

# Road Infrastructure Projects Under Public Private Partnership Mode

## Introduction

Road infrastructure is understood to include all physical assets within the road reserve, including not only the road itself, but all associated furniture (signage etc.) and all earthworks, drainage, structures (culverts, bridges, buildings etc....).

Roads have the potential to be a significant asset to any country both in terms of the physical investment and the social and economic benefits. A society relies on a good road system as the basis to access jobs, health care, education and social connections. It is a crucial element in the development of a community on a localized level and a country's economic growth nationally and globally. A well-maintained and managed road network unlocks the region's productive capacity by linking agricultural areas to national or regional markets, and encourages economic growth and social integration by bringing cities and villages closer together.

Operations of vehicles along these transport systems make the travel time to reduce and generation of employment in the sector which in aggregate influence the aggregate demand for goods and services that ultimately leads to increase in GDP and overall development.

With this in mind, governments are eager to develop and manage their road networks to meet their economic, political and social needs. In some jurisdictions this means building brand new roads, while in others it requires refurbishing, widening and extending existing road networks. (PPP Knowledge Lab, the World Bank Group. <https://pppknowledgelab.org/sectors/roads>)

## Road Network in Pakistan

Roads in Pakistan are generally classified as federal, provincial and municipal roads.

Pakistan

Motorways	Expressways	Highways	Primary Road	Secondary Road	Local Road	Metro Road	Total
2,471.19	427.96	320,96.63	4,387.70	87,764.58	373,525.14	76.07	500,749.27

<http://www.ntrc.gov.pk/pakistan/>, National Transport Research Centre (NTRC)

Kilometers

Sindh

Motorways	Expressway	Highways	Primary Road	Secondary Road	Local Road	Metro Road	Total
591.21	36.94	5,818.53	1,456.31	16,662	67,564.07	12.18	92,141.24

<http://www.ntrc.gov.pk/sindh/>, National Transport Research Centre (NTRC)

Kilometers

## **Federal Roads**

Federal roads are controlled by the Government of Pakistan and maintained by National Highway Authority (NHA). They are divided into 3 classes:

### **Motorways**

Motorways of Pakistan are a network of multiple-lane, high-speed, limited-access or controlled-access highways that are owned, maintained and operated federally by NHA.

### **National Highways**

National Highways of Pakistan consist of all public highways maintained by NHA. The highways transverse across the country and provide access to major population centers.

### **Strategic Highways**

National Highways are distinct from 'Strategic Highways'. These are controlled and operated by the Ministry of Defense.

### **Expressways**

Expressways are also a network of multiple-lane, high-speed toll highways in Pakistan, which are owned, and maintained by the NHA. Expressways are usually upgraded versions of National highways but differ from Motorways because of less access restrictions

### **NHA:**

NHA was created in 1991 through an Act of the Parliament for planning, development, operation, repair and maintenance of National Highways, Motorways and Strategic Roads entrusted to NHA by the Federal Government or by a Provincial Government or other authority concerned. NHA is the custodian of 39 national highways/ motorways/ expressway/ strategic routes having a total length of ~11,995 km. It is ~2.4% of total national roads network. However, it carries ~80% of the commercial traffic and N-5, connecting Karachi to

