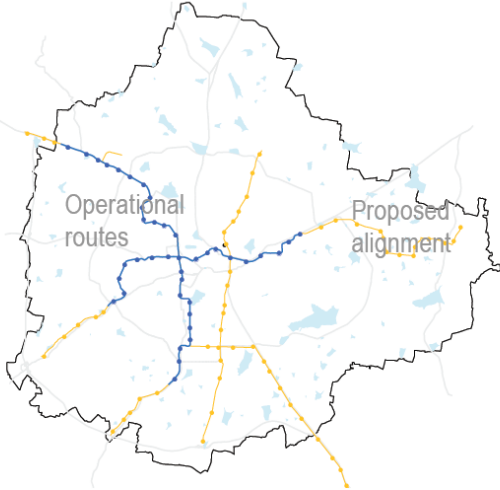
METRO NETWORK
42.3 km operational, 72.09 km proposed

BUS PASSENGERS
5.02 million passengers

53%

DAILY TRIPS
7% IPT
31% Private Trips
35% NMT
27% Public Transport

Source: mobility indicators, DULT -2010

Roads: 13,000 km
Metro: 42.3 km
Bus coverage: 11.96 lakh km
Railway:118.5 km
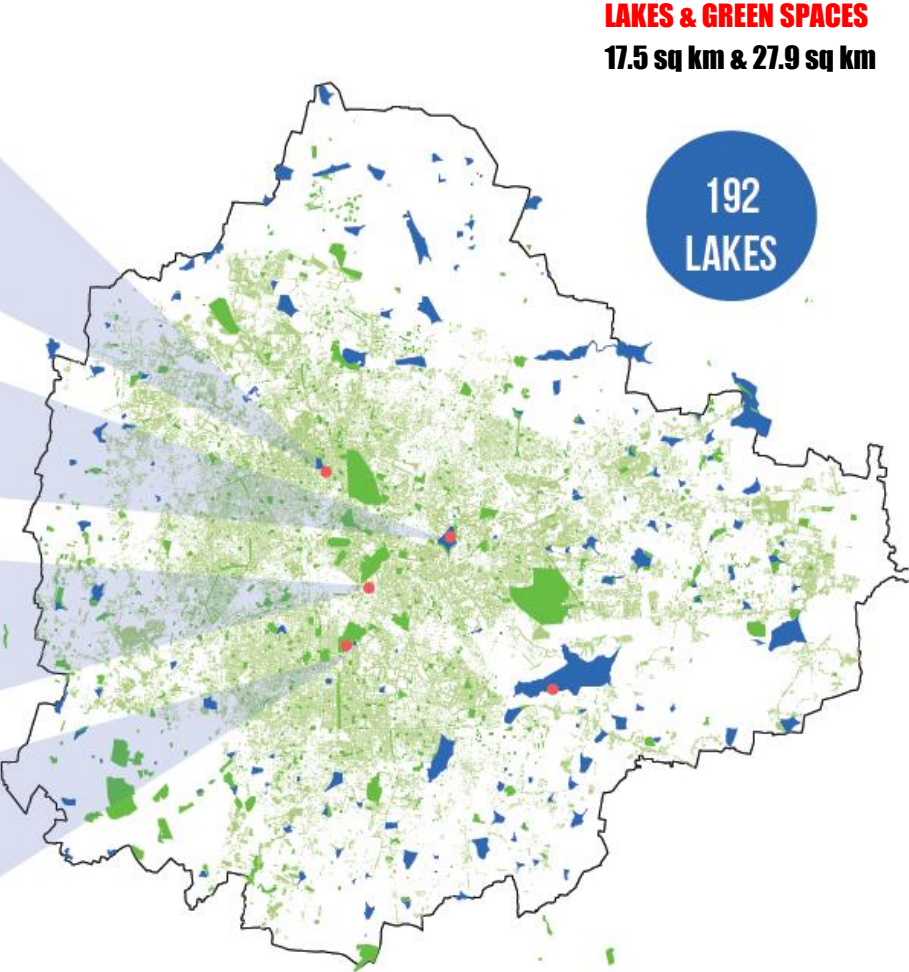Footpaths: 3435 km

