Smart Cities
& Urban Transportation
in the Indian Context

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14th April,2016

Part 1

Smart Cities

What is a Smart City?

A smart city has-

- Basic infrastructure

- Uses **'smart' solutions** to make infrastructure and services better

- Relies on **area based development**

- Smart cities are essentially urban clusters with smooth transportation, e-governance, and better social infrastructure, including healthcare and education.
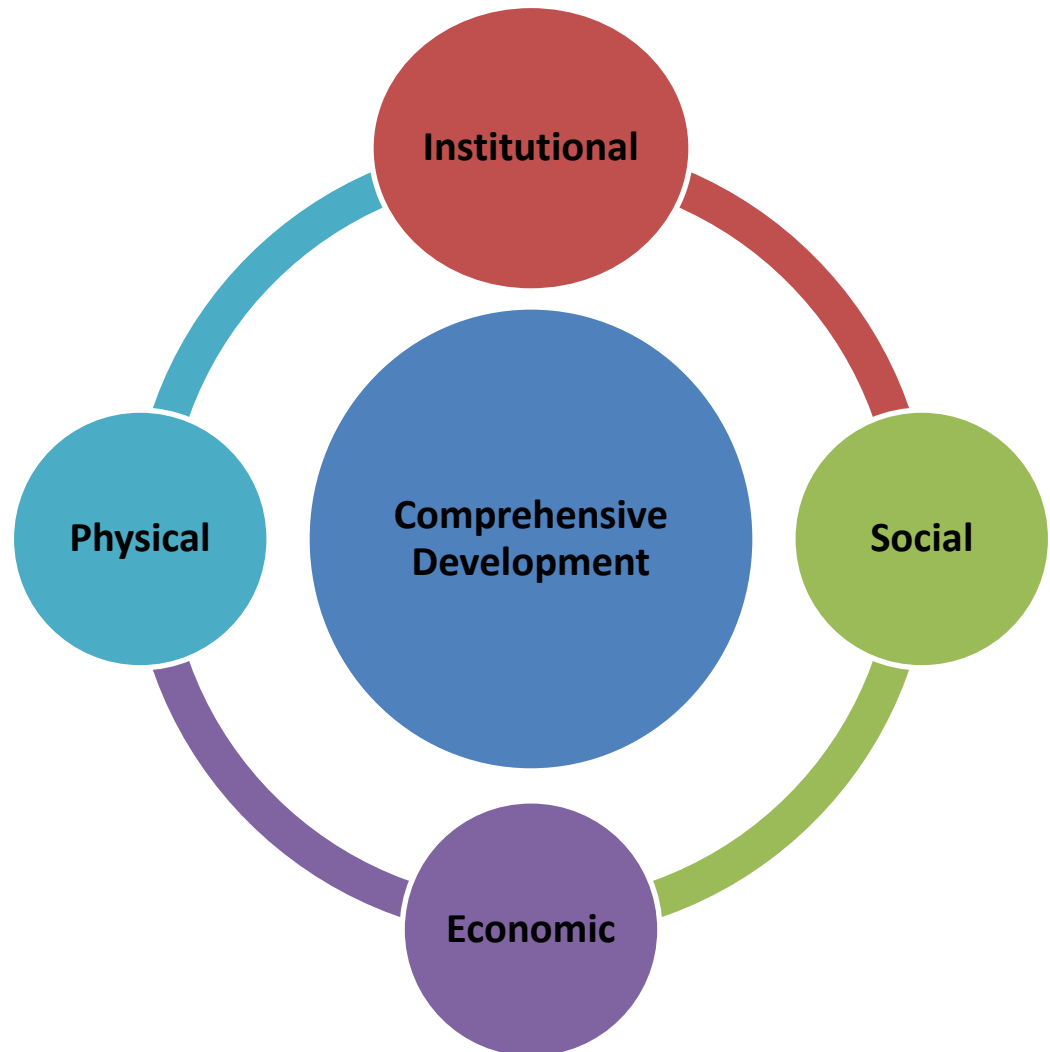
Smart City Features …

- Promoting mixed land use in area based developments

- Housing and inclusiveness - expand housing opportunities for all

- Creating walkable localities

- Preserving and developing open spaces

- Promoting a variety of transportation/commuting options

- Making governance citizen-friendly and cost effective

- Giving an identity to the city - based on its main economic activity, such as local cuisine, health, education, arts and craft, culture, sports goods, furniture, hosiery, textile, dairy, etc;

- Applying Smart Solutions to infrastructure and services in area-based development in order to make them better

Core Infrastructure Elements in a Smart City

- Adequate water supply

- Assured electricity supply

- Sanitation, including solid waste management

- Efficient urban mobility and public transport

- Affordable housing, especially for the poor

- Robust IT connectivity and digitalization

- Good governance, especially e-governance and citizen participation

- Sustainable environment

- Safety and security of citizens, particularly women, children and the elderly

- Health and education

Strategy

Smart City Project takes a **compact-area approach**. The strategic components of **area-based development** in the Smart Cities Mission are :

- City Improvement (**Retrofitting – min area: 500 Ac**)

- City Renewal (**Redevelopment- min area: 50 Ac**)

- City Extension (**Greenfield Development-min area: 250 Ac**)

- A **Pan-city** initiative in which Smart Solutions are applied covering larger parts of the city.

- These are demonstration projects, which could later be replicated and scaled up to the city level.

Illustrative List of

Smart Solutions

E-Governance and Citizen Services

1. Public Information, Grievance Redressal
2. Electronic Service Delivery
3. Citizen Engagement
4. Citizens - City's Eyes and Ears
5. Video Crime Monitoring

Waste Management

6. Waste to Energy & fuel
7. Waste to Compost
8. Waste Water to be Treated
9. Recycling and Reduction of C&D Waste

Water Management

10. Smart Meters & Management
11. Leakage Identification, Preventive Maint.
12. Water Quality Monitoring

Energy Management

13. Smart Meters & Management
14. Renewable Sources of Energy
15. Energy Efficient & Green Buildings

Urban Mobility

16. Smart Parking
17. Intelligent Traffic Management
18. Integrated Multi-Modal Transport

Others

19. Tele-Medicine & Tele Education
20. Incubation/Trade Facilitation Centers
21. Skill Development Centers

Smart City Mission in India

- Smart Cities Mission of the Government is a bold, new initiative.

- The **objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions**.

- The focus is on **sustainable and inclusive development** and the idea is to **look at compact areas, create a replicable model** which will act like a light house to other aspiring cities.

- It is meant to set examples that can be replicated, catalysing the creation of similar Smart Cities in various regions and parts of the country.

- **Funding:** By Centre: Rs 1000 Cr over 5 years (Rs 200 Cr/Year/City) – linked to formation of SPV for implementation.

Implementation… More participatory & professional approach

-proposed to be implemented through a SPV.

- SPV will have equal equity participation from the state and urban local body. It will be headed by a chief executive officer (CEO), who will have absolute executive powers to run the scheme.

-SPVs to form further joint venture companies, create subsidiary companies and sign public-private partnership (PPP) agreements is required.

-SPV could spawn many such holding companies, each with private participation to deliver a component of smart city development, as it would be difficult to have all stakeholders for all components taking part in a single SPV

-SPV will have to provide an entire bouquet of smart services, such as electronic delivery of services, intelligent handling of municipal solid and waste water, smart parking and energy-efficient buildings.