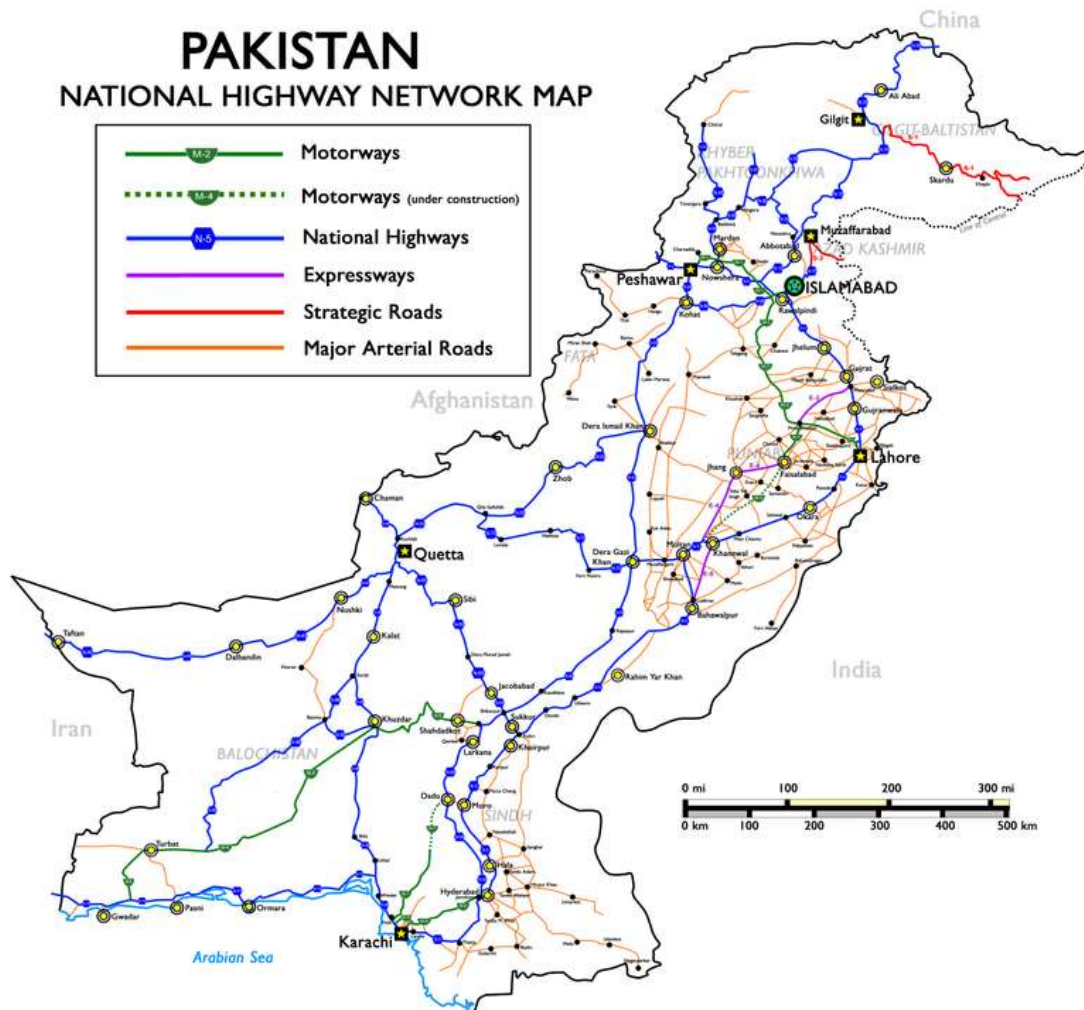
Torkham, which is the blood-line of Pakistan, carries 65% of this load in the country. (The Pakistan Credit Rating Agency Limited (PACRA), Road Infrastructure, Sector Study, April 2021)

### Provincial and territorial roads

Provincial and territorial roads are controlled by the respective provincial and territorial governments of Pakistan and maintained by each province's Highway Authority.

### Municipal roads

Municipal roads are controlled by the respective district governments or city governments.



([https://en.wikipedia.org/wiki/Roads\\_in\\_Pakistan#/media/File:Pakistan\\_Nationalhighways.PNG](https://en.wikipedia.org/wiki/Roads_in_Pakistan#/media/File:Pakistan_Nationalhighways.PNG))

## **Pakistan's Ailing Road Infrastructure**

If Pakistan is to traverse into the 21st century along its roads, there is a significant possibility it will not make to it. The twists and turns, the highs and lows, and the bone-breaking lopsidedness of its roads are ensured to dispirit and stall even the most determined travelers.

Developed roads, highways, bridges and ports play a significant role in the economic development and prosperity of a country. In the economy of Pakistan where the services sector contributes around 61% of the total GDP, the domain of transport and communication which represents a sub-section of services is of pivotal importance.

