PRE FEASIBILITY REPORT

FOR

DEVELOPMENT OF "MANGALA CORNICHE" - RING ROAD & RIVER FRONT DEVELOPMENT AT MANGALORE ON PPP FORMAT

INFRASTRUCTURE DEVELOPMENT DEPARTMENT

5th October, 2009

SUBMITTED BY:

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IL&FS | Infrastructure

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I. Introduction

1.1. Background

Infrastructure Development Department (IDD), Government of Karnataka is the Infrastructure arm of the government of Karnataka (GoK) with the objective of facilitating / developing infrastructure projects across the Karnataka State.

The IDD on discussions with project advisors empanelled with the department, including **KSIIDC-IL&FS Project Development Company (KIPDC)** has identified a pipeline of infrastructure projects to be taken up across the State. For optimum utilization of the State Government's fund resources, the IDD has proposed to explore the development of the projects identified on Public Private Partnership (PPP) basis.

The IDD recognizes that depending upon the location and other location specific issues, projects at some locations may not be financially viable or attractive to developers for development on PPP basis. IDD also recognizes that certain projects may require Viability Gap Funding (VGF) or other State / Central support.

The IDD has proposed to carry out Pre-feasibility Studies for the set of projects identified for development across multiple locations within the State. While the objective of the Pre-feasibility Study would be to assess the broad project viability for development on PPP basis and to segregate the project that would require VGF or other State / Central support, the IDD has agreed in principle to mandate the project development of the viable projects identified to the advisory agency doing the project pre-feasibility on single source basis at "no cost basis" to IDD. A project success fees as agreeable to IDD would however be permitted to be charged and recovered from the selected developer for the project.

The project development for projects requiring VGF would be bid out based on Ministry guidelines. The advisory agency that carried out the project pre-feasibility study would be eligible to participate in such bids.

Vide **letter No. ID/89/ITS/2008[Part-I] dated 18th March, 2009**, the IDD has mandated KIPDC to undertake the Pre-feasibility study for "**Development of Mangala Corniche - Ring Road and River Front Development at Mangalore, Karnataka"**

1.2. IDD's Objective

IDD's objective towards preparation of the Project Pre-feasibility is:

- To explore the possibilities of development of the projects identified on Public Private Partnership (PPP) basis
- To assess the preliminary project viability for development on PPP basis and to segregate the project that would require VGF or other State / Central support
- To identify the project stakeholders including the project sponsoring department and advice them on taking up the projects
- To explore project viability for implementation
- Mandate the viable projects to the respective project advisors for project development
- Development & time bound implementation of all projects of the government with private sector investment
- Development, operations and maintenance of the projects in a planned manner with modern amenities and requisite supporting infrastructure by reputed developers without utilizing Government resources of manpower, funds, etc
- To structure a viable and bankable project amenable for PPP and explore project funding through Private Sector Developer
- To expedite project implementation by leveraging private sector efficiency

1.3. Role of KSIIDC-IL&FS Project Development Company (KIPDC)

The Role of KIPDC while carrying out the Pre-feasibility Studies has been to:

- Conduct project pre-feasibility study for development of the proposed project on PPP at the identified locations and include the project concept, need for the project at the location, preliminary market / demand assessment, broad financial feasibility / viability, implementation framework, recommendation of nodal agency for the project at individual locations, role of nodal agency & IDD and way-ahead.
- The Pre-feasibility essentially focuses on the viability of the project on PPP with / without State / Central Govt. support, segregation of projects / locations requiring VGF support and project development approach for projects proposed to be taken up for project development by KIPDC.

- The Pre-feasibility study has been carried out with location analysis and assessment of viability for development at multiple locations across the State.

1.4. Aspects Covered

Activities required to be carried out by KIPDC would include:

- Development of project concept
- Desk study for location(s) analysis, review of statistic / data already available
- Interact with the head of respective Department / Deputy Commissioner
- Co-ordination for correspondence by KSIIDC / IDD with respective Deputy Commissioner's for additional information, shortlisting of locations, etc
- Preliminary project structuring and viability assessment
- Summarizing of the Pre-feasibility assessment in the form of a report alongwith recommendation to KIPDC / IDD
- Preparation of requisite presentations to IDD

II. Project Background

2.1. Overview

Mangalore is one of the rapidly growing cities of Karnataka. Mangalore, besides being a coastal City, is also uniquely surrounded by two rivers – Gurupur and Nethravathi, from three sides. Both these rivers merge with each other at the peninsula of Tannir Bavi before meeting into the Arabian Sea. This unique location has provided one of the longest and scenic riverfronts to the City. While there exists a large scope and potential for river front development for recreational and other purposes, the potential of the riverfront has not been capitalized on till date with several areas along the riverfront being inaccessible.

Mangalore has a long tradition of business & entrepreneurship and ranks second in the state after Bangalore in terms of growth and potential for development. Mangalore is a multi-functional city with business (trade and commerce), skilled jobs (industries) and administration as the principal sources of employment. The tertiary or service sector has increased over the recent years with a significant proportion of new jobs across a whole range of activities.

Mangalore has the only major port in Karnataka and is thus also known to be a well-developed transportation hub. 3 National Highways (NH) pass through Mangalore connecting the City to the rest of the Country. NH-17, which runs from Panvel, Maharashtra to Changanur Junction, near Edapally in Kerala, passes through Mangalore giving it excellent North-South connectivity. NH-48 runs eastward from Mangalore to the state capital, Bangalore. NH-13 runs northeast from Mangalore to Sholapur. A state highway (SH-88) connects Mangalore to the city of Mysore passing through the hill city of Madikeri.

The transport centers generate sizable vehicular traffic, which often causes congestion on the City roads as well as on stretches of the National Highways passing through the City. In the recent years, the intra-city vehicular traffic has resulted in a severe stress on city road network. There is an immediate need to bypass through highway traffic from the city and strengthen city road network by providing additional linkages and net work augmentation.

Having recognized the potential in the developing the river front as well as the need for augmentation of city's road infrastructure, a ring road encircling the Mangalore City alongwith the river front development has been proposed.

2.2. Project Objective

The proposed development, **'Mangala Corniche'**, is aimed at mainly fulfilling following main objectives:

- Providing an efficient and seamless connectivity between important locations of the city through a ring road around the city
- Decongesting city roads from through traffic travelling north- south & vice versa and goods traffic, currently passing through the city
- Development of the riverfront in a sustainable manner to protect the riverfront landmass and urban regeneration of the surrounding areas
- Boost tourism on select riverfront stretches towards harnessing untapped recreational potential for unique tourism product and overall socio-economic development.

2.3. Scope of Study

The scope of this Prefeasibility Study includes the following:

- Development of the "Mangala Corniche" Concept
- Preliminary assessment of Project Feasibility
- Possibilities of Development and project components
- Block Estimation of Project cost
- Conducting preliminary Financial Feasibility
- Designing Project Implementation structure

2.4. Approach & Methodology

- A preliminary alignment analysis of Mangala Corniche Ring Road to assess:
  - Physical
  - Social
  - Economic

- Environmental feasibility
- Broad Financial viability for development

- A preliminary review of the Ring Road in terms of:
  - Circulation patterns
  - Type and density of the traffic
  - Type of users and
  - Volume of traffic inflow through the Ring Road

- Preliminary Market assessment study for estimating:
  - Land prices
  - Demand and possible options
  - Opportunities for real estate development along the corridor

Based on the preliminary Viability analysis, Market Assessment and Traffic Analysis the project components have been segregated for PPP and non PPP. These components have been further integrated into various PPP options for implementing the project.

Various PPP structuring options considered for the project includes

- BOT (Annuity)
- BOT (Toll)
- BOT (Toll with Viability Gap Funding)

The assessment for the Project / Project components have been made considering the commercial viability for development on PPP. The information required has been predominantly sought through discussion with relevant authorities, internet and through a variety of primary and secondary sources via desk research. Figure 1 represents Approach & Methodology for the project.

City Profile	Regional Settings of Mangalore, Location, Connectivity
Road Alignment Analysis	Topography, Physical Characteristics, Land use
Traffic Analysis	Pattern of Circulation of Regional, Intra-city Traffic and City Traffic, Advantage due to construction of Ring Road
Market Assessment	Land Pricing, Cost of Land Acquisition, Design of Possible Product Mix
Statutory and Legal Framework	Regulatory framework for Project Implementation
Environment & Social Impact	Key Environmental and Social Issues and Mitigation Measures
Cost Estimation	Rate Analysis, Road Formation, Flyovers and Interchanges, Drainage and Culverts
Project Structuring	Public Private Partnership, Risk Assessment and allocation, BOT (Toll), BOT (VGF), BOT (Annuity)
Economic & Financial Analysis	Equity IRR, PIRR

Figure 1: Approach & Methodology

III. City Profile: Mangalore

3.1. Background

Mangalore, originally Mangalooru, is the fourth largest city and the chief port city of the Karnataka State. The city is located along the Malabar Coast on the backwaters of the Netravati and Gurupur Rivers and is the administrative headquarters of the Dakshina Kannada (South Canara) district. Mangalore is an administrative, commercial, educational, and industrial centre for the state of Karnataka. It has a long tradition of business and entrepreneurship and ranks second in the state after Bangalore in terms of growth and potential for development. Mangalore is located along the western coast of India about half way between Mumbai and Cape Comorin. The district of Mangalore spreads across an area of about 4866 sq kms. The district has 2 distinct geographical regions:

The Coastal Region: Mangalore Taluka with coast line of 60 km and

The Malnad Region: consisting of Belthagady , Puttur, Sullia and Bantwal Taluk

3.1.1 Regional Settings

The city of Mangalore is located at 12º-52'N latitude and 74º-49'E longitude within Mangalore Taluka (see figure 2). It is located along the Arabian Sea and is strategically placed on the coastal corridor, which connects Kerala in South with Goa and Mumbai in north. Mangalore is about 347 km from Bangalore and 937 km from Mumbai via National Highway. The total area of Mangalore district is 30,600 hectares. The area under the city Municipal limits is 12,877 hectares.

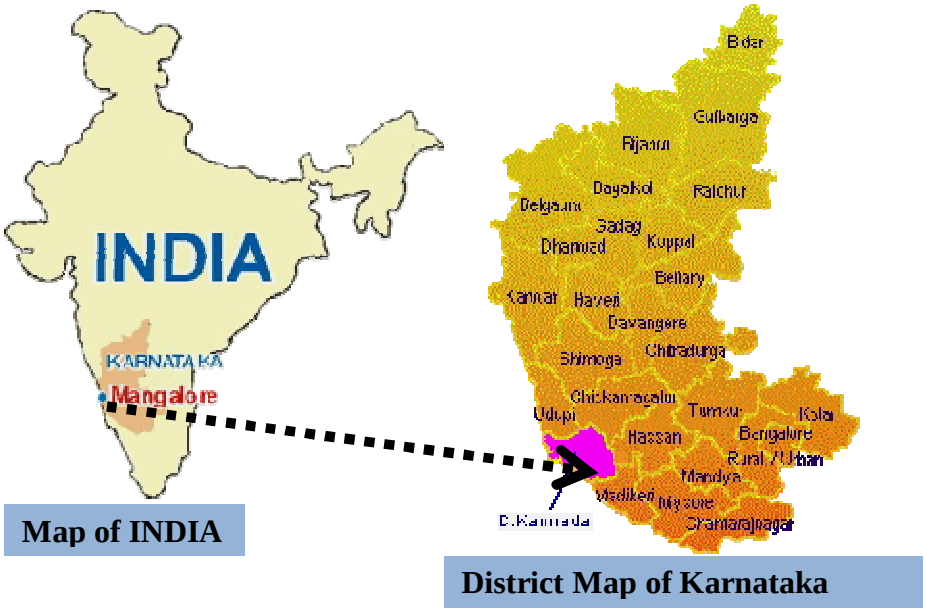
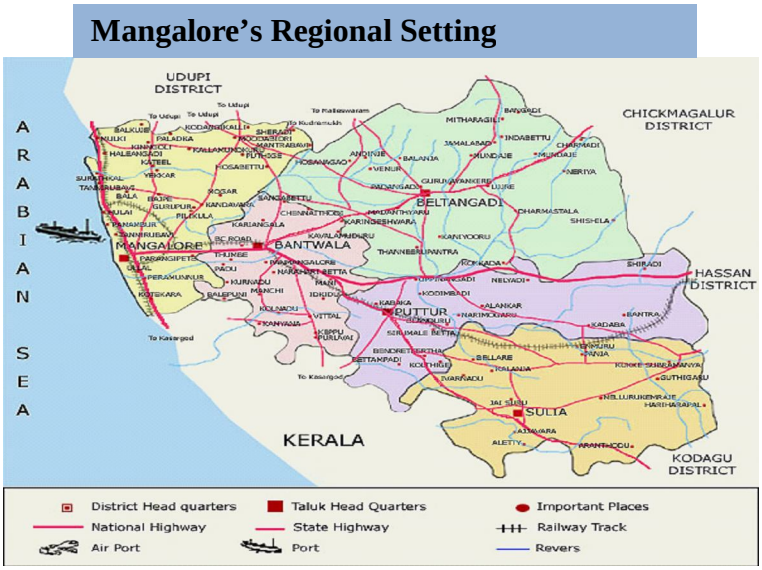
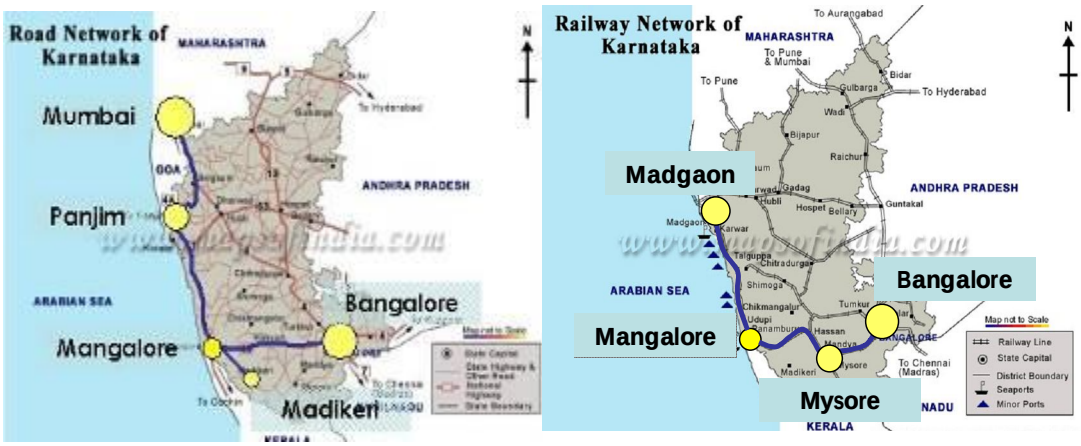


Figure: 2 Regional Settings of Mangalore



3.1.2 Linkages & Connectivity

Mangalore is well connected through Sea Port, Rail, Road and Air. Being a coastal city, it has the advantage of all four modes of transport as well as export routes abroad. Three National Highways viz., NH-17 linking Panvel and Kanyakumari, NH-48 linking Mangalore and Bangalore, NH-13 linking Mangalore and Sholapur pass through the city. A domestic Airport is located at Bajpe, which is 15 km from city connecting it to Mumbai and Bangalore. Mangalore is also linked by rail through the Konkan and Southern railway network to all major cities of India and is also having all weather harbors. An all weather port is located in Mangalore is the only major port of Karnataka. The New Mangalore Port Trust (NMPT) provides transportation of goods to and fro from Mangalore. The port at present handles cargo as well as tankers. Mangalore also has a very good network of government and private bus service which connects it to the interior parts of the other Talukas and Districts.



Road Connectivity and Network Rail Connectivity and Network

Figure: 3 Road and Rail Connectivity Map of Mangalore

3.1.3 Climate

The Climate of Mangalore is characterized by high humidity and temperature. The relative humidity is generally very high reaching saturation levels during the summer season. A high relative humidity of more than 90% is experienced during the monsoons (June to October). Humidity is lowest during winters (December to February). The ambient temperature varies minimum from 17ºc to a maximum of 37ºc. The city receives heavy rainfall during monsoons. The rain fall is about 4000mm throughout the year of which about 90% received in the monsoon period.

3.1.4 Topography, Soil & Vegetation

The topography of the city varies from plain to undulated terrains at various locations. An interesting feature of the coastal strip and the middle belt is that, it is not a plane but a series of estuarine low lands separated by numerous hill ranges projecting the Western Ghats are seen along this belt. The geology is characterized by hard laterite in hilly tracts and sandy soil along the seashore. The coastal tract is the most densely populated part of the district and is the most fertile belt. The middle belt again has an undulated topography with hills and dales. The valleys are fertile and boast of evergreen forest and several gardens of arecanut and coconut, and paddy fields, which are the main crops of the district.

The soil is mostly sandy along the coastal belt and laterite in other parts characterized by high iron and aluminum contents. The valley & river basins to the east of the coastal region contain rich alluvial soil. However, the water retention capacity of the soil is poor.

3.2 Pattern of Urbanisation & Growth

The city's growth has largely been oriented towards the north and eastern sides along the Airport and National Highway 17 (towards Suratkal and Udupi). The sea face along the west and the administrative state boundary of state of Kerala along the south has restricted the city's growth in the western and southern directions. A large number of redevelopment initiatives around Hampankatta and K.S Rao Road are also taking place. The development pattern of the port city has been in a manner that has resulted in the central areas in the city being congested and densely populated.

The development of Mangala Corniche not only ensures a smooth traffic flow in the city liberating the city roads from Heavy traffic flow but also enhances development of the city towards less developed areas, thus resulting in the expansion of the otherwise choked city. The Ring Road shall also augment the development of residential & commercial regions catering to industrial

development in the northern region & IT development in the southern region along the alignment .The figure no.4 represents the pattern of growth and urbanization in Mangalore.

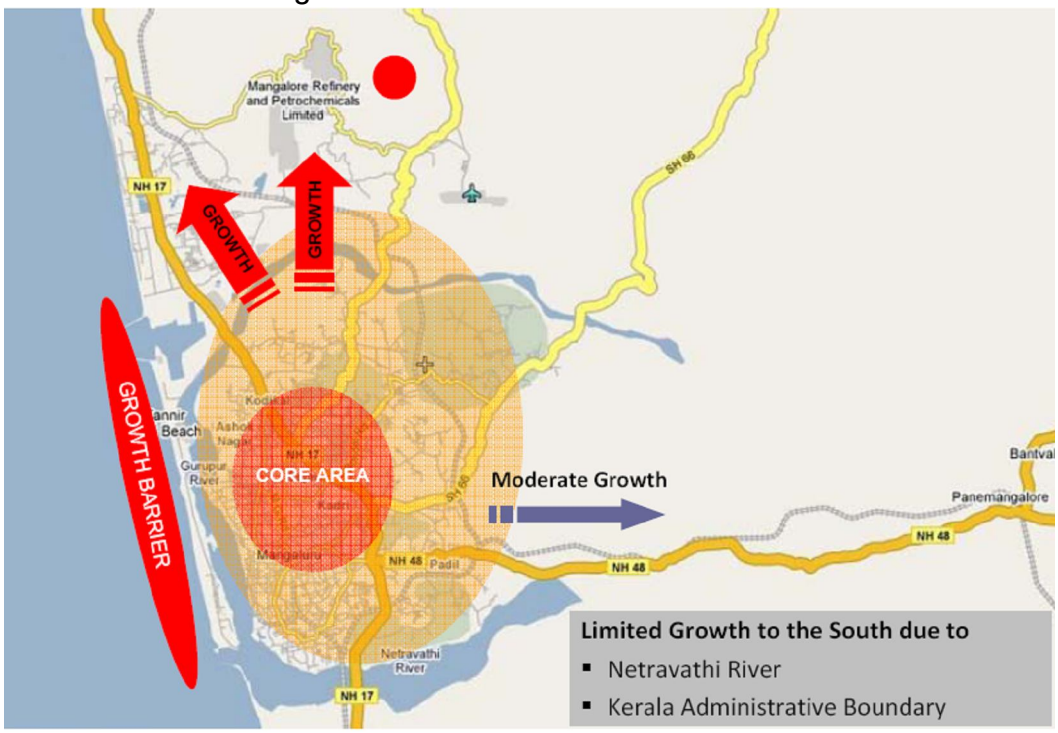


Figure 4 : Urbanization and Pattern of Growth in Mangalore City

3.2.1 Land Use Plan

As depicted in the land use plan, majority of the land use in Mangalore about 8.14 sq. kms (37.5%) is Residential. A sizable area of 20.55 sq. km (about 16%) has transport and communication infrastructure. Amongst the other prominent usages agriculture landholdings attribute to about 19.91 sq km (15.5 %).

