



The Urban Unit

Urban Sector Planning & Management Services Unit (Pvt.) Ltd.



TRANSPORT & CONNECTIVITY PLAN

Regional Development Plan of
D.G Khan Division

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ACRONYMS

ADP	Annual Development Plan
ADT	Average Daily Traffic
BRT	Bus Rapid Transit
C&WD	Communication and Works Department, Government of the Punjab
DRTA	District Regional Transport Authority
GDP	Gross Domestic Product
GFAs	Goods Forwarding Agencies
LOS	Level of Service
NHA	National Highway Authority of Pakistan
P&D	Planning and Development Board, Government of the Punjab
PCU	Passenger Car Unit
PSS	Punjab Spatial Strategy
PTIAI	Public Transport Infrastructure Accessibility Index
SDGs	Sustainable Development Goals
VPD	Vehicles per day

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1 INTRODUCTION

1.1 Background

Regional transport planning involves the development of a transportation strategy tailored to a particular geographic area. The primary objective of regional transport planning is to guarantee that the transportation system within the region functions optimally, is productive, and sustainable. This process encompasses a multidisciplinary approach, engaging stakeholders from diverse sectors including government bodies, transportation service providers, local communities, businesses, and advocacy organizations.

Regional transport planning considers the current and future transportation needs of the region and its residents. This includes the demand for different modes of transport such as roads, public transit, biking and walking paths, and air transportation. The process considers the current and future land use patterns in the region and the impact that transportation has on the environment and quality of life in the region. The plan outlines specific projects and programs required to achieve these objectives.

Stakeholder engagement in regional planning includes consultation with representatives from the public, private, and non-profit sectors and community members. The input and perspectives of these stakeholders help shape the transportation plan to meet the needs of the region. This leads to developing a well-coordinated plan for managing and improving the transport system, which particularly focuses on more efficient use of existing resources. Additionally, regional transport planning helps promote economic development in the region by improving access to employment, educational, and recreational opportunities.

Throughout the financial year, the Planning and Development (P&D) Board, Government of Punjab, receives numerous funding requests for road and transport schemes forwarded by the Communication and Works (C&W) and the Transport Departments. The individual schemes however at times lack a regional perspective and overlook benefits that may be associated with the alternative transport and connectivity schemes. This regional transport plan will address the gaps for D.G Khan Division for the next ten years (2024-2034) with a core focus on ensuring that the transportation system is efficient, effective, and sustainable.

Through this regional transport plan, the Urban Unit provided a platform for stakeholder engagement and collaboration for collecting any missing data. These stakeholders included but were not limited to the C&W, District Regional Transport Authorities (DRTAs), and other relevant government officials in the respective district administrations: D.G Khan, Muzaffargarh, Layyah, and Rajanpur.

1.2 D.G Khan Division, An Overview

D.G Khan Division is in the South of Punjab Province, Lahore (439 km away) and Multan to the east (97 Km away). Other key destinations are Islamabad, 638 km; Quetta 540 km; and Karachi, 836 km (Figure 1-1). The division is connected to these destinations via a network of national and provincial roads and the railway network.

The division is comprised of four districts: D.G Khan, Muzaffargarh, Layyah and Rajanpur.

1.2.1 District D.G Khan

D.G Khan District spans over 13018 km² and has a population of around 2.872 million according to the 2017 Census. The district is bounded on the north by Dera Ismail Khan district of Khyber Pakhtunkhwa (KP) and its adjoining tribal areas; on the west by Musa Khel and Barkhan districts of Balochistan province; on the south by Rajanpur district; and on the east by Muzaffargarh and Layyah districts. Muzaffargarh and Layyah are separated from DG Khan by the River Indus.

The district is comprised of four tehsils: D.G Khan, Kot Chutta, Taunsa, and Koh e Suleman. It is known for producing a variety of crops including Wheat, Rice, cotton, Sugarcane, Barley, Maize, sunflower, and other crops. D.G Khan is well-known for cotton ginning and pressing, Rice Mills, textile spinning, and cement factories. Tourism has been a growing contributor to the district's economy due to its rich cultural and historical heritage. Attractions such as Fort Munro, and Yak Bai.

1.2.2 District Muzaffargarh

Muzaffargarh is one of the oldest districts of Punjab. Muzaffargarh spreads over an area of 4810 km² and forms a strip between the Chenab River on its east and the Indus River on its west, which pass along the Eastern and Western boundaries respectively of the district and a triangle at Alipur tehsil of the district. The district is bounded on the north by district Layyah, on the south by Bahawalpur and Rahimyar Khan districts across the river Chenab. District Multan on the eastern side of district Muzaffargarh, across the river Chenab. Dera Ghazi Khan and Rajanpur districts lie on the western side across the river Indus.

The district has a total population of 4.329 million according to the 2017 census. Now, industries of all types including Flour, Rice, Sugar, Oil/Ghee, Electronics, Textile, Cotton, polypropylene, services, and professional associations have developed in the area. Due to its rich cultural and historical heritage, tourism has become an increasingly significant contributor to the district's economy. Notable attractions include the Sakina-Tu-Sughra Mosque and Fayyaz Park.

1.2.3 District Layyah

The district is bordered on the north by district Bhakkar, and on the east by the Jhang district; the River Indus flows on its western side and separates the district from Dera Ghazi Khan district, while on the south of Layyah is the Muzaffargarh district.

According to the 2017 census, the total population of District Layyah is 1.823 million. The district covers a total area of 6291 km². This agricultural landscape plays a crucial role in the local economy, supporting the production of crops like rice, wheat, barley, sugarcane, and various other fruits and vegetables.

Additionally, Layyah District is not solely dependent on agriculture; it has various manufacturing facilities that contribute significantly to its economy. Other industrial sectors in the district include 13 rice mills, 13 flour mills, and 183 brick kilns, all of which play a pivotal role in bolstering the local economy and providing employment opportunities for the

residents of Layyah District. The Shrine of Karor Hazrat Lal Esan and Darbar Khawaja Ghulam Hassan Sewag are renowned tourist attractions in the district.

1.2.4 District Rajanpur

Rajanpur was given the status of a district in the year 1982. The District spans over 12318 km² and has a population of around 1.996 million according to the 2017 Census. It is situated on the west bank of the River Indus. The district is bounded on the north by Dera Ghazi Khan district, on the east by Muzaffargarh and Rahim Yar Khan districts (located across River Indus), on the south by Jacobabad district of Sindh province, and on the west by the districts of Dera Bugti and Barkhan of Balochistan province.

The district is comprised of three tehsils: Rajanpur, Jampur, and Rojhan. It is known for producing a variety of crops including Wheat, Rice, cotton, Sugarcane, Tobacco, sunflower, and other crops. Rajanpur is well-known for cotton ginning and pressing, Rice Mills, Flour Mills, and Oil Mills. Tourism has been a growing contributor to the district's economy due to its rich cultural and historical heritage. Attractions such as the Shrine of Hazrat Ghulam Farid Kot Mithan, the Shrine of Hazrat Khawaja Noor Muhammad and Harrand Fort, Lal Garh

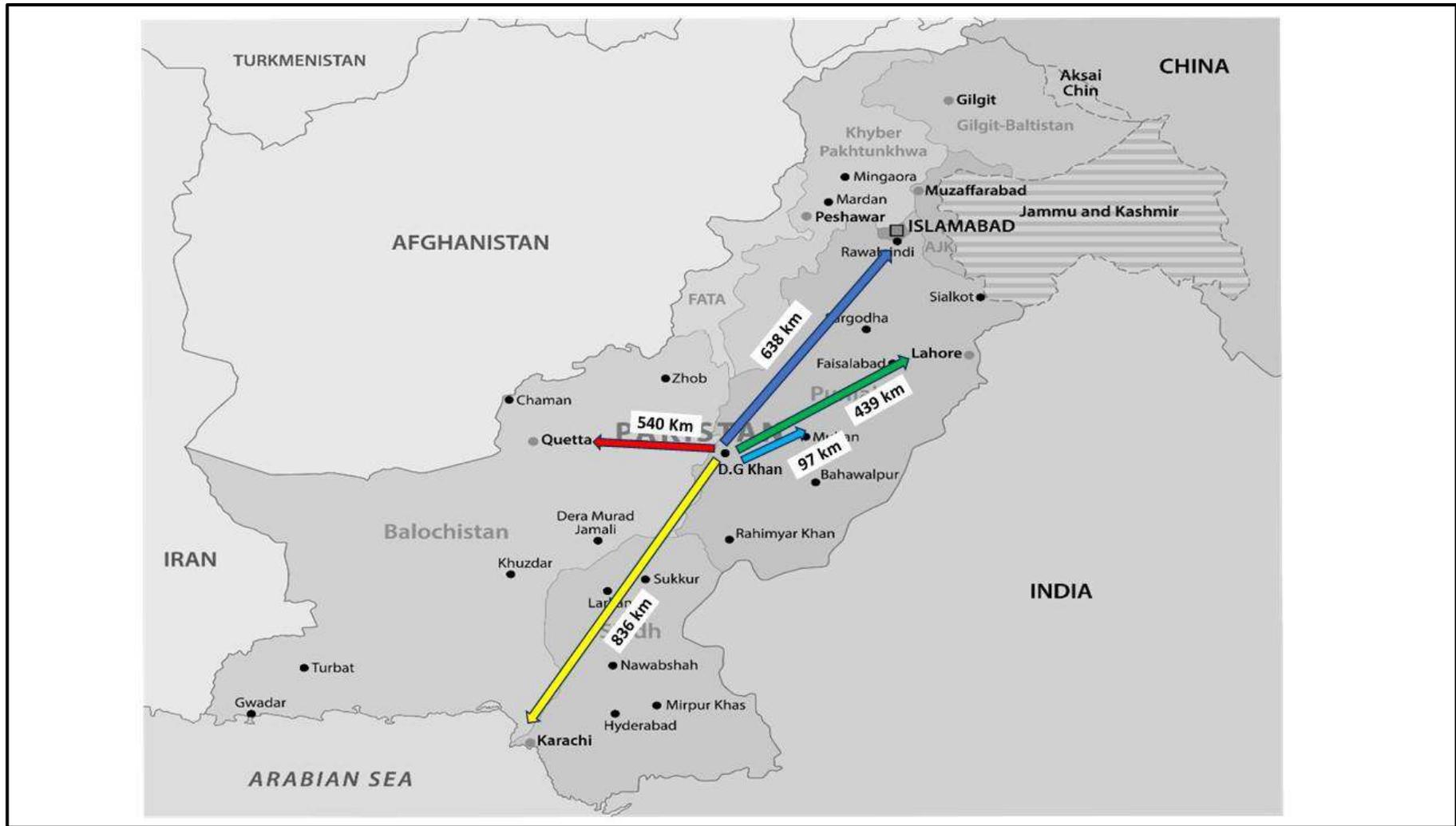


Figure 1-1: D.G Khan Division Location and Regional Positioning

1.3 Transport Connectivity in D.G Khan Division

Figure 1-2 summarizes the key transport nodes and links that play a major role in transport connectivity within and beyond the region. The division is served by 30283 km of roads including two National Highways N-55 and N-70. Additionally, there are 28 railway stations. To support freight transport, there are 44 goods forwarding agencies (GFAs) in the division but no formal truck terminal in D.G Khan. For passenger transport, there are 9 inter-city public transport terminals in the division.

D.G Khan Division at a Glance – Transport Statistics



Figure 1-2: Key Transport Connectivity Nodes and Links D.G Khan

2 ROAD, RAIL AND AIR TRANSPORT

The total length of the road network in Pakistan at present is 500,749.27 km (NTRC, 2019). Punjab, being the most populous province of the country has the longest road network. The Total length of roads in Punjab is around 280,103 km. Further sub-classification of these roads includes approximately 1291 km of motorways, 185 km of Expressways, 14556 km of Highways, and 2342 km of primary roads.

The district wise profile of the road network statistics of D.G Khan Division are summarized in Figure 2-1 to Figure 2-4. On the other hand, the road network details in the entire D.G Khan Division are illustrated in the below graphs.

2.1 Road Network in D.G Khan District

D.G Khan District has a total road network length of 6,547 km. The district is well connected with adjacent districts through an extensive network of national highways, and provincial highways. N55 and N70 serves as a primary corridor that connects D.G Khan with D.I Khan on the north side and Multan on the east side. In addition to national highways, major provincial highways connect D.G Khan with Muzaffargarh, Kot Addu, and Rajanpur. Lengths of different road classes that fall in D.G Khan are shown in Figure 2-1.

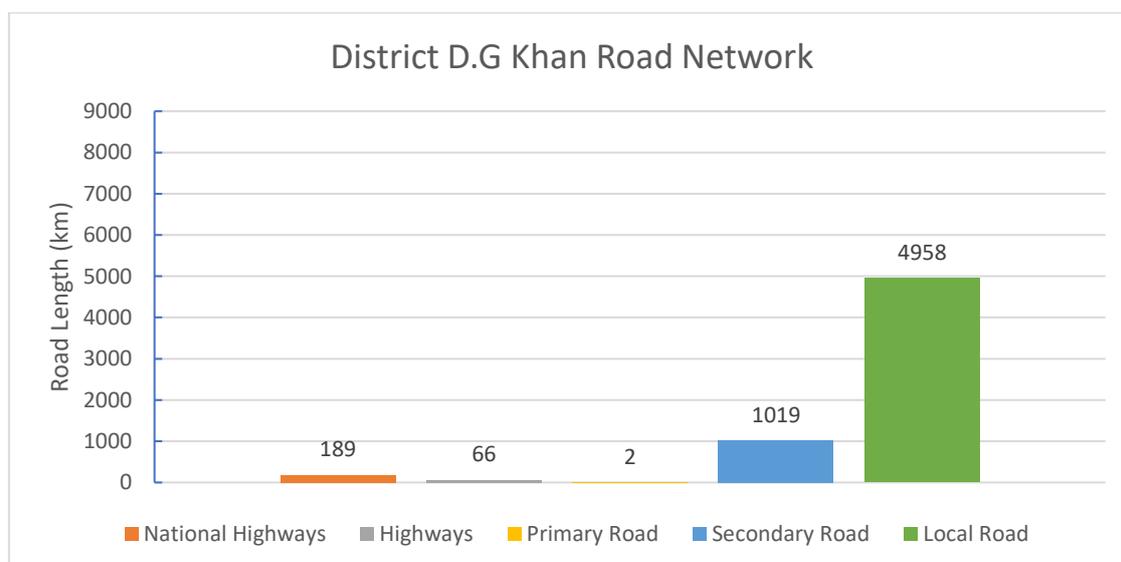


Figure 2-1: Road Network Statistics, District D.G Khan

Source: Digitization of Road Directory in the Country, NTRC, 2019

2.2 Road Network in Muzaffargarh District

Muzaffargarh district has a total road network length of 7969 km whereas the length of National Highways passing through Muzaffargarh is 45 km. The length of road network in Muzaffargarh with different road classes is illustrated in Figure 2-2. The Muzaffargarh district is well connected with adjoining districts through an extensive network of national highways, and provincial highways. N70 connects Muzaffargarh to Multan on the east side.

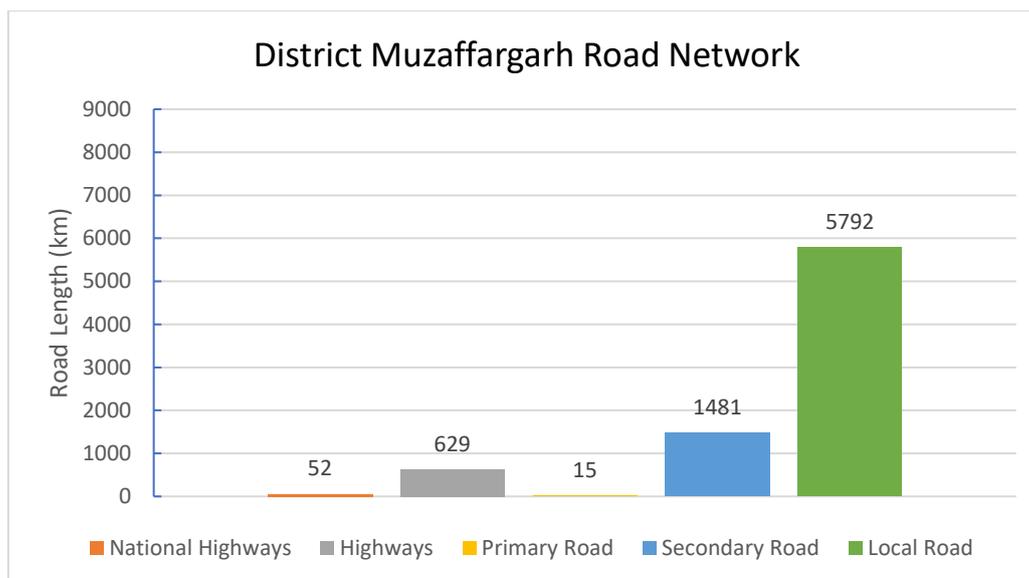


Figure 2-2: Road Network Statistics, District Muzaffargarh

Source: Digitization of Road Directory in the Country, NTRC, 2019

2.3 Road Network in Layyah District

Layyah district has a total road network length of 9,535 km. Provincial highways connect the district with Bhakkar in the North, Kot Addu in the South and Shorkot in the East. The length of different road classification is shown in Figure 2-3.

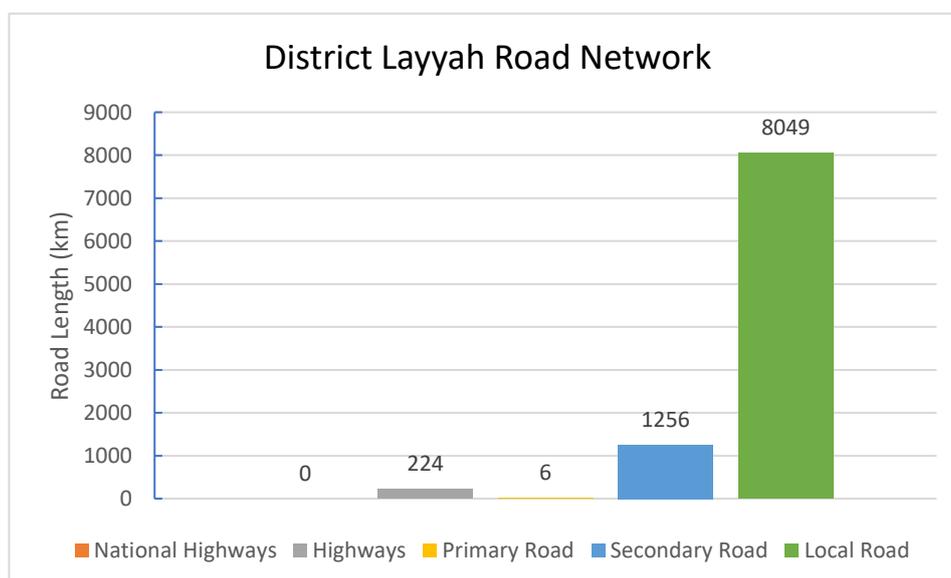


Figure 2-3: Road Network Statistics, District Layyah

Source: Digitization of Road Directory in the Country, NTRC, 2019

2.4 Road Network in Rajanpur District

Rajanpur district has a total road network length of 6,234 km. N55 serves as a primary corridor that connects Rajanpur with D.G Khan on the north side. The length of different road classifications is shown in Figure 2-3.

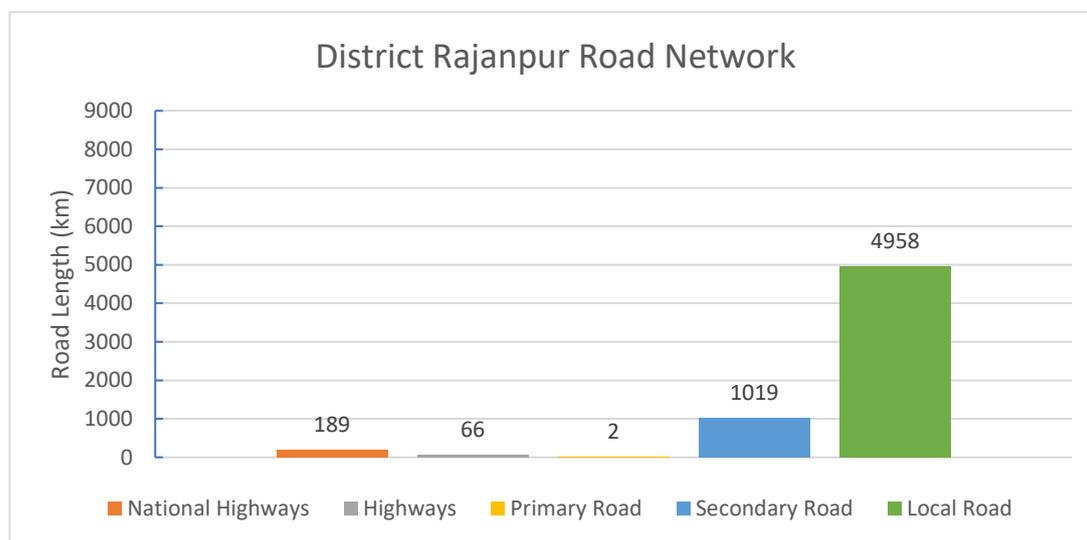


Figure 2-4: Road Network Statistics, District Rajanpur

Source: Digitization of Road Directory in the Country, NTRC, 2019

2.5 Road Network Mobility

Motorways, national highways, and provincial highways, especially those with dual carriageways accommodate high-speed traffic. The average design speed of motorways in Pakistan is 120 km/hr, national highways 100 km/hr, and provincial roads, 80 km/hr for dual carriageways and 50 km/hr for single carriageways. However, factors such as high traffic volume and deteriorated roads often result in less than desired speeds on these roads, particularly on provincial highways that find it hard to compromise between access and mobility.

The only high-speed national roads N-55 and N-70 connect D.I Khan in the North and Multan in the East.

Key provincial roads that provide connectivity primarily through single carriageways among key cities in the division include D.G Khan, Kot Addu, Sanawan, Layyah, Chowk Azam Rajanpur, Dajal, and Jampur. Figure 2-4 depicts an overall situation of roadway mobility in terms of the road types in the division.

Figure 2-5 shows existing primary (national) and secondary (provincial) freight corridors based on extant HTV volume and the spatial distribution of small, medium, and large-scale industrial units in D.G Khan Division. The national freight corridors include only N-55 and N-70.

The provincial freight corridors include Karamdad Qureshi-Kot Addu Road, Chobara-Chowk Azam Road, Sanawan-Sultan Colony Road, Jatoi-Shah Jamal Road, Alipur-Muzaffargarh Road Karor-Layyah Road, and Taunsa Barrage Road

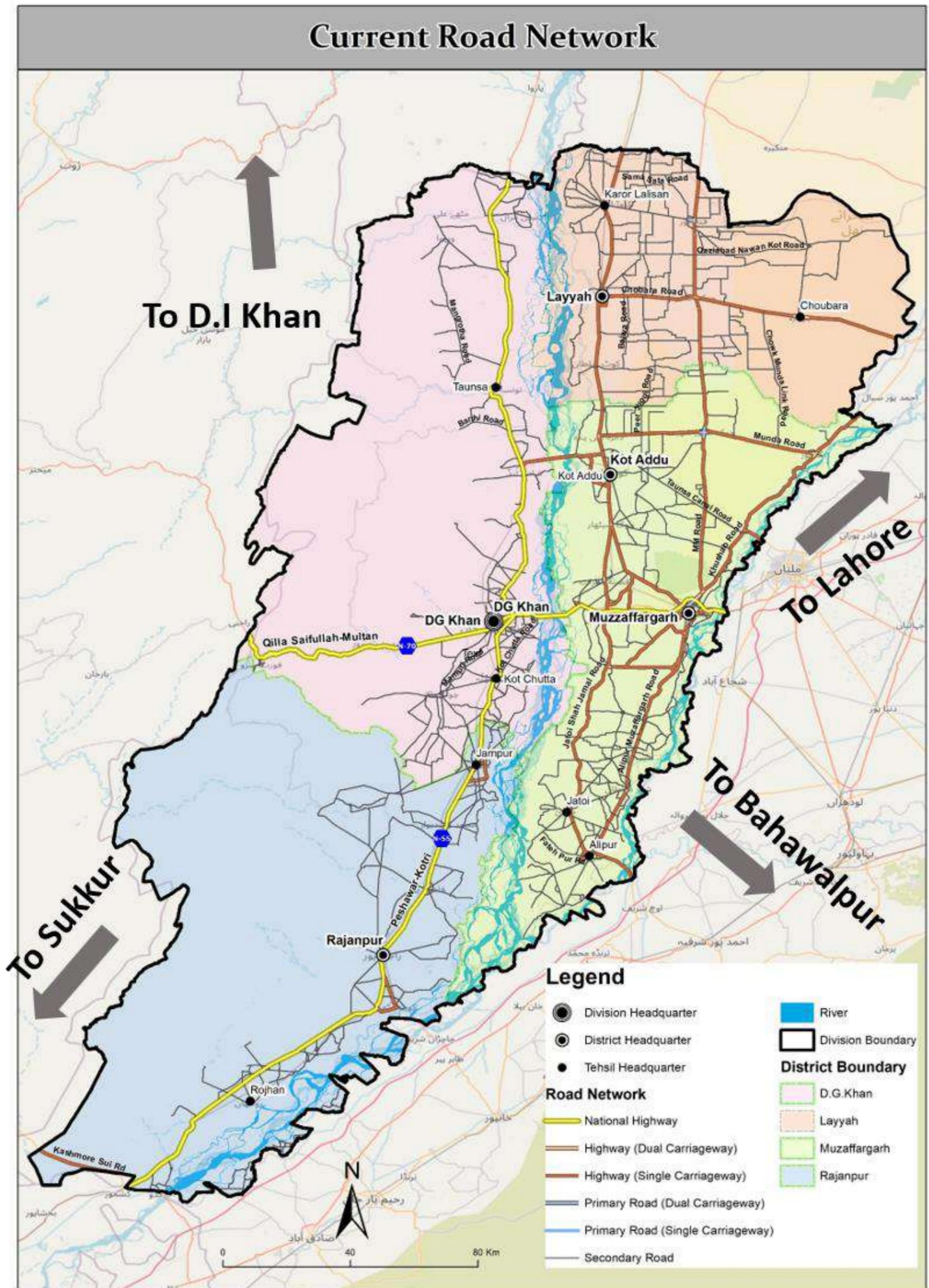


Figure 2-5 Current Road Network DG Khan

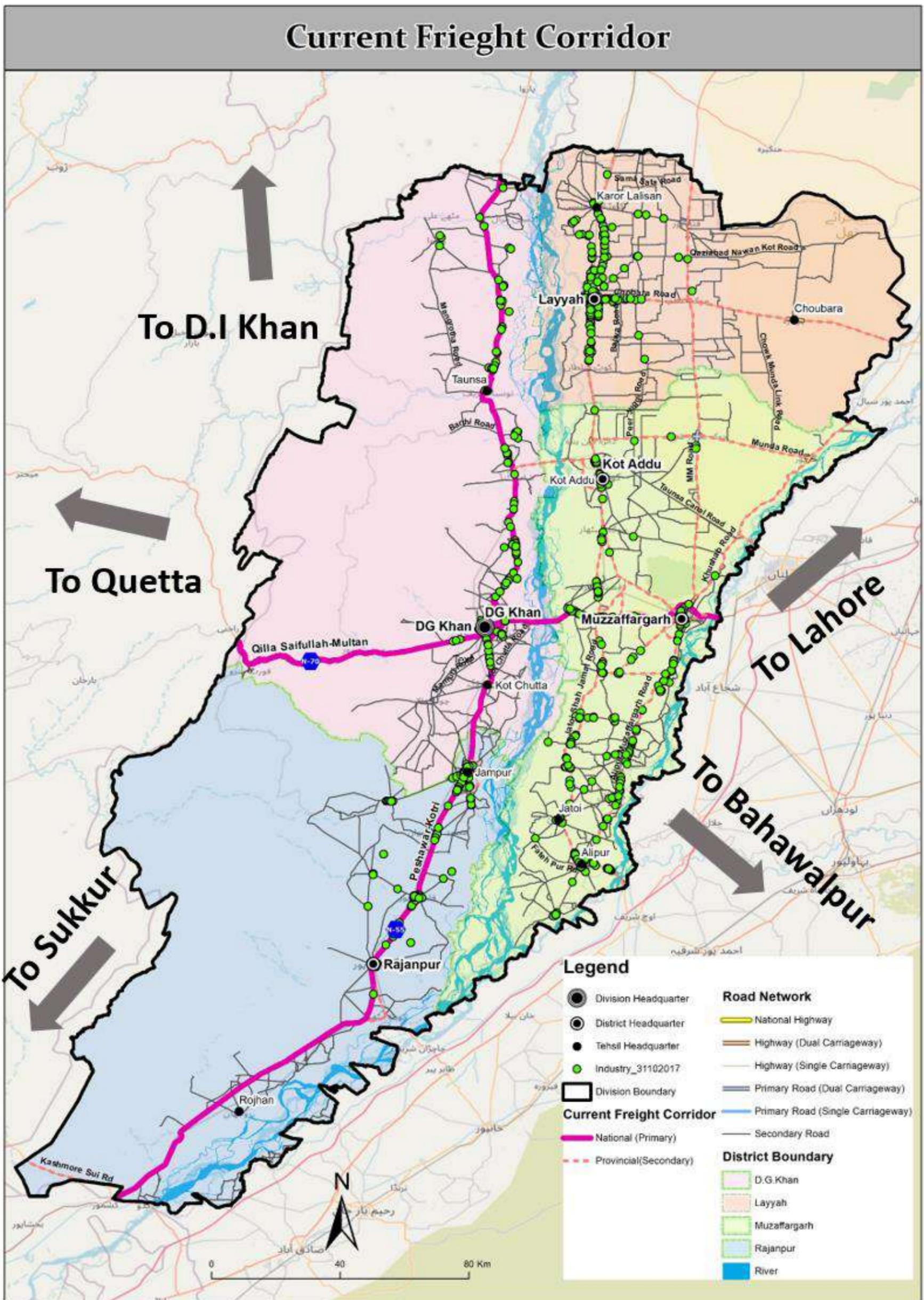
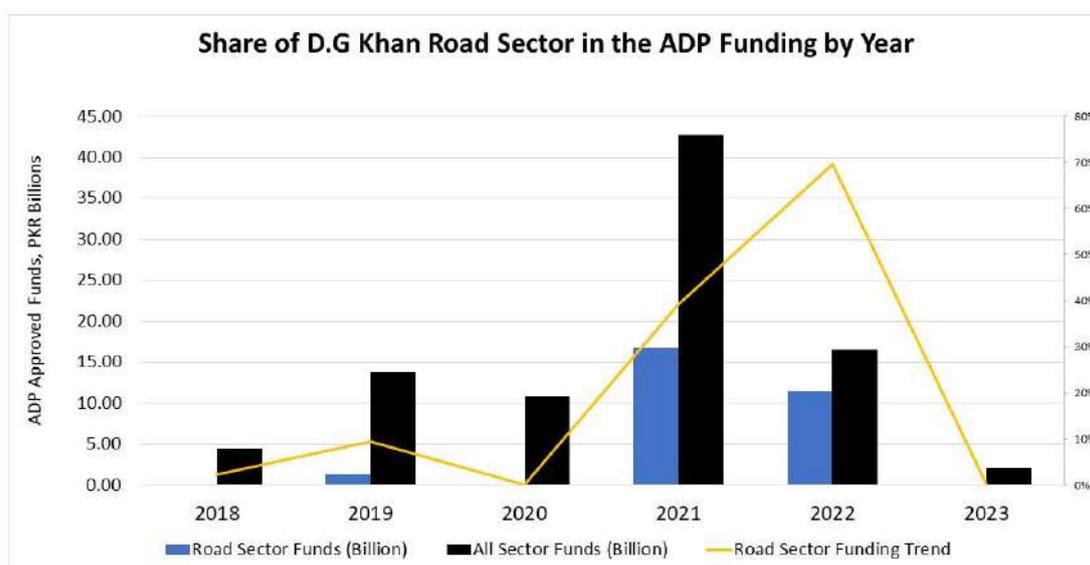


