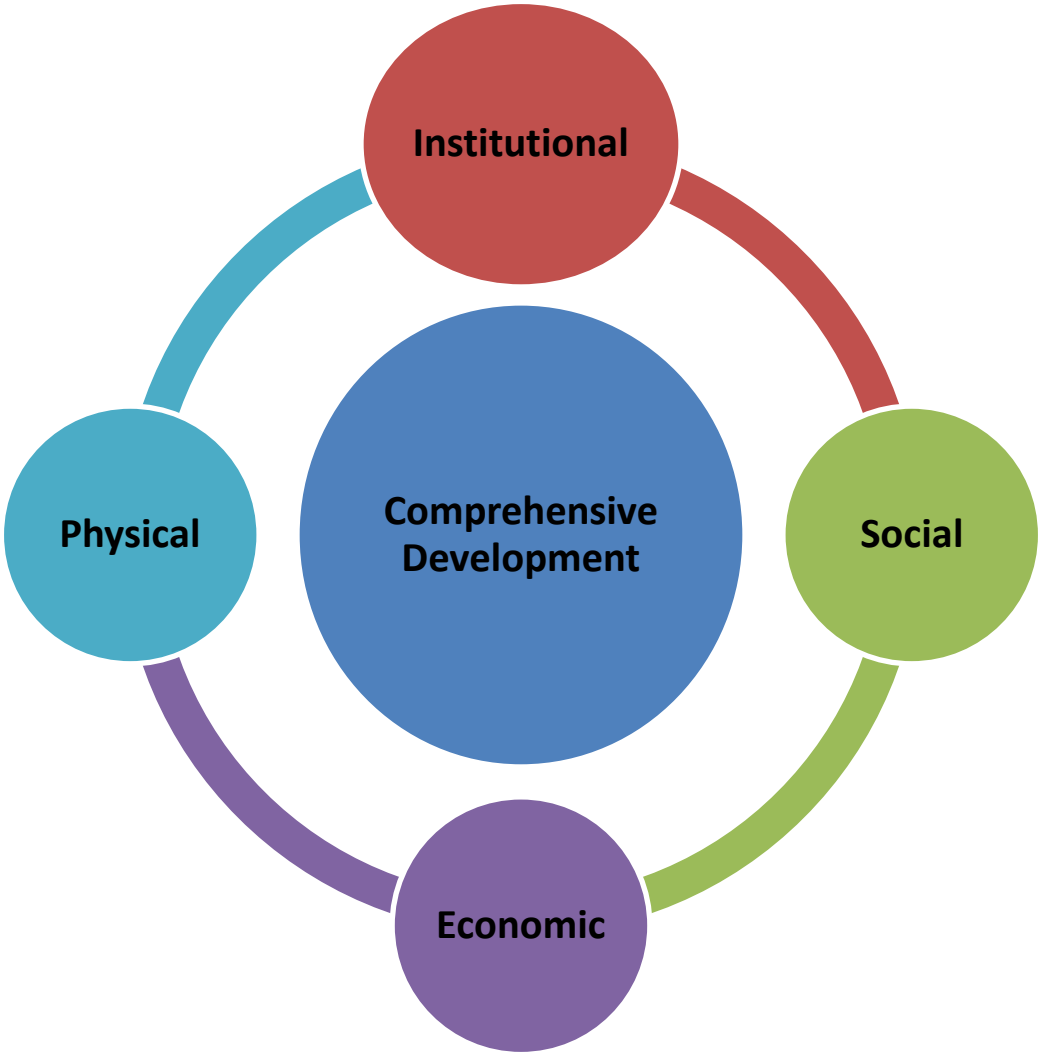
Smart Cities
& Transportation
in the Indian Context

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 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

The strategic components of area-based development in the Smart Cities Mission are :

- City Improvement (Retrofitting)
- City Renewal (Redevelopment)
- City Extension (Greenfield Development)
- A Pan-city initiative in which Smart Solutions are applied covering larger parts of the city.

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.

Case Study

Belagavi (Karnataka)

Transforming Belagavi into a SMART CITY

AGENDA

- CITY LEVEL CRITERIA
- AREA BASED DEVELOPMENT PROPOSALS
- PAN CITY PROPOSAL

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%

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.

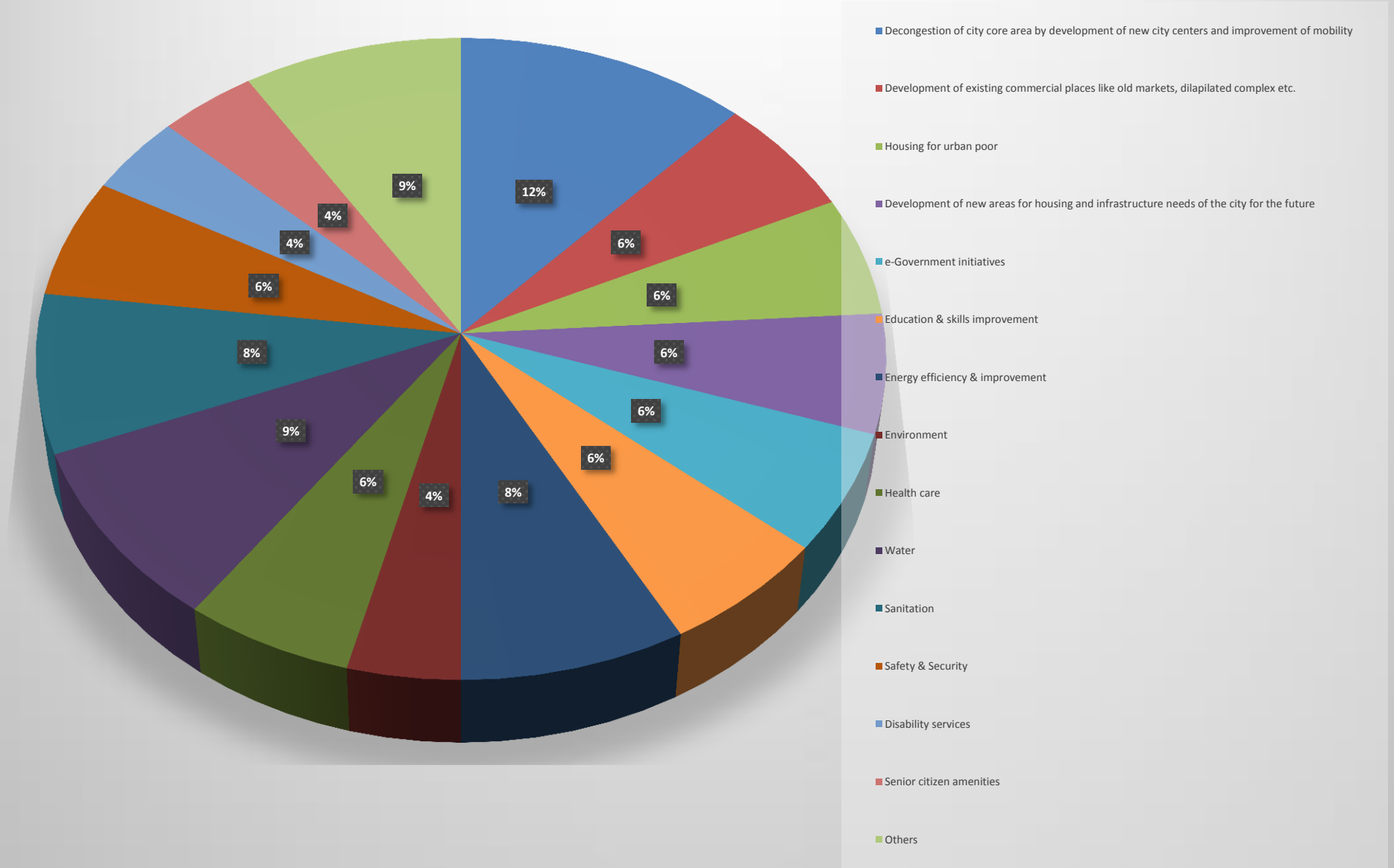
CITIZEN ENGAGEMENT

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

CITIZEN ENGAGEMENT

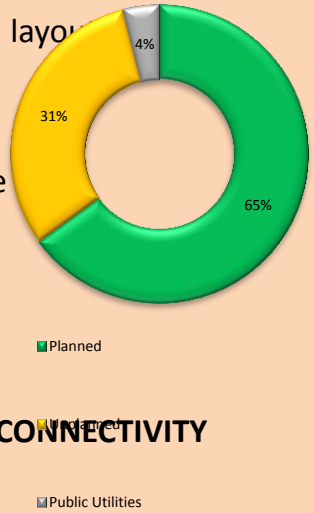
Overall priorities as listed by Citizens



SWOT ANALYSIS

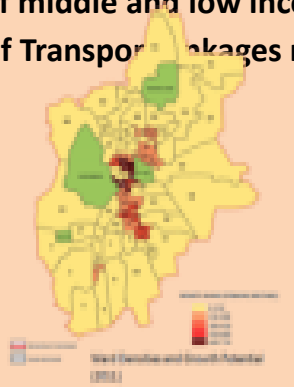
STRENGTHS

- ❑ **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 layo
  - ▪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**



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 Transpor akages 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

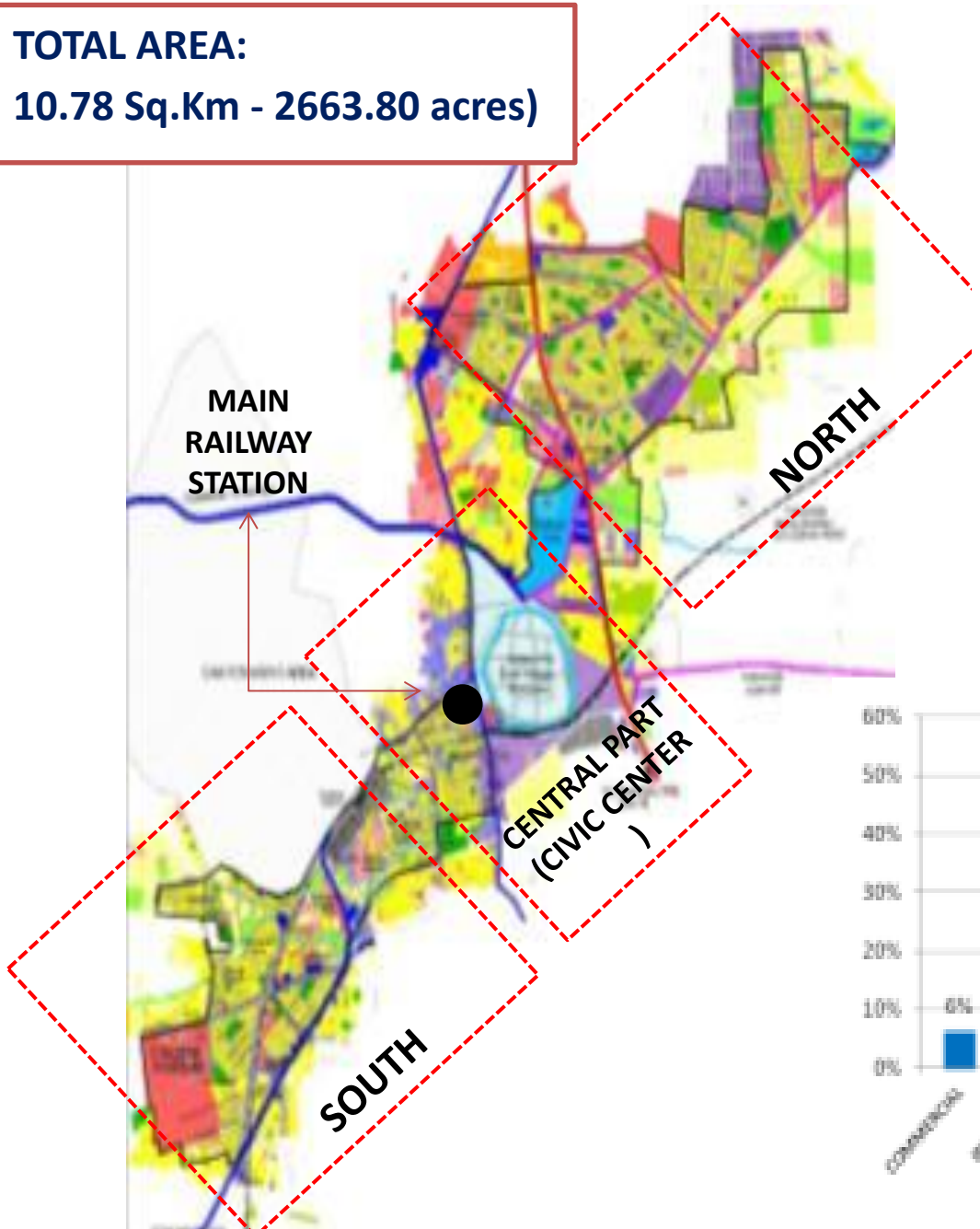
AREA BASED DEVELOPMENT PROPOSALS

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 PROPOSA

TOTAL AREA:
10.78 Sq.Km - 2663.80 acres)



NORTH

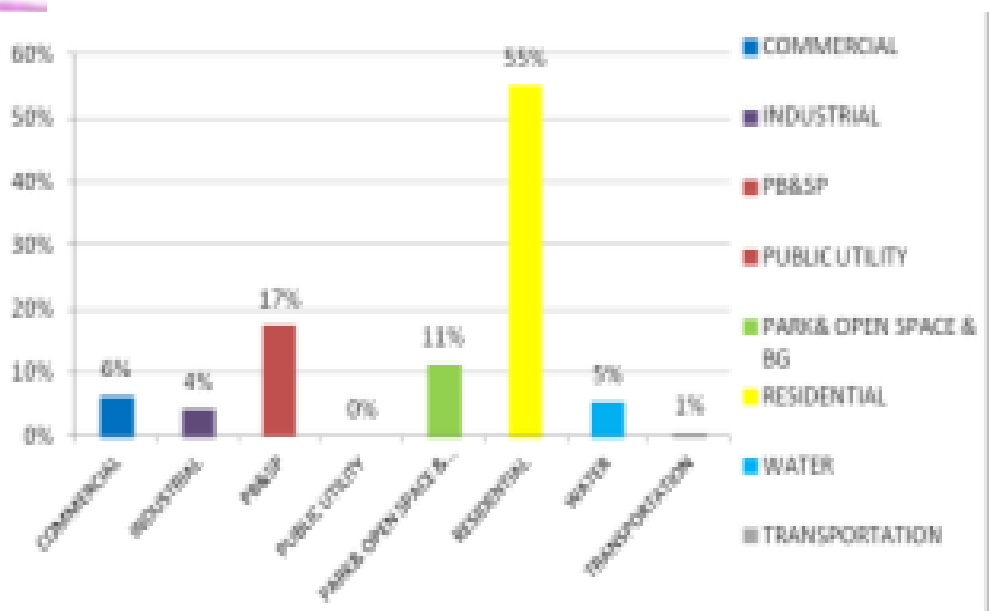
- RAMTEERTH NAGAR
- MAL-MARUTI EXTENSION
- SHIV BASAVA NAGAR

CENTRAL

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

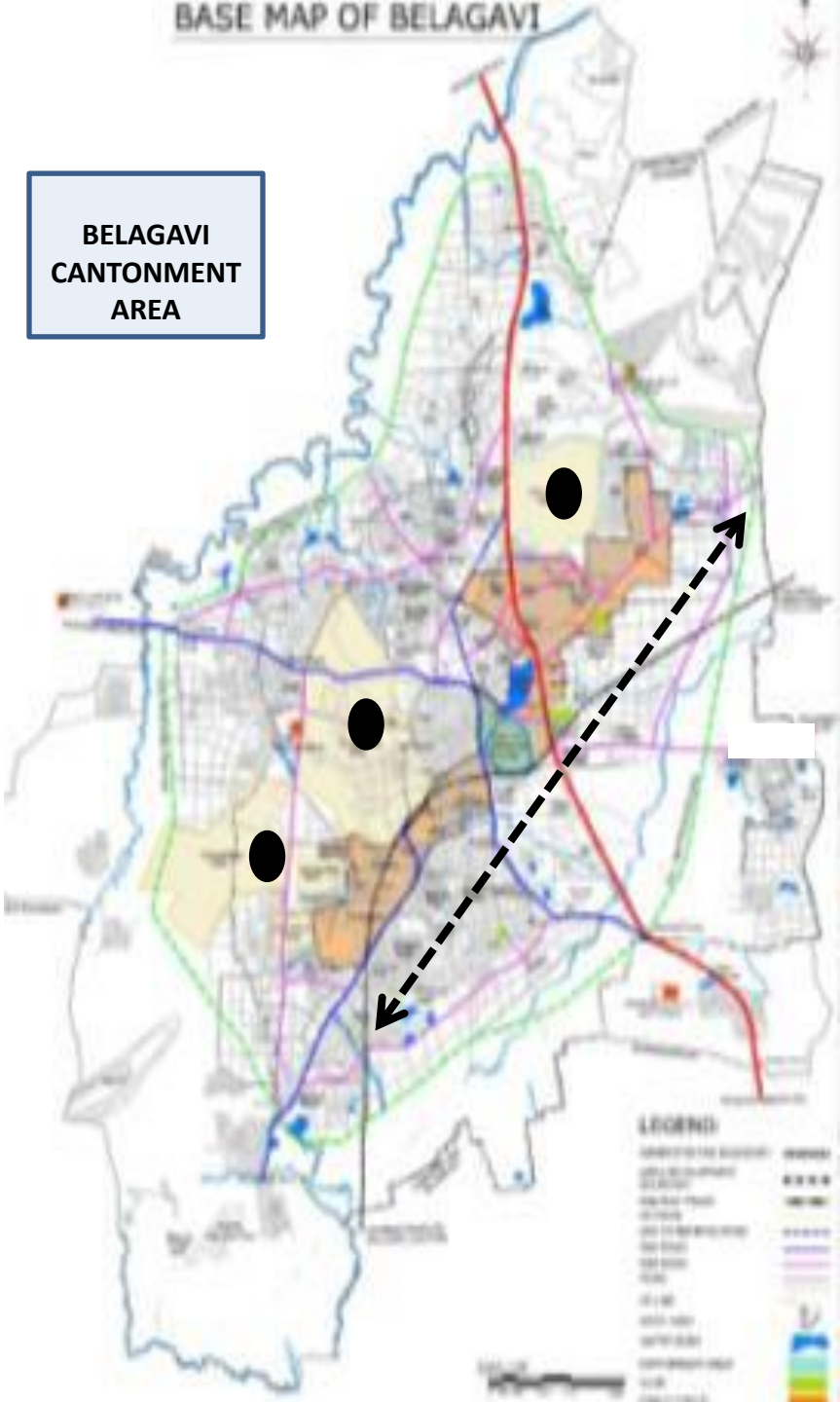
SOUTH

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



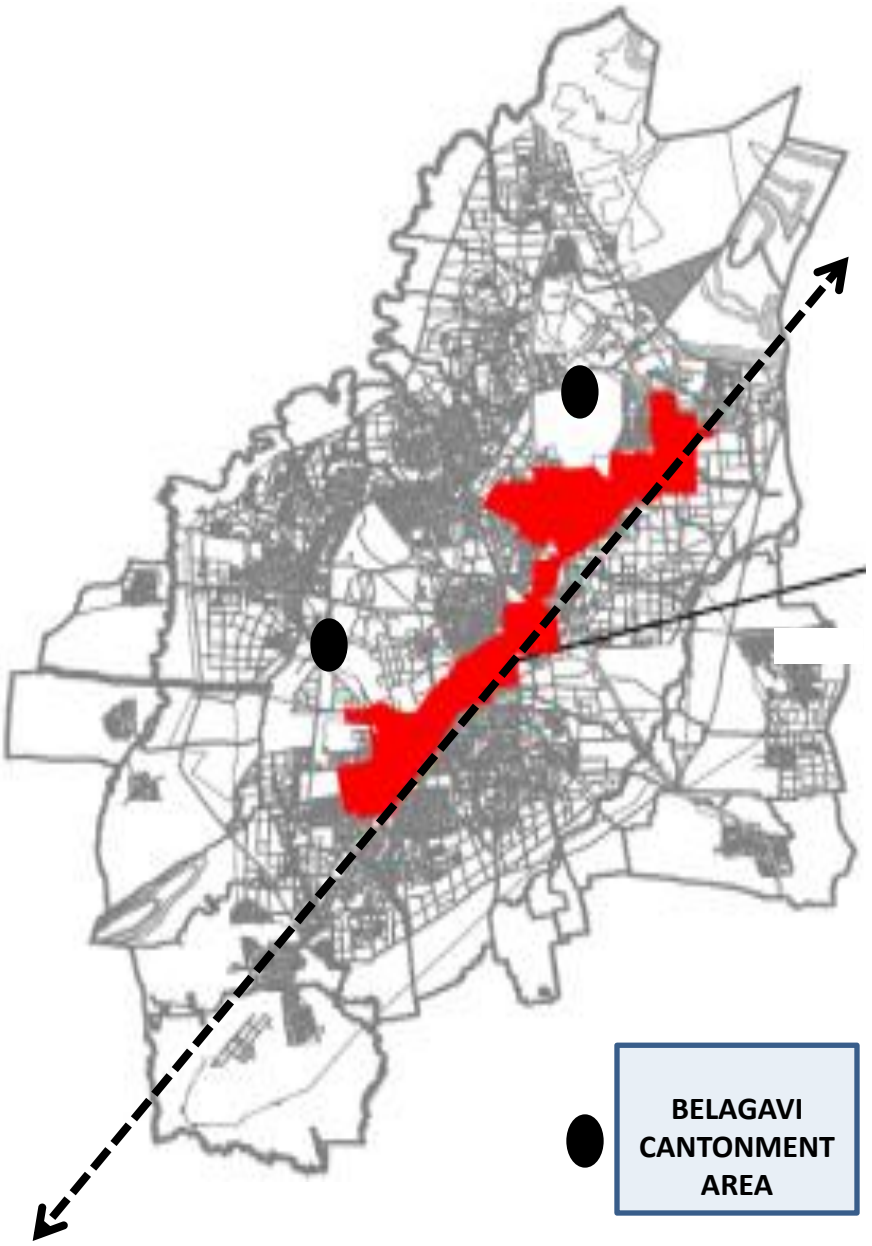
CRITERIA SELECTION FOR AREA

- Decongesting & decentralizing the Inner City Area
- Backbone of the city & Axis of future development. Aids development of extension areas adjoining this central spine as new activities/economic growth centers
- Enables comprehensive development, through retrofitting strategies of smart city including central transportation hub, location of offices, employment centers, civic centers and enhances connectivity between north and south Belagavi
- Promotes equitable distribution of utilities service centers. Promotes effective service delivery mechanism
- Create maximum impact with the Smart City initiative to the citizens of Belagavi with a view to achieve a balanced development