Environment

Sankey Tank
Ulsoor Lake
Cubbon Park
Lalbagh Gardens

LAKES & GREEN SPACES
17.5 sq km & 27.9 sq km

192 LAKES

AREAS OF CONCERN

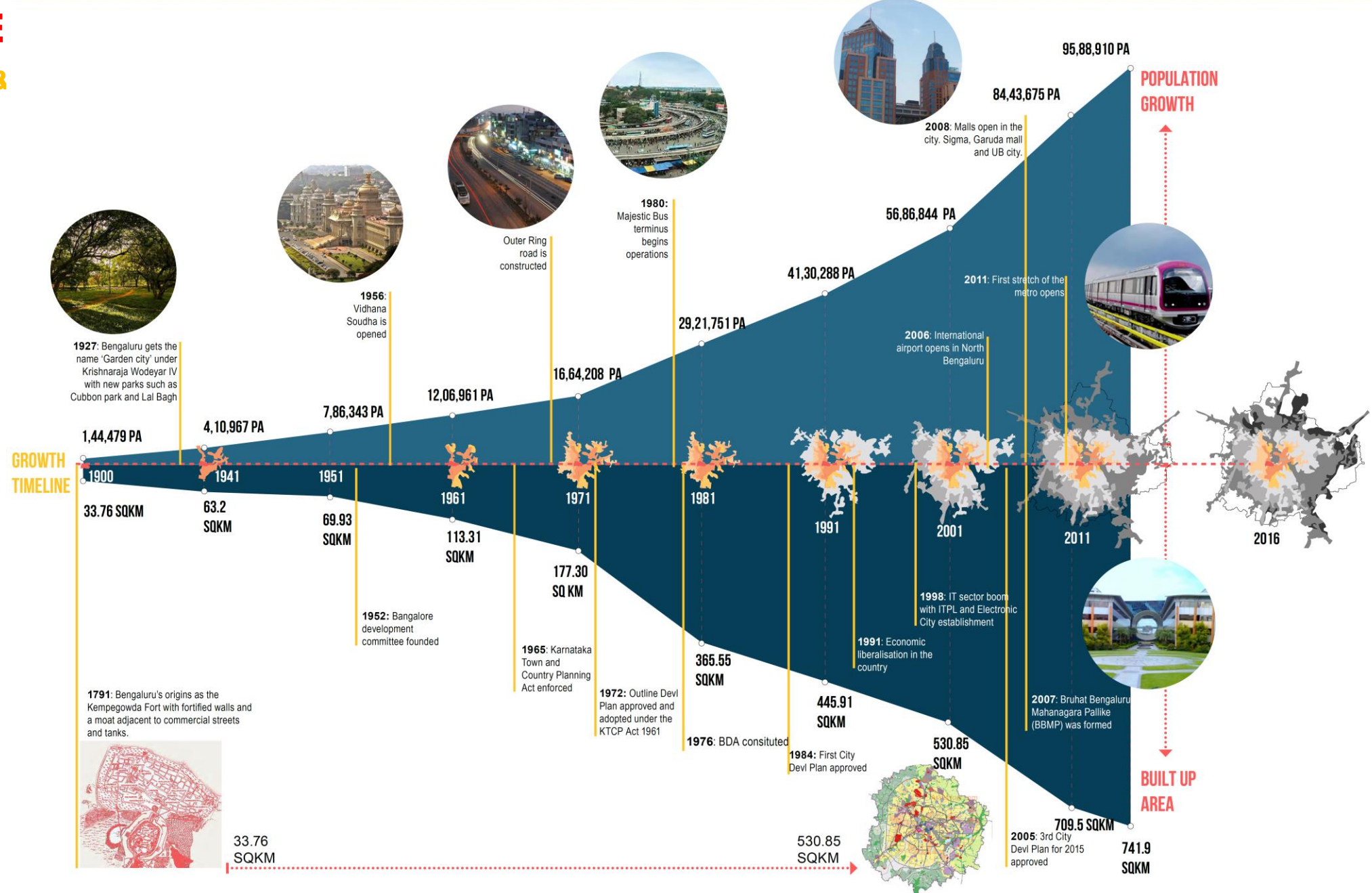| Severe traffic congestion | Inadequate public transport facilities | Inadequate pedestrian and disable friendly infrastructure | Reduction of open spaces/ lakes | Contamination of water bodies | Sub optimal solid waste management |

SMART BENGALURU

CITY PROFILE

Evolution &

POPULATION GROWTH

95,88,910 PA

84,43,675 PA

56,86,844 PA

2008: Malls open in the city. Sigma, Garuda mall and UB city.

41,30,288 PA

2011: First stretch of the metro opens

29,21,751 PA

1980: Majestic Bus terminus begins operations

16,64,208 PA

Outer Ring road is constructed

2006: International airport opens in North Bengaluru

12,06,961 PA

7,86,343 PA

1956: Vidhana Soudha is opened

4,10,967 PA

1,44,479 PA

1927: Bengaluru gets the name 'Garden city' under Krishnaraja Wodeyar IV with new parks such as Cubbon park and Lal Bagh

GROWTH TIMELINE

1900 — 1941 — 1951 — 1961 — 1971 — 1981 — 1991 — 2001 — 2011 — 2016

33.76 SQKM

63.2 SQKM

69.93 SQKM

113.31 SQKM

177.30 SQ KM

1952: Bangalore development committee founded

1965: Karnataka Town and Country Planning Act enforced

1972: Outline Devl Plan approved and adopted under the KTCP Act 1961

365.55 SQKM

1976: BDA consituted

445.91 SQKM

1984: First City Devl Plan approved

1998: IT sector boom with ITPL and Electronic City establishment

1991: Economic liberalisation in the country

530.85 SQKM

2007: Bruhat Bengaluru Mahanagara Pallike (BBMP) was formed

1791: Bengaluru's origins as the Kempegowda Fort with fortified walls and a moat adjacent to commercial streets and tanks.

BUILT UP AREA

709.5 SQKM

2005: 3rd City Devl Plan for 2015 approved

741.9 SQKM

33.76 SQKM

530.85 SQKM

SMART BENGALURU

CITY PROFILE

Self Assessment

MOBILITY AND TRANSPORT	WATER SUPPLY	WASTE WATER & SWM	STORM WATER DRAINAGE	SAFETY AND SECURITY

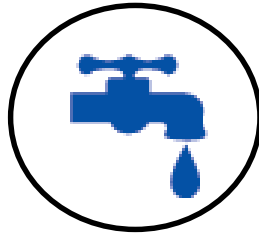**MOBILITY AND TRANSPORT**

13000 km road network

2428 kms (18%) of public bus transit system

52L (53%) Daily ridership in BMTC

42.30 kms of Metro rail network

1% signalised intersection

26% footpath available

WATER SUPPLY

94 LPCD Water supply

38% coverage of water supply connection

50% quality of water supply

49% Non revenue water

95.5% metered connection 1400 smart meters

2% Houses with rain water harvesting facility

WASTE WATER & SWM

66.3% Coverage of Sewerage network

62.5% sewage treated in STPs

30 - 40% Segregation at source

60% collection at source

STORM WATER DRAINAGE

850 km Storm water drain

47% natural stream missing

38% Underground drainage network
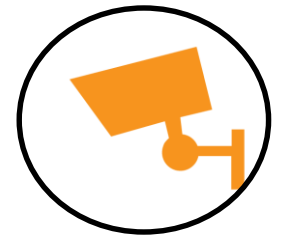
SAFETY AND SECURITY

50% reduction in road accidents

21758 repeated offenders driving licenses sent for suspension

400 surveillance cameras

Source: Bangalore Traffic Police | Centre for Sustainable Development | BBMP | Street Quality Score

SMART BENGALURU

CITIZEN PARTICIPATION

15,20,414 RESPONSES

ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
Bruhat Bengaluru Mahanagara Palike

Smart City Namma Bengaluru Vote Now!