Table 1: Distribution of Land Use, Mangalore Municipal Corporation

Sl. No.	Type of Land use	Area (Sq. Kms)	Percentage
1.	Residential	48.14	37.38
2.	Commercial	4.33	3.36
3.	Industrial	8.47	6.58
4.	Transport & Communication	20.55	15.96
5.	Public Utilities	0.34	0.26
6.	Public & Semi Public	6.13	4.76
7.	Open Spaces	8.14	6.32
8.	Agriculture	19.91	15.46
9.	Others	12.76	9.91
	Total	**128.77**	**100**

Source: Land Use Plan, Mangalore Municipal Corporation, 2007

3.3 Demographic Profile

3.3.1 Population

The total population of the Mangalore taluka as per census 2001 is 8, 82,856. The population of city of Mangalore as per the 2001 census is 3,99,565. The population of males and females in this is 50.23 % and 49.77 % respectively. There has been a phenomenon increase in the growth rate every decade due to the emergence of new economic avenues and improved infrastructure in the city.

There has been a steady increase in the population residing in the urban agglomeration areas of the city. As per the 2001 census, the population in the urban agglomeration was 5.39 lakhs which has increased to 6,03,269 as per the report published by World Gazetter recently.

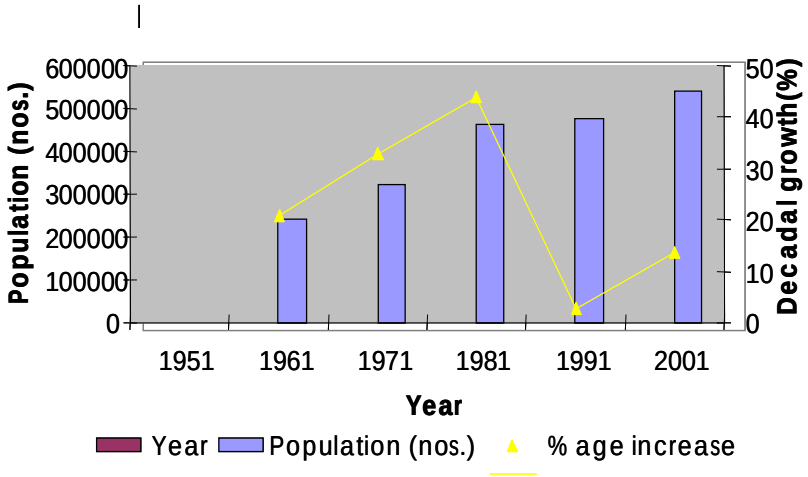


Figure 5 Population Growth Trends in Mangalore

3.3.2 Literacy

The literacy rate in Mangalore is 82% which is higher than the national average of 59.5%. Mangalore has also emerged as an educational centre with a number of good quality education institutions offering professional courses including engineering, medical and management studies along with Commerce, Science, Arts and Literature studies.

3.3.3 Languages Spoken

The native language of Mangalore is Tulu. However, Konkani is also widely spoken in the region. The region covering Mangalore is also locally known as 'Tulunadu', on account of the predominance of Tulu language. Tulu language and its people have been closely associated with Kannada language as Tulu has been written in Kannada script for many centuries.

3.3.4 Economic Profile

The district's economy is dominated by Agricultural Processing and Port-Related Activities followed by fishing activity in the coastal areas. Mangalore port handles 75% of India's coffee exports along with a bulk section of the cashew nuts exports from the country. In the recent years quite a few chemical, engineering, automobiles and food processing units have also been initiated in the city. Mangalore's economy is mainly based on agriculture processing and port related activities. The other subsidiary occupation includes Animal Husbandry and Food based Cottage Industries. Of late Sericulture is also developed in certain areas. Trade and commerce in the district is fairly at the higher level.

Mangalore has also viewed as a successful Banking and Financial hub for the country. The district has large middle class and affluent population which is working in banking sector About five nationalized banks have their base at Mangalore namely; Corporation Bank, Canara Bank, Karnataka Bank, Syndicate Bank and Vijaya Bank.

IV. Development Scenario in Mangalore

4.1 Background

The city of Mangalore is undergoing a rapid economic change. It is fast emerging as an attractive real estate destination in Karnataka. This is mainly due to the development of port and improvement in infrastructure such as roads, development of international airport, increased trade and commerce, development of service industries, IT-ITES clusters and Special Economic Zones. To back this development and growth, the city has developed an equally good social infrastructure. Good quality educational, financial and health care institutions are been established. The above developments have attributed to the increase in demand for real estate market in Mangalore. The property prices have shown a phenomenal increase in the last few years. In certain locations, it has almost doubled.

Figure 6 Development of Physical Infrastructure Mangalore

4.2 Development of Residential & Commercial Spaces

The immediate periphery of the city centre has predominantly residential development. The development is fast moving towards the north and north eastern sides along the industrial growth corridors of the city. Commercial growth is predominantly seen towards the eastern side. This can be linked to the development of residential zone along this side. The southern part of the city has various resort developments exploring the water front potential.

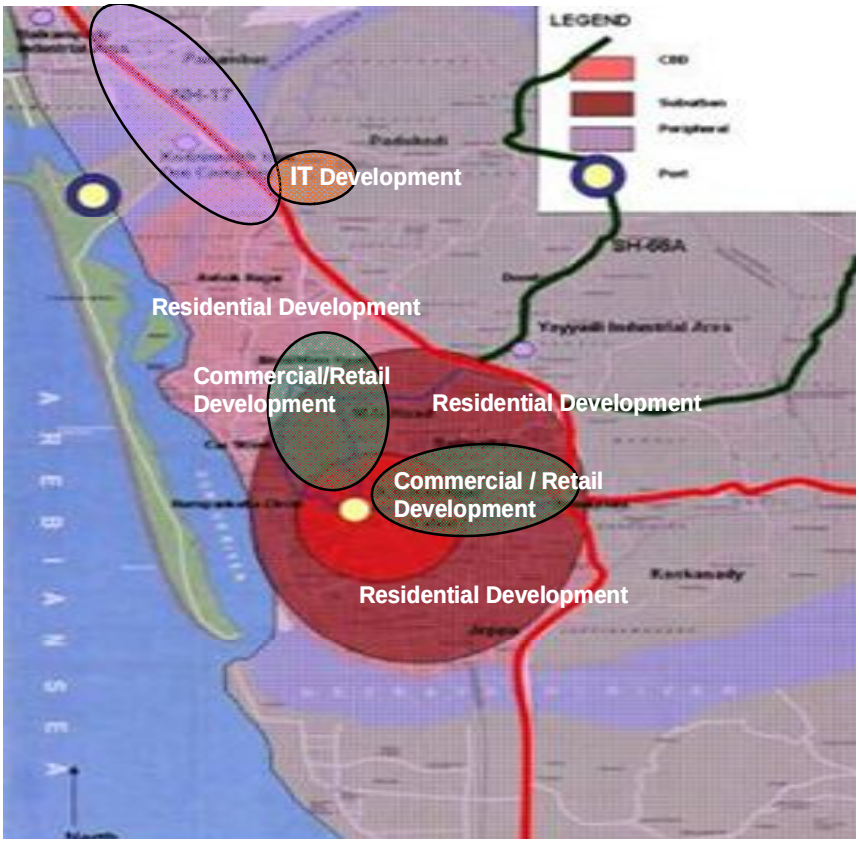


Figure 7 Development of Residential & Commercial Land use in Mangalore

4.2.1 Residential Spaces

The city is expanding spatially along the north and north east side. To cater to the increased growth and demand, Developers in the city are providing a wide range of choices in residential especially apartments. Two and three bedroom apartments are among the major chunk in the supply. Large townships spread in over 100 acres of area are also seen to arise. The residential property market has grown significantly in the recent years due to the increase NRI investment, growth in IT-ITES activities and BPO industries

4.2.2 Commercial Spaces

In Mangalore, the commercial areas are mostly concentrated at the Central Business District (CBD). With the growth of the city, an expansion of these areas is seen along the major road corridors and mainly along the IT/ ITES development. The network of retail shops in the city is also expanding steadily, and is spread across several locations in the form of traditional and modern retail streets, up market and suburban and retail clusters. With the expansion of city's economy especially in IT and Education, requirement for new commercial spaces with better design and infrastructure has increased.

4.3 Key factors for increase in Real Estate Prices in Mangalore

- **Affordability of Investors**: Though Bangalore has well established real estate market, in the recent years, due to the extremely high and unaffordable property rates, Mangalore has been a popular destination for investment. A high literacy rate, development of the IT Industry and employment of several locals in the middle-east are other factors that have attributed to the affordability of Investors in Mangalore.

- **Improved Connectivity**: Mangalore has an advantage due to the accessibility by all means of transportation systems. It has a very good sea link and is well connected via roads, rail and air.

- **Development of Industries**: The industrial corridor of the city expands towards the northern side. Growth of IT Corridor and Mangalore Special Economic Zone has increased the value of residential and commercial properties along this side.

4.4 Prominent Developments in Mangalore

4.4.1 Industrial Sector

Traditionally, Mangalorean firms have had a major presence in the tile, beedi, coffee and cashew nut industry, although the tile industry has been in decline due to the predominance of concrete in the modern construction. The Beedi rolling industry one of the major home industry of district employs over 6 lakh people with estimated manufacture of around 27 crore of Beedi stick a day covers around 17 % of the country's total Production. Other industries which have set up their units include Campco Chocolate factory, BASF, and score of tile, cashew, fish and canning Factories The city has two major industrial areas, viz. northern areas, such as Baikampady Industrial Estate, Panambur & Kuthethoor and eastern areas, such as Yeyyadi Industrial Estate. The northern

areas have industries of crude oil (refinery), chemicals & fertilizers, iron & steel, shipping, seafood, granite, spice, etc. whereas the Yeyyadi Industrial Estate comprises manufacturing units of coir products, wooden furniture, plastic articles, engineering products, etc. The map below presents the geographic distribution of industrial activities in the Baikampady Industrial Estate. Some of the major industries located in Mangalore are:

Mangalore Chemicals and Fertilizers Limited
Kudremukh Iron Ore Company Limited
Mangalore Refinery and Petrochemicals Limited (MRPL)
Mangalore Special Economic Zone (MSEZ)
Jaiprakash Associates have envisaged power plant at Mangalore.
The figure depicts major industries in Northern Region.

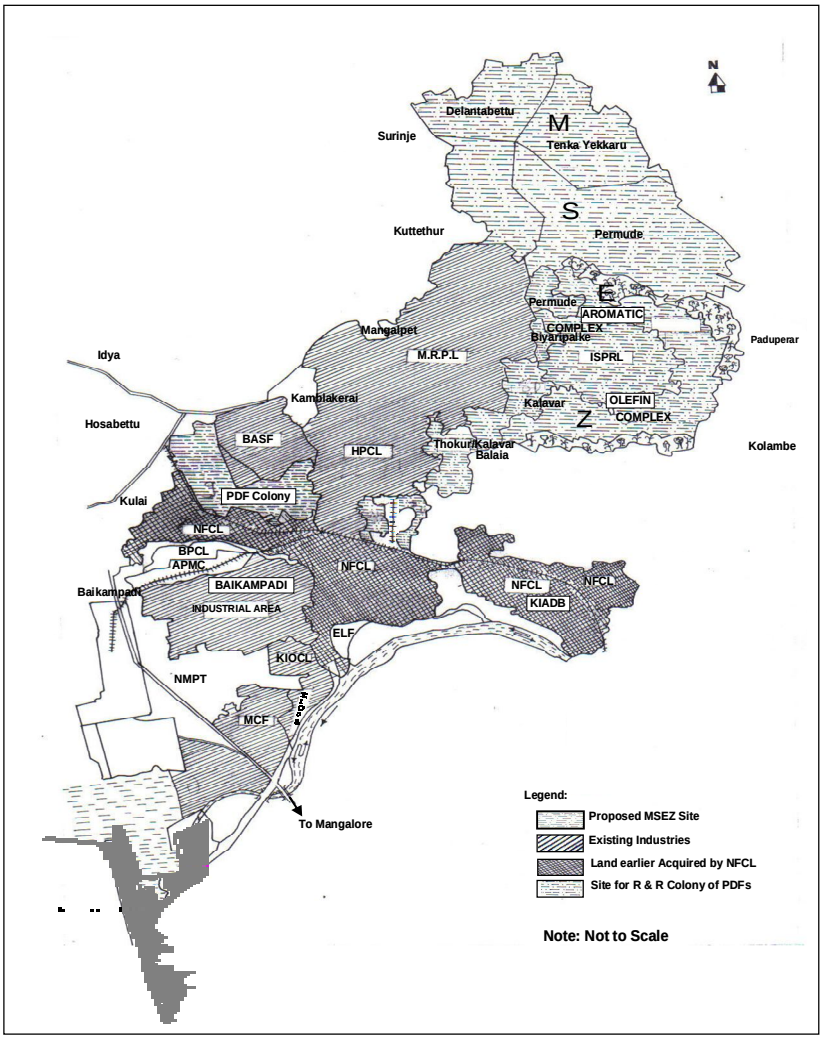


Figure 8: Existing Industrial Developments in the northern areas of Mangalore

Karnataka Industrial Areas Development Board (KIADB) is the Nodal Agency for industrial development in the State including matters pertaining to land acquisition and R&R packages. The Baikampady Industrial area spread across

an area of 937 acres is one of the largest & most developed industrial parks in Dakshina Kannada District. Table 4.1 Indicates statistics of Industrial Parks developed by KIADB.

Table 4.1: Industrial Parks developed by KIADB

Sr no	Industrial area	Extent In Acres	
		Acqd.	Developed
1	Baikampady	937.9	473
2	Karnad	65.02	70
3	Thannirbhavi	126	2
4	Puttur		
	SUB TOTAL	1128.92	545

Source: KIADB website

According to estimates, over Rs 50,000 crore investments are planned in various sectors in Dakshina Kannada and Udupi districts on private entrepreneurship model in the near future.

4.4.2 Special Economic Zones

(i) Mangalore Special Economic Zone (MSEZ)

The MSEZ is located 22 km away from the city, towards the north near the NH17. It is designed as a multi product SEZ catering to petrochemical, manufacturing, service, trading and warehousing industry. To cater to the housing needs of the workers/employees a non Processing area of 303.25 acres is planned around it. The MSEZ has triggered a demand for real estate in the vicinity. The real estate price along the corridor has increased Also a number of other SEZ developments are coming along its side. This has increased the demand for housing. New townships and group housing type of residential colonies are planned by private developers to cater the housing requirements of migrant population who are expected to work in these industries.

(ii) Petroleum Chemicals & Petro-Chemicals Investment Region (PCPIR)

Mangalore is one among the few PCPIRs (proposed) (petroleum, chemicals and petrochemicals investment regions) in the county, and Oil and Natural Gas Corporation (ONGC) - Mangalore Refinery and Petrochemicals Limited (MRPL) is planning mega investments in the region. It includes Rs 8,000 crore for refinery expansion and Investment of Rs 5,000 crore for petrochemical complex by ONGC Mangalore Petrochemical Limited (OMPL)

4.4.3 IT-ITES Sector

In IT/ITES activities too, Mangalore is fast catching up with other major cities. IT major Infosys has established a large presence here. With the increasing real estate costs in Bangalore, Mangalore has emerged as a prominent destination for development of IT industry. Keeping this in view, the Government of Karnataka (GoK) is facilitating development of IT Corridor and a Software Park in Mangalore. Most of the upcoming developments in SEZ's is related to IT-ITES. Infosys is setting up its IT SEZ near Konaje heralding the entry of other IT firms like Lasersoft Infosystems Ltd., Invengor Technologies, and Mphasis BPO. Amongst the other companies Nitesh Estates and BA group are developing IT SEZ at Ganjimutt and Thumbay respectively. There are presently three dedicated IT Parks under construction, which indicates the demand from IT companies which intends to expand their work force in the city. The details of the same are in Table No 4.2.

Table No 4.2 IT/ITES Special Economic Zones

Sr.No.	Developer	Location	Sector	Area (In Ha)
1	Karnataka Industrial Areas Development Board	Mangalore, Karnataka	IT/ITES	203.00
2	Infosys Technologies Limited	Pajeeru, Kairangala, Kurunadu Village of Bantwal Taluk, Dakshina Kannada District, Karnataka.	IT / ITES	125.00

4.4.4 New Mangalore Port Trust

The New Mangalore Port (NMPT) is the only major port in Karnataka. It was established in 1980s and handles 26.67 million tones of cargo. The port has marked Mangalore as a destination for trading and economic development of the region. Since its inception, the port has successfully increased the exports and imports from the region. Over the years the Port has grown from the level of handling less than a lakh tonnes of traffic to 26.67 million tonnes handled during 2003-04. The major commodities exported through the Port are Iron Ore Concentrates & Pellets, Iron Ore Fines, POL Products, granite stones, containerized cargo, etc. The major imports of the Port are Crude and POL products, LPG, wood pulp, timber logs, finished fertilizers, liquid ammonia, phosphoric acid, other liquid chemicals, containerized cargo, etc.

NMPT has provision of residential accommodation within the premises of the port. The township covers an area of approximately 130 Acres. NMPT has also proposed major development activities for the port in the near future. The figure no 9 depicts the facilities and developments envisaged by NMPT.

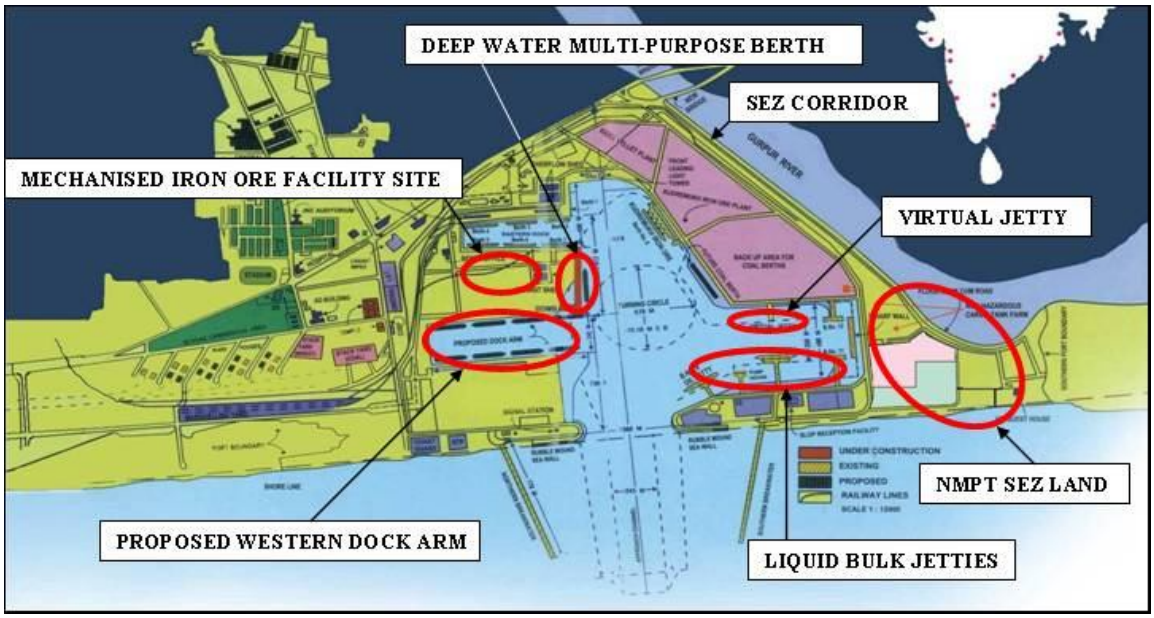


Figure 9 Layout: New Mangalore Port, including existing and proposed facilities

4.4.5 Mangalore Airport

The Mangalore Airport is located at Bajpe, about 22 km from Mangalore City. In the past, the airport used to handle only domestic flights. Recently, the airport has commenced few international flights to the Gulf. In late 2006, it was handling only eight international movements a week. The number of international aircraft movements (arrival and departure) during this period

went up from 720 to 2,200. Considering increased number of passenger traffic the Airport Authority is planning a new Terminal Building. Most passengers are from Dakshina Kannada and Udupi districts of Karnataka and from northern Kerala. The passenger movement at the airport stood at 2.84 lakh people in 2005-06 against 2.68 lakh in 2004-05, registering a growth of 6 per cent. The Airports Authority of India (AAI) expects to handle 3.55 lakh passengers by 2009-10 and 4.31 lakh passengers by 2013-14. According to AAI, the number of aircraft movements was likely to be increased to 5,154 during 2009-10 and 6,265 in 2013-14, from 3,650 in 2005-06.

New Developments envisaged:
To meet the emerging demands of both domestic and international traffic, the AAI has initiated various measures, including the construction of a second runway. This runway, which can handle bigger aircraft, is 2,450 meters long & 45 meters wide, and lies southeast to the existing runway. Adjacent to the new runway an integrated passenger terminal is proposed, which will handle both domestic and international traffic. A new approach road ahs also been constructed to the new terminal which will be closer to Mangalore City by 4 km compared to the existing terminal.

