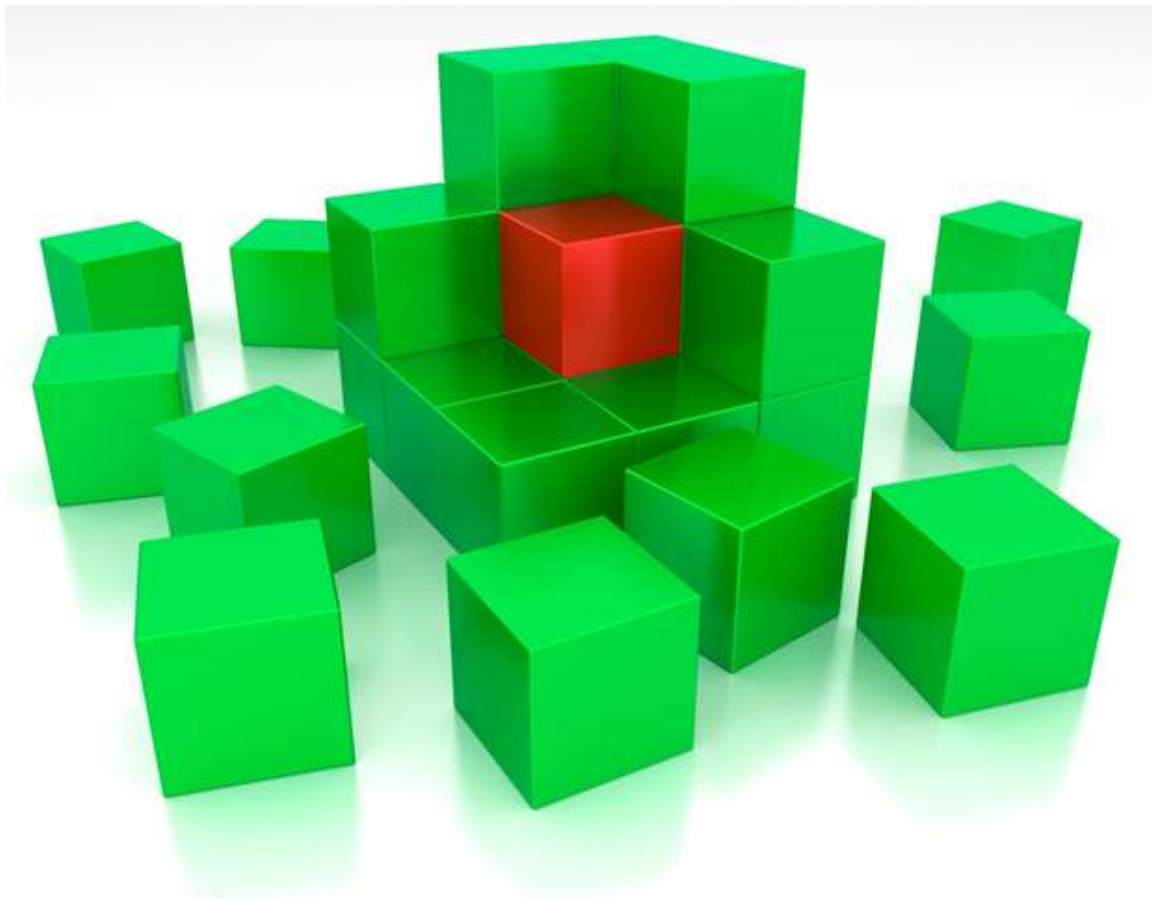




Sector Specific Inventory & Institutional Strengthening for PPP Mainstreaming

Directorate of Urban Land Transport

Prefeasibility Report- Outer Ring Road, Belgaum



Submitted By
Deloitte Touche Tohmatsu India Private Limited

April 2012

ACRONYMS

ADM	Additional District Magistrate
BOOT	Build Own Operate Transfer
BOQ	Bill of Quantities
BOT	Build Operate Transfer
BUDA	Belgaum Urban Development Authority
CAGR	Compound Annual Growth Rate
CDP	City Development Plan
CEMP	Comprehensive Environment Management Plan
CTTP	Comprehensive Traffic & Transportation Plan
DBFOT	Design Build Finance Operate and Transfer
DG	Diesel Generator
DOT	Department of Telecom
DULT	Directorate of Urban Land Transport
EIA	Environmental Impact Assessment
EOI	Expression of Interest
EPC	Engineering, procurement and construction
FAR	Floor Area Ratio
FDI	Foreign Direct Investment
FSI	Floor Space Index
GAD	General Administration Department
Gol	Government of India
GoK	Government of Karnataka
HMDA	Hyderabad Metropolitan Development Authority
IDD	Infrastructure Development Department
INDAL	Indian Aluminium Company
IPT	Intermediate Public Transport
IRC	Indian Road Congress
KSHB	Karnataka State Housing Board
KTCP Act	Karnataka Town and Country Planning Act
LCV	Light Commercial Vehicles
LOS	Level of Service
LPA	Local Planning Authority
LRT	Light Rail Transit
MIS	Management Information System
MoEF	Ministry of Environment and Forests
NH	National Highway
NHAI	National Highways Authority of India
NICE	Nandi Infrastructure Corridor Enterprise Ltd.
NOC	No Objection Certificate

NUTP	National Urban Transport Policy
O&M	Operation and Maintenance
PPP	Public Private Partnership
PW,P&IWT	Public Works, Ports and Inland Water Transport
R & R	Resettlement and Rehabilitation
RFP	Request for Proposal
RFQ	Request for Qualification
RoB	Rail over Bridge
SHLC	State High Level Committee
SIA	Social Impact Assessment
SPV	Special Purpose Vehicle
TNRDC	Tamil Nadu Road Development Company
UDD	Urban Development Department
ULB	Urban Local Body
VGf	Viability Gap Funding

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1 Executive Summary

- 1.1 Karnataka has emerged as a key State with knowledge-based industries such as IT, biotechnology and engineering. It is the science capital of India with more than 100 Research and Development (R&D) centres, and a preferred destination for multinational corporations with more than 650 such companies. Such all-round developments trigger the need for well-developed social, physical and industrial infrastructure, part of which can be built through Public Private Partnership (PPP).
- 1.2 Since PPP concept is relatively new and the implementing officers require necessary insight, orientation and assistance, Infrastructure Development Department (IDD), Government of Karnataka is keen to strengthen the project development process in the Directorate of Urban Land Transport for implementing infrastructure projects through PPP. IDD has therefore engaged Deloitte Touche Tohmatsu India Pvt. Ltd. to provide consultancy services in this regard.
- 1.3 Among the wider ambit of services, the engagement intends to arrive at sector-wise inventory, undertake pre-feasibility studies and develop a procurement plan for selection of Transaction Advisor (TA) / Technical Consultant for projects to be taken up for bidding. The information on projects that are generated out of this process shall be initially marketed through workshops before they are bid-out with the assistance of respective Transaction Advisors.
- 1.4 Belgaum city is the district headquarters of Belgaum district and lies at a distance of 502 km from Bangalore. Belgaum city corporation area has a geographical spread of 98.04 Sq. km while the Local Planning Area is 182 Sq km. As per Census 2011, Belgaum city has population of 488,292. Its urban/metropolitan population is 610,189.
- 1.5 A Ring Road along the outer periphery of Belgaum City, approximately 41.53 km in length has been conceptualized which will connect Kakati on NH-4 to Sulga and then pass through Udyambagh to Majagaon cutting NH-4A and NH-4 on its way to Kalkamb to Mutennati and then connecting back to Kakati. As per our understanding the Outer ring road is envisaged from the need to ease traffic flow and initiate development and direct urban growth toward the outskirts of Belgaum. The project is planned to be taken up in two phases with **Phase 1** to include 27.01 km of the western link connecting NH-4 with NH-4A and NH-4.
- 1.6 Phase I of the ORR will connect most of the external road links joining Belgaum including NH-4 from north of Belgaum at Kakti to Kadoli village, Vengurla, Rakasakoppa, NH-4A and NH-4. Hence, **Phase I** of the ORR will be able to cater to the majority of the diverted traffic from these roads. Based on February 2009 figures, total traffic influx at all these intersecting points will be close to 1,70,000 PCU or 1,50,000 Nos. of which 8-10% will be external to external traffic and are expected to use the entire corridor. Besides some % of traffic originating or destined from/to Belgaum will also use a part of this corridor.
- 1.7 Based on the traffic volumes available for the years 2008-09, some realistic assumptions on the traffic diversions from these regional networks to the proposed ring road network has been made to arrive at the base line traffic(for Year 2008-09) as also indicated in the Table below. The traffic has been projected @ 5% per annum.

Tollable Traffic					Non-Tollable Traffic		Total Tollable (PCU)	Total Traffic (PCU)
Cars	Bus	Mini Bus	LCV	Trucks	2-Wheelers	3-Wheelers		
3324	793	321	1584	3905	4857	559	20275	23262

- 1.8 Considering the above base traffic volume, a 4-lane divided carriageway with 1.5 paved shoulders is recommended. Intermediate lane service road has also been proposed in 50% of the road stretches to begin with and with the balance 50% of the road corridor in future as the need traffic arises.
- 1.9 The Total Project Cost (TPC) is sum-total of the civil construction costs, contingencies, financing costs and IDC without any Grant from GoK. The per km cost of construction for a greenfield 4-lane divided carriageway has been assumed to be INR 8 Cr. per/km and INR 1 Cr. per km for greenfield intermediate lane service road.
- 1.10 In exercise of the powers conferred by Section 19A of the Karnataka State Highways Act 1964, GoK notified toll tax to be determined and collected as Toll or user fee for using a section of State Highway/Major District Road to be developed under PPP. The base toll rates are provided in the Table below:

Type of Vehicle	Basic Toll Rate applicable from 28.01.2009 for 4-lane road (Rs per km)*
Car, Jeep, Van or Light Motor Vehicle	0.65
Light Commercial Vehicle, Light Goods Vehicle or Mini Bus	1.05
Bus	2.2
Truck	2.2
Multi Axle Vehicle (MAV), HCM, EME (Three to Six Axles)	3.45
Oversized Vehicles (Seven or more axles)	4.2

* Note: Karnataka Toll Notification dated 26th May 2009 issued by Public Works, Ports and Inland Water Transport, Department, GoK

The toll rates as provided in the above table are to be revised every year on the basis of Wholesale Price Index rounded off to the nearest 5 rupees and are to be made applicable from 1st March of every year.

- 1.11 Other than toll revenue receipts, a private developer can be given rights to advertise along the road corridor. Lump sum revenue of Rs. 50 lakhs per annum has been considered for the FY 2015-16 and increased @ 5% per annum. Considering that Belgaum Urban Development Authority (BUDA) will be the concessioning authority, a notification allowing advertisement rights to the developer would be required to be issued and included in the concession agreement.

1.12 GoK has the option to develop this project either as BOT-Toll or BOT-Annuity. In case of BOT-Toll, the project authority will notify toll rates for the project road. In case the project is implemented on BOT-Annuity, the revenue accruing to the developer would be in form of annuity amount paid by GoK half-yearly. In this case, GoK would have the option of notifying tolls for the project road or fund it through a dedicated project development funds.

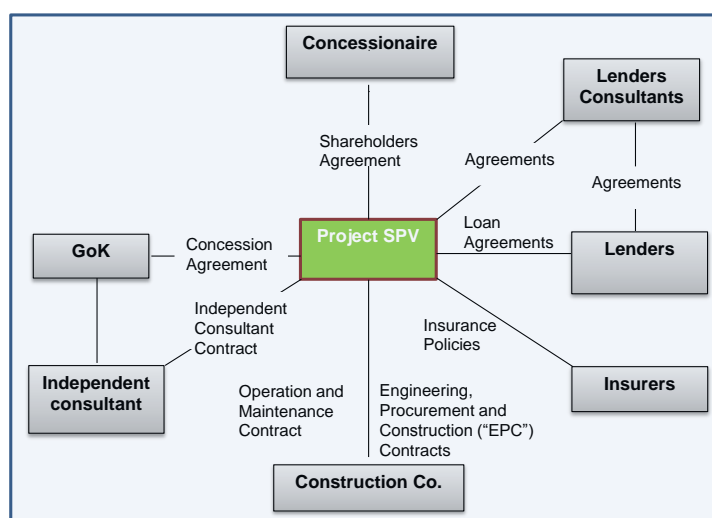
1.13 For financial viability analysis, the following three Scenarios have been considered for evaluation

- **Scenario I BOT (Toll) with Grant/Premium**
- **Scenario II BOT (Annuity)**
- **Scenario III Hybrid Model**

1.14 Based on the standard cost and revenue assumptions, the key project viability indicators for the three scenarios have been determined and presented in the Table below.

Key Indicators	Scenario I	Scenario II	Scenario III
Total Project Cost (TPC)	302.82	320.53	305.52
Upfront Grant assumed as % of TPC	34.3%	-	20%
Annuity INR in Cr.	-	62.16	52.16
Project IRR (after tax)	8.13%	13.63%	9.58%
Equity IRR	15.00%	15.00 %	15.00%
Weighted Average Cost of Capital (WACC)	6.80%	11.78%	9.35%
DSCR Minimum	0.74	1.07	1.07
DSCR Average	1.51	1.37	1.46

1.15 The options available for the GoK are either to develop the project on BOT-Toll with the option of grant/premium or BOT-Annuity. However, in either case, the concessionaire would be a SPV specially incorporated for the development of the project. The relationship of the Project SPV with various projects stakeholders/components is represented in the figure alongside.



2 Introduction

2.1 Project Background

Belgaum is situated 502 km from Bangalore; North West of Karnataka state and is the headquarters of Belgaum District. The economy of the city is based on small scale industries and moderate commercial activities. It is an important location for vegetable trading, fish, wood & mining resource trading in North Karnataka. Rich deposits of bauxite are found in Belgaum district, and have led to the establishment of the Indian Aluminum Company Ltd. (presently HINDALCO) north of the city. Belgaum also is a strong industrial hub for Machine Shops catering to Automotive Manufacturing, especially in Crank-shaft machining spread in various Industrial estates/units spread in the north and south of the city. The city is well connected with its neighboring regions as represented in the Figure alongside.