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

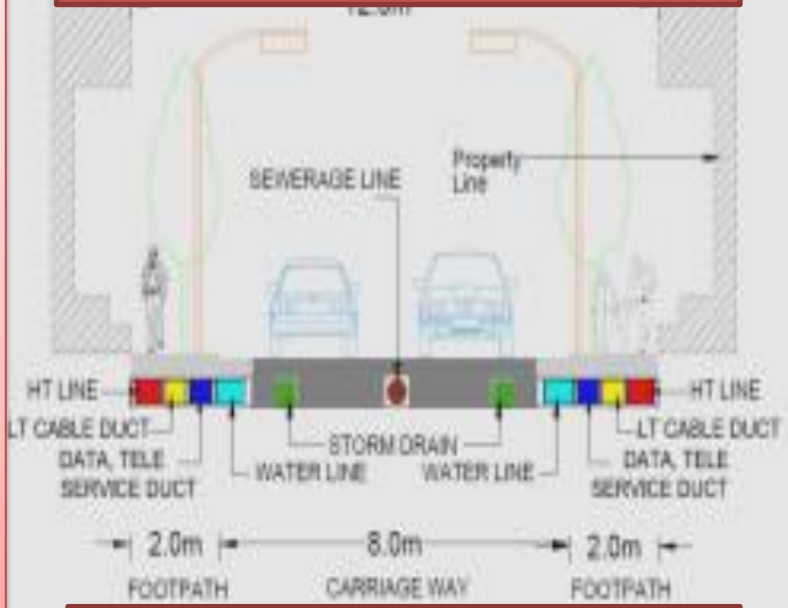


ABD-Improving Roads, Circulation Network & Junctions

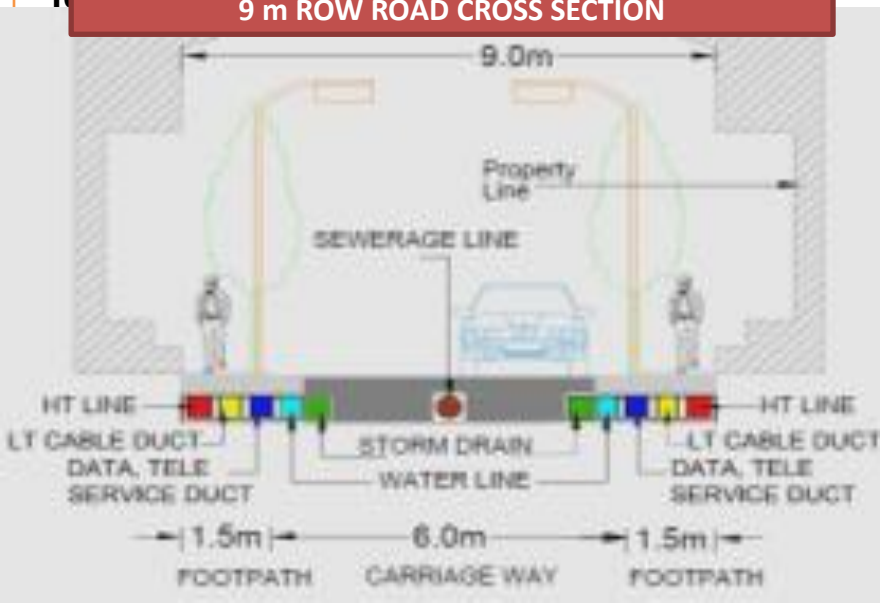
ROAD WIDTH		ROAD LENGTH
Mtr.	Feet	Km
9.0	30	137.28
12.0	40	29.85
13.0	45	1
15.0	50	1
18.0	60	9.1
24.0	80	13
30.0	100	10
36.0	120	5.3
T		

- 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

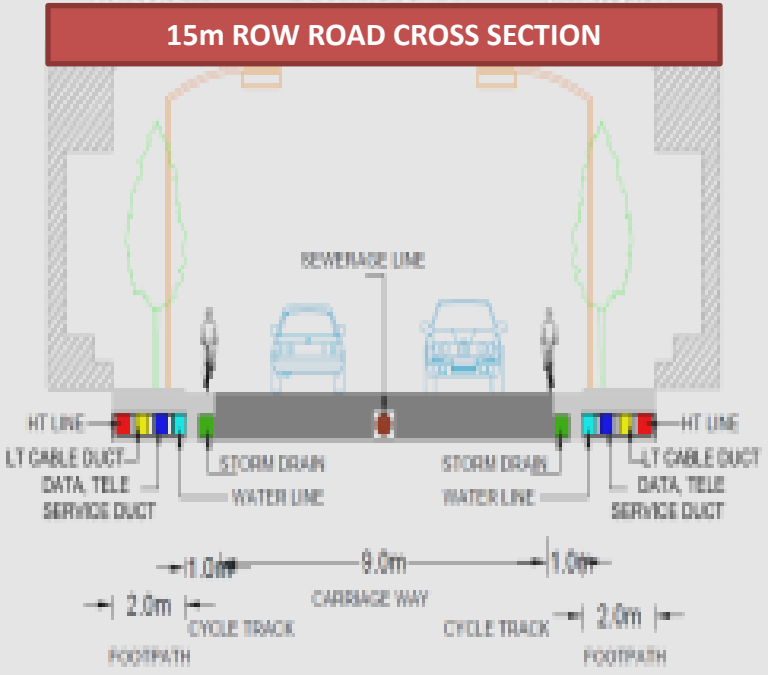
12m ROW ROAD CROSS SECTION



9 m ROW ROAD CROSS SECTION

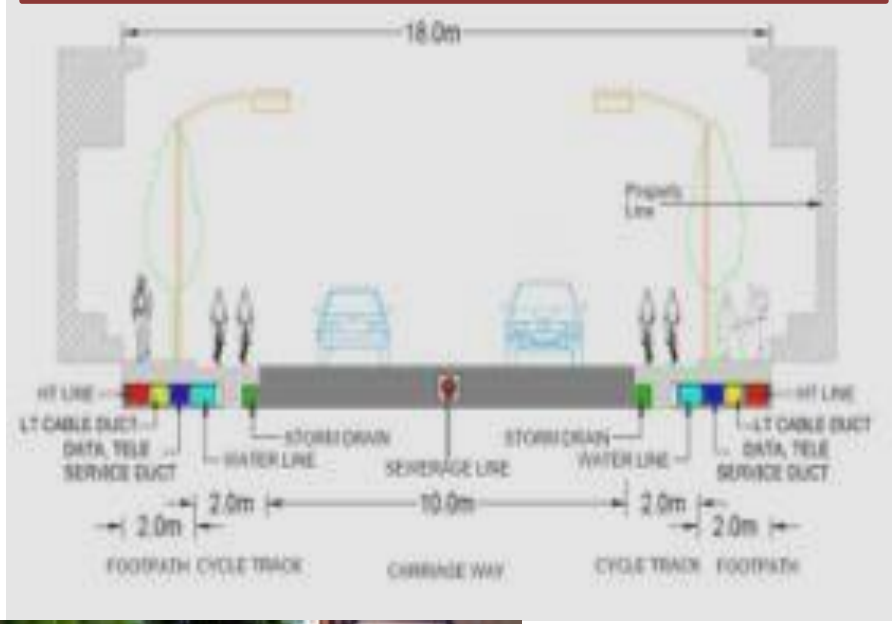


15m ROW ROAD CROSS SECTION

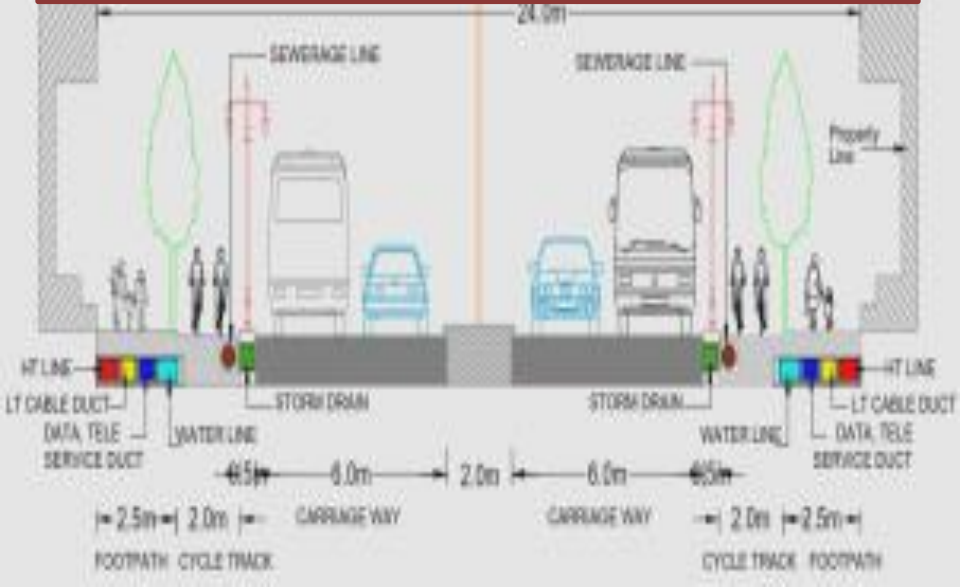


ABD-Improving Roads, Circulation Network & Junctions

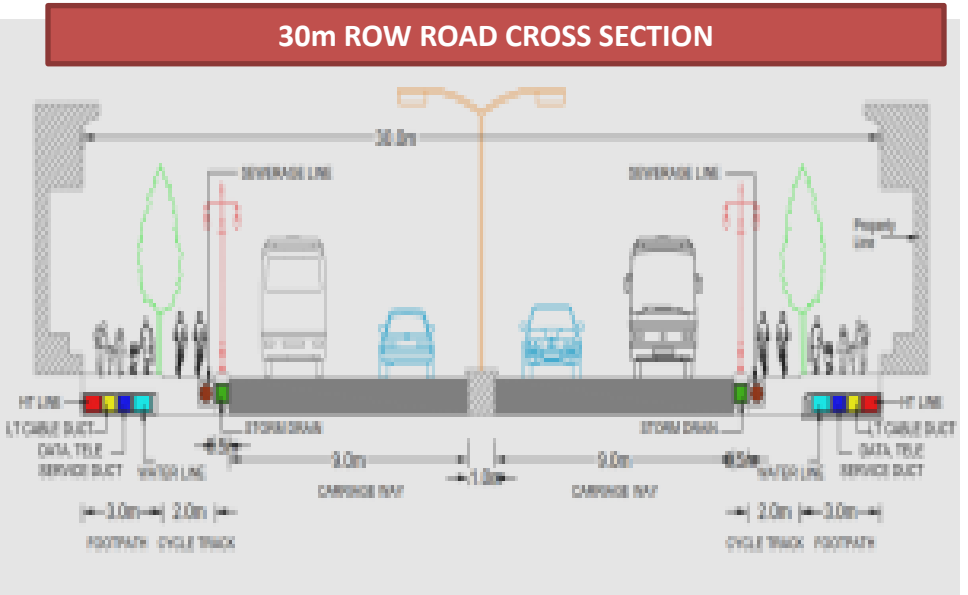
18 m ROW ROAD CROSS SECTION



24m ROW ROAD CROSS SECTION



30m ROW ROAD CROSS SECTION



ABD-Improving Roads, Circulation Network & Junctions

ROAD		FOOTPATH			CYCLE TRACK (2M WIDE)	
WIDTH (M)	LENGTH (KM)	WIDTH (M)	LENGTH (KM)	COST (RS. CR.)	LENGTH (KM)	COST (RS. CR.)
9.0	120.56	1.5	241.13	3.13	-	-
12.0	25.52	2.0	51.05	8.84	-	-
13.5	1.00	2.0	2.00	0.35	-	-
15.0	0.87	2.0	1.74	0.30	1.74	0.30
18.0	8.09	2.0	16.18	2.80	16.18	2.80
24.0	12.52	2.0	25.05	4.34	25.05	4.34
30.0	9.56	2.5	19.13	4.14	19.13	3.31
36.0	4.27	3.0	8.53	2.22	8.53	1.48
Total	182.40		364.81	26.11	70.63	12.23

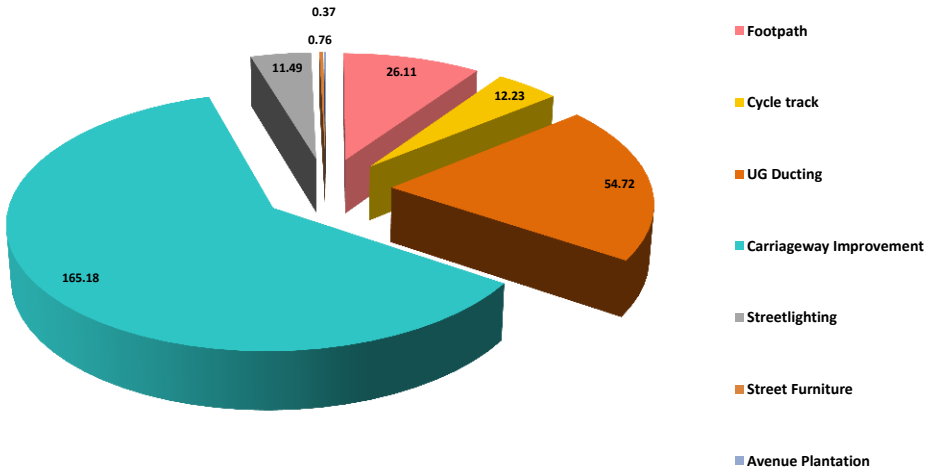
- Total Pedestrian Walkways: 364.81 Km
- Provision for Non – Motorized Transport (Cycle Tracks): 70.63 Km

ROAD		UG DUCTING COST (RS.CR.)	CARRIAGEWAY IMPROVEMENT (RS.CR.)	STREET LIGHT	
WIDTH (M)	LENGTH (KM)			NO.S	COST (RS.CR.)
9.0	120.56	36.17	120.56	4,823	7.60
12.0	25.52	7.66	25.52	1,021	1.61
13.5	1.00	0.30	1.00	40	0.06
15.0	0.87	0.26	0.87	35	0.06
18.0	8.09	2.43	4.05	324	0.51
24.0	12.52	3.76	6.26	501	0.79
30.0	9.56	2.87	4.78	383	0.60
36.0	4.27	1.28	2.13	171	0.27
Total	182.40	54.72	165.18	7,298.00	11.49

ABD-Improving Roads, Circulation Network & Junctions

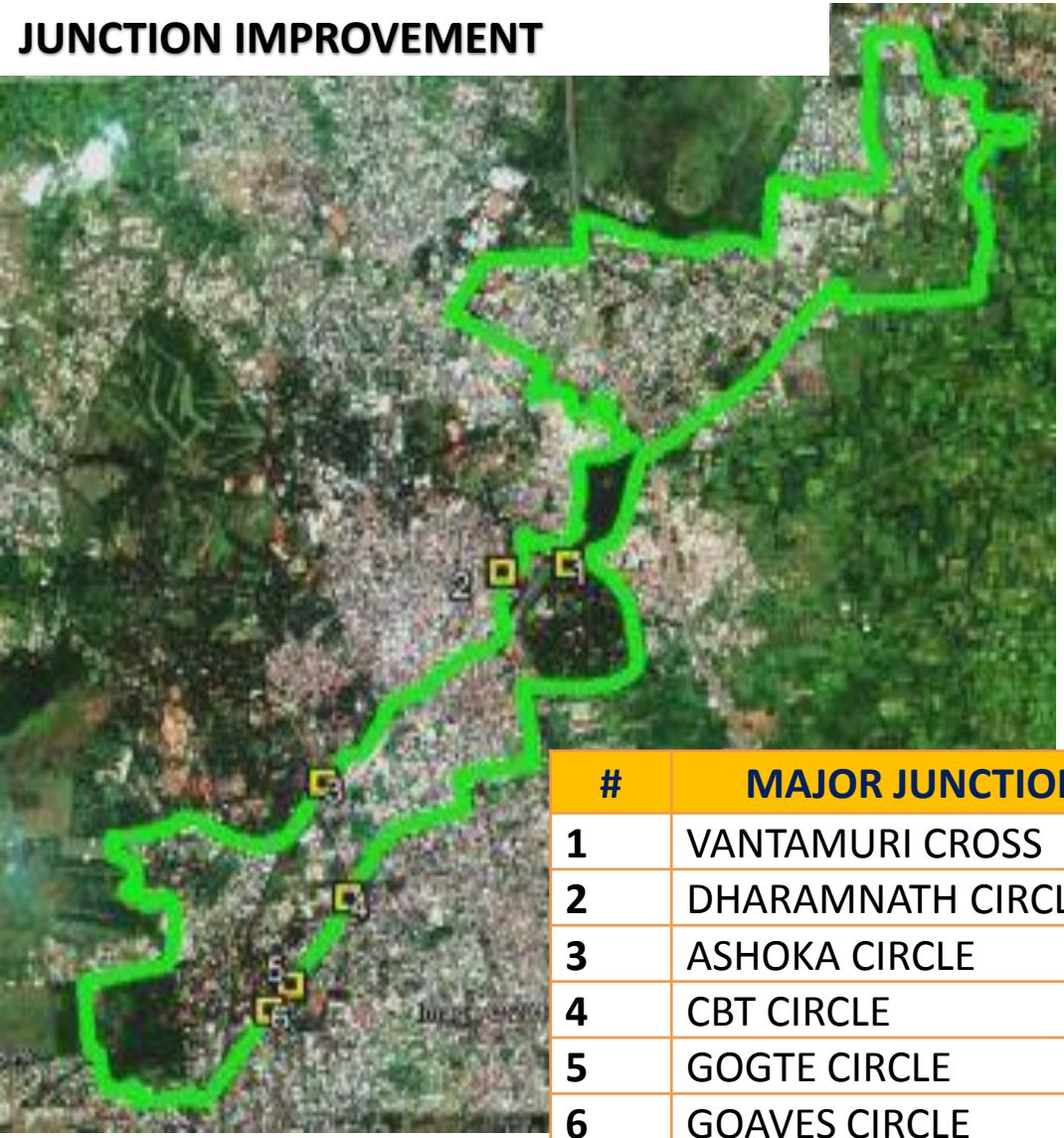
ROAD		STREET FURNITURE		AVENUE PLANTATION	
Width (m)	Length (Km)	No.s	Cost (Rs.Cr.)	No. of Trees	Cost (Rs.Cr.)
9.0	120.56	482	0.51	1,808.00	0.23
12.0	25.52	102	0.11	383.00	0.05
13.5	1.00	4	0.00	15.00	0.00
15.0	0.87	3	0.00	13.00	0.00
18.0	8.09	32	0.03	162.00	0.02
24.0	12.52	50	0.05	250.00	0.03
30.0	9.56	38	0.04	191.00	0.02
36.0	4.27	17	0.02	85.00	0.01
Total	**182.40**	**728**	**0.76**	**2,907.00**	**0.37**

Road		Total cost (rs.Cr.)
width (m)	length (km)	
9.0	120.56	168.20
12.0	25.52	43.78
13.5	1.00	1.71
15.0	0.87	1.80
18.0	8.09	12.64
24.0	12.52	19.56
30.0	9.56	15.77
36.0	4.27	7.40
TOTAL	**182.40**	**270.87**



