ANNEXURE - 2

B	C	D	E	F	G	I	J	K
Feature	**Definition**	**Scenario 1 (BASE)**	**Scenario 2**	**Scenario 3**	**Scenario 4 (ADVANCED)**	**Basis for assessment and/or quantitative indicator (Optional - only if data exists)**	**Projection of 'where the city wants to be' with regard to the feature/indicator based on the city vision and strategic blueprint**	**Input/Initiative that would move the city from its current status to Advanced status (Scenario 4: Column G)**
Citizen participation	**A smart city constantly shapes and changes course of its strategies incorporating views of its citizen to bring maximum benefit for all. (Guideline 3.1.6)**	The City begins identifies priorities and projects to pursue without consulting citizens.	City undertakes citizen participation with some select stakeholders. The findings are compiled and incorporated in some projects or programs. Very few major decisions are shared with -citizens until final projects are unveiled.	City conducts citizen engagement at city level and local area level with most stakeholders and in most areas. The findings are compiled and incorporated in projects or programs.	City constantly conducts citizen engagement with people at each Ward level to incorporate their views, and these shape priorities and development projects in the city. Multiple means of communication and getting feedback such, both face-to-face and online are utilised. The effectiveness of city governance and service delivery is constantly enhanced on the basis of feedback from citizens.	There is active participation of the citizens through MCC website and through Mangalore one giving continuous feedback to the city corporation.	Innovative and comprehensive multi device app to converge the experience of equivalent commercial ones made available to the citizens to access the city's services, content and payment.	The app eliminates queues, optimises time, zeroes in on data and information searched for, enriches the exerience and results in paperless transactions benefitting the citizens and the city's administration.
Identity and culture	**A Smart City has a unique identity, which distinguishes it from all other cities, based on some key aspect: its location or climate; its leading industry, its cultural heritage, its local culture or cuisine, or other factors. This identity allows an easy answer to the question "why in this city and not somewhere else?" A Smart City celebrates and promotes its unique identity and culture. (Guideline 3.1.7)**	There are few architectural monuments, symbols, and festivals that emphasise the unique character of the city. Built, natural and cultural heritage is not preserved and utilised or enhanced through physical, management and policy structures.	Historic and cultural resources are preserved and utilised to some extent but limited resources exist to manage and maintain the immediate surroundings of the heritage monuments. New buildinds and areas are created without much thought to how they reflect the identity and culture of hte city.	Historic and cultural heritage resources are preserved and utilised and their surroundings are well-maintained. Public spaces, public buildings and amenities reflect the cultural identity of the city;–	Built, natural and intangible heritage are preserved and utilised as anchors of the city. Historical and cultural resources are enahnced through various mediums of expression. Public spaces, open spaces, amenities and public buildings reflect local identity and are widely used by the public through festivals, events and activities.	The city has a unique identity due to its port, pristine beaches, temples, existing educational and financial institutions.	Urban form, placemaking and technology tools to reinterpret and continue historic preferences and lifestyles adapted to modern times	Creation of precincts around religious and cultural institutions, introduction of cultural and culinary destinations and places and spaces to celebrate the coastal way of life.
Economy and employment	**A smart city has a robust and resilient economic base and growth strategy that creates large-scale employment and increases opportunities for the majority of its citizens. (Guideline 2.6 & 3.1.7 & 6.2)**	There are some job opportiunities in the city but they do not reach all sections of the population. There are a high number of jobs in the informal sector without sufficient facilities.	There is a range of job opportunities in the city for many sections of the population. The city attemps to integrate informal economic activities with formal parts of the city and its economy.	There are adequate job opportunities for all sections of society. But skill availability among residents can sometimes be a challenge.	There are adequate opportunities for jobs for all sections of income groups and skill levels. Job-oriented skill training supported by the city and by industry. Economic activities are suited to and build on locational and other advantages of the city.	Industry, fishing and tourism are the main source of revenue and employment generation.	Stop out-migration of skilled personnel in the otherwise untapped fishing, culinary and hospitality industries, triggering economy and jobs in retail, banking & IT	Central Node as the pride of place, a readable and easily navigable Retail node and district, a facility celebrating the historic activitues such as fishing, & maritime trade.
Education	**A Smart City offers schooling and educational opportunities for all children in the city (Guideline 2.5.10)**	The city provides very limited educational facilities for its residents. There are some schools but very limited compared to the demand. Many schools are in poor condition.	City provides adequate primary education facilities within easily reachable distance of 15 minutes walking for most residential areas of the city. The city also provides some secondary education facilities.	City provides adequate primary and secondary education facilities within easily reachable distance for most residential areas of the city. Education facilities are regularly assessed through - databases of schools including number of students, attendance, teacher - student ratio, facilities available and other factors.	City provides adequate and high-quality education facilities within easily reachable distance of 10 minutes walking for all the residential areas of the city and provides multiple options of connecting with specialised teaching and multi media enabled education. Education facilities are regularly assessed through database of schools including number of students, attendance, teacher-student ratio, facilities available and other factors.	More than adequate education facilities are available within 10 minutes walk able distance for all residential areas of the city.	Leverage the already existing high standards on education with knowledge enhancing technology embedded into the school and higher education system producing smarter and socially conscious human resources.	Implement e-learning in schools, colleges and universities making the city a desirable knowledge destination and providing facilites and places for out-of-classroom learning for an all round development.
Health	**A Smart City provides access to healthcare for all its citizens. (Guideline 2.5.10)**	Healthcare is difficult for citizens to access - demand for healthcare often exceeds hospitals' ability to meet citizen needs.	The city provides some access to healthcare for its residents but healthcare facilities are overburdened and far from many residents. Access to preventive health care is only easily available for some residents.	City provides adequate health facilities within easily reachable distance for all the residential areas and job centers of the city. It has an emergency response system that connects with ambulance services.	City provides adequate health facilities at easily accessible distance and individual health monitoring systems for elderly and vulnerable citizens which are directly connected to hospitals to prevent emergency health risks and to acquire specialised health advice with maximum convenience. The city is able to foresee likely potential disases and develop response systems and preventive care.	City provides adequate health facilities within accessible distance for all residential areas of the city.	Upgrading existing government and public hospitals to a state of the art wellness centres as an inclusive measure to match and compliment the already existing medical infrastructure in the private sector.	Upgradation of 2 Distcrict Level Facilities (Wenlock & Lady Goshen Hospitals) and implemntation of e-health program in hospitals for health monitoring system for elderly, underprivilaged abd vulnerable citizens and response systems and preventive care.
Mixed use	**A Smart City has different kinds of land uses in the same places; such as offices, housing, and shops, clustered together. (Guidelines 3.1.2 and 3.1.2)**	The city has mostly separated uses and areas are focused either on residential, commercial, or industrial, with little co-existance of uses. The average resident cannot walk to the closest market or shops near his or her home. For almost everyone, going to work or going shopping for basic needs requires a journey by automobile or bus of more than 15 minutes. Land use regulations prevent putting commercial or office locations in residential neighborhoods and vice versa.	In some parts of the city , there is a mixture of land uses that would allow someone to live, work, and shop in close proximity. However, in most areas, there are only small retail stores with basic supplies near housing. Most residents must drive or use public transportation to access a shop for food and basic daily needs. Land use rules support segretating housing, retail, and office uses, but exceptions are made when requested.	Most parts of the city have housing, retail, and office buildings in close proximity. Some neighborhoods have light industrial uses within them (e.g., auto repair, craft production). Land use rules allow for mixed uses.	Every part of the city has a mix of uses. Everyone lives within a 15-minute trip of office buildings, markets and shops, and even some industrial uses. Land use rules require or encourage developers to incorporate a mixture of uses in their projects.	The city is fairly mixed use in most parts of the city. Land uses allow mix of land uses along its primary arterials, easily accessible to its residential, institutional and commercial areas.	Strategic land use and Urban Design methods adopted to achieve seamless and legible transitions between distinctly identifiable experience, work and live zones bound together in a complete cognizible urban habitat.	Adaptive reuses applied to heritage buildings such as the vacated DC's office, defunct tile factories and strategically linking them with inclusive housing and participative experience in the a public domain to ultimately arrive at the varied activities along the otherwise neglected but celebrated waterfront with activities of its own.
Compact	**A Smart City encourages development to be compact and dense, where buildings are located close to one another and are ideally within a 10-minute walk of public transportation, forming concentrated neighborhoods. (Guidelines 2.3 and 5.2)**	The city is expanding rapidly at its periphery into undeveloped land, rural or natural areas, or along industrial corridors - both formally and informally. Formal new development is occuring in a way that is "sprawling," meaning that the buildings spread across a wide area and are far from one another. Residents or tenants find it easier or safer to travel by automobile because it takes a long time to walk between destinations and there are busy roads separating buildings. Large pockets of land in the inner-city are vacant. New developments at the periphery tend to be large-scale residential developments, often enclosed with a gate and oriented to the automobile.	The city has one or two high density areas - such as the city center, or historic areas, where buildings are concentrated together and where people can walk easily from building to building and feel as though they are in center of activity. Most of the city consists of areas where buildings are spread out and difficult to walk between, sometimes with low-density per hectare. Regulations tend to favor buildings that are separated from one another, with lots of parking at the base and set-back from the streets. The city likely has some pockets of under-utilized land in the center. New formal developments at the periphery tend to be large-scale residential developments, often enclosed with a gate and oriented to the automobile.	The city has multiple high density clusters that are easy to walk around where buildings are close together. However, the city actively encourages development to occur on under-utilized parcels of land into high-density, walkable areas. When new formal large-scale development projects happen at the periphery, they are encouraged to be dense and compact, with buildings that are close together and line the streets. The city actively encourages or incentivizes re-development of under-utilized parcels in the inner-city, especially those located close to public transportation.	The city is highly compact and dense, making the most of land within the city. Buildings are clustered together, forming walkable and inviting activity centers and neighborhoods. Regulations encourage or incentivize re-development of under-utilized land parcels in the city center. Buildings are oriented to the street — and parking is kept to a minimum, located below ground or at the back of buildings. Public transport and walking connects residences to most jobs and amenities. Residential density is at an optimal with affordable housing available in most areas.	High density is being encouraged in all new developments within the city but the core/ central areas (which include Bunder and Hampankatta) having low density.	Taking a cue from the multi nodal nature of the city and its surrounding areas a series of multi nodal activity centres are proposed along the 5km length of the waterfront envisaging replicable extensions that one day will surround the entire city and link its citizens to the pristine and interesting destinations along the waterfront.	Relatively densest wards of the city have been grouped to form the ABD, being a definite intent for densification and creation of a replicable Compact City concept. Apart from the usual work-live proximity, aspects which improve quality urban life such as retail high streets, public spaces and most importantly the waterfront are not just made accessible but also desirable.

Public open spaces	**A Smart City has sufficient and usable public open spaces, many of which are green, that promote exercise and outdoor recreation for all age groups. Public open spaces of a range of sizes are dispersed throughout the City so all citizens can have access. (Guidelines 3.1.4 & 6.2)**	The city has very few usable public open spaces and very few usable green spaces. Available recreational spaces are located far away and are dispersed at long distances around the city. The few available public open spaces offer a limited variety of experiences for all sections of population and age groups such as places for sport, places for rest, and places for play.	A variety of public open spaces are available in some neighborhoods, but are not available in all the areas of the city or are located far away from residential areas Many of the open spaces have access restrictions, or are not well-maintained. A variety of types of public open spaces may be lacking, such as natural areas, green areas, parks, plazas, or recreation areas.	Most areas of the city have some sort of public open space. There is some variety in the types of public spaces in the city. However, public spaces are sometimes not within easy reach or access of more vulnerable populations and are more restricted in poorer neighbourhoods.	Public open spaces are well dispersed throughout the city. Every residential area and work space has access to open space within 10 minutes walking distance. Open spaces are of various types - natural, green, plazas, parks, or recreation areas - which serve various sections of people. Public spaces tend to truly reflect the natural and cultural identity of the city.	Most areas of the city have some sort of public open space but overall there is a lack of open green spaces across the city.	Though statistically increased to almost 6% of the total area from the existing 4% in the current proposal, the public open and green space will be linked to other areas of the city in a meaningfully structured system to also accomodate the natural drains	Development of Waterfront marina along with waterfront parks and gardens that are pushed into activity zones such as the Fishing Harbour and Old Port to provide for sufficient green and public spaces in the city.
Housing and inclusiveness	**A Smart City has sufficient housing for all income groups and promotes integration among social groups. (Guidelines 3.1.2)**	Housing is very limited and highly segregated across income levels. Population growth far exceeds the creation of new housing. The poor live in informal settlements with limited to no access to basic services, and are concentrated in a few areas. The wealthy live in separate enclaves. Those in the middle have few , if any options.	Housing is available at most income levels but is highly segregated across income levels. Population growth slightly exceeds the creation of new housing. The wealthy and the middle class have housing that meets their needs at costs appropriate to their income. The poor live in informal settlements.	Housing is available at all income levels, but is segregated across income levels. The growth of supply of housing almost meets the rate of population growth. Increasingly, lower and middle-income people can find housing in areas that are conveniently located.	A wide range of ~~a~~ housing is available at all cost levels. The supply of housing is growing at pace with population. Afforable, moderate, and luxury housing are found clustered together in many areas of the city	There is a lack of affordable housing within the city.	Including the marginalised into the urban fabric of the city and providing for housing at geographically appropriate locations minimising work-live distances and time.	Re-housing the 250 EWS & LIG families within the geographic boundaries(wards) and completely eliminating slums facilitating an upward economic move.
Transport	**A Smart City does not require an automobile to get around; distances are short, buildings are accessible from the sidewalk, and transit options are plentiful and attractive to people of all income levels. (Guidelines 3.1.5 & 6.2)**	Personal automobile centric city with very few modal options. Long trip lengths for daily commute to work and education. Accessing various areas by walking or cycling is difficult. Women and vulnerable sections find it very difficult to move independently in the city. There is limited public transport. Vehicles cause high air and noise pollution levels in the city. Vehicles dominate public spaces and affect their effective functioning.	The street network system is elaborate but public transport choices are restricted. Public transport can be too expensive or unafforadable for the poor. Pedestrian infrastructure is only available in select areas. Tha majority of investments focus on reducing traffic congestion through the creation of more roads.	Network of streets are fairly complete. Public transport covers most areas of the city. However last mile connectivity remains incomplete ~~-~~and affects transport options~~.~~ ~~–~~ Foot paths are accessible in most areas, ~~whereas~~ concerns of safe crossings and security throughout the day remain. Parking zones are demarcated but absence of pricing increases over utilization of parking lots.	Street network is complete and follows a clear structure. Public transportation network covers the entire city and intensity of connection relates with the demand. Plenty of options of public transport are available and affordable for all sections of the society. There is multi-modal integration at all mass transit staions and organized-priced on street and off street parking. Walking and cycling is prevalent.	Each habitat is within 15 minutes of walking distance from major public transport corridor	Efficient public and multi-modal transport system to attract and include all groups of economic segments of the city. Not motorized transport facilities complimented by prefer-to-walk opportunities resulting in effective and distinct pedestrian domains.	Introduce eco-friendly methods of mass transportation and linking it to transition nodes for last-mile non motorised preferences including the walkable city zones. Standards for roads allow for safe bicycling as well complimented by appropriate urban landscape and vistas.
Walkable	**A Smart City's roads are designed equally for pedestrians, cyclists and vehicles; and road safety and sidewalks are paramount to street design. Traffic signals are sufficient and traffic rules are enforced. Shops, restaurants, building entrances and trees line the sidewalk to encourage walking and there is ample lighting so the pedestrian feels safe day and night. (Guidelines 3.1.3 & 6.2)**	The city is designed mainly for the automobile. Daily life without a car requires long bus rides. Walking is difficult and often dangerous; there are few pavements, existing pavements need repair and lack trees to provide shade for pedestrians, and marked pedestrian crossings are rare. New buildings have their main entrances set-back from the street, sometimes with large driveways or parking lots separating them from the street, and sometimes are are enclosed by gates. Traffic signals are often disobeyed	Older areas of the city see a mix of pedestrians, cyclists, and vehicles but newer areas are focused mainly on the automobile. In the new areas, there are few pavements and main entrances to new buildings are not accesible from the front of the street. large driveways or parking lots often separating them from the street, and sometimes are are enclosed by gates. In these areas, traffic signals are disobeyed.	The city has a good network of pavements and bike lanes. Buildings in most areas of the city are easily accessible from the pavement. Howver, traffic signals are sometimes disobeyed and it can feel difficult to cross the street.	The city is highly walkable. Pavements exist on every street and are maintained. Trees line many sidewalks to provide shade for pedestrians. Buildings in most areas of the city are easily accessible from the sidewalk. Traffic signals control the flow of automobiles and are enforced. A network of bike lanes exists to promote cycling as a means of transport. Traffic rules are followed and enforced with great seriousness.	There is a lack of pavements/ pedestrian and non-motorized transport infrastructure in most parts of the city.	A place where barrier-free pedestrian walkways and domains are not only safe but are interesting in varied but identifiable experience, complimented by appropriately designed urban landscape and other building-sheltered stretches allowing for movement even during the monsoons and humid summers	Development of pavements/ pedestrian facilities and non-motorized transport infrastructure concentrated in the Central Node, retail node Central Market area and the varied riverfront activity zones such as the Marina all linked to residential zones and hence creating disable friendly environment within public realm.
IT connectivity	**A Smart City has a robust internet network allowing high-speed connections to all offices and dwellings as desired. (Guideline 6.2)**	City has no major plans to bring increased high speed internet connectivity to the public.	The city has made plans to provide high speed internet connectivity through the existing framework.	The city makes has high speed internet connectivity available in most parts of the city.	The city offers free wifi services to provide opportunity for all the citizens to connect with high speed internet across the city.	The city makes has high speed internet connectivity available in most parts of the city.	Internet of things to all	Development of wi-fi zones across the city.
ICT-enabled government services	**A Smart City enables easy interaction (including through online and telephone services) with its citizens, eliminating delays and frustrations in interactions with government. (Guidelines 2.4.7 & 3.1.6 & 5.1.4 & 6.2)**	Essential Government services are not linked with online platforms. Paper intensive interactions with the local Government continues. Recieving services and response to citizen complaints take a long time. There is limited availability of data to monitor service delivery.	Some of the public services are provided online and infrastructure for total digitalization is not in place. Service delays occur regularly in some sectors. Responses to citizen inquiries or complaints are often delayed. No integration between services and billing.	Most of the services are provided online and offline. Data transparency helps monitoring. Systema and processes to better coordinate between various Government agencies are being developed.	All major services are provided through online and offline platforms. Citizens and officials can access information on accounting and monitor status of projects and programs through data available on online system. Robust data infratsructure system shares information and enhances internal governmental coordination.	Some initiatives have been taken by the local authorities towards e-governance to provide public services both online and offline.	Complete e-governance system with single citizen interface platform	Development of e-governance system so that all citizen services are provided through online platforms.
Energy supply	**A Smart City has reliable, 24/7 electricity supply with no delays in requested hookups. (Guildeline 2.4)**	There is only intermittent electricity supply with regular power shedding. Many residents have to plan their days around when power is available.	Electricity supply and loads are managed as per demand and priority for various functions with clear scheduling, with electricity being available in many areas for most hours of the day.	Electricity is available in most parts of the city for most hours of the day but some areas are not so well-served. Smart metering exists in some parts of the city but not all.	Electricity is available 24 x 7 in all parts of the city with smart metering linked to online platforms for monitoring and transparency.	There is shortage in supply by a margin of almost 25% in the current demand.	Reduction in currnt energy usage	Augmentation of current supply and reduction in current demand through Conversion of all the lighting in government building and steet lights into LEDs.
Energy source	**A Smart City has at least 10% of its electricity generated by renewables. (Guideline 6.2)**	The city does not have any renewable sources of energy and there is no commitment to promote this for the forseeable future.	The city is preparing plans for ensuring that it gets more energy from renewable sources and is in the process of making commitments in this regard.	Some energy consumed is the city is produced through renewable sources. There are long term targets for higher renewable energy capacities and the city is making plans to achieve these.	At least 10% of the energy used in the city is generated through renewable sources. The city is undertaking long-term strategic projects to tap renewable sources of energy in its region/beyond to increase the percentage of renewable energy sources.	40% of the power produced in Karnataka is through renewable sources.	Promotion of Solar energy	Development of Solar and Recreational Island (8MW) and Installation of rooftop solar (10MW) to provide for more than 10 % of city demand from solar energy.
Water supply	**A Smart City has a reliable, 24/7 supply of water that meets national and global health standards. (Guidelines 2.4 & 6.2)**	The city has a poor water supply system with limited water availability. There are no clear targets to achieve higher quality and optimal quantity standards. Unaccounted water loss is above 40%	The city has intermittent water supply and availability. However it is setting targets and processes in place to try to improve its water supply. Unaccounted water loss is less than 30%.	The city has 24 x 7 water supply in most areas but the quality of water does not meet international health standards. Unaccounted water loss is less than 20%.	The city has 24 x 7 treated water supply which follows national and global standards and also available in suffecient quantity and affordable across all sections of the society. Unaccounted loss less than 15%.	The city has 24x7 water supply in most areas and the same is being implemented for the whole city through ADB project Ph-2.	Reduction of NRW and UFW	Reduction of NRW to less tha 10% through strengthening of household connections and smart metering solutions.
Water management	**A Smart City has advanced water management programs, including smart meters, rain water harvesting, and green infrastructure to manage stormwater runoff. (Guideline 6.2)**	The city does not measure all its supply. It does not recycle waste water to meet its requirements and rain water harvesting is not prevalent. Flooding often occurs due to storm water run-off.	The city has meters for all its water supply but lacks mechanisms to monitor. Water wasteage is very high. Some, but not much, rainwater harvesting exists.	The has meters for all its water supply with some smart mechanisms to monitor. Rainwater harvesting systems are installed and storm water is collected and stored in water bodies. However, recycling of waste water and reusage of storm water is limited.	The city has meters for all its water supply. It includes smart mechanisms to monitor remotely. Rainwater harvesting systems are installed and utilised through the city and storm water is collected and stored in water bodies and treated for usage. Recycled waste water is supplied for secondary uses.	There is lack of monitoring to control NRW and UFW within the city.	Reduction of NRW	Installation of smart bulk flow meters at reservoirs and smart household meters.