52 LAKH+ CITIZENS CONTACTED

TOTAL CAMPAIGN REACH

10.37 LAKH+ CITIZENS VOTED

CITY LEVEL VOTES

3 LAKH+ CITIZEN INPUTS

NEIGHBOURHOOD INPUTS

68,494 CITIZEN OPINIONS

SPECIFIC OPINIONS

LIKES ON FB
6,24,891

TWEETS 5681

WHATSAPP MSGS
25,435

49,229 LIKES ON
SOCIAL MEDIA

2,52,422 DIRECT
BALLOTS

1,12,433 MISSED
CALL VOTES

50 LAKH SMS SENT

YOUTUBE VIDEOS

67,114 INPUTS ON THE
BUDGET PRIORITIES

291 INPUTS ON
MYGOV.IN

Livable Bengaluru

Healthy
GREEN
BLUE
WALK AND PLAY

Connected
INTEGRATED MOBILITY
SAFE NEIGHBOURHOODS
COMMUNITY PLATFORMS

Vibrant
STRONG IDENTITY
FLOURISHING MARKETS
ACTIVE STREETS
THRIVING BUSINESS DISTRICT
AFFORDABLE HOUSING

Smart Information kiosks

E-autos and charging points

Solar roof tops

CCTV surveillance

Solar powered lighting

Safe crossings

Syncronised signals

Smart bicycles

Underground utilities

Smart bus shelters

DECIDING FACTORS

CITIZEN INPUTS

STATUS OF CITY INDICES

KEY IMPROVEMENT INDICES

MOBILITY — 1
ECONOMY — 2
HOUSING & INFRASTRUCTURE — 3
ENVIRONMENT — 4
SAFETY — 5
AMENITIES — 6

ABD & PAN CITY PROJECTS

…And, a smart city is built by building smart communities

SMART BENGALURU

PROPOSED INTERVENTIONS

ABD & Pan City

7 AREA BASED DEVELOPMENT PROJECTS
10 areas of interventions

PROJECT 1: **Revitalization of historic heart of city**
- Road redevelopment under Tender S.U.R.E. model

PROJECT 2. **Integrated mobility towards creating vibrant destination**
- Shivajinagar bus station and Russell Market
- Kempegowda Bus Stand (Majestic)

PROJECT 3: **Redevelopment of historic economic centres**
- KR Market
- Malleshwaram Market

PROJECT 4: **Innovation of downstream clean up of drainage system**
- Ulsoor lake
- Sankey Tank

PROJECT 5: **Protection & redevelopment of centrally located parkland**
- Cubbon Park

PROJECT 6: **Increasing affordable housing stock through slum redevelopment**
- Swathanthra Palya Slum redevelopment, Gandhinagar

PROJECT 7: **Retrofitting of a health care facility**
- K.C General Hospital

1 PAN CITY PROJECT
8 proposals on governance and public services

PROJECT 1: **CITIZEN CENTRIC E-GOVERNANCE AND SERVICES**

GOVERNANCE
- Municipal finance reforms
- Participatory budgeting
- Improvement in property tax collections
- Grievance management
- Online project information system for public project management
- Improvement of neighborhood safety

PUBLIC SERVICES
- BTRIPS – Bengaluru Travel Related Information and Planning System
- Open data portal for citizen information and innovation