- Success depends on how the private sector is accommodated in this SPV structure, and how they are able to generate revenue from the real estate they develop (land monestisation)

The proposals in the Smart Cities Mission

Pan City Proposals

1. Centralized command and control centre
2. Transit operations system (maintenance and tracking)
3. Smart parking system
4. Common card (payment and operations)
5. Area based traffic control
6. Leak identification system
7. Platform for citizen engagement and all citizen services; city dash board
8. Traffic mobile app
9. Smart metering (water)
10. CCTV surveillance
11. Emergency response
12. Public Information system
13. Public transit and traffic operations and management center
14. GPS tracking and optimization of routes of garbage trucks
15. Wifi connectivity

Pan City Proposals – 2 (Contd…/-)

16. NMT infrastructure
17. LED street lighting
18. Traffic analysis or roads and video surveillance inside bus using CCTV surveillance
19. Mobile app based SWM and cleanliness monitoring
20. Fleet management system
21. Automatic fare collection system (transport)
22. Variable message sign boards
23. Optical fiber enabled communication
24. Smart bulk metering at WTPs
25. 24x 7 water supply
26. Grievance redressal through web, app and phone
27. SWM operations and management centre/ system
28. Smart card for all service payments
29. Smart Bus stops
30. Smart meters for electricity

Pan City Proposals – 3 (Contd…/-)

31. Solar power capacity implementation
32. e-healthcare
33. Air quality monitoring sensors
34. Hydraullic information system/ flood monitoring
35. In-bus information system and wifi
36. Private bus aggregator
37. Intelligent road asset management
38. Give up water subsidy"campaign
39. ICT enabled billing and recovery department
40. e-challans for traffic violations
41. ICT and social media based 2 way communication with citizens
42. ERP with GIS platform for corporation
43. Ticket vending machines and value machines
44. Water accounting at community level
45. Street sweeping and dusting machines 46. Data analytics centre
47. Intelligent solar powered lights
48. Bicycle pods with PIS
49. Smart paving (capture energy from movement)

Pan City Proposals – 4 (Contd.../-)

50. One website, app and call centre
51. Smart grid and energy management
52. Rainwater harvesting
53. Smart classrooms
54. Virtual hospital
55. Weighing machines with RFIS/ NFC
56. GPS for geofencing garbage bins
57. Kiosks (for urban services and grievnce)
58. Para-transit facility
59. Solar panels on bus top roof
60. Tourism mobile app
61. Bus bays
62. Cycle sharing
63. Parking management
64. Online system of water connections
65. Smart E- Rickshaw with charging station
66. GIS enabled revenue collection (land)
67. Water level sensors
68. Intelligent shopping apps

Area Based Development Proposals

1. Interconnected Open Spaces / Smart Open Space management / rejuvenation of parks and public spaces / Public park over Nallah / Plazas / Integrating and Re-organizing spaces

2. Lake restoration/Riverfront Development / Rejuvenation of lake / Rejuvenation of city canals / Integrated development of lakes / Canal waterfront development

3. Rain water harvesting
4. LED Street lights / Solar Street Lights
5. Renewable energy Initiatives
6. ITS / ITS for traffic and bus management / Smart Signalling
7. Affordable housing
8. Intelligent Parking Systems / Shared parking
9. Seamless WiFi connectivity / WiFi Hotspots
10. CCTV for Surveillance / Crime monitoring
11. Smart Water Management
12. Slum Redevelopment
13. Cycle and Bicycle Tracks
14. Redesign of footpath
15. Redesign of Streets / Redesign of roads / Signage installation

Area Based Proposals – 2 (Contd…/-)

16. Underground wiring
17. Mixed use project / Development based on TOD principles / Incentives to guide TOD and redevelopment on private lands
18. Micro Business Incubation Facilities / Incubation Start up centre / Start up centre / STARTSmart Open learning initiative
19. e-rickshaws / Electric vehicles for last mile connectivity
20. Adaptive reuse of heritage structures / adaptive reuse of public structures / Built heritage conservation
21. Redesign of junctions / intersections / PELICAN crossing facilities
22. Disable friendly pathways design / Barrier free walkways
23. Centralised Command Centre / Intelligent operations centre
24. Public bike sharing
25. Community Toilets
26. Open Markets / Market Redevelopment / Modernization of markets
27. Lamp posts with multifunctional facilities
28. Smart design of dustbins / Sensor based bins
29. Fire Stations / Fire Protection System
30. Travel Card for city travel

Area Based Proposals -3 (Contd…/-)

31. Citizen App (grievance redressal, citizen reporting)
32. Street façade improvement
33. Night market and vending zones
34. Underground Utility Services
35. Pedestrianization of commercial streets
36. Railway Station terminal building redevelopment
37. Urban History Museum
38. Rental Housing for construction workers / Rental Public housing
39. Shelter for Homeless / Night Shelters
40. e-Buses Pune, Visakhapatnam 2 43
41. Transit Hub at City Entry / Central Transit Hub
42. GIS based property and land management system
43. Air Quality monitoring App / AQM
44. Pedestrianization of commercial streets
45. Waste-to-Energy (Bio Methanation)
46. Redevelopment / Development of Bus terminal
47. Recycle centres

Area Based Proposals – 4 (Contd…/-)

48. Working Women's Hostel
49. Early Childhood care centers (E3C)
50. Water ATMs
51. Community laundries
52. Women digital literacy centres
53. Provision of Social Infrastructure
54. Smart Grid
55. Heritage walks
56. Green rooftops
57. Integration of mobility card for monument entry payments
58. Heritage app
59. Smart Sewage management
60. Water Transport
61. Revival of heritage areas

Area Based proposals – 5 (Contd…/-)

62. Re-energize and revive SMEs
63. Domestic and institutional lighting to be converted to LED
64. Implement E-patashalas/ digital learning in 24 schools
65. Smart bus shelters with e-toilets
66. CNG and PNG Gas access to domestic, commercial and industrial use
67. Mobile app for tourism
68. Solar master plan for city
69. Solar power Generators for emergency back system
70. Standalone floating solar aerators
71. Solar roof battery operated boats
72. Hydrological Information system for flood forecasting
73. Integrated GIS based utilities management

Case Study

Belagavi (Karnataka)

Transforming Belagavi into a SMART CITY

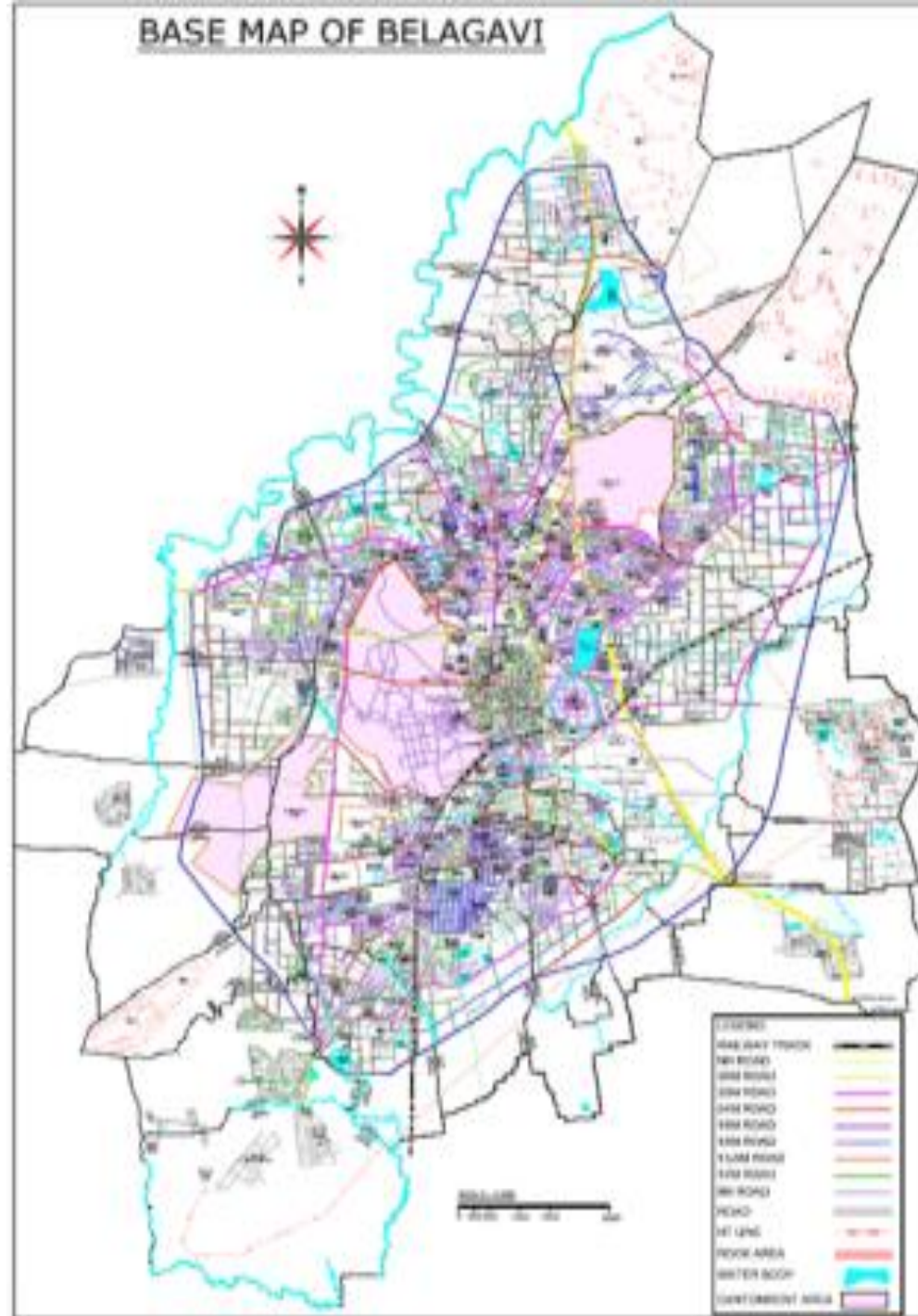# Transforming Belagavi into a SMART CITY