In Pakistan, road transportation is preferred for being economical and time-saving. In rural areas, it is the only medium present for the movement of people and freight. Though the country is home to the world's 21st largest road network and its roads are among the worst and deadliest on the planet. According to the World Economic Forum, Pakistan ranks 77th in the world for the quality of its road infrastructure; the ranking quite aptly paints the dismal picture of its substandard road network. According to the World Health Organization 2015 report, Pakistan ranked 1st in Asia and 48th in the world for most deaths caused by traffic accidents which necessitate the pressing need for improving the road infrastructure on a priority basis.

In the last few years, the quality of highways is gradually being upgraded courtesy a few developments and flagship highway and motorway construction projects pursued under the CPEC and the Public Sector Development Program. The state of highways managed under the National Highways Authority is nevertheless much better than its more traveled roads the ordinary rural and urban roads, upon which the vast majority of its population travels daily.

A glance at the country's non-highway roads highlights the absence of basic lane-lines, leave aside more advanced surface markings such as solid, single, broken and double white and yellow lines, diagonal lines, directional lines, zebra markings, parking markings, etc. Most of its local roads are devoid of basic standardized traffic signage. Owing to the unplanned construction, the roads are deprived of any visible boundaries to forestall the wearing off at the edges. The functioning traffic lights for pedestrians to cross a busy junction are rare, and as are walkable sidewalks. For example, in early 2019, the Islamabad Traffic Police confirmed that only 40% of the traffic signals installed in the federal capital are in working condition. This precipitous absence of walkways and pedestrian safety standards equates to

criminal negligence in a country where the majority of the public walks on the streets, and many among them suffer accidents because of insufficient walking space.

Virtually no standards are being implemented for potholes and street bumps nor any for sewer vent covers which are afoot above or beneath the road surface, all of which reduce the accessible road space and are significant reasons for mishaps. To make it worse, people have unlawfully encroached tracts of government lands that make roads shrink further.

(<https://dailytimes.com.pk/608852/improving-pakistans-ailing-road-infrastructure/>)

## **Role of Private Sector in Road PPP Projects**

While the public sector is ultimately responsible for roads, the private sector has a potential role to play in the project lifecycle, whether it be in road construction, operation, financing or maintenance. Partnerships between the public and private sector in roads are by no means a new phenomenon and, when done right in the appropriate circumstances, can improve project quality and increase efficiencies.

The nature of road public-private partnerships (PPPs) varies considerably from project to project and is driven by the local, national and even international factors that make the project a necessity in the first place. Historically, the most common road PPPs have been brownfield concessions. However, since 2000 Greenfield projects have become increasingly more popular.

While there has been significant investment in road networks globally, it is expected that very significant investments will continue to be required in the next 20 years to meet increasing demand arising from population growth and economic development. Recent studies indicate that both the investment requirement and the potential funding gap in road infrastructure will be significantly higher than other transportation sectors. In most jurisdictions this will mean building brand new roads, extending existing roads or both.

New roads are expensive and governments are often constrained in their ability to commit fiscal spending to roads. This is an area where project financing and BOT projects are becoming more and more common. As in other transportation subsectors, the allocation of demand / revenue risk between the host government and private developer and maintaining

the appropriate balance between public amenity and project profitability will be core considerations.

## **Public Private Partnership (PPP) Interventions by Sindh in Road Infrastructure**

Government of Sindh (GoS) established a Public Private Partnership Unit in 2008 with the technical assistance Asian Development Bank. GoS enacted a PPP Law in 2010, 1st PPP law of Pakistan. It has been drafted to supplement the legal and regulatory framework for PPPs and to assist both the private and the public sectors in implementing this innovative procurement methodology.

### **Hyderabad Mirpurkhas Dual Carriageway Project (HMDC)** **First Flagship Project of Sindh Government under PPP Mode**

Hyderabad Mirpurkhas Dual Carriageway Project (HMDC) has been the first flagship project for the Government of Sindh under PPP Mode i.e. Design, Build, Finance, Operate, Maintain and Transfer (“DBFOT”) – Revenue model

The Works & Services Department intended to develop a dual carriageway road access from Hyderabad to Mirpurkhas city to reduce traffic congestion, and to provide quick and safe access to the commuters. The brief scope of work included

#### **Design & Construction (02 years)**

A 60 kilometer dualization of existing two-lane road connecting Hyderabad to Mirpurkhas.