Figure 2-6: Freight Corridor D.G Khan

2.5.1 Road Sector Funding by Year

The total funding of the annual development program in D.G Khan Division for all the sectors is shown year-wise for the years 2018 through 2023 in Figure 2-8. From 2018 to 2023, the all-sector funds ranged from PKR 2.17 billion in 2023 to PKR 4.54 billion in 2018. The road sector funds varied from PKR 0.11 billion in 2018 to PKR 0.0 billion in 2023. The percentage allocations for road sector funds ranged from 2% in 2018 to 0% in 2023. The highest percentage allocation of road sector funds was observed in 2021, with 16.77 billion Pakistani rupees being allocated, which is equivalent to 40% of the all-sector funds. In contrast, the lowest percentage allocation of Road Sector Funds was observed in 2023. The timely repair and maintenance of roads requires an accumulation of funds, which at times require more funding than routinely needed.



Source: SMDP accessed Feb 2023

Figure 2-7: Share of Road Sector in ADP Funding

2.6 Freight Transport

Freight delivery in Pakistan greatly relies on the road network. The same is true for Punjab. At present more than 96% of the freight traffic is carried through roads. The main reason for this is the inefficient freight operations by other modes, particularly railways.

Punjab has the largest economy in the country and is the most industrialized province having around 68,000 industrial units. Punjab also serves as a spatial link between Khyber Pakhtunkhwa and Sindh i.e., provides North to South connectivity. Much of the local and international freight transport emerging from the seaports of Port-Qassim and Gwadar transverse Punjab to its desired destination. Currently, there are 7 major dry ports in Punjab listed below in Table 2-1. These ports serve as a hub for shipment of international and domestic cargo to inland destinations.

Table 2-1: Dry Ports in Punjab

Sr No.	Dry Port	Type
1	Lahore Dry Port	Public sector
2	Multan Dry Port	Public sector
3	Rawalpindi Dry Port	Public sector
4	NLC dry port (Jia Bagga Lahore)	Private sector
5	Sialkot Dry Port	Private sector
6	Premnagar dry port	Private sector
7	Faisalabad Dry Port	Private sector

Besides freight and logistics transport agencies that mainly deal with container shipments concerning large industries, goods forwarding agencies (GFAs) play a key role in transporting goods for small-scale industries and vendors. There are more than 640 GFAs in Punjab (Table 2-2). Of these, 6 lie in Layyah, 36 in Muzaffargarh. Private goods forwarding agencies operate independently, and there appears to be a deficiency in public sector monitoring and regulation enforcement within the trucking industry.

Table 2-2: Goods Forwarding Agencies (GFAs) in Punjab

District	GFA's	District	GFA's	District	GFA's
T.T Singh	56	Okara	17	Layyah	6
Sialkot	16	Khushab	30	Nankana sahib	10
Jhang	10	Lodhran	6	M.B din	14
Gujrat	10	Sahiwal	6	Kasur	38
Chiniot	14	Bhakar	19	Muzaffargarh	36
Bahawalnagar	27	Hafizabad	4	Bahawalpur	8
Chakwal	11	Gujranwala	2	Narowal	17
Multan	21	Rawalpindi	102	Pakpattan	7
Vehari	23	Faisalabad	106	R.Y khan	2
Mianwali	9	Sheikhupura	0	Attock	0

Private Goods Forwarding Agencies (GFAs) typically lease open spaces and transform them into makeshift truck parking areas (as depicted in Figure 2-7). Unfortunately, these facilities often lack essential amenities for drivers, such as dining areas, rest zones, and sleeping accommodations. Security measures are also insufficient, and drivers who were interviewed raised apprehensions regarding the safety of their cargo. Furthermore, the absence of formal truck terminals has led to challenges in terms of accessibility for goods transport.



Figure 2-8 A Goods-Forwarding-Agency Stand in D.G Khan Public Transport

Public transport affects socio-economic development of cities in two ways. Firstly, inadequacies in public transport provision create barriers by limiting individual and community participation in activities such as employment, health, and education, etc. These

inadequacies can be due to insufficient network links between the transport system and activities. Secondly, the operation of the public transport system results in environmental, aesthetic, and social externalities on individuals and communities, as opposed to others. In both scenarios, people are forced to opt for alternate modes of travel, usually private means to access their desired activities.

The rapid increase in population has resulted in more vehicular trips across the province and within the cities. Consequentially, the transport system has observed major changes. Apart from urbanization, other factors have also contributed to these variations. Nonetheless, multiple efforts have been made to revitalize the public transport system in the province; however, the share of private vehicular trips both within intercity and intra-city travel has remained higher. The public transport system can be classified as:

- Intercity Public Transport
- Intra-city (or Urban) Public Transport

2.6.1 Inter-City Public Transport

Intercity Transport in Punjab is partially deregulated. The Government of Punjab only regulates the fare of non-air-conditioned intercity transport to ensure equity, and convenience to the public. Presently there are more than 116,000 intercity and 26,000 intra-city vehicles playing in Punjab who have obtained route permits from regulatory authority during 2014-17. Likewise, there are three hundred and seventy-four (374) intercity bus terminals in Punjab classified as A, B, C and D Class terminals. Presently, there is no A-class terminal in the province, there are only three (3) B-class terminals. There are one hundred and fourteen (114) C-class terminals. Likewise, there are two hundred and fifty-five (255) D-class terminals in the province.

There are 43 intercity bus terminals in D.G Khan Division of which 10 are owned by the government while the rest (33) are privately owned. District-wise list of bus terminals with type is given in Table 2-3. The overall state of the bus terminal in D.G Khan is fair, with limited access to essential facilities for both the public and drivers. While poor cleanliness, pavement and drainage conditions persist in general bus stand of many THQs in the division. More on the accessibility of these bus terminals follows in the next chapter. The general bus stands in the D.G Khan division are illustrated in Figure 2-8.

Table 2-3: District Wise Bus Terminals in D.G Khan

District	Terminal Type	Number of Terminal
D.G Khan	B Class Stand	01
	D Class Stand	15
Muzaffargarh	C Class Stand	02
	D Class Stand	09
Layyah	C Class Stand	04
	D Class Stand	06
Rajanpur	C Class Stand	03
	D Class Stand	03



A (D.G Khan)

B (D.G Khan)



C (Layyah)

D (Rajanpur)

Figure 2-9: Bus Terminals in D.G Khan division

Figure 2-9 provide more insights in to access of public to bus terminal. Accessibility analysis of the bus terminals shows that it can serve 28% of the population between 0 and 10 minutes, 22% of the population within 10 to 20 minutes, and 27% between 20 to 30 minutes. It takes more than 30 minutes for the remaining 23% of the population to access bus terminals.

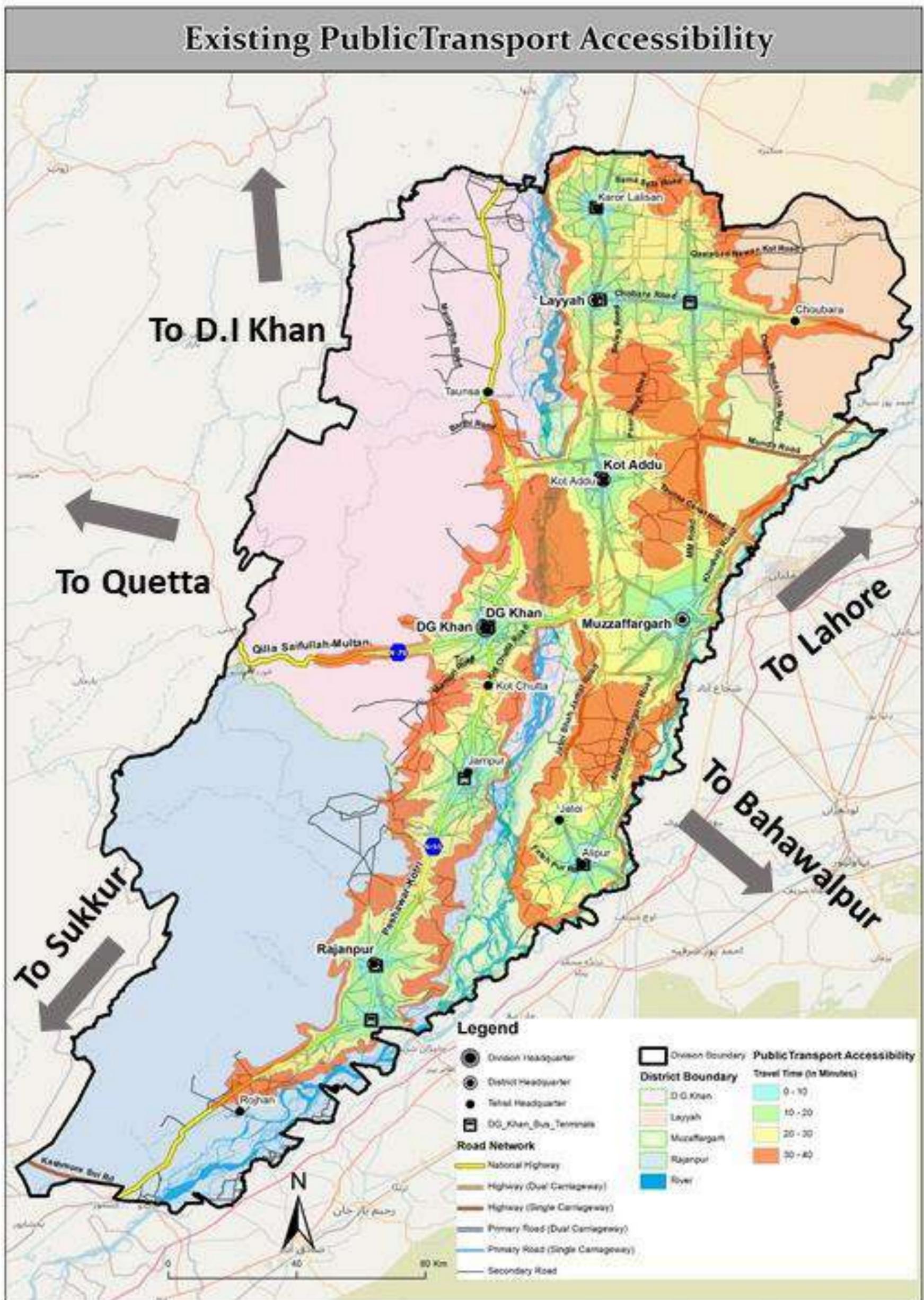


Figure 2-10: Public Transport Accessibility in D.G Khan Division

2.7 Rail Network

Rail transport plays a pivotal role in facilitating efficient and cost-effective passenger and freight movement, bringing several significant advantages to the transportation industry. One of the key benefits is the potential for reduced transport costs. Railways can carry large volumes of passengers and freight over long distances, offering economies of scale. By consolidating a substantial number of individuals or goods into a single train, rail transport allows for cost savings compared to individual vehicles or smaller-scale transportation methods. This leads to lower per-unit transport costs and improved affordability for both passengers and businesses.

Figure 2-10 provides some insights into the railway access of the people in D.G Khan Division. It presents data on the distribution of individuals based on the time it takes for them to reach the nearby railway station. The population is categorized into four-time ranges: 0-10 minutes, 10-20 minutes, 20-30 minutes, and 30-40 minutes. The analysis reveals that a significant proportion of the population, approximately 34%, enjoys convenient railway access, requiring only 0-10 minutes to reach the nearest railway station. This suggests that a large portion of the population resides near the railway infrastructure, enabling them to easily utilize rail transportation for their commuting needs.

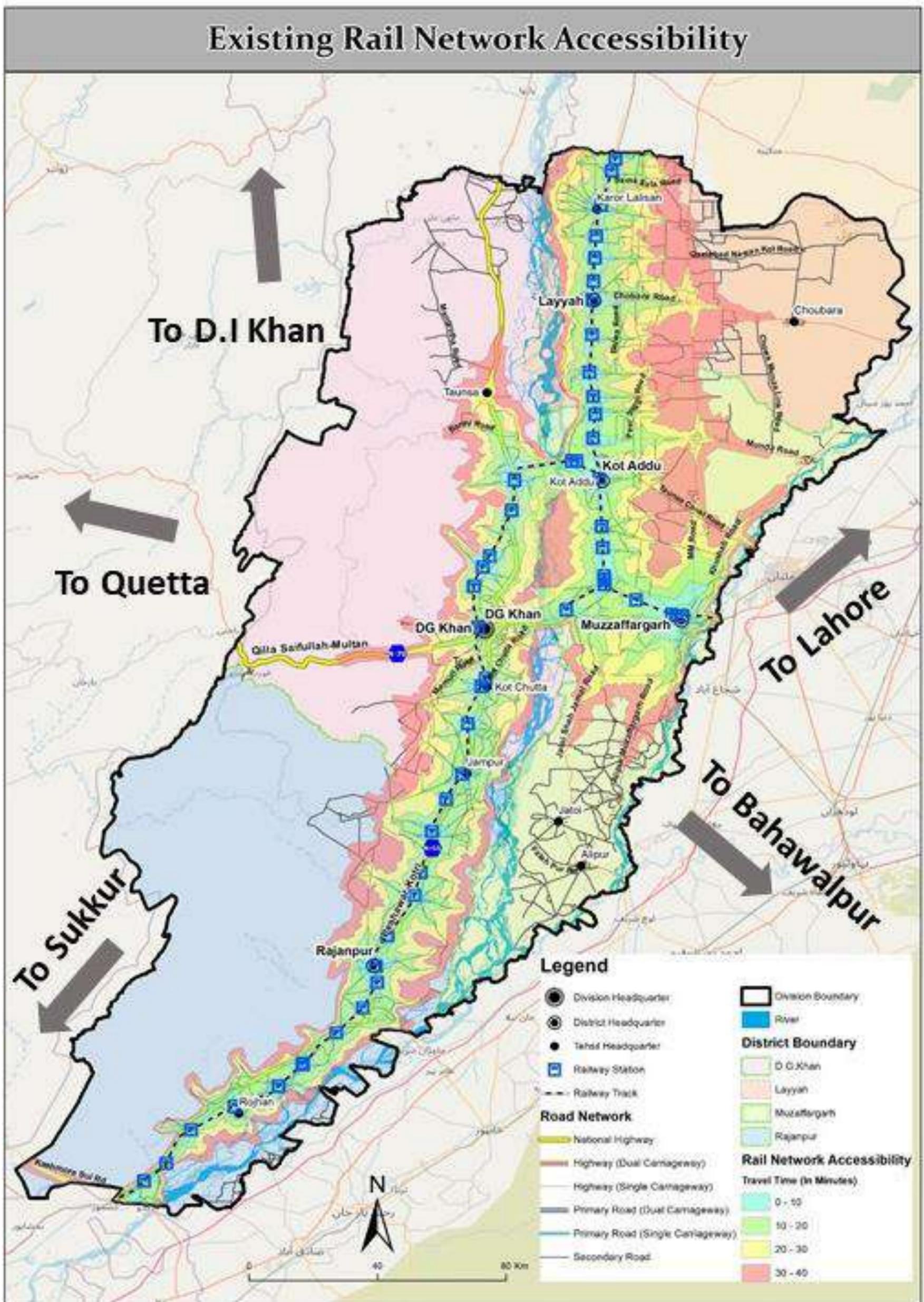


Figure 2-11: Existing Rail Network Accessibility, D.G. Khan

2.8 Air Network

Air transport plays a vital role in connecting people and goods across the globe, offering unparalleled speed and accessibility. It catalyzes economic growth, enabling the efficient movement of passengers and high-value goods across vast distances. One of the key advantages of air transport is its ability to bridge geographical barriers and facilitate international trade, tourism, and cultural exchange. By connecting distant regions and facilitating rapid global mobility, air transport contributes to economic development and creates opportunities for businesses to expand their markets.

Figure 2-12 provides insights into the distribution of the population based on the time required to reach the Islamabad International Airport. It offers a comprehensive overview of the accessibility levels for individuals residing anywhere in the D.G Khan Division. The population is categorized into four time ranges: 0-20 minutes, 20-40 minutes, 40-60 minutes, 60-80 and 80-120 minutes. Analysis reveals that a considerable portion of the population, approximately 4%, enjoys convenient airport access, requiring a mere 0-20 minutes of travel time. This indicates that a significant number of individuals reside in close proximity to the airport, enabling them to easily access air transportation for their travel needs. However, it is noteworthy that a comprising 9% of the population, falls within the 20-40 minutes time range, suggesting a slightly longer travel time to reach the airport. These individuals may reside in areas that are moderately closer to the airport, necessitating a short commute but still benefiting from relatively convenient access.

Additionally, approximately 13% of the population falls into the 40-60-minute time range, indicating that they require a moderate amount of time to reach the airport. These individuals may reside at a reasonable distance from the airport, requiring a longer commute but still enjoying relatively accessible airport connectivity. Furthermore, about 19% of the population falls within the 60-80-minute time range, indicating that they face longer travel times to access the airport. Likewise, 37% of the population falls within the 80-120-minute time range. This group may include individuals residing in more remote areas or regions farther away from the airport, requiring additional time and planning to reach their air travel destinations. It takes more than an hour for the remaining population of the division to access the D.G Khan Airport.

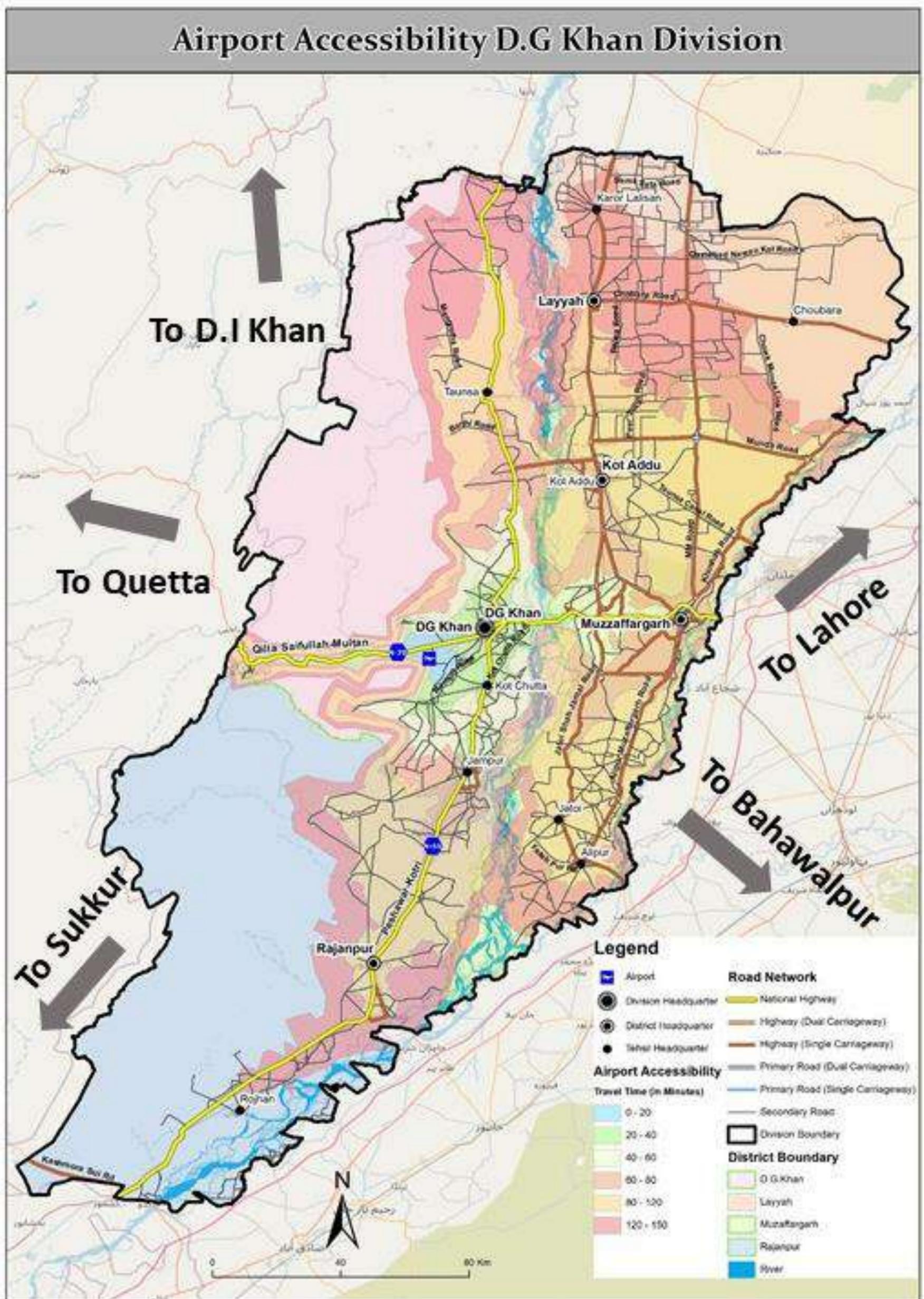


Figure 2-12: AirPort Accessibility, D.G Khan

2.9 Limitations

There exist some limitations that hinder the implementation of connectivity plans. These are elucidated below.

2.9.1 Delays in Repair

The roads requiring immediate maintenance are ignored, which leads to increase in cost of repair. Delays can occur due to several reasons, for instance, lack of availability of funds, delays in the issuance of funds, and in official approval of the repair of road. These are major limitations that are left unaddressed.

2.9.2 Lack of Availability of Funds

In most cases, the authority that repairs or constructs roads lack funds to do so. This deteriorates the condition of the roads further and augments the problem of connectivity for the locals. Often, the funds are issued with delay and without consideration of increase in the cost that takes place due to inflation during the delay. Thus, the insufficiency of funds prevails in such a scenario as well.

2.9.3 Choosing the right policy option

It is also essential for the body that is taking the responsibility to construct a road to choose the right policy option or relevant rules. For instance, in many cases, according to the policy of the Communication and Works Department, Government of Punjab, there is a need to dualize the roads to accommodate high traffic volumes. On the other hand, the P&D Board recommends considering provincial roads (arterials) that witness more than 8000 vehicles per day (P&D Board, 2018).

2.9.4 Lack of Asset Management Tools

The road asset management (RAM) tool can equip decision-makers to foresee road repair and maintenance needs and arrange for budgeting in advance. Delaying the timely repair of roads leads to increasing the cost of the repair. Moreover, a RAM tool can help distribute the road sector funding among various schemes in a justified way.

3 ANALYSIS OF MISSING CONNECTIVITY LINKS

This chapter includes an analysis of the missing connectivity links that are crucial for passenger and freight transport in the D.G Khan division. This analysis will lead to the identification of the transport and connectivity schemes for the division. In particular, the focus of the proposed interventions will be road sector schemes (dualizations or Widening/improvement), freight transport schemes (truck terminals), and public transport schemes (mass transit). The analysis aims to compare the extant status of transport and connectivity infrastructure with transport demand, thereby identifying the missing transport infrastructure that the public agencies must provide to completely realize the potential of the division.

3.1 Identification of Road Schemes

Concerning section 2.5, there is a clear indication that most of the provincial roads, that play key roles in the regional transport and connectivity of the division, are single (undivided) roads. Not only do such roads fail to fulfil the mobility need of the regional traffic, but also present a safety hazard due to the possibility of head-on collision. In addition to mobility and safety, other road functions such as accessibility also play a role in the identification of new road schemes. Here, a methodology for identification of road network schemes is presented that considers all these factors as well as the cost benefit ratio of the investment.

Figure 3-1 explains how to identify road schemes that can help obtain the highest rate of return both in economic and social terms. Identification of links is based on the analysis of the directness index, travel speed, connectivity to CPEC and motorways of Pakistan, public transport infrastructure accessibility index (PTIAI), consultation with experts, quality, and reliability of existing road network. Each identified link is then subjected to a detailed cost-benefit analysis to ensure that the project is financially sound.

