**Infrastructure Development Department**
**Government of Karnataka**
**Bangalore**

# FEASIBILITY STUDY FOR PROVIDING RAILWAY STATION NEAR BAJPE AIRPORT AND A HUB FOR MULTI MODAL TRANSPORT SYSTEM MANGALORE

**FINAL REPORT**
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# KEY PLAN

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# INTRODUCTION

# INTRODUCTION

## 1. INTRODUCTION

The Government of Karnataka has proposed to look into the possibility of provision of a Railway station on Konkan Railway line at a location near Bajpe Airport serving all travelers from and to Mangalore. In this connection the Government of Karnataka has directed Infrastructure Development Corporation (Karnataka) Limited (iDeCK) to carry out a feasibility study for providing such a full fledged railway station near Bajpe Airport. iDeCK has also been directed to cover in the feasibility study possibility of providing a hub for Multi Modal Transport System in the Railway station near the proposed area.

M/s. Infrastructure Development Corporation (Karnataka) Limited have been engaged to carry out the study relating to provision of a railway station and a hub for Multi Modal Transport System at a suitable location on the existing Konkan Railway System, as near to Bajpe Airport as possible.

M/s. Infrastructure Development Corporation (Karnataka) Limited in association with M/s. Varna Engineering Consultants Pvt.Ltd, and their team have surveyed the area and carried out investigation as detailed below :

- Reconnaissance of the alternative areas for citing the proposed Railway Station.
- Identification of a site for providing the railway station as near to the airport as possible.
- Checking on availability of land for locating the station and the hub for Multi Modal Transport System.
- Checking the engineering feasibility for the provision of railway station and hub for Multi Modal Transport System.
- Collection of all relevant Data relevant to the Project.

### 1.1. Background

1.1.1. The decision on providing a railway station and developing an area as a hub for multi modal transport system is the outcome of the site inspection by Principal Secretary to Govt. of Karnataka Infrastructure Development Department on 22.5.09. During the inspection, the Airport Authorities suggested provision of a new road from the airport by upgrading the existing SH 67 and ZP road and also

provision of railway station on existing Konkan Railway System along with a hub for multi modal transport system near to proposed Railway Station.

1.1.2. Climate

The monsoon period for Mangalore is from May to November, when South West monsoon is active. Situated on the costal area of Arabic Sea the town enjoys a good climate with temperatures between 21.0° C and 32.0° C.

## 1.2. Industries & Trade

1.2.1. History of Mangalore Town

1.2.2. Abbakka Devi, a famous warrior Queen, defeated the Portuguese and set up Mangalore way back in 1680. Someshwar temple and Dargah of the Sufi Saint Syed Malani are important places in Mangalore visited frequently by the tourist. Apart from the Kadiri hills, Manjunath temple, Mangalamba temple and Gokarnanath temple are also places of interest. Bandre Hot Springs are situated about 65 kms from Mangalore. Dharmastala the famous abode of Lord Manjunath is situated at about 67 kms from Mangalore. Mangalore is an important town with access to other important places like Honnavar, Karkala, Kateel, Kollur, Maravanthe, Moodabidri, Murudeshwar, Subramanya, Udupi, Ullal, Venur etc. Mangalore town is having a population of 7.40 lakhs situated on the West Coast of India, Mangalore attracts a lot of tourist traffic.

Mangalore is also a major trade and industries centre having major industries ports and airport. The industries are playing a significant role in the economy of the city. At present, the main industries of Mangalore who have been contributing the highest revenue to the state treasury and are the key players of the Mangalore economy are as follows :

- Mangalore Power Company
- Mangalore Refineries and Chemicals Limited
- Kudremukh Iron Ore Industries
- Canara springs Limited
- Mangalore Chemical Fertilizers Lilmited
- Mangalore Cashew Industry
- IT Industries like Infosys & Wipro
- Coconut Industries
- Arecanut Industries
- Fisheries Industries

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1.2.3. Mangalore Port

The New Mangalore Port, the only Major Port of Karnataka was declared as the 9th Major Port on 4th May 1974 and was formally inaugurated by the then Prime Minister of India, Smt. Indira Gandhi on 11th January 1975. The Provisions of the Major Port Trust Act 1963 were applied to NMP with effect from 1-4-1980. Since then the Port has been functioning as a catalyst for the economic development of this region and cater the needs of the shippers. Over the years the Port has grown from the level of handling less than a lakh tonnes of traffic to 38.00 million tones handled during 2008-09.