ABD-Improving Roads, Circulation Network & Junctions

JUNCTION IMPROVEMENT

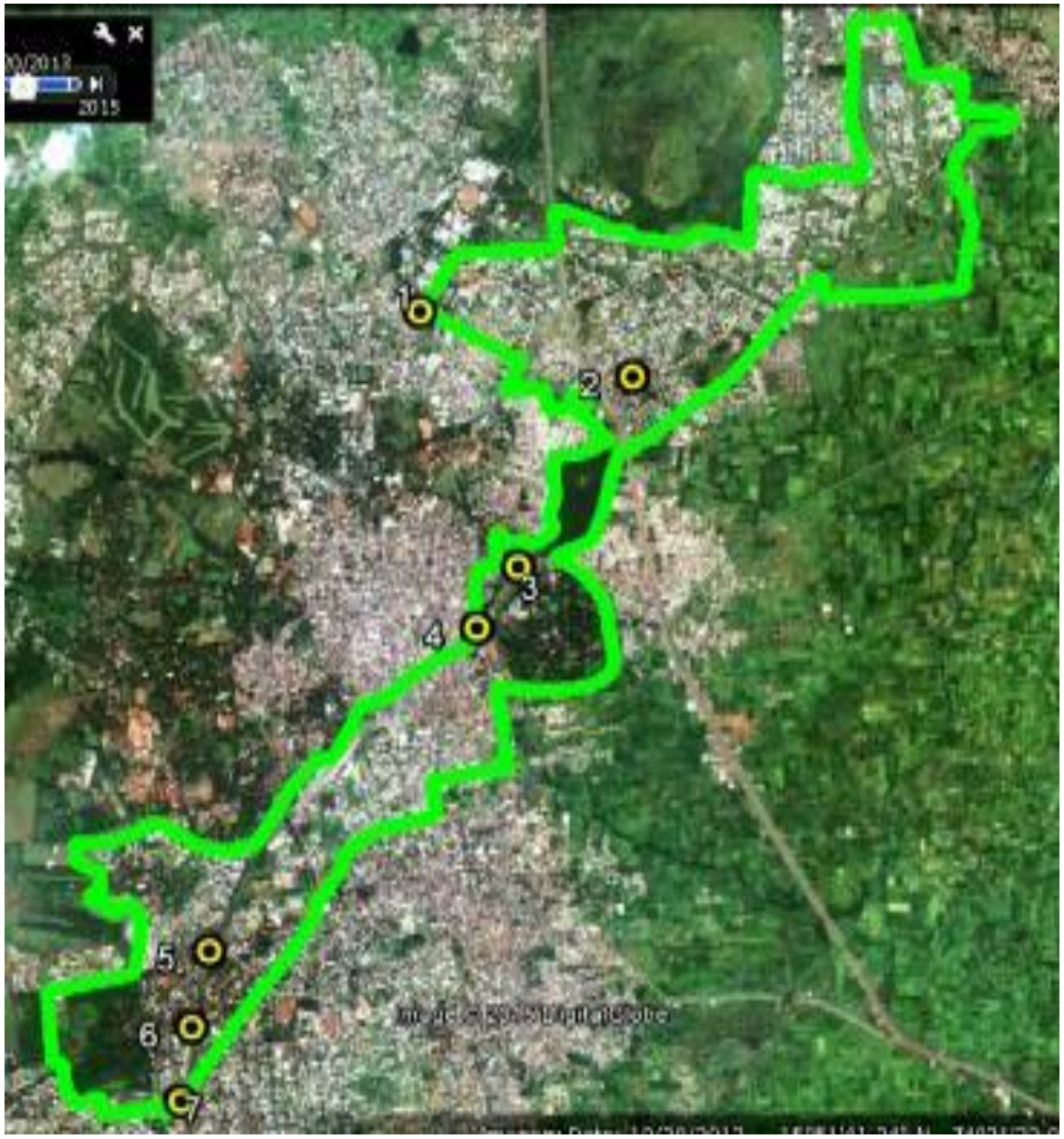


- GEOMETRIC IMPROVEMENTS
- ROUNDABOUT
- MANNED / SIGNALIZED
- HIGH MAST LIGHTS
- LANDSCAPING
- SURVEILLANCE EQUIPMENT
- TRAFFIC SIGNAGE

#	MAJOR JUNCTIONS
1	VANTAMURI CROSS
2	DHARAMNATH CIRCLE
3	ASHOKA CIRCLE
4	CBT CIRCLE
5	GOGTE CIRCLE
6	GOAVES CIRCLE
7	RPD CROSS
8	KHANAPUR JUNCTION (3rd GATE)

ASHOKA CIRCLE

ABD-Improving Roads, Circulation Network & Junctions



#	Minor Junctions
1	GANESH CIRCLE, RAMTIRTH NAGAR
2	RAMDEV CROSS
3	DCC BANK
4	CIRCUIT HOUSE
5	DESHPANDE PETROL BUNK
6	TILAKWADI GATE 1
7	TILAKWADI GATE 2
8	TILAKWADI GATE 3

ABD-Improving Roads, Circulation Network & Junctions

RAIL OVER BRIDGES

#	PROPOSED LOCATIONS
1	B/W RAILWAY GATE I & II
2	RAILWAY GATE III – (NH 4A & KHANAPUR ROAD)
3	OLD PB ROAD
4	KAPILESHWAR ROAD

UNDERPASS

#	PROPOSED LOCATION
1	RANI CHANNAMMA CIRCLE (for pedestrian, Raichur Bachi Road)

FLYOVER

#	PROPOSED LOCATION
1	Ashoka Circle (NH4 Junction to CBT via Raichur Bachi Road)

ABD-Improving Roads, Circulation Network & Junctions

#	LOCATION	DEVELOPMENT	COST (RS.CR.)
1	Rani Channamma Circle, on Raichur-Bachi Road	UNDERPASS	56.00
2	Flyover over Ashoka Circle, NH4 Junction to CBT, via Raichur-Bachi Road	FLYOVER	129.00
3	Between Railway Gate I & II, at Railway Gate III, Old PB Road & Kapileshwar Road	ROBS	144.00
TOTAL			365.00

ABD-Improving Non Motorized Transportation Walkability & Cycle Track

ROAD WIDTH		ROAD LENGTH	CYCLE TRACK	FOOTPATH (WIDTH)			
			2m wide	1.5m (5ft)	2m (7ft)	2.5m (8ft)	3m (10ft)
Mtr	Feet	Km	Km		Km		
9.0	30	120.56	-	241.13			
12.0	40	25.52	-		51.05		
13.0	45	1.00	-		2.00		
15.0	50	0.87	1.74		1.74		
18.0	60	8.09	16.18		16.18		
24.0	80	12.52	25.05			25.05	
30.0	100	9.56	19.13				19.13
36.0	120	4.27	8.53				8.53
Total (Km)		**182.54**	**70.90**	**241.13**	**71.24**	**25.05**	**27.66**

- **TOTAL WALKABILITY : 365 km**
- **TOTAL Non Motorised (cycle track) :71 km**

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

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

#	LOCATION	OWNERSHIP	EXTENT acres	PROJECT COST Rs.Crores
1	**DHARMANATH CIRCLE**	Corporation	13	
2	**RAM TEERTH NAGAR**	BUDA	2.7	34.71
3	**MAHANTESH NAGAR**	Corporation	1.36	34.71
4	**1st GATE OPP KALAMANDIR**	Corporation	1.15	34.71
5	**FORT ROAD**	Cantonment	3.44	11.40
6	**GOAVES COMPLEX**	Corporation	1.17	34.71
TOTAL				**150.25**

ABD-Improvement of Public Convenience & Amenities

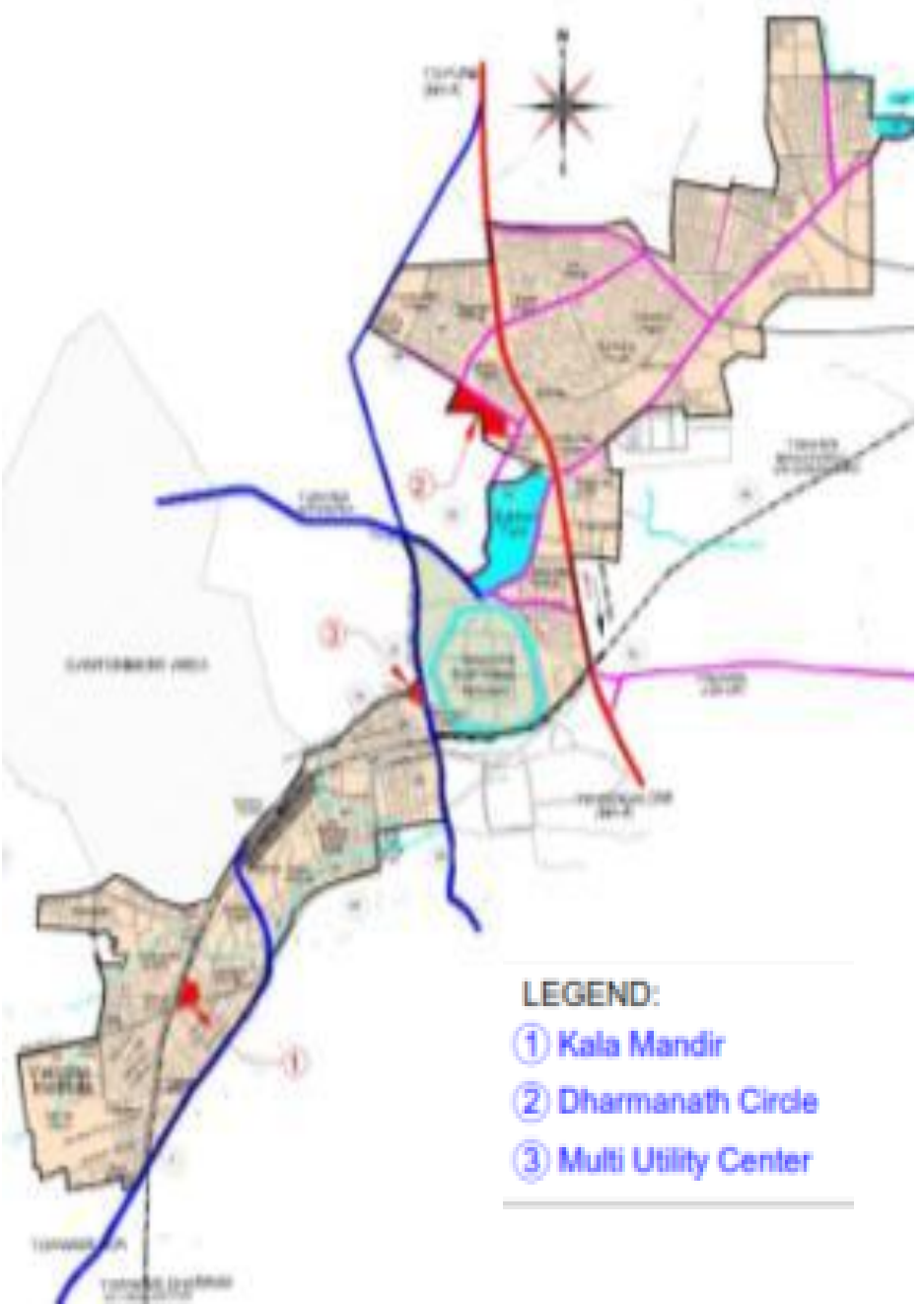
PUBLIC TOILETS

- Providing Public Convenience and utilities in the ABD (2 in each ward)
- Easily accessible for physically challenged people
- High emphasis on cleanliness of the toilet units.
- Roof top Solar Panels (Optional)
- To ensure sustainability of operation and maintenance, operators are given the rights of advertisement which can be displayed around the units of public amenity.

DRINKING WATER KIOSKS

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



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- NEW CITY CENTERS

Basement- Parking

Parking: 100 cars, 200 2-wheelers

Ground floor

Bus Terminal

Ground level:

25-30 bicycles

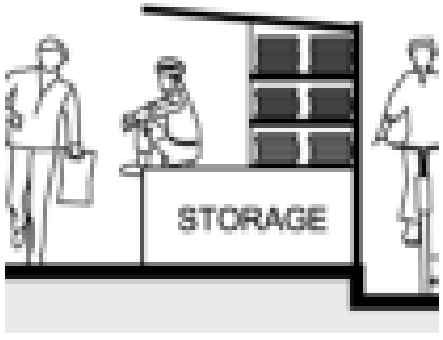
Ground level:

3 wheeler parking- 25 vehicles

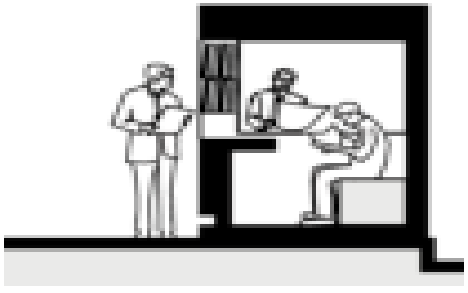
SPECIFIC HAWKER VENDING SPACES

HAWKER ZONE

- Formalization of street vending leading to better upkeep of the spaces, brings in vitality and vibrancy in the inner city and civic center area
- 20-25 hawkers space in each of the proposed nine Multi-utilities complexes
- Total spaces created ~200



A platform doubling as lockable storage



EAT STREET IN CENTRAL AREA

- Stretch of 200 m on OLD PB road along Footpath towards Fort side
- Stretch of 100 m along Kanbargi Road footpath towards Kotekere lake
- Creating ~200 fast food outlets
- **Estimated Cost: Rs.3 Crores**

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**

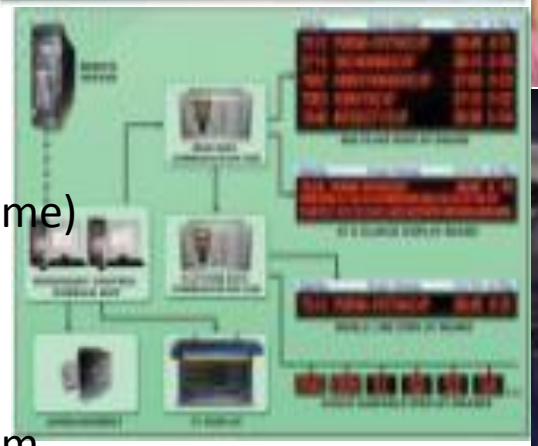
KEY FEATURES

- 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

#.	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,	Corporation	

TOTAL PARKS AND GARDENS AREA : ~21.50 Acres

ESTIMATED PROJECT COST: RS.18.50 Cr

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 VACCINE DEPOT AS HERITAGE PARK

#	PROPOSALS
1	GRAMIN BHARAT
2	EXISTING WATER BODIES DEVELOPMENT, BOATING
3	GLASS HOUSE
4	TREE HOUSES
5	SOCIAL – CLUB
6	WATER PONDS
7	OLD BUILDINGS HERITAGE
8	AMUSEMENT PARK
9	PICNIC HUTS
10	JOGGING TRACKS
11	CHILDREN PARK
12	AMPHITHEATRE
13	HERBAL GARDEN
14	BOTANICAL GARDEN
15	OPEN YOGA CENTER
16	THICK BLOCKS AFFORESTATION

EXISTING

PROPOSED

TOTAL EXTENT : ~156 Acres

ESTIMATED PROJECT COST: RS.38.50 Cr

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

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

FORT AND MOAT PRECINCT AREA

ACTIVITIES in FORT PREMISES :

1. **MILITARY/DEFENCE THEME MUSEUM**
2. **JOGGING TRACK**
3. **HERITAGE CONSERVATION OF**
   - RAMAKRISHNA ASHRAM
   - KAMAL BASTI
   - MOSQUES: Safa Majid, Jamia Masjid
4. **AFFORESTATION AND BLOCK PLANTATION**
5. **AMPHITHEATER (OAT)**
6. **ART AND CRAFT CENTER (in Existing Building)**
7. **BANNING OF VEHICULAR MOVEMENT INSIDE THE FORT AREA**

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

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




ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

ACTIVITIES in MOAT PREMISES :

1. **REJUVENATION OF MOAT AREA AS A WATER BODY AND LANDSCAPED AREA**
   - Removing the algae and weed
   - Dredging the moat to have proper depth
   - Aerators & Connecting with Kotekere
   - Development of Natural aquarium
   - Foot over bridges
   - Recycling of Water (Aeration) in MOAT
   - Canoeing & fountains in MOAT

2. **THEME BASED PARKS AND GARDEN**
   - Walkway- Jogging Tracks
   - Public recreational space
   - Open sit out area , Furniture
   - Sound & light show-Laser Show
   - Open air theatre

3. **Improving the Lake and MOAT Hydraulics**

MOAT PREMISES INCLUDES

1. Vegetable market Premises
2. Open Parking Lot
3. MOAT AREA
4. Open Land Under Income tax Dept

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

BEFORE	AFTER
	
	
	

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

KEY FEATURES

- Cleaning of MOAT to make it pollution-free
- Retain and replenish the water
- Creating a safe habitat environment
- Development of Public and recreational spaces
- Strengthen the MOAT/ Canal edge
- Improve accessibility and connectivity in the area
- Generate resources to pay for all of the foregoing
- Integrate with city development
- Increase groundwater recharge

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

FORT AND MOAT AREA

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREA

VEGETABLE MARKET AREA

- Vegetable market will be shifted to the APMC site at B K Kangroli, existing Onion Market site utilized for open space for old city
- Existing vegetable market utilized as part of civic central area preservation through landscaping, etc
- Developed as an Heritage & Culture centre and landscaped park for citizen's of Belagavi
- A theme based park & Garden
  - Walkway- Jogging Tracks
  - Public recreational space
  - Open sit out area , Furniture
  - Sound & light show-Laser Show
  - Open air theatre

Road Side Tree Plantation

- **Development of 2 rows of continuous avenue plantations along all roads of 9m & above RoW**

ABD-CONSERVATION & PRESERVATION OF CENTRAL AREAc

KOTEKERE LAKE

- Eat street on lines of Chaupati, Mumbai
- Boating
- Chennamma / Gandhiji's statue on the lines of Buddha statue in Hussain Sagar
- Water front development activities
- Aeration sprinklers in the water body

ROAD SIDE TREE PLANTATION IN ABD

Development of 2 rows of continuous avenue plantations along all roads 9 m & above in Area Based Development

ESTIMATED PROJECT COST: RS.0.50 Cr

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	220.00
2	Construction of Sewage Treatment Plant of 5.0 MLD capacity in Soth Zone	
3	Rehabilitation of Old Sewerage Network	
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	

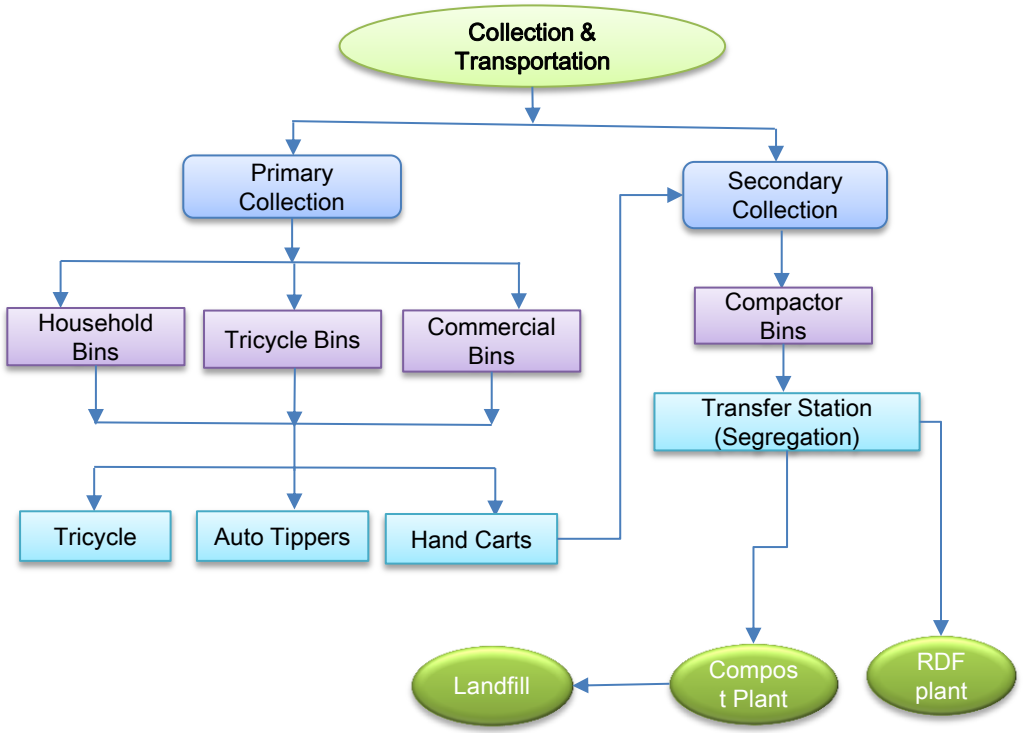
STORM WATER DRAINAGE SYSTEM

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**

SOLID WASTE MANAGEMENT

- 100% door to door collection with infrastructure for segregation at Source. Separate bins for collection of wet and dry waste.
- Infrastructure for collection of Segregated Waste.
- Material Recovery Unit
- Compost Plant
- RDF Making Plant
- Bio-methanation Plant
- Final Disposal Facility.