- Road: 58.7 km
- Lanes: 04
- Toll Booths at each end: 08
- Weighbridges: 03 numbers (Hyd, MPK and Rahuki)
- Pedestrian Bridges: 03
- U turns: 13
- Bridges: 03
- Catch pits: 21
- Box culverts: 08

- Pipe culverts: 40

### **Operations & Maintenance (30 years from substantial completion of Construction)**

The Concessionaire shall undertake toll operations and regular maintenance of the Project Highway as per agreed standards.

### **Project Economic Benefits / VFM**

- Reduced travel time and fuel from Hyderabad to Mirpurkhas
- Creation of approximately 5,000 direct job opportunities and 22,000 indirect job opportunities
- Uplift land values significantly
- Improve safety and reliability
- Facilitation to major agricultural belt of Sindh
- Opportunities for local communities for jobs and businesses due to ease of road access as well as better law & order situation in the area

### **Procurement Process**

The Project was launched for investor solicitation in December 2008. The Technical & Financial Evaluation Committee (TFEC) concluded the procurement process and recommended Deokjae Construction Co. (Pvt.) Limited as preferred bidder with Project Cost of PKR 6.2 billion. The PPP Policy Board in its 3rd and 4th meeting held on 10th June 2009 and 11th November 2009, respectively, granted approval for issuance of LOI to Deokjae Construction (Pvt.) Limited and Concession Agreement.

### **Project Financing**

26.1% Equity (18.4% private partner and 7.7% of GoS)

37.3% Bank Loan

31.3% GoS Subordinated Debt

5.3% Developer Equity

### **Key Features of the Project**

- The HMDC Project achieved substantial completion of construction works in August 2012.

- The HMDC is the first major road sector project that is based on project financing from local lenders i.e. NBP and Summit Bank. The HMDC Project through toll & non-toll revenues successfully retired bank loan in December 2020.
- The HMDC project has commenced repayments of Subordinated debt to the GoS from March 2021.
- The HMDC project implemented most diversified technology of Electronic Toll and Traffic Management System (ETTMS).

### **Sir Aga Khan Jhirk Mulla Katiyar Bridge Project (JMK)**

Sir Aga Khan Jhirk Mulla Katiyar Bridge is the longest bridge constructed over River Indus by Works & Services Department under Public Private Partnership Mode i.e. Design, Build, Finance, Operate, Maintain and Transfer (“DBFOT”) – Annuity model

It has been constructed on a strategic location as it links important cities of lower Sindh including Nooriabad, Jhirk, Matli to Tando Muhammad Khan and subsequently to Badin and Mirpurkhas Division. The main objective of this project was to create a vertical access to northeast from Jhirk crossing overhead River Indus to Tando Mohammad Khan-Bathoro Road.

The brief scope of work includes

#### **Design & Construction (02 years)**

Bridge over River Indus (approximately 1700 meters)

Link road of 15.3 Kilometers.

#### **Operations & Maintenance (25 years from substantial completion of Construction)**

The Concessionaire shall undertake toll operations and regular maintenance of the Project Highway as per agreed standards.

#### **Project Economic Benefits / VFM**

- There was no direct connectivity between two sides of river and people had two options i.e.
  - a. Either use traditional boats or
  - b. Travel via Hyderabad which took about 2 hours.
- After the bridge the travel time & distance from Jhirk to Mulla Katiyar has been reduced to half.



- It has brought prosperity among the population of both side of the rivers, ensuring fast communication and effectively 'Bringing People Closer'.
- This project aims to improve traffic flow between major cities of Sindh & facilitate the growth of commercial activities ultimately connecting the Industrial Hub of Sindh with the Agricultural Hub.
- Creation of direct and indirect job opportunities.
- Uplift project surrounding land values

### **Procurement Process**

In response to Request For Proposal (RFP) issued by the Government of Sindh, three (3) firms namely (1) M/s Electric Services, (2) M/s NKKE and, (3)M/s Deokjae Construction submitted their proposals.

