



The Urban Unit

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



TRANSPORT & CONNECTIVITY PLAN

Regional Development Plan of
Rawalpindi 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
RDA	Rawalpindi Development Authority
RDP	Rawalpindi Dry Port
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 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, as well as 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, as well as 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 financial year, the Planning and Development (P&D) Board, Government of the Punjab, receives numerous funding requests for road and transport schemes put forwarded by the Communication and Works (C&W) and the Transport Departments. However, individual schemes 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 Rawalpindi Division for the next ten years (2023-2033) 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: Rawalpindi, Attock, Chakwal and Jhelum.

1.2 Rawalpindi Division, An Overview

Rawalpindi Division is in the North of Punjab Province, near Islamabad (20.6 km away). Other nearby and key destinations are Peshawar, 187 km; Muzaffarabad 304 km; Quetta 892 km; Lahore, 362 km, and Karachi, 1397 km (Figure 1-1). The division is connected to these destinations via a network of national and provincial highways as well as the railway network. The division is comprised of four districts: Rawalpindi, Attock, Chakwal and Jhelum.

1.2.1 District Rawalpindi

Rawalpindi District spans over 5286 km² and has a population of around 5.4 million according to 2017 Census. The district has a diverse economy that primarily relies on industry and agriculture. Rawalpindi is also well-known for being a tourist destination.

The district is comprised of five tehsils: Taxila, Rawalpindi, Gujar Khan, Kallar Syedan and Kahuta. It is known for producing a variety of crops including Wheat, Rice, Sugarcane, Barley, Maize, Millets, and Pulses. The industrial sector is focused on textiles, food processing, Engineering and Manufacturing, and Construction and Building Materials with textile manufacturing being the largest. The service sector in Rawalpindi District includes retail, banking, and financial institutions, contributing significantly to the local economy. Tourism has been a growing contributor to the district's economy due to its rich cultural and historical heritage. Attractions such as Rawalpindi Fort, the Mausoleum of Bari Imam, and the Rawalpindi Museum draw visitors from different parts of the country and the world. Overall, Rawalpindi's economy is diverse and growing, with ample opportunities for businesses and investors.

1.2.2 District Attock

Attock District, established in 1904, comprises six tehsils: Attock, Fateh Jhang, Hazro, Hassan Abdal, Jand and Pindi Gheb. The district is bounded on the north by Haripur and Swabi districts of Khyber Pakhtunkhwa (KP), in the east by Rawalpindi district, by Chakwal district in the southeast, Mianwali district in the southwest, and by Kohat and Nowshera of KP in the west and northwest respectively. The Indus River forms the western boundary of the district.

The district covers a total area of 6,857 km² and has total population of 1.46 million according to the 2017 census. The Attock district is home to various industries, contributing to its economic development. There are several industrial units in Attock, manufacturing cement, textile, engineering goods and glass. Some of the significant units are Lawrencepur Woolen & Textile Mills, Lawrencepur Live Flying Gas Private Mills, Attock City Gas Filling, Dhurnal P.S.O Gas, Dhurnal Pakistan Oil Field Limited, Khaur Sui Southern Gas. Kamra Aeronautical Complex and Sanjwal Ordinance Factories are located in the district and provide employment opportunities to the residents besides providing defense equipment, services and ammunition to Pakistan Army and Air Force. Attock District is primarily an agricultural region, with farming being the major occupation of its residents.

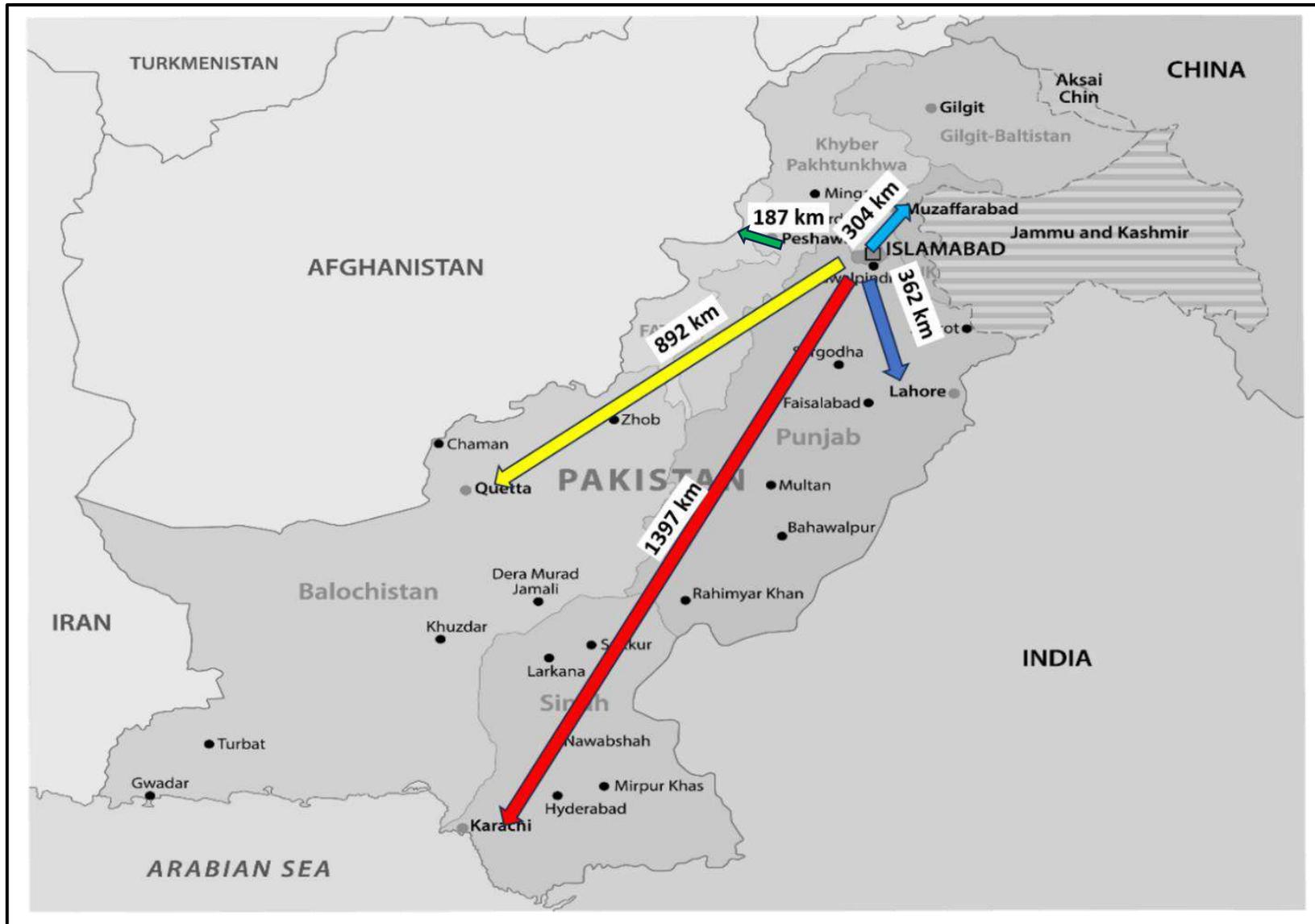


Figure 1-1: Rawalpindi Division Location and Regional Positioning

1.2.3 District Chakwal

Chakwal District, established in 1985, comprises four tehsils: Chakwal, Kallar Kahar, Choa saiden shah, and Talagang. It is located in the Dhanni region of the Potohar in northern Punjab. Chakwal district is bordered by Khushab to its south, Rawalpindi to its northeast, Jhelum to its east, Mianwali to its west and Attock to its northwest.

According to the 2017 census, the total population of District Chakwal is 1.5 million. The district covers a total area of 6,524 km². This agricultural landscape plays a crucial role in the local economy, supporting the production of crops like oranges, wheat, barley, sugarcane, and various other fruits and vegetables. Notably, Chakwal is renowned for producing oranges that meet international standards.

Additionally, Chakwal District is not solely dependent on agriculture; it has various manufacturing facilities that contribute significantly to its economy. Among these industries, the Best Way Cement Factory stands out as the largest factory in Asia, a source of pride and economic stability for the region. Other industrial sectors in the district include 61 rice mills, 6 flour mills, 4 textile mills, and 120 brick kilns, all of which play a pivotal role in bolstering the local economy and providing employment opportunities for the residents of Chakwal District.

1.2.4 District Jhelum

Jhelum District, established in 1849, comprises four tehsils: Jhelum, Sohawa, Pind Dadan Khan, and Dina. District Jhelum is situated in the North-East of the province of the Punjab in Pakistan. It spreads over both sides of the Grand Trunk (GT) Road. It is bound in the North by Rawalpindi District, in the South by Mandi Baha-ud-Din, Gujrat and Sargodha, in the East by Azad Jammu and Kashmir and in the West by Chakwal and Khushab from which it is separated by the mountain range called the Kohistan-e-Namak.

The district covers a total area of 3,587 km² and has population of approximately 1.28 million, with a mix of rural and urban areas. Land utilization statistics indicate that about 36.89% of the total area is dedicated to agriculture. There are many recreational places in Jhelum which includes Lehri Nature Park, Rohtas Fort, Rasul Barrage, Jhelum Railway Station and River View Golf Club etc.

1.3 Transport Connectivity in Rawalpindi 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 19917.7 km of roads including four motorways: M-1 (Islamabad–Peshawar Motorway), M-2 (Lahore-Islamabad Motorway), M-14 (Islamabad–Dera Ismail Khan Motorway) and M-15 (Hazara Motorway). Additionally, there are 39 railway stations, and one dry port, namely, Rawalpindi Dry Port. To support freight transport, there are 132 goods forwarding agencies (GFAs) in the division but no formal truck terminal in Rawalpindi. For passenger transport, there are 13 inter-city public transport terminals in the division.

The division was served by Benazir Bhutto International Airport until 3rd May 2018 when it was replaced by the new Islamabad International Airport. The airport handled 4,767,860 passengers in 2015-16, compared to 3,610,566 in 2010–11 (Civil Aviation Authority, 2021). The airport was in the area of Chaklala in Rawalpindi, which neighbors Islamabad. The new airport has a 180,000m² terminal and is capable of handling 9 million passengers and 80,000 metric tons of cargo per annum.

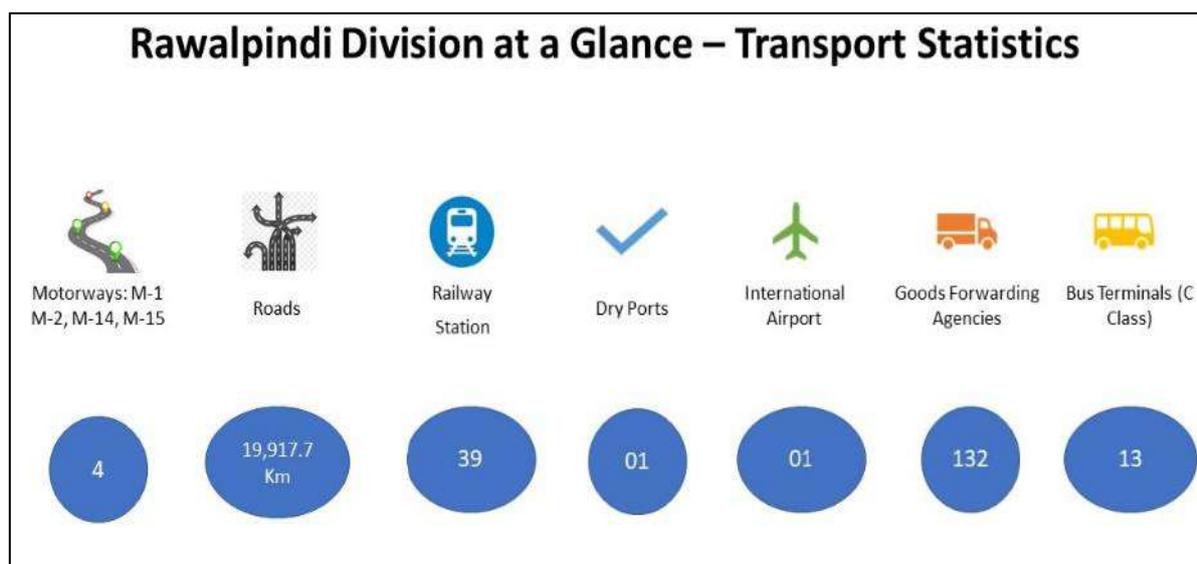


Figure 1-2: Key Transport Connectivity Nodes and Links Rawalpindi

2 ROAD, RAIL AND AIR TRANSPORT

The total length of the road network in Pakistan at present is 500,749 km (NTRC, 2023). This includes 2,471 km of Motorways, 427 km of Expressways, and 4387 km of primary roads. 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 Rawalpindi Division are summarized in Figure 2-1 to Figure 2-4. On the other hand, the road network details in the entire Rawalpindi Division are illustrated in the below graphs.

2.1 Road Network in Rawalpindi District

Rawalpindi District has a total road network length of 10,078 km. The district is well connected with adjacent districts through an extensive network of motorways, national highways, and provincial highways. N5 serves as a primary corridor that connects Rawalpindi with Peshawar on the western side and Gujrat on the southern side. Other corridors include M1 and M2 that connect Rawalpindi with Chakwal, Attock and onwards with Peshawar and Lahore. In addition to national highways, major provincial highways connect Rawalpindi with Chakwal, Attock, Mirpur, Kotli and Poonch. Lengths of different road classes that fall in Rawalpindi are shown in Figure 2-1.

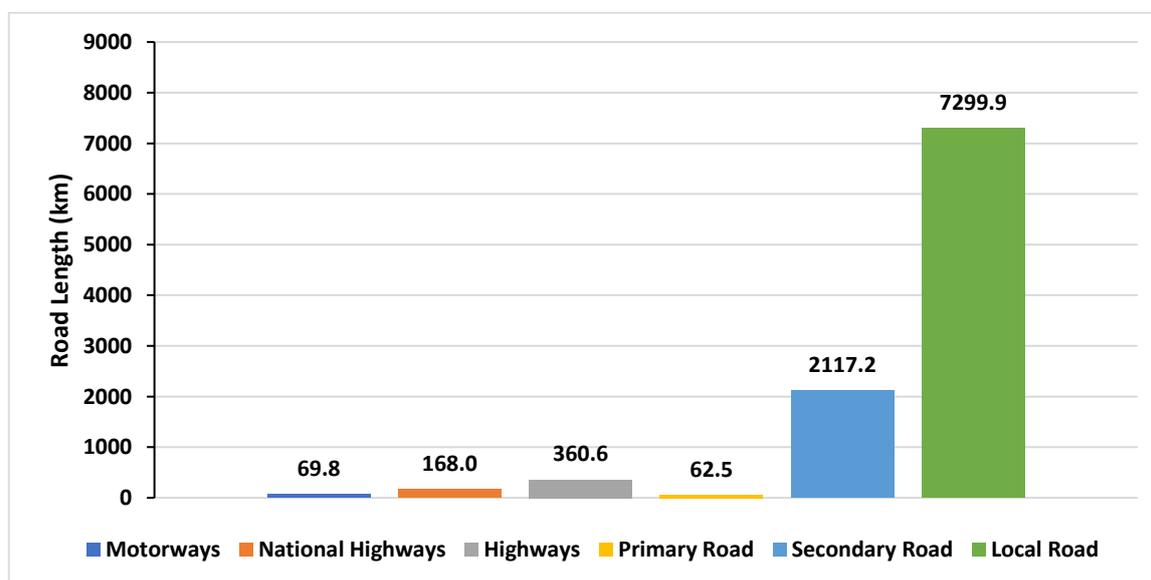


Figure 2-1: Road Network Statistics, District Rawalpindi

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

2.2 Road Network in Attock District

Attock district has a total road network length of 4105 km whereas length of motorways passing through Attock is 89 km. The length of road network in Attock with different road

classes is illustrated in Figure 2-2. The Attock district is well connected with adjoining districts through an extensive network of motorways, national highways, and provincial highways. N5 connects Attock to Peshawar in the western side and Rawalpindi in the East. N80 connects Attock with Kohat in the West and Rawalpindi in the east.

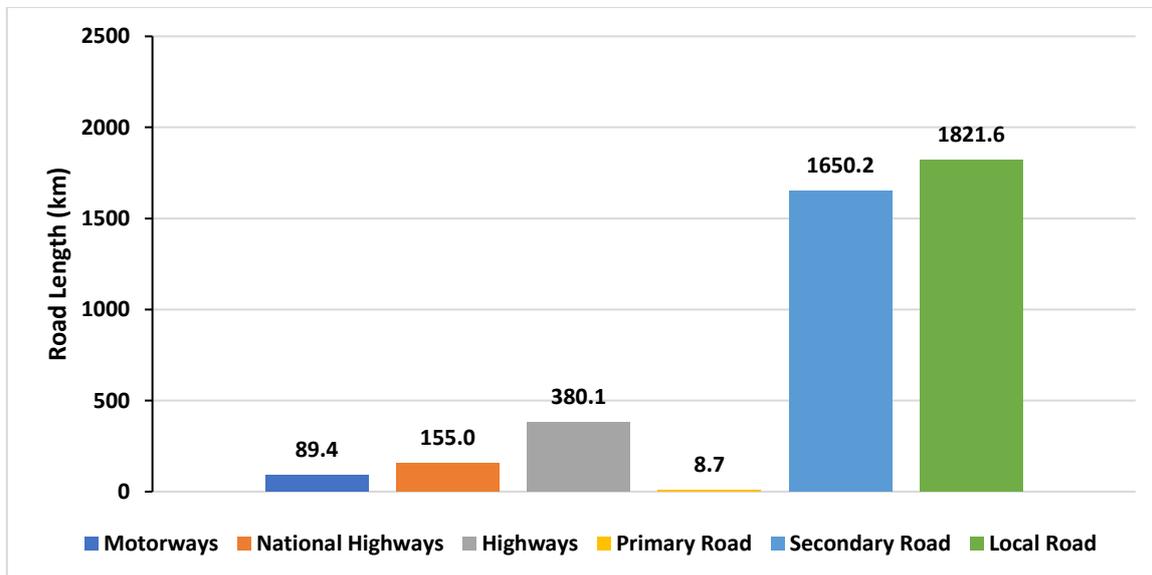


Figure 2-2: Road Network Statistics, District Attock

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

2.3 Road Network in Chakwal District

Chakwal district has a total road network length of 4,093.9 km. The length of motorways passing through Chakwal is 78.4 km whereas length of provincial highways is 370.8 km. Provincial highways connect the district with Mianwali in the West, Jhelum in the South and Rawalpindi in the North. The length of different road classification is shown in Figure 2-3.

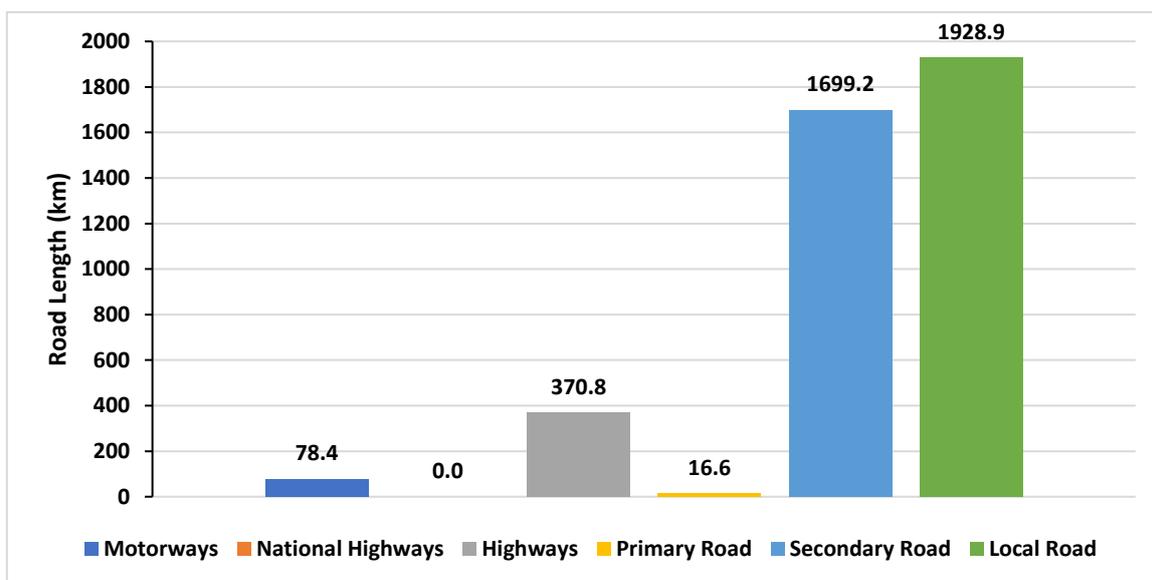


Figure 2-3: Road Network Statistics, District Chakwal

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

2.4 Road Network in Jhelum District

Jhelum has a total road network length of 1,691.2 km. The length of motorways passing through Jhelum is 24.2 km. The Jhelum district is linked with bordering districts through national highway and a network of provincial highways. N-5 connects Jhelum with Gujrat in the South and Rawalpindi in the North. Length of road network in Jhelum with road classification is illustrated in Figure 2-3.

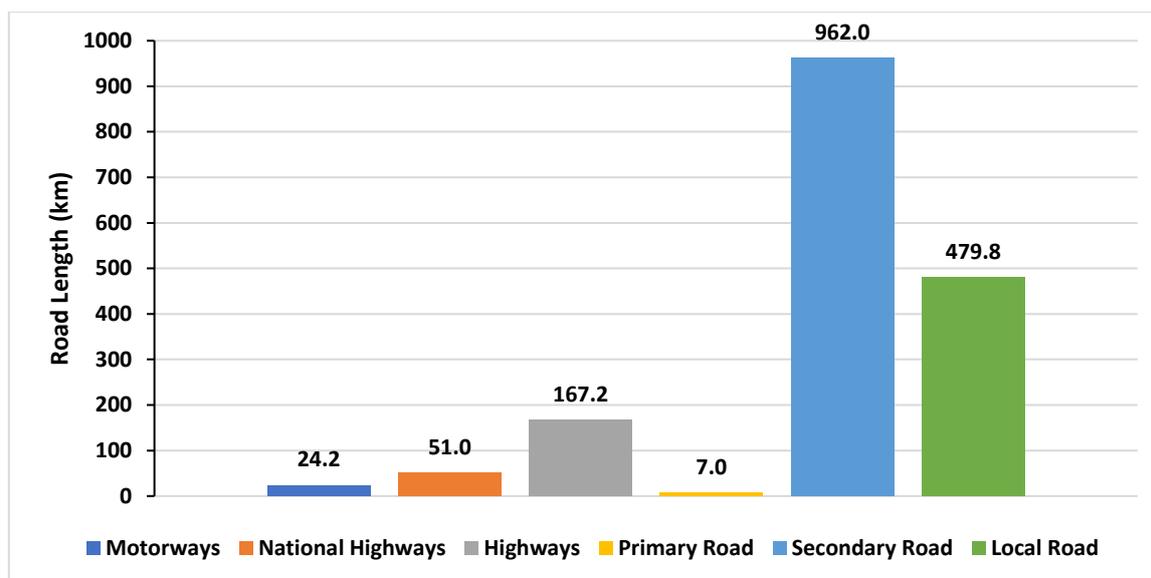


Figure 2-4: Road Network Statistics, District Jhelum

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 motorways that provide access to Rawalpindi Division include, M-1 (Islamabad–Peshawar Motorway), M-2 (Lahore-Islamabad Motorway), M-14 (Islamabad–Dera Ismail Khan Motorway) and M-15 (Hazara Motorway). Other high-speed national roads include N-5 (GT Road) that connect Rawalpindi with Peshawar via Nowshera in the Northwest and Karachi via Faisalabad and Multan in the South. N-80 (Rawalpindi-Kohat Road) is another national highway that originates from Tarnol at N-5 and Terminates in Kohat. Additionally, Rawalpindi and Murree are connected by E-75 (Murree Expressway).

Key provincial roads that provide connectivity primarily through single carriageways among key cities in the division includes Rawalpindi, Chakri, Attock, Fateh Jhang, Pindigheb, Jand,

Talagang, Kallar Kahar, Chao Saidan Shah, Chakwal, Pind Dadan Khan, Sohawa, Kallar Saidan, Jhelum, Kahuta and Holar. The length of provincial highways that comprise dual carriageways is negligible considering the vast area of the division. Figure 2-5 depicts an overall situation of roadway mobility in terms of the road types in the division. In addition to the roads Rawalpindi Ring Road (RRR) is under construction, the alignment of Ring Road is illustrated in Figure 2-6.

Figure 2-7 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 Rawalpindi Division. The national freight corridors include N-5, N-80, M-1, M-2, M-14, M-15 and E-75.

The provincial freight corridors include Pinddadan Khan – Mandi Bahaudin Road, Chakwal Road, Kallar Kahar Road, Jhelum Road, Mandra Chakwal Road, Talagang Road, Khushab Road, Sargodha Road, Mianwali Talagang Road, Talagang Fateh Jhang Road, Rawat Chakbeli Road Jhand – Pindigheb Road, Fateh Jhang Attock Road and Jhala Khan Road. In addition, Mandra Chakwal Road is also a freight corridor linking Mandra at N-5 and Chakwal to Kallar Kahar and onwards to Sargodha. The road also connects with Lahore Islamabad Motorway M-2.