AAI has earmarked 20.85 acres for commercial development along the approach road to the new terminal. Around six acres would be available for the development of a business park, which would target Global logistics companies, trade & industry groups and pharmaceutical companies. AAI has also earmarked 7.38 acres for the development of a hotel and a convention centre.

Export of perishables such as jasmine and vegetables to West Asia is likely to get a boost once international flights start to operate from the Mangalore airport. Floriculture is growing in Dakshina Kannada and Udupi districts, and many small farmers have taken up cultivation of jasmine. Apart from places like Mumbai, jasmine is in good demand in West Asia. To provide an opportunity for the exporters of perishable goods, the AAI has earmarked one acre for the development of cold storages.

4.4.6 Tourism Sector

"Dakshina Kannada" district has rich heritage and culture in form of temples, churches and mosques. It has some of the most beautiful beaches and ghats along the western part of the country. Inspite of this, the tourism potential of the district remains largely unutilized. Currently the tourism activities are mostly related to heritage tourism activities. Some of the popular heritage

destinations are Mangaladevi Temple, Kadri Manjunath Temple, St. Aloysius College Chapel, Jain temple at Moodabidire, Sultan Battery, Pilgrim centre and Beach Resort at Ullal and Karala Temples. The inflow of tourist through out the year to these destinations has been increasing steadily. Every year there are number of visitors to Mangalore. The major tourist circuits include Mangalore and Udupi.

The two towns attract a number of tourists but mostly domestic tourists. More than 95% of the total tourist inflows are composed of domestic tourist while the remaining foreign. The inflow of tourists is almost stable throughout the year but there is an increase noted in the numbers during the months of December to March which is the peak season.

Table: 4.3 Inflow of Tourist during Peak Season in Mangalore and Udupi

Year	Tourist Inflow	Percentage Growth
2006	49,942	-
2007	57,559	15.25
2008	62,276	8.20

Source: Department of Tourism, Mangalore 2008

With beautiful water front and scenic coastline, Mangalore has a huge potential for developing into a holiday destination for domestic and international tourist. Various recreational activities related to water sports, beach resorts and amusement parks can be planned along the water front for attracting international tourists.

4.4.7 Hospitality Sector

Mangalore also has a potential to emerge as one of the largest domestic hospitality markets in South India, driven by the growth of the tourism sector and its strategic location as gateway to tourism in northern Karnataka. The hospitality sector in the city mainly caters to the tourists (domestic & international) and business travelers. As per the recent estimate, approximately 60 percent of the travelers to the city come here on business trips whereas the remaining for leisure trips. Majority of premium hotel supply is concentrated mainly in the KS Rao Road as the area is better accessible to the public transport system and city railway station. Within the city, the corporate traveler segment is estimated to account for a majority of demand for hotel accommodation, with domestic international tourists represent marginal share. Mangalore has few luxury hotels and the occupancy rates are very high during the peak season.

Large hoteliers have shown keen interest in spreading their wings in the city. Ginger Hotels have already launched their Hotel in Mangalore

4.4.8 Infrastructure

Several infrastructure improvement initiatives are being taken up by the District administration, NHAI, etc. The figure no.10 represents major city infrastructure developments proposed for Mangalore city

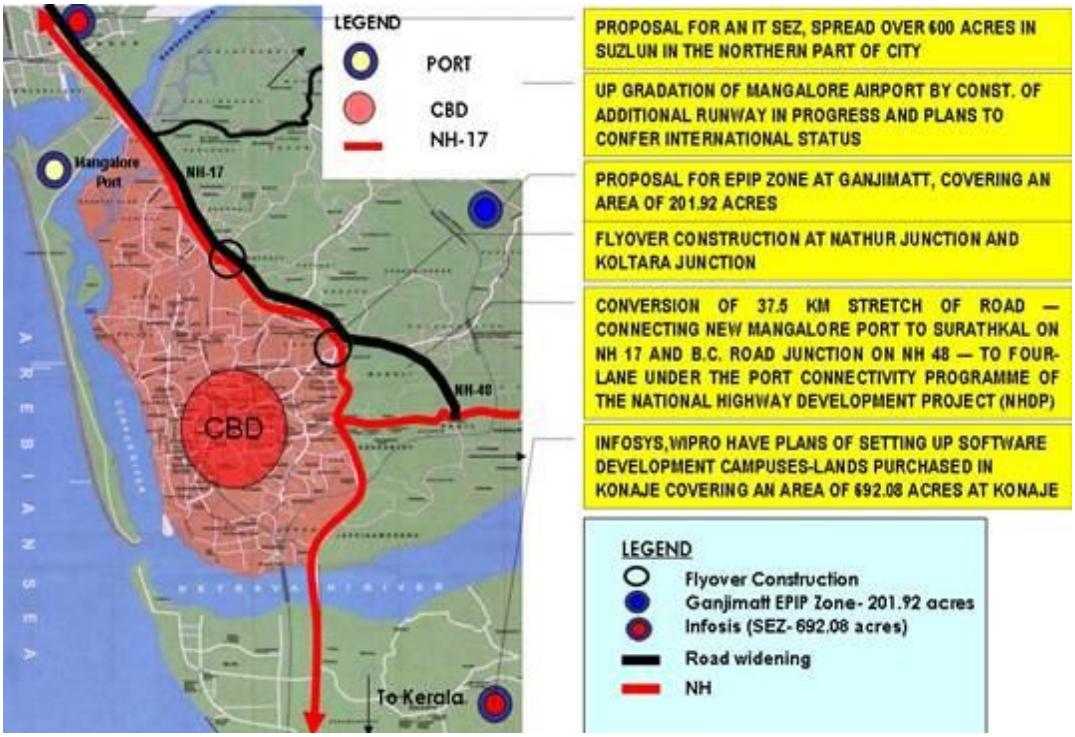


Figure 10 Major City Level Infrastructure Developments in Mangalore

V. Project Concept

5.1 Project Need

With the Rapid urbanization, the intra-city vehicular traffic in the past few years has caused severe stress on city's transportation systems. With limited scope for further road widening of the narrow streets of the old City, an alignment that would relieve and disperse the traffic load is the need of the hour.

Mangalore City is also uniquely surrounded by two rivers – Gurupur and Nethravathi, from three sides. Both these rivers merge with each other at the peninsula of Tannir Bavi before meeting into the Arabian Sea. This unique location has provided one of the longest and scenic riverfronts to the City. While there exists a large scope and potential for river front development for recreational and other purposes, the potential of the riverfront has not been capitalized on till date with several areas along the riverfront being inaccessible.

The Ring Road River front Development envisaged, arises from the project need to:

(i) Ease Traffic flow and provide traffic solution:

There is an immediate need to bypass the highway traffic from the city and strengthen city road network by providing additional linkages Ring roads and network Augmentation facilities. Development of Ring road around Mangalore city is expected to reduce the pressure on city's roads and act as stimulus for bringing significant socio-economic benefits to the city.

(ii) Capitalising the opportunities of Riverfront

The second project component which is the river front development has a vast significance in terms of creating a recreational open space for the city. Although Mangalore has a unique combination of scenic beauty and location, the potential of the waterfront areas largely remain unutilized due to the poor accessibility, facilities and recreational activities along the river banks. The river front development would help to unlock various parcels of lands along the river side which were not available earlier for public access and utility.

(iii) Initiate Development & Growth towards the Suburban regions of Mangalore

The South western & North Western regions show moderate growth in development of industrial, IT/ITES sectors resulting in residential and commercial development. The proposed corridor can augment and enhance the pace of this development thus extending the growth towards the otherwise lesser developed region.

5.2 Advantages of Ring Road Development

- Improved access and connectivity to all parts of the city efficiently without passing through congested city areas. The ring road can act as a bypass for intercity traffic entering the city thus reducing the pressure on the arterial and sub arterial roads.

- Reduced congestion in the interior parts of the city by allowing through traffic of National Highway to bypass the city. The ring road would be useful for the floating population which is coming from outside of the city and moving out.

- The ring road would connect major arterial roads originating from city centre and thereby strengthen city Road Network.

- The ring road would provide connectivity to major transportation hubs of the city like, Bajpe Airport, National Highways and the New Mangalore Port. The development of industrial corridor in the north has further increased the traffic. Presently, the connectivity is inadequate to cater to the future traffic requirements between NH 17 and the Airport. Therefore developing a Ring Road which can act as an effective transportation link and a bypass for the city traffic is a necessity.

- Due de-congestion, ease of transport, more efficient road-network there would be immense savings in time and cost of travel and significant reduction in pollution levels

- The proposed ring road would act as a connection to the suburban areas in the city which are not properly connected. It will also help in decongesting the traffic along the arterial and sub arterial roads of the city.

- The proposed ring road will unlock the land parcels and act as catalyst for development of corridors along the hitherto poorly accessible and under-

developed areas of the city. Thus, it will further act as a growth corridor for the city.

5.3 River Front Development

- The proposed development will provide access to about 12 km of riverfront, large part of which is presently inaccessible for public use.
- In line with similar development implemented elsewhere in the world successfully, the river front development would bring a unique and distinct identity to Mangalore and boost its Tourism Potential
- The development will make provision for recreational activities along riverfront in an integrated planned manner with residential and commercial activities along its side.
- The proposed development will Regenerate and Rejuvenate the area and prevent un-controlled, unauthorized developments including possible encroachments
- The development will open up and will provide better access to land parcels along the river front.
- A planned development of riverfront will also unlock commercial potential of riverfront, which can also finance other project components.
- Developing the riverfront will effectively prevent erosion of riverbank and enhance quality of environment along it.
- Quality infrastructure services will be provided in the surrounding areas as part of the riverfront areas, which will effectively prevent environmental degeneration including river pollution.

5.4 The Mangala Corniche

The proposed development of the ring road along with the river front developments as its integral part has been christened as the 'Mangala Corniche'

5.4.1 Project Components

a. **Development of 100 feet wide road** (4 lanes) over a length of about 35 km ring road around Mangalore city and (35 mts Ring Road from Maravoor Bridge to Kannur)

b. **Riverfront development** along the ring road for a stretch of about 12 km starting from Ullal Bridge to Kuloor Bridge along Gurupur River.
   - Riverfront development would primarily include development of road stretch as part of ring road, embankment protection, walkways and promenade, parks and gardens, eateries and recreational activities and real estate development of land parcels in government land pockets.

The ring road (as shown in the schematic map in Figure 11) is proposed to be developed into five stretches as follows:

- **Stretch I**: From Ullal bridge to Kuloor bridge along River Gurupur stretching about 12 km including development of river front
- **Stretch II:** From Kuloor Bridge to Maravoor Bridge along River Gurupur,
- **Stretch III:** From Ullal Bridge to Kannoor along River Nethravati
- **Stretch IV:** From Maravoor Bridge to Gurupur Bridge along River Gurupur
- **Stretch V:** Connecting link between Gurupur Bridge and Kannur passing through hinterland

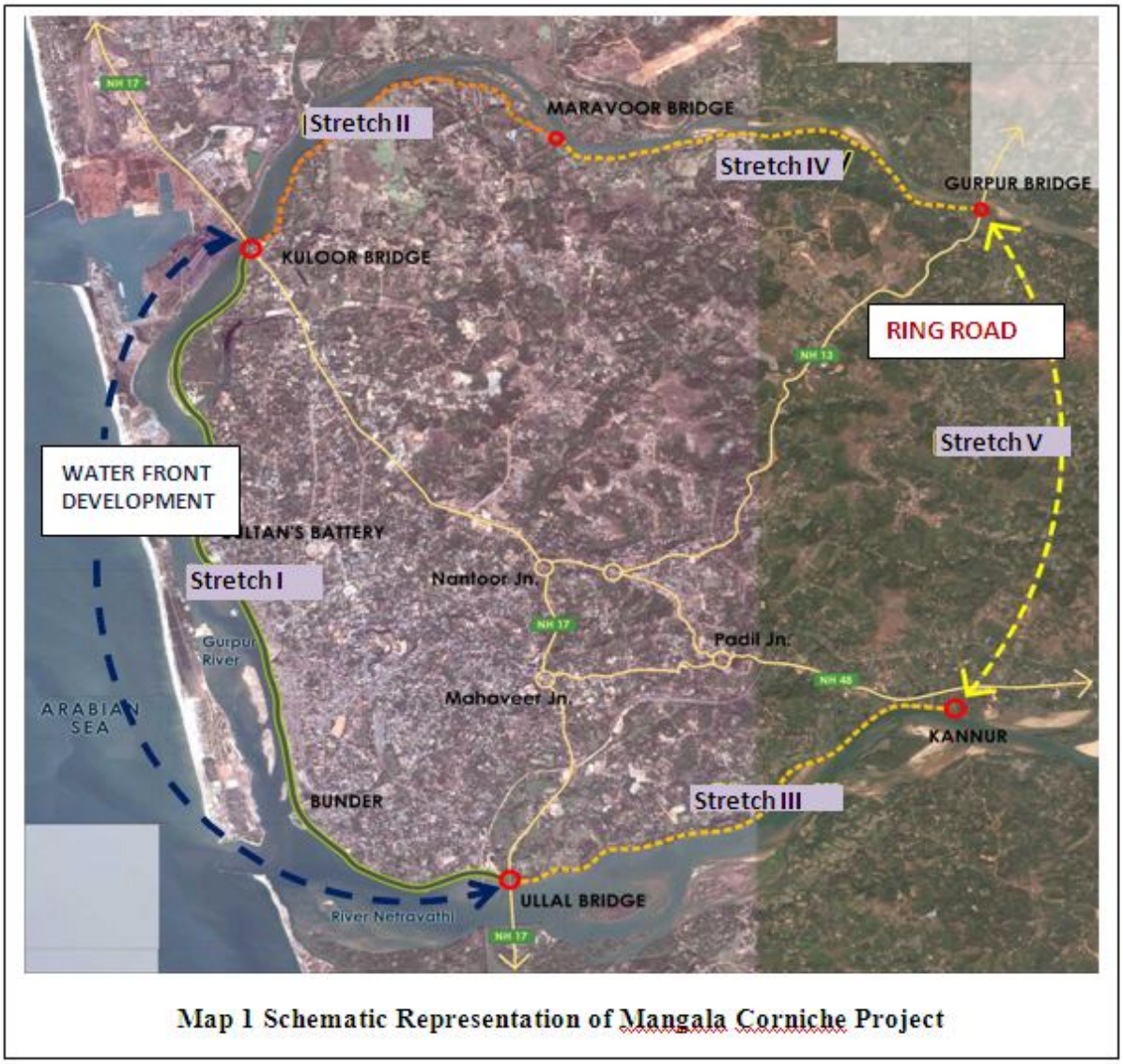


Figure 11: Schematic Representation of Mangala Corniche Project in Mangalore

VI. Alignment Analysis of Mangala Corniche

6.1 Traffic Analysis

The City of Mangalore enjoys connectivity through three National Highways namely NH 17 (from Panvel in Maharashtra) to Edapally Junction (near Kochi in Kerala), NH 48 (towards Bangalore) and NH 13 (from Mangalore to Sholapur). There is also a state highway passing through Madikeri which connects the city to Mysore.

The above cluster of highways is inadequate to handle the traffic that flows through the region due to which NHAI is upgrading the national highways connecting New Mangalore Port to Suratkal on NH-17 and B. C. Road Junction on NH-48, from 2 lane to 4 lane would take place. A total stretch of 37.5 Kms would be upgraded from two lanes to four lanes.

As seen in the figure 3.1 all the three National Highways traverses through the congested areas of the city. With the development of the Mangalore Port and SEZ surrounding it the vehicular traffic to the city has increased. There is a pressure on the existing roads to carry on this traffic also since all the roads transverse through the city, the intra city vehicular traffic also gets added to it. This in turn has an effect on the inter city traffic which subjected to increase with expanding SEZ and Port activities. The Outer Ring Road would provide a fast and smooth access to this traffic and would improve the transportation corridor link of Mangalore with other cities

6.2 Existing Situation of traffic in Mangalore

The scenario of traffic in Mangalore is changing rapidly. With the development of the New Mangalore Port, SEZ and industrial developments in the surrounding, the vehicular traffic in the city has increased. The traffic pressure on the roads has increased. Since all the major roads and highways traverse through the city, the intra city vehicular traffic also gets added to it. This in turn has increased the total volume of traffic passing through the city. The traffic scenario in the city areas of Mangalore is also very alarming with slow movement and mixing of highway traffic with the city traffic. The old city of Mangalore is very congested. The arterial roads leading to the CBD carry heavy traffic due to concentration of commercial, industrial and other employment-related activities in the CBD. Other major roads are also congested. Capacity of almost all roads is reduced due to less width, high intensity usage, poor quality of riding surface, inadequate pedestrian pavement and lack of properly

designed intersections. The figure no 12 depicts the existing traffic scenario in Mangalore

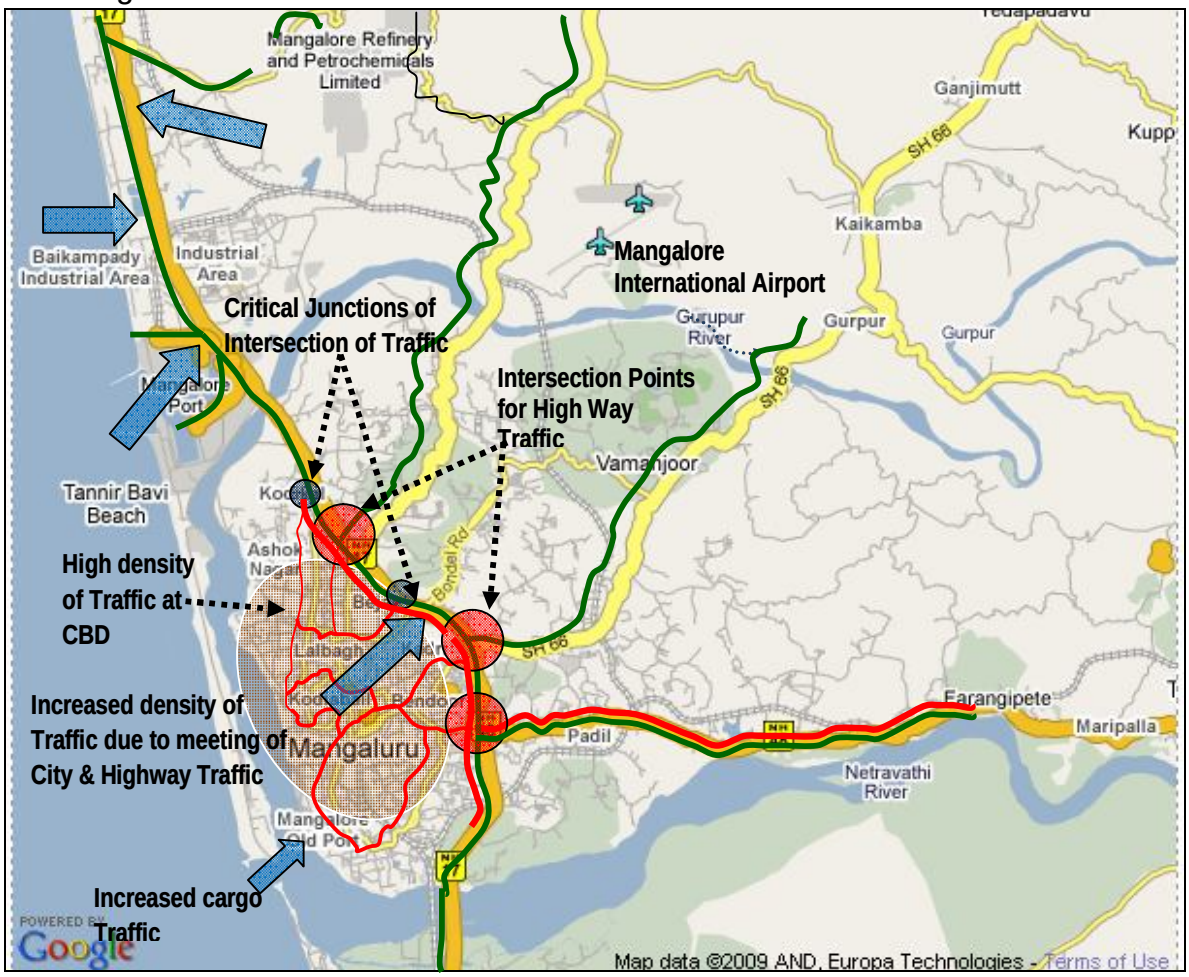


Figure 12 Existing situation of Traffic in Mangalore

6.3 Road Network and Connectivity

The pattern of roads in Mangalore can be broadly classified as radial. Except the old city areas where the road network is already established, the new network of roads emerge in a radial fashion along the NH17 linking various parts of the city. The layout of roads in old city is organic. Typical old neighborhood streetscape shows a network of narrow lanes with commercial spaces on the ground floor and residential spaces on the top. Various neighborhood lanes converge to form clusters which are linked by sub arterial roads to the major streets and roads of the city. The network of roads further connects to the highway NH17. NH17 acts as a connecting road link for NH48 (Mangalore-Bangalore highway) and NH 13 (Mangalore – Sholapur highway) thereby facilitating movement of traffic across the highways in the city.