After the detailed evaluation of bids, Technical and Financial Evaluation Committee (TFEC) for the project presented their recommendations to PPP Policy Board in its 7th PPP Policy Board meeting held on May 15, 2012 to award the Concession for Jhirk Mulla Katiyar Bridge Project to M/s Al-Jasr Pakistan (Pvt) Ltd. (Special Purpose Company incorporated by M/s NKKE - Preferred bidder) for the subject project.

The Project cost of the Project is 4.5 billion. It was completed in 2017 and is operational

### **Project Financing**

13% Private Partner Equity

12% GoS Equity

75% Bank Loan

### **Key Features of the Project**

- Longest bridge constructed over River Indus.
- This project was undertaken to cater to government's vision to expand and improve the functionality of national highways and motorways.
- In the years ahead this project will entail economic boost to the connecting areas and transform the local agriculture economy with better logistics access for supply of Agri-produce and have great impact on the social uplift of the area.

- The project financing was secured from UBL & HBL which has been completed paid off as of November 2020.

### **Karachi Thatta Dual Carriageway Project (KTDC)**

The main objective of the Project was to dualize and enhance the road quality of existing N-5 highway. The project is important as it is connecting this corridor from Thatta onwards to Mithi, taking it further down to Islamkot and Thar. The brief scope of work includes

#### **Design & Construction (02 years)**

Design, Finance, Build, Operate & Transfer (DFBOT) of National Highway (N5) from Ghagghar Phatak to Thatta Bypass comprising of 49 KM length.

#### **Operations & Maintenance (25 years from substantial completion of Construction)**

The Concessionaire shall undertake toll operations and regular maintenance of the Project Highway as per agreed standards.

#### **Project Economic Benefits / VFM**

- The main objective of the Project is to dualize and enhance the road quality of existing N-5 highway.
- The project is important as it is connecting this corridor from Thatta onwards to Mithi, taking it further down to Islamkot and Thar which serves as the vital area for national power generation.

#### **Procurement Process**

The Project was launched for Investor Solicitation with the approval of PPP Policy Board in its 7th meeting held on 15 May, 2012 under SPPRA Rules.

Two (2) bids were received from following:

1. China Railway First Group Ltd
2. Federal Works Organization (FWO)

Wherein the FWO was found to be the only compliant bid in accordance with RFP and SPPRA Rules and declared as preferred bidder. The PPP Policy Board in its 15th meeting dated April 22, 2015 (attached as Annexure E1) approved the signing of the revised draft of the Concession Agreement on the negotiated terms in relation to the Karachi Thatta Dual Carriageway Project with the Frontier Works Organization (FWO), and also approved the

funding of PKR 6.463 billion (PKR 1.463 billion as equity participation and PKR 5 billion as SBLC for ensuring annuity payments covering 2 years) through Viability Gap Fund managed by the Sindh Fund Management House. The cost and financial structure approved by the PPP Policy Board is presented below.

Total Construction Cost (EPC)           PKR 7,499 Mn

Total Project Development Cost (Non-EPC) PKR 2460 Mn

Total   PKR 9,958 Mn

### **Project Financing**

Debt   (70.0%)

Equity                                       (30.0%)

Private Partner Equity (53.3%)

GoS Equity                               (46.7%)

- Concession Agreement was signed on 7th May 2015.
- Independent Engineer & Independent Auditor agreements have been signed on 14 Jan, 2016.
- Price Escalation Agreement has been signed on 29 December 2016
- Project Site License Agreement has been signed 8 April 2016.
- Equity Funding & Utilization Agreement signed on 29 December 2015

### **Key Features of the Project**

- Reduced travel time from Thatta to Karachi. Prior to dualization it used to take 90 minutes of travelling time, whereas now it takes 45 to 50 minutes.
- Fuel and vehicle wear & tear costs savings for the commuters
- Improve safety and reliability.