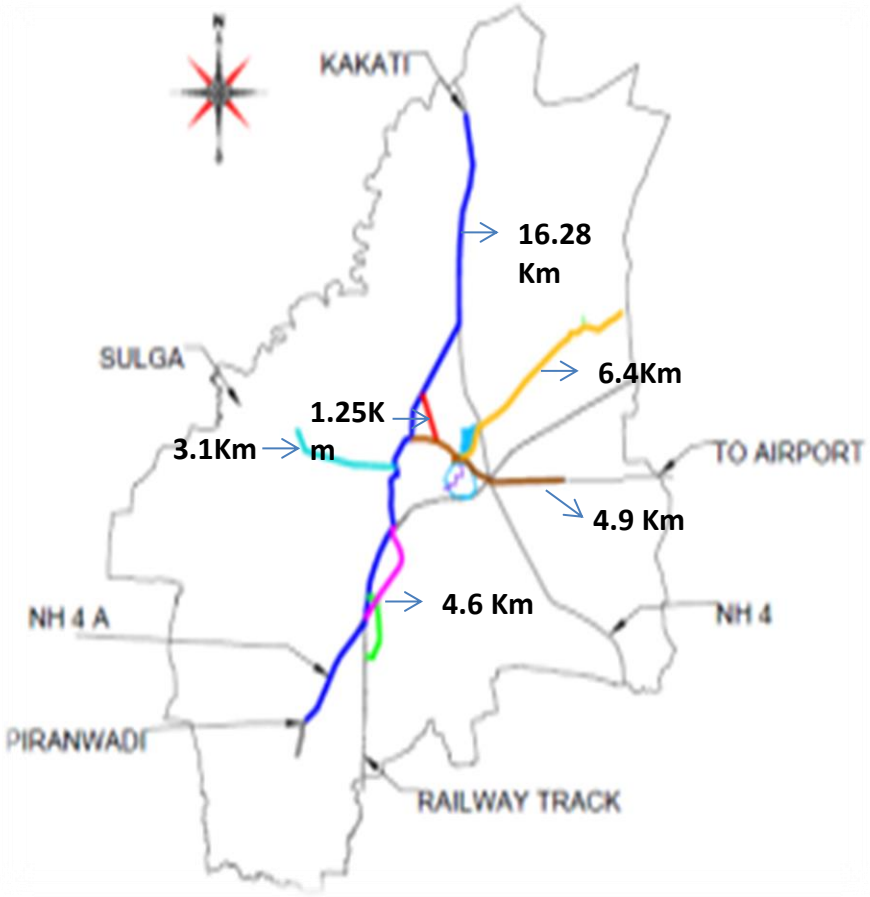
SL.NO.	DESCRIPTION	AREA REQUIRED IN ACRES (2016-36)	COST IN RS. CRORE (PHASE -I: 2016-26)
1	Infrastructure for Primary and Secondary Collection with segregation	0.0	23.7
2	Compost Plant	4.2	9.1
3	Biomethanation Plant	0.5	1.2
4	RDF	8.0	2.0

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

URBAN MOBILITY & TRANSPORT – PRIORITY BUS LANES



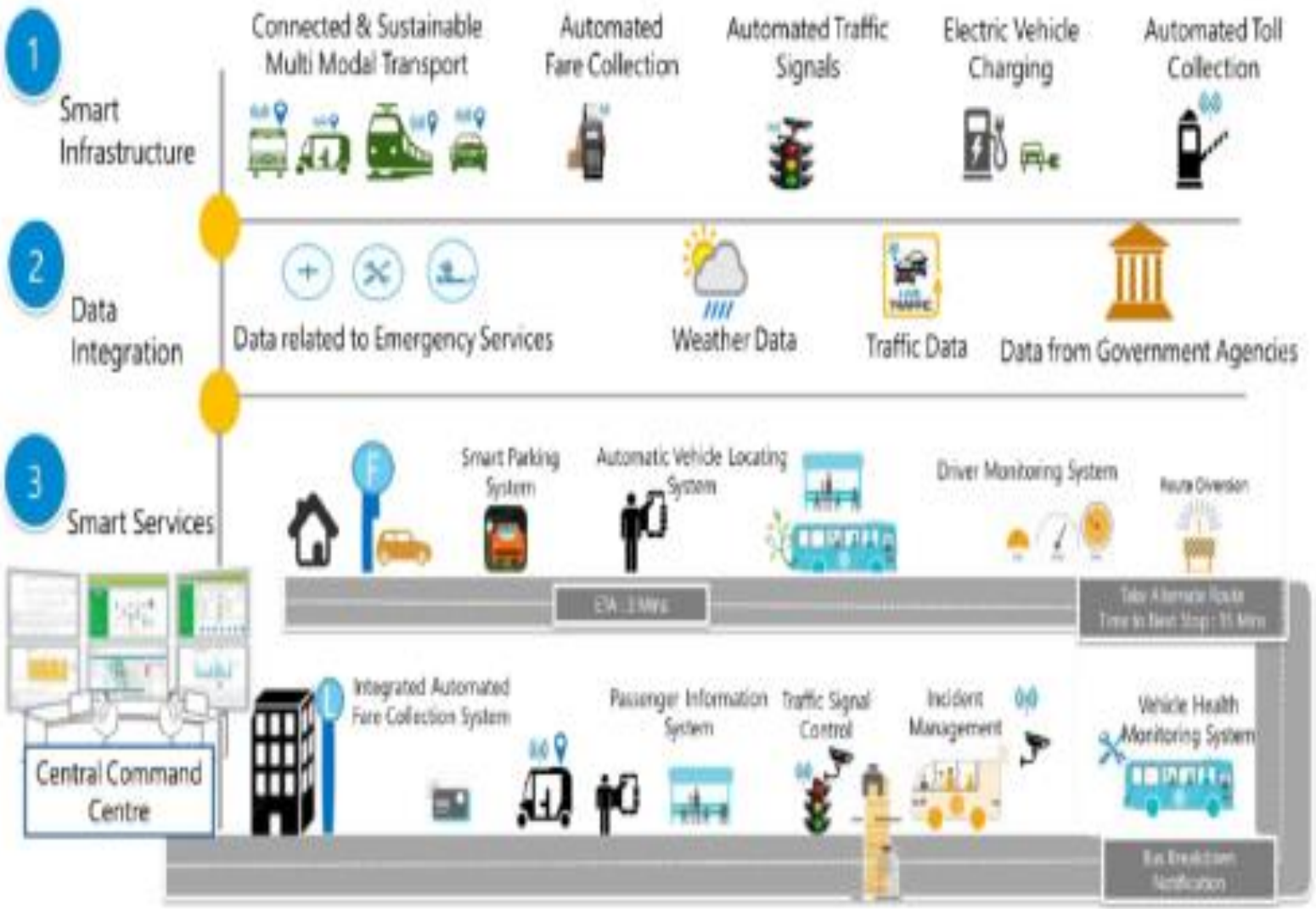
36.5Km of dedicated bus lanes proposed

#	ORIGINATION	DESTINATION	VIA
1	KAKATI INDUSTRIAL ESTATE	BOGARVES CIRCLE	• KLE HOSPITAL • CHENNAMMA CIRCLE
2	BOGARVES CIRCLE	TILAKWADI GATE NO.3	• NH 4A
3	TILAKWADI GATE NO.3	PEERANWADI	• NH 4A
4	KOLHAPUR CIRCLE	RTO CIRCLE	• POLICE HQ
5	RAILWAY STATION	TILAKWADI GATE NO.3	• GOAVES CIRCLE
6	TILAKWADI GATE NO.2	YELLUR/ANGOL	• DESHMUKH ROAD
7	CITY BUS TERMINAL (CBT)	KANBARGI	• MAHANTESH NAGAR CROSS
8	RANI CHENNAMMA CIRCLE	AIRPORT ROAD BRIDGE	• RTO • ASHOK CIRCLE • SAMBARA BRIDGE
9	VANITA VIDYALAYA CIRCLE	VIJAYANAGAR	• ST.XAVIER'S SCHOOL • GANAPATI TEMPLE

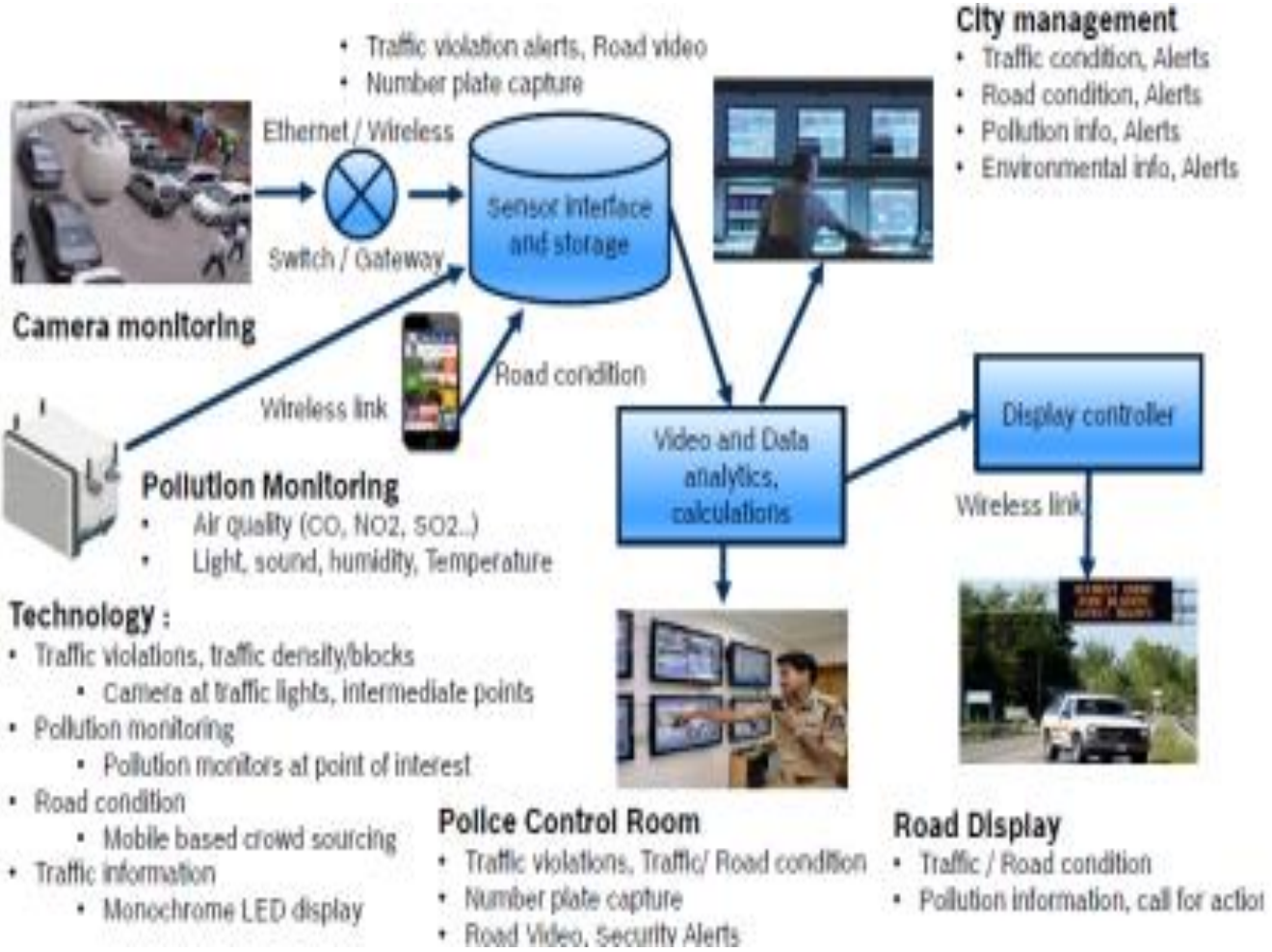
Criteria for Selection

- **North-south road covers major access path. Most segments are 100 feet width, where exclusive bus lane is marked**
- **Minimum 80 ft./24m RoW required for dedicated bus lanes.**

INTELLIGENT TRANSPORT – (ITMS FRAMEWORK)

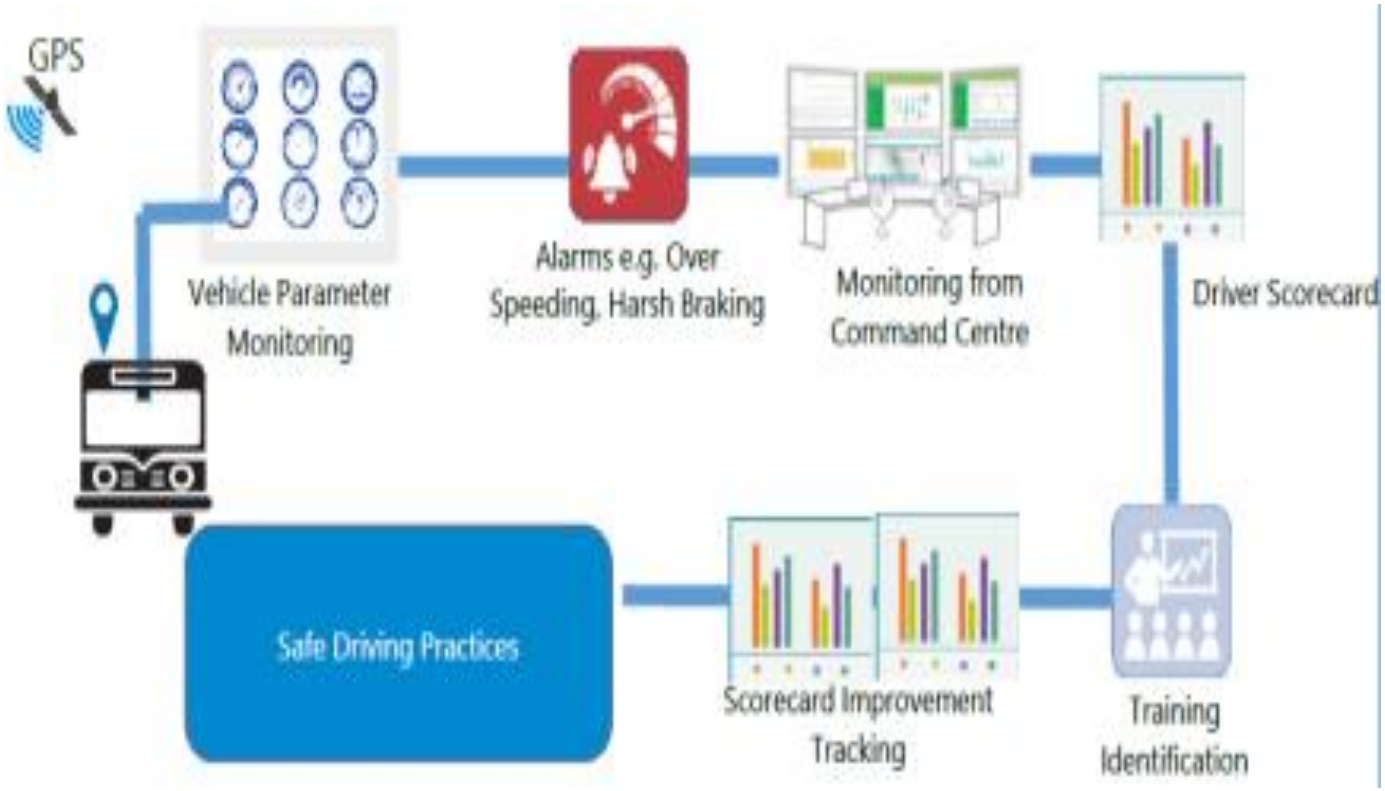


Monitoring touchpoints in ITS



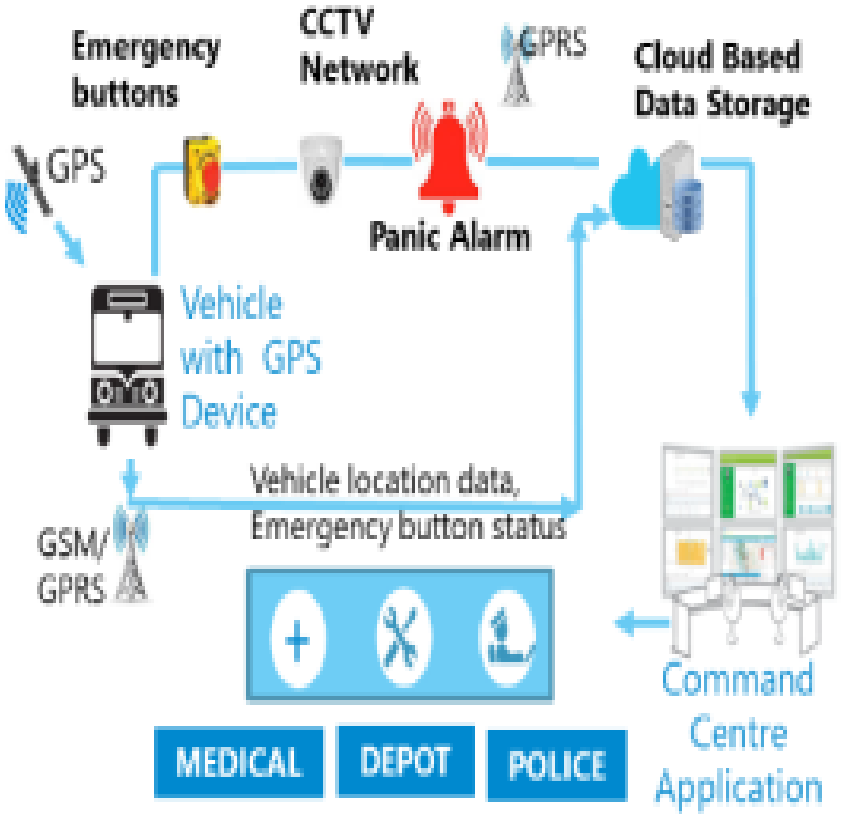
Vehicle & Driver monitoring solutions

- This ensures safety and also monitors the performance of the driver on a real-time basis thus enabling scorecards for improving the driving behaviour



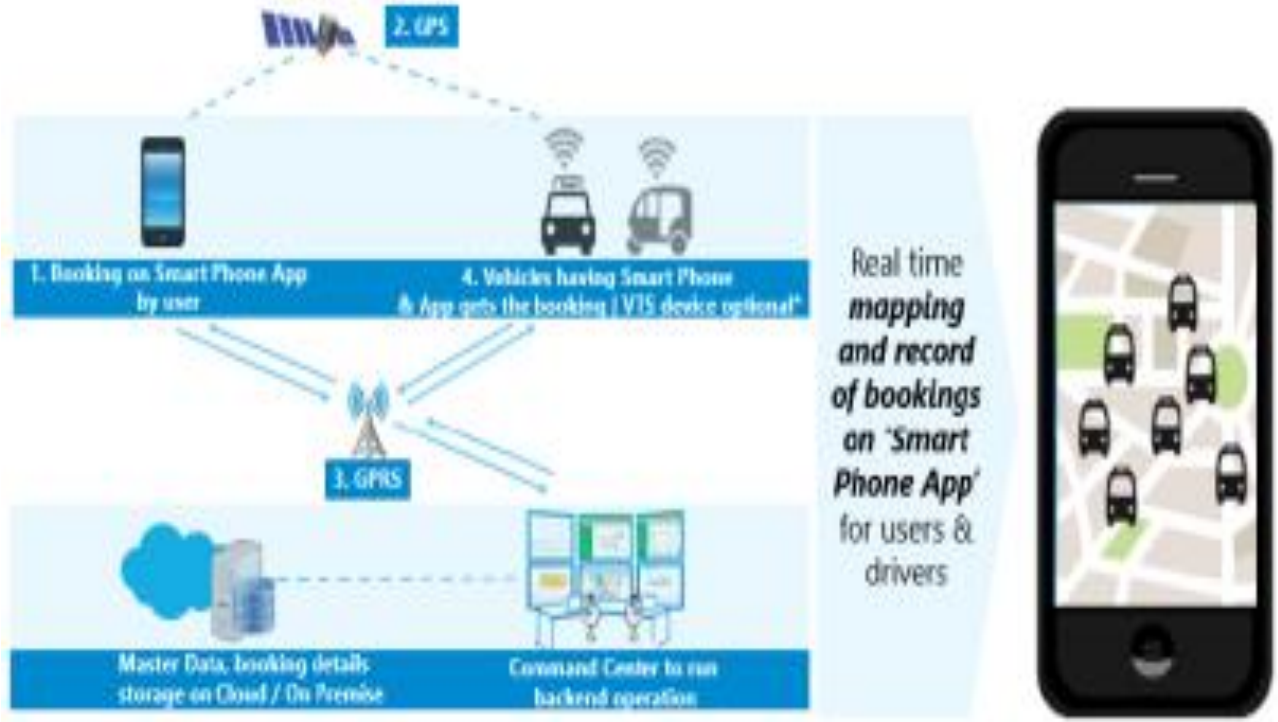
Emergency response team

- This setup enables that any event can be easily monitored and managed through a connected network.