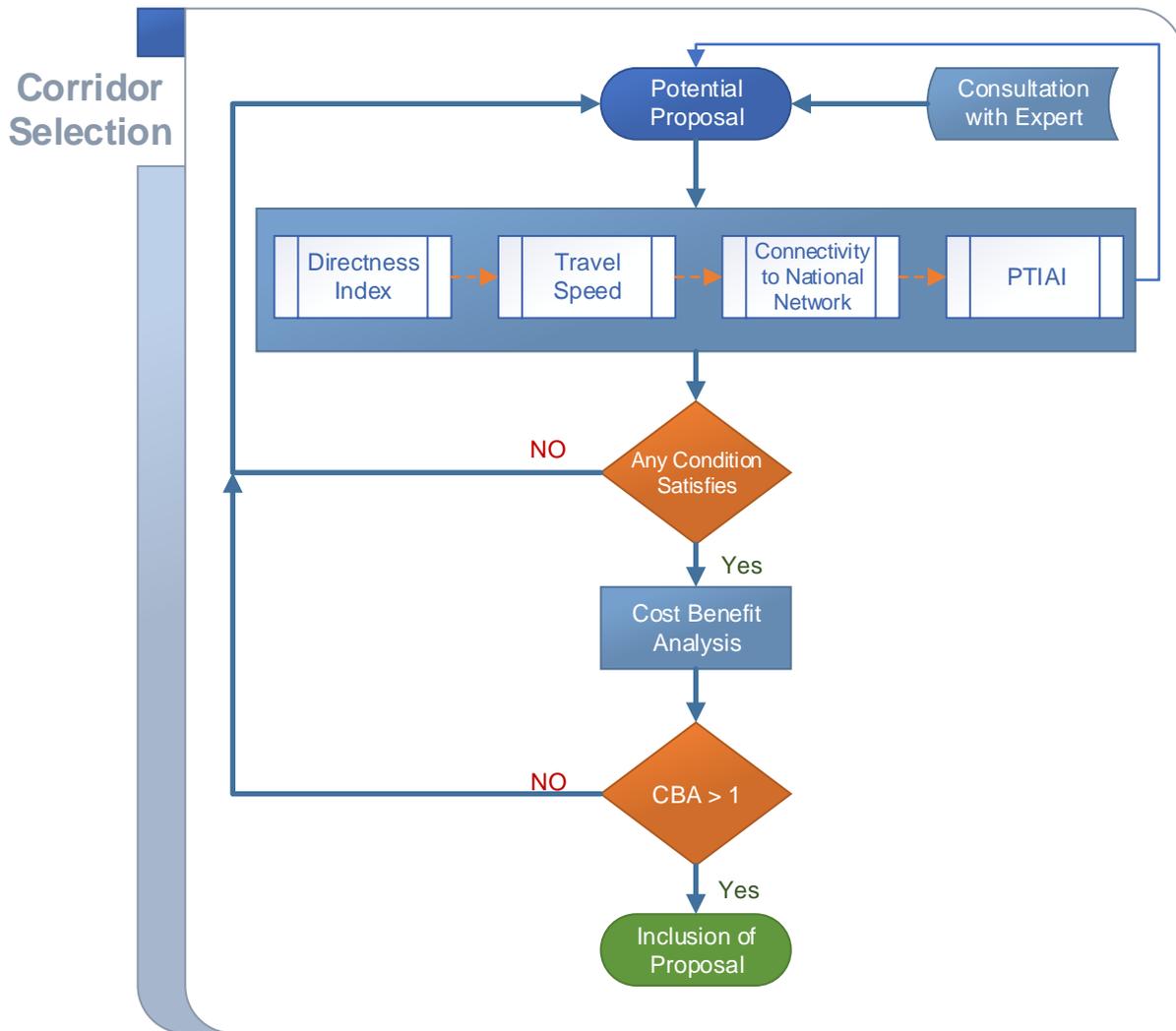


Figure 3-1: Identification and Selection of Proposed Road Corridors

3.1.1 Directness Index

The directness index measures the ratio of network distance between two points and the Euclidean distance between the same points. It is a common indicator to measure the accessibility of the two points. The index has the lowest limit of 1 but the upper limit is not fixed. A ratio of 1 indicates that a direct possible corridor is available between two points. Various studies have been carried out to identify the benchmark value of the ratio but factors such as geography and topology of the area limit selection of absolute value. Nevertheless, some researchers through empirical analyses have found that a value of 1.2 holds true for various settings¹. Keeping in view past studies a value of 1.2 is selected as the threshold for connectivity, therefore any OD pair that has a value higher than 1.2 is considered as an

¹ Ballou, R., Rahardja, H. and Sakai, N. (2002), "Selected country circuitry factors for road travel distance estimation", *Transportation Research Part A*, Vol. 36(9), Elsevier, pp. 843– 848.

Love, R. and Morris, J. (1979), "Mathematical models of road travel distances", *Management Science*, Institute of Management Sciences, pp. 130–139.

indirect connection and a new corridor that reduces this value is considered feasible. The indicator is calculated on ArcGIS using a network analyst tool to determine the shortest corridor between origin and destination.

3.1.2 Travel Speed

Travel speed is based on the type, width, quality, and class of the road network available between the origin and destination under free flow conditions. It determines the quality of the road network available and identifies a poor link even if it provides direct accessibility. Travel speed is calculated for the identified corridor using the ArcGIS network analyst tool. Free flow speeds based on road class is tabulated in Table 3-1.

Table 3-1: Road Speed in km/hr for different road classes

Road Class	Dual Carriageway	Single Carriageway
Expressway/Motorway	120	-
Highways	100	80
Primary Road	70	60
Secondary Road	50	40
Local Road	-	30

3.1.3 Connectivity to National Network

The national road network of Pakistan is developed by the National Highway Authority funded by the federal government. It comprises a network of motorways and national highways that are aimed at improving mobility. A high-speed motorway network passes through Punjab via a network of M2, M3, M4, M-5, and M-14. To utilize the benefits of this network, it is crucial to connect cities and industries away from motorways with a high-speed and reliable road link to these motorways. Hence links that provide connection with already built or under construction national networks are considered as a viable option and proceed for Benefit Cost Analysis (BCA).

3.1.4 Public Transport Infrastructure Accessibility Index

Public Transport Infrastructure Accessibility Index (PTIAI) is an index developed by the Urban Unit based on Transport Accessibility Index (TAI)². PTIAI is a modified form of TAI developed to identify and estimate the population being deprived by transport and to identify future improvement areas where transport provision is to be enhanced. The detailed methodology of the index can be read in the Urban Unit Publication of Public Transport Infrastructure Accessibility Index. Highlights of the results of the Index for D.G Khan Division are given in Figure 3-2.

² Towards the Development of Transport Accessibility Index, Gamma and Trutz Haase, 2007

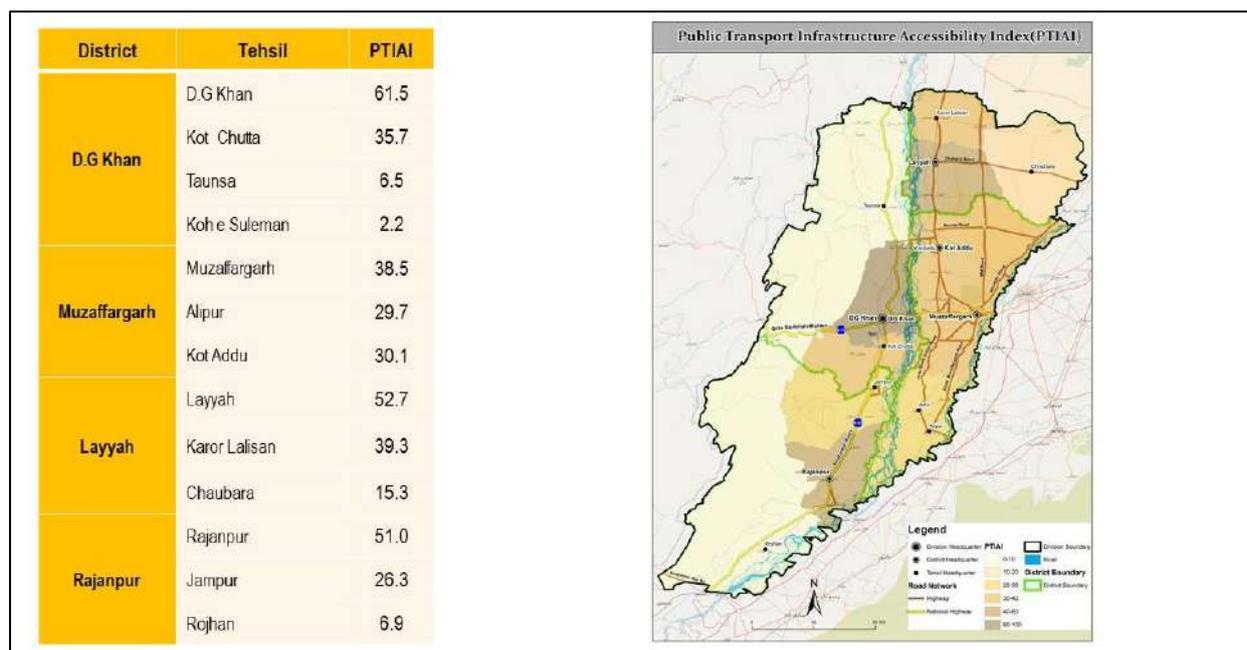


Figure 3-2: Results of PTIAI for Tehsils of D.G Khan

3.1.5 Benefit-Cost Analysis

Benefit-cost analysis (BCA) calculates a benefit-cost ratio (BCR) that identifies the relationship between the cost and benefits of a proposed project. The ratio is used to measure both the quantitative and the qualitative factors since sometimes the benefits and the costs cannot be measured exclusively in financial terms. When possible, the qualitative factors should be translated into quantitative terms for the results to be easily understandable and tangible. The BCR is calculated by dividing the total discounted benefits of a project by the total discounted costs of the project. In order to calculate the discounted values of benefits and costs, Net Present Value (NPV) is used, in which the values are divided by the sum of 1, and the discount rate is raised to the number of periods. This will give the net present values of future benefits and costs.

$$NPV \text{ of Benefits} = \sum_{t=0}^n \left\{ \frac{Benefits_t}{(1+r)^t} \right\}$$

$$NPV \text{ of Costs} = \sum_{t=0}^n \left\{ \frac{Costs_t}{(1+r)^t} \right\}$$

Where:

- r = Discount rate
- t = Number of years
- n = Total number of years (design life)

Once the accumulated values of benefits and costs are calculated then just by dividing them BCR can be calculated.

$$BCR = \frac{NPV \text{ of Benefits}}{NPV \text{ of Costs}}$$

After calculating the BCR of proposed projects, if the value of BCR is greater than 1 then the proposed project is assumed to be economically feasible and if the value of BCR is less than 1 then the proposed project is assumed to be economically not feasible.

Using the above methodology, 22 road network schemes were tested for preliminary economic feasibility (Table 3-2). These schemes primarily aim to improve the provincial roads to fulfill the regional transport needs. Most of the proposed schemes aim to dualize provincial roads to meet the eligibility standards as discussed above. Widening/improvement is recommended for those road projects where current operating speeds are lower than the design speeds, but the traffic count is not enough to justify adding more lanes to the existing roads. For a detailed BCA, please refer to Annexure-I.

Table 3-2: Summary of Benefit Cost Ratio Analysis of Potential Road Schemes

Sr No	Linkage	Accumulated Benefits (Rs. Million)	Accumulated Costs (Rs. Million)	B/C Ratio
1	1. Dualization of metalled road from (N-70) D.G.Khan to Choti, Length = 26km	16,182.14	5,164.54	3.1
2	Widening of road from Kot chuta to Choti, Length = 16Km	4,577.16	3,178.18	1.4
3	Construction of Southern Bypass, Length = 13Km	25,140.73	2,582.27	9.7
4	Construction of Northern Bypass, Length = 20Km	38,678.05	3,972.72	9.7
5	Rehabilitation of Choti to Jampur, Length 24 Km	7,285.44	4,767.27	1.5
6	Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage, Length = 35Km	23,606.94	1,402.50	16.8
7	Widening of metalled road from Taunsa to Vehova, Length = 60Km	13,447.51	11,918.17	1.1
8	Dualization of road from Chowk Munda to Daira Din Pannah, Length 29Km	18,425.57	5,760.45	3.2
9	Dualization of metalled road from Jatoi to Karam Dad Qureshi road, Length = 68Km	55,481.25	13,507.26	4.1
10	Dualization of road from Muzaffargarh to Sanawan, Length 37.5Km	34,698.92	7,448.86	4.7
11	Rehabilitation of metalled road from Sinawan to Langer Sarai, Length 34Km	8,670.50	1,362.43	6.4
12	Widening of Khan Garh - Shah Jamal road, Length 19.5Km	6,255.15	781.39	8.0
13	Dualization of Chobara road to Chowk Azam, Length = 12km	11,314.12	480.86	23.5
14	Dualization of Layyah Bypass road, Length 5Km	6,204.01	993.18	6.2
15	Dualization of road from Karor to Fatehpur, Length 23Km	15,409.66	921.64	16.7
16	Dualization of road Chowk Azam to Garh Maharaja, Length = 68Km	62,069.48	2,724.86	22.8
17	Dualization of road from Chowk Azam to Fatehpur, Length 24Km	37,495.18	961.71	39.0

18	Widening of road from Layyah to Qaziabad Via Tail indus, Length 31Km	6,527.18	1,242.21	5.3
19	Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad, Length = 30Km	7,392.18	1,202.14	6.1
20	Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed, Length 15Km	3,676.85	601.07	6.1
21	Dualization of Jampur-Dajal Road, Length = 23Km	20,281.73	4,568.67	4.4
22	Widening of road from Rajanpur to Asni, Length 12Km	2,860.84	480.86	5.9

3.2 Identification of Truck Terminal Sites

As discussed above, the existing truck terminals, especially those under the patronage of government, are not enough to meet the freight transport needs of the region. The following methodology has been used for identification of potential truck terminal sites in the D.G Khan Division.

3.2.1 Methodology

The connectivity of the potential sites has been modeled mathematically. Let C_j be the connectivity score of location j that depends on k factors, then it can be written as follows:

$$C_j = 1 / \sum_{k=1}^5 C_{jk}$$

For a given location j , we can calculate the corresponding C_k values as follows:

$C_{j1} = C_{jN} / C_{\max N}$ = Distance of location 'j' from National Highway / Distance of the farthest location from the Highway.

Similarly,

$C_{j2} = C_{jM} / C_{\max M}$ = Distance of location 'j' from Motorway / Distance of the farthest location from Motorway.

Three new terminals have been identified for the district headquarters (Table 3-3). To ensure equity, each of the four districts gets two model truck terminals. The purpose of these potential sites is to enhance the accessibility of the goods transport services to the entire division.

Table 3-3: Potential Truck Terminal Sites.

Sr.No	Site Location	District
1	Near Gurmani filling station along N-70	D.G Khan
2	Near Mehmood Kot road along N-70	Muzaffargarh

Figure 3-3 shows the spatial distribution and accessibility of the potential truck terminal sites. The sites are located near provincial highways for smooth movement of truck traffic. Moreover, care has been taken to select such sites that minimize the distance of the district headquarters to the major divisional, regional, and national connectivity corridors such as national highways and motorways.

With the proposed truck terminals, the goods transport accessibility would significantly improve in comparison to the existing freight transport accessibility of the districts (Figure 3-3). Most of the industries, particularly those in the district headquarters, would get rapid goods transport coverage (80-100 minutes availability of trucking service). Specifically, when the time range is decreased to 80 minutes, 22% of the industrial units are served with the construction of proposed truck terminals. Alternatively, an improved road infrastructure can help shorten the travel time between truck terminals and industrial units. It implies that the truck terminal sites will be accessible to the majority of the industrial units of the division at a reasonable travel distance.

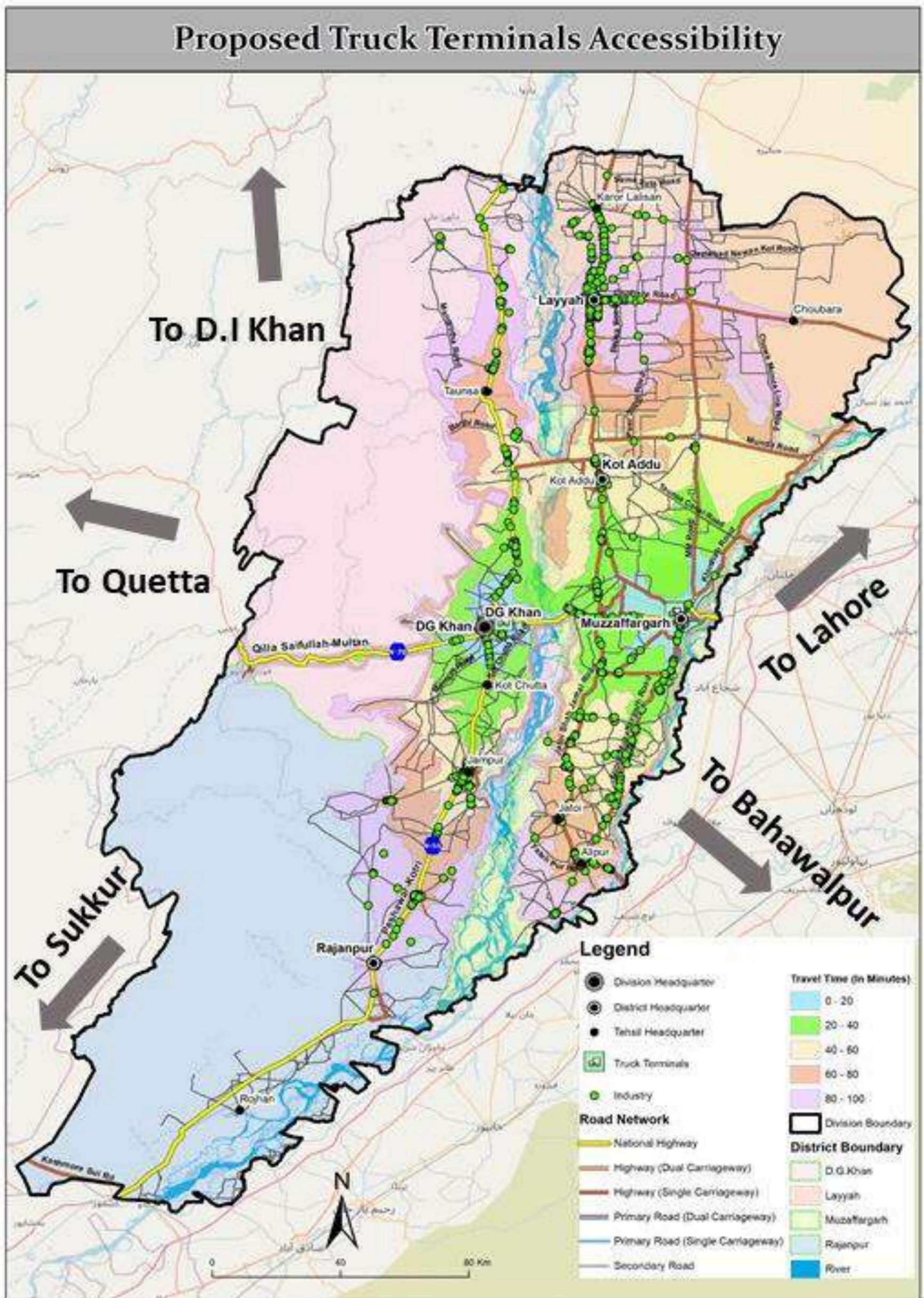


Figure 3-3: Accessibility Analysis of the Proposed Truck Terminal Locations

3.3 Identification of Public Transport Schemes

A GIS-based Public Transport Accessibility analysis of inter-city transport terminals is presented in this section. For this purpose, areas accessible within the 10, 20, and 40-minute drive time threshold are considered for analysis from each bus terminal. Figure 3-4 illustrates the area served based on drive time by each bus terminal.

Most of the residents (28%) have access to intercity public transport terminals in 10 minutes. When the time range is increased to 40 minutes, the significant population of the division is served as illustrated in Table 3-4 by the cumulative percentage of population. It implies that inter-city public transport is accessible to most of the population of the division at a reasonable travel distance.

Table 3-4: Inter-city Public Transport Accessibility

Intercity Bus Coverage			
Time (minutes)	Population	%Age	Cumulative %Age
0-10	2933098	28%	28%
10-20	2281627	22%	50%
20-30	2837723	27%	77%
30-40	2400508	23%	100%

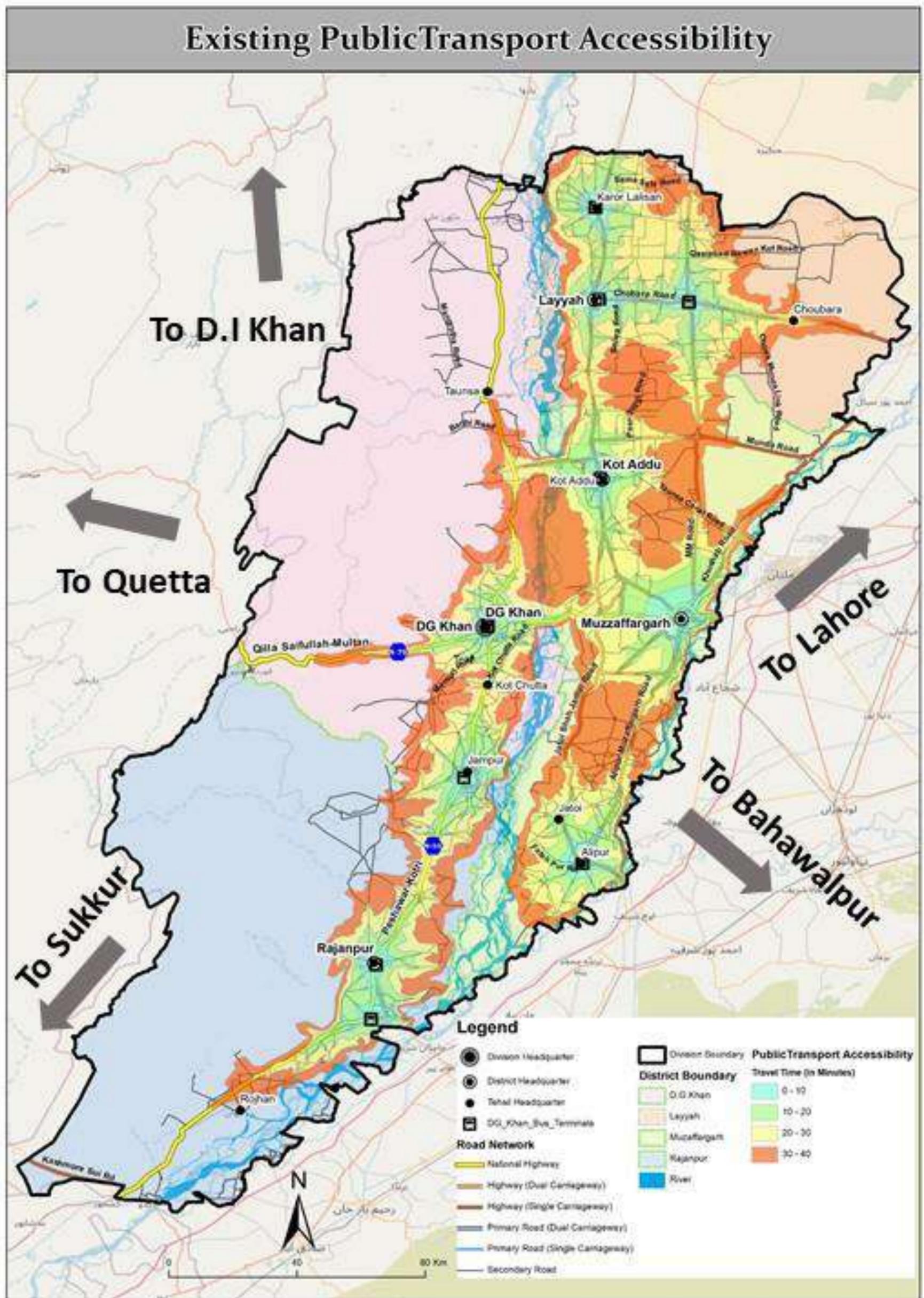


Figure 3-4: Public Transport Accessibility in D.G Khan Division

4 PROPOSED INTERVENTIONS

The proposed interventions for the upcoming ADPs target a 10-year planning horizon from the year 2024 to 2034. The proposed interventions encompass the road and transport sectors. The road sector schemes include New Construction, dualization, and widening/Rehabilitation schemes while the transport sector schemes include urban transport interventions as well as the construction of new model truck terminals and a Parking Plaza in the district headquarters. A preliminary cost estimate and the target implementation timelines for each of the projects have been proposed. It should be noted that these cost estimates rely on the average cost of similar road and transport schemes that have been completed recently in Punjab. Therefore, the reader should expect the possibility of large variations in the cost estimates when a detailed design of the proposed facilities is conceived in the future.

4.1 Road Schemes

These road schemes are aimed at improving the provincial road network for better regional connectivity. As discussed in the previous chapters, many provincial roads in D.G Khan Division are single-lane, despite an ADT of more than 8000. The evaluation of the benefit-cost ratio of these roads, as discussed in the previous chapter, gives 22 road schemes that should be completed over the next ten years to ensure the required mobility and accessibility on the road network. These road schemes are summarized in Table 4-1. A detailed cost-benefit analysis of these roads is presented in Annexure I. The benefit-cost ratio of these projects might form the basis of their funding priority. That is, a road scheme with a higher benefit-cost ratio gets funding earlier as compared to a road scheme with lower benefit cost ratio.

There are eleven proposed dualization and seven widening schemes and two Rehabilitation and two new construction. In terms of implementation timeline, six schemes have been proposed for implementation in the medium to long term (2030-2034) while the remaining sixteen schemes have been proposed for implementation in the short to medium term (2024-2030). The total cost of short to medium-term projects is PKR 48.83 billion and 27.20 billion for medium to long-term projects. Thus, D.G Khan Division would tentatively need PKR 76.02 billion over the next ten years to dualize and improve road infrastructure.

Table 4-1: Proposed Road Schemes D.G Khan Division.

District	Proposed Road Schemes	Length (Km)	ADT Projections				Timeline
			2024	2027	2030	2034	
D.G Khan	Dualization of metalled road from (N-70) D.G. Khan to Choti	26	7341	7875	8409	9122	Medium to Long Term
	Widening of road from Kot chuta to Choti	16	6080	6523	6965	7556	Short to Medium Term
	Construction of Southern Bypass	13	29260	39310	33520	36360	Short to Medium Term

	Construction of Northern Bypass	20	29260	39310	33520	36360	Short to Medium Term
	Rehabilitation of Choti to Jampur	24	6256	6711	7167	7774	Short to Medium Term
	Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage	35	7543	8092	8641	9374	Short to Medium Term
	Widening of metalled road from Taunsa to Vehova	60	4965	5326	5688	6170	Short to Medium Term
Muzaffargarh	Dualization of road from Chowk Munda to Daira Din Pannah	29	6793	7288	7782	8441	Medium to Long Term
	Dualization of metalled road from Jatoi to Karam Dad Qureshi road	68	7783	8350	8916	9672	Medium to Long Term
	Dualization of road from Muzaffargarh to Sanawan	37.5	9176	9844	10512	11402	Short to Medium Term
	Rehabilitation of metalled road from Sinawan to Langer Sarai	34	4979	5341	5704	6187	Medium to Long Term
	Widening of Khan Garh - Shah Jamal road	19.5	6276	6733	7189	7798	Short to Medium Term
Layyah	Dualization of Chobara road to Chowk Azam	12	10585	11356	12126	13154	Short to Medium Term
	Dualization of Layyah Bypass road	5	8951	9603	10254	11123	Short to Medium Term
	Dualization of road from Karor to Fatehpur	23	7125	7644	8163	8854	Medium to Long Term
	Dualization of road Chowk Azam to Garh Maharaja	68	9974	10700	11426	12394	Short to Medium Term
	Dualization of road from Chowk Azam to Fatehpur	24	12447	13353	14259	15468	Short to Medium Term
	Widening of road from Layyah to Qaziabad Via Tail indus	31	3917	4202	4488	4868	Short to Medium Term
Rajanpur	Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad	30	5183	5560	5937	6440	Short to Medium Term
	Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed	15	5035	5402	5768	6257	Short to Medium Term
	Dualization of Jampur-Dajal Road	23	9918	10640	11362	12325	Short to Medium Term
	Widening of road from Rajanpur to Asni	12	4462	4786	5111	5544	Medium to Long Term

The spatial distribution of the proposed road network schemes is shown in Figure 4-1. The proposed network is spread across the division connecting the region with high-speed road links at Tehsil Level and beyond. Moreover, high-speed connectivity with national roadways has been ensured. For example, the proposed dualization of Talpur Dera Ghazi Khan road improves the link to Sakhi Sarwar (N-70). Likewise, the dualization of Dajal – Jampur Road improves the link with the Indus Highway (N-55).

Moreover, the interconnectivity of THQs and DHQs will be significantly improved when the proposed interventions are implemented. For instance, the busy road connection between Layyah, Kot Addu, Muzaffargarh, Rajanpur, and D.G Khan would become much faster after its proposed dualization is completed.



Figure 4-1: Spatial Distribution of Proposed Road Network Schemes

A district-wise analysis is presented in the following paragraphs. Sahiwal District is proposed to develop seven of its existing roads in the next ten years totaling PKR 32.99 billion (Table 4-2). These projects aim to improve the road infrastructure by implementing dualization and Widening/improvement schemes. The combined length of all the listed road projects is 193 kilometers, which will contribute to better connectivity and transportation efficiency in the district.

The road schemes serve a significant number of PCUs ranging from 6639 to 27,500, indicating the potential reduction in traffic congestion and travel times. The Benefit/Cost (B/C) ratios of the schemes range from 1.1 to 16.8, indicating their economic viability and potential for positive returns on investment. The total cost of the listed road development projects is PKR 32,985.65 million. This includes expenses associated with dualization and Widening/improvement of the roads.

