FINAL PRE FEASIBILITY REPORT

FOR

DEVELOPMENT OF

INTERMODAL TRANSIT HUBS

ON PPP FORMAT IN CITIES OF KARNATAKA

TO

INFRASTRUCTURE DEVELOPMENT DEPARTMENT

04th November, 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 Inter Modal Transit Hubs on PPP format for major cities in 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 in multiple cities on a replicable model
- 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. Approach & Methodology

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

As a part of the project documentation, KIPDC would submit the following to IDD:

1) Inception
2) Draft Pre-feasibility Report
3) Presentation on Draft Pre-feasibility Report
4) Final Pre-feasibility Report
5) Presentation on Final Pre-feasibility Report

II. Infrastructure in Karnataka

2.1 Overview

Karnataka is the ninth most populated state in India. Located in the southern part of India, Karnataka is divided in to 29 districts and has an area of 191,791 sq km that accounts for 5.83 per cent of India's geographical area. The state is bordered by the Arabian Sea to the west, Goa to the northwest, Maharashtra to the north, Andhra Pradesh to the east, Tamil Nadu to the southeast, and Kerala to the southwest. Bengaluru is the administrative and financial capital of the state. Bengaluru along with Belgaum, Gulbarga, Hubli-Dharwad, Mangalore and Mysore are among the large cities in the state in terms of population.

Although agriculture is the mainstay of the population, services and industrial sectors have shown significant growth attracting major companies from all over the world. Today, the services sector contributes the maximum to the state's income.

Karnataka has been the top most choice in the field of the IT/ ITeS. Bengaluru is a prominent location among the world's top five technology hubs. Karnataka contributes to more than 35 % of the national exports. The IT/ITeS domain alone shares about 30 per cent of the over all export of the State. Karnataka has over 1,200 operational companies in the IT/ ITeS space (2006) employing over 400,000 professionals. Karnataka's contribution to national software export between 2004 and 2006 was recorded to be about 36 percent. Karnataka has a vast pool of IT professionals, and a preferred hub for R&D with several multinational and domestic companies. There are more than 100 R&D organizations. Karnataka also has some of the country's best academic and premier research institutions. The state is also known to have the highest number of biotech companies in the country.

Karnataka is focused on improving its investment climate. It has been proactive in inviting the private sector and was amongst the first to invite private investment in the education sector. With its encouraging policies and favourable environment, the state has attracted investors and has seen a steady increase in Foreign Direct Investment (FDI) inflow in recent years.

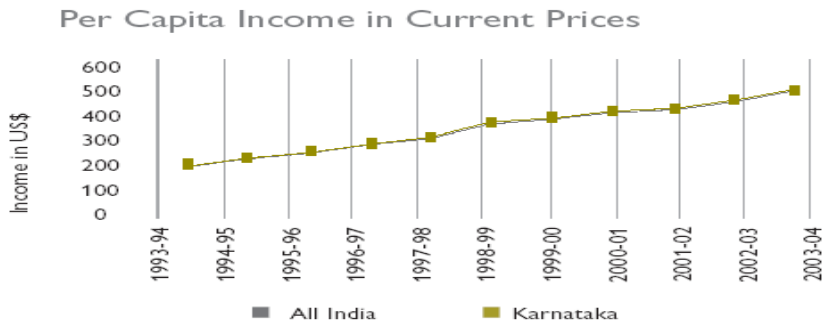
Economic Snapshots

Capital	Bangalore
Area (sq km)	191,791
Population (Census 2001, million)	52.7
Projected Population (2008, million)	57.39
Literacy Rate (%)	67.04
NSDP (US$ billion)	25.93
Per Capita Income (US$) (2007-08)	942
Exports (US$ million)	9.3
National Highways Length (km)	3,843
International Port	New Mangalore Port, Karwar Port
International Airport	New Bengaluru International Airport
Domestic Airports	Hubli, Mangalore, Belgaum

Karnataka has emerged as one of India's fastest growing states with respect to parameters of GDP and GDP per capita, in addition to being the most economically progressive states. The per capita income during 2007-2008 stood at US$ 942. The state has been the forerunner in the IT/ITeS space owing to an appropriate ecosystem for knowledge-driven industries including proactive government, sector-friendly policies and a large pool of skilled manpower, with Bengaluru being amongst the five largest technology hubs in the world.

The total gross state domestic product (GSDP) of Karnataka in 2007-2008 was about Rs. 2152.82 billion (US$ 51.25 billion) during which period the GSDP grew by seven per cent.

Table II.1: Per Capita Income in Current Prices



Bengaluru, Mysore and Mangalore are three major cities of Karnataka and home to over 40 percent of the urban population in the state.

Bangalore – largest urban metropolis of the state

Mysore – emerging as an alternative destination to Bangalore in service and tourism sectors

Mangalore with its presence of – port, educational institutes, hospitals and banks it's fast emerging economy in services, logistics and manufacturing.

Cities	Average Annual Household Income ($)	Average Annual Household Savings ($.)	Households Electrified (%)	Internet Users (Nos.)	Households with Four Wheelers
Bengaluru	211	84	95	579,000	10%
Mysore	180	58	93	91,000	9%
Mangalore	180	50	91	95,000	6%

Source: City Skyline Date, E&Y Analysis

The government of Karnataka is promoting the growth of SEZs, with several sector-specific SEZs, e.g., for pharmaceuticals and biotech, food processing and agro- based industries and processing clusters, besides a textile SEZ at Hassan and coastal SEZ at Mangalore. Karnataka is among the top five industrialised states in the Country. It was the first to introduce a State Industrial Policy in 1982-1983, offering subsidy of up to US$ 0.2 million for setting up of an effluent treatment plant in any area.

Karnataka also leads the nation in biotechnology. It is home to India's largest bio cluster, with 158 of the country's 320 biotechnology firms being based here. Karnataka has a headcount of over 6,800 scientists involved in biotech research. The state also accounts for 75% of India's floriculture, an upcoming industry which supplies flowers and ornamental plants worldwide.

Seven of India's leading banks, Canara Bank, Syndicate Bank, Corporation Bank, Vijaya Bank, Karnataka Bank, Vysya Bank and the State Bank of Mysore originated in this State. The coastal districts of Udupi and Dakshina Kannada have a branch for every 500 persons - the best distribution of banks in India. As of March 2002, Karnataka had 4767 branches of different banks with each branch serving 11,000 persons, which is lower than the national average of 16,000.

Karnataka is the manufacturing hub for some of the largest public sector industries in India, including Hindustan Aeronautics Limited, National Aerospace Laboratories, Bharat Heavy Electricals Limited, Indian Telephone Industries, Bharat Earth Movers Limited and Hindustan Machine Tools, which are based in Bangalore. Many of India's premier science and technology research centers, such as Indian Space Research Organization, Central Power Research Institute, Bharat Electronics Limited and the Central Food Technological Research Institute, are also headquartered in Karnataka. Mangalore Refinery and Petrochemicals Limited is an oil refinery located in Mangalore.

Providing world class infrastructure in the State is one of the next initiatives of the Government of Karnataka in order to keep its pace with the growing Cities in the State.

2.2 Overview of India's transport sector

India's transport sector is large and diverse; it caters to the needs of about 1.1 billion people. The sector has grown tremendously over the last fifty years of planned development, both in terms of outreach and capacity. Today, more than ever, the sector is on the verge of major expansion and development.

India's passenger and freight transport system has witnessed a shift away from railways in favor of roads. However, rail is still the dominant form of transport for long-haul passenger movement, while road transport accounts for most of the short haul movement. If past and present trends in demand for passenger and freight travel continue and GDP continues to grow, the modal split will become increasingly skewed in favor of roads, with worsening impacts for energy use and the environment.

The rate of growth has varied considerably by sub-sectors. Road, air and water transport have grown rapidly, while rail transport has grown more slowly. The details of historical trends and modal shares of various transportation modes in passenger traffic is as per table below.

Historical trends and modal shares of various transportation modes in passenger traffic

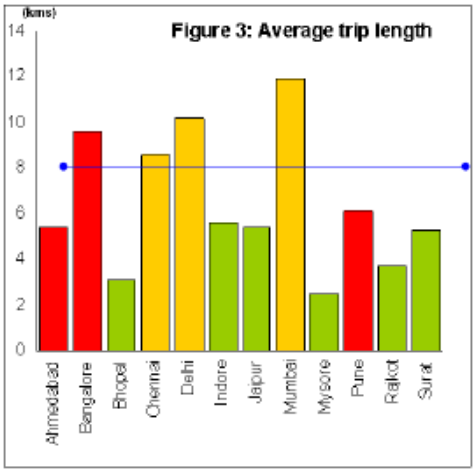
N

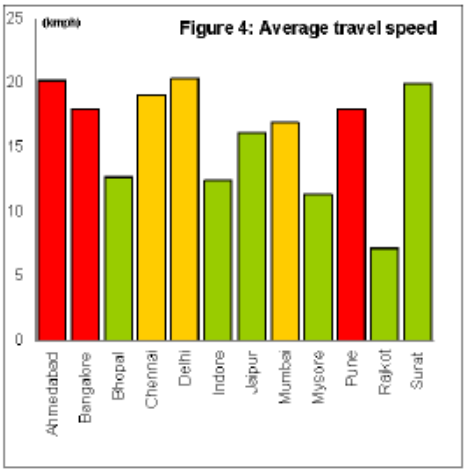
Year	Passengers (Billion Passengers Km)				Modal Shares (%)			
	Road	Railways	Airline	Total	Road	Railways	Airline	Total
1950-51	23.0	66.5	NA	89.5	25.7%	74.3%	NA	100%
1960-61	80.9	77.7	NA	158.6	51.0%	49.0%	NA	100%
1970-71	210.0	118.1	NA	328.1	64.0%	36.0%	NA	100%
1980-81	541.8	208.6	NA	750.4	72.2%	27.8%	NA	100%
1990-91	767.7	295.6	NA	1063.3	72.2%	27.8%	NA	100%
1999-20	1831.6	430.7	11	2273.3	80.6%	18.9%	0.50%	100%
2000-01	2075.5	457	12	2544.5	81.6%	18.0%	0.50%	100%
2001-02	2413.1	490.9	12	2916.0	82.8%	16.8%	0.40%	100%
2002-03	2814.7	515	13	3342.7	84.2%	15.4%	0.40%	100%
2003-04	3070.2	541.2	15	3626.4	84.7%	14.9%	0.40%	100%
2004-05 (Provisional)	3469.3	515.7	18	4003	86.7%	12.9%	0.40%	

(source: Planning Commission, 2007)

The recent studies in growth pattern and vehicle characteristics around the world has shown that cities show an increase in per capita trip making and per capita trip length with :(i) increase in income (ii) increase in participation of women in work force and(iii) industrial restructuring towards service oriented economy. The cities in India also show similar trends of growth and thus resulting in the increase in Average trip length of the commuters and reduce the average speed of travel. The Average Trip Length and Average Travel Speed of major Indian cities are as in figure below. An efficient transport infrastructure with basic

integration with modes of travel, interchanges thus becomes necessity for progress of the cities.





2.3 Transport Infrastructure in the State

Karnataka has 3,843 km of national highways (NH), 28,311 km of state highways (SH) and 19,801 km of district roads. The state is well connected to six neighbouring states and other parts of India through 14 NHs, which account for six per cent of total NH network in India. The district centres are connected to each other with 114 SHs. The total road network of NH, SH and district roads are about 52,000 km.

The Civil Aviation Sector has seen tremendous growth with international air passenger traffic growth of 50% and domestic air passenger growth at 44% during 2006-07. As regards cargo traffic, the State airports handled 1.66 lakh ton of freight during 2006-07, a 19% increase over the previous year. Karnataka has airports at Bangalore and Mangalore, Hubli, Belgaum, Hampi and Bellary with key international operations from Bangalore and Mangalore airports. Airports at Mysore, Gulbarga, Bijapur, Bellary, Hassan and Shimoga are under implementation.

New Bangalore International Airport developed under a Public Private Partnership framework at Devanahalli, in the outskirts of Bangalore started operations in May2008.

Karnataka has a railway network with a total length of approximately 3,089 kilometres (1,919 mi). Until the creation of the South Western Zone headquartered at Hubli in 2003, the railway network in the state was in the Southern and Western railway zones. Several parts of the state now come under the South Western Zone, with the remainder under the Southern Railways. Coastal Karnataka is covered under the Konkan railway network which was considered India's biggest railway project of the century. Bangalore is extensively connected with inter-state destinations. However, intra-state rail connectivity, especially on the key lines for passenger and freight movements, needs to be augmented.

The Karnataka State has a maritime coastline of 155 nautical mile (300 kilometers) and has only one Major Port at Mangalore i.e. New Mangalore Port and studded with 10 minor ports of the State are Karwar, Belekeri, Tadri, Honnavar, Bhatkala, Kundapur, Hangarkatta, Malpe, Padubidri and Old Mangalore. Out of 10 ports Karwar is the only all weather port while the other nine are the reverine anchorage lighter age ports. All these ports have handled a total cargo of 6573 thousand tonnes in 2006-07.

The New Mangalore port was incorporated as the ninth major port in India on May 4, 1974. This port handled 32.04 million tonnes of traffic in the fiscal year 2006-07 with 17.92 million tonnes of imports and 14.12 million tonnes of exports. The port also handled 1015 vessels including 18 cruise vessels during the year 2006-07.

2.4 Initiatives in Urban Infrastructure

The growth of urban population in India has been extremely rapid. While the total population in India has grown by about 3.5 times in the last century, its urban population has increased almost 9 times over the same period. According to the 2001 census, India has a population of 1027 million with approximately 28per cent or 285 million people living in urban areas. As a result of the liberalization policies adopted by the Government of India is expected to increase the share of the urban population may increase to about 40 per cent of total population by the year 2021. It is estimated that by the year 2011, urban areas would contribute about 65 per cent of gross domestic product (GDP). The Average Annual Growth rates & Per capita Income for All India & major States of India are as in table below. Urban economic activities and higher productivity is contingent upon the availability and quality of infrastructure services such as power, telecom, roads, water supply and mass transportation, coupled with civic infrastructure, such as sanitation and solid waste management.

Average annual growth rates of Income and Per Capita Income in real terms for all India and major states of India

State	Annual Average Growth Rates (%) during 1999-00 to 2006-07		Per Capita income at Current prices 2006-07 (Rs)	Rank
	Income	Per Capita Income		
Andhra Pradesh	10.9	9.7	29582	8
Assam	9.0	7.4	20166	12
Bihar	10.1	8.0	9702	15
Gujarat	12.5	10.5	37532	4
Haryana	13.7	11.3	49038	1
Karnataka	**10.0**	**8.6**	**30847**	**7**
Kerala	9.4	8.3	33609	5
Madhya Pradesh	6.5	4.6	16578	13
Maharashtra	10.6	8.8	41331	2
Orissa	11.2	9.9	20240	11
Punjab	8.7	6.9	40566	3
Rajasthan	8.7	6.5	20492	10
Tamil Nadu	8.8	7.9	32733	6
Uttar Pradesh	8.3	6.1	14649	14
West Bengal	10.3	9.0	28753	9
All India	**11.2**	**9.4**	**29642**	

Source : 1. Karnataka : Directorate of Economics and Statistics, Government of Karnataka

2. All India and other States: Central Statistical Organisation, Government of India

To ensure sustainable growth, Government of India has initiated the development programs for the urban sector in selected cities through Jawaharlal Nehru Urban Renewal Mission (JNNURM). The aim is to encourage reforms and fast track planned development of identified Cities with focus on efficiency in urban infrastructure and service delivery mechanisms, community participation, and accountability of ULBs/ Parastatal agencies towards citizens

It is estimated that over a seven-year period, the Urban Local Bodies (ULBs) would require a total investments of Rs. 1,20,536 Crores. This includes investment in basic infrastructure and services, with an annual funding requirement of Rs. 17,219 Crores. The details are as in table below:

URBAN SECTOR INVESTMENT REQUIREMENT

(Rs. crore)

Category	Number of Cities	Investment Requirement (over 7 years starting 2005-06)	Annual Funds Requirement
Cities with over 4 million population	7	57,143	8163.3
Cities with 1-4 million population	28	57,143	8613.3
Selected Cities with less than 1 million population	28	6,250	892.9
Total	63	1,20,536	17219.5

The objectives of the JNNURM are to ensure that the following are achieved in the urban sector:

- Focused attention to integrated development of infrastructure services in cities covered under the Mission
- Establishment of linkages between asset-creation and asset-management through a slew of reforms for long-term project sustainability;.
- Ensuring adequate funds to meet the deficiencies in urban infrastructural services;
- Planned development of identified cities including peri-urban areas, outgrowths and urban corridors leading to dispersed urbanisation;.
- Scale-up delivery of civic amenities and provision of utilities with emphasis on universal access to the urban poor;
- Special focus on urban renewal programme for the old city areas to reduce congestion;
- Provision of basic services to the urban poor including security of tenure at affordable prices, improved housing, water supply and sanitation, and ensuring delivery of other existing universal services of the government for education, health and social security.

Karnataka too faces the challenge to sustain high growth while also improving its Human Development. The four strategic development challenges facing Karnataka are:

- to remain one of India's fastest growing states.
- to move from an average to a high-performing state as measured by the Human Development Index

- to maintain rapid agricultural growth, while reducing the risks faced by the rural community
- to enable north-east Karnataka to catch up with the rest of the state.

Having recognized that with Karnataka having ranked 7th in the Country for growth rates for Income and Per Capita Income, the expectations for infrastructure by its population especially that of urban population would be equally higher, the State aims at providing world class urban infrastructure to its population. The same is identified as one of the key drivers to the uniform growth of the State and its cities in a sustainable manner. Hence, the Government of Karnataka has been taking several initiatives to keep itself at pace with the growing cities and their infrastructure needs with its focus primarily on providing:

- Primary Education
- Health Awareness Programme
- Drinking water
- Roads & Street Light
- Under Ground Drainage and Sanitation
- Solid Waste Management

With the above objectives, the State Government has also initiated several schemes / programs with the objective of creating quality infrastructure including the Karnataka Urban Water Sector Improvement Project (KUWASIP), Karnataka Urban Development and Coastal Environmental Management Project (KUDCEMP), Kalasa-Banduri Nala project, etc. The State Government has also been effectively seeking the assistance under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) for the developments of its JNNURM classified cities.

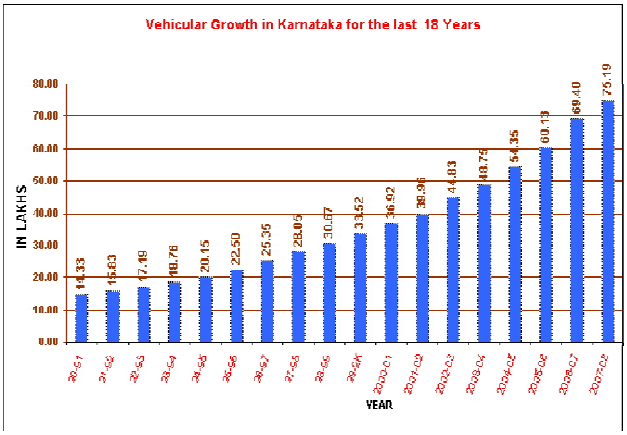
While there is a lot done, the need for doing a lot more in providing basic urban infrastructure needs has been noted by the Government of Karnataka. Considering the same, the State Budget 2009-2010 has identified the development of Urban Infrastructure as the one of the Priority Sectors and has earmarked Rs. 7,367 Crores (approx.) for the development of the same including that for Bangalore City.