The city is located in the middle of Pune-Bangalore National Highway (NH-4). National Highway (NH-4A) i.e. Belgaum to Panaji in Goa starts from Belgaum and passes through the heart of the city. There has been a rapid growth in the vehicular population in the city (CAGR of vehicle registration has been around 12%). It is also understood that some of the major essential commodities to Goa State are also transported from Belgaum. Owing to absence alternate corridor for freight traffic movement, all the major transport vehicles from Mumbai-Pune leading to Goa, and manganese ore to Goa have to move through Belgaum city. This external to external traffic movement along with the city's own travel demand has resulted in heavy traffic congestion in the city. Thus in order to decongest the city an Outer Ring Road around Belgaum City / LPA has been proposed for development.

2.2 Approach & Methodology, studies, surveys including Data collection, analysis

Our broad approach and methodology for conducting pre-feasibility study is presented in form of the Table below:

S No.	Steps By Step Approach	Broad Methodology
1	Project Inception	Meetings with key officials of the DULT, BUDA, Belgaum City Corporation and PW,P&IWT
2	Macro overview of Town: Insights on regional setting, location connectivity, analysis of city road network, travel pattern, upcoming & planned developments	Secondary Research, review of Master Plan/City Development Plan, Comprehensive Traffic & Transportation Plan (CTTP)
3	Project Analysis a) Preliminary Alignment analysis with macro-level insights on connecting nodes, topography and landuse b) Estimate baseline traffic based on the review of traffic circulation pattern for regional, intra-city and city traffic and Traffic assignment c) Review of the social, environmental , regulatory requirements for project implementation	Stakeholder interactions, Comprehensive Traffic & Transportation Plan (CTTP)
4	Market Assessment a) Review of the Toll rates applicable in the State b) Understanding potential for real estate development in the corridor for induced traffic and possible revenue generating options for the Developer other than Toll c) Understanding Advertisement Revenue Potential generating potential along the corridor d) Land Prices e) Exploring feasible project development framework/models in ring road development	Secondary research, review of Karnataka Toll Policy and interactions with City Corporation, BUDA and real estate developers
5	Preliminary Engineering a) Finalize suitable road cross-section based on the baseline traffic estimate b) Preliminary project cost estimation for different project scenarios	Based on the market data, broad technical specifications and stakeholder inputs
6	Development of Base Financial Model : Base project cost, toll revenue, other revenue, traffic growth rates, assumptions on financial structuring	Discussion with the Stakeholders and market insights
7	Preliminary assessment of PPP options and Final Recommendation on Project Structuring	Based on sectorial PPP best practices and market insights

2.3 Study of earlier reports in this sector in the relevant area

2.3.1 The Directorate of Urban Land Transport (DULT), Government of Karnataka, had appointed Consultant in 2009 to prepare a Comprehensive Traffic and Transportation Plan (CTTP) for Belgaum 2009 – 2028 in line with National Urban Transport Policy (NUTP) 2006. The Final CTTP Report submitted to the DULT in 2010 has been referred by Deloitte.

3 Sector Profile

3.1 Regional Profile

3.1.1 Belgaum District is well known for its diverse cultural heritage, favourable agro-climatic conditions, industries, educational institutions and tourist spots. The district is bound by Bangalkot district in the east, the districts of Dharwad & Uttar Kannada on the south and States of Maharashtra & Goa on the west. It is well connected by air, road and rail. Belgaum district population is 4,778,439 as per Census 2011 with the area of 13415 sq km. The aforementioned aspects have made Belgaum popular as industrial and tourist destination and have influenced the tourist population inflow into the city.

3.1.2 Belgaum city is the district headquarters of Belgaum district and is at a distance of 502 km from Bangalore. It is situated nearly 2,500 ft (762 m) above sea-level. Belgaum city has a geographical spread of 98.04 sq km reflecting the character of a small town governed Municipal Corporation which comes under Belgaum Urban Agglomeration. The local planning area covers around 182 sq km. As per Census 2011, Belgaum city has population of 488,292 its urban/metropolitan population is 610,189.

3.1.3 As per the land use plan of 2004 residential area constitutes 32.29% of the total developed area of 4,232.21 Hectares while commercial and industrial establishments occupy 1.84% and 11.89% respectively of the total developed area of the city. The core area of Belgaum city is over-crowded and very congested as a result-new extension areas are coming up in the peripheral areas of the city.





3.1.4 The existing land use of the City exhibits two distinct patterns – one is specific or defined land use and other is mixed land use. Specific or defined land use means one particular land use appearing predominantly in a given area, other land uses account for negligible coverage. New extension areas like Rani Chennamma Nagar, Vijay Nagar, Sadashiv Nagar, Mahantesh Nagar etc., have residential function as specific land use. Mixed land use means an area where different land uses like commercial, industrial, public- semi public/ residential etc. exists together and each land use is predominant. For e.g. C.B.D., Khade Bazaar, Shahapur, Vadgaon etc., have mixed land use pattern, where one land use overlaps the other land use and in certain cases, segregation itself becomes difficult. One such example is Khade Bazaar road facing portion of the land is commercial, while the hinder part is used for residential use. Defined land use is predominant in newly developed areas of the City.

3.1.5 Belgaum is the fourth largest city in the State of Karnataka, after Bangalore, Mysore, Hubli-Dharwad. The district has rich deposits of bauxite which have led to establishment of INDAL (Indian Aluminium Company presently HINDALCO) at Belgaum. Belgaum is also known for its foundry clusters specialized in making machine tools, oil engines, electricity machinery and pump sets for automobile industry. These clusters are located in the Industrial estates of Udyambagh, Honga, Shinnoli and Angol Industrial Area/Estate. The location of the city right in between cities of Bangalore and Mumbai/Pune, the major automotive manufacturing hub, provides a distinct advantage. Belgaum city is also known for the being a prime education center with two medical

colleges, two dental colleges, three engineering colleges. It city also houses Vishweshwaraiah Technological University and a Post Graduate campus of Karnataka University and KLE education institutes. The city also has a number of training centres of the Indian Armed Forces, and an air base of the Indian Air Force.

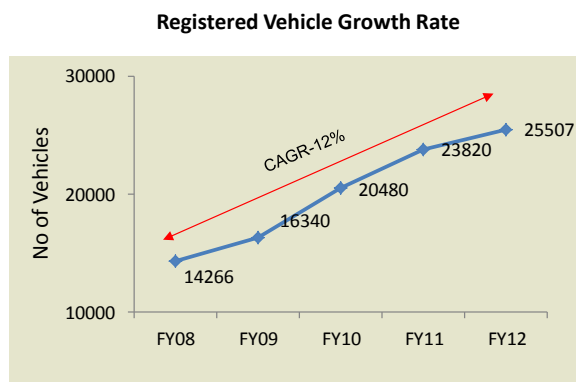
- 3.1.6 Belgaum also has a large number of places of tourist importance in around and which makes a stop-over for the tourists. Some of the prominent tourist places are Belgaum Fort, Safa masjid, Kamala Basthi, Saundatti Fort, Hooli Panchalingeshwar Temple, St. Mary's Church, Vajrapoha Falls, Naviltirtha.

3.2 City Transportation Characteristics

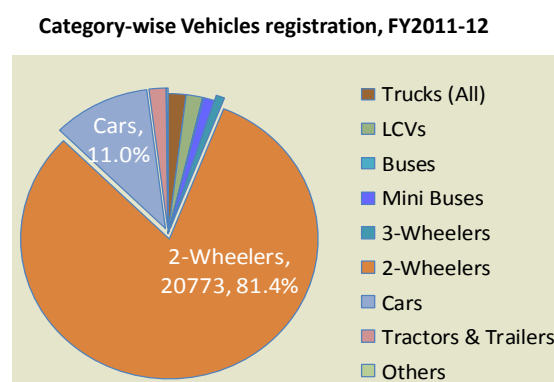
- 3.2.1 The city is located to the north-west of Karnataka and lies on the NH4 connecting Bangalore to Mumbai. The city is the gateway to both Mumbai and Goa from Karnataka. Belgaum is at a distance of 502 km from Bangalore and 320 km from Pune. It's well connected by road and rail. The transportation system in the city is dependent on primarily on roadway system. Development of the city which is governed by proposals of the Master Plan of Belgaum Urban Development Authority (BUDA) proposes a comprehensive circulation pattern for establishing the efficient traffic and transportation system.
- 3.2.2 About 743 km. of road network connects various parts in Belgaum. The city has a road density of 7.90 km per sq. km and 1.56 km road length per 1000 persons. Out of the total road length of 743 km., about 138 km. are un-surfaced roads. About 95% of the roads are maintained by Belgaum City Corporation, while the remaining is maintained by the PW,P&IWT. Most of the roads especially in CBD area are unplanned and organic in nature. Khade bazaar road running in east-west direction connecting Pune-Bangalore road and Belgaum-Panaji road, Ganapati Galli road running north-south are the important roads in the CBD area of Belgaum.
- 3.2.3 As far as the regional connectivity is concerned, National Highway 4 i.e. Pune Bangalore Road and Belgaum–Panjim (NH 4A) are the two major roads passing through Belgaum city. The city is inter-spread on either side and between these two highways. In between these two National Highways, Vengurla – Bagalkot State Highway separates the CBD on the north. The two National Highways traverse through developed areas of the city and with heavy traffic movement on them, functions as inter-city roads also. The relation of these highways with important internal roads of the city is not orderly. The Central Business Area is bounded by these highways on North, East and West. But, there are no regular internal roads for the fast moving regional traffic to inter-connect these highways. As a result, these highways particularly the Pune Bangalore Road is subjected to heavy traffic both regional and city traffic. However, in order to have speedy and smooth movement of regional traffic, four lane bye-pass of NH–4 has been constructed along the Eastern boundary of the city recently. However, there is no direct through fare connecting Pune Bangalore Road (NH 4) and Belgaum–Panjim road (NH 4A).
- 3.2.4 Belgaum falls on one of the main Indian Railways grid being part of Hubli Division and is well connected by rail to major destinations such as Bangalore (via Hubli), Mumbai (via Miraj) and Goa. The city comes under South Central Railway. The Railway station area is in Cantonment Area. Belgaum city is well connected by Railways to other parts of the State and Country. The broad gauge line is passing through the middle of the city. There

are six level crossings at different parts of the city, of which three are in Southern and other two are in the old part of the city. Among them one level crossing that crosses Pune – Bangalore road (NH 4) has road over bridge.

- 3.2.5 Belgaum city has a large number of two wheelers among the fast moving vehicles and bicycles account the major share of slow moving vehicles . The figures below represent the growth rate for vehicles registration for Belgaum Taluk in last 5 years and category wise vehicles registered (in % & numbers) in 2012.



Source: RTO Belgaum



Source: RTO Belgaum

As it can be seen from the figures above the total number of vehicles registered has grown at a CAGR of 12% in the last five years. It has also been noted that of the total 25,507 vehicles registered in FY2011-12, 81% are two wheelers, 11% are cars and rest are in the range of 1-2%.

- 3.2.6 The Public Transport system in Belgaum consists of city buses and Intermediate Public Transport (IPT) system. There are about 50 bus routes connecting city and sub-urban areas operate from 3 different bus terminals in the city. Most of the commuters are office employees, school students, college students, business people and village people, who come to city to sell vegetables. Industrial laborers using public transport is less since major industry is situated in northern and southern part of the city.
- 3.2.7 The IPT system present in Belgaum consists of auto rickshaws and taxis. The auto – rickshaws are often used as mode of transport for school children. With the upsurge of the city area, the public bus transport system has not been able to justify the mobility needs of the Belgaum citizens. Thus, there is an increase in usage of auto–rickshaws and taxis.

3.3 Key Transport Issues in Belgaum

- 3.3.1 Belgaum city is inter-spread on either side and between two highways NH-4 and NH-4A. These National Highways traverse within the city, functions as inter-city roads registering movement of city traffic and also intra-city freight traffic. The freight traffic movement raises concerns on road safety as a result of conflict between highway and city traffic, reduces the travel speed, increase hold up time at junctions which leading to increased CHG emissions and city pollution. As per City Traffic Police records, the road accidents have increased many folds in the city and with the black spots are located mostly on NH-4A inside the city limit and the College Road.

- 3.3.2 Considering that there is considerable traffic from Pune Bangalore Road (NH-4) and Belgaum-Panjim road (NH-4A) and doesn't have any direct through fare connecting the two, an outer ring road, if constructed, will substantially ease the traffic congestion within the city limits.
- 3.3.3 The Belgaum city is expected to grow outwards in the future and the same has been factored in by Belgaum Urban Development Authority while preparing the scenarios for the Master Plan 2021. At present, Western and Northern parts of the city have fairly low density of population while central and southern parts have moderate to high density of population. As per the Master Plan 2021, the area proposed for residential includes North Western part, Eastern part and Western part of the city and also extreme Northern part. Considering such future provisions, the outer ring road would if constructed would considerably help in meeting the travel demand needs of these future residential colonies.
- 3.3.4 As per the existing land use it has been observed that the commercial activities are concentrated in CBD. These areas have not undergone any change in respect of road width. The commercial activity has increased several folds, but the area has not increased leading to acute congestion. Therefore it is required to allocate commercial land in new extended areas. The corridor along the proposed ring road can be offered for commercial development and will help in reducing the congestion in central areas of the city.
- 3.3.5 The north-south bound traffic passing through the city limits have to negotiate three level crossings, Gate Number 1 on Congress Road, Gate Number 2 on Congress Road, Gate Number 3 on NH-4A, which cause heavy traffic jam as well as hardship to the public during the period of closure of level crossings.