Waste water management	**A Smart City treats all of its sewage to prevent the polluting of water bodies and aquifers. (Guideline 2.4)**	The city is unable to treat all its sewage. Many local sewer lines open on to water bodies and open ground and pollute the environment.	Most waste water is collected and treated before before disposal. However the treated water does not meet standards and is not recycled for secondary uses.	All the waste water is collected and treated before before disposal. It is also treated to a high standard and some is recycled.	The city has zero waste water because all the waste water is collected, treated and recycled. It meets standards an reduces the need for fresh water.	The network of waste water collection is already there in the city but half of the households are not yet connected to the waste water network. The collected waste water is treated and is being used by industries.	100% waste water collection coverage and grey water recycling for high rise buildings	Development of house hold connections to the waste water network.
Air quality	**A Smart City has air quality that always meets international safety standards. (Guideline 2.4.8)**	City does not have plans, policies or programs to improve the air quality. Systems to monitor air quality are absent.	City has programs and projects to monitor air quality and spatialising the data to ascertain reasons for degrees of pollution in the air. A few strategies to decrease air pollution have been implemented.	City has programs and projects to monitor air quality and spatialising the data to ascertain reasons for degrees of pollution in the air. Pollution levels are acceptable.	The city has clean air by international standards. Live Air quality monitoring cover the entire city and data of air quality are mapped.	There are existing monitoring stations within the city but they are located in only few parts of the city.	Air , Noise , water quality monitoring in real-time basis and live feedback in public domain	Development of monitoring sensors and stations so that overall city is covered.
Energy efficiency	**A Smart City government uses state-of-the-art energy efficiency practices in buildings, street lights, and transit systems. (Guideline 6.2)**	City has no programs or controls or incentive mechanisms to promote or support energy effeciency in buildings	The city promotes energy efficiency and some new buildings install energy effeciency systems that track and monitor energy use and savings.	Most new public buildings install energy effeciency systems and some older buildings are also retrofitted to be more energy efficient. Local government conducts counselling and outreach with developer, businesses and residents to adopt energy effeciency strategies	All the existing old and new public buildings employ energy effeciency principles in development and operation and apply for energy rating by national and international forums. Many non-public buildings are also energy efficient because the government promotes energy efficiency through incentices and regulations.	Currently the city is retrofitting the old system with energy efficient systems having 5 star rating and is also replacing few street lights with LEDs.	All street lights to be LED based with motion sensors to decrease the power consumption	Use of energy efficient system in all govt building and replacement of all street lights with smart street lights.
Underground electric wiring	**A Smart City has an underground electric wiring system to reduce blackouts due to storms and eliminate unsightliness. (Guideline 6.2)**	City does not have plans for underground electric wiring system.	More than 40% of the city has underground electric wiring system.	More than 75% of the city has underground electric wiring system.	More than 90% of the city has underground electric wiring system.	Some of the primary feeder lines are undergroud	100% common utility ducting for power and communication lines in high density development clusters	Underground cabling and sub-station in Area based Development.
Sanitation	**A Smart City has no open defecation, and a full supply of toilets based on the population. (Guidelines 2.4.3 & 6.2)**	Many parts of the city do not have access to sanitation infrastructure and facilities.	Sanitation facilities are availabile to 70% of the city's population.	Sanitation facilities are available to 90% of the city's poopulation.	Sanitation facilities are available to 100% of the city's population.	Sanitation facilities are available to 90% of the city's population but there is a lack of public toilets.	Sanitation for all	Development of e-toilets at public places and bus shelters.
Waste management	**A Smart City has a waste management system that removes household and commercial garbage, and disposes of it in an environmentally and economically sound manner. (Guidelines 2.4.3 & 6.2)**	Waste collection systems do not pick up waste on a frequent basis and waste often enters into water bodies.	Waste generated is usually collected but not segregated. Recycling is attempted by difficult to implement.	Waste is segretated, collected, recycled and disposed in an environmentally sound manner.	The city reduces land fill caused by waste so that it is minimal. All the solid waste generated is seggregated at source and sent for recycling. Organic waste is sent for composting to be used for gardening in the city. Energy creation through waste is considered.	Currently there is door to door waste collection system in the city, but the available treatment facility is for half the capacity.	Reduction in waste going to land fills.	Source segregation and development of treatment facilities for the waste generated along with strict implementation of source segregation.
Safety and security	**A Smart City has high levels of public safety, especially focused on women, children and the elderly; men and women of all ages feel safe on the streets at all hours. (Guideline 6.2)**	The city has low levels of public safety - most groups of residents feel insecure during most parts of the day in many parts of the city.	The city has medium levels of public safety - some more vulnerable groups feel insecure during some points of the day and in some parts of the city	The city has high levels of public safety - all citizens including women, children and the elderly feel secure in most parts of the city during most time in the day.	The city has very high levels of public safety - all residents feel safe in all parts of the city during all hours of the day.	Mangalore is a relatively a safe city for its residents and tourist. The city lacks surveillance mechanisms in its streets and public place.	Highest level of public safety and security & quick 24*7 emergency response systems to be in place.	Installation of CC cameras and surveillance mechanisms in streets and public place.

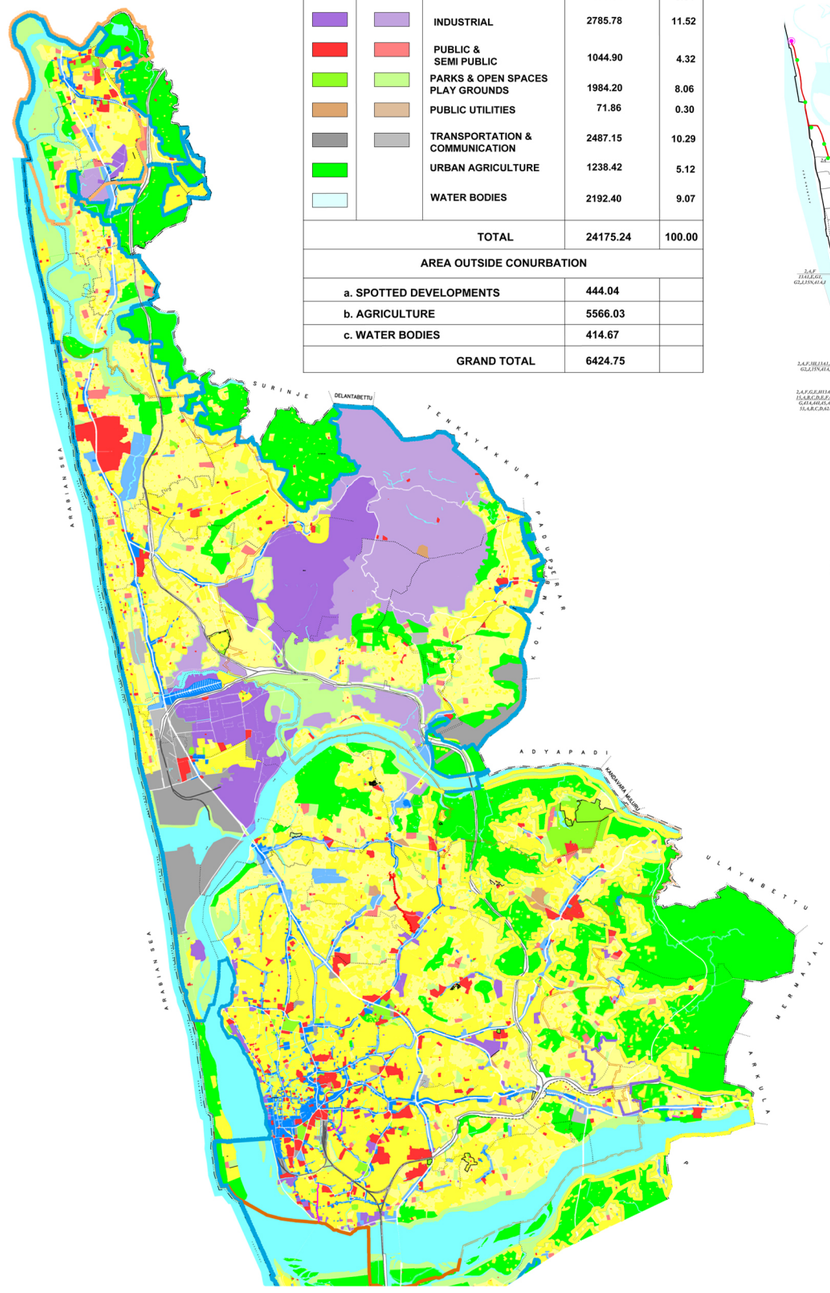
ANNEXURE - 3

CITY PROFILE - BASE MAPS

MANGALURU SMART CITY | Way to go.. Way to Grow..

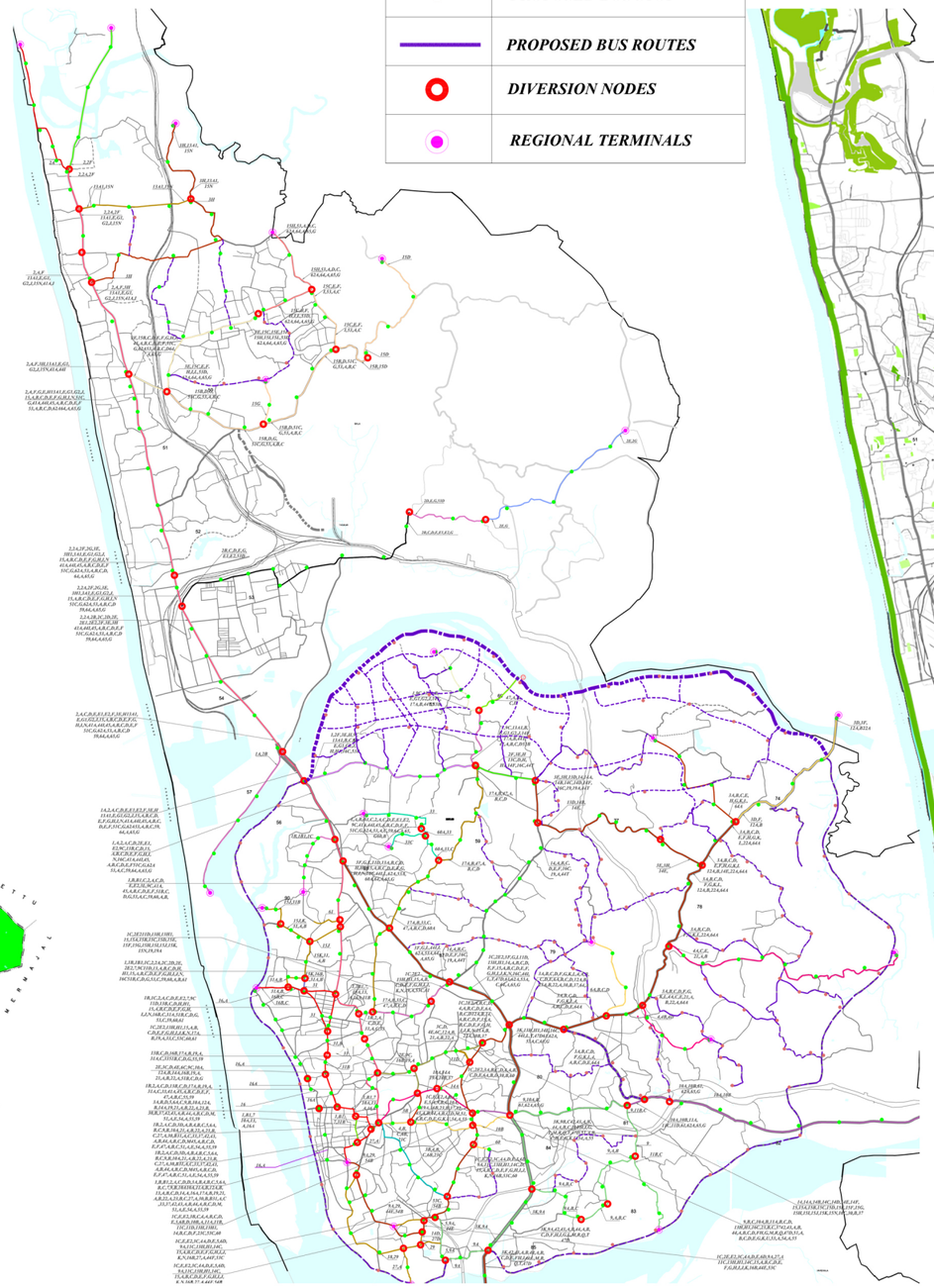
ANNEXURE 3.1 TO SCP

PROPOSED LANDUSE				
EXISTING	PROPOSED	LANDUSES	AREA WITHIN CONSTRUCTION (IN HECT.)	%
		RESIDENTIAL	11527.70	47.68
		COMMERCIAL	878.84	3.64
		INDUSTRIAL	2785.78	11.52
		PUBLIC & SEMI PUBLIC	1044.90	4.32
		PARKS & OPEN SPACES PLAY GROUNDS	1984.20	8.06
		PUBLIC UTILITIES	71.86	0.30
		TRANSPORTATION & COMMUNICATION	2487.15	10.29
		URBAN AGRICULTURE	1238.42	5.12
		WATER BODIES	2192.40	9.07
		TOTAL	24175.24	100.00
AREA OUTSIDE CONURBATION				
a. SPOTTED DEVELOPMENTS			444.04	
b. AGRICULTURE			5566.03	
c. WATER BODIES			414.67	
GRAND TOTAL			6424.75	



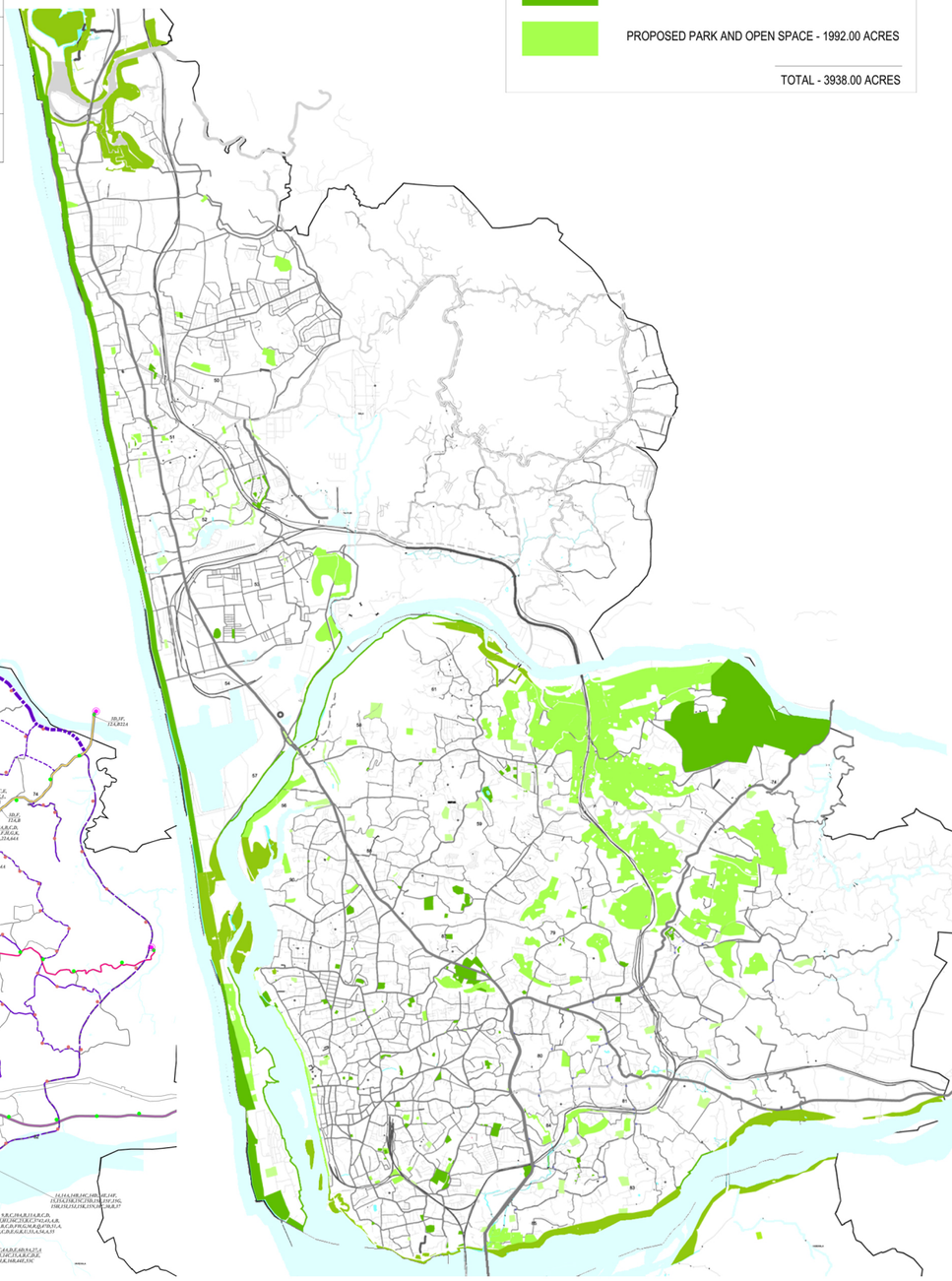
LAND USE MAP

LEGEND	
	EXISTING BUS STOP
	PROPOSED BUS STOP
	PROPOSED BUS ROUTES
	DIVERSION NODES
	REGIONAL TERMINALS



PUBLIC TRANSPORT FACILITIES
(EXISTING & PROPOSED BUS ROUTES)
WITH REGIONAL BUS TERMINALS & BUS STOPS

	EXISTING PARK AND OPEN SPACE - 1946.00 ACRES
	PROPOSED PARK AND OPEN SPACE - 1992.00 ACRES
	TOTAL - 3938.00 ACRES

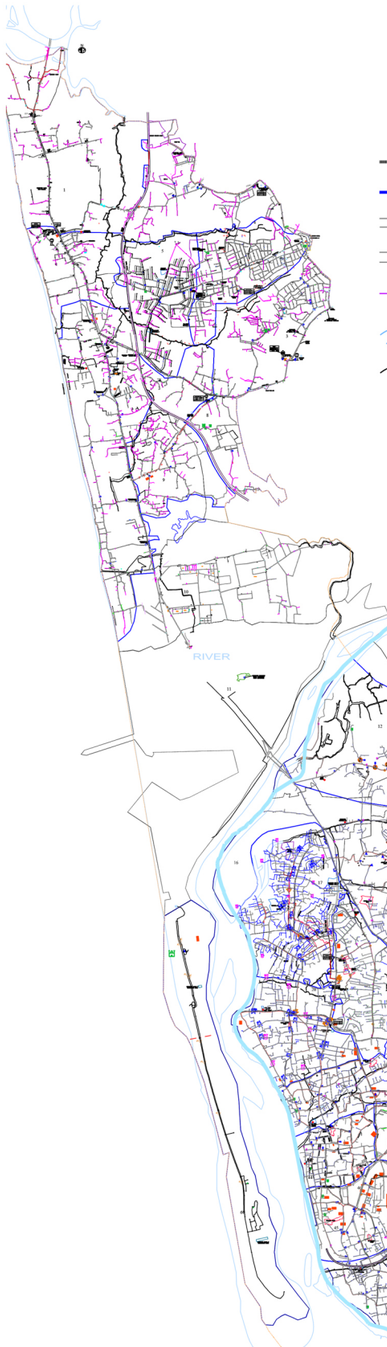


PARK AND OPEN SPACES

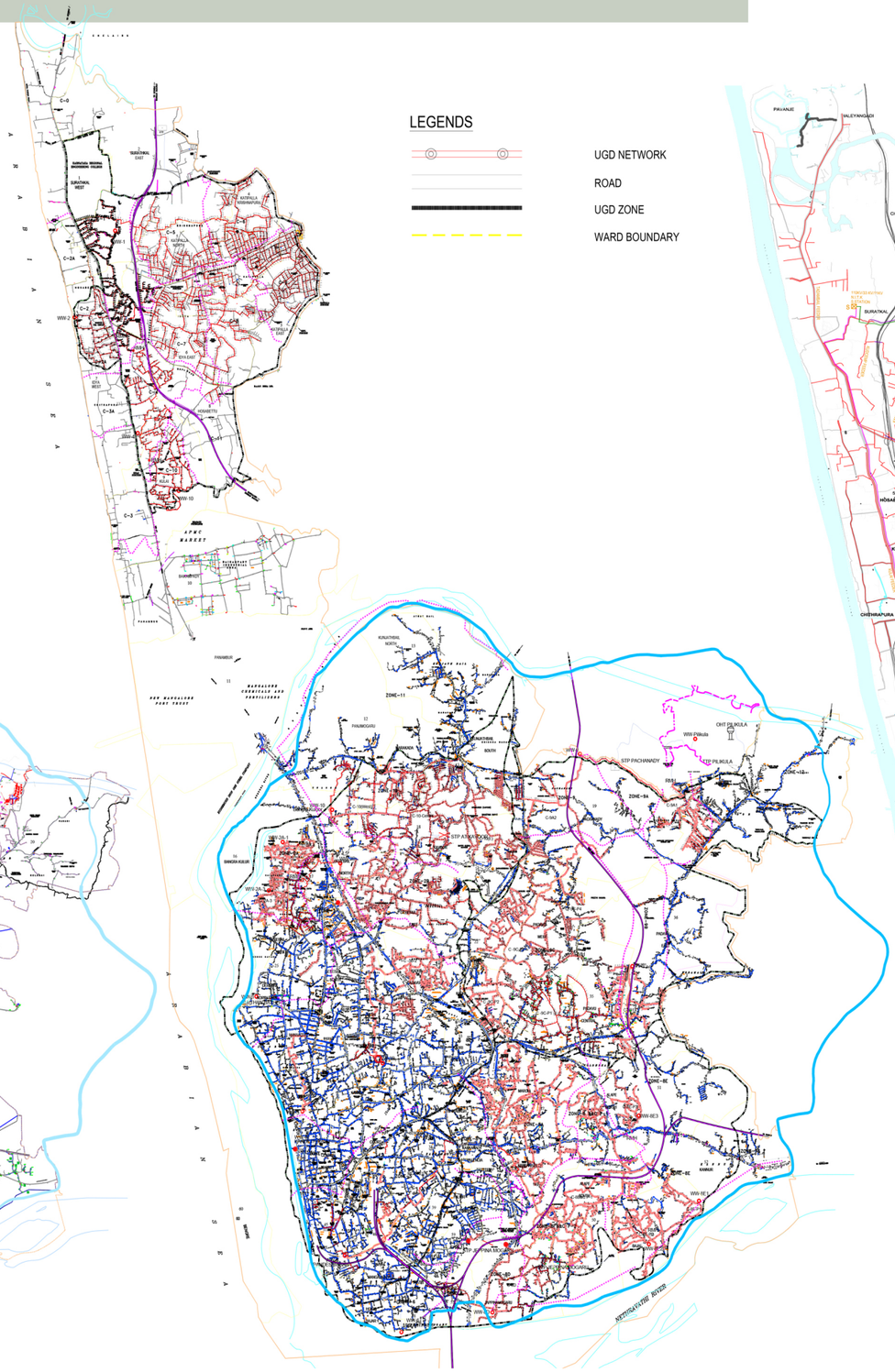
BASEMAPS OF MANGALURU CITY

MANGALURU SMART CITY | Way to go... Way to Grow...

ANNEXURE 3.2 TO SCP



WATER SUPPLY & STORM WATER NETWORK



SEWAGE DISTRIBUTION & TREATMENT SYSTEM

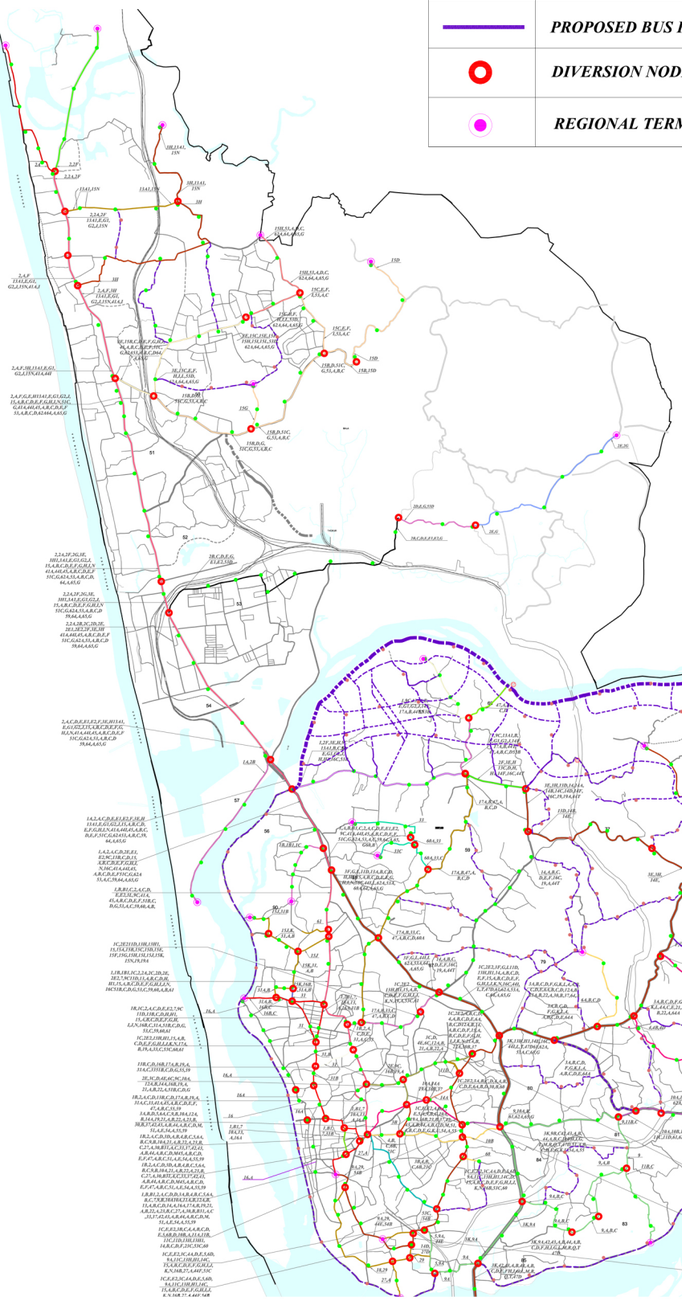
POWER SUPPLY AND DISTRIBUTION SYSTEM

CITY PROFILE-BASEMAPS

MANGALURU SMART CITY | Way to go. Way to Grow...