### **Ghotki-Kandhkot Bridge Project**

The Works & Services Department, GoS intends to provide a direct link between Ghotki and Kandhkot by constructing a bridge over Indus River in the province of Sindh to improve traffic flows between these major cities. The project was launched as Design, Build, Finance, Operate, Maintain and Transfer (“DBFOT”) project. Brief scope of work includes the following:

### **Design & Construction (03 years)**

Total project length is 34.7 Km with below break-up:

- 4 lane Bridge 2 Km
- 2 Lane approach road on Ghotki Side 12.8 km
- 2 Lane approach road on Kandhkot Side 15.2 km
- 2 Lane link road to Thull Road 4.5 km

Scope of work also involves:

- One (1) flyover on N-55 crossing
- Four (4) small bridges on canals
- Eighty-Five (85) culverts
- One (1) Toll Plaza
- One (1) Administrative Building
- Two (2) Weigh Bridges
- Electronic Toll & Ticketing System (ETTM)

The Concessionaire shall commence construction work from 90 days of IRC approval (Scheduled Commencement Date).

### **Operations & Maintenance (25 years from substantial completion of Construction)**

The Concessionaire shall undertake toll operations and regular maintenance of the Project Highway as per agreed standards.

### **Project Economic Benefits / VFM**

- The main objective of the Project is to dualize and enhance the road quality of existing N-5 highway.
- The project is important as it is connecting this corridor from Thatta onwards to Mithi, taking it further down to Islamkot and Thar which serves as the vital area for national power generation.

### **Procurement Process**

The Project was launched for Investor Solicitation with the approval of PPP Policy Board in its 7th meeting held on 15 May, 2012 under SPPRA Rules.

Two (2) bids were received from following:

1. China Railway First Group Ltd
2. Federal Works Organization (FWO)

Wherein the FWO was found to be the only compliant bid in accordance with RFP and SPPRA Rules and declared as preferred bidder. The PPP Policy Board in its 15th meeting dated April 22, 2015 (attached as Annexure E1) approved the signing of the revised draft of the Concession Agreement on the negotiated terms in relation to the Karachi Thatta Dual Carriageway Project with the Frontier Works Organization (FWO), and also approved the funding of PKR 6.463 billion (PKR 1.463 billion as equity participation and PKR 5 billion as SBLC for ensuring annuity payments covering 2 years) through Viability Gap Fund managed by the Sindh Fund Management House. The cost and financial structure approved by the PPP Policy Board is presented below.

Total Construction Cost (EPC)           PKR 7,499 Mn  
Total Project Development Cost (Non-EPC) PKR 2460 Mn  
Total   PKR 9,958 Mn

### **Project Financing**

Debt                                   (70.0%)  
Equity                                 (30.0%)

Private Partner Equity (16%)

GoS Equity                         (14%)

- Concession Agreement was signed on 7th May 2015.
- Independent Engineer & Independent Auditor agreements have been signed on 14 Jan, 2016.
- Price Escalation Agreement has been signed on 29 December 2016
- Project Site License Agreement has been signed 8 April 2016.
- Equity Funding & Utilization Agreement signed on 29 December 2015

### **Key Features of the Project**

- Reduced travel time from Thatta to Karachi. Prior to dualization it used to take 90 minutes of travelling time, whereas now it takes 45 to 50 minutes.
- Fuel and vehicle wear & tear costs savings for the commuters
- Improve safety and reliability.

### **Project Economic Benefits / VFM**

- Significantly reduce travel time and fuel from Ghotki to Kandhkot i.e. The distance between Kandhkot and Ghotki via Guddu Barrage, is 151 km. A bridge connecting Ghotki and Kandhkot will reduce this distance from 151km to 30 km approximately.
- Significant boost in economic activities. Better road access will Ghotki and Khandkot together host one of the largest oil and gas fields, power projects and fertilizer plants in the country.
- Opportunities for local communities for jobs and businesses due to ease of road access as well as better law & order situation in the area
- Uplift of surrounding land values
- Uplift of local agriculture sector especially for women farmers and workers.