2.5 Traffic & Congestion Scenario in growing Cities of Karnataka

Most cities are characterized by high densities, intensely mixed land use patterns, short trip distances and high share of walking and non motorized transport. The spatial spread of most cities has been changing and comprise of the old core areas (usually congested) and the land use mixed. Most cities also have the central core and more than one Central business District (CBD).

The cities of Karnataka are no different in their pattern of spread. With the rising number of vehicular population along with the city's growth and rise in per capita income, high volumes of vehicular traffic and congestion is presently the focus for attention in most tier –II cities.

Vehicular Growth in Karnataka for the last 18 years



In a city like Bangalore, the growing number of immigrants and the pressure on transportation systems, travelling 10 kms within the city could just take more than 90 mins.

The key causes of traffic congestion in cities are as below:

- Lack of Mass Transport systems
- Over utilization of Road capacity
- Increasing private vehicles & rickshaws
- Lack of Parking space
- Vehicle Breakdowns
- Accidents
- Potholes/ Under Construction activities & repairs
- Lack of Driving Discipline

Motor Vehicle Registration Statistics for Karnataka

Number of motor vehicles under different categories 2005-2006 to 2008-09

('000s)

Item	2005-06	2006-07	2007-08	2008-09 (31-10-08)
1. Motorcycles	4512.91	4972.75	5269.31	5703.51
2. Motorcars	635.21	731.27	774.07	874.21
3. Jeeps	41.99	45.16	45.34	46.12
4. Auto rickshaws	213.72	242.69	248.93	268.21
5. Omnibuses	54.81	66.19	68.38	75.89
6. Motor cabs	39.29	49.68	57.65	61.38
7. KSRTC buses	30.22	34.08	36.47	19.70
8. Private buses	9.80	8.22	7.35	8.18
9. Goods carriages	219.20	247.29	254.12	286.78
10. Tractor	166.69	195.78	209.66	221.25
11. Trailers	167.62	185.80	200.15	208.02
12. Others	128.91	160.80	164.00	251.90
Total	**6220.37**	**6939.71**	**7335.43**	**8025.15**

Source: Motor Vehicles Department

Car sales in Bangalore presently close to 8 lakh units a year, are growing at an average rate of 10 per cent while two-wheeler sales at 5 million are expected to grow 14-15 per cent. In order to accommodate the large volume of vehicles, cities and towns must develop their infrastructure - roads, flyovers, car parks and other facilities. Otherwise their arteries are most likely to get clogged.

With limited scope for road widening, providing signal free and smooth flowing traffic especially in CBD areas is a concern that most cities in Karnataka desire to address. A consequence to the inflation in the traffic scenario, number of vehicles in cities & unplanned urbanization has led to congestion. City Core area is already fully developed with very less space for further expansion which has resulted in unplanned footloose developments in the suburban areas of the CBD. Thus the Comprehensive Development plans and Comprehensive Traffic and Transport studies of the cities propose to orient the direction of growth towards the peripheral regions in a planned and phased manner. In order to achieve the same the local administration has designed planned residential /commercial layouts, wider outer ring roads connecting radial roads at the periphery thus providing orbital route without choking the CBD.

The CDP's also visualize a scenario where the integration is both between the modes of transport and between the land use components. In terms of traffic distribution regional traffic integration of traffic modes viz road, rail & air is also recommended.

The various methods that may be utilized to address the above needs of the cities and facilitate the expansion of the city are:

- Decentralize major bus and railway stations by setting up new centres away from the CBD. These newly enveloped zones can then serve to interlink the different modes to give a choice to the commuters depending upon their destinations.

- Create new commuting zones particularly at the intersections of the radial arteries with outer & peripheral roads, rail alignment etc. The presently undeveloped areas can be efficiently planned for appropriate infrastructure as would be required over a horizon period.

- The above measures will help in the development of new nodal centres and provide efficient linkages between modes of transport and well organized connectivity between the nodes of the state.

III. The Project Concept

3.1 Background

The proactive approach of the State has in effect opened up new corridors for growth and development - thus offering investors many more options. Some of the stated development and initiatives from the Karnataka Government that are envisaged to increase the concentration of population in Tier 2 cities of the state:

- The 'Karnataka Vision 2025' states: To enable balanced development of the state and a more equitable distribution of economic activities, creation of world-class infrastructure (power, water, sanitation/waste disposal, highway access, local roads, rail & air access) is essential at multiple urban locations. The government should invest in such infrastructure at "Tier-2 cities" such as Mysore, Mangalore, Hubli-Dharwad, Belgaum, Bellary, Raichur, and Gulbarga.

- To give a thrust to the new government's policy of developing tier II and tier-III cities as magnets for technology companies, the IT industry is asking for a special investment of Rs 500 crore each in Mysore and the port city of Mangalore in three years.

- The Karnataka Government has urged IT companies to shift to other Tier II cities in Karnataka like Mysore, Mangalore, Hubli and Gulbarga. Some of the companies like Infosys, Wipro, Mphasis have all set up units in Mysore, Mangalore, but the focus need to also shift to other cities like Hubli, Hassan, Gulbarga to see an overall development throughout the Tier II cities of the state.

- The Karnataka state government initiated the idea for a high speed passenger corridor that'll connect Bangalore-Hubli in 2 hours, Bangalore-Mysore in 40 minutes. This will perhaps give stimulus to Hubli and Mysore, by increasing connectivity, so that they can develop as economic centers and act as meaningful alternatives to Bangalore.

  The central government has an aspiring industrial corridor plan & under the Delhi- Chennai industrial corridor. The main aim of this corridor is the overall industrial development and ease in logistics. 100 acres at Halga on the NH 4 has been reserved for Agri Food processing. 70 acres already allotted for a Textile park in Waghvade on the Belgaum – Khanapur road.

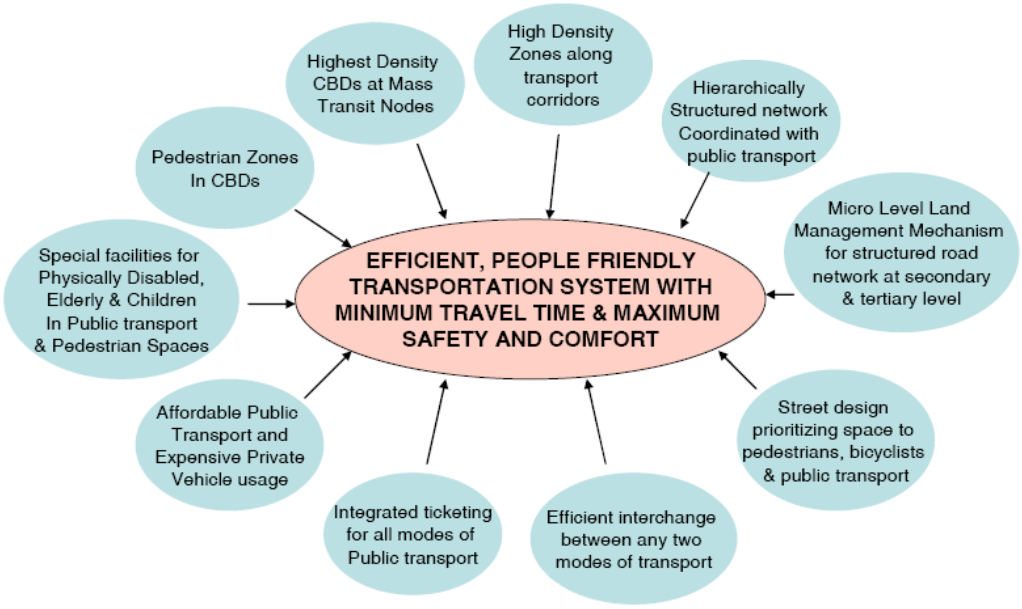
  These Industrial corridors would observe immense growth in population and infrastructure in the coming years.

- An Integrated IT-BT-Health city is envisaged for the twin cities of Hubli-Dharwad to be set up under a public-private partnership. For the northern cities of Belgaum and Gulbarga, it wants 'electronic cities' which will help generate large-scale local employment for business process outsourcing companies.

Mysore, Mangalore, Hubli-Dharwad, Belgaum, Gulbarga and Bellary have been identified to be the next emerging and fast developing cities other than Bangalore in Karnataka.

The major cities of Karnataka are undoubtedly one of the fastest growing cities in Asia and also one of the most sought after cities in India by people, companies, multinationals and tourists. The massive growth that the cities have witnessed in the last decade is a clear indication of these cities being developed to be at par with the most modern cities in the India.

The exponential growth in urban population in the major cities has significantly affected the urban infrastructure of the State. One of the sectors that has been strained by the influx of population into the major cities is the transport infrastructure. The major plans to be implemented to revolutionize the present traffic scenario have been summarized as in the following figure:



The improvisation of affordable public transport introduction of mass transport system, Transport Integration at major nodes and Transport Hubs at intersection of Ring Roads with arterial Roads, Rail alignment with roads etc are the major recommendations that have been provided in Comprehensive Traffic & Transportation studies (CTTP) of Major cities of Karnataka.

It is in this scenario that the importance of Traffic integration comes into picture. Along with the necessary infrastructure, the integration can be achieved by:

- Structured Network of Transport coordinated with Public Transport
- Integrated ticketing for different modes of transport
- Efficient Interchange between modes of transport

The Government initiatives have augmented the infrastructure in various segments, but to cater to the present situation of vehicle growth, a futuristic, planned and systematic approach is necessary. In order to maintain the existing high growth scenario of the Karnataka, the cities should gear up for the future with innovative and futuristic developments in this sector. The intermodal Transit Hubs ensuring the efficient interchange can largely supplement the infrastructure developments in Traffic and Transport sector.

3.2 Scenario of Urban Transport Infrastructure in Major Cities

An outline of the transport infrastructure and limitations in cities identified can be summarised under the following classifications:

Demand Factors

- A far higher traffic demand generation compared to the population increase.
- The residential locations located away from the industrial/employment hubs necessitating increased journey lengths.
- Lack of sufficient commercial centres in residential areas generating un-necessary and long vehicular trips for shopping purposes.

Supply Factors

- Insufficient road space for movement resulting in high volume to capacity ratio leading to congestion.
- Insufficient space at intersections – over-saturated junctions and insufficient pace for junction improvement.
- Non-availability of parking spaces.
- Improper and insufficient location of transport terminals with many public transport terminals located on street.
- Lack of enough circumferential road system.
- Insufficient by-pass system for the city.
- Lack of truck terminals at city entry points thus resulting in parking of trucks on the side of main roads.

Environmental Factors

- Air pollution
- Noise pollution
- Safety factors

Accessibility

- Traffic congestion & several traffic management schemes have increased journey lengths and journey time.
- Insufficient and improper facilities for pedestrians to walk along the road and cross the road.
- Overcrowded public transport system.
- Non-availability of a Mass Rapid Transport System.
- A very high route factor for bus routes, which favours the use of personal transport system.

Interconnectivity between Transport Hubs

- Non existence of planned interchange between modes of travel
- Lack of operational integration within transport modes
- Need for additional interconnectivity infrastructure viz: Busses, Autos, Taxis, etc
- Additional burden to city roads by commuters interchanging modes

3.3 Intermodal Transit Hubs

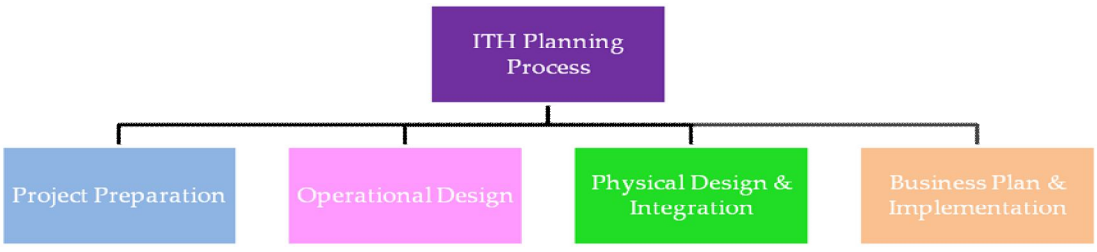
An intermodal facility can be defined as a place where interface occurs between transportation systems. In a passenger terminal, people enter the facility by one mode of access (e.g. by car, by bus or train, etc.) and leave by another. The term **"Intermodal Transit Hub (ITH)"** is generally applied to a terminal that serves multiple transit operators and/or modes, such as combined bus and rail stations. Intermodal Transit hubs are a particularly strategic consideration in the present scenario of traffic growth and congestion in roads. An Intermodal Transit Facility gathers many modes of transportation together and is strategically located so that the commuter has different transit alternatives to reach the destination. It describes an approach to planning, building, and operating the transportation system, emphasizes optimal utilization of transportation resources and connections between modes. One of the objectives of an Intermodal transit hub is to minimize the cost and inconvenience of changing transit systems by a commuter.

A World Class Intermodal Transit Hub promises to offer the following:

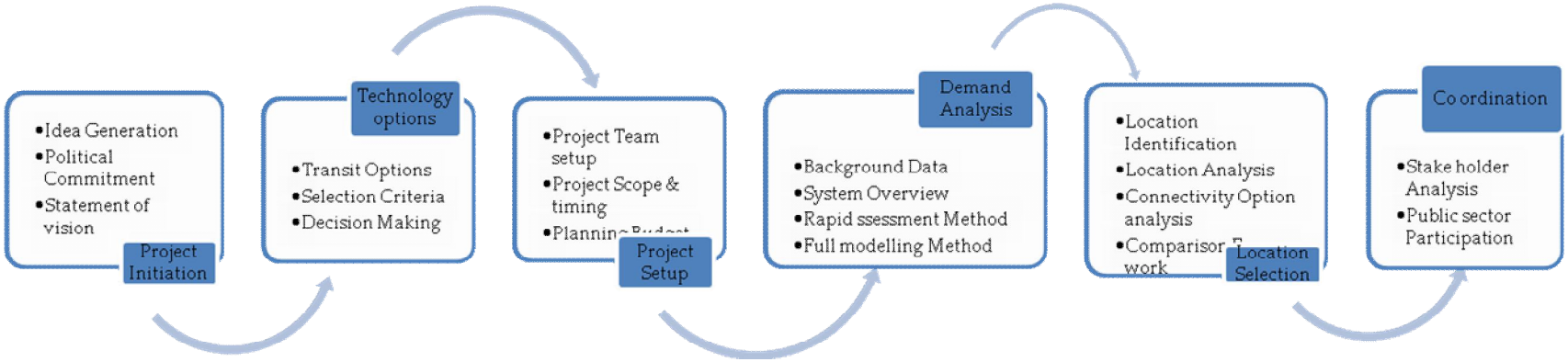
- Lowering overall transportation costs by allowing each mode to be used for the portion of the trip to which it is best suited.
- Increasing economic productivity and efficiency.
- Reducing congestion and the burden on overstressed infrastructure components.
- Improving mobility for the elderly, disabled, isolated, and economically disadvantaged.
- Reducing energy consumption and contributing to improved air quality and environmental conditions.
- Reducing land take for road operations and common amenities
- Maximizing opportunities for shared facilities and synergies
- Minimizing potential phasing impacts by reducing the number of components that need to be accommodated and avoiding duplication of facilities.
- Optimizing Frequency and number of trips in case of public transport

The multimodal hub is a major transportation centre generally characterized by a large footprint, many thousands of users, multiple modes of transportation and serving large portion of the city area, regional center, park-and-ride activity, transfer between bus and possibly other modes and includes a building that functions as a transit centre. A well-designed ITH should fit within the fabric of the entire transport system of the region. The figure depicts the overview of the planning process for Intermodal Transit Hub.

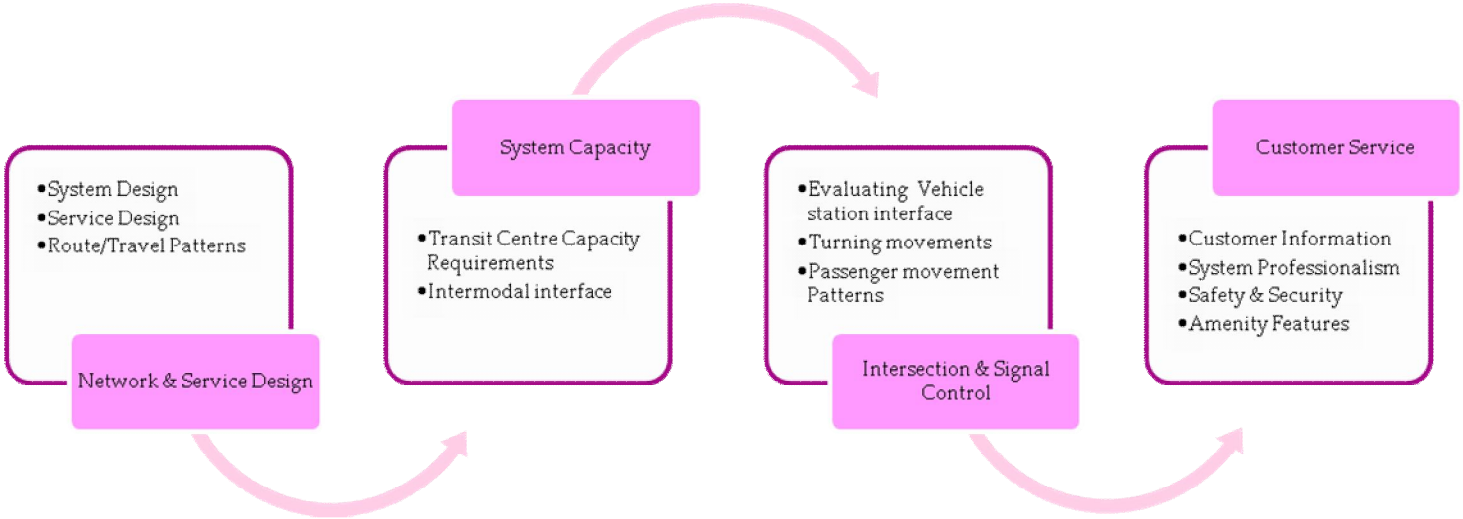
Overview Of Planning process of Intermodal Transit Hub



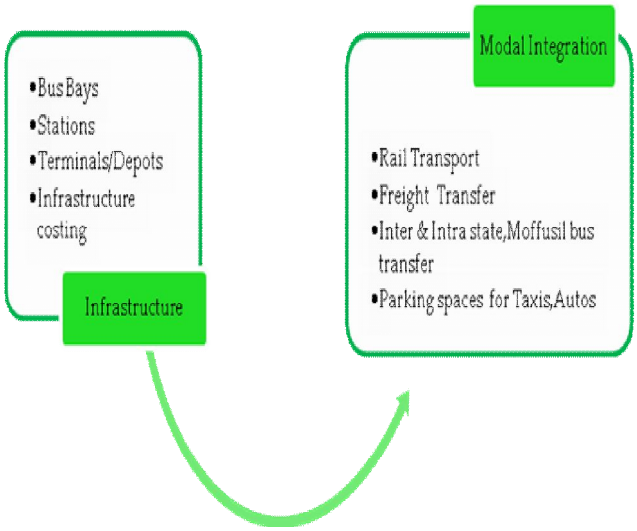
A.ProjectPreparation



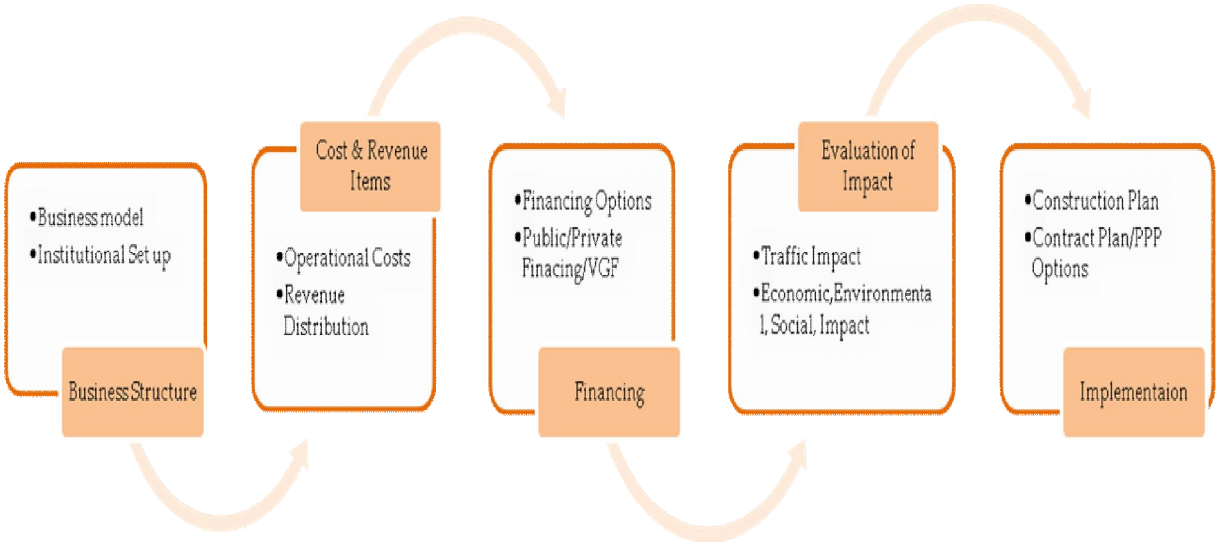
B. Operational Design



C. Infrastructure Design & Integration



D. Business Plan & Implementation



3.4 Evaluation Criteria for an ITH

In recent years, increasing emphasis has been placed on the development of intermodal transport centres as tools with which to improve urban mobility especially in the developing countries, where a majority of residents use public transit systems. An effective system of transfer centres could improve intra-urban mobility and give low-income residents better access to economic opportunities.