The major commodities exported through the Port are Iron Ore Concentrates& Pellets, Iron Ore Fines, POL Products, granite stones, containerized cargo, etc. The major imports of the Port are Crude and POL products, LPG, wood pulp, timber logs, finished fertilizers, liquid ammonia, phosphoric acid, other liquid chemicals, containerized cargo, etc

## 1.3. Tourist potential

1.3.1. Some of the places of tourist interest are as follows:

Mangalore is known as a pilgrim center and boasts of many sacred temples like Sharavu, Kadri, Mangaladevi, Kudroli etc. Out of these Sri Sharavu Sharabeshwara - Sri Mahaganapathy Kshetra is an outstanding, pious center of great illustrious history of marathon 800 years and the temple is located in the heart of the city.
Kukke Subrahmanya Temple is about a 100 KM from Mangalore.

About 135 Kms from Mangalore, Kollur has the famous Mookambika Temple at the foot of the Western Ghats. This is a well-known temple in Kundapur taluk of Karnataka visited by pilgrims from all over India. There are couples of places worth visiting in the vicinity of the temple. One of them is Arasina Makki, a famous waterfall. The Kutachadri range is a beautiful place and attracts a large number of mountaineers and trekkers. Kollur is well connected to Mangalore, Bangalore and Mysore.

Udupi is a divine shrine in the coastal region of Western Ghats. Situated about 60 kms from Mangalore, Tourists from all over the country and abroad come to Udupi to watch Uthsava.

The Church of Our Lady of Miracles, Milagres, better known as Milagres church, is thus more that 300 years old and is located in the heart of Mangalore.

Kudroli Sri Gokarnatheshwara temple is situated in the city of Mangalore, It's located at about 3 kms from Hampanakatte, the center of Mangalore city. Shree Venkataramana Temple is located at Car-street in Mangalore.

The temple of Manjunatheshwara on the hills of Kadri is a very beautiful and popular temple in Mangalore. It is situated 4 Km. away from Nehru Maidan Bus Stand.

Moodabidri , sometimes described as the Jain Varanasi has a powerful presence in the centre of the town and is located about 34Kms from Mangalore.

St. Aloysius College Chapel is situated in the heart of the city on the lighthouse hill about a kilometer away from Nehru Maidan Bus stand.
Sringeri is a picturesque town in the heart of the Malnad. This temple town attracts pilgrims from all over India and abroad as well. It is located at the foot of the Sahyadris (Western ghats).
Sri Manjunatheshwara Temple, Dharmasthala situated about 75 kms from Mangalore on the banks of river Nethravathi .

Kateel Durga Parameshwari Temple Situated on the banks of River Nandini, has become a famous pilgrimage and a tourist center over the years. Kateel is located 30KMs North of Mangalore.

The Ullal darga is located about 10 kms from the heart of the city

Anegudde Sri Vinayaka temple is about 100 kms from Mangalore and 9 kms from Kundapur

## 1.4. Educational Centre

1.4.1. Some of the Key Educational centers adding importance to the Mangalore city are:

1.4.2. The Campus of Mangalore University is located in a rural area 20 km south-east of the city centre of Mangalore.

Manipal Acadamy of Higher Education, Manipal.
National Institute of Technology, Karnataka (NITK) Suratkal.
Sri Dharmastala Manjunatheshwara law college. Dharmastala.

## 1.5. Location

### 1.5.1. Air Port

Existing Mangalore airport is located at a place called Bajpe, which is at a distance of 16 km north east of the Mangalore City Centre and 22 km from the Mangalore Railway Station. The airport is situated at an elevation of +103 RL above MSL ( Means Sea Level). This airport is equipped with both Asphalt and concrete runways of length 1615 m and 2900 m respectively. The Mangalore port also connects the airport by two-lane road of length 16 km. At a location opposite the Airport, Konkan Railway line is passing through Maravur village. Expansion of the existing airport is under construction at Bajpe, Mangalore and this Airport will be at a distance of only about 2 kms from Maravur village. Thus the ideal location for provision of a new Railway Station in Konkan Railway will be at a location near Maravur village.

Therefore, the above reasons necessitates to have a multi modal hub to Mangalore City.

# C H A P T E R  N o. 2

# SCOPE OF WORK

## 2. SCOPE OF WORK

As per the terms of reference, the following works are covered under the scope of work entrusted to M/s. Infrastructure Development Corporation (Karnataka) Limited, Bangalore.

- Reconnaissance of the entire area.
- Collection of necessary data from various sources/agencies.
- Study of the existing facilities/features available and their conditions.
- Preparation of key plan of the area.
- Assessment of Road connectivity to station and from station to Airport.
- Identification of the suitable Location for the station.
- Study of the area for the development of Multi Modal hub.
- Suggest the development needed.
- Study of the location to decide the changes on the proposed station building.
- Confirm availability of land to position the minimum requirement of station building to include SM Room, waiting hall, ticket booking counter, toilet facilities, Low/High level platform, and S&T cabin and Electrical panel requirement.
- Explore the possibility of existing gradient for the proposed station.
- Decide type of station viz. Halt or Crossing station, A,B,C type.
- Assessment of the quantum of passengers and goods traffic by local enquiry.
- Study requirement of level crossing if road passes nearby.
- Preparation and submission of Budgetary cost estimate for provision of facilities.
- Any other points as suggested by IDECK.