### **Procurement Process**

The Project was launched for investor solicitation in November 2017 in pursuance to SPP rules 2010.

Three (03) bids were received. The procurement process was concluded in February 2018 by Technical & Financial Evaluation Committee (TFEC). M/S Sachal Engineering with Project Cost of 14 billion & Bid Price of 18 billion (annuity payment in PV terms) declared as the preferred bidder.

The PPP Policy Board in its 27th meeting held on 13th December 2018 approved for commencement of investor solicitation under International Competitive Bidding for the Project and of preferred bidder & signing of Concession Agreement and VGF funding.

### **Project Financing**

Debt	(70.0%)
Equity	(30.0%)

Private Partner Equity (16%)

GoS Equity (14%)

### **Key Features of the Project**

- Significantly reduce travel distance and time from Ghotki to Kandhkot i.e. distance will reduce from 151 kilometers to 30 kilometers and estimated 2 hours of time saving
- Fuel and vehicle wear & tear costs savings for the commuters
- Significant boost in economic activities upon commissioning of this Project. since Ghotki and Kandhkot together host one of the largest oil and gas fields, power projects and fertilizer plants in the country.
- Uplift project surrounding land values
- Uplift of local agriculture sector especially for women farmers and workers
- The Project will greatly help in maintaining Law & Order situation and will eliminate to greater extent the robberies in the area.

### **M9-N5 Link Road Project (LRP)**

The M9-N5 Link Road Project (LRP) will serve as the Commercial Corridor providing upcountry access to the traffic emanating from Port Qasim, Industrial areas of Landhi, Korangi, & Steel Mill.

The brief scope of work includes:

#### **Design & Construction (20 months)**

The Project scope covers Design, Finance, Build, Operate & Transfer (DFBOT) of Link Road connecting National Highway (N5) near Gulshan-e-Hadeed-Port Qasim stretch and Kathore-Gadap-Fiesta Water Park stretch of Karachi-Hyderabad Motorway (M9).

It will be a four lane dualized carriageway with an approximate length of (22) twenty-two kilometers

#### **Operations & Maintenance (25 years from substantial completion of Construction)**

The Concessionaire shall undertake toll operations and regular maintenance of the Project Highway as per agreed standards.

#### **Project Economic Benefits / VFM**

- It serves as the Commercial Corridor providing upcountry access to the traffic emanating from Port Qasim, Industrial areas of Landhi, Korangi, & Steel Mill.
- Located at the heart of Karachi's three major developments of Bahria Town, DHA City and Education City.
- It serves as the backbone for the national trade and economy.
- Creation of direct and indirect job opportunities.
- Uplift project surrounding land values

### **Procurement Process**

The Project was launched for Investor Solicitation in August 2020 under SPPRA Rules.

Four (4) bids were received from following:

- a) Joint Venture of M/s Jiangsu Haitong Construction Engineering Co. Ltd. (Pakistan Branch), M/s Hasas Construction (Pvt.) Ltd. and M/s Kainatt Enterprises; (JHCEC)
- b) Joint Venture of M/s Sardar Mohammad Ashraf D Baluch, M/s MBC & Sons Builders & Developers Construction and M/s Fazal & Brothers; (SMADB)
- c) Joint Venture of J.N & Co., Elahi Group of Companies and Bina Puri Holdings BHD; (JNCO)
- d) Zahir Khan & Brothers (ZKB)

The procurement process was concluded in Jan 2021. JV of SMADB with Project Cost of 1,966.7 Mn & Bid Price of 786. 7 Mn declared as the preferred bidder.

### **Project Financing**

100% financed by the Private Partner with its own equity with no Bank & VGF Financing.

### **Key Features of the Project**

- Considering its significance, the project has been part of PSDP+, Government of Pakistan.
- The only project in Sindh which will be 100% financed by the Private Partner with its own equity with no Bank & VGF Financing.
- Traffic risk has been 100% endured by the Private Partner.