The selection criteria for location of an ITH are developed with regard to coordination of modes, physical location, design and safety. Other factors also include service reliability, user satisfaction, physical attractiveness, community acceptance and costs. The parameters have been analyzed taking Cognizance of Comprehensive Traffic &Transportation Plan, City Development Plans and Master Plans of the cities the parameters. The following criteria can be effectively analyzed for developing an effective Intermodal Transit Facility Hub.

3.4.1 Supported and Safe Intermodal Action

The location of an ITH should be such that it maximizes the ease of access to different modes of transportation and potential transfers between the modes. An ITH will ultimately be judged by its ability to serve passengers, and its location is critical to the quality of that service. An intermodal transfer facility should ideally be located such that connections within a single mode and between various modes are available. Modal support will obviously reflect the transportation alternatives available for the area. Site selection also involves identifying mode requirements to determine compatibility. Inappropriate site selection can doom the success of the facility. Design of an intermodal transfer facility should also incorporate safety mechanisms that prevent incidents between modes. Evaluation of access and egress is critical in ensuring that the modes are compatible and that the facility can operate effectively and efficiently. It is also important to ensure that the facility design does not pose physical barriers to transferring between modes.

3.4.2 Facility Type and Size

When rail or other infrastructure-driven modes are to be involved in an intermodal center, the type of facility is most determined by the requirements of that mode (the most intense mode). However, for modes most commonly found, such as bus, pedestrian and park and ride the options for facility type will also be determined by available funding, demand for service, and community needs. Facility developers may find that inadequate funding limits facility types to on-street local stops or that passenger demand may require a

facility with several bays and personnel on duty. Placing a facility of inappropriate scale in a community is either wasteful or easily outgrown and may create an unsafe environment.

3.4.3 Amenities

Transit signs, system/route maps and information, trash receptacles, and lighting are required to ensure that passengers have reasonable opportunity to plan and complete their trip in a safe environment. Even amenities such as shelters, benches, and public telephones provide some necessary comfort, especially where poor weather conditions or elderly patronage is common. Other amenities, such as landscaping, public art displays, and vending services also contribute to the comfort of the facility user. Amenities have an important role in the effectiveness of a facility.

3.4.4 Reliable transferability between modes

Those facilities which provide the most chances for transfers between modes and routes offer passengers the greatest opportunity to maximize transportation alternative are to be selected. Failure of any of the modes of transit at the facility can affect the intent of the facility and reduce the ability of the passengers to maximize transportation alternatives.

3.4.5 Passenger Information, Service and Amenities

Passenger information and service in a Intermodal facility is as important as the facility it self. A state-of-the-art bus facility should be equipped with reasonable bus service to major destinations so as to cater to public .Moreover accurate and reliable information of the services is also a prerequisite for the maximization of the facilities.

3.4.6 Operational Integration

Integration at operational level is an important parameter in case of an intermodal facility which can be achieved by synchronizing the timings of mass transit and feeder services. For an efficient inter-change, waiting time at the Intermodal facility needs to be minimized. In case of Rail Road intersections the supporting bus services may be aligned and timed in such away that it benefits maximum passengers ie. higher frequency of busses at arrival & departure timings of trains and so on. Introduction of common ticketing and their availability at convenient places can also enhance efficiency of the system. An integrated passenger information system covering all modes through publication of common route guides, time-table, and information boards at terminals for providing up-to-date information for the system is an essential part of the Integrated Intermodal Transit Hub.

3.5 Components of Intermodal Transit Hub

The development of an Intermodal Transit Hub would include the following project components:

3.5.1 Integrated Bus Terminus

An integrated Bus Terminus that would serve as a common facility to:

- Govt. owned inter-state / inter-city busses, viz: KSRTC, NEKRTC, NWKRTC, other State transport busses, etc.
- Private Bus operators (inter-state / inter-city)
- Local city busses

The proposed ITH is to be developed as a self contained facility including the following amenities:

- Platforms
- Waiting Halls
- Cloak Rooms
- Bus Parking Lots to each operator
- Vehicle Service Centers /Repair Centers
- Resting facilities for Drivers
- Fuel Station
- Tyre and Spares Shop
- Authorized Service Centers
- Office of RTO / Insurance & logistic Agencies

3.5.2 State of the Art Railway Station

A State of the art Railway Station taking in to consideration the future development and expansion plans is envisaged to be an integrated part of the project, with the following facilities:

- Full train length covered platforms
- Mechanized Foot over bridges
- Luggage trolleys
- Spacious waiting halls & Cloak rooms
- Platform seating for passengers
- Electric buggies for old & handicapped passengers
- Train parking platforms
- Pre-paid porter counters
- Barrier free access for differently abled passengers
- Parcel Service & Counters

- Parcel Loading / Unloading facilities with warehouses, including cold rooms
- Cargo facilities

The facilities in the Transit centre may also include specific areas allocated to cater to passengers to the respective Airports in case of locations identified en-route to the existing or proposed Airports

3.5.3 Commercial Development

The project being envisaged to be the centre of future development in the area, commercial development of the available FSI has been proposed, that would provide supplementary services to the passengers traveling by Rail as well as Road. The following are possible developments that command a potential demand at the project.

- Ticket Reservation Counters by private operators
- Tourism Counters
- F & B Outlets
- Shopping Centre
- Retail Hypermart
- 3 Star Hotel
- Dormitory Accommodation
- ATMs / Bank Counters / Foreign exchange Counters
- Auto rickshaw and Taxi Stand
- Tempo stand
- Visitor Parking Facilities
- Skywalk / inter-Connectivity to Railway Station and Bus Terminus

IV. Intermodal Transit Hub on PPP

4.1 PPP in Infrastructure Projects

The Governments encourage the implementation of Infrastructure Projects through a Public Private Partnership (PPP) model. The PPP approach allows an ideal combination of public interest with private sector efficiency and sensitivity to market requirements. Private Sector tends to be responsive to market requirements and with a motivation to optimize returns brings in efficiency and accountability. For Operation, Maintenance and Management, Private Sector efficiency can also be tapped through awarding Management contracts, Service contracts and other such arrangements.

In a PPP, while the private sector shall be responsible for financing, executing and operating the facility, Government shall facilitate the development by providing timely clearances and approvals. The Government shall define minimum development obligations for the private sector, yet leave adequate flexibility for the developer to build the project in response to market demand and hence optimize collective returns.

In order to optimize on the utilization of Government Funds for priority projects, timely implementation of Infrastructure Projects and to offload the operational and market risks, the Government has been promoting the involvement of the private sector on Public Private Partnership (PPP) format in the infrastructure projects. The following are a few advantages of involvement of the private sector in Infrastructure Projects:

- Development & time bound implementation of all priority 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
- Focused project development and time bound implementation
- Optimization of commercial benefits to the Government, which could be utilized for funding other unviable projects
- Project funding through Private Sector Developer

4.2 Intermodal Transit Hubs on PPP

With a large wish list of projects and limited resources for implementation of projects, several State Governments have been developing projects on PPP.

With several developers now having developed their skills in developing, operating and managing urban infrastructure projects, most ULBs have been exploring the possibilities for development of their projects on PPP.

Commercial viability being the key to the success of any PPP project, the viability of Intermodal Transit Hubs in the urban sector can be ascertained with the following as main streams of Revenue:

- Revenues from the commercial space and other facilities provided at the ITH
- Levy of user charges to transport service providers including Government inter and intra state services, private/ Omni busses, taxis, Autos etc
- Levy of Parking fee for busses and other vehicles using the proposed parking facilities
- User charges for other miscellaneous services like over night parking, vehicle repair/service facilities, etc for buses, cars etc
- Revenue from advertising (at the intermodal hub premises, on parking fee tickets, interior walls, parking spaces and subway etc)

The Project could be implemented on a PPP model by selecting a developer through a transparent open bidding process who would be responsible for the design, development, finance, construction, marketing, sub-lease and maintenance of the common area and facilities of the property.

The site for the construction of Intermodal Transit Hub can be leased out for a pre-agreed number of years to the successful bidder by Government for an agreed upfront lease premium, an annual license fee and /or on any other feasible option derived as per detailed studies.

4.3 Key Revenue Streams for ITHs on PPP

Revenue generation would mainly be from entry fees, parking fees, advertisement rights and renting of commercial space like kiosks, ATMs, Telephone Booths, etc. A demand assessment for each proposed location would however confirm the viability.

4.3.1 Levy of user charges to transport service providers including Government inter and intra state services, private/ Omni busses, taxis, Autos etc

The ITH can utilize its fully developed services to attract the private services thus churning out easy revenue.

4.3.2 Levy of Parking fee for busses and other vehicles using the proposed parking facilities

As a sheltered space with safety to the vehicles is provided for parking in ITH 's compared to the unorganized roadside parking without safety, an enhanced parking charges can be levied as per the service provided viz: Washing / cleaning facilities, minor repairs, laundry services, idle parking etc.

4.3.3 Commercial Space - Revenues from the commercial space and other facilities provided at the ITH

Most of identified ITH locations would either fall on the major arteries of the city having commercial development in surrounding areas or have the capacity on its own to develop as a major hub in due course. The proposed ITH locations can be explored for creation of spaces for urban needs as well as commercial benefit to make the project more attractive. The revenues streams envisaged are:

- Revenues from Shopping Centre, F & B Outlets
- Lease rentals from Retail Hyper-mart, Star Hotels
- Revenues from leasing out of Ticket Reservation Counters to private operators
- Revenues from Dormitory Accommodation
- Lease revenues from ATMs / Bank Counters / Foreign exchange Counters
- Parking revenues from parking in the commercial area
- Revenues from Parcel Loading / Unloading areas ,warehouses etc which includes cold rooms also

4.3.4 Advertisement Space

Advertisement industry has its spread in every aspect of merchandizing. Because of the cosmopolitan trends and global identity, there is immense market for advertisement in major cities and district headquarters. The proposed ITH can also be utilized for the advertisement revenue options. The revenue can also be from the advertisement on parking tickets, and other ticketing options

V. Cities Identified

5.1 Background

Intermodal Transit Hubs (ITH)s are proposed to be implemented on PPP basis across most major cities in Karnataka, including **Bangalore, Belgaum, Vijayanagar Area Development Authority(VADA), Hubli and Mysore**. The viability of the project in terms of potential for revenue from Commercial development, Parking, Entry fees, Advertisements at the respective cities is being assessed as a part of this Pre-feasibility study.

5.2 Basis of selection of Cities

"Karnataka vision 2025" has envisaged Karnataka to be a leader in human development; knowledge-intensive industries and ecologically-friendly economic activities. Among other schemes it envisages the State to have world-class infrastructure and to provide opportunities for employment suiting people's locational and community choices. In order to achieve this and to attain equittable growth in whole of the state the Government has identified regions and has initiated futuristic programs for the development in the region. Mysore, Mangalore, Hubli-Dharwad, Belgaum, Bellary, Raichur, and Gulbarga are the major hubs that have been initially proposed to be developed as multiple urban locations. Various development programs also have been envisaged in these areas giving a boost to the development of the region. The future prospects of the identified areas are very huge and achievement of of the growth envisaged will choke the existing infrastructure.

For the purpose of this pre-feasibility study, cities with future growth potential vis a vis their existing transport infrastructure were analysed. The regions were then identified for augmentation of infrastructure so as to enhance the progress of the regions. The Government initiatives were also taken into account for the zeroing down of the cities for the development of Intermodal Transit Hubs.

The development of Intermodal Transit Hubs is an infrastructure necessity of the Government, especially in cities identified for development. The development of these ITH's would be an initiative of the state Government for creation of requisite world class infrastructure as would be required for the cities when developed. The other characteristics considered for the selection of the Intermodal facilities includes:

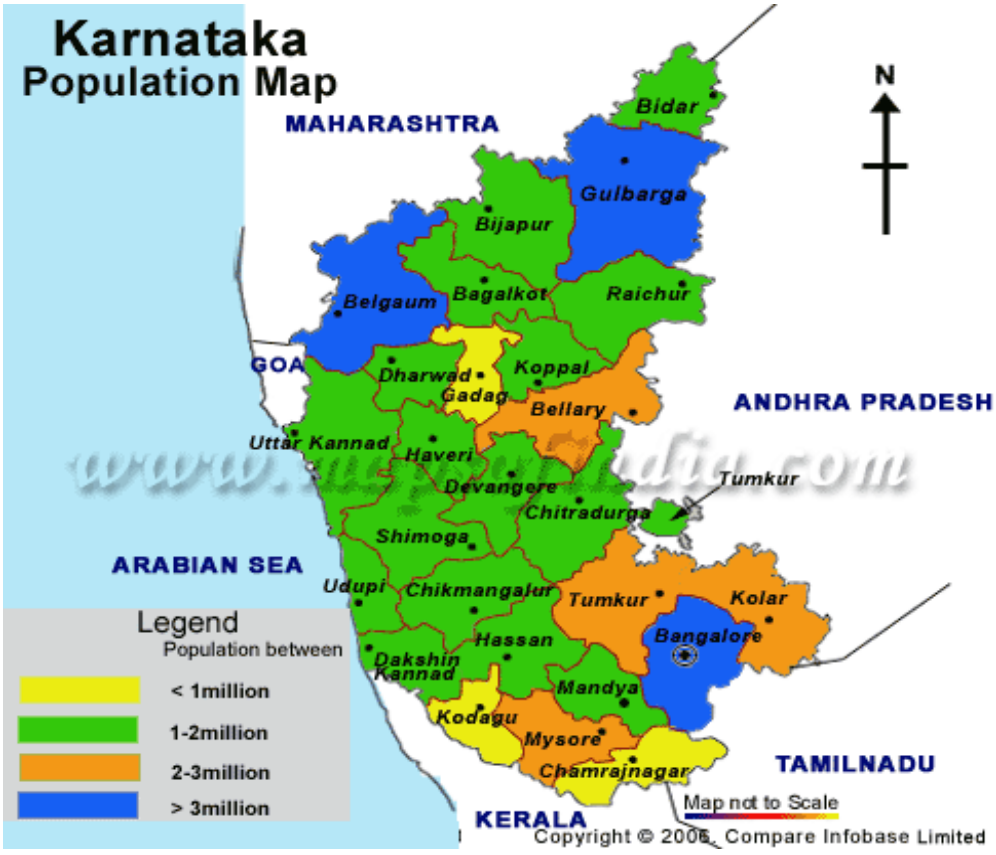
- Population Growth
- Vehicle Growth statistics
- Traffic scenario

- Interconnectivity & Traffic linkages
- Infrastructure gaps in terms of passenger facilities in bus & rail transport nodes

The cities have been selected considering that the traffic generated by the Intermodal Transit Hubs over a Horizon period, including both passengers & visitors, and the existing & upcoming developments in the area would provide critical mass for sustaining viable commercial developments at the project.

The preliminary district wise analysis based on the all the above criterion was carried out and the major cities identified for the implementation of Intermodal Transit Hubs are: **Bangalore, VADA, Belgaum, Hubli-Dharward, and Mysore**.

As per the census of 2001, the industrially progressive state of Karnataka, encompasses a total population of 52,733,958. The state of Karnataka ranks ninth in the population chart of our country.



The following states the population as from the 2001 Census of India and percentage increase in population for the major districts of Karnataka that have been shortlisted. The table below depicts the population of the shortlisted districts.

Population of districts shortlisted for development of ITH

Sr. No.	District	Population	% Increase in Population
1	Bangalore district	6,523,110	34.80%
2	Bangalore Rural district	1,877,416	12.21%
3	Belgaum district	4,207,264	17.40%
4	Dharwad district	1,603,794	16.65%
5	Bellary district	2,245,000	26.92%
6	Mysore district	2,624,911	15.04%

Accordingly, ITH's are proposed across most major cities in Karnataka, including **Bangalore, VADA, Belgaum, Hubli-Dharward, and Mysore**.

These cities have been the fastest growing in terms of various aspects including population, vehicle growth and demands better infrastructure. The city profiling for specific city would help in understanding the Infrastructure status and the developments proposed throughout the city. The profiling would help in assessing the viability of the project in terms of potential for revenue from parking fees, lease rentals from commercial spaces and advertisements as a part of this Pre-feasibility study.

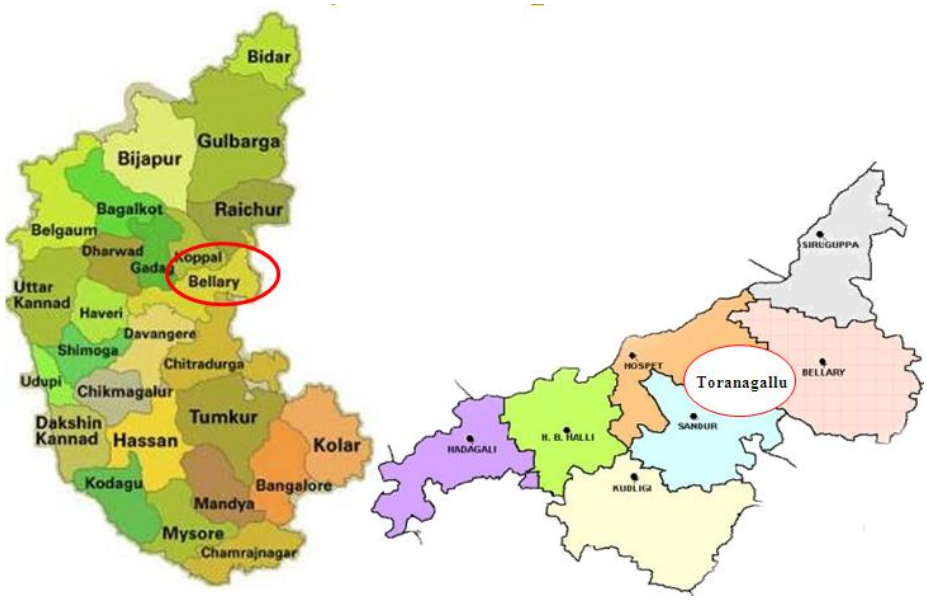
The preliminary viability of the proposed ITH's for development on Public Private Partnership (PPP) basis in terms of potential for revenue from bus entry fees for private operators, Parking fees, lease rentals for commercial spaces and advertisements at the respective cities has also being assessed as a part of this Pre-feasibility study.