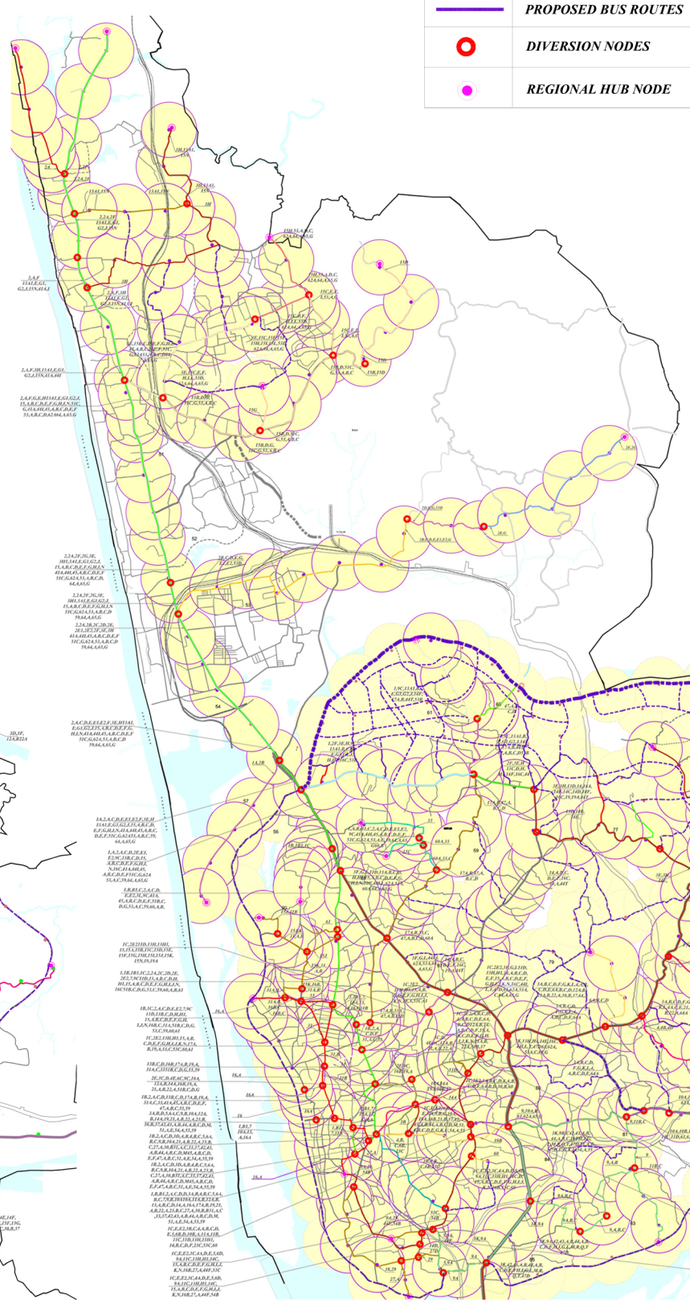
ANNEXURE 3.3 TO SCP

LEGEND	
	EXISTING BUS STOP
	PROPOSED BUS STOP
	PROPOSED BUS ROUTES
	DIVERSION NODES
	REGIONAL TERMINALS



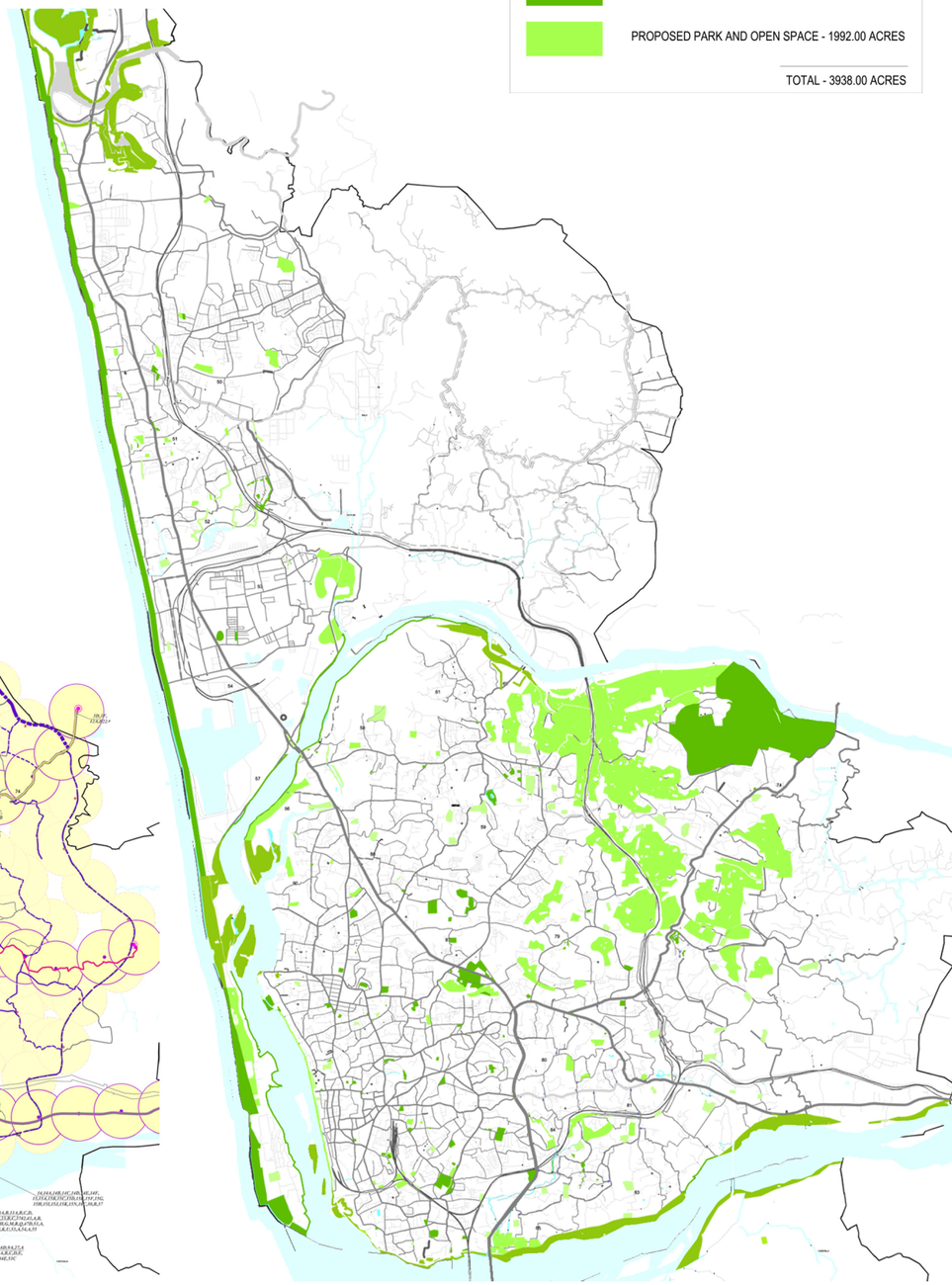
PUBLIC TRANSPORT FACILITIES
(EXISTING & PROPOSED BUS ROUTES)
WITH REGIONAL BUS TERMINALS & BUS STOPS

LEGEND	
	EXISTING BUS STOP
	PROPOSED BUS STOP NODES
	PROPOSED BUS ROUTES
	DIVERSION NODES
	REGIONAL HUB NODE



COVERAGE OF LAST MILE CONNECTIVITY
FROM PUBLIC TRANSPORT(BUS STOPS)

	EXISTING PARK AND OPEN SPACE - 1946.00 ACRES
	PROPOSED PARK AND OPEN SPACE - 1992.00 ACRES
	TOTAL - 3938.00 ACRES

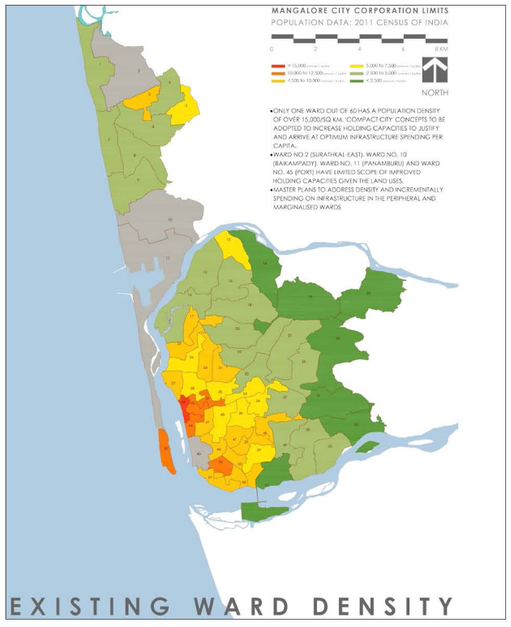


PARK AND OPEN SPACES

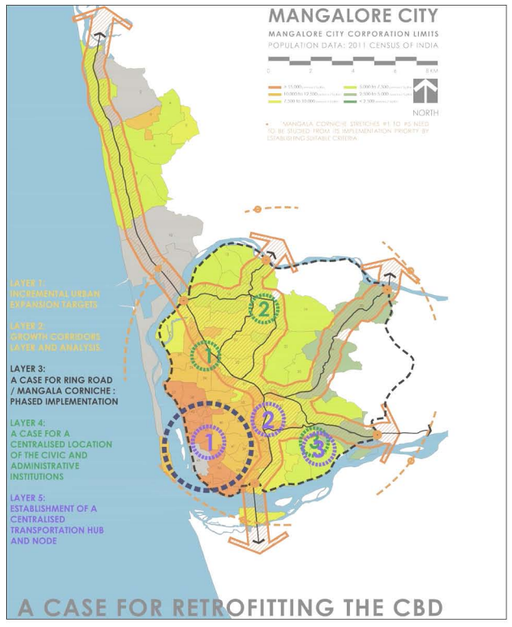
01. Mangalore as a Confluence

revitalized as a place of exchange
re-orientated towards the waters and its maritime-industrial strength,
updated to include efficient physical and digital networks for exchange

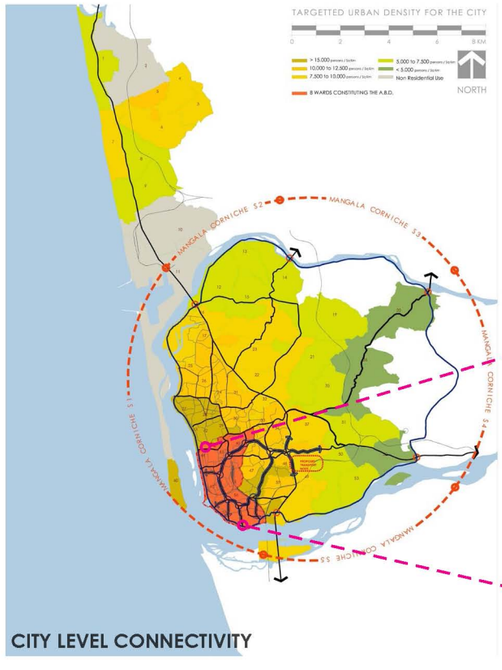
Mangalore occupies a fertile backwater condition at the meeting of the Netravati and Gurupura rivers, and it was from here that the fisheries and port triggered the development of the city core. However, counter to its Tulu name `Kudla`(confluence), the city currently adopts an introverted condition, turning its back on the vibrant possibilities of its natural, economic and economic assets. The Area Based Development reverts this, by weaving ribbons of civic life from the current retail core, through a new cultural core and updated religious precinct, connecting to the revitalized area of the Fishing Harbour, Old Port and Tile Factories to a riverfront, newly enlivened with commercial and public activity.