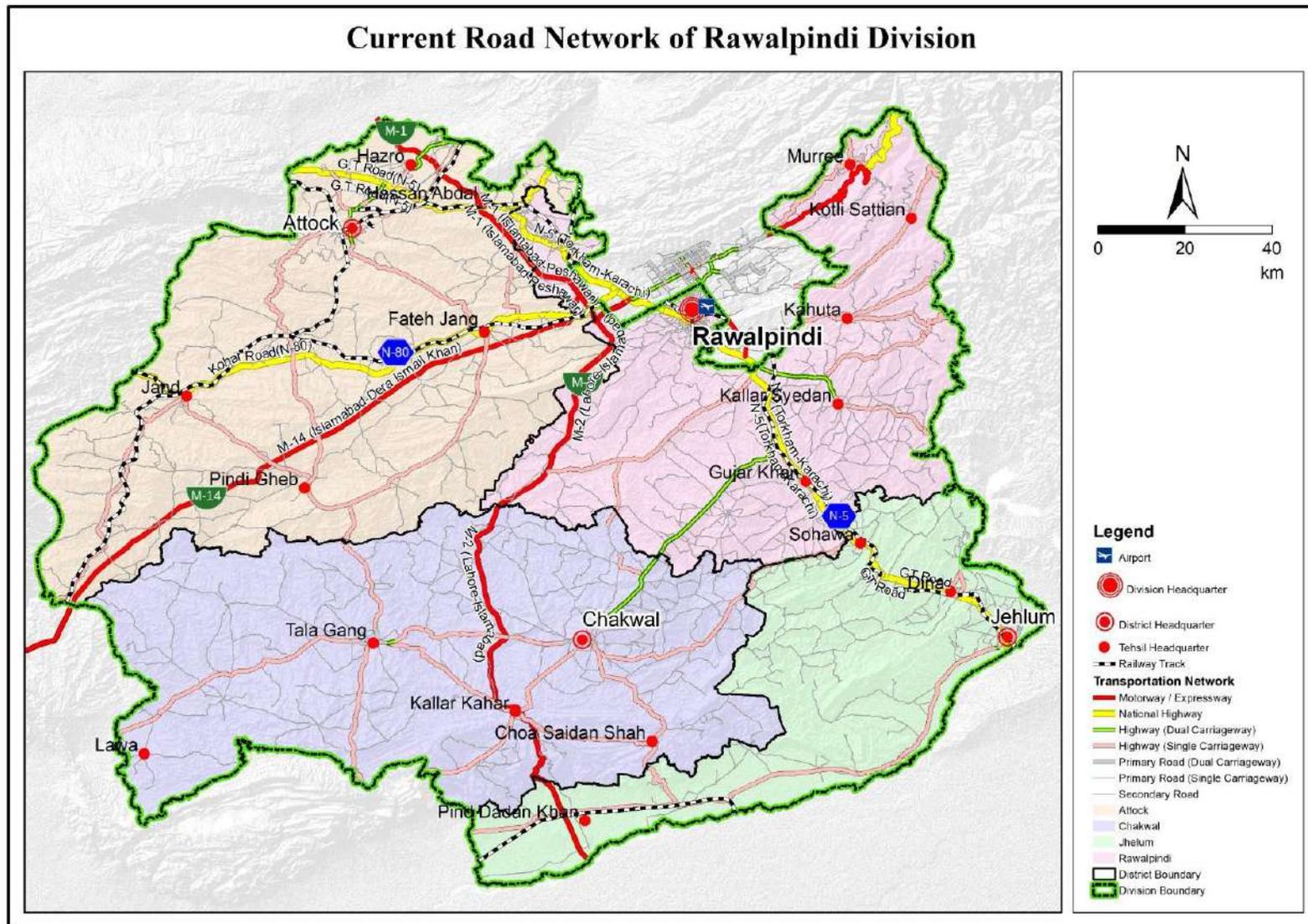


Figure 2-5 Current Road Network in Rawalpindi Division

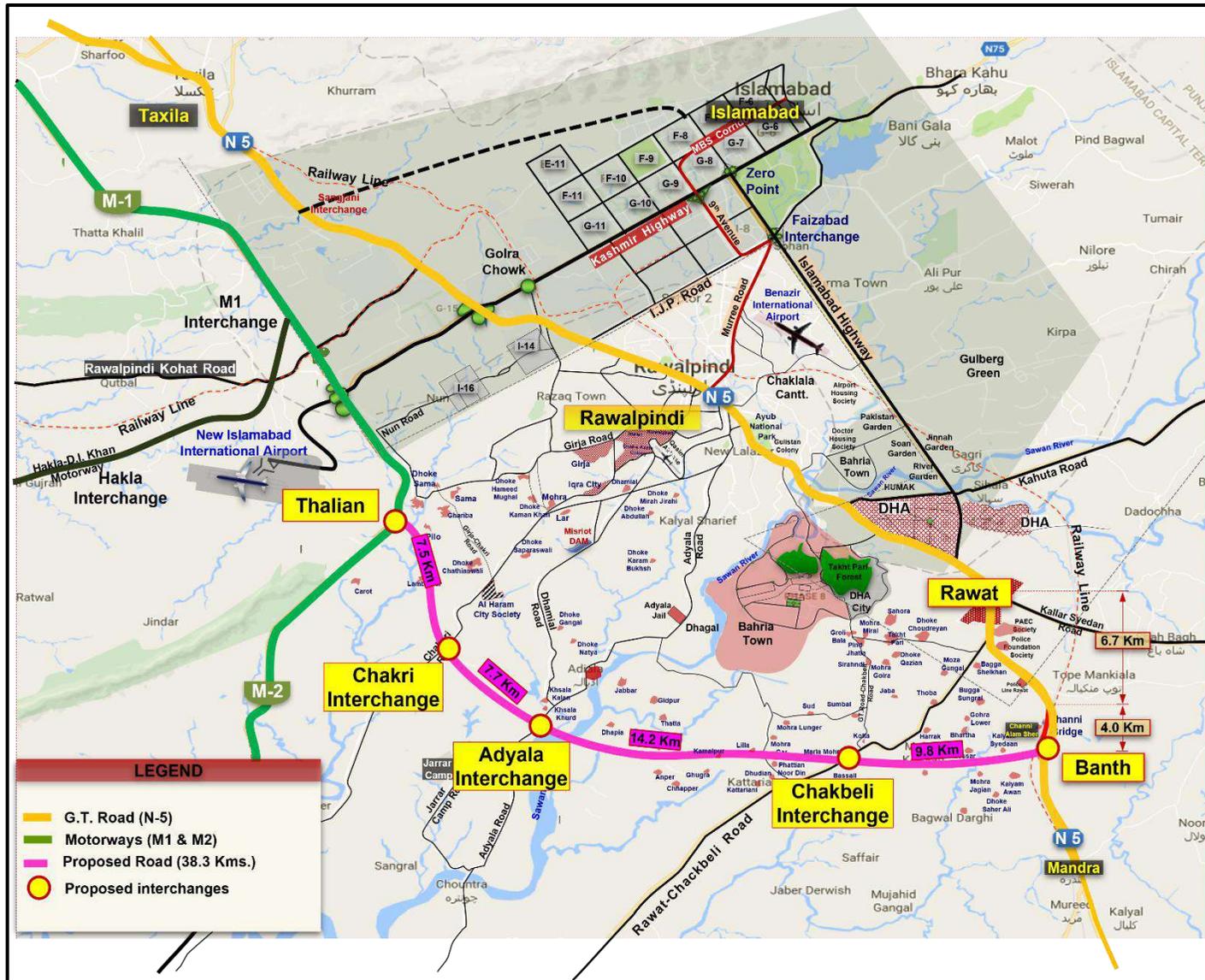


Figure 2-6 Rawalpindi Ring Road Alignment

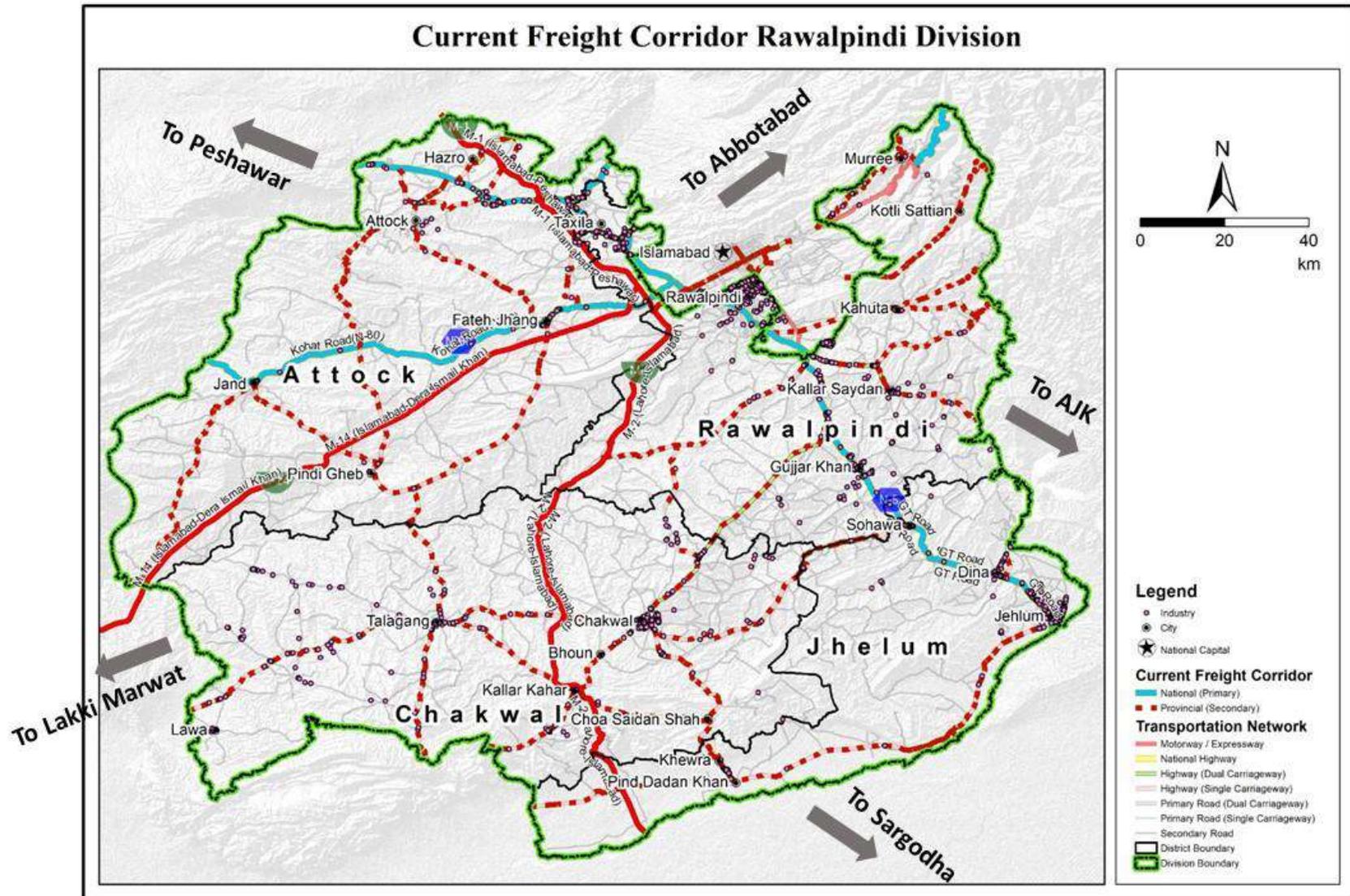


Figure 2-7: Freight Corridors in Rawalpindi Division

2.5.1 Road Sector Funding by Year

The total funding of annual development program in Rawalpindi 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 17.53 billion in 2018 to PKR 2.48 billion in 2023. The road sector funds varied from PKR 0.35 billion in 2018 to PKR 0.33 billion in 2023. The percentage allocations for road sector funds ranged from 2% in 2018 to 13% in 2023. The highest percentage allocation of road sector funds was observed in 2022, with 29.59 billion Pakistani rupees being allocated, which is equivalent to 27% of the all-sector funds. In contrast, the lowest percentage allocation of Road Sector Funds was observed in 2018. The timely repair and maintenance of roads requires an accumulation of funds, which at times require more funding than routinely needed.

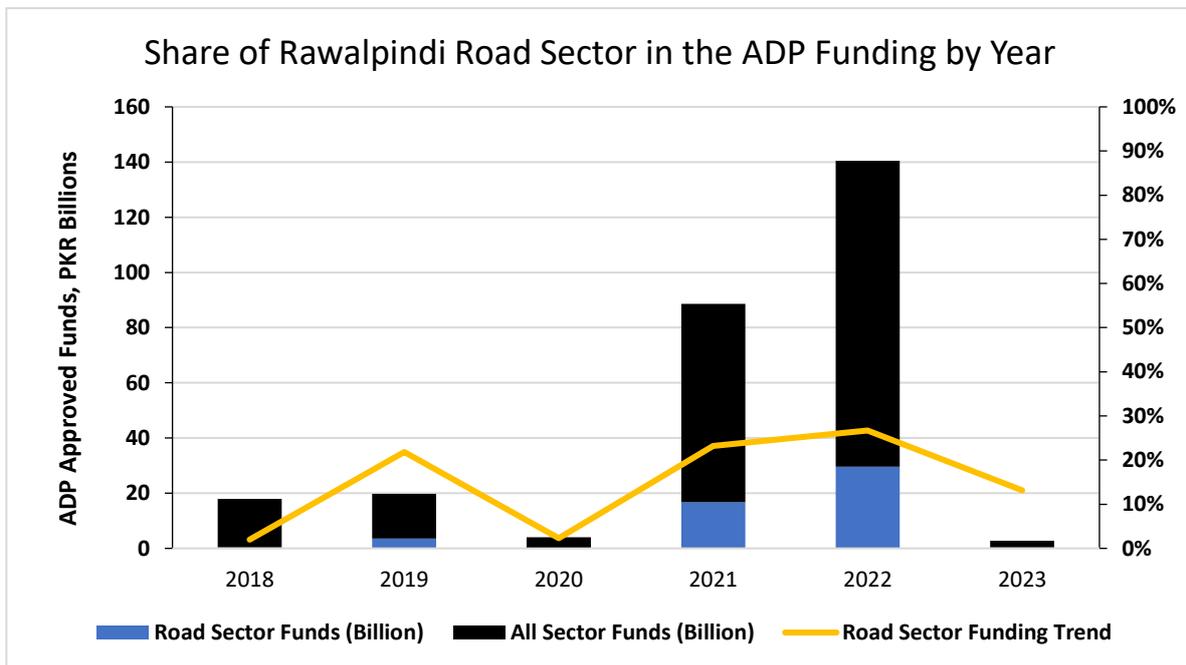


Figure 2-8: Share of Road Sector in ADP Funding

2.6 Freight Transport

Freight delivery in Pakistan greatly relies on 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 seaports of Port-Qassim and Gwadar transverse Punjab to its desired destination. Currently, there are 7 major dry ports in Punjab enlisted 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

The Rawalpindi Dry Port (RDP) provides services for transshipment permits (TP), excise duty payments, and clearance that can be completed on the same day. Accessibility analysis of the dry port shows that it can serve 20% of industrial units within 20 minutes, 23% of the units between 20 and 40 minutes, 14% of the units within 40 to 60 minutes and 6% between 60 to 80 minutes and 32% within 80 to 120 minutes (Figure 2-9). It takes more than 120 minutes for the remaining 3% of the industries to access RDP.

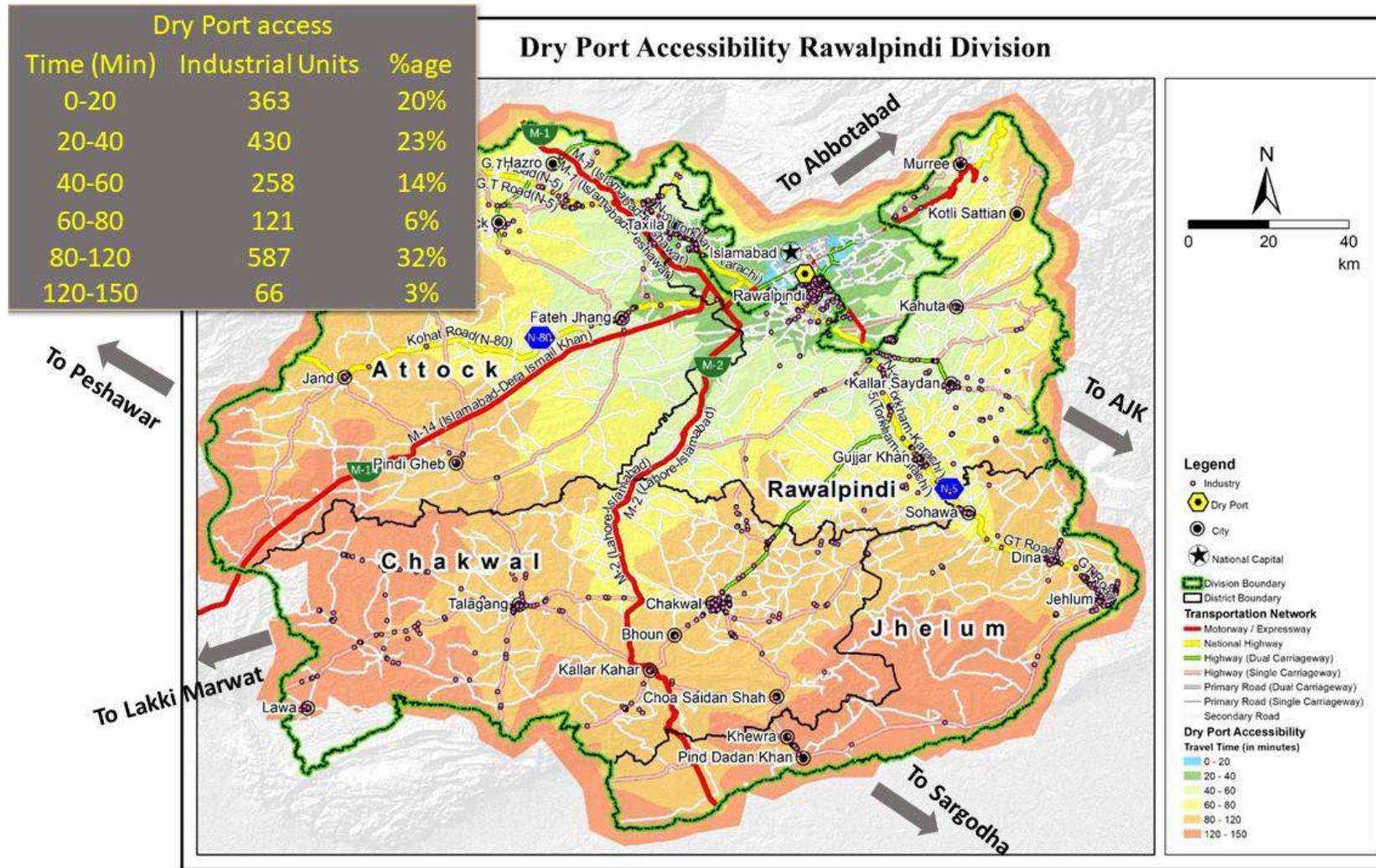


Figure 2-9: Dry Port Accessibility Analysis, Rawalpindi

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, 102 lie in Rawalpindi and 11 in Chakwal. 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 2-10). 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 2-10: A Goods-Forwarding-Agency Stand in Rawalpindi Public Transport

2.7 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, 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.

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

2.7.1 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 44 intercity bus terminals in Rawalpindi Division of which 12 are owned by the government while the rest (32) are privately owned. District wise list of bus terminals with type is given in Table 2-3. The general bus stand in Rawalpindi is in good condition and all the basic amenities are available to 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 Rawalpindi division are illustrated in Figure 2-11.

Table 2-3: District Wise Bus Terminals in Rawalpindi

District	Terminal Type	Number of Terminal
Rawalpindi	C Class Stand	01
	D Class Stand	18
Attock	C Class Stand	04
	D Class Stand	04
Chakwal	C Class Stand	02
	D Class Stand	07
Jhelum	C Class Stand	05
	D Class Stand	03



A (Rawalpindi)



B (Jhelum)



C (Chakwal)



D (Attock)

Figure 2-11 Bus Terminals in Rawalpindi Division

Figure 2-12 provide more insights in to access of public to bus terminal. Accessibility analysis of the bus terminals shows that it can serve 55% of the population between 20 and 40 minutes, 22% of the population within 40 to 60 minutes and 4% between 60 to 80 minutes. It takes more than 80 minutes for the remaining 3% of the population to access bus terminal.

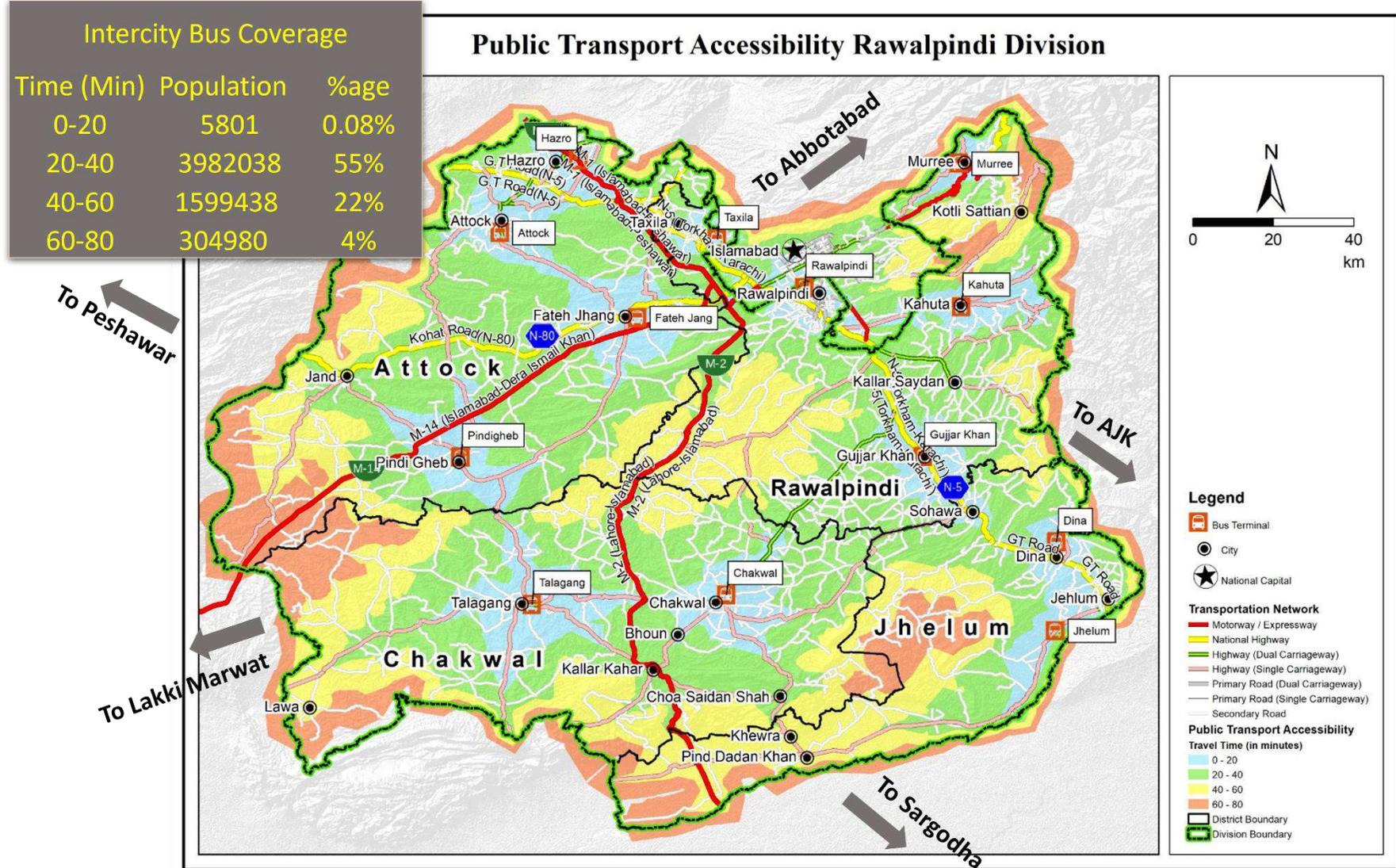


Figure 2-12. Public Transport Accessibility in Rawalpindi Division

2.8 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 have the capacity to 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 2-13 provides some insights into the railway access of the people in Rawalpindi 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 three time-ranges: 0-20 minutes, 20-40 minutes, and 40-60 minutes. The analysis reveals that a significant proportion of the population, approximately 112%, enjoys convenient railway access, requiring only 0-20 minutes to reach the nearest railway station. This suggests that a large portion of the population resides in close proximity to the railway infrastructure, enabling them to easily utilize rail transportation for their commuting needs.

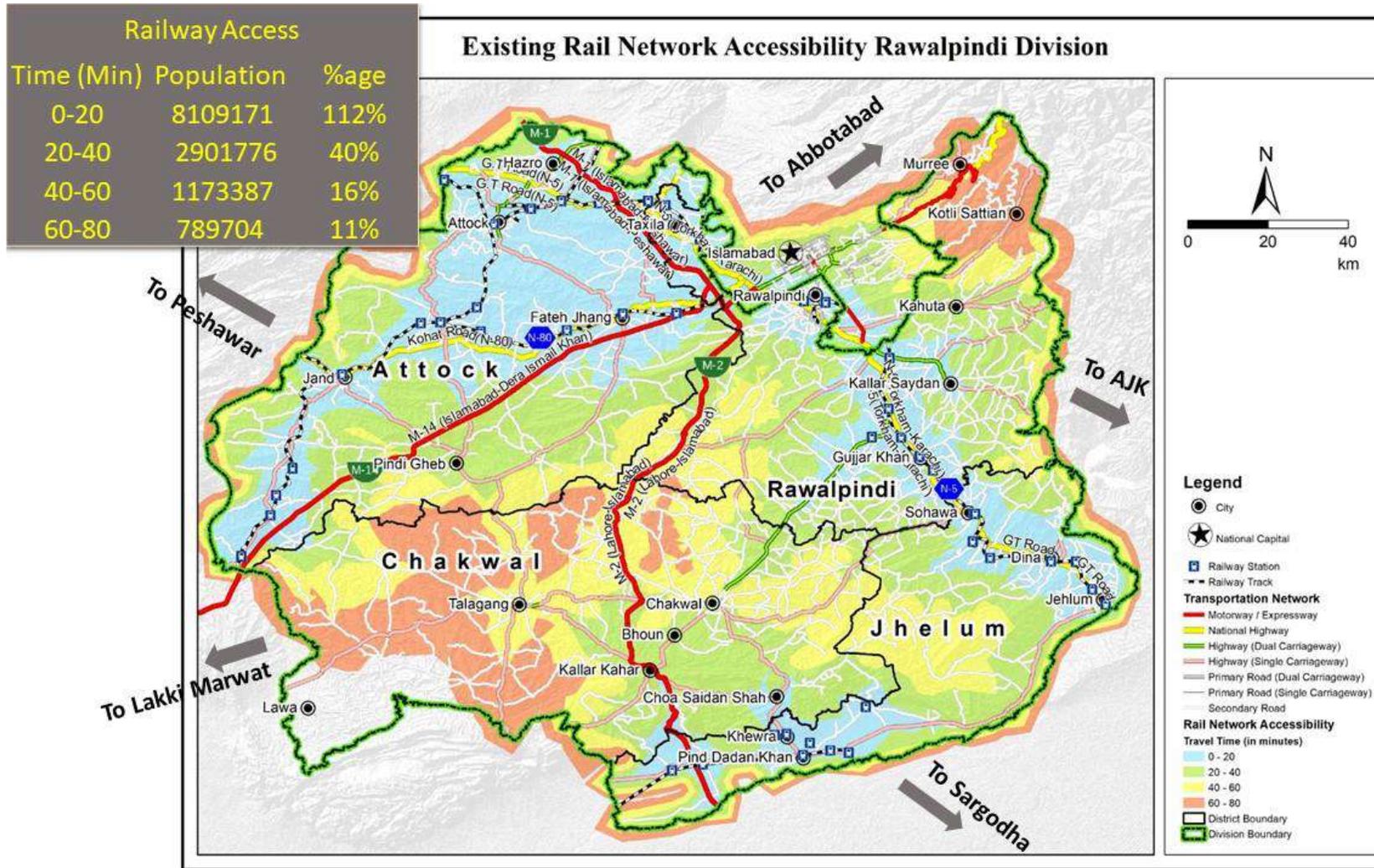


Figure 2-13: Existing Rail Network Accessibility, Rawalpindi

2.9 Airport

Air transport plays a vital role in connecting people and goods across the globe, offering unparalleled speed and accessibility. It serves as a catalyst for 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 2-14 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 Rawalpindi 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 37%, 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 23% 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 30% of the population falls into the 40-60 minutes 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 35% of the population falls within the 60-80 minutes time range, indicating that they face longer travel times to access the airport. Likewise, 43% of the population falls within the 80-120 minutes 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 Islamabad International Airport.