4 Project Concept

4.1 Project Need

As discussed in the sections above, Belgaum city is unique in terms of having two National Highways passing within the city limits which cause a huge of influx of inter-city traffic. The above factor further is coupled with the rapid urbanization, with the intra-city vehicular traffic in the past few years having increased considerably leading to severe stress on city's transportation systems. With limited scope for further road widening of the city transport network, an alignment that would relieve and disperse the traffic load is the need of the hour. The Outer Ring Road for Belgaum is envisaged from the following:

- Need to ease Traffic flow and provide traffic solution by bypassing the highway traffic from the city and strengthening city road network by providing additional linkages Ring roads and network Augmentation facilities. The development of ring road around the city is expected to reduce the pressure on city's roads and act as stimulus for bringing significant socio-economic benefits to the city
- Initiate Development & Growth towards the sub-urban regions of Belgaum. The South Western & North Western regions show moderate growth in development of industrial, IT/ITES sectors resulting in residential and commercial development. The proposed corridor can augment and enhance the pace of this development thus extending the growth towards the otherwise lesser developed region.

4.2 Key Advantages of Ring Road Development

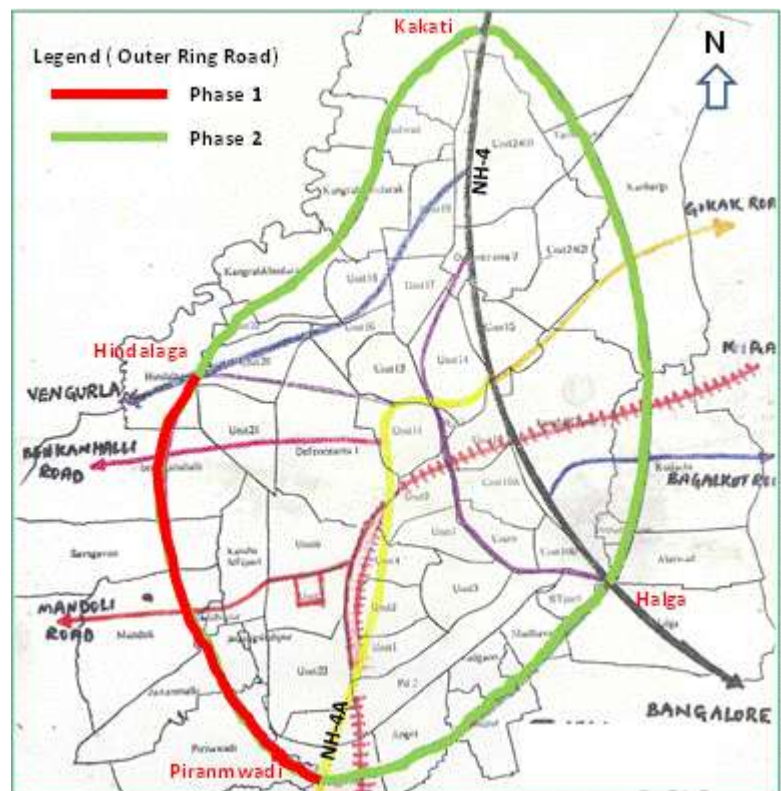
The Outer Ring Road if constructed will offer the following advantages:

- Provide improved access and connectivity to all parts of the city efficiently without passing through congested city areas. The ring road can act as a bypass for intercity traffic entering the city thus reducing the pressure on the arterial and sub arterial roads.
- Reduce congestion in the interior parts of the city by allowing through traffic of National and State Highways/MDRs to bypass the city. The ring road would be useful for the floating population which is coming from outside of the city and moving out.
- The ring road would connect major arterial roads and also some proposed radial roads originating from city centre and thereby strengthen city Road Network.
- The proposed ring road would act as a connection to the suburban areas in the city which are not properly connected and are expected to grow in future. It will also help in decongesting the traffic along the arterial and sub arterial roads of the city.
- Due to de-congestion, ease of transport, more efficient road-network there would be immense savings in time and cost of travel and significant
- The proposed ring road will unlock the land parcels and act as catalyst for development of corridors

4.3 Interaction with Key Stakeholders & Findings

Interactions with the stakeholders formed a critical component of the pre-feasibility study. The list of key stakeholders consulted is presented in **Annexure A**. The interactions with these stakeholders were aimed at understanding the city road network, traffic characteristics, city spread and spatial planning, need for the project, studies/evaluation carried so far, land acquisition requirements/status, standard assumptions and inputs on project cost based on terrain, geography, geometry, structures and a feasible project structure. The important findings from these interactions included:

- The 38 km outer ring road in the outer periphery of Belgaum city connecting Hindalaga–Peeranawadi-Halga-Kakati-Hindalaga had been under BUDA’s consideration since 2005-06. It is also understood that a technical feasibility study for the project was undertaken in 2006 and the 8.5 km section from Hindalga to Piranawadi (Connection between Vengurla Road and NH-4A,) was considered for being taken up in the **Phase I**. The tender for awarding the project on BOT basis for 30 years concession was called and the letter of intent was also issued to Chetak Enterprise of Jaipur. However, GoK had not given the in-principle approval for project to be developed on BOT-Toll and therefore the project could not be executed. However, we understand that 30 m ROW has already been acquired for this stretch.



Source: Belgaum Urban Development Authority

- The Outer Ring Road alignment falls within the Local Planning Area (LPA) of BUDA and they would be the planning & development authority for the outer ring road. The outer ring road will enable bypassing the heavy vehicular traffic from NH-4 to NH-4A, Vengurla road, Bagalkot road from the city roads.
- Belgaum city is steadily expanding outwards in the west, north and south direction owing to land availability constraints within the city limits. And considering that land along the ring road corridor would be comparatively easier to be available the possibilities of commercial developments like residential, hospital, hotels, commercial malls, warehouse, auto/industry spaces.
- The development control regulations of the LPA are governed by the BUDA Zonal Regulations 1993; however land falling under within Cantonment Area is regulated by

Cantonment Board, Belgaum. The Draft Master Plan 2021 for Belgaum is yet to be approved by Government of Karnataka.

4.4 Case Studies for road projects in India

- 4.4.1 In India, several reforms and initiatives have been introduced over the past few years to create an enabling framework for private sector participation in development of National Highways and State Highways. Constitution of NHAI was the first step in this direction. NHAI is responsible for the development, maintenance, and operation of the National Highways. Several institutional reforms and fiscal incentives have been introduced. The Government of India has undertaken various initiatives to meet the financing needs of infrastructure projects. The key ones are the Viability Gap Funding scheme (VGF) and creation of IIFCL to provide long term capital and capacity building assistance.
- 4.4.2 Generally the mode of implementation of various projects in road sector in India can be broadly classified into three categories – **IRCC/EPC contracts**, **Toll based concessions** and **Annuity based concessions**. However, there are some other structures that have also been tried. A brief description of each of these models and the risk sharing framework for the three commonly used structures is given in **Annexure B**.
- 4.4.3 In this section we would try to look at the some of the examples of the ring projects will provide broad indicators for arriving at the viable PPP options for the projects. The 4 outer ring roads constructed or under construction in various cities across India reflect the following as in Table below:

Name of the Road	Whether PPP	PPP type	Proposed for Toll
Outer Ring Road, Chennai	Yes	BOT- Hybrid Annuity	No
Outer Ring Road, New Delhi	No	-	No
Outer Ring Road, Bangalore	No	-	No
Outer Ring Road, Hyderabad	Yes	BOT-Annuity	Yes

Outer Ring Road, Chennai

Project Description- Chennai Outer Ring Road project measuring 62.3 kms is being developed in two phases Chennai Metropolitan Development Authority (CMDA). The configuration of the alignment comprises a dual system of both road and rail corridor. The **Phase 1** of the project, under implementation, covers a distance of 29.65 km. The **Tamil Nadu Road Development Company** (TNRDC) is the project monitor and co-coordinating agency on behalf of **Government of Tamil Nadu**. The work has been awarded to M/s GMR Chennai Outer Ring Road Private Ltd., for executing the project in two and half years. The **Phase 2** of the project covers a distance of 33.1 km for which currently the land acquisition is under progress and to be offered under bidding shortly. The various project features of **Phase I** under taken on PPP are presented in the table below:

Particulars	Description
Length	29.650 km
Project Features	6 lanes and 2 service lanes, 10 Grade separators at major junctions and 50 bus bays on both sides and also truck lay-byes for parking of around 100 trucks
Cost	INR 864 Cr. (originally). However, there was revision in some scope of work and as per industry estimate, revised cost is around INR.1081.4 Cr.
Width (RoW)	122 m (25 m on either side for road, 22 m wide central strip reserved for future Mass Rapid System/LRT and 50 m for commercial development
Concession Period	20 years including 30 months construction period
Expected Completion Date	June 2012
Contract Basis	BOT annuity project
Concessionaire	GMR — NAPC consortium period
Segment	1-(NH-45) GST Road(Vandalur) to (NH-4) GWT Road(Nazarethpet) Length-19.7 km
	2-(NH-4)GWT Road (Nazarethpet) to (NH-205) RTC Road (Nemilicherry)Length-9.95 km

Outer Ring Road, Hyderabad

Project Description: The Outer Ring Road project is Ring Road -cum- Area Development project since the aim is the development of well-planned and well-connected Urban settlements around the Hyderabad Metropolitan area. The 158 km long ring road connects Patancheru- Shamshabad- Hayathnagar- Medchal - Patancheru providing connectivity to various State Highway and National Highways, to bypass the city of Hyderabad.

The Government of Andhra Pradesh formed a **Special Purpose Vehicle (SPV)** for development of Outer Ring Road (ORR) named as "Hyderabad Growth Corridor Limited" under Companies Act 1956 on 26th December 2005 with the equity participation from INCAP (40%) and HUDA (60%). Subsequently, the equity participation is restructured as to INCAP (26%) and HUDA (74%). The Phase 1 of the Ring Road project has been implemented as an EPC contract and the Phase 2 is to be implemented in BOT-Annuity Format.

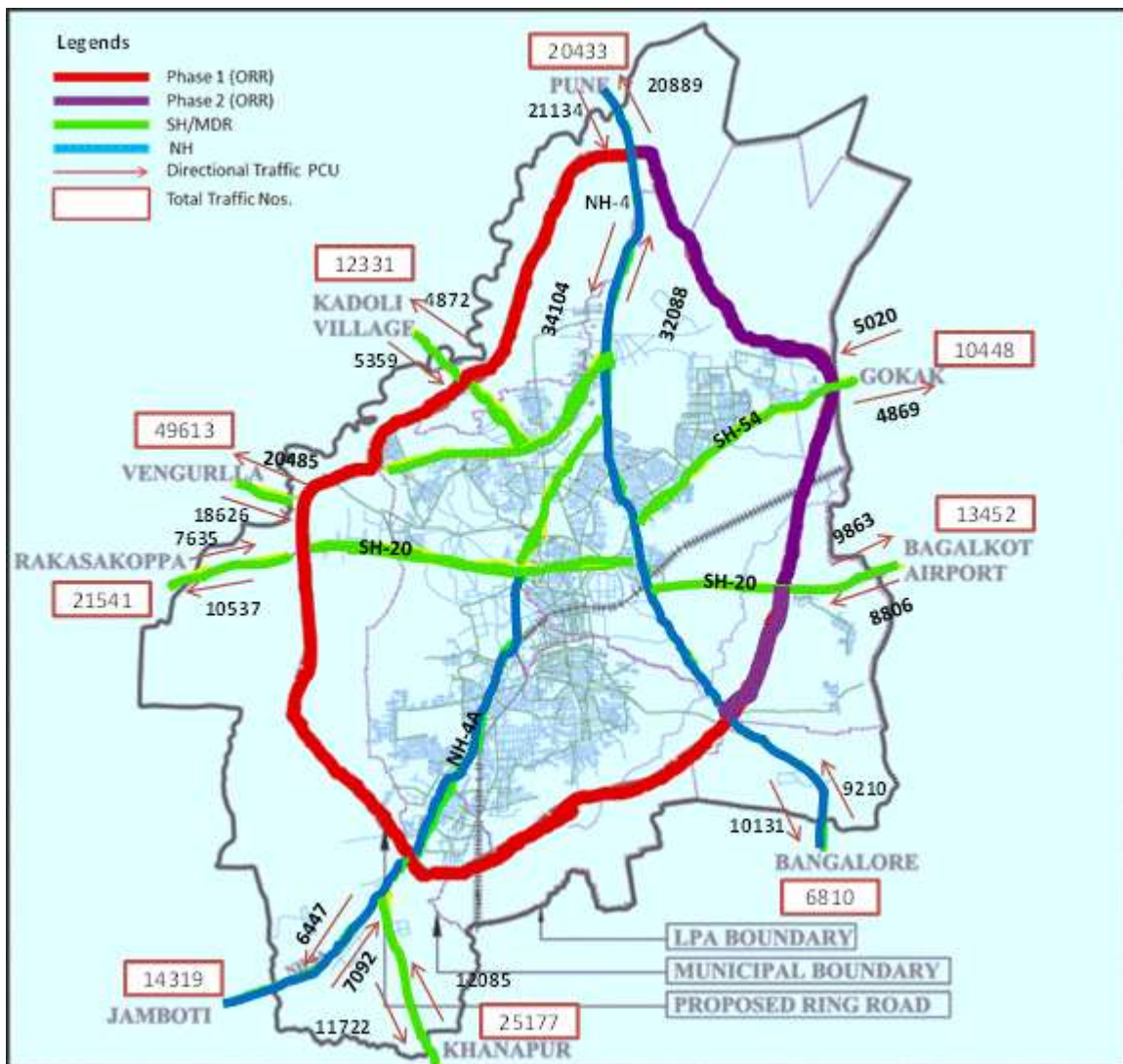
As per an article published in The Times of India dated February 6, 2012, collection of toll tax on the completed portion of the Outer Ring Road (ORR) between Pedda Amberpet and Patancheru is likely to begin in May.