Table 4-2: Proposed Road Schemes, District D.G Khan

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2024	2027	2030	2034				
1. Dualization of metalled road from (N-70) D.G.Khan to Choti	Dualization	9546	7341	7875	8409	9122	5164.54	3.1	2030-2034	Medium to Long Term
2. Widening of road from Kot chuta to Choti	Widening	8474	6080	6523	6965	7556	3178.18	1.4	2024-2030	Short to Medium Term
3. Construction of Southern Bypass	New Construction	27500	29260	39310	33520	36360	2582.27	9.7	2024-2030	Short to Medium Term
4. Construction of Northern Bypass	New Construction	27500	29260	39310	33520	36360	3972.72	9.7	2024-2030	Short to Medium Term
5. Rehabilitation of Choti to Jampur	Rehabilitation	8992	6256	6711	7167	7774	4767.27	1.5	2024-2030	Short to Medium Term
6. Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage	Dualization	10345	7543	8092	8641	9374	1402.50	16.8	2024-2030	Short to Medium Term

7. Widening of metalled road from Taunsa to Vehova	Widening	6639	4965	5326	5688	6170	11918.17	1.1	2024-2034	Short to Medium Term
	Total Cost (PKR Millions)						32985.65			

Figure 4-2 shows the spatial distribution of proposed road schemes in D.G Khan District. In the Northern part of the district, the proposed Widening of Mangrotha road would connect Indus Highway (N-55).

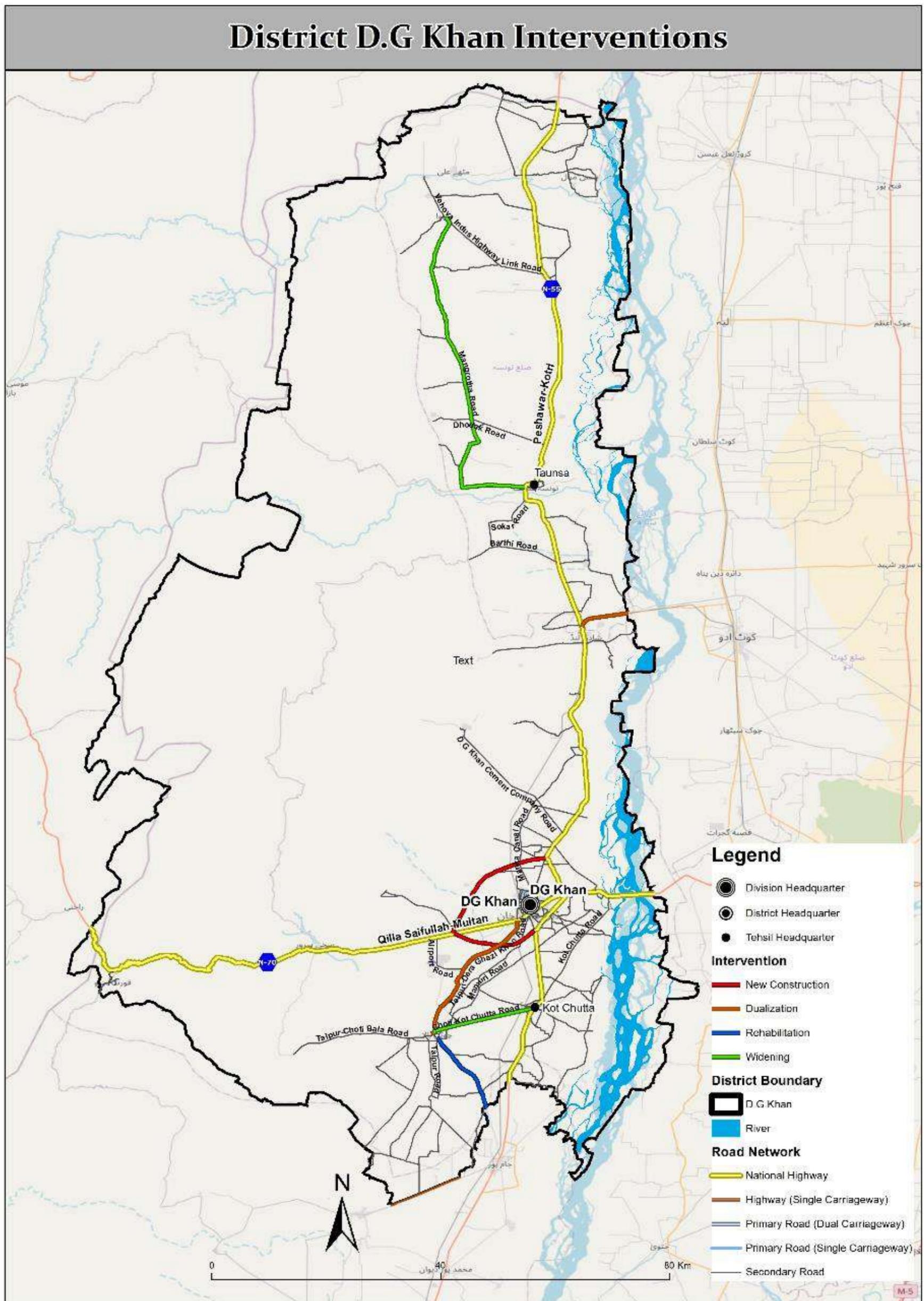


Figure 4-2: Spatial Distribution of Proposed Roads in D.G Khan

Figure 4-3 shows the implementation timeline of the proposed schemes in D.G Khan. The dualization of Taunsa Barrage road is proposed to be a Short to medium-term intervention (2024-2030). Likewise, the Widening of Choti Kot Chuta Road from Indus Highway N-55 is also proposed to be a short to Medium term intervention (2024-2030). Similarly, the Talpur D.G Khan road is proposed to be completed in the medium to long term i.e., up to the year 2034 because the projected traffic seems to be served well by the extant road infrastructure till that period of time. It implies that D.G Khan would require PKR 27.82 billion in short to medium term and the remaining PKR 5.16 billion in medium to long term to complete the road infrastructure improvement.

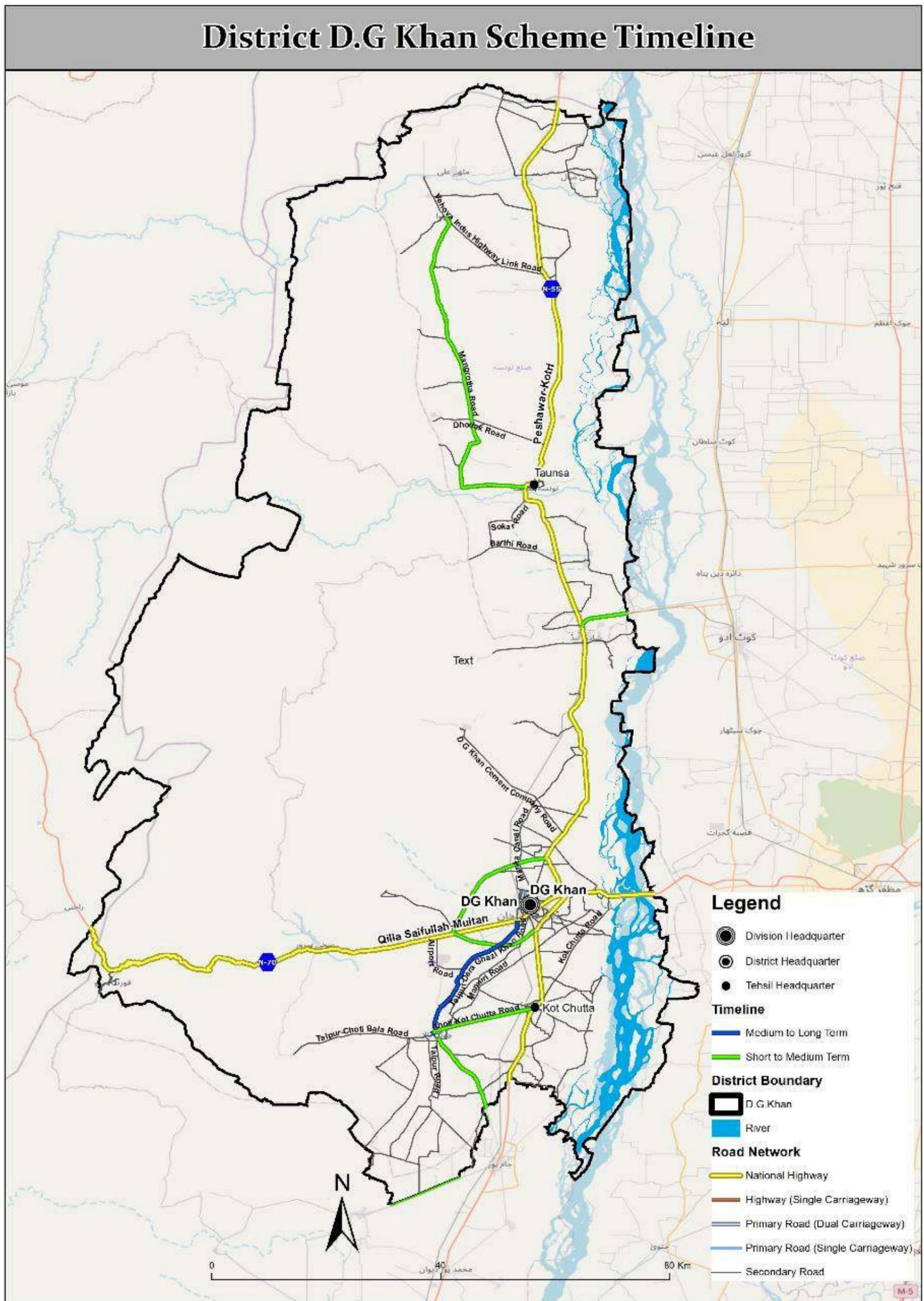


Figure 4-3: Timeline of Proposed Roads in D.G Khan

The total cost of proposed road schemes in Muzaffargarh is PKR 28.86 billion. This includes three dualization schemes, one Widening/improvement, and one Rehabilitation scheme. Among five proposed schemes, three roads would require medium to long-term implementation (2030-2034) which implies that the extant road widths are enough to serve traffic adequately for the next six years on these roads. The remaining two schemes are proposed to be implemented in the short to medium-term (2024-2030) timeline.

Table 4-3: Proposed Road Schemes, District Muzaffargarh

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2024	2027	2030	2034				
8. Dualization of road from Chowk Munda to Daira Din Pannah	Dualization	9745	6793	7288	7782	8441	5,760.45	3.2	2030-2034	Medium to Long Term
9. Dualization of metalled road from Jatoi to Karam Dad Qureshi road	Dualization	12514	7783	8350	8916	9672	13,507.26	4.1	2030-2034	Medium to Long Term
10. Dualization of road from Muzaffargarh to Sanawan	Dualization	14192	9176	9844	10512	11402	7,448.86	4.7	2024-2030	Short to Medium Term
11. Rehabilitation of metalled road from Sinawan to Langer Sarai	Rehabilitation	7554	4979	5341	5704	6187	1,362.43	6.4	2030-2034	Medium to Long Term
12. Widening of Khan Garh - Shah Jamal road	Widening	9502	6276	6733	7189	7798	781.39	8.0	2024-2030	Short to Medium Term
Total Cost (PKR Millions)							28,860.39			

Figure 4-4 shows the spatial distribution of the proposed road schemes in Muzaffargarh. The dualization schemes will provide the much-needed North connectivity for Muzaffargarh with Kot Addu. National Highway N-70 also passes nearby reinforcing the East-connectivity of the district. The weaker links are road connections with D.G Khan, Mehmood Kot Road, Sanawan Sultan Colony Road, and Chowk Manda which have been proposed to dualize in this study.

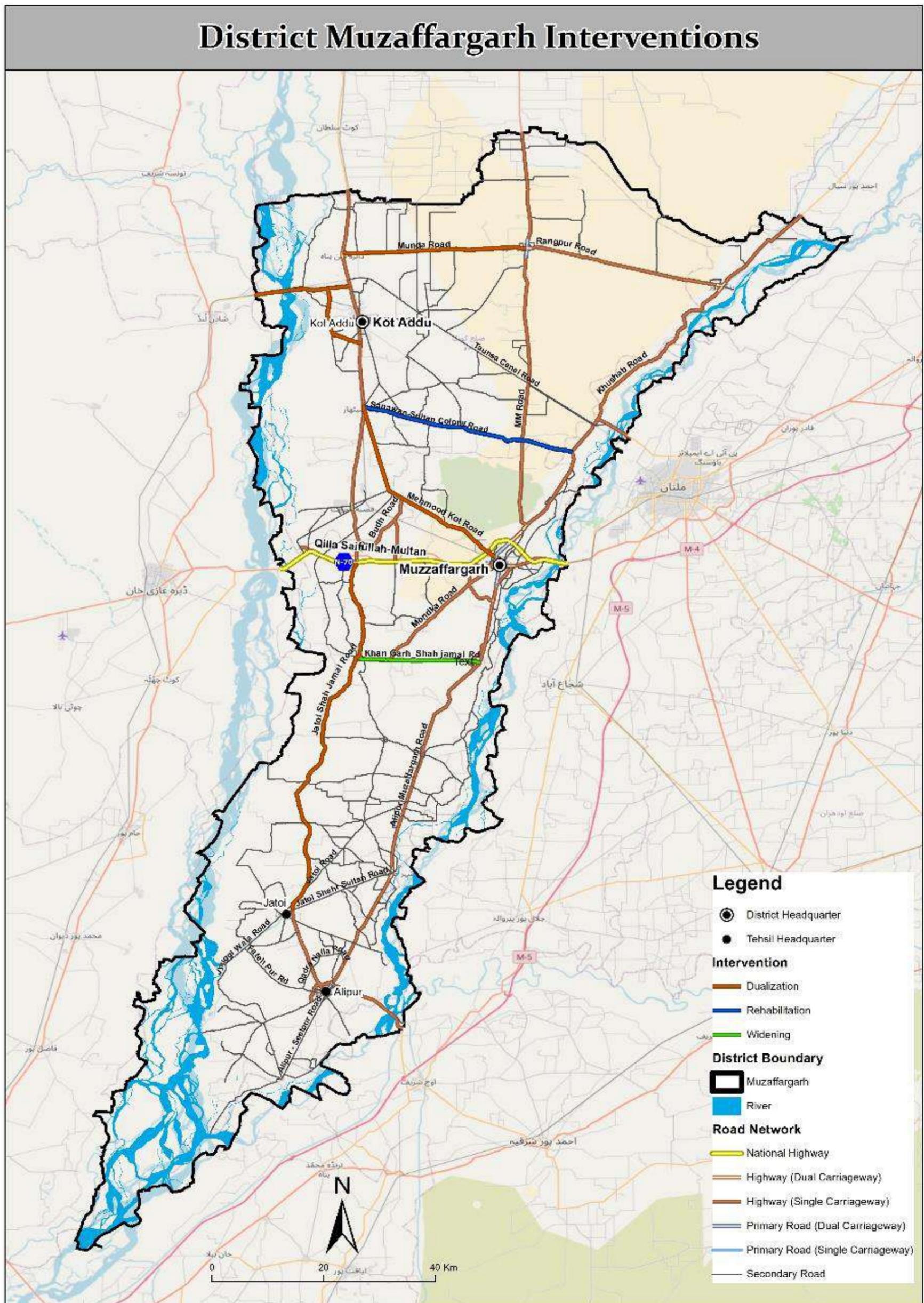


Figure 4-4: Spatial Distribution of Proposed Roads in Muzaffargarh

Figure 4-5 shows the proposed implantation timeline of the schemes. Out of five schemes, two Road projects are proposed for Dualization in the short to medium term (2024-2030) one road project in the Medium to Long term (2030-2034) and one is proposed for widening in the short to medium term (2024-2030) while the remaining one Rehabilitation scheme is proposed as a medium to long term intervention (2030-2034).

District Muzaffargarh Scheme Timeline

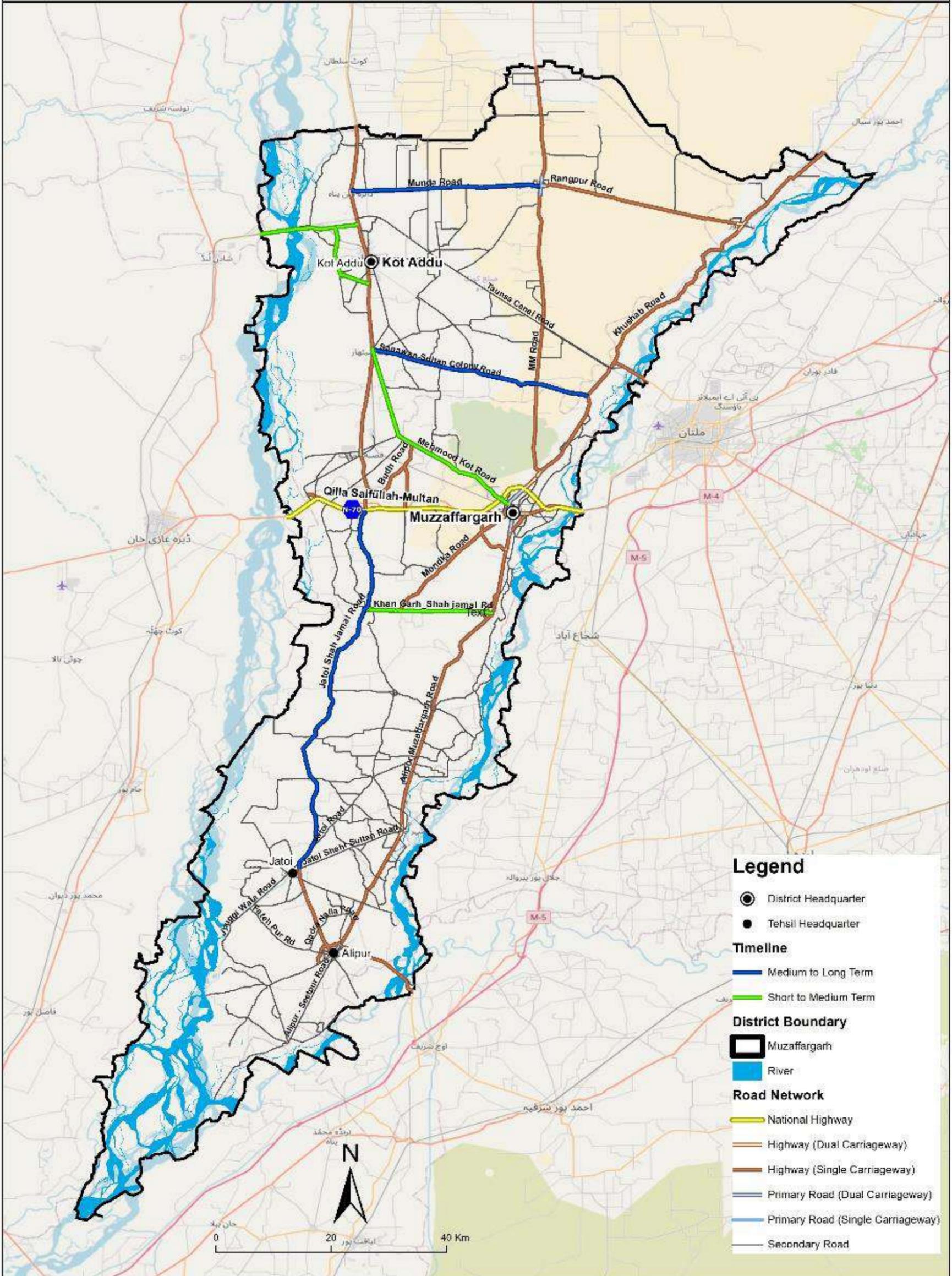


Figure 4-5: Timeline of Proposed Roads in Muzaffargarh

Table 4-4 lists the proposed road schemes in Layyah District. Five roads have been proposed for dualization and one for the Widening/improvement program in the next 10 years. The total cost of all the proposed schemes is around PKR 7.32 billion. Only 6.08 billion would be incurred on the dualization of roads that connect key parts of the district and feature heavy traffic volumes.

Table 4-4: Proposed Road Schemes, District Layyah

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2024	2027	2030	2034				
13. Dualization of Chobara road to Chowk Azam	Dualization	14461	10585	11356	12126	13154	480.86	23.5	2024-2030	Short to Medium Term
14. Dualization of Layyah Bypass road	Dualization	19031	8951	9603	10254	11123	993.18	6.2	2024-2030	Short to Medium Term
15. Dualization of road from Karor to Fatehpur	Dualization	10276	7125	7644	8163	8854	921.64	16.7	2030-2034	Medium to Long Term
16. Dualization of road Chowk Azam to Garh Maharaja	Dualization	14000	9974	10700	11426	12394	2,724.86	22.8	2024-2030	Short to Medium Term
17. Dualization of road from Chowk Azam to Fatehpur	Dualization	23962	12447	13353	14259	15468	961.71	39.0	2024-2030	Short to Medium Term
18. Widening of road from Layyah to Qaziabad Via Tail indus	Widening	6237	3917	4202	4488	4868	1,242.21	5.3	2024-2030	Short to Medium Term

Total Cost (PKR Millions) 7,324.47

Figure 4-6 shows the spatial distribution of the proposed road schemes. It can be seen that the proposed interventions cover almost all the key roads in the district strengthening connectivity within and beyond the district.

On the other hand, figure 4-7 shows the implementation timeline of the proposed projects. Out of six schemes, four Road projects are proposed for Dualization in short to medium term (2024-2030) and one road project for Dualization in Medium to Long term (2030-2034) while the remaining widening scheme is proposed as a short to medium term intervention (2024-2030).

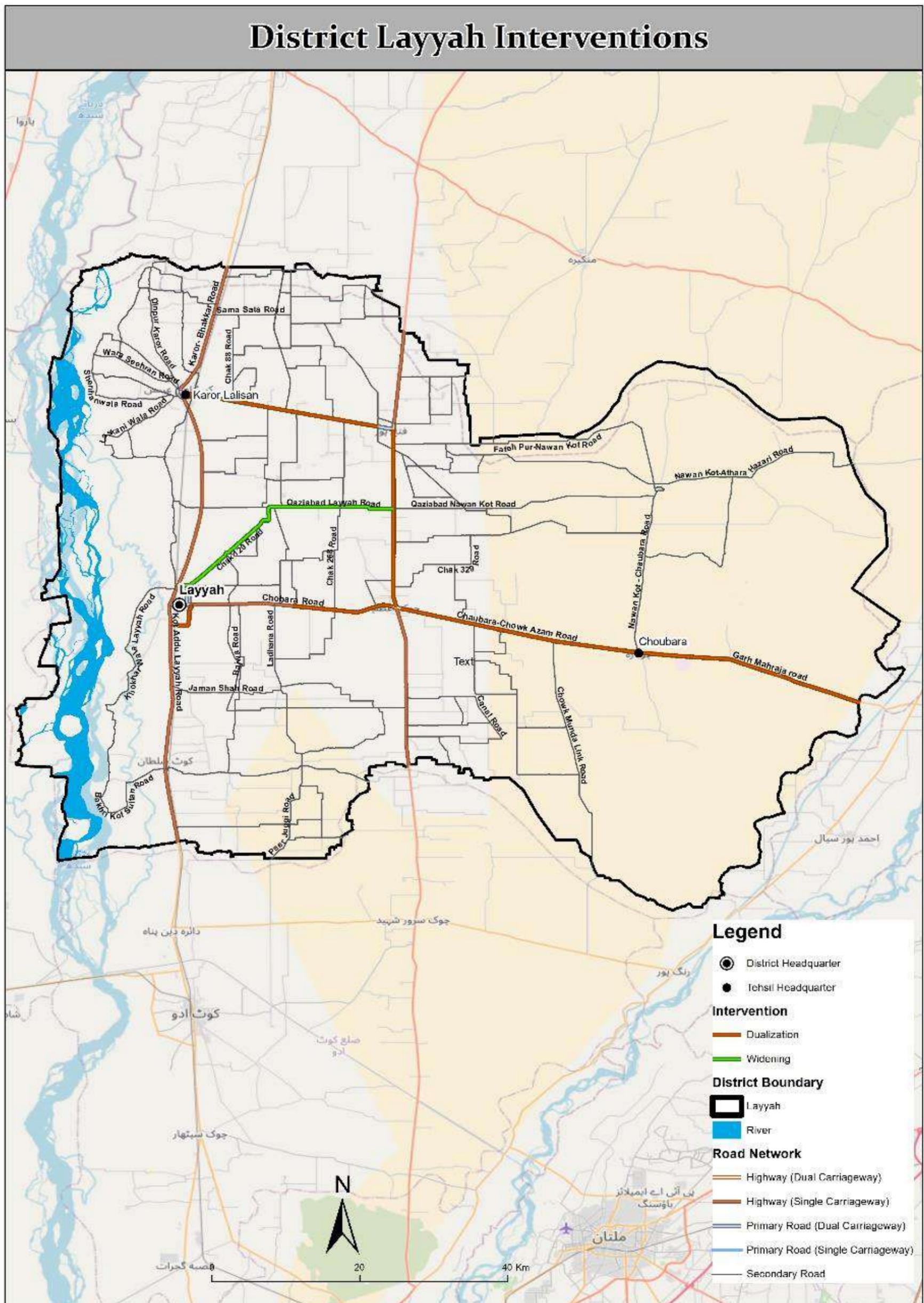


Figure 4-6: Spatial Distribution of Proposed Roads in Layyah

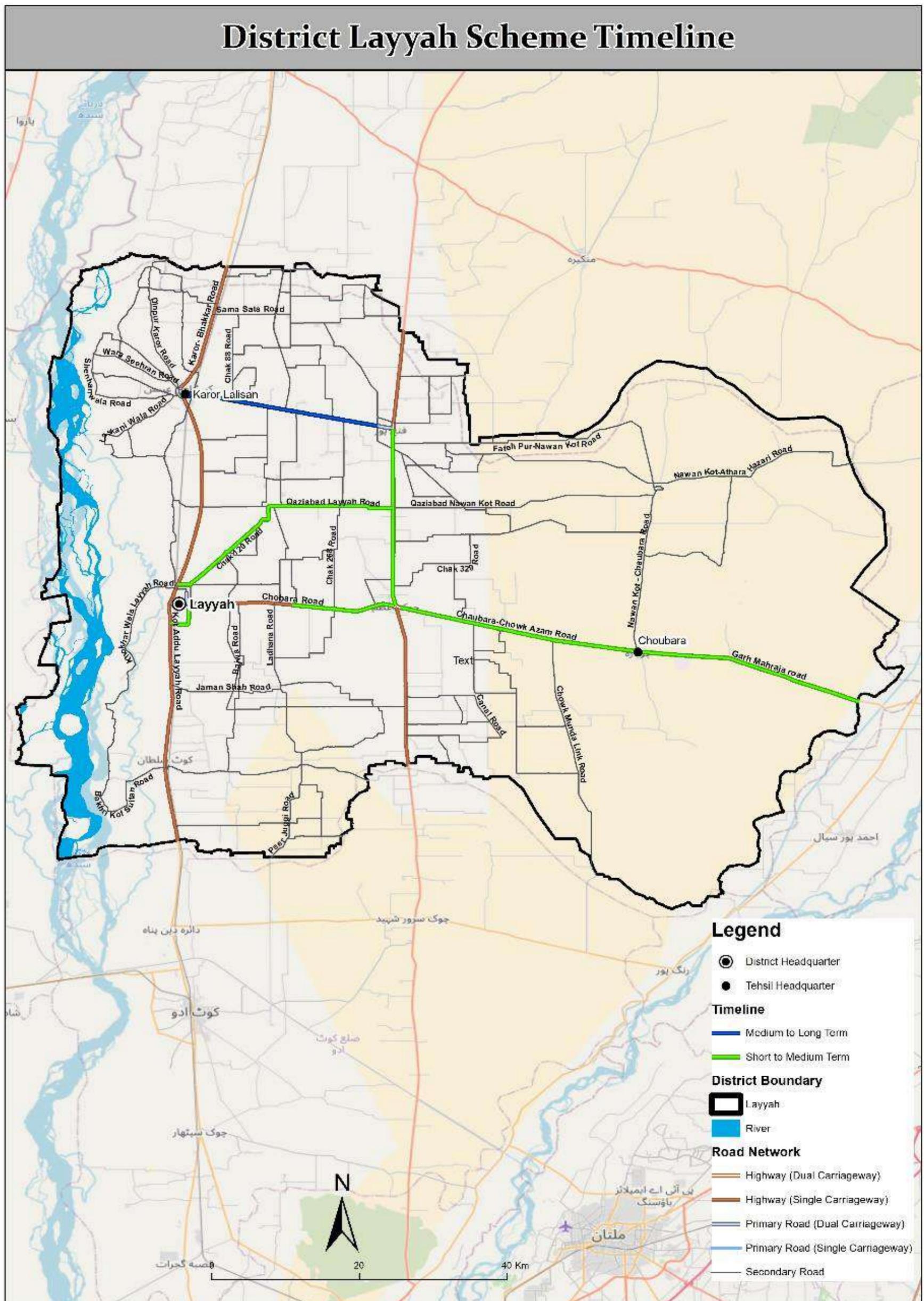


Figure 4-7: Timeline of Proposed Roads in Layyah

The total cost of proposed road schemes in Rajanpur is PKR 6.85 billion. This includes one dualization scheme and three Widening/improvement schemes. Among four proposed schemes, three roads would require Short to medium term implementation (2024-2030) and the remaining one schemes are proposed to be implemented in medium to long term (2030-2034) timeline.