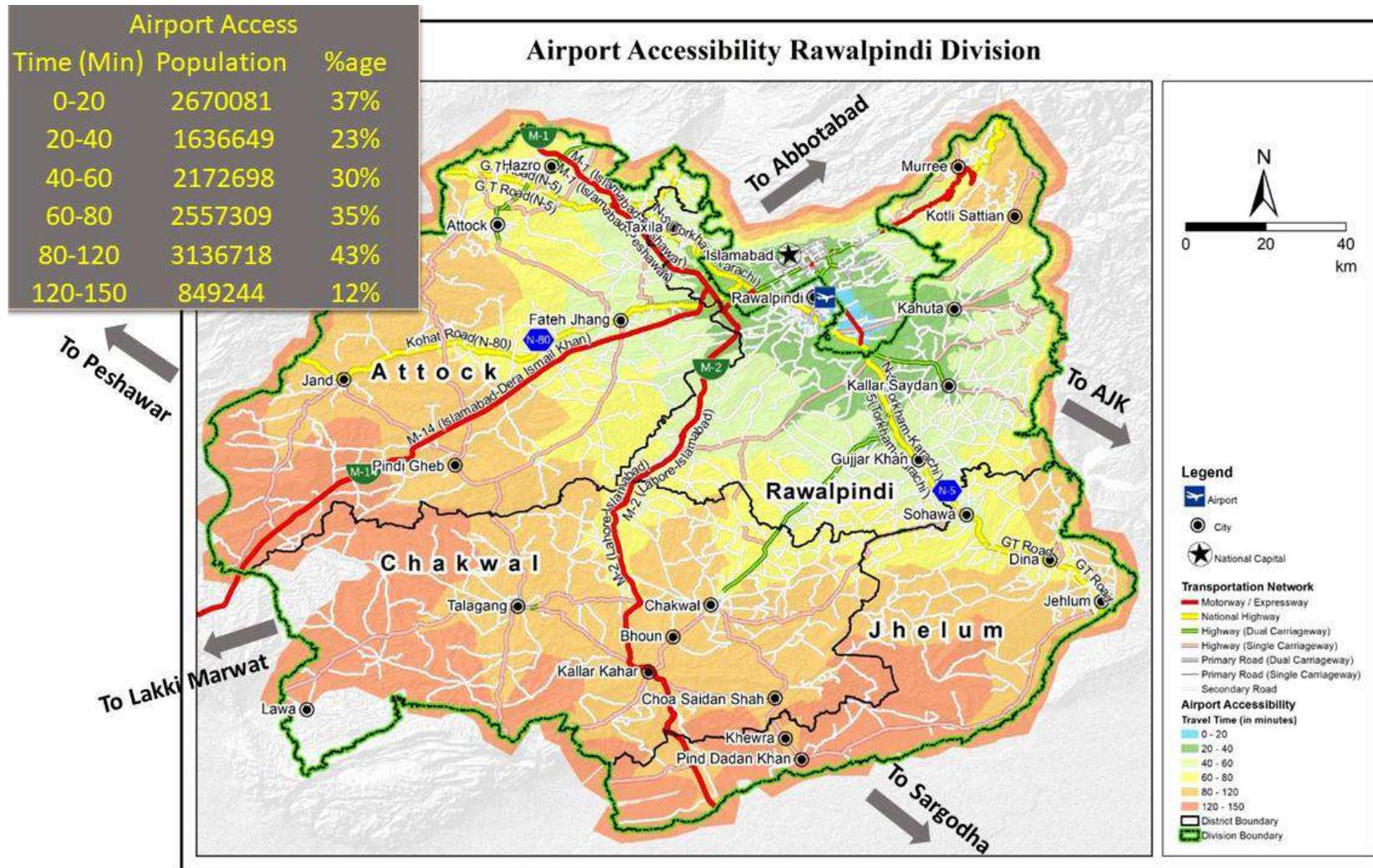


Figure 2-14: Airport Accessibility, Rawalpindi

2.10 Limitations

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

2.10.1 Delays in Repair

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

2.10.2 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.

2.10.3 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 the 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).

2.10.4 Lack of Asset Management Tools

The road asset management (RAM) tool can equip the 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 Rawalpindi 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 Rehabilitation/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

With reference to section 2.5, there is a clear indication that most of the provincial roads, that play key role 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 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.

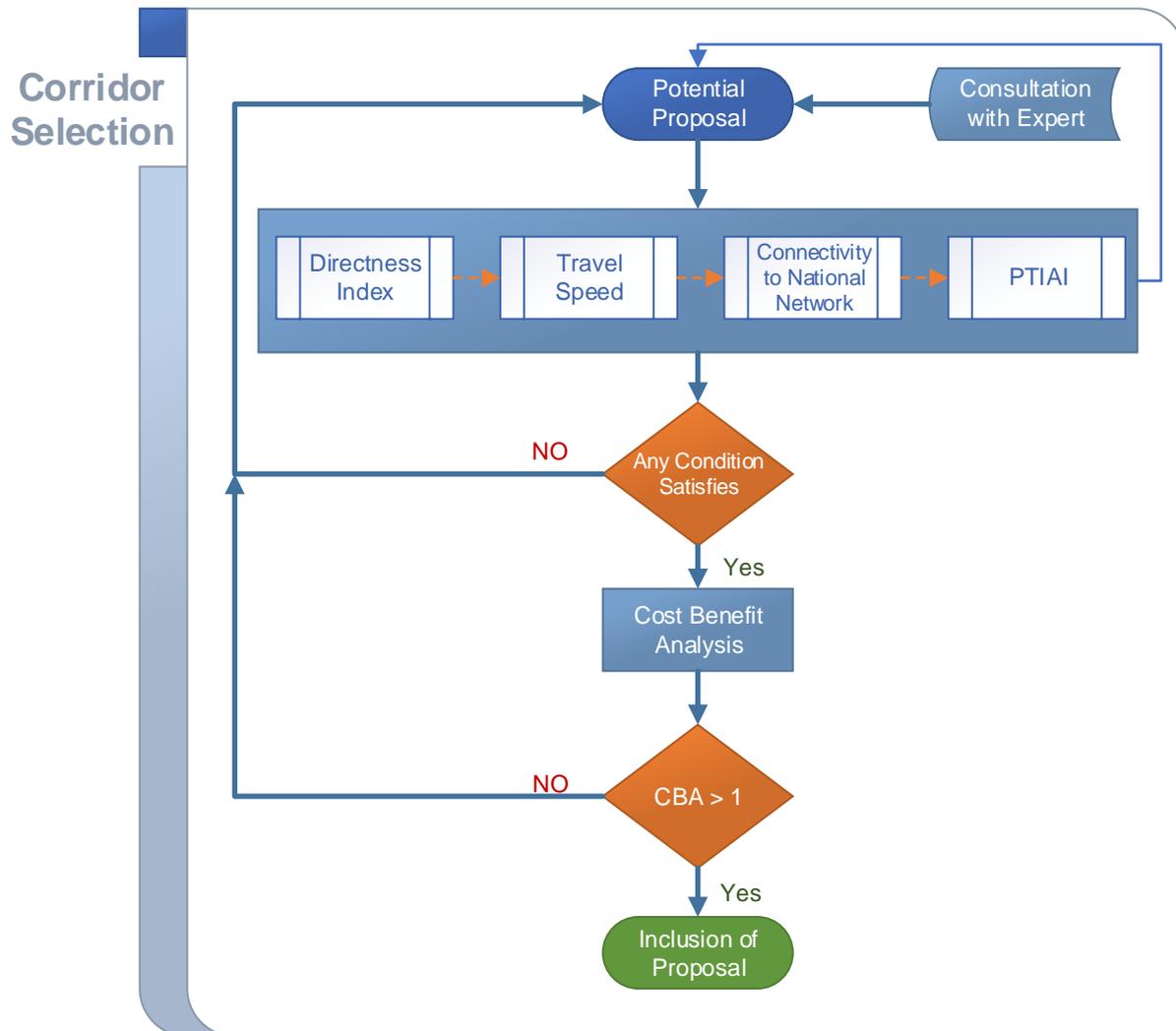


Figure 3-1: Identification and Selection of Proposed Road Corridors

3.1.1 Directness Index

Directness index measures the ratio of network distance between two points and the Euclidean distance between same points. It is a common indicator to measure accessibility of the two points. The index has lowest limit of 1 but 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 to identify the benchmark value of the ratio but factors such as geography and topology of the area limits 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 threshold for connectivity, therefore any OD pair that have a value higher than 1.2 is considered as indirect connection and a new

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.

corridor that reduces this value is considered feasible. The indicator is calculated on ArcGIS using 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 origin and destination under free flow condition. It determines the quality of road network available and identifies a poor link even if it provides direct accessibility. Travel speed is calculated for the identified corridor using 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

National road network of Pakistan is developed by National Highway Authority funded by the federal government. It comprises a network of motorways and national highways that are aimed at improving mobility. High speed motorway network passes through Punjab via 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 network are considered as a viable option and proceeded 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 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 Rawalpindi Division are given in Figure 3-2.

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

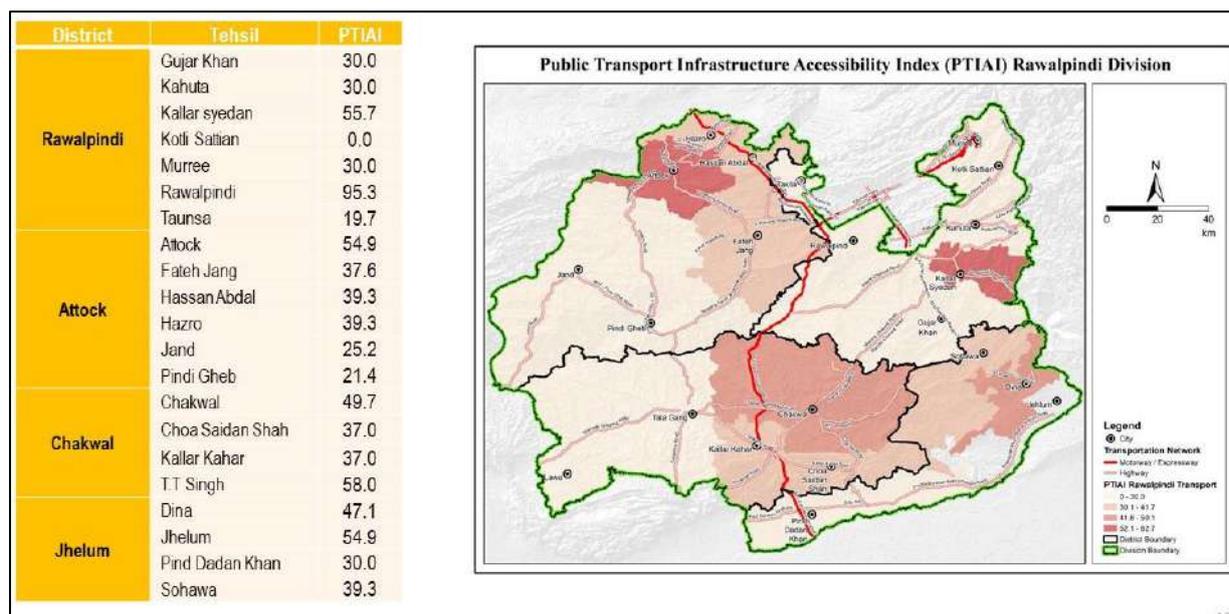


Figure 3-2: Results of PTIAI for Tehsils of Rawalpindi

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 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 than the proposed project is assumed to be economically not feasible.

Using the above methodology, 20 road network schemes were tested for a preliminary economic feasibility (Table 3-2). These schemes primarily aim to improve the provincial roads to fulfil 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	Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	26,557.86	5,363.18	5.0
2	P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	44,766.73	13,525.21	3.3
3	P5 Dualization of Road from Talagang to Pindi Gheb, km 58	40,155.13	11,158.49	3.6
4	Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	20,847.72	2,002.08	10.4
5	Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	18,554.47	7,349.54	2.5
6	Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	4,624.86	1,986.36	2.3
7	Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	17,339.85	6,260.92	2.8
8	P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	129,181.23	24,478.79	5.3
9	Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	7,546.72	1,689.65	4.5
10	Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	17,334.76	3,307.78	5.2
11	P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	29,221.48	10,320.80	2.8
12	Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	5,799.69	2,304.04	2.5
13	Dualization of Kallar Kahar Choa Saiden Shah Road Length = 30.5kM	14,222.76	6,774.60	2.1

14	C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	75,717.94	21,878.57	3.5
15	Reconstruction of Road from Phagwari Chowk to Forepothi length 12.00 Km	2,784.55	533.78	5.2
16	Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	1,903.77	447.75	4.3
17	Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	71,075.52	2,711.07	26.2
18	Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmi Boundary, Length 23 km	5,135.45	889.61	5.8
19	Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	10,598.48	1,037.20	10.2
20	Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	5,331.54	1,231.28	4.3

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 Rawalpindi division.

3.2.1 Methodology

The connectivity of the potential sites has been modelled 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.

Two new terminals have been identified for the two district-headquarters (Table 3-3). To ensure equity, each of the four districts gets one model truck terminal. 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	Site Location	District
1	Near FBR district Taxation Office in Attock City	Attock
2	Near National Highway and Motorway Police Office on N-5 in Rawalpindi city	Rawalpindi

Figure 3-3 shows 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 2-8). Most of the industries, particularly those in the district headquarters, would get rapid goods transport coverage (0-10 minute's availability of trucking service). Specifically, when the time range is increased to 80 minutes, 60% of the industrial units are served with 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 division at a reasonable travel distance.

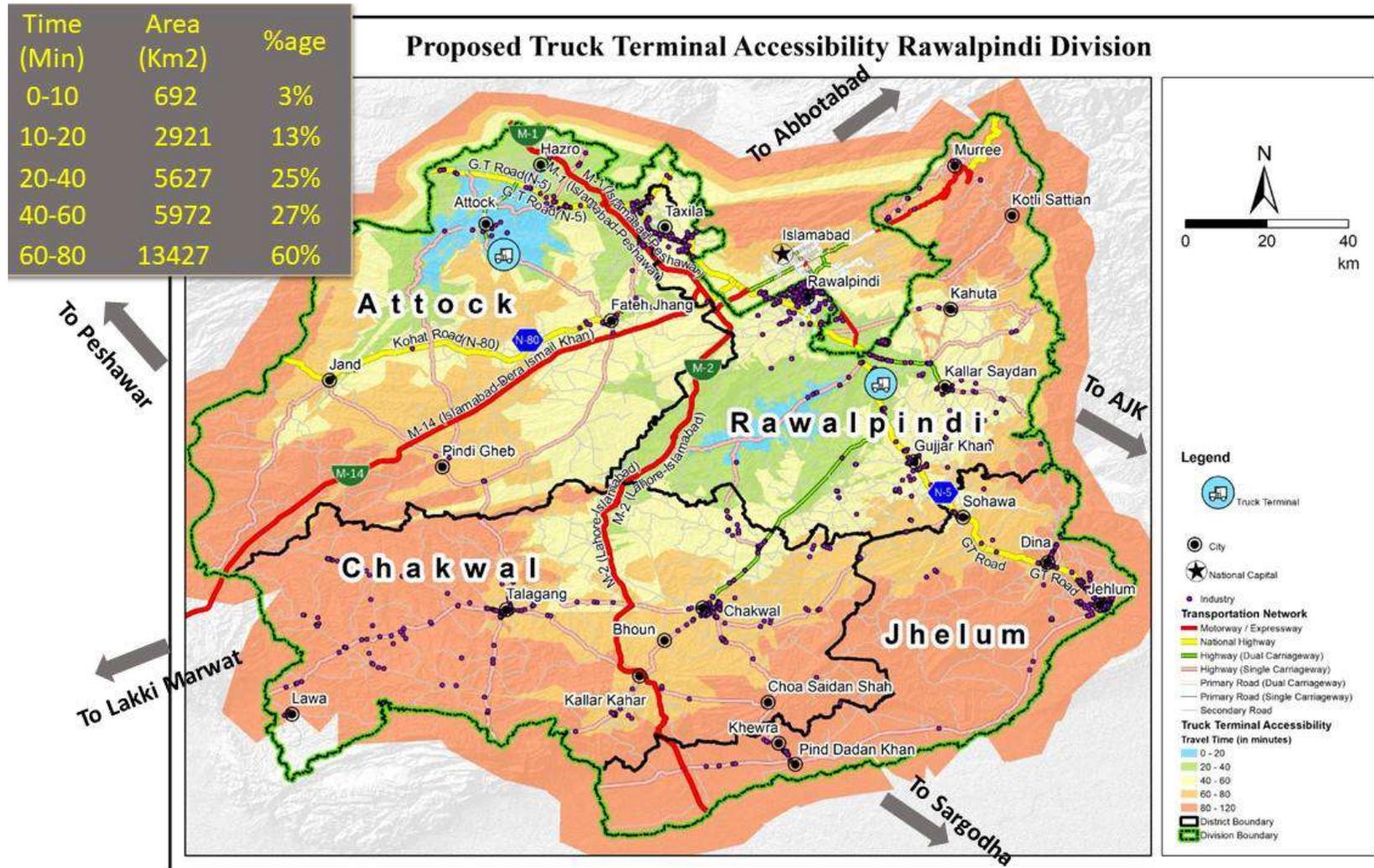


Figure 3-3: Accessibility Analysis of the Proposed Truck Terminal Locations

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 20, 40, and 60 minutes' 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 (55 %) have access to intercity public transport terminals in 40 minutes. When the time range is increased to 60 minutes, the significant population of the division is served as illustrated in Table 3-5 by cumulative percentage of population. It implies that the 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
0-20	5801	0.08%	0.08%
20-40	3982038	55%	55.08%
40-60	1599438	22%	77.08%
60-80	304980	4%	79.08%

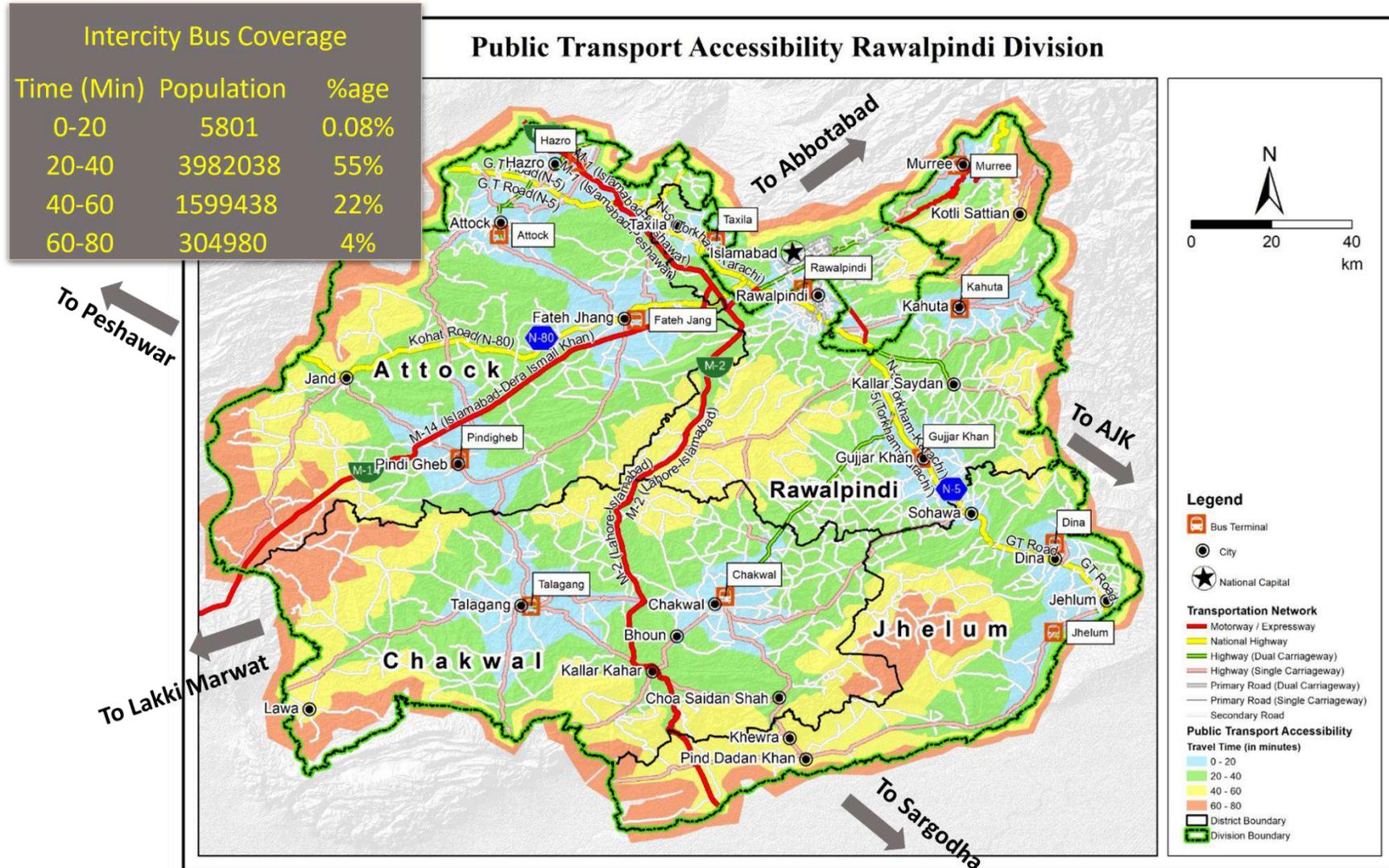


Figure 3-4. Public Transport Accessibility in Rawalpindi Division

4 PROPOSED INTERVENTIONS

The proposed interventions for the upcoming ADPs target a 10-year planning horizon from the year 2023 to 2033. The proposed interventions encompass road and transport sectors. The road sector schemes include dualization and upgradation schemes while the transport sector schemes include urban transport interventions as well as the construction of new model truck terminals 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 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 Rawalpindi Division are single lane, despite an ADT of more than 8000. The evaluation of benefit-cost ratio of these roads, as discussed in the previous chapter, gives 20 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 higher benefit-cost ratio gets funding earlier as compared to a road scheme with lower benefit cost ratio.

There are ten proposed dualization and ten Rehabilitation schemes. One scheme is new construction, and one is upgradation. In terms of implementation timeline, two schemes have been proposed for implementation in the medium to long-term (2029-2033) while the remaining eighteen schemes have been proposed for implementation in short to medium term (2023-2029). The total cost of short to medium term projects is PKR 118.60 billion and 8.04 billion for medium to long term projects. Thus, Rawalpindi Division would tentatively need PKR 126.64 billion over the next ten years to dualize and improvement/ its roads infrastructure.

Table 4-1: Proposed Road Schemes Rawalpindi Division.

District	Proposed Road Schemes	Length (Km)	ADT Projections				Timeline
			2023	2026	2029	2033	
Attock	Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	27	12114	14024	16235	10760	Short To Medium Term (2023-29)

	P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	72	7658	8865	10262	9894	Short To Medium Term (2023-29)
	P5 Dualization of Road from Talagang to Pindi Gheb, km 58	58	8527	9871	11427	6188	Short To Medium Term (2023-29)
	Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	50	9935	11501	13313	11073	Short To Medium Term (2023-29)
	Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	37	6176	7150	8277	15992	Short To Medium Term (2023-29)
	Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	10	5696	6594	7633	13810	Medium to Long Term (2029-33)
Chakwal	Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	29	7364	8525	9869	8752	Short To Medium Term (2023-29)
	P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	134	11873	13745	15911	6740	Short To Medium Term (2023-29)
	Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	32.50	5533	6405	7414	9065	Short To Medium Term (2023-29)
	Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	27.2	7282	8430	9759	4822	Short To Medium Term (2023-29)
	P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	54	6665	7715	8931	10668	Short To Medium Term (2023-29)
	Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	35.75	6637	7683	8894	8662	Medium To Long Term (2029-33)

	Dualization of Kallar Kahar Choa Saiden Shah Road Length = 30.5km	30.5	5743	6649	7697	18407	Medium To Long Term (2029-33)
Jhelum	C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	120	7771	8996	10414	20146	Short To Medium Term (2023-29)
	Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km	22	8616	9974	11547	32615	Short To Medium Term (2023-29)
	Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	11	4124	4774	5526	17318	Short To Medium Term (2023-29)
Rawalpindi	Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	72	23521	27228	31520	6312	Short To Medium Term (2023-29)
	Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmir Boundary, Length 23 km	23	5320	6159	7129	14562	Short To Medium Term (2023-29)
	Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	27.3	9250	10708	12396	16146	Short To Medium Term (2023-29)
	Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	26.8	4740	5487	6352	7732	Short To Medium Term (2023-29)

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 Pindigheb – Attock road improves the link of both the cities with Islamabad–Dera Ismail Khan Motorway (M-14) as well as the GT Road (N-80). Likewise, dualization of Talagang – Chakwal Road improves the link with Lahore – Islamabad Motorway. The aforementioned road connects to Choa Saidan Shah and Pind dandan Khan via Chakwal Road improving connectivity with M-2. Similarly, the dualization of Mianwali Talagang road and Talagang Fateh Jhang road improves connectivity with M14 and M-2 connecting Talagang and Pindigheb.

Moreover, the interconnectivity of THQs and DHQs will be significantly improved when the proposed interventions are implemented. For instance, the busy road connection between Pindigheb, Attock, Talagang and Chakwal would become much faster after its proposed dualization is completed.