BASE MAP

Population	4,90,045+17523= **507568**
Area	94.08 Sq. Km
Number of Properties	1,00,169
Number of Wards	58 Wards
Length of Roads	804.20 Kms
Total Water Supply	90 MLD
Per Capita Water Supply	110-130 LPCD
Total Amount of SWG per day	220 tonnes
% of Household Covered by Door-to-Door Collection	95%

BASE MAP OF BELAGAVI

VISION & SUB GOALS

VISION FOR BELAGAVI

"A livable, inclusive and vibrant Belagavi city, in which every citizen has adequate access to good quality of affordable and sustainable physical & social infrastructure, employment opportunities, in which cultural heritage and environment are protected and preserved through good governance and city management"

VISION & SUB GOALS

THE FOLLOWING ARE THE SUB-GOALS OF BELAGAVI WITH VIEW TO ACHIEVE THE VISION:

- **24 x 7 water supply:** To achieve uninterrupted water supply for the entire city as per international standards.

- **Uninterrupted & sustainable Power supply:** Augmenting existing power with efficient renewable solar and wind energy with a view to providing uninterrupted and sustainable power supply.

- **Sewerage network & system:** To achieve complete underground sewerage network and system with complete treatment and reusage for the entire city.

- **City Mobility:** Improvement of overall Mobility for Belagavi city that includes dedicated bus lanes, Roads with integrated infrastructure , Pedestrian friendly footpaths, dedicated cycle tracks, decongestion of Inner City, dedicated Parking areas, Junction improvements and using Integrated & effective Traffic Management systems.

- **Improving civic facilities and amenities in the city through development of specific area level multi utilities civic service centers, aiming at significantly improving the standard of living.**

VISION & SUB GOALS

- **Increasing the green cover of the City through development of large scale plantations/urban forestry in available open spaces, institutional campuses, Cantonment areas, foreshores of water bodies and avenue plantations.**

- **E-Governance- Information & Communication Technology** enabled & Integrated portal/platform with a Central Command Station for facilitating citizen services , ensuring safety and security, hassle free mobility and for providing transparent, Citizen friendly, effective & responsive governance.

- **Affordable housing:** In view of priority requirements of this sector, facilitation of affordable housing for EWS and LIG in the city.

- **Enhancement of Employment opportunities:** City has a potential engineering industries base as well as aerospace units, and is home to large number of textile power looms. It has a large number of educational Institutions & potential ITES growth. Imparting appropriate skill sets for youth through skill development centres there by emphasis would be to given to establish engineering ancillary units, encouragement of power loom sector along with Information Technology & Engineering Service industries to strengthen the city's economy & bringing in more employment and livelihood opportunities.
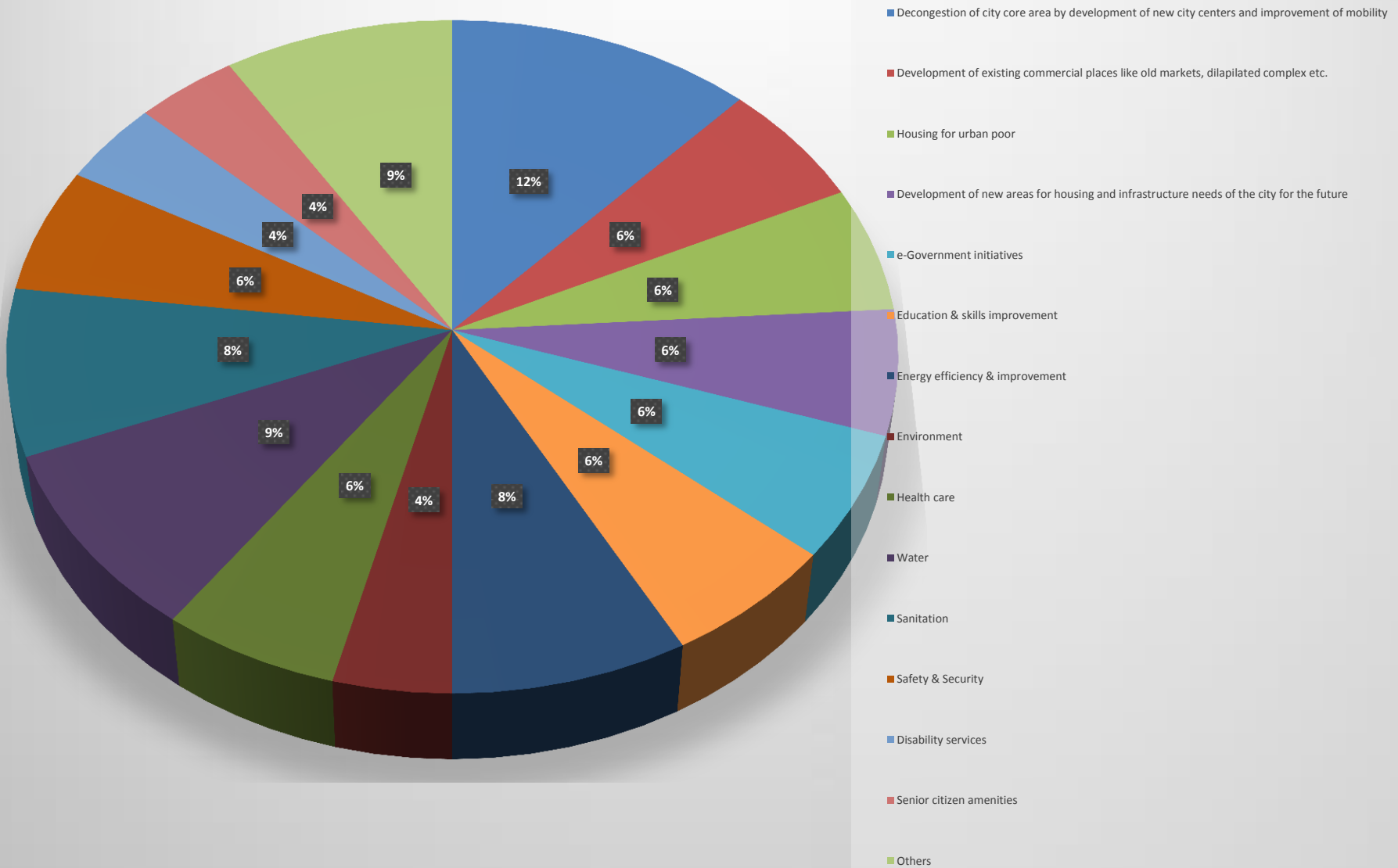
VISION & SUB GOALS

- **Knowledge City :** By ensuring adequate and quality infrastructure which acts as catalyst to promote city of Belagavi as Knowledge hub for imparting education in the field of Medicine, Technical, Management, Life sciences , City being already the seat of three Universities, Six medical institutions, many technical, management and other institutions.