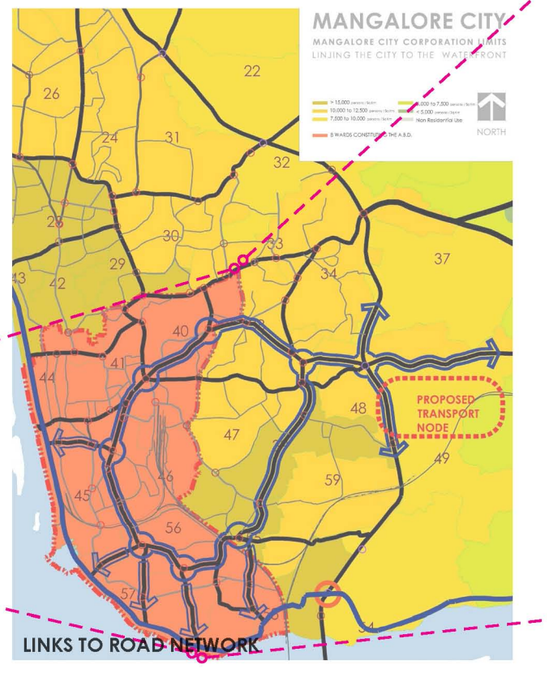
EXISTING WARD DENSITY



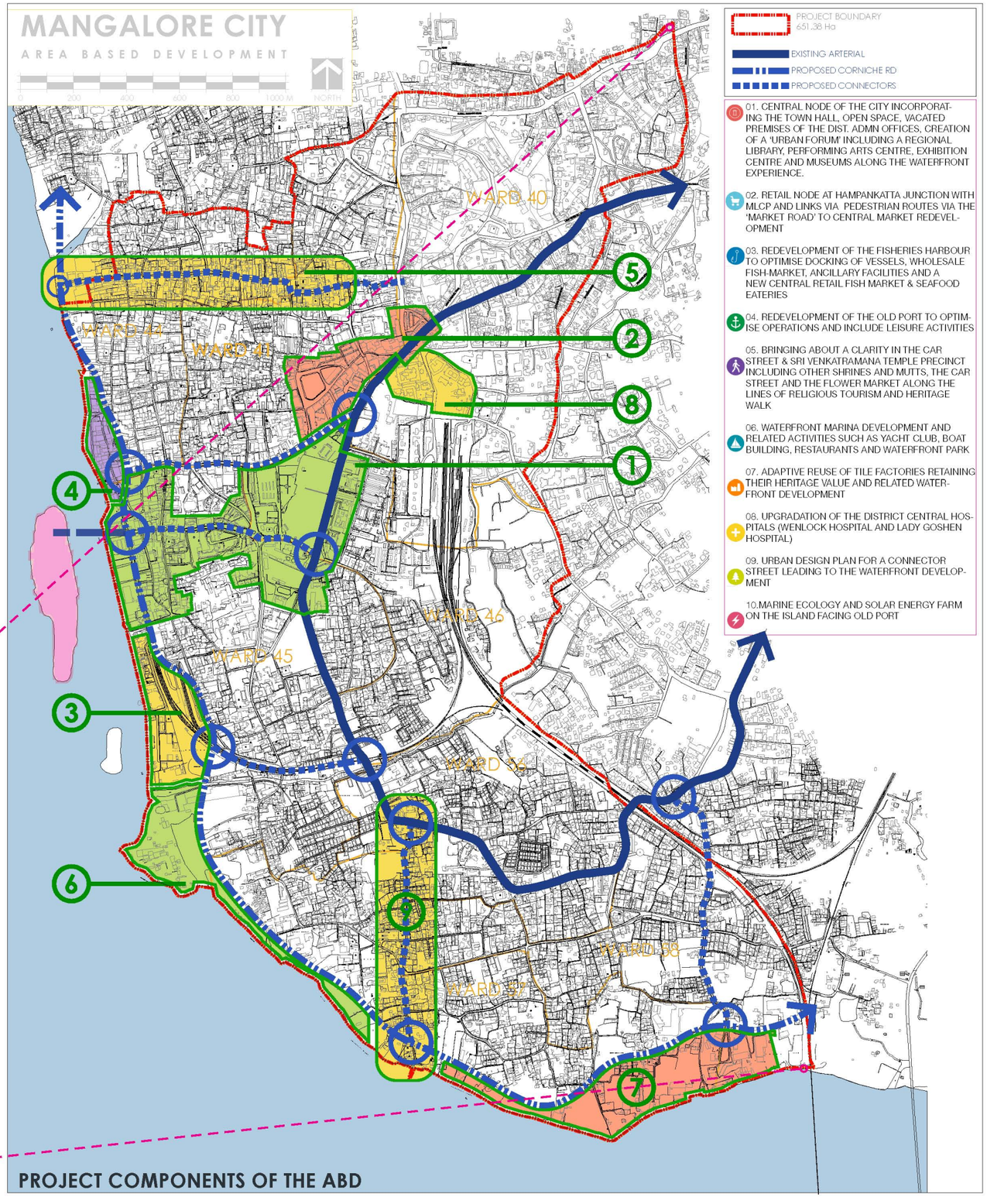
A CASE FOR RETROFITTING THE CBD



CITY LEVEL CONNECTIVITY

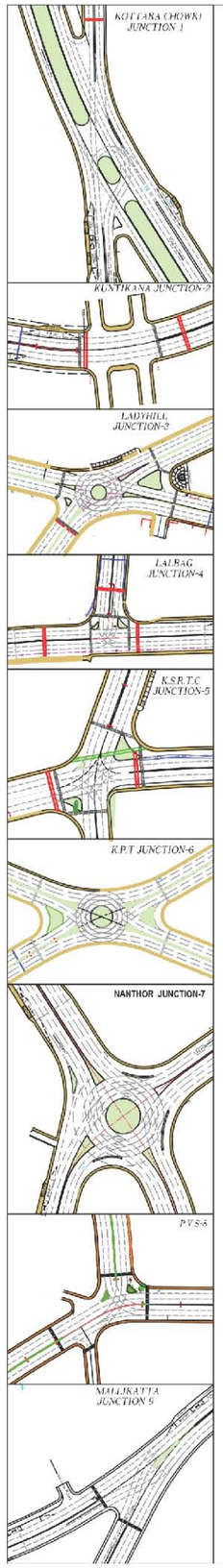


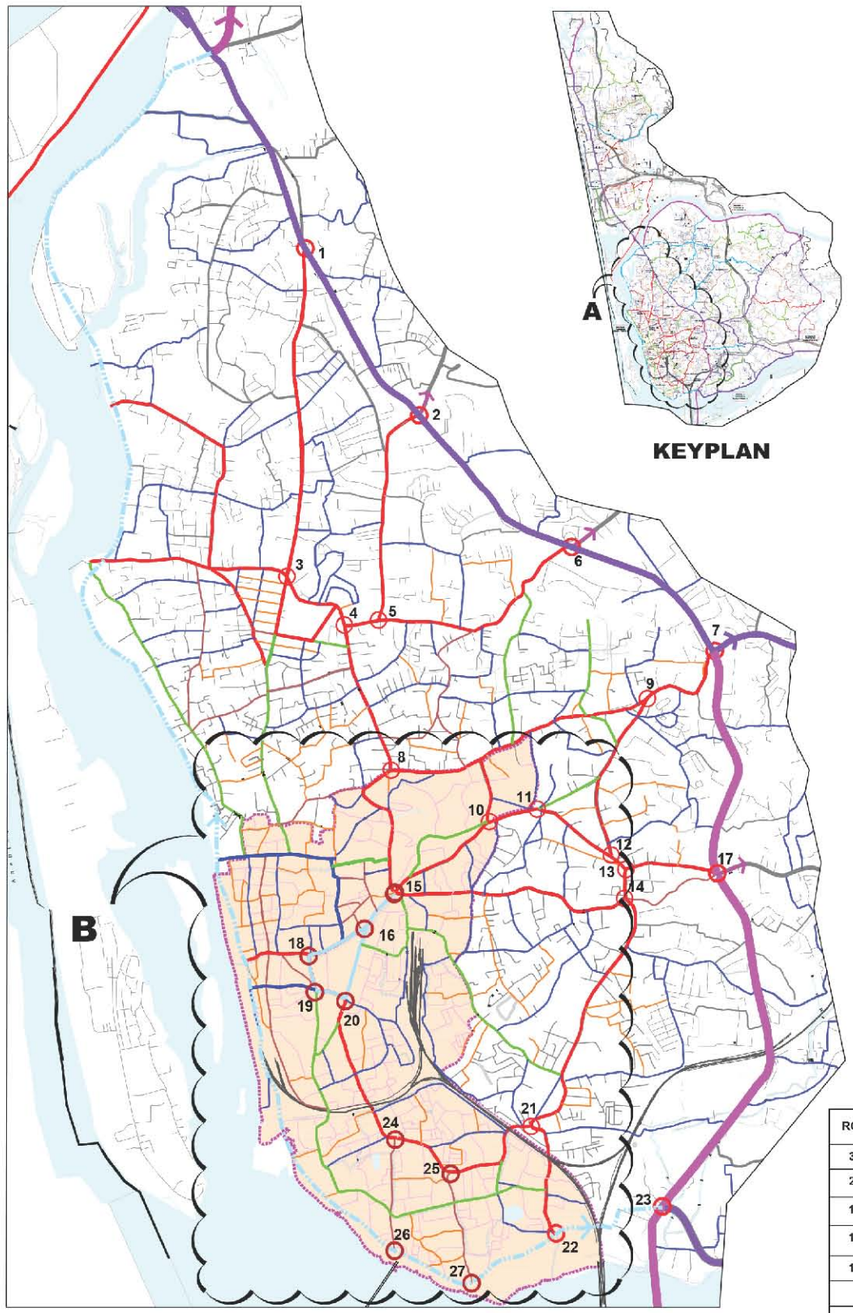
LINKS TO ROAD NETWORK



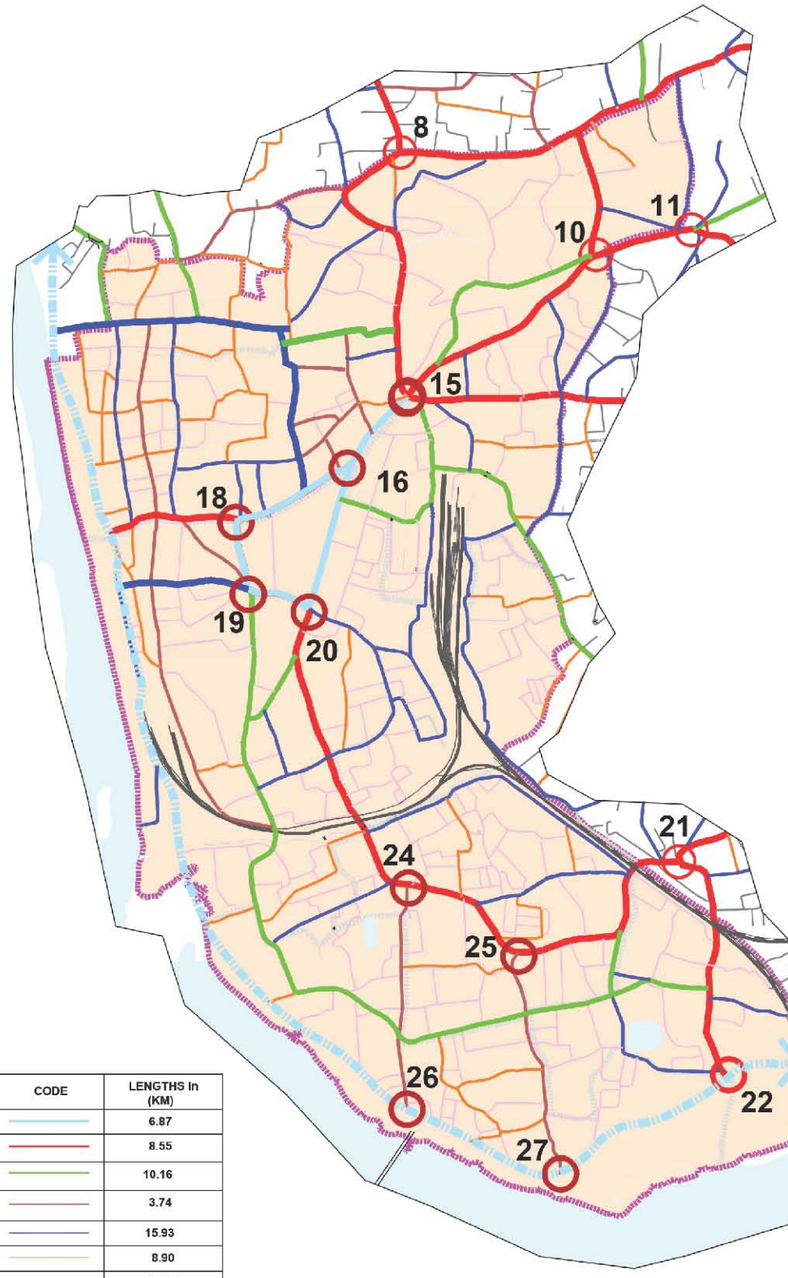
PROJECT COMPONENTS OF THE ABD

02. Road Heirarchy Circulation & Junction Improvement



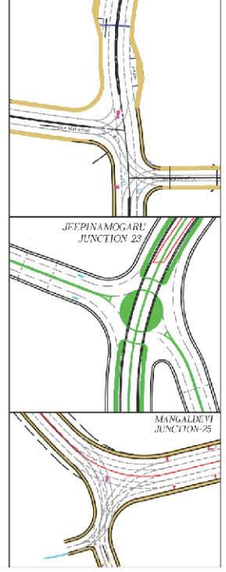


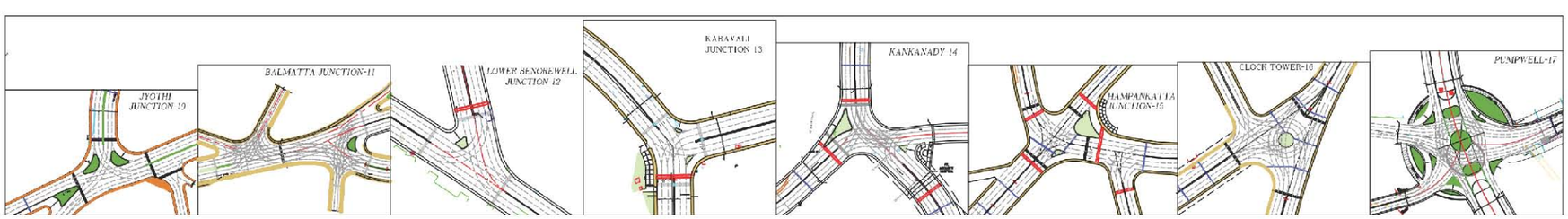
KEYPLAN



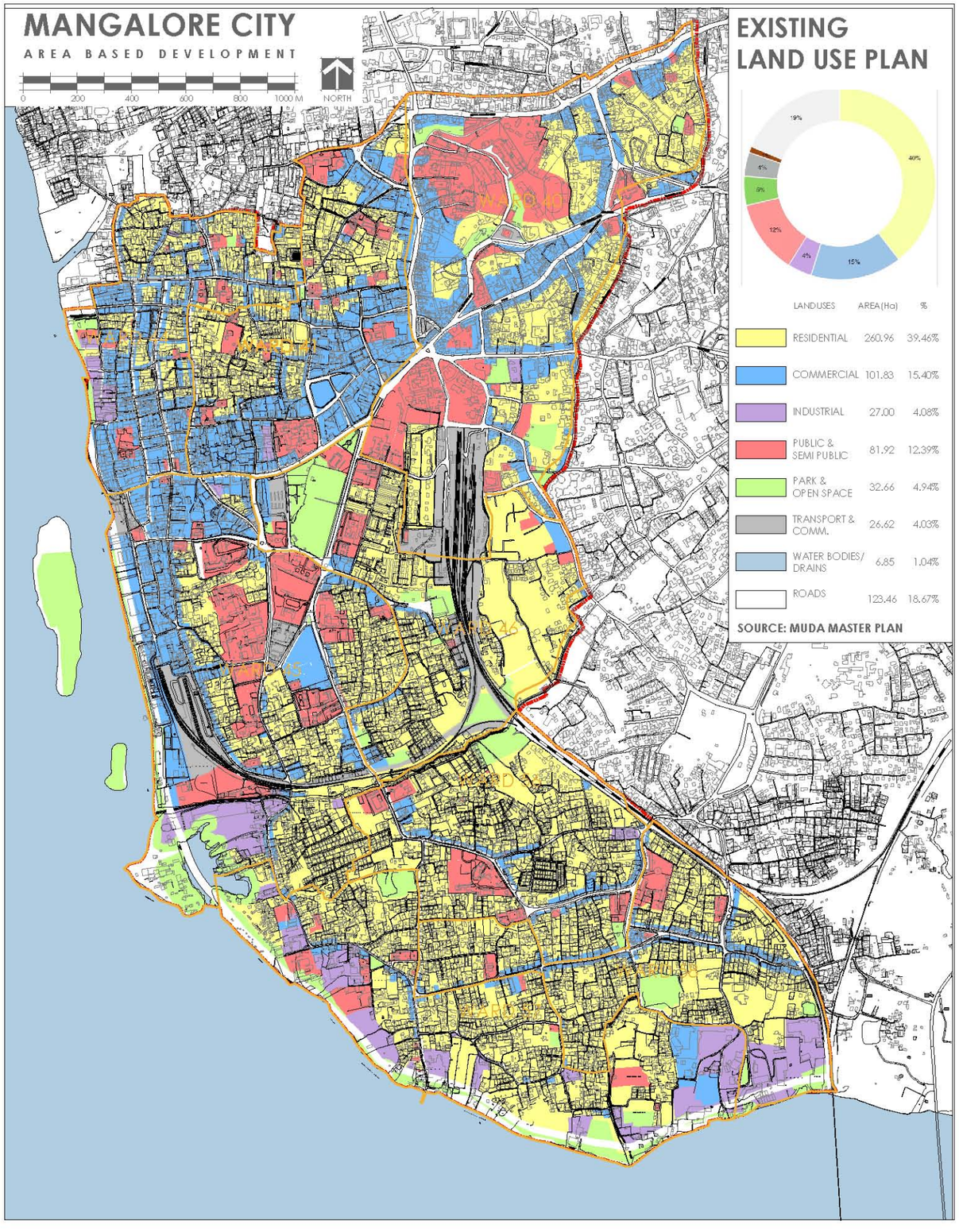
N

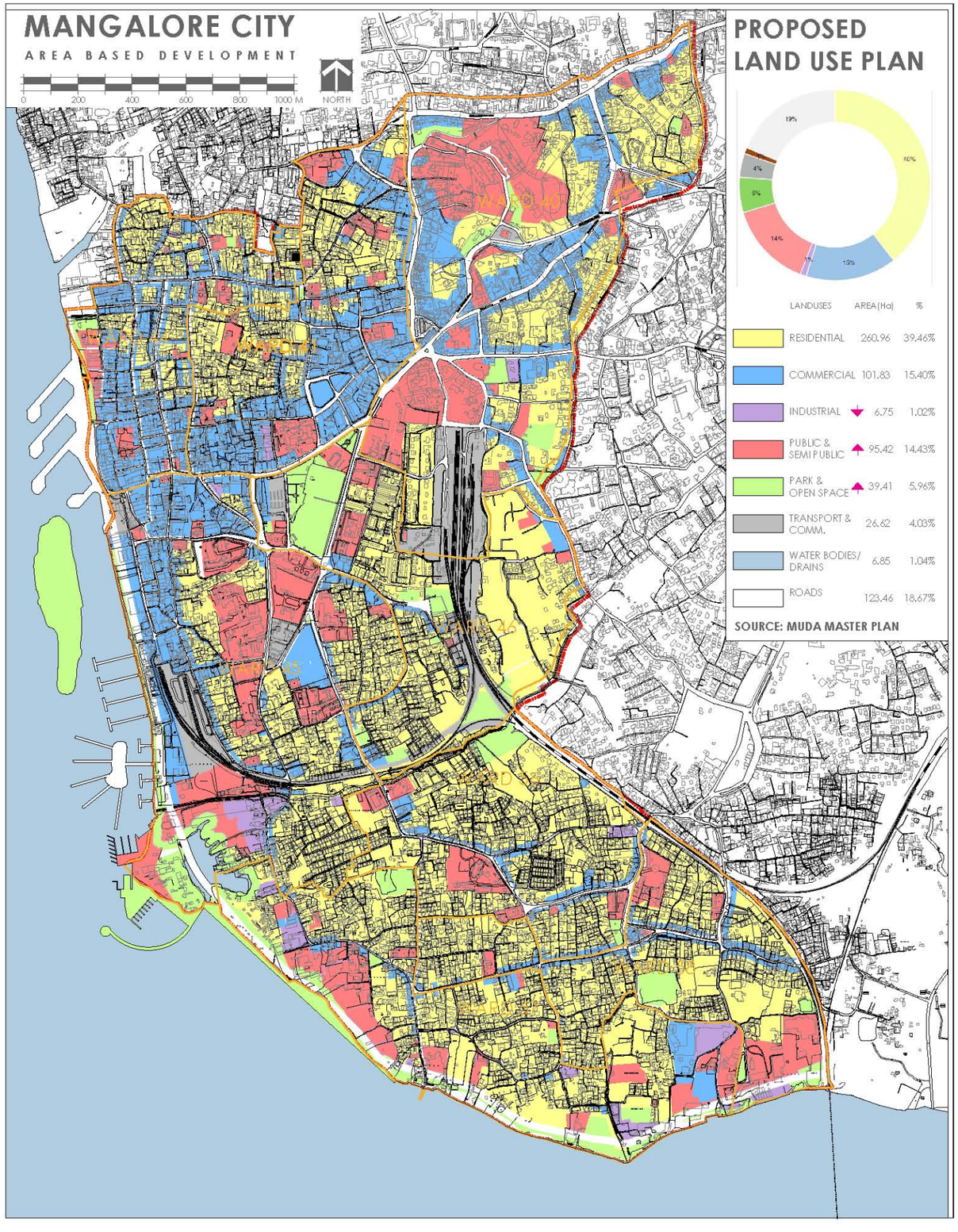
ROADS	CODE	LENGTHS In (KM)
30m		6.87
24m		8.55
18m		10.16
15m		3.74
12m		15.93
9m		8.90
6m		46.46





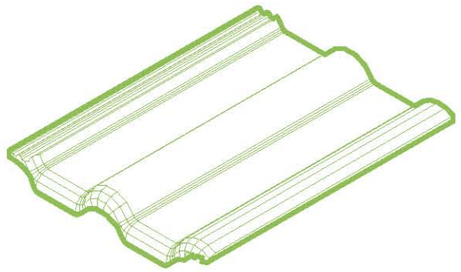
03. Existing and Proposed Landuse of ABD

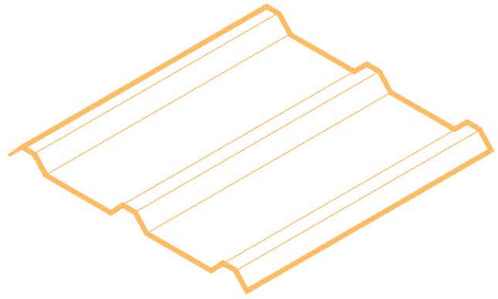




04. Mangaluru Tile Factory - Then and Now

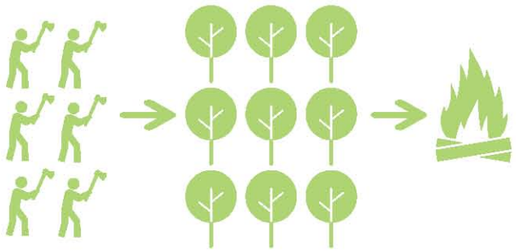
Mangaluru Tiles were first Introduced in 1890 by German Missionary Plebot upon finding large deposits of clay on the banks of Gurupura and Nethravathi Rivers and setting up a factory on the banks of the latter. Being cheap, durable and suited to the local weather condition, it proved to be an ideal material for roofing.





Industrialisation and Technological advancements gave rise to alternative roof building materials and construction methods. This also led to the mechanisation of the manufacturing process to a large extent. Dependence on firewood became scarce as alternate energy sources became available. Although, this resulted in an overall increase in operational costs in the manufacturing industry.

Clay brought by river

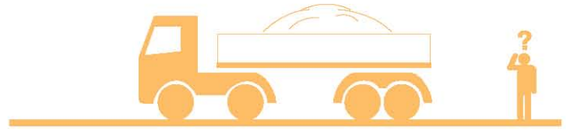


Energy for kilns from firewood

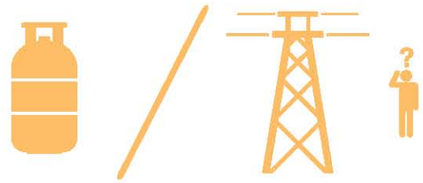
INCEPTION (1860)

TECHNOLOGICAL ADVANCEMENT

Clay brought by road

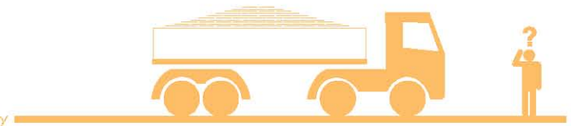


Energy for kilns using LPG / Electricity



Tiles transported by river

Tiles transported by road



TODAY (2016)

functioning at 10% efficiency

large unused open spaces

The tile factories hold great potential for adaptive reuse as

Hotel/Food and Beverages

Eateries

Institutions of the City

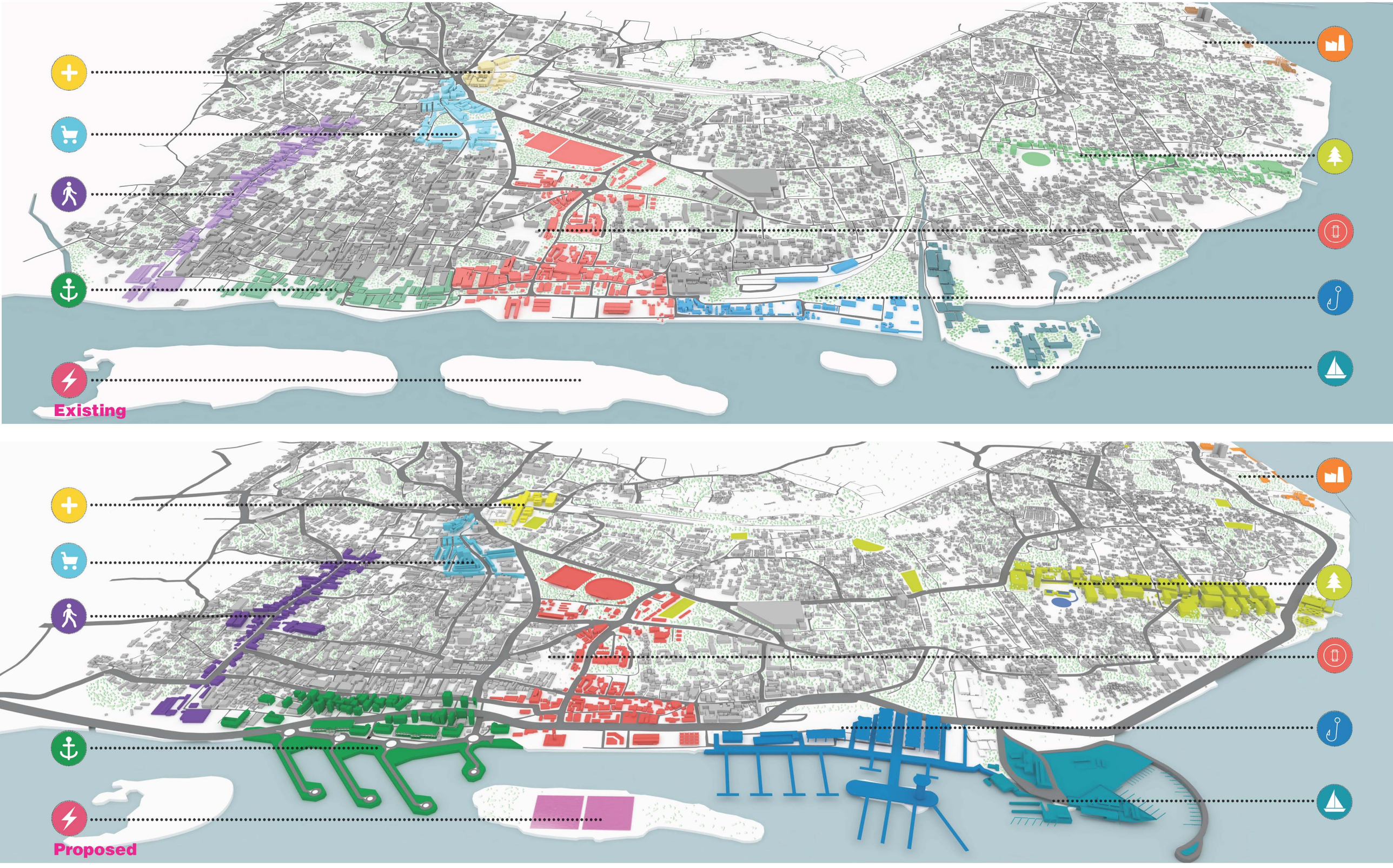
Public Art/Performance Art Spaces

Schools/College

Convention Centres

Characteristic of Mangaluru, the Mangaluru Tile Factories have manufactured roof tiles along the Malabar coast and supplied the country and beyond with roof tiles ever since the 1860s. With the rise of alternative roofing materials, and a diminishing supply of clay, the factories have declined and many now lie abandoned or functioning at a much-reduced capacity. Due to CRZ regulations, which prevent redevelopment within 100m of the waterfront, along with the heritage value, robustness and versatility of the factory buildings, the most logical option for developing the Mangaluru tile factory sites is adaptive reuse. Inherent flexibility lends the buildings to mixed uses including Public Library, Arts Centre, Hotel, Bathhouse, Marriage Hall, Schools, Housing, IT hubs, Innovation Centres and Office space alongside small-scale industries.

05. Urban Form



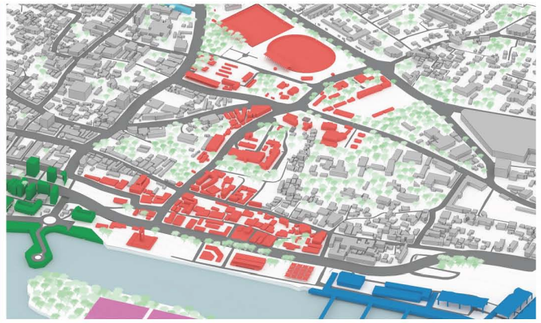
Area - 1628 Acres | Cost - 1707.29 Crores | Convergence Fund - 400.96 Cr. | P.P.P Funding - 516.95 Cr. | Revenue to S.P.V - 424 cr.

P01.
Nehru Maidan & Bunder Riverfront

Connecting the main open space and central node of the city with the revitalized historic waterfront.

Existing Scenario

Proposed Scenario



Development Strategy

• Redesigning the playgrounds and providing for sheltered stands.

• Restructuring the intra-city bus stand to decongest the road

• Redesigning the existing intercity bus stand as a temporary exhibition ground or assembly space for large events.

• Restructuring the waterfront providing for recreational open spaces, performance areas and assembly spaces.

• Adaptive reuse at the waterfront buildings as restaurants , art galleries and cultural spaces.

Area - 99.56 Acres

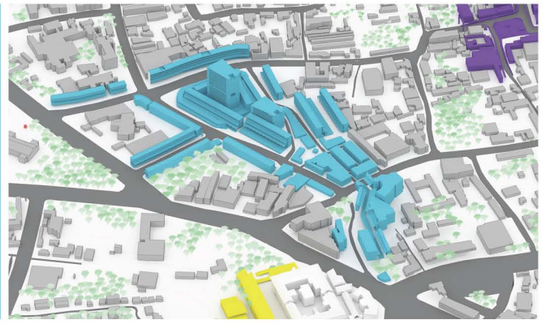
Cost - 50.21 Acres

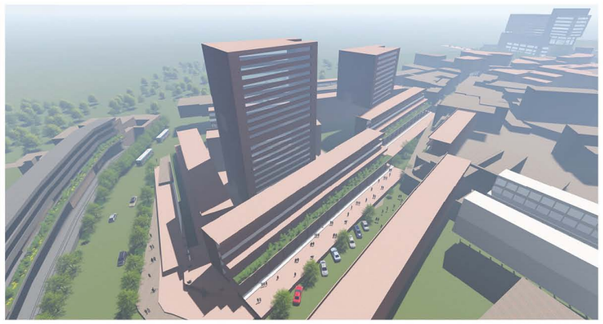
P02.
Hampankatta Retail Node

Re-activating Mangaluru's role as a place of exchange through rejuvenation of the central market area and creation of fluid pedestrian access.

Existing Scenario

Proposed Scenario





Development Strategy

• Rejuvenate & re-organise the central market to its full potential.

• Provide for a MICP to decongest the traffic as the central arteries.

• Restructure the area between these two facilities providing better connectivity.

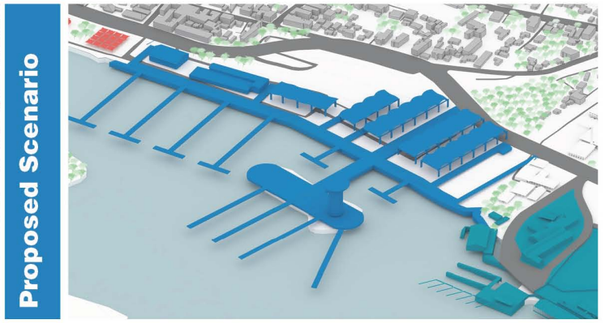
• Reorganising the entire district as the central retail node of the city which is pedestrian friendly.

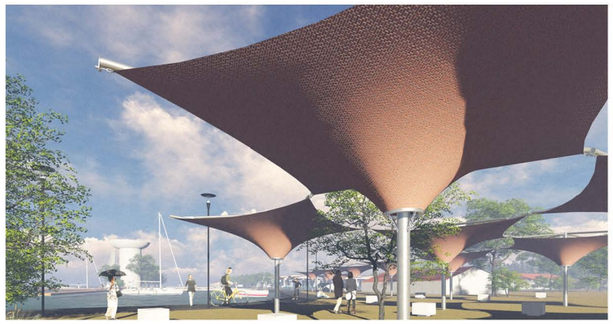
Area - 28.33 Acres

Cost - 161.80 Acres

P03. Fishing Harbour

Upgrading dilapidated fishing harbour to state of the art standards and integrating public & facilities for eating & water based recreation.





Development Strategy

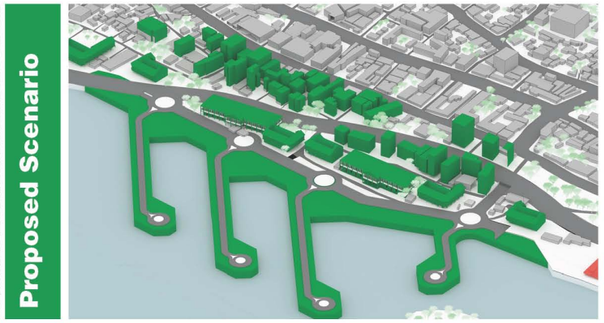
- Using the existing sand bar to provide for a solar panel farm.
- Creating the harbour as an active public space which is easily accessible from the city.
- Upgradation of the present harbour by providing additional wharfs which would increase the docking capacity by two fold.
- Creating a state of the art facility for auctioning, wholesale a retail activities related to the fishing industry.
- Creating auxiliary facilities like processing units, ice factories & logistics.
- To create a portion of the harbour for recreational water based activities like fishing, angling trolling & deep sea fishing.

Area - 22.46 Acres

Cost - 91.76 Cr.

P04. Old Port

Re-organising the docking facility in separate wharfs for the traditional boats (Manghi's) and the medium sized fishing boats.



Development Strategy

- Re-organising the docking facility in separate wharfs for the traditional boats (Manghi's) and the medium sized fishing boats.
- Providing better connectivity to the loading 7 unloading vehicles between the wharfs is the auxiliary facilities.
- Upgrading the infrastructure supporting the fishing industry.
- Making the port a destination for quality sea food restaurants, shopping & related water front activities.

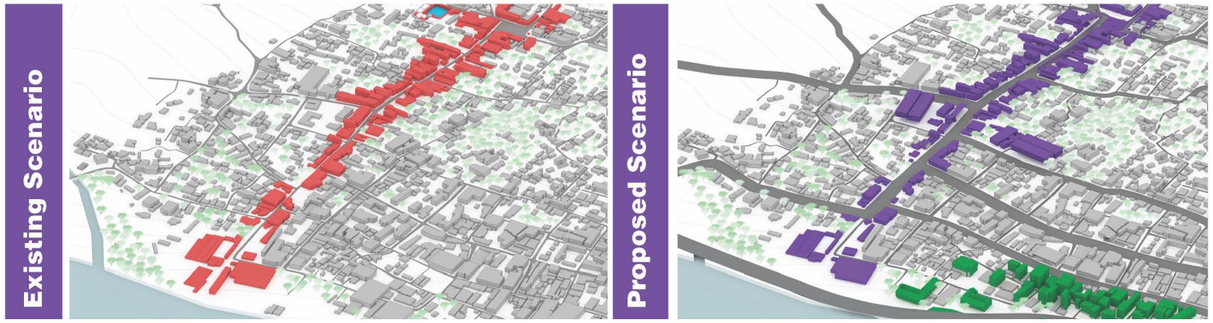
Area - 8.42 Acres

Cost - 88.45 Cr.

P05.

Car Street Temple Precinct

Clarifying the Temple precinct and access roads as active public space for commerce, festivals and spontaneous interaction.



Development Strategy

• Organising the area between the temples as a major square to facilitate activities during the festivals.

• Restructuring the entire walk from the temple to the water front to enhance the experience during the festival and as a heritage walk during the rest of the year.

• Creating halls & congregation areas along the water front for community based activities.

• Providing for a park along the waterfront for the residential population of the street & its neighbourhood.

• Adaptive Reuse of the tile factory as a community center and a Waterfront Park.