# C H A P T E R  N o. 3

# EXISTING FACILITIES

## 3. EXISTING FACILITIES

Mangalore town is an important business centre for the Dakshina Kannada district of Karnataka. The town is well connected by roads, rail, air and ports. Mangalore taluk is spread over an area of 834 sq.km having a population of 7,59,705. Literacy ratio is about 82.21%. The average rainfall for Mangalore is about 3600 mm. The total number of motor vehicles is about 98,586 as per the year 1999 statistics and now it will be around 1,52,500 at the growth rate of 5% per year. This includes cars, buses, jeeps, lorries, autorickshaws, etc. Mangalore is one of the important educational centres in Karnataka State with a number of professional / educational institutions situated in and around the Town.

### 3.1. Railways

3.1.1. Existing alignment of Konkan Railway line passes near the Bajpe Airport at a distance of about 6 km (shown in Key Plan). The proposed Railway Station has to be located in the stretch between km 15 and 20 with number of curves and steep gradient. After physical verification and inspection at site, the stretch of Railway alignment between road underpass ( Railway Bridge No.28) at railway km 17.2 and Gurupura River Bridge at railway km 15.5 has been chosen for the proposed railway station. The land availability in this stretch i.e. from railway km 17.2 to km 15.5 width varies from 16.5 m to 50 m. The existing gradient in this stretch is level and 1 in 400.

### 3.2. Airport

3.2.1. Existing Mangalore airport is well connected only by roads at present and is located in an elevated place of about (+)103 metres above MSL. The approach road of the airport is taking off from SH 67 at km 20. SH 67 crossing the existing Konkan Railway line at railway km 14 in Maravur village, which is situated about 6 km from the Bajpe Airport. The Airport Authority of India has taken up the work of construction of a new terminal building which on completion will reduce the distance between Mangalore and the airport by about 8 km. The following are the activities being undertaken under this scheme of expansion of the airport.

3.2.2. New terminal building 43,000 sq. metres

- Provision of 28 check-in counters, conveyor belts and inline baggage check system.
- Provision of Aero bridges.

3.2.3. With the above expansion the Mangalore airport will attain international standards and will function as an important international airport. In 2006-07 the Mangalore airport had handled 2688 aircrafts and in 2007-08, 10019 aircrafts. Mangalore airport deals with daily domestic flights to Mumbai, Bangalore, Goa, Cochin, Kozhikode and Chennai. Mangalore started operating the international flights from 2006 and the services available at present are to Dubai, Abu Dhabi, Muscat, Doha, Bahrain, Kuwait, Sharjah, Kulala Lumpur etc. At present there is no cargo handling facility in the existing airport. However, Airport Authority may likely provide this facilities once the new terminal becomes operational.

3.2.4. KUIDFC has already funded for the construction of new approach road of 1.4 km long to the proposed new terminal of the airport from a point located near Maravur, taking off at km 14.8 from SH 67. The road constructed is in steep gradient and has a few hairpin bends in the alignment between Maravur and new Air Terminal. This road is yet to be commissioned.

# C H A P T E R  N o. 4

# DATA COLLECTION

## 4. DATA COLLECTION

M/s. Infrastructure Development Corporation (Karnataka) Ltd, Bangalore, in association with M/s.Varna Engineering Consultants Pvt.Ltd have carried out the study in line with the terms of reference issued by Principal Secretary, Infrastructure Development Department, Government of Karnataka. The proposals have been made considering the aspects of land availability, traffic to and from the airport in terms of number of passengers, and vehicular movement in the area.

A team comprising of experienced engineers has carried out reconnaissance survey of the entire area. The survey has been carried out keeping the airport as a business centre for development of the locality. Development of the Airport is expected to trigger off a large number of supporting activities in the area.

The data related to this study have been collected from Airport Authority of India, (Mangalore), Konkan Railways, Panther Goods Railway Yard, Mangalore Port and local enquiries. The data collected are tabulated and exhibited in Annexures. The data collected from Airport Authority of India, Mangalore are shown in Annexure I. As per the information received from the airport authorities, 20 Nos. of domestic flights per day and 21 Nos. of International flights per week are being operated from Mangalore airport.

Presently, there is no dedicated cargo flight from Mangalore airport. However, commodities like blood sample, biological items, plants, mobile phones, dry ice, printed materials, plastic goods etc., are dealt with through passenger flights as shown in Annexure II.

The data collected from the agency engaged by AAI for operating the car park and regulating the entry of vehicles to airport is tabulated and exhibited in the Annexure III. It is learnt from the Authorities that once the airport under construction becomes operational the existing terminal will be used exclusively for cargo handling.