- **Tourism development:** Considering spatial location of Goa, by improving overall ambience, Cultural and Heritage sites, promoting health tourism making Belagavi as a supplementary and preferred tourist destination.

CITIZEN ENGAGEMENT

SOURCE	SUGGESTIONS RECEIVED
mygov.in	1,549
Drop box & Face to Face	47,593
Facebook, Twitter, SMS & Email	878
Smart Belagavi App	52,814
Essays	56
TOTAL	1,02,890

- Numerous awareness programs and Events conducted for general public, students, professionals etc.
- Extensive coverage in Media
- Hoardings across the city, in important junctions
- Mobile App developed exclusively, for citizens' convenience in participation

Overall priorities as listed by Citizens

Legend:
- Decongestion of city core area by development of new city centers and improvement of mobility
- Development of existing commercial places like old markets, dilapilated complex etc.
- Housing for urban poor
- Development of new areas for housing and infrastructure needs of the city for the future
- e-Government initiatives
- Education & skills improvement
- Energy efficiency & improvement
- Environment
- Health care
- Water
- Sanitation
- Safety & Security
- Disability services
- Senior citizen amenities
- Others

SWOT ANALYSIS

STRENGTHS

- **BELAGAVI IS MORE OF A PLANNED CITY THAN A CITY THAT HAS EVOLVED**
  - Corporation developed areas (811 acres)
  - Cantonment (1,763 acres)
  - Layouts developed by BUDA, BUDA approved layout
  - Industrial areas developed by KIADB
- **HUB FOR HEALTHCARE AND EDUCATION**
  - Tertiary Healthcare → Quaternary Healthcare
- **INDUSTRIALIZED**
  - HINDALCO, AEQUS, Foundry Cluster
- **SECOND CAPITAL OF KARNATAKA**
- **SALUBRIOUS CLIMATE**
- **STRATEGIC LOCATION COUPLED WITH GOOD CONNECTIVITY**
  - Equidistant from Bangalore, Hyderabad & Mumbai, Proximity to Goa, good connectivity by Road, Rail and Air.
- **AVAILABILITY OF LAND**

4%
31%
65%

■Planned
■Undeveloped
■Public Utilities
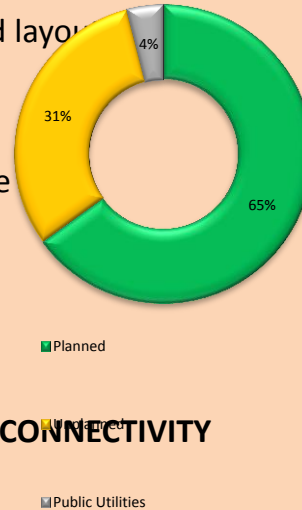
WEAKNESSES

- **Congestion in the central old part of the city**
- **National Highway (NH4A) runs through the city**
  - 4,000 Heavy Vehicles move through the city, daily
- **Only 48% of the city covered with sewerage system**
- **Sewage discharges to water body without treatment.**
- **Water supplied intermittently in majority of the city area**
- **Shortage of middle and low income housing stock**
- **Potential of Transport linkages not fully exploited**
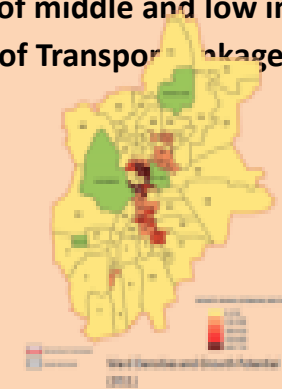
OPPORTUNITIES

- **Continuing upwards on the value curve – in academics and in eco-friendly, high technology industries**
- **Capacity to emerge as the best destination for investments as Bangalore moves towards saturation**
- **Capacity for planned unlocking of land in the city and its periphery**
- **Utilizing the citizens/NGOs willingness and ability in participative**

THREAT

- **Competition from other cities (both metropolises and tier 2 cities), especially from those in Southern India**

PROPOSALS FOR AREA BASED DEVELOPMENT

AREA BASED DEVELOPMENT PROPOSALS

CONSISTS OF THE FOLLOWING COMPONENTS IN THE ABD AREA :

- IMPROVEMENT OF ALL ROADS, NETWORK, AND JUNCTIONS
- IMPROVEMENT OF UTILITIES AND AMENITIES LIKE WATER SUPPLY, SEWERAGE, SANITATION AND SOLID WASTE MANAGEMENT
- IMPROVEMENT OF TRANSPORTATION FACILITIES AND MOBILITY – DEVELOPMENT OF FOOTPATHS, CYCLE WAYS, REGULATING TRAFFIC AND PARA- TRANSIT FACILITIES
- PROVIDING THE SMART SOLUTIONS WITH ICT COMPONENTS, IT CONNECTIVITY, SAFETY AND SECURITY.
- IMPROVEMENT OF THE BASIC SUPPORT SERVICES LIKE HAWKERS VENDING AREAS, PARKING, BUS TERMINALS, CYCLE STATIONS, BUS STANDS, SUPPORT SHOPPING FACILITIES
- IMPROVING OTHER SUPPORT SERVICES LIKE LOCAL OFFICES, CITIZEN INFORMATION CENTERS
- ENCOURAGE NON-MOTORIZED TRANSPORT AND PROVISION FOR WALKWAYS
- DEVELOPMENT OF NEIGHBORHOOD PARKS AND OPEN SPACES
- DEVELOPMENT OF MAJOR HERITAGE PARK AND ENHANCING GREENERY
- IMPROVEMENT OF EMPLOYMENT FACILITIES THROUGH FLATTED FACTORIES DEVELOPMENT, SKILL DEVELOPMENT CENTERS AND IT INCUBATION CENTERS & INFORMAL SECTOR
- CONSERVATION & PRESERVATION OF CENTRAL AREA AS CIVIC CENTER
- DEVELOPMENT OF AFFORDABLE HOUSING FOR EWS & LIG SEGMENTS
- FACILITATION OF GOOD HEALTH AND EDUCATION FACILITIES FOR RESIDENTS OF THE AREA.

AREA BASED DEVELOPMENT PROPOSAL
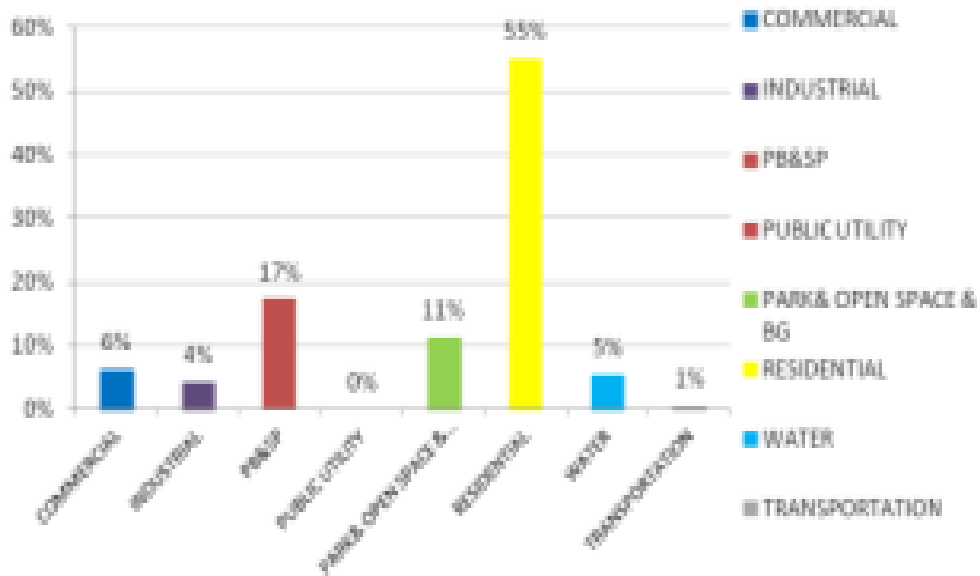
TOTAL AREA:

10.78 Sq.Km - 2663.80 acres)

MAIN RAILWAY STATION

NORTH

CENTRAL PART (CIVIC CENTER)
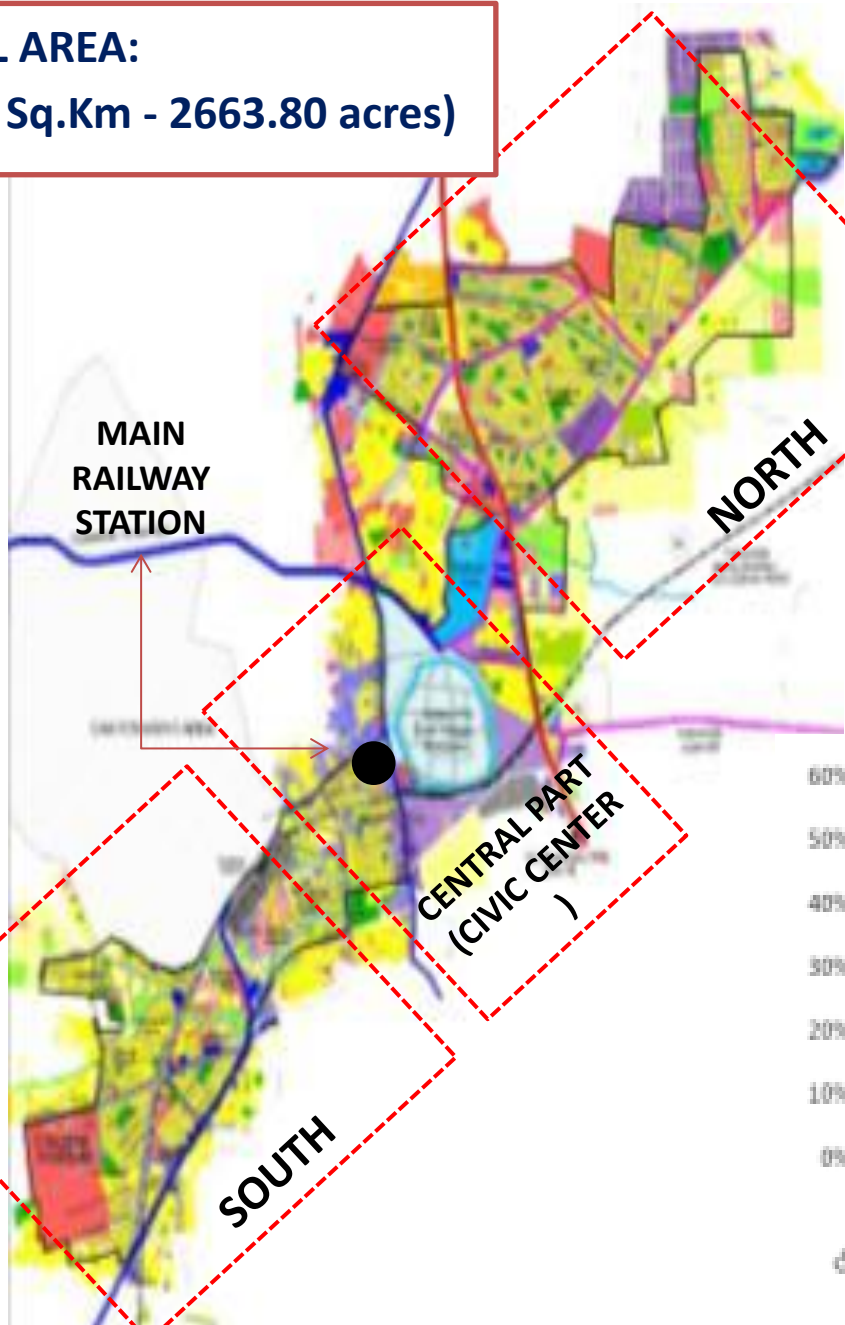
SOUTH

NORTH

- RAMTEERTH NAGAR
- MAL-MARUTI EXTENSION
- SHIV BASAVA NAGAR

CENTRAL

- KOTEKERE
- ASHOK NAGAR PART
- FORT PRECINT
- CENTRAL BUS TERMINAL

SOUTH

- TILAKWADI
- VACCINE DEPOT
  RANI CHENNAMMA NAGAR PART
- SHANTI NAGAR/ MARATHA COLONY/ NANAWADI

CRITERIA SELECTION FOR AREA

- **Selection based on overall city profile; inputs from Citizens, stakeholders, planning experts, civic officials; and SWOT Analysis**

- **Retains the nature of lung space (18 sq.km of Cantonment area) in the central part of city which complements it**

- **Augments the future directional growth**

  - **Towards east in view of NH, Airport connectivity, Suvarna Soudha and industrial hubs**

 - **Towards west in view residential and educational developments**

BELAGAVI CANTONMENT AREA
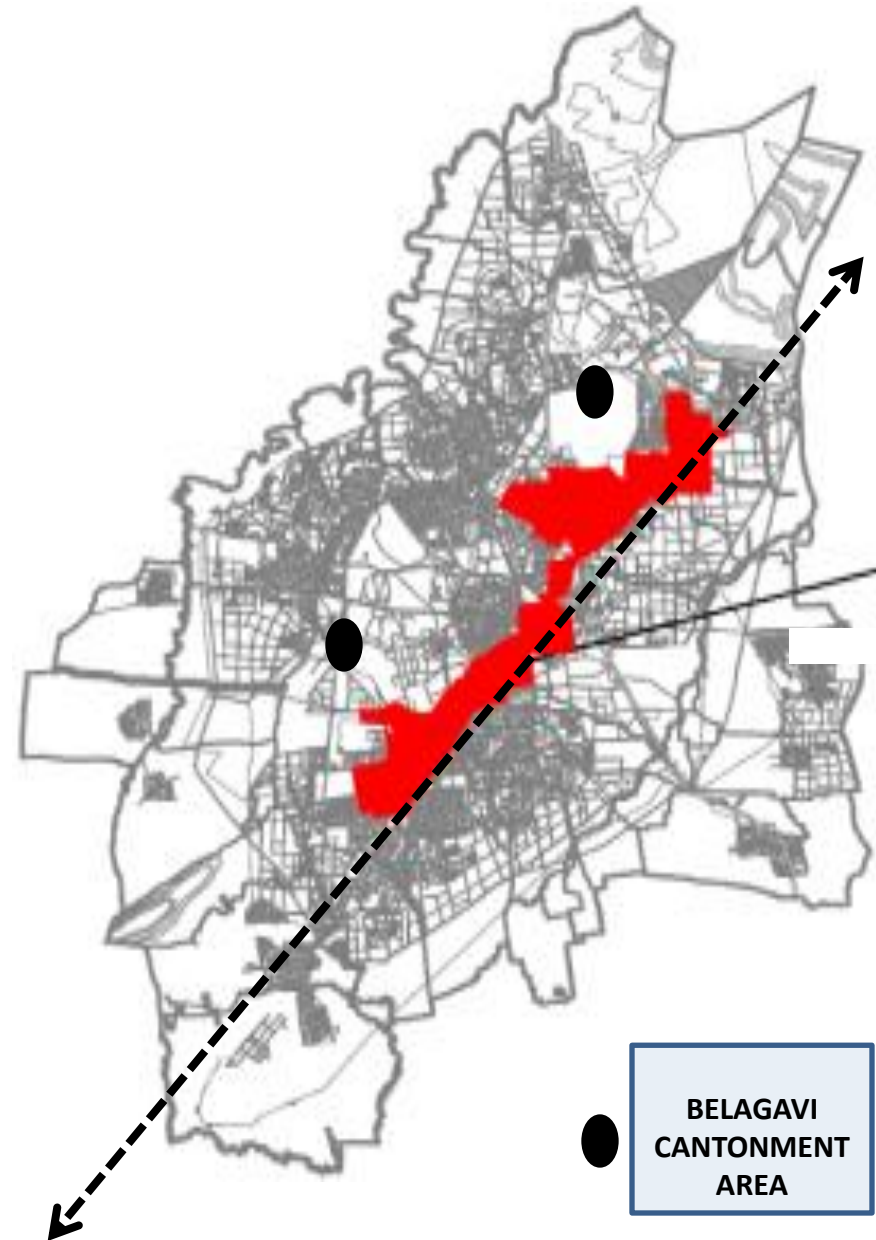
ABD-Improving Roads, Circulation Network & Junctions