6.4 Traffic Analysis along major routes

NH 48 lies entirely in the state of Karnataka and links Mangalore to the state capital passing through the towns of B.C Road, Uppinangadi, Sakleshpura, Hassan, Kunigal and Nelamangala. The traffic on this highway has increased after 1990 mainly due to the boom in information technology (IT) jobs at Bangalore and setting up of MRPL at Katipalla, Mangalore. Large number of IT professionals working in Bangalore belongs to Dakshina Kannada and Udupi districts. The government undertaking KSRTC runs several buses day and night in between these two cities along with private operators.

NH-48 i.e. the Mangalore - Bangalore National Highway is reported to have heavy congestion due to the increased traffic inflow on this corridor. Frequent traffic jams are also seen on this route. The trucks and trailer carrying LPG and other petroleum products from MRPL to Bangalore have been frequent cause of accidents on this road. Thus necessitating an urgent need to divert heavy vehicles such as trucks, lorries, oil tankers and multi axle vehicles bound for Bangalore to ease the pressure.

In the recent years, with the development of NMPT and IT industry, the influx of service class population to the city has increased. Since there is no further scope for development in the western side of the city, the new residential and commercial neighborhoods are seen developing along the north and eastern sides of the city. NH17 has thus become the main arterial axis for the movement of vehicular traffic along the east-west corridors of the city. According to a study by the KCCI, NH-17 bears around 70,000 vehicle movements per day and NH 48 bears around 40,000 vehicle movements per day. Nearly two lakh passengers use the road in each segment every day. Around 500 trucks transport 5,000 tones of local cargo every day on each highway. A minimum of 50,000 tones of export-import cargo is also transported. Considering the growing demand for improvement in traffic, NHAI is upgrading the national highways connecting New Mangalore Port to Suratkal on NH-17 and B. C. Road Junction on NH-48, from 2 lanes to 4 lanes. A total stretch of 37.5 Km would be upgraded from two lanes to four lanes. As many as seven flyovers, five minor bridges, three under passes and 15 culverts will be constructed during the four laning of the National Highways. Flyovers will be constructed at Surathkal, Kuloor, Kottara Chowki, Nanthur, Maroli, BC Road and Kuntikana. However, along with this upgradation, there is a need for establishing a strong east-west and north-south corridor link which can segregate the highway traffic before entering the city.

6.5 Critical issues related to Road Traffic in Mangalore

(i) **Reduced Speed:** The increased numbers of vehicular traffic coupled with minimal increase in road space has resulted in decrease in travel speeds and considerable hold-ups at junctions thereby increasing the travel time.

(ii) **Increased Density of Traffic:** The increase in volume of traffic, due to the operations of NMPT, MSEZ and other Industrial areas has increased the numbers of unscheduled carriages such as oil tankers, tourist buses, and goods carriers from Punjab, Andhra Pradesh, Tamil Nadu, Kerala, Maharashtra, and Goa. This has increased the density of vehicular traffic. The check-post at Mukka near Suratkal records nearly 900 such vehicles everyday while the check-post at Talapady logs an average of 1,000 vehicles a day.

(iii) **Poor Access and Connectivity**: Certain missing links especially in the orbital direction have also reduced the efficiency of movement. The traffic from the city has to use the national highway in order to get connected to other areas. There are no bypass roads which can improve the connectivity of the east-west and north-south linkages in the city.

(iv) **Safety of Road Traffic:** Conflicts between highway traffic (comprising of goods traffic, heavy duty vehicles) with city traffic (consisting of vehicular traffic and bicycle and pedestrian traffic) has increased the issue of road safety. The growth of residential colonies along the highway has increased the conflict between highway and city traffic. Lack of organised parking including loading/unloading facilities for trucks along this stretch has further reduced the capacity and safety of movement on these roads.

6.6 Development of Mangala Corniche Ring Road

The proposed Mangala Corniche Ring Road would comprise of developing a 31 km long stretch of Ring Road around the city. The Ring Road would serve as a bypass for the outside traffic entering the city and will provide an alternative route for the movement of traffic thereby easing out the congestion on the major travel routes. The figure no 15 depicts planned rerouting of the traffic through Mangala Corniche thus reducing congestion the roads through the city.

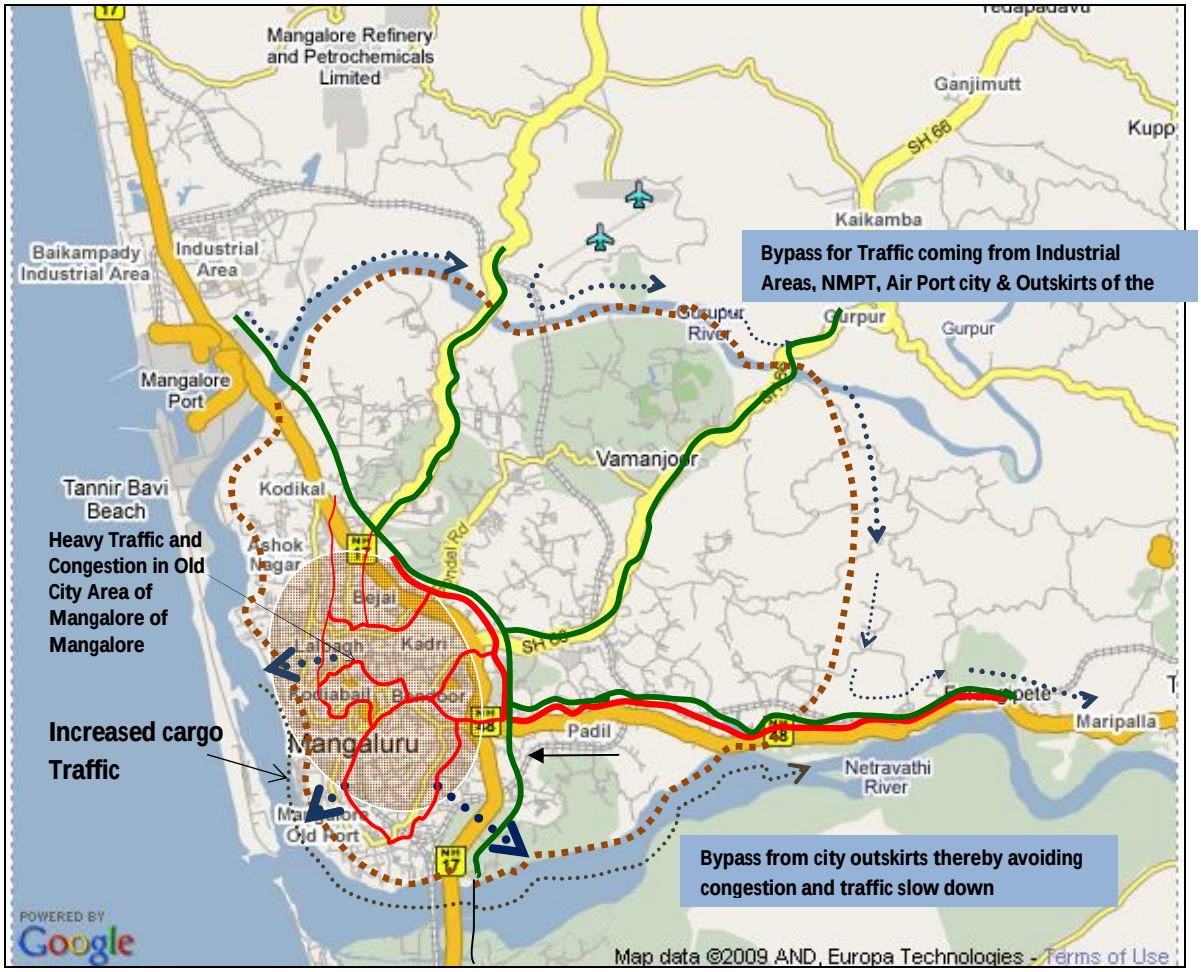


Figure 15: Proposed Ring Road Development of Mangala Corniche

6.7 Alignment Analysis

The ring road for Mangala Corniche is proposed to be designed in a circular fashion along the city. The road will intersect Kulur, Maravoor and Gurpur bridges and will merge at the Kannur Junction. The areas falling in between these bridges along the river is proposed to be utilized for the road project. Thus, the Ring Road has been divided into five stretches.

- Stretch I: Between Ullal Bridge to Kuloor Bridge
- Stretch II: Between Kuloor Bridge to Maravoor Bridge
- Stretch III: Between Ullal Bridge to Kannur
- Stretch IV: Between Maravoor Bridge to Gurupur Bridge
- Stretch V: Between Gurupur Bridge to Kannur

6.8 Stretch I: Between Ullal Bridge to Kuloor Bridge

Figure 17 Possible Developments at Stretch A: Ullal Bridge to Kuloor Bridge

6.8.1 Special Features & Characteristics

Length of the Stretch is about 12 km. The entire stretch of 12 km is located along the river. The stretch can be broadly subdivided into two sections. Section A: Initiating from the Maravoor Bridge to Sultan Battery and Section B: Starting from the Sultan Battery to Ullal Bridge. The two road sections have distinct characteristics.

Section A: The land along Section -A is marked with green pastures and agricultural land holdings. Coconut plantations are predominantly seen in the area. There is an existing kutcha road which runs along the water front connecting the Ullal Bridge to the Backwaters just before the Sultan's Battery. The traffic along this stretch is low due to low density of activities. A portion of this stretch has also been noted to have mangroves.

Section B: Section B begins from Sultan's Battery passes through the Bunder Area towards the Ullal Bridge. The area around Sultan's Battery is developed into a fishing harbor. The area passes along the Old City. The stretch after the

Sultan's Battery until the Old Mangalore Port is marked with high density residential settlement along with harbour activities. There are also a number of industries along with warehousing zones are seen along this belt which stretches up till Ullal Bridge.

6.8.2 Critical Analysis of Various Options for Development of Stretch 1

Stretch I faces the riverfront on one side, due to which it has a potential of developing into water front area for the city. Various water front related activities can be planned depending upon the availability of land parcels and the existing typology of land use and typology of development along its side. For example, for the stretch falling under Section-A i.e. between Kuloor Bridge to Sultan Battery, where most of the land is green and not much of physical development is seen could be utilized for water sports and related activities. Activities which can be undertaken may include, motor boat rides, Cubing, rafting, river cruises etc.

Motor Boat rides **Tubing**

Figure 18 Possible Developments along Section A of Stretch 1

The island on Gurupur River near the Sultan's Battery can be developed as tourist attraction point and various ferry boat services can be linked to these islands from the Sultan Battery. The stretch falling under Section – B (i.e alignment between Sultan's Battery passing through Bunder till Ullal Bridge) is adjacent to the Old city. The Old City of Mangalore is very congested and surrounding areas have high density residential and commercial settlement. In some pockets the settlements are touching the Gurupur River on its side. As this stretch moves further, there are fishing docs, Old Mangalore Port and a number of Industrial setups along the river side.

The stretch has the potential to be developed into a beautiful marine drive with walkways along its sides. In sections of the road where the congestion is less recreational spaces such as gardens, play areas for children, open spaces as indicated in figure 19 can be planned.

Figure 19 Open spaces & Children Play Areas

At sections where the road traverses along the congested portions of the city, walkways, promenades and various eateries can be planned. The city neighborhoods can be linked to the water front so that people are able to enjoy the water front and other activities along its side. For the purpose of controlling the traffic, these streets can be made available for pedestrian traffic.

- *Quite Walkways* *Busy shopping areas with Eateries*

Figure 20 Possible Developments along Section B of Stretch 1

6.8.3 Land Acquisition

For the implementation of the water front land acquisition in certain areas would be required. Locations where government owned land parcels exists could be utilized for development of jetties and other infrastructure.

However, in sections where the land belongs to private owners, minimal acquisition can be planned so as to reduce the displacement of people and their livelihoods which might be dependent on the area. Therefore, in Section–A activities such as water sports which more space and area can be planned while in Section-B activities which can be designed with minimum acquisition of land such as walkways, promenades etc. can be planned.

6.9 Stretch II: Kuloor Bridge to Maravoor Bridge

Figure 21 Possible Developments in Stretch II: Kuloor Bridge to Maravoor Bridge

6.9.1 Special Features & Characteristics

The length of this Stretch II is 5.8 km. The entire stretch has a waterfront along its side. The area surrounding it is developing rapidly. The major development happening near this corridor is Mangalore SEZ and IT Park. The stretch is well connected through road, rail and air traffic. It is directly linked to NH 17 via Kuloor Bridge and to Bajpe Railway Station and International Airport via the Maravoor Bridge. Kuloor Bridge acts as a junction for inflow and outflow of traffic, linking the SEZ and industrial developments surrounding it to the city.

The stretch connects the Kuloor Bridge and the Maravoor Bridge which act as two main transport junctions for the city. Both the Kuloor and the Maravoor Bridge act as an access road for the traffic moving towards the northern side i.e. the NH17 and Mangalore Airport respectively. Also it can act as link road for connecting various SEZ and industrial developments such as MSEZ development, other planned SEZ's, NMPT, IT Park and KIOCL which are

located along its vicinity. The ring road will serve the transportation requirements of goods and other heavy duty traffic for the above industries. It will also act as a bypass for the Air passenger traffic. Thus, this stretch would act as an effective network corridor linking the highway and Airports to the industrial areas of the city.

6.9.2 Land Acquisition:

The land parcels along this stretch are mostly agricultural. The acquisition of agricultural lands will have to be made for development of this stretch of ring road.

6.9.3 Critical Analysis of Various Options for Development of Stretch II

Since the stretch is passing through industrial areas and can be effectively utilized as a transport corridor for them, the road can be designed as an inter linkage for transportation of goods and services for the nearby industrial developments. It can be designed as a four lane road thereby restricting the land acquisition to suit the minimum requirements.

Although, the road has a river front on its side, considering the type and frequency of traffic along its surface, development of waterfront along this edge would not be feasible option for development of this stretch. It can be best utilized as a transport link corridor/ bypass for industrial usage. The road can be tolled for usage. Since the industrial development along this corridor is anticipated to increase, the collection of toll would act as a potential revenue generating stream

6.10 Stretch III: Ullal Bridge to Kannur

Figure 22 Possible Developments along Stretch III: Ullal Bridge to Kannur

6.10.1 Special features and Characteristics

The **length of Stretch III is about 6.5km.** The entire length is exposed to riverfront. The land use is predominantly agricultural with dense coconut plantations and mangroves along the river side. There are a few village kinds of settlements within the agricultural fields. There is no road along the river side. The river basin is undulated and there are a few landmasses which have emerged within the basin. Some of them are as large as 1 km length surrounded by waters from all the sides. This has given a unique loop kind of feature to this stretch.

6.10.2 Critical Analysis of Various Options for Development of Stretch III

The river basin along this stretch is considerably wide. The basin is shallow, with undulated topography. Considering the fact that the river basin is shallow there would be limitations for the utilization of this stretch for water sports related activities. However, the same characteristic of the river can be utilized for the development of land masses / islands within its basin. The land masses as shown in figure 22 can be used for the development of Lake Resorts or Island Hotels. The area aligning the road can be designed as a recreational zone for the city. Activities such as Water Park can be designed and given to private developer for operation. Waterfront related activities such as boating and island safaris can also be organized. The stretch also has a potential for development

of high end tourist activities such as golf course, marine park etc. However, feasibility of each of them under PPP needs to be defined.

6.11 Stretch IV: Maravoor Bridge to Gurupur Bridge

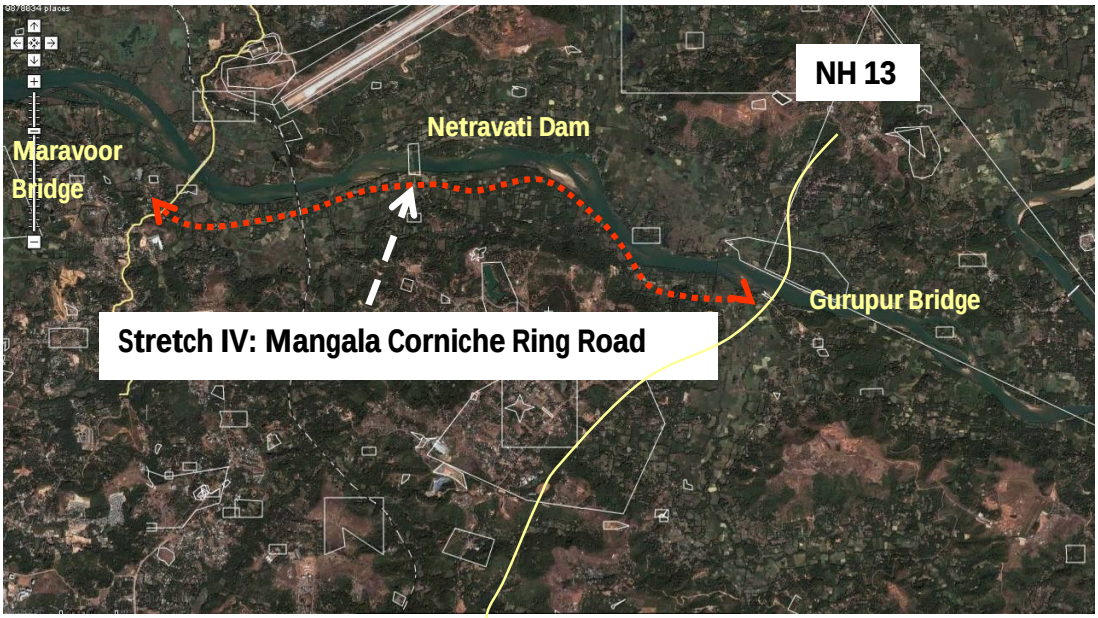


Figure 23 Possible Developments at Stretch IV: Maravoor Bridge to Gurupur Bridge

6.11.1 Special features and Characteristics

The **length of this stretch is about 6.3 km** and the entire stretch is exposed to river front on one side. The stretch passes through agricultural areas and there is very less physical development seen in its vicinity. Some of the prominent features along this stretch include; Railway Bridge and Netravati dam built at a distance of about 1.2 Km and 2.6 km from the Maravoor Bridge respectively. It has a countryside landscape which can refresh mind and body

6.11.2 Critical Analysis of Various Options for Development of Stretch IV

The stretch links the traffic coming from the industrial areas i.e. from the Kuloor Bridge to NH13. Also it acts as a connecting link from the international airport to the city. The railway station is also connected along the same line. The stretch can be developed as a Riverfront Drive which can connect the traffic coming from Airport, Rail to the interior parts of the city. This road would basically serve as a bypass for the intercity traffic from the northern side. A few country side tourist activities can be planned along this stretch especially near the Gurupur dam. At a few locations Jetty's can be constructed and boat rides can be planned.

Some of the country side tourism activities have been shown in figure 24. The photograph 1 shows a typical English countryside along The River Avon near Bath. Photograph 2 shows Bolton Abbey in the Yorkshire Dales located across one of the Britain's largest National Park.