5.3 VIJAYANAGAR AREA DEVELOPMENT AUTHORITY (VADA)

5.3.1 Overview of District

Bellary district is spread from southwest to northeast and is situated on the eastern side of Karnataka state. The district is 15° 30' and 15°50' north latitude and 75° 40' and 77° 11' east longitude. This district is bounded by Raichur district on the north, Koppal district on the west, Chitradurga and Davanagere districts on the south, and Anantapur and Kurnool districts of Andhra Pradesh on the east. It comes under the administrative control of Gulbarga division and development jurisdiction of H.K.D.B, Gulbarga.

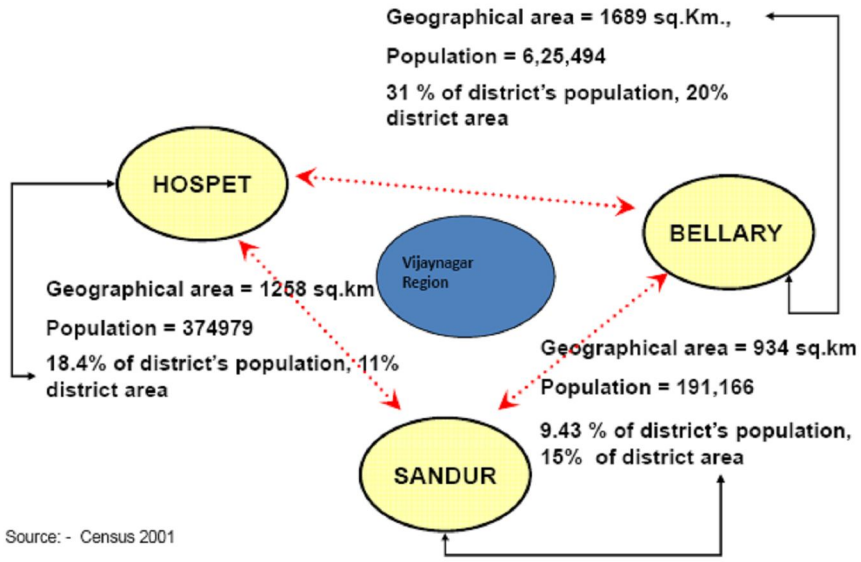
The urban population of Bellary city is 3.17 lakhs as per 2001 census. The city area ia 81.95 sq. Kms. As per 2003 census the population of the district stood at 22,45,000. The geographical area is 8447 sq. km. It has 2 revenue sub divisions, Bellary subdivision and Hospet subdivision, which in all have seven taluks. The Bellary subdivision has 3 taluks, while there are four taluks in Hospet subdivision. There are 27 hoblies, two CMC's, one town municipality, seven town panchayats, 542 revenue villages, and 436 thandas/habitations. The rural population constitutes 70%. The density of population is 196 per sq. km., which is much lower than the state average of 235 per sq.km. However the decimal growth rate for 1981-91 was 26.92% which is higher than the state growth rate of 21.12%. The major occupation of this district is agriculture and 75% total labour force is dependent on agriculture for its livelihood.



Bellary district is rich in natural resources which need to be tapped to a great extent for overall development of the district. This district is endowed with rich mineral resources. It has both metallic and non-metallic minerals. The metallic minerals include iron ore, manganese ore, red oxide, gold, copper and lead. The

non-metallic minerals include and alusite, asbestos, corundum, clay, dolomite, limestone, lime kankan, molding sand, quartz, soap stone, granite and red ochre. The metallic minerals are abundant is only three taluks, Sandur, Hospet and Bellary in the order of mining activity intensity. The annual production of Iron ore is anywhere between 2.75 to 4.5 million tonnes, and manganese ore between 0.13 million tonnes to 0.3 million tonnes (1991). Bellary presently is the second fastest growing city in the state of Karnataka after Bangalore which is the capital city. The real estate prices have already started to shoot as more and more industries are finding their way into this city. Bellary to its credit has the second largest single rock mountain in the world.

The district administration of Government of Karnataka has been proactively working towards keeping at pace with the growth the City and the region has been witnessing. The formation of the Vijaynagara Area Development Authority (VADA) is one such initiative.



Bellary, the Industrial Town and District headquarters, also well known for the tourism through Hampi is one of the fastest growing cities in Karnataka. The boom in the Steel and Mining Industry has further accelerated the growth rate with Industry giants such as JSW Steel, etc. announcing major expansion plans. The City infrastructure has already begun to fall short, especially the City Bus Stand and Railway Station.

JSW Steel Ltd. Is one among the largest Indian Steel Companies in India, has its largest establishment in Toranagallu with expansion plans and a vision of developing steel manufacturing hub in Bellary dist. With an investment of 50,000 Cr. generating an employment for 2,25,000 people. As part of their

expansion plans, JSW has also planned to develop an integrated town ship in 1000 Acres of land.

Despite the availability of minerals in large quantities, this district is considered to be an industrially backward district. There are 23 units of large and medium scale industries in this district with an investment of Rs.447.76 crores employing around 9,222 persons. At present it occupies ninth place in the state. Sathavahana Ispat Ltd. Is the first Pig Iron plant setup in the region to utilize the abundant iron ore reserves available; Kirloskar was the next to follow with their Pig Iron plant. However with the commissioning of Jindal Vijayanagar Steel Limited at Hospet, the industry scenario of this district underwent sea changes. It is understood that Mukund Steels and Kalyani Steels have started industries in this area. The inflow of investment into these industries would be around Rs.30,000 Crores. The district will therefore come under heavy pressure on basic infrastructure such as power, communication, health, education and police stations which again invite heavy investment to create the needed infrastructure.

5.3.2 Overview of the Location Identified for Intermodal Transit Hub

VADA proposes planned development of Bellary, Hospet and Sandur regions encompassing an area of about 600 sqkm hence the zone having easy access to these regions is considered for the proposed ITH. Toranagallu is a town in Bellary District and is about 30 km west of Bellary and 35 km east of Hospet. Jindal Thermal Power Company Ltd (JTPCL), the first Independent Power Producer (IPP) in Karnataka state, and Jindal Vijayanagar Steel Plant are the landmarks in the location. Hosadaroji is only 4 km from here.

Toranagallu is connected by road and rail to Bellary, Hospet and Bangalore and the National Highway 63 passes through it. Toranagallu presently has a railway station situated on South Central Zone of Indian Railways (IR) and is located about 3 Kms from the JSW area. The station handles passenger as well as the goods movement and services related to the transportation of iron ore and finished products from the JSW works. The station has substantial earnings from goods traffic and is one of the highest revenue earners on this section.

The Toranagallu station is presently small and the area abutting the existing station has witnessed unplanned and haphazard growth, particularly between the NH and the Station with residential buildings and small commercial establishment (vegetable market, butcher shops, etc). The extent of congestion in the area presently makes it even difficult to locate the entry point to the Station. The other station, Duroji railway station situated about 6 Km from Toranagallu is also in a poor condition. The figure below represents the location shortlisted for ITH.

Map showing proposed ITH location in Bellary

GoK has identified two land parcels of 50 Acres and 25 Acres each, together about 75 Acres land for development of the proposed project. The figure below depicts the land identified for the proposed ITH.

5.3.3 Criteria for the Selection of Proposed Location

The identified site at Toranagallu that has been selected for the establishment of Intermodal Transit hub in Bellary is based on the following parameters.

- Proximity of the Railway line
- Strategically located on NH 63 and can act as terminus for Bellary, Hospet and Sandur passengers
- Location proposed can be developed as an integrated facility, with state of the art Railway station, and bus station, which is directly connected to the NH
- The integrated hub in the neighbourhood of Toranagallu village can also cater for the Five villages, Vidyanagar and Proposed New JSW Township
- Proposed connectivity from Vidyanagar Airport
- Proposed site is towards the westward side of Toranagallu and can act as tourist entry point for Hampi – World Heritage Site.

5.3.4 Parameters Analysed for the identified location of Intermodal Transit Hub at VADA

Parameters	VADA
Administrative significance	+++
Historical/Cultural significance	+++++
Commercial/Economic significance	+++++
Population & Growth Rate	++
Transport connections& Strategic interchange opportunities	
Connectivity to major centres/cities	++
Connectivity by different modes	+++
Proximity of Major Port, Airport , Rail Terminals	
Railway Station	+++
Airport	o
Port	o
Future growth potential	++++

Order of Significance (High to Low)	+++++	++++	+++	++	+
Facility Not available	o				

5.4 BELGAUM

5.4.1 Overview

Belgaum (also known as Belagavi) is the headquarters city of Belgaum district and is one of the oldest urban centers of Karnataka, lying at a distance of around 502 km from Bangalore and around 500 km from Mumbai.

The second largest district in the State in terms of area, Belgaum lies on the northern boundary of Karnataka adjoining the State of Maharashtra and Goa. The majestic Sahyadris separate it from the State of Goa in the West, to the East lays the district of Bagalkot and Bijapur while on the South, it is bounded by Gadag and Dharwad districts.

The population of Belgaum district is 42 lakhs. The total geographical area is 13.44 lakh Hectares. Administration of Belgaum District has been divided into 10 Talukas. Athani taluka is the largest with an area of 1,995.70 Sq. Kms. and Raybag taluka is the smallest with an area of 958.8 Sq. Kms. The district comprises three Revenue Sub-divisions and six Police Sub-divisions. Apart from the Belgaum City Corporation , there are 17 Municipalities, 20 Towns Panchayats, 485 Gram Panchayats, 1,138 inhabited villages and 26 un-inhabited villages. Belgaum is also the headquarters of the Belgaum Revenue Division.

The National Highway 4 and the broad gauge railway line between Bangalore and Mumbai cut through the district, providing excellent accessibility to the rest of the country. Belgaum is situated at an equal distance of 500 Kms from Bangalore, Mumbai, and Hyderabad and at about 150 Kms from the seaport Goa. The nearest seaport is Karwar. Belgaum is on the National air map providing air connectivity to Mumbai, Pune, and Bangalore by the introduction of Air Deccan service at a very competent tariff.

Belgaum is an important trade, administrative and education hub of North Western Karnataka. The city has training centers of the Indian Armed Forces and an air base of the Indian Air Force. The city houses a number of industries, including hydro engines, turbines & pressure oils and Indian Aluminium Company (INDAL).

Belgaum is also been known as an Educational Hub with a set up of several professional colleges.

Map of Karnataka showing the location of Belgaum District & Belgaum District Map Showing location of Belgaum City

5.4.2 Belgaum - Economic Base

As stated earlier, Belgaum is a multi-functional city with business (trade and commerce), skilled jobs (industries) and administration as the principal sources of employment. Economic base of the city comprises of the following four core sub-sectors:

- Agriculture & agrarian goods trading;
- Wholesale commodity trading-vegetable, fish, wood;
- Heavy manufacturing industries like INDAL, hydraulics, pressure oils; and
- Centre of automotive engineering esp. crank shaft machining.

The city is an important location for vegetable trading, fish, wood & mining resource trading in North Karnataka. Trade flourishes in the city as many areas of the city are dedicated to certain kinds of trade. For example, almost all automobile-related trade and manufacture happens in the Fort Road area of the city. The Raviwarpeth area is known as the wholesale market which sells commodities like grains, tea, etc.

From the early 1970s, Belgaum began developing as an important centre for the manufacture of heavy machine tools, including the manufacture of high pressure oil hydraulics. Rich deposits of bauxite are found in Belgaum district, and have led to the creation of the INDAL for production of aluminium.

Additionally, uranium deposits have recently been found in Deshnur, a small village near Belgaum. The city is also a strong industrial hub for machine shops catering to automotive manufacturing especially in crank-shaft machining. Belgaum has friendly environment for foundry and casting businesses. The geographical location of the city is an advantage since it is situated strategically between Bangalore and Mumbai/Pune to support the major automotive and aerospace companies.

5.4.3 Belgaum Administrative Setup

The city conurbation area is planned and regulated by the Belgaum Urban Development Authority (BUDA). The Belgaum Municipal Corporation (BMC) is the city administrator, which comprises 58 wards under its jurisdiction with an urban population of about 506,480 (Census 2001). The administrative jurisdiction of BMC encompasses an area of about 83.93 sq. km including many urban villages. Significant proportion of the city area forms part of the Cantonment Board Jurisdiction i.e. Defence area. Following table presents the fact sheet of the Belgaum City

5.4.4 Key Infrastructure And Development Initiatives in Belgaum

The GoK has initiated proactive measures to augment and expand the physical infrastructure of the city by developing major infrastructure projects to catalyze economic development of the city. Belgaum would soon get a more advanced airport, a new power station, an international standard exhibition centre amongst many other facilities. Micro level infrastructure projects for better water & electric supply has also been undertaken. Following are some of the major infrastructure development initiatives in the city:

- Recent Industrial Incentives: To develop specific sectors, the GoK has setup and IT Incubation Centre at Gogte Institute of Technology, Belgaum and a Science and Technology Entrepreneurs Park at KLE's Engineering College. Karnataka Industrial Area Development Board (KIADB) has setup 8 industrial areas and Karnataka State Industrial Investment Development Corporation (KSIIDC) has setup 5 industrial estates which are fully developed. There is an exclusive auto park to house all auto related industries. The oldest agency in co-operative sector i.e. Belgaum Manufacturer's Co-operative Industrial Estate at Belgaum has developed another 250 acres and provided best quality infrastructure at competitive rates.

- Communication: 713 post offices, 189 telephone exchanges, mobile connectivity services by BSNL, Airtel, Hutch, Spice, Reliance and Tata Indicom form the communication hub at Belgaum. Broadband Internet connectivity rules the roost by over 12000 internet installations providing global connectivity. BSNL has undertaken the augmentation of Wi-fi, optical fibre & cellular connectivity in the entire city for better internet & mobile coverage in the city in the near future.

- Power: Belgaum has 87 sub stations with a capacity to receive and disseminate 1625 MW of power. Belgaum is bestowed with TATA Power Limited with 81.3 MV of power generation. A new 110 KVA power station at Udyambag is to be set up at a cost of about INR 185 million.

- Augmentation of Infrastructure for Water Supply in the City: District administration have planned to increase water supplying capacity of Hidkal Reservoir from 12 MGD to 18 MGD supported by another project of Rakaskop Reservoir from 6 MGD to 12 MGD. The City Municipal Corporation has planned 24 X 7 water supply scheme for the city.

- Belgaum Airport: The land acquisition of about 370 acres is underway as per the Government Order in October 2006, for the airport expansion. The Airport Authority of India has been given the charge of upgrading the runway, terminal and the taxi apron way.

- Upgradation of Infrastructure Facilities at Foundry: The Government of India (GoI) has very recently approved the Upgradation of Infrastructure facilities at Foundry Cluster, Belgaum under Industrial Infrastructure Upgradation Scheme (IIUS) at a tentative cost of INR 247.80 million. The following works will be covered under this Upgradation scheme.
    - Upgradation of infrastructure covering roads, water, water tank, sump tank, pump house
    - Communications covering telephone, internet, fax, Xerox, computers, LCD, Genset etc.
    - CETP - building reclamation plant, green sand, chemical bonded (5 tons /hr.), material handling equipment, common quality testing laboratory, building, furniture, equipments

- Re-development of Tourism Properties under PPP Scheme: The Department of Tourism / Karnataka State Tourism Development Corporation is renovating for operations and management of tourism properties at various locations in Karnataka. The overall project cost is pegged at INR 90 million with a fixed amount of money allocated for all historical/tourist monuments

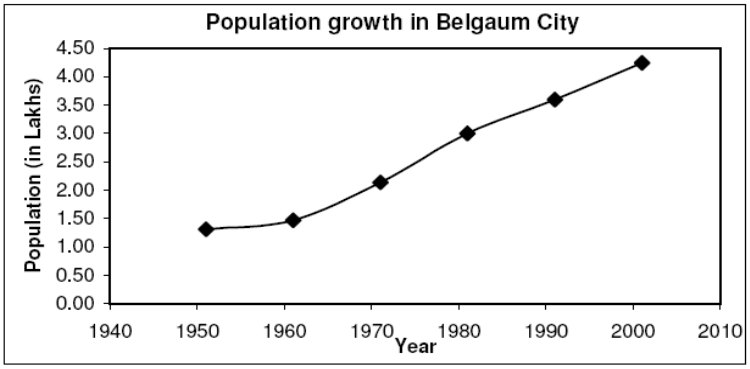
in the City of Belgaum. Apart from this, about INR 1.0 million was allocated in 2005-2007 from the budget to form new gardens & Lake Front Development of the Kotekere Tank.

- Proposals for Special Economic Zones (SEZs) and Industrial Parks: There are many proposals for SEZs development and for setting up specific product industrial parks in and around the Belgaum city. About 169.8 acres of land identified adjacent the VTU college in south Belgaum for an IT Park. Close by 69.8 acres land has been earmarked for a proposed Apparel park. Apart from this a proposal has been tabled for two more SEZs for engineering and sugar industries. About 300 acres identified in Hukkeri Taluk for this purpose. Engineering services major Quest is collaborating with business partners to establish a 300-acre SEZ in Belgaum to build an ecosystem of aerospace supply chain. The SEZ, which has been granted in-principle clearance by the Board of Approvals, will be housing suppliers in a single area and carry out precision machining. It is expected to employ about 10,000 people. Quest's present facility in Bangalore, set up in collaboration with Canadian major Magellan, will also move into the SEZ as a 200,000 sq. ft. plant. Lately there have been repeated proposals to set up food processing, textile & floriculture parks in the north as industrial parks in collaboration with the KIADB.

- Major residential developments are taking place in the far north, east and the south. The northern as well as the southern areas are experiencing growth due to the commercial and institutional developments on the NH-4 (north) and NH-4A (Khanapur Road in the south). The eastern areas like Ramterth Nagar, Kanbargi, Mahantesh Nagar, Rukmini Nagar, Patil Nagar, Sree Nagar, Shivteertha Colony, Gandhi Nagar etc. have developed mainly in the last 3 years and constitute the most sought after residential areas of the city. This development can be attributed to their proximity to the CBD and the developing stretch of NH-4 in the north as well as the proximity to the SH-20 that leads to the airport.

5.4.5 Population Growth

Population of Belgaum city has increased from 1.31 lakhs in 1951 to 4.25 lakhs in 2001. The average yearly growth rate is 2.38%. The Table 2.1 shows the growth of population in Belgaum city from 1951 to 2001. Based on the past trends, it is estimated that population of Belgaum city will be 4.98 lakhs in 2011. The figure below shows the trend in population growth.



5.4.6 Vehicle Growth

There has been sharp increase in the number of mechanized two-wheelers, presently growing at the rate of 10.06%. It is assumed that this trend will continue. The growth rate of cars is significant at 11.26% per annum and assumes that this trend will continue. The growth of auto rickshaw has been very moderate at 3.30% per annum. This may be due to it' growth is controlled by policy of permits from RTA. The growth of goods vehicle has increased at a rate of 5.11% per annum. The growth of private buses has been very significant at a rate of 8.11% per annum while there is no growth in KSRTC buses. The table below shows the registered vehicle data for the period 1999 to 2003.