Particulars	Description
Length	158 Km
Cost	INR 3000 Cr.
Concession Period	20 years
Contract Type	First Phase : EPC, Second Phase : BOT (Annuity)
Phase	<p>The First Phase was built to connect Rajiv Gandhi International Airport with the IT corridor. It was inaugurated on 14 November 2008.(500 cr)</p> <ul style="list-style-type: none"> Shamshabad - Gachibowli (22 Kilometers) <p>The second phase is divided into A and B. This phase, thereby the entire ORR, is expected to be completed by November 2012.(2500 cr.)</p> <p>Second Phase A</p> <ul style="list-style-type: none"> Pedda Amberpet to Shamshabad (38 kilometers) - (completed) Narsingi to Patancheru (23.7 kilometers) - (completed) <p>Second Phase B</p> <ul style="list-style-type: none"> Patancheru to Shamirpet (38 kilometers) - November 2011 (completed) Shamirpet to Pedda Amberpet (33 kilometers) - November 2012 (expected date of completion)

5 Alignment Analysis

5.1 Traffic Analysis

5.1.1 Considering that the outer ring road would traverse through the outskirts of the Belgaum and intersect NH-4, NH4A and other regional roads connecting the city, the expected traffic on this proposed road will primarily comprise of the divertible traffic which currently passes through the city to connect other regional road network.. As a part of CTTT, traffic volume counts were conducted on these radial networks at various outer cordon points and these traffic figures have been used to determine the divertible traffic which can be assigned to this green-field alignment. The traffic influx to/from the city on these roads i.e. NH-4 (Pune & Bangalore side), NH-4A, and other regional connectors are presented in the figure below. The classified traffic volumes at the outer cordon points are represented in **Annexure C**.



5.1.2 As suggested in the CTTT, the outer ring road has been proposed to be taken up in two phases as indicated in the Table below.

Phase	From	To	Length (km)
Phase I (27.01 km)	Kakati	Sulga	10.77
	Sulga	Udhyambagh	7.48
	Udhyambagh	Majagaon	2.08
	Majagaon	Old PB Road	6.68
Phase II (14.52 km)	Old PB Road	Kalkamb	8.02
	Kalkamb	Mutennati	4.57
	Mutennati	Kakati	1.93

5.1.3 **Phase I** of the ORR will connect most the external road network connecting Belgaum including NH-4 from north of Belgaum at Kakti to Kadoli village, Vengurla, Rakasakoppa, NH-4A and NH-4. Hence, Phase I will enable majority of the traffic diversion needs of the city. Based on February 2009 figures, total traffic influx at all these intersecting points will be close to 1,70,000 PCU or 1,50,000 Nos. of which only a portion which is external to external traffic will be use the entire corridor. It is also worth mentioning that the analysis of vehicle composition on these regional road network reveals that more than 60% of the vehicles are two-wheelers of which only small portion will register external-external movement and expected to use the entire/majority section of the ring road corridor. In order to arrive at the base traffic figures which can be assigned to the Phase I corridor, the following traffic diversion assumptions have been assumed.

Name of the Road	% of Traffic expected to be diverted to Ring Road						
	Cars	Bus	Mini Bus	LCV	Trucks	2-Wheelers	3-Wheelers
NH-4 (North of Belgaum) From Pune	10%	10%	10%	20%	25%	10%	10%
NH-4 (South of Belgaum) From Bangalore Side	10%	10%	10%	20%	25%	10%	10%
All other intersecting regional road network	20%	20%	20%	40%	50%	5%	5%

5.1.4 Based on the above assumptions the baseline traffic (for Year 2008-09) which can be considered for the ORR is provided in the Table below. In order to arrive at the traffic for the year of opening a 5% traffic growth rate can be assumed.

Tollable Traffic					Non-Tollable Traffic		Total Tollable PCU	Total PCU
Cars	Bus	Mini Bus	LCV	Trucks	2-Wheelers	3-Wheelers		
# 3324	793	321	1584	3905	4857	559	20275 [#]	23262 [#]

Traffic figures for FY2008-09

5.1.5 Considering traffic growth rate of 5% per annum for all categories of vehicle, the projected traffic (both tollable and total) for the various cardinal years are presented below:

Year	2009	2013	2016	2020	2025	2026	2029	2030	2031	2032
Total Traffic (PCU)	23262	28302	32782	39866	50914	53463	61907	65006	68261	71679
Total Tollable Traffic (PCU)	20275	24668	28573	34748	44377	46598	53958	56659	59496	62475

5.1.6 IRC – 64: 1990 “Capacities for Roads in Rural Areas” indicates that the design service volume of 15,000 PCUs per day for two lane road with earthen shoulder at Level of Service (LOS) – B (50 % capacity) in plain terrain. Similarly for four lane road, the design service volume is 35,000 PCUS per day at LOS – B. The same capacities can be increased by 15 % for roads with 1.5m paved shoulder. Considering the above, the outer ring road is proposed as a 4-lane divided carriageway with 1.5m paved shoulder and 3 m wide median with provision for intermediate lane service road corridor to cater to non-toll able traffic and slow moving vehicles of the villages. The four lane road with paved shoulder will offer a Service Level C till a traffic volume of 56,000 PCUs beyond which it will enter LOS D. As per prevailing standards adopted for National Highways up-gradation, capacity augmentation is considered at traffic volume of 60000 PCUs. Considering, 60,000 PCUs of traffic as benchmark for capacity augmentation from 4-lane to 6-lane, the proposed ring road would need to be up-graded to 6 lane with effect from FY 2031-32.

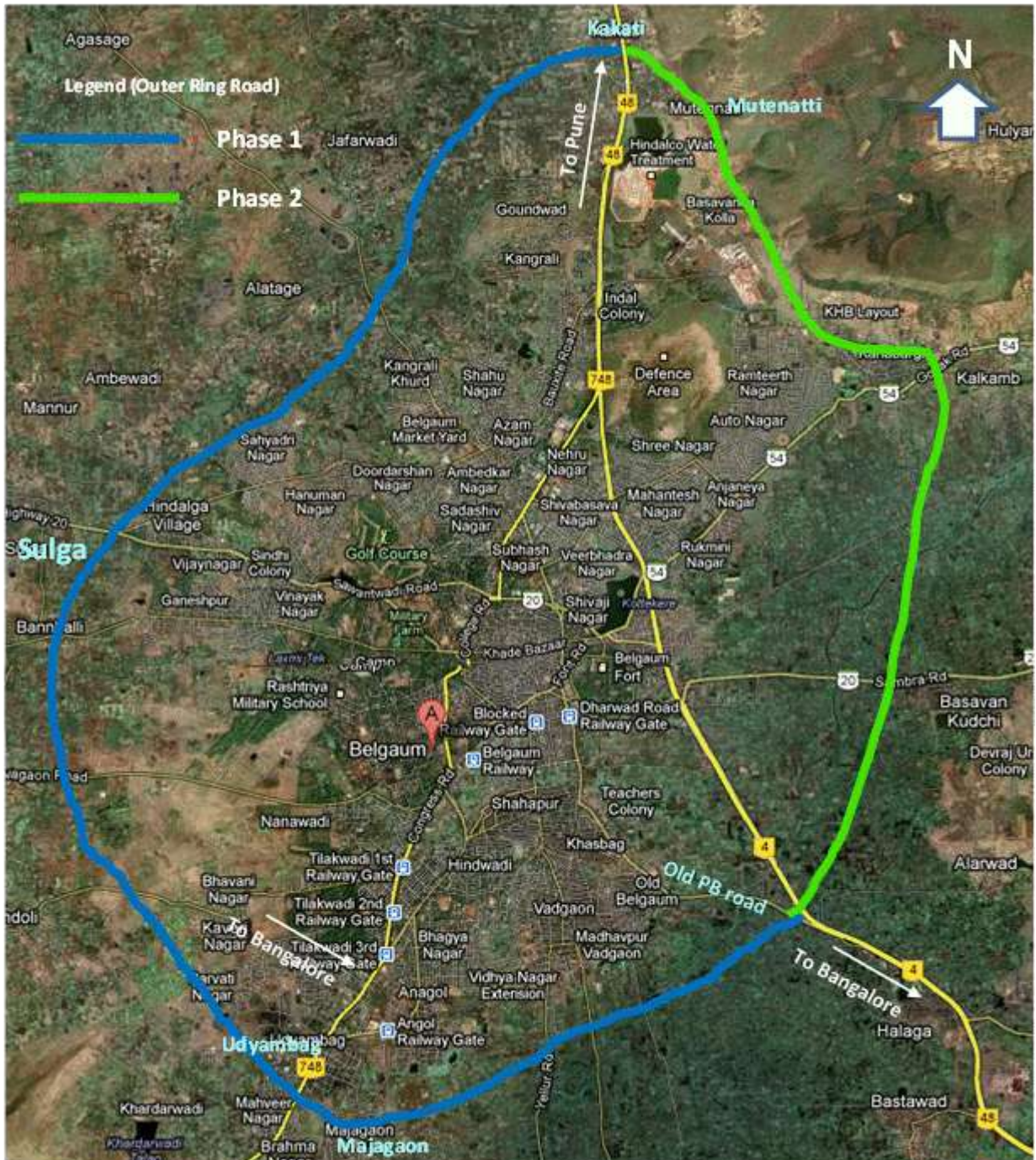
5.2 Description of the Alignment and Proposed Facilities

5.2.1 A Ring Road along the outer periphery of Belgaum City, approximately 41.53 km in length has been conceptualized which will connect Kakati to Sulga and then pass through Udhyaambagh to Majagaon cutting NH-4A and NH-4 on its way to Kalkamb to Mutennati and then connecting back to Kakati.

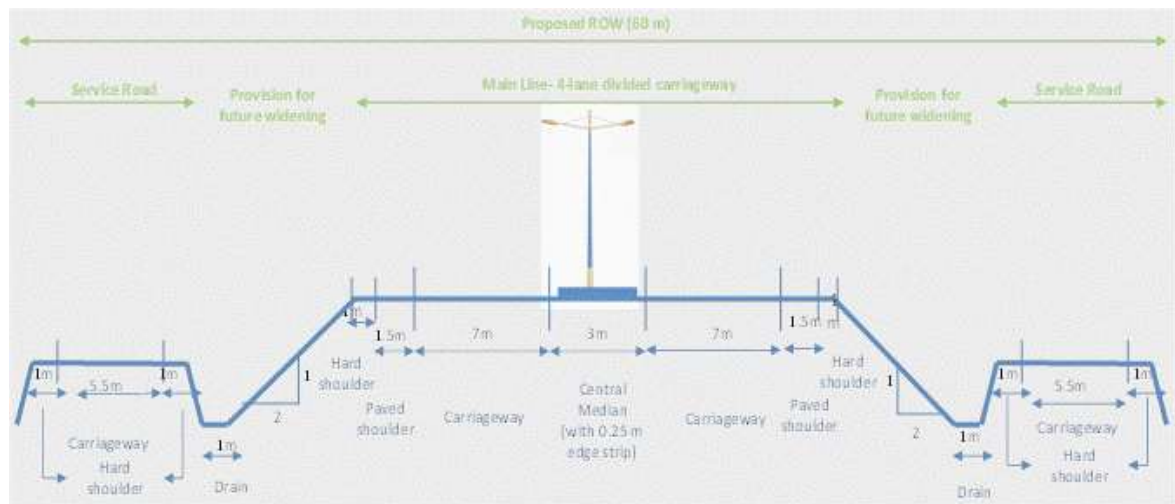
5.2.2 Phase I of the alignment which is 27.01 km in length will start from Kakati and traverse in the south-west direction passing through the villages like Goudwad, Kangralibhudarak, Hindalaga, intersects Vengurla road at Sulga. The alignment will then traverse in the south-east direction and passes through the out skirts of villages like Nanawadi, Savagavon, Mandolli, Jaitanmalla & finally cross NH-4A near Udyambagh. The alignment

will then take a turn in north-east direction and traverse across the villages like Majagaon, Angol, Shahpur, Madhavapur, Halaga and joining NH-4.

5.2.3 Phase II of the alignment 14.52 km in length will start from NH-4 and move north-west wards cutting across villages like Kudachi where it intersects Bagalkot road, then intersect Gokak road at Kalkamb, then traverse through the villages of Kanbargi, Mutennati and join NH-4 at Kakati. The Phase I & II alignment is represented in the map provided below.



- 5.2.4 The proposed ORR will mostly have new alignment. Only part of the road length will run along the existing alignment. The existing sections will also require significant improvement with respect to geometrics and capacity.
- 5.2.5 The broad-level engineering estimates for Phase I of the ORR would include provision for 10 Nos. at-grade intersections, around 20-25 cross-drainage structures, one ROB, one/two major bridges, a number of cattle-crossings. It is may be assumed that 50% of the alignment would require service roads either on single or both sides and would be provided at the beginning of the projects and the rest 50% would be covered during the concession period. The entire corridor would be provided with street lights.
- 5.2.6 4-lane divided carriageway with 1.5m wide paved shoulders and 1 m wide hard shoulder with 3m wide median is proposed for the mainline. The service road alongside the mainline should be of intermediate lane standard (5.5m) with 1 m earthen shoulder. A 60m ROW has been proposed. The typical cross-section proposed for ORR is provided below.



Source: Deloitte's own sketch

- 5.2.7 Based on the prevailing market rates, EPC cost assumptions can be made to be INR 8 Cr. per km for 4 lane road including structures, traffic furniture; tree-planting, street lights can be assumed. While for intermediate lane service road an EPC cost of INR 1 Cr. per km can be assumed. The above figures are for the base year 2012-13.
- 5.2.8 Around 400 acres of land would be required to be acquired for the outer ring road. Considering an average land price of Rs. 10 Lakhs per acre in the outskirts of Belgaum City, the cost of land acquisition will be in the tune of Rs 40 Crores.

6 Project Financials

6.1 Project Specifications

6.1.1 The ring road 41.53 km in length is proposed in the outer periphery of Belgaum City connecting Kakti-Sulga-Udyambag-Majagaon-Old PB Road-Kalkamb-Mutennati-Kakati. The **Phase I** of the project would entail development of 27.01 km of the ring road. The project financial analysis has been carried out for **Phase I**.