It is learnt understand that there is a substantial growth in the passenger movement between 2006-2007 and 2007-2008. However, it appears from the details furnished by AAI that there is a decline in the growth of passenger traffic in recent days, in line with international trend.

We have also collected the datas from the Railways ( Panthar Yard) in respect of the commodities movement and their quantum which are exhibited in Annexure IV.

The railway station and a Hub for Multi Modal Transport System are being proposed near Maravur village.

Names of the stations and the locations as per the railway km are given in the Annexure V.

The traffic details ( trains) collected at a Level Crossing are tabulated and shown in Annexure VI.

It is learnt that the Mangalore Port was declared as a major port in the year 1974 and has been functioning as a catalyst for the economic development of this region and cater the needs of the shippers. It is also informed that the traffic handled during the year 2003-04 is 26.67 Million tones and at present the port is handling 38 million tones. The existing transit sheds and open stock yard are inadequate to handle such a huge volume of cargo. The data collected from the port authorities in respect of handling of the commodities are tabulated hereunder.

| **S.No.** | **Name of Berth** | **Type of Berth** | **DWT ( in MT)** |
|---|---|---|---|
| 1 | Berth No.1 | Gen. cargo | 4000 |
| 2 | Berth No.2 | Gen. cargo | 30000 |
| 3 | Berth No.3 | Gen.cargo | 30000 |
| 4 | Berth No.4 | Gen.cargo<br>Liq. Ammonia | 30000 |
| 5 | Berth No.5 | Gen. cargo/<br>Bulk cement | 30000 |
| 6 | Berth No.6 | Gen. cargo | 30000 |
| 7 | Berth No.7 | Gen. cargo | 30000 |
| 8 | Berth No.8<br>(Iron ore berth) | Iron ore<br>(Mech) | 60000 |
| 9 | Berth No.9 | POL/LPG | 45000 |
| 10 | Berth No.10<br>(crude oil jetty) | Crude / POL products | 85000 |
| 11 | Berth No.11 | Crude / POL products | 85000 |
| 12 | Berth No.12 | Crude / POL products | 50000 |
| 13 | Virtual jetty | POL products | 35000 |
| 14 | Deep draft Multi-purpose berth | General cargo | 90000 |

The present total capacity of the port is 38.00 million tones.

# C H A P T E R  N o. 5

# PROPOSED FACILITIES

## 5. PROPOSED FACILITIES

As per the scope of work, a reconnaissance survey of the entire area has been carried out and collected data from the airport, railways, port authorities and also through local enquiries. The consultants have also carried out examination of the existing facilities and features.

After examining the entire alignment of Konkan Railway near the airport, we have chosen the location for the proposed railway station between railway km 15.5 and km 17.2.

### 5.1. Railways

5.1.1. In general, the provision of a new railway station is to meet atleast one or more of the following :

- To entrain or to detrain the passengers
- To load or off load the goods or parcels
- To control the movement of trains
- To enable the trains to cross each other in case of single line section
- To enable the faster trains to overtake the slower trains
- To enable the locomotives to take fuel.
- To attach or detach coaches or wagons to and from the trains
- To collect food and water for the passengers
- To provide facilities for change of engines and crew / staff.
- To enable sorting out of wagons and bogies to form new trains
- To provide facilities for the stay of the passengers in case of emergencies like floods and accidents etc. when traffic is disrupted.

5.1.2. General requirements by Railway Station :

- Passenger requirements
- Traffic requirements
- Staff requirements

5.1.3. Stations can be classified broadly on the basis of the following :

- Operational consideration
- Earnings consideration
- Functional consideration

- Social obligations

5.1.4. Railway stations can also be classified based on the operational point of view as Block station and Non-block station. Block station is of 3 types viz. E class, B class and C class. Similarly Non-block station are of 2 types, Flag station and DK station.

5.1.5. Reasons for selecting the location between km 15.5 and 17.2

- Permissibility of geometry of the existing alignment.
- Availability of the land
- Proximity to airport
- Economy in construction

5.1.6. The terrain of this area is hilly and the soil condition seems to be good for construction. The approach road of SH 67 has been well connected to MRPL and Manampur Harbour.

5.1.7. The Konkan railway is crossing the Maravur village between railway km 15.5 near Gurpura River Bridge at south end and km 17.2 near a subway provided for crossing SH 67 on the northern end. The proposed location of the railway station is near to the airport and the railway geometry also permits provision of the railway station with a loop line. The area is well elevated above the road and land is available to lay a single line loop on the airport side. Land availability on this stretch to the edge of the cutting is varying from 16.5 m to 50 m and the land needs to be acquired near to the SH 67 for the provision of a hub for Multi Modal Transport System.