Registered Vehicle Data For period 1999-2003

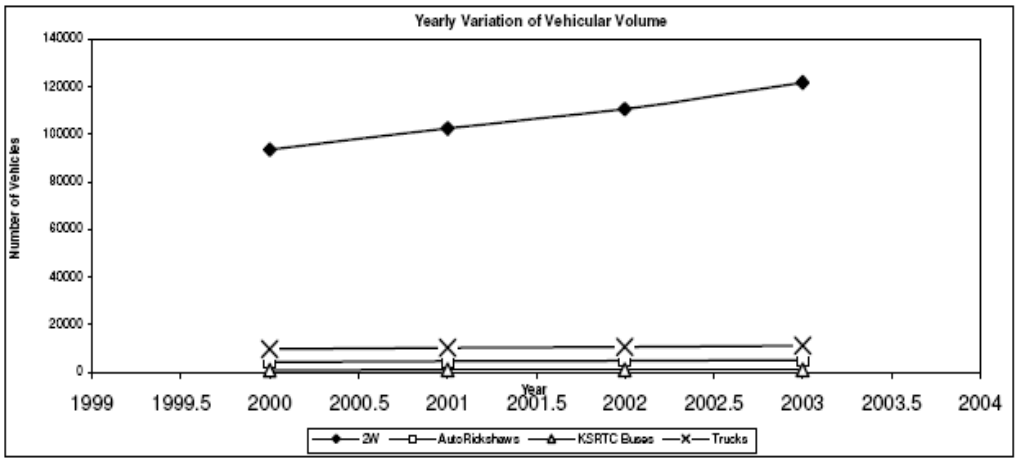
Vehicle Type	Year			
	1999-2000	2000-2001	2001-2002	2002-2003
Two wheelers	93667	102512	110684	121816
Car	7835	8945	9873	10985
Jeep	835	879	891	703
Mini Bus (Omni)	1260	1387	1555	1713
Maxi. Cab	254	322	373	415
Auto	4411	4746	4975	5139
Delivery Tempo	55	121	140	177
Truck	6459	6739	7070	7178
Tipper	153	210	179	125
Private bus	57	71	74	80
KSRTC bus (Govt.)	916	999	1040	1040

Tractor	1686	1943	1835	2055
Trailer	1597	1644	1731	1946
Bulldozers	0	1	1	3
Total Vehicles	119185	130519	140421	153375
Growth Rate (%)		9.51	7.59	9.23

Source: R.T.O Belgaum City

The figure below indicates the growth of vehicles in the Belgaum City.

Vehicle Growth in Belgaum City



Source: Traffic Management Plan for Belgaum City (KUIDFC)

5.4.7 Existing Traffic Scenario

The present road network in Belgaum comprises about 51.88 km of Major and Sub arterial roads, 12.25 km collector and distributor roads in addition to local access roads. The major arterials include NH4 (Mumbai-Pune-Bangalore-Chennai Link) and NH4A (Belgaum – Panaji Link). This corridor has largely contributed towards building of North-South radial development corridor. There are no major orbital arterials. The distribution of road network by classification is as under:

- Major arterials 23.06 km (12.88%)
- Sub arterials 28.82 km (16.09%)
- Collectors 12.25 km (6.84%)
- Residential streets 114.92km (64.18%)

Two major radial corridors Old P. B. Road / College Road / NH4A were found to be congested in peak period of travel. The numbers of specific link were found to be problematic from capacity and safety considerations on major road

network. These links were on College Road, Old P. B. Road, Club Road and in CBD, and older parts of the city Hosur / Shahapur / Madhavpur. The critical junctions were Globe Circle, Ashoka Circle, Nityanand Circle, CBT Circle and RPD Cross. The traffic bottlenecks were experienced at Road / Rail level crossings, ROB at Gokate Circle Camp Road, and Old P. B. Road from CBT Circle to Jijamata Chowk.

Bus Transport is the major mode of transport with NWKRTC busses running more than 115 routes. In addition to NWKRTC busses there are approximately 243 busses making 612 trips daily (statistics as per 2003).The details are as per table below. As per 2003 statistics there are also 20 bus operators who provide intercity travel services operating 108 buses. There are no separate bus parking facilities for the services and majority of them end their services at either the Fort or the City Bus Stand or parking on roadsides thus further congesting the region. The proposed Intermodal Transit Hub envisaged should also cater to this sector also thus reducing the clogging of the major roads. The Traffic study conducted by KUIDFC also highlights the importance of providing off street parking facilities for the city bus services.

Information of Mini Bus Services at Belgaum

S.No.	From	To	No.of Buses	Trips/day	Parking at	Totl.Trips/day
1	Hidkal	Belgaum	56	2	Fort	112
2	Kangara	Belgaum	9	4	Fort	36
3	Nesargi	Belgaum	60	2	Fort	120
4	Halga	Belgaum	8	3	Fort	24
5	Khanapur	Belgaum	35	4	Lake	140
6	Hukkeri	Belgaum	20	2	Fort	40
7	Sankleshwar	Belgaum	25	2	Fort	50
8	Kittur	Belgaum	30	3	Bus Stand	90
Total Trips by Mini Buses per Day						612

Source: Traffic Management Plan for Belgaum City (KUIDFC)

5.4.8 Passenger Overview

i. By Train

Belgaum Railway Station is on the Bangalore-Mumbai section of the South Western Railways. Sharavati Express, Haripriya Express, Chalukya Express and Goa Express are some of the main train connections. Daily service is offered to New Delhi from Belgaum. Dharwad Railway Station is located south-east of Belgaum (81 m.) Tourist information center and computerized reservation facility are provided. There are several hotels near the station for boarding and lodging. Just opposite the railway station is the railway bus stand. The aerodrome closest to the station is Belgaum Airport at a distance of 10 km. There are around 104 trains that stop by at

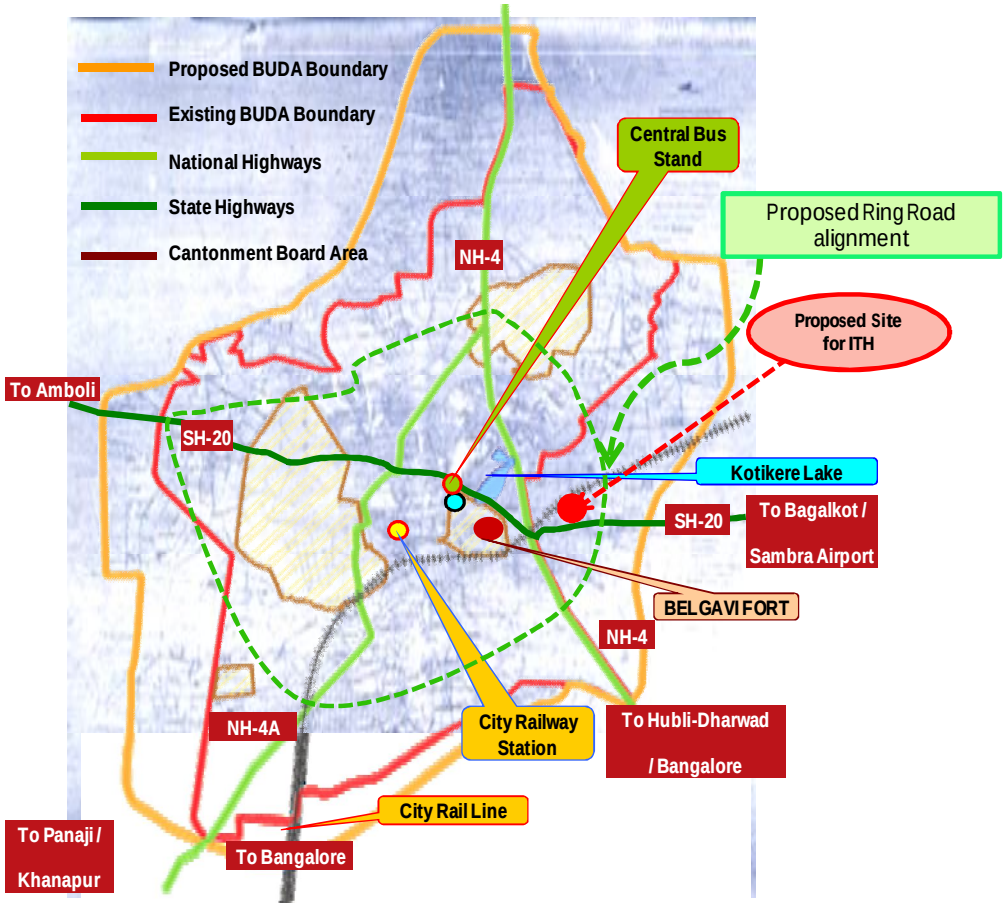
Belgaum railway station in a week which cater to around 50,000 people in a week.

ii. Bus Service

The city central bus stand is located at the heart of the city in close proximity to the Fort area and falls under the Belgaum Cantonment Board. Belgaum Central Bus Station is located at an intensively populated area with major Commercial establishment, and it is 11 Kms from Belgaum Airport & 4 kms from Belgaum Railway Station. The Belgaum Central Bus station was established in the year 1962. The Belgaum Central Bus Station site is surrounded by three approach roads, i.e. Link Road along the north, Fort Road along the east and Old Pune Bangalore Road along the western boundary of the site. The bus stand handles around 1150 trips every day.

5.4.9 Selection of Location Intermodal Transit Hub: Option -1

Proposed location along the Railway alignment to Miraj and SH 20 to Sambra Airport



5.4.10 Criteria for selection of the proposed location:

- Proximity of the Railway line
- Strategically located on SH20
- Enhanced connectivity can be achieved due to its proximity to the proposed ring road
- Location proposed can be developed as an integrated facility, with state of the art Railway station, and bus station, which is directly connected to the SH & Ring Road
- The integrated facility at the proposed location can also improve the connectivity to Belgaum airport
- The integrated hub in the neighbourhood can enhance the development of the region thus resulting the city to expand towards this region

Moreover this location can also be developed and utilized as a terminating hub for the private /moffusil/mini bus services which presently end their services at the fort region thus reducing the number of trips to the city centre and reducing congestion at critical Junctions of the CBD. Adequate connecting services can then be provided from the Hub to the major city centres.

5.4.11 Selection of Location Intermodal Transit Hub:Option-2

Proposed Location Adjacent to the existing Railway Bus stand

The proposed site lies adjacent to the existing Railway station. An existing Bus stand is presently functioning in this premise which can be re-developed and integrated along with the re-development of the existing Railway Station into a state of the art modern Intermodal Transit Hub.

For further expansions it is envisaged that a redevelopment of the existing railway station with interconnectivity with the Railway bus stand is a necessity. Hence for the envisaged development further acquisition of land/transfer of adjoining private / Government lands may be required.

5.4.12 Criteria of selection of the proposed location:

- Proximity to the Existing Railway Station
- Existing Railway Bus stand may be converted to offer services for interstate and intra-city bus services

5.4.13 Comparison between Locations Option 1 & Option 2

The comparisons between the options of the identified locations are depicted in the Table below.

Sl. No	Option-1	Option-2
1	New Development Envisaged hence state of the Art facilities can be suitably planned and developed	Development planned in the existing bus stand & railway station premises thus making the new development to compromise on the existing land and premises
2	Establishment of a new Hub and centre thus facilitating the growth & expansion of the city outwards	The expansion will provide much needed facilities to the passenger but will further congest the area
3	Development of a new Railway Station and interconnected bus & taxi facilities will require coordination with railway authorities, State transport Corporations, private operators and other stake holders which makes it complex procedure.	The proposed development of the existing Railway Bus Stand can be done independently and connected to the Rail way Station by a Subway or a Sky walk
4	Land prices would relatively be cheaper.	Less land acquisition required
5	Huge investments required as the developments are to be initiated in	Complex project structure envisaged with ownership of land

	a new area.	(part) and existing station being with Railways.

5.4.14 Recommended Option

Option 1 of developing a new facility would be the preferred option considering the long term vision and future growth potential of the city for the next 25 years and in view of the infrastructure developments planned by the Government of Karnataka.

NWKRTC is also developing a full fledged Bus Station in Belgaum to cater to its services envisaging a growth period of 20 years. The modern Belgaum intermodal Transit Centre can thus be considered to be developed in the lines of pickup drop centre for the passengers thus serving the objective of improving passenger connectivity facilities without creating congestion in the region. Moreover short service bus services can also be added in order to improve the connectivity to the Central Business District.

5.4.15 Parameters analysed for the identified Locations of Intermodal Transit Hub at Belgaum

Parameters	**Belgaum**	
	Location 1	Location 2
Administrative significance	++++	+++++
Historical/Cultural significance	+++	+++
Commercial/Economic significance	+++	+++
Population & Growth Rate	+++	++
Transport connections& Strategic interchange opportunities		
Connectivity to major centres/cities	++++	++++
Connectivity by different modes	++	++++
Proximity of Major Port, Airport , Rail Terminals		
Railway Station	+++	+
Airport	o	o
Port	o	o
Future growth potential	++	++++

Order of Significance (High to Low)	+++++	++++	+++	++	+
Facility Not available	o				

5.5 HUBLI-DHARWAD

5.5.1 Overview

Hubli-Dharwad is the second-largest conurbation in Karnataka after the State capital - Bangalore. Dharwad is a quiet, pleasant, and fast growing city in the northern part of Karnataka, which together with Hubli, 22 kilometers apart, forms a twin city, about 400 km from Bangalore.

While Dharwad is the administrative headquarters of Dharwad District and an important education centre, Hubli is primarily a commercial and industrial centre. It is believed that owing to this diversity and geographical proximity, the State government amalgamated the two cities. The Hubli Municipal Corporation (HDMC) was constituted in the year 1962 by combining the two cities. The twin cities have a population of nearly 8 Lakh (Census 2001) and it covers an area of 202.28 sq kms, with development concentrated in 72.78 sq kms including 45 revenue villages and large number of extensions spread in all the directions. The State Government promotes the industrialisation of the region leveraging its strategic location, good connectivity with metropolitan centres (like Mumbai, Pune and Bangalore), availability of water and forest resources, and labour.

With the tremendous success of the IT/ITES industry in Bangalore, the State government started promoting Mysore, Mangalore and Hubli as favorable IT destinations. Mysore and Mangalore, over the last few years, have emerged as alternative destinations (to Bangalore) for the IT industry in the State. Now, the Karnataka IT Department is focusing on Hubli and Dharwad to this effect. The literacy rate in Hubli is estimated to be 81% (2006 estimate) as compared to the

national average of 61%. A large pool of this literate population constitutes educated youth with technical expertise, who would meet the growing demands of skilled manpower in these industries.

Dharwad is the seat of learning with Karnataka University and Agricultural University. There are large number of Arts, Science, Commerce and Law Colleges in the city. Karnataka Medical College, S.D.M. College of Dental Sciences and Engineering and technical institutions are crowning additions to the educational facilities in the city. Due to these educational and industrial facilities, the city attracts considerable floating population.

The city has an advantageous location being surrounded by a number of important historical and mythological places within a radius of about 200 kms. There are important tourist and historical places such as Ghataprabha, Gokak Falls, Soundati Yellamma Temple, Kittur, Badami, Pattadakal, Aihole, Kudalasangam, Bijapur, Bagewadi, Basavakallyan on northern side, on the western and southern sides there are Dandeli, Port-town of Karwar, Gokarn Magod falls, Ulavi, Banavasi, Jog-falls, Shimoga and Bhadravathi, Laxmeshwar and Tungabhadra Dam and on eastern side Hampi, Lakkundi and Mantralaya.

5.5.2 Economy – Hubli- Dharwad

Hubli is an important hub for agricultural and horticultural activity. Cotton, food grains, groundnuts and chillies are major crops cultivated here. Basaveshwar Agriculture Market Yard is amongst the largest agriculture markets in Asia. The Cotton Market of Hubli is also one among the five biggest markets in India. With the establishment of Bhoruka textile mill, NGEF and KMF, the city gathered momentum in industrial development. In order to promote industrialisation, the Karnataka State government has approached companies, such as Infosys, Mahindra & Mahindra to run Special Economic Zones (SEZs) in Hubli. Further, plans are also on for setting up five dedicated industrial clusters to promote industrial development in the State. Overall on summarizing the above we can say that, though presently the economy is primarily of an agrarian nature but the pivotal focus is now on the development of IT/ITES industry.

There are eight industrial areas including the Growth Centres spread on 3,294 acres of developed land in the district. Some of the notified industrial areas in the city are Gokul Industrial Estate, Tarihal, and Rayapur. In the small scale sector, the main products manufactured are agro, engineering and machine tools, chemical and pharmaceutical. Notable is the production of industrial valves, designed to meet the needs of the chemical and petrochemicals industries. Hubli accounts for nearly 40% of the country's requirement.

Public sector establishment includes the Railway Workshop and Diesel Loco Shed in collaboration with General Motors of USA. Other large industries include TELCO, KEC, KSRTC, NGEF, Kirloskar Warner and Swassey, BDK. The Karnataka Material Testing and Research Centre is the first of its kind research centre that was established at the Gokul Industrial Estate in Hubli, and it caters to the testing needs of North Karnataka. The tests undertaken here include chemical analysis, water / soil testing, physical testing, instrument calibration, etc.

The economy is primarily of an agrarian nature but the pivotal focus is now on the development of IT/ITES industry. There are eight industrial areas including the Growth Centres spread on 3,294 acres of developed land in the district. Some of the notified industrial areas in the city are Gokul Industrial Estate, Tarihal, and Rayapur.

The STPI-Hubli (Software Technology Parks of India – an organization under the Dept of IT, Government of India) has been operational from May 2001, to provide the data communication and incubation services to IT/ITES industry and also to promote the industry. The IT Park Hubli that is situated in the heart of the City is promoted by the Government of Karnataka IT Department and Karnataka State Electronics Development Corporation Limited (KEONICS).

5.5.3 Hubli Dharwad Municipal Corporation (HDMC)

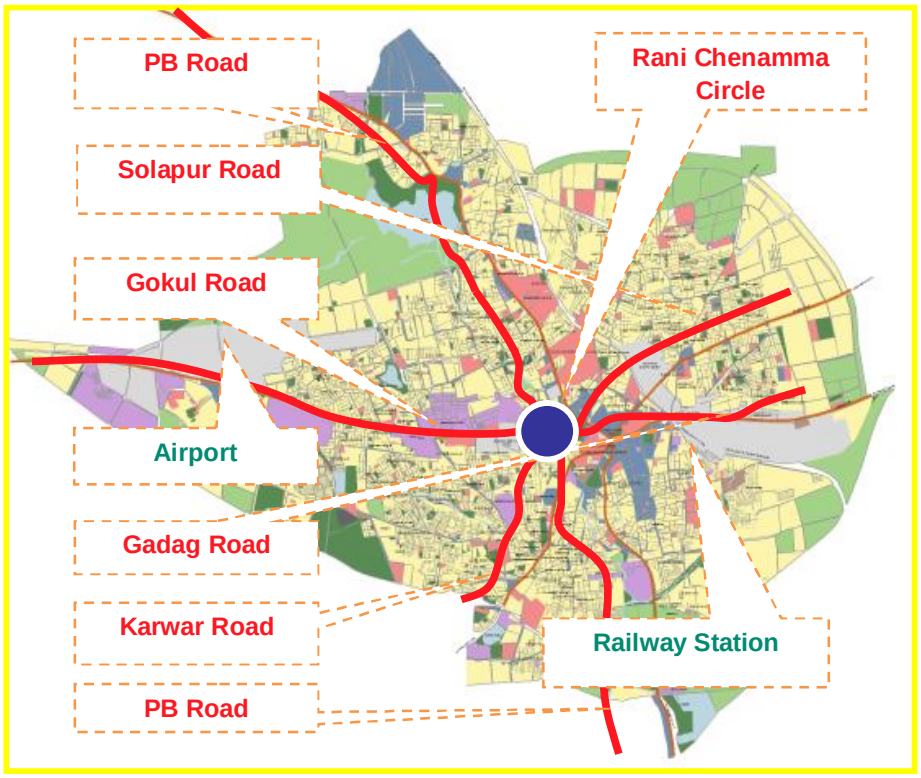
The Hubli Dharwad Municipal Corporation (HDMC) was constituted in the year 1962 by combining the two cities. The twin cities have a population of nearly 1.1 million and it covers an area of 202.28 sq kms, with development concentrated in 72.78 sq kms including 45 revenue villages and large number of extensions spread in all the directions. The State Government promotes the industrialisation of the region leveraging its strategic location, good connectivity with metropolitan centres (like Mumbai, Pune and Bangalore), availability of water and forest resources, and labour.