Multi modal passenger information solution

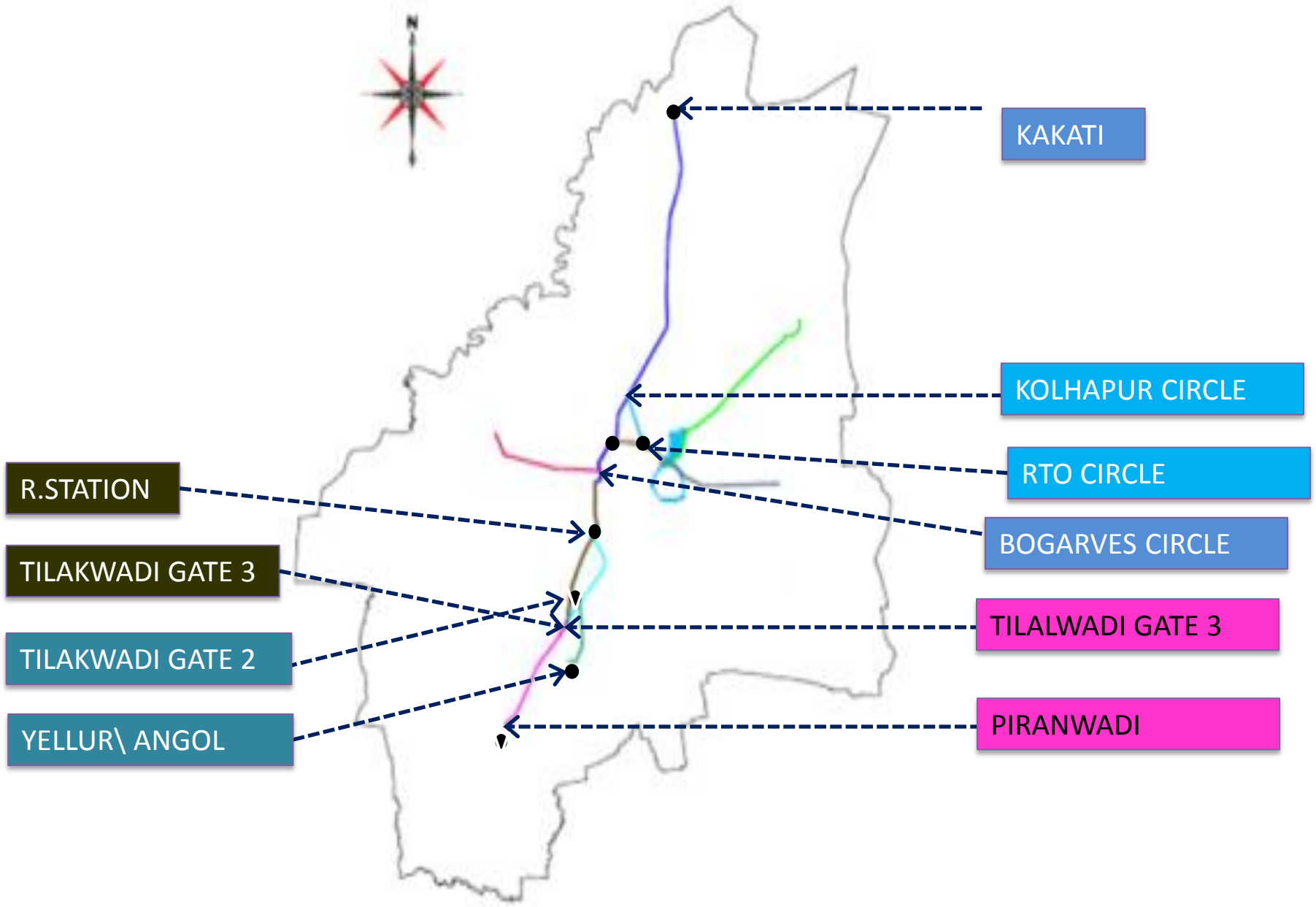
- Provides the features to track and book cabs/autos
- These are tracked from the command center to ensure safety and security 24 X 7



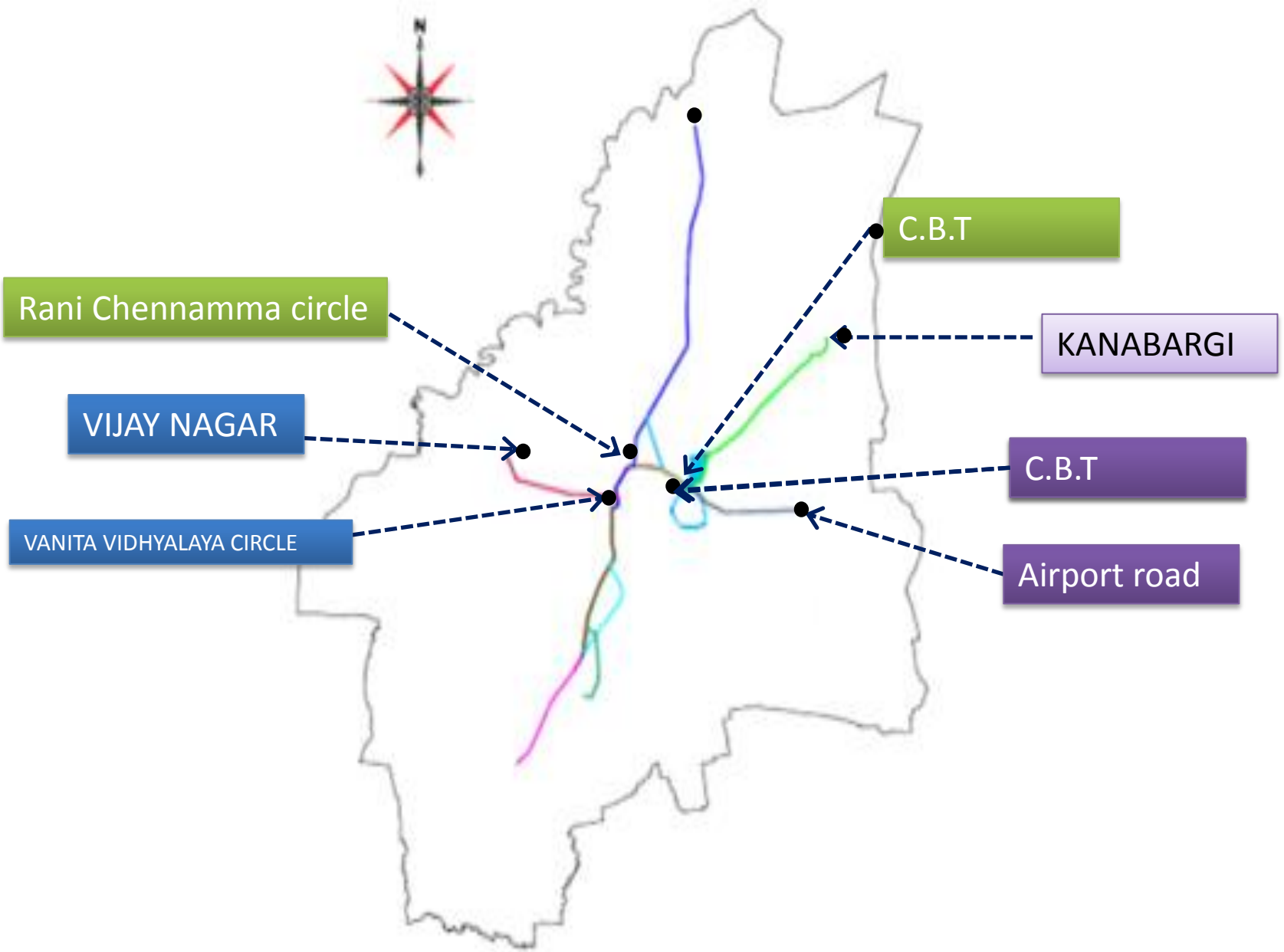
Traffic monitoring & control solution

- WVDs and surveillance cameras help in providing real-time updates on the flow of traffic and also ensure free flow of traffic
- The command center has data on peak zones, peak hours and how traffic can be managed with alternate paths

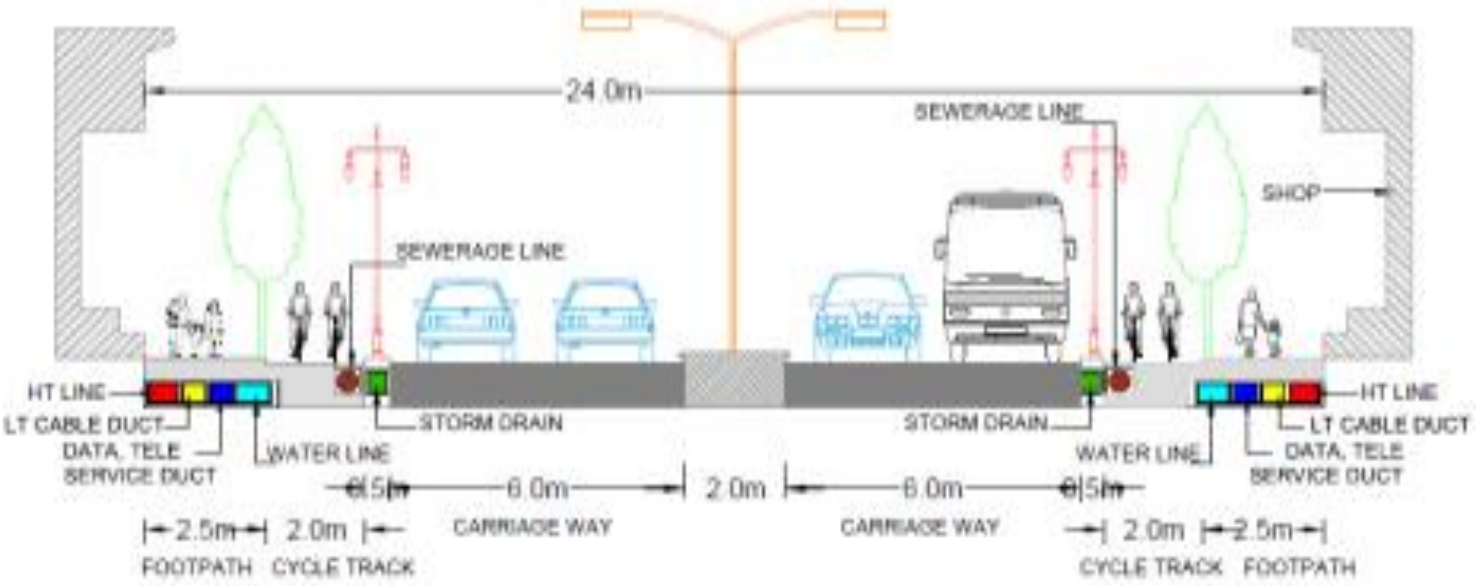
PRIORITY BUS LANES



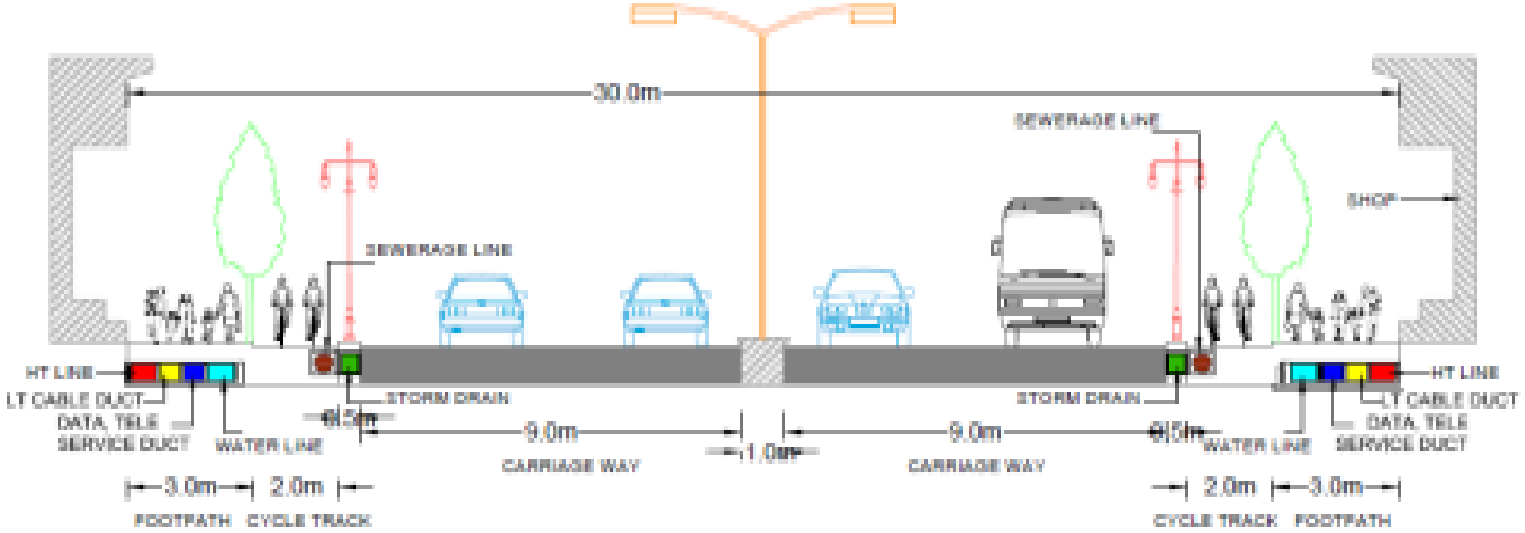
PRIORITY BUS LANES



PRIORITY BUS LANES



24m ROW ROAD CROSS SECTION WITH DEDICATED BUS LANE



30m ROW ROAD CROSS SECTION WITH DEDICATED BUS LANE

PRIORITY BUS LANES

Components

1. Painting
2. Surface Redressing
3. Signage
4. Collapsible Lane Dividers

Cost Estimates

- Rs.28.57 Lakhs per Km
- Project Cost for (36.5x2) 73 Km is Rs.20.86 Crore

BUS TERMINALS

NWKRTC Terminals

1. **Kumaraswamy Layout**
2. **Piranwadi**
3. **Hindwadi**
4. **Railway Station**

- **Funding Sought under Smart City: Rs.90.77 Crores**
- **Expected to contribute Rs.10.29 Crores to the ULB, from lease rentals**

MULTI-UTILITIES FACILITATION COMPLEXES

- **Basement Parking**
- **[Bus Terminus]**
- **Auto Rickshaw stand**
- **Cycle parking & cycle station**
- **Hawking space**
- **Belagavi One**
- **Landscaping** (& open plazas with sit-outs/Fountains)
- **Retail Spaces (Shops, Restaurants etc.**
- **Commercial Office Spaces** (Departments/Private–Incubation Centers/Skill Development Centers etc)
- **Air pollution monitoring station**
- **Developed as Green Building**
  - Rain Water Harvesting,
  - Energy Efficiency,
  - Drinking Water
  - Grey Water Recycling
- **Wifi Zone**

MULTI-UTILITY FACILITATION CENTERS

Model – I (Kumaraswamy Layout & Piranwadi)

FACILITIES	NO.S	PLINT AREA (SQ.M.)	COST (RS.CR.)
Basement (1 level only) Parking (2 Wheelers)	100	2,062.50	4.74
Basement (1 level only) Parking (4 Wheelers)	50		
Bus Terminal	8	1,008.00	5.86
Auto Rickshaw Stand	10	125.00	
Cycle Station & Parking	50	125.00	
Shops	16	178.44	
Public Conveniences	4	76.00	
Belagavi One	4	22.30	
ATM	1	11.15	
Common Areas		516.60	
Ground Floor		2,062.50	
Commercial Spaces (3 Floors)		6,187.50	17.59
25% additional, for Green Buildings			5.86
Hawkers' Spaces	20	59.48	0.40
Landscaping			0.25
Total Built-up		**8,250.00**	**34.71**

Model – II (Hindalga)

FACILITIES	NO.S	PLINT AREA (SQ.M.)	COST (RS.CR.)
Basement Parking(2 Wheelers)	75	1,054.22	2.42
Basement Parking (4 Wheelers)	40		
Bus Terminal	4	420.00	3.00
Auto Rickshaw Stand	8	100.00	
Cycle Station & Parking	30	75.00	
Shops	9	100.37	
Public Conveniences	4	76.00	
Belagavi One	4	22.30	
ATM	1	11.15	
Common Areas	-	249.39	
Ground Floor		1,054.22	
Commercial Spaces (3 Floors)	-	3,162.66	8.99
25% additional, for Green Buildings	-		3.00
Hawkers' Spaces	20	59.48	0.40
Landscaping	-		0.13
Total Built-up	**-**	**4,216.88**	**17.94**

SMART BUS SHELTERS

Smart Bus Shelters

- Display boards / Passenger Information Systems
- Maps with major tourist attractions, information on how to get there
- Drinking water
- Solar panels
- Bio-toilets, Smart bins
- Charging points etc.

1. Ashok circle
2. Lingaraj College
3. Fish market
4. Gogte circle
5. Goaves
6. Nathpai circle
7. Yallur
8. RPD cross
9. Hari Mandir
10. Third (III) gate
11. Udyambagh
12. Peeranwadi
13. Union Gymkhana
14. Ganapati temple
15. Military hospital
16. Ganeshapur
17. Rani Chennamma circle
18. Azamnagar
21. Kakati
22. Hotel Surabhi
23. Ashoknagar
24. Gandhinagar
25. S C Motors
26. Kudachi
27. Fort (Bharatesh School)
28. Mankibagh
29. Patson
30. Naka
31. Suverna Soudha
32. Vadagaon
33. Angol
34. Majagaon
35. Guruprasad colony
36. Shaunagar
37. P&T
39. Anjaneyanagar
40. Dattamandir
41. Harsha hotel
42. Uday school
43. Ganesh circle
44. Ramtirth nagar
45. Sangolli Rayanna college
46. Srinagar
47. Corporation complex
48. Vantamuri
49. Kapileshwar temple
50. Shivaji garden
51. Sadashivanagar
52. Vishveshwar Nagar
53. Kotekere circle

SMART BUS SHELTERS

FACILITY	COST (RS.LAKHS)
Smart Bus Shelter	3.50
Drinking Water Facility	1.50
Solar Paneling (1KW)	0.70
E-Toilet	5.00
Cost per Smart Shelter	**10.70**
No. of Shelters	53.00
Total Cost	**567.10**

PARATRANSIT

Streamlining paratransit to ensure last mile connectivity

- **Battery operated <u>shared</u> auto-rickshaws plying inside the inner city**
- **An auto-hailing app on the lines of “Ola” is proposed.**

Battery operated Autorickshaw

Promotion of battery operated Auto-rickshaw

PARATRANSIT

FACILITY	COST (RS.LAKHS)
Electric Vehicle Charging Station	3.50
Drinking Water Facility	1.50
Solar Paneling (1KW)	0.70
E-Toilet	5.00
Cost per Station	10.70
No. of Station	8
Total Cost	85.60

Area contained by Inner Ring Road = 7.95 sq.Km

Improving Non Motorized Transportation Walkability & Cycle Track

Pedestrian Walkways

- Every road of ROW 9m (30 ft.) & above should have footpaths for pedestrians, on either sides

Road Width	Road Length		
	Overall	Area Based	Pan City
9m	474.83	120.56	354.27
12m	220.63	25.52	195.10
13.5m	6.97	1.00	5.97
15m	41.71	0.87	40.84
18m	10.58	8.09	2.49
24m	70.81	12.52	58.29
30m	90.13	9.56	80.57
36m	18.43	4.27	14.17
60m	3.65	-	13.65
Total	**947.75**	**182.40**	**765.35**

Cycle Tracks

- Dedicated cycle lanes in all roads of width 15m (50 ft.) and above

Road Width	Road Length		
	Overall	Area Based	Pan City
15m	41.71	0.87	40.84
18m	10.58	8.09	2.49
24m	70.81	12.52	58.29
30m	90.13	9.56	80.57
36m	18.43	4.27	14.17
60m	3.65	-	13.65
Total	**245.32**	**35.32**	**210.01**

Pedestrian Walkways

- Exclusive of Footpaths covered under Area Based Development
- Of the Footpath length of 1,530.70 Km, PWD has undertaken improvement of 113.8 Km

Road Width (m)	Road Length (Km)	Foot Path Width (m)	Foot Path Length (Km)	Cost (Rs.Cr.)
9.0	354.27	1.5	708.53	9.20
12.0	195.10	2.0	390.20	67.56
13.5	5.97	2.0	11.94	2.07
15.0	40.84	2.0	81.67	14.14
18.0	2.49	2.0	4.99	0.86
24.0	58.29	2.0	116.58	20.19
30.0	80.57	2.5	161.13	34.87
36.0	14.17	3.0	28.34	7.36
60.0	13.65	3.0	27.31	7.09
Total	**765.35**		**1,530.70**	**163.35**
Work undertaken by PWD			113.81	
Work to be undertaken under Smart City			**1,416.89**	**151.20**

Cycle Tracks

- Cycle tracks in Pan City (excluding tracks covered under Area Based Development) is estimated as 420 Km
- PWD has undertaken work on creating cycle tracks on 6 Km of Atal Bihari Vajapeyi Marg

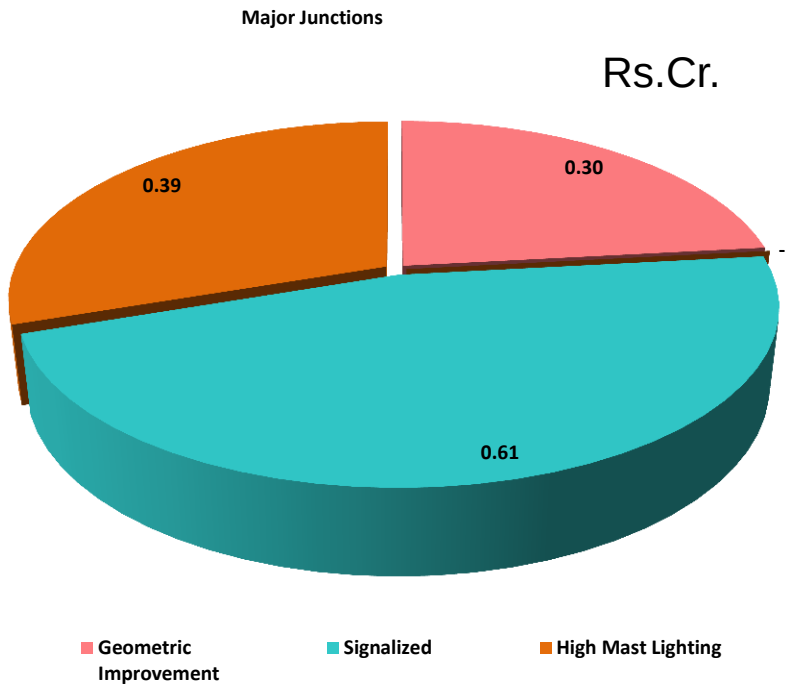
Road Width (m)	Road Length (Km)	Cycling Track Km (2m Width)	Cost (Rs.Cr.)
15.0	40.84	81.67	14.14
18.0	2.49	4.99	0.86
24.0	58.29	116.58	20.19
30.0	80.57	161.13	27.90
36.0	14.17	28.34	4.91
60.0	13.65	27.31	4.73
Total	**765.35**	**420.02**	**72.73**
Work undertaken by PWD		12.00	