Figure 24 Country Side Landscape

6.12 Stretch V: Gurupur Bridge to Kannur

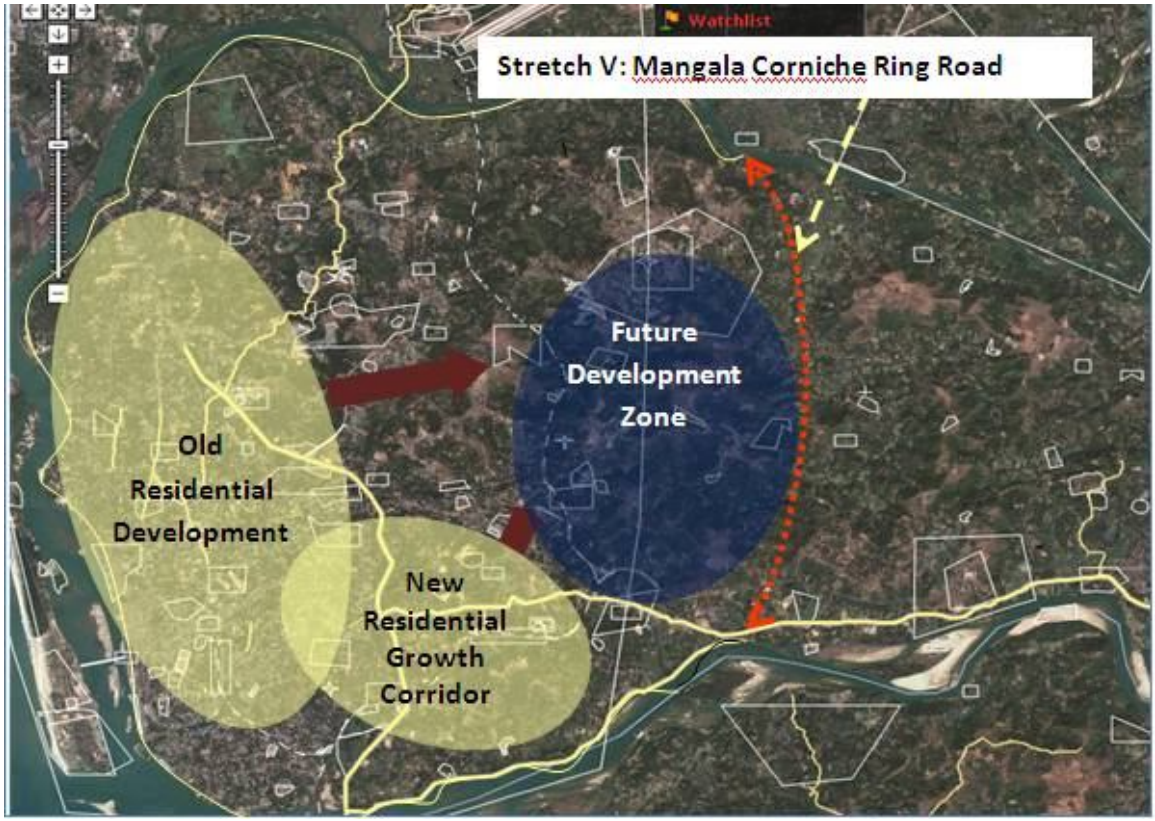


Figure 23 : Possible Developments at Stretch V : Gurupur Bridge to Kannur

6.12.1 Special features and Characteristics

The stretch V is the last section of the Mangala Corniche Ring Road Development. It spans between the Gurupur Bridge and Kannur. The total **length of this stretch is about 7.5 km** and the topography of this stretch is plane. The land use along this stretch is predominantly agricultural. With the city's growth on the east some residential areas are seen along the south-eastern side just before the stretch meets the Kannur Bridge. It is the only part of the ring road which does not have a riverfront along its side.

6.12.2 Critical Analysis of Various Options for Development of Stretch V

Land acquisition: Most of the agricultural land holdings are private and would have to be acquired by the government for construction of the road corridor.

Impacts of Development: The development of Stretch-V of the Ring Road would improve the infrastructure and connectivity of the areas falling between Kannur to Gurupur Bridge there by, encouraging the development of new residential colonies. As shown in the figure 23, there is little scope for new development on the western side of the city, presently the growth corridor is shifting towards the east and north eastern sides. With the development of Mangala Corniche along the eastern fringe the growth will get aligned. This will encourage the growth of new residential and commercial development in the city. Thus, the construction of the Ring Road would trigger the growth of residential and commercial development in the area increasing the development and real estate value of the surrounding areas.

6.13 Primary benefits of developing the Ring Road Corridor

1. The primary consideration for development of the Ring Road is to generate a smooth and effective transportation link for the City and Highway traffic. The bypass route would create an efficient means of travel for the commercial and intercity traffic without increasing the pressure on the existing road network of the city.

2. The traffic from NMPT, PCPIR, MSEZ and other industrial areas moving towards NH13 and NH48 in the North and Eastern directions respectively can use the bypass road thereby avoiding the heavily congested route of NH17 passing from Kodikal and Bendoor intersections. Presently the goods traffic moving towards NH 13 from the Kullor Bridge has to travel via NH17 southwards for a distance of about 6.5 km and further travel northwards to about 9.3 km before reaching the Gurupur Bridge on NH13. The stretch of

NH17 linking this corridor passes through heavily congested areas of the city. This increases the effective time to reach the Gurupur Bridge. Alternatively, the Ring Road from Kullor Bridge to Gurupur Bridge takes only 12 km. Thus, the effective distance of travel is less. Thus, resulting in a considerable reduction in time and cost for the journey.

3. The stretch between Maravoor Bridge and Kannur Bridge is critical due to the rapid increase of the volume of passenger traffic from the airport. Also with the up gradation of Airport, this stretch would act as the key connectivity for the airport to the city. The ring road would also serve as an efficient route of travel for the outside traffic moving from and towards the Airport. This would primarily include the traffic to north towards Udupi on NH 17. Similarly, it would facilitate smooth movement of traffic towards NH 13 and NH 48 thereby reducing the travel time and cost for the journey.

4. Considering the high density of commercial activities along the western edge of the CBD, the traffic originating/ moving towards Sultan Battery, Bandar and Old Mangalore Port area can be diverted through the Stretch - I ring road on the western side. This will ease out the traffic congestion in the core areas of the city.

5. The Ring Road which would be developed as a Greenfield project would have additional facilities such as parking spaces, bus and truck terminus, loading/unloading spaces, refilling and service stations which otherwise would be difficult to be accommodated in the existing city roads.

VII. Assessment of Risks

7.1 Risk Allocation and Mitigation

Appropriate risk mitigation structures would have to be evolved for the Project. Various risks associated with the Project and broad mitigation structure is explained below:

7.1.1 Traffic Revenue Risk:

Traffic Revenue risks forms a major component in the risk matrix which can be mitigated only through diligent traffic studies and projections.

7.1.2 Design and Development Risk:

This can arise due to faulty specifications. This risk is being looked at being mitigated by the designs being finalized and standardized by the ULBs based on the city's profile.

7.1.3 Construction Risk:

This can lead to delays in completion. Effective clauses in the concession Agreement and ensuring timely clearances and handing over of sites are some ways of mitigating this risk.

7.1.4 Demand Risk:

These risks arise from the project if there is no established demand for the Project. However in this case, a Pre-feasibility has been carried out to assess the viability of the project based on the demand for the revenue generating components for the project.

7.1.5 Commercial Risk/ Revenue Risk:

These risks arise from existing and future competition, effectiveness in utilizing space and management of facilities. With the involvement of Private Sector in marketing, O&M and management and attractive incentives structures linked with Project success, risk would be transferred to the Developer.

7.1.6 Debt servicing Risks

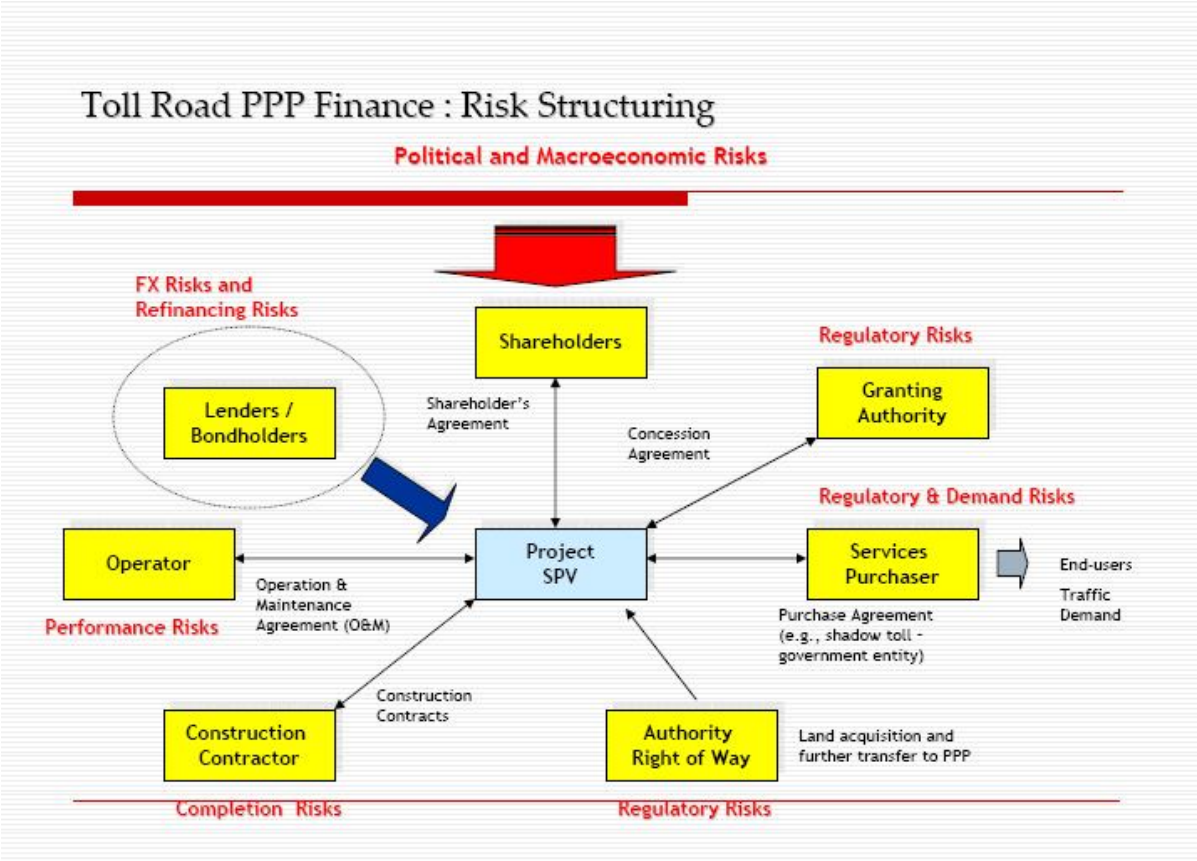
The risk mitigants are appropriate debt–equity mix and proactive managerial strategies in financial restructuring

7.1.7 Political Risk:

These can be mitigated by effective legal documentation and insurance.

The figure 24 depicts the risk mitigation practices of the SPV in case of Toll roads.

Risk Mitigation in Road Projects



7.2 Environment and Social Risks

The purpose of this study is to undertake a preliminary assessment of the environment and social risks so as to facilitate incorporation of appropriate environmental protection measures for development of the Mangala Corniche Ring Road. The study comprises of Preliminary Environment and Social Screening and Outlining scope for future studies. The assessment is based on the secondary information available through a wide range of resources. Significant impacts, including identification of sensitive locations and mitigation measures thereof are discussed and future scope of environmental and social assessments is ascertained. The process is carried out by undertaking an Environmental and Social Screening of the project corridor.

7.2.1 Objectives of Screening

The main objectives of the environment and social screening are:

- Preliminary assessment of the environmental & social issues along the project corridor.

- To identify the valued ecological /environmental components along the project corridor.

- To assess likely impact due to the project within the project impact and influence areas.

- To determine the focus of the Environmental and Social Impact Assessments to be carried out subsequently.

7.2.2 Environmental Screening

This section presents the preliminary assessment of the environmental situation, discussions on project interventions and likely environmental impacts, legal and policy framework applicable for the project. A broad assessment of the mitigation and enhancement measures is made for minimizing the adverse and maximizing the beneficial environmental impacts due to the project.

7.2.3 Social Screening

This section presents the preliminary assessment of social conditions along the project corridor. It discusses the likely social impacts and their sensitivity along the corridor and the applicable legal, policy framework for the implementation of the project.

7.2.4 Scoping

This section provides necessary information on the scope of further Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) studies, preparation of Resettlement Action Plan (RAP) and Comprehensive Environment Management Plan (CEMP) for the project.

7.2.5 Approach :

To undertake the environment and social screening an area of about 10km is marked on either side of the road alignment. This corridor is considered as the Project Influence Area in line with the requirements of Ministry of Environment and Forest (MoEF). A preliminary assessment of the environmental and social risks along this corridor is made. The area is divided into direct impact zone i.e the area within the proposed right of way (RoW) and the immediate vicinity, and indirect impact zone i.e. the area within 10 km of the proposed alignment. A preliminary assessment of the direct/ indirect environment and social impacts along theses zones is carried out. Based on the preliminary assessment of impacts, mitigation measures are discussed.

Environmental components considered for the preliminary assessment include; geophysical characteristics such as land use and topography, features of surrounding areas, vegetation, ecological environment, sound, air and water pollution etc; Similarly the components examined for social risks include demography, population, livelihoods, type of settlement, population density etc.

7.2.6 Institutional Setting:

The environmental regulations, legislation, policy guidelines and control that may apply for the project, fall under the responsibility of various government agencies. The following agencies would play an important role in this project.Some of the agencies from whom clearances would be required include; Ministry of Environment and Forests (MoEF), Karnataka State Pollution Control Board (KSPCB), Karnataka State Level Environment Impact Assessment Authority (SEIIA), Karnataka State Coastal Zone Management Authority.

7.3 Assessment of Environment and Social Risks

A preliminary assessment of the environmental and social components is carried out. Based on which the following risks have been identified and corresponding risk mitigation measures have been discussed.

7.3.1 Environmental Screening

7.3.1.1 Air and Noise

The levels of air and sound pollution would be dependent on the type of development proposed for each stretch of the Ring Road. In case of Stretch-I the development proposed is related to water front activities such as marine drive, water sports, beautification etc. The level of sound and air pollution due to such activities is low hence the air and noise pollution along this Stretch is estimated to be low. Stretch – II and IV are designed as transportation linkages for NMPT and Industrial areas. These stretches serve as major connecting links for the goods traffic which would increase the levels of dust and noise pollution. To reduce the impact, dense tree plantation should be carried along the corridor of these stretches. Trees act as dust and sound barriers hence trees with thick foliage should be planted along the either sides of these corridor.

Conversely, the river front development is expected to improve the organization of spaces in the surrounding areas which would reduce the levels of congestion and improve the quality of sound and air. Currently, there are a couple of educational institutions falling in the impact zone of Stretch- I, the levels of sound and air pollution is high due to high density settlements and increased commercial activities. With the development of river front, the levels of sound and air pollution is expected to decline. However, during the operational stage

these institutions would be potential receptors of noise generated by the corridor. Based on the finalised alignment option at each of the locations, appropriate mitigation measures would be determined and presented in the EIA report.

7.3.1.2 Water resources

Major water bodies identified in the project area are Gurupur River, Netravati River and Palguni River. The Ring Road, while passing through the first 4 stretches crosses several streams. Also there are a few lakes along the vicinity of these stretches which fall under the corridor of impact. Appropriate cross drainage structures should be provided after studying the pattern of ground water table and drainage to avoid impedance due to drainage before implementation of the project.

7.3.1.3 Vegetation

A major section of the Ring Road passes along the side of the river. Stretch I-IV is exposed to waterfront whereas Stretch V passes through agricultural land holdings.

Area surrounding the Stretch I-IV has mangrove and coconut plantations along its side. The land along the river is fertile and is presently used for a range of agricultural and fishing activities. The development of Ring Road will have an impact on the cutting of mangroves and other vegetation in the area falling under these stretches. It will also lead to acquisition of some of the most fertile lands along the river basin. To reduce the impacts, the road corridor should be aligned in a manner which encourages less cutting of mangroves and other vegetation along the belt. Also, new plantations should be carried out to compensate the losses.

7.3.1.4 Ecological Environment

A major section of the corridor has a river front along its side. There are several water and terrestrial ecosystems consisting of numerous terrestrial and aquamarine species. Also a variety of migrant birds and animals would be visiting the area. The development of the ring road would have an impact on the functioning of these ecosystems. As discussed above; it would also have an impact on the local occupational practices such as fishing and agriculture in the area. To assess the levels of destruction caused to the ecological and social environment a Comprehensive Environment Management Plan (CEMP) should be prepared. Various design and implementation measures to reduce and compensate such losses would be proposed in the CEMP.

Coastal Regulation Zone (CRZ): The ring road is close to river front and sea. The Stretch I lie along an estuary. Since the area falls along the Coastal Zone its development is subjected to the following of CRZ regulations from the CRZ

authority. The proposed development along the River Front should minimize the design of additional built up areas and promote development of green landscape and activities which can fall under the permissible limits of the applicable CRZ regulations. Therefore, activities such as walkways, gardens, green spaces, water sports etc are promoted along this stretch. The applicable CRZ regulations for other stretches should also be assessed in the EIA studies.

In order to encourage protection and sustainable development of the coastal stretches and marine environment through sustainable coastal zone management practices, Government and Ministry of Environment & Forests has made notification the Coastal Management Zone Notification, 2008. Accordingly the developments are to be based on sound scientific principles taking into account the vulnerability of the coast to natural hazards, sustainable livelihood security for local communities, and conservation of ecologically and culturally significant coastal resources.

7.3.1.5 Topography and Land Use

Since the area is adjacent to the riverfront it has a differential topography, the design of the Ring Road and its surrounding areas should adhere strictly to the levels of contours and other topographical features in the area. The pattern of drainage, ground water table and soil conditions will be very important for avoiding the problems due to water logging and drainage in future. The topographical features would also play an important role in determining the design and type of development along each stretch of the Ring Road Corridor.

7.3.2 Social Screening

7.3.2.1 Land Acquisition

Along the total stretch of 31km, a major section of the Ring Road passes through, green fields and agricultural areas. Stretch-1 passes through some of the most congested areas of the city. In case of Stretch-II & Stretch III the impact zone covers mostly agricultural land holdings. The area surrounding Stretch-IV is also agricultural with fast growth of residential and commercial areas along its side. In sections where the Ring Road passes through residential and commercial colonies, the alignment should be marked, in a manner that it causes minimal damages to the residential and commercial properties. To reduce the impact of damages, the ring road and its surrounding developments are proposed in a manner which will reduce the land acquisition at places where there is high density of settlements. The objective is to reduce Resettlement and Rehabilitation in these areas. However, in certain stretches where there mostly agricultural land exist and compulsory land acquisition is required, acquisition of land would be undertaken.

The primary objective while developing the Mangala Corniche Ring Road is to make minimal displacement of population and their livelihoods. Hence at places

where the stretch travels through dense settlements, the acquisition would only be kept minimal to fulfill the requirements of construction of the corridor road, additional areas for waterfront development would not be done. Only government properties which can be easily undertaken for development would be considered under such situations. The households and commercial establishments who have lost their properties under road development would be provided appropriate compensation as per the National R&R policy and the World Bank guidelines.

7.3.2.2 Built-up area

A section of Ring Road passes through residential and commercial colonies. During the finalization of the road alignment, there is a possibility that the road would cut the built up areas of such properties. The point of interception of cutting would determine the extent of land acquisition and damage to the structure. Based on the extent of damages, the structures would be categorized as partially or fully damaged. The compensation for such damages would be worked out based on the R&R policy designed for the project and should by no means less than the mandatory compensation approved for infrastructure projects by the state.

7.3.2.3 Loss of Livelihood

The process of land acquisition would impact the population who is dependent on the area for its economic sustainability. Presently, a wide range of activities such as fishing, harbor etc are carried along the river front. Development of these areas, into water front of the city would have an impact on the current occupational and employment patterns for the fishing and labor class communities. In case of agricultural landholdings, loss of land would have a direct impact on the source of income for farmers and an indirect loss for the labors working on these fields. Therefore, restoration of livelihoods would be very important. A reorientation of such activities is required, in order to sustain the livelihoods of the local communities. Some of these activities might be required to be shifted to other areas. Various skill and occupational training programs are required to be undertaken. Economic assistance in the form of provision of soft loans and special concessions could be given. This may also include, provision of institutional credit for activities related to agriculture, fishery etc.

7.3.2.4 Utility Relocation

This would include relocation of utility/ service lines such as electric poles and transmitters, drainage and water supply, telephone cables lines which are passing through the alignment at various locations. These lines are required to be shifted. The cost related to relocation of the utilities should be incorporated within the R&R cost of the project.

7.3.2.5 Cultural Properties

Cultural Properties such as temples and mosque and also potential old tourist interest areas fall in less than 0.5 km of the edge of water front areas. Depending upon the finalization of the road alignment the impact on these structures could be ascertained. Also a few properties might be persisting along agricultural fields or which would be falling under archeologically protected areas. A detailed survey of such properties should be carried out and options for development should be proposed. The resettlement of properties should be done in consultation with the community. Adequate provisions would be made in the cost estimates against their relocation as part of the project cost.

7.3.2.6 Environment and Social Cost

After the analysis of the site possible alternatives for alignment of the Ring Road should be worked out. A preliminary estimate for assessing the magnitude of the potential impacts due to various alternatives should be worked out and an assessment of the environment and social costs should be made. Block cost estimates on considering the costs due to land acquisition and R&R along with Environmental & Social Costs should be prepared for working out the total project cost.

7.3.3 Mandatory Safeguards and Policies for Environment and Social Impacts

7.3.3.1 Resettlement and Rehabilitation Policy (R&R Policy):

Based on the intensity of damages and area acquired for the road project, a compensation policy for the project affected people should be prepared. The policy should be in line with the statutory compensation and benefits mentioned under National Resettlement and Rehabilitation policy (R&R Policy) and World Bank guidelines for displacement of project affected persons under infrastructure projects. This would be followed by the implementation of Comprehensive Environment Management Plan (CEMP) and Resettlement action plan (RAP) for the affected families.