6.1.2 Three Scenarios can be considered for the development of **Phase I** of the outer ring road.

Scenario I BOT (Toll) with Grant/Premium: The assumption in this case is that the project would be awarded to a Concessionaire with the Lowest Grant/ Highest Premium which will be the bidding parameter in the competitive bidding process. In this case, GoK will have to notify tolls for different vehicle categories for the project road which the concessionaire would be charging the road users.

Scenario II BOT (Annuity): The assumption in this case is that the project would be awarded to a Concessionaire on the least annuity amount which will be the bidding parameter in the competitive bidding process. In this case, GoK would have the option of notifying tolls for different vehicle categories for the project road or fund it by creating a dedicated project development funds.

Scenario III Hybrid Model: The assumption in this case is that the GoK would decide on an upfront grant to be paid during the construction period and would be awarded to a Concessionaire through a competitive bidding process on the least annuity amount claimed which will be the bidding parameter. In this case, GoK would have the option of notifying tolls for the project road or fund it by creating a dedicated project development funds.

6.1.3 The Design Capacity of the proposed Ring Project has been considered to be 60,000 PCUs. Concession period for this Project Highway is understood to start from 1 April, 2013 (in FY 2013-14). And a construction period of 30 months/ 912 days has been assumed for this financial feasibility analysis.

6.1.4 The key business assumptions for the three scenarios are presented in the Table below

Particulars	Assumptions
Capex Phasing for Construction over a 30 months	By 365th day from Appointed date - 30% of total Capital Cost By 730th day from Appointed date - 70% of total Capital Cost By 910th day from Appointed date - 100% of total Capital Cost
Commercial Operations Date (COD)	1 st October 2015
Concession Period	18 years (Please refer Section 6.1.5 for explanation)
Wholesale Price Index (WPI)	Actual WPI increase from 2007-08 to 2010-11 and 5.0% p.a. then onwards
Key Financing and Tax rate Assumptions	
Debt Equity Ratio	70:30
Term of Debt Drawn	Over 30 months
Moratorium & Principal Repayment	Total tenor - 13 years including Moratorium – 3 years (including the entire construction Period of 2.5 years)
Corporate Tax Rate Including Tax Surcharge	32.45%
Minimum Alternate Tax Rate Including Tax Surcharge	20.01%
Tax Depreciation	WDV method
Construction & Operation Period	
Interest Rate	13% pa
Concession Fee	Re 1 p.a.
Routine Maintenance Costs	3.5 Lakh /Km/Year (Year FY 2011-12) for 4-lane
Periodic Maintenance Costs	35 Lakh/Km/every 5 Year (Year FY 2011-12) for
Electricity and Patrolling Expenses	1.25 Lakh/Km/Year (Year FY 2011-12) for 4-lane
Toll Collection Expenses (per Toll Plaza)	1.68 Crores/Toll Plaza/Year (Year FY 2011-12)
Office Expenditure	2.625 Crores/Year (Year FY 2011-12)
Insurance	0.15% of Total Project Cost (TPC)

6.1.5 Considering the base tollable traffic volume of 20275 PCUs and traffic growth rate @ 5% per annum, the projected traffic would exceed 60,000 PCUs in FY 2031-32 requiring lane up gradation from 4 to 6 Lane. Hence, concession period has been assumed to be 18 years starting from 1st April 2013 and ending 31st March 2031.

6.2 Project Cost

6.2.1 The Total Project Cost (TPC) of the Project based on the civil construction costs, contingencies, financing costs and IDC without any Grant from GoK is about INR 320.53 Crores and at 34.3% Grant to make the Equity IRR 15% is about INR 302.82 Crores. Summary of the TPC for the three scenarios is provided in Table below:

S No.	Project Components	Scenario 1	Scenario 2	Scenario 3
	Unit	INR Cr.	INR Cr.	INR Cr.
A	Total Civil Construction cost for 27.0 km of 4-lane and 27.1 km of Intermediate lane service road for 2013-14	255.24	255.24	255.24
	Contingencies/QC @ 3% of Civil Cost	7.66	7.66	7.66
B	Total EPC Cost	262.90	262.90	262.90
C	IC & Pre-operative expenses @1% of EPC	2.63	2.63	2.63
D	Financing Cost @ 2% Debt at 70:30 DER	2.79	4.49	3.43
E	Escalation @ 5% per annum (During Construction Period of 30 months)	19.15	19.15	19.15
F	Interest during Construction on Debt	15.35	31.36	17.41
Total Project Cost (TPC)		302.82	320.53	305.52

6.2.2 **Means of Finance:** Based on the assumptions presented in previous section, the Project cost is proposed to be financed by a mix of debt - equity in the proportion 70:30, which translates into a debt equity ratio of 2.33 times. The funding component for the project is presented in the table below:

S No.	Items	Scenario 1	Scenario 2	Scenario 3
	Unit	INR Cr. (% of Total)	INR Cr. (% of Total)	INR Cr. (% of Total)
1	Debt	139.27 Cr. (45.99%)	224.37 Cr. (70%)	171.09 Cr. (56%)
2	Equity	59.69 Cr. (19.71%)	96.16 Cr. (30%)	73.32 Cr. (24%)

S No.	Items	Scenario 1	Scenario 2	Scenario 3
3	Grant	103.87 Cr. (34.30%)	-	61.10 Cr. (20%)
	Total	302.82	320.53	305.52

6.3 Project Revenue

6.3.1 The toll rates notified by GoK under section 19A of the Karnataka State Highways Act 1964, for State Highway/Major District Road to be developed under PPP have been considered for estimation of the Toll revenues. The base toll rates are provided in the Table below:

Type of Vehicle	Basic Toll Rate applicable from 28.01.2009 for 4-lane road (Rs per km)*
Car, Jeep, Van or Light Motor Vehicle	0.65
Light Commercial Vehicle, Light Goods Vehicle or Mini Bus	1.05
Bus	2.2
Truck	2.2
Multi Axle Vehicle (MAV), HCM, EME (Three to Six Axles)	3.45
Oversized Vehicles (Seven or more axles)	4.2

* Note: Karnataka Toll Notification dated 26th May 2009 issued by Public works, Ports and Inland Water Transport, Department, GoK

The toll rates as provided in the table above are to be revised every year on the basis of Wholesale Price Index rounded off to the nearest 5 rupees and are to be made applicable from 1st March of every year. For revenue estimate, during the concession period, WPI has been considered to grow @ 5% per annum.

6.3.2 GoK might also decide to implement the project on BOT-Annuity in which case the revenue accruing to the developer would be in form of annuity amount paid by GoK semi-annually. In this case, GoK would have the option of notifying tolls for the project road or fund it through a dedicated project development funds.

6.3.3 Other than toll revenue receipts, a private developer can be given rights to advertise along the road corridor. Lump sum revenue of Rs. 50 lakhs per annum has been considered for the FY 2015-16 and increased @ 5% per annum. Considering that Belgaum Urban Development Authority (BUDA) will be the concessioning authority, a notification allowing advertisement rights to the developer would be required to be issued and included in the concession agreement.

6.4 Project Viability Analysis

6.4.1 Based on the assumption discussed in previous sections of this report, the key project viability indicators for the three scenarios are presented in the Table below. The project financials for the cardinal years are presented in **Annexure D**.

Key Indicators	Scenario I	Scenario II	Scenario III
Total Project Cost (TPC)	302.82	320.53	305.52
Construction period Grant assumed as % of TPC	34.3%	-	20%
Annuity INR in Cr.	-	62.16	52.16
Project IRR (after tax)	8.13%	13.63%	9.58%
Equity IRR	15.00%	15.00 %	15.00%
Weighted Average Cost of Capital (WACC)	6.80%	11.78%	9.35%
DSCR Minimum	0.74	1.07	1.07
DSCR Average	1.51	1.37	1.46

6.4.2 In case, it is decided to develop the project on DBFOT (Toll) basis, without the Viability Gap funding support, the project does not appear to be financially attractive to the private sector. However, GoK might consider awarding the project on BOT- Toll to test the market sentiments with a capping of Grant to 34.3%. In case there is not enough response in the competitive bidding process, the project might be considered to be undertaken on BOT-Annuity or Hybrid Model.

6.4.3 Considering that the key project viability variables are EPC cost and Traffic growth envisaged. Sensitivity analysis for Scenarios I has been conducted with respect to these two variables and the results for the same are presented below:

Sensitivity to EPC Cost

Parameters	% Change in EPC Cost				
	-10%	-5%	0%	5%	10%
Project IRR (Post Tax)	9.28%	8.69%	8.13%	7.62%	7.14%
Equity IRR	17.32%	16.13%	15.00%	13.97%	13.00%
Average DSCR	1.63	1.56	1.51	1.45	1.39

Sensitivity to Traffic Growth Rates

Parameters	Traffic Growth				
	3%	4%	5%	6%	7%
Project IRR (Post Tax)	4.00%	6.08%	8.13%	10.14%	12.10%
Equity IRR	7.18%	11.20%	15.00%	18.57%	21.96%
Average DSCR	1.12	1.31	1.51	1.70	1.91

6.4.4 It can be observed that the project returns are highly sensitive to the Traffic growth rates assumption. This indicates the importance of an accurate traffic demand assessment for the project corridor along with estimation of the projected traffic growth rate.

7 Project Structuring

7.1 Background

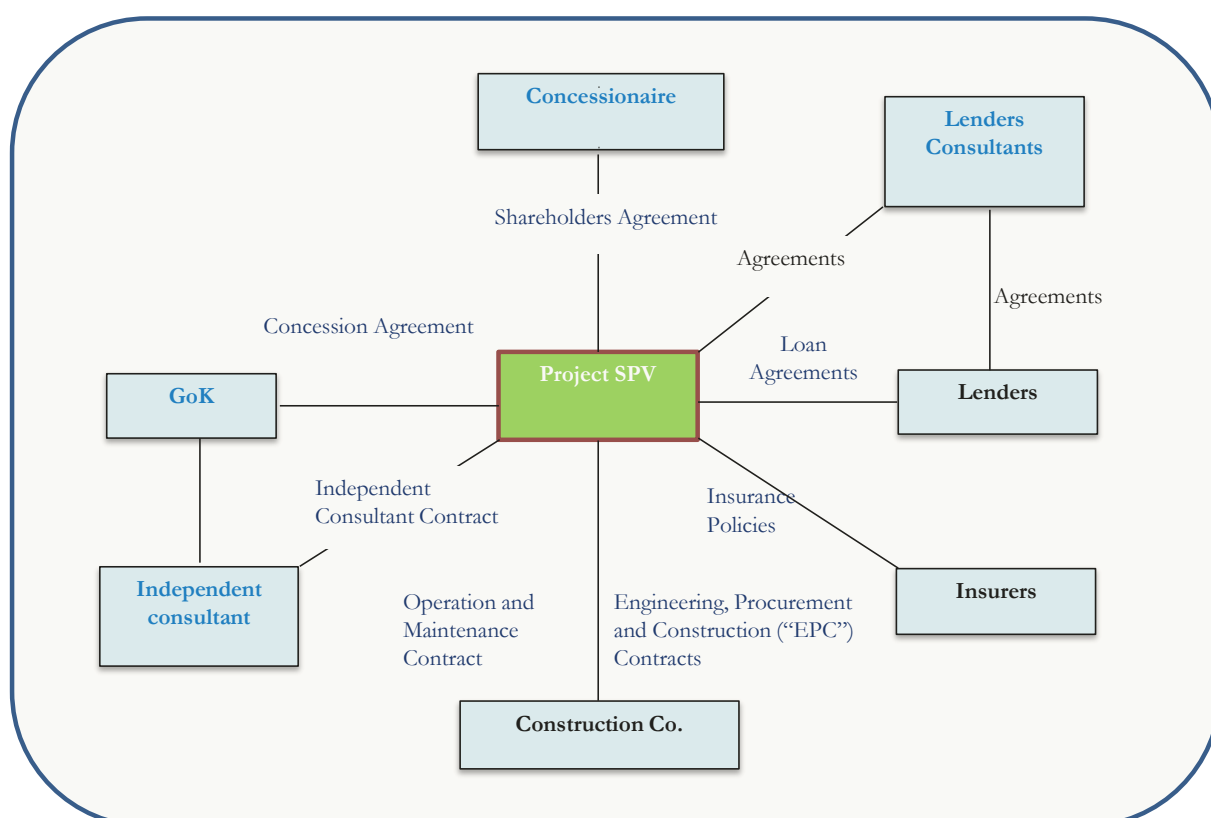
Project structuring and packaging involves distribution of risks and returns efficiently and reduces the total cost of financing. The art of effective project structuring requires balancing the interests of the diverse stakeholders, and optimal capital structuring. This is then converted into contracts that clearly define the roles, responsibilities, and risks allocated to each partner.

7.2 Project Structure & Risk Framework

7.2.1 Financial Feasibility analysis for the different project development scenarios shows that project is not feasible on stand-alone basis and would need to be funded with VGF support or through annuity. Thus it would important to select a nodal agency either BUDA, PW, P&IWT Department for preparation of the requisite documentation necessary for taking before the State High Level Committee (SHLC) for approval.

7.2.2 The options available for the GoK are either to develop the project on BOT-Toll with the option of grant/premium or BOT-Annuity. It has been recommended to take up the project on BOT-Toll with a cap on the grant amount. However, in either case, a concessionaire would be selected through a competitive bidding process who would require to incorporate a Project specific SPV with minimum equity sharing of 51%. The linkages of the Project SPV with various projects stakeholders/components is represent in the figure below.