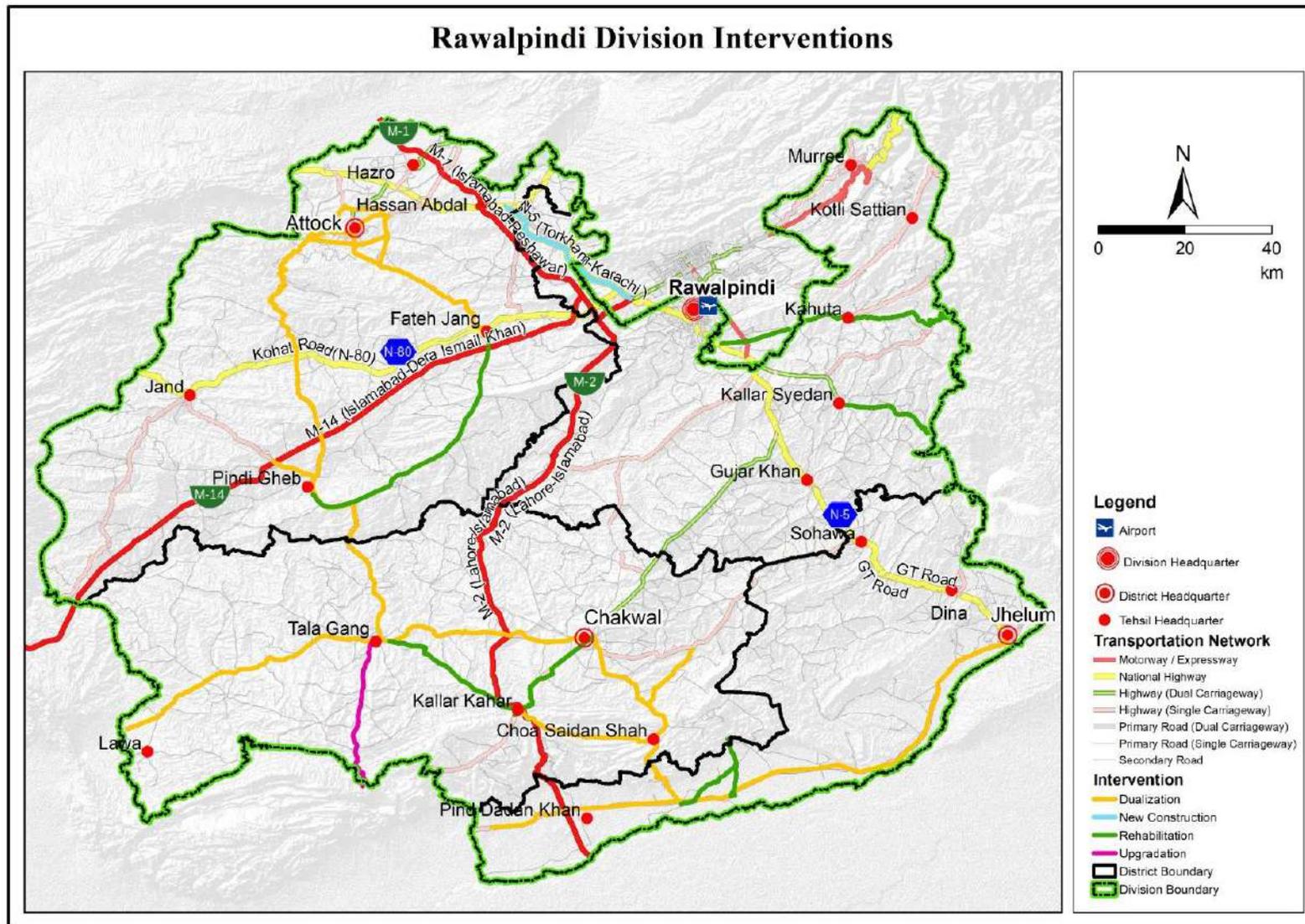


Figure 4-1: Spatial Distribution of Proposed Road Network Schemes

A district-wise analysis is presented in the following paragraphs. Attock District is proposed to develop six of its existing roads in the next ten years totaling PKR 42.525 billion (Table 4-2). These projects aim to improve the road infrastructure by implementing dualization, and Rehabilitation/improvement schemes. The combined length of all the listed road projects is 254 kilometers, which will contribute to better connectivity and transportation efficiency in the district.

The road schemes serve a significant number of PCUs ranging from 6493 to 13,810, indicating the potential reduction in traffic congestion and travel times. The Benefit/Cost (B/C) ratios of the schemes range from 2.3 to 10.4, indicating their economic viability and potential for positive returns on investment. The total cost of the listed road development projects is PKR 42,525.35 million. This includes expenses associated with dualization, and Rehabilitation/improvement of the roads.

Table 4-2: Proposed Road Schemes, District Attock

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2023	2026	2029	2033				
1- Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	Dualization	13810	12114	14024	16235	19733	5,363.18	5.0	2023-2029	Short To Medium Term
2- P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	Dualization	8730	7658	8865	10262	12474	14,301.80	3.1	2023-2029	Short To Medium Term
3- P5 Dualization of Road from Talagang to Pindi Gheb, km 58	Dualization	9721	8527	9871	11427	13889	11,520.90	3.6	2023-2029	Short To Medium Term
4- Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	Rehabilitation	11325	9935	11501	13313	16182	2,003.57	10.4	2023-2029	Short To Medium Term
5- Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	Dualization	7041	6176	7150	8277	10060	7,349.54	2.5	2023-2029	Short To Medium Term
6- Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	Dualization	6493	5696	6594	7633	9278	1,986.36	2.3	2029-2033	Medium To Long Term
Total Cost (PKR Millions)							42,525.35			

Figure 4-2 shows the spatial distribution of proposed road schemes in Attock District. In the Northern part of the district, the proposed dualization of Attock Road would connect Fateh Jhang and Pindigheb tehsils to district Attock. In the center of the region, key proposed roads are Attock Talagang road and Fateh Jhang Attock road.

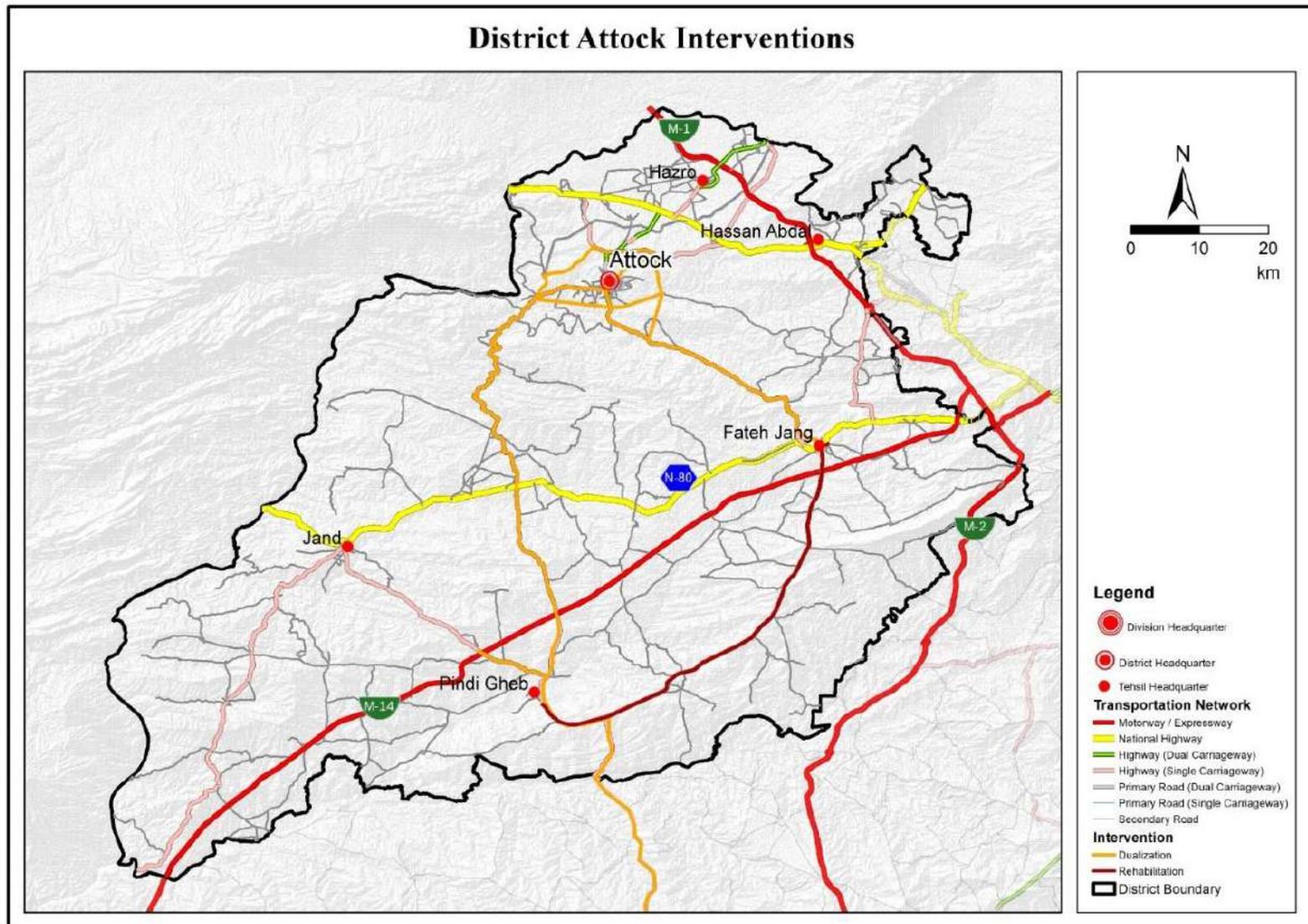


Figure 4-2: Spatial Distribution of Proposed Roads in Attock

Figure 4-3 shows the implementation timeline of the proposed schemes in Attock. The dualization of Fateh Jhang Attock road is proposed to be Short to medium term intervention (2023-2029). Similarly, the dualization of Makhad road from Pindi Gaeb to kharapa is proposed to be Medium to long term intervention (2029-2033) because the projected traffic seems to be served well by the extant road infrastructure till that period of time. The Dualization of Attock ring Road is proposed to be completed in the short to medium term i.e., up to the year 2029. Likewise, the road connecting Fateh jhang with pindi Gaeb via Dhullian also needs to be Rehabilitate in the short to medium term. It implies that Attock would require PKR 40.538 billion in short to medium term and the remaining PKR 1.986 billion in medium to long term to complete the road infrastructure improvement.

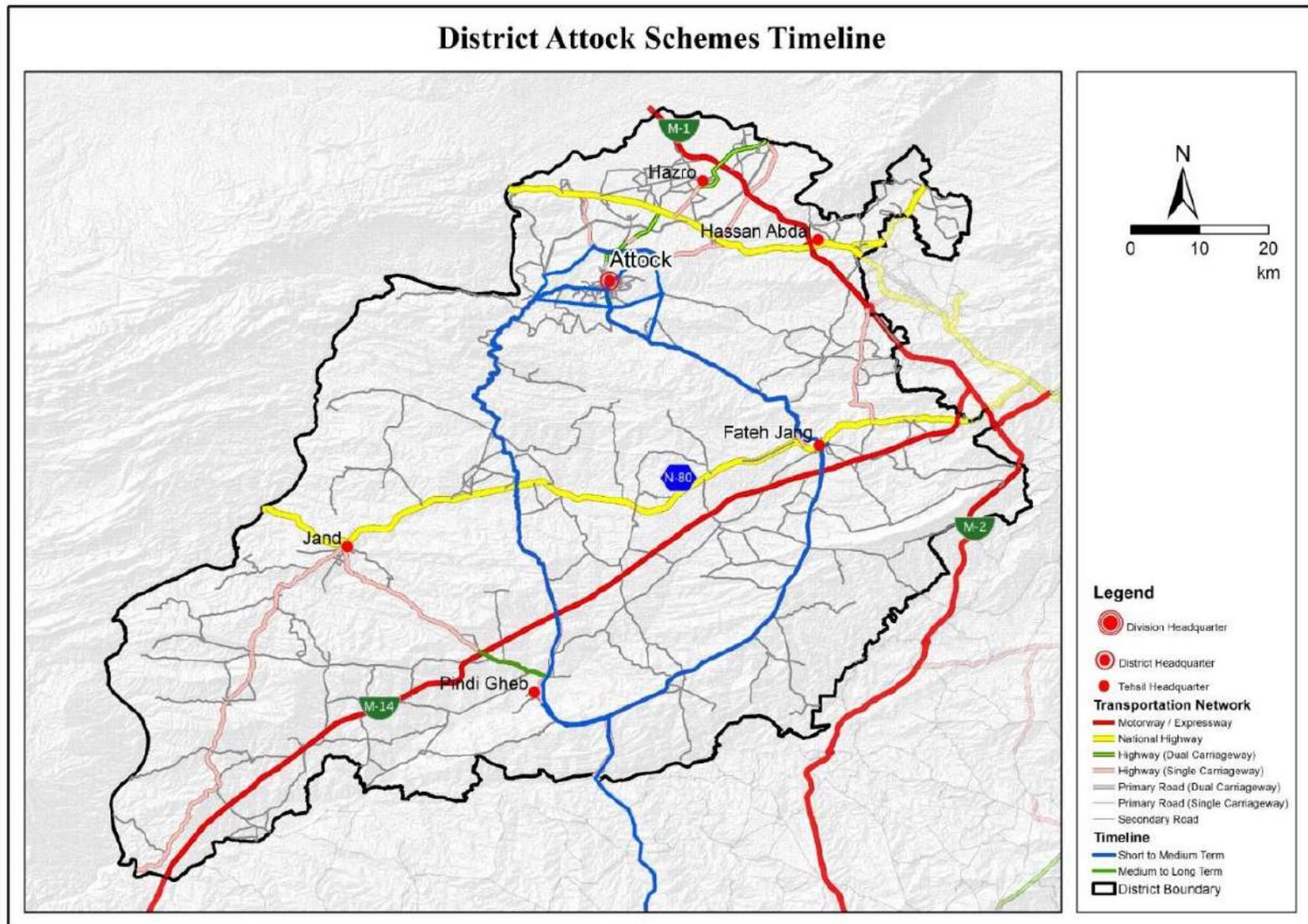


Figure 4-3: Timeline of Proposed Roads in Attock

The total cost of proposed road schemes in Chakwal is PKR 52.987 billion. This includes four dualization schemes, two Rehabilitation/improvement schemes and one upgradation. Among seven proposed schemes, one road would require medium to long term implementation (2029-2033) which implies that the extant road widths are enough to serve traffic adequately for the next six years on these roads. The remaining six schemes are proposed to be implemented in short to medium term (2023-2029) timeline.

Table 4-3: Proposed Road Schemes, District Chakwal

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2023	2026	2029	2033				
7- Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	Dualization	8395	7364	8525	9869	11995	5,760.45	3.0	2023-2029	Short To Medium Term
8- P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	Dualization	13536	11873	13745	15911	19340	26,617.25	4.9	2023-2029	Short To Medium Term
9- Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	Rehabilitation	6307	5533	6405	7414	9012	1,302.32	5.8	2023-2029	Short To Medium Term
10- Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	Rehabilitation	8302	7282	8430	9759	11862	1,089.94	15.9	2023-2029	Short To Medium Term
11- P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	Dualization	7598	6665	7715	8931	10856	10,726.35	2.7	2023-2029	Short To Medium Term
12- Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	Upgradation	7566	6637	7683	8894	10810	1,432.55	7.0	2023-2029	Short To Medium Term
13- Dualization of Kallar Kahar Choa Saiden Shah Road Length = 30.5km	Dualization	6547	5743	6649	7697	9355	6,058.40	2.3	2029-2033	Medium To Long Term
Total Cost (PKR Millions)							52,987.26			

Figure 4-4 shows the spatial distribution of the proposed road schemes in Chakwal. The dualization schemes will provide the much needed North East connectivity for Chakwal with Attock and Jhelum. Lahore Islamabad Motorway (M-2) also passes nearby reinforcing the North-south connectivity of the district. The weaker links are road connections with Jhelum, Kallar kahar Choa Saiden and Pind Dadan that have been proposed to dualize in this study.

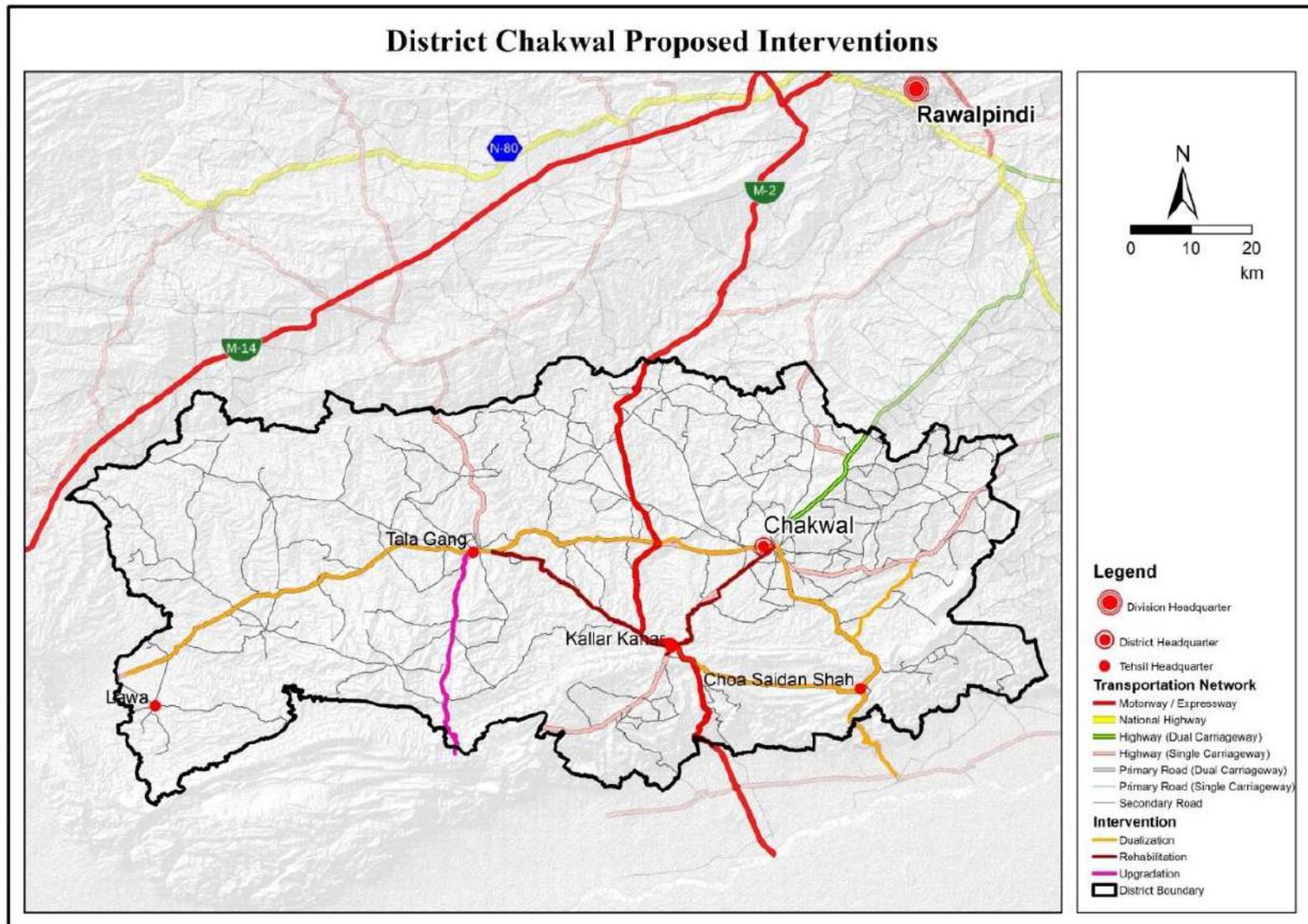


Figure 4-4: Spatial Distribution of Proposed Roads in Chakwal

Figure 4-5 shows the implementation timeline of the proposed schemes. Although the East West connectivity is lagging the North-West connectivity of the district, the traffic counts show that the extant road width in this direction will be sufficient for the next six years and dualization would be required only in the short to medium term and medium to long term. The dualization of Kallar Kahar Choa Saidan Shah Road however can be carried out in the medium to long term time frame (2029-2033).

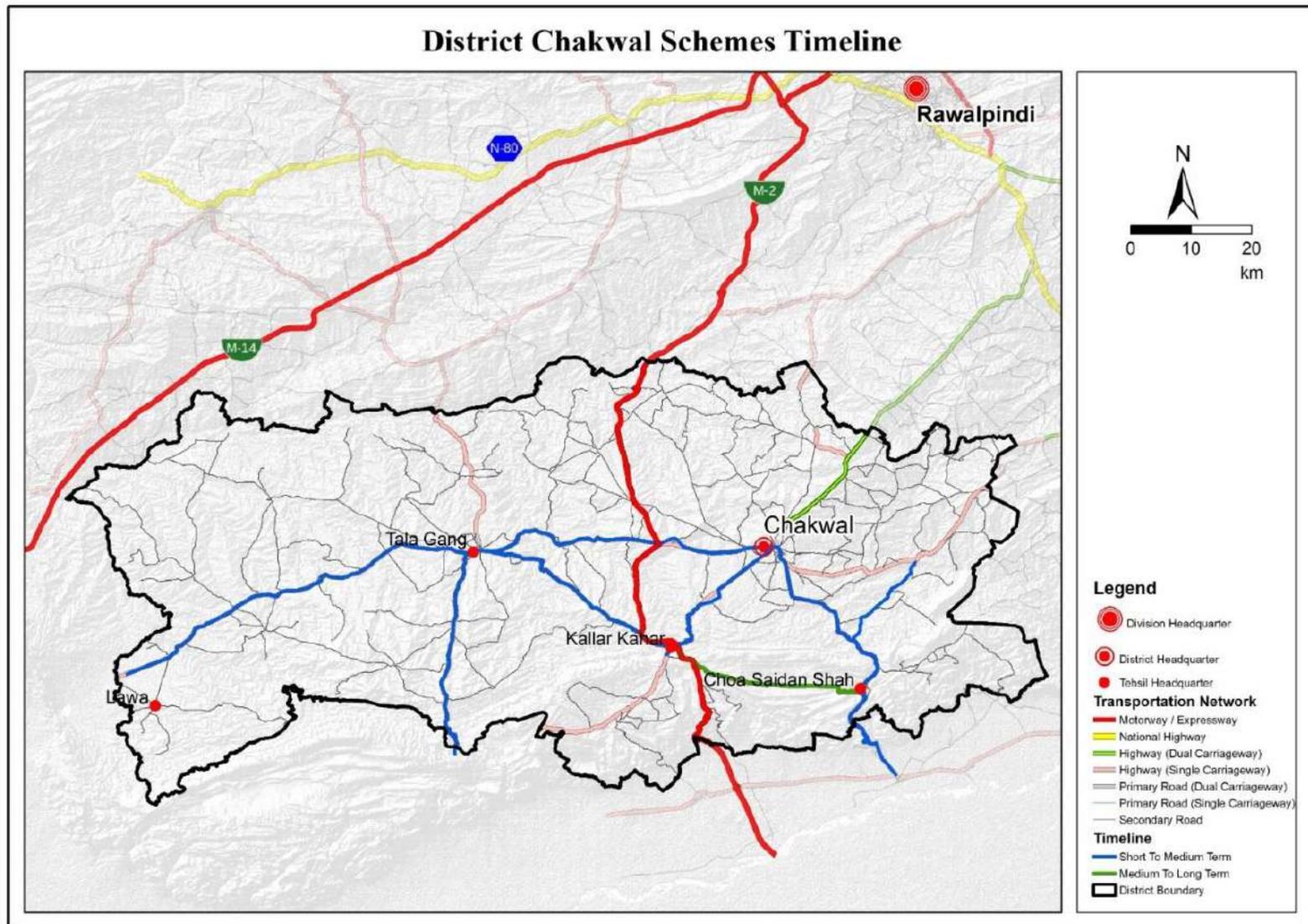


Figure 4-5: Timeline of Proposed Roads in Chakwal

Table 4-4 shows proposed road schemes for Rawalpindi District. The total portfolio the schemes is around PKR 5.974 billion, of which 3.089 billion would be incurred on Rehabilitation of roads and the remaining PKR 2.885 billion on New Construction projects Out of four roads proposed in the study, three comprise Rehabilitation and the only one road that is proposed for New Construction in the Rawalpindi District.

Table 4-4: Proposed Road Schemes, District Rawalpindi

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2023	2026	2029	2033				
17- Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	New Construction	26813	23521	27228	31520	38313	2,885.14	24.6	2023-2029	Short To Medium Term
18- Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmir Boundary, Length 23 km	Rehabilitation	6065	5320	6159	7129	8666	921.64	5.6	2023-2029	Short To Medium Term
19- Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	Rehabilitation	10545	9250	10708	12396	15067	1,093.95	9.7	2023-2029	Short To Medium Term
20- Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	Rehabilitation	5404	4740	5487	6352	7721	1,073.91	5.0	2023-2029	Short To Medium Term
Total Cost (PKR Million)							5,974.64			

Figure 4-6 shows the spatial distribution of the proposed roads in Rawalpindi District. The district already is served by various national roads including M-1, M-2, M-14 N-5 and N-80. The proposed interventions are aimed at strengthening the weaker links in all directions. For example, the proposed Rehabilitation would enhance the connection of Rawalpindi with Kahuta GT road in the East. Likewise, the proposed Rehabilitation of Kallar Sayidan to Dhan Gali would enhance Northeast connectivity in the urban area and its outskirts. New construction of Rawalpindi-Taxila-Hassan Abdal via N5 would strengthen one of the busiest corridors in the northern side.