7.3.3.2 World Bank Safeguard Policies Triggered by the Project:

The policies of the World Bank triggered by the project and the steps that shall be taken for the compliance with their requirements are presented as following:

Safeguard Policies	Activities Triggering the Policies	Remarks

Environmental Assessment	Cumulative magnitude of the environmental and social impacts due to the project	Environment and Social Assessment needs to be carried out. A detailed EIA, CEMP & RAP has to be prepared for the implementation of environmental mitigation and corrective actions thereof.
Involuntary Resettlement	Land acquisition and impact on private properties for additional land acquisition along widening sections and bypass alignments	Project Specific R&R policy in lines with the World Bank Guidelines and National R&R policy would be prepared and fully implemented.
Poverty Reduction	Not Triggered	
Cultural Property	Triggered due to the presence of religious properties within the influence area.	In case any religious/ cultural properties are falling in the RoW of different stretches, then for the protection of cultural properties, the SIA needs to be undertaken so that the cultural properties can be protected and restored intact in situ. In other cases, structures can be relocated, preserved and restored on alternate sites after proper public consultations.
Disclosure	All projects have to comply with the Disclosure Requirements of the bank.	A public disclosure mechanism of the EIA documents, including the EIA Executive Summary in local language, EIA and RAP documents needs to be worked out. Before appraisal, these documents shall be made available to the public at the district libraries along the route.

7.3.3.3 National R&R Policy

Compulsory acquisition of land for large scale developmental projects some times lead to displace people involuntarily, forcing them to give up their home

assets, means of livelihood, traditional and cultural attachment. This type of displacement apart from depriving the project affected people from their lands, resource-base and livelihood; also has other traumatic psychological and socio-cultural consequences. Involuntary resettlement generally give rise to severe economic, social and environmental problems. It may also cause severe long-term hardships, impoverishment and environmental damage. People are relocated to new environment where their productive skills may be less applicable and the competition for the resources may be greater. The National R&R Policy provides guidelines for the development of Resettlement Action Plan and monitory compensation for the population displaced/ affected due to the infrastructure projects in the country. The outline of the R&R policy guidelines applicable for the project is provided in the Annexure-1.

7.3.4 Strategies/ Scope for further studies

Environment and Social Impact Assessment: A detailed investigation of the site along with EIA and SIA study needs to be carried out in order to estimate the intensity of corresponding environment and social impacts for the project corridor. Further pollution mitigation, monitoring and institutional measures are required to be taken during project implementation and operation stage to avoid any potential adverse environmental and social impacts.

Mandatory Clearances: Based on the EIA and SIA studies, mandatory environmental clearances should be sought from relevant authorities

Preparation of Comprehensive Environment Management Plan (CEMP): A CEMP is required to be prepared in order to prepare a comprehensive plan that can assimilate the environment and social risks and provide project benefits to the society.

Environment and Social Costs: The costs to mitigate the environmental and social impacts are required to be configured into the total cost of the project.

Preparation of Resettlement and Rehabilitation Action Plan (RAP): The objective of RAP is to avoid or minimize the possibilities of adverse impacts (socio-economic and physical) to the project affected populations. Where the displacement is unavoidable, due to technical reasons, the objective is to minimize the hardship caused to the affected families and to take preventive measure to restore and enhance their livelihoods.

VIII. Legal &Regulatory Frame work

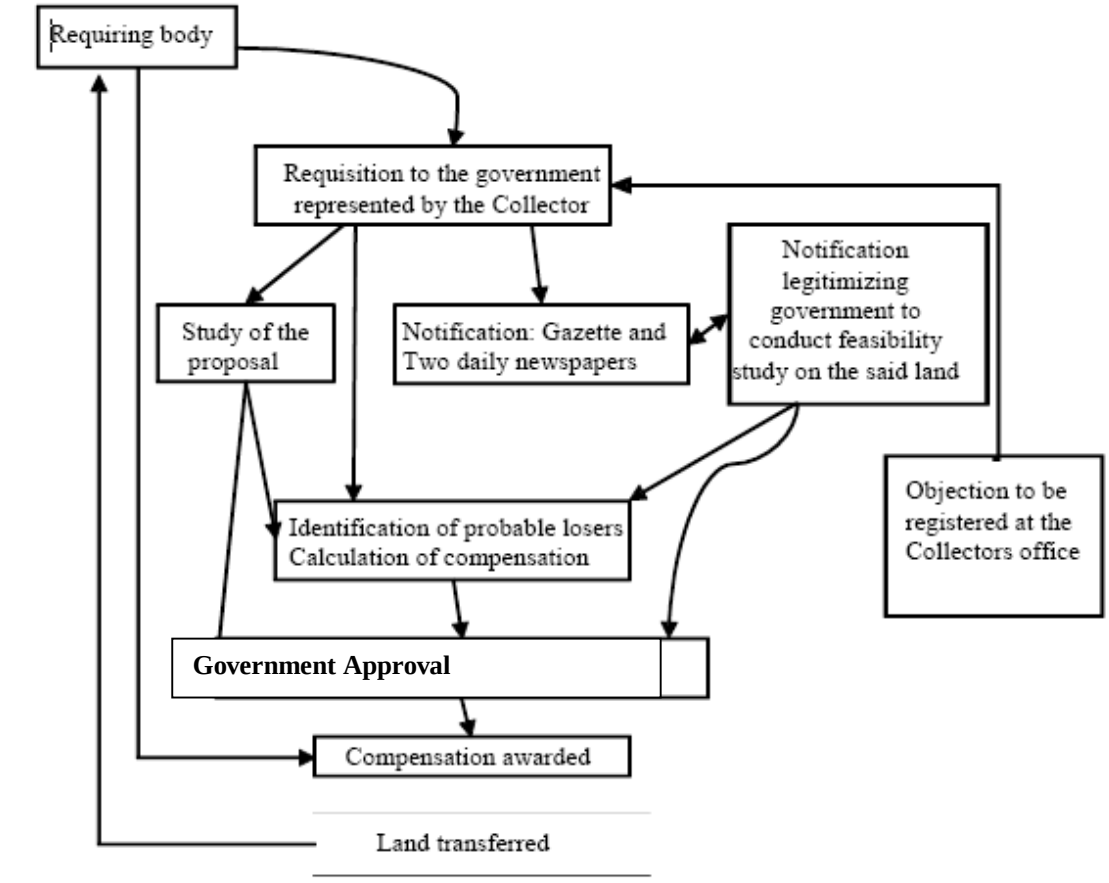
8.1 Requirement of Legal and Regulatory Framework Specific to Mangala Corniche

The unique features of Mangala Corniche that necessitates a robust legal framework, are:

- Land Acquisition along the densely populated riverfront, agricultural areas for the Ring Road Development
- Ring Road Development in Public Private Partnership mode (BOT Toll, BOT Annuity, BOT VGF)
- River Front Development
- Land Acquisition & transfer on lease to Private developer for real estate development to improve the viability of the project
- Wide range of activities like those that are executed directly by government, activities that are executed under PPP mode and activities acquiescent to VGF and so on.
- Responsibility of preparation of the master plan, infrastructure planning, financing, implementation, integration, management, operations, licensing and overall administration of the project
- Determination of efficient tolling of the stretch and Planned diversion of Traffic for decongestion of the city

8.2 Regulatory Framework for Implementation of the Project

Infrastructure Policy – 2007 (Government Order No.IDD 32 IDM 2003 Bangalore dated 16thJuly 2007) provides a fair and transparent policy frame work to encourage Public Private Partnership (PPP) in upgrading, expanding and developing the infrastructure projects in the state which would be awarded for private participation through open competitive bidding. The sector is governed by a number of legislations comprising the Indian Tolls Act of 1851, The Land Acquisition (Karnataka) Amendment Act of 1988, Dispute Settlement Act of 1940, National Highways Act of 1965, Motor Vehicles Act of 1988, National Highways Authority of India Act of 1988 and the Central Road Fund Act of 2000



Source: Chakrabarti B (2008)

Figure 25 :Land Acquisition Format as per Land Acquisition (Amendment) Act 1988

IX. Project Structuring & Implementing Frame Work

9.1 Background

The proposed Ring Road project, Mangala Corniche is planned to be developed in Public Private Partnership (PPP) format. Structuring infrastructure development on a PPP platform has been seen as an avenue to optimize development and implementation in such a way that it is sustainable in the long run. PPP provides an attractive alternative to bring private investments as well as efficiency gains in the provision of services.

When properly structured and made bankable, PPP projects balance between the requirements of the government and the public for service provision with high quality of standards and attract private investments. Public Private Partnerships, particularly those that focus on innovative ways to help public and private interest meet, carry the promise of a development that is inclusive and sustainable at the same time. The project involves components of diverse nature viz: Road Development, Riverfront Development, Real Estate Development to improve the feasibility of the project. This results in various permutations and combinations of different options in PPP framework.

There are many options that can be considered for implementing the proposed Mangala Corniche on a PPP framework. The table below shows some of the different options that may be adopted:

Possible Options for PPP

Option	Ownership	Financing	Management
Lease	Public	Private	Private
Concession	Public	Private	Private
BOOT	Private , then Public	Private	Private
Outright Sale	Private	Private	Private

9.2 Implementation through Public-Private-Partnership (PPP)

Successful development and implementation of Mangala Corniche project would require diligent planning, extensive project development with proper implementation strategy. Technically, development and implementation of the

project would draw expertise from various sectors like road design and development, river training, land-use planning including landscaping and urban design, infrastructure planning including water supply, sewerage and storm-water drainage network. Development of Mangala Corniche project would require sizeable capital investment for implementation. Since public entities and local bodies like MCC and MUDA are required to meet infrastructure provisions and other expenses of the Mangalore city from their limited resources and it would not be possible for them to fund the Mangala Corniche project.

It is pertinent to mention that implementation of any infrastructure project has unique and distinctive requirements, not comparable to similar ventures in production and service sectors. Development of a new road and river front development is typical example of sizeable capital requirement. It is also pertinent to say the due to limited resources of the local bodies and also in order to achieve higher performance efficiency both in construction and operation, it is imperative that the project needs to be implemented through active private sector participation under an appropriate PPP model, which will help in:

- leveraging limited public resources
- expediting implementation
- improve quality of services and bring in value for money

For successful private sector participation in such capital-intensive projects with associated risks involved, commercial viability, amenability to private sector participation and bankability of the project assume significant importance, which can be addressed only through proper and comprehensive project development. The benefits to project development include:

- Basic Feasibility
  - Technical
  - Financial
- Risks Mitigation
  - Technical
  - Financial
  - Regulatory
- Viability Enhancement
  - By optimizing implementation time
  - Appropriate implementation structure
  - Financial engineering

- Accessing government support/grants, wherever possible

➢ Enhance Market Response

- Developing reliable technical & financial information
- Direct marketing with potential investors
    - Dry financial closure to ensure bankability
    - Good valuation

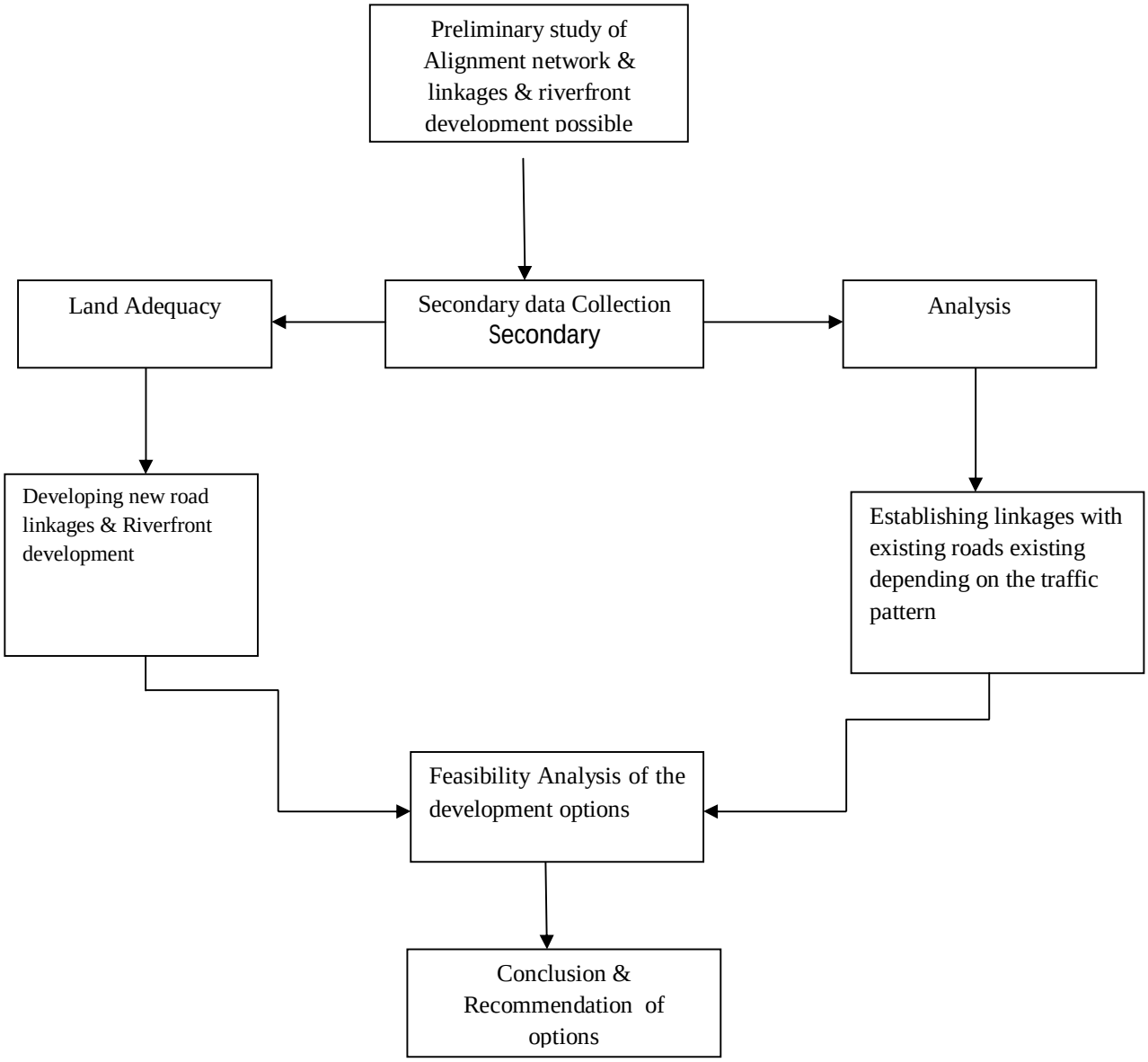
➢ Provide Clarity to

- Government - basis of support to make the project bankable
- Private Sector - to bid at nominal bid costs and risk premia
- Financing Agencies - the bankability of the project

For such PPP Projects to be able to attract private capital, substantial project preparation and development work will need to be undertaken. This will include

- Techno-Commercial Feasibility Studies,
- Financial Modeling and Engineering,
- Risk Management Plans,
- Environmental and Social Impact Assessments,
- Marketing of the Projects,
- Management of the Procurement Process,
- Design of appropriate Contractual and Regulatory Structures,
- management of the Government approval process at the State and the Central Government levels

The PPP approach will enable the GoK to raise resources and implement Projects expeditiously on the strength of future accruals with minimum recourse to budget financing. Hence implementing a complex project, involving multiple stakeholders makes **"Project Development"** a necessary pre-requisite. The success of developing such a project is largely based on understanding the risks, allocating them among various stakeholders, developing structural frameworks and following transparent procurement processes to induct private sector efficiencies and resources. The figure represents the process of detailed study for finalization of proposed alignment of the project.



Project Development approach for Finalization of Ring Road alignment

The project Mangala Corniche has components that are amenable to PPP and those that cannot be feasibly implemented through PPP. Land acquisition is a major component in any project and the alignment of the Ring Road passes either through densely populated areas or agricultural land which makes Land acquisition prone to major issues/ tribulations .The land to be acquired would be ascertained on finalization of the alignment and segregation of Govt. and Private lands.

The table no 9.1 shows some of the different options that may be adopted for the project.

Table 9.1 Identification of PPP and Non PPP Project Components

	PPP	Non PPP
Stretch I		
1. Development of Water Sport Activities	✓	
2. Development of Tourist Attraction Points	✓	
3. Boat Ferry's	✓	
4. Development of Walkways and Marine Drive	✓	
5. Land Acquisition		✓
Stretch II		
1. Four Lane Bypass Road	✓	
2. Land Acquisition		✓
Stretch III		
1. Development of Lake Resorts and Island Hotels	✓	
2. Recreational Zone (Water and Amusement Parks)	✓	
3. High End Tourism Activities (Golf Course, Marine Park)	✓	
4. Land Acquisition		✓
Stretch IV		
1. Development of Marine Drive	✓	
2. Country Side Tourism Activities (Boat Rides, Jetty's, Walkways)	✓	
3. Development of Picnic Spots		
4. Land Acquisition		✓
Stretch V		
1. Four Lane Bypass Road	✓	
2. Development of Land Parcels	✓	
3. Land Acquisition		✓

9.3 Need for a Program Management Approach

Implementation of the proposed Ring Road & River Front development Project will require investment on infrastructure development / augmentation of high magnitude, besides investments in the development of the various options.

It is inevitable that a project of this magnitude and complexity will require to be implemented keeping in mind the development of another 50 years. In the process, the phasing of implementation and the integration of the various project components will need to be carefully articulated and implemented to secure the full potential of the initiative.

In order to ensure that the traditional pitfalls of project implementation are overcome, it is proposed that a Project Development and Program management approach be adopted, wherein each component of the project is developed in an integrated manner from an engineering, financial, contractual, environmental and social perspective, alongwith inter-linkages, on prioritization and selective basis and prior to commencement of implementation. This exercise would also include the acquisition of all lands required for the implementation of each project.

A project of this magnitude would also require significant upfront financial resources to develop and structure activities in an optimum manner. An appropriate Institutional mechanism that is able to exercise oversight and governance becomes critical in this regard. Accordingly, the approach to implementation will require integrating the above and enabling focused program management.

9.4 Proposed Institutional Framework – Formation of Special Purpose Vehicle (SPV)

The project development is the key component for successful delivery and implementation of infrastructure projects. In order to create an enabling environment to unleash the potential of entrepreneurs, attract strategic investors and get maximum benefits from the project to government as well as public, a dedicated project development framework should be in place for successful delivery. For developing the projects with focused approach and in a time bound manner, a dedicated project development entity with necessary expertise, experience and autonomy is an imperative.

It is therefore proposed that a Special Purpose Vehicle (SPV) with exclusive mandate to take up all required activities for development of the proposed project from concept till selection of developer for implementation may be set-up.

Initial stakeholders of this SPC could be MUDA, MCC, KSIIDC, Coastal Management Authority, KUDCEM, IDD etc.

Project Development Fund (PDF) will be created with initial contributions from stakeholders to take-up project development activities.

Anchor partners from government departments, public-sector undertakings or private sector having strategic interest in the project and in development of Mangalore city will be invited to take stake in the SPV.

9.5 Roles & Responsibilities of the Special Purpose Vehicle

The proposed Special Purpose Vehicle for the Project would drive the development and implementation of the project. Individual sub-project SPVs may need to be created for taking up the implementation of the individual project components.

Roles and Responsibilities of the Project Specific Special Purpose Companies will include design, finance, construct, operate, maintain and collect user charges/ toll, sharing revenue with the respective government agencies and transferring the project assets to the concerned agency at the end of concession period. Each SPC would have its own Board of Directors. The financial Structure of the SPCs could be as under:

(i) Own equity specific to each project,
(ii) Operators selected for implementation.
(iii) Debts raised domestically and externally.
(iv) Undertake Project Preparation and Development
(v) Formulate Strategy to implement projects in Public Private Partnership.
(vi) Undertake Bid Process Management where necessary for procurement of developer(s)/ contractor(s), operators.
(vii) Promote Special Purpose Companies, wherever required to undertake development and implementation of infrastructure projects.
(viii) On successful development of the project, implement the project, if necessary through bidding out the construction, management, operations, and user fee collection contracts.
(ix) Assist developer(s) in Financial Closure including mobilizing Equity, Debt, Grant & Subsidy funds from various sources for the project and achieve financial closure.
(x) Oversee the Project Implementation and monitor Construction, Operation and Maintenance Contractors.
(xi) Facilitating overall decision-making on the Projects and invite the stakeholders in the capacity of 'advisory members' in the Board Meetings,
(xii) Finalizing & approval of budgets / approval of project development expenses

9.6 Implementation of Developed Projects

Based on the Detailed Project Report, decisions of the Board, and requisite statutory and administrative approvals and clearances, Projects would be offered on competitive basis to an Implementing Agency(ies). The Board shall be responsible for selecting the Implementing Agency on the basis of Project Development, and concession

The concession agreements to be entered with selected developers to recover their investment through collection of user fees (toll etc.), advertisement and commercial utilization of land in project area as specified in the master plan during the operation period.

9.7 Critical aspects along the Ring Road Alignment

(i) The entry/exit points of the Ring Road and integration with the existing road networks and existing facilities will be critical in planning the development

(ii) Land to be acquired all along the proposed ring road to achieve the width of the planned 4 lane Road (to the extent practicable).