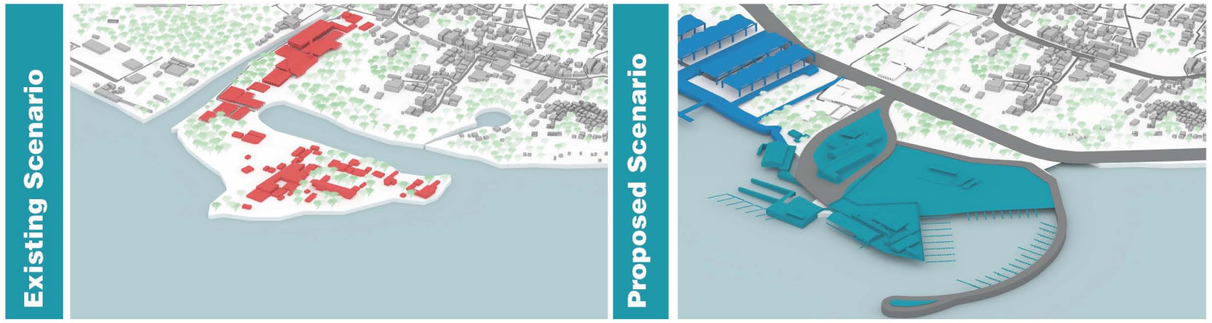
Area - 56.86 Acres

Cost - 29.10 Cr.

P06.

Marina

Waterfront and Marina Development



Development Strategy

• Optimizing a natural sheltered condition to house a marine, repair & refuelling of yachts – training centre for the leisure and maritime and nautical sector

• Reorganising the fishing harbour within a networked complex for ware housing ,truck terminal , auction centre , repair for fishing vessels.

• Adaptive house of disused tile factory premises for exhibition and public art.

• Providing facilities for a Modernised Traditional Boat Building Yard.

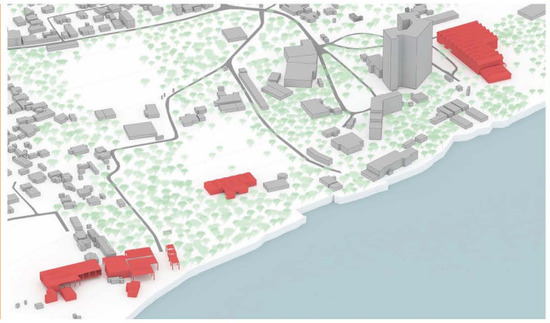
Area - 24.56 Acre

Cost - 101.95 Cr.

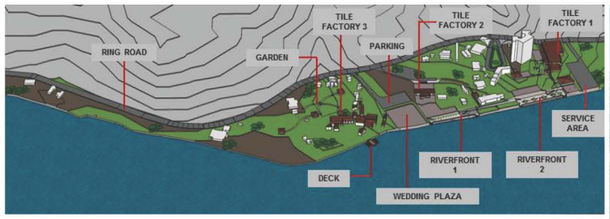
P07.
Adaptive Reuse of Tile Factories

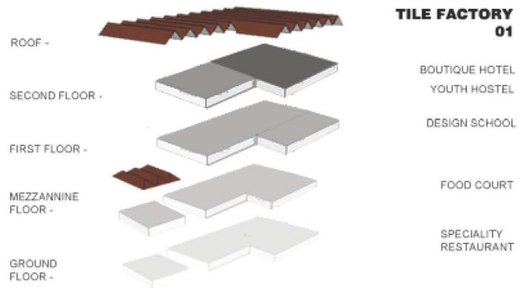
With the rise of alternative roofing materials and a diminishing supply of clay, many characteristic Mangaluru Tile factories lie abandoned or functioning at a limited capacity. Due to CRZ regulations, along with the heritage value and robust versatility of the factory buildings, the logical option for developing the riverfront sites is adaptive reuse. Inherent flexibility lends the buildings to mixed uses including Culture, Hospitality, Education, IT and small-scale industry.

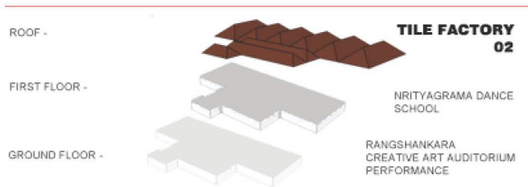
Existing Scenario

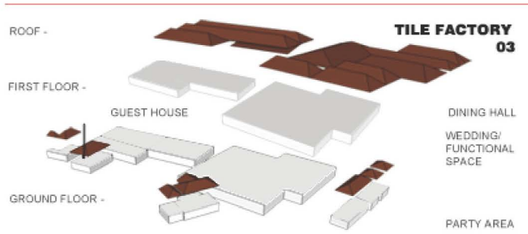


Proposed Scenario









Development Strategy

- Historic tile factories dating from the 1860s protestant Basel Mission adapted for mixed use functioning including cultural, hospitality, IT and innovative services alongside limited functioning factories.

- Tile-factory as the administration of the journey to the waterfront re-used in an arts centre, Yakshagana grounds and a museum with activities such as restaurants and street food.

Area - 42.38 Acres

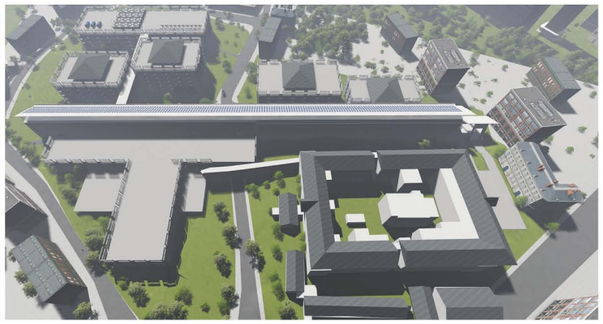
Cost - 77.97 Cr.

P08.
Upgrading District General Hospital

Dating from the 19th century, Wenlock and Lady Goschen Hospitals are Pavilion hospitals, built along the guidelines of Florence Nightingale. These heritage hospitals will be upgraded to provide state-of-the-art facilities and healthcare whilst retaining their original character, scale and civic function as points of encounter.

Existing Scenario

Proposed Scenario



Development Strategy

- Upgrading historic pavilion hospital to retain architectural character and achieve state of the art healthcare standards.

- Upgrading the existing hospital by providing additional blocks which would house state of the art facilities.

- Retaining the heritage value of the existing 100 year old structure by decongesting the activities housed till this building and relocating them in the newer blocks.

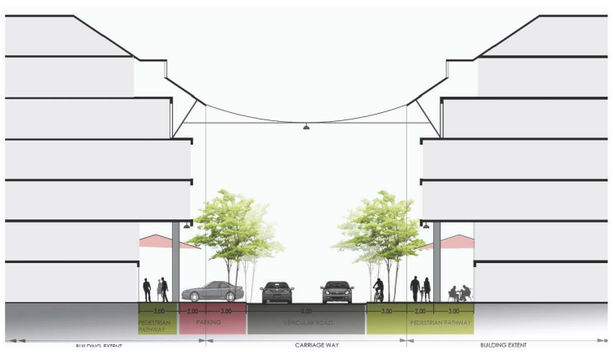
- Providing for infrastructure which would accommodate the latest advancement in this field as it happens from time to time.

Area - 70.67 Acres

Cost - 72.90 Cr.

P09. Connector Street

Demonstrative public link road from the city arterials to reinitialized water front.



Development Strategy

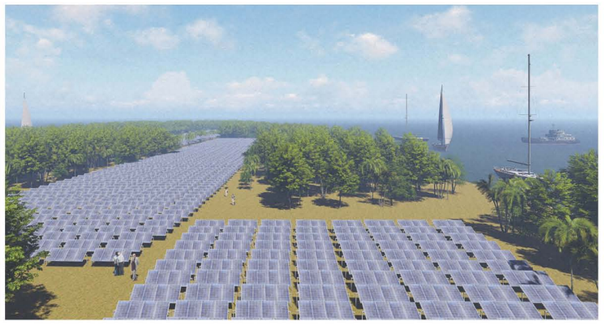
- Critical 'Connector Street' linking the existing arterial to the proposed waterfront road with street level retail activity a housing at higher floors.
- Mixed socio-economic communication with inclusive housing.
- Redevelopment of small sized residential plots with limited access into an amalgamated larger plot allowing retail street activities.
- Complimentary intervention as an interface of activities and urban form.
- Public activities zones such as the swimming pool & the temple upgraded and integrated into the public domain.
- An Experiment in Propert Pooling and Reconfiguring an urban land thus creating an entirely new experience of anticipating and arriving at a waterfront.

Area - 45.92 Acres

Cost - 50.20 Cr.

P10. Solar Farm

Harvesting Solar Energy in an un inhabitated Island by Occupying 12% of its Area.



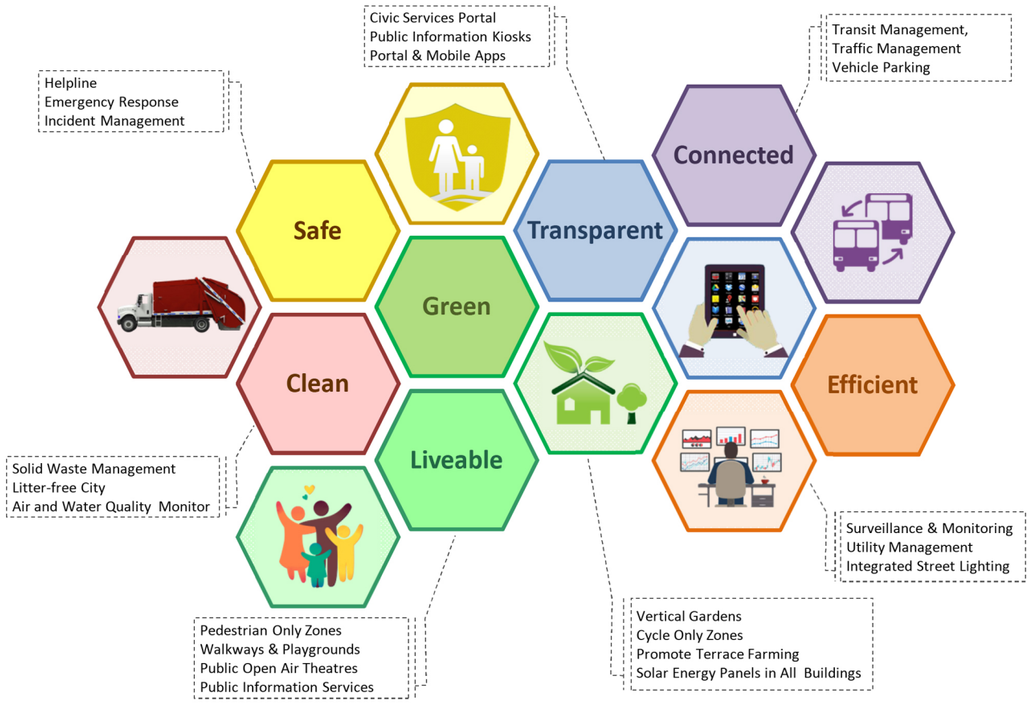
Development Strategy

- Contributing to the city's and Nation's Power Grid by utililizing an un inhabitated island by providing State of the Art Solar Panel which also facilitates a landside for a Marine ecological Park.
- Introduction of local flaura and fauna including Mangroves, Forest Cover and creating an Urban Bio Diversity Zone.

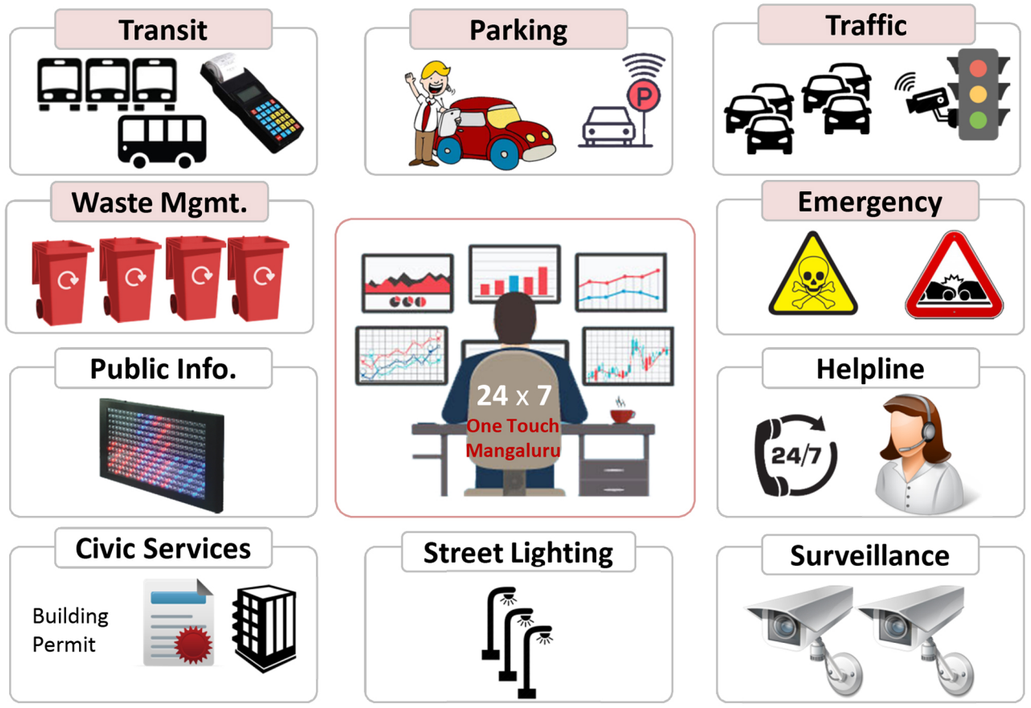
Area - 18.42 Acres

Cost - 86.74 Cr.

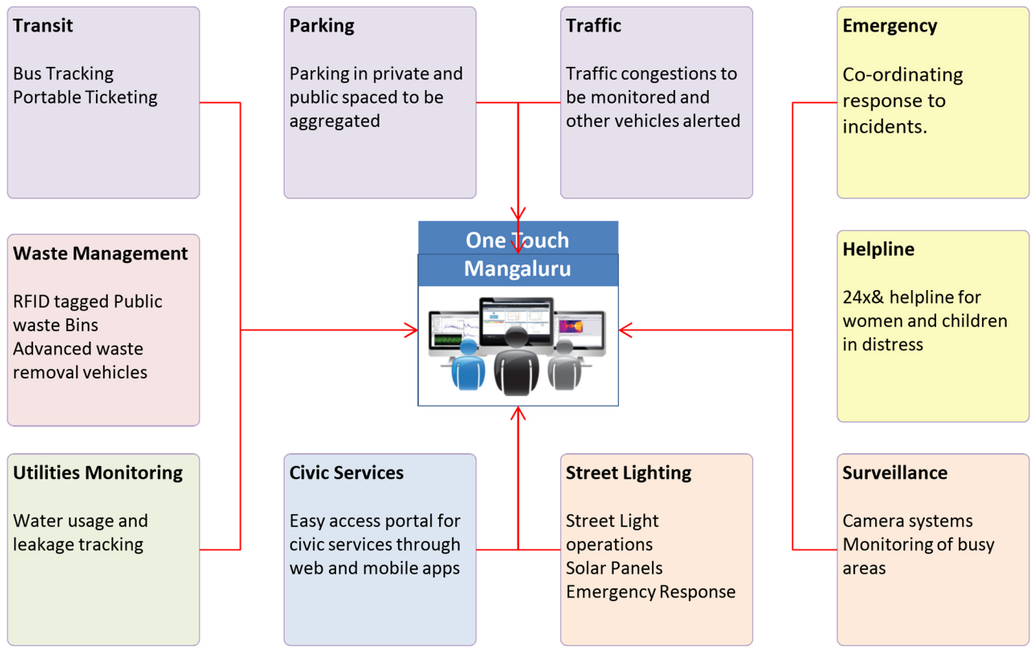
Core Dimensions of PAN City Initiatives



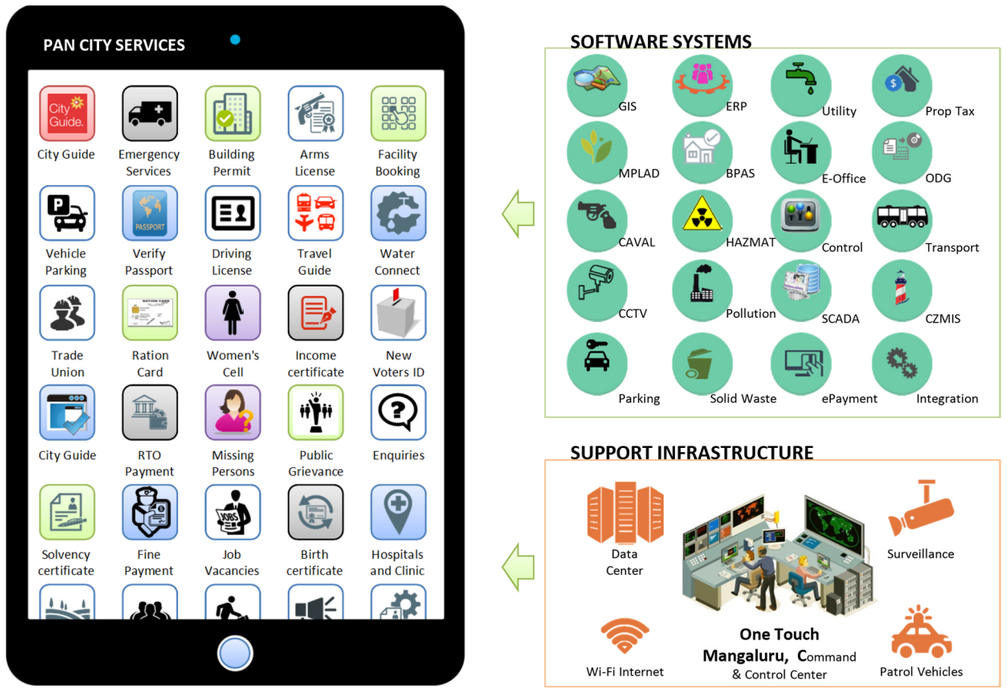
PAN City Initiatives: Co-ordination In Action



PAN City Initiatives: Operations Co-ordination & Control



Connecting PAN City Initiatives to Citizens and Business through Web and Mobile



PAN City Initiatives – Integrating Key Sub Systems for Smart Living

CLEAN

1200 Waste Bins fitted with RFID tags for remote tracking

450 New automated Waste Removal Vehicles

100 New public hygiene centres to be built

SAFE

1000 Public Emergency Response Buttons to be placed

60 People response centre for women's issues

30 Advanced Emergency Response Vehicles

TRANSPARENT

240 Public Service and Information Portals for Citizens

150 Free Wifi Hubs for access to Public Services

36 New mobile app functions to be made for civic services

CONNECTED

350 Traffic points to be upgraded with surveillance kit

750 Advanced Vehicle Tracking Systems for Buses

4000 New parking slots to be integrated across city

EFFICIENT

60 Information access points and kiosks to be installed

360 Utility monitoring devices to be installed

50 People call and response centre for civic services

GREEN

200000 New trees to be planted through citizen programs

20 KM dedicated bicycle lanes along arterial roads

20000 New Rainwater harvesting facilities on existing and proposed

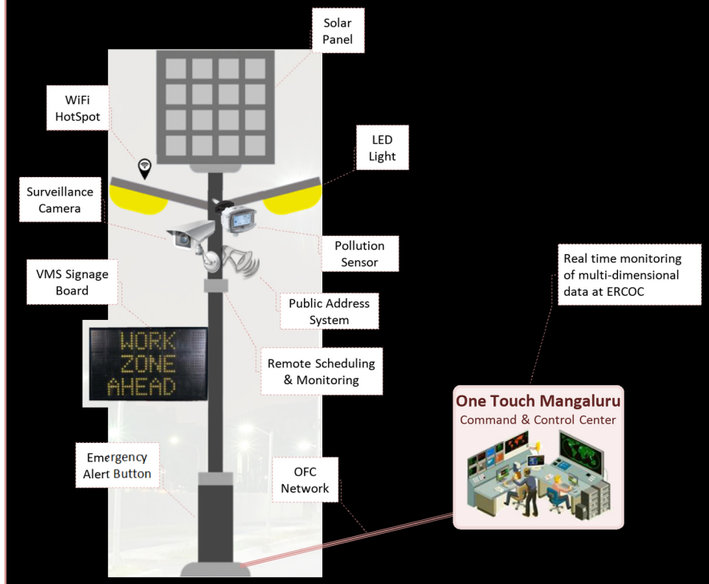
LIVEABLE

50 Schools to be equipped with E-Pathashala kit

200 Public Information Display Boards along main roads

20 New walkways circling lakes and gardens

PAN City Initiative: Sensible Street Lighting Network



- Maximizing utility potential of Street Light Infrastructure
- Revenue Streams from monetization of VMS Boards
- Energy savings due to solar and LED usage for lamps
- Improved emergency response for public on streets

PAN City Initiative: Public WiFi - connecting all city stakeholders closer

Detailed Cost and Convergance

S.No.	Feature	Description	*Cost (in Lakhs)*	*Total Cost (in Lakhs)*	Convergence							
					Scheme/ Program	GOI (other schemes)	GOK Schems	MCC	PPP	Beneficiaries	Smart City Component	ADB
ABD Development												
1	Identity & Culture	Retrofit Car Street & areas of Sri Venkatramana Temple as Religious Zone	2,921	4,172	PPP	-	-	-	1,463	-	1,459	-
		Community Level Facilities along with international swimming pool	1,250		-	-	-	-	-	-	1,250	-
2	Economy & Employment	Retrofit of Fish Market	144	33,788	PPP	200	-	-	72	-	(128)	-
		Redevelopment of Central Market	5,063		PPP	-	-	-	5,063	-		-
		Redevelopment of Vacant Premises of DC office into Hotel, Retail Shops and Speciality Restaurants	729		-	-	-	-	-	-	729	-
		Redevelopment of Fisheries Harbour along with fish market & ancilliary facities	8,846		State Fisheries Dept	-	5,000	-	3,846	-	-	-
		Retrofit of Old Port	8,845		State Ports Dept	-	5,000	-	-	-	3,845	-
		Jetty Repair Facility & Warehouse	2,395		PPP	-	-	-	2,395	-	-	-
		Retrofitting of 6 tile factories into Hotel, Auditorium, Convention Centre, Museum, Marina with retail and Speciality Restaurants	6,724		PPP	-	-	-	4,318	-	2,405	-
		Redevelopment of Brick Factory into retail/ commercial development (retail shop, small office)	1,043		PPP	-	-	-	1,043	-	-	-
		Redevelopment of Old Port as Riverfront Rcreational Space	2,558		-	-	-	-	-	-	2,558	-
3	Health	Upgradation of Wenlock & Lady Goshen Hospital	7,290	7,290	State Health Dept	-	5,000	-	-	-	2,290	-
4	Education	Skill Development and Safety Training Centre	330	1,930	-	-	-	-	-	-	330	-
		Implementation of e-smart schools in all government schools	1,600		-	-	-	-	-	-	1,600	-
5	Open Spaces	Water front Marina Develpment	7,800	9,575	PPP	-	-	-	1,225	-	6,575	-
		Development of Waterfront Gardens	1,074		-	-	-	-	-	-	1,074	-
		Development of Green Area along Connector Road	702		-	-	-	-	-	-	702	-
6	Housing	EWS Housing	780	780	Atal Awas Yojna	375	250	-	-	155	-	-
7	Transport, Mobility & Walkability	Specialised Pedestrian Facilities along certain road sections	2,782	44,901	-	-	-	-	-	-	2,782	-
		Retrofit of Bus Station	990		-	-	-	-	248	-	743	-
		Widening of Roads	15,000		MCC Funds	-	-	7,300	-	-	7,700	-
		Development of MLCP with retail space near Hampankatta Junction	9,117		-	-	-	-	9,117	-	-	-
		Upgradation of Roads with footpaths	15,000		-	-	-	-	-	-	15,000	-
		Development of MLCP a along Connector Road	1,246		-	-	-	-	-	-	1,246	-
		Provision of Road side plantation	435		-	100	-	-	-	-	335	-
		Implementation of Smart Bus Shelters	331		-	-	-	-	-	-	331	-
8	IT Connectivity	100% IT connectivity	440	440	-	-	-	-	-	-	440	-
9	Energy Source & Management	Solar and Recreational Island	8,674	29,006	PPP	-	-	-	8,674	-	-	-
		Installation of rooftop solar on Govt buildings	20,332		PPP	-	-	-	14,233	-	6,100	-
10	Water Source & Quality	100% water supply coverage along with residential meters, water quality monitoring and SCADA	4,000	5,000	ADB	-	-	-	-	-	-	4,000
		Implementation of rain water harvesting in all building having area more than 1000 sqft.	1,000		-	-	-	-	-	800	200	-
11	Waste Water	100% waste water coverage with SCADA and connecting the waste water to STP for treatment and reuse	12,886	12,886	AMRUT	2,577	-	-	-	-	10,309	-
		100% underground drainage network for ABD	3,750								3,750	
12	Air Quality	Installation of air quality monitoring sensors and connecting them to command and control centre.	100	100	-	-	-	-	-	-	100	-
13	Energy Efficiency	Conversion of all the lighting in government building into LED	446	2,625	EESL	223	-	-	-	223	-	-
		Conversion of all street lights into solar LED	2,179		EESL	1,089	-	-	-	-	1,089	-
14	Underground Wiring	IPDS proposals	11,432	11,432	IPDS	6,859	1,143	-	-	-	3,430	-
15	Sanitation	E-toilets along smart bus shelters	496	496	-	-	-	-	-	-	496	-
		TOTAL COST OF ABD		**1,70,729**	**-**	**11,424**	**16,393**	**7,300**	**51,695**	**1,178**	**78,738**	**4,000**
B		**PAN CITY DEVELOPMENT**										
1		ICT and Disaster Safety Components	1558								1557.7	
2		Public Mobility App	1000								1000.0	
3		Hardware & GPS Support	1000								1000.0	
4		MCC - Citizen interphase APP	250								250.0	
		Total - One Touch MANGALORE	**3808**			0	0	0	0	0	3808	
5		Bus shelters with Wi-Fi & E toilets	1500		AMRUT	750.0					750.0	
6		Smart water meters for H/H (15mm)	3750									3750.0
7		Smart water meter apartments (40mm) with Analyser	125									125.0
8		Bulk water meters + SCADA for water distribution network	5000									5000.0
9		Smart energy meters for LT (Res)	3750								3750.0	
10		Mechanised vehicles for SWM collection (8 W)	300					300.0				
11		Mechanised vehicles for SWM collection (4 W)	240					240.0				
12		Segregated smart bins for street level collection	50					50.0				
13		Hand held readers for H/H meters	1								0.8	
14		Software for smart meters	7								6.5	
15		Software for high bulk water meters	3								2.5	
16		LED Street Lights - Major Roads	100		EESL	100.0						
17		LED Street Lights - Minor Roads	125		EESL	125.0						
18		LED Street Lights - Lanes	450		EESL	450.0						
19		Command & Control Centre	6000								6000.0	
20		CCTV System Fixed Zoom Telescopic Camera	300								300.0	
21		Hardware Support	1000								1000.0	
22		Networking & Cloud Support	500								500.0	
23		CCTV for road surveillance (PTZ) with WP	1250								1250.0	
24		CCTV for road surveillance (fixed tele) with WP	450								450.0	
25		Control Room Hardware	350								350.0	
26		Cabling & other hardware	250								250.0	
27		Patrolling Vehicles 4 W	36		Nirbhaya Scheme	36.0						
		Total - Smart Utility Management	**25536**			1461	0	590	0	0	14610	8875
B		**TOTAL COST OF Pan City**	**29343**		**-**	**1,461**	**-**	**590**	**-**	**-**	**18,417**	**8,875**
C		**Total Pan city and ABD**	**2,00,072**		**-**	**12,885.0**	**16,393**	**7,890**	**51,695**	**1,178**	**97,156**	**12,875**