There is an excellent inter-city transportation facility between Hubli and Dharwad, as NWKRTC and Bendre Nagara Sarige (a consortium of private bus-owners) jointly cater to the large number of commuters between Hubli and Dharwad. Bus services from the twin-cities are available to most of the parts of Karnataka and neighbouring states. Private bus operators also render their services for overnight travel between Hubli and Bangalore, Mangalore, Pune, Mumbai. The table and figure below depicts details of major roads in region.

Overall Road Network – Hubli-Dharwad (700 km network)	
Hubli Dharwad twin city distance	22 km
The length of the roads HDMC jurisdiction	630 km
The density of the road in the town	3.29 km per sq m
Per capita road length	0.8 km
The Average width of the road	9.5 m in the town
HDMC road	595 km
National Highway	30 km
PWD roads	40 km

Source: HDMC Research

Major Roads and Prominent Locations in Hubli:



5.5.4 Passenger Overview

a) Train Service

Hubli Junction Railway Station is a major junction on the Mumbai-Bangalore rail route. Ajmer Express, Hubli Passenger, Haripriya Express, Chalukya Express and Jan Shatabdi Express pass through the station. The Station is under the South Western Railways. A tourist information center is provided by the railway department. Computerized reservation facility available. The nearest main station is at Dharwad, situated north-west of Hubli. There are several hotels near the station to cater for the

needs of travelers. The bus station is only a fifteen-minute walk from the railway station. Nearest airport is the Hubli Airport at a distance of about 18 km. Goa Airport is about 160 km from Hubli. In a week there are 258 trains which stop by at Hubli railway station. These trains cater to around 60,000 people in a week.

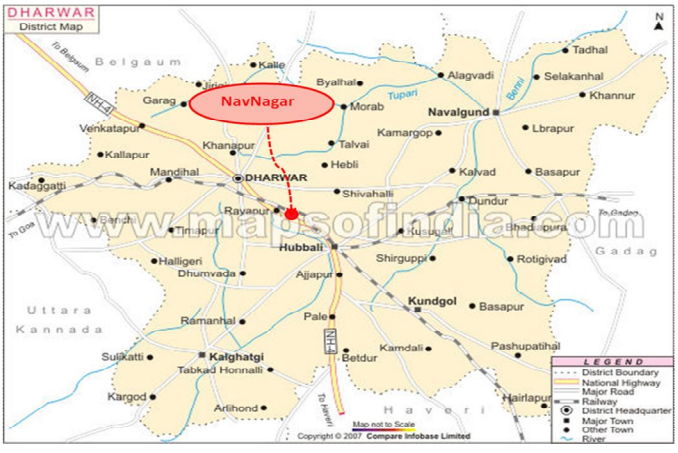
b) Bus Service

Hubli Bus Station is a short walk from the Hubli Junction Railway Station, an important junction in the rail route between Bangalore and Goa. The bus station operates numerous services to all major towns and cities of Karnataka and Maharashtra. Buses ply from Hubli to Mumbai, Pune, Belgaum, Kolhapur, Dharwad, Hospet, Shirsi, Bhatkal, Bangalore, Mangalore, Mysore and Goa. Deluxe and semi-deluxe buses are in service. The nearest airport is Hubli Airport, at a distance of about 18 km.

5.5.5 Selection of Location Intermodal Transit Hub

Development of ITH at Nav Nagar

Nav Nagar is located inbetween Hubli and Dharward and this region is planned to be developed into a new hub converging and connecting the twin cities. As part of expansion plan of the state for IT development Hubli Dharward Municipal Council (HDMC) is planning development of Aryabhata Tech Park spreading over an area of 26 acres in Amargol village on the Hubli main road. It aims to be a model park in the non-metropolitan regions with a focus on the IT and ITES companies. Moreover the authorities have also approved layouts in the Amargol and other neighbourhood regions creating a spurt of growth in the region. Rayapur is also an important industrial area in this region. The ITH is proposed in a strategic location close to NH and the Amargol railway station which has a potential to develop into IT hub in future.



5.5.6 Criteria for selection of the proposed location:

- Proximity of the Railway line and Amargol Railway Station .The area is also planned to be developed as South-Western Railway Zonal headquarters
- Strategically located adjacent to NH4
- Planned developments envisaged in the region with Government initiative to develop it as an administrative centre.
- Location proposed can be developed as an integrated facility, with state of the art Railway station, and bus station, which is directly connected to the NH and the existing Railway Station
- The integrated hub in the neighbourhood can enhance the development of the region thus ensuring the connectivity link between the cities
- Proposed location lies near to upcoming IT & Industrial developments

5.5.7 Parameters Analysed for the identified Location of Intermodal Transit Hub at Hubli-Dharward

Parameters	Hubli-Dharward
Administrative significance	++++
Historical/Cultural significance	+++
Commercial/Economic significance	+++
Population & Growth Rate	+++
Transport connections& Strategic interchange opportunities	
Connectivity to major centres/cities	++
Connectivity by different modes	++
Proximity of Major Port, Airport , Rail Terminals	
Railway Station	+
Airport	o
Port	o
Future growth potential	++++

Order of Significance (High to Low)	+++++	++++	+++	++	+
Facility Not available	o				

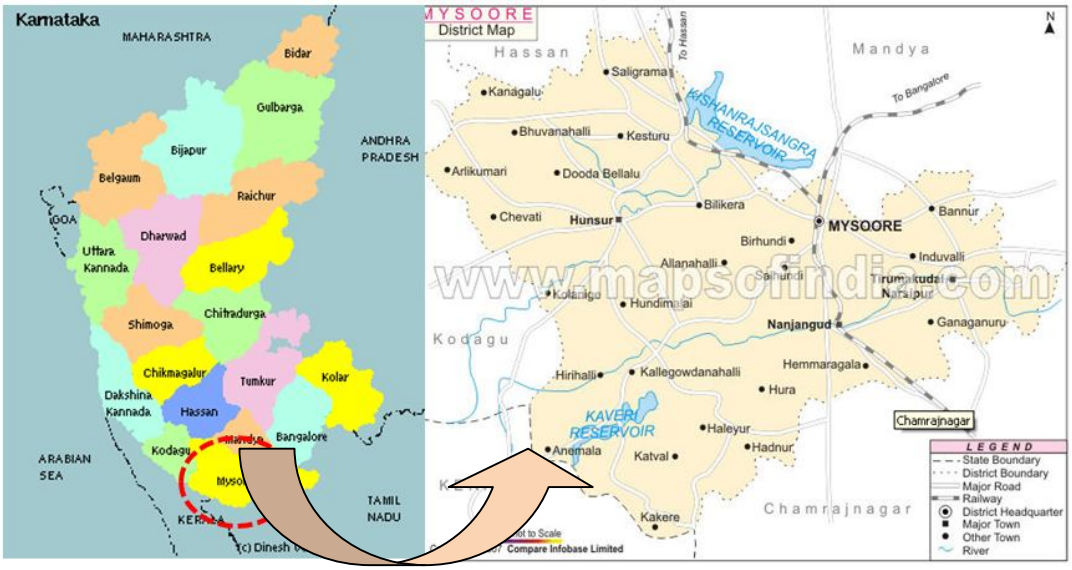
5.6 MYSORE

5.6.1 Overview

Mysore is Located 140 Kms from the state capital Bangalore- and is the erstwhile capital of Wodeyars, the rulers of Mysore state. Situated in the southern part of the Deccan Plateau, Mysore District is an undulating tableland, covered in parts by granite outcrops and fringed by verdant forests. From ancient times, this district has played a significant role in the history of South India.

Mysore is an educational, commercial and administrative centre and also an important tourist and heritage centre. Also known as the City of Palaces, Mysore retains a quaint charm that never fails to enchant. It is a popular tourist destination, offering several attractions ranging from the royal splendour of Mysore City and its fabulous Dasara Festival to exquisite temples, pilgrimage centres and scenic spots. It is well connected to the adjoining States of Kerala (Wynad, Calicut) and Tamil Nadu (Ooty, Coimbatore) through roads.

Mysore is the second biggest city in the state of Karnataka covering an area of 128 sq. kms. In order to improve air connectivity with the major cities of the country, upgradation and expansion of the existing airport is on the anvil.



Mysore has inter-city and sub-urban public bus transportation, albeit not very robust. The system operates from the 'City Bus Stand' connecting to most major sections of the city. Traditional means of transport available in other Indian cities like auto-rickshaws and taxis are also available.

Mysore is the railway junction for the district, and rail lines connect Mysore city to Bangalore to the northeast via Mandya, and to the rail junction at Hassan to the northwest, to Chamarajanagar via Nanjangud to the southeast.

The city of Mysore has been rapidly growing and a spate of infrastructure activities need to be planned for the city's infrastructure to keep pace with the population growth and increasing commercialization. The City in its present form is congested as the road network is inadequate and mass transport infrastructure is not in place. The city boasts of having around 50 parks and three major lakes but the upkeep and maintenance is not satisfactory. Further, the city intends to develop integrated townships/sub-urban spaces in the growth corridors of the city so that the growth of the city is not skewed.

5.6.2 Passenger Overview

a) By Train

Mysore Railway Station is one of the main stations in Karnataka. It is a major railhead of South Western Railways. It is located just off Irwin Road, close to the city center. Mysore is linked to Bangalore by a broad gauge line. Meter gauge services are available to the rail routes connecting Mysore with Chamarajanagar (south) and to Arasikere (north-west). Regular train services that connect Mysore with Bangalore, Chennai and Thanjavur are available. Some of the main train connections include Mysore Express, Bangalore Express, Shatabdi Express, Tippu Express and Chamundi Express. To help the travelers, a tourist information center is provided by the railway department. Computerized reservation facility is provided. The station has won awards for its chivalrous service. The major railhead towards the north-east of Mysore is at Mandya, 37 km. There are 224 trains that stop by at Mysore railway station which cater to more than 1.5 lakh people in a week.

b) Bus Service

Mysore Central Bus Station is situated in the heart of the city, near KR Circle. Karnataka State Road Transport Corporation (KSRTC) operates long route and interstate buses from the Central Bus Station. Also, KSRTC operates sight-seeing services to the advantage of tourists: hi-tech buses carry passengers to Chamundi Hills, Zoological gardens, Jaganmohan Palace, Somanathapura and Srirangapatnam. A number of private bus operators run regular services from Mysore to all major destinations including Bangalore, Goa, Hyderabad, Mumbai, Chennai, Mangalore, Ooty and Pune. Mysore Junction Railway Station is a short

walk from the bus station. The airport close to the station is Bangalore International Airport, about 138 Km from Mysore.

5.6.3 Selection of Location for ITH

Mysore railway junction is at a distance of around 1.5 Km from the city bus stand as well as the Mysore Central Bus Station. The construction of an ITH adjacent to the Junction would definitely provide an easy access to the commuters between the trains, interstate and intracity bus service but the region as it is overcrowded and even the additional infrastructure instead of facilitate would only further add to the congestion. The objective of development of the Urban Infrastructure is the decongestion of city which will be futile in this case. The Advantage of the development of city suburbs and enhancement of value of that region will also be unattainable. An alternative zone which can be utilized for development of Intermodal Transit Hub has been identified adjacent to the Ring Road and the Mysore- Bangalore Rail alignment. The location identified is at the junction of Rail alignment to Bangalore, SH-17 and Ring Road.

The interconnectivity between modes of transport can be attained at this junction. An efficient interchange facility by means of shuttle etc could also be provided from here for connectivity to the commuters via the Hassan line. The location Identified is in depicted in the figure below:


Proposed
ITH location

5.6.4 Criteria for selection of he proposed location:

- Reduce Congestion at the CBD
- Location at the junction of Ring Road, Rail alignment and SH-17 to Bangalore.
- Industrial Development plans in the periphery of Ring Road

5.6.5 Parameters analysed for the identified Location of Intermodal Transit Hub at Mysore

Parameters	Mysore
Administrative significance	++++
Historical/Cultural significance	+++++
Commercial/Economic significance	+++
Population & Growth Rate	+++
Transport connections& Strategic interchange opportunities	
Connectivity to major centres/cities	++
Connectivity by different modes	+++
Proximity of Major Port, Airport , Rail Terminals	
Railway Station	++
Airport	o
Port	o
Future growth potential	++

Order of Significance (High to Low)	+++++	++++	+++	++	+
Facility Not available	o				

5.7 BANGALORE

Bangalore is situated in the southeast of Karnataka, at an average elevation of 920m above mean sea level. It is positioned at 12.97°N, 77.56°E and covers an area of 2,190 Sq. Km. Bangalore Urban District borders with Kolar District in the northeast, Tumkur District in the northwest, Mandya District in the southwest, Chamarajanagar District in the south and the neighboring state of Tamil Nadu in the southeast. The Bangalore Urban District is divided into three taluks: Bangalore North, Bangalore South, and Anekal. The Bangalore North taluk is a relatively level plateau, while the Bangalore South taluk has an uneven landscape with intermingling hills and valleys.

The topography of Bangalore is flat except for a ridge in the middle. The highest point in Bangalore is Doddabettahalli, which is 962 m and lies on this ridge. There are no major rivers running through the City. The river Arkavathi (a tributary of the Kaveri) passes near Nandi Hills, 60 km north of Bangalore, while the river Kaveri has its nearest approach near Srirangapatnam, southwest of Bangalore. Bangalore has a number of freshwater lakes and water tanks, the largest of which are Madivala Tank, Hebbal Lake, Ulsoor Lake, and Sankey Tank.

Due to its elevation, Bangalore enjoys a pleasant climate throughout the year, with temperatures ranging between 33°C and 16°C, with an average of 24°C. The summer heat is moderated by occasional thunderstorms and squalls. Bangalore receives adequate rainfall of about 860 mm from the Northeast Monsoon as well as the Southwest Monsoon. The wettest months are August, September and October.

Bangalore is headquarters to several public manufacturing heavy industries such as Hindustan Aeronautics Limited (HAL), National Aerospace Laboratories (NAL), Bharat Heavy Electricals Limited (BHEL), Bharat Electronics Ltd. (BEL), Bharat Earth Movers Limited (BEML), and Hindustan Machine Tools (HMT). In June 1972, the Indian Space Research Organization (ISRO) was established under the Department of Space and headquartered in the City.

Bangalore is called the “Silicon Valley” of India because of the large number of Information Technology companies located in the City, which form the largest contributor to India’s US$12.2 Billion (Rs.54,000 Crore) IT and software export market. Bangalore’s IT industry is divided into three main “clusters” — Software Technology Parks of India, Bangalore (STPI); International Technology Park Ltd. (ITPL); and Electronics City. Infosys and Wipro, India’s 2nd and 3rd largest software companies are headquartered in Electronics City. As headquarters to 38% of global SEI-CMM1 Level 5 Companies, Bangalore’s

place in the global IT map is prominent. Bangalore is home to 66 Fortune 500 companies, 682 MNCs, 1,685 IT/ITES and 131 Biotech companies.

In the decade of 1991-2001, the growth rate urban population in Karnataka was 28.85%, as against the aggregate population growth rate of 17.25%. Bangalore grew at a much faster rate, and the population of Bangalore increased from 41.30 lakh to 56.86 lakh during the decade 1991-2001, representing a decadal increase of 37.7%, which made Bangalore one of the fastest-growing Indian metropolises, after New Delhi (51.93%).

Location for ITH in Bangalore (Dabaspet)

5.7.1 Existing Traffic Scenario

The city's roads were not designed to accommodate the massive traffic that now prevails in Bangalore. As the city expands and absorbs other towns into it, the necessity for proper planning and road infrastructure to commute through the city increases. The local administration has attempted to overcome some of the shortcomings in the road systems by imposing one-way traffic systems and attempting to build a flyover system in the city. These initiatives have met with limited success. Some of the flyovers and one-ways have mitigated the traffic situation moderately, but the volume of traffic continues to grow. This has contributed to the discontent among the public. The local administration (Bangalore Development Authority or BDA) has also laid an 'Outer Ring Road'

to ease out the congestion in the city. This was a welcome relief to the city dwellers a few years ago, since it did ease out substantial traffic in the city by diverting the truckers out of the city. However recent growth in the city in the past couple of years has seen development of apartment complexes/townships beyond the outer ring road. This has once again brought the traffic situation back to square one. Rapid economic growth has been brought about by the IT and other associated industries. This has led to an escalation of the vehicular population to about 1.7 million, and which is growing at 8% per annum. Along with the unplanned nature of the rise and growth of these industries and the city's design the economic growth has also lead to massive traffic cris-crossing the city through the day.

i. Vehicle Population in Bangalore City

The vehicle Vehicular Population growth in Bangalore has continuously increased during the last decade particularly after the software industry boom in Bangalore when the 2 wheeler population saw an exponential increase. The insufficient public transport and connectivity also added to the congestion of the already clogged roads. The details of the vehicle growth are depicted in the figure below.

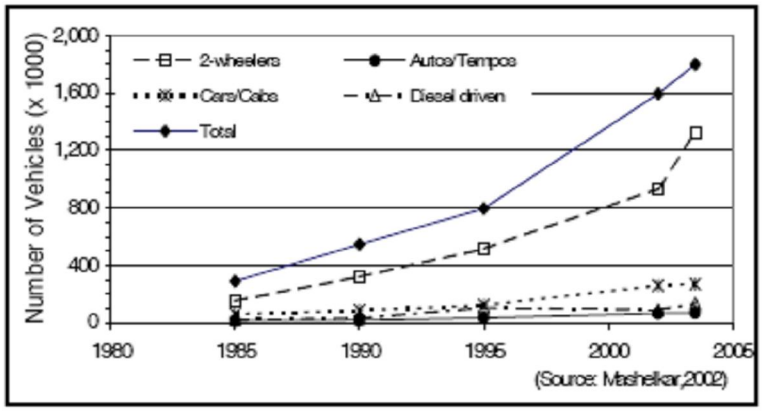


Figure 5: Growth in vehicular population (as registered) in Bangalore

ii. Congestion and parking

Congestion levels are high in Bangalore. Nearly all major junctions operate over capacity resulting in traffic jams, reduced speed and congestion. Average delays have increased over the years, and a lack of parking facilities and policies is another issue facing the city today. This adds to the congestion problem in the already limited road space. Issues: The addition of more capacity in the form of roads and flyovers has not been able to meet surging demand by private vehicles. These measures have only succeeded in shifting the point of congestion further up the

traffic stream, without really improving the overall performance of the network. Congestion is not really the problem; rather, the problem lies with urban planning and management.

iii. Limitations of Bangalore's road network

- The existing route systems have been designed to encourage destination and not direction-oriented travel, which essentially has led to traffic flows becoming unmanageable.

- Only 16% of the total urban road network in the city is an arterial / primary road network which is severely congested due to various industrial and commercial developments that have sprung up along their lengths.

- The intercity roads converging into the city bring in large volumes of goods traffic along with intra-city traffic, resulting in further strain on the central roads.

- Almost 80% of the road network has a Right of Way (ROW) of less than 30m thereby limiting road widths. Only about 11% of the total network allows for journey speeds over 30kmph.