JUNCTIONS IMPROVEMENT

Major Junctions

#	Name
1	OLD PB ROAD – BYPASS JUNCTION
2	VANITA VIDYALAYA JUNCTION
3	RANI CHENNAMMA CIRCLE
4	NATHPAI CIRCLE
5	DHARAMVEER SAMBAJI CIRCLE
6	APMC MARKET YARD JUNCTION

Geometric Improvement	Signalized	High Mast Lighting	Total(in Cr
0.30	0.61	0.39	1.31



JUNCTION IMPROVEMENT

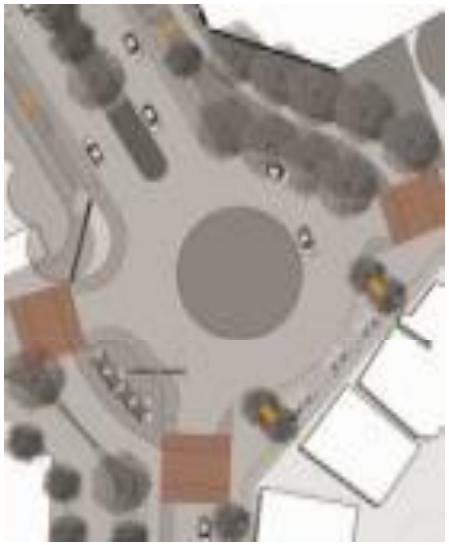


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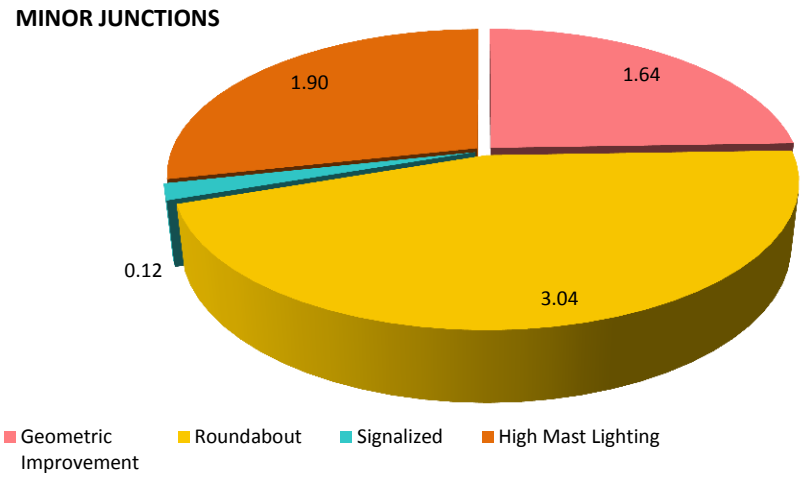
TABLE TOP CROSSING

PB Road Junction

JUNCTIONS IMPROVEMENT

Minor Junctions



GEOMETRIC IMPROVEMENT	ROUND ABOUT	SIGNALIZED	HIGH MAST LIGHTING	TOTAL
1.64	3.04	0.12	1.90	6.71

#	Name
1	Kolhapur cross
2	RTO Circle
3	Triveni Circle
4	Nityanand Cross
5	Gandhinagar
6	City Bus Stand Circle
7	Mujavar Kot (Bhavi Met)
8	Pimpal Katta
9	NB Chowk
10	Kambli Koot
11	DC Gate
12	VishVeshwara nagar cross
13	Kaktives Road
14	Ganesha Temple
15	Ganapati Gali

#	Name
16	Sambra Underbridge
17	Club Road
18	Sanman Cross
19	Kirloskar Road
20	Maruthi Galli
21	Huns Talkies Road
22	Sambhadevi Galli
23	Ramdev Galli
24	Globe Cross
25	Fish Market
26	Shanivar Kot
27	Kadha Bazaar Road
28	Ravivar Pet
29	KLE Road

POWER DISTRIBUTION – HT & LT LINES

Existing Scenario

Line	Length in Ckt. Km
HT Line OH	423.0
HT Line UG	7.9
LT Line OH	905.0

Conversion of OH HT Line to UG HT Line

- **HESCOM has undertaken conversion of 11KV OH HT Line to 11KV HT UG cable in ENTIRE BELAGAVI city, at a project cost of Rs.316.27 Crores**

Adoption of IT

- **HESCOM has implemented IT Solutions through funding from PFC, at a cost of Rs.2.5 Crores.**

Strengthening of Distribution Network

- **HESCOM plans to strengthen the distribution network of Belagavi City**
- **Plans to introduce Digital Metering**
- **Estimated project cost of Rs.24.81 Crores, funded by Power Finance Corporation (PFC)**

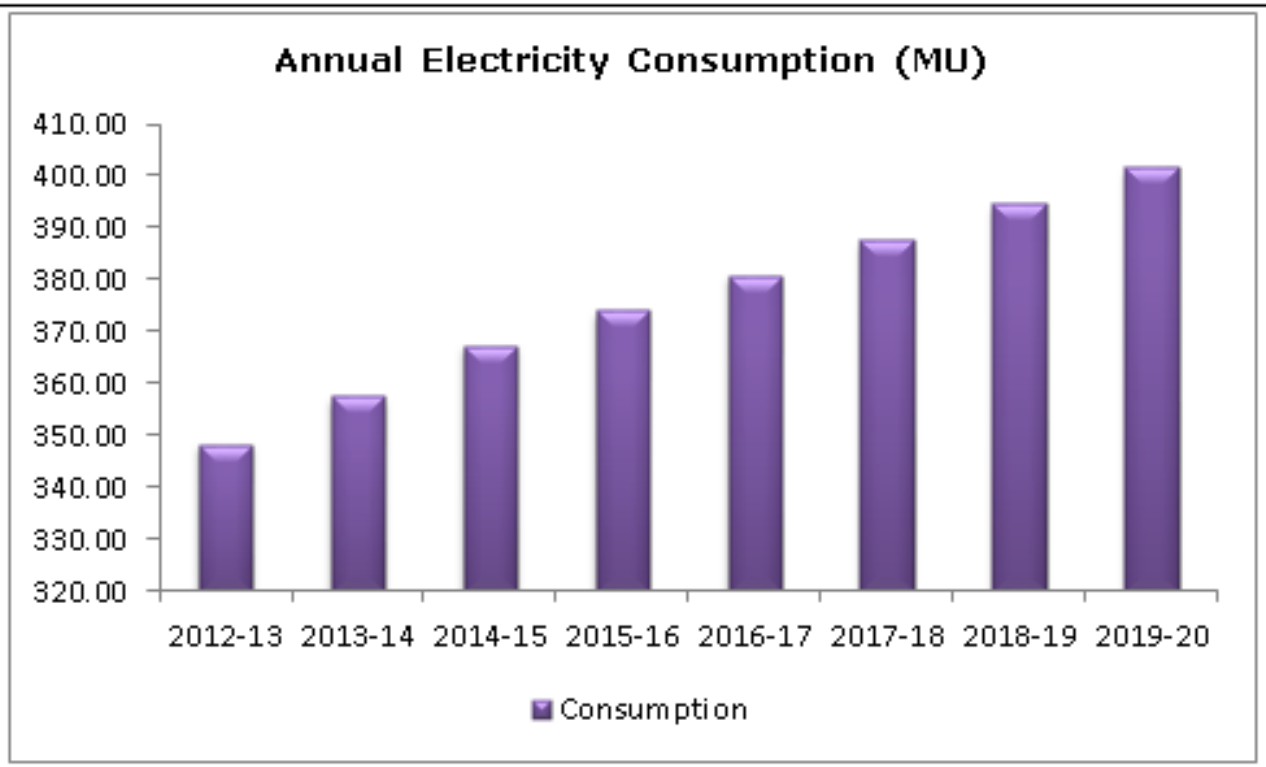
- **HESCOM is planning to go for underground cabling of all LT lines under urban area.**
- **Total Length of the line which needs to be converted into underground cabling is around 247 ckt. Km**
- **Estimated cost for the shifting of overhead LT lines to UG LT Lines would be around Rs.104 Crores.**

RENEWABLE ENERGY & ENERGY EFFICIENCY – PROJECTIONS

Year	Consumption (Mil Units)
2012-13	348.20
2013-14	357.40
2014-15	367.38

Based on trend analysis of the total electricity consumption data for Belagavi urban sub-division for the past three years, by 2019-20, the annual electricity consumption of Belgaum urban sub-division would be around 402 MU in BAU scenario.

Total Projected Annual Electricity consumption (MU) in BAU scenario



Source: HESCOM & Darashaw Analysis

Adoption of IT

- **Targeted Generation: 10% = 40.2 MU**
- **Targeted Capacity: 24.15 MW**

Renewable Energy Potential – Solar Roof Top & Wind

SOLAR ROOFTOP

SECTOR	IDENTIFIED CAPACITY (MW)	ESTIMATED GENERATION (MU)	INVESTMENT (RS. CRORE)
EXISTING	**0.5**	**0.8**	
KSWC (ON PPP)	**6.0**	**8.4**	**36.3**
kuws & db	**1.6**	**2.2**	**9.5**
RESIDENTIAL (200 GROUP HOUSING SCHEMES OF AVERAGE AREA 6,000 SQ.FT. ROOF TOP)	**1.2**	**2.0**	**7.3**
MUNICIPAL/PUBLIC BUILDINGS	**7.6**	**12.6**	**46.0**
INSTITUTIONS	**2.0**	**2.8**	**12.1**
MULTI-UTILITIES FACILITATION COMPLEX & NEW CITY CENTER	**1.7**	**2.5**	**10.3**
TOTAL	**18.9**	**31.9**	**121.5**

WIND ENERGY

Particular	Units
Installed Capacity	**59.0 MW**
Terminating in Belagavi	**10-15 MW**

Renewable Energy Potential

- **Proposed 18.9 MW (Rs.121.5 Crore investment) may be undertaken under PPP**

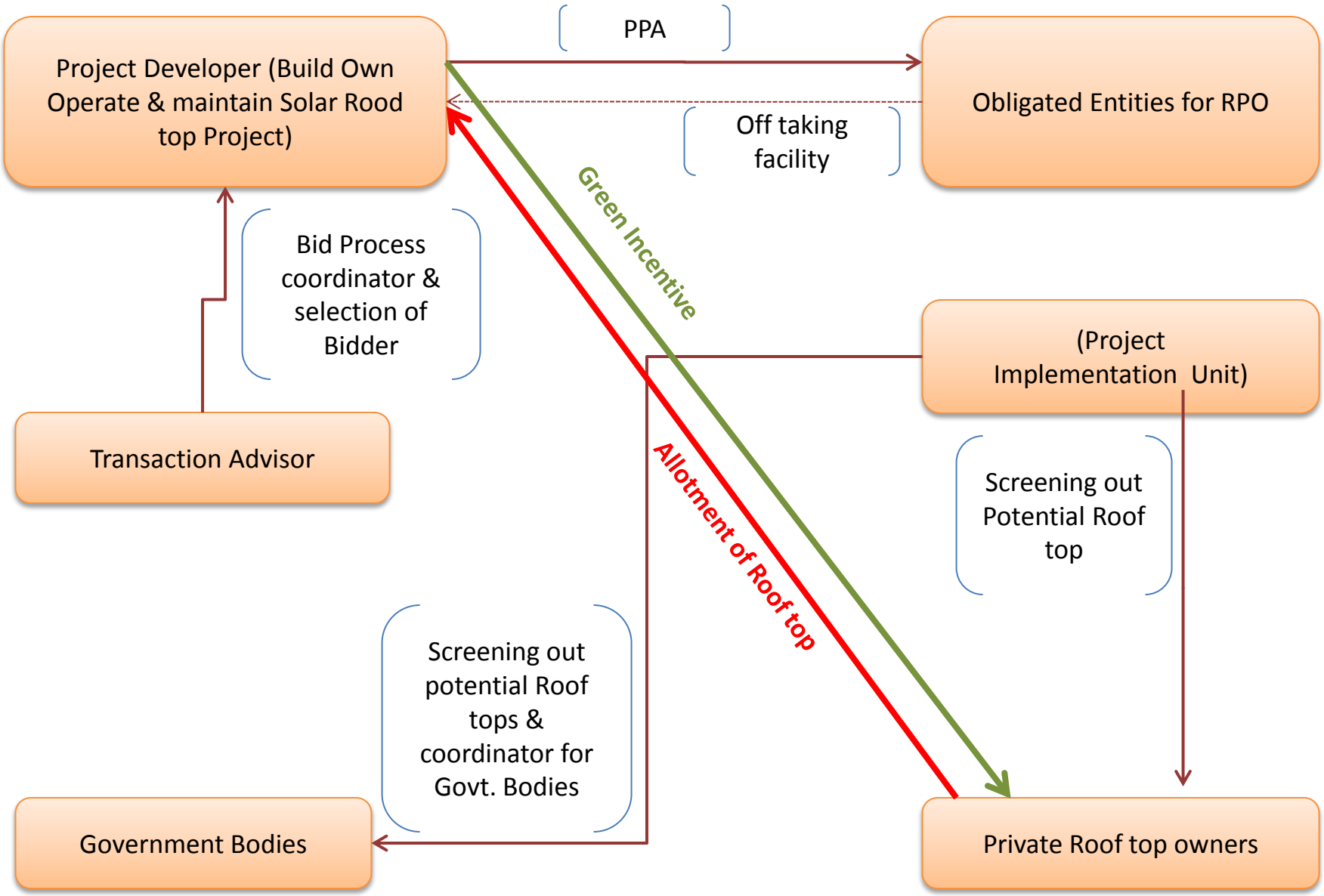
- Note: Karnataka State Warehousing Corporation is working on PPP Business model for solar rooftops on their existing, under construction and proposed construction warehouses in Karnataka
- Capital cost: Rs. 6.05 cr/MW as per CERC order dated 31.03.2015 on Bench marking costs
- 15% Capital subsidy is available for all

ENERGY EFFICIENCY – LED STREET LIGHTING

PROPOSED ENERGY EFFICIENCY MEASURES FOR BELAGAVI – STREET LIGHTS			
Energy Efficiency Strategy - Municipal	**Target No.s**	**Investment(Rs.Crores)**	**Energy Saved p.a. (MU)**
Replacement of High Mast Tower lights of 40W Tube Light with LED lights of 18 W	10,620	1.22	1.44
Replacement of High Pressure Sodium Vapor Lamps of 250W with LED lights of 120 W	16,002	17.28	8.35
Replacement of Metal Halide of 400 W with LED lights of 180 W	1,892	2.83	1.67
TOTAL		**21.33**	**11.46**

Corporation can work on PPP ESCO Business Model to implement this project

PAN CITY ROOFTOP SOLAR PV – PPP MODEL



WATER SUPPLY

- **24x7 Water Supply Project to cover entire areas of City Corporation of Belagavi through SPV: Rs.663 Crore (World Bank aided project).**
- **Construction of Water Treatment Plant at Basavanakolla Hillock, 2 ELSRs of 1.5ML capacity each with allied works taken up with the internal revenue generated by the City Corporation: Rs.35.94cr.**
- **Quality monitoring & triggering – based on pH ratio & other quality parameters**
- **Quantity – 24X7 coverage**
- **Billing and online payment**
- **Water filters 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**
  - **Leakage detection**
  - **Modular rejuvenation of open wells, augmentation of surface su**
  - **Water Quality monitoring (pH metering)**
  - **Digital metering**

SANITATION – PUBLIC CONVENIENCES

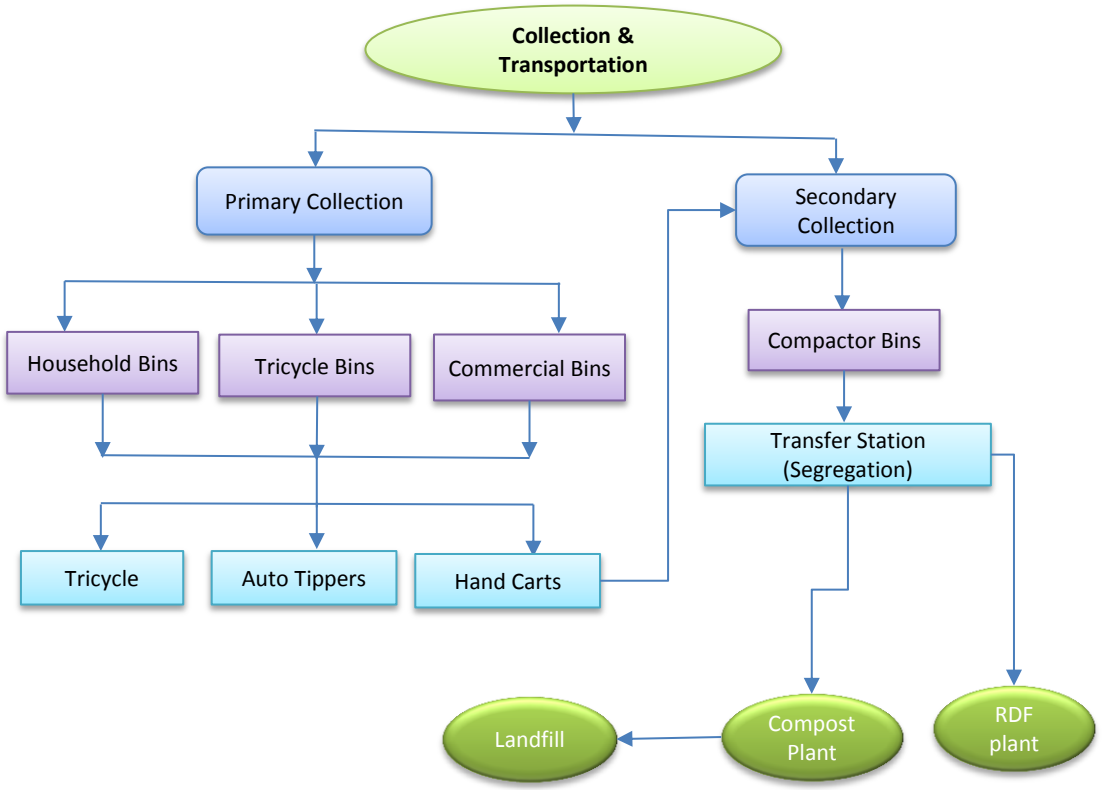
PUBLIC TOILETS

- Providing Public Convenience and utilities (2 in each ward)
- Easily accessible for physically challenged people
- High emphasis on cleanliness of the toilet units.
- Roof top Solar Panels (Optional)
- To ensure sustainability of operation and maintenance, operators are given the rights of advertisement which can be displayed around the units of public amenity.

No of Wards, excluding ABD	37
No. per Ward	2
Cost per Toilet Block	15.96
TOTAL COST (RS.CR)	**11.81**

SOLID WASTE MANAGEMENT

- 100% door to door collection with infrastructure for segregation at Source. Separate bins for collection of wet and dry waste.
- Infrastructure for collection of Segregated Waste.
- Material Recovery Unit
- Compost Plant
- RDF Making Plant
- Bio-methanation Plant
- Final Disposal Facility.