AREA BASED DEVELOPMENT

Revitalizing the city center of Bengaluru

Area for maximum impact

"BELONGS TO, AND IS USED BY EVERYONE"
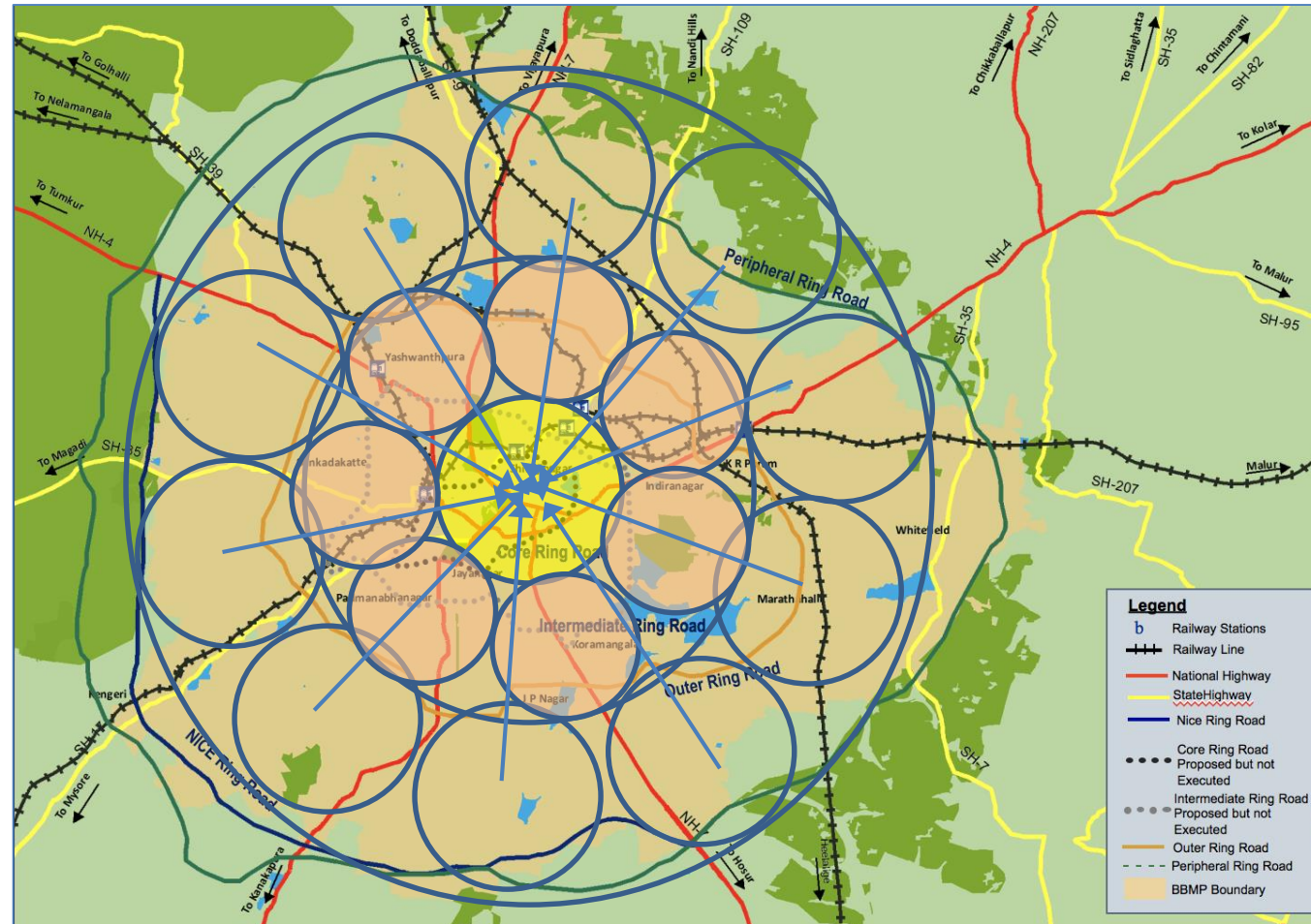
AREA BASED DEVELOPMENT

Revitalizing the city center of Bengaluru
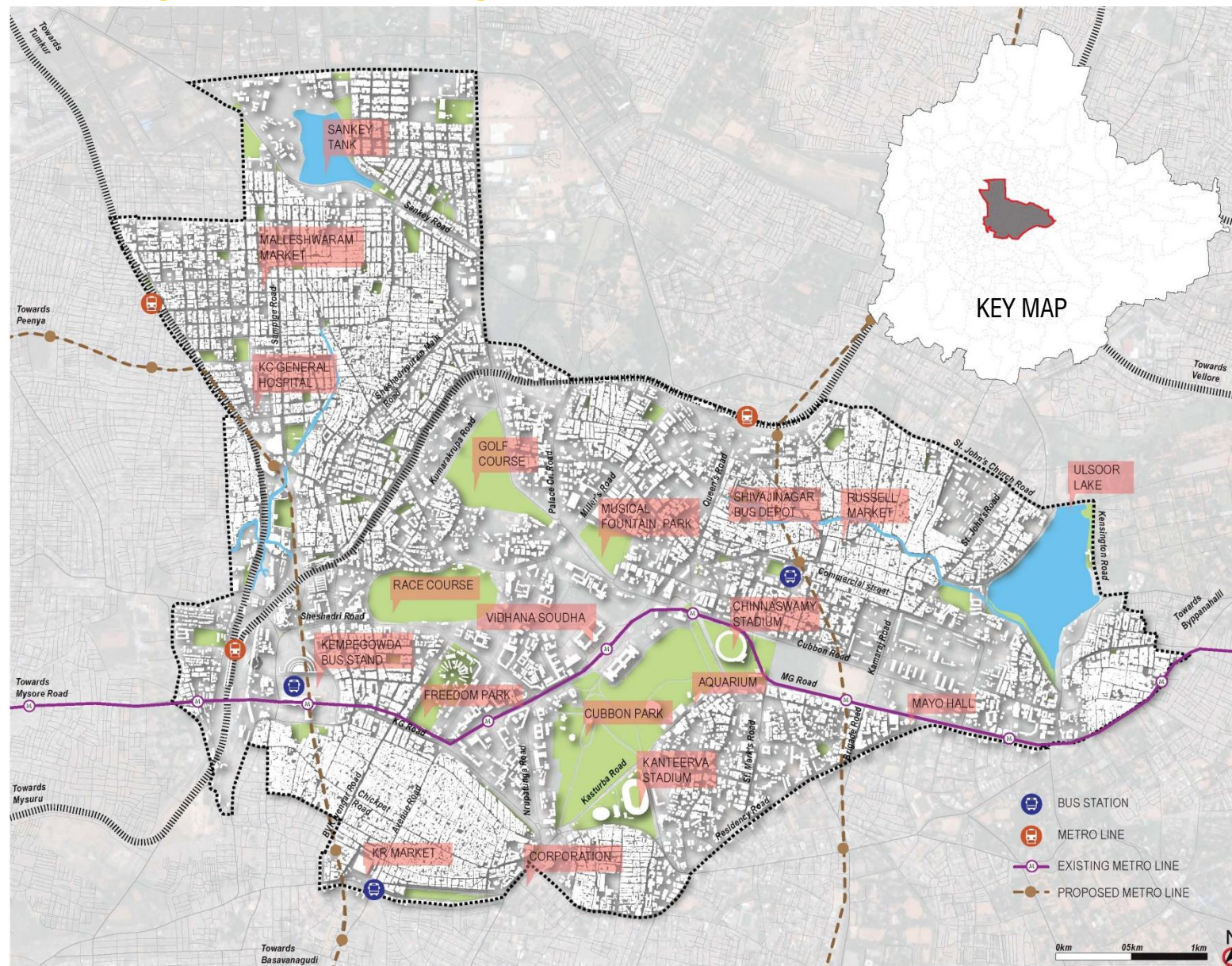
AREA: 5380 ACRES (21.8 SQ KM)
POPULATION : 5,24,000
17 WARDS

ABD LANDMARKS

CBD & ADMIN
Vidhana Soudha
City corporation
MG road
Kasturba Road

OLD CITY CORE
Historic Pete - Chickpet
Avenue Road
Cantonment
Brigade road
Commercial street

SOCIO-CULTURAL
Kempegowda Museum
Vishveshwariah Tech. Museum
JN Planetarium
Aquarium
Chinnaswamy stadium

PARKS AND LAKES
Cubbon Park
Bal Bhavan
IG Musical fountain
JN Planetorium
Ulsoor Lake
Sankey Tank

CULTURE & HERITAGE
Bangalore Fort
Historic markets
St.Mary's Basilica
Jama Masjid
Temples in Malleshwaram
& Ulsoor

TRANSIT HUBS
2 city bus stations
2 metro interchanges
and city railway station

SMART BENGALURU

AREA BASED DEVELOPMENT

City Layers
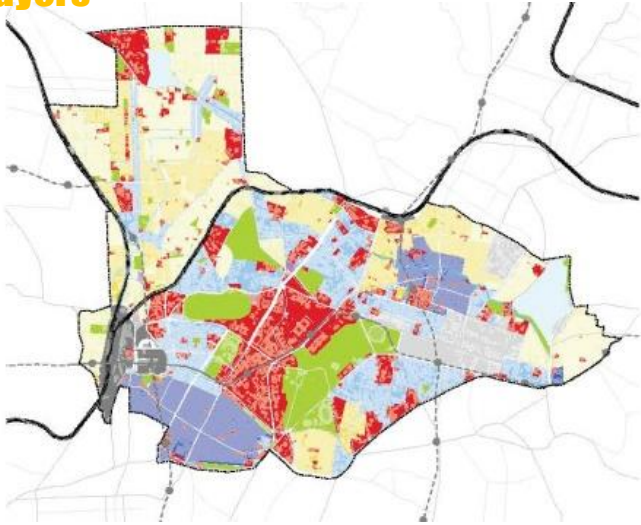
LAND USE MAP
28% Commercial, 19% Public & Semi Public , 13% Mixed Use