ROAD WIDTH		ROAD LENGTH
Mtr.	Feet	Km
9.0	30	137.28
12.0	40	29.85
13.0	45	1
15.0	50	1
18.0	60	9.1
24.0	80	13
30.0	100	10
36.0	120	5.3

- Carriageway improvement
- Footpaths
- Street Light
- Street Furniture
- Avenue Plantation
- Lanes & Other Traffic Markings
- Surface dressing/Pavement
- Underground Utilities –
  Water, telecom, Drainage, Power, OFC
- Non Motorized Transport : Cycle track
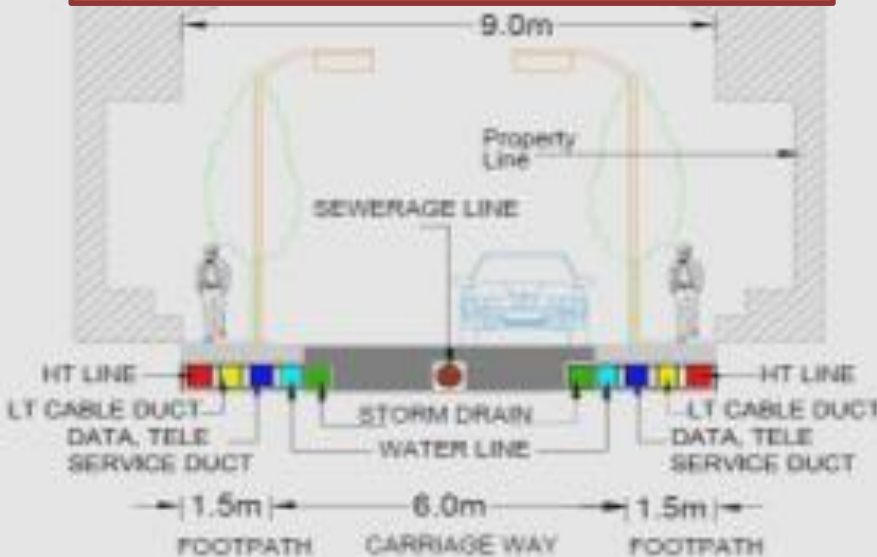- Facilities for physically challenged

12m ROW ROAD CROSS SECTION
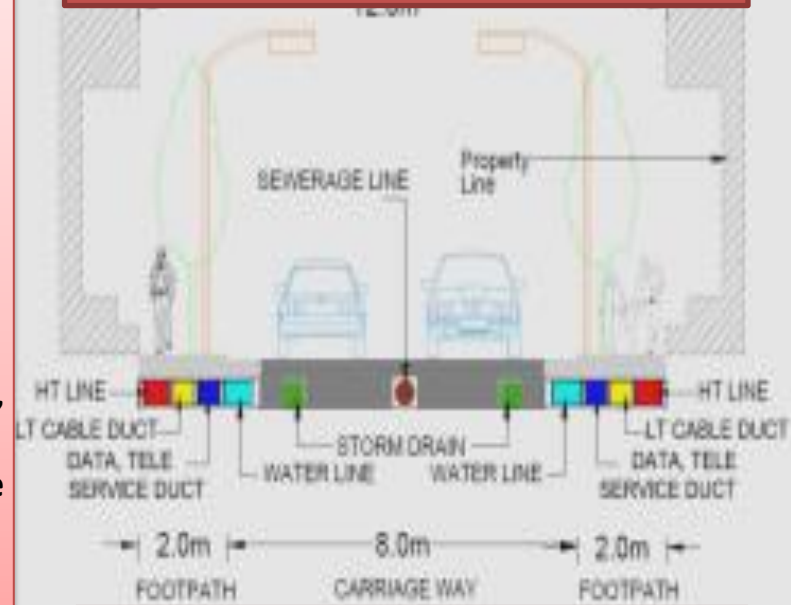
15m ROW ROAD CROSS SECTION
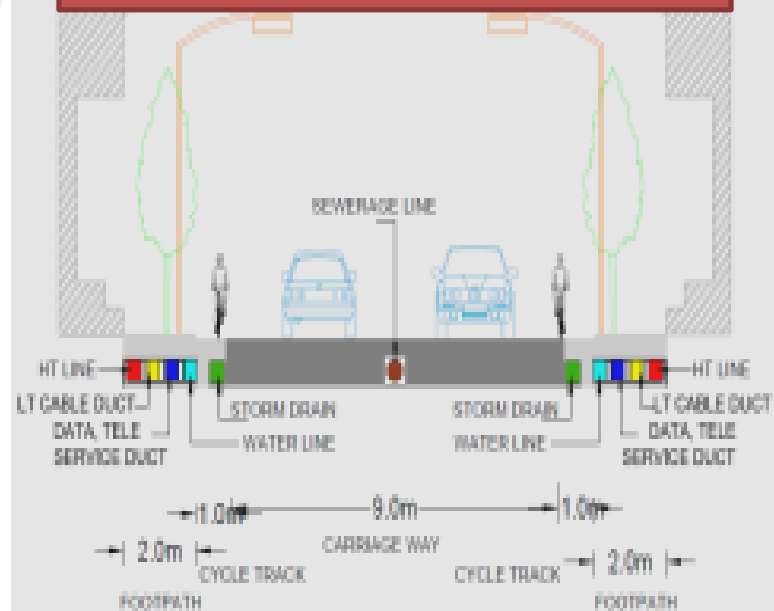
9 m ROW ROAD CROSS SECTION

ABD-Improving Facilities and Services Through Multi Utilities Complexes (MUCS)

BASEMENT :

- One Level Basement for parking (upto 50cars – 75 cars & up to 100 - 150 Two Wheelers)

GROUND LEVEL (OPEN AND BUILT UP SPACES)

- Transport Facilities
  - Bus terminal (5-8 Transit Buses platforms)
  - Auto rickshaw stand /Taxi Stand (10 Veh.)
  - Modern Cycle Stations (25-30 Bicycles)
- Informal sector/ public hawkers' spaces/zones
- Public conveniences facilities: Community toilets & Fresh drinking water kiosks)
- Open plazas with sit-out benches, Fountains, Landscaping/ Greenery & Wi-fi Zones
- IT Gateway/OFC/Broadband Connectivity
- Convenient shopping and Local shops including ATMs etc

UPPER FLOORS :

- Commercial cum Office complex, Restaurants, Banquet Halls, Small lodges etc.
- Public utility offices- like
  - Air & Noise Monitoring system
  - Belagavi One / Citizen Service Centre
  - Local municipal ward offices
  - Post office, Various Bill payment & Receipt counters etc
  - Skill Development Centre and Incubation Centre (NSIC)

KEY FEATURES

- Located on vacant sites of Mpl. Corp./BUDA/Cantt.
- 6 Sites identified -abutting to Major roads / Junctions
- Management & Maintenance under Professional agencies with smart O&M techniques
- SMART SOLUTIONS
  - Intelligent Parking Mngt. system
  - Smart card
  - PIS
  - Bicycles sharing system
  - Rain Water Harvesting syatem
  - Air & Noise Monitoring system