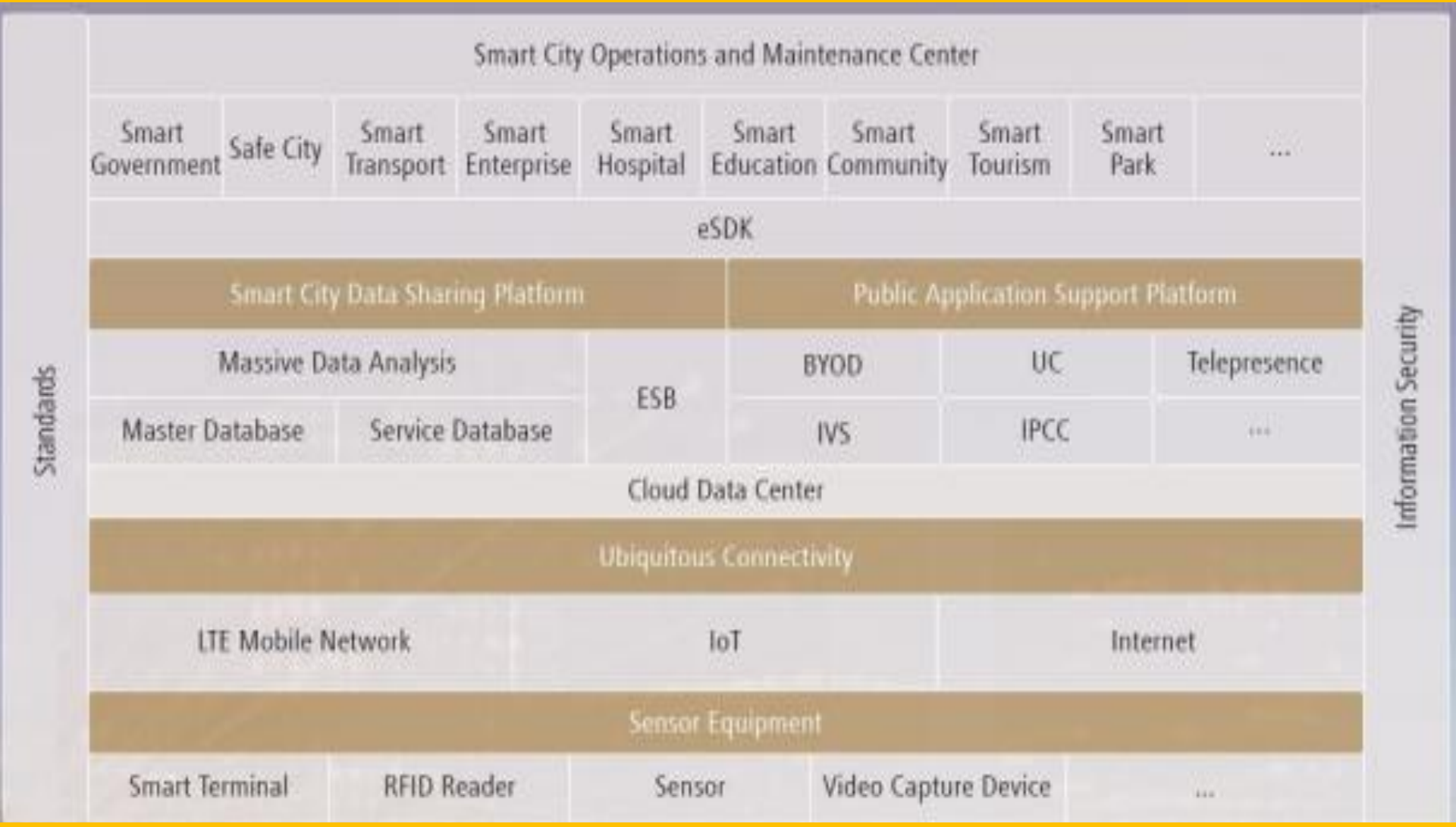
#	DESCRIPTION	AREA REQ. (ACRES)	COST (RS.LAKHS)
1	Infrastructure for Primary and Secondary Collection with segregation	0	3048
2	Compost Plant	8.4	1164
3	Biomethanation Plant	0.5	115
4	RDF	3	165
5	Landfill	23.04	1052
	Total	34.94	5544

ICT ELEMENTS

ICT ENABLEMENT FRAMEWORK

ICT COMPONENTS IN SMART CITY

LOGICAL VIEW OF ICT ARCHITECTURE



IT TECHNOLOGIES USED

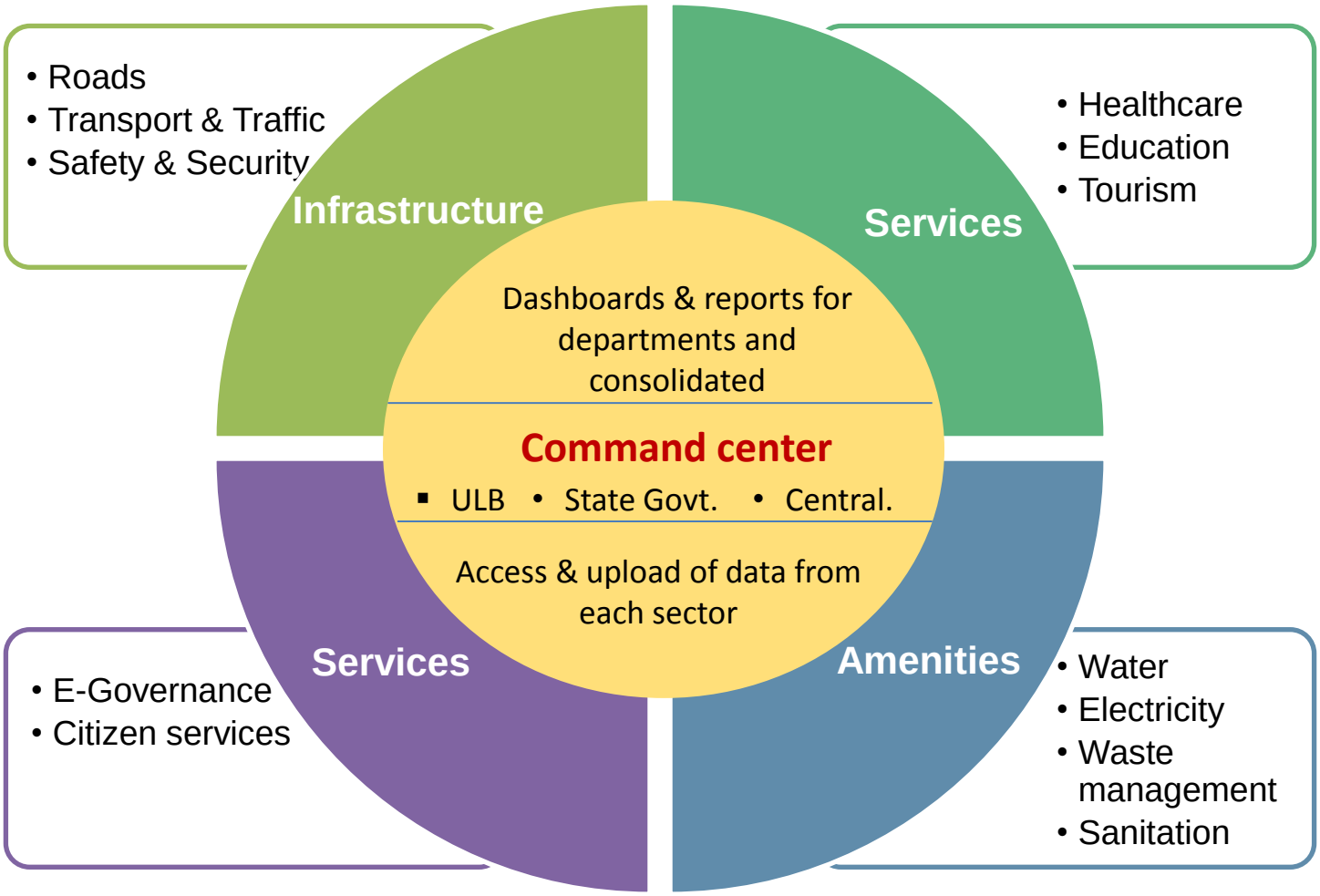
- ADSL
- VoWLAN
- WIFI
- Network
- MAN
- CRM
- Digital Radi
- WAN
- Wide Band
- LAN
- Sensors
- DTT
- GPRS
- Radiolink
- Optical Fibr

Key Product / Service Provider Roles in Smart City Ecosystem

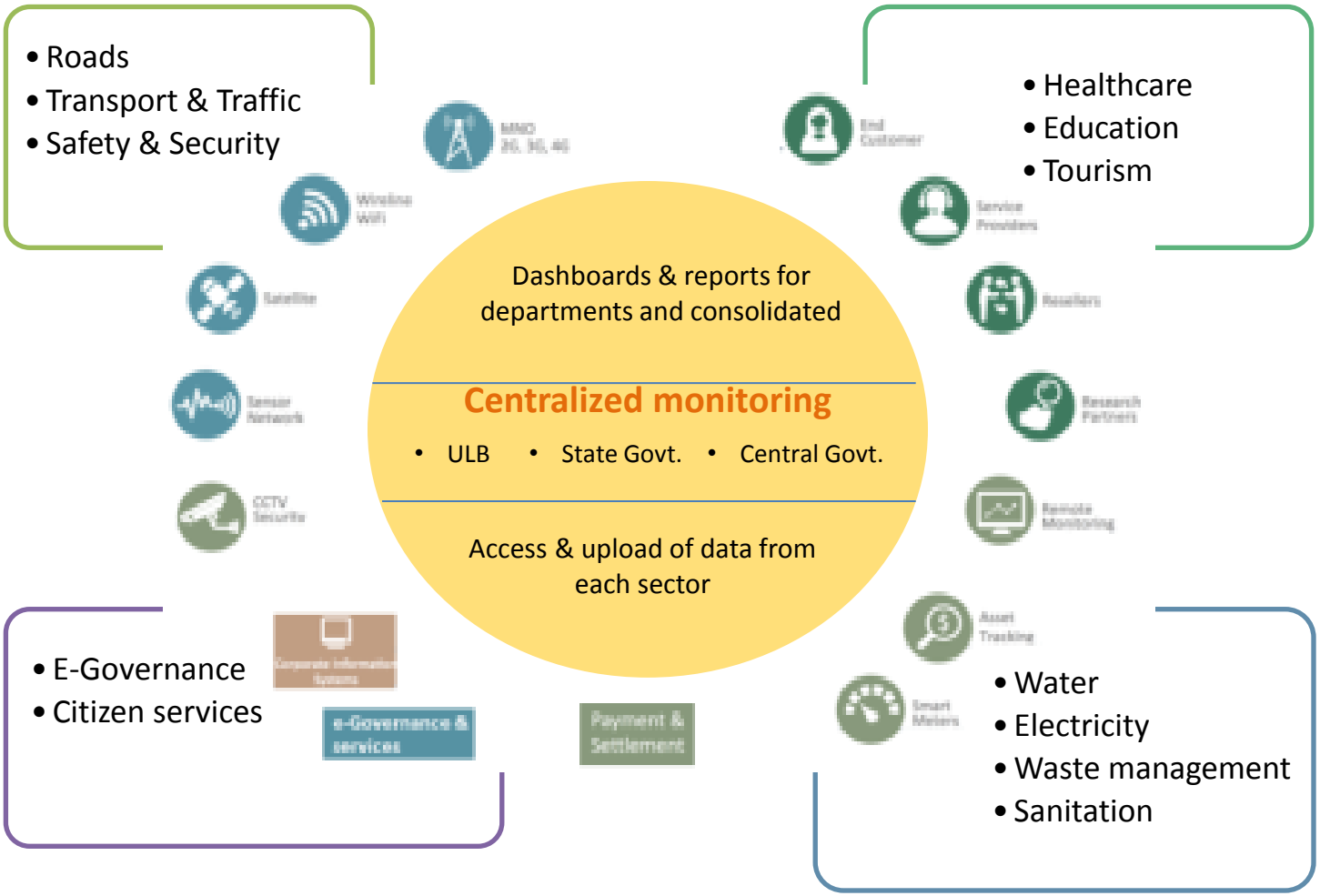
Integrators, network service providers, product vendors, and managed service landscape in the smart city ecosystem

Products / Services	Integrators	Network Service Providers	Pure-Play Product Vendors	Managed Services
	Software Focused	Communication Focused	Infrastructure Focused	Operations Focused
Existing case examples	Pre-packaged platforms	Collaborative networks	Hardware and Assets	Maintenance
Smart Clouds	✓	✓		
Centralized Collaborative Dashboards	✓	✓	✓	
Data Integration	✓			
Unified Communications	✓	✓		
Location Based Services and Transportation Platforms	✓	✓	✓	
Telepresence and virtual public services (education, healthcare)	✓	✓	✓	✓
Wireless Sensor Networks		✓	✓	
Grid monitoring and control	✓		✓	✓
Smart Buildings (materials and sensors)			✓	✓
Electric Charging Infrastructure			✓	✓
Asset tracking and management	✓	✓	✓	✓

ICT SOLUTIONS FOR CENTRALIZED MANAGEMENT

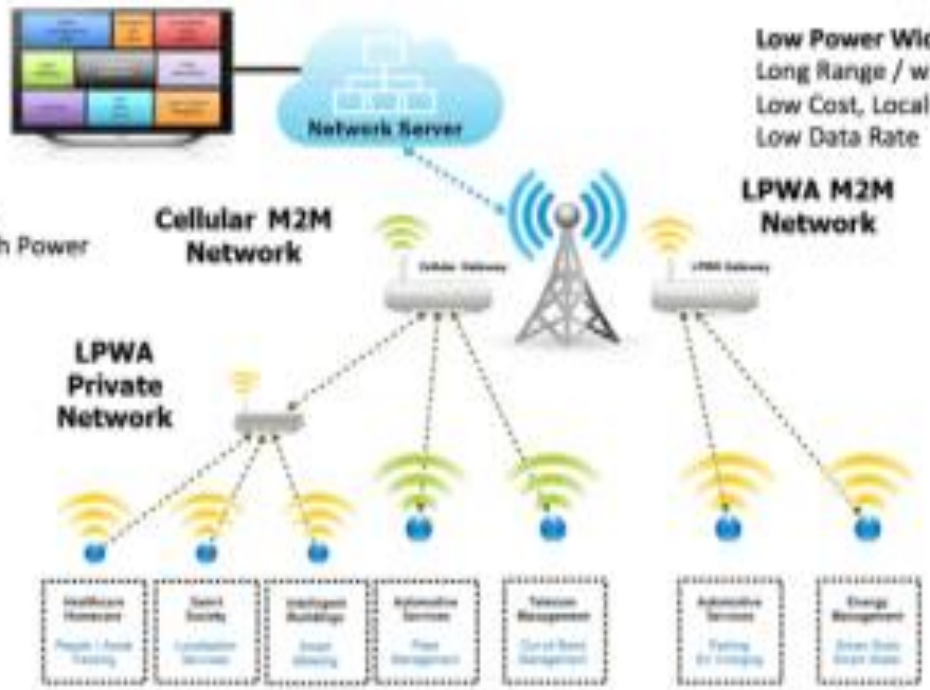


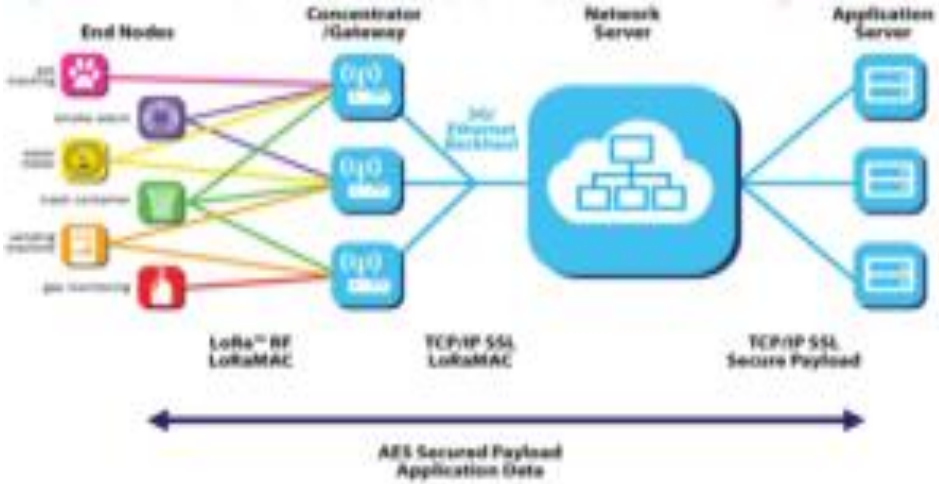
CENTRALIZED MONITORING – ACCESS ALL SECTORS DATA



COMMUNICATION NETWORK – FOUNDATION FOR ALL SOLUTIONS

Ensuring connectivity using different networks





Ensuring security across connections and applications

WHAT IS REQUIRED FROM ICT

- Smart City framework
  - Framework helps capture various cross-city governance processes that deliver benefits based on core guiding principles and taking due account of critical success factors.
- Domain knowledge model
  - The aggregation of multi-source and heterogeneous data and service needs a set of unified concepts and terminologies. In addition, the development of applications needs the support of common knowledge of Smart Cities. In order to support cross-domain and cross-city interoperation of knowledge, a core concept model specifies terms from different stakeholders, supports semantic understanding and provides a standardized expression of knowledge. Such a model should be completed with a taxonomy of (smart) device types (such as types of sensor, mobile devices, hardware, software, systems, etc.); Smart Cities sectors (such as health, transport, governance, etc.); and 'components' within each sector (such as medical devices, analytics, for health; buses, trams, for transport; etc.).
- Data and services model
  - Using Open systems interconnection as a template, a data a services model would reflect the data, communications, service and application layers that are used by citizens, businesses, and city authorities. Such a model would provide an adequate technical view of and for a more general Smart City model.
- Data flows
  - Data is created in social and physical systems, collected, transmitted, stored and possibly shared before the data can be analyzed, displayed and finally used to make decisions. At each step, different stakeholders are involved and technical challenges to be addressed (e.g. related to interfaces and interoperability) as well as social issues (e.g. privacy, security, monetization). Such data flows need to be observed within as well as between different systems and help understand where further standards may be needed.

There is no specific need for products or solutions such as ERP for Smart Cities if these guidelines are followed. Rather the critical part is to enable integration between different systems to ensure proper data flow

OVERALL PRINCIPLES FOR ICT INTERVENTION

- Ubiquitous computing
  - computing can occur using any device, in any location, and in any format
- Geospatial information
  - Spatial referencing by coordinate and name; web mapping and related features; location based service for tracking and navigation; linear referencing; ubiquitous public access and place identifier linking; land administration modelling; sensor modelling; and core geospatial terminology
- Transparency of information
  - Transparency towards the end users on how their information is being used, with clear opt-in options and secured environments, has to be the starting point when providing services that leverage personal data.
- Metadata and data standardization
  - Enables comparability and comprehensibility, publishing of more fine granular data through mechanisms for automatic anonymization or pseudonymization of data sets.
- Networking
  - Broadband capacity with FTTH, 4G LTE and IP Multimedia Systems (IMS) as well as future networking technologies to enable the democratization, in terms of reasonable cost for high quality service, of Immersive Digital Environments

ICT COMPONENTS IN SMART CITY (CONTD..)

- Big Data
  - A Smart City, as a “system of systems”, can potentially generate vast amounts of data, especially as cities install more sensors, gain access to data from sources such as mobile devices, and government and other agencies make more data accessible.
- Geographic information system (GIS)
  - GIS is used to provide location based services. The implementation of a GIS in Smart City is often driven by city jurisdictional, purpose, or application requirements. GIS and location intelligence applications can be the foundation for many location-enabled services that rely on analysis, visualization and dissemination of results for collaborative decision making.
- Cloud computing
  - Cloud computing is increasingly helping the private sector to reduce cost, increase efficiency, and work smarter.
- Service Oriented Architecture (SOA)
  - Pre-built integration into back-office applications and multi-channel access to maximize citizen self-service results in higher efficiencies and cost savings, and must be implemented with a SOA that facilitates a fully shared environment.
- Embedded networks and Internet of Things (IoT)
  - Enabling connectivity across devices and facilitating automation

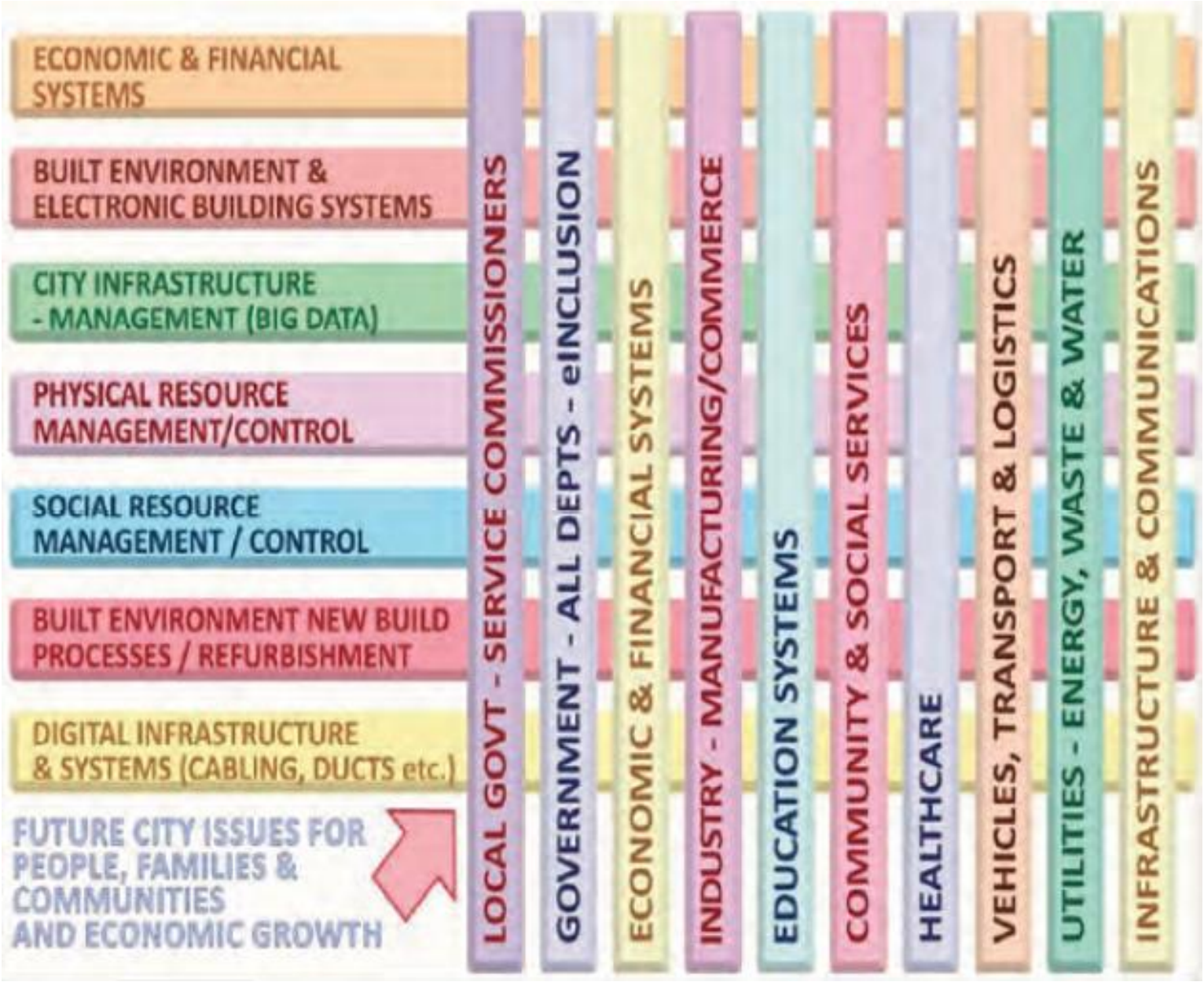
SYSTEM INTEGRATION MATRIX

SG Smart City IT and JTC 1 Systems Integration Matrix

Version 0.3, 2014-09-15

	Governance and Management	Engineering	Security	Sensors	Actuators	Tags	Networking	Middleware	Clouds	Data and Ontologies	Big Data	GIS	Cloud Computing	SOA	Internet of Things	Analytics Applications	Transactional Applications	Collaborative Applications	Control Applications
SC 02 Coding							X				x				x				
SC 06 Network											x								
SC 07 Sw&Sys		X									x		x	x	x	x	x	x	x
SC 17 Cards ID																			
SC 22 Prog. Lang																			
SC 23 Disk																			
SC 24 Graphic										x		x							
SC 25 Interc.						x													
SC 27 Security			X										x						
SC 28 Office Eq.																			
SC 29 Multimed.										x									
SC 31 Data Cap						X										x			
SC 32 Data Int.										X	x				x				
SC 34 Doc.																			
SC 35 User Int.																			
SC 36 Learn																		x	
SC 37 Bio			X																
SC 38 Middl		x						X	X				X	X	x				
SC 39 IT Sust.	x	x																	
SC 40 Gov & M	X	x							x										
SWG 2 Acc												x							
SWG 5 IOT				x	X	x	x				x	x			X		x		x
WG 7 Sensor Ntw				X			x				x				x				
SG Big Data											X	x	x			X			