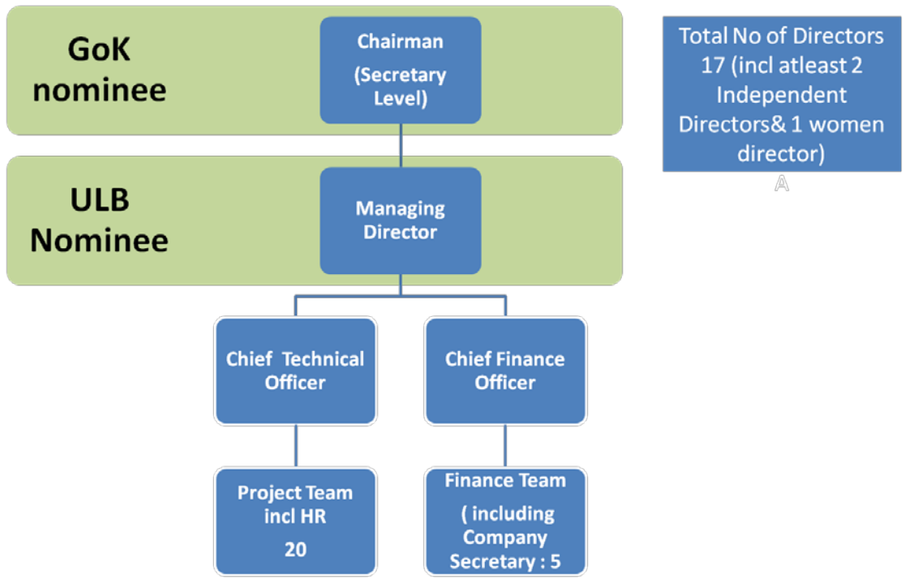
Q 31. Implementation Plan

S.No.	Description	Timeline															
		FY 2017-18				FY 2018-19				FY 2019-20				FY 2020-21			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	**Identity & Culture**																
	Retrofit Car Street & areas of Sri Venkatramana Temple as Religious Zone																
	Community Level Facilities along with international swimming pool																
2	**Economy & Employment**																
	Retrofit of Fish Market																
	Redevelopment of Central Market																
	Redevelopment of Vacant Premises of DC office into Hotel, Retail Shops and Speciality Restaurants																
	Redevelopment of Fisheries Harbour along with fish market & ancilliary facities																
	Retrofit of Old Port																
	Jetty Repair Facility & Warehouse																
	Retrofitting of 6 tile factories into Hotel, Auditorium, Convention Centre, Museum, Marina with retail and Speciality Restaurants																
	redevelopment of Brick Factory into retail/ commercial development (retail shop, small office)																
	Redevelopment of Old Port as Riverfront Rcreational Space																
3	**Health**																
	Upgradation of Wenlock & Lady Goshen Hospital																
4	**Education**																
	Skill Development and Safety Training Centre																
	Implementation of e-smart schools in all government schools																
5	**Open Spaces**																
	Water front Marina Develpment																
	Development of Waterfront Gardens																
	Development of Green Area along Connector Road																
6	**Housing**																
	EWS Housing																
7	**Transport, Mobility & Walkbility**																
	Specialised Pedestrian Facilities along certain road sections																
	Retrofit of Bus Station																
	Widening of Roads																
	Development of MLCP with retail space near Hampankatta Junction																
	Upgradation of Roads with footpaths																
	Development of MLCP a along Connector Road																
	Provision of Road side plantation																
	Implementation of Smart Bus Shelters																
8	**IT Connectivity**																
	100% IT connectivity																
9	**Energy Source & Management**																
	Solar and Recreational Island																
	Installation of rooftop solar on Govt buildings																
10	**Water Source & Quality**																
	100% water supply coverage along with residential meters, water quality monitoring and SCADA																
	Implementation of rain water harvesting in all building having area more than 1000 sqft.																
11	**Waste Water**																
	100% waste water coverage with SCADA and connecting the waste water to STP for treatment and reuse																
	100% underground drainage network for ABD																
12	**Air Quality**																
	Installation of air quality monitoring sensors and connecting them to command and control centre.																
13	**Energy Efficiency**																
	Conversion of all the lighting in government building into LED																
	Conversion of all street lights into solar LED																
14	**Underground Wiring**																
	IPDS proposals																
15	**Sanitation**																
	E-toilets along smart bus shelters																
B	**PAN CITY DEVELOPMENT**																
	Total - One Touch MANGALORE																
	Total - Smart Utility Management																

Q 33. SPV Structure

SPV Structuring

Mangaluru SMART CITY Proposal



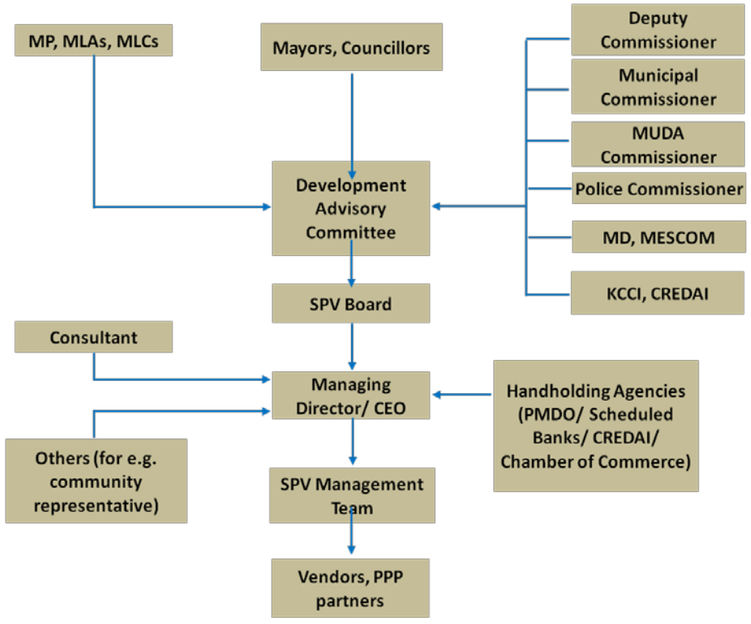
Development Advisory Committee

Mangaluru SMART CITY Proposal

1	Dist. Incharge Minister (Chairman)	12	3 Corporators on yearly rotation
2	MP (Vice Chairman 1)	13	
3	MLA - 1 (Vice Chairman 2)	14	
4	MLA - 2 (Vice Chairman 3)	15	MD Smart City SPV
5	MLC - 1	16	DC
6	MLC - 2	17	Police Commissioner
7	Hon. Mayor	18	Commissioner MCC (Member Secretary)
8	Hon. Dy. Mayor	19	Commissioner MUDA
9	Chairman, Works	20	KCCI
10	Opp. Leader	21	CREDAI
11	Chairman, MUDA	22	3 Prominent Citizens

SPV Structuring

Mangaluru SMART CITY Proposal



Directors of SPV

Mangaluru SMART CITY Proposal

1	GOVERNMENT OF KARNATAKA	CHAIRMAN OF SPV
2		MD OF SPV
3		PR. SECRETARY PWD
4		SECRETARY FISHERIES
5		MD KPTCL (CHAIRMAN MESCOM)
6		MP (LOKSABHA)
7		MLA 1
8	MANGALURU CITY CORPORATION	HON. MAYOR
9		COMMISSIONER
10		MLA 2
11		CORPORATOR 1
12		CORPORATOR 2
13		CORPORATOR 3
14		CORPORATOR 4

Q 42. Financial Timeline

The total funds required for the implementation of Smart City Projects is Rs. 2000.72 Cr. It is planned to implement the project in four years starting from 2017-18 to 2020-21. Based on the timelines for completion of projects as indicated in Table 5 (Question 31) the funds requirements along-with timelines are indicated below:

Source of Funds	Year 1	Year 2	Year 3	Year 4	Total
Smart city Mission-GOI	101.0	192.4	119.7	73.6	486.78
Smart city Mission-GOK	101.0	192.4	119.7	73.6	486.78
GOI- Other Schemes	32.07	43.81	29.02	21.95	126.85
GoK-Other schemes	48.24	60.35	40.55	14.79	163.93
MCC-own funding	2.95	39.45	36.50	0.00	78.90
Beneficiaries	0.45	3.04	4.29	4.00	11.78
ADB	52.38	56.38	20.00	0.00	128.75
PPP	102.36	162.29	149.08	103.22	516.95
Total	**440.52**	**750.20**	**518.80**	**291.20**	**2000.72**

The above fund flow will ensure the timely availability of funds required for meeting the capital expenditure budget of all the projects.

Financial Sustainability of SPV

As mentioned earlier, a Special Purpose Company (SPC) shall be formed. It is assumed that the entire funding from the Smart City money shall be routed through the SPV. SPV shall also be responsible for the O&M of the assets being created excluding the assets created for the beneficiaries, or assets created by PPP developers. The SPV shall also be given right to collect revenues from some of the project being developed. MCC has also agreed to pay the administrative, development and facilitation charges being generated through redevelopment of the area shall be given to the SPC. The other taxes and charges shall be the responsibility of the Mangaluru City Corporation (MCC). Any gap between income and the expenses of the SPC shall be required to be paid by the MCC. We have derived the projected financial statements (income statement, P&L statement, Balance Sheet and Cash flow statement) for determining the support required from the MCC. The following sections describes clearly the details of project cost, revenue assumptions, operating structure and assumptions etc. at length.

1. Project Cost

Following assumptions are used for arriving at the landed project cost:

a) The implementation period is assumed to be five years period commencing from FY 2016-17 and ending at end of FY 2020-21.
b) The Financial Model for SPV is developed for 15 years.
c) The Project Cost estimates are based on current price (2016-17)

The following table shows the breakup of Project Cost with the convergence of other schemes:

Table 0-1: Breakup of Project Cost

Sr No.	Initiative	Project Cost
1	Religious Zone and community centre	41.72
2	Fish market, Harbour, Jetty, Old Port	202.30
3	Skill development centre	3.30
4	Central Market, CD office, Old factories redevelopment	161.16
5	ESI Hospital	72.90
6	E Smart Schools Implementation	16.00
7	Green Park and Riverfront Development and air quality	96.75
8	Construction of houses	7.80
9	Transport, mobility and walkability	449.01
10	IT Connectivity	4.40
11	Rooftop solar and LED conversion	316.31
12	Water metering & Rainwater Harvesting	50.00
13	Waste Water	166.36
14	Sanitation	4.96
15	Under Ground Wiring	114.32
	Total : Area Based Development	**1707.29**
1	ICT Based intelligent governance system	38.08
2	ICT Based MSW management system	255.36
	Total : PAN CITY Proposals	**293.43**
	Total Project cost (ABD & PAN CITY)	**2000.72**

2. Phasing of Project Cost

The construction of the project would be undertaken in 5 years as tabulated hereunder:

Table 0-2: Phasing of Project Cost

Financial Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Investment (%)	22.0%	37.5%	25.9%	14.6%	0.00%	100.0%
Investment (Rs Lakhs)	44052	75020	51880	29120		200072

3. Means of Finance

The entire project is proposed to be funded from various sources such as Smart City Mission-GOI contribution, Smart City Mission- Government of Andhra Pradesh Contribution, Convergence from other GoI and GoAP schemes as tabulated in Table 1-1, own funds of MCC, contribution by beneficiaries, Public Private Partnership, as tabulated hereunder in Table 1-3.

Table 0-3: Means of Finance

Means of Finance (Rs In Lakhs)	% of total Project cost	Total Amount	Year 1	Year 2	Year 3	Year 4	Year 5
Smart city Mission-GOI	24.3%	486.78	101.03	192.44	119.68	73.62	
Smart city Mission-GOAP	24.3%	486.78	101.03	192.44	119.68	73.62	
GOI- Other Schemes	6.3%	126.85	32.07	43.81	29.02	21.95	
GoAP-Other schemes	8.2%	163.93	48.24	60.35	40.55	14.79	
MCC-own funding	3.9%	78.90	2.95	39.45	36.50	-	
Beneficiaries	0.6%	11.78	0.45	3.04	4.29	4.00	
PPP	25.8%	516.95	102.36	162.29	149.08	103.22	
One-time payment from the Sewerage users	6.4%	128.75	52.38	56.38	20.00	-	
Total	**100.0%**	**2,000.72**	**440.52**	**750.20**	**518.80**	**291.20**	

4. Revenue Assumptions

In order to make the SPV financially independent, certain revenue generating projects have been identified. The major revenue to the SPV is revenue heads of the proposed project are given in the table below

Table 0-4: Revenue Assumptions

S No	Particulars	Base Revenue
Projects Revenue		
1.	Central Market near Hampankatta	Rs. 7 per sq ft per month from 3rd year onwards
2.	Income from lease of market etc.	Rs. 10 per sqft per month from 2nd year onwards
3.	Smart Bus Shelters with Smart E-Toilets	Rs.8000 per bus terminal per year from 2nd year onwards
4.	Lease rental on solar island	From 3rd year onwards
5.	Kalyanmandapam	Rs. 1 crore per year from 4th year onwards
6.	Recreational revenues from Riverfront space near Nehru Maidan Precint	Rs. 12 lakh per annum from 4th year onwards
7.	Other revenues from administrative, development and facilitation charges	LUMPSUM on area basis

The total revenue from these operations are projected as tabulated hereunder:

Revenue Sheet										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Year Counter	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10
Fish Market in Nehru Maidan precint	0.0	0.0	0.0	8.3	8.3	8.3	9.5	9.5	9.5	11.0
Hotel near old DC Office	0.0	0.0	0.0	13.8	13.8	13.8	15.9	15.9	15.9	18.3
Riverfront Recreational space near Nehru Maidan Precint	0.0	0.0	0.0	23.0	23.0	23.0	26.5	26.5	26.5	30.4
Retail spaces NEAR Hampankatta Junction	0.0	0.0	0.0	26.0	29.7	33.4	38.4	38.4	38.4	44.2
Central Market NEAR Hampankatta Junction	0.0	0.0	0.0	19.5	19.5	19.5	22.4	22.4	22.4	25.8
Kalyanamandapam	0.0	0.0	0.0	80.5	92.0	103.5	132.3	132.3	132.3	152.1
Smart Bus Shelters with Smart E-Toilets	0.0	20.9	27.8	32.0	32.0	32.0	36.8	36.8	36.8	42.3
Redevelopment of Central Market	0	300	500.00	1,000.00	1,200.00	-	-	-	-	-
Retrofitting of 6 tile factories into Hotel, Auditorium, Convention Centre, Museum, Marina with retail and Speciality Restaurants	0	0	0	200	200	200	225	225	225	250
New Public Connector Street to Waterfront into Retail & Commercial Zone	0	0	500	1000	1500	2000	2500	2500	2500	2500
Water front Marina Develpment	0	0	0	50	50	100	100	100	150	150
Retail & Office Complex Development at Hampankatta & Bus Station	0	0	500	1000	2000	3000	3500	0	0	0
Solar and Recreational Island	0	0	25	25	25	30	30	30	50	50
Administrative, Faciltation and Development Charges from Retai, Hospitality and F&B provided in public spaces and public buildings	0	500	1000	1000	1500	1000	0	0	0	0
Administrative, Faciltation and Development Charges from New Developments	0	0	200	200	300	400	400	600	600	600
Total Revenue	0.0	820.9	2752.8	4678.1	6993.3	6963.5	7036.7	3736.7	3806.7	3874.0

5. O&M Assumptions

The major O&M expenses for the project shall be expenditure on the maintaining of the entire project assets for which the SPC is responsible. The details of the O&M responsibility for each of the sub-project or initiative are tabulated hereunder:

Initiative	O&M responsibility
Development of Brick Factory into retail/ commercial development (retail shop, small office)	Beneficiary
Development of MLCP with retail space near Hampankatta Junction	
Development of MLCP a along Connector Road	
100% IT connectivity	
Solar and Recreational Island	
Installation of rooftop solar on Govt buildings	
Implementation of rain water harvesting in all building having area more than 1000 sqft.	
Conversion of all the lighting in government building into LED	
Retrofit Car Street & areas of Sri Venkatramana Temple as Religious Zone	Beneficiary/ SPV
Retrofit of Fish Market	
Jetty Repair Facility & Warehouse	
Retrofitting of 6 tile factories into Hotel, Auditorium, Convention Centre, Museum, Marina with retail and Speciality Restaurants	
Implementation of e-smart schools in all government schools	Dept. of Education
Upgradation of Wenlock & Lady Goshen Hospital	Dept. of Health
Retrofit of Old Port	DEPT OF PORTS
Development of Green Area along Connector Road	MCC
EWS Housing	
Specialised Pedestrian Facilities along certain road sections	
Retrofit of Bus Station	
Provision of Road side plantation	
100% water supply coverage along with residential meters, water quality monitoring and SCADA	
100% waste water coverage with SCADA and connecting the waste water to STP for treatment and reuse	
100% underground drainage network for ABD	
E-toilets along smart bus shelters	MCC/ SPV
Conversion of all street lights into solar LED	MESCOM

IPDS proposals	MESCOM
Installation of air quality monitoring sensors and connecting them to command and control centre.	PCB
Community Level Facilities along with international swimming pool	SPV
Redevelopment of Central Market	
Redevelopment of Vacant Premises of DC office into Hotel, Retail Shops and Speciality Restaurants	
Redevelopment of Fisheries Harbour along with fish market & ancillary Facilities	
Redevelopment of Old Port as Riverfront Recreational Space	
Skill Development and Safety Training Centre	
Water front Marina Development	
Development of Waterfront Gardens	
Widening of Roads	
Upgradation of Roads with footpaths	
Implementation of Smart Bus Shelters	

6. Revenue Support from the MCC

The financials of the SPC has been projected for the next fifteen years to assess the financial sustainability of the SPC. It has been observed that the SPC can barely manage the operating expenditure only as majority of the assets created are of the public nature and for the public utility and can't generate revenue. The Profit & Loss Statement for the next fifteen year along with the support from MCC are tabulated hereunder:

Profit & Loss Account	Rs Lakhs	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10
Revenue from Operations		-	821	2,753	4,678	6,993	6,963	7,037	3,737	3,807	3,874
Other Revenue		4	21	84	221	443	717	1,001	1,230	1,401	1,579
Revenue Suport from MCC	123	123									
Total Revenue	-		**842**	**2,837**	**4,899**	**7,436**	**7,680**	**8,038**	**4,967**	**5,207**	**5,453**
	-										
Total O&M Costs	11,125	125	177	358	542	711	736	772	811	850	892
	4727.26										
PBDIT		**(125)**	**664**	**2,479**	**4,357**	**6,725**	**6,944**	**7,266**	**4,156**	**4,357**	**4,561**
Depreciation		-	-	-	-	-	-	-	-	-	-
PBIT		**(125)**	**664**	**2,479**	**4,357**	**6,725**	**6,944**	**7,266**	**4,156**	**4,357**	**4,561**
Interest on Loan		-	-	-	-	-	-	-	-	-	-
Int. On Overdraft Facility to P&L		-	-	-	-	-	-	-	-	-	-
PBT		**2**	**664**	**2,479**	**4,357**	**6,725**	**6,944**	**7,266**	**4,156**	**4,357**	**4,561**
Tax		1	221	823	1,447	2,234	2,307	2,413	1,381	1,447	1,515
PAT		**1**	**444**	**1,655**	**2,910**	**4,491**	**4,638**	**4,852**	**2,776**	**2,910**	**3,046**

The total support required from the MCC is Rs. 1.23 Crore over a period of 15 years as tabulated above. Total depreciation for the entire set of assets created is not used in here as the majority of the assets are public assets. The details of the projected Balance sheet and Cash flow statements for the SPV are detailed our hereunder:

Balance Sheet

Financial Year Ending 31st March --	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Year Counter	1	2	3	4	5	6	7	8	9	10
Balance Sheet (Rs Lakhs)	**Yr1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**	**Yr6**	**Yr7**	**Yr8**	**Yr9**	**Yr10**
Liabilities										
Equity	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Balance Transferred from P&L	1	445	2,100	5,010	9,501	14,138	18,991	21,766	24,676	27,722
Grant By GOI/ GOK	207	38,695	62,631	77,356	77,356	77,356	77,356	77,356	77,356	77,356
Grant through Convergence	23,845	60,376	88,321	1,02,716	1,02,716	1,02,716	1,02,716	1,02,716	1,02,716	1,02,716
Support from MCC	123	123	123	123	123	123	123	123	123	123
Networth	**44,176**	**1,19,640**	**1,73,175**	**2,05,205**	**2,09,696**	**2,14,334**	**2,19,186**	**2,21,961**	**2,24,871**	**2,27,917**
DEBT	-	-	-	-	-	-	-	-	-	-
Term Liabilities (a)										
Cash Shortfall Loan	-	-	-	-	-	-	-	-	-	-
Total Term Liablities	-	-	-	-	-	-	-	-	-	-
Current Liabilities (b)										
Payables	-	-	-	-	-	-	-	-	-	-
Working Capital Limits	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-	-	-	-	-	-	-	-	-	-
Total Debt (a) + (b)	-	-	-	-	-	-	-	-	-	-
Total Liabilities	**44,176**	**1,19,640**	**1,73,175**	**2,05,205**	**2,09,696**	**2,14,334**	**2,19,186**	**2,21,961**	**2,24,871**	**2,27,917**
Assets										
Gross Fixed Assets	44,052	1,19,071	1,70,952	2,00,072	2,00,072	2,00,072	2,00,072	2,00,072	2,00,072	2,00,072
Less: Cumulative Depreciation	-	-	-	-	-	-	-	-	-	-
Net Fixed Assets	44,052	1,19,071	1,70,952	2,00,072	2,00,072	2,00,072	2,00,072	2,00,072	2,00,072	2,00,072
DSRA	-	-	-	-	-	-	-	-	-	-
Current Assets										
Cash Balances	124	568	2,223	5,133	9,624	14,262	19,114	21,889	24,799	27,845
Total Assets	**44,176**	**1,19,640**	**1,73,175**	**2,05,205**	**2,09,696**	**2,14,334**	**2,19,186**	**2,21,961**	**2,24,871**	**2,27,917**

Cashflow Statement

Financial Year Ending 31st March ------>		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Year Counter		1	2	3	4	5	6	7	8	9	10
Cashflow Statement	**Rs lakhs**	**Yr1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**	**Yr6**	**Yr7**	**Yr8**	**Yr9**	**Yr10**
Cash Flows from Operating Activities											
Net Profit after Tax		1	444	1,655	2,910	4,491	4,638	4,852	2,776	2,910	3,046
Add											
Depreciation		-	-	-	-	-	-	-	-	-	-
Interest on Debt		-	-	-	-	-	-	-	-	-	-
Interest on Short term Debt		-	-	-	-	-	-	-	-	-	-
Less											
Other income		4	21	84	221	443	717	1,001	1,230	1,401	1,579
Net Cash from Operating Activities		(2)	423	1,572	2,689	4,048	3,921	3,851	1,546	1,509	1,467
Cash Flows from Investing Activities											
Capex		44,052	75,020	51,880	29,120	-	-	-	-	-	-
Interest on DSRA		4	21	84	221	443	717	1,001	1,230	1,401	1,579
Net Cash from Investing Activities		(44,048)	(74,999)	(51,797)	(28,900)	443	717	1,001	1,230	1,401	1,579
Cash Flows from Financing Activities											
Equity		20,000	-	-	-	-	-	-	-	-	-
Grants by GOI & GoAP		207	38,488	23,936	14,724	-					
Grants through Convergence		23,845	36,531	27,944	14,396	-					
One time receipts -Sewerage connection charges		-	-	-	-	-	-	-	-	-	-
Support from KMC		123	-	-	-	-	-	-	-	-	-
Debt brought in		-	-	-	-	-	-	-	-	-	-
Less											
Interest on Loan		-	-	-	-	-	-	-	-	-	-
Repayment of Debt		-	-	-	-	-	-	-	-	-	-
Add											
Debt Service Reserve Account		-	-	-	-	-	-	-	-	-	-
Net Cash from Financing Activities		44,175	75,020	51,880	29,120	-	-	-	-	-	-
Change in Cash / Cash equivalents		124	444	1,655	2,910	4,491	4,638	4,852	2,776	2,910	3,046

Additional Employment Generation from ABD

Projects	Direct Employment		
	Skilled	Semi-skilled	Total
Redevelopment of Central Market	1,060	1,100	2,160
Retrofitting of 6 tile factories into Hotel, Auditorium, Convention Centre, Museum with retail and Speciality Restaurants	3,000	3,000	6,000
New Public Connector Street to Waterfront into Retail & Commercial Zone	750	750	1,500
Water front Marina Develpment	50	50	100
Retail & Office Complex Development at Hampankatta & Bus Station	800	920	1,720
Solar and Recreational Island	10	10	20
TOTAL	**5,670**	**5,830**	**11,500**
	49%	51%	100%

Note: This is in addition to the existing employment alraedy in the ABD as we are retrofitting and redeveloping the area.