5.1.8. The location of the railway station proposed is very near to the airport which is only about 6 km. The existing geometry of the railway line is permitting for taking off at railway km 15.620 and joining on the existing alignment at railway km 16.500. The proposed loop line is running parallel to the existing railway alignment at a distance of 5.6 metres; Both ends of the loop lines are connected in level gradient. The points and crossings proposed for the loop line are 1 in 12-1/2 ( 60 kgs). The proposed loop will have a full track capacity of 715 metre. It is proposed to have a control phone connection on either side of the station for easy communications and for the safe operation. The entire loop line and the proposed platform are in a curve of radius 583 metres. The station building proposed is at railway km 16.2. Both ends of the loop line have been proposed with run over line of length 120 metres. An approach road of width 5.5 metre has been proposed upto the station building from SH 67. The station proposed will have passenger facilities like platforms with electric lighting, generator room, waiting hall, toilets, water facilities etc. With the existing traffic Konkan Railway may not agree for

operation as a halt station. Hence, it has been suggested to go in for a crossing station on deposit terms to be funded by the State Government. The crossing station shall have a station master room, waiting room with convenience, ticket booking counter, rest room, relay room, equipment room, generator room, axle counter room, battery room, telecom room, waiting hall, etc., the railway staff needs to be provided with requisite staff quarters. The drawing showing the complete details of proposed railway station is enclosed (drawing No. 01/Ideck/SBC/09-10 .)

## 5.2. Hub for a Multi Modal Transport System

5.2.1. The proposed land for a Multi Modal Transport system is shown in the Land Use Plan enclosed as Drawing No. 02/Ideck/SBC/09-10.

5.2.2. The proposed hub for a multi modal transport system will have a provision of transit shed for the movement of cargo with truck parking facilities, warehouses , rest room for drivers, etc. The hub will also have banking facilities, post office, shopping complex, restaurant, information centre with necessary parking facilities.

5.2.3. The hub for the Multi Modal Transport System will have a provision for parking of 50 Nos. of cars, 25 Nos. of Autos and 100 Nos. of two wheelers. It will also permit turn round of buses with parking facilities for 6 Nos. at a time with all entry and exit facilities for free movement of the vehicles. The passengers arriving in airport can pick any hired vehicle and reach the railway station to board the train for their destinations and vice versa by the passengers who want to board the flight.

5.2.4. Considering the expected traffic from and to the Airport, it is recommended to go for a crossing station.( Block station category E)

5.2.5. As per the data collected from the contract firm collecting parking fee, engaged by AAI, the number of vehicles coming per day is 74 Nos .i.e. Car- 20, Auto- 50 and heavy vehicles – 4 Nos. The same has been forecasted for the next ten years and is tabulated below.

| Details | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Car | 20 | 21 | 21 | 22 | 25 | 28 | 32 | 36 | 39 | 42 |
| Autos | 50 | 52 | 55 | 57 | 60 | 62 | 65 | 67 | 70 | 72 |
| Heavy vehicles | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 8 | 9 |

5.2.6. The peak hours traffic, being considered as 2 ½ times of the hourly traffic and which works out to 50 cars. Similarly the Autos parking have not reached the required level i.e 25 Nos. Hence provision has been made for minimum parking facility of 25 Nos. As far as heavy vehicles are concerned present day traffic is only 4 Nos. This may likely to increase, when the cargo handling terminal becomes operational.

5.2.7. The transit yard and the stockyard area inside the port are inadequate when compared to import / export being handled. They shall also be forced to move out of the port area and may use the created facilities like ware house, truck parking area , drivers rest room etc., now proposed in the Multimodal Hub.

5.2.8. The tourist population will also increase in the coming years. They shall also travel to the place of interest by their choice of transport viz. Car, Taxi, Bus, Auto, Train, etc., In addition provision for Hotel, Bus stand, ATM, shopping complex, information centre, post office has been made.

5.2.9. A flag station has more facilities than a halt and is provided with a station building and staff. On controlled sections, the block station is equipped with a control phone also connected to the stations on either side for easy communication. The block station is usually provided with a small waiting hall and booking office, platforms with benches and with drinking water arrangements. Sometimes a siding is also provided in a block station for stabling wagons booked for the station.

5.2.10. It is also proposed to have a high level platform for a total length of 686 metres with a station building, booking facilities and a small waiting room for the passengers to take rest.

5.2.11. It is also proposed to have toilets attached to the waiting hall with water facilities apart from common toilets in the platform. It is also proposed to have other passenger’s facilities like name board, lighting arrangements, drinking water facilities etc.

## 5.3. Road connectivity from proposed railway station to Airport

5.3.1. Presently an approach road taking off from km 20 on SH 67 upto the existing airport is of two lane and it is suggested that the same can be provided with centre median with necessary drainage and footpaths.

5.3.2. The proposed road which is in the advanced stage of construction taking off from SH 67 at km 15.2 is in steep gradient with number of hairpin curves to reach the MSL (+) 103 metres and leading to a new international airport under construction is of 1.4 kms length from SH 67. In future if the traffic improves, this road can be converted as the exit road and the road taking off from SH 67 @ km 20 may be converted as entry to airport so that the accident can be minimized. This road is not in operation and is not yet connected to SH 67.