Project Structure



7.2.3 The project specific risks, degree of impact, indicative mitigates for the project are presented in the Table below:

Risks	Impact	Risk Mitigates	Risk Bearer
1. Pre-completion Risk			
Engineering	Low	Detailed Technical Engineering	Concessionaire
Timing or Delay	Low	Fixed Cost contracts with EPC contractors with Performance Guarantee	Concessionaire
Cost Over-run	Medium		Concessionaire
Regulatory risk (Land availability, Govt. Approvals)	Low	Concession Agreement	DULT/BUDA/PW,P&IWT
2. Operating Risk – Post Completion Risk			
Traffic / market risk	Medium	Detailed Traffic Analysis and Future growth	Concessionaire
Toll Rates	Low	The basis for Toll can be the Category wise toll rates published on Karnataka Toll Notification 26 th May 2009 and escalation in toll rates.	Concessionaire
O&M	Low	O&M Contracts with Performance Guarantee	O&M Contractor
Competing facility and capacity augmentation	Low	Suitable provision in the concession agreement	DULT/BUDA/PW,P&IWT
3. Sponsor Risks			
<ul style="list-style-type: none"> • Credit history • Proposed stake, ability to fund own equity • Ability to <ul style="list-style-type: none"> – arrange third party equity – implement an subsequently operate projects – provide limited recourse 	Low to Medium	Defining suitable Bid Strategy & Concession Agreement <ul style="list-style-type: none"> • Suitable qualification criteria • Track record • Credit references, market feedback • Minimum level of equity stake • Bank guarantees / undertaking for equity contribution • Balance sheet analysis 	DULT/BUDA/PW,P&IWT
4. Political & Legal Risks			
<ul style="list-style-type: none"> • Granting of approvals • Change in law • HR issues, past history 	Low	<ul style="list-style-type: none"> • Political Risk Insurance • Provisions in Concession 	Private –Insurance Company DULT/BUDA and Concessionaire (Risk Sharing)

Risks	Impact	Risk Mitigates	Risk Bearer
5. Financial Risks	Low to Medium	Loan Syndication/Sub-Debts	Concessionaire , Financial Institutions
6. Force Majeure			
<ul style="list-style-type: none"> • Non-political events • Acts of God • Strikes or boycotts affecting supplies and services • Indirect Political events • Strikes: Industry wide, state/country wide public agitation 	Low	<ul style="list-style-type: none"> • Contractual provisions • Termination payments • Insurance cover 	Private – Insurance Company DULT/BUDA/PW,P&IWT and Concessionaire (Risk Sharing)

8 Statutory & Legal Framework

8.1 Applicable laws & Rules

8.1.1 The Karnataka Highways Act, 1964

The Act provides for the restriction of ribbon development along highways, for the prevention and removal of encroachment thereon, for the construction, maintenance and development of highways, for the levy of betterment charges and for certain other matters. This Act shall extend to the whole of Karnataka and applies to the highways of the State except the National Highways declared as such by the Central Government under the National Highways Act, 1956.

The Act defines the Powers and roles of the Authorities. As per the Act the authority can acquire any land that is deemed compulsory for development.

8.1.2 Karnataka Private Investment Project (Road toll or user fee determination of rates and collection) notification 2009

In exercise of the powers conferred by Section 19A of the Karnataka State Highways Act 1964, the Government of Karnataka has notified rate of toll to be determined and collected as Toll or user fee for using a section of State Highway or Major District Road to be developed under “PPP” basis.

8.1.3 The Karnataka Municipal Corporation Act, 1976

The Act provides for creation of Municipal Authority in the state of Karnataka. It confers certain powers on Mayor and the deputy Mayor. It specifies the obligatory and specific functions of the corporations. It also provides for strengthening the administrative machinery of the corporations.

The Authority can acquire, any land designated in a Master Plan for specified purpose or for any public purpose either by agreement with the land owners or under the provisions of the Land Acquisition Act, 1894.

8.1.4 Karnataka Urban Development Authorities Act, 1981

Objective of this Act is to establish the Urban Development Authorities in the state of Karnataka for the purpose of providing planned development of major and important urban areas in the State.

Power of Authorities to take Developmental Works

Under this Section, the Authority has the power to undertake works and incur expenditure for development and in execution of that power; the Authority has the power to draw up detailed Schemes for the development of the urban area and also for the framing and execution of development schemes. The Authority may also take up any new or additional development schemes.

Authority to have power to acquire land by agreement

This Section empowers the Authority to enter into agreement with owner of any land or any interest therein, situated within the urban area for the purchase of such land. Further land may also be acquired under the provision of the Land Acquisition Act, 1894.

Power of the Authority to levy of betterment tax

Where, as a consequence of execution of any development scheme, the market value of any land in the area comprised in the scheme which is not required for the execution thereof has, in the opinion of the Authority, increased or will increase, the Authority shall be entitled to levy on the owner of the land or any person having an interest therein a betterment tax in respect of the increase in value of the land resulting from the execution of such scheme.

8.1.5 Karnataka Town and Country Planning Act, 1961

The objective of this Act is to regulate planned growth of land use and development by preventing unequal and chaotic growth of towns and cities in Karnataka. The Act gives power to the state government to declare any area to be a local planning Area through notification and may constitute a planning authority for such area. The Planning Authority so notified shall be responsible for the implementations of Act within such declared local planning areas. Such Authority shall initially be responsible for providing the Master Plan outlining the development and improvement plan for the entire local planning area. The Planning Authority may formulate one or more town planning scheme in order to implement such Master Plan. The Act confers sufficient power in the hands of Town Planning Authority for the purpose execution of Master Plan. Master Plan shall consist of maps and documents indicating the manner in which the development and improvement of planning area to be carried out and regulated. Section 66 of the Act empowers the Planning Authority to enter an agreement with any person in respect of any matter relating to implementation of town planning scheme. This Section thus, provides scope for seeking private sector participation in implementation of the town planning scheme by making suitable agreement in this regard.

As per Section 68-A (b) and (d) of this Act, Every Planning Authority shall have and maintain a separate fund to which shall be credited-

- *All charges or fees received by the Planning Authority under this Act or Rules, regulations or bye-laws made thereunder.*
- *All moneys received by the Planning Authority from any other source.*

8.1.6 Karnataka Planning Authority Rules, 1965

As per Rule 21 (4-b-ii-c) of this act the items of receipt that shall be credited to the "Capital" section of the Planning Authority Fund account shall also include **collections from private persons** apart from others. *This implies that any construction/development undertaken can have an option of collection of fees or charges from private people as well.*

8.2 Legal & Regulatory framework

- 8.2.1 The Belgaum Urban Development Authority is designated as the Planning Authority under the Karnataka Town and Country Planning Act, 1961 for the Belgaum Local Planning Area of 182.00 Sq. km which includes Belgaum City Corporation of 94.00 Sq. km
- 8.2.2 The planning functions of BUDA in brief involve the following:
- Preparation of development plan for Belgaum city
 - Preparation of Scheme Plans.
 - Approval of Development Plans for Group Housing and Layouts.
 - Approval of building plans.
 - Other statutory functions under KTCP Act. 1961
- 8.2.3 In addition to the planning functions, the BUDA also performs the following development functions:
- Planning and implementation of schemes to provide for Residential sites, Commercial sites, Industrial sites, Civic Amenity sites, Parks and playgrounds.
 - Construction of Commercial complexes
 - Construction of houses for Economically Weaker Sections, Low Income Group, Middle Income Group, High Income Group
 - Development of major infrastructure facilities
- 8.2.4 The building and development control norms for the BUDA planning area including the Belgaum City Corporation is governed by Zonal Regulations 1993. BUDA has prepared a Master Plan 2021 with proposed land use for the planning horizon and submitted it to the Government for approval.
- 8.2.5 The Outer ring road will fall within the Local Planning Area under the jurisdiction of Belgaum Urban Development Authority. Hence the guidelines of BUDA shall prevail for development of the ring road and the corridor.
- 8.2.6 It is envisaged that for development of the Outer Ring Road, the following regulatory approvals/clearances would be required which the Concessionaire has to arrange supported by the engaging authority
- Considering that a PPP structure would be adopted for project development, a SPV would need to be registration of SPV as Principal Employer
 - Approval for foreign Investment / loans, if required
 - Approval for import of equipment and machinery for construction and operation, if required
 - Exemption of excise duty on constr. material, if required
 - Clearance of GAD for RoB by Railways
 - Permission / clearance for setting up of wireless system, if required
 - Clearance / permission for the use of optical fibre cables of DOT, if required
 - Quarrying Permits:
 - Permits for extraction of boulder from quarry from ADM Mines
 - Permit for installation of crusher from village Panchayat and Pollution Control Board
 - License for explosives from Explosive controller

- Explosive license for storing Diesel
- Electricity:
 - Permission from SEB for installation of DG
 - Permission for electrical connection, if power source is available
- Water: If water has to be taken from river/ reservoir, permission from State Irrigation Department
- Batching Plant:
 - License from inspection of factories
 - NOC consent from pollution department
- Asphalt Plant: Clearance required from village Panchayat & Pollution Control Board
- Borrow Earth:
 - Permission from irrigation department if land taken from irrigation land
 - Permission required from village panchayat and ADM mines for Government & private land
 - Permission from Local Municipalities and Development Authorities
- Environment Clearance from MoEF and Pollution Control Board
- Cutting of trees:
 - Permission from Forest Department
- Sewage Lines and Water Mains:
 - Permission from Local Municipalities and Development Authorities.

9 Indicative Environmental & Social Impacts

9.1 Environmental Impacts & Mitigation

Prior to awarding the project on PPP, the following environmental impact studies are required to be carried out and the corresponding risk mitigation strategies are required to be framed. Some these elements in context of an developing an outer ring road project are discussed below.

9.1.1 Air and Noise

The levels of air and sound pollution would be dependent on the type of development proposed for each stretch of the Ring Road. The stretches serve as major connecting links for the goods traffic which would increase the levels of dust and noise pollution. To reduce the impact, dense tree plantation should be carried along the corridor of these stretches. Trees act as dust and sound barriers hence trees with thick foliage should be planted along the either sides of these corridor. Based on the finalized alignment option at each of the locations, appropriate mitigation measures would be determined and presented in the EIA report.

9.1.2 Water resources

Appropriate cross drainage structures should be provided after studying the pattern of ground water table and drainage to avoid impedance due to drainage before implementation of the project.

9.1.3 Vegetation

The construction of the Ring Road may impact the vegetation in the area. To reduce the impacts, the road corridor should be aligned in a manner which encourages less cutting of trees and other vegetation along the belt. Also, new plantations should be carried out to compensate the losses.

9.1.4 Ecological Environment

The proposed Ring Road would also have an impact on the local occupational practices such as agriculture in the area. To assess the levels of destruction caused to the ecological and social environment a Comprehensive Environment Management Plan (CEMP) should be prepared. Various design and implementation measures to reduce and compensate such losses would be proposed in the CEMP.

9.1.5 Topography and Land Use

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

9.2 Social Impacts & Mitigation

The evaluation of social impacts for development of the proposed site needs to be carried out, as per the guidelines of National Resettlement and Rehabilitation Policy 2007, through detailed Social Impact Assessment (SIA) covering following aspects briefed in the table given below:

9.2.1 Land Acquisition

Alternative alignment options study should be carried to arrive at a feasible alignment option which has minimum Resettlement and Rehabilitation requirements. The primary objective while developing the Outer Ring Road is to make minimal displacement of population and their livelihoods. Hence at places where the stretch travels through dense settlements, the acquisition would only be kept minimal to fulfill the requirements of construction of the corridor road. The households and commercial establishments who have lost their properties under road development would be provided appropriate compensation as per the National R&R policy and the World Bank guidelines. Attempt should be made to pass bypass stretches with having multi-crop land.

9.2.2 Built-up area

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

9.2.3 Loss of Livelihood

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

9.2.4 Utility Relocation

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

9.2.5 Cultural Properties

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

9.2.6 Environment and Social Cost

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

10 Way Forward

10.1 Government Interventions

- 10.1.1 The project as analyzed above can be implemented on PPP basis with a Viability Gap funding. The sections below recommend certain detailed studies to be undertaken before taking the project to the transaction phase.
- 10.1.2 The project of this magnitude would require the approval of the Government of Karnataka and requisite documentation necessary for taking the approval from State High Level Committee (SHLC) needs to be prepared. Once approved, it can be forwarded to the Central Empowered Committee for the 20% Central VGF approval. The first step would be thus to identify a nodal agency for taking up all these activities to take the project to the next level. The agency can be either BUDA, PW,P&IWT or any other Government agency which GoK might consider suitable.
- 10.1.3 The project preparatory studies envisaged before the transaction phase include the following:

S No.	Studies to be conducted	Tasks to be performed
1	Alternative Alignment Study	Procure satellite imagery of the area; fix alternative alignments on the map, physical survey of the alternative alignments with hand-held GPS, collection of engineering, social and environmental data. Alternative alignment options analysis and selection of the preferred alignment.
2	Detailed Techno-Economic Feasibility Study	Detailed Analysis of divertible and induced traffic for arriving at different Traffic assignments and traffic growth rate scenarios for the project corridor. Topographical and Geotechnical surveys, Finalization of cross-sections, development phasing, preliminary geometric design, pavement design and quantity and preliminary cost estimate.
3	EIA Study	Initial Environmental Examination (IEE) Rapid Regional Environmental Impact Assessment (RREIA) Environment Management Plan
4	Social Impact Assessment (SIA) and R&R Plan	Socio-Economic Assessment Including survey of the Affected Development Impact Assessment Identification of Key Critical Factors and Strategy formulation R& R Plan Formulation Workshop and representation

- 10.1.4 The above studies would be undertaken by a Technical Engineering Consultant which the nodal agency needs to select through a transparent bidding process
- 10.1.5 Once the above the studies are completed, the concerned agencies should freeze the project PPP structure with the help of a qualified transaction advisor and also initiate the process of land acquisition for the project.
- 10.1.6 Also, a qualified transaction advisor should be engaged to further develop and market the project and select a suitable concessionaire.
- 10.1.7 An indicative Terms of Reference for selection of the Technical Consultant and Transaction Advisor is provided in **Annexure E** for reference

Annexure A: List of Stakeholders Met

Name	Designation
Mr. Vinayak G Sugur	Superintending Engineer, PW,P&IWT Dept. Belgaum Circle
Mr. N.P. Naik	Executive Engineer, PW,P&IWT Dept. Belgaum Circle
Mr CB Hiremath	Assistant Executive Engineer, Suvarna Soudha, Belgaum Circle
Mr. RS Naik	Executive Engineer, City Corporation Belgaum
Mr. MV Hiremath	Assistant Engineer, City Corporation Belgaum
Mr. Murti	PPP in Charge, PW,P&IWT Dept. Belgaum Circle
Mr. PN Ravindra	Commissioner, BUDA
Mr. V N Karekar	Town Planner Member, BUDA
Mr. Prakash	Town Planner, BUDA
Mr. Deshpande	Assistant Engineer, BUDA
Mr. CL Kulkarni	Revenue Officer, City Corporation Belgaum
Mr. Vijay Rajak	CEO, Cantonment Board, Belgaum
Mr. Vikas Patil	Manager, Nucleus Mall
Mr. Harish Gulabani	Owner, Adarsh Palace Hotel
Ms Preeti	Manager, Eefa Hotel
Mr. Sachin N Kallimani	Real Estate Developer, Belgaum
Mr. Abhinandan	Real Estate Developer, Belgaum
Mr. Mahesh	Real Estate Developer, Belgaum

Annexure B: Different PPP models and Risk Framework

IRCC/EPC

A significant number of projects in the road sector have been implemented / are being implemented through this mode. Under IRCC model, the government provides a Bill of Materials (BOM) at the time of bidding and the bidders are asked to quote their rates against the work items. The bidder, whose quote computed as the product of work quantities and rates quoted is the lowest is selected as the preferred bidder. In this structure, the contractor is responsible only for constructing the facility within the stipulated time frame and thus bears actual construction / implementation risk. All other risks associated with the project such as cost escalation, financing, traffic and long term operations and maintenance are borne by government.