Citizen Engagement








Annexure

ABBREVIATIONS

ABD	Area Based Development
AMURT	Atal Mission for Rejuvenation and Urban Transformation
BMTC	Bangaluru Metropolitan Transport Corporation
CAGR	Cumulative Average Growth Rate
CND	Construction and Demolition
EGC	Economic Growth Center
EWS	Economically Weaker Section
FY	Financial Year (Apr-Mar)
GoI	Government Of India
GoK	Government Of Karnataka
GPS/GIS	Geo Positioning/Information System
ICT	Information , Communication Technology
IGBC	Indian Green Building Certification
IIM	Indian Institute of Management
IPDS	Integrated Power Development Scheme
IT	Information Technology
ITS	Intelligent Transport System
KSRTC	Karnataka State Road Transport Corporation
LED	Light Emitting Diodes
LNG	Liquified Natural Gas
LOI	Letter of Intent
LPCD	Liters per capita per day
MCC	Mangalore City Corporation
MESCOM	Mangaluru Electric Supply Company (DISCOM)
MLD	Million Liters per day
MoA	Memorandum of Agreement
MoP & NG	Ministry of Petroleum & Natural Gas
MRPL	Mangalore Refineries & Petrochemicals Limited
MSEZ	Mangalore Special Economic Zone
MW	Mega Watt
NHAI	National Highway Authority of India
NIT	National Institute of Technology
NMPT	New Mangalore Port Trust
NRW	Non Revenue Water
O&M	Operations & Maintenance
OEM	Original Equipment Manufacturer
PPP	Public Private Partnership
PWD	Public Works Department
RTA	Road Transport Authority
RWH	Rain Water Harvesting
SCADA	Supervisory Control and Data Acquisition
SCM	Smart City Mission
SCP	Smart City Proposal
SPV	Special Purpose Vehicle
STP	Sewerage Treatment Plant
SWM	Solid Waste Management
T&D	Transmission & Distribution
TP Scheme	Town Planning Scheme under KTCP Act
ULB	Urban Local Body
VGF	Viability Gap Fund
VOIP	Voice on Internet Protocol
WHO	World Health Organisation
WTP	Water Treatment Plant

ANNEXURE - 4

V. PONNURAJ, I.A.S.
Secretary to Government
(Municipalities & UDAs)
Urban Development Department

Telephone : 22353942
22035079
Fax : 22280318

Karnataka Government Secretariat
No. 435, 4th Floor, Vikasa Soudha
Bengaluru - 560 001

No UDD 208 CSS 2015

dated 29.06.2016

To,

The Joint Secretary & Mission Director – Smart Cities Mission
Ministry of Urban Development,
Government of India,
Nirman Bhawan,
New Delhi – 110 011

Sir,

Sub: Submission of Smart City Proposals of 5 Cities under Smart Cities Mission

Ref: 1. GoI OM No K-15016/157/2015-SC-I dated 30th March 2016
2. GoI OM No K- K-15016/157/2015-SC-I (Vol-II) dated 25/05/2016
3. Proceedings of the 3rd meeting of HPSC-SCM held on 29/06/2016 (copy enclosed)

****

Under Smart Cities mission, MoUD, Government of India has approved 6 Cities for Karnataka, viz. Hubballi Dharwad, Belagavi, Mangaluru, Davanagere, Shivamogga & Tumakuru. Out of these, Davanagere & Belagavi Cities were selected in Round 1 competition. As per MoUD OM cited at ref. no.1, the non-selected cities have to revise the Smart City Proposal (SCP) to compete in Round 2 and submit the same on or before 30 June, 2016.

MoUD has approved for inclusion of Bengaluru to participate in the Round 2 All India Competition of the Smart City Challenge Process OM at ref. no. 2.

In this regard, State High Power Steering Committee (HPSC) in its 3rd meeting held on 29 June 2016, has approved the Smart City Proposals (SCP) of following 5 Cities.:

1. Bengaluru
2. Mangaluru
3. Shivamogga
4. Hubballi Dharwad
5. Tumakuru

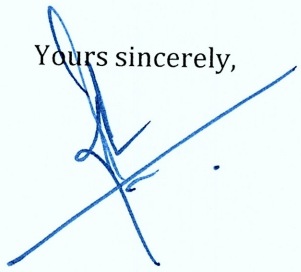
The State Government reiterates its commitment to develop the selected cities under the Smart Cities Mission.

.....2

It is requested to consider the proposals and accord approval for development under the Mission.

Thanking You,

Yours sincerely,



Encl: As Above

CC to:

1. Chief Secretary to government of Karnataka
2. The Director (SC-1), Room No 210 'C', MoUD, Nirman Bhawan, , New Delhi – 110011
3. Managing Director, KUIDFC
4. The Commissioners of Bruhat Bengaluru Mahanagara Palike, Mangaluru City Corporation, Shivamogga City Corporation, Hubballi Dharwad City Corporation, Tumakuru City Corporation

SMART CITIES MISSION

GOVERNMENT OF KARNATAKA

PROCEEDINGS OF THE 3rd MEETING OF THE STATE LEVEL HIGH POWERED STEERING COMMITTEE (HPSC) FOR SMART CITIES MISSION

In the Chair : **Chief Secretary, Government of Karnataka**

Date & Time : **29-06-2016, 10:00 am**

Venue : **Room 123, Ist Floor, Vikasa Soudha, Bengaluru**

Members Present: As per list enclosed.

Managing Director, KUIDFC, welcomed the **Chief Secretary, Government of Karnataka** and the Chairman, State Level High Powered Steering Committee (HPSC) for Smart Cities Mission, and the members present.

The deliberations are as follows:

1. SUBJECT : CONFIRMATION OF THE PROCEEDINGS OF THE 2ND HPSC MEETING HELD ON 11.12.2015

As no comments were received, the proceedings of the 2nd Meeting of the HPSC was confirmed.

2. SUBJECT: ACTION TAKEN REPORT ON THE DECISIONS OF THE 2ND HPSC MEETING

The action taken on the proceedings of 2nd HPSC was noted.

3. SUBJECT: STATUS OF SMART CITIES MISSION IN KARNATAKA

MD, KUIDFC, presented the status of the Smart Cities Mission. This included an overview of the Smart City guidelines, Financing Model, Smart City Round 2 Competition.

3.1 Selection of Davanagere & Belagavi Cities in Round 1 Competition
3.2 Establishment of Special Purpose Vehicle (SPV) for Davanagere & Belagavi Cities
3.3 Release of First Instalment from GoI for the SPVs of Davanagere & Belagavi
3.4 Appointment of City-wise Consultancy firms for preparation of SCP in Round 2 Competition
3.5 Selection of Bengaluru under SCM

HPSC noted the status as mentioned above.

4. SUBJECT: PROPOSALS FOR RATIFICATION

4.1 Approval for EOI notification for procurement of Consultancy services of Project Management Expert for KUIDFC from open market

MD, KUIDFC, explained the need for the appointment of Project Management Expert for KUIDFC to strengthen the Smart Cities Mission Cell and mentioned that on file approval of the Chairman - HPSC was obtained for floating EoI notification.

The HPSC resolved to authorise ACS-UDD to take further necessary action.

5. SUBJECT: PROPOSALS FOR APPROVAL OF HPSC

5.1 Approval of Consultancy Firm for preparation of Bengaluru SCP

Commissioner, BBMP explained that MoUD has announced inclusion of Bengaluru under SCM on 25/05/2016 and that last date of submission of SCP is 30/06/2016. In view of the stiff timeline, a decision to appoint M/s SREI Infrastructure Finance Limited as consultant on direct entrustment basis for an amount of Rs. 30 lakhs was taken. He further explained that the said decision was based on their earlier performance in preparation of SCPs of Davanagere, Shivamogga, Durgapur and Haldia.

He requested the Committee to ratify the action taken.

The HPSC resolved to ratify the action taken to appoint M/S SREI Infrastructure Finance Ltd as consultant for preparation of SCP for Bengaluru for a Consultancy fee of Rs. 30 lakh.

5.2 Approval for issuing EOI for procuring services of CEO/MD for SPVs from open market

MD, KUIDFC explained the need for appointment for CEO/MD for the SPVs from open market. He also mentioned about formation of a Selection Committee headed by ACS-UDD for the said purpose.

HPSC resolved to approve the procurement of services of CEO/MD from open market for the SPVs as proposed.

5.3 Approval for Delegating Financial Powers to SPVs

MD, KUIDFC explained that, the SCM guidelines envisage delegation of financial autonomy to SPV for timely execution of the projects.

The Chairman-HPSC, expressed the need for delegating financial powers keeping in view the size of the projects that are to be executed in a time-bound manner. He also stressed on the need for delegation of higher level technical and administrative powers with decentralisation. He further mentioned that locally based Chief Engineers should be involved in these projects.

He directed MD, KUIDFC, to prepare a detailed note for approval of Cabinet on delegation of technical & financial powers.

HPSC resolved to place the subject with necessary details before the Cabinet.

5.4 Approval of Revised Smart City Proposals submitted by 4 Cities

MD, KUIDFC, briefed HPSC about the evaluation criteria prescribed under SCM guidelines and asked the 4 Cities namely, Hubballi-Dharwad, Managaluru, Shivamogga & Tumakuru to present their revised SCP.

The Cities made the presentation. The details are as follows:

5.4.1 Hubballi-Dharwad SCP

Area Based Proposal

992 acres of core city area connecting multiple transport hubs, linking the city from Airport to Railway Station. The proposed ABD area is the hub of city's commercial activities. Comprising of 3 categories of residents: the thickly populated old Hubli (33%), the modern layouts (30%) and the developing layouts (36%), the ABD envisions revitalizing the core city &energising the new city.

Key Components:

- Streetscape Improvement of all major and minor roads, junction improvements.
- Dedicated NMT zones (10km of Bicycle Network)
- Smart Parking Management for On-street & Off-street / MLCP
- Re-development of MG Market &Janata Market
- Re-development of transport hubs : Railway Station, BRTS and NWKRTC with wi-fi
- City Centre Plaza (20 acre) with Smart City Iconic Tower
- Upgradation of MSME Cluster on Gokul Road.
- Redevelopment of defunct industrial lands in city centre under PPP model.
- Slum redevelopment through Affordable Housing for EWS / BPL
- Rejuvenation of Nala channel, Recreation Park at Tolankere Lake
- 24×7 Water supply and Electricity smart metering
- Eco Battalion Territorial Army for greening of the area (green corridor)

Pan City Proposal

- Two layered People Empowerment Platform (PEP) and One Stop Solution (OSS) with Centralised Command Centre
- Smart Solid Waste Management

Financial Plan (approx.)

Parameters	Area Based	Pan City	Total	%
Smart City Fund	919	81	1000	60.2%
Convergence with GoI	311	147	458	27.6%
ULB funding from	7	17	24	1.4%
PPP funding	170	-	170	10.2%
CSR/other sources	10	-	10	0.6%
Total Indicative	**1417**	**245**	**1662**	**100.0%**

The Committee suggested to explore the following:

- Inclusion of Airport area in ABD proposal of SCP.
- Signal free Corridor between Airport & City Railway Station.
- Bus-Depot near Airport.
- Capitalising Air-transit facility for transporting horticulture produce.

The Committee approved the Smart City Proposal of Hubballi Dharwad.

5.4.2 Mangaluru SCP

Area Based Proposal

1628 acres identified in Central Business District around Hampankatta, Bunder and Car Street is proposed for Retrofitting and Redevelopment under SCM:

- Central Civic Node – 100 acres,
- Hampankatta Junction Retail Node – 27 acres
- Fisheries Harbour Redevelopment – 22 acres
- Old Port Redevelopment – 10 acres
- Upgraded Temple Precinct/ Religious Zone – 57 acres
- Waterfront and Marina Development – 25 acres
- Mixed-use Zone for IT services, Offices, Small-Scale industries, Hospitality and Leisure alongside limited-capacity factory functioning by Adaptive Reuse of Tile Factories – 42 acres
- Upgrading District General Hospitals (Wenlock and Lady Goshen) – 17 acres
- Public Connector Streets Leading to Waterfront Development as Commercial & Retail Zone – 47 acres
- Solar Farm on Island facing Bunder – 20 acres

Pan City Proposal

- Integrated citizen interface platform with dual access - "One Touch Mangalore" through mobile and "One Access Mangalore" through web.
- Smart utility management will leverage use of technology in utility systems to achieve tangible improvement in availability and utilisation of public utility services.

Financial Plan (approx.)

Parameters	Usage Pattern (Rs. Cr)		
	Area Based	PAN City	Total
Smart City Fund	789.38	184.17	973.56 (49%)
PPP Funding	516.95	-	516.95 (26%)
Convergence with GoI Schemes	112.24	14.61	126.85 (6%)
Convergence with GoK Schemes	163.93	-	163.93 (8%)
Convergence with ADB	40	88.75	128.75(6.4%)
ULB Funding from own source	73	5.90	78.90 (4%)
Contribution from beneficiaries	11.78	-	11.78 (0.6%)
Total Indicative Project Cost	**1,707.29**	**293.43**	**2,000.72**

The Committee suggested to explore the following:

- Convergence with the proposal of converting the Old DC Office into Museum and other projects of Tourism Department.
- Proposed Strategic Plan consisting of economic growth centres over next 20 years, with MCC funding, may be considered post approval of SCP by MoUD.
- To develop Mangalore as Cruise Hub to attract the tourist.
- Finding an Anchor for Marina project for funding and users.
- Possibility to connect Old Port river front with the proposed Cruise Terminal at New Managalore Port.

The Committee approved the Smart City Proposal of Mangaluru.

5.4.3 Shivamogga SCP

Area Based Proposal

Retrofitting and Redevelopment model covering a total area of 1500 acres with an impact population of 83,000 (23% of city population).

- Improvement of Basic Services – 24 X7 Water Supply, smart meters, modern abattoir, public toilets, E-toilets, Improvement of storm water drains, underground ducting of services, provision of affordable housing for Poor & EWS.
- Traffic & Transportation – Integrated bus terminal, smart bus shelters, well designed pedestrian pathways , dedicated bicycle tracks, bike sharing, skywalk, junction improvement, MLCP, conservancies, signage etc
- Development of Eco Tourism & Cultural Hub
  a. River front development Tourism includes Eco resort, Yoga & Naturopathy center, Green House with butterfly park, Zen Garden, Rock Garden, Theme Park, City Aquarium
  b. Cultural Showcase includes Improvement of Shivappana Nayaka palace area, Religious/ heritage walk, Art and Craft Village
- Knowledge Hub - Revival of the Floriculture Research centre, Local skill development centers, Sandal Wood History Museum, International Biodiversity Research Centre
- Green & Sustainable Initiatives – Ward level parks Improvement, Canal side improvement & beautification, Renewable energy (Solar Power Plant – 30 MW), Rain water harvesting in public and institutional buildings

Pan City Proposal

- Integrated Traffic & Transportation System (ITTS) – It includes Intelligent Public Transport, Smart Parking and Intelligent signalling and system integrated with centralized control room.
- ICT based SWM system - ICT based SWM system towards making it a "Zero Waste city"- includes monitoring system for waste collection & transportation, human resource management and complaint redressal.
- Intelligent LED Street lighting and surveillance –Includes Energy efficient Intelligent Street lighting system along with dense coverage of surveillance system for improved safety & security.

Financial Plan (approx.)

Scheme	ABD	Pan City	Total	%
Grant - Smart City	883	39	922	61%
Central schemes	79	19	98	6%
State / ULB	28	-	28	2%
PPP	469	-	469	31%
Total	**1459**	**58**	**1517**	**100%**

The Committee suggested to explore the following:

- The River front length and the Canal length to be used for light Cruise tourism.
- To develop Shivamogga as Tourist hub.
- Convergence with the proposals of Railways.
- Maximise rooftop solar energy tapping using public buildings.
- Linkage to proposed Airport.

The Committee approved the Smart City Proposal of Shivamogga.

5.4.4 Tumakuru SCP

Area Based Proposal

Proposed Area: Transforming 1354.97 Acres of the city centre.

#1 QUALITY OF LIFE

- Public Utility Infrastructure Improvement:
- Clean Tumkuru: Efficient management of MSW, , Zero Waste Campuses, Public Toilets
- Public Space Improvement: Lake Front Development, City Library, Vending Zones, Underground Ducting, Smart Lounges
- Health and Welfare: Multi-Speciality Govt Hospital and Trauma Centre, Medical College
- Affordable Housing at Slums & EWS housing

#2 MOBILTY AND ACCESSIBILITY:

- Transit Hub: Government and Private Bus Stands, Feeder System, Junction Re-design
- Non-motorised Transport: Footpaths & Walkways, Cycle lanes
- Parking: Multi-level Car Park, On-street Parking
- Integrated Signage Network: 'You are here' Maps, Signage and Street Markings

#3 ENVIRONMENT AND ECOLOGY

- Integrated Water Resources Management: Sustainable Lake Basin Management, Rain Water Harvesting
- Solar Energy: Solar Panels on Rooftops, LED and Solar Street lights
- Urban Tree Management: Afforestation around Amanikere, Tree Plantation, Green buffer zones, Redevelopment of Parks
- Monitoring: Enviro-Lab, Pollution Monitoring Sensors and Weather Stations

#4 GOVERNANCE AND PUBLIC SERVICE MANAGEMENT

- Business Innovation and Incubation Centre
- TumkurOne Centres

Pan City Proposal

Integrated City Management Control Centre (ICMCC):

- Smart Water Network
- Intelligent Traffic & Transport Management
- Smart SWM Monitoring
- Surveillance System
- Emergency Response System
- Environment Monitoring

Financial Plan (approx.)

Rs in Crore

SOURCE	ABD	PAN CITY	TOTAL	%
Smart City Grants	788	212	**1000**	45%
Central Schemes	213	21	**234**	11%
PPP	242	102	**344**	15%
ULB Sources, Ongoing Schemes & Other Sources	649	0	**649**	29%
Total Cost	**1892**	**335**	**2227**	**100%**

The Committee suggested to explore the following:

- Linking Hemavathi Canal with Amanikere.
- To develop Tumakuru as de-stressing destination
- Heli-service for tourism.

The Committee approved the Smart City Proposal of Tumakuru.

5.5 Approval of Bengaluru SCP

MD, KUIDFC explained HPSC that, MoUD vide it OM No K-15016/157/2015-SC-I (Vol-II) dated 25/05/2016 has considered Bengaluru to participate in Smart City Round 2 competition.

The gist of Bengaluru Smart City proposal is as follows;

Area Based Proposal
"Reinventing the Sub-Urban Business District of Bengaluru as The New Edge City" in 8463 acres of area identified in Mahadevpuraof East Bengaluru, specifically Wards 81, 82 and 85. 1. Economic Vibrancy: Relocation of Truck Terminal/Container yard to make way for a "New Mixed Use Business District" 2. Urban Mobility: Road Widening / New road for Establishing the Urban Grid, Improved/New Regional Connectors across Outer Ring Road, Strengthening District Connectors, Strengthening Within District / Neighbourhood Connections 3. Integration of Metro , Development of Multimodal Hubs, JPOD Connectivity, 4. Urban Districts - City Beautiful planned via City Boulevard (Roads Aesthetic upgradation), Character Urbanscape/Architecture, Tendersure Roads For Sub-Arterial Roads
Pan City Proposal
1. **B-RACE (Bengaluru Revenue Assessment and Collection Enabler)** Revenue Assurance Augmentation to Civic/Utilities agencies with the use of ICT & GIS 2. **B-TRIPS (Bengaluru Travel Related Information and Planning System)** Integration of Information on the available Multi-modal Transport system (City Bus, Metro, Suburban Rail) using bigdata& machine intelligence platform. 3. **B-GRAPE (Bengaluru-Grievance Reporting Actuator for Public Engagement)** A Mutli-channel (web base, app & toll free enabled) integrated Public Grievance and Resolution System- an integrated network for Services and Operations Center, connecting all the stakeholder departments of the city governance, regulation & services on a single seamless platform.
Financial Plan (approx)
Total Project Cost – Rs 6062.40 Cr with following sources of funds 1. Smart City Mission – Rs 962.50cr 2. Convergence – Rs3310.30 cr 3. PPP – Rs 1,789.70 cr

The Committee suggested to explore the following:

- Create 10-12 Smart Civic groups for sectors like public space management, public health, education, skill development, mobility, water & waste water, environment etc., for ensuring smart ideas from Citizens.
- Convergence with investments proposed by core departments like BDA, BWSSB, BMRCL, IDD, BMTC etc., in addition to GoI schemes.
- RFID driven Mobility.
- All public services to be technology driven.

The Committee approved the Smart City Proposal of Bengaluru

The Managing Director, KUIDFC
&
The Member Secretary - HPSC

Chief Secretary, Government of Karnataka
&
The Chairman, HPSC- SCM

******

RESOLUTIONS PASSED BY COUNCIL OF MANGALURU CITY CORPORATION(MCC) on 28/06/2016

(ANNEXURE 4.1 to SCP)

In continuation to the Resolution passed by the Council of Mangaluru City Corporation on 14-12-2015 in connection with the Smart City Proposal (SCP), the following additions / revisions are approved in anticipation of Council ratification.

1. It is resolved to approve the revised Smart City Proposal(SCP) prepared for Mangaluru.

2. It is resolved to approve the revised Vision and Goals prepared based on Citizen Consultation and the revised SCP (Attachment 1).