BUILT vs OPEN
29% Built up

PARKS, OPEN SPACES & LAKES
13% Open space
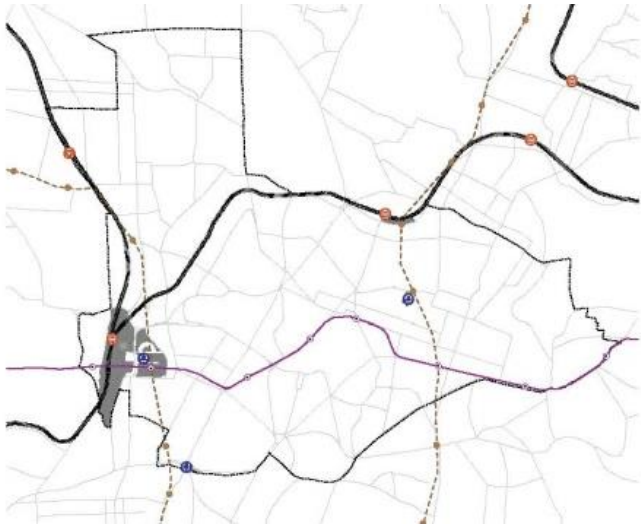
TRANSPORTATION NETWORK
97 km of major Roads
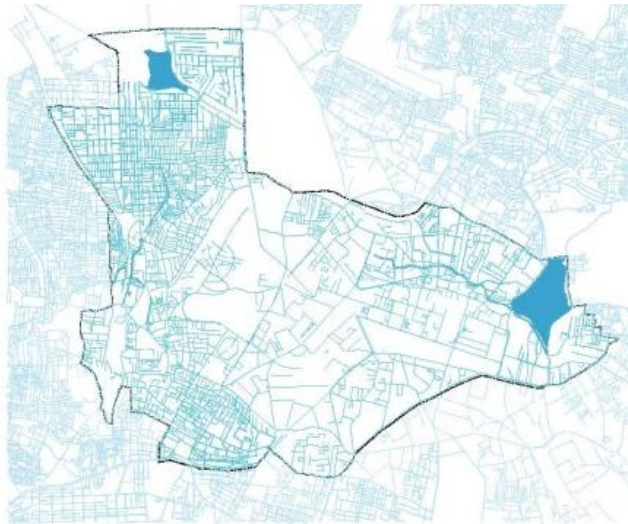
STORM WATER DRAIN NETWORK
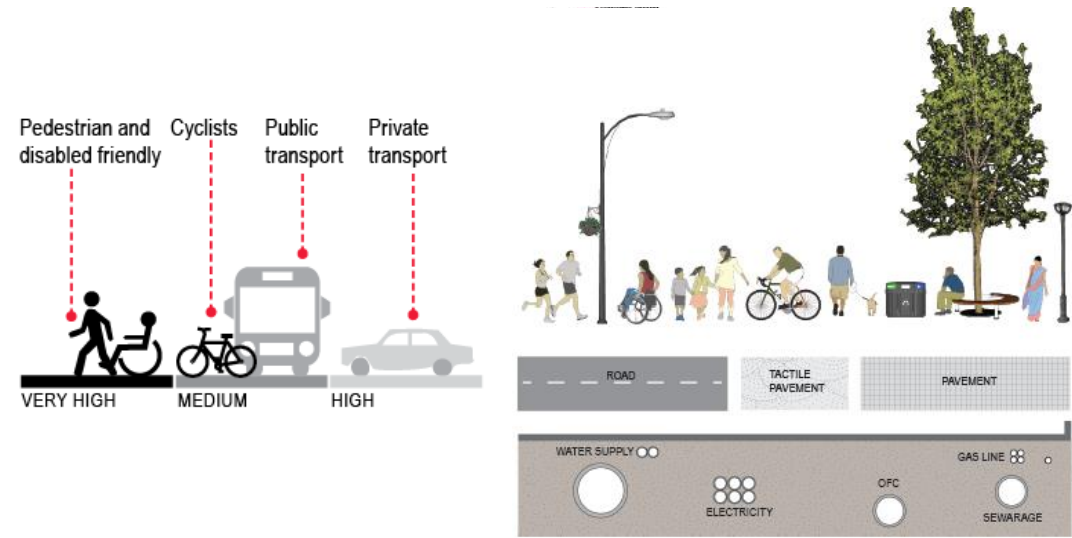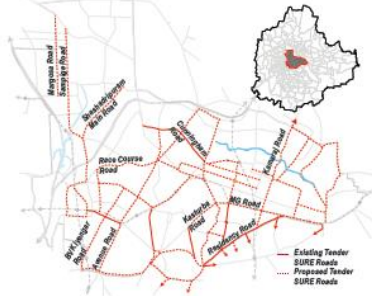**556 km within ABD**

SEWERAGE NETWORK
417 km within ABD

1. Revitalization Of Historic Heart Of City

Redevelopment under Tender S.U.R.E.