NSIC

ABD-Improving Facilities and Services Through Multi Utilities Complexes (MUCS)

#	LOCATION		EXTENT (ACRES)
1	DHARMANATH CIRCLE	Corporation	13
2	RAM TEERTH NAGAR	BUDA	2.7
3	MAHANTESH NAGAR	Corporation	1.36
4	1st Gate Opp Kalamandir	Corporation	1.15
5	OLD P.B. ROAD	Cantonment	3.44
6	GOAVES COMPLEX	Corporation	1.17

ABD- NEW CITY CENTERS
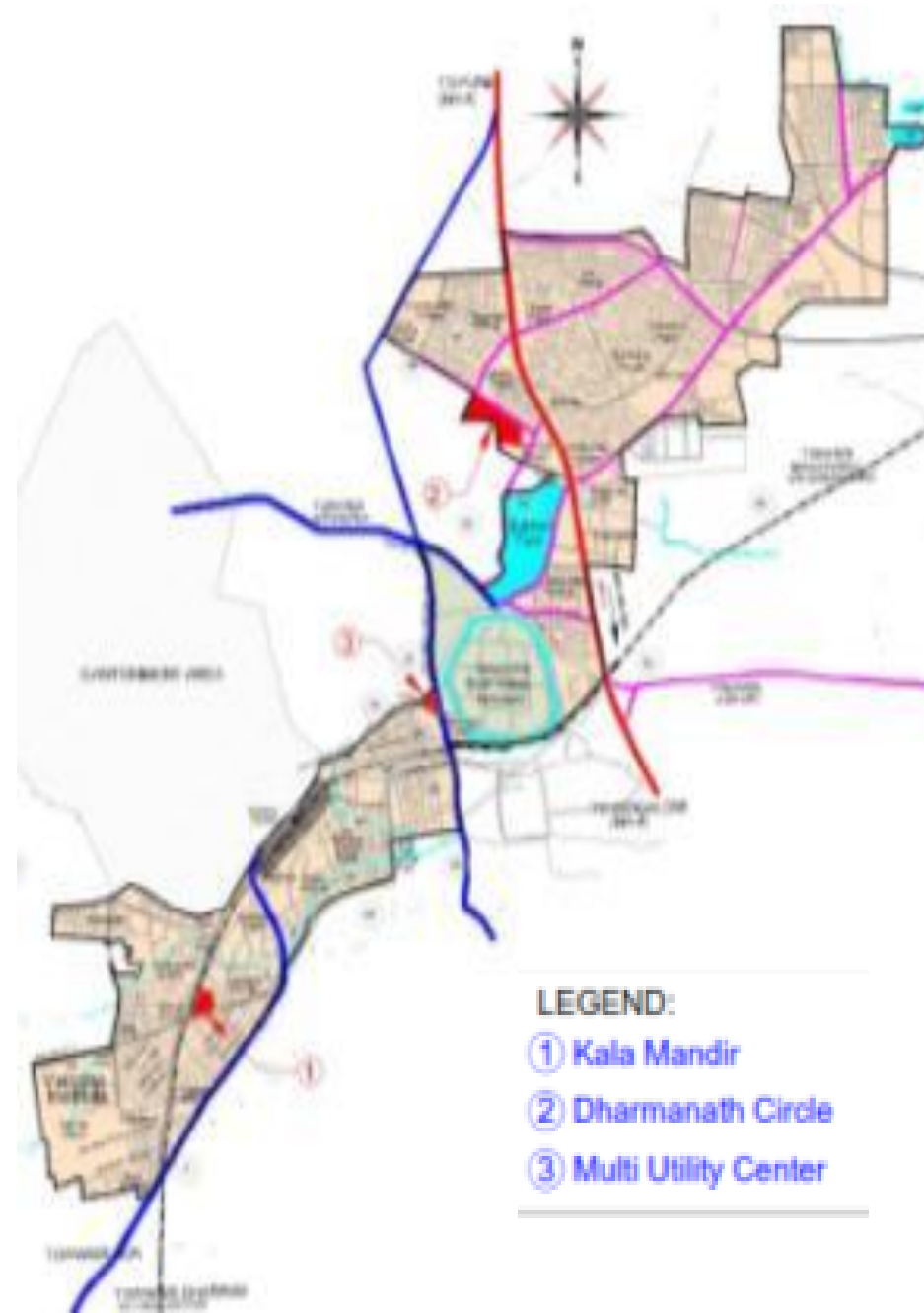
#	LOCATION		EXTENT (ACRES)
1	KALA MANDIR	Corporation	2.1
2	DHARMANATH CIRCLE	Corporation	13
3	OLD PB ROAD	Cantonment	3.44

LEGEND:
① Kala Mandir
② Dharmanath Circle
③ Multi Utility Center

ABD- NEW CITY CENTERS

BENEFITS INCLUDE

- Convenience to citizens (most citizen services available at one place)

- Enhanced Community facilities will increase the livability of citizens

- The New Civic center will enhance the revenues of the corporation.

- Ease of Parking problems in & around Shukrawarpet and Tilakwadi Railway Gate – I and adjoining inner city area

- Optimal use of land value (the site is located in the heart of the city)

- Upfront / Recurring cash inflow, to the Corporation during the concession period (In PPP Mode)

- Transfer of asset to the corporation at the end of the concession period

ABD- NEW CITY CENTERS

ACTIVITIES PROPOSED

- **Offices/IT Complex; Skill Development Centre and Incubation centre**

- **Convention Centre**

- **Shopping for Informal sector, Local shops**

- **Shopping Mall cum Multiplex Block**

- **Multi Utilities Centre**

- **Family entertainment and Restaurants, Food court**

- **Mini Auditorium cum Culture center**

ABD- IMPROVEMENT OF CENTRAL BUS TERMINUS (CBT)

- **MODERN BUS STATION :**
  - Terminal building (G+1)
  - Dormitory
  - Local Convenience shop
  - Waiting cum seating lobby space
  - Rest room
  - Public Toilets
  - Accessible to differently challenged people

- **COMMERCIAL cum OFFICE COMPLEX**

- **MULTI LEVEL CAR PARKING (G+2)**

- **ROOF TOP SOLAR PANELLING**

KEY FEATURES

- Site Area 26 Acres
- Self sustainable Terminal facilities along with SMART solutions
- Intelligent Parking Mngt. system
- Smart card
- PIS
- Smart Ticketing
- LED Boards
- LCD Displays / Video Walls
- Vehicle Location (Real time)
- Control Station
- Enterprise Management System / MIS
- Rain water harvesting system

# ABD- IMPROVEMENT OF CENTRAL BUS TERMINUS (CBT)

Smart Bus Station – in line with KSRTC, Mysore

- LED Boards
- LCD Displays / Video Walls
- Vehicle Location (Real time)
- Control Station
- Enterprise Management System / MIS

Smart Buses

- Passenger Information Systems (Real Time)
- Vehicle Mounted System – GIS/GPS
- In Vehicle Display
- Automated Voice Announcement System
  - Smart ticketing (RFID)
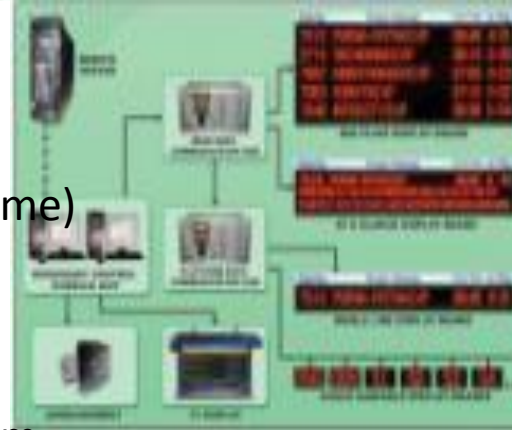
☐ **ESTIMATED PROJECT COST: RS.106.81 CR**