- The ring-roads are unable to serve their purpose due to lack of proper connectivity with radials at various places. The absence of transverse links between the radials is a major cause of congestion in the city's core area, as this makes the radial system very restrictive.

- There are no dedicated lanes for buses, high occupancy vehicles, pedestrians or cyclists, etc.

- The roads lack pedestrian crossings. New road developments have eaten into a lot of pedestrian space and this is continuing to happen. In most places, pedestrian sidewalks are either non-existent or very congested.

5.7.2 Passenger Overview

i. By Train

Bangalore has two major railway terminals. The Bangalore City railway station is situated in the heart of the city, opposite the Majestic Bus stand. Most trains, both local and long-distance, arrive and depart from here. The other terminal is Yeswantpur Junction located on NH-4

(Tumkur Road). A few (mostly long-distance) trains arrive and depart from here. Bangalore City Junction is one of the most important stations in the South Zone, and it is served by Southern Railways, South Western Railways, and Konkan Railway. There are more than 900 trains that stop by in a week at Bangalore City Junction or the other major railway stations in Bangalore district that provide service to around 12 lakh people each week. Yeswanthpur Junction Railway Station is situated 10 km from Bangalore City Railway Station, and is served by the South Western Railways.

ii. Bus Service

a) Intercity Bus Services

Bangalore Bus Station (better known as Majestic Bus Station) is situated near the Bangalore City Junction Railway Station, 20 km from Bangalore International Airport. Everyday over 16,000 buses originate from and end their journey in Bangalore. It provides bus services to all major cities in Karnataka and neighbouring states including Tamil Nadu. Transport corporations of neighbouring states also run regular services to and from Bangalore City.

b) City Bus Service

Bangalore Metropolitan Transport Corporation (BMTC) has deployed a fleet of 5,493 buses and operates around 5,370 schedules daily connecting different locations within the city and the villages around it. It makes 73,640 trips in a day performing 11.89 Lakh kilometers. More than 38 Lakh passengers use the services of BMTC.

5.7.3 Selection of Location for ITH

- Dabaspet has been recommended as the location for the proposed ITH. Situated at a distance of around 50 Km from Bangalore and 20 Km from Tumkur, the location identified at Dabaspet lies adjacent to Railway alignment and NH-4.
- The location is approximately 1.00 km from the junction of NH-4 and road towards Doddaballapur providing direct connectivity to the Bangalore International Airport. The existing Dabaspet bus stand also lies approximately at a distance of 1 Km from the Dabaspet Junction. The proposed ITH is envisaged to be a Hub for providing direct connectivity for the rest of Karnataka for accessing the International Airport at Bangalore.

- Tumkur is developing as a major industrial hub, thus increasing the need for connectivity by all modes of transport including the requirement for more number of trains connecting Tumkur and Yeshwanthpur railway station.
- The North–South Corridor of Bangalore Metro is proposed to be extended from Yeshwanthpur terminal to Hessaraghata Cross thus orienting the planned growth towards the Northern region.
- Dabaspet is a junction of the rail alignment with the National Highway with next major common junction being only at Yeshwantpur. Dabaspet can thus act as switchover point to the Bangalore International Airport.

The figure below depicts proposed location of the proposed ITH.

5.7.4 Criteria for selection of the proposed location:

- Proximity of the Railway Alignment
- Strategically located adjacent to NH4
- Over utilisation of capacity of existing Stations at Bangalore
- Proximity to NH-207 providing connectivity to Devanahalli International Airport and proximity to the SH-23
- KIADB also has plans to acquire lands at Dabbaspet for industrial development
- Future plans for industrial hubs at Tumkur and Neelamangala
- Development potential as Connecting hubs to the industrial Areas
- Location proposed can be developed as an integrated facility, with state of the art Railway station, and bus station, which is directly connected to the NH as well as the Bangalore International Airport
- Announcement by Railways for re-development of Bangalore City and Biapanahalli stations into world class stations

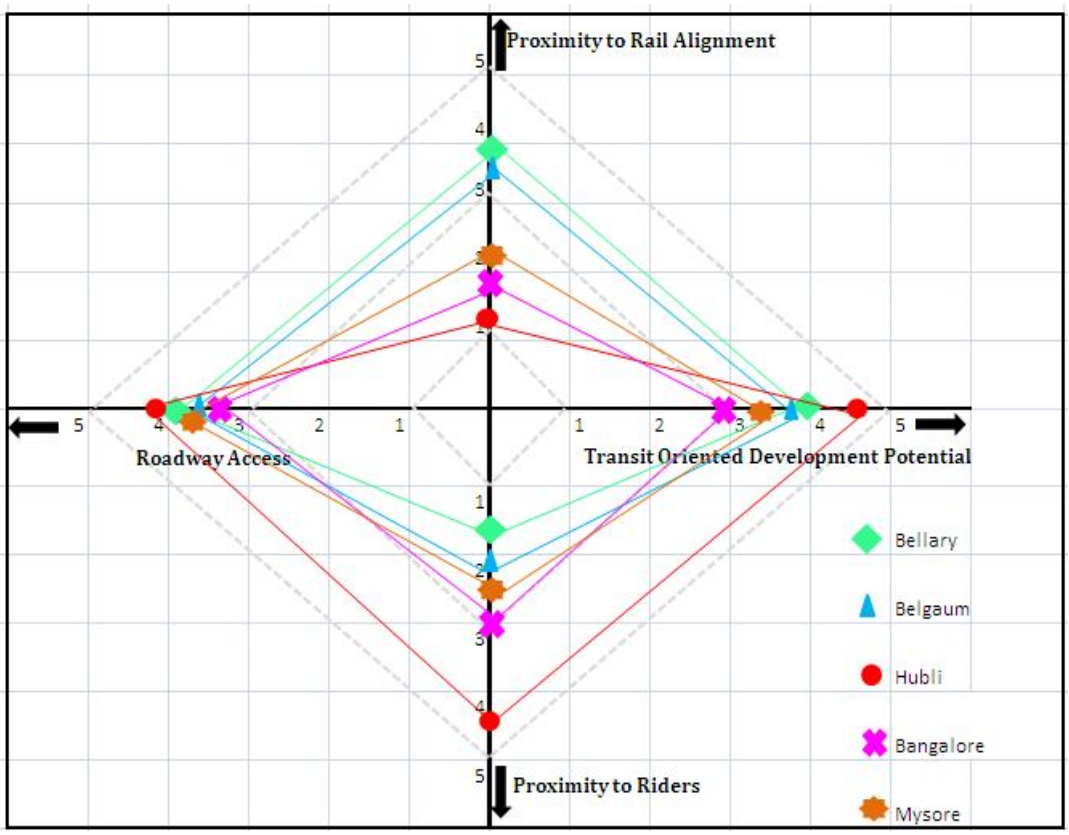
5.7.5 Parameters analysed for the identified Location of Intermodal Transit Hub at Bangalore

Parameters	Bangalore
Administrative significance	+
Historical/Cultural significance	+
Commercial/Economic significance	+++
Population & Growth Rate	+++
Transport connections& Strategic interchange opportunities	
Connectivity to major centres/cities	+++
Connectivity by different modes	+++
Proximity of Major Port, Airport , Rail Terminals	
Railway Station	+++
Airport	o
Port	o
Future growth potential	+++

Order of Significance (High to Low)	+++++	++++	+++	++	+
Facility Not available	o				

5.8 Comparison of the Locations based on the Evaluation frame work

The identified and shortlisted location/zone have been compared on the Basic Evaluation Frame Work (BEFW) for analysis of Intermodal Transit Hubs. The evaluation has been done based on the assumption that the basic requirement of minimum land availability for the development of the facilities including parking and passenger amenities is satisfied.



VI. Project Financials

6.1 General

The preliminary financial analysis for a standardised ITH has been carried out based on the assumptions arrived from preliminary market assessment carried out at the identified Cities.

The Intermodal Transit Hub is proposed to be developed with state of the art facility which integrates the Railway Station and Bus Station facilities with linkages and connectivity to the National Highways/Major roads/Ring Roads. The locations where there is an existing Railway Station only the Bus Station facilities and amenities need to be included. However for the preliminary calculation capital cost and operation costs the entire development is considered. This includes:

- State of the Art Railway Station
- Passenger Amenities for the Railway station
- Bus Station with Bus bays for transit operations
- Passenger Amenities within the Bus station
- Connectivity between both the modes of transport if required by Sky Walks, Subways etc
- Approach Roads to the ITH
- Adequate circulation areas and parking grounds for mini busses
- Adequate parking Areas for Taxis & Autos

The broad Financial Viability of the Project is assessed with respect to the key parameters such as Project IRR and Equity Internal Rate of Returns (IRR). The Equity IRR for the selected cities will vary depending upon the growth pattern of the cities as certain cities growth rates are much lower as compared to developed cities like Bangalore.

The viability analysis includes the identification of revenue and expenditure streams. Revenues will be from parking fees, commercial activities and advertisement, while the expenditure would be primarily on account of Capital and O&M costs.

6.2 Assumptions in Capital Cost & Operations & Maintenance

Following set of assumptions are considered for the Financial Assessment of the Intermodal Transit Hub that includes general assumptions, area assumptions and specifications.

6.2.1 Preliminary Cost Estimation

The preliminary cost estimates are based on the preliminary market surveys carried out for the identified Cities. The landed project cost is estimated considering the cost involved in Construction, Project Development Fees, Interest during construction, Cost of Approvals & Sanctions and Pre-operative cost & contingencies etc. Following Tables shows the break up of the Cost for an integrated Intermodal Transit Hub.

SUMMARY OF PROJECT COSTS

Description	Capital Cost (in Rs. Crores)
Components	
i. Road Access Facilities	
A. Intermodal Bus Stand Facilities	
No. of Bus bays –For State Road Transport Busses - 25 bays	
No. of Bus bays –For Private/ Moffusil Busses -40 bays	
Component cost for Bus stand Facilities: (Construction costs of 65 bays @ Rs. 35 Lakhs/Bay)	22.75 Crores
B. Parking Facilities for Taxi & Auto	
▪ Surface Car parking -50 nos ▪ Surface Auto Parking-50 nos (construction cost assumed @ Rs.400 per sft)	1.20 crores
C. Other Amenities as per Standards Specified for Bus Station	3 Crores
ii. Rail Access Facilities	
A. Intermodal Railway Terminal Facilities	
Construction of Railway Passenger Station with a minimum of 3 Railway lines and 3 Platforms with Passenger amenities	20 Crores
B. Rail Siding for freight	
Considering a rail siding including a concrete apron for loading unloading Platforms ,Covered storage sheds, open storage area, Connecting roads, Truck Parking etc.	15 Crores

iii.	**Subways, Sky walks, Improvement of entry exit connecting roads etc.**	12 Crores
	Project Cost	74 Crores (approximately)
iv.	**Preliminary & Pre-Operative Expenses, Interest Costs etc. @ 20% of Project Cost**	15 Crores
TOTAL PROJECT COST OF INTER-MODAL TRANSPORT HUB		**89 Crores (approximately)**

6.3 Revenue Streams

The ITHs are proposed to be structured on Development and Management Rights Model with Entry fees, parking fees, advertisement and commercial rental rights. Revenue from Commercial development, parking fees shall be major revenue stream for the operator to recover the investment.

The lease rentals and parking fees for the selected cities are considered as per market conditions prevailing at the locations considering the development potential of the location.

6.4 Key Financial Indicators

The returns of the project at the different identified locations have been calculated considering the typical investment and facilities at the location. The revenue streams are assumed as per the market conditions and the Lease Period of 30 Years is considered for the calculation of returns from the project. A block financial Assessment for development of ITH on PPP format has been provided as in Annexure-I.

Following table shows the financial indicators for 30 years of authorization period at 50:50 Debt-Equity project structure.

Key Financial Indicators

Sr. No.	City	Indicators	
1.	**Bangalore**	Project IRR	21.00%
		Equity IRR	18.00%
2.	**VADA**	Project IRR	16.00 %
		Equity IRR	13.00 %
3.	**Belgaum**	Post-tax Project IRR	16.00 %
		Equity IRR	13.00 %
4.	**Hubli**	Post-tax Project IRR	15.00 %
		Equity IRR	12.00 %
5.	**Mysore**	Post-tax Project IRR	19.00 %
		Equity IRR	15.00 %

The assumptions considered for the model are Block Cost Estimates for capital Outlay and conservative returns, also taking into account the present market scenario. However the viability could be further enhanced by adopting the most viable product mix determined from a detailed feasibility study. The Equity IRR and the Project IRR represent the projects broad financial viability on PPP format.

6.5 Commercial Viability as Per Location

Viability of the project is based on the revenues from subleasing of Built-up space, user charges from the transport modes, revenues from parking, advertisement, etc and depends on the development and city infrastructure around the proposed area. City specific IRRs have been derived considering the prevailing lease rentals, parking rates and advertisement rates at various locations in the selected cities. The operations of the Railway Station and the

Bus Stands are considered to be transferred to the respective departments after construction. The developer in turn can retrieve his investments by commercial development of the land provided to him on lease. The developer can Operate, Maintain and sublease the built up space at market rates. The advertisement and parking revenues can also generate additional revenue streams for the developer. In case of locations identified with the existing Railway Stations only the modification of the facilities need to be done thus reducing the Capital investment by the private sector developer. The land to be provided to the developer for commercial development will thus be determined upon the proposed development works envisaged considering a win –win situation to all the stakeholders. Further, the viability of lessor viable locations could be suitable addressed by addition of other commercial components to the project.

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. The traffic revenues for the project would also depend on the following:

1. Enforcement by the local bodies for directing the private / Government operated busses to the ITH
2. Stoppage of Trains at the ITH

7.1.2 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.

7.1.3 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. It is however envisaged that the demand for revenue generating facilities at the proposed ITH would increment over years and on commencement of operations of the ITH.

7.1.4 Commercial Risk/ Revenue Risk:

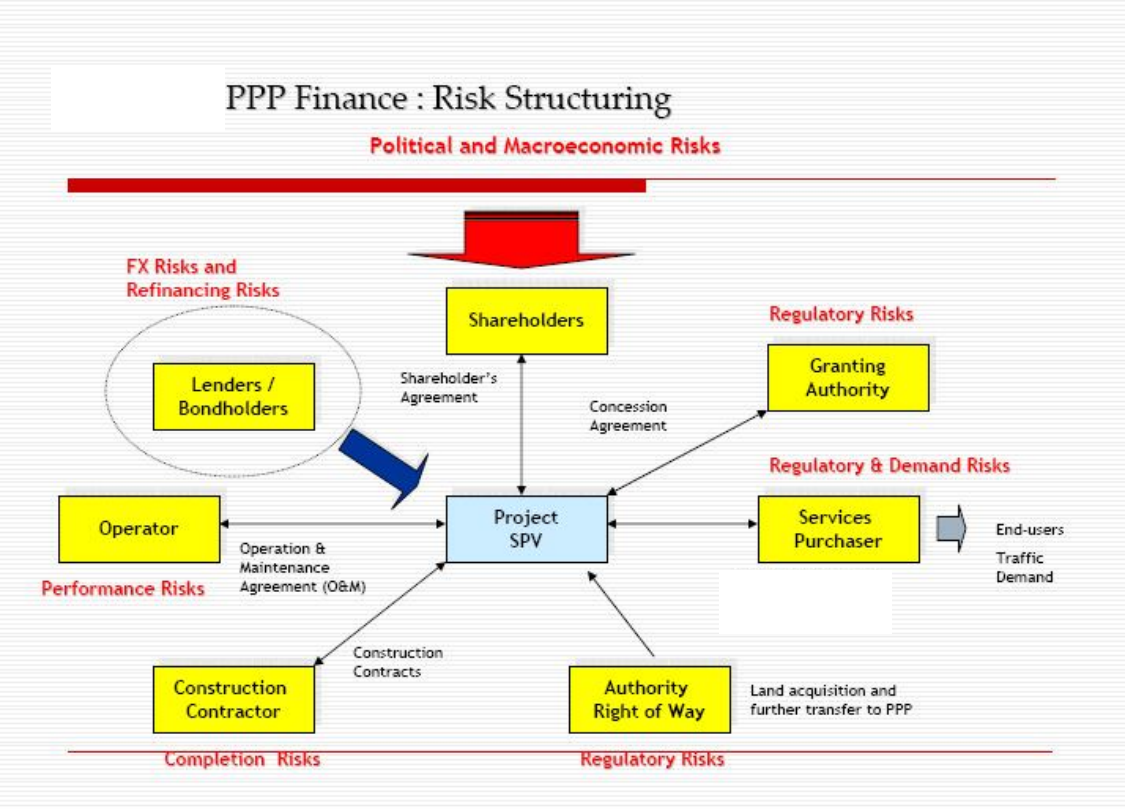
These risks arise from existing demand and future competition, effectiveness in utilizing space and management of facilities. With the involvement of Private Sector in marketing, O&M and management and attractive incentives structures linked with Project success, risk would be transferred to the Developer. It is however envisaged that the demand for commercial facilities at the proposed ITH would increment over years and on commencement of operations of the ITH.

7.1.5 Debt servicing Risks

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

7.1.6 Political Risk

These can be mitigated by effective legal documentation and insurance.



VIII. Legal &Regulatory Frame work

8.1 Requirement of Legal & Regulatory Framework

One of the important aspects for governments developing a sector based on private investments is the necessity of devising systems of regulation and support that provide the encouragement and room for maneuver that the private sector needs while at the same time minimizing govt. exposure to the host of commercial and financial risks surrounding the projects.

The trend towards infrastructure privatisation has pushed regulatory issues to the forefront, the prominent among them being the role of regulatory agencies because regulation is complicated by three related considerations. First, prices are invariably based on political pressures/considerations. There are numerous cases when justifiable price increases have been withheld at the expenses of investors and long- term interests of the consumers. Second, investors are aware of these pressures. In the absence of credible government commitments, capital will be more expensive which results in higher tariffs. In terms of privatisation, this translates into smaller proceeds from sale of existing enterprises and higher financing costs for new (greenfield) projects. Third, the long-term nature of most infrastructure investment makes credible commitments difficult. Any design of a regulatory framework is thus a complex undertaking that involves the balancing of many influences/elements which include regulatory goals and resources, social institutions and sector characteristics. These elements influence the form, function and scope of regulatory policy

The proposed ITH necessitates a robust legal and regulatory framework, for:

- Land Acquisition
- 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
- The success of the ITH would depend on the Implementation of Traffic regulations levied by the local administration towards restricted entry of busses to the CBD and directing the same to the proposed ITH.

- Implementation of No Parking Zones ,Traffic Regulations, Entry Exit limiting restrictions

- Levy of penalty for off-street parking of busses, etc

IX. Project Structuring & Implementing Frame Work

9.1 Background

The proposed ITHs are proposed to be developed on 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: Rail & Road infrastructure, Real Estate Development to improve the feasibility of the project, etc. 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 ITHs 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 the ITHs would require diligent planning, extensive project development with proper implementation

strategy. Technically, development and implementation of the project would draw expertise from transport sector.

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. 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,
- 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.

9.3 Need for a Program Management Approach

Implementation of the proposed ITHs 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 25-30 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 Project Structuring

The Project would 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, 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.