Proposed for 66% of Major roads in ABD

" …into a walking, cycling, tree lined, economically vibrant, environmentally sensible and inclusive center "

- **Infrastructure revitalization** (increase in capacity and coverage)- Surface drainage, sewage network, water supply, power and telecommunication
- The city core needs **highest degree of walkability** owing to highest footfall count

Tender S.U.R.E.	Promoting NMT	Improved public amenities	Energy efficiency/ conservation	Smart S.U.R.E.
Uniform travel lanes, underground services, smart parking, landscaping, street features	Pedestrian walkway and cycling network, app enabled public bicycle share points	Smart bus shelters with digital information boards, smart dustbins, environmental sensors, e-toilets, water ATMs, smart telecom towers	Vehicle charging points, Solar lighting/ energy efficient lighting, electric buses, e rickshaw stands with charging points	Based on PPP annuity model. Cost recovery on O&M from telecom companies

EXISTING PRECEDENT: 9 Roads – 11.5 km executed; 150 electric buses (BMTC proposal)

SMART BENGALURU

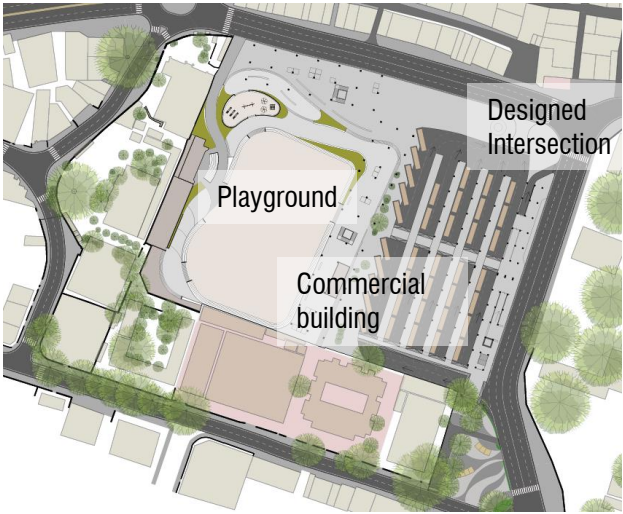## 2. Integrated Mobility Towards Creating Vibrant Destination

Shivajinagar Bus Depot + Russell Market, Kempegowda Bus Stand

Integrated Development Of Transport Hub, Market, Civic Park & Connecting Road

" Integrating transport hubs, vibrant market, school and community civic space towards a livelihood destination "

KEY MAP - MULTI MODAL HUBS

- **Building on Tender SURE and Proposed Metro Station**
- **Connecting Shivajinagar bus depot to Russell Market** through overhead pedestrian bridge
- **Reuse of underutilized public space and infrastructure** towards economic viability

Shivajinagar Context map

1. Shivajinagar BMTC Bus Depot
2. Civic park
3. Russell Market
4. St. Mary's Basilica
5. Mosque
6. Bowring Hospital
7. Cinnaswamy Stadium
8. Cubbon Park

Shivajinagar Bus Depot Proposed Plan

Designed Intersection

Playground

Commercial building

Shivajinagar Bus Depot - Proposed

| Redevelopment of Shivajinagar Bus Depot & Civic Park	Increased space allocation for economic activities	Integrated development of Russell Market	Improved parking in CBD	Retrofitting of Kempegowda Bus Stand (Majestic)
Bus routing in and around bus depot. Integrate metro network to bus transportation to increase regional connectivity	smart cubicles/ start-up hubs/ incubators within CBD, possibly on under utilized public holdings	Retrofitting of historic market building	App enabled smart car parking with vehicle charging points	Digital information boards, way finding features, CCTV surveillance

AREA BASED DEVELOPMENT

## 3. Upgradation & Redevelopment Of Historic Economic Centres

K R Market, Malleshwaram Market
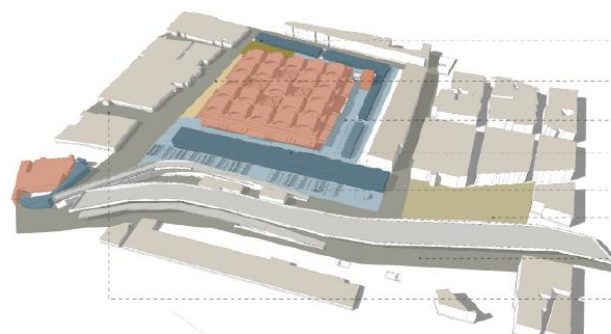**Footfall of 30,000/ day, 1249 vendors**

> *Towards resilient markets: Connectivity with Metro Station, Reuse of existing unused municipal built assets and Solving the garbage crisis*
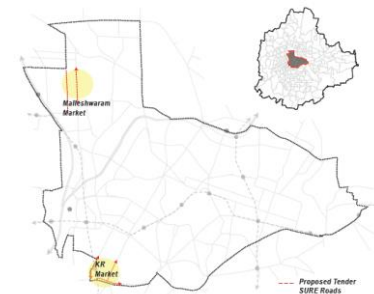
- **Retrofitting of historic market center** through improved public transport connectivity and efficient circulation management
- **Efficient vending and increased retail footprint** through efficient space management
- **Integrating proposed metro station to market** through over head pedestrian bridge
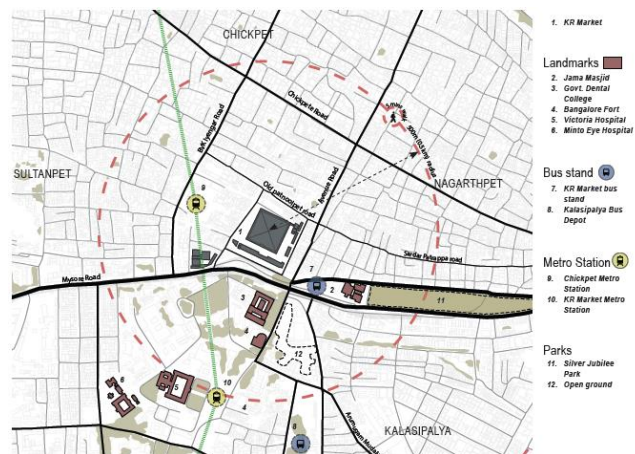
KR Market Context map

Hygienic vending conditions by setting up effective waste management system

Strenthening existing loading / unloading platforms

Designated vending areas for better pedestrian movement

Retaining heritage character of market precinct

Pedestrian friendly shopping experience

Enhancing existing transit hub

Reducing conjestion and improving mobility

Connectivity with metro station

Proposals for market redesign

KR Market - Proposed entrance

Redesign of KR Market	Organized vending	Solid waste management	Energy efficiency/ conservation	Redevelopment of Malleshwaram Market
Heritage conservation, organizing vehicular and pedestrian movement around the market, provision of loading unloading bays and time managed goods movement	Creating designated vending zones with plazas – smart vendor kiosks	Sensor based smart dustbins, recycling unit, composting unit	Roof top solar panels, solar lighting/ energy efficient lighting	CCTV surveillance, e-toilets, water ATMs, Public bicycle share points