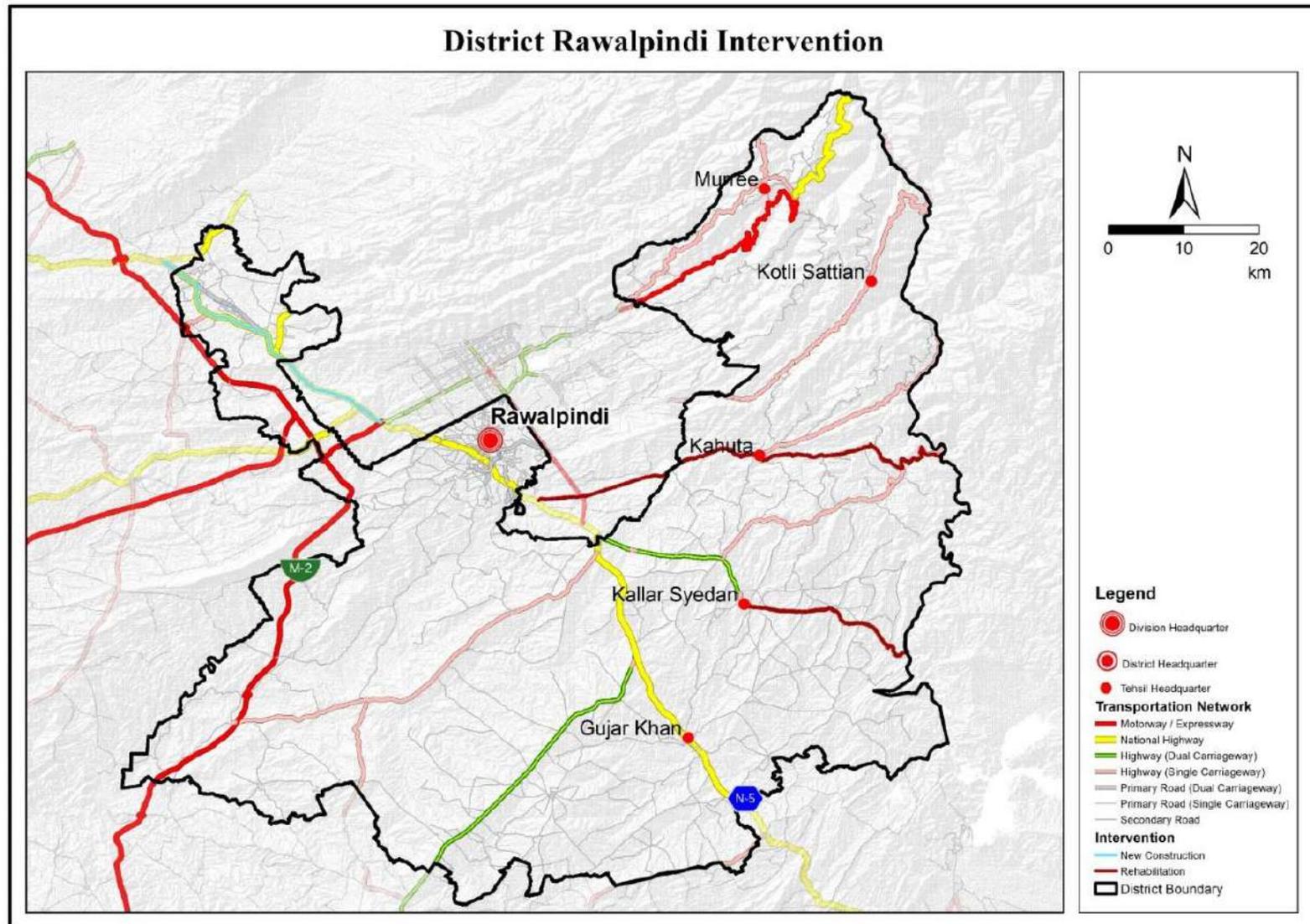


Figure 4-6: Spatial Distribution of Proposed Roads in Rawalpindi

Figure 4-7 shows the proposed implantation timeline of the schemes. Out of four schemes, the three Road projects are proposed for Rehabilitation in short to medium term (2023-2029) while the remaining new construction (N-5 Hassan Abdal Road) is also proposed as a short to medium term (2023-2029).

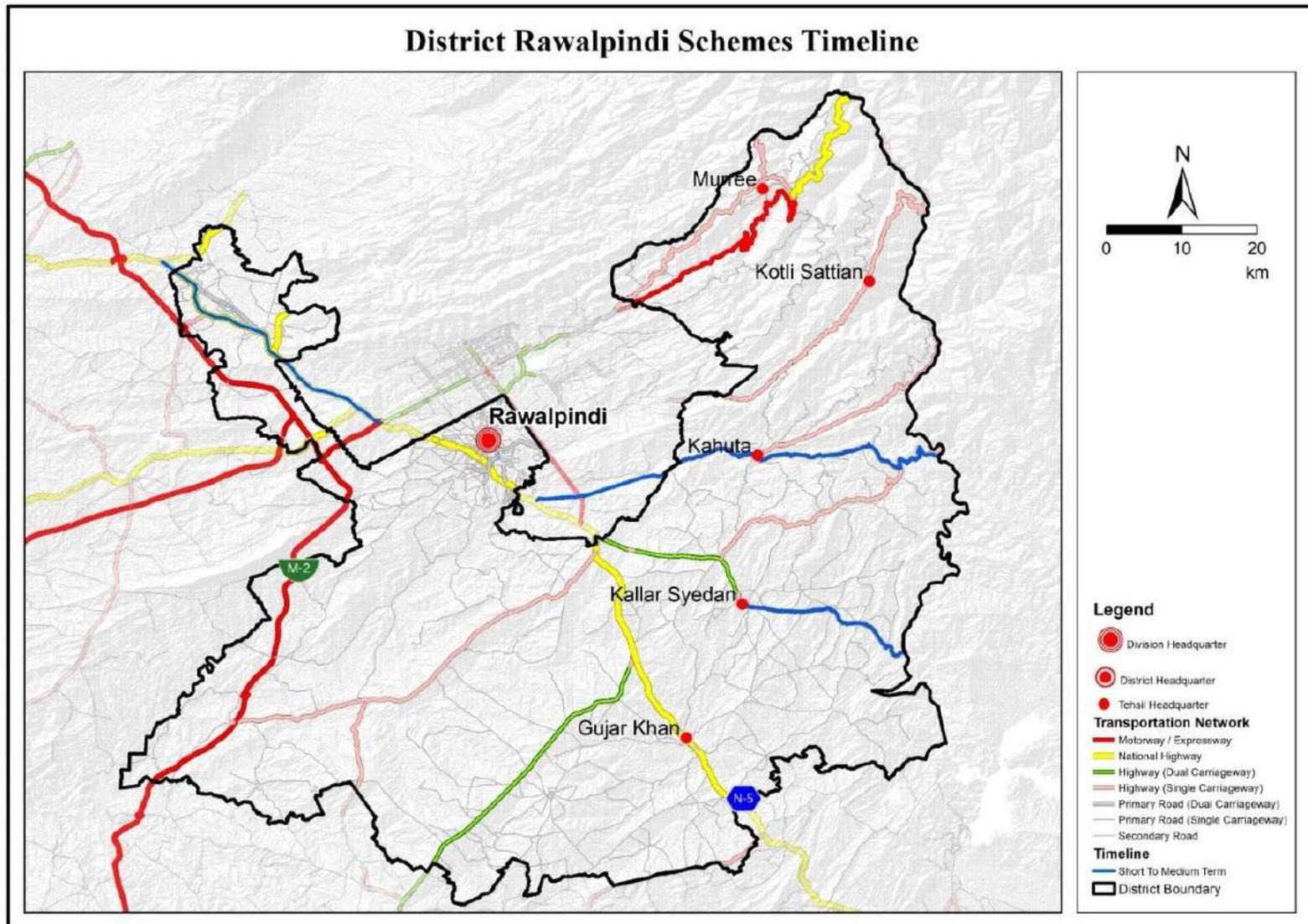


Figure 4-7: Timeline of Proposed Roads in Rawalpindi

Table 4-5 lists the proposed road schemes in Jhelum District. There are 6 roads that have been proposed for dualization or Rehabilitation/improvement program in the next 10 years. Notably, one of these schemes is proposed for dualization and the remaining five are proposed for Rehabilitation/improvement. The total cost of all the proposed schemes is around PKR 25.1588 billion. The cost of Rehabilitation / improvement projects is only PKR 1.322 billion while the remaining 23.836 billion would be incurred on the dualization of road that connect key parts of the district and feature heavy traffic volumes.

Table 4-5: Proposed Road Schemes, District Jhelum

Proposed Road Schemes	Intervention	PCUs	ADT Projections				Cost (PKR Millions)	B/C Ratio	Timeline	Phase
			2023	2026	2029	2033				
14- C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	Dualization	8859	7771	8996	10414	12659	23,836.34	3.2	2023-2029	Short To Medium Term
15- Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km	Rehabilitation	9822	8616	9974	11547	14035	881.57	9.0	2023-2029	Short To Medium Term
16- Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	Rehabilitation	4701	4124	4774	5526	6717	440.79	4.3	2023-2029	Short To Medium Term
Total Cost (PKR Millions)							25,158.70			

Figure 4-8 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 4-9 shows the implementation timeline of the proposed projects. All of the Six proposed interventions are short term schemes (2023-2026).

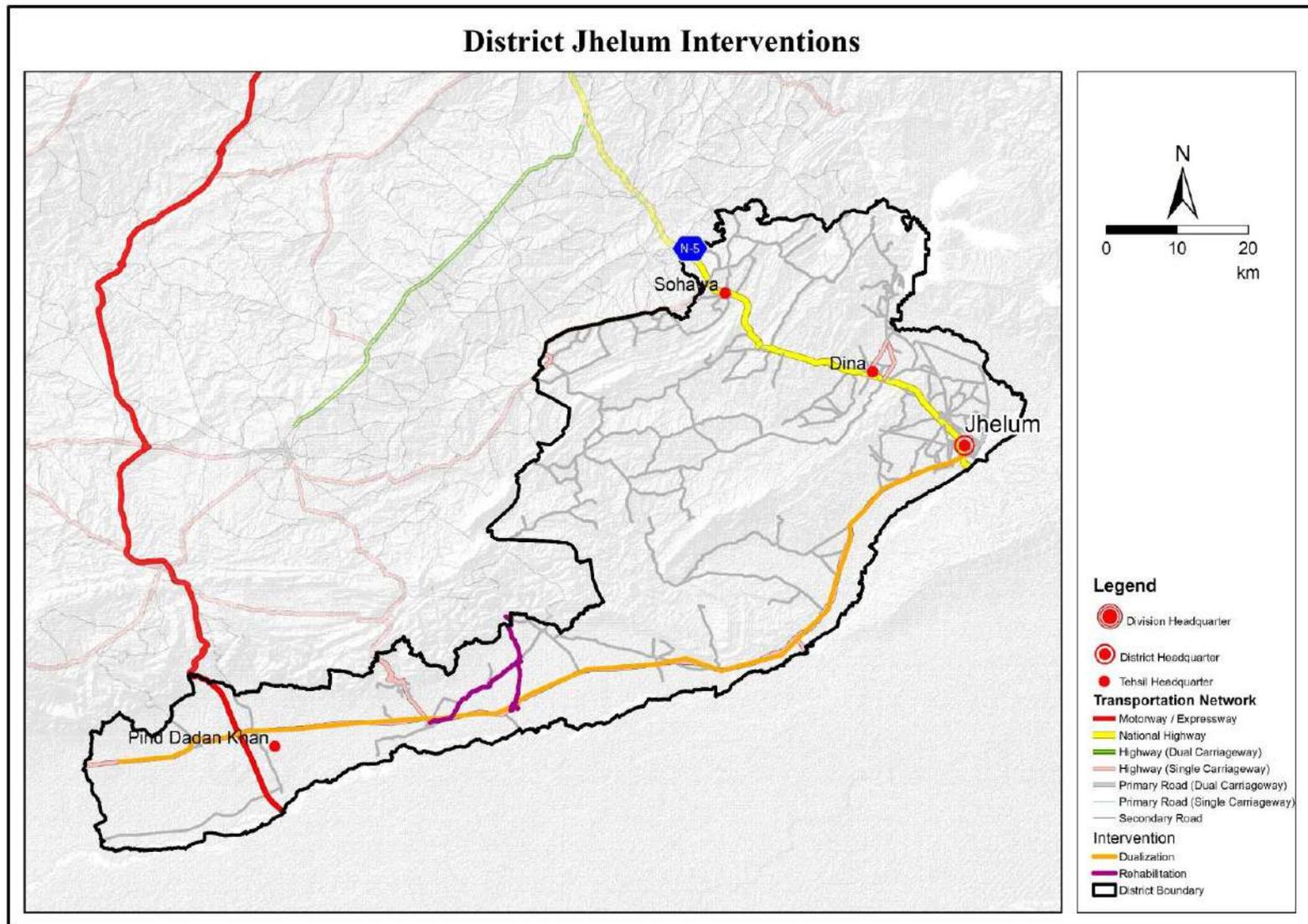


Figure 4-8: Spatial Distribution of Proposed Roads in Jhelum

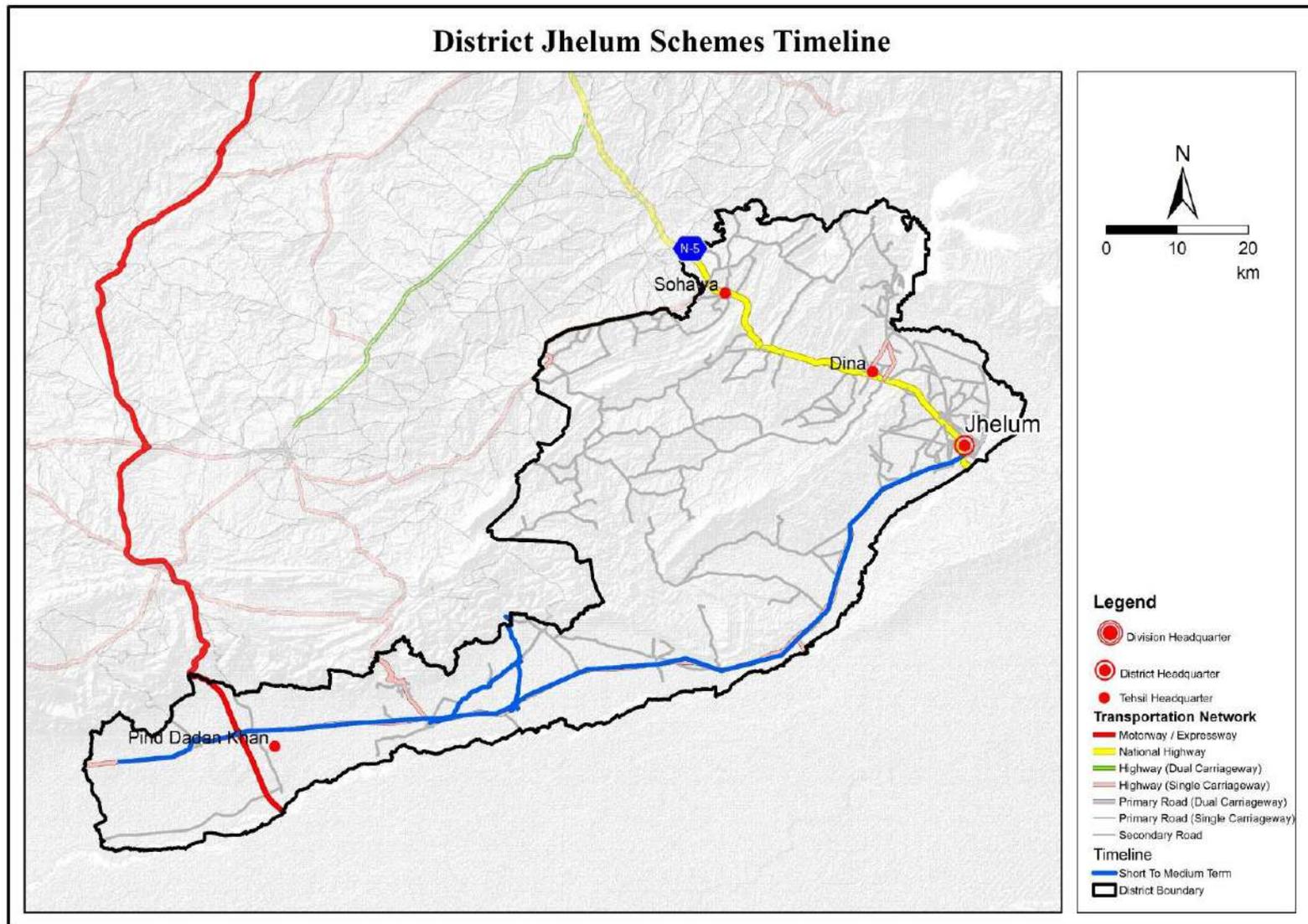


Figure 4-9: Timeline of Proposed Roads in Jhelum

4.2 Truck Terminals

Table 4-6 provides information on the implementation timeline of four projects related to the construction of modal truck terminals in Rawalpindi division. These projects are scheduled to be implemented between 2023 and 2033.

The first project, “Construction of Modal Truck Terminal Near FBR district Taxation Office” is planned for the Attock district. The construction of this truck terminal 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. This truck terminal 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 second project, “Construction of Modal Truck Terminal Near National Highway and Motorway Police Office on N-5 is planned for Rawalpindi 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 proposed interventions would be able to serve 90% 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	Construction of Modal Truck Terminal Near National Highway and Motorway Police Office on N-5 in Rawalpindi city	Rawalpindi	2023-2029
2	Construction of Modal Truck Terminal Near FBR district Taxation Office in Attock City	Attock	2029-2033

4.3 Public Transport

The intercity transport service is found to be satisfactory during this study, therefore, no new schemes have been proposed in this regard. The proposed public transport schemes (Table 4-7) target urban transport in Rawalpindi city. These proposals are based on a study by the Punjab Mass Transit Authority and cater for the mass movement of passengers in the divisional headquarters of Rawalpindi. However urban public transport in district Attock, Jhelum and Chakwal found informal during the study therefore there is a need to formalize the public transport in these districts.

The proposed mass transit system includes Development of dedicated route for Blue Line and Integrated Operations of Feeder Routes. These public transport facilities are expected to ease traffic congestion in Rawalpindi city while providing a cheaper way to commute for different activities such as shopping, businesses, education etc.

Table 4-7: BRT Trunk and Feeder Routes Implementation Timeline for Rawalpindi City

S. No.	Proposed Interventions	Implementation Timeline
1	Development of Integrated Operations of Feeder Routes and Regular Urban Transport	2023-2029
2	Development of Dedicated Track for Blue Line	2029-2033
3	Formalization of Public Transport in District Attock, Jhelum and Chakwal	2029-2033

Spatial Distribution of the Trunk Route and integrated feeder routes in Rawalpindi is shown in Figure 4-10. The Red Line Corridor is 22.5 km, it starts at Sadar and ends at Secretariat. The Blue Line Route is 20 km, starts from Karal Chowk and ends at PIMS. The portion of Blue Line from Karal Chowk to Kuri Road falls in Rawalpindi.

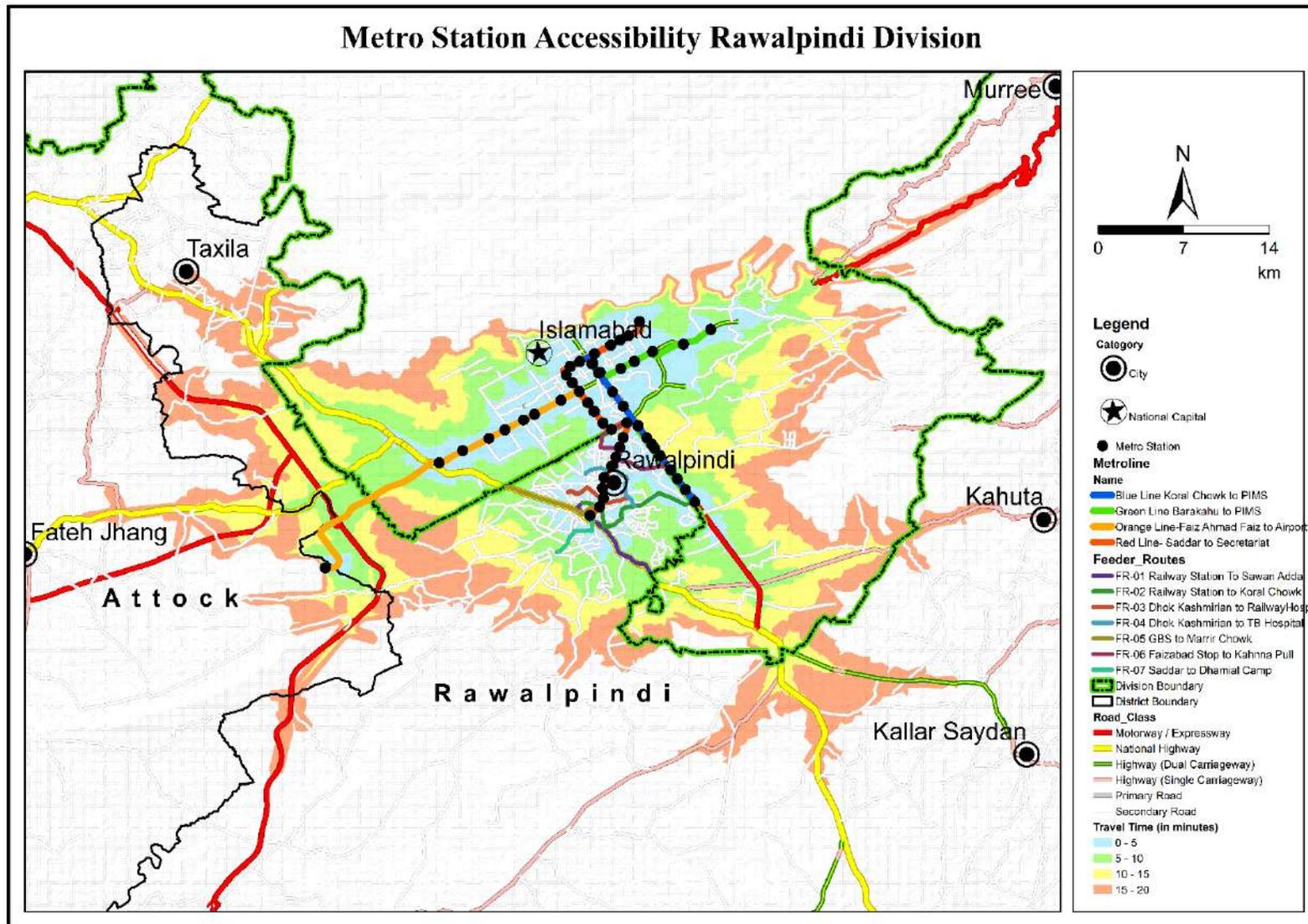


Figure 4-10: Spatial Distribution of Trunk and Feeder Routes

4.4 Parking Plazas

The parking supply was found unsatisfactory during this study, therefore, three parking plazas have been proposed in Satellite Town, Banni Market and Old MC Office in Rawalpindi city (Figure 4-11). The proposed parking plazas (Table 4-8) target urban areas and cater for the parking demand in the divisional headquarters of Rawalpindi. These proposals are based on a study by the Metropolitan Corporation Rawalpindi (MCR)/Punjab PPPA and Rawalpindi Development Authority. The parking facilities are expected to ease traffic congestion in Rawalpindi city while providing commuters with a safe and reliable facility.

Table 4-8 Parking Plaza Implementation Timeline in Rawalpindi

Sr. No	Proposed Intervention	Implementation Timeline
1	Construction of Parking Plaza A in Satellite Town	2029-2033
2	Construction of Parking Plaza B in Banni Market	2029-2033
3	Construction of Parking Plaza C near Old MC Office	2029-2033

4.4.1 Parking Plaza A Satellite Town

The proposed parking Plaza A in satellite town has a total covered area of 133,634 square foot and has 3 floors in addition to a Basement and a Roof Top. Floor wise details of parking plaza with area and usage is illustrated in Table 4-9 while 3D design is presented in Figure 4-12.

Table 4-9 Details of Proposed Parking Plaza A in Satellite Town

Floor	Covered Area SFT	Purpose
Basement 1	31,295	Car Parking + Mosque
Ground	32,507	Multi-Purpose
Floor 1	32,507	M Cycle Parking
Floor 2	32,507	M Cycle Parking
Roof Top	4,818	Restaurant
Total	133,634	

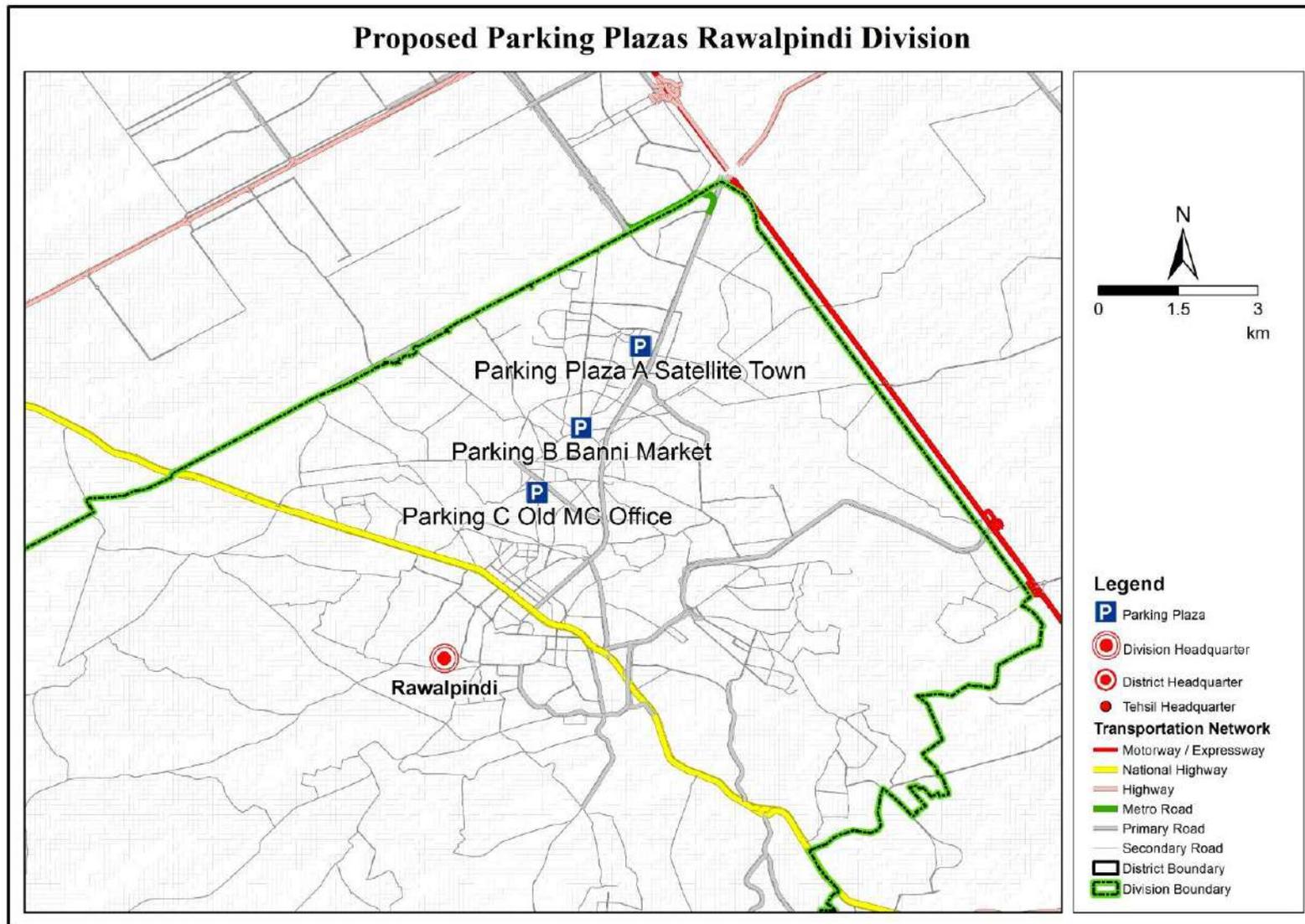


Figure 4-11 Proposed Parking Sites in Rawalpindi



Figure 4-12 3D design of Parking Plaza A in Satellite Town

4.4.2 Parking Plaza B Banni Market

The proposed parking Plaza B in Banni Market has a total covered area of 436,324 square foot and has 8 floors in addition to a Basement and a Roof Top. Floor wise details of parking plaza with area and usage is illustrated in Table 4-10 while 3D design is presented in Figure 4-13.