(iii) The alignment along the Gurupur River in the South Western region is constrained with marshy land, mangroves. Thus, geotechnical, soil improvement, environmental clearances assume importance.

(iv) Coastal Regulations Zone (CRZ) stipulations will be applicable in sections where river bank/ marshes/ mangroves and other environmentally sensitive areas will get affected.

(v) Land acquisition issues will need to be addressed in sections where village/ fishermen hutments will be displaced due to the proposed Ring Road.

(vi) The Ring Road crosses both the Konkan Railway line & South Western Railway line connecting Bangalore thus necessitating Road Overbridges at the sections which needs to be evaluated.

(vii) The Ring Road crosses NH-17, NH-6, NH-48 and other State highways along the alignment thus flyover and integration of the two in terms of exit/ entry needs to be evaluated.

(viii) The alternative of elevating the Ring Road at the Ullal, Kuloor, Maravoor Bridge sections at the crossing would require extensive evaluation. This task would be undertaken by the technical consultants later on.

(ix) Access will need to be provided to the adjoining industrial sites along the Ring Road considering the traffic growth due to the existing industrial activity and other developments planned in the region.

9.7.1 Development of alternative routes:

Other alternative routes can also be explored in areas where Land acquisition is not possible. In this case Major city roads may be widened and suitably connected to so as to provide seamless connectivity even though that may not provide complete and efficient connectivity. Any other extensions/ new routes can be evaluated only after detailed option analysis and survey

9.8 Project Structuring:

The Project would then be (un)bundled into suitable components and reputed Private sector Partner(s) would be identified for implementation of the Project. The bundling would be based on commercial viability based on market demand, land related issues, Government functions or specific area allocation for Government use in the township, etc. The Project(s) would be structured to allocate, mitigate and manage risks effectively and make the projects 'bankable'. Such project structures would attract Private investments, achieve socio-economic benefits and in the process also provide sharing of upside by Government so as to mobilize resources for further developments.

Option 1:

The Ring Road & River front Development to be done in PPP Mode with VGF, and O & M to be done by the private entity. The bidder would be entitled to collect the Toll on predetermined stretches of the Ring Road as its revenue

Option2:

The Ring Road & River Front Development to be done in PPP Mode, and O&M to be done by the private Entity. The bidder is entitled to collect the Toll on predetermined stretches of the Ring Road as its revenue. The compensation structure would be annuity Based.

Option3:

The Ring Road & River Front Development to be done in PPP Mode, and O&M to be done by the Private Entity.

The options 1 & 2 with Tolling may not be feasible as the stretches passing through the city. Moreover recently redeveloped NH 17 has Toll plazas planned at the entry & exit points of the NH which will invariably affect the

revenue streams of the Corridor thus making it disinclined to Tolling. In such conditions, Real estate development may also need to be an essential component of the project to ascertain its viability. The Developer would need to be allotted land which it could utilize for Real Estate Development so as to recoup the investment.

X. Project Financials

10.1 General

The Ring Road & Riverfront project Mangala Corniche has large investments and the feasibility of the Tolling option of the Roads can be determined only by detailed traffic study and Willingness to pay Matrices. Thus with the objective of filling in the viability gaps with minimum or zero user charge to the urban population, Property / Real Estate Development along the Route, junctions and terminals is considered as a vital element of the Project.

The option of Commercial Development of land by the preferred bidder to recoup his investments has been considered for this preliminary analysis. Government can vary the basic structure by reducing the land component and including the VGF of the project. The preliminary financial analysis are derived based on the assumptions arrived from similar Road & Riverfront developments and preliminary market assessment for real estate rates.

The preliminary Financial Viability of the Project is assessed with respect to the key parameters such as Project Internal Rate of Returns (PIRR) and Equity Internal Rate of Returns (EIRR) considering the option of Commercial Real Estate Development for the viability of the project. The viability analysis includes the identification of revenue and expenditure streams. Revenues will be from Lease rentals of commercial Development, Tolling and Riverfront commercial activities, while the expenditure would be primarily on account of Capital and O&M costs of the Road, Riverfront and Real Estate Assets.

10.1.1 Capital Development Cost for the Components to be taken up on PPP basis

The preliminary cost estimates are based on the preliminary study carried out for the project. A four lane road with ROW of 45 m has been assumed for the analysis. The cost of each component for the stretches I to V are as below.

Stretch I: Between Ullal Bridge to Kuloor Bridge

Table No. 10.1 : Capital Cost for Ring Road Development

Length of Stretch -12 km

Description	Cost in Rs. Crores
Bituminous Concrete	8.16
Dense Bituminous Macadam	23.26
Wet Mix Macadam	10.20
Granular Sub Base	7.75
Sub Grade Material	4.08
Median	9.00
Bridges	62.50
Rail Over Bridges	30.00
Grade Separators	130.00
Road Furniture and Pavement Marking	1.80
Total Estimated Cost	**287.00**

Table No. 10.2 : Capital Cost for River Front Development

Length of riverfront development - 10 km

Description	Cost in Rs. Crores
Lighting & Illumination	3.5
Walkways (5km assumed)	5.6
Pedestrian bridges (3 bridges of 100 m length & 6m width assumed)	6.3
Promenade (5km assumed)	6
Reclamation & Retaining walls	21
Jetties 3 nos including the ramps to the jetty	12
Public services, shops	25
shifting of utilities	5
Car parking facilities for 50 cars	1.2
Total Estimated Cost	**86.00**

Estimated costs for Riverfront Development envisaged for the basic financial assumption have been considered to be less than 15% of the total project cost. Further developments could however be explored based on technical feasibilities and viability of the same. Project Components such as Waterfront development, navigation channels, Boat Cruises etc may be planned in association with Tourism Department, Inland Navigation Departments, Coastal Regulatory Authorities etc with the aid of budgetary support.

Stretch II: Kuloor Bridge to Maravoor Bridge

Table No. 10.3 : Capital Cost for Ring Road Development

Length of Stretch -6 km

Description	Cost in Rs. Crores
Bituminous Concrete	4.08
Dense Bituminous Macadam	11.63
Wet Mix Macadam	5.10
Granular Sub Base	3.88
Sub Grade Material	2.04
Median	4.50
Road Furniture and Pavement Marking	0.90
Total Estimated Cost	**32.00**

Stretch III: Ullal Bridge to Kannur

Table No.10.4 : Capital Cost for Ring Road Development

Length of Stretch -6 km

Description	Cost in Rs. Crores
Bituminous Concrete	4.08
Dense Bituminous Macadam	11.63
Wet Mix Macadam	5.10
Granular Sub Base	3.88
Sub Grade Material	2.04
Median	4.50
Grade Separators	65.00
Road Furniture and Pavement Marking	0.90
Total Estimated Cost	**97.00**

Stretch IV: Maravoor Bridge to Gurupur Bridge

Table No. 10.5 : Capital Cost for Ring Road Development

Length of Stretch -6 km

Description	Cost in Rs. Crores
Bituminous Concrete	4.08
Dense Bituminous Macadam	11.63
Wet Mix Macadam	5.10
Granular Sub Base	3.88
Sub Grade Material	2.04
Median	4.50
Rail Over Bridges	30.00
Grade Separators	65.00
Road Furniture and Pavement Marking	0.90
Total Estimated Cost	**127.00**

StretchV: Gurupur Bridge to Kannur

Table No. 10.6 : Capital Cost for Ring Road Development Stretch 5

Length of Stretch -7 km

Description	Cost in Rs. Crores
Bituminous Concrete	4.76
Dense Bituminous Macadam	13.57
Wet Mix Macadam	5.95
Granular Sub Base	4.52
Sub Grade Material	2.38
Median	5.25
Rail Over Bridges	30.00
Grade Separators	65.00
Road Furniture and Pavement Marking	1.05
Total Estimated Cost	**132.00**

Total Investment by The private sector developer envisaged for the project is as in table no.10.7

Table No. 10.7 : Summary of Capital Cost for Mangala Corniche

Components	Stretch I	Stretch II	Stretch III	Stretch IV	Stretch V
A. Ring road	287	32	97	127	132
B. Riverfront	86	-	-	-	-
Capital Investment (In Rs. Crores)	**372**	**32**	**97**	**127**	**132**
TOTAL	**Rupees 761 Crores**				

10.1.2 Investment Requirement for -Land Acquisition

While extent of land requirement has been estimated, the extent of land acquisition requirement would need to be firmed up on finalization of alignment and segregation of Govt. vis-à-vis private land holdings along the proposed alignment.

The Road widths proposed at certain stretches may also not be practical for implementation and the extent of land requirement would also be dependant on the same.

The estimated land requirement for the proposed Mangala Corniche in each of the stretches is as below.

Table no 10.8 : Land Requirement for Mangala Corniche

Components	Stretch I	Stretch II	Stretch III	Stretch IV	Stretch V
A. Ring road	133	67	67	67	78
(assuming 45m width along the alignment)					
B. Riverfront	25	-	-	-	-
(assuming 20m width along the river front)					
Land Requirement for Stretch (in Acres)	**183**	**67**	**67**	**67**	**78**
Land Requirement for the whole alignment	**461 Acres**				

While the extent of land acquisition would be firmed up during the project development, a broad estimate has been drawn considering that 100% land acquisition would be required.

Table no 10.9 : Land Acquisition Costs for Mangala Corniche

Description	Cost of acquisition of Land per Acre	Total Cost In (Rs.Crores)
Stretch 1	@ 2.5crores/per acre	**457**
Stretch 2	@ 2.5crores/per acre	**167**
Stretch3	@ 2.0crores/per acre	**133**
Stretch4	@ 1.0crores/per acre	**67**
Stretch5	@ 0.5crores/per acre	**39**
ESTIMATED LAND ACQUISITION COST (in Rs. Crores)		**863**

Additional land extents may also need to be procured as a part of the project for addressing the project viability through real estate development. The extent of such land requirement would also be dependant on the project viability arrived during the project development.

10.1.3 Project viability in PPP Mode

The preliminary viability for Mangala Corniche–the River Front and Ring Road Development project has been analysed based on the assumption that the private sector developer will invest in the Ring Road project, in return for which an extent of land would be awarded towards property development.

The basic model assumes an additional extent of approximately 500 Acres of land earmarked for development by the private sector developer. (This has however been arrived on the assumption of non-availability of Government land and requirement of 100% acquisition.

The tolling options have not been considered in the basic model and the same could be considered after a detailed traffic study. The revenue streams of the Riverfront development are also not incorporated in the basic Financial Model as the revenue component for the Riverfront and public space development will have minimal effect in the viability of the project as the capital investment is only about 15% of the whole project. Hence the revenue from riverfront development and Tolling may be considered as an additional source which can enhance the attractiveness of the project in terms Project IRR and Equity IRR.

The Road & Riverfront development is assumed to be completed in 4 years whereas the real estate development is considered to be in 2 phases in total time period of 7 years. This shall however be subject to timely completion of land acquisition process. First phase extends for a period of 3 years and the second phase for 4 years in which the whole commercial development is completed.

It is noted from this prefeasibility assessment that the proposed project is viable for development on Public Private Partnership (PPP) format.

XI. Keys to Success

11.1 Key Stakeholders

The key stakeholders identified for the formation for development of Mangala Corniche:

- Mangalore Urban Development Authority(MUDA)
- Mangalore City Corporation (MCC)
- **Nodal Department** – KSIIDC / IDD / Coastal Development Authority
- Urban Development Department
- **Facilitating Department** - Infrastructure Development Department
- City Town Planning Department
- Village Panchayats
- Revenue department
- Railways
- National Highway Authority
- Traffic Police Department

For the successful implementation of the project, the Key Stakeholders would be required to initiate the formation of SPV in consultation with the Project Advisors. The SPV would then be responsible for taking up of the further development of the project concept and structure including the Funding of Project Development.

11.2 Project Development Concerns

- For development & implementation of project of this magnitude requires concentrated efforts and initiation to address to various critical issues & concerns. Based up on preliminary site investigation & analysis carried out, following are key issues which require immediate attention in order to proceed to next stage of development work :
  - Project Development Funding
  - Coordination within Stakeholders MUDA, MCC, GoK & other identified stakeholders
- Final Alignment of the corridor
- Survey and Identification of land for the Road & Riverfront

- Project Land Requirement :Identification &earmarking of Land that need to be transferred to the developer for commercial development
- Land Acquisition
- Feasibility of the Ring Road & riverfront development
    - Realistic assessment of revenue streams &willingness to pay
    - Gathering Information regarding Traffic Patterns
    - Rehabilitation & Resettlement Issues
    - Environmental Issues &Clearances
    - Grade separation / Connectivity issues at NH and Other Major Road Junctions
    - Establishment of adequate mechanism for implementation

11.3 Clearances and Sanctions

The following clearances and sanctions for the proposed project would be required from the various agencies mentioned below

- Government of Karnataka / State High Level Committee (SHLC)
- Mangalore Urban Development Authority (MUDA)
- Mangalore city Corporation
- National Highways Authority of India
- Railway Department
- Revenue Department
- Coastal Regulatory Authority
- Environmental Department
- Village Panchayats
- Public Work Department (PWD)
- Urban Development Authority
- Other agency as deemed necessary

XII. Way Ahead

12.1 Proposal

KIPDC proposes to provide the Project Development Advisory Services to the Project SPV / Stakeholders for development of Mangala Corniche on PPP format.

12.2 Project development approach by KIPDC

KIPDC recommends the Project Implementation Structure as proposed in Chapter IX, wherein the Incorporation of a Project Special Purpose Company to take forward the Project development and Implementation has been recommended.

KIPDC proposes the Project Development for the proposed project in following Phases:

Phase-I: Project Approval & Incorporation of Project SPV

- The project of this magnitude would require the approval of the Government of Karnataka. KIPDC would assist the Nodal Department in preparation of the requisite documentation necessary for taking the project before the State High Level Committee (SHLC) for approval
- KIPDC would assist the designated Nodal Agency in incorporation of the Project SPV with equity shareholding of other Departments of the State Government

Phase-II: Project Development

KIPDC would provide Project Development advisory services and process management services to the project SPV incorporated.

KIPDC has carried out a preliminary estimate of the Project development Fund, that would be required for funding the various project development activities required during project development. The Project Development Expenses for the proposed project is at Table 10.7.

Table 10.7 Estimated Project Development Expenses for Mangala Corniche

Sr No	External Consultant	Task to Perform	Estimated Cost (Rs In Lakhs)
1.	**Survey of the Land along the**	- Land Use & Land Cover assessment - Topographical survey	**50**

Sr No	External Consultant	Task to Perform	Estimated Cost (Rs In Lakhs)
	proposed alignment	- Satellite Mapping of the area - Broad Land use Land cover - Base Map preparation for the area and the Identified site - Identifying the Physical environ of the sites Detailed survey for the identifivcation and Segregation of the land into private & Government	
1.	**Technical Feasibility analysis in terms of the alignment and the components**	- Identifying Infrastructure & land Requirement - Projections considering various factors such as macro-economic, government plans etc. - Indicative proposals for alignment over critical sections of Railway,NH,&SH - Faesibilty of Riverfront Development - Investment and phasing	**35**
3.	**Traffic Analysis,Demand Assessment & Market Strategy**	- Traffic Analysisconsidering the future developments and ascertaining the Traffic that may be rerouted through the Mangala Corniche - Assess market potential of the through primary market surveys, interaction with key industry players & stake holders - Business Plan - Assess the development options in the Real estate Segmnet -	**50**
4.	**EIA Study**	- Initial Environmental Examination (IEE) - Rapid Regional Environmental Impact Assessment (RREIA) - Environment Management Plan - Rapid Regional Environmental Impact Assessment (RREIA	**25**
5.	**Social Impact**	- Socio – Economic Assessment	**8**

Sr No	External Consultant	Task to Perform	Estimated Cost (Rs In Lakhs)
	Assessment and R&R Plan Formulation Expert	Including survey of the Affected - Development Impact Assessment - Identification of Key Critical Factors and Strategy formulation - R& R Plan Formulation - Workshop and representation	
8.	**Geo tech & Soil Testing expert**	- Geo- tech Survey Soil Testing	**10**
9.	**Master Planner/ Technical Consultants**	- Review of Site Related Reports by other Consultants - Conceptual Layout Plan Report - Master Plan/ Site Plan/ Cost Estimates Report	**75**
10.	**Detail Engineering Plan**	- Detail Engineering Plan For proposed infrastructure - Requirement Assessment - Cost Estimates - Drafting of Technical Documents	
11.	**Legal Cum Liasioning Services**	- Legal vetting of document - Legal Inputs to various consultants concerning policy, regulation matters.	**15**
13.	**Project Consultants**		**100**
14.	**Miscellaneous expenses**		**50**
	Total Estimated Project Development Expense		
			518 Lakhs

(Approximate Project Development Cost Rs. 5.00 Crores)

KIPDC proposes to provide end to end Project Advisory Services to the Project SPV for taking up the project development and selection of developer for the project / sub-projects on Public Private Partnership (PPP) format.

The extent of Project Development Fund estimated could however be provided by the State Government / Project Stakeholders in a phased manner based on

the requirement from time to time. Such expenditures could also e recovered from the Developers for the Project / Project components.

12.2.1 Project Development Process

- **Preparation of Detailed Project Report including the Masterplan and Finalisation of alignment**
- **Overlaying of proposed ring road alignment on the revenue map Delineation of project area**
- **Notification of project area**
- **Technical Studies to be taken up:** Traffic assessment and projection study, River Hydraulics study, Road design, Master Plan for project area including detail land use planning, architectural and landscape design of riverfront, and infrastructure services design.
- **Project Feasibility studies:** financial analysis and feasibility studies, project structuring including bundling and unbundling of project components, risk management plan, environment and social impact assessment, preparation of contractual documentation, etc.
- **Final DPR**: Based on the final approval of the alignment, the extent of right of way requirement shall be assessed and the same shall used to prepare the land acquisitions plan with the help of revenue maps. Based on the preliminary project cost, a broad financial analysis shall be carried out with project traffic and the approved NH toll rates to check whether the project is viable on a stand-alone basis. If the project is not viable on a stand-alone basis, and based the extent of grant support, a decision shall be taken whether to access VGF funding from PPP cell, GOI or to assess the extent of additional land which shall be commercially exploited to cross subsidize the cost of ring road. **Necessary Approvals and Sanctions:** All necessary approvals and special sanctions required from the state government shall be worked out. For Example, the change of land use for the land earmarked for commercial exploitation in case the project is bid out on a land subsidy model
- **Land procurement:** either through acquisition, transfer, joint-development agreements or through any other suitable mechanism. Land will also be reclaimed if proved suitable by technical studies
- **Environmental Impact Assessment studies**

- **Procurement of Private Sector Partner: The procurement process shall follow** a competitive and transparent bidding process for individual project components or designed project packages

Location / stretch wise strategy would be developed including bundling of financially viable and non- viable project stretches in order to make the project attractive to private sector. Selected private sector developer would be given development rights & Lease`rights to recover his investments. Subsequent to the completion of the concession period, the asset would be returned back to the Government by the developer.

12.3 Government Support Required

- Approval for the Project & for incorporation of Project SPV
- Budgetary Support for Project Development Fund
- Land identification & segregation of Government lands for transferring to the Project and private lands for acquisition.
- Providing all clearances and approvals for proposed alingnment & components in PPP format.
- Ensuring coordination between various departments and various government agencies to expedite their approvals and clearances
- Transfer of land free of encumbrances
- Ensuring availability of requisite off-site infrastructure, viz. power transmission lines, approach road, telephone lines, sewage and drainage network,
- In order to make the project viable for the Private Sector, financial support may be required for some of the components emerging out of project studies. This support could take various forms, such as subsidies, payment of annuities to the selected Developer etc. The composition and extend would be addressed while undertaking detailed Project studies.

Annexure- 1

National Policy for Resettlement and Rehabilitation for Project Affected Families 2003

The Karnataka government has no specific R&R policy at state level; however, it has a practice of evaluation and approving appropriate R&R packages on project to project basis.

The Ministry of Rural Development, Govt. of India brought out a National Policy on Resettlement and Rehabilitation for Project Affected Families in 2003. The National Policy does not cover any R&R plan in the form of purely cash compensation to project affected people. It addresses compensatory land allotment and some additional financial assistance as part of compensation for shifting to new location and the transit period losses. The summary of R&R framework based on the provisions under the National Policy on Resettlement and Rehabilitation of Project Affected Persons (PAPs) are given below:

The system of extending cash compensation does not, by itself in most cases, enable the affected families to obtain cultivable agricultural land homestead and other resources, which they have to surrender to the state. The difficulties are more acute for persons who are critically dependent on the acquired assets for their subsistence/livelihoods, such as land less agricultural workers, forest dwellers, tenants and artisans, as their distress and destitution is more severe, and yet they are not eligible for cash compensation.