3. It is resolved to propose the following area as the Area Based Development for the SCPcomprised in 1628 Acres;
   "Retrofitting areas of the Central Business District using place-making design tools and modern standards into a Urban Node to include Nehru Maidan, a city transport hub with trams and shaded and landscaped pedestrian routes connecting a world class riverfront promenade with parks, a modern freight and fish market, harbour, museums, water sports, marina, conventions centre, performing arts theatre, up-gradation of government offices and preservation of heritage buildings by adaptive re-use."

4. It is resolved to approve the Financial Plan including the Fall Back Plan and Implementation Plan of the SCP.

5. It is resolved that MCC shall provide short term debt funding to the SPV for any short fall in funds for the administrative and establishment cost of the SPV in the first year of its formation, which shall be repaid by the SPV along with mutually agreed rate of interest.

6. It is resolved to approve the revised institutional arrangement for operationalisation of the SPV and the Development Advisory Committee (DAC) of MCC for the effective functioning and co-ordination with various Stake Holder Organisations in the Development of Mangaluru Smart City(Attachment 2).

7. All the remaining Resolutions passed by the Council on 14-12-2015 remain unchanged including the Strategic Plan for the Comprehensive Development of Mangaluru as a Smart City, in 20 years, including the Financial Plan with all its Attachments (Attachment 3).

CORPORATION OF THE CITY OF MANGALORE

Mayor
Mangaluru City Corporation

MAYOR
CITY CORPORATION
MANGALORE

Attachment 1 to Resolution dated 28th June 2016-06-28

Mangaluru :
"The Coastal Confluence where Nature and Opportunity meet"

City Vision and Goals

Core vision and goals emerge from the particular profile, challenges and opportunities of Mangalore. These are identified through SWOT analysis and citizen aspirations, resulting from consultations and a city-wide competition:

VISION

Mangaloreans see the city as,

An unusually clean and green Port City nurtured by a vibrant community of educated and industrious citizens with a pluralistic cultural heritage"

that through participatory, transparent and responsible governance will become,

"The prime Economic and Maritime Hub of Coastal Karnataka, rare in its economic and ecological balance and driven by innovation, entrepreneurship, knowledge and healthcare services to create an equitable city with equally high levels of opportunities, quality of life and urban services"

Mangalore occupies a fertile backwater condition at the meeting of the Netravati and Gurupura rivers. However, counter to its Tulu name `*Kudla*`(confluence), the city adopts an introverted condition, turning its back on the vibrant possibilities of its natural and economic assets. As a smart city, Mangaluru proposes,

"to revitalize its role as a confluence and place of exchange, re-orientated towards its core assets: the waters and its maritime-industrial strength, and updated to include efficient physical and digital networks for exchange"

Mangalore`s heritage as an important sea-trading port created a cosmopolitan city with a diverse economy, characterised by fisheries, tile factories, boat-building, and a crucial connection with the Lakshadweep Archipelago. Decline in traditional industries has coincided with a rise in IT,Banking,Healthcare and Education, shifting Mangaluru`s economy away from a material foundation towards a service-base. The city proposes to,

"balance efficient production and movement of things and people with the service and digital economies in a shift towards becoming a model Smart City hub and tourist gateway for the Malabar Region"

Vision built around Four Key Areas, each with Goals, Activities and Metrics of Livability and Sustainability:

A1.Kudla:Mangalore as Confluence and Place of Exchange

GOALS

- Re-activate riverfront for commercial and civic exchange
- Strengthen role as Regional Entrepreneurial Hub to create employment and entrepreneurial opportunities
- Increase role as node for tourism, recreation and culture

ACTIVITIES

- Mixed-use retrofitting of neglected city fabric to create confluence of industries-people-commerce
- Construction of permanent home for fish market within fishing habour, renovation of central market
- Integrated and Intelligent multi-modal(rail, ferry, air, road) city and regional transport network to enhance connectivity
- Creation of Incubation Centre for Innovation
- Tourist awareness and facilitation services

METRICS

- Increase in city GDP, Inward Migration, Visitor Numbers, Business Transactions, Employment, Population Density, City Pedestrianisation Coverage, Public Transport Usage, Number of start-ups, River Transport Usage
- Reduction in travel time

A2.Intelligent Continuity with Port Heritage

Riverfront and old port areas are decaying and disconnected from the city core. Integrating this area within the city, updating its role in production and exchange of goods as part of digital exchange network will stimulate growth and identity.

GOALS

- Revive link with port-trading history and fisheries
- Make Mangaluru a hub for gastronomy and fresh produce(coffee, fish, cashew nuts, fruits, vegetables)
- Strengthen connection with Lakshadweep Islands both for trade and tourism (http://www.thehindu.com/news/cities/Mangalore/smart-city-corporation-told-to-project-old-port/article8689294.ece)

ACTIVITIES

- Regeneration of Old Port, Fisheries and Tile factory area as mixed-use smart core
- Promote local cuisine through gastronomic festivals, markets and restaurants
- New passenger terminal, holding facilities and hub for Lakshadweep Islanders within Mangaluru Riverfront

METRICS

- Increase in: Occupation, density, employment, visitor numbers, commercial transactions within Old Port and Riverfront, Investment from and passenger and goods transport with Lakshadweep Islands

- Port Trading and Energy Efficiency

A3.Archipelagic Approach to `Smart` development and Accountable Governance:

GOALS

- Establish digital and physical networks in polycentric approach to Governance, IT, Place-making, Healthcare, Transportation and Integrated Energy Model
- 100% compliance of SWM Rules 2000
- Move towards zero-waste economy
- Focus Community and Place-Making on making quality affordable housing and nodal civic space

ACTIVITIES

- Implement Smart Technology to ensure accountable and participatory Governance and efficient delivery of services
- One-Touch-Mangalore Interactive Platform to facilitate efficiency in transportation and commercial transactions
- E-health services including appointment booking, health awareness and emergency helpline
- Adopt decentralized waste-management and Smart Monitoring Systems
- Establish Community Interest groups to push for social and cultural civic improvements
- Establishment of Civic Core: Cultural Centre and Public Library

METRICS

- Cost of Living
- Increase in: efficiency in processing applications for redevelopment, number of G2C transactions made online, availability and occupation of affordable housing units, percentage of city area dedicated to civic public space, Wi-Fi access points per sq.km, performance reliability index for power supply, number of water and sewage connections, Smart Metering coverage at household, institutional and city level , digital literacy rate and Internet access, Literacy Rate, Percentage of skilled professional employment opportunities created, Number of Start-Ups based in the city, employment opportunities for the differently-abled
- Improved health index
- Reduction in emergency and complaint response time

V4.Livable and Ecological City

GOALS

- Make use of underutilized rivers, beaches, forests and hills for a)Public Place-making b)Water and Energy Resources c)Transport, Recreation and Tourism d)Education and Ecological Protection
- Build on high standards of Cleanliness, Public Health and Safety
- Upgrade Civic Infrastructure to be sustainable and efficient
- Improve accessibility, connectivity and efficiency within public transportation and NMT

ACTIVITIES

- Optimize use of Sustainable technology in Integrated Model for Energy, Waste and Infrastructure
- Implement Solar City Masterplan with smart-metering at household, institutional and city scales
- Establish world-class infrastructure for River Transport and Recreation
- Infrastructure for Rainwater Harvesting at household and institutional scales
- Establish standards and monitoring to maintain ecological balance between city and its natural environment
- Create Centre for Maritime Ecology as guide for Ecological Protection and Water-based Cities
- Improve continuity between streetscape and buildings to facilitate access for the differently-abled
- Implement CCTV Coverage for enhanced city safety
- Increase in street coverage with proper drainage, unobstructed pedestrian footpaths and dedicated cycle lanes

METRICS

- Reduction in: Carbon Footprint and Non-Revenue Water(NRW)
- Increase in: percentage of energy supplied by renewable sources(10% within 4 years); nature-related recreation of visitors and citizens, rainwater harvesting for greywater, environmental literacy levels
- Greater coverage area under pedestrianisation and with proper drainage
- Improvement in safety and livability, particularly for the most vulnerable
- Percentage of city served by Smart Parking

Attachment 2, Resolution dated 28th June 2016

I. Directors of "Smart City Mangaluru" Special Purpose Vehicle (SPV)

Total Number of directors – 17

1. GOI Representative
2. Independent Director
3. Independent Director

GOK Directors

4. Chairman of SPV
5. MD/CEO of SPV
6. MP (Loksabha), Mangaluru
7. MLA Mangaluru - 1
8. Principal Secretary PWD
9. Secretary Fisheries
10. MD KPTCL

Mangaluru City Corporation Directors

11. Hon. Mayor
12. Commissioner
13. MLA Mangaluru -2
14. Corporator 1*
15. Corporator 2*
16. Corporator 3*
17. Corporator 4*

II. Development Advisory Committee of MCC for Smart City SPV

1. Dist. Incharge Minister (Chairman)
2. MP Loksabha (Vice Chairman 1)
3. MLA 1 (Vice Chairman 2)
4. Mla 2 (Vice Chairman 3)
5. MLC -1
6. MLC -2
7. Hon. Mayor

8. Hon. Dy. Mayor
9. Chairman, Works Committee
10. Opp. Leader
11. Chairman MUDA
12. Coporator*
13. Corporator*
14. Corporator*
15. Managing Director SPV
16. Deputy Commissioner, Dakshin Kannada
17. Police Commissioner
18. Commissioner MCC (Member Secretary)
19. Commissioner MUDA
20. KCCI Representative
21. CREDAI Representative
22. Prominent Citizen#
23. Prominent Citizen#
24. Prominent Citizen#
25. Prominent Citizen#

* Post of Corporator is on Yearly Rotation

Prominent citizens from the field of Social Service, Urban Planning, Health and Education.

GOVERNMENT OF KARNATAKA
(Department of Fisheries)

O/o Assistant Director of Fisheries, (Grade-1) Mangaluru Fishing Harbour,
Mangaluru -575 001.

e-mail: smaditaifb9@gmail.com / adf1mngfh@gmail.com

No. HAR:10:2016-17 **Dated: 27-06-2016.**

To,

The Commissioner
Mangalore City Corporation
Mangaluru.

Sir,

Sub: Extension of Support and Participation in Implementing Smart City Proposal in Mangalore & requirement of Co-Ordination and arrangement with *Dept. of Fisheries.*

Ref: Commissioner, Mangaluru City Corporation letter No . E3/NA YO V/CR 09/2016-17, Dated: 23-06-2016.

****

With reference to the subject cited above, it is to intimate, that *Dept. Of Fisheries* Mangaluru has been involved in the Smart City Proposal (SCP) preparation and we extend our support to MCC through Special Purpose Vehicle (SPV) that is to be constituted, as proposed in proposal subject to the approval from Govt. of Karnataka. We have projects of Rs. 100 Crore in line, for various projects already been initiated and are willing to support financially & through contribution of Land for making Mangaluru develop as highlighted in SCP.

Yours Faithfully,

Assistant Director of Fisheries (Grade-1)
Mangaluru Fishing Harbour,
Mangaluru.

MESCOM

Mangalore Electricity Supply Company Limited

(A Government of Karnataka Undertaking)
CORPORATE OFFICE : Paradigm Plaza, P.B. No. 200, Mangaluru- 575001
Phone : 0824 - 2444300 Fax : 0824 - 2444360 CIN : U40109KA2002SGC030425

Ref. No. : MESCOM/MD/SEE(T)/841
Encl

Date : 05-12-15

Additional Chief Secretary to Government
Energy Department
Vikasa Soudha,
Bangalore-560 009

Sir,

Sub: Funding Assistance for Implementation of Smart City Mission.

Ref:
1. Ltr No KUID-6/Smart City/2015-16 dated: 26.08.2015 of Managing Director & Mission Director-SCM, Karnataka Urban Infrastructure Development & Finance Corpn. Ltd., Bangalore.
2. T.O. Ltr. No: SEE(Tech)/EE(Tech)/M1-1079/15-16/ 29673-82 dated: 07.11.2015.

With reference to the above, the proposals covered under Smart City Mission in Mangaluru (Rs. 1654.00 Crores) & Shivamogga (Rs.710.00 Crores) City in the Jurisdiction of Mangalore Electricity Supply Company Ltd., have been submitted to M/s. KUIDC Bangalore vide ref (2) which is enclosed herewith for kind reference.

In this connection, it is requested to recommend GoI, for releasing the necessary funding assistance for the said proposals.

Yours faithfully,

5-12-2015

Managing Director
MESCOM, Mangaluru.

MANGALORE ELECTRICITY SUPPLY COMPANY LTD.,

(A Government of Karnataka Undertaking)

MESCOM

CORPORATE OFFICE,
PARADIGM PLAZA,
A.B. SHETTY CIRCLE,
MANGALURU - 575 001

CIN: U40109 KA 2002 SGC 030425
PHONE: 0824-2446132
FAX: 0824-2444142
Email: setmng@rediffmail.com
Web site : www.mesco.in

No. SEE(Tech)/EE(Tech)/M1-1079/15-16/29673-82 Date: 7 NOV 2015
Encl: 2 sheets.

Managing Director & Mission Director-SCM,
Karnataka Urban Infrastructure
Development & Finance Corpn. Ltd.,
Bangalore

Sir,

Sub: Note on Best Practices for Smart City Mission.

Ref: Y.O.Ltr No: KUID-6/Smart City/2015-16 dated: 26.08.2015

&&&

With reference to the above, I am directed to submit the proposals covered under Smart City Mission in Mangaluru & Shivamogga City in the Jurisdiction of Mangalore Electricity Supply Company Limited.

Further, the following officers are nominated as Nodal officers for Managaluru & Shivamogga cities respectively.

1. Sri. U.B.S Sukumar, Superintending Engineer(Ele), O&M Circle, MESCOM, Mangaluru.
2. Sri. M. Eshwar, Superintending Engineer(Ele), O&M Circle, MESCOM, Shivamogga.

Yours faithfully,

Superintending Engineer (Elec) (Tech)
MESCOM, Mangaluru.

MESCOM – At a Glance

Area of distribution and Supply	- 26,222 Sqkm.
Number of sub stations 220 KV, 110 KV, 66 KV (of KPTCL)	- 82
Number of 33 KV stations	- 36
Number of Distribution Transformers (As on 31.03.2015)	- 49552
Length of LT Lines (In RKMs) (As on 31.03.2015)	- 70672.73
Length of 11 KV Lines (In RKMs) (As on 31.03.2015)	- 30044.20
Length of 33 KV Lines (In CKMs) (As on 31.03.2015)	- 692.30
Number of electricity consumers (As on 31.03.2015)	- 20.75 Lakhs

Mangalore Electricity Supply Company is presently comprised of Dakshina Kannada, Udupi, Chickmagalur & Shivamogga districts with two corporation area namely Mangaluru and Shivamogga. One O&M Zone, 4 O&M Circles and 12 O&M Divisions are functioning in MESCOM jurisdiction, which are taking care of electrical distribution works in all the above districts.

MESCOM's major Initiatives in corporation area

- **Upgradation of infrastructure in Corporation areas:**

As per 2014-15 Budget Speech it is proposed to Upgrade the infrastructure in 10 Nos. of Corporation areas at a total cost of Rs. 50.00 Crores.

Accordingly, it is proposed to provide UG cable in Mangaluru and Shivamogga Corporation limits at an approximate cost of Rs. 10.00 Crores for which Government has already released Rs. 12.50 Crores. By providing UG cables in City limits the interruptions will be reduced and it is also a preventive measure to reduce accidents.

- **Solar Roof Top Plan:**

MESCOM provided an opportunity to its consumers for establishing Solar Plants on the Rooftop of Residential / Commercial / Industrial / Educational Institutions on net metering. Consumers can earn money for the excess Solar Energy injected into the MESCOM grid over & above the import from MESCOM grid. The amount payable for the excess energy injected is as below;

i) Rs. 9.56, if consumer does not availed subsidy from MNRE to install the Solar Plant.

ii) Rs. 7.20, if consumer avail subsidy from MNRE.

Further, the following proposals are covered under Smart City Mission Mangaluru City:

Sl.No.	Particulars	Estimated cost (Rs.in crores)
1	(i) Construction of 220KV Double Circuit line from UPCL to proposed 220KV sub-station at Kottara.	250.00
	(ii) Alternatively, creation of 400KV/220KV Sub-Station near MRPL (Arasu Padavu) by tapping 400KV UPCL-Shantigrama line & extending 220KV line to proposed 220KV Kottara Sub-Station. Land required is already identified at Arasu Padavu.	
2	Creating additional infrastructure (downstream station). (i) Construction of 220KV Sub-Station at Kottara – 5.0 acres of land is required.	50.00
	(ii) Construction of 110/33/11KV Sub-Station at Nehru Maidan – proposal for allotment of land is already submitted.	20.00
	(iii) Construction of 110/33/11KV Sub-Station at Surathkal.	20.00
	(iv) Interlinking of proposed 110KV Nehru Maidan Sub-Station with 110KV Jeppu & 110KV Bejai Sub-Station.	30.00
	(v) Construction of 33/11KV Sub-Stations at following places:- a) Urwa Market b) Akasha Bhavan c) Vamanjoor.	20.00
3	Conversion of existing overhead HT/LT line to underground distribution system using RMUS & feeder pillar boxes. HT 1025 kms. LT 2500 kms.	1025.00
4	Replacement of existing Double pole Transformers structure by concrete Platform & spun pole 4000 Nos.	20.00

5	Providing solar roof top for all Government offices. Total installed capacity of 1 MW.	10.00
6	Replacing old type electrical appliances & lightings by five star rated fixtures and appliances.	5.00
7	Replacement of existing street light fittings by LED fittings	42.00
8	Replacement of existing conventional energy meters by smart meters. Smart meters shall have the property of delivering message to consumer's mobiles through wifi or Hot star regarding consumption billing and switching control. Average cost: Rs. 8,000-00/- single phase meter. Rs.14,000-00/- 3 phase meter.	162.00
	Total	**1654.00**

Contact Person: Sri. Manjappa EE(Ele), O&M Division, Mangaluru-1 Phone: 9448289429

Shivamogga City:

Sl.No.	Particulars	Estimated cost (Rs.in crores)
1	Conversion of existing overhead HT/LT line to underground distribution system using RMUs & feeder pillar boxes	378.67
2	Replacement of Existing Double Pole Transformer Structure by Concrete Column	1.84
3	Establishing Solar Generation at various places provided by City Municipal Corporation Shivamogga	140.00
4	Solar roof top for all Government buildings/schools /colleges/stadiums	2.00
5	Establishing Four Numbers of Electrical Sub-station proposed within city areas – Mc. Gann Hospital, Mallegenahalli, Purle, Sominakoppa	40.00
6	Providing wind generation at outer ring road	50.00
7	Implementation of SMART meters	97.50
	Total	**710.01**

Contact Person: Sri. D. Nataraj EE(Ele), O&M Division, Shivamogga. Phone: 9448289446

Superintending Engineer (Ele) (Tech)
MESCOM, Mangalore.

Power Load Calculation

Particulars			Demand (MW) Present	upto 5 yrs	upto 10 yrs	upto 15 yrs	upto 20 yrs	Total	Remarks
Load	Present		180	170	160	150	140	140	Reduction in load to be achieved through efficiency
	Additional		0	(2 Cr Sft) 18	(5 Cr Sft) 63	(9 Cr Sft) 144	(14 Cr Sft) 270	(30 Cr Sft) 270	0.9 w / sq.ft. considered by using energy efficient fixtures / equipments.
Total Load	Present & Additional Load		180	188	223	294	410	410	
Reduction through renewable energy	For present load (upto 10% - 2.5%/yr)		0	4.25	8	11.25	14	14	
	For Additional load (30%)		0	5.4	18.9	43.2	81	81	
Net load required	Present & Additional Load		180	178.35	196.1	239.55	315	315	
ver Infrastructure required and costing in Crores									
Substation	220 KV	Numbers	1	2	2	2	2	2	
		Cost	0	50	0	0	0	50	
	110 KV	Numbers	4	5	6	7	8	8	
		Cost	0	20	25	30	35	110	
	33 KV	Numbers	9	10	11	0	0	11	
		Cost	0	5	7	0	0	12	
ıversion of existing OH ne to UG cable lines	110 KV	UG cable (km)	5.5	13.5	20.5	20.5	20.5	20.5	
		Cost	0	32	32	0	0	64	
	33 KV	UG cable (km)	50	59	71	77	85	85	
		Cost	0	10	15	9	11	45	
	11 KV	UG cable (km)	25	125	325	425	525	525	
		Cost	0	150	325	175	200	850	
litional New UG Cable lines	220 KV	OH line (km)	0	1	1	1	1	1	
		Cost	0	18		0	0	18	
	220 KV	UG cable (km)	0	0	32	32	32	32	
		Cost	0	0	250	0	0	250	
	110 KV	UG cable (km)	0	8	17	18	19	19	
		Cost	0	32	36	4	4	76	
	33 KV	UG cable (km)	0	1	3	3	3	3	
		Cost	0	1	2	0	0	3	
	11 KV	UG cable (km)	0	15	25	30	35	35	
		Cost	0	7	6	4	5	22	
Smart Meters (cost for household meters)			0	200	0	0	0	200	
Total Cost				525	698	222	255	1700	
Split of Funds		GOK						291	
		IPDS						850	
		SPV						559	

Note:

1 Solar roof top for all Government office buildings and other private buildings woould be done on PPP model (ESCO)

2 Replacing conventiond type electrical fittings to LED and other energy efficient 5 star rated fixtures and appliances would also be done on PPP model (ESCO) However SPV would fund for poor sections of the society, for the same 10 CR

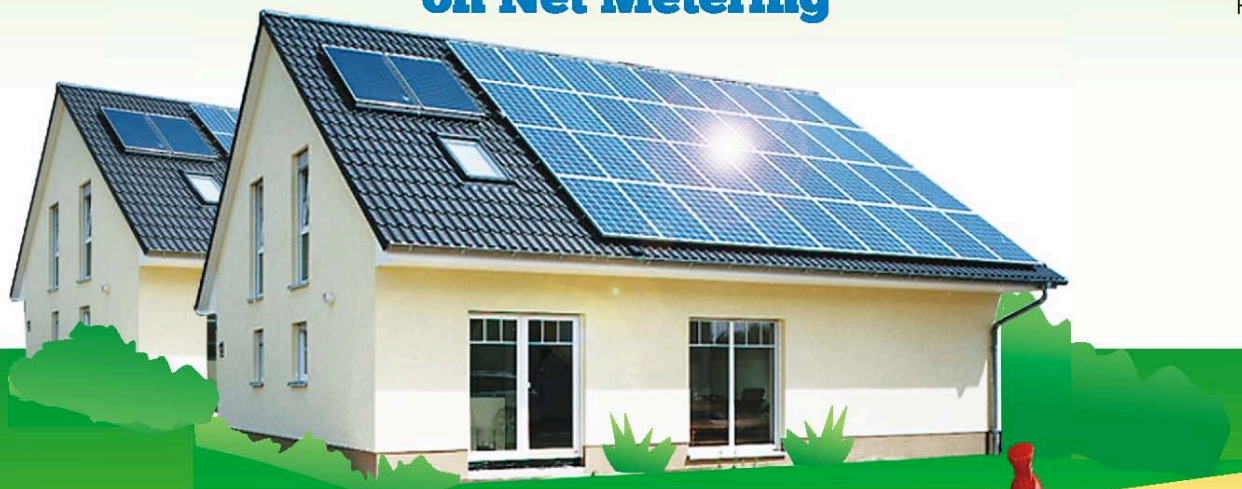
Sri Siddaramaiah
Hon'ble Chief Minister

Mangalore Electricity Supply Company Ltd. provides an opportunity to its Consumers to install Grid connected

Solar Rooftop System

on Net Metering

Sri D.K. Shivakumar
Hon'ble Minister for Energy



Produce Solar Energy - Earn Revenue

As per the Solar Policy 2014-21 of Govt. of Karnataka, MESCOM has implemented the programme for installation of Grid connected Solar Rooftop PV System on the Rooftops of Residential / Commercial / Educational / Industrial Organisations in MESCOM Jurisdiction to encourage generation of Solar Energy.

Benefits of installing Solar Rooftop System

- Solar power generation is Environment friendly.
- Generate your own power for your installation.
- Earn money for the excess Solar Energy injected in to the MESCOM grid over & above the import from MESCOM grid on net metering basis.

Application format and procedures for installations can be obtained from MESCOM Website www.mesco.in

For Electricity related complaints call MESCOM Helpline : 1912

MESCOM

K.R.E.D.L.

Undertaking in Respect of Co-ordination among Multiple Utility Services

In the city of Mangaluru, the development, operation and maintenance of drinking water supply, sewerage collection, solid waste management and city roads is being undertaken by Mangalore City Corporation itself. Hence, no consent/ intent letter is required for these services from any other department(s).

Date : June 29, 2016

Commissioner
Managluru City Corporation