Table 4-10 Details of Proposed Parking Plaza B in Banni Market

Floor	Covered Area SFT	Purpose
Basement Floor	47,916	Bike Parking
Ground Floor	47,371	Commercial
1st Floor	47,803	
2nd Floor	47,803	
3rd Floor	47,803	
4th Floor	47,803	Car Parking
5th Floor	47,803	

6th Floor	47,803	
7th Floor	47,803	Entertainment
Roof Top Floor	6,416	Food Court
Total	436,324	



Figure 4-13 3D design of Parking Plaza B in Banni Market

4.4.3 Parking Plaza C Old MC Office

The proposed parking Plaza C in Old MC Office has total covered area of 520,929 square foot and has 8 floors in addition to a Basement and a Roof Top. Floor wise details of parking plaza with area and usage are illustrated in Table 4-11 while 3D design is presented in Figure 4-14.

Table 4-11 Details of Proposed Parking Plaza C in Old MC Office

Floor	Covered Area SFT	Purpose
Basement Floor 1	59,957	Bike Parking
Ground Floor	58,861	Commercial
1st Floor	58,861	
2nd Floor	59,626	
3rd Floor	59,626	
4th Floor	59,626	Car Parking
5th Floor	59,626	
6th Floor	59,626	
7th Floor	39,949	Entertainment
Roof Top Floor	5,164	Food Court
Total	520,929	



Figure 4-14 3D design of Parking Plaza C in Old MC Office

4.5 Sectoral Targets

To facilitate the implementation of the proposed projects and visualize their impact, detail of sectoral targets has been presented in following sections. In the base year 2023, the share of dual carriageways in the entire road network of Rawalpindi division is only 8.3%. The proposed interventions would enhance it to 14.4% by 2029 and 20.9% by 2033. Likewise, currently there are two BRT route operational in Rawalpindi. Likewise, the number of feeder routes would increase and be integrated with other modes of transport such as railways, para-transits, and ride-hailing services. Currently, there is no formal truck terminal in the division . This would increase to two by 2033. Thus, the proposed interventions would have a multi-prong effect on enhancing the road and transport sector infrastructure in Rawalpindi.

4.5.1 Base Line Year 2023

In the base year 2023, transport infrastructure stands at following statistics in the Rawalpindi division.

- 1. Road Network (Except Local Roads)**
 - Dual Carriageways: 8.3%
- 2. Mass Transit System; Two Corridors**
 - Corridor-1 Red Line (Saddar to Secretariat)
 - Corridor-2 Blue Line (Karal Chowk to PIMS)
- 3. Freight Transport**
 - 1 Dry Port
- 4. Airport**
 - New Islamabad International Airport

Key institutions that played a crucial role in the implementation of these plans include Punjab Mass Transit Authority (PMA) and Rawalpindi Development Authority (RDA).

4.5.2 Short to Medium Term (2023 to 2029)

The execution of proposed transport project in short to medium term timeline in different sectors would enhance transport infrastructure to the following statistics till year 2029.

- 1. Road Network (Except Local Roads)**
 - Dual Carriageways: 14.4%
- 2. Urban Transport**
 - Integrated Operations of Feeder Routes and Regular Urban Transport
- 3. Mass Transit System; Two Corridors**

- Corridor-1 Red Line (Saddar to Secretariat)
- Corridor-2 Blue Line (Karal Chowk to PIMS)

4. Freight Transport

- 1 Truck Terminals
- 1 Dry Port

5. Airport

- New Islamabad International Airport

6. Railways

- Upgradation of Taxila, Pindi and Gujar Khan Railway Station

The Key Institutions that would achieve the targets include Punjab Mass Transit Authority (PMA), Rawalpindi Development Authority (RDA), and Punjab Transport Company (PTC).

4.5.3 Medium to Long Term (2029 to 2033)

The execution of proposed transport project in medium to long term timeline in different sectors would enhance transport infrastructure to the following statistics till year 2033.

1. Road Network (Except Local Roads)

- Dual Carriageways: 20.9%

2. Urban Transport

- Integrated Operations of Feeder Routes and Regular Urban Transport
- Formalization of Public Transport in Attcok, Jhelum and Chakwal

3. Mass Transit System; Two Corridors

- Corridor-1 Red Line (Saddar to Secretariat)
- Corridor-2 Blue Line (Karal Chowk to PIMS)
- Dedicated tracks for Blue line

4. Parking

- 3 parking Plaza

5. Freight Transport

- 2 Truck Terminal
- 1 Dry Port

6. Airport

- New Islamabad International Airport

7. Railways

- Upgradation of Taxila, Pindi and Gujar Khan Railway Station

The Key Institutions that would achieve the targets includes Punjab Mass Transit Authority (PMA), Rawalpindi Development Authority (RDA), and Punjab Transport Company (PTC) and Traffic Engineering and Transport Planning Agency (TEPA).

ANNEXURE I

COST-BENEFIT ANALYSIS OF THE POTENTIAL ROAD SCHEMES

Sheet 1 Candidate Links and Proposed Improvements

Sr#	Linkage	Existing Link				Proposed Link			
		Carriageway	Distance (Km)	Speed (kph)	TT (Hrs)	Carriageway	Distance (Km)	Speed (kph)	TT (Hrs)
1	Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	Dual	0	80	0	Dual	27	80	0.34
		Single	27	40	0.68	Single	0	50	0
		Total	27	-	0.68	Total	27	-	0.34
2	Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	Dual	0	80	0	Dual	37	80	0.46
		Single	37	40	0.93	Single	0	50	0
		Total	37	-	0.93	Total	37	-	0.46
3	Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	Dual	0	80	0	Dual	10	80	0.13
		Single	10	40	0.25	Single	0	50	0
		Total	10	-	0.25	Total	10	-	0.13
4	P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	Dual	0	80	0	Dual	72	80	0.9
		Single	72	40	1.8	Single	0	50	0
		Total	72	-	1.8	Total	72	-	0.9
5	P5 Dualization of Road from Talagang to Pindi Gheb, km 58	Dual	0	80	0	Dual	58	80	0.73
		Single	58	40	1.45	Single	0	50	0
		Total	58	-	1.45	Total	58	-	0.73
6	Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	Dual	0	80	0	Dual	0	80	0
		Single	50	40	1.25	Single	50	50	1
		Total	50	-	1.25	Total	50	-	1
7	Dualization of Kallar Kahar Choa Saiden Shah Road Length = 30.5km	Dual	0	80	0	Dual	30.5	80	0.38
		Single	30.5	40	0.76	Single	0	50	0
		Total	30.5	-	0.76	Total	30.5	-	0.38
8	Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	Dual	0	80	0	Dual	29	80	0.36
		Single	29	40	0.73	Single	0	50	0
		Total	29	-	0.73	Total	29	-	0.36
9	P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	Dual	0	80	0	Dual	134	80	1.68
		Single	134	40	3.35	Single	0	50	0
		Total	134	-	3.35	Total	134	-	1.68
10	P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	Dual	0	80	0	Dual	54	80	0.68
		Single	54	40	1.35	Single	0	50	0
		Total	54	-	1.35	Total	54	-	0.68
11	Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	Dual	0	80	0	Dual	0	80	0
		Single	32.5	40	0.81	Single	32.5	50	0.65
		Total	32.5	-	0.81	Total	32.5	-	0.65
12	Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	Dual	0	80	0	Dual	27.2	80	0.34
		Single	27.2	40	0.68	Single	0	50	0
		Total	27.2	-	0.68	Total	27.2	-	0.34
13	Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	Dual	0	80	0	Dual	0	80	0
		Single	35.75	40	0.89	Single	35.75	50	0.72
		Total	35.75	-	0.89	Total	35.75	-	0.72

Annexures

14	C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	Dual	0	80	0	Dual	120	80	1.5
		Single	120	40	3	Single	0	50	0
		Total	120	-	3	Total	120	-	1.5
15	Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km	Dual	0	80	0	Dual	0	80	0
		Single	22	40	0.55	Single	22	50	0.44
		Total	22	-	0.55	Total	22	-	0.44
16	Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	Dual	0	80	0	Dual	0	80	0
		Single	11	40	0.28	Single	11	50	0.22
		Total	11	-	0.28	Total	11	-	0.22
17	Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	Dual	0	80	0	Dual	0	80	0
		Single	72	40	1.8	Single	72	50	1.44
		Total	72	-	1.8	Total	72	-	1.44
18	Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmi Boundary, Length 23 km	Dual	0	80	0	Dual	0	80	0
		Single	23	40	0.58	Single	23	50	0.46
		Total	23	-	0.58	Total	23	-	0.46
19	Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	Dual	0	80	0	Dual	0	80	0.0
		Single	27.3	40	0.68	Single	27.3	50	0.5
		Total	27.3	-	0.68	Total	27.3	-	0.55
20	Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	Dual	0	80	0	Dual	0	80	0.0
		Single	26.8	40	0.67	Single	26.8	50	0.5
		Total	26.8	-	0.67	Total	26.8	-	0.5

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	Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	0.68	0.34	0.34	13,810	4,661.0	1,701,279.7	1,749.0	2,975,538,180.9	2,975.54
2	Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	0.93	0.46	0.46	7,041	3,256.4	1,188,587.5	1,749.0	2,078,839,522.6	2,078.84
3	Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	0.25	0.13	0.13	6,493	811.7	296,265.5	1,749.0	518,168,395.3	518.17
4	P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	1.80	0.90	0.90	8,730	7,856.8	2,867,728.1	1,749.0	5,015,656,436.5	5,015.66
5	P5 Dualization of Road from Talagang to Pindi Gheb, km 58	1.45	0.73	0.73	9,721	7,047.4	2,572,312.3	1,749.0	4,498,974,161.6	4,498.97
6	Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	1.25	1.00	0.25	11,325	2,831.4	1,033,444.2	1,749.0	1,807,493,967.7	1,807.49
7	Dualization of Kallar Kahar Choa Saiden Shah Road Length = 30.5km	0.76	0.38	0.38	6,547	2,496.2	911,101.1	1,749.0	1,593,515,847.0	1,593.52
8	Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	0.73	0.36	0.36	8,395	3,043.2	1,110,780.0	1,749.0	1,942,754,147.0	1,942.75
9	P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	3.35	1.68	1.68	13,536	22,672.0	8,275,267.5	1,749.0	14,473,442,928.3	14,473.44
10	P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	1.35	0.68	0.68	7,598	5,128.5	1,871,909.5	1,749.0	3,273,969,738.9	3,273.97

Annexures

11	Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	0.81	0.65	0.16	6,307	1,024.9	374,099.1	1,749.0	654,299,348.3	654.30
12	Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	0.68	0.34	0.34	8,302	2,822.7	1,030,279.1	1,749.0	1,801,958,169.1	1,801.96
13	Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	0.89	0.72	0.18	7,566	1,352.4	493,621.0	1,749.0	863,343,084.8	863.34
14	C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	3.00	1.50	1.50	8,859	13,288.9	4,850,443.4	1,749.0	8,483,425,567.2	8,483.43
15	Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km	0.55	0.44	0.11	9,822	1,080.5	394,371.0	1,749.0	689,754,930.8	689.75
16	Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	0.28	0.22	0.06	4,701	258.6	94,372.2	1,749.0	165,056,893.9	165.06
17	Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	1.80	1.44	0.36	26,813	9,652.9	3,523,290.7	1,749.0	6,162,235,497.9	6,162.24
18	Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmir Boundary, Length 23 km	0.58	0.46	0.12	6,065	697.5	254,570.0	1,749.0	445,242,895.0	445.24
19	Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	0.68	0.55	0.14	10,545	1,439.4	525,378.3	1,749.0	918,886,581.1	918.89
20	Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	0.67	0.54	0.13	5,404	724.1	264,290.1	1,749.0	462,243,342.9	462.24

SHEET 3- Vehicle Operating Costs Savings

Sr No	Linkage	Distance (km)		VOC (Rs./km/ PCU/Day)		PCU per Day	VOC (Rs./Year)		VOC Per Annum	
		Existing	New	Before	After		Before	After	PKR	(Million)
1	Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	27.0	27.0	52.8	52.4	13,810	7,183,516,035	7,131,826,128	51,689,907	51.69
2	Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	37.0	37.0	52.8	52.4	7,041	5,018,714,645	4,982,601,843	36,112,802	36.11
3	Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	10.0	10.0	52.8	52.4	6,493	1,250,957,222	1,241,955,799	9,001,422	9.00
4	P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	72.0	72.0	52.8	52.4	8,730	12,108,750,165	12,021,620,107	87,130,058	87.13
5	P5 Dualization of Road from Talagang to Pindi Gheb, km 58	58.0	58.0	52.8	52.4	9,721	10,861,380,721	10,783,226,269	78,154,452	78.15
6	Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	50.0	50.0	52.8	50.5	11,325	10,909,086,954	10,444,691,997	464,394,957	464.39
7	Dualization of Kallar Kahar Choa Saiden Shah Road Length = 30.5km	30.5	30.5	52.8	52.4	6,547	3,847,050,834	3,819,368,888	27,681,946	27.68
8	Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	29.0	29.0	52.8	52.4	8,395	4,690,178,623	4,656,429,844	33,748,779	33.75
9	P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	134.0	134.0	52.8	52.4	13,536	34,941,648,548	34,690,221,454	251,427,094	251.43
10	P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	54.0	54.0	52.8	52.4	7,598	7,903,986,670	7,847,112,525	56,874,145	56.87
11	Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	32.5	32.5	52.8	50.5	6,307	3,949,008,192	3,780,900,678	168,107,514	168.11

Annexures

12	Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	27.2	27.2	52.8	50.5	8,302	4,350,270,309	4,165,081,246	185,189,063	185.19
13	Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	35.8	35.8	52.8	50.5	7,566	5,210,686,703	4,988,870,098	221,816,605	221.82
14	C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	120.0	120.0	52.8	52.4	8,859	20,480,605,487	20,333,234,675	147,370,812	147.37
15	Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km	22.0	22.0	52.8	50.5	9,822	4,162,999,518	3,985,782,489	177,217,029	177.22
16	Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	11.0	11.0	52.8	50.5	4,701	996,196,967	953,789,307	42,407,660	42.41
17	Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	72.0	72.0	52.8	50.5	26,813	37,192,026,131	35,608,778,197	1,583,247,933	1,583.25
18	Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmir Boundary, Length 23 km	23.0	23.0	52.8	50.5	6,065	2,687,252,928	2,572,857,772	114,395,156	114.40
19	Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	27.3	27.3	52.8	50.5	10,545	5,545,918,157	5,309,830,899	236,087,258	236.09
20	Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	26.8	26.8	52.8	50.5	5,404	2,789,858,728	2,671,095,689	118,763,039	118.76

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	Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	Dual	0	80	19.94	0.00	0	0	2952.06
		Single	27	40	21.69	585.63	13,810	8,087,837	
		Total	27	-	-	585.63	13,810	8,087,837	
2	Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	Dual	0	80	19.94	0.00	0	0	2062.44
		Single	37	40	21.69	802.53	7,041	5,650,512	
		Total	37	-	-	802.53	7,041	5,650,512	
3	Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	Dual	0	80	19.94	0.00	0	0	514.08
		Single	10	40	21.69	216.90	6,493	1,408,438	
		Total	10	-	-	216.90	6,493	1,408,438	
4	P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	Dual	0	80	19.94	0.00	0	0	4976.08
		Single	72	40	21.69	1561.68	8,730	13,633,101	
		Total	72	-	-	1561.68	8,730	13,633,101	
5	P5 Dualization of Road from Talagang to Pindi Gheb, km 58	Dual	0	80	19.94	0.00	0	0	4463.48
		Single	58	40	21.69	1258.02	9,721	12,228,702	
		Total	58	-	-	1258.02	9,721	12,228,702	
6	Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	Dual	0	80	19.94	0.00	0	0	4483.08
		Single	50	40	21.69	1084.50	11,325	12,282,414	
		Total	50	-	-	1084.50	11,325	12,282,414	
7	Dualization of Kallar Kahar Choa Saidan Shah Road Length = 30.5km	Dual	0	80	19.94	0.00	0	0	1580.94
		Single	30.5	40	21.69	661.55	6,547	4,331,350	
		Total	30.5	-	-	661.55	6,547	4,331,350	
8	Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	Dual	0	80	19.94	0.00	0	0	1927.43
		Single	29	40	21.69	629.01	8,395	5,280,617	
		Total	29	-	-	629.01	8,395	5,280,617	

Annexures

9	P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	Dual	0	80	19.94	0.00	0	0	14359.24
		Single	134	40	21.69	2906.46	13,536	39,340,395	
		Total	134	-	-	2906.46	13,536	39,340,395	
10	P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	Dual	0	80	19.94	0.00	0	0	3248.14
		Single	54	40	21.69	1171.26	7,598	8,899,007	
		Total	54	-	-	1171.26	7,598	8,899,007	
11	Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	Dual	0	80	19.94	0.00	0	0	1622.84
		Single	32.5	40	21.69	704.93	6,307	4,446,142	
		Total	32.5	-	-	704.93	6,307	4,446,142	
12	Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	Dual	0	80	19.94	0.00	0	0	1787.74
		Single	27.2	40	21.69	589.97	8,302	4,897,919	
		Total	27.2	-	-	589.97	8,302	4,897,919	
13	Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	Dual	0	80	19.94	0.00	0	0	2141.33
		Single	35.75	40	21.69	775.42	7,566	5,866,651	
		Total	35.75	-	-	775.42	7,566	5,866,651	
14	C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	Dual	0	80	19.94	0.00	0	0	8416.49
		Single	120	40	21.69	2602.80	8,859	23,058,875	
		Total	120	-	-	2602.80	8,859	23,058,875	
15	Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km	Dual	0	80	19.94	0.00	0	0	1710.78
		Single	22	40	21.69	477.18	9,822	4,687,073	
		Total	22	-	-	477.18	9,822	4,687,073	
16	Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	Dual	0	80	19.94	0.00	0	0	409.39
		Single	11	40	21.69	238.59	4,701	1,121,607	
		Total	11	-	-	238.59	4,701	1,121,607	
17	Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	Dual	0	80	19.94	0.00	0	0	15284.04
		Single	72	40	21.69	1561.68	26,813	41,874,069	
		Total	72	-	-	1561.68	26,813	41,874,069	
18		Dual	0	80	19.94	0.00	0	0	1104.32

Annexures

	Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmi Boundary, Length 23 km	Single	23	40	21.69	498.87	6,065	3,025,547	
		Total	23	-	-	498.87	6,065	3,025,547	
19	Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	Dual	0	80	19.94	0.00	0	0	2279.09
		Single	27.3	40	21.69	592.14	10,545	6,244,085	
		Total	27.3	-	-	592.14	10,545	6,244,085	
20	Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	Dual	0	80	19.94	0.00	0	0	1146.49
		Single	26.8	40	21.69	581.29	5,404	3,141,069	
		Total	26.8	-	-	581.29	5,404	3,141,069	

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	Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km	Dual	27	80	19.94	538.38	13,810	7,435,291	2713.88
		Single	0	50	20.28	0.00	0	0	
		Total	27	-	-	538.38	13,810	7,435,291	
2	Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.	Dual	37	80	19.94	737.78	7040.87	5,194,616	1896.03
		Single	0	50	20.28	0.00	0.00	0	
		Total	37	-	-	737.78	7040.87	5,194,616	
3	Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km	Dual	10	80	19.94	199.40	6493.49	1,294,802	472.60
		Single	0	50	20.28	0.00	0.00	0	
		Total	10	-	-	199.40	6493.49	1,294,802	
4	P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km	Dual	72	80	19.94	1435.68	8729.77	12,533,150	4574.60
		Single	0	50	20.28	0.00	0.00	0	
		Total	72	-	-	1435.68	8729.77	12,533,150	
5	P5 Dualization of Road from Talagang to Pindi Gheb, km 58	Dual	58	80	19.94	1156.52	9720.59	11,242,062	4103.35
		Single	0	50	20.28	0.00	0.00	0	
		Total	58	-	-	1156.52	9720.59	11,242,062	
6	Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km	Dual	0	80	19.94	0.00	0.00	0	4191.65
		Single	50	50	20.28	1014.00	11325.42	11,483,972	
		Total	50	-	-	1014.00	11325.42	11,483,972	
7	Dualization of Kallar Kahar Choa Saiden Shah Road Length = 30.5km	Dual	30.5	80	19.94	608.17	6547.32	3,981,886	1453.39
		Single	0	50	20.28	0.00	0.00	0	
		Total	30.5	-	-	608.17	6547.32	3,981,886	
8		Dual	29	80	19.94	578.26	8395.12	4,854,565	1771.92
		Single	0	50	20.28	0.00	0.00	0	

Annexures

	Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.	Total	29	-	-	578.26	8395.12	4,854,565	
9	P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km	Dual	134	80	19.94	2671.96	13535.50	36,166,320	13200.71
		Single	0	50	20.28	0.00	0.00	0	
		Total	134	-	-	2671.96	13535.50	36,166,320	
10	P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km	Dual	54	80	19.94	1076.76	7597.81	8,181,014	2986.07
		Single	0	50	20.28	0.00	0.00	0	
		Total	54	-	-	1076.76	7597.81	8,181,014	
11	Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km	Dual	0	80	19.94	0.00	0.00	0	1517.35
		Single	32.5	50	20.28	659.10	6307.26	4,157,112	
		Total	32.5	-	-	659.10	6307.26	4,157,112	
12	Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km	Dual	27.2	80	19.94	542.37	0.00	0	1643.50
		Single	0	50	20.28	0.00	8302.01	0	
		Total	27.2	-	-	542.37	8302.01	4,502,743	
13	Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km	Dual	0	80	19.94	0.00	0.00	0	2002.13
		Single	35.75	50	20.28	725.01	7565.80	5,485,279	
		Total	35.75	-	-	725.01	7565.80	5,485,279	
14	C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km	Dual	120	80	19.94	2392.80	8859.26	21,198,431	7737.43
		Single	0	50	20.28	0.00	0.00	0	
		Total	120	-	-	2392.80	8859.26	21,198,431	
15	Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km	Dual	0	80	19.94	0.00	0.00	0	1599.57
		Single	22	50	20.28	446.16	9822.44	4,382,381	
		Total	22	-	-	446.16	9822.44	4,382,381	
16	Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.	Dual	0	80	19.94	0.00	0.00	0	382.77
		Single	11	50	20.28	223.08	4700.98	1,048,694	
		Total	11	-	-	223.08	4700.98	1,048,694	
17		Dual	0	80	19.94	0.00	0.00	0	14290.47

Annexures

	Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km	Single	72	50	20.28	1460.16	26813.48	39,151,965	
		Total	72	-	-	1460.16	26813.48	39,151,965	
18	Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmi Boundary, Length 23 km	Dual	0	80	19.94	0.00	0.00	0	1032.54
		Single	23	50	20.28	466.44	6064.80	2,828,865	
		Total	23	-	-	466.44	6064.80	2,828,865	
19	Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km	Dual	0	80	19.94	0.00	0.00	0	2130.93
		Single	27.3	50	20.28	553.64	10545.00	5,838,176	
		Total	27.3	-	-	553.64	10545.00	5,838,176	
20	Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km	Dual	0	80	19.94	0.00	0.00	0	1071.96
		Single	26.8	50	20.28	543.50	5403.60	2,936,878	
		Total	26.8	-	-	543.50	5403.60	2,936,878	

ANNEXURE II
PROPOSED ROAD SCHEMES

1: Attock Ring Road

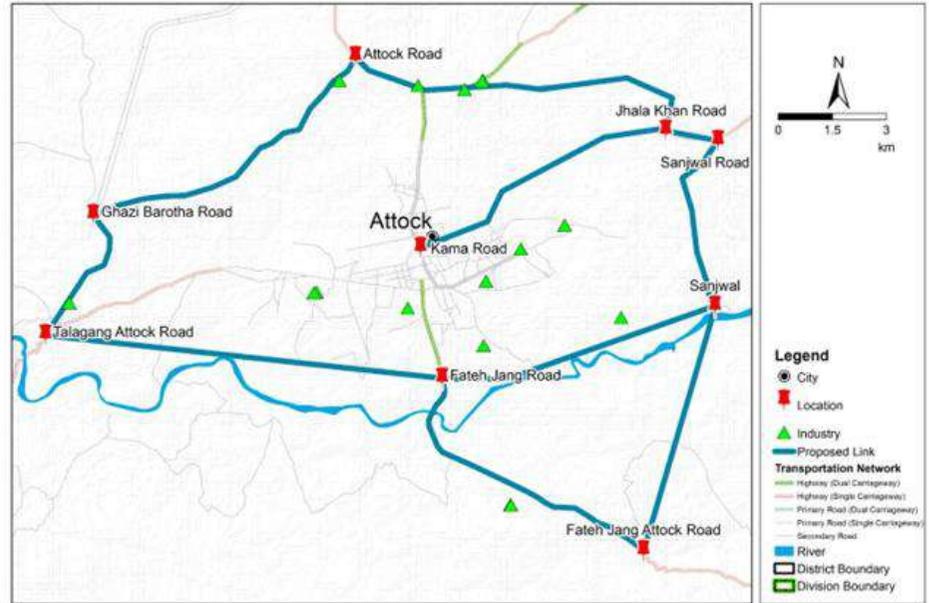
Project Name Construction of Attock Ring Road; Dualization of Carriageway and New Construction, Length 27 km

Districts Attock

Phase Short To Medium Term (2023-2029)

Total Cost (PKR Millions) 5363.18

Benefit Cost Ratio 5.0



District	Industrial Produce	Agriculture Produce	Tourism Site
Attock	Textile, Food, Seed, Oil and gas	Wheat, peanuts, maize, sugarcane and other crops	Attock Fort, Kala Chitta Mountain Range, Ratti Jinnah Hill Park, Attock bridge



2: Attock-Talagang Road

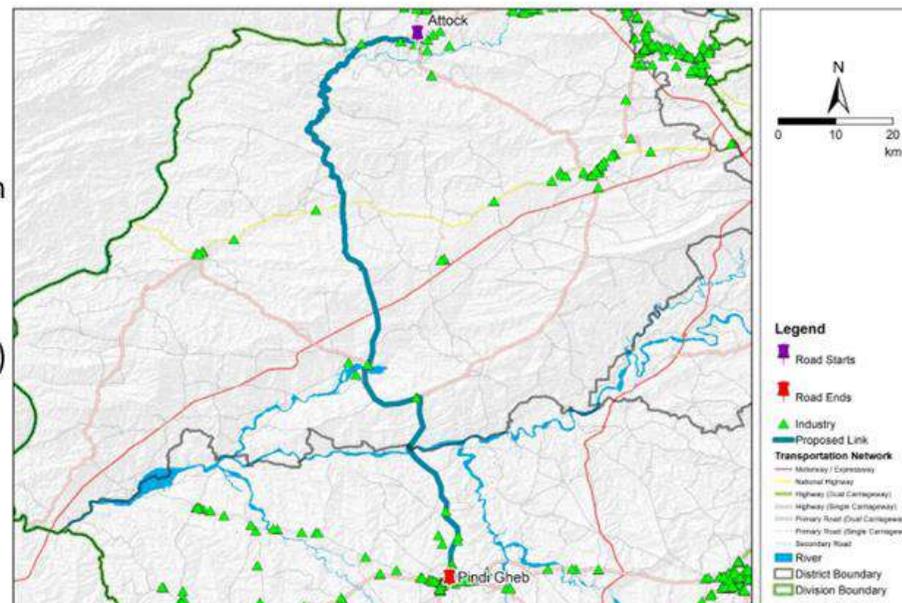
Project Name P3 Dualization of Talagang-Attock Road from Pindigheb to Attock, Length, 72 km