5.3.3. The connecting road proposed from existing airport to the New terminal under construction is of two lane and running parallel along the compound wall of NAAI. The length of this proposed road is about 4 km.

5.3.4. In case of the new terminal becomes operational, ZP road taking of SH67 can be modified to 4 lane road to a length of 7 km. Thus, ZP road will be the entry road to the new terminal. The new approach road under construction funded by M/s. KUIDFC will become the exist from the new terminal.

5.3.5. It is learnt from AAI that the present terminal will be converted as a cargo handling. The existing approach road can be still utilized for cargo movement.

# C H A P T E R  N o. 6

# BUDGETARY ESTIMATE

## 6. BUDGETARY ESTIMATE

The total budgetary cost estimate for the proposed hub for Multi Modal transport system and the railway station is working out to Rs.6795 lakhs (excluding cost of land ). The abstract estimate is shown below :

**Abstract :**

Provision of railway station near Bajpe Airport and a hub for multi modal transport system, Mangalore

| S.No. | Description | Anticipated cost Rs. in lakhs |
|---|---|---|
| 1. | Provision of railway station | 635.00 |
| 2. | Provision of a hub for multi modal transport system | 3060.00 |
| 3. | Recurring expenditure for the operation of a railway station | 100.00 |
| 4. | Road connectivity from proposed railway station to Airport | 1900.00 |
| 5. | The improvement of ZP road taking of SH 67 to the airport. | 1100.00 |
| | **GRAND TOTAL** | **6795.00** |

* Note: This expenditure can be borne by M/s. Konkan Railway Corporation after discussions by IDD.

The cost of provision of a railway station is working out to Rs.635 lakhs which covers jungle clearance, earthwork, laying of railway track, provision of points and crossings, signal and telecommunication, electrification, construction of high level platform, passenger facilities and drainage system etc. details of which are shown in Annexure VII. (Based on the latest estimate submitted to Board by Railway.)

The recurring expenditure for operation of the railway station has been worked out as Rs.100 lakhs per annum which covers deployment of 3 station managers (SM and ASM), 6 Nos. Gangmen, Booking clerk 3 Nos. and other related maintenance costs. One additional ASM and booking clerk and 2 Nos. of gangmen also need to be accounted for, throughout shown in Annexure VIII.

The budgetary cost estimate for a hub for multi modal transport system has been worked out as Rs.3060 lakhs (excluding cost of land) which covers land development, bus stand, provision of rigid and flexible pavement, rest room for drivers, banking, restaurant, post office, information centre,landscaping and horticulture, drainage system, etc. as shown in Annexure IX.

The budgetary cost estimate for the road connectivity from proposed railway station to the Airport have been worked out and the budgetary provision is made for an amount of Rs.1900.00 lakhs . It covers the improvement on the existing SH 67 between the new railway station and upto the approach road to Airport, approach road to Airport, proposed road connection between the existing airport and the new international airport and to the new road under construction from SH 67 to new international airport. (Annexure X)

The budgetary cost estimate for the ZP road connecting the SH 67 and the new airport terminal ( this road may be improved once the new airport terminal has become operational). It covers the development of the existing ZP road with the provision of the central median and drainage facilities, etc. The additional new road for the connection of ZP road and the new airport terminal for a length of 2 km is also taken which includes formation base, subbase, DBM, wearing course, footpath and drainage facilities complete. Apart from the above, provision of junction improvement, horticulture, landscaping and plantation of avenue trees is also considered. The detailed area shown in the Annexure XI.

# C H A P T E R  N o. 7

# RECOMMENDATIONS AND CONCLUSIONS

# RECOMMENDATIONS AND CONCLUSIONS

## 7. RECOMMENDATIONS AND CONCLUSIONS

The proposed study recommends the following infrastructure viz.

(i) Providing a railway station near Bajpe airport.
(ii) Hub for Multi Modal Transport System
(iii) Improvement to the existing road and construction of new roads to interconnect airport, Railway station and Multi Modal Hub.

By providing a crossing station the distance between two crossing stations namely Kankanadi and Thokkur will get reduced. By introduction of this station, optimum utilization of the traffic is achieved. Apart from the revenue to Konkan railway, the economic development to the area as a whole shall grow considerably.

The state Government can demand for a stop of all the trains crossing the new proposed station, which will help the passengers who are coming from long distances to get down, for boarding the flight and vice versa. Hence they can save time and money.

The state Government shall discuss with Konkan Railway for establishing a Railway Station considering the following points.

- Improvement of the existing airport and the expansion undertaken by the AAI.
- The proposed Multi Modal Hub
- Cost sharing and its implication

If the proposal, to request Konkan Railways to provide a new station is decided upon considering traffic other than Airport Traffic, attempt should be made to persuade Konkan Railway to share the initial capital cost and annual recurring cost. Once the crossing station is completed, the long block section of 17 kms. between existing stations Kankanadi and Thokur on either side will get converted into two smaller block stations of 11 kms and 6 kms. This will give a big operational facility to Konkan Railway to facilitate crossing / overtaking of trains on the single line sections. The throughput of train in the section Mangalore to Udipi will improve.

The proposed Multi Modal Hub can also be discussed with the Port authorities and industrialist and appraise about the advantage of transit arrangement for both export and import commodities. Considering the space constrains inside the port

this facility shall become a sigh of relief to the long felt area requirement, with the expansion of the city.

The station has been proposed within the available land at a suitable location.

A small bit of land about 3 Hectares needs to be acquired near to the railway station with the future expansion

Considering the suggestions initiated by the Principal Secretary, Infrastructure Development Department , Govt. of Karnataka, a crossing  station and a hub for multi Modal transport system have been proposed in this report.

# C H A P T E R N O. 8

# ANNEXURES/DRAWINGS/PHOTOS

# ANNEXURE – I

# INFORMATION COLLECTED FROM AIRPORT AUTHORITIES, MANGALORE

Name of the Airport – Bajpe Airport

**TABLE 1**

| General Information | |
|---|---|
| Passenger Terminal | Domestic 1 No<br>International 1 No. |
| Mean Sea Level (MSL) | 335.11' (101.62 m) |
| Capacity of Air Bus | 310 passengers (Biggest Aircraft handled) |
| No. of flights –<br>Domestic<br><br><br>International | Arr. Dep.<br>20 Nos./day 20 Nos./day<br><br>21 Nos./week 21 Nos./ week |
| Expansion programme | 1 New Run way is under construction with night landing facilities.<br><br>Air field length is 2450 metres and width 45 metres<br><br>PCN 54 designed<br><br>Orientation 06.24 |

# ANNEXURE – II

# INFORMATION COLLECTED FROM AIRPORT AUTHORITIES, MANGALORE

Name of the Airport – Bajpe Airport

**TABLE 2**

| **Cargo Information** | |
|---|---|
| Cargo Plan | Not available |
| Quantity of cargo handled | 50 Tonnes (Approx) per month |
| Transport of cargo at present | Only by passenger planes |
| Commodities | Blood sample<br>Biological items,<br>Plants<br>Mobile phones<br>Dry Eyes<br>Printed materials<br>Plastic goods |

# ANNEXURE – III

# INFORMATION COLLECTED FROM AIRPORT AUTHORITIES, MANGALORE

Name of the Airport – Bajpe Airport.

**TABLE 3**

Traffic Data from 2nd Aug. 2009 to 9th Aug.2009

| Date | **No. of Vehicles** | | |
|---|---|---|---|
| | Cars | Heavy Vehicles | Autos |
| 2.8.09 | 495 | 4 | 53 |
| 3.8.09 | 488 | 7 | 48 |
| 4.8.09 | 505 | 4 | 49 |
| 5.8.09 | 501 | 5 | 56 |
| 6.8.09 | 499 | 4 | 50 |
| 7.8.09 | 487 | 7 | 50 |
| 8.8.09 | 511 | 5 | 44 |
| **Total** | **3486** | **32** | **350** |

# ANNEXURE – IV

# INFORMATION COLLECTED FROM RAILWAY YARD, (PANTHAR ) MANGALORE

Name of the Airport – Bajpe Airport.

**TABLE 4**

Goods handled at Panthar Railway Yard between Apr.2008 and March 2009

| Sl.No. | Item description | Received from | Quantity | Unit |
|---|---|---|---|---|
| 1 | Cement | Tamil Nadu & AP | 46,237 | Tons |
| 2 | Fertilizer | Trombay | 1,173 | Tons |
| 3 | Rice, Wheat grains | FCI – Delhi, AP | 6,870 | Tons |
| 4 | Assorted items | Private Sector | 39,994 | Tons |
| | | **TOTAL** | 94,272 | Tons |

# ANNEXURE V

**TABLE 5**

Names of the stations in Mangalore- Udupi sections are given below :

| Station Name | Km From Mangalore |
|---|---|
| Udupi | 87 kms |
| Pandubidri | 64 kms |
| Mulki | 40 kms |
| Surathkal | 28 kms |
| Thokur | 22 kms |
| Kankanadi | 5 kms |
| Mangalore | 0 km |

# ANNEXURE VI

**TABLE 6**

Traffic details Mangalore-Udipi section collected at a Level Crossing :

| Date | No. of trains |
|---|---|
| 2.8.09 | 23 |
| 3.8.09 | 22 |
| 4.8.09 | 21 |
| 5.8.09 | 49 |
| 6.8.09 | 24 |
| 7.8.09 | 24 |
| 8.8.09 | 19 |
| **Total** | **182** |

# Annexure VII

**TABLE 7**

The budgetary cost estimate for the provision of a railway station

| Sl.No. | Descrpition | Amount Rs. in lakhs |
|---|---|---|
| 1. | Jungle clearance | 5.00 |
| 2. | Earthwork Excavation Embankment | 50.00 |
| 3. | Laying the railway track (1.50 kms) | 250 .00 |
| 4. | Provision of points and crossing | 30.00 |
| 5. | Signal tele-communication services | 100.00 |
| 6. | Electrification including generator room | 50.00 |
| 7. | Construction of high level platform | 25.00 |
| 8. | Provision of station building, waiting hall, booking facilities and other passenger amenities (750 sq.mt) | 75.00 |
| 9. | Provision of Drainage system | 20.00 |
| | Contingencies 5% of the above | 30.25 |
| | **Sub total** | **635.25** |

Note: - Land cost is not considered. Say Rs.635 lakhs

# Annexure VIII

**TABLE 8**

**Recurring expenditure :**

| S.No. | Description | Amount per annum Rs in Lakhs |
|---|---|---|
| 1. | Station Manager – 3 Nos. ( 1 lac x 12 x 3) | 36.00 |
| 2. | Gangman – 6 Nos. ( 40,000 x 12 x 6) | 28.80 |
| 3. | Booking clerk – 3 Nos. ( 60,000 x 12 x 3) | 21.60 |
| 4. | Regular maintenance provision – 1 lac per month | 12.00 |
| | **Sub total** | **98.40** |

**Say Rs. 100 lakhs**

Minimum amount need to be deposited in advance every year with railways for the operation of the railway station.

# Annexure IX

**TABLE 9**

The budgetary cost estimate for a Hub for multi modal transport system :-

| S.No. | Description | Amount Rs. in lakh |
|---|---|---|
| 1. | Land development (100m x 200m) | 120.00 |
| 2 | Provision of rigid / flexible payment with median | 1000.00 |
| 3 | Provision of ware houses, rest room for drivers, commercial complex, banking, restaurant, post office, information centre, etc. | 370.00 |
| 4 | Landscaping and horticulture | 10.00 |
| 5 | Drainage system | 5.00 |
| 6 | Miscellaneous | 5.00 |
| | Contingencies 5% of the above | 58.25 |
| | **Sub total** | **3058.25** |

**Say Rs.3060 lakhs**

**N**ote: Land cost is not considered.

# Annexure X

**TABLE 10**

THE BUDGETARY COST ESTIMATE FOR PROVISION OF ROAD CONNECTIVITY FROM THE PROPOSED RAILWAY STATION TO AIRPORT.

| S.No. | Description | Amount Rs. in Lakhs |
|---|---|---|
| 1. | **DEVELOPMENT ON EXISTING SH 67 BETWEEN KM 15 AND 20 KM.** Development of central median drainage, and drainage facilities for the existing SH67 from proposed new railway station to Airport. (5 Km X 100 lakhs) | 500.00 |
| 2. | **APPROACH ROAD TO AIRPORT (EXISTING)** From SH67 to Airport including removal of central median and provision of foot path and drainage etc., 1.8 km | 100.00 |
| 3. | **NEW ROAD FOR MACHINE BETWEEN THE EXISTING AIRPORT TO THE NEW AIRPORT TERMINAL.** The new road including formation base, subbase, DBM, wearing course footpath and drainage facilities complete. ( 4 km x 250 lakhs) | 1000.00 |
| 4. | **NEW ROAD TO THE NEW AIRPORT TERMINAL (under construction)** Improvement on the new road (under construction) connecting the proposed International Airport 1.4 km. | 300.00 |
| | **Sub-Total** | **1900.00** |

# Annexure XI

**TABLE 11**

THE BUDGETARY COST ESTIMATE FOR THE IMPROVEMENT OF ZP ROAD TAKING OF SH 67.

| S.No. | Description | Amount Rs. in Lakhs |
|---|---|---|
| 1. | **DEVELOPMENT ON EXISTING ZP ROAD.** Development of central median drainage, and drainage facilities for the existing ZP Road from SH 67 to the Airport. (5 Km X 100 lakhs) | 500.00 |
| 2. | **NEW ROAD FORMATION BETWEEN THE ZP ROAD UPTO THE AIRPORT PARKING AREA ( NEW AIRPORT TERMINAL).** The new road including formation base, subbase, DBM, wearing course footpath and drainage facilities complete. ( 2 km x 250 lakhs) | 500.00 |
| 3. | **JUNCTION IMPROVEMENT** Junction improvements, horticulture, landscaping and plantation of avenue tree etc., LS | 100.00 |
| | **Sub-Total** | **1100.00** |