Table 4-5: : Proposed Road Schemes, District Rajanpur

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2024	2027	2030	2034				
19.Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad	Widening	7299	5183	5560	5937	6440	1,202.14	6.1	2024-2030	Short to Medium Term
20.Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed	Widening	7261	5035	5402	5768	6257	601.07	6.1	2024-2030	Short to Medium Term
21.Dualization of Jampur-Dajal Road	Dualization	13314	9918	10640	11362	12325	4,568.67	4.4	2024-2030	Short to Medium Term
22.Widening of road from Rajanpur to Asni	Widening	7062	4462	4786	5111	5544	480.86	5.9	2030-2034	Medium to Long Term
Total Cost (PKR Millions)							6,852.74			

Figure 4-8 shows the spatial distribution of the proposed road schemes in Rajanpur. The dualization schemes improve the link with (N-55).

On the other hand, figure 4-9 how's the implementation timeline of the proposed projects. Out of four schemes, one Road project is proposed for Dualization in the short to medium term (2024-2030) and one road project for Widening in the Medium to Long term (2030-2034) while the remaining two widening schemes is proposed as a short to medium term intervention (2024-2030).

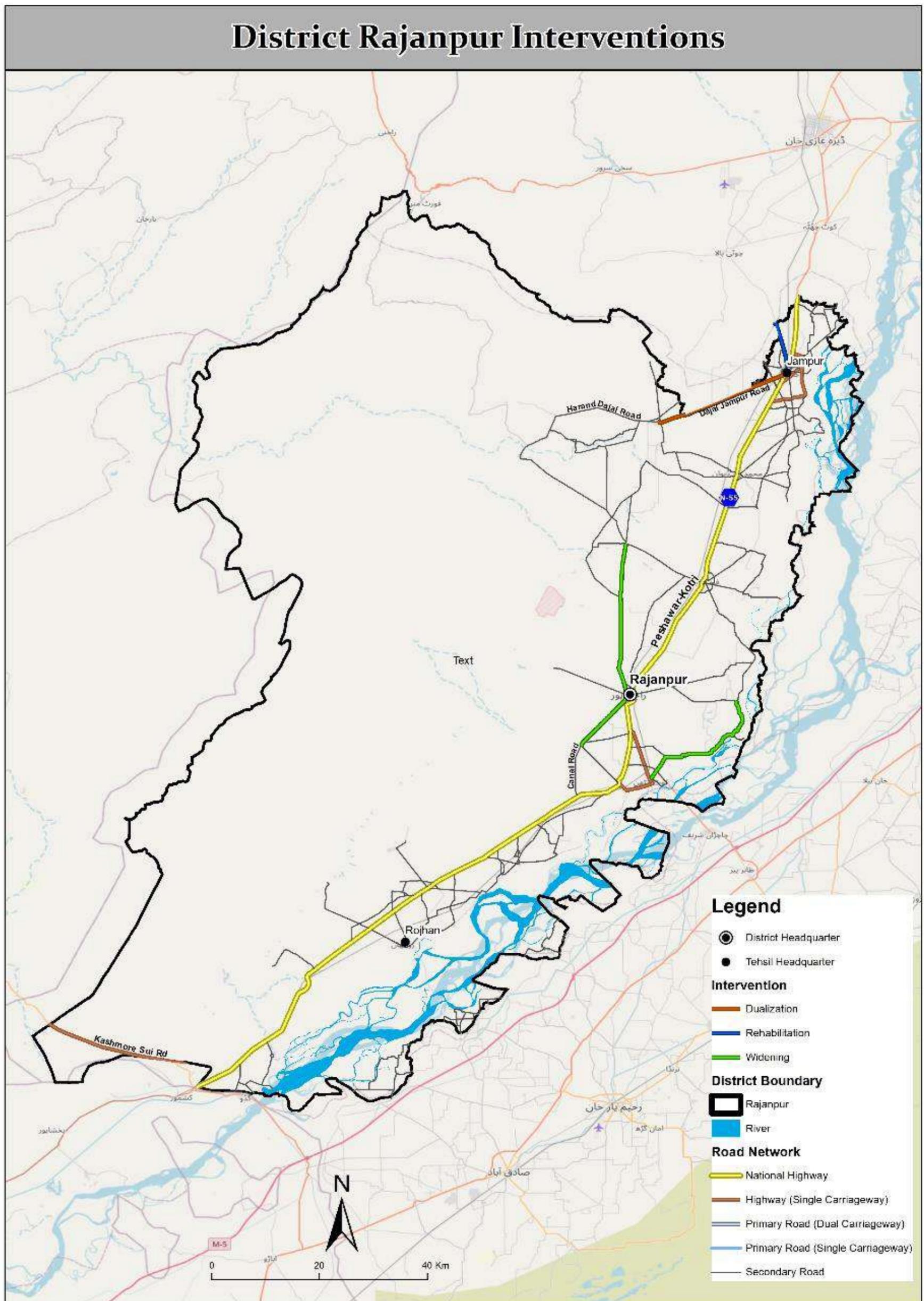


Figure 4-8: Spatial Distribution of Proposed Roads in Rajanpur

Figure 4-5 shows the proposed implantation timeline of the schemes. Out of five schemes, two Road projects are proposed for Dualization in the short to medium term (2024-2030) one road project in the Medium to Long term (2030-2034) and one is proposed for widening in the short to medium term (2024-2030) while the remaining one Rehabilitation scheme is proposed as a medium to long term intervention (2030-2034).

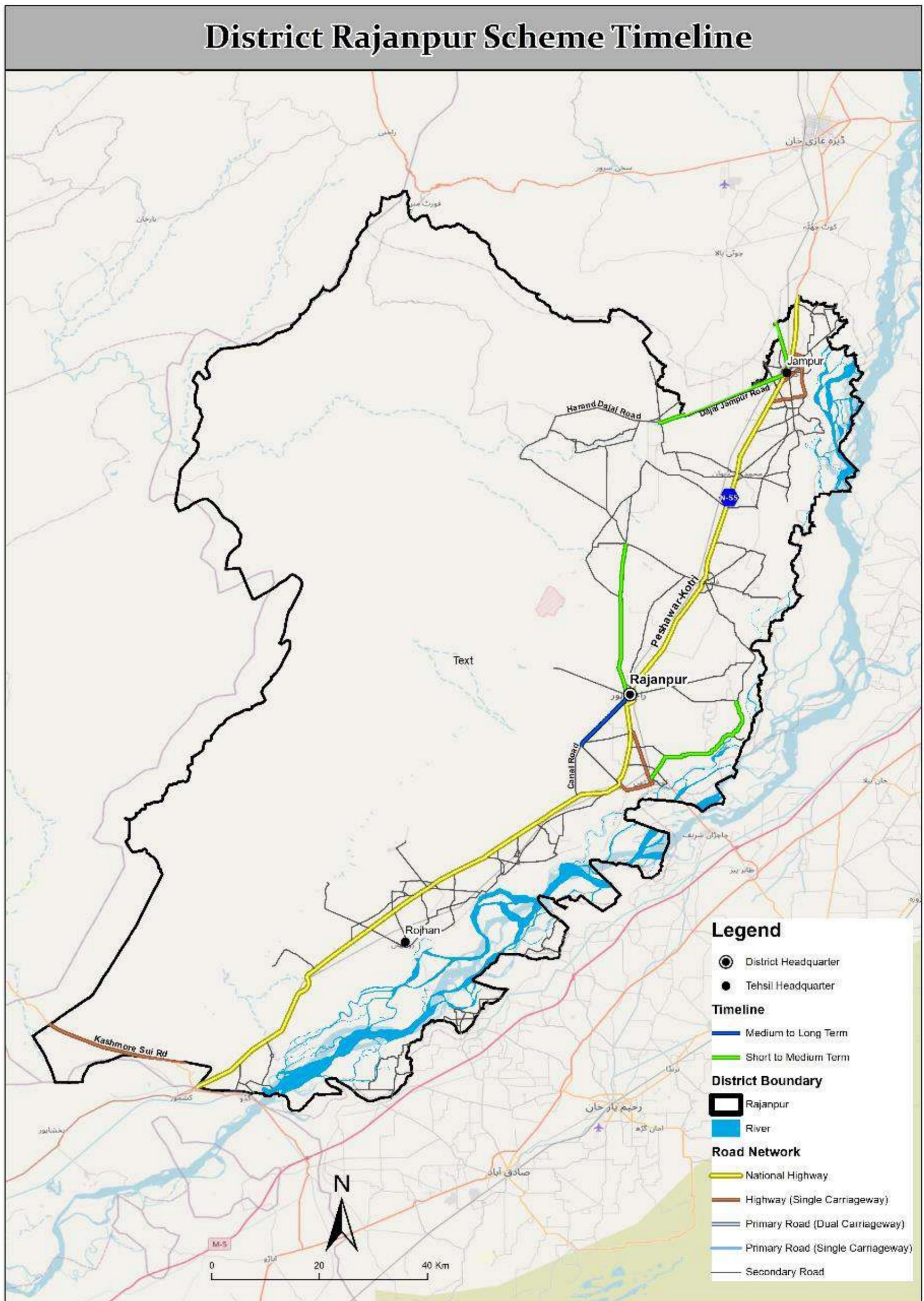


Figure 4-9: Timeline of Proposed Roads in Rajanpur

4.2 Truck Terminals

Table 4-5 provides information on the implementation timeline of two projects related to the construction of modal truck terminals in the D.G Khan division. These projects are scheduled to be implemented between 2024 and 2034.

The first project, “Establishment of Logistic Terminal along N-70 in D.G Khan” is planned for the D.G Khan district. This truck terminal aims to cater to the needs of the transport industry in the area, offering a designated space for truck parking, loading, and unloading activities. It is expected to improve logistics operations and contribute to the overall development of the transport sector in the district.

The second project, “ Construction of Freight / Logistic Terminal near Mehmood Kot Road” is planned for the Muzaffargarh district. The construction of these truck terminals aims to provide a dedicated facility for handling truck traffic and logistics operations. It is expected to enhance the efficiency of transportation services in the area and contribute to improved trade and commerce. These truck terminals will serve as a centralized hub for truck operations. By providing modern facilities and infrastructure, it will help streamline the movement of goods and support the local industry. The proposed interventions would be able to serve 47.39% of the Division Area within a one-hour travel time window.

Table 4-6: Proposed Truck Terminals

Sr. No	Project Name	District/ Sector	Implementation Timeline
1	Establishment of Logistic Terminal along N-70 in D.G Khan	D.G Khan	2024-2030
2	Construction of Freight / Logistic Terminal near Mehmood Kot road	Muzaffargarh	2024-2030

4.3 Intracity Public Transport

The proposed public transport schemes (Table 4-6) target urban transport in Sahiwal city. These proposals are based on a study by the Punjab Intermediate Cities improvement investment program and cater to the mass movement of passengers in the District headquarters of Muzaffargarh.

These public transport facilities are expected to ease traffic congestion in Muzaffargarh city while providing a cheaper way to commute for different activities such as shopping, businesses, education, etc.

Table 4-7: Intracity Public Transport routes for Muzaffargarh City

S. No.	Proposed Interventions	Implementation Timeline
1	Development of Integrated operations of Intracity Public Transport Routes	2024-2030

The spatial distribution of the routes in Muzaffargarh is shown in Figure 4-8. The Purple color line is 11 km, it starts at Mehmood Mill flyover and ends at Indus Hospital. The red color line is 16 km, starts from Khanpur Bagga Shair, and ends at Chaman Bypass.

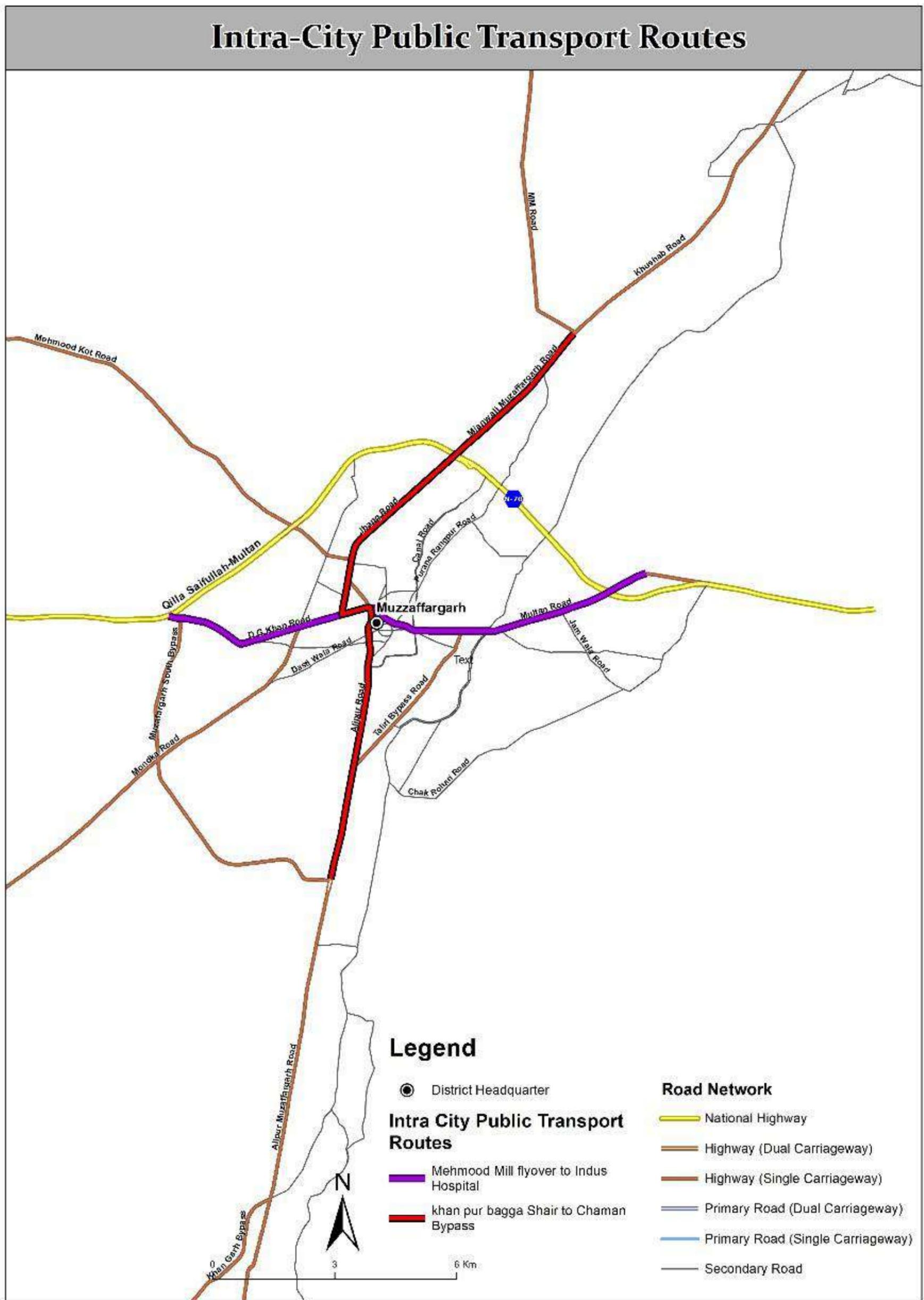


Figure 4-9: Spatial Distribution of Intracity Routes

4.4 Sectoral Targets

To facilitate the implementation of the proposed projects and visualize their impact, details of sectoral targets have been presented in the following sections. In the base year 2024, the share of dual carriageways in the entire road network of D.G Khan division is only 1.44%. The proposed interventions would enhance it to 0.96% by 2030 and 0.48% by 2034. Currently, there is no formal truck terminal in the division. This would increase to 2 by 2034. Thus, the proposed interventions would have a multi-prong effect on enhancing the road and transport sector infrastructure in D.G Khan.

4.4.1 Base Line Year 2024

In the base year 2024, transport infrastructure stands at the following statistics in the D.G Khan division.

1. Road Network (Except Local Roads)

- Dual Carriageways: 0.29%

Key institutions that played a crucial role in the implementation of these plans include Regional Transport Authority

4.4.2 Short to Medium Term (2024 to 2030)

The execution of the proposed transport project in a short to medium-term timeline in different sectors would enhance transport infrastructure to the following statistics till year 2030.

1. Road Network (Except Local Roads)

- Dual Carriageways: 0.96%

2. Urban Transport

- Integrated Operations of Intracity Public Transport Routes

3. Freight Transport

- 2 Truck Terminal

The Key Institutions that would achieve the targets include the Regional Transport Authority (RTA), and Punjab Transport Company (PTC).

4.4.3 Medium to Long Term (2030 to 2034)

The execution of the proposed transport project in medium to long-term timelines in different sectors would enhance transport infrastructure to the following statistics till year 2034.

1. Road Network (Except Local Roads)

- Dual Carriageways: 1.44%

2. Urban Transport

- Integrated Operations of Intracity Public Transport Routes

3. Railways

- Restoration and operationalize Railway Stations

4. Parking

- 1 Parking Plaza

5. Freight Transport

- 2 Truck Terminal

The Key Institutions that would achieve the targets include the Regional Transport Authority (RTA), and Punjab Transport Company (PTC).

ANNEXURE I
COST-BENEFIT ANALYSIS OF THE POTENTIAL ROAD SCHEME

Sheet 1 Candidate Links and Proposed Improvements

Sr. No	Linkage	Existing Link				Proposed Link			
		Carriage way	Distance (Km)	Speed (kph)	TT (Hrs)	Carriage way	Distance (Km)	Speed (kph)	TT (Hrs)
1	1. Dualization of metalled road from (N-70) D.G.Khan to Choti, Length = 26km	Dual	0	80	0	Dual	26	80	0.325
		Single	26	40	0.65	Single	0	50	0
		Total	26	-	0.65	Total	26	-	0.325
2	Widening of road from Kot chuta to Choti, Length = 16Km	Dual	0	80	0	Dual	0	80	0
		Single	16	40	0.4	Single	16	50	0.32
		Total	16	-	0.4	Total	16	-	0.32
3	Construction of Southern Bypass, Length = 13Km	Dual	0	80	0	Dual	13	80	0.1625
		Single	13	40	0.325	Single	0	50	0
		Total	13	-	0.325	Total	13	-	0.1625
4	Construction of Northern Bypass, Length = 20Km	Dual	0	80	0	Dual	20	80	0.25
		Single	20	40	0.5	Single	0	50	0
		Total	20	-	0.5	Total	20	-	0.25
5	Rehabilitation of Choti to Jampur, Length 24 Km	Dual	0	80	0	Dual	0	80	0
		Single	24	40	0.6	Single	24	50	0.48
		Total	24	-	0.6	Total	24	-	0.48
6	Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage, Length = 35Km	Dual	0	80	0	Dual	35	80	0.4375
		Single	35	40	0.875	Single	0	50	0
		Total	35	-	0.875	Total	35	-	0.4375
7	Widening of metalled road from Taunsa to Vehova, Length = 60Km	Dual	0	80	0	Dual	0	80	0
		Single	60	40	1.5	Single	60	50	1.2
		Total	60	-	1.5	Total	60	-	1.2
8	Dualization of road from Chowk Munda to Daira Din Pannah, Length 29Km	Dual	0	80	0	Dual	29	80	0.3625
		Single	29	40	0.725	Single	0	50	0
		Total	29	-	0.725	Total	29	-	0.3625

Annexures

Sr. No	Linkage	Existing Link				Proposed Link			
9	Dualization of metalled road from Jatoi to Karam Dad Qureshi road, Length = 68Km	Dual	0	80	0	Dual	68	80	0.85
		Single	68	40	1.7	Single	0	50	0
		Total	68	-	1.7	Total	68	-	0.85
10	Dualization of road from Muzaffargarh to Sanawan, Length 37.5Km	Dual	0	80	0	Dual	37.5	80	0.46875
		Single	37.5	40	0.9375	Single	0	50	0
		Total	37.5	-	0.9375	Total	37.5	-	0.46875
11	Rehabilitation of metalled road from Sinawan to Langer Sarai, Length 34Km	Dual	0	80	0	Dual	0	80	0
		Single	34	40	0.85	Single	34	50	0.68
		Total	34	-	0.85	Total	34	-	0.68
12	Widening of Khan Garh - Shah Jamal road, Length 19.5Km	Dual	0	80	0	Dual	0	80	0
		Single	19.5	40	0.4875	Single	19.5	50	0.39
		Total	19.5	-	0.4875	Total	19.5	-	0.39
13	Dualization of Chobara road to Chowk Azam, Length = 12km	Dual	0	80	0	Dual	12	80	0.15
		Single	12	40	0.3	Single	0	50	0
		Total	12	-	0.3	Total	12	-	0.15
14	Dualization of Layyah Bypass road, Length 5Km	Dual	0	80	0	Dual	5	80	0.0625
		Single	5	40	0.125	Single	0	50	0
		Total	5	-	0.125	Total	5	-	0.0625
15	Dualization of road from Karor to Fatehpur, Length 23Km	Dual	0	80	0	Dual	23	80	0.2875
		Single	23	40	0.575	Single	0	50	0
		Total	23	-	0.575	Total	23	-	0.2875
16	Dualization of road Chowk Azam to Garh Maharaja, Length = 68Km	Dual	0	80	0	Dual	68	80	0.85
		Single	68	40	1.7	Single	0	50	0
		Total	68	-	1.7	Total	68	-	0.85
17	Dualization of road from Chowk Azam to Fatehpur, Length 24Km	Dual	0	80	0	Dual	24	80	0.3
		Single	24	40	0.6	Single	0	50	0
		Total	24	-	0.6	Total	24	-	0.3
18	Widening of road from	Dual	0	80	0	Dual	0	80	0
		Single	31	40	0.775	Single	31	50	0.62

Annexures

Sr. No	Linkage	Existing Link				Proposed Link			
		Total				Total			
	Layyah to Qaziabad Via Tail indus, Length 31Km	Total	31	-	0.775	Total	31	-	0.62
19	Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad, Length = 30Km	Dual	0	80	0	Dual	0	80	0.0
		Single	30	40	0.75	Single	30	50	0.6
		Total	30		0.75	Total	30		0.6
20	Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed, Length 15Km	Dual	0	80	0	Dual	0	80	0.0
		Single	15	40	0.375	Single	15	50	0.3
		Total	15		0.375	Total	15		0.3
21	Dualization of Jampur-Dajal Road, Length = 23Km	Dual	0	80	0	Dual	23	80	0.3
		Single	23	40	0.575	Single	0	50	0.0
		Total	23		0.575	Total	23		0.3
22	Widening of road from Rajanpur to Asni, Length 12Km	Dual	0	80	0	Dual	0	80	0.0
		Single	12	40	0.3	Single	12	50	0.2
		Total	12		0.3	Total	12		0.2

Sheet 2 Travel Time Savings

Sr No	Linkage	Existing Travel Time (Hrs)	Travel Time After Improvement (Hrs)	Travel Time Saved per PCU per Day (Hrs)	PCU per Day	Total Time Saved per Day (Hrs)	Total Time Saved per Year (Hrs)	Time Value of Occupants (Rs./Hr)	Total Amount Saved Annually (Rs.)	Total Amount Saved Annually (Million Rs.)
1	1.Dualization of metalled road from (N-70) D.G.Khan to Choti, Length = 26km	0.65	0.33	0.33	9,546	3,102.5	1,132,394.3	1,749.0	1,980,557,543.3	1,980.56
2	Widening of road from Kot chuta to Choti, Length = 16Km	0.40	0.32	0.08	8,474	677.9	247,440.8	1,749.0	432,773,959.2	432.77
3	Construction of Southern Bypass, Length = 13Km	0.33	0.16	0.16	27,500	4,468.8	1,631,093.8	1,749.0	2,852,782,968.8	2,852.78
4	Construction of Northern Bypass, Length = 20Km	0.50	0.25	0.25	27,500	6,875.0	2,509,375.0	1,749.0	4,388,896,875.0	4,388.90
5	Rehabilitation of Choti to Jampur, Length 24 Km	0.60	0.48	0.12	8,992	1,079.0	393,849.6	1,749.0	688,842,950.4	688.84
6	Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage, Length = 35Km	0.88	0.44	0.44	10,345	4,525.9	1,651,967.2	1,749.0	2,889,290,610.9	2,889.29
7	Widening of metalled road from Taunsa to Vehova, Length = 60Km	1.50	1.20	0.30	6,639	1,991.7	726,970.5	1,749.0	1,271,471,404.5	1,271.47
8	Dualization of road from Chowk Munda to Daira Din Pannah, Length 29Km	0.73	0.36	0.36	9,745	3,532.6	1,289,385.3	1,749.0	2,255,134,911.6	2,255.13
9	Dualization of metalled road from Jatoi to Karam Dad Qureshi road, Length = 68Km	1.70	0.85	0.85	12,514	10,636.9	3,882,468.5	1,749.0	6,790,437,406.5	6,790.44

Annexures

Sr No	Linkage	Existing Travel Time (Hrs)	Travel Time After Improvement (Hrs)	Travel Time Saved per PCU per Day (Hrs)	PCU per Day	Total Time Saved per Day (Hrs)	Total Time Saved per Year (Hrs)	Time Value of Occupants (Rs./Hr)	Total Amount Saved Annually (Rs.)	Total Amount Saved Annually (Million Rs.)
10	Dualization of road from Muzaffargarh to Sanawan, Length 37.5Km	0.94	0.47	0.47	14,192	6,652.5	2,428,162.5	1,749.0	4,246,856,212.5	4,246.86
11	Rehabilitation of metalled road from Sinawan to Langer Sarai, Length 34Km	0.85	0.68	0.17	7,554	1,284.2	468,725.7	1,749.0	819,801,249.3	819.80
12	Widening of Khan Garh - Shah Jamal road, Length 19.5Km	0.49	0.39	0.10	9,502	926.4	338,152.4	1,749.0	591,428,591.3	591.43
13	Dualization of Chobara road to Chowk Azam, Length = 12km	0.30	0.15	0.15	14,461	2,169.2	791,739.8	1,749.0	1,384,752,822.8	1,384.75
14	Dualization of Layyah Bypass road, Length 5Km	0.13	0.06	0.06	19,031	1,189.4	434,144.7	1,749.0	759,319,058.4	759.32
15	Dualization of road from Karor to Fatehpur, Length 23Km	0.58	0.29	0.29	10,276	2,954.4	1,078,337.8	1,749.0	1,886,012,724.8	1,886.01
16	Dualization of road Chowk Azam to Garh Maharaja, Length = 68Km	1.70	0.85	0.85	14,000	11,900.0	4,343,500.0	1,749.0	7,596,781,500.0	7,596.78
17	Dualization of road from Chowk Azam to Fatehpur, Length 24Km	0.60	0.30	0.30	23,962	7,188.6	2,623,839.0	1,749.0	4,589,094,411.0	4,589.09
18	Widening of road from Layyah to Qaziabad Via Tail indus, Length 31Km	0.78	0.62	0.16	6,237	966.7	352,858.3	1,749.0	617,149,123.0	617.15
19	Widening of metalled road from Zahir Peer Kot Mithan	0.75	0.60	0.15	7,299	1,094.9	399,620.3	1,749.0	698,935,817.3	698.94

Annexures

Sr No	Linkage	Existing Travel Time (Hrs)	Travel Time After Improvement (Hrs)	Travel Time Saved per PCU per Day (Hrs)	PCU per Day	Total Time Saved per Day (Hrs)	Total Time Saved per Year (Hrs)	Time Value of Occupants (Rs./Hr)	Total Amount Saved Annually (Rs.)	Total Amount Saved Annually (Million Rs.)
	road to Bait Sountra via Wang, Bursabad, Length = 30Km									
20	Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed, Length 15Km	0.38	0.30	0.08	7,261	544.6	198,769.9	1,749.0	347,648,511.4	347.65
21	Dualization of Jampur-Dajal Road, Length = 23Km	0.58	0.29	0.29	13,314	3,894.3	1,421,435.9	1,749.0	2,486,091,432.8	2,486.09
22	Widening of road from Rajanpur to Asni, Length 12Km	0.30	0.24	0.06	7062	423.7	154,657.8	1,749.0	270,496,492.2	270.50