Districts Attock

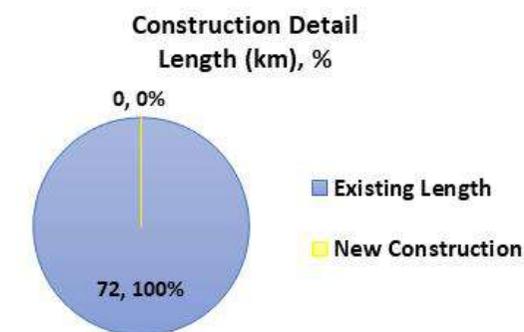
Phase Short To Medium Term (Year 2023-2029)

Total Cost (PKR Millions) 14301.80

Benefit Cost Ratio 3.1



District	Industrial Produce	Agriculture Produce	Tourism Site
Attock	Textile, Food, Seed, Oil and gas	Wheat,peanuts, maize, sugarcane and other crops	Attock Fort, Kala Chitta Mountain Range, Ratti Jinnah Hill Park, Attock bridge



3: Pindigheb-Talagang Road

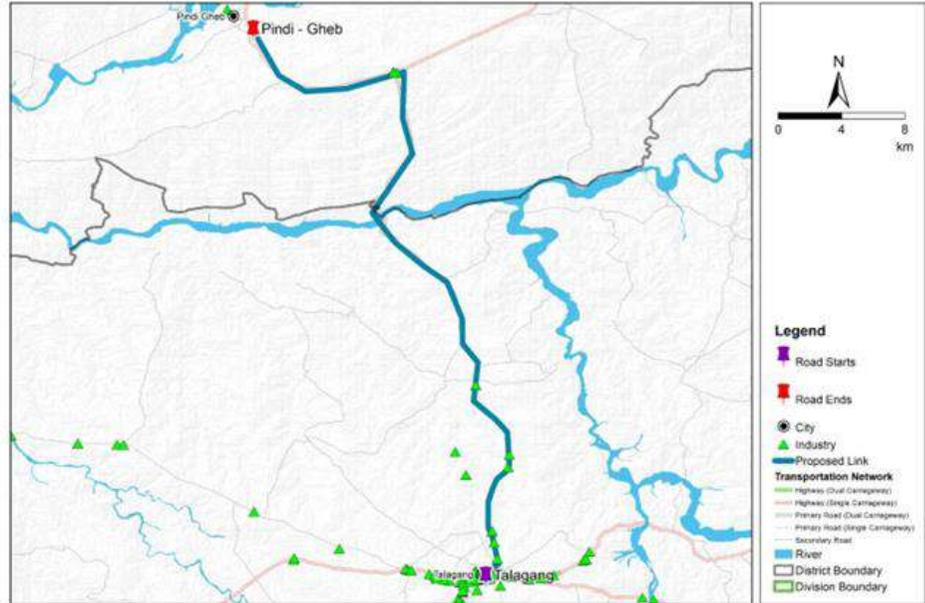
Project Name P5 Dualization of Road from Talagang to Pindi Gheb, km 58

Districts Attock

Phase Short To Medium Term (Year 2023 – 2029)

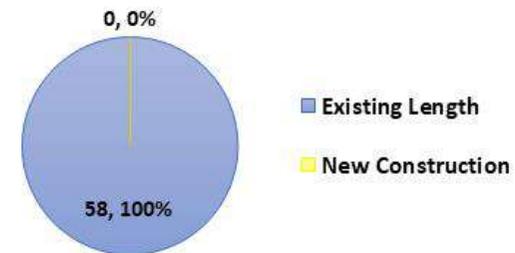
Total Cost (PKR Millions) 11520.90

Benefit Cost Ratio 3.6



District	Industrial Produce	Agriculture Produce	Tourism Site
Attock	Textile, Food, Seed, Oil and gas	Wheat,peanuts, maize, sugarcane and other crops	Attock Fort, Kala Chitta Mountain Range, Ratti Jinnah HillPark,Attock bridge

Construction Detail Length (km), %



4: Fatehjang-Pindigheb Road

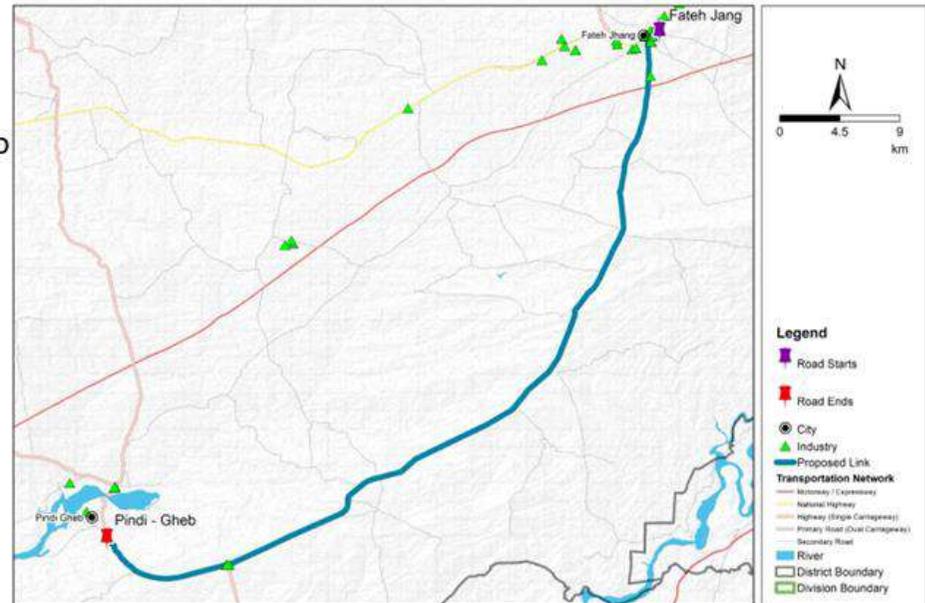
Project Name Rehabilitation of Road from Fatehjang to Pindigheb via Dhullian, length 50 km

Districts Attock

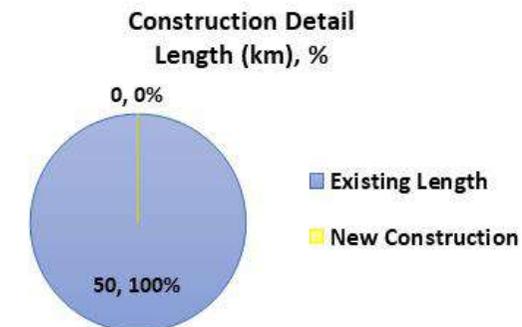
Phase Short To Medium Term (Year 2023 – 2029)

Total Cost (PKR Millions) 2003.57

Benefit Cost Ratio 10.4



District	Industrial Produce	Agriculture Produce	Tourism Site
Attock	Textile, Poultry, Food, Seed, gas	Wheat,peanuts, maize, sugarcane and other crops	Attock Fort, Kala Chitta Mountain Range, Ratti Jinnah Hill Park, Attock bridge



5: Attock-Fateh Jang Road

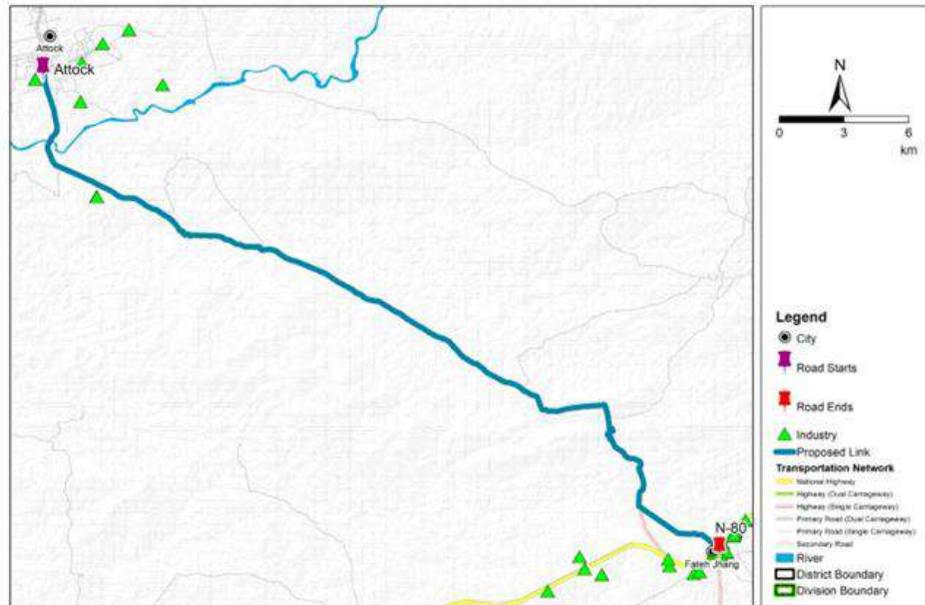
Project Name Dualization of Fateh Jang Attock Road, from Attock to N 80, 37 km.

Districts Attock

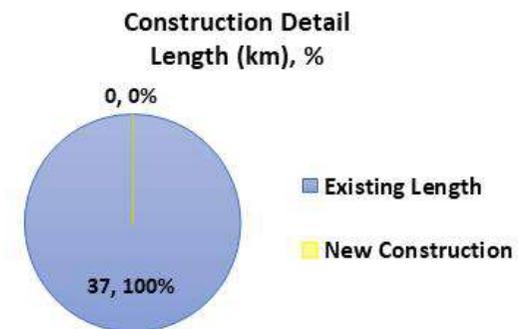
Phase Short To Medium Term (Year 2023 – 2029)

Total Cost (PKR Millions) 7349.54

Benefit Cost Ratio 2.5



District	Industrial Produce	Agriculture Produce	Tourism Site
Attock	Textile, Food, Seed, Oil and gas	Wheat, peanuts, maize, sugarcane and other crops	Attock Fort, Kala Chitta Mountain Range, Ratti Jinnah Hill Park, Attock bridge



6: Makhad Road

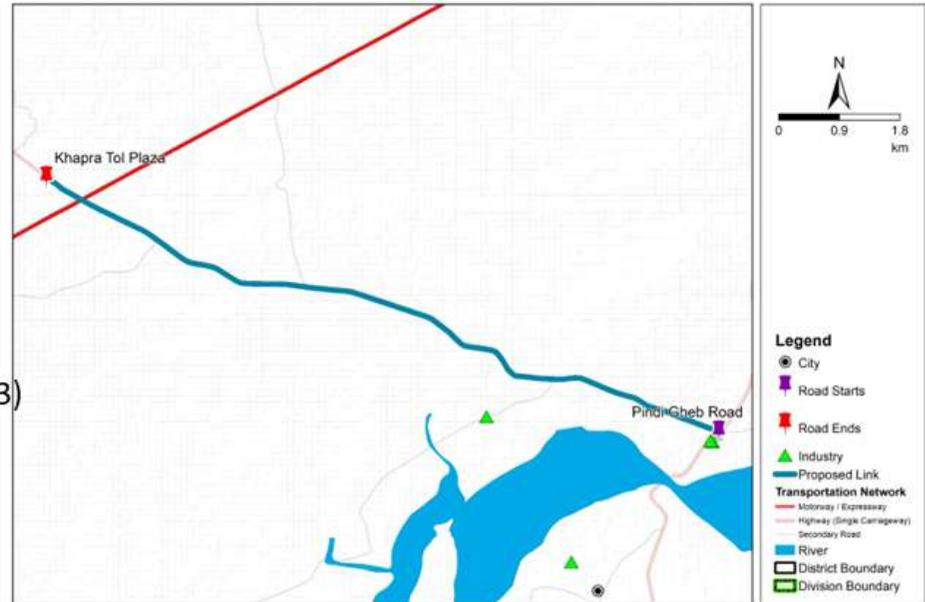
Project Name Dualization of Makhad Road from Pindigheb to Kharapa Toll Plaza M-14, 10km

Districts Attock

Phase Medium To Long Term (Year 2029 – 2033)

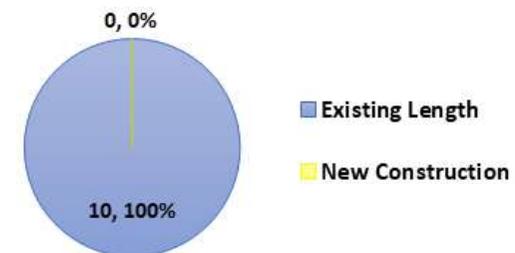
Total Cost (PKR Millions) 1986.36

Benefit Cost Ratio 2.3



District	Industrial Produce	Agriculture Produce	Tourism Site
Attock	Textile, Food, Seed, Oil and gas	Wheat,peanuts, maize, sugarcane and other crops	Attock Fort, Kala Chitta Mountain Range, Ratti Jinnah Hill Park, Attock bridge

Construction Detail Length (km), %



7: Choa Saidan Shah Link Road

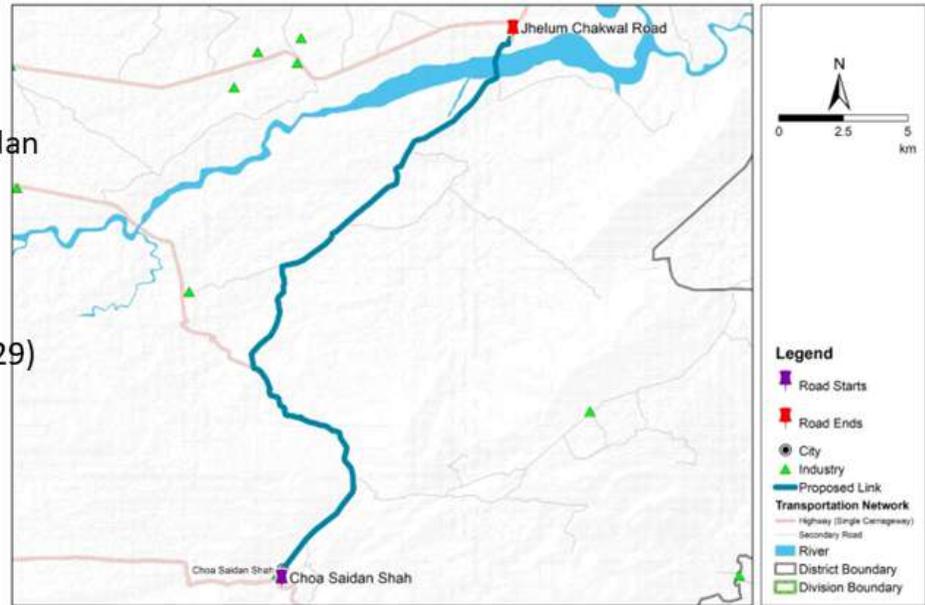
Project Name Dualization of Link Road from Choa Saidan Shah to Jhelum Chakwal Road, 29 km.

Districts Chakwal

Phase Short To Medium Term (Year 2023 – 2029)

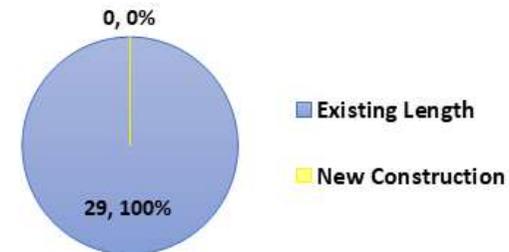
Total Cost PKR Millions 5760.45

Benefit Cost Ratio 3.0



District	Industrial Produce	Agriculture Produce	Tourism Site
Chakwal	Textile, cement, Poultry, Food	rice, Cotton, maize, Other Crops	Kallar Kahar · Katas Raj Temples · Swaik Lake · Malot Fort · Chinji National Park.

Construction Detail Length (km), %



8: Chakwal-Mianwali Road

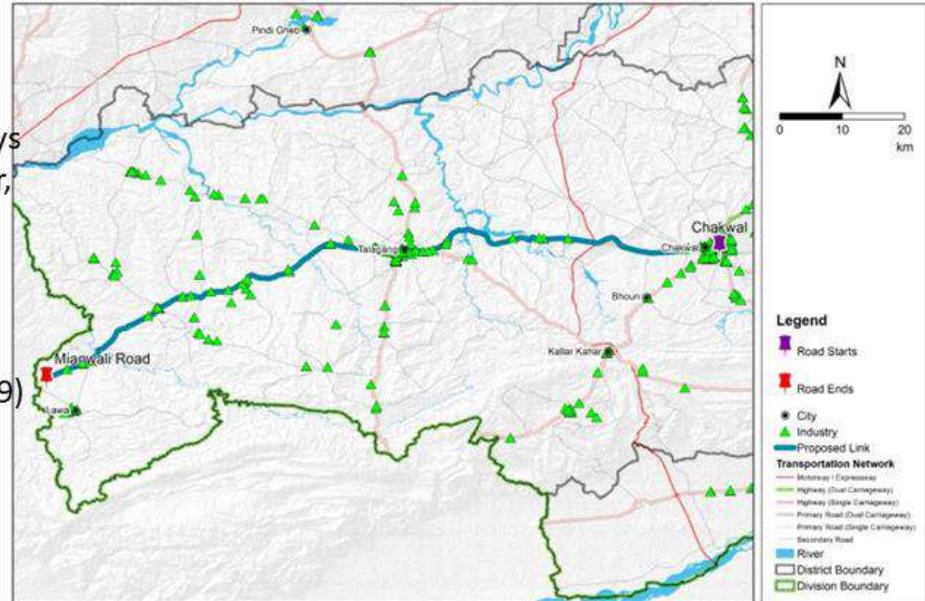
Project Name P1 Dualization of the Single Carriageways Segments of Chakwal-Mianwali Corridor, Length 134 km

Districts Chakwal

Phase Short To Medium Term (Year 2023 - 2029)

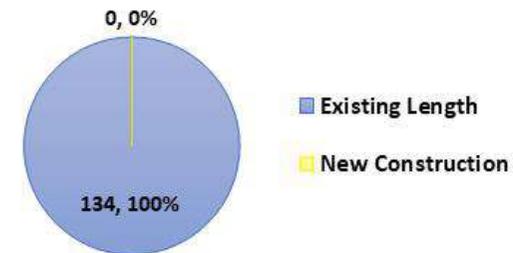
Total Cost PKR Millions 26617.25

Benefit Cost Ratio 4.9



District	Industrial Produce	Agriculture Produce	Tourism Site
Chakwal	Textile, cement, Poultry, Food	rice, Cotton, maize, Other Crops	Kallar Kahar · Katas Raj Temples · Swaik Lake · Malot Fort · Chinji National Park.

Construction Detail Length (km), %



9: Kallar Kahar Bharpur Road

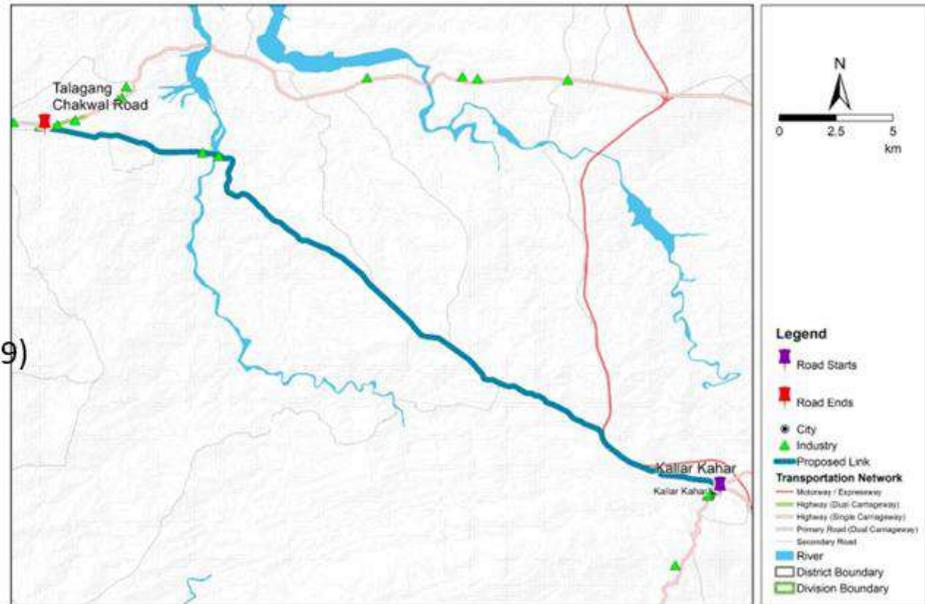
Project Name Rehabilitation of Kallar Kahar Bharpur Road Length = 32.50 Km

Districts Chakwal

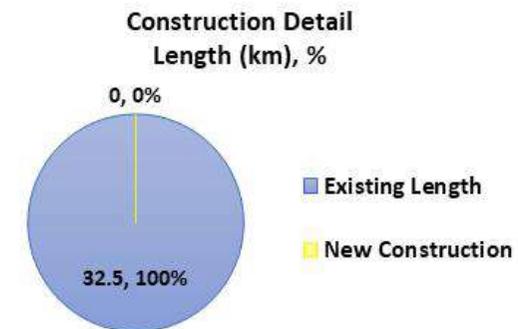
Phase Short To Medium Term (Year 2023 - 2029)

Total Cost PKR Millions 1302.32

Benefit Cost Ratio 5.8



District	Industrial Produce	Agriculture Produce	Tourism Site
Chakwal	Textile, cement, Poultry, Food,	rice, Cotton, maize, Other Crops	Kallar Kahar · Katas Raj Temples · Swaik Lake · Malot Fort · Chinji National Park.



10: Chakwal Kallar Kahar Road

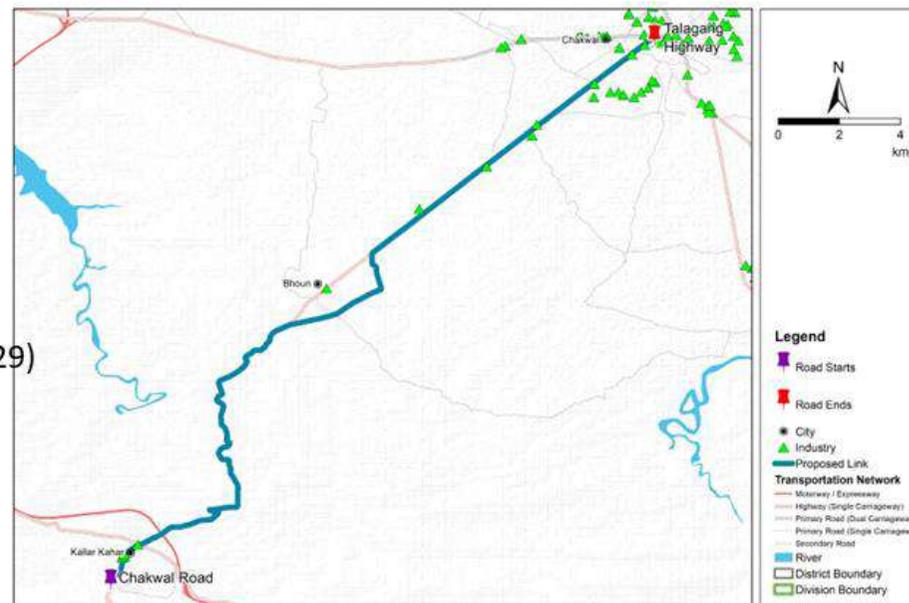
Project Name Rehabilitation of Kallar Kahar Chakwal Road, Length 27.2 km

Districts Chakwal

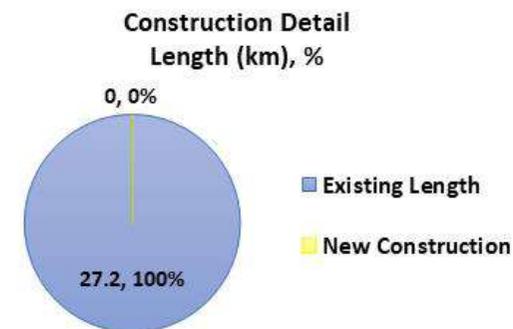
Phase Short To Medium Term (Year 2023 – 2029)

Total Cost PKR Millions 1089.94

Benefit Cost Ratio 15.9



District	Industrial Produce	Agriculture Produce	Tourism Site
Chakwal	Textile, cement, Poultry, Food	rice, Cotton, maize, Other Crops	Kallar Kahar · Katas Raj Temples · Swaik Lake · Malot Fort · Chinji National Park.



11: Pind Dadan Khan Chakwal Road

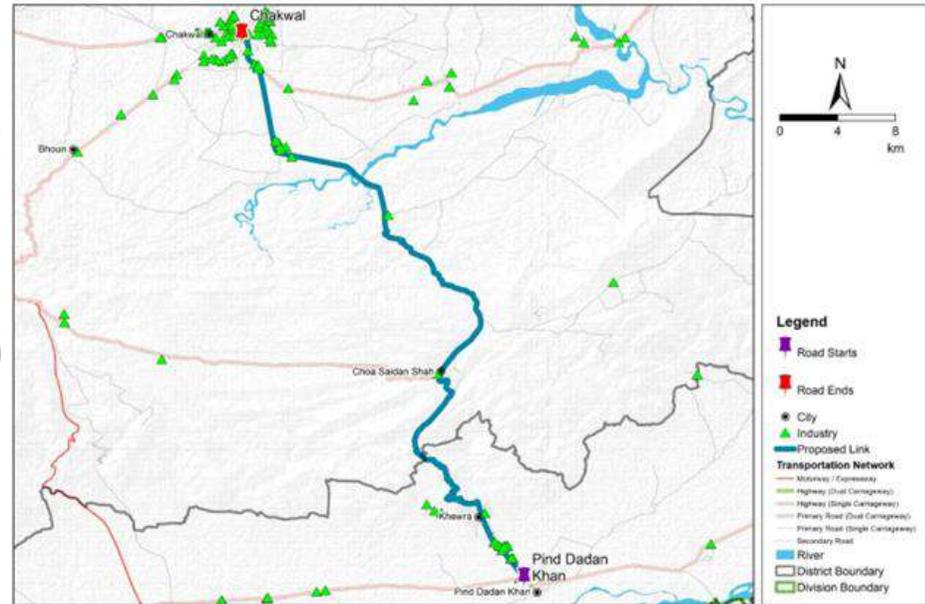
Project Name P4 Dualization of Road from Pind Dadan Khan to Chakwal, Length 54 km

Districts Chakwal

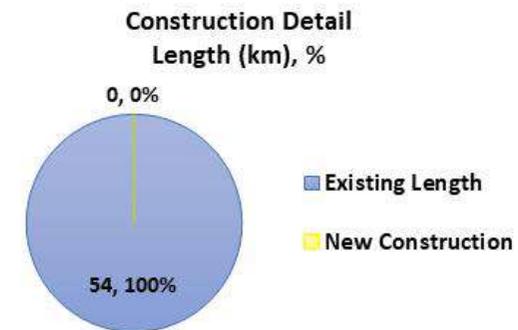
Phase Short To Medium Term (Year 2023-2029)

Total Cost PKR Millions 10726.35

Benefit Cost Ratio 2.7



District	Industrial Produce	Agriculture Produce	Tourism Site
Chakwal	Textile, cement, Poultry, Food	rice, Cotton, maize, Other Crops	Kallar Kahar · Katas Raj Temples · Swaik Lake · Malot Fort · Chinji National Park.