## 4. Innovation Of Downstream Clean Up Of Drainage System

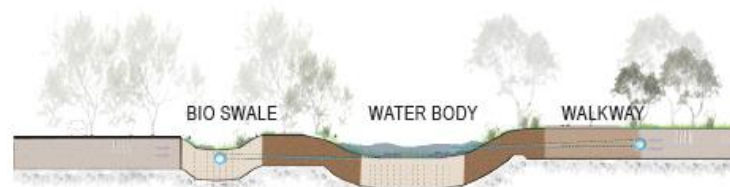### Ulsoor Lake, Sankey Lake

200 acres of lake precincts & 2.5 km of nallah clean up

" Developing a water body as a replicable model towards

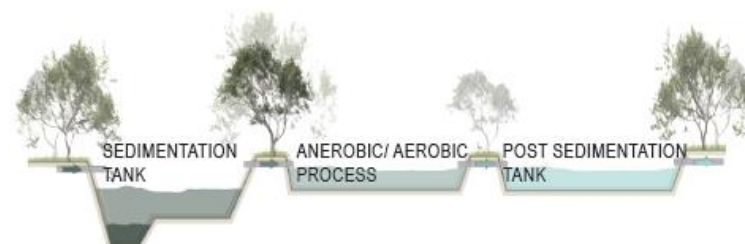*reclaiming the dying historic drainage system of the city "*

- **Green initiatives** for water body clean up
- **Increased ground water** recharge
- Creating a **vibrant and accessible public space** within the ABD
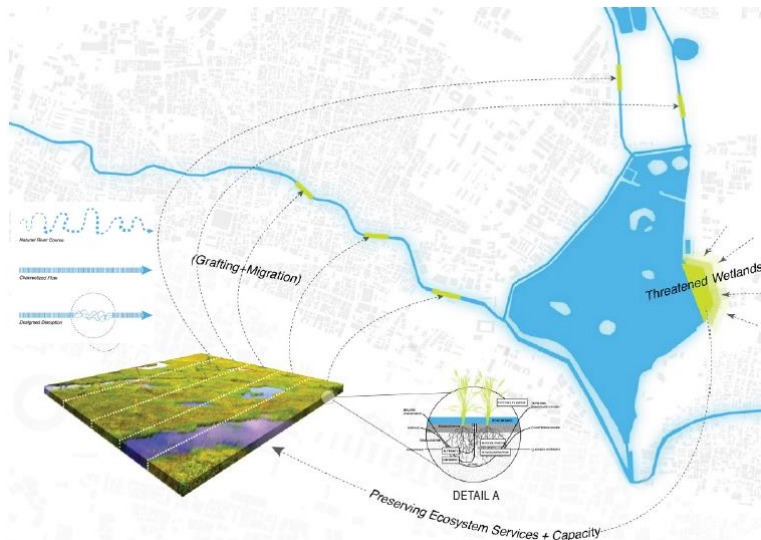
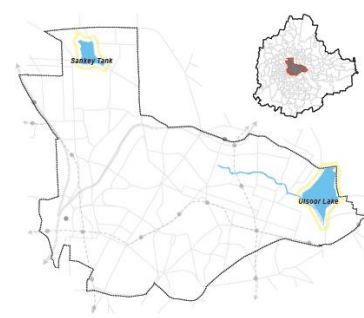Initiatives for Ulsoor lake and nallah clean up

Bio swales along lake and nallah

DEWATs (Decentralised waste water treatment) for reducing contamination of water body

Proposed pedestrian and bicycle network around Ulsoor lake

Ulsoor lake and nallah clean up	Creating public space	Improved public amenities	Sankey tank
Introduction of DEWAT system, Green Bridges for natural filtration and Bio-Swales in lake and nallah for reducing water contamination	Lake front development as an active public space, Pedestrian and cycle network around the lake	Provision of e-toilets, Smart bins, Public space features/ furniture, public bicycle share points, energy efficient lighting, Solar trees and CCTV installation for improved security	Pedestrian and cycle network around the lake, smart features, children's play equipment, public space furniture

AREA BASED DEVELOPMENT

5. Protection & Redevelopment Of The Centrally Located Parkland

Cubbon Park

25000 foot fall / day (weekends)

" to become a local community asset "

- **Revitalizing the central city green** through improved pedestrian connectivity and place making
- **Integrate green network** to heritage and cultural landmarks around Cubbon park

Cubbon Park

6. Increasing Affordable Housing Stock Through Slum Redevelopment

Swathanthra Palya Slum (Gandhinagar)

Housing + road + Utility Services

" improving quality of life "

- Upgrading of **housing units**
- **physical infrastructure** - roads, water supply, sanitation, street lighting
- **social infrastructure -** Community centre

Proposed slum upgradation

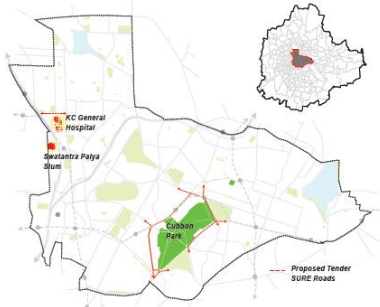## 7. Retrofitting Of A Healtch Care Facility

K.C. General Hospital

Building redesign + abutting road under Tender SURE

" improving a health care centre "

- **Building redesign** of health care centre
- **Heritage conservation** of building

Existing KC General Hospital

Cubbon Park	Safety and security	Rain water harvesting	Affordable housing	K.C. General hospital
Digital information board (activities, events, eateries and places of interest), tourist information kiosk, seating	CCTV Installation and improved energy efficient lighting	Collection and re use towards ground water recharge	Housing units, physical infrastructure, social infrastructure, roof top solar panel on community centre, energy efficient solar lighting	CCTV surveillance, Roof top solar panels, public bicycle share points, Tender SURE road for abutting