SHEET 3- Vehicle Operating Costs Savings

Sr No	Linkage	Distance (km)		VOC (Rs./km/PCU/Day)		PCU per Day	Vehicle Operating Cost (Rs./Year)		VOC Per Annum	
		Existing	New	Before	After		Before	After	PKR	(Million)
1	1.Dualization of metalled road from (N-70) D.G.Khan to Choti, Length = 26km	26.0	26.0	53.3	52.9	9,546	4,830,284,746	4,795,527,815	34,756,931	34.76
2	Widening of road from Kot chuta to Choti, Length = 16Km	16.0	16.0	53.3	51.0	8,474	2,638,678,009	2,526,350,665	112,327,344	112.33
3	Construction of Southern Bypass, Length = 13Km	13.0	13.0	53.3	51.0	27,500	6,957,512,598	6,661,334,395	296,178,202	296.18
4	Construction of Northern Bypass, Length = 20Km	20.0	20.0	53.3	51.0	27,500	10,703,865,535	10,248,206,762	455,658,773	455.66
5	Rehabilitation of Choti to Jampur, Length 24 Km	24.0	24.0	53.3	51.0	8,992	4,199,963,297	4,021,172,736	178,790,561	178.79
6	Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage, Length = 35Km	35.0	35.0	53.3	52.9	10,345	7,046,549,297	6,995,844,952	50,704,345	50.70
7	Widening of metalled road from Taunsa to Vehova, Length = 60Km	60.0	60.0	53.3	51.0	6,639	7,752,323,268	7,422,310,330	330,012,937	330.01
8	Dualization of road from Chowk Munda to Daira Din Pannah, Length 29Km	29.0	29.0	53.3	52.9	9,745	5,499,938,035	5,460,362,529	39,575,506	39.58
9	Dualization of metalled road from Jatoi to Karam Dad Qureshi road, Length = 68Km	68.0	68.0	53.3	52.9	12,514	16,560,865,063	16,441,699,244	119,165,819	119.17
10	Dualization of road from Muzaffargarh to Sanawan, Length 37.5Km	37.5	37.5	53.3	52.9	14,192	10,357,449,523	10,282,921,173	74,528,351	74.53
11	Rehabilitation of metalled road from Sinawan to Langer Sarai, Length 34Km	34.0	34.0	53.3	51.0	7,554	4,998,432,743	4,785,651,694	212,781,048	212.78
12	Widening of Khan Garh - Shah Jamal road, Length 19.5Km	19.5	19.5	53.3	51.0	9,502	3,606,015,529	3,452,509,060	153,506,470	153.51

Annexures

Sr No	Linkage	Distance (km)		VOC (Rs./km/PCU/Day)		PCU per Day	Vehicle Operating Cost (Rs./Year)		VOC Per Annum	
		Existing	New	Before	After		Before	After	PKR	(Million)
13	Dualization of Chobara road to Chowk Azam, Length = 12km	12.0	12.0	53.3	52.9	14,461	3,377,205,807	3,352,904,692	24,301,116	24.30
14	Dualization of Layyah Bypass road, Length 5Km	5.0	5.0	53.3	52.9	19,031	1,851,866,045	1,838,540,707	13,325,339	13.33
15	Dualization of road from Karor to Fatehpur, Length 23Km	23.0	23.0	53.3	52.9	10,276	4,599,704,021	4,566,606,263	33,097,758	33.10
16	Dualization of road Chowk Azam to Garh Maharaja, Length = 68Km	68.0	68.0	53.3	52.9	14,000	18,527,418,162	18,394,101,759	133,316,403	133.32
17	Dualization of road from Chowk Azam to Fatehpur, Length 24Km	24.0	24.0	53.3	52.9	23,962	11,192,117,496	11,111,583,185	80,534,311	80.53
18	Widening of road from Layyah to Qaziabad Via Tail indus, Length 31Km	31.0	31.0	53.3	51.0	6,237	3,762,836,890	3,602,654,605	160,182,285	160.18
19	Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad, Length = 30Km	30.0	30.0	53.3	51.0	7,299	4,261,500,793	4,080,090,609	181,410,185	181.41
20	Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed, Length 15Km	15.0	15.0	53.3	51.0	7,261	2,119,657,300	2,029,424,435	90,232,864	90.23
21	Dualization of Jampur-Dajal Road, Length = 23Km	23.0	23.0	53.3	52.9	13,314	5,959,562,022	5,916,679,232	42,882,790	42.88
22	Widening of road from Rajanpur to Asni, Length 12Km	12.0	12.0	53.3	51.0	7,062	1,649,251,602	1,579,043,698	70,207,904	70.21

SHEET 4-A Existing Link Fuel Cost

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
1	1. Dualization of metalled road from (N-70) D.G.Khan to Choti, Length = 26km	Dual	0	80	19.94	0.00	0	0	1964.93
		Single	26	40	21.69	563.94	9,546	5,383,371	
		Total	26	-	-	563.94	9,546	5,383,371	
2	Widening of road from Kot chuta to Choti, Length = 16Km	Dual	0	80	19.94	0.00	0	0	1073.40
		Single	16	40	21.69	347.04	8,474	2,940,817	
		Total	16	-	-	347.04	8,474	2,940,817	
3	Construction of Southern Bypass, Length = 13Km	Dual	0	80	19.94	0.00	0	0	2830.27
		Single	13	40	21.69	281.97	27,500	7,754,175	
		Total	13	-	-	281.97	27,500	7,754,175	
4	Construction of Northern Bypass, Length = 20Km	Dual	0	80	19.94	0.00	0	0	4354.27
		Single	20	40	21.69	433.80	27,500	11,929,500	
		Total	20	-	-	433.80	27,500	11,929,500	
5	Rehabilitation of Choti to Jampur, Length 24 Km	Dual	0	80	19.94	0.00	0	0	1708.52
		Single	24	40	21.69	520.56	8,992	4,680,876	
		Total	24	-	-	520.56	8,992	4,680,876	
6	Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage, Length = 35Km	Dual	0	80	19.94	0.00	0	0	2866.49
		Single	35	40	21.69	759.15	10,345	7,853,407	
		Total	35	-	-	759.15	10,345	7,853,407	

Annexures

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
7	Widening of metalled road from Taunsa to Vehova, Length = 60Km	Dual	0	80	19.94	0.00	0	0	3153.60
		Single	60	40	21.69	1301.40	6,639	8,639,995	
		Total	60	-	-	1301.40	6,639	8,639,995	
8	Dualization of road from Chowk Munda to Daira Din Pannah, Length 29Km	Dual	0	80	19.94	0.00	0	0	2237.34
		Single	29	40	21.69	629.01	9,745	6,129,702	
		Total	29	-	-	629.01	9,745	6,129,702	
9	Dualization of metalled road from Jatoi to Karam Dad Qureshi road, Length = 68Km	Dual	0	80	19.94	0.00	0	0	6736.86
		Single	68	40	21.69	1474.92	12,514	18,457,149	
		Total	68	-	-	1474.92	12,514	18,457,149	
10	Dualization of road from Muzaffargarh to Sanawan, Length 37.5Km	Dual	0	80	19.94	0.00	0	0	4213.35
		Single	37.5	40	21.69	813.38	14,192	11,543,418	
		Total	37.5	-	-	813.38	14,192	11,543,418	
11	Rehabilitation of metalled road from Sinawan to Langer Sarai, Length 34Km	Dual	0	80	19.94	0.00	0	0	2033.33
		Single	34	40	21.69	737.46	7,554	5,570,773	
		Total	34	-	-	737.46	7,554	5,570,773	
12	Widening of Khan Garh - Shah Jamal road, Length 19.5Km	Dual	0	80	19.94	0.00	0	0	1466.91
		Single	19.5	40	21.69	422.96	9,502	4,018,918	
		Total	19.5	-	-	422.96	9,502	4,018,918	
13		Dual	0	80	19.94	0.00	0	0	1373.83

Annexures

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
	Dualization of Chobara road to Chowk Azam, Length = 12km	Single	12	40	21.69	260.28	14,461	3,763,909	
		Total	12	-	-	260.28	14,461	3,763,909	
14	Dualization of Layyah Bypass road, Length 5Km	Dual	0	80	19.94	0.00	0	0	753.33
		Single	5	40	21.69	108.45	19,031	2,063,912	
		Total	5	-	-	108.45	19,031	2,063,912	
15	Dualization of road from Karor to Fatehpur, Length 23Km	Dual	0	80	19.94	0.00	0	0	1871.13
		Single	23	40	21.69	498.87	10,276	5,126,388	
		Total	23	-	-	498.87	10,276	5,126,388	
16	Dualization of road Chowk Azam to Garh Maharaja, Length = 68Km	Dual	0	80	19.94	0.00	0	0	7536.84
		Single	68	40	21.69	1474.92	14,000	20,648,880	
		Total	68	-	-	1474.92	14,000	20,648,880	
17	Dualization of road from Chowk Azam to Fatehpur, Length 24Km	Dual	0	80	19.94	0.00	0	0	4552.89
		Single	24	40	21.69	520.56	23,962	12,473,659	
		Total	24	-	-	520.56	23,962	12,473,659	
18	Widening of road from Layyah to Qaziabad Via Tail indus, Length 31Km	Dual	0	80	19.94	0.00	0	0	1530.70
		Single	31	40	21.69	672.39	6,237	4,193,696	
		Total	31	-	-	672.39	6,237	4,193,696	
19	Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad, Length = 30Km	Dual	0	80	19.94	0.00	0	0	1733.55
		Single	30	40	21.69	650.70	7,299	4,749,459	
		Total	30	-	-	650.70	7,299	4,749,459	

Annexures

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
20	Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed, Length 15Km	Dual	0	80	19.94	0.00	0	0	862.26
		Single	15	40	21.69	325.35	7,261	2,362,366	
		Total	15	-	-	325.35	7,261	2,362,366	
21	Dualization of Jampur-Dajal Road, Length = 23Km	Dual	0	80	19.94	0.00	0	0	2424.31
		Single	23	40	21.69	498.87	13,314	6,641,955	
		Total	23	-	-	498.87	13,314	6,641,955	
22	Widening of road from Rajanpur to Asni, Length 12Km	Dual	0	80	19.94	0.00	0	0	670.91
		Single	12	40	21.69	260.28	7,062	1,838,097	
		Total	12	-	-	260.28	7,062	1,838,097	

SHEET 4-B Proposed-Link Fuel Cost

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
1	1.Dualization of metalled road from (N-70) D.G.Khan to Choti, Length = 26km	Dual	26	80	19.94	518.44	9,546	4,949,028	1806.40
		Single	0	50	20.28	0.00	0	0	
		Total	26	-	-	518.44	9,546	4,949,028	
2	Widening of road from Kot chuta to Choti, Length = 16Km	Dual	0	80	19.94	0.00	0.00	0	1003.62
		Single	16	50	20.28	324.48	8474.00	2,749,644	
		Total	16	-	-	324.48	8474.00	2,749,644	
3	Construction of Southern Bypass, Length = 13Km	Dual	13	80	19.94	259.22	0.00	0	2601.92
		Single	0	50	20.28	0.00	27500.00	0	
		Total	13	-	-	259.22	27500.00	7,128,550	
4	Construction of Northern Bypass, Length = 20Km	Dual	20	80	19.94	398.80	0.00	0	4002.96
		Single	0	50	20.28	0.00	27500.00	0	
		Total	20	-	-	398.80	27500.00	10,967,000	
5	Rehabilitation of Choti to Jampur, Length 24 Km	Dual	0	80	19.94	0.00	0.00	0	1597.45
		Single	24	50	20.28	486.72	8992.00	4,376,586	
		Total	24	-	-	486.72	8992.00	4,376,586	
6	Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage, Length = 35Km	Dual	35	80	19.94	697.90	10345.00	7,219,776	2635.22
		Single	0	50	20.28	0.00	0.00	0	
		Total	35	-	-	697.90	10345.00	7,219,776	

Annexures

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
7	Widening of metalled road from Taunsa to Vehova, Length = 60Km	Dual	0	80	19.94	0.00	0.00	0	2948.59
		Single	60	50	20.28	1216.80	6639.00	8,078,335	
		Total	60	-	-	1216.80	6639.00	8,078,335	
8	Dualization of road from Chowk Munda to Daira Din Pannah, Length 29Km	Dual	29	80	19.94	578.26	9745.00	5,635,144	2056.83
		Single	0	50	20.28	0.00	0.00	0	
		Total	29	-	-	578.26	9745.00	5,635,144	
9	Dualization of metalled road from Jatoi to Karam Dad Qureshi road, Length = 68Km	Dual	68	80	19.94	1355.92	12514.00	16,967,983	6193.31
		Single	0	50	20.28	0.00	0.00	0	
		Total	68	-	-	1355.92	12514.00	16,967,983	
10	Dualization of road from Muzaffargarh to Sanawan, Length 37.5Km	Dual	37.5	80	19.94	747.75	14192.00	10,612,068	3873.40
		Single	0	50	20.28	0.00	0.00	0	
		Total	37.5	-	-	747.75	14192.00	10,612,068	
11	Rehabilitation of metalled road from Sinawan to Langer Sarai, Length 34Km	Dual	0	80	19.94	0.00	0.00	0	1901.15
		Single	34	50	20.28	689.52	7554.00	5,208,634	
		Total	34	-	-	689.52	7554.00	5,208,634	
12	Widening of Khan Garh - Shah Jamal road, Length 19.5Km	Dual	0	80	19.94	0.00	0.00	0	1371.55
		Single	19.5	50	20.28	395.46	9502.00	3,757,661	
		Total	19.5	-	-	395.46	9502.00	3,757,661	
13	Dualization of Chobara road to Chowk Azam, Length = 12km	Dual	12	80	19.94	239.28	14461.00	3,460,228	1262.98
		Single	0	50	20.28	0.00	0.00	0	

Annexures

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
		Total	12	-	-	239.28	14461.00	3,460,228	
14	Dualization of Layyah Bypass road, Length 5Km	Dual	5	80	19.94	99.70	19031.00	1,897,391	692.55
		Single	0	50	20.28	0.00	0.00	0	
		Total	5	-	-	99.70	19031.00	1,897,391	
15	Dualization of road from Karor to Fatehpur, Length 23Km	Dual	23	80	19.94	458.62	10276.00	4,712,779	1720.16
		Single	0	50	20.28	0.00	0.00	0	
		Total	23	-	-	458.62	10276.00	4,712,779	
16	Dualization of road Chowk Azam to Garh Maharaja, Length = 68Km	Dual	68	80	19.94	1355.92	14000.00	18,982,880	6928.75
		Single	0	50	20.28	0.00	0.00	0	
		Total	68	-	-	1355.92	14000.00	18,982,880	
17	Dualization of road from Chowk Azam to Fatehpur, Length 24Km	Dual	24	80	19.94	478.56	23962.00	11,467,255	4185.55
		Single	0	50	20.28	0.00	0.00	0	
		Total	24	-	-	478.56	23962.00	11,467,255	
18	Widening of road from Layyah to Qaziabad Via Tail indus, Length 31Km	Dual	0	80	19.94	0.00	0.00	0	1431.19
		Single	31	50	20.28	628.68	6237.00	3,921,077	
		Total	31	-	-	628.68	6237.00	3,921,077	
19	Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad, Length = 30Km	Dual	0	80	19.94	0.00	0.00	0	1620.86
		Single	30	50	20.28	608.40	7299.00	4,440,712	
		Total	30	-	-	608.40	7299.00	4,440,712	

Annexures

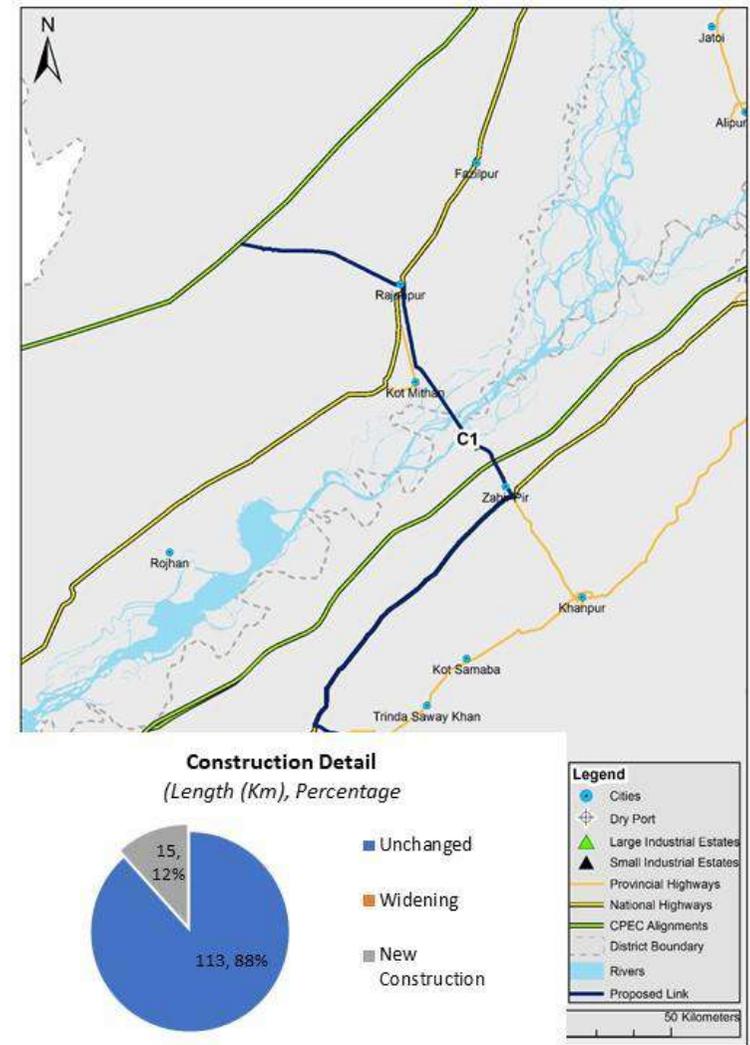
Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)
20	Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed, Length 15Km	Dual	0	80	19.94	0.00	0.00	0	806.21
		Single	15	50	20.28	304.20	7261.00	2,208,796	
		Total	15	-	-	304.20	7261.00	2,208,796	
21	Dualization of Jampur-Dajal Road, Length = 23Km	Dual	23	80	19.94	458.62	13314.00	6,106,067	2228.71
		Single	0	50	20.28	0.00	0.00	0	
		Total	23	-	-	458.62	13314.00	6,106,067	
22	Widening of road from Rajanpur to Asni, Length 12Km	Dual	0	80	19.94	0.00	0.00	0	627.29
		Single	12	50	20.28	243.36	7062.00	1,718,608	
		Total	12	-	-	243.36	7062.00	1,718,608	

ANNEXURE II
PROPOSED ROAD SCHEMES

C1: Rahim Yar Khan to CPEC Central (PSS)

Project Name	Dualization and Upgradation of Road from RY Khan to CPEC Central
Via	Fatehpur Arain, Sadargarh, Zahirpir, Kot Mithan, Rajanpur
Districts	RY Khan & Rajanpur
Length	128 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2017 – 2027)
Total Cost	Rs. 8,557.28 Million
Benefit Cost Ratio	11.8

District	Industrial Produce	Agriculture Produce	Tourism Site
RY Khan	Food Products, Non-Metallic Mineral Products	Wheat, Sugarcane, Cotton, Mango, Onion, Chillies, Rapeseed, Garlic, Cucumber.	NA
Rajanpur	Wood And Of Products Of Wood And Cork, Fabricated Metal Products	Sugarcane, Rapeseed, Onion, Cotton	NA



C2: Fortabbas to CPEC Central (PSS)

Project Name Dualization and Upgradation of Road from Fortabbas to CPEC Central

Via Hasilpur, Mailsi, Multan, Muzaffargarh & DG Khan

Districts Bahawalnagar, Bahawalpur, Vehari, Khanewal, Multan, Muzaffargarh & DG Khan

Length 281 km (+ 2 Bridges)

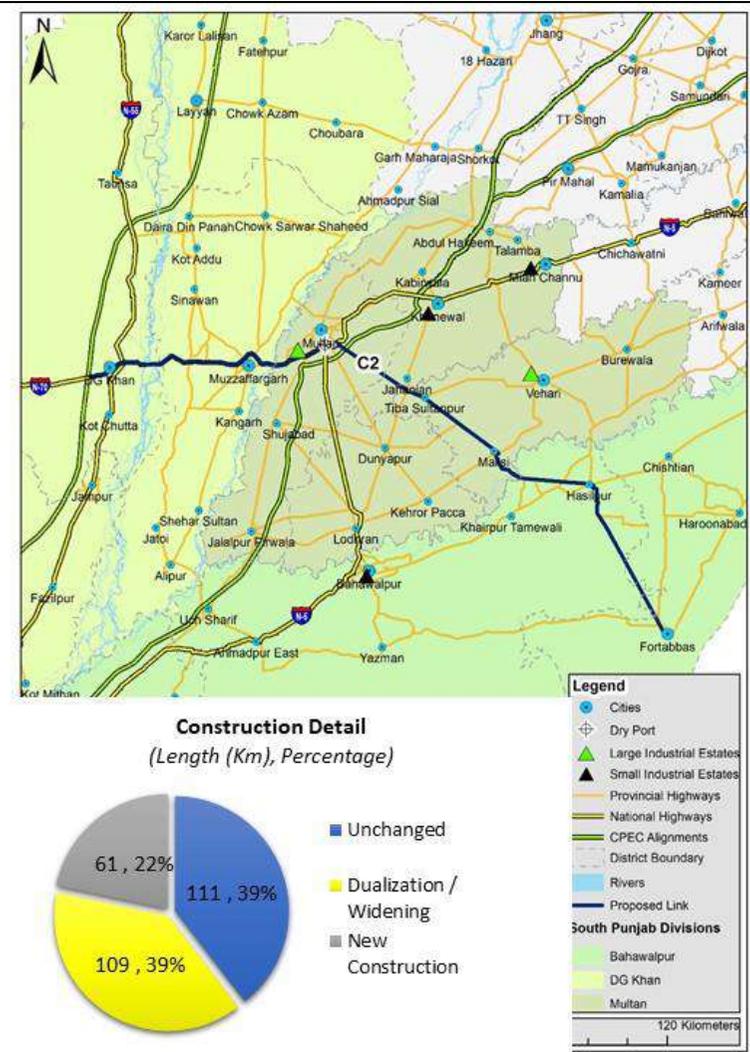
Type 4-Lane Dual Carriageway

Phase II (Year 2027 – 2037)

Total Cost Rs. 15,798.0 Million

Benefit Cost Ratio 3.4

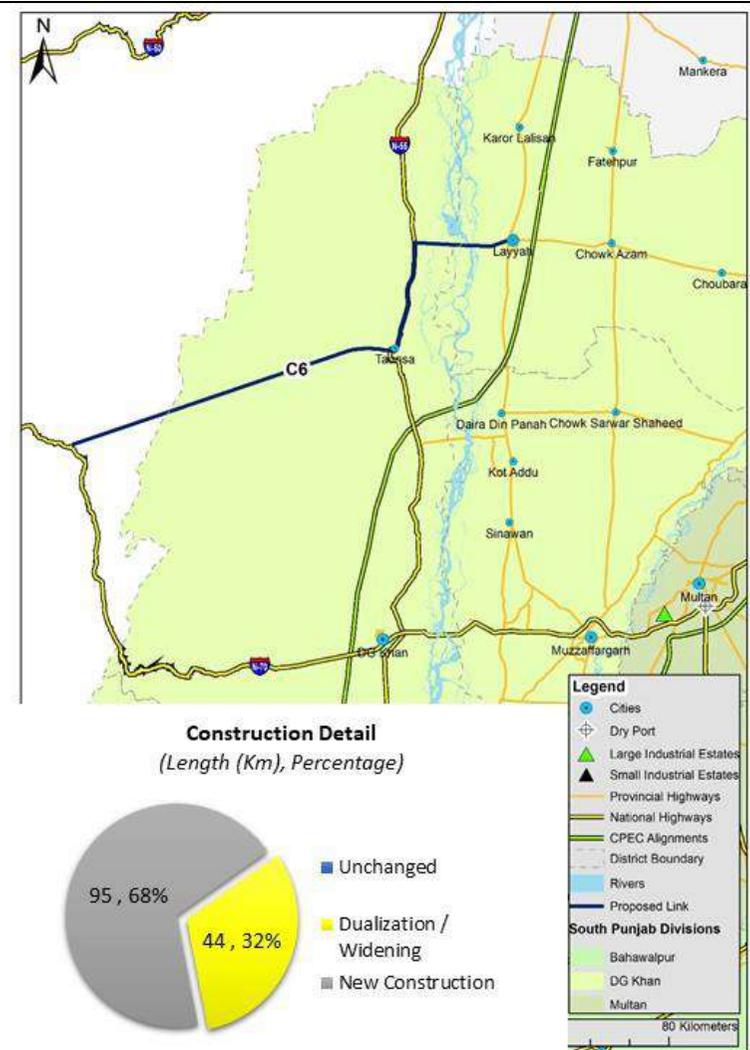
District	Industrial Produce	Agriculture Produce	Tourism Site
Bahawalnagar, Bahawalpur, Vehari, Khanewal & DG Khan	Food Products, Non-Metallic Mineral Products	Wheat, Cotton Chilies.. Rice, Mango, Onion.. (K) Sugarcane, Gram (DG)	Adventure, Heritage, Historical tourism (Bwl), Fort Monroe (DG Khan)
Multan	Textiles, Wearing Apparel	Mango, Ladyfinger, Pomegranate, Cotton..	Religious, Historical, Sufi Influence shrines
Muzaffargarh	Fabricated Metal Products, Wood And Of Products Of Wood And Cork	Sugarcane, Barley, Tomato, Mango, Garlic, Dates, Pomegranate	NA



C6: Layyah to N70 Balochistan (PSS)

Project Name	Dualization and Upgradation of Road from Layyah to N70 Balochistan
Via	More Jhangi, Retra & Taunsa
Districts	Layyah & DG Khan
Length	139 km (+ 1 Bridge)
Type	4-Lane Dual Carriageway
Phase	III (Year 2037 – 2047)
Total Cost	Rs. 15,249.5 Million
Benefit Cost Ratio	7.0

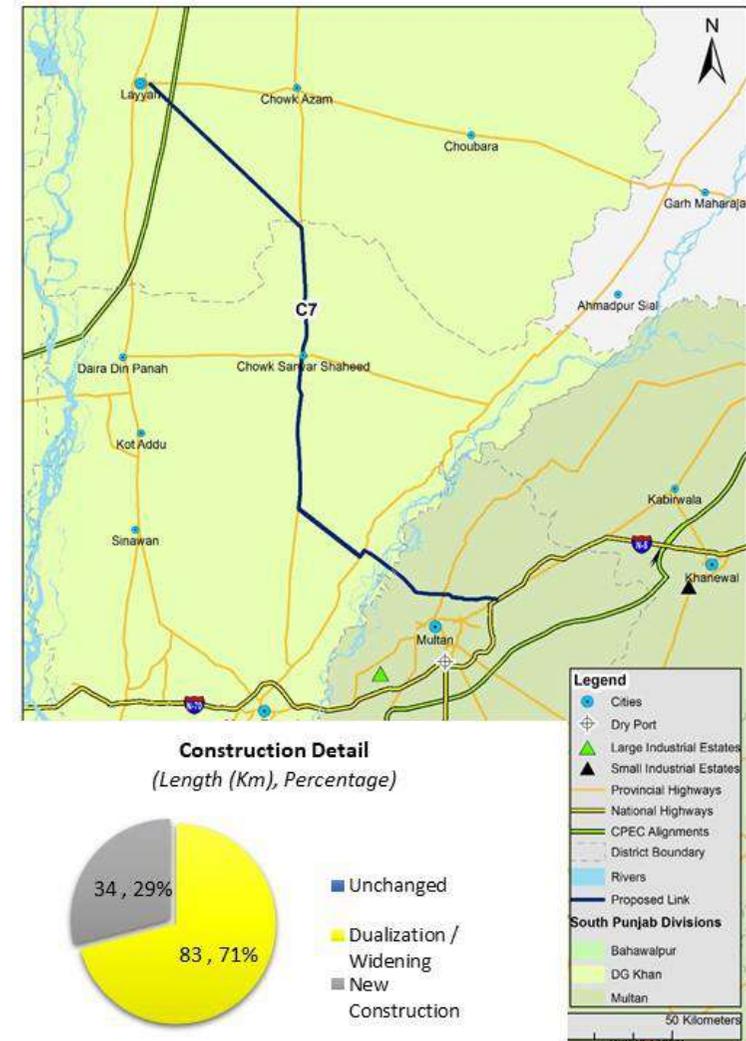
District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Wood And Of Products Of Wood And Cork, Non-Metallic Mineral Products	Dates, Squash, Bajra, Barley, Gram	NA
DG Khan	Food Products, Non-Metallic Mineral Products	Sugarcane, Gram	Fort Monroe