12: Talagang Khushab Road

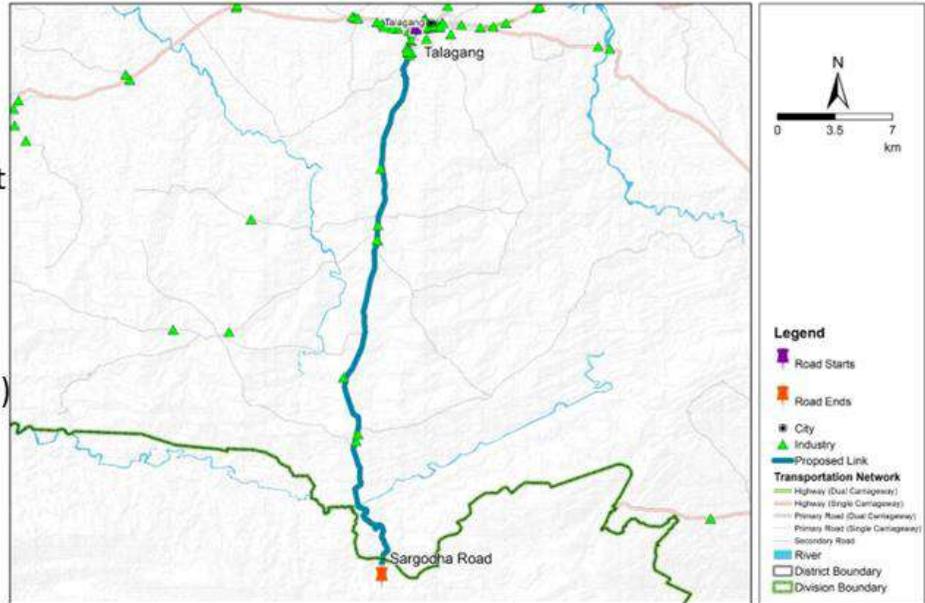
Project Name Upgradation of Talagang Khushab Sargodha Road from Talagang to District Boundary Talagang Length = 35.75 km

Districts Chakwal

Phase Short To Medium Term (Year 2023-2029)

Total Cost PKR Millions 1432.55

Benefit Cost Ratio 7.0



District	Industrial Produce	Agriculture Produce	Tourism Site
Chakwal	Textile, cement, Poultry, Food	rice, Cotton, maize, Other Crops	Kallar Kahar · Katas Raj Temples · Swaik Lake · Malot Fort · Chinji National Park.



13: Kallar Kahar-Choa Saidan Shah

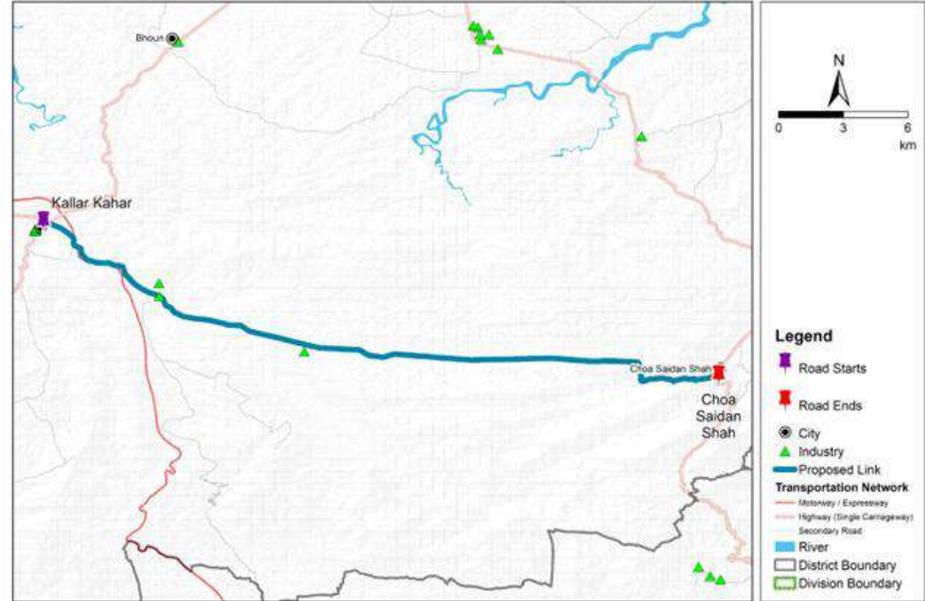
Project Name Dualization of Kallar Kahar Choa Saidan Shah Road Length = 30.5 km

District Chakwal

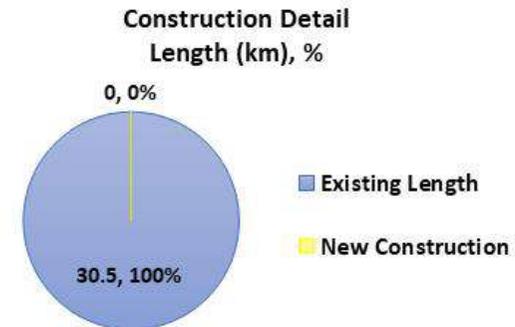
Phase Medium To Long Term (Year 2029-2033)

Total Cost (PKR Millions) 6058.40

Benefit Cost Ratio 2.3



District	Industrial Produce	Agriculture Produce	Tourism Site
Chakwal	Textile, cement, Poultry, Food	rice, Cotton, maize, Other Crops	Kallar Kahar · Katas Raj Temples · Swaik Lake · Malot Fort · Chinji National Park.



14: Jhelum-Bhakkar Road

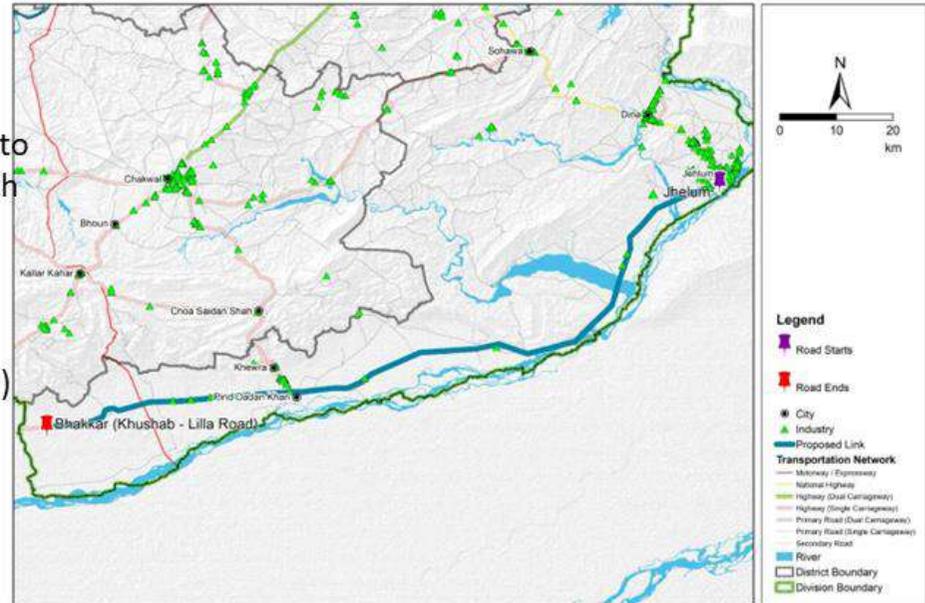
Project Name C5 Dualization of Corridor from Jhelum to Bhakar via PD Khan and Khushab, Length upto Rawalpindi Division Boundary, Length 120 km

Districts Jhelum

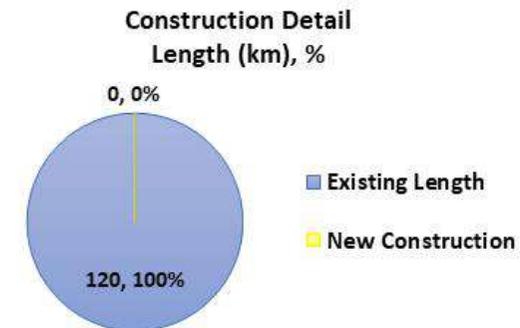
Phase Short To Medium Term (Year 2023-2029)

Total Cost PKR Millions 23836.34

Benefit Cost Ratio 3.2



District	Industrial Produce	Agriculture Produce	Tourism Site
Jhelum	Tobacco, wood, marbel, glass and flour mills.	Wheat, Pulses, Maize, Bajra, Jawar and other crops	Rohtas Fort, Khewra Salt Mine, Mangla Dam, Rasul Barrage, Tilla Jogian



15: Ghareebwal Cement-PD Khan

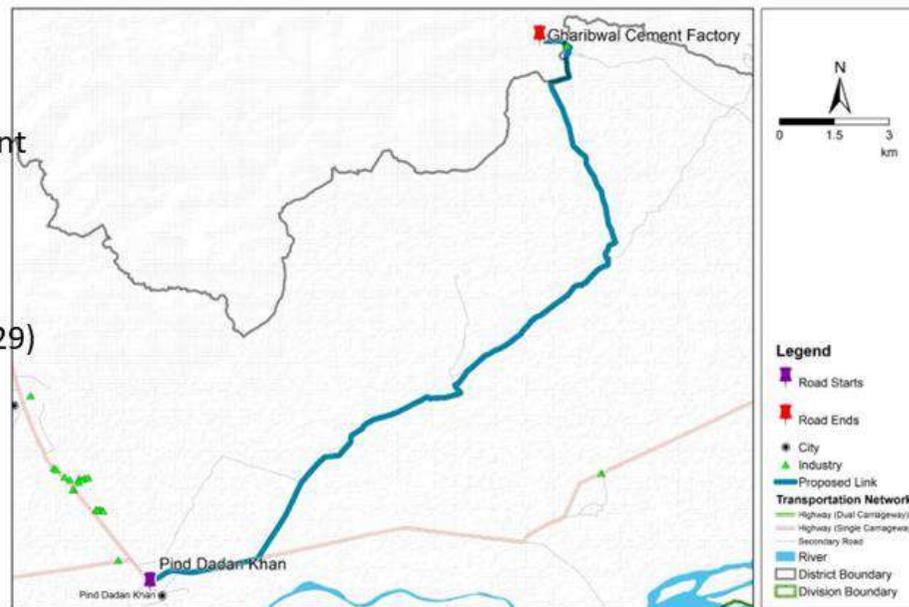
Project Name Rehabilitation / Widening / Improvement of Road from PD Khan To Ghareebwal Cement Factory, Length = 22.00 Km

Districts Jhelum

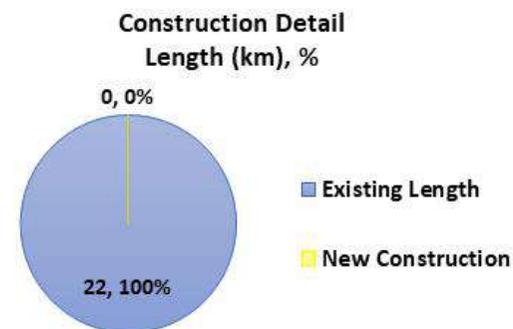
Phase Short To Medium Term (Year 2023 – 2029)

Total Cost PKR Millions 881.57

Benefit Cost Ratio 9.0



District	Industrial Produce	Agriculture Produce	Tourism Site
Jhelum	Tobacco, wood, marbel, glass and flour mills.	Wheat, Pulses, Maize, Bajra, Jawar and other crops	Rohtas Fort, Khewra Salt Mine, Mangla Dam, Rasul Barrage, Tilla Jogian



16: Haranpur-Sauwal Road

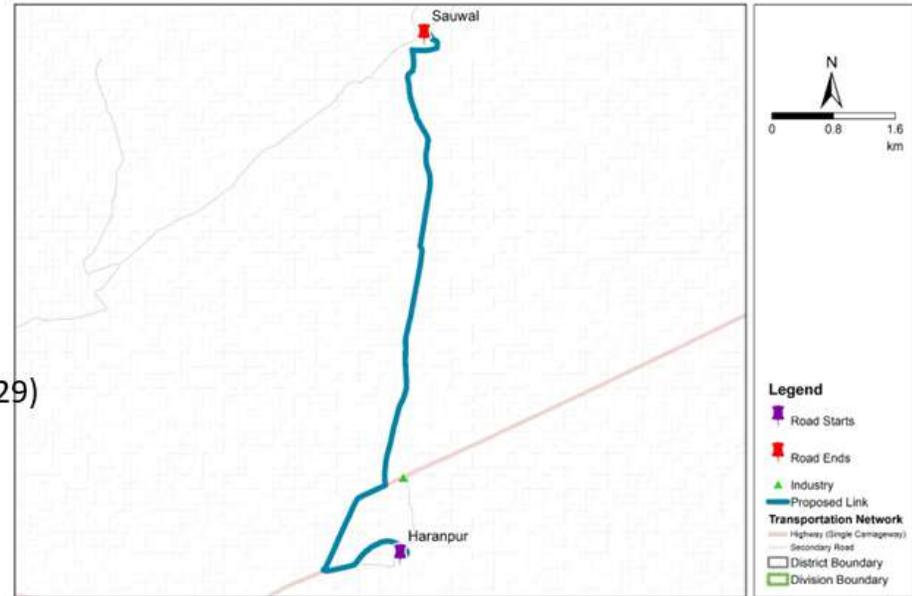
Project Name Rehabilitation/Widening of Road from Haranpur to Sauwal including links, Length 11 km.

Districts Jhelum

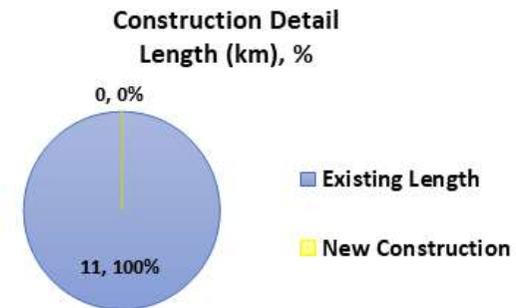
Phase Short To Medium Term (Year 2023 – 2029)

Total Cost PKR Millions 440.79

Benefit Cost Ratio 4.3



District	Industrial Produce	Agriculture Produce	Tourism Site
Jhelum	Tobacco, wood, marbel, glass and flour mills.	Wheat, Pulses, Maize, Bajra, Jawar and other crops	Rohtas Fort, Khewra Salt Mine, Mangla Dam, Rasul Barrage, Tilla Jogian



17: Hassan Abdal-26 No.

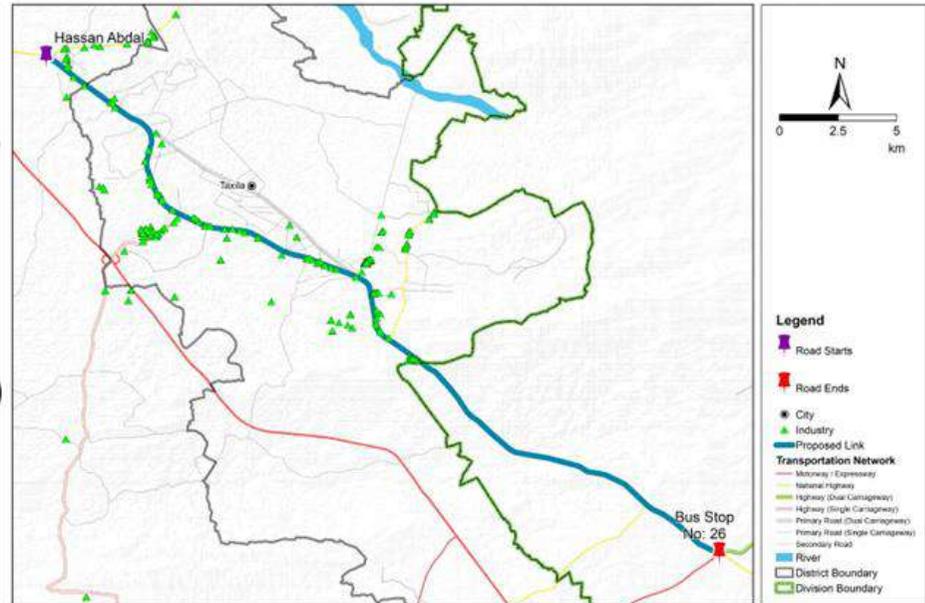
Project Name Provision of Service Roads on both sides of N-5 from Hassan Abdal to 26 No Bus Stop, length (36x2) 72 km

Districts Rawalpindi

Phase Short To Medium Term (Year 2023-2029)

Total Cost PKR Millions 2885.14

Benefit Cost Ratio 24.6



District	Industrial Produce	Agriculture Produce	Tourism Site
Rawalpindi	Oil refineries, gas processing, steel manufacturing, iron mills	Wheat, Rice, Sugarcane, Barley, Maize, Millets.	Murree Hillstation, Ayub National Park, Markazi Mosque, Raja Bazar, Rawat Fort.



18: Kallar Sayidan-Dhan Gali

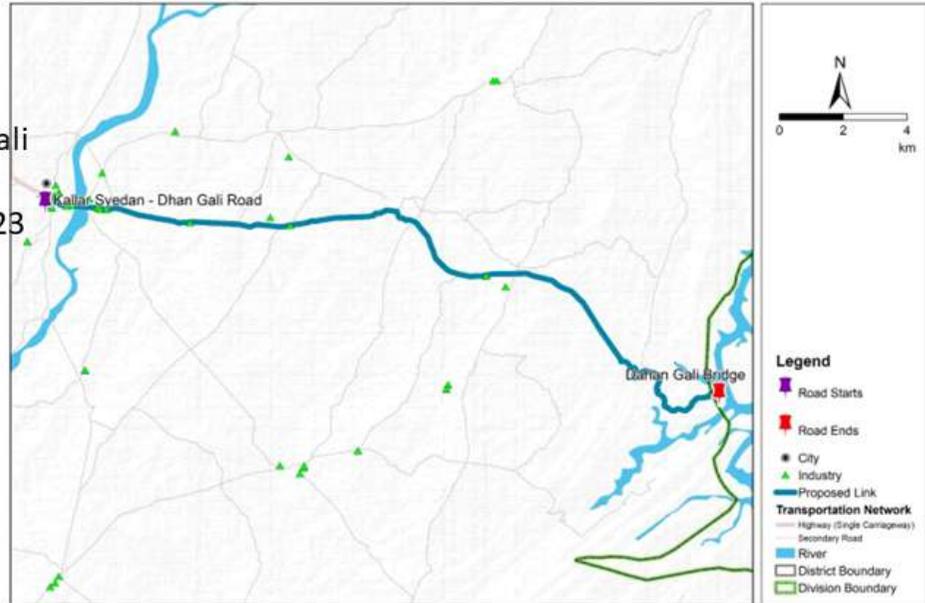
Project Name Rehabilitation of Kallar Sayidan-Dhan Gali Road from Kallar Sayedan to Dhan Gali Bridge, Azad Kashmir Boundary, Length 23 km

Districts Rawalpindi

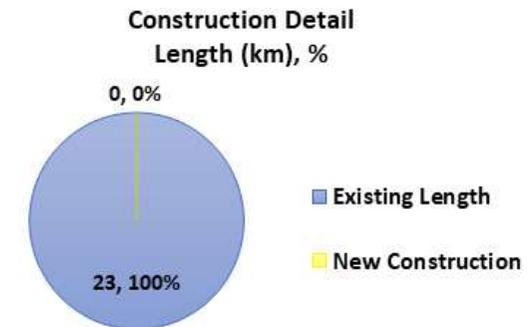
Phase Short To Medium (Year 2023 – 2029)

Total Cost PKR Millions 921.64

Benefit Cost Ratio 5.6



District	Industrial Produce	Agriculture Produce	Tourism Site
Rawalpindi	Oil refineries, gas processing, steel manufacturing, iron mills	Wheat, Rice, Sugarcane, Barley, Maize, Millets.	Murree Hillstation, Ayub National Park, Markazi Mosque, Raja Bazar, Rawat Fort .



19: Rawalpindi-Kahuta Road

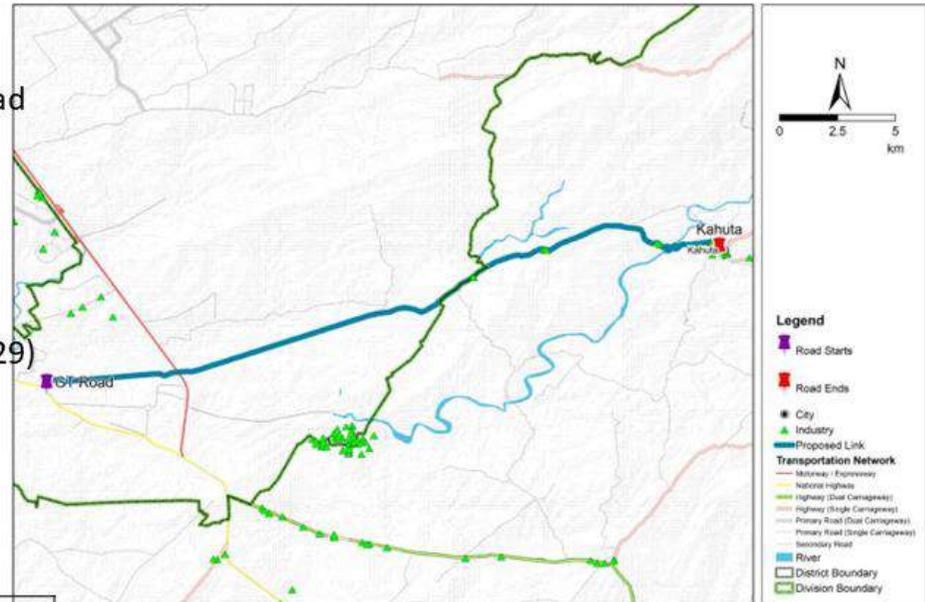
Project Name Rehabilitation of Rawalpindi Kahuta Road from GT Road (Near Amazon Mall) to Kahuta, Length 27.3 km

Districts Rawalpindi

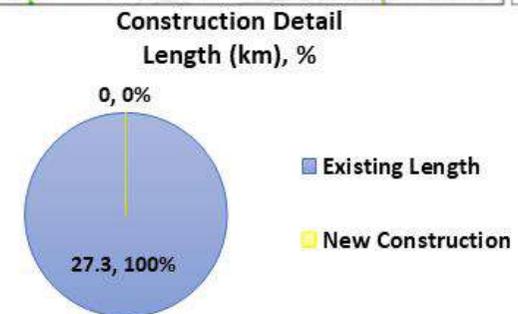
Phase Short To Medium Term (Year 2023 – 2029)

Total Cost PKR Millions 1093.95

Benefit Cost Ratio 9.7



District	Industrial Produce	Agriculture Produce	Tourism Site
Rawalpindi	Oil refineries, gas processing, steel manufacturing, iron mills	Wheat, Rice, Sugarcane, Barley, Maize, Millets.	Murree Hillstation, Ayub National Park, Markazi Mosque, Raja Bazar, Rawat Fort .



20: Kahuta-Kotli Road

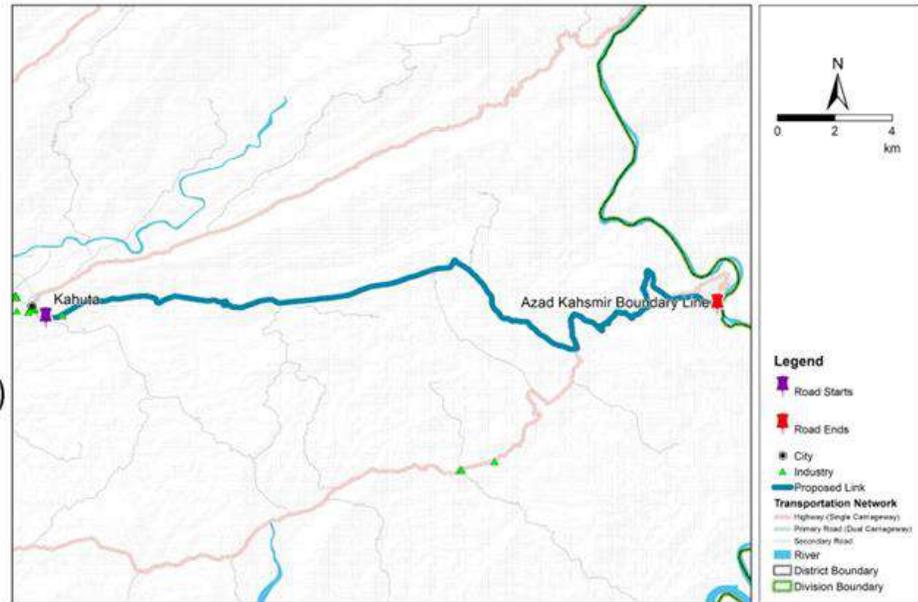
Project Name Rehabilitation/Improvement of Kahuta-Kotli Road from Kahuta to Azad Kashmir Boundary near Holar 26.8 km

Districts Rawalpindi

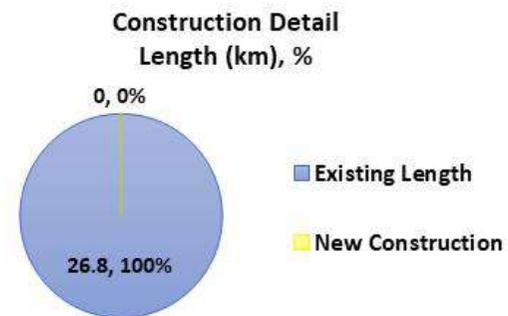
Phase Short To Medium Term (Year 2023-2029)

Total Cost PKR Millions 1073.91

Benefit Cost Ratio 5.0

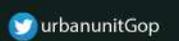


District	Industrial Produce	Agriculture Produce	Tourism Site
Rawalpindi	Oil refineries, gas processing, steel manufacturing, iron mills	Wheat, Rice, Sugarcane, Barley, Maize, Millets.	Murree Hillstation, Ayub National Park, Markazi Mosque, Raja Bazar, Rawat Fort .





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