R&R Benefits for Project Affected Families

The resettlement and rehabilitation (R&R) benefits shall be extended to all the Project Affected Families (PAF) whether belonging to below poverty line (BPL) or non-BPL

Any Project Affected Family (PAF) owning house and whose house has been acquired may be allotted free of cost house site to the extent of actual loss of area of the acquired house but not more than 150 sq.mt. of land in rural areas and 75 sq.meter. of land in urban areas.

- Each PAF of BPL category shall get a one-time financial assistance of Rs. 25000/- for house construction. Non-BPL families shall not be entitled to receive this assistance.
- Each PAF owning agricultural land in the affected zone and whose entire land has been acquired may be allotted agricultural land or cultivable waste land to the extent of actual land loss subject to a maximum of one hectare of irrigated land or two hectares of un-irrigated land/cultivable waste land subject to availability of Government land in the districts.

- Stamp duty and other fees payable for registration shall be borne by the acquiring body.
- The Land allotted shall be free from all encumbrances. The Land allotted may be in the joint names of wife and husband of the Project Affected Family (PAF).
- In case of allotment of wasteland/degraded land in lieu of acquired land, each PAF shall get financial assistance of Rs. 10,000/- per hectare for land development. In case of allotment of agricultural land, a one-time financial assistance of Rs. 5000/- per PAF for agricultural production shall be given.
- Each PAF having cattle shall get financial assistance of Rs. 3000/- for construction of cattle shed.
- Each PAF shall get financial assistance of Rs. 5000/- as transportation cost for shifting of building materials, belongings and cattle etc. from the affected zone to the resettlement zone.
- Each PAF comprising of rural artisan/small trader and self employed person shall get one-time financial assistance of Rs. 10,000/- for construction of working shed/shop.
- Each PAF owning agricultural land in the affected zone and whose entire land has been acquired shall get one-time financial assistance equivalent to 750 days minimum agricultural wages for loss of livelihood.
- Each PAF owning agricultural land in the affected zone and whose entire land has not been acquired and consequently he becomes a marginal farmer shall get one time financial assistance equivalent to 500 days minimum agricultural wages.
- Each PAF owning agriculture land in the affected zone and who consequently becomes a small farmer shall get one time financial assistance equivalent to 375 days minimum agricultural wages.
- Each PAF belonging to the category of 'agricultural laborer', or 'non-agricultural laborer' shall be provided a one time financial assistance equivalent to 625 days of the minimum agricultural wages.
- Each displaced PAF shall get a monthly subsistence allowance equivalent to 20 days of minimum agricultural wages per month for a period of one year up to 250 days of MAW.
- In the case of acquisition of land in emergent situation such as under Section 17 of the Land Acquisition Act 1894 or similar provision of other Act in force, each PAF shall be provided with transit accommodation, pending resettlement and rehabilitation scheme. Such families shall also get R&R benefits as mentioned in above paras under the Policy.
- Acquisition of Long Stretches of Land: In case of projects relating to Railway Lines, Highways, Transmission Lines and laying pipelines wherein only a narrow stretch of land extending over several kilometers is

being acquired, the Project Affected Families will be offered an ex-gratia amount of Rs. 10,000/- per family, and no other Resettlement & Rehabilitation benefits shall be available to them.

- The Project Affected Families shall be provided necessary training facilities for development of entrepreneurship to take up self-employment projects at the resettlement zone as part of R&R benefits.
- The Project Affected Families, who were in possession of forest lands prior to 25th October, 1980 shall get all the benefits of R&R as given in above paras under the Policy.
- The PAFs of Scheduled Caste category enjoying reservation benefits in the affected zone shall be entitled to get the reservation benefits at the resettlement zone.
- Only those oustee who own land shall be considered eligible for the allotment of agriculture land of their own choice.
- For the loss of trees, crops, perennials and Sharecroppers compensation should be given at the market value.

Basic Amenities to be provided at Resettlement Zone

While shifting the population of the Affected Zone to the Resettlement Zone, the Administrator for R&R may as far as possible, ensure that:

In case the entire population of the village/area to be shifted belongs to a particular community, such population/families may be resettled in a compact area so that socio-cultural relations (social harmony) amongst shifted families are not disturbed.

In case of resettlement of Scheduled Castes PAFs, it may be ensured that they are resettled in sites close to the villages.

The Project Affected Families shall be provided the basic amenities and infrastructure facilities at the resettlement site as per norms specified by the Appropriate Govt. It is desirable that provision of drinking water, electricity, schools, dispensaries and access to the resettlement sites amongst others be included in the resettlement plan formulated by the Administrator for R&R.

Non-Farm Economic Activities

To provide alternative employment (tea-stall, grocery-cum-agricultural input stores, push carts (Thela) etc. and income through non-farm economic activities, the following may be considered.

Training: Majority of the household has small land holdings and their occupation is agriculture. Special training should be imparted to the affected people for supporting their economic activities in various forms. There should be a vocational training centre for the development of entrepreneurship to take up self-employment

as a rehabilitation benefit where the inhabitants of the area would be encouraged to undergo training in irrigated farming, dairy etc. and up gradation of existing skills in carpet weaving, manufacture of handicrafts, and carpentry.

Employment: The Project Authorities should provide preference in employment for project affected families in the category of unskilled and skilled workmen as per the need of the project. Every affected family must be helped in starting some gainful occupation/getting training to facilitate secondary employment in the region. The project authorities must construct shopping complexes in which a limited number of small shops/stalls will be earmarked. Eligible persons must be allotted employment after considering their skills and capabilities and wages should be provided to them as fixed by the corporation. Some members of the oustee families may qualify to go for vocational training courses, like ITI etc.

Financial Assistance: For starting an income generation scheme/self employment the Project Authority should provide financial grant in the case of shops allotted to the land PAFs. The Project authorities must consider to award petty contracts to the Co-operatives of eligible families on preferential basis so that some of them may be engaged in such jobs also. Secondly, the project authorities must persuade their contractors to engage eligible persons from affected families on a preferential basis wherever possible during construction stage. These steps will ultimately lead to facilitation for adjustment of all the eligible persons in different employment/income.

R&R Programme Monitoring and Reporting Procedure

R&R committee meetings should be held in every three months in order to ensure incorporation of preference of the PAFs and resolve logistic problems in implementation of R&R Plans. The project co-ordinator with team members must meet every PAF to ensure the implementation of project from time to time. Six-month progress reports must be submitted to project proponent. The Potential Evaluation Indicators for monitoring would be:

- Task completion as per schedule
- Identification of conflict among stakeholders, and its resolution
- Awareness of PAFs and their involvement in overall development and improvement in their quality of life

Salient recommendations for smooth implementation of the Resettlement and Rehabilitation Plan are delineated below:

- All the works of resettlement, i.e. majority of the physical rehabilitation measures and disbursement of houseless grants should be completed before commencement of project.
- Project authorities should ensure frequent meetings with the implementation and monitoring committees and teams to enable smooth implementation of all relief measures.

- Project authorities should seek advice and help of local NGOs and other registered welfare bodies in the area. Their participation and involvement in the proposed development schemes would go a long way in confidence building. This would also help in conflict resolution, if such a situation arises.
- Sincere effort should be made to strengthen the local NGOs which are working in the area of socio-economic development.

Annexure-II

CASE STUDY: HYDERABAD GROWTH CORRIDOR LIMITED

The Govt. of Andhra Pradesh has proposed major infrastructure facilities for Hyderabad city, one of which is the orbital linkage to decongest the traffic flow on the existing major arterials. The Outer Ring Road project is **Ring Road -cum- Area Development** project since the aim is the development of well planned and well connected Urban settlements around the Hyderabad Metropolitan area. The 159 km long ring road connects Patancheru- Shamshabad- Hayathnagar- Medchal - Patancheru providing connectivity to various State Highway and National Highways, to by pass the city of Hyderabad. The importance of the proposed corridor are:

- Relieves congestion on metropolitan area and inner ring road and meets the future demand.
- Provides orbital linkage to radial arterial roads
- Creates options for development of the further satellite townships
- Provides linkage to the proposed MRTS and Bus system
- Provides quick access to the International Airport from Strategic parts of the city
- Connects various new urban nodes outside the city like Hi- Tech city , Games village, IIIT, ISB, Hardware Park, Singapore Township Financial district etc.,

The traffic studies conducted on NH-7 and NH-9 show that the road is due for 4/6 lane. The traffic movement on the existing inner ring road shows that the existing 4-lane road is inadequate for the movement of the traffic at the design level of serviceability.

Project Scope:

Develop on a commercial format the following three integrated projects on Design, Build, Finance and Operate (limited period) basis –

- Greater Hyderabad Growth Corridor (ORR) of 167 Kms with 8 lanes having access control arrangements
- Complete land use plan for 'Knowledge Corridor'(KC) in a given areas of 20,000 acres developing the needed modern infrastructure support systems on an area based Land Use Plan
- Cluster Development (CD) including fully integrated self contained townships to enable the developer to recoup Project Costs

The ORR project is implemented in 2 phases and is estimated to cost Rs 3000 Crores.

- Construction of 22 Km of Phase-I from Gachibouli to Shamshabad NH 7 (Rs 500 crores).
- Construction of 140 km of Phase-II (Rs 2500 Crores).

The Land required for the ORR was taken up in two Phases. Phase I is the 22 Km Stretch between Gachibouli Junction and the Shamshabad NH7 Junction at Tondupally. The total land required is 750 Acres, out of which the private land is 500 Acre. The land required for Phase II is about 5500 Acres, out of which the Govt. land is about 1000 Acre. 7 SDCs are inducted in the Project for the entire Land Acquisition.

Frame Work Adopted for Project Development for the Growth Corridor:

- Trunk infrastructure for KC to be planned and developed by GoAP
- GoAPto take responsibility for statutory clearances for 3 projects
- GoAP to obtain on best effort basis the following :
    - Capital / Revenue Grant from National Highways Authority of India (NHAI) for ORR
    - Viability Gap Funding from Government of India
    - Investment through Trust Funds of INCAP
    - For obtaining any of above liquidity support to project finance commensurately land alienation will be downsized proportionately
- Project Development will be handled through Infrastructure Corporation of Andhra Pradesh Limited (INCAP) mandated by GOAP
- Land required for the Projects will be provided to SPVs by GOAP through INCAP
- Project Development shall be done through the relevant provisions of the Andhra Pradesh Infrastructure Enabling Act 2001

SPV Related Project Structure proposed for the project:

At least 3 SPVs to be formed for doing the following projects

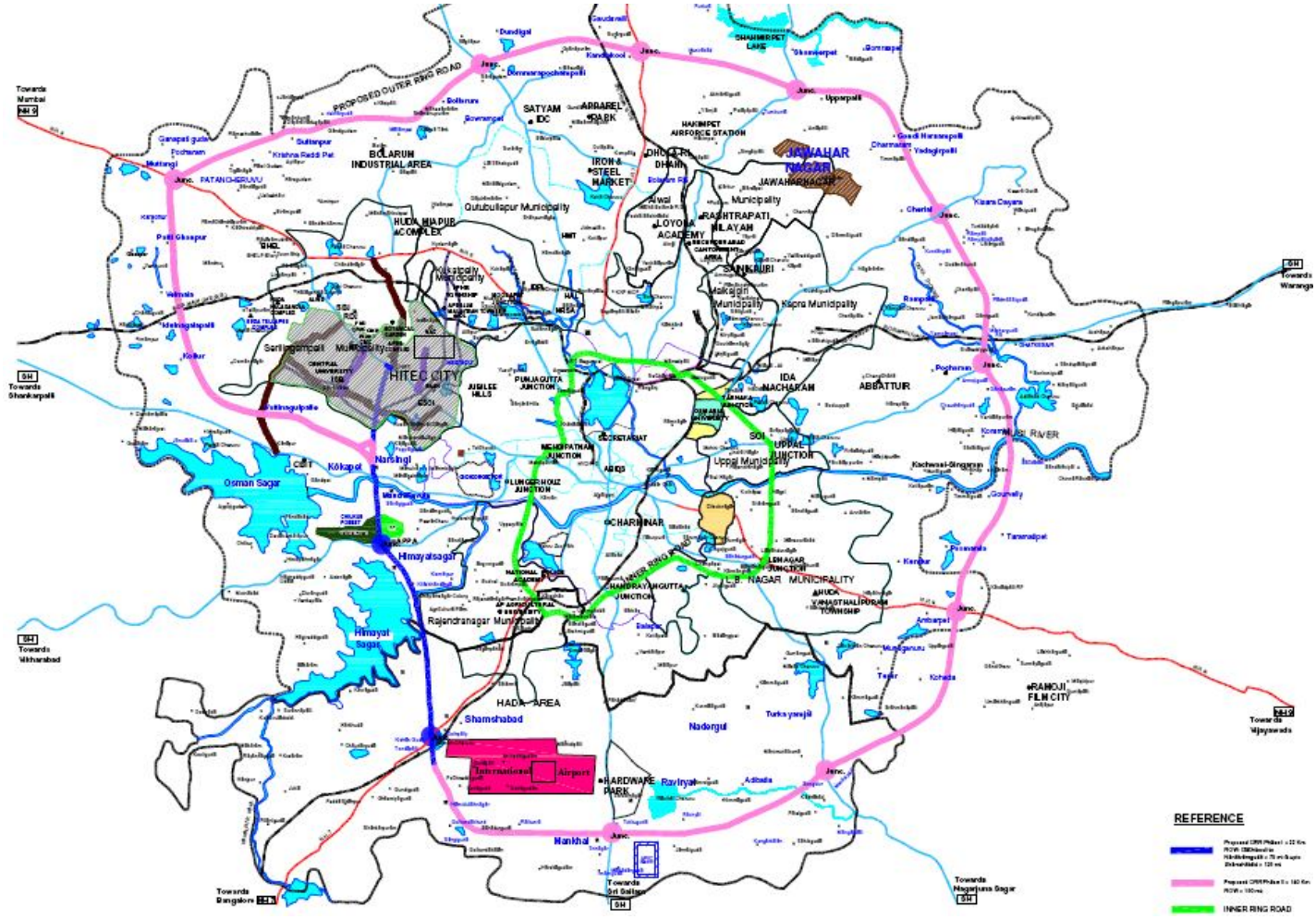
- For development of ORR ----------SPV ORR
- For development of Knowledge Corridor ----------SPV KC
- For Cluster Development ----------SPV CD

➢ Land to be provided for the above projects shall be equity in to SPV from GoAP

➢ GoAP shall hold 100% equity in SPV ORR.

➢ GoAP to hold equity up to 49% and in any case not less than 26% of equity of SPV KC & SPV CD

The layout of the Hyderabad Growth Corridor is as in figure below.



The Government of Andhra Pradesh formed a Special Purpose Vehicle (SPV) for development of Outer Ring Road (ORR) named as "Hyderabad Growth Corridor Limited" under Companies Act 1956 on 26th December 2005 with Registration No.01-48580 with the equity participation from INCAP (40%) and HUDA (60%). Subsequently, the equity participation is restructured as to INCAP (26%) and HUDA (74%).The Phase 1 of the Ring Road project has been implemented as an EPC contract and the Phase 2 is to be implemented in BOT-Annuity Format.

Annexure-III

Preliminary Viability Assessment

Project Cost Details							
	Phase 1			Phase 2			
	2010	2011	2012	2013	2014	2015	2016
Civil Construction Cost for Expressway "A"	1300.00	1472.90	1929.20	2125.50	0.00	0.00	0.00
Construction Cost for Real Estate Development "B"							
Site Development	35.46	146.03	426.61	272.52	451.26	710.01	281.84
Construction Cost							
Offices	670.82	2072.85	4266.44	1096.80	3380.95	6943.03	0.00
Mall	0.00	1263.14	2414.16	891.15	2289.19	2350.50	3858.92
Shops cum Offices	215.62	666.27	1371.36	352.54	1086.73	2231.69	0.00
Parking	111.70	345.16	710.43	372.03	382.27	392.51	402.75
Contingency "C"	58.34	149.16	277.95	127.76	189.76	315.69	113.59
Base Construction Cost "A+B+C"	**2391.95**	**6115.51**	**11396.15**	**5238.31**	**7780.17**	**12943.44**	**4657.09**
Insurance cost	23.92	61.16	113.96	52.38	77.80	129.43	46.57
Pre-operative cost @ 8%	191.36	489.24	911.69	419.06	622.41	1035.48	372.57
Interest During Construction	135.18	625.86	1657.22	2547.05	0.00	0.00	0.00
Advisory Fees	59.42	156.26	297.26	173.93	179.47	294.60	104.89
Financing Charges	57.14	128.41	234.07	90.42	59.17	97.46	0.00
Marketing expenses	78.13	148.63	86.96	89.73	147.30	52.45	0.00
Pre-Operative Contigencies	19.14	48.92	91.17	41.91	62.24	103.55	37.26
Working Capital Requirements	14.86	39.07	74.31	43.48	44.87	73.65	26.22
Total Project Cost	**2971.08**	**7813.05**	**14862.79**	**8696.27**	**8973.43**	**14730.05**	**5244.60**

Financing Charges

		2010	2011	2012	2013	2014	2015	2016
Upfront fees on debt	**1.050%**	21.84	57.43	109.18	34.56	30.31	49.92	0.00
Loan syndication Fees	**1.000%**	20.80	54.69	103.98	32.92	28.86	47.54	0.00
Independent Engineer Fees	**1.000%**	13.00	14.73	19.29	21.26	0.00	0.00	0.00
Independent Auditors		1.00	1.04	1.08	1.12	0.00	0.00	0.00
Escrow Agent Charges		0.50	0.52	0.54	0.56	0.00	0.00	0.00
Grand Total		**57.14**	**128.41**	**234.07**	**90.42**	**59.17**	**97.46**	**0.00**

P&L,Tax & IRR Calculations

	2010	2013	2014	2015	2020	2025	2030	2035	2038	2039
Financial Statement										
Annual Revenues			-4123.19	-6791.61	17511.22	23158.59	26632.38	35221.33	40504.53	40504.53
O&M			516.79	562.91	1238.42	1595.78	1920.02	2341.17	3011.24	6750.85
EBDITA			-4639.98	-7354.52	16272.80	21562.81	24712.37	32880.16	37493.29	33753.68
Depreciation			111.29	111.29	1697.37	1915.61	1915.61	1915.61	1915.61	1915.61
Interest Paid			2752.61	2818.58	781.18	0.00	0.00	0.00	0.00	0.00
PBT			-7825.62	-10658.20	13794.25	19647.20	22796.76	30964.55	35577.68	31838.07
Tax			0.00	0.00	4168.26	6503.69	7900.18	10871.62	12517.03	11265.95
PAT			-7825.62	-10658.20	9625.99	13143.51	14896.58	20092.93	23060.65	20572.12

Tax Schedule										
Profit Before Tax			-7825.62	-10658.20	13794.25	19647.20	22796.76	30964.55	35577.68	31838.07
Add Back : Book Depreciation			111.29	111.29	1697.37	1915.61	1915.61	1915.61	1915.61	1915.61
Profit Before Depreciation & Tax			-7714.33	-10546.91	15491.62	21562.81	24712.37	32880.16	37493.29	33753.68
Less: WDV Depreciation			341.38	324.31	3228.43	2428.68	1469.70	895.38	667.66	605.88
Less: Losses B/f			0.00	8055.71	0.00	0.00	0.00	0.00	0.00	0.00
Taxable Profit			-8055.71	-18926.93	12263.20	19134.13	23242.66	31984.77	36825.63	33147.80
Carry Forward of Losses			8055.71	18926.93	0.00	0.00	0.00	0.00	0.00	0.00
Taxable Profits-Subject to Deduction of Sec. 80-I			0.00	0.00	12263.20	19134.13	23242.66	31984.77	36825.63	33147.80
Deductions u/s 80-I			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Taxable Profits			0.00	0.00	12263.20	19134.13	23242.66	31984.77	36825.63	33147.80
Mat			0.00	0.00	1562.89	2226.03	2582.87	3508.28	4030.95	3607.25
Normal Tax			0.00	0.00	4168.26	6503.69	7900.18	10871.62	12517.03	11266.94
Extra MAT paide over the Normal tax			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mat Credit										
Applicable Tax			0.00	0.00	4168.26	6503.69	7900.18	10871.62	12517.03	11266.94

Free Cash Flows										
Project Cash Flows (Pre Tax)	-2956.23	-4659.20	-8718.30	-7280.87	16272.80	21562.81	24712.37	32880.16	37493.29	33753.68
Project Cash Flows (Post Tax)	-2956.23	-4659.20	-8718.30	-7280.87	12104.54	15059.12	16812.18	22008.53	24976.26	22486.74
Equity Cash Flows	-891.33	-663.19	-8629.55	-13782.97	7713.49	15059.12	16812.18	22008.53	24976.26	22487.73
IRR Results										

Project IRR (Pre Tax)	**21%**
Project IRR (Post Tax)	**17%**
Equity IRR	**20%**