C7: Layyah to Multan (PSS)

Project Name	Dualization and Upgradation of Road from Layyah to Multan
Via	Ladhana, Raziabad, Chowk Munda, & Chak 138 ML
Districts	Layyah, Muzaffargarh & Multan
Length	117 km
Type	4-Lane Dual Carriageway
Phase	III (Year 2037 – 2047)
Total Cost	Rs. 12,835.9 Million
Benefit Cost Ratio	3.0

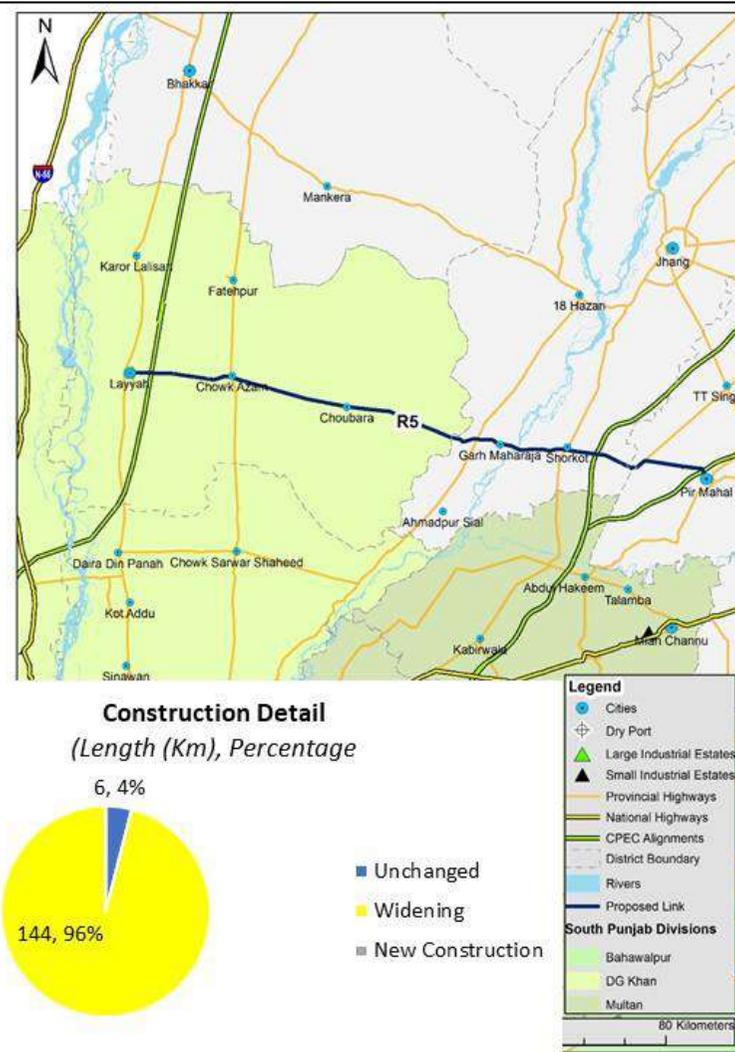
District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Wood And Of Products Of Wood And Cork, Non-Metallic Mineral Products	Dates, Squash, Bajra, Barley, Gram	NA
Muzaffargarh	Fabricated Metal Products, Wood And Of Products Of Wood And Cork	Sugarcane, Barley, Tomato, Mango, Garlic, Dates, Pomegranate	NA
Multan	Textiles, Wearing Apparel	Mango, Ladyfinger, Pomegranate, Cotton..	Religious & Historical, Sufi Influence shrines



R5: Layyah to Pir Mahal (PSS)

Project Name	Dualization and Upgradation of Road from Layyah to Pir Mahal
Via	Chowk Azam & Shorkot
Districts	Layyah, Jhang & TT Singh
Length	150 Km (+1 Bridge)
Type	4-Lane Dual Carriageway
Phase	III (Year 2037 – 2047)
Total Cost	Rs. 16,493.05 Million
Benefit Cost Ratio	3.0

District	Industrial Produce	Agriculture Produce	Tourism
Jhang	Textiles, Food Products	Sugarcane, Gram, Bajra, Dates, Squash	NA
Layyah	Wood And Of Products Of Wood And Cork, Non-Metallic Mineral Products	Dates, Squash, Bajra, Barley, Gram	NA
TT Singh	Textiles, Food Products	Sugarcane, Maize, Rapeseed.. (T) Wheat, Sugarcane, Gram, Bajra, Dates, Squash (J)	NA



1: Talpur D.G Khan Road

Project Name Dualization of metalled road from (N-70) D.G.Khan to Choti

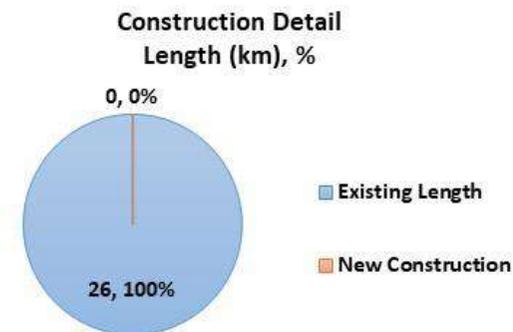
Districts D.G Khan

Phase Medium to Long Term (2030-2034)

Total Cost (PKR Millions) 5164.54

Benefit Cost Ratio 3.1

District	Industrial Produce	Agriculture Produce	Tourism Site
D.G Khan	Cement Company, Textile and Spinning Mills, Flour Mills, Rice Mills, Oil Mills	Wheat, Sugarcane, and Cotton Rice, Sesame	City Park, Fort Munro, Yak Bai



2: Choti Kot Chutta Road

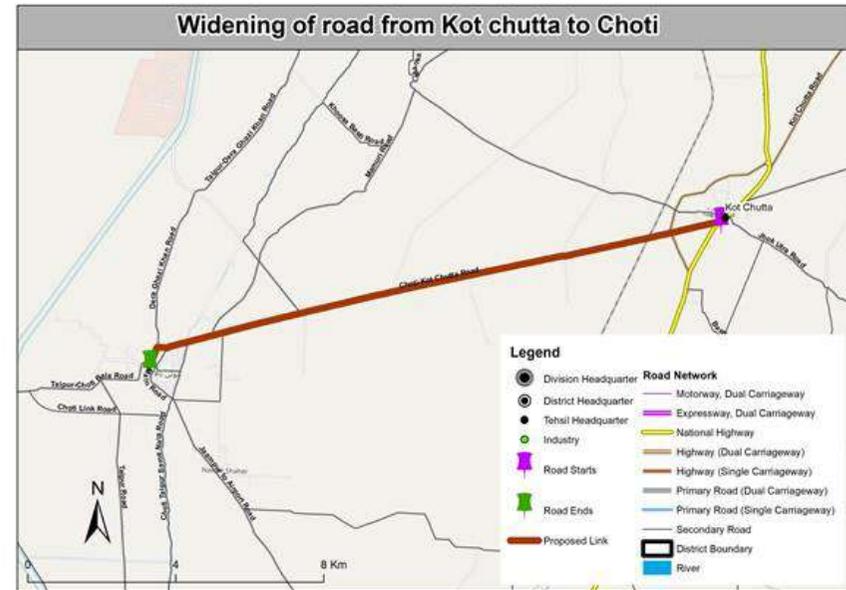
Project Name Widening of road from Kot chuta to Choti

Districts D.G Khan

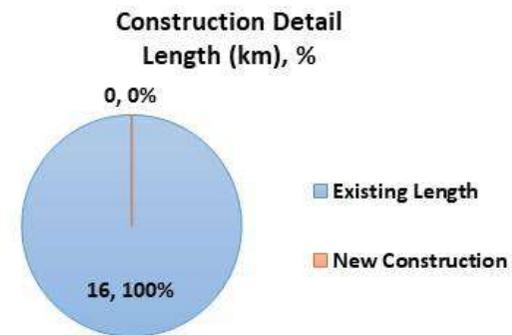
Phase Short To Medium Term (Year 2024-2030)

Total Cost (PKR Millions) 3178.18

Benefit Cost Ratio 1.4



District	Industrial Produce	Agriculture Produce	Tourism Site
D.G Khan	Cement Company, Textile and Spinning Mills, Flour Mills, Rice Mills, Oil Mills	Wheat, Sugarcane, and Cotton	Rice, Sesame
			City Park, Fort Munro, Yak Bai



3: Southern Bypass D.G Khan

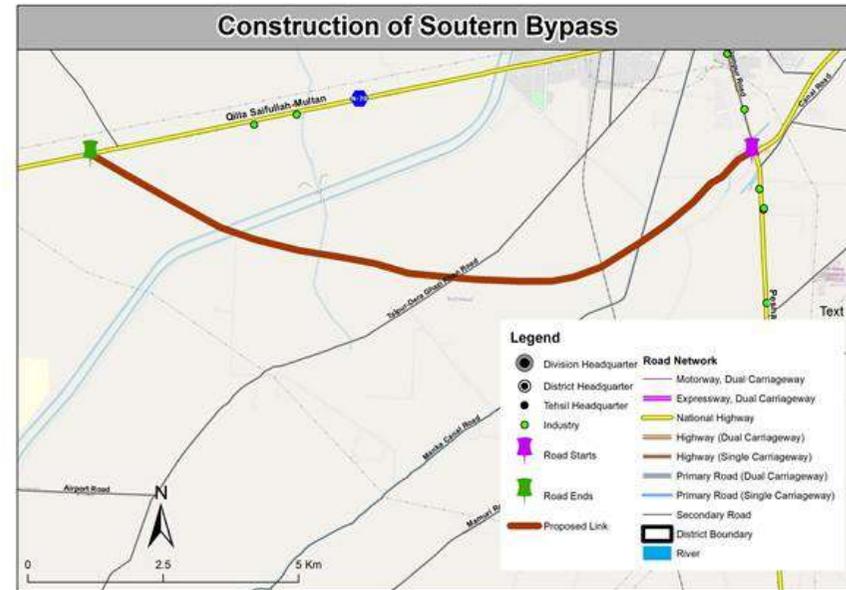
Project Name Construction of Southern Bypass

Districts D.G Khan

Phase Short to Medium Term (Year 2024 – 2030)

Total Cost (PKR Millions) 2582.27

Benefit Cost Ratio 9.7



District	Industrial Produce	Agriculture Produce	Tourism Site
D.G Khan	Cement Company, Textile and Spinning Mills, Flour Mills, Rice Mills, Oil Mills	Wheat, Rice, Sugarcane, Sesame and Cotton	City Park, Fort Munro, Yak Bai



4: Northern Bypass D.G Khan

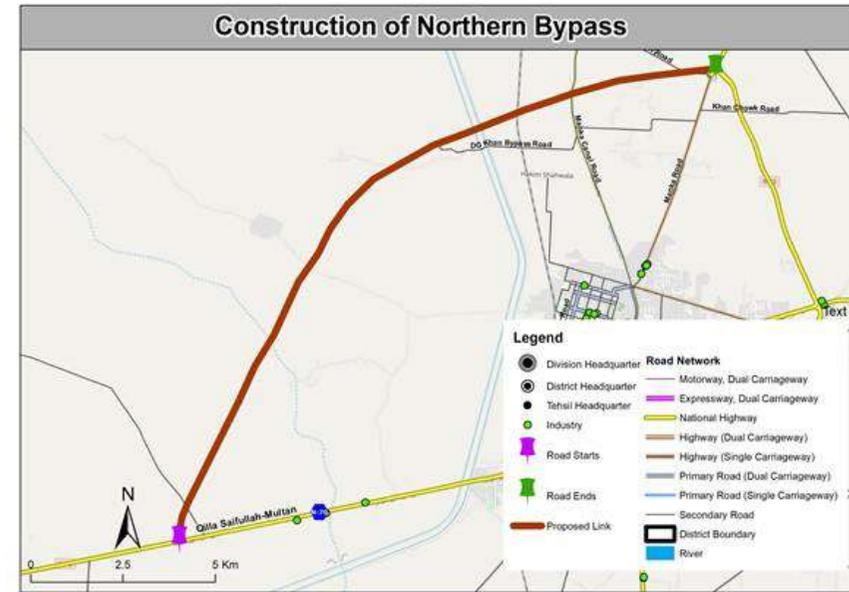
Project Name Construction of Northern Bypass

Districts D.G Khan

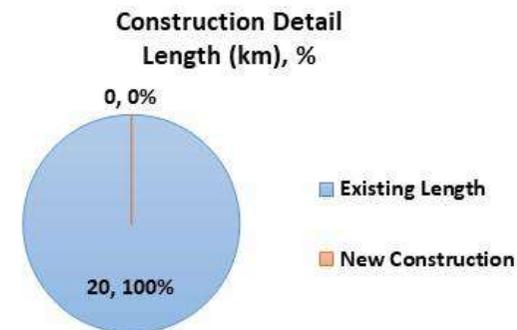
Phase Short To Medium Term (Year 2024 – 2030)

Total Cost (PKR Millions) 3972.72

Benefit Cost Ratio 9.7



District	Industrial Produce	Agriculture Produce	Tourism Site
D.G Khan	Cement Company, Textile and Spinning Mills, Flour Mills, Rice Mills, Oil Mills	Wheat, Rice, Sugarcane, Sesame and Cotton	City Park, Fort Munro, Yak Bai



5: Chotti-Jampur Road

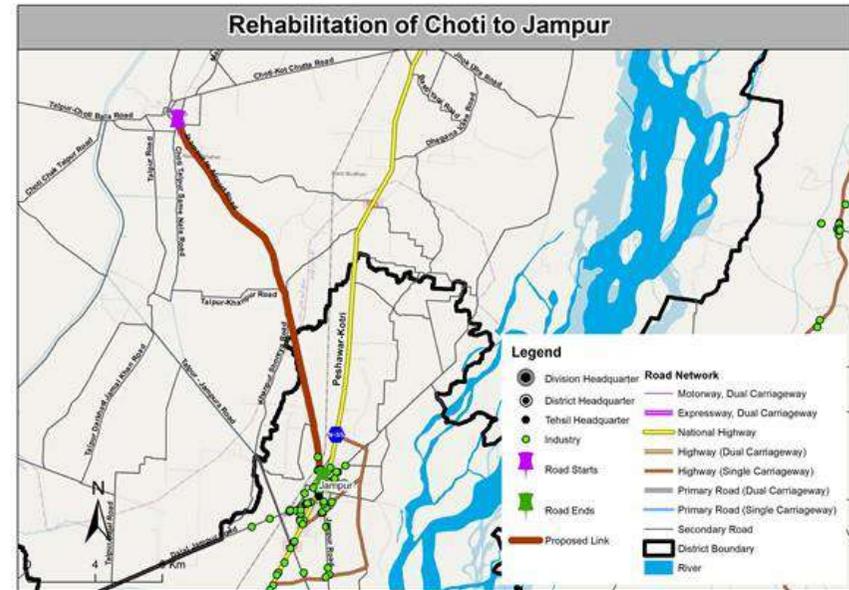
Project Name Rehabilitation of Choti to Jampur

Districts D.G Khan

Phase Short to Medium Term (Year 2024 – 2030)

Total Cost (PKR Millions) 4767.27

Benefit Cost Ratio 1.5



District	Industrial Produce	Agriculture Produce	Tourism Site
D.G Khan	Cement Company, Textile and Spinning Mills, Flour Mills, Rice Mills, Oil Mills	Wheat, Rice, Sugarcane, Sesame and Cotton	City Park, Fort Munro, Yak Bai



6: Taunsa Barrage Road

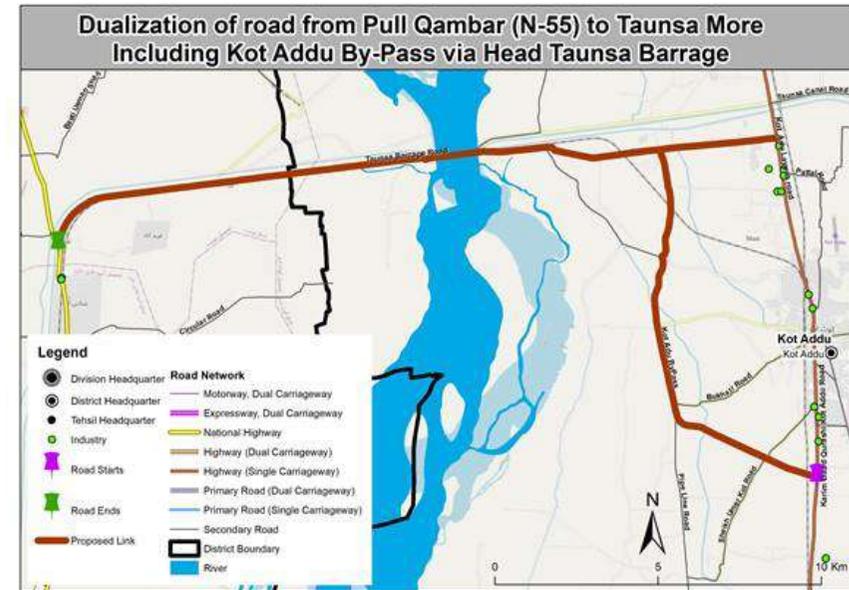
Project Name Dualization of road from Pull Qambar (N-55) to Taunsa More Including Kot Addu By-Pass via Head Taunsa Barrage

Districts D.G Khan

Phase Short To Medium Term (Year 2024 – 2030)

Total Cost (PKR Millions) 1402.50

Benefit Cost Ratio 16.8



District	Industrial Produce	Agriculture Produce	Tourism Site
D.G Khan	Cement Company, Textile and Spinning Mills, Flour Mills, Rice Mills, Oil Mills	Wheat, Sugarcane, and Cotton Rice, Sesame	City Park, Fort Munro, Yak Bai



7: Mangrotha Road

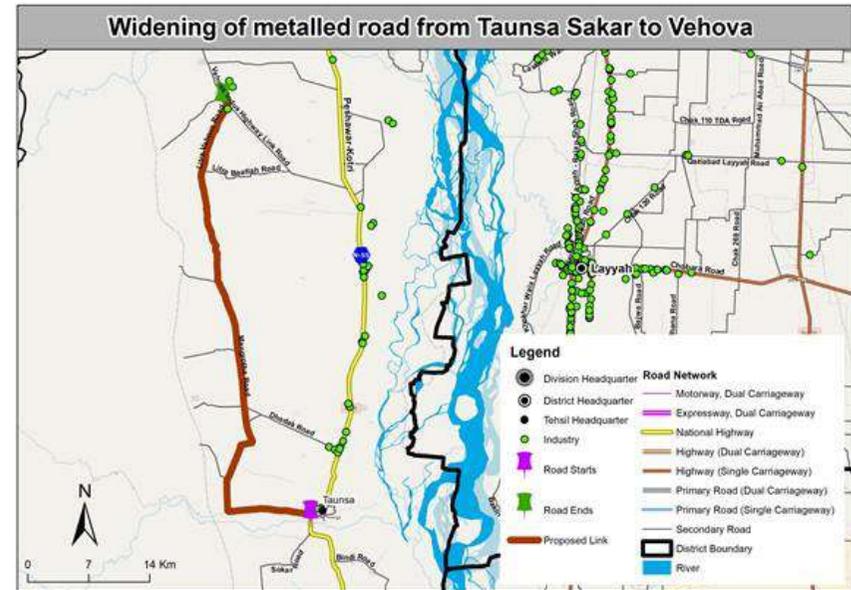
Project Name Widening of metalled road from Taunsa to Vehova

Districts D.G Khan

Phase Short To Medium Term (Year 2024 – 2030)

Total Cost (PKR Millions) 11918.17

Benefit Cost Ratio 1.1



District	Industrial Produce	Agriculture Produce	Tourism Site
D.G Khan	Cement Company, Textile and Spinning Mills, Flour Mills, Rice Mills, Oil Mills	Wheat, Sugarcane, and Cotton Rice, Sesame	City Park, Fort Munro, Yak Bai



8: Daira Din Panah-Chowk Munda Road

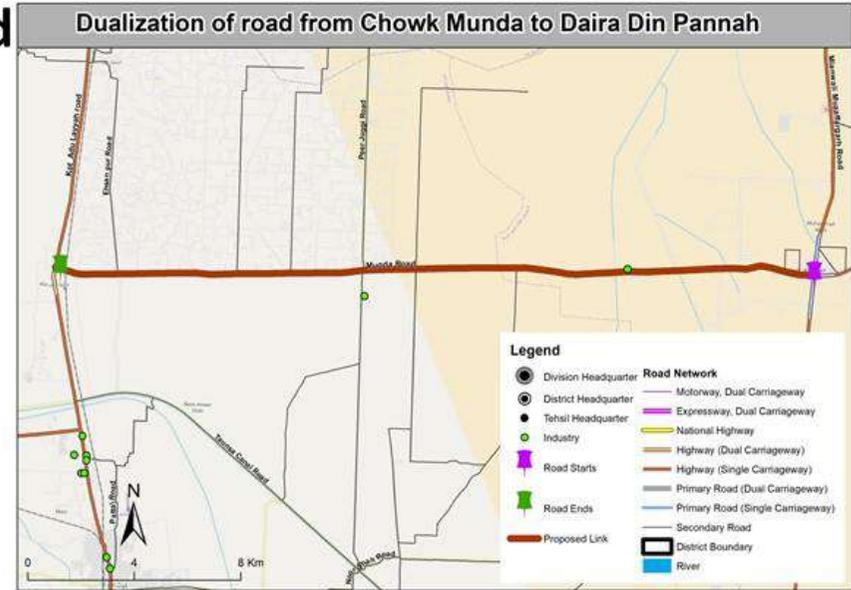
Project Name Dualization of road from Chowk Munda to Daira Din Pannah

Districts Muzaffargarh

Phase Medium to Long Term (Year 2030 – 2034)

Total Cost (PKR Millions) 5760.45

Benefit Cost Ratio 3.2



District	Industrial Produce	Agriculture Produce	Tourism Site
Muzaffargarh	Sugar Mills, Textile Mills, Flour Mills, Rice Mills, Oil Mills and Cold Storage	Wheat, cotton. rice, sugarcane and other crops	Fayyaz Park, Sakina Tu Sughra Mosque



9: Jatoi-Shah Jamal Road

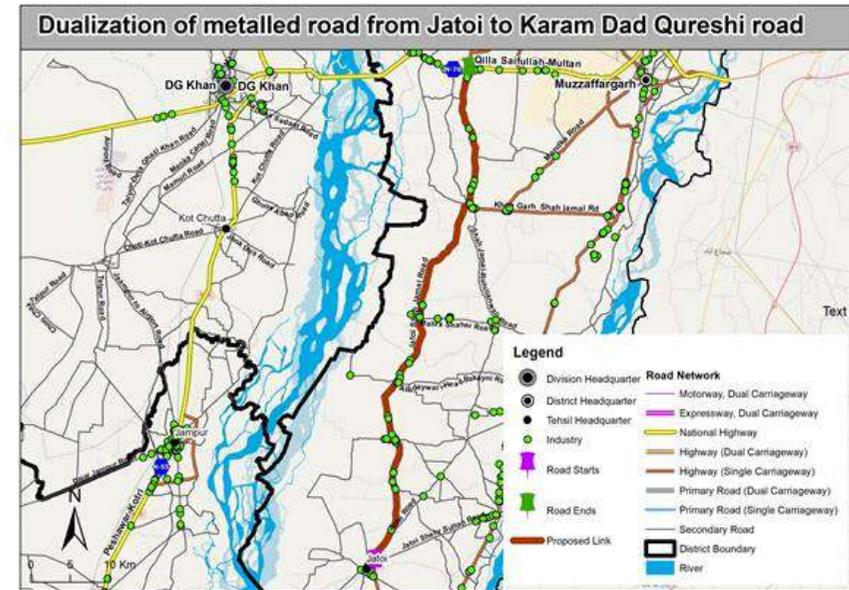
Project Name Dualization of metalled road from Jatoi to Karam Dad Qureshi road

Districts Muzaffargarh

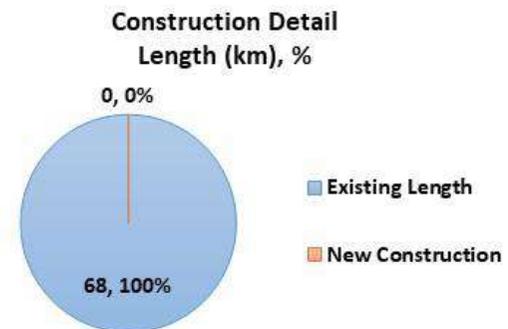
Phase Medium to Long Term (Year 2030 – 2034)

Total Cost (PKR Millions) 13507.26

Benefit Cost Ratio 4.1



District	Industrial Produce	Agriculture Produce	Tourism Site
Muzaffargarh	Sugar Mills, Textile Mills, Flour Mills, Rice Mills, Oil Mills and Cold Storage	Wheat, cotton, rice, sugarcane and other crops	Fayyaz Park, Sakina Tu Sughra Mosque



10: Muzaffargarh-Kot Addu Road

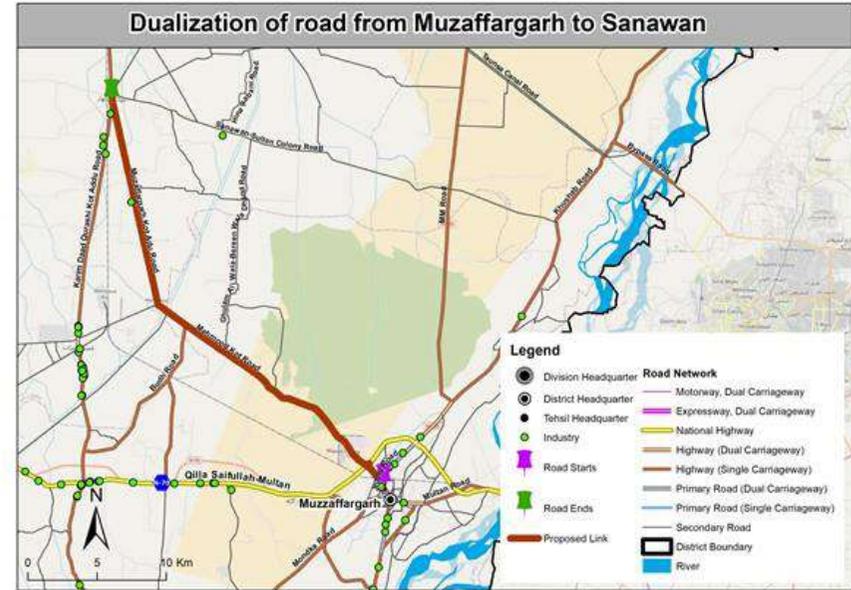
Project Name Dualization of road from Muzaffargarh to Sanawan

Districts Muzaffargarh

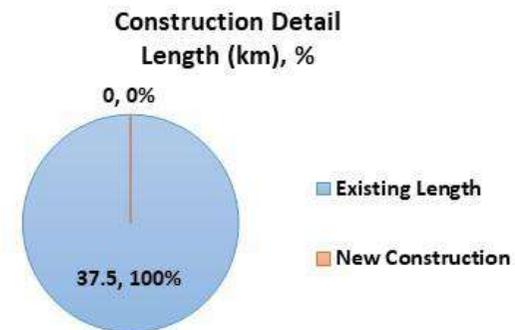
Phase Short to Medium Term (Year 2024 – 2030)

Total Cost (PKR Millions) 7448.86

Benefit Cost Ratio 4.7



District	Industrial Produce	Agriculture Produce	Tourism Site
Muzaffargarh	Sugar Mills, Textile Mills, Flour Mills, Rice Mills, Oil Mills and Cold Storage	Wheat, cotton. rice, sugarcane and other crops	Fayyaz Park, Sakina Tu Sughra Mosque