X. Operating Framework

10.1 Implementation Structure

The locations identified for development of ITHs in individual cities would need to be assessed for their technical & financial viability. In the proposed PPP structure for implementation, the roles to be performed by the respective parties i.e. the ULBs / Project Sponsor and Selected Developers have been identified as below:

10.1.1 Role of ULBs / Project Sponsor:

The role of the Project Sponsor would include:

a. Identification of location
b. Co-ordination with Railways and seeking requisite clearances
c. Standardization of performance standards
d. Providing collection of parking fees rights to developers

10.1.2 Role of Developer:

The role of the Developer would include but not limited to:

a. Design, finance, construct, operate, maintain and manage the facilities including supporting ancillary infrastructure
b. Meet the requirements laid down by the Competent Authority
c. Operate& Maintain the commercial facility in order to recoup the investment incurred

10.1.3 Civil and Structural Requirements

The building shall be designed in accordance with the latest Indian Standard Codes and shall be designed to resist wind and seismic forces RCC Structures shall be designed as per IS 456: 2000. Steel Structures shall be designed in accordance with the provision of IS 800-1984. Structural steel shall conform to IS 2062. Tubular section shall conform to IS 4923

- Architectural design norms as per NBC (National Building Code – 2005)
- Structural Design norms as per NBC and BIS (Bureau of Indian Standards)

10.1.4 Fire Fighting Facilities

The developer shall provide the required fire fighting equipment and facilities conforming to relevant standards and the applicable rules and regulations. Fire safety measures as recommended in applicable codes (Indian as well as international) shall be implemented. Specifically, the fire fighting system shall be adequate to control petroleum fires. Construct the Parking Facilities' structure with non-combustible material without a specified fire resistance. In addition, those portions of the facility used for the transport and / or storage shall have a finish of non-absorbent, non-combustible material.

10.2 Maintenance and Performance Standard

10.2.1 General

During the period of operation, the Developer would be required to maintain all the Facilities in accordance with performance standards and maintenance requirements, as mentioned below:

- Perform maintenance on a routine and periodic basis. Identify potential problems early within the context of the planned maintenance system so that corrective action may be planned and completed in a timely manner.

- Establish a maintenance list for planned operation and maintenance. Follow an orderly program so that maximum operational efficiency is attained.

The system shall be required to be designed such, that maintenance personnel has access to all Parking Facility, machinery and electrical and electronic components in a safe manner.

The Developer shall perform routine and periodic maintenance activities for the project infrastructure viz, civil, mechanical and electrical works and equipment, furniture for meeting the specified performance standards

XI. Keys to Success

11.1 Key Stakeholders

The key stakeholders identified for the development of Intermodal Transit Hubs in developing Cities of Karnataka are:

- **Project Sponsor** - Concerned Municipal Authority / Railways
- **Nodal Department** - Urban Development Department / Transport Department / Infrastructure Development Department
- **Facilitating Department** - Infrastructure Development Department
- Railways
- National Highway Authority of India
- State Public Works Department- (Roads Division)
- City Town Planning Department
- Revenue Department
- City Corporations
- Traffic Police Department
- Other agency as deemed necessary

For the successful implementation of the projects, the Infrastructure Development Department along with the Project Advisors, the Urban Development Department, the Transport Department would require to convene a joint meeting of their respective heads where the project concept and structure is discussed and taken up for implementation.

The project sponsor alongwith the Project Advisors will be required to take the lead in co-ordinating with the individual agencies involved for identification of locations and for seeking the requisite clearances

11.2 Essential issues to be addressed

The following have been identified to be key issues for the success in developing of ITHs and effective utilization of the same

- Coordination with the Railway Authorities for identification of new feasible location of the Railway Station at the ITH
- Coordination with National & State Highway Authorities to sort out connectivity issues for intermodal transfer

- Coordination with State Road Transport Corporations & Private Bus Operators Associations for the entry of busses to the ITH
- Traffic Authorities to be roped for Traffic Management for ingress & egress routes to the ITH
- Stringent provisions by way of fine and other penal actions need to be provided to restrict entry to the Cities.
- A graded parking/entry fee structure should be evolved as a measure of demand management at the ITH for Busses, Omni Busses, Taxis, Autos etc
- Joint inspections of locations and reviews with key stakeholders

11.3 Role of Project Sponsor

The Project Sponsor shall be responsible to give right to use land free of encumbrance to the Developer for developing the Project components. The land required for creating the Project Facilities would be required to be given on Development and Management Rights to the Developer over the Authorization Period in terms of the Authorization Agreement supported by Development and Management Agreement (DMA).

The Project Sponsor will also require facilitating availability of infrastructural support / services and ensuring effective coordination between all government departments to provide timely approval and clearances. Government support/ facilitation would be required in the following:

- Ensuring availability of requisite land & infrastructural support/ services, viz. power supply, improving existing roads, development of connectivity
- Providing all clearances and approvals for execution of commercial centre at ITH, installing supportive facilities and other commercial components for development and operation.
- Issue of necessary regulations for re-directing busses to the ITH

11.4 Clearances and Sanctions

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

- Department of Railways for the approval of location of the Railway Station facilities
- National and State Highway Authorities for efficient connectivity to the location and seamless integration for Intermodal transfer
- Concerned Municipal Authority /City Corporations
- Urban Development Authority
- Revenue Department in case of acquisition required in the location
- Traffic Police Department
- State Electricity Board
- Water Supply & Sewerage Board
- Other agency as deemed necessary

XII. Way Ahead

12.1 Proposal

KIPDC proposes to take up the Project Development for development of Intermodal Transit Hubs (ITH) on PPP format including identification of locations in close co-ordination with IDD and the respective City administrations.

It is proposed to take up the development of ITHs initially at two locations, i.e. Dabaspet and Mysore, while the other locations viz: Belgaum, Bellary, Hubli could be taken up in the next phase of project development based on the success of the first two and suitably addressing the viability by other sources of project funding as well as additional commercial components.

KIPDC proposes to provide advisory services for the implementation of ITH's in the cities identified as an innovative urban infrastructure development program of the Government of Karnataka.

12.2 Project development approach by KIPDC

Project development comprises of end-to-end responsibility commencing from project conceptualisation, identification of locations for setting up of Intermodal Transit Hubs(ITH) along with stakeholders (GoK, Department of Railways, NHAI, ULB, Traffic Police, Town Planning Dept, etc), technical and financial viability assessment, project packaging, risk analysis and legal review, concession agreements, assisting the Sponsoring Department till the identification and selection of the most suitable private sector developer for the ITHs.

KIPDC shall undertake the project structuring and bid process management for selecting the most suitable developer to finance, design, construct, operate and maintain the subject project for around 30 years and with a view to facilitating PPP format. Bid process management shall be taken up in a speedy, competitive and transparent manner.

The Sponsoring Department shall provide the selected private sector developer with development rights and permissible advertisement rights to recover its investments. Subsequent to the completion of the concession period, the asset would be returned back to the Sponsoring Department by the developer.

Another essential requirement of successful project development would be to create awareness amongst likely developers through proactive marketing strategy. Project development cycle is expected to be around 6-8 months.

12.2.1 Scope of Project Development

In order to successfully implement the project, certain essential requirements as listed hereunder are enumerated:

a. **Location Identification:** Identification of suitable project locations in coordination with Project Sponsor, Railways, NHAI, State PWD,ULB, Traffic Police, Town Planning Department, or any other agency as deemed necessary by the GoK. The basis for location of a ITH shall be the Connectivity of the location, development potential of the location, Commuter convenience and availability of land for development of the ITH. Project location identification also includes proximity of related synergies that may be factored while project development and structuring.

b. **Project Development & Benchmarking Bid Values:** KIPDC would provide its professional expertise to undertake project development including project feasibility and structuring exercise in order to develop the most suitable PPP model and exploring the viability options. Based on the viability of the proposed package, KIPDC would arrive at the benchmarking of Bid Values for each of the packages for optimum returns to the Sponsoring Department.

c. **Procurement of Developer:** Undertaking in a speedy manner, competitive and transparent bid process management in order to select the most suitable private sector partner for this project. Private Sector Developers for the packages shall be selected through transparent bidding based on highest premium. KIPDC shall draft the concession agreement to be entered into by the Sponsoring Department with the Private Sector Developer and facilitate in signing of the same.

12.3 Implementation Plan

KIPDC proposes to take up the Project Development for the development of ITHs in Cities of Karnataka. The zones proposed for the development of ITH's are as per preliminary assessment and a detailed study would be required to be conducted to identify the locations in each of the districts recommended above. The detailed business plan and Product mix for the identified locations will be

categorised and KIPDC will then carry out the project development and procurement process for selection of private sector developer on PPP format.

12.4 Role of Infrastructure Development Department

- Approval of Pre-feasibility Study carried out and recommendations to the Urban Development Department, Transport Department, Directorate of Municipal Administration and the ULB's for implementation of the ITH with KIPDC as project development advisor.
- Take up the implementation of the ITHs in the Cities identified as an urban infrastructure development Program
- Act as facilitating arm to the Project Sponsor.
- Convene joint meetings of the stakeholders for facilitating the taking up the implementation, setting development time frames.
- Coordination with Revenue Department in case of Land Acquisition required
- Assist the Sponsoring Department in meetings with other departments, viz: Railways, NHAI, Revenue Department, Traffic Police, etc

I. Annexure-I

VIABILITY ASSESSMENT FOR INTERMODAL TRANSIT HUB

Particular	Area
Plot Area	869,200
Permissible Floor Area Ratio	3.00
Permissible Built-up Area	435,600
Saleable / Leasable (Super built-up) Area	1,306,800
Basement Parking	435,600

Project Stream - Commercial Complex			Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y9	Y10	Y15	Y20	Y25	Y30
Capital Account															
Construction Phasing			40%	40%	20%										
Receipts															
Equity Component		50.0%	7,634.33	7,545.95	4,633.16										
Debt Component		50.0%	7,634.33	7,545.95	4,633.16										
Expenditure															
Land Development Cost	65	In Lakhs	564.98												
Cost of all Amenities and Approvals	65	In Lakhs	849.42												
Cost of Construction - Commercial / Office Space (incl. Common Areas & Utilities)	1425	INR per Sq. ft	1425	1524.75	1631.48	1745.69	1867.88	1998.64	2138.54	2448.42	2619.80	3674.41	5153.55	7228.12	10137.82
Cost of Construction - Basement Parking	625	INR per Sq. ft	625	668.75	715.56	765.65	819.25	876.59	937.96	1073.87	1149.04	1611.58	2260.33	3170.23	4446.41
Escalation in Construction Cost	7%														

Cost Reduction if Any	0%														
Total Construction Cost (including basement)		In Lakhs	8,537.76	9,135.40	4,887.44										
Preliminary and Preoperative Costs (Percentage of Construction Costs)	10%		853.78	913.54	488.74										
Total Development Cost			10,805.94	10,048.94	5,376.18										
Cost for construction of Intermodal Tranist Hub			3560.00	3,560.00	1,780.00										
Project Development Expenses	1.00%		396.49												
Recommended (Tentative) Land Reserve Premium	10.00	In Lakhs	10.00	-	-										
Interest during Construction (Capitalized)		In Lakhs	496.23	1,613.14	2,132.13										
Total Project Cost		In Lakhs	15,268.66	15091.89	9288.31										
Revenue Account															
Absorption Rate of Leasable Area			0%	0%	75%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Receipts															
Lease Rent (INR per sq. ft. per month)	45		45.00	45.00	45.00	54.34	54.34	54.34	65.61	65.61	79.23	95.67	139.49	203.38	245.58
Parking Charges 2 wheelers		INR per 3 hrs	20.00	20.00	20.00	21.00	21.00	21.00	22.05	22.05	23.15	24.31	26.80	29.55	31.03
Parking Charges 4 wheelers			30.00	30.00	30.00	31.50	31.50	31.50	33.08	33.08	34.73	36.47	40.20	44.32	46.54
No. of 2 wheelers per day			-	-	2,610.00	3,480.00	3,480.00	3,480.00	3,480.00	3,480.00	3,480.00	3,480.00	3,480.00	3,480.00	3,480.00
No. of 4 wheelers per day			-	-	1,218.00	1,624.00	1,624.00	1,624.00	1,624.00	1,624.00	1,624.00	1,624.00	1,624.00	1,624.00	1,624.00
Rent Appreciation (once in 3 years)	15%														
Revision for Capital Appreciation	5%														
Gross Potential Revenues as Lease Rent		In Lakhs	-	-	5,293	8,521	8,521	8,521	10,289	10,289	12,424	15,002	21,874	31,893	38,511
Gross Potential Revenues from Parking Charges		In Lakhs	-	-	324	453	453	453	476	476	500	525	579	638	670
Less: Revenue Loss due to Non-Occupancy	3%		-	-	168	269	269	269	323	323	388	466	674	976	1,175
Net Revenue Receipts					5,448	8,705	8,705	8,705	10,442	10,442	12,536	15,061	21,779	31,555	38,006

Revenues from Advertising	1%		-	-	54	87	87	87	104	104	125	151	218	316	380
Total Net Revenue Receipts			-	-	5,502	8,792	8,792	8,792	10,547	10,547	12,662	15,212	21,997	31,871	38,386
Expenditure															
Lease Rents payable	10%	In Lakhs	-	-	1	1	1	1	1	2	2	3	4	5	6
Transaction Charges	2%	In Lakhs	-	-	110	176	176	176	211	211	253	304	440	637	768
Operations and Maintenace cost (As a % of revenue)	15%	In Lakhs	-	-	825	1,319	1,319	1,319	1,582	1,582	1,899	2,282	3,300	4,781	5,758
Interest during Operation		In Lakhs	-	-	-	2,337.03	2,025.43	1,713.82	1,402.22	779.01	467.41	-	-	-	-
Total Revenue Expenditure		In Lakhs	-	-	936	3,833	3,521	3,210	3,197	2,574	2,622	2,589	3,743	5,423	6,532
Depreciation	3.34%	In Lakhs	-	-	1,441.05	1,441.05	1,441.05	1,441.05	1,441.05	1,441.05	1,441.05	1,441.05	1,441.05	1,441.05	-
Taxable Income (PBT)		In Lakhs	-	-	3,125	3,518	3,830	4,141	5,909	6,532	8,599	11,182	16,813	25,007	31,854
Deduct: Corporate Tax (incl. Surcharge and Education Cess)	33.99%	In Lakhs	-	-	1,062	1,196	1,302	1,408	2,008	2,220	2,923	3,801	5,715	8,500	10,827
Net Profit (PAT)		In Lakhs	-	-	2,063	2,322	2,528	2,734	3,901	4,312	5,676	7,381	11,098	16,507	21,027
Deduct: Dividend Distribution Tax (DDT)	17%	In Lakhs	-	-	298	320	337	355	454	489	605	750	1,066	1,526	28,339
Net Cash Accruals		In Lakhs	-	-	3,206	3,444	3,632	3,820	4,888	5,264	6,512	8,072	11,473	16,423	(7,312)
Capital Structuring / Funding															
Equity	50.0%	In Lakhs	7,634.33	7,545.95	4,644.16										
Debt	50.0%	In Lakhs	7,634.33	7,545.95	4,644.16										
Debt Schedule															
Opening Balance		In Lakhs	-	7,634.33	16,524.26	19,175.65	16,778.69	14,381.74	11,984.78	7,190.87	4,793.91	-	-	-	-
Loan Receipts		In Lakhs	7634.33	7,545.95	4644.16	-	-	-	-	-	-	-	-	-	-
Loan Repayment		In Lakhs	-	-	2,396.96	2,396.96	2,396.96	2,396.96	2,396.96	2,396.96	2,396.96				
Closing Balance		In Lakhs	8,293.22	16,524.26	19,175.65	16,778.69	14,381.74	11,984.78	9,587.82	4,793.91	2,396.96	-	-	-	-
Interest															

Total Interest on the Debt Component	13%	In Lakhs	539.06	1,613.14	2,320.49	2,337.03	2,025.43	1,713.82	1,402.22	779.01	467.41	-	-	-	-
Interest during Construction		In Lakhs	539.06	1,613.14	2,320.49	-	-	-	-	-	-	-	-	-	-
Interest during Operation		In Lakhs	-	-	-	2,337.03	2,025.43	1,713.82	1,402.22	779.01	467.41	-	-	-	-
Corporate Tax Calculation															
Loss brought Forward		In Lakhs	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Profit/Loss for Tax Calculation		In Lakhs	-	-	3,125	3,518	3,830	4,141	5,909	6,532	8,599	11,182	16,813	25,007	31,854
Deduct: Corporate Tax (incl. Surcharge and Education Cess)		In Lakhs	-	-	1,062	1,196	1,302	1,408	2,008	2,220	2,923	3,801	5,715	8,500	10,827
Net Profit (PAT)															
Dividend Distribution Tax Calculation															
Dividend Payout	50%	In Lakhs	-	-	1,751.92	1,881.77	1,984.58	2,087.39	2,670.80	2,876.39	3,558.55	4,411.11	6,269.55	8,974.16	10,513.50
Non-Taxed Dividend Carried Forward		In Lakhs	-	-	1,751.92	3,633.69	5,618.28	7,705.66	10,376.46	16,026.44	19,584.99	40,192.48	68,492.15	106,221.56	156,187.05
Dividend Distribution Tax (DDT)	17%	In Lakhs	-	-	297.83	319.90	337.38	354.86	454.04	488.99	604.95	749.89	1,065.82	1,525.61	28,339.09
SUMMARY CASH FLOWS AND KEY FINANCIAL INDICATORS															
Cash Profit (Net Cash Accruals - Loan Repayment)		In Lakhs	-	-	809.06	1,046.69	1,234.83	1,422.96	2,490.60	2,866.83	4,115.19	8,072.33	11,473.27	16,422.72	(7,312.09)
Project Cash Flows (including Tentative Land Premium) on EBIDTA		In Lakhs	(16,586.45)	(16,462.08)	(5,530.66)	7,296.48	7,296.37	7,296.25	8,752.29	8,751.99	10,507.23	12,622.95	18,253.72	26,448.29	31,854.27
Project Cash Flows (including Tentative Land Premium) - post tax		In Lakhs	(16,586.45)	(16,462.08)	(6,592.84)	3,763.55	3,969.16	4,174.77	5,341.60	5,752.77	7,117.10	8,822.22	12,539.09	17,948.33	21,027.00
Equity Cash Flows (including Tentative Land Premium) of the Project		In Lakhs	(8,293.22)	(8,231.04)	(4,239.28)	1,046.69	1,234.83	1,422.96	2,490.60	2,866.83	4,115.19	8,072.33	11,473.27	16,422.72	(7,312.09)
Total Cumulative Equity (including Tentative Land Premium)		In Lakhs	8,293.22	16,524.26	21,572.60	21,572.60	21,572.60	21,572.60	21,572.60	21,572.60	21,572.60	21,572.60	21,572.60	21,572.60	21,572.60
Average Return on Equity			-100.00%	-49.81%	-19.65%	4.85%	5.72%	6.60%	11.55%	13.29%	19.08%	37.42%	53.18%	76.13%	-33.90%
Total Investments / Cost		In Lakhs	16,586.45	16,462.08	10,096.68	-	-	-	-	-	-	-	-	-	-

Total Benefits		In Lakhs	-	-	4,566	7,296	7,296	7,296	8,752	8,752	10,507	12,623	18,254	26,448	31,854
Interest Service Ratio			-	-	-	3.76	4.34	5.13	7.52	13.54	27.09	-	-	-	-
Debt Service Ratio			-	-	1.34	1.44	1.52	1.59	2.04	2.20	2.72	-	-	-	-
Debt Service Coverage Ratio			-	-	1.34	0.73	0.82	0.93	1.29	1.66	2.27	-	-	-	-
Project Breakeven Period		In Lakhs	(16,586.45)	(33,048.53)	(39,641.37)	(35,877.82)	(31,908.66)	(27,733.88)	(22,392.29)	(11,092.32)	(3,975.22)	37,239.74	93,839.09	169,297.92	269,228.90

Equity (Developer's) IRR	18%
Project Internal Rate of Return (IRR) - EBIDTA	21%