☐ **FUNDING UNDER SMART CITY: RS.76.81 Cr,**

   (Balance 30 Cr from KSRTC Funds)

ABD-IMPROVEMENT OF NEIGHBORHOOD PARKS & RECREATIONAL SPACES

TOTAL PARKS AND GARDENS AREA : ~21.50 Acres

ESTIMATED PROJECT COST: RS.18.50 Cr

#.	LOCATION		EXTENT (ACRES)
1	MAHANTESH NAGAR 1	Corporation	0.68
2	MAHANTESH NAGAR 2	Corporation	0.68
3	SHREE NAGAR GARDEN	Corporation	1.98
4	RANICHENNAMMA GARDEN M.M EXTENSION	Corporation	0.89
5	KARANJIMATH UDYAN	Corporation	1.76
6	SHIVALAYA UDYAN. SHIVABASAV NAGAR	Corporation	1.01
7	GARDEN AT MM NAGAR EXTENSION SECTOR-12	Corporation	3.47
8	PRAGATHI GARDEN	Corporation	0.88
9	MALA MARUTI OPP. POLICE STATION	Corporation	1.24
10	BHAGAVAN MAHAVEER UDYAN	Corporation	0.87
11	BASAVESWAR UDYAN	Corporation	2.96
12	NURSURY UDYAN, GOAVES	Corporation	0.76
	MAHATMA PULE UDYAN,	Corporatio	

ABD-IMPROVEMENT OF NEIGHBORHOOD PARKS & RECREATIONAL SPACES

- ❑ **PUBLIC CONVENIENCES FACILITIES :**

  Community toilets

  Fresh drinking water kiosks

- ❑ **CHILDREN PLAY AREA :** Swing , Slides , hanging bar etc & Jogging Tracks

- ❑ **Special areas for senior citizens** like study circle

- ❑ **OPEN PLAZAS with** sit-outs benches for senior citizens , Fountains, Landscaping/ Greenery & **Wi-fi Zones**

- ❑ **ESTABLISHMENT OF NURSERY**

- ❑ **WATER BODY, PONDS , AQUATIC PLANTS, WALKING TRACKS ALONG WATER BODY (OPTIONAL)**

- ❑ **PARKING PLAZAS & CYCLE STATIONS**

- ❑ **CONSERVATION AND IMPROVEMENT OF FORESHORES**

- ❑ **IRRIGATION AND RAIN WATER HARVESTING**

ABD- IMPROVEMENT OF EMPLOYMENT POTENTIAL

LAND – LOCATION	INDUSTRY TYPE	EXTENT	EXPECTED EMPLOYMENT
NANDINI EXTN. AREA	Flatted Factories (G+4)	9.15 Acres (BUA 4.5 Lakh ft)	~4000
NEW CITY CENTER	IT and Allied Activities + Incubation Centre	BUA 1.5 Lakh Sft	~2000
INFORMAL SECTOR IN MUCS , CENTRAL AREA	Hawkers zones & Food Streets,		~1000

Mahantesh Nagar Ground

ESTIMATED PROJECT COST:
Rs.900 Cr

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

1. **BELAGAVI FORT**

2. **KOTEKARE LAKE**

3. **MOAT AND FORT AREA**

4. **VEGETABLE MARKET**

5. **PARKING PLAZA**

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

S/N	PARTICULARS	APPROX LAND AREA	APPROX AMOUNT (in crore)
1	MILITARY THEME MUSEUM • Museum Landscaping • Outdoor display area Audio & Video room • Parking lot Toilets	10 Acres	6 Cr
2	AMPHITHEATER & ART, CRAFT AN OTHER INDIGENOUS PRODUCT CENTER Indoor and outdoor Display areas • Open space and garden Interpretation center • Multipurpose Hall Parking Lot • Toilets	3 - 4 Acres	10 Cr
3	HERITAGE STRUCTURE AND PREMISES • Renovation of Building (Swamiji Ashram and Mosques) • Information Counter • Audio Visual Room Multi Purpose Hall • Landscape Development Restructuring and Premises.		2 Cr

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

DEVELOPMENT OF AFFORDABLE HOUSING FOR EWS

The above will cover about

27% of the Housing Demand

for above segments

- **TOTAL AREA DEVELOPMENT : 12.60 ACRES**
- **TOTAL ESTIMATED PROJECT COST: RS.73.68 Cr**

#	SITE NO	AREA (IN SQ.M)	STRUCTURE	NO OF UNITS
1	VANTMURI	3744	G+3	128
2	SRI NAGAR ZOPAD BASTI	6477	G+3	272
3	GAGANWADI	22,986	Single Housing	78
4	ASHRAY COLONY	17806	G+3	750
	TOTAL			1228

WATER SUPPLY

- **24x7 Water Supply Project** to cover entire areas of City Corporation of Belagavi : Rs.663 Crore (World Bank aided project).

- Already Pilot Project Completed in 10 wards out of 58 wards and running successfully since 8 years with performance monitoring.

- Modular rejuvenation of Open Wells augmenting the surface Water Source.

- Quality monitoring & triggering – based on pH ratio & other quality parameters

- Billing and online payment

- Water Kiosks on roads for public – with capacity of

  100 litres per hour & 2000 litres per day – 100 units

  cost: Rs.1.5 crores

- **SMART SOLUTIONS**:

  - Managing Pumping requirements with sensors
  - Smart Metering
  - Leakage detection
  - Modular rejuvenation of open wells, augmentation of surface supply

  Funding: World Bank, State Govt. and ULB.

SEWERAGE SYSTEM

- **The Area Considered in ABD, 85% of the area is covered with Sewerage Scheme.**

- **It is proposed to rehabilitate the network wherever it is required.**

- **It is proposed to construct outfall sewers to the proposed Sewage Treatment Plant.**

- **Two Sewage Treatment Plants are proposed in the ABD area.**

- **It is proposed to reuse treated sewage water for watering existing and proposed gardens in the city and also for watering median landscape of roads.**

SL.NO	DESCRIPTION	COST IN RS. CRORE
1	Construction of Sewage Treatment Plant of 4.0 MLD capacity in North Zone	
2	Construction of Sewage Treatment Plant of 5.0 MLD capacity in Soth Zone	
3	Rehabilitation of Old Sewerage Network	220.00
4	Construction of Sewer Network in Uncovered Areas	
5	Construction of Pump House and Outfall Sewer	
6	Construction of Piping Network for Reuse of Ttreated Sewage for maintenance of Parks, Median Landscaping	

STORM WATER DRAINAGE SYSTEM

It is proposed to Cover the entire area of ABD with Storm Water Drainage System.

Sl.No.	Drains	Indicator (km)	Cost in Rs. Crores
1	**PRIMARY DRAIN**	8	48
2	**SECONDARY DRAIN**	10	22
3	**TERTIARY DRAIN**	Covered in Road Improvement Component	
	TOTAL COST IN RS. CRORES		**70**

PAN CITY PROPOSALS

PAN CITY PROPOSALS

- **URBAN MOBILITY**
  - **Priority Bus Lanes, Bus Terminals & Bus Shelters**
  - **Para - Transit**
    - **Battery operated autos**
    - **Auto-hailing App**
  - **Walkability & Non-Motorized Transport**
    - **Cycle Tracks**
  - **Rail Over Bridges**
  - **Flyovers**
  - **Junction Improvements**
    - **Major & Minor Junctions**
  - **Intelligent Transport Systems**
- **RENEWABLE ENERGY & ENERGY EFFICIENCY**
  - **Current HT & LT Scenario**
  - **Projections**
  - **Rooftop Solar PV & Wind Energy Potential**
  - **Energy Efficiency – Street Lighting**
- **E-GOVERNANCE**
- **WATER SUPPLY, SANITATION & SOLID WASTE MANAGEMENT**

Transforming Belagavi into a Smart City

END Of Part 1

T H A N K Y O U

Part 2

Urban Transportation