FACILITATION THROUGH ICT



URBAN MOBILITY

Guiding principles	Intelligent transport system, Ensure connectivity, smooth traffic flow, track and monitor

Key processes

Business objectives
- Continuity of public transport
- Generate revenue and enable multi modal commute

Citizen centricity
- Ease of transport
- Availability of information
  - schedule, outage, locations etc.
- Smart ticketing
- Tracking
- Last mile connectivity
- Safety

Technology components
- GPS, GIS
- CCTV camera
- Sensor
- Web app and Mobile app
- GPRS, Wi-Fi communication

Critical success factors	Integration between providers, real-time information, police, surveillance, Sensors, incident management and response
Cost **12 crores**	Network, Sensors, CCTV cameras, web & mobile apps, GIS & GPS communication
Funding	To be funded in Smart City

IMPROVING URBAN MOBILITY THROUGH ICT

Feature

Stage I

- Bus lanes are marked
- Bus information is published through apps and on digital boards
- Auto or quadri-cycle information is enabled

Stage II

- Monitoring of bus movement and speed
- Ability to book last mile connectivity
- Integrated city information
- Alternate channel information
- Route guides
- Bicycle parking and renting facilities
- Automated alerts for important events and diversions
- Alerts for road work

Improvement

Marked zones for buses, Cycle tracks, Standardization of carriageway

Monitoring of vehicular movement through CCTVs

Traffic tickets (challans) and enforcement through electronic means

Residential, school and hospital zones marked

ICT initiative

GIS and GPS enablement (in stage I 54km of roads, zone control in stage II)

CCTV monitoring (currently only 19 cameras are enabled), need to augment to 12 + 38 + 88 in Stage I and another 54 + 17 + 70 in Stage II

Integrated monitoring through a central monitoring team

Parking is monitored through tickets and location CCTV

Integrating with city information

Integration with Smart phone apps for cabs, autos and other modes

E-GOVERNANCE

Guiding principles	Citizen services, Department level coordination Central monitoring and command center for the entire city

Key processes

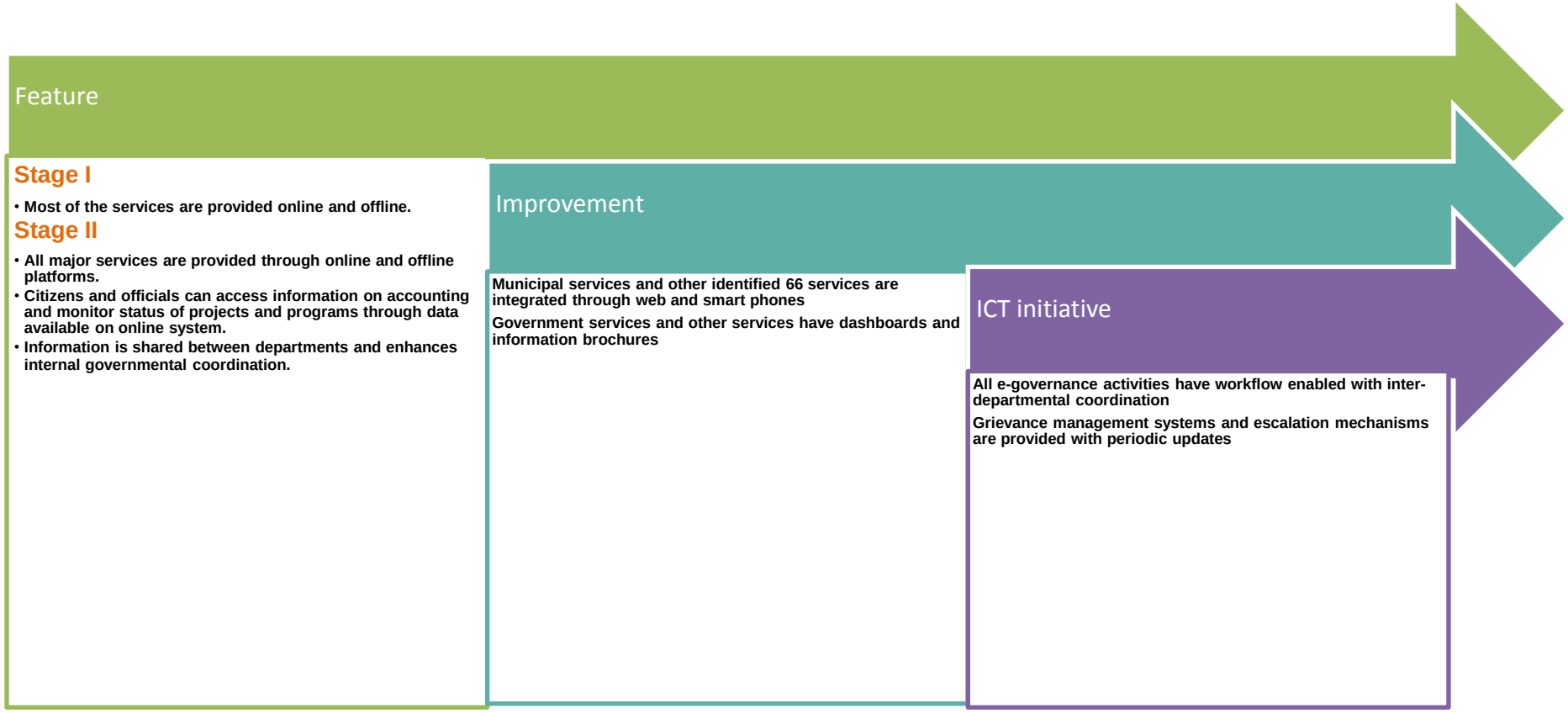
Business objectives
- Access to information
- Enable citizen services
- Information delivery across departments
- Operation management and coordination across sectors

Citizen centricity
- Information and public service data
- Requests and services provisioned
- Notifications
- Updates and alerts

Technology components
- Command center
- Citizen service charters
- Integration
- M2M – IoT (meters)
- Web app and Mobile app
- GPRS, Wi-Fi communication

Critical success factors		Integration between departments & providers, real-time information, police, surveillance, Sensors, incident management and response
Cost	**12 crores**	Network, Sensors, CCTV cameras, web & mobile apps, GIS & GPS communication, Command center
Funding		To be funded in Smart City

E-GOVERNANCE THROUGH ICT



ELECTRICITY

Guiding principles	Assured electricity supply with at least 10% of the Smart City's energy requirement coming from solar power

Key processes

Business objectives

- Ensure optimum utilization of energy
- Renewable energy sources providing power for the city requirements
- Enable smart metering

Citizen centricity

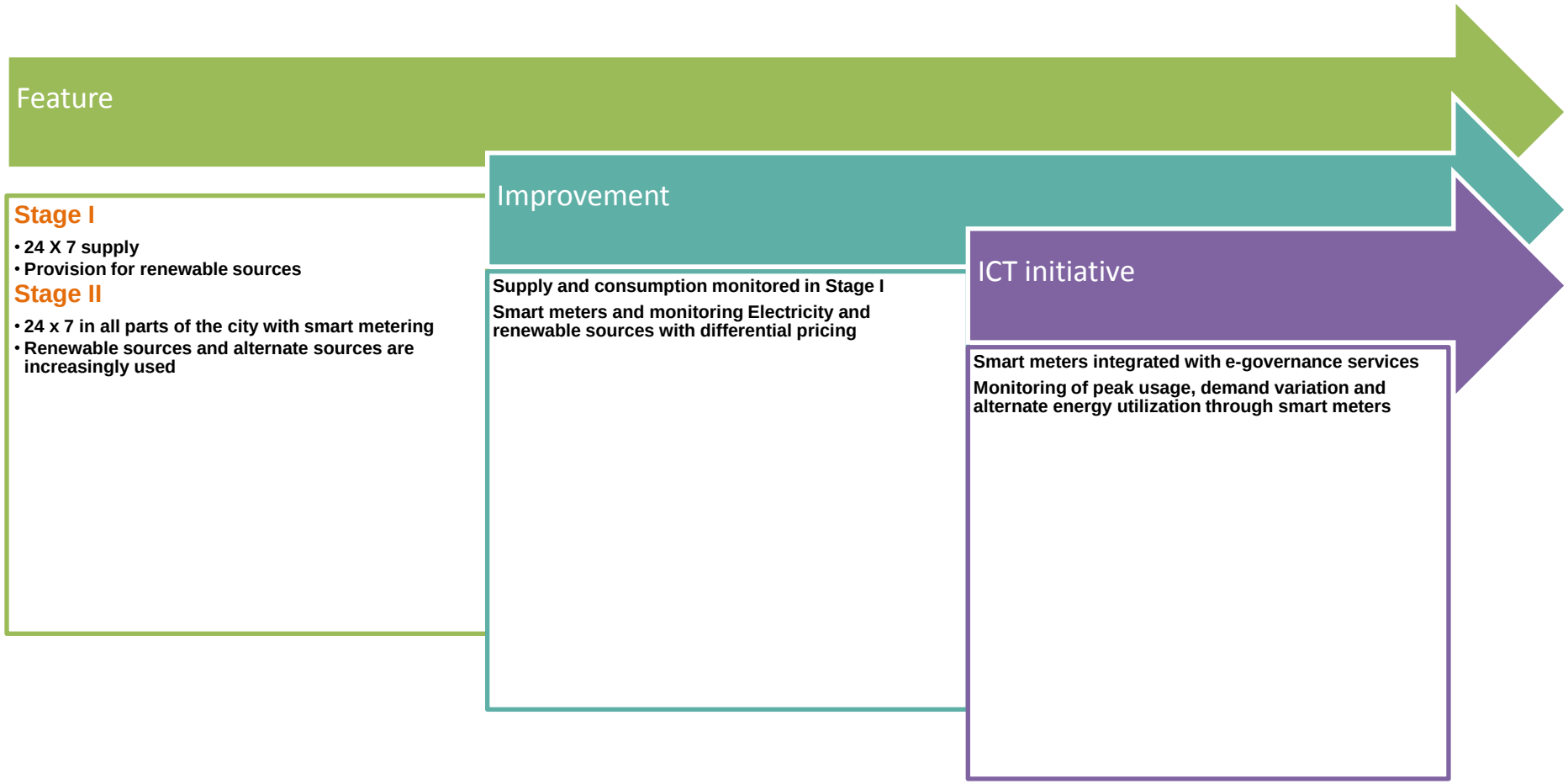
- Uninterrupted supply
- Charged based on usage
- Enable optimization of usage and reduction in bills

Technology components

- Smart meters
- Web and Mobile apps

Critical success factors		Integration between providers, real-time information, deployment of smart meters, provision of grids
Cost	**60 crores**	Network, Sensors, web & mobile apps, GIS communication Cost of meters is shared among consumer, electricity dept and ULB
Funding		60 crores to be supply by HESCOM (recovered from consumer on annuity basis)

ELECTRICITY MANAGEMENT THROUGH ICT



WATER

Guiding principles	Assured 24 X 7 water supply

Key processes

Business objectives	Citizen centricity	Technology components
• Ensure 24 X 7 supply • Enable smart metering and optimization	• Uninterrupted supply • Charged based on usage • Enable optimization of usage and reduction in bills	• Smart meters • Web and Mobile apps • Sujal water filters for public (on roads)

Critical success factors		Integration between providers, real-time information, deployment of smart meters, provision of redundant sources
Cost	**62 crores**	Network, Sensors, web & mobile apps, GIS communication Cost of meters is shared among consumer, Water supply and ULB
Funding		60 crores to be funded by Water supply (recovered from consumer on annuity basis). 2 crores to be funded from Smart City

WATER MANAGEMENT THROUGH ICT

Feature	Improvement	ICT initiative
Stage I •24 x 7 water supply in most areas with meters •Rainwater harvesting and storm water planning is done **Stage II** •24 x 7 treated water supply with smart meters •Rainwater harvesting systems are installed and storm water is collected and stored in water bodies and treated for usage. •Recycled waste water is supplied for secondary uses.	Water supply monitored in Stage I Quality and Quantity of water supply being assured Smart meters and monitoring primary and secondary uses with differential pricing as future upgrade	Water filters / kiosks on city roads Monitoring of rain harvesting, storm water and recycling through command center

TOURISM

Guiding principles	Information access and availability in various modes

Key processes

Business objectives	Citizen centricity	Technology components
• Ensure information is available about all locations, amenities, maps and transport	• Availability of information on sites, locations, features, accessibility, reservations • Notifications and alerts	• Web and Mobile apps • Integrated facility applications

Critical success factors	Integration between providers, real-time information

Cost	**0**	Cost covered under e-governance

Sl.No	Item no.	Description	Cost in Rs Crores		
			Area Based Development	Pan City	Convergence from other Grants
1		**IMPROVING ROAD, CIRCULATION NETWORK**			
	1.1	FOOTPATH	26.50		SFC + 14th finance + SC
	1.2	CYCLE TRACK	12.50		
	1.3	UG DUCTING	55.00		SC
	1.4	CARRIAGEWAY IMPROVEMENT	165.00		SFC + 14th finance + SC
	1.5	UG CABLE DUCTING (HT & LT LINE)	104.00		Hescom + SC
	1.6	STREET LIGHTING	11.50		PPP by replacing LED +

Sl.No	Item no.	Description	Cost in Rs Crores		
			Area Based Development	Pan City	Convergence from other Grants
2		SPECIFIC HAWKER VENDING SPACES			
	2.1	Hawker zone & Eat Street	3.00		SC
	Sub Total		3.00		
3		JUNCTION IMPROVEMENT			
	3.1	Major Junction	1.70		PPP
	3.2	Minor Junction	1.30		SC
	Sub Total		2.90		
4		FLYOVERS, UNDERPASS & ROB			
	4.1	Flyover	129.00		PWD
	4.2	Underpass	56.00		PWD
	4.3	ROB	113.50		PWD

Costing

Sl.No	Item no.	Description	Cost in Rs Crores		
			Area Based Development	Pan City	Convergence from other Grants
5		MULTI UTILITIES CENTRES			
	5.1	Dharamnath Circle	18.00		SC+PPP
	5.2	Ramteerth Nagar	35.00		SC+PPP
	5.3	Mahantesh Nagar	35.00		SC+PPP
	5.4	First Rly Gate Opp. Kalamandir	35.00		SC+PPP
	5.5	Fort Road	11.40		SC
	5.6	Goaves Complex	35.00		PPP
		Sub Total	169		
		PUBLIC CONVENIENCE &			

Costing

Sl.No	Item no.	Description	Cost in Rs Crores		
			Area Based Development	Pan City	Convergence from other Grants
7		DEVELOPMENT OF MARKETS			
	7.1	Development of modern markets at Tilakwadi (Kalamandir)	53.50		PPP
	7.2	Development of modern markets near DHARAMNATH CIRCLE at MM Extension	250		PPP
		SUB TOTAL	303.50		
8		IMPROVEMENT OF PUBLIC TRANSPORT			
	8.1	Improvement of Central Bus Terminus	107.00		KSRTC+SC
		SUB TOTAL	107.00		
9		PARKS & RECREATIONAL SPACES			
	9.1	Improvement of Neighborhood Parks & Recreational Spaces	18.50		AMRUT+SC+BUDA
	9.2	Development of Heritage Park at Vaccine Depot - Tilakwadi	38.50		SC
		SUB TOTAL	57.00		
		EMPLOYMENT CENTER			

Sl.No	no.	Description	Area Based Development	Pan City	from other Grants
11		CONSERVATION & PRESERVATION OF HERITAGE STRUCTURE			
	11.1	Development of Fort and Precinct	25.00		SC
	11.2	Improvement of Lakes	10.00		SC
		Sub Total	35.00		
12		AFFORDABLE HOUSING			
	12.1	Development of Affordable Housing for EWS	74.00		SCHEME+SC
		Sub Total	74.00		
13		ROAD SIDE TREE PLANTATION			
	13.1	Road side tree plantation	0.50		Forest + CCB+BUDA
		Total	0.50		
14		SEWERAGE SYSTEM			
	14.1	Construction of STP and Improvement of sewerage lines	220.00		AMRUT+SC
		Total	220.00		
15		STORM WATER DRAINAGE SYSTEM			
	15.1	Storm Water Drainage System	70.00		SC+SFC+13th Finance+100 cr

Costing

Sl.No	Item no.	Description	Area Based Development	Pan City	Convergence from other Grants
16		Solid Waste Management and Sanitation			
	17.1	Solid Waste Management	52.70		SBA+PPP+SC
		Total	52.70		
17		Urban Mobility & Transport			
	18.1	Priority Bus Lanes		20.86	
	18.2	Bus Terminals		90.77	KSRTC+CCB+SC
	18.3	Smart Bus Shelters		3.50	PPP+CCB
	18.4	Paratransit		0.85	SC
	18.5	Pedestrian Walkways		110.6	
	18.6	Cycle Tracks		70.65	
	18.7	Junction Improvement - Major		1.3	
	18.8	Junction Improvement - Minor		6.7	
		Total		305.23	
18		ICT			
	19.1	Central Command Center and Traffic and Transportation		12	
	19.2	E-Governance		12	
	19.3	Smart Metering for Electricity		60	Consumers+SC+Hescom
	19.4	Smart Metering Water Supply/ UGD		62	Consumers+sc+kuwssb
		Total		146.00	
		Grand Total (in Rs			

OTHER PROPOSED PROJECTS

	Other Proposed/ Ongoing Projects			
Sl.No.	Description	Cost In Rs Crores		Funding Source and Remarks
		Ongoing/ Sanctioned	Proposed	
1	24x7 water supply with world bank funding	680		World Bank+SG+CCB; Already Sanctioned and tendered
2	11 KV Under Ground Cable - Conversion of existing 11 KV OH Line by 11 KV UG Cable in complete Belagavi City	320		
3	Area Development Project at Kanbargi Scheme no 61		177	BUDA
4	Imrovement of Road, Drains, Garden Development, Stadium, UGD, Street Lights, Nallas, and Multilevel Parking etc.	100		3rd Phase Rs. 100 Cr works
5	Karnataka Housing Board - Housing of 2170 DU - EWS & MIG and Commercial Complex	70	502	Karnataka Housing Board

OTHER PROPOSED PROJECTS

	Other Proposed/ Ongoing Projects			
Sl.No.	Description	Cost In Rs Crores		Funding Source and Remarks
		Ongoing/ Sanctioned	Proposed	
6	Strengthening and Improvement of Distribution system in Belagavi		30	IPDS-PFC
7	Sewerage system for uncovered areas of belagavi City	200	284	AMRUT+SG+CCB+Spl Funding
8	Storm Water Drainage Scheme for rest of the City		310	AMRUT+SG+CCB+Spl Funding
9	Development of Urban Forestery and Green Cover		43	State Government
10	Development of Outer Ring Road for Belagavi		1000	Rs. 100 crore from BUDA for I phase. Given Cost is only Infrastructure Cost which is other than land assemblage thru self

OTHER PROPOSED PROJECTS

Sl.No.	Other Proposed/ Ongoing Projects			
	Description	Cost In Rs Crores		Funding Source and Remarks
		Ongoing/ Sanctioned	Proposed	
11	Tourism Improvement Projects		26	SG+DoT, GoK
12	Logistic Hubs- 2 no and Truck Terminal- 2 no.		200	PPP+SG
13	Development of Major Roads and new links	200	250	BUDA+CCB+Rs 100 Cr Spl Funding
14	Improvement of Airport		500	AAI
15	Shifting of existing railway station to Desur and laying of new rail tracks		150	Railways+SG
16	Construction of additional 1 no 220 KV station along with 4 nos. of interconnected 110KV Lines and Strengthening of existing 110 KV Lines		130	KPTCL/ SG
17	Development of new industrial	100	200	KIADB+SG+100 Cr Spl.

Transforming Belagavi into a Smart City

T H A N K Y O U