PAN CITY INTERVENTIONS

Project: Citizen Centric E-Governance and Services

PAN CITY PROPOSALS
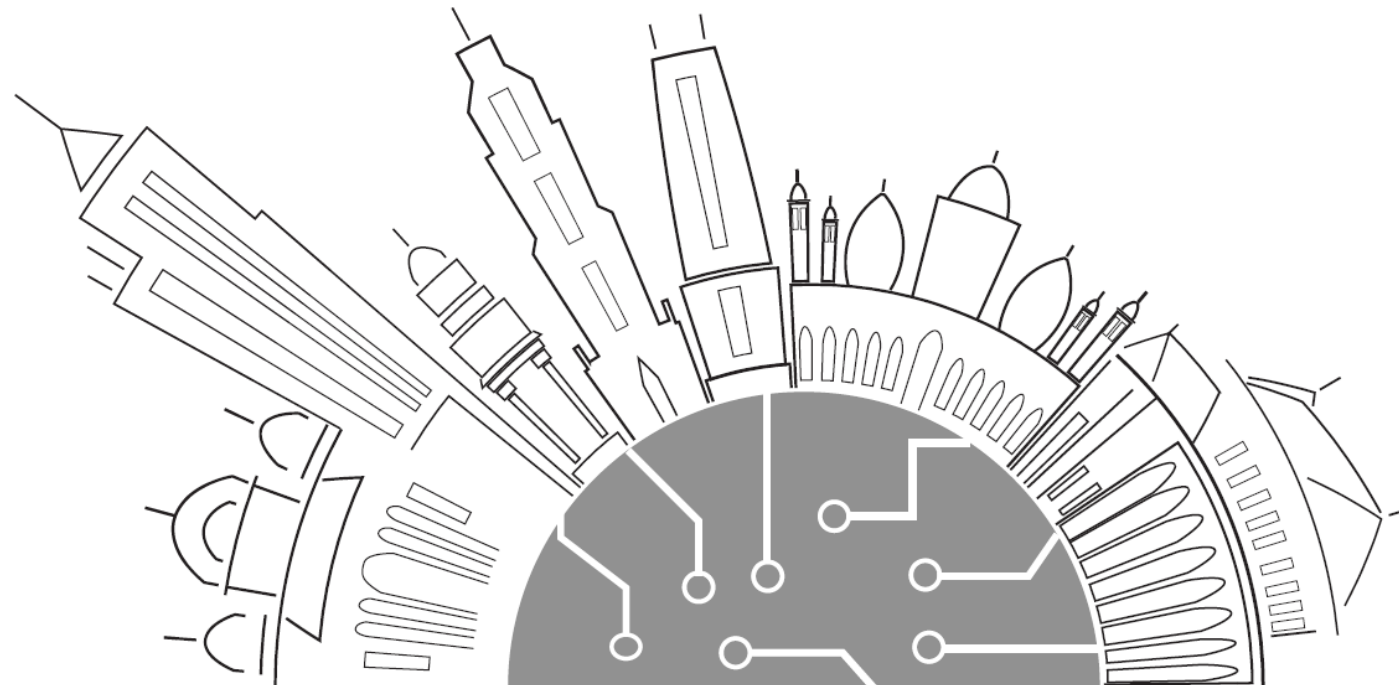
Project 1: Citizen Centric E-governance And Services

1. Grievance Management
Governance
- Central Command Centre for accepting citizen queries across agencies
- Smart Kiosk for people without digital reach

2. Municipal Finance Reforms
- Municipal Audits
- City dashboard as a single MIS
- Surveying wards and streets to accurately report condition of infrastructure

3. Participatory Budgeting
- Campaigns and drive to involve residents and publish the collated, analysed results
- Citizen app that consolidates neighbourhood and ward level inputs from the citizens

4. Improvement of Neighborhood Safety
- Community Policing
- CCTV monitoring

5. Improvement in Property Tax Collections
- 3D building mapping for city using drone technology for property assessment, public assets, regulation and revenue augmentation

6. B-TRIPS (Bengaluru Transport related information and planning system)
- Single smart card for all public transport
- PIS system

7. Public Project Management
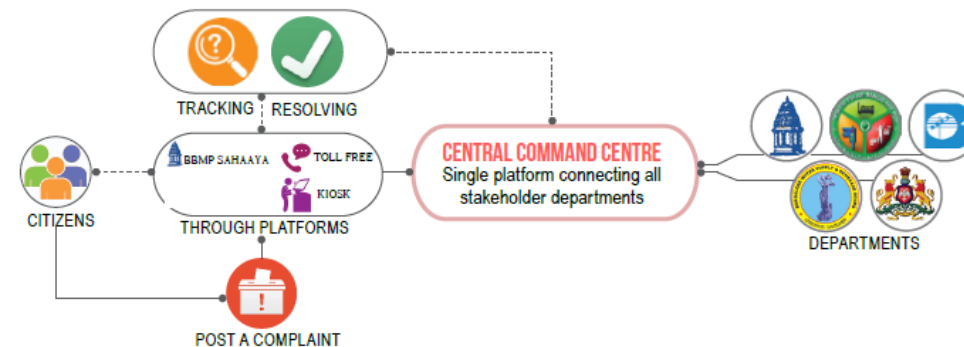*Public Services*
- Online project information system displaying projects information

8. Data for Citizens
- Open data portal is based on the ideology of providing spatial data to citizens

1. Grievance Management: Grievance redressal steps
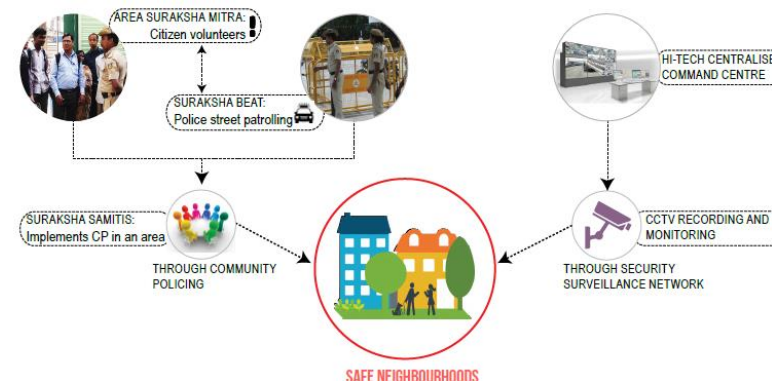

2. Municipal Finance Reforms: Street Quality Report Benefits

3. Participatory Budget

4. Key Initiatives for Safe Neighbourhoods

SMART BENGALURU

Thank You