EPC is a more sophisticated variant of IRCC, where the design is also done by the contractor unlike under the IRCC model and in that sense, the construction risk is shifted in part or in full to the contractor.

Annuity concessions (BOT-Annuity)

The annuity based concessions being currently used are primarily construction and long term O&M contracts combined together with the government making fixed semi-annual payment (Annuity) to the concessionaire for developing and maintaining the facility over the term of the concession. This approach was primarily developed for the purposes of encouraging participation by the private sector in developing those road sections where traffic forecasts levels or toll revenue collections (due to various reasons) are not sufficient to render the road stretch viable on the basis of private finance.

Toll based concessions (BOT-Toll)

On the other hand, toll based concessions transfer nearly all the major business risks to the private sector. This scheme has evinced interest for projects, which have estimated traffic forecasts at levels that would render the road stretch viable on a project finance basis.

The key advantage of BOT Toll concessions is that the executing agency assumes almost all the risks associated with construction, financing and operating (including traffic risk) the project. The toll revenues are collected by the concessionaire and therefore primarily only high traffic stretches that presents very high returns opportunity can be developed through this model. The involvement of the government and management time for monitoring and administering such projects is also considerably reduced as compared to construction contracts and annuity projects.

Initially, DPR was prepared by the government even while awarding BOT concessions (both toll and annuity projects) and therefore, the concessionaire had little flexibility for achieving design and cost optimizations. However, this approach is gradually being replaced with DBFOT model, and the design responsibility now rests with the concessionaire.

Other PPP models in road sector

Some of the states in India have experimented with **Development Right – based BOT model**, which provides the funding of the project either through the exploitation of development rights alone or along with toll revenues from the road users. This is designed to enhance the viability of the project stretches and make it more attractive for the private sector participation. However, the project cost under this model works out to be much higher than that of a conventional road project. This model also requires acquisition of additional land than that required for road development. Since land is a pre-requisite in this model, it becomes the biggest stumbling block. It also requires careful policy planning and detailing to determine the share the state government will receive from the project on an ongoing basis. Unless uncertainties around land acquisition are resolved, such a model is not likely to succeed. This model has been adopted in case of development of Noida toll bridge, which provides for grant of development rights to the concessionaire, in case the project is not generating sufficient revenues for the concessionaire to recover the Total Project Cost and returns thereon. However this concession agreement also does not set out the principles underlying valuation of the development rights, as also the duration for which the concessionaire would be granted such rights. It is therefore required that the award criteria of development right is precise and unambiguous principles for valuing them is stated upfront. This was also adopted in Bangalore Mysore Infrastructure Corridor project, where the issue of excess land is still to be sorted out. Though the foundation stone for this project was unveiled in April 1999, this project is yet to be completed owing to continuing muddle over acquisition of land for Nandi Infrastructure Corridor Enterprise Ltd. (NICE). This approach has been adopted by state government of Uttar Pradesh for Yamuna expressway (connecting Noida and Agra) developed by Jaiprakash Group.

Another variant of BOT(Annuity)-**Hybrid Model** has also been used for the Outer Ring Road project Chennai, where part of the estimated project cost is envisaged to be paid to the concessionaire during construction period, in addition to fixed annuities at 6 months interval (as quoted in the bids) during the O & M period. This provision deviates from the standard concession agreement, which envisages payment of annuity only to the concessionaire on each Annuity Payment Date during the O&M period. Although this deviation substantially reduces the annuity payment liability of the government, the exact percentage of the estimated project cost to be borne by the government need to be decided by the availability of surplus fund with the government and to what extent the government wants to leverage the same. In fact, the more the government pays during the construction period, the less will be risk borne by the concessionaire. Since in this case the debt requirement is substantially reduced, this shall provide additional comfort to the bidders/potential lenders and may result in less cost of capital for the concessionaire and which in turn may lead to more competitive bid. However, it is equally possible to be exploited by the concessionaire as his stake involved in the project is minimal. It may also perhaps be appropriate to examine if the government may also reimburse O&M cost to the concessionaire on similar lines, which can be least of the actual cost incurred by the concessionaire or the cost quoted by the concessionaire at the bidding stage. This will ensure better monitoring of the O&M works by the concessionaire.

Risk Framework for PPP Projects

Key Risks	Cash Contracts / EPC	Annuity Concessions##	BOT Concessions#
I. Development Period Risks			
1. Statutory clearances (Environmental Protection and Conservation of Site)	Government	Government	Government
2. Availability of Land free from encumbrances (Land acquisition, encroachments, utility shifting and R&R)	Government	Government @	Government @
3. Financing and financial closure	Government	Concessionaire	Concessionaire
4. Approval from Railways (in case of ROBs)	Government	Upto GAD Approval	Upto GAD Approval
II. Construction Period Risks			
5. Design risk	Government *	Concessionaire	Concessionaire
6. Quantity and price variation	Government	Concessionaire	Concessionaire
7. Quality	Contractor	Concessionaire	Concessionaire
8. Local permits / clearances	Contractor	Concessionaire	Concessionaire
9. Delays	Government **	Concessionaire	Concessionaire
10. EPC risks	Government	Concessionaire	Concessionaire
11. Completion risks (Government design approvals, tests, completion certificates, other procedural issues)	Contractor	Concessionaire	Concessionaire
III. Operation Period Risks			
12. Traffic and revenue risks	Government	Government	Concessionaire / Government
13. Operating risks	Government	Concessionaire	Concessionaire
14. Maintenance risks	Government	Concessionaire	Concessionaire
15. Cost overruns	Government	Concessionaire	Concessionaire
16. Road availability	Government	Concessionaire	Concessionaire
17. Quality of service	Government	Concessionaire	Concessionaire
18. Road safety	Government	Concessionaire	Concessionaire

Key Risks	Cash Contracts / EPC	Annuity Concessions##	BOT Concessions#
IV. Divestment Period Risks			
19. Cost	NA	Concessionaire	Concessionaire
20. Statutory payments	NA	Concessionaire	Concessionaire
21. Divestment requirements	NA	Concessionaire	Concessionaire
V. Project Life Cycle Risks			
22. Regulatory risks	Government	Concessionaire	Concessionaire
23. Legal risks	Government	Concessionaire	Concessionaire
24. Commercial / Financial risks	Government	Government (Mostly)	Concessionaire
25. Debt repayment	Government	Government (and Concessionaire)	Concessionaire
26. Force Majeure Events	Government	Government / Concessionaire	Concessionaire
27. Termination		Concessionaire	Concessionaire

Model Concession Agreement for BOT (Toll) projects approved by the GoI

Draft Concession Agreement currently in use by NHAI

@ In BOT Toll and Annuity Projects the concessionaire bears the responsibility for removing encroachments from the site.

*Design risk in turn is passed to the DPR consultant.

** Normally the Government can levy LD's of 1/2000 of the contract value per day of delay subject to a maximum of 10% of the contract value. In case of delays by the Government, the contractor can ask for termination or demobilizing and remobilization allowance or escalation for the period of delay or interest on the amounts due as per the applicable case.

Annexure C: Classified Traffic Volume at Outer Cordon points (February 2009)

Road Name	Road Configuration	Total in PCU	Traffic Volume In Nos						
			Car	Bus	Mini Bus	LCV	Trucks	2- Wheelers	3-Wheelers
Towards Pune (NH-4)	4-lane 2 way divided carriageway	42023	4904	613	205	1430	5108	7560	613
Gokak Road	2 lane 2 way undivided carriageway	9889	3134	313	313	731	627	3448	1463
Bagalkot Road	2 lane 2 way undivided carriageway	18669	3094	1346	403	672	1211	6053	672
Towards Bangalore (NH4)	4-lane 2 way divided carriageway	19341	2724	749	-	340	2111	817	68
Towards Khanapur	2 lane 2 way undivided carriageway	23807	3525	1007	504	504	1259	16869	1259
Towards Jamboti	2 lane 2 way undivided carriageway	13539	2005	573	286	286	716	9593	716
Towards Rakasakoppa	2 lane 2 way undivided carriageway	20172	1077	216	216	1292	862	9693	3446
Towards Vengurla	2 lane 2 way undivided carriageway	39111	5953	1489	496	993	993	35722	3771
Towards Kadoli Village	2 lane 2 way undivided carriageway	10231	246	-	-	-	370	8509	617

Source: CTPP, Belgaum

Annexure D: Financial Results Sheet

Scenario I BOT (Toll) with Grant/Premium

Figures in INR Cr.

P&L Account	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Income					
Toll income	13.54	40.59	67.09	107.41	120.14
Annuity	0.00	0.00	0.00	0.00	0.00
Advertisement Revenue	0.25	0.61	0.78	0.99	1.04
Less Loss due to Exempted traffic	0.06	0.17	0.29	0.46	0.53
Less Premium	0.00	0.00	0.00	0.00	0.00
Total Income(A)	13.73	41.03	67.58	107.94	120.65
Expenses					
Toll Plaza and O&M Expenses	3.63	8.74	11.02	13.94	14.62
Depreciation	6.42	12.84	12.84	12.84	12.84
Amortisation	3.35	6.70	6.70	6.70	6.70
Less : Grant	-3.35	-6.70	-6.70	-6.70	-6.70
Total Expenses(B)	10.05	21.57	23.86	26.78	27.45
Gross profit (A-B) (PBIT)	3.68	19.46	43.72	81.16	93.20
Interest on Term Loan	9.05	11.77	2.72	0.00	0.00
Interest on Cash Deficit Loan	0.00	0.00	0.00	0.00	0.00
Profit before tax (PBT)	-5.37	7.69	41.00	81.16	93.20
Tax	0.00	1.54	8.20	27.38	31.60
Profit after tax (PAT)	-5.37	6.15	32.80	53.78	61.60
Cumulative Profit /Loss	-5.37	-6.40	86.01	291.01	352.61
Cash Accrual	1.05	18.99	45.64	66.62	74.44

Scenario I BOT (Toll) with Grant/Premium

Figures in INR Cr.

Cash Flow Analysis

Cash Inflows	31-Mar-2014	31-Mar-2015	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Gross Cash Accruals	0	0	1.05	18.99	45.64	66.62	74.44
Increase in Grant	13.31	51.75	38.81				
Increase in Equity	59.69	0.00	0.00				
Increase in Debt	17.85	69.38	52.04				
Increase in Cash Deficit Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Increase / decrease in Current Liabilities & Bank Borrowings							
Total Inflows	90.85	121.13	91.89	18.99	45.64	66.62	74.44
Cash Outflows							
Capital Expenditure	90.85	121.13	90.85				
Principal Repayment:							
<i>Debt</i>				13.93	13.93	0.00	0.00
Increase in Current Assets							
Total Outflows	90.85	121.13	90.85	13.93	13.93	0.00	0.00
Opening Balance		0.00	0.00	4.52	64.83	271.25	337.86
Cash Surplus (Deficit) during the year	0.00	0.00	1.05	5.06	31.71	66.62	74.44
Closing Balance	0.00	0.00	1.05	9.58	96.54	337.86	412.30
Cash Deficit Loan							
Net Cash BF	-	-	-	4.52	64.83	271.25	337.86
Cash flow during the year	-	-	1.05	5.06	31.71	66.62	74.44
Net Cash CF	0.00	0.00	1.05	9.58	96.54	337.86	412.30

Scenario I BOT (Toll) with Grant/Premium

Figures in INR Cr.

IRR Calculations		31-Mar-2014	31-Mar-2015	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Capex including IDC		90.85	121.13	90.85				
Less : Grant		0.00	0.00	0.00				
Less IDC		1.16	6.83	7.36				
Capex excluding Grant		89.69	114.30	83.48	0.00	0.00	0.00	0.00
Current Assets build up								
(Increase) / decrease in cash deficit loan								
Cash Outflow		89.69	114.30	83.48	0.00	0.00	0.00	0.00
Gross Cash Accruals				10.10	30.75	48.35	66.62	74.44
Cash Inflow		0	0.00	10.10	30.75	48.35	66.62	74.44
Net Cash Flow		-89.69	-114.30	-73.38	30.75	48.35	66.62	74.44
Project IRR	8.13%							
Equity Returns								
PAT		0.00	0.00	-5.37	6.15	32.80	53.78	61.60
Add: Depreciation		0.00	0.00	6.42	12.84	12.84	12.84	12.84
Less: Principal Repayment				0.00	13.93	13.93	0.00	0.00
Free Cash Flows to Equity		-	-	1.05	5.06	31.71	66.62	74.44
Total Cash Flows to Equity Investor (Rs Cr)		(59.69)	-	1.05	5.06	31.71	66.62	74.44
Equity IRR (%)	15.00%							

Scenario II BOT (Annuity)

Figures in INR Cr.

P&L Statement	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Income					
Toll income	0.00	0.00	0.00	0.00	0.00
Annuity	31.08	62.16	62.16	62.16	62.16
Advertisement Revenue	0.25	0.61	0.78	0.99	1.04
Less Loss due to Exempted traffic	0.00	0.00	0.00	0.00	0.00
Less Premium	0.00	0.00	0.00	0.00	0.00
Total Income(A)	31.33	62.77	62.94	63.15	63.20
Expenses					
Toll Plaza and O&M Expenses	2.63	6.28	7.88	9.93	10.40
Depreciation	10.34	20.68	20.68	20.68	20.68
Amortisation	0.00	0.00	0.00	0.00	0.00
Less : Grant	0.00	0.00	0.00	0.00	0.00
Total Expenses(B)	12.97	26.96	28.56	30.61	31.08
Gross profit (A-B) (PBIT)	18.36	35.81	34.37	32.54	32.12
Interest on Term Loan	14.58	18.96	4.38	0.00	0.00
Interest on Cash Deficit Loan	0.00	0.00	0.00	0.00	0.00
Profit before tax (PBT)	3.78	16.85	30.00	32.54	32.12
Tax	0.76	3.37	6.00	6.51	6.43
Profit after tax (PAT)	3.02	13.48	24.00	26.03	25.69
Cumulative Profit /Loss	3.02	44.08	132.00	249.13	274.82
Cash Accrual	13.36	34.16	44.68	46.71	46.37

Scenario II BOT (Annuity)

Figures in INR Cr.

Cash Flow Analysis

Cash Inflows	31-Mar-2014	31-Mar-2015	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Gross Cash Accruals	0	0	13.36	34.16	44.68	46.71	46.37
Increase in Grant	0.00	0.00	0.00				
Increase in Equity	28.85	38.46	28.85				
Increase in Debt	67.31	89.75	67.31				
Increase in Cash Deficit Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Increase / decrease in Current Liabilities & Bank Borrowings							
Total Inflows	96.16	128.21	109.52	34.16	44.68	46.71	46.37
Cash Outflows							
Capital Expenditure	96.16	128.21	96.16				
Principal Repayment:							
<i>Debt</i>				22.44	22.44	0.00	0.00
Increase in Current Assets							
Total Outflows	96.16	128.21	96.16	22.44	22.44	0.00	0.00
Opening Balance		0.00	0.00	58.11	126.72	277.90	324.61
Cash Surplus (Deficit) during the year	0.00	0.00	13.36	11.72	22.24	46.71	46.37
Closing Balance	0.00	0.00	13.36	69.83	148.95	324.61	370.98
Cash Deficit Loan							
Net Cash BF	-	-	-	58.11	126.72	277.90	324.61
Cash flow during the year	-	-	13.36	11.72	22.24	46.71	46.37
Net Cash CF	0.00	0.00	13.36	69.83	148.95	324.61	370.98

Scenario II BOT (Annuity)

Figures in INR Cr.

IRR Calculation		31-Mar-2014	31-Mar-2015	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Capex including IDC		96.16	128.21	96.16				
Less : Grant		0.00	0.00	0.00				
Less IDC		4.38	14.58	12.40				
Capex excluding Grant		91.78	113.63	83.76	0.00	0.00	0.00	0.00
Current Assets build up								
(Increase) / decrease in cash deficit loan								
Cash Outflow		91.78	113.63	83.76	0.00	0.00	0.00	0.00
Gross Cash Accruals				27.95	53.12	49.05	46.71	46.37
Interest on Cash Deficit Loan								
Terminal Value								
Cash Inflow		0	0.00	27.95	53.12	49.05	46.71	46.37
Net Cash Flow		-91.78	-113.63	-55.81	53.12	49.05	46.71	46.37
IRR	13.63%							
Equity Returns								
PAT		0.00	0.00	3.02	13.48	24.00	26.03	25.69
Add: Depreciation		0.00	0.00	10.34	20.68	20.68	20.68	20.68
Less: Principal Repayment				0.00	22.44	22.44	0.00	0.00
Free Cash Flows to Equity		-	-	13.36	11.72	22.24	46.71	46.37
Total Equity Investment (Rs Cr)		-28.85	-38.46	-28.85	0.00	0.00	0.00	0.00
Total Cash Flows to Equity Investor (Rs Cr)		(28.85)	(38.46)	(15.48)	11.72	22.24	46.71	46.37
Equity IRR (%)	15.00%							

Scenario III Hybrid

Figures in INR Cr.

PL Statement	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Income					
Toll income	0.00	0.00	0.00	0.00	0.00
Annuity	26.08	52.16	52.16	52.16	52.16
Advertisement Revenue	0.25	0.61	0.78	0.99	1.04
Less Loss due to Exempted traffic	0.00	0.00	0.00	0.00	0.00
Less Premium	0.00	0.00	0.00	0.00	0.00
Total Income(A)	26.33	52.77	52.94	53.15	53.20
Expenses					
Toll Plaza and O&M Expenses	2.61	6.26	7.86	9.90	10.38
Depreciation	7.88	15.77	15.77	15.77	15.77
Amortisation	1.97	3.94	3.94	3.94	3.94
Less : Grant	-1.97	-3.94	-3.94	-3.94	-3.94
Total Expenses(B)	10.50	22.03	23.63	25.67	26.15
Gross profit (A-B) (PBIT)	15.83	30.74	29.31	27.48	27.05
Interest on Term Loan	11.12	14.46	3.34	0.00	0.00
Interest on Cash Deficit Loan	0.00	0.00	0.00	0.00	0.00
Profit before tax (PBT)	4.71	16.28	25.97	27.48	27.05
Tax	0.94	3.26	5.20	5.50	8.51
Profit after tax (PAT)	3.77	13.03	20.77	21.98	18.54
Cumulative Profit /Loss	3.77	46.34	123.69	220.83	239.37
Cash Accrual	11.65	28.79	36.54	37.75	34.31

Scenario III Hybrid

Cash Flow Analysis

Figures in INR Cr.

Cash Inflows	31-Mar-2014	31-Mar-2015	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Gross Cash Accruals	0	0	11.65	28.79	36.54	37.75	34.31
Increase in Grant	4.82	32.16	24.12				
Increase in Equity	73.32	0.00	0.00				
Increase in Debt	13.51	90.05	67.54				
Increase in Cash Deficit Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Increase / decrease in Current Liabilities & Bank Borrowings							
Total Inflows	91.66	122.21	103.31	28.79	36.54	37.75	34.31
Cash Outflows							
Capital Expenditure	91.66	122.21	91.66				
Principal Repayment:							
<i>Debt</i>				17.11	17.11	0.00	0.00
Increase in Current Assets							
Total Outflows	91.66	122.21	91.66	17.11	17.11	0.00	0.00
Opening Balance		0.00	0.00	54.29	117.18	240.64	278.39
Cash Surplus (Deficit) during the year	0.00	0.00	11.65	11.69	19.43	37.75	34.31
Closing Balance	0.00	0.00	11.65	65.98	136.62	278.39	312.70
Cash Deficit Loan							
Net Cash BF	-	-	-	54.29	117.18	240.64	278.39
Cash flow during the year	-	-	11.65	11.69	19.43	37.75	34.31
Net Cash CF	0.00	0.00	11.65	65.98	136.62	278.39	312.70

Scenario III Hybrid

Figures in INR Cr.

IRR Calculation		31-Mar-2014	31-Mar-2015	31-Mar-2016	31-Mar-2020	31-Mar-2025	31-Mar-2030	31-Mar-2031
Capex including IDC		91.66	122.21	91.66				
Less : Grant		0.00	0.00	0.00				
Less IDC		0.88	7.61	8.93				
Capex excluding Grant		90.78	114.60	82.73	0.00	0.00	0.00	0.00
Current Assets build up								
(Increase) / decrease in cash deficit loan								
Cash Outflow		90.78	114.60	82.73	0.00	0.00	0.00	0.00
Gross Cash Accruals				22.77	43.25	39.88	37.75	34.31
Interest on Cash Deficit Loan								
Terminal Value								
Cash Inflow		0	0.00	22.77	43.25	39.88	37.75	34.31
Net Cash Flow		-90.78	-114.60	-59.96	43.25	39.88	37.75	34.31
IRR	9.58%							
Equity Returns								
PAT		0.00	0.00	3.77	13.03	20.77	21.98	18.54
Add: Depreciation		0.00	0.00	7.88	15.77	15.77	15.77	15.77
Less: Principal Repayment				0.00	17.11	17.11	0.00	0.00
Free Cash Flows to Equity		-	-	11.65	11.69	19.43	37.75	34.31
Equity Investment								
Investment		-73.32	0.00	0.00		0.00		
Total Equity Investment (Rs Cr)		-73.32	0.00	0.00	0.00	0.00	0.00	0.00
Terminal Value (Rs Cr)								
Total Cash Flows to Equity Investor (Rs Cr)		(73.32)	-	11.65	11.69	19.43	37.75	34.31
Equity IRR (%)	15.00%							

Annexure E: Draft ToR for Technical Consultant & Transaction Advisor

Scope of Services-Technical Consultant

The scope of services shall comprise the following, but not limited to:

1. Alternative Alignment Study and selection of a feasible alignment

2. Traffic surveys and Traffic demand assessment

The Consultant shall make a detailed assessment of the traffic based on analysis of existing traffic trends, diversion analysis and socio-economic influencing factors. The Consultant shall submit a Report on the Traffic Assignment, Growth Rates.

3. Engineering surveys and investigations

- i. Estimate the Land requirement for the Project facility
- ii. Topographic survey, Geotechnical investigations as required to be carried out for project design and arriving at the project cost

4. Environment & Social impact assessment

- i. The Consultant shall undertake environment impact assessment of the Project as per provisions of the Applicable Laws on environment protection and identify a package of measures to reduce/eliminate the adverse impact identified during the assessment. An environmental impact assessment report and environmental management plan shall be prepared based on such assessment. The management plan shall include project specific mitigation and monitoring measures for identified impacts as well as management and monitoring plans to address them.
- ii. The Consultant shall also assist the Authority in addressing the comments and suggestions received during the EIA process with a view to getting environmental clearance from the competent authority.
- iii. The Consultant shall also identify the resettlement & rehabilitation requirements of the project site along with package to be offered for the same to the beneficiaries

5. Preliminary designs of Outer Ring Road

The Consultant shall arrive at the preliminary designs of various components of the Project Ropad keeping in view the requirements of the Authority and the scope of services described in this TOR. The site layout and preliminary engineering designs shall be supplemented with explanatory drawings, technical specifications, charts, and notes as necessary.

6. Preparation of Preliminary Cost Estimates

The Consultant shall work out indicative BOQ of various components and prepare cost estimates of the Project with a break up of cost for each component separately.

7. Establishing the Financial Viability of the Project

Detailed financial analysis is required to be undertaken by the Transaction Consultant. However, the Consultant shall provide the estimated construction costs, operation and maintenance costs, traffic forecast, revenues etc. as part of its financial analysis and

appraisal of the Project. The Consultant shall, also provide an assessment of the financial viability of the Project with a view to estimating the likely IRR over an appropriate concession period.

The scope of work indicated above is indicative and not exhaustive. There may be need for flexibility during the assignment as more information about the project emerges and what is feasible and most effective. This can be discussed and mutually agreed during the course of the assignment

Scope of Services-Transaction Advisor

1. Physical Packaging

- i. Identifying issues that could have commercial and financial implications.
- ii. Assist the Authority Preparation of the project implementation schedule.
- iii. Examine the overall viability of the current way of packaging and suggest mechanisms to strengthen the same.

2. Strategic Packaging

- i. Assist the Authority in conducting risk assessment by: (a) identifying the allocation of risks; (b) proposing changes in the risk allocation that will make the project more attractive to the private sector without significantly increasing the liabilities on the Authority.
- ii. Assist and suggest framework for the bidding package in consideration of a variety of specific factors including: (a) the requirements for a fixed time schedule performance parameters (b) the terms for early termination.
- iii. Define the project concept, establish project parameters and identify issues in developing the project. The obligations of project and those of Authority would be crystallized.

3. Investment Packaging

- i. Assist the Authority in developing financial model for the Project to improve the financial / commercial viability of the project;
- ii. Assist the Authority in estimating the financial impact of various provisions in the project agreement.
- iii. Assist the Authority in optimizing the project structure under various implementation options; and estimate the values of basic bidding criteria, for evaluation of the reasonableness of the financial proposals.
- iv. Assist and guide the Authority in developing the business plan under the selected project structure and a cash flow model to maximise the return to the Authority.

4. Process Packaging

- i. Finalisation of bidding documents.
- ii. Finalise the bidding process, the qualification parameters and the criteria for evaluation of proposals in consultation with Authority.
- iii. Assist the Authority in finalization of the RFP and in consultation with Authority.
- iv. Assistance in addressing bidders' queries

- v. Assistance in evaluation of RFP proposals

5. Delivery System Packaging

- i. Suggest appropriate Dispute Resolution Mechanism within the Agreements.
- ii. Assist the Authority in ensuring obtaining all undertakings, submissions and warranties from the selected bidders.

The scope of work indicated above is indicative and not exhaustive. There may be need for flexibility during the assignment as more information about the project emerges and what is feasible and most effective. This can be discussed and mutually agreed during the course of the assignment.



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