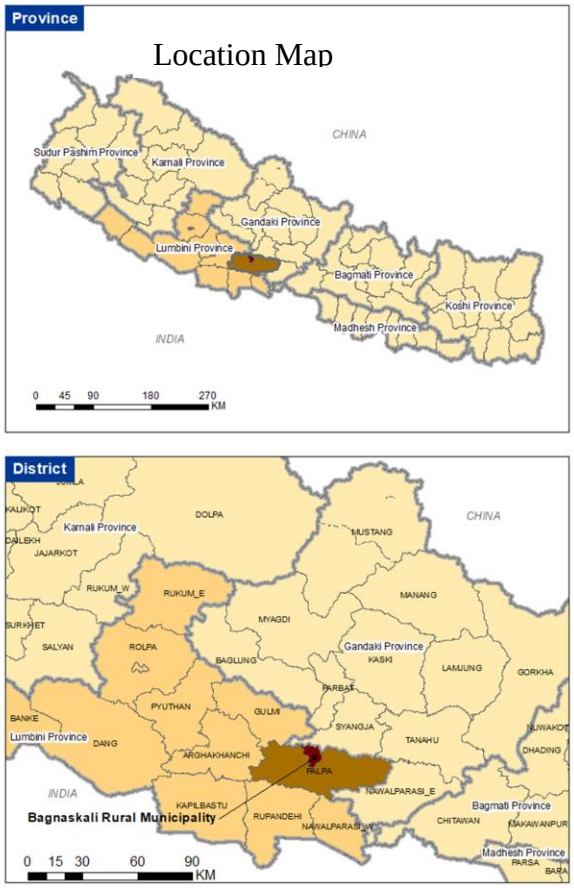
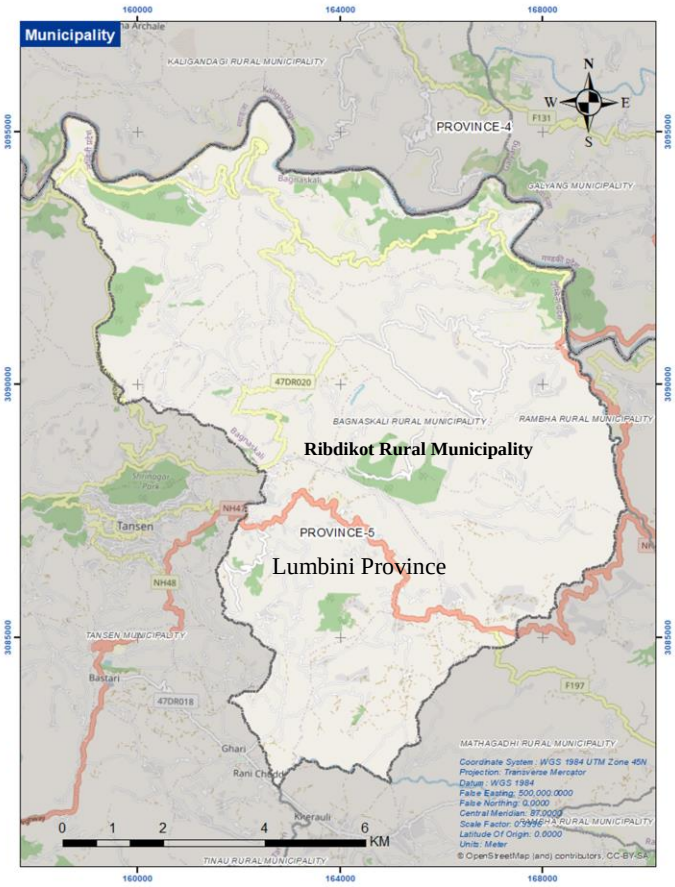
Ribdikot Rural Municipality

Office of Rural Municipal Executive

Khasyauli,Palpa, Palpa





FINAL REPORT

PREPARATION OF MUNICIPAL TRANSPORT MASTER PLAN

Ribdikot, Palpa

NEPAL

Acknowledgement

The Consultant team would like to express our deep sense of gratitude to Chief Administrative Officer, Ribdikot Rural Municipality Office for providing us the opportunity for the **"Preparation of "Municipal Transport Master Plan for Ribdikot Rural Municipality"**. The team extends its sincere gratitude to Municipal Chairperson Mr. Narayan Bahadur Karki, Vice Chairperson Mrs. Kanta Adhikari and all technical and non- technical staffs from the municipality for facilitating and supporting us during the study. The team would like to thank all the municipal Executive members, ward chairman and ward committee and former representatives without whom this task would not have been completed.

The team is even obliged to all the locals from the study area for their interest as well as support during the ward meetings and field visit.

Acronyms/Abbreviations

CBO	Community Based Organization
DCC	District Cordination Committee
DTMP	District Transport Master Plan
MTMP	Municipality Transport Master Plan
NGO	Non-Governmental Organization
ROW	Right of Way
TDC	Town Development Committee
ToR	Terms of Reference
UEIP	Urban Environment Improvement Project
VDCs	Village Development Committees

Table of Contents

Table of Figures

List of Tables

Chapter 1: INTRODUCTION

1.1 Background

Development of transportation infrastructure is one of the most essential groundwork for opening other avenues of development. Rural municipalities in Nepal often face significant transportation challenges due to rugged terrain, limited infrastructure, and dispersed populations. The lack of reliable and efficient transportation systems hinders access to essential services such as healthcare, education, and markets, impacting the overall quality of life for residents. Additionally, inadequate transport infrastructure can impede economic development by limiting the movement of goods and people, reducing opportunities for trade and employment. Recognizing these challenges, a Municipal Transport Master Plan (MTMP) for a rural municipality in Nepal will aim to address these issues through the development of sustainable and inclusive transportation strategies that improve connectivity, enhance accessibility, and promote economic growth and social development.

Municipal Transport Master Plan is a comprehensive overview that sets the foundation for the planned development. It typically includes a brief overview of the municipality, including its geographical location, size, population, and economic activities, to understand its transportation needs and challenges. An analysis of the existing transportation system, including modes of transport, infrastructure, and services, helps identify strengths and weaknesses. Key challenges such as congestion, inadequate infrastructure, and safety concerns are identified, along with an overview of national, regional, and local policies. It serves as a blueprint for the development and improvement of transportation infrastructure, services and policies within specific geographic area, such as a city or town. The main purpose of a Municipal Transport Master Plan is to create a sustainable, efficient and accessible transportation system that meets the current and future needs of the community while considering environmental, social and economic factors.

Ribdikot Rural Municipality is one of such municipal area dealing with a variety of issues as a result of improper transportation planning. Right of Way (RoW) and setback setting, buildings and other infrastructure construction drawing permission and expansion of various physical infrastructure such as drain, water supply system and pathways are all causing them problems. Additionally, emerging are social difficulties. People are denied access to simple services because physical infrastructure is being built in a disorganized and haphazard manner.

People became aware that many municipal roads are so congested that ambulance and fire engines cannot even pass. People refer integrated facilities that make it simple and efficient to access all necessary services. A proper tie-up is required between the road networks and the other services areas. However, the current municipal roadways do not connect or integrate the other facility areas. All of these problems can be minimized by applying proper transportation planning in municipality. MTMP is one of the best planning tools for it.

Recognizing the multifaceted challenges posed by urbanization and transportation demands, effective transportation planning emerges as a crucial necessity for Ribdikot Rural Municipality. This encompasses a holistic approach that considers not only the expansion of road networks but also the implementation of robust public transport systems and strategic traffic management strategies. The Municipality Transport Master Plan (MTMP) stands out as a pivotal initiative, aiming to comprehensively address these challenges and formulate sustainable solutions for the transportation landscape.

1.2 Objectives

The General Objective of this Study is to prepare Municipal Transport Master Plan for Ribdikot Rural Municipality of Palpa District. The Preparation of scientific and Sustainable Transport Master Plan requires the consideration of all components of the environment that exists and the environment to be created tomorrow.

The Specific objectives of this study are as follows

- Analyze the present mobility situation (e.g., Prepare/Update an inventory of present road infrastructures within Ribdikot Rural municipality including the road/street length, width, present condition, road category and the vehicular/passenger traffic on those roads/streets etc.)
- Identify the major road networks linkage of the municipality with the surrounding VDC and analyze the mobility and condition of road and transport infrastructures.
- Identify the different aspects of municipal and traffic management, parking, Route, fare, Tax collection and Taxation system etc.
- Analyze the existing situation of municipal transport and traffic management, study the feasibility of municipal transport and traffic management and propose the municipal traffic and traffic management plan for the future.

- Identify and priorities the interventions based on the mobility and accessibility situation.

1.3 Scope of Works

❖ ***Conduct meeting with stakeholders and concerned agencies to provide/seek information and to orient them about the municipal transport study.***

A meeting with the stakeholders and the line agencies will be conducted to provide the relevant information on the Municipality Transport Master Plan. The meeting will orient the participants with the importance of MTMP and mobilize them to take part in the preparation of the MTMP by coordinating with information required.

❖ ***Assist in the formulation of the Municipality Roads Co-ordination Committee (MRCC)***

MRCC is special committee which provides the support to the municipality in formulating, managing and monitoring Municipality Road Transport infrastructure policies, rules and regulations. The municipality will be supported by the consultant to form MRCC and ensure their involvement and along with their role in the entire planning, decision-making, and programming in the preparation of MTMP.

❖ ***Collection of Secondary Data and Preparation of Base Map***

Secondary Data was collected from journals, publications of government and non-government organizations. Base map was captured from web and digitized to prepare GIS maps including Roads, Land Use, and administrative boundary etc. Base map will be updated after field verification.

❖ ***Mobility and Accessibility Data collection***

Origin-Destination survey and socio-economic survey will be carried out by sampling in the delineated zones to determine the mobility and accessibility. Traffic count survey will be performed on cordon points and on intersection.

- ***Preparation of Municipality Inventory Map (MIM)***

Municipality Inventory Map will be prepared after the detail inventory of the existing condition of municipality road. The inventory of the existing condition of road shall be carried out by mobilizing the enumerators or by walkover surveys. The information to be collected in the Inventory of Transport Linkages will be Name of Road, Class and category of road, total length, total width, carriageway width, road surface, type of structures in the road, etc.

- ***Collection of Demands for New/Upgrading Rehabilitation Transport linkages from ward/settlements and developing scoring for prioritization.***

The formal requests for the demand of new construction or rehabilitation of different linkages will be collected from the wards and settlement similar to bottom to top approach. The collected demands shall be screened, synthesized, synchronized and harmonized in the municipality level through a workshop. The screened demands will be prioritized by developing the score to the individual demand. All the demanded linkages shall be processed and undergo through the screening and prioritization process.

- ***Prepare the indicative Municipality Development Potential Map (IDPM)***

Indicative Municipality Development Potential Plan will be prepared according to Comprehensive City Development Plan/ Visionary City Plan. The base map will be prepared on a 1:25000 scale to topographical, to and digitized to prepare GIS Maps. The identification and ranking of existing/potential areas and services will be done.

- ***Preparation of Perspective Plan of interventions of services and facilities.***

The perspective plan of intervention of services and facilities will be prepared which will be identified from accessibility analysis and municipality level workshops. All the identified interventions shall be screened and rated on the basis of approved criteria. The final perspective plan of municipality road will be prepared by consulting the technical team of municipality and MRCC team. This perspective plan will be shown in GIS map also.

- ***Preparation of the Municipality Transport Master Plan. (MTMP)***

With regard to the Perspective Plan, the MTMP of the municipality will be prepared by selecting the interventions from among top priority in the Perspective Plan starting from first

and that could be implemented in the next five years period. The planning shall be based on the cost estimates of maintenance, upgrading, rehabilitation and new construction of main bridges, trials and roads and available financial resources.

1.4 Limitation

This transport master plan is limited within the territory of the Municipality. Since the data collected for the planning were based on the information provided by the villagers in the ward levels, they may have supplied limited information. Although Enumerators have attempted their best to reach all the roads for the necessary data, there are chances of missing the data to some extent. Misnaming of the road may occur due to the pronunciation error or hearing problem by the respondent as well as enumerators. Chances of error may occur during data entry and tabulation. The scale used to work on GIS is also likely to generate some errors. Though such limitation and errors are obvious, attempts have been made to minimize such errors taking precautions in the error prone areas.

1.5 Approach and Methodology

The consultant has gone through the general procedures well defined in the ToR for the completion of the project. Participatory Rural Appraisal approach has been the core of the planning approach. A preliminary presentation was made in the Municipality among the village executive members, related officials, line agencies members and stakeholders for the clarification of how MTMP is prepared consulting the villagers, ward chairman and members the collection of data on roads and transportation status as mentioned in the ToR. After the completion of the ward level meeting and field survey, O-D survey, demand collection, field data were organized to finalize IDPM, Municipality Inventory Map of Road Network and base map. On the basis of the IDPM and other maps and data MTMP draft report was prepared. Furthermore, the draft report was sent to the Municipality for the necessary correction and feedbacks. After incorporating the correction and feedback, the final report was prepared for the approval from the village assembly for the implementation.

Field survey and data collection were done to study the existing accessibility condition of the villagers and analyze the necessary interventions to be made in the future. Demand survey was done to assess the existing condition and future necessity of road extension and transport infrastructure. Participatory bottom-up approach was ensured in the overall planning process. Integrated Rural Accessibility Planning (IRAP) has been the foundational concept of overall

planning which emphasizes on improving the accessibility condition of all the settlements in the Municipality.

1.5.1 General Methodological Overview

S.N.	Task Description	Activities	Outcomes
1.	Preliminary Presentation on Ribdikot Rural Municipality	Expert team conducted initial presentation among the village executive members and all related stakeholders	Stakeholders sensitized
2.	Study of secondary resources on roads and transportation related to the Municipality	Study and review of all relevant laws, by-laws, best practices, norms and standard of planning Review of previous MTMP (if any)	Expert team got familiarized with existing information regarding Municipality Transport Infrastructures and previous efforts for the development
3.	Ward level meeting	Participatory Rural Appraisal method adopted during ward level meetings in all wards for data collection demand survey; O-D survey and all other necessary information	Primary data collected from the ward level formed strong ground for the necessary interventions to be made in the future
4	Data Management and analysis	Data obtained from the field were tabulated; GIS work done to develop base map, IDPM, inventory map and other maps and nomenclature, coding and grading of roads	Data organized and maps prepared
5.	IDPM and MIM Preparation	As the part and product of data management, Indicative Development potential Map (IDPM) and a complete Municipality Road Inventory Map (MIM) was prepared	IDPM and RMIM developed
6.	Perspective Plan	After identification and preparation of the existing status of all the roads IDPM and MRIM were prepared and prioritization of key interventions finalized	Perspective plan helped to prioritize and systematize the planning process

7.	MTMP Preparation	After analysis of all the existing infrastructures 5 years MTMP was prepared, Implementation plan prepared, Fund availability and access to funds recommended	MTMP was prepared
8.	Approval	After all necessary correction and feedbacks, final report of the MTMP was submitted to village assembly for the approval and implementation	

1.5.2 Comprehensive Task Description

1.5.2.1 Municipal Level Initial Presentation

Expert team conducted a presentation and workshop to clarify the executive members and stakeholders about the holistic process of preparing MTMP.

1.5.2.2 Ward Level Meeting for Primary Data Collection

Enumerators and surveyors were deployed in each ward for the required interactions with the villagers and for the collection of all necessary data on the existing condition of roads from the ground level at respective wards.

1.5.3 Data Collection

1.5.3.1 Primary Data

During the ward level meeting and after surveyors were deployed to collect all the necessary data viz. Road name, condition, length. O-D survey was conducted simultaneously. All other relevant information was collected to prepare base map and IDPM which formed a groundwork for overall planning.

1.5.3.2 Secondary Data

The following documents and sources were reviewed for the important data as the secondary data and information.

1. The constitution of Nepal.
2. Local Government Operation Act 2074.
3. DOLIDAR's Approach Manual
4. Nepal Rural Road Standard (2055) - 2nd Revision, 2071

5. Nepal Urban Road Standard, 2076
6. Municipal Profile
7. Demographic Data from CBS
8. Previous MTMP (if any)
9. Relevant Plans and policies (Federal Provincial, Local)
10. SDGs
11. Yearly Plans, Policies and Programs of the Municipality
12. RMTMP/MTMP of adjoining Municipalities or Rural Municipalities
13. Annual reports and policies of line agencies
14. Land use plan and policy
15. Agricultural Plan and Policy

1.5.4 Data Analysis

After collecting the necessary data, analysis was done to assess the existing condition of accessibility. It revealed the demands for the improvement as well as sustainable development of all transport infrastructure basically roads. Human settlement patterns, core road network and lack of roads are identified for the planning process. Analysis was done adopting the proven techniques, norms and standards.

1.5.5 Base Map with Indicative Development Potential Map

1. Base map is the foundation for all kinds of planning. Therefore base map was prepared with following information.

- Geo-political boundaries
- Land use or Land cover
- National Highways and Strategic Road Network
- District Road Network
- Bridges
- Important historical, religious, natural landmarks
- Water bodies, Watershed
- Major settlement, all settlement, urban centers, industrial areas
- Major touristic locations

2. Future development potential zones include: (IDPM)

• Areas with extensive agriculture and future expansion
• Areas with forest and future expansion
• Areas with business activities or marketplace
• Areas with touristic importance
• Areas with industry and future expansion
• Watershed areas
• Potential service sector expansion areas
• Areas with open space, recreation, stadium, parks, etc.

IDPM was prepared based on the base map. IDPM indicates the future expansion areas where management of proper transportation system may become urgent according to the nature of the potential zones and volume of anticipated traffic after future expansion.

1.5.6 Preparation of MRIM (Municipal Road Inventory Map)

MRIM include a complete plotting of the roads within the municipality on the basis of the data collected from the ward levels. This map includes all the linkages with bridges and trails. It is a complete coverage of all the existing roads or like a profile of the roads or road networks. The roads are classified, codified, named and indicated on the map according to the above features with separate index.

1.5.7 Perspective Plan

Perspective plan covers the nature of the key interventions to be made upon the roads in the future in accordance to their importance and necessity. This plan is based on the data collected from the grassroots level. As a local government Municipality itself determines the requirements and demands from the ward levels and necessary interventions are recommended in accordance to the demands and necessity of the local people. Such required interventions are based on criteria 'B' of the approach Manual. This perspective plan is finalized after being approved by the Municipality.

1.5.8 Preparation of MTMP

After finalization of fundamental components like base-map, IDPM and perspective plan MTMP is prepared based on these components. MTMP rests on the following interventions types in one way or other. They are:

- New construction
- Upgrading
- Rehabilitation
- Recurrent Maintenance
- Periodic Maintenance

The consultant has prioritized the above interventions on the basis of interaction with the villagers and the necessity of the place and time. Availability of fund for the execution of the projects have been analyzed and five years projected financial plan devised. Target for the year and types of interventions have been finalized accordingly. After that report will be submitted for the approval from the village assembly.

CHAPTER 2: STUDY AREA

2.1 Administrative Division

Ribdikot Rural Municipality lies in 27° 52′ 42.19″N latitude to 83° 28′ 21.41″E longitude in global map. Ribdikot Rural Municipality (Gaupalika - □□□□□□□□□ □□□□□□□□□□ (is located in Palpa district. Ribdikot Rural Municipality has been formed by merging 8 Village Development Committees (VDCs) Khyaha, Deurali, Khasyauli, Bhairavasthan, Kusumkhola, Palungmainadi, Timure and Phek VDCs into a sustainable unit.

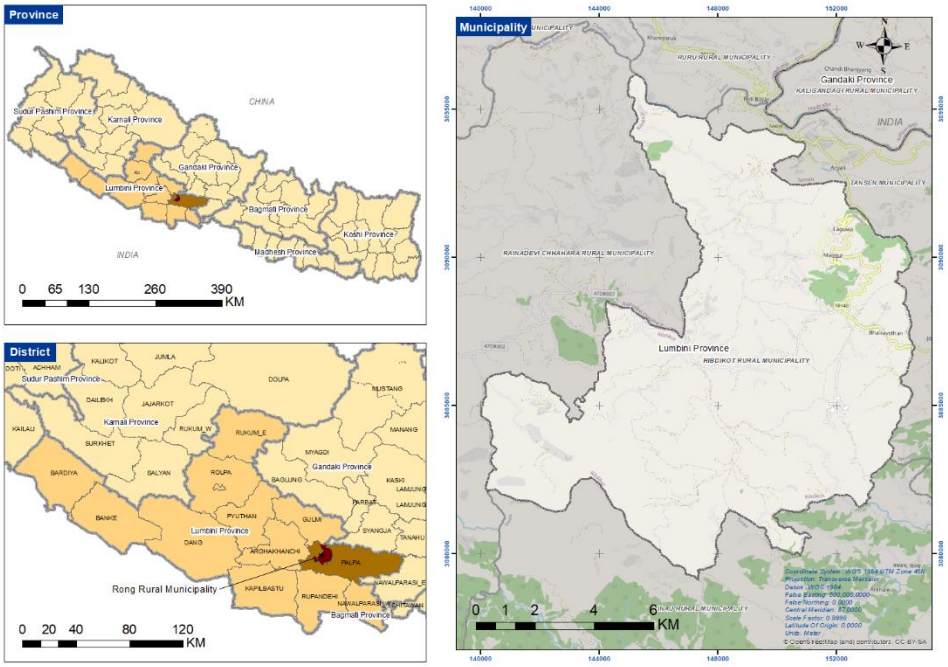


Figure 2-1: Index Map of Ribdikot Rural Municipality

The total population of Ribdikot Gaupalika is 15,473 as of 2021. Its area is 124.55 square kilometers. Its borders are Tansen municipality in the east, Rainadevi Chhahara rural municipality in the west, Tansen municipality and Gulmi district in the north, and Tinau rural municipality in the south.

Table 2-1: Administrative Divisions

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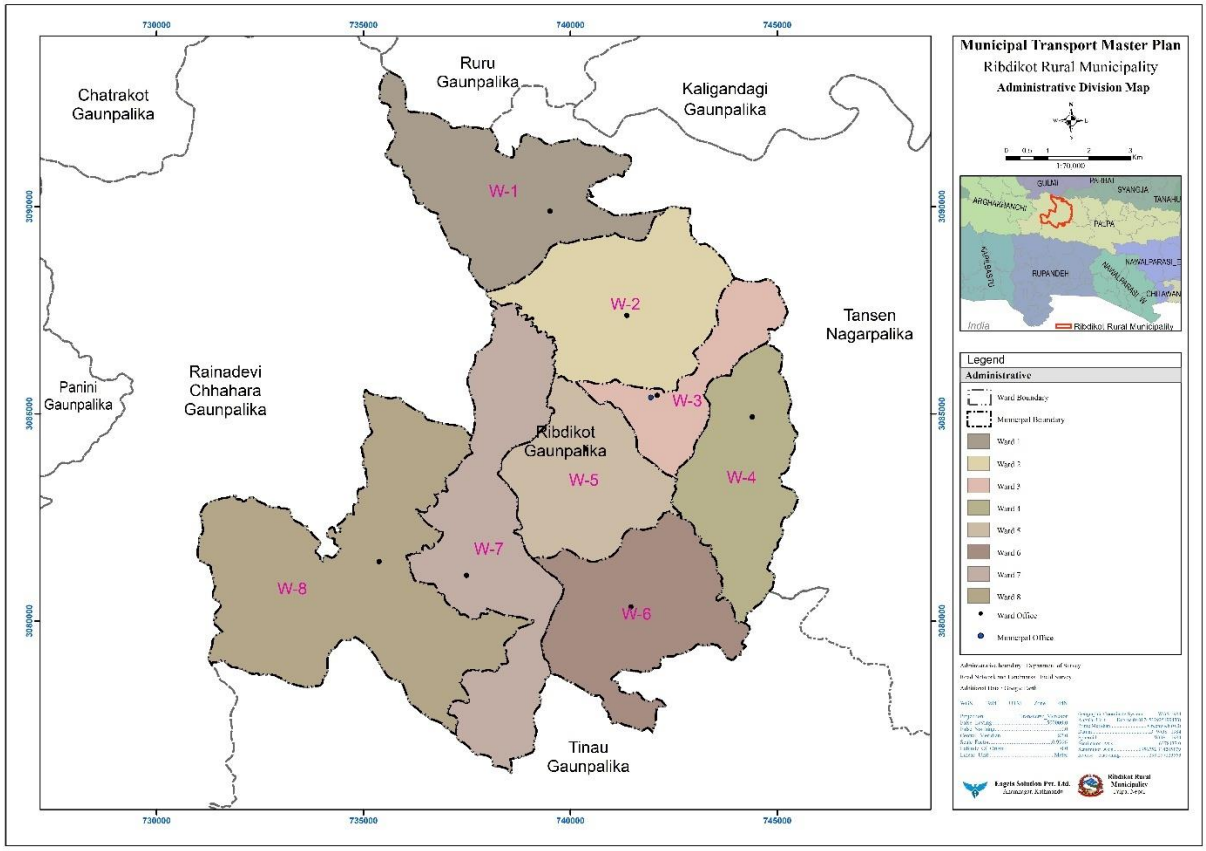

Figure 2-2: Administrative Map

2.2 Demography

According to the CBS (2021), the total population of the municipality is 15,473 with 7,026 male and 8,447 female population. The population growth decreased by 1.9% annually, since the population in 2011 was found to be 18,770 as per CBS. Total household in the municipality

is 4,402. The population density of this rural municipality is 124 per sq. km. The ward wise population distribution of the municipality is as shown in the table below.

Table 2-2: Population Distribution of Ribdikot Rural Municipality

Ward no	Total Population	Male	Female
1	2001	883	1118
2	1828	827	1001
3	1807	799	1008
4	1802	847	955
5	1311	604	707
6	2005	909	1096
7	2048	922	1126
8	2671	1235	1436
Total	**15,473**	**7,026**	**8,447**

(CBS, 2021)

2.2.1 Population Density

The Population Density of Ribdikot Rural Municipality, Palpa, Nepal, illustrates the varying population densities across different wards within the municipality. Ward 3, has the lowest population density, indicating a sparsely populated area. This suggests that Ward 3 has large areas of undeveloped or agricultural land, and forest offering opportunities for development and urban expansion. On the other hand, Ward 2, 5 and 7 have the highest population density, signifying a more urbanized and possibly congested area that requires efficient infrastructure and services to support the dense population.

Moderate population density areas are wards 1, 4, 6 and 8. These wards have a balanced population density, suggesting a mix of urban and rural characteristics. The population density in these wards ranges from medium to moderately high, indicating areas undergoing development and urbanization. These wards require balanced infrastructure development to ensure sustainable growth without overburdening existing resources.

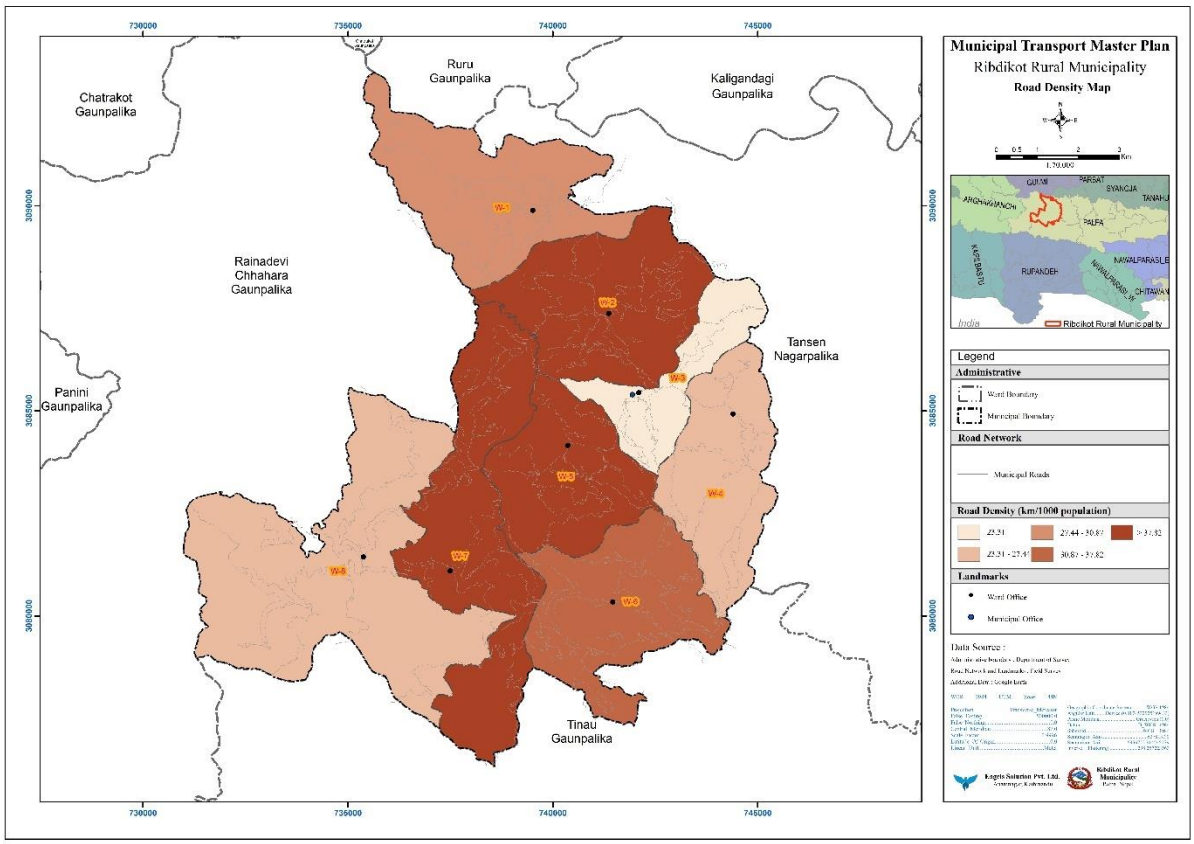

Figure 2-3: Population Density Map

2.2.2 Road Density

The Road Density Map of Ribdikot Rural Municipality, Palpa, Nepal, part of the Municipal Transport Master Plan, provides a detailed overview of the road infrastructure across the municipality's wards. The map uses color-coding to indicate varying levels of road density, which helps identify areas with more or fewer transportation networks. The area with the lowest road density, indicated in light yellow, is Ward 8 with road density of 2.5 km per square kilometer. This area has limited road networks, suggesting potential for future infrastructure development to improve accessibility and connectivity.

Moderate road density areas, include Wards 2, 4, 6 and 7, with road densities ranging from 2.5 to 5.28 km per square kilometer. These regions have a relatively better road network, facilitating moderate accessibility and movement within the municipality. Higher road density areas, shaded in darker brown, include Ward 3 with density of 5.99 km per square kilometer, indicating more developed transportation networks that support better connectivity and mobility.

The area with the highest road density, indicated by the darkest brown color is Ward 1 with density of 11.86 km per square kilometer. This region boasts the most extensive road networks, ensuring high accessibility and efficient transportation. This high-density road area is likely to serve to as key transportation hubs, facilitating the movement of people and goods and supporting local economic activities.

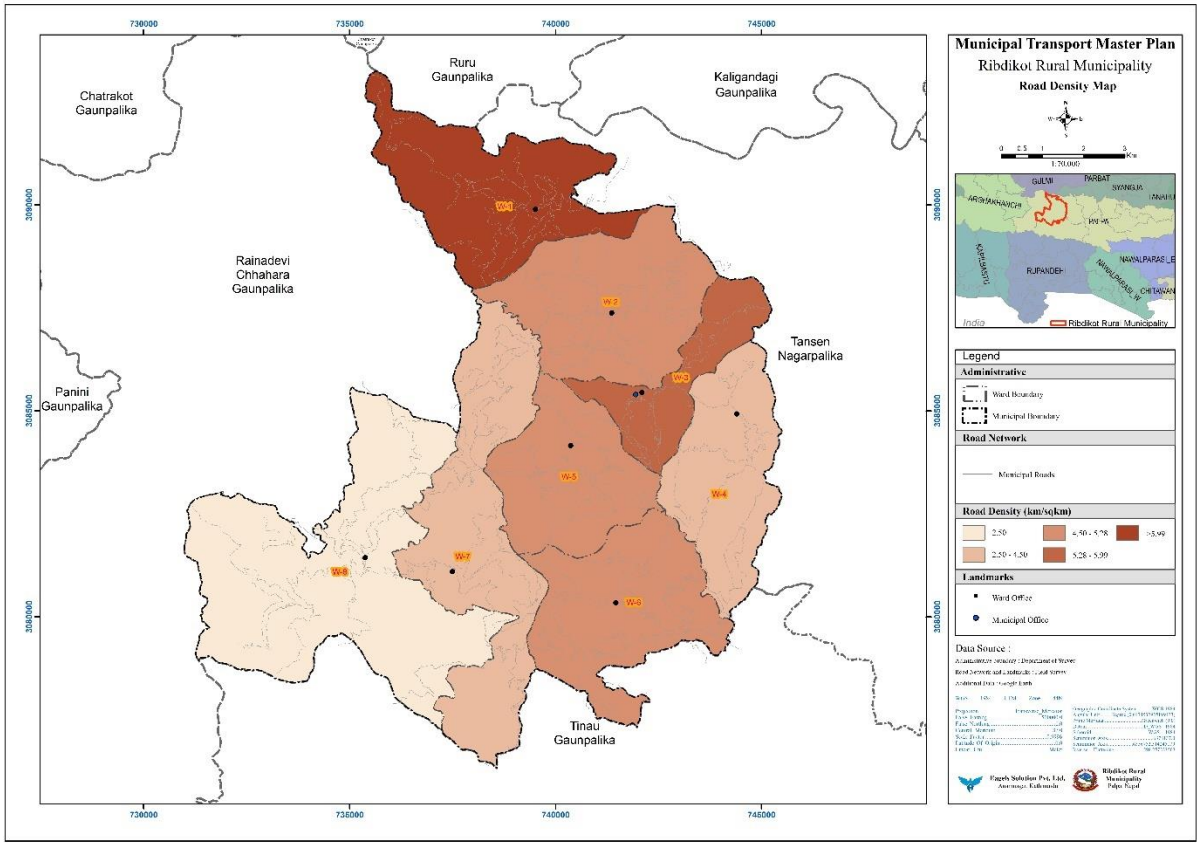

Figure 2-4: Road Density Map

2.3 Regional Linkage

Ribdikot Rural Municipality, located in the Palpa district of Nepal, is characterized by its diverse terrain and significant agricultural activity. Ensuring robust road connectivity is vital for the socio-economic development of this region.

1. Siddhartha Highway (H10)

The Siddhartha Highway is a crucial arterial road that passes through the Palpa District and serves as a major link for Ribdikot. This highway connects:

Butwal: A significant commercial hub in the Terai region, providing access to the southern plains of Nepal and facilitating trade and commerce.

Tansen: The district headquarters of Palpa, offering administrative, healthcare, and educational services. The connection to Tansen is vital for Ribdikot's socio-economic activities.

Pokhara: A major city in western Nepal known for tourism and trade, accessible via the Siddhartha Highway.

2. Tansen-Ribdikot Road

This road is a key linkage between Tansen and Ribdikot Rural Municipality. It is an essential route for residents to access administrative services, markets, and healthcare facilities in Tansen. Improvements and maintenance of this road are crucial for ensuring smooth connectivity.

3. Ribdikot-Rampur Road

Connecting Ribdikot to Rampur Municipality, this road is significant for agricultural trade and the movement of goods and services between the two municipalities. It supports local economies by facilitating access to markets and resources.

4. Ribdikot-Purbakhola Road

This road links Ribdikot with the neighboring Purbakhola Rural Municipality. It is an important route for inter-municipality collaboration and resource sharing, enhancing regional integration and development.

5. Local Rural Roads

Within Ribdikot, there are several rural roads that connect various wards and settlements. These roads are primarily gravel or earthen but are vital for local connectivity:

Village Roads: Connecting smaller villages and hamlets within Ribdikot, facilitating daily commuting and transport of local produce.

Agricultural Roads: Serving the agricultural areas, these roads are essential for the movement of farm produce to local markets and storage facilities.

While Ribdikot Rural Municipality itself does not have an airport, it benefits from the proximity of regional airport Gautam Buddha International Airport (approximately 70 km).

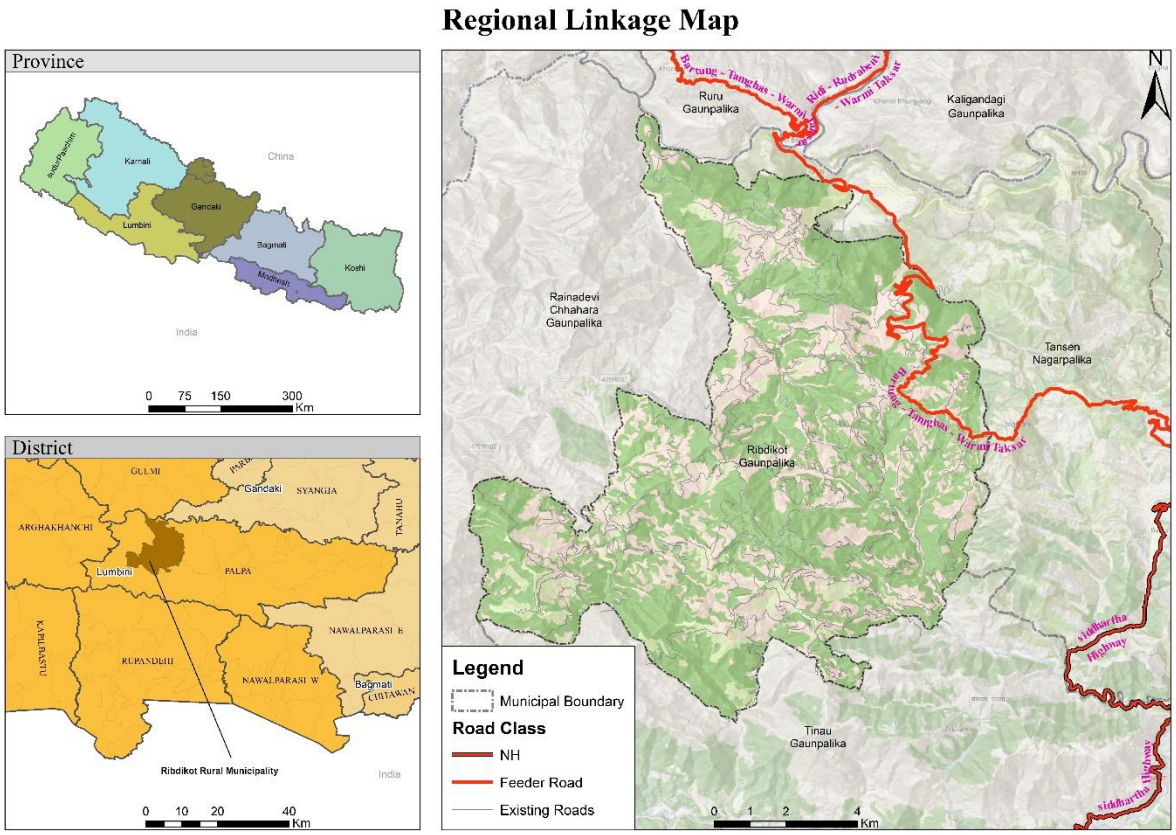

Figure 2-5: Regional Linkage Map

2.4 Market Centres:

Ribdikot Rural Municipality in Palpa District, Nepal, hosts several market centers that serve as vital hubs for trade, commerce, and social interaction. These market centers are crucial for the local economy, providing residents with access to goods, services, and markets for agricultural and other local products. Here are the primary market centers of Ribdikot Rural Municipality:

1. Bhairabsthan Bazaar

Bhairabsthan Bazaar is the main market center of the municipality. It is a bustling hub where locals gather to buy and sell a variety of goods, including groceries, clothing, household items,

and agricultural products. The bazaar is a focal point for social and economic activities in Ribdikot that attracts local as well as commercial traders.

2. Khasyauli Bazaar

Khasyauli Bazaar is another key market in Ribdikot, offering a range of products and services. It serves as a local hub for commerce, providing residents with access to essential goods.

3. Jorte Bazaar

Jorte Bazaar is one of the market centers of the municipality for groceries and shopping activities. It is a hub where local products as well as products from other cities can be found. The bazaar facilitates trade between Ribdikot and other places.

4. Deurali Bazaar

Deurali Bazaar is another key market in Ribdikot that offers a range of products and services. The bazaar provides essential goods such as groceries, agricultural products, clothing to the residents.

5. Harthok Bazaar

Harthok Bazaar is one of market centers in Ribdikot. It primarily serves the population with the products and services used on a daily basis.

6. Malmool Bazaar

Malmool Bazaar is a smaller yet significant market center in Ribdikot. It primarily serves the local community, offering daily necessities and acting as a gathering point for social and commercial activities.

2.5 Water Bodies

Ribdikot Rural Municipality in Palpa District, Nepal, is endowed with various water bodies that are essential for the region's ecology, agriculture, and daily life of the residents. These water bodies include rivers, streams, ponds, and reservoirs that contribute significantly to the local environment and economy. Here’s an overview of the major water bodies in Ribdikot Rural Municipality:

2.5.1. Rivers and Streams

Ribdikot is traversed by several rivers and streams that play a crucial role in the municipality's water supply, irrigation, and ecosystem.

Aadhi Khola is one of the prominent rivers in Ribdikot. It is a perennial river that provides a reliable source of water throughout the year. The river is vital for irrigation, supporting the agricultural activities of the local farmers.It also contributes to the local biodiversity, supporting various aquatic and terrestrial species.

Chandi Khola is another important stream in Ribdikot, contributing to the irrigation needs of the municipality.This stream helps in maintaining the moisture levels of the soil, which is crucial for farming, especially during the dry season.

2.5.2. Ponds and Lakes

There are several small ponds and lakes in Ribdikot that are important for local water storage, irrigation, and sometimes for recreational purposes.

Sundar Pokhari is a notable pond in Ribdikot. It is often used for irrigation and as a source of water for domestic use.The pond also serves as a habitat for various species of fish and other aquatic life, contributing to the local biodiversity.

Rani Pokhari is another significant water body in Ribdikot, utilized for agricultural irrigation and as a water source for the local population.The pond is also a spot for local gatherings and community events, enhancing its cultural significance.

2.5.3. Reservoirs and Irrigation Canals

To enhance agricultural productivity and manage water resources effectively, Ribdikot has several reservoirs and irrigation canals.

Irrigation Reservoirs

- The municipality has built small irrigation reservoirs to store water, especially for use during the dry season. These reservoirs are crucial for ensuring a consistent water supply for farming.
- These reservoirs also help in recharging groundwater levels and maintaining the overall water balance in the region.Irrigation Canals

- A network of irrigation canals distributes water from rivers and reservoirs to agricultural fields. These canals are essential for efficient water management and distribution, helping to sustain the agricultural economy of Ribdikot.

2.5.4. Springs

Natural springs are a vital source of water for many rural communities in Ribdikot.

Jhyalung Spring is one of the key natural springs in Ribdikot, providing a continuous supply of fresh water for drinking and household use.The spring is also used for small-scale irrigation and supports the local vegetation and wildlife.

In the context of the Municipal Transport Master Plan (MTMP), the strategic integration of water bodies is essential for sustainable development. Rivers, streams, and lakes not only serve as vital sources of irrigation and drinking water but also influence the planning and construction of transportation infrastructure. Ensuring that road networks and bridges are designed to protect and preserve these water bodies is crucial. Proper drainage systems and culverts must be incorporated to prevent waterlogging and contamination from roadway runoff. Additionally, maintaining the ecological balance and cultural significance of these water bodies will enhance the overall resilience and sustainability of the municipality's transport infrastructure, fostering economic growth and improving the quality of life for residents.

2.6 Education Facilities

In this rural municipality, there are 24 primary, 14 secondary, 3 campus, and 3 community learning centers. Among the 24 primary schools, classes from grade 1 to 5 are conducted in 19 schools, and classes from grade 1 to 8 in 5 schools. Among the 14 secondary schools, classes from grade 1 to 10 are conducted in 5 schools, and classes from grade 1 to 12 in 6 schools. There is one institutional school among the 5 operated primary schools. In the total 38 schools in this rural municipality, there are early childhood development centers operating, including 8 under local jurisdiction, 29 under federal government, and 1 institutional school that operates with the aim to lessen the burden on parents. Additionally, Bhawani Secondary School is being developed into a model school, also conducting special classes including slow hearing classes.

2.7 Health Facilities

The existing health services in the rural municipality include 7 health posts, but there is a lack of necessary physical infrastructure. Consequently, curative health services at the rural level are weak. Most households in this rural municipality rely on health posts and nearby

government hospitals for medical services when ill, although some also seek care at private hospitals. Additionally, there are 2 birthing centers and 1 ayurvedic dispensary in the area.

2.8 Land Use

Cultivation areas dominate the landscape, covering 42.76% of the total land area, which underscores the importance of agriculture in the region for food production and the livelihoods of farming communities. Forest follows closely, occupying 34.67% of the land. This forest coverage indicates a rich biodiversity, substantial carbon sequestration, and a strong ecological balance. Bushland accounts for 16.11% of the land, serving as a transitional zone between forests and agricultural areas, providing habitat for various wildlife species. Cliffs make up 5.05% of the land, contributing to the geological diversity of the area but being largely unsuitable for agriculture or dense vegetation. Sand covers 0.82% of the land, likely including beaches, dunes, or desert regions, important for tourism and natural erosion barriers. Barren land constitutes only 0.38% of the area, representing regions devoid of significant vegetation, possibly due to harsh environmental conditions or land degradation. Lastly, water bodies, comprising 0.21% of the land, are vital for local ecosystems, supporting aquatic life and providing water for drinking and irrigation. Overall, the chart highlights the predominant roles of agricultural fields and forests while also reflecting a diverse landscape with varied ecological functions and land management practices.

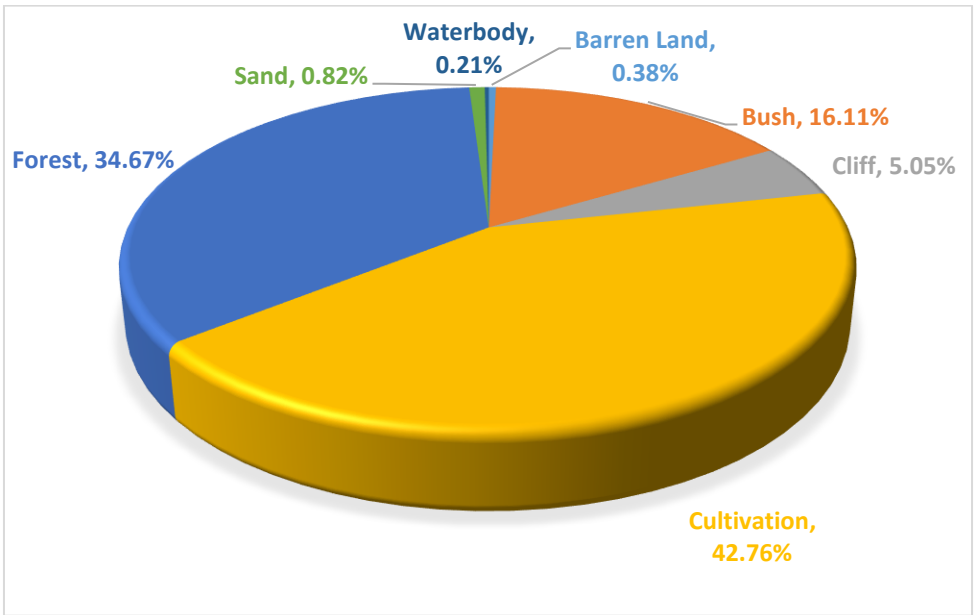

Figure 2-6: Land Use