11: Sanawan-Sultan Colony Road

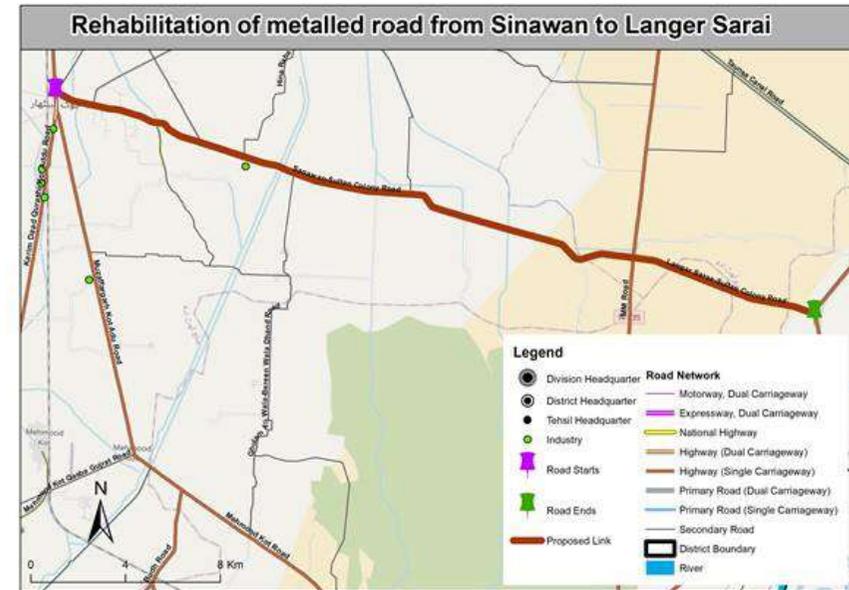
Project Name Rehabilitation of metalled road from Sinawan to Langer Sarai

Districts Muzaffargarh

Phase Medium to Long Term (Year 2030 – 2034)

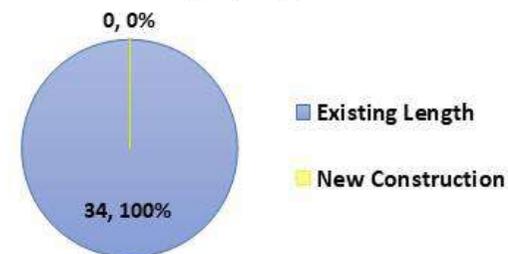
Total Cost PKR Millions 1362.43

Benefit Cost Ratio 6.4



District	Industrial Produce	Agriculture Produce	Tourism Site
Muzaffargarh	Sugar Mills, Textile Mills, Flour Mills, Rice Mills, Oil Mills and Cold Storage	Wheat, cotton, rice, sugarcane and other crops	Fayyaz Park, Sakina Tu Sughra Mosque

Construction Detail
Length (km), %



12: Khan Garh-Shah Jamal Road

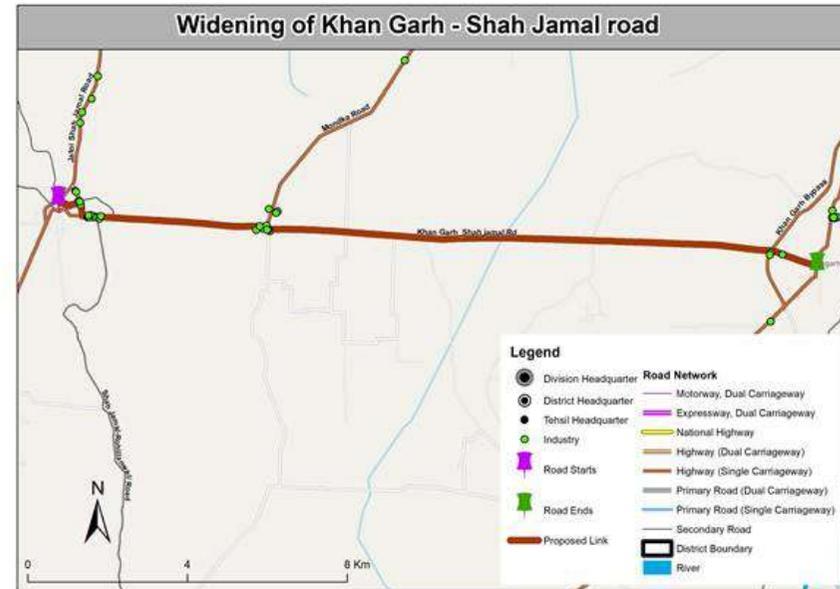
Project Name Widening of Khan Garh - Shah Jamal road

Districts Muzaffargarh

Phase Short To Medium Term (Year 2024 - 2030)

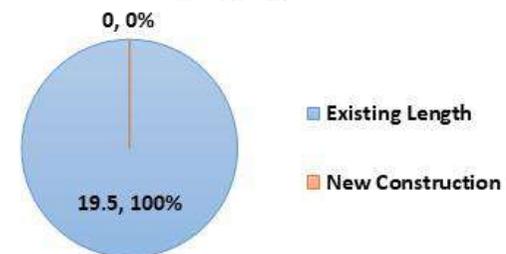
Total Cost PKR Millions 781.39

Benefit Cost Ratio 8.0



District	Industrial Produce	Agriculture Produce	Tourism Site
Muzaffargarh	Sugar Mills, Textile Mills, Flour Mills, Rice Mills, Oil Mills and Cold Storage	Wheat, cotton, rice, sugarcane and other crops	Fayyaz Park, Sakina Tu Sughra Mosque

Construction Detail
Length (km), %



13: Chobara-Layyah Road

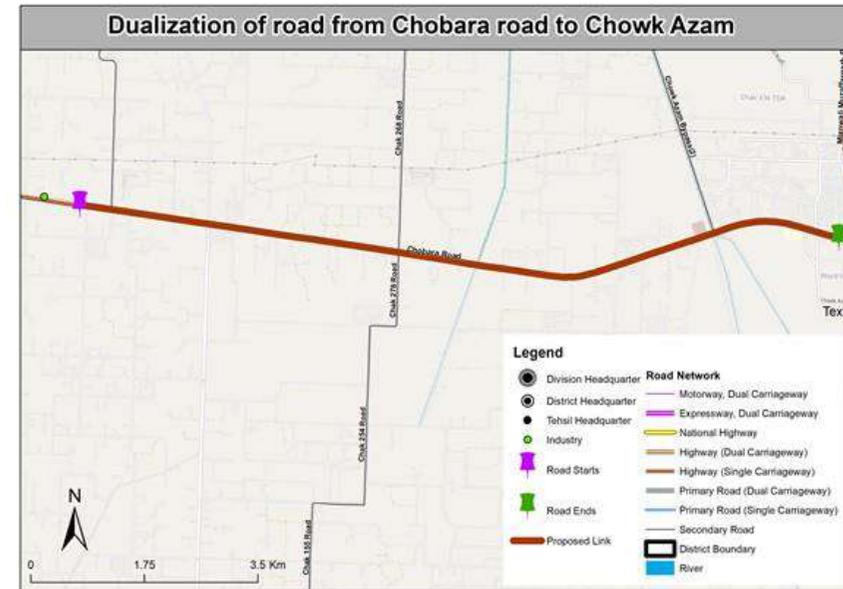
Project Name Dualization of Chobara road to Chowk Azam

Districts Layyah

Phase Short To Medium Term (Year 2024 - 2030)

Total Cost PKR Millions 480.86

Benefit Cost Ratio 23.5



District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Textile, Flour, Sugar, rice. Cold storage,	Sugarcane, wheat, rice, bajra, tobacco and other crops	Karor Hazrat Lal Esan, Darbar Khawaja Ghulam Hassan Sewag



14: Layyah Bypass Road

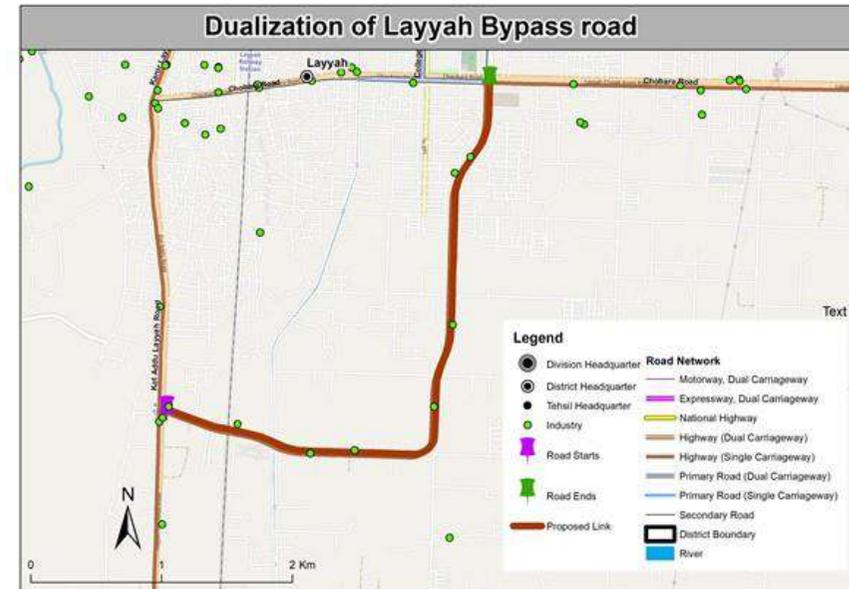
Project Name Dualization of Layyah Bypass road

Districts Layyah

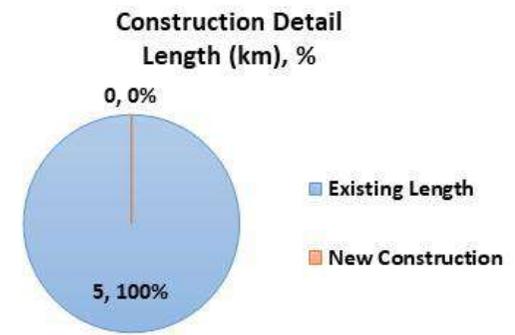
Phase Short To Medium Term (Year 2024 - 2030)

Total Cost PKR Millions 993.18

Benefit Cost Ratio 6.2



District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Textile, Flour, Sugar, rice. Cold storage,	Sugarcane, wheat, rice, bajra, tobacco and other crops	Karor Hazrat Lal Esan, Darbar Khawaja Ghulam Hassan Sewag



15: Karor-Fateh Pur Road

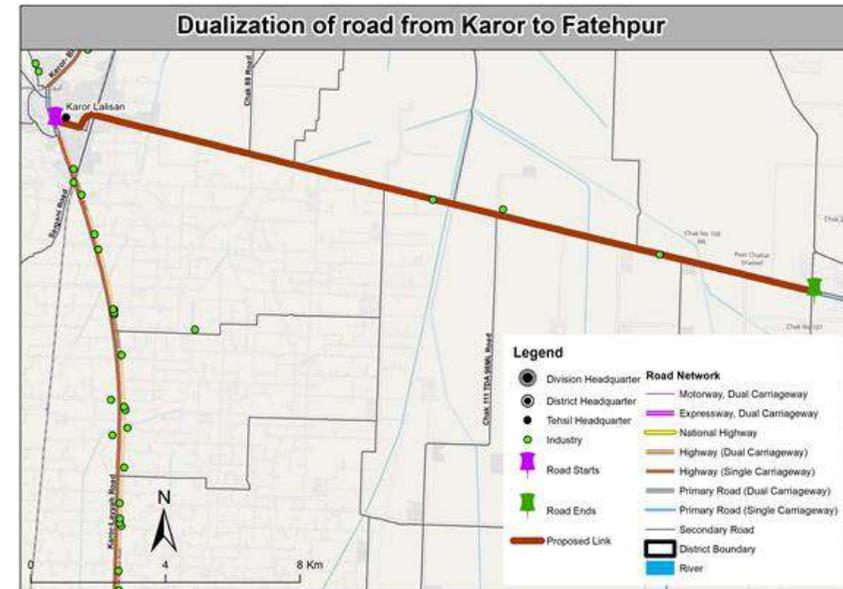
Project Name Dualization of road from Karor to Fatehpur

Districts Layyah

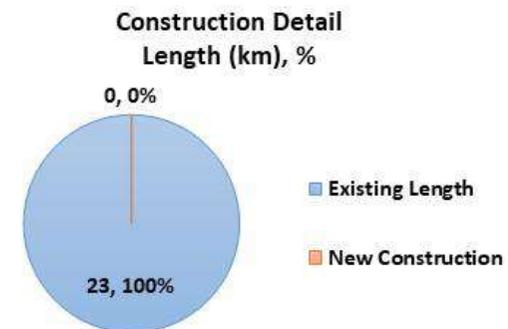
Phase Medium to Long Term (Year 2030 - 2034)

Total Cost PKR Millions 921.64

Benefit Cost Ratio 16.7



District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Textile, Flour, Sugar, rice. Cold storage	Sugarcane, wheat, rice, bajra, tobacco and other crops	Karor Hazrat Lal Esan, Darbar Khawaja Ghulam Hassan Sewag



16: Garh Maharaja Road

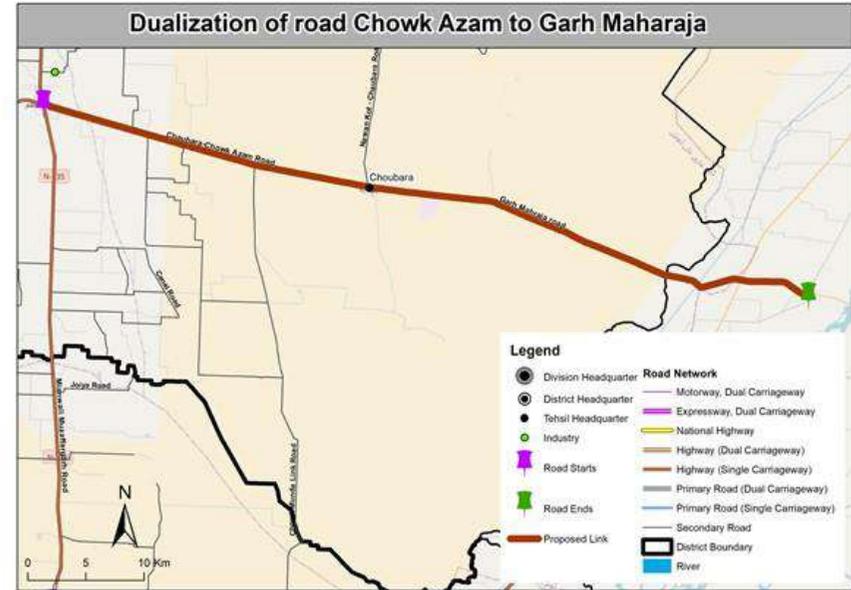
Project Name Dualization of road Chowk Azam to Garh Maharaja

Districts Layyah

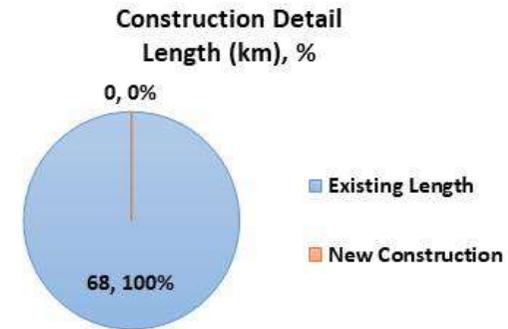
Phase Short To Medium Term (Year 2024 - 2030)

Total Cost PKR Millions 2724.86

Benefit Cost Ratio 22.8



District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Textile, Flour, Sugar, rice. Cold storage	Sugarcane, wheat, rice, bajra, tobacco and other crops	Karor Hazrat Lal Esan, Darbar Khawaja Ghulam Hassan Sewag



17: Mianwali-Muzaffargarh Road

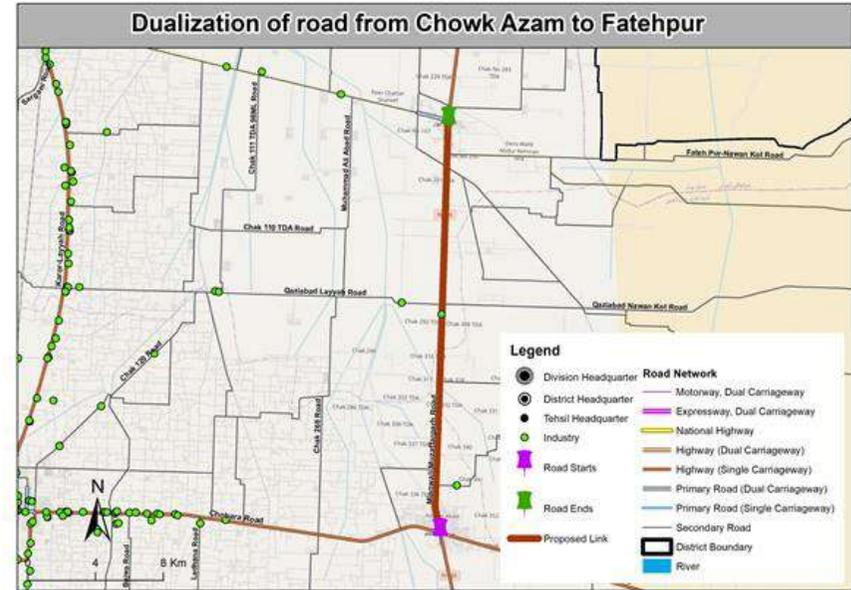
Project Name Dualization of road from Chowk Azam to Fatehpur

Districts Layyah

Phase Short To Medium Term (Year 2024 - 2030)

Total Cost PKR Millions 961.71

Benefit Cost Ratio 39.0



District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Textile, Flour, Sugar, rice. Cold storage	Sugarcane, wheat, rice, bajra, tobacco and other crops	Karor Hazrat Lal Esan, Darbar Khawaja Ghulam Hassan Sewag



18: Chak 120-Qaziabad Layyah Road

Project Name Widening of road from Layyah to Qaziabad Via Tail indus

Districts Layyah

Phase Medium to Long Term (Year 2030 - 2034)

Total Cost PKR Millions 1242.21

Benefit Cost Ratio 5.3



District	Industrial Produce	Agriculture Produce	Tourism Site
Layyah	Textile, Flour, Sugar, rice. Cold storage	Sugarcane, wheat, rice, bajra, tobacco and other crops	Karor Hazrat Lal Esan, Darbar Khawaja Ghulam Hassan Sewag



19: Zahir peer-Kot Mithan Road

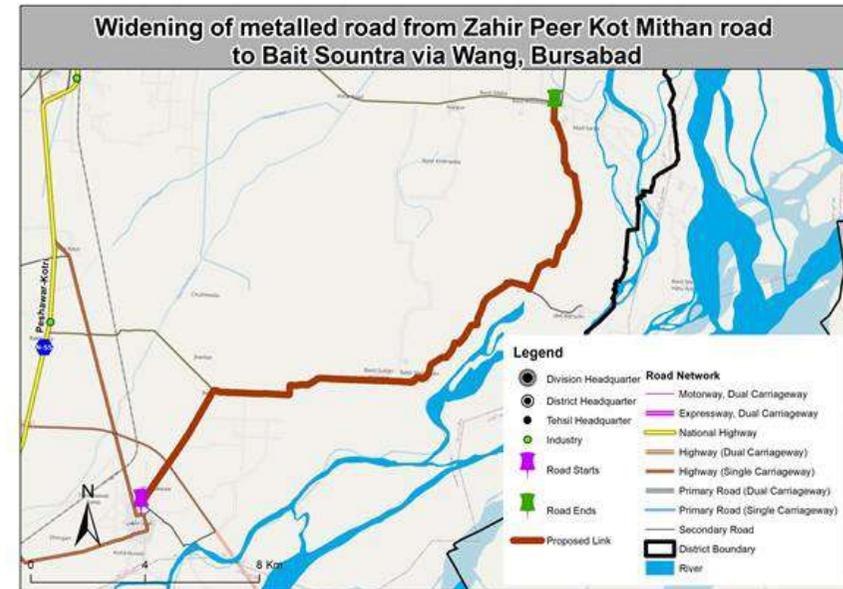
Project Name Widening of metalled road from Zahir Peer Kot Mithan road to Bait Sountra via Wang, Bursabad

Districts Rajanpur

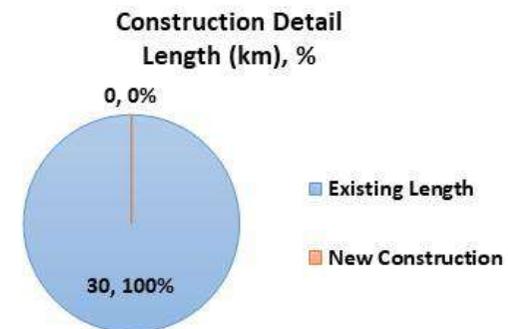
Phase Short To Medium Term (Year 2024 - 2030)

Total Cost PKR Millions 1202.14

Benefit Cost Ratio 6.1



District	Industrial Produce	Agriculture Produce	Tourism Site
Rajanpur	Textile, Flour, rice, Cold storage	wheat, rice, sugarcane, Gram, Cotton, sunflower	Fort of Harrand, Dillu Roy Therre, Kot Mithan, Hajipur, Maari, Ada Chiragh Shah



20: Hajipur Road

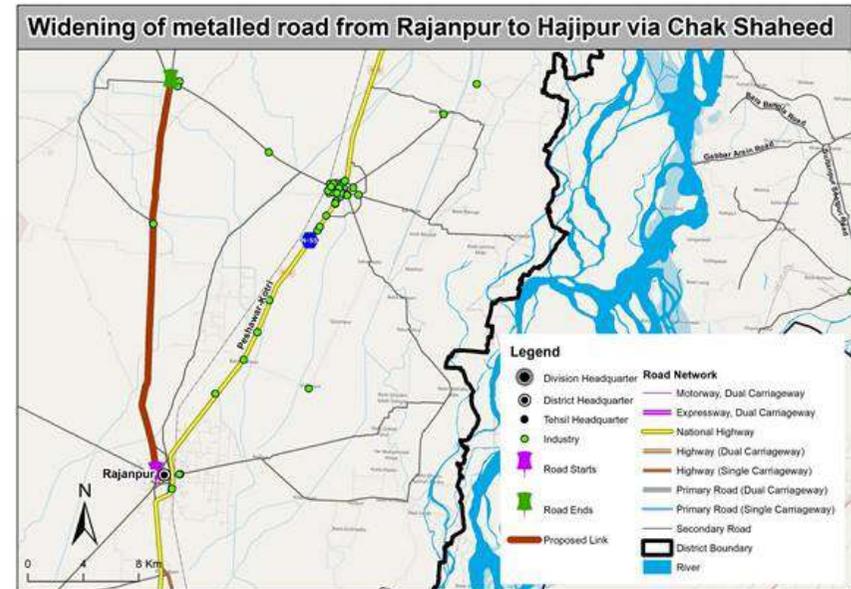
Project Name Widening of metalled road from Rajanpur to Hajipur via Chak Shaheed

Districts Rajanpur

Phase Short To Medium Term (Year 2024 - 2030)

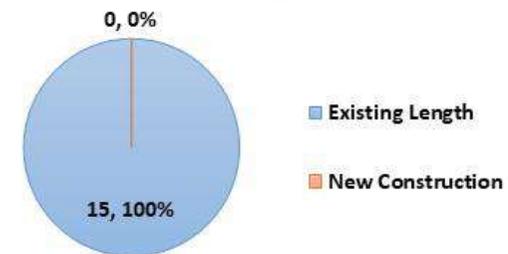
Total Cost PKR Millions 601.07

Benefit Cost Ratio 6.1



District	Industrial Produce	Agriculture Produce	Tourism Site
Rajanpur	Textile, Flour, rice, Cold storage	wheat, rice, sugarcane, Gram, Cotton, sunflower	Fort of Harrand, Dillu Roy Therre, Kot Mithan, Hajipur, Maari, Ada Chiragh Shah

Construction Detail Length (km), %



21: Dajal-Jampur Road

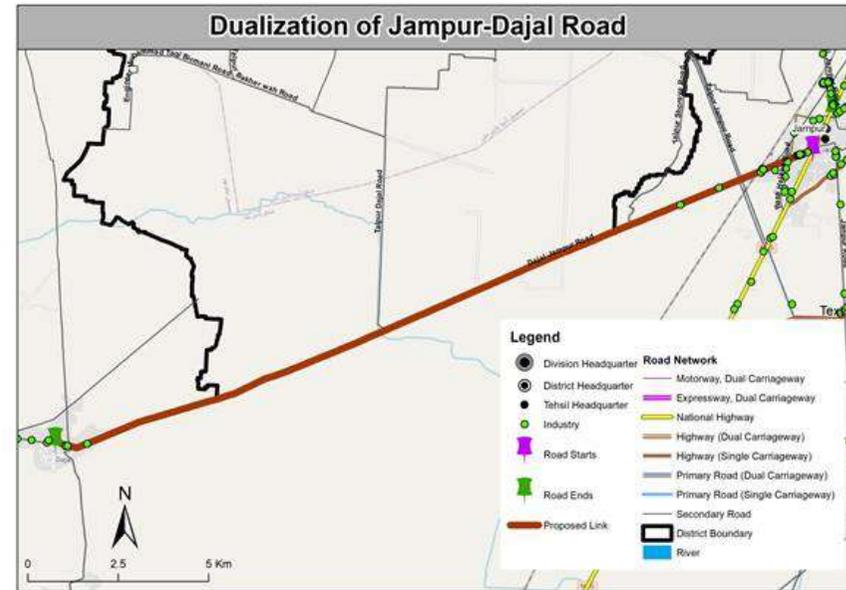
Project Name Dualization of Jampur-Dajal Road

Districts Rajanpur

Phase Short To Medium Term (Year 2024 - 2030)

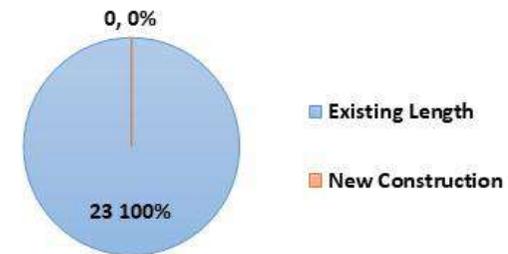
Total Cost PKR Millions 4568.67

Benefit Cost Ratio 4.4



District	Industrial Produce	Agriculture Produce	Tourism Site
Rajanpur	Textile, Flour, rice, Cold storage	wheat, rice, sugarcane, Gram, Cotton, sunflower	Fort of Harrand, Dillu Roy Therre, Kot Mithan, Hajipur, Maari, Ada Chiragh Shah

Construction Detail Length (km), %



22: Band Road

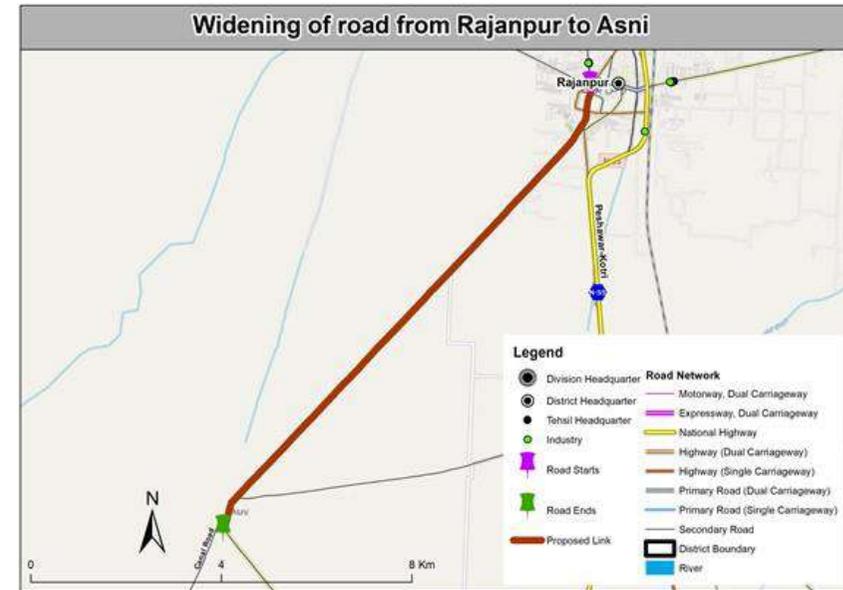
Project Name Widening of road from Rajanpur to Asni

Districts Rajanpur

Phase Medium to Long Term (Year 2030 - 2034)

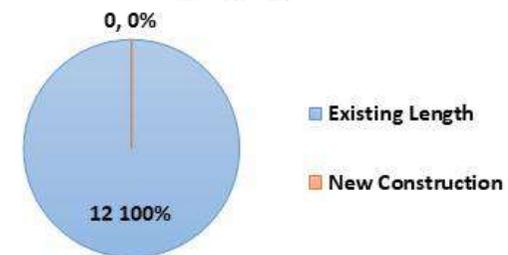
Total Cost PKR Millions 480.86

Benefit Cost Ratio 5.9



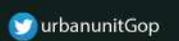
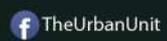
District	Industrial Produce	Agriculture Produce	Tourism Site
Rajanpur	Textile, Flour, rice, Cold storage	wheat, rice, sugarcane, Gram, Cotton, sunflower	Fort of Harrand, Dillu Roy Therre, Kot Mithan, Hajipur, Maari, Ada Chiragh Shah

Construction Detail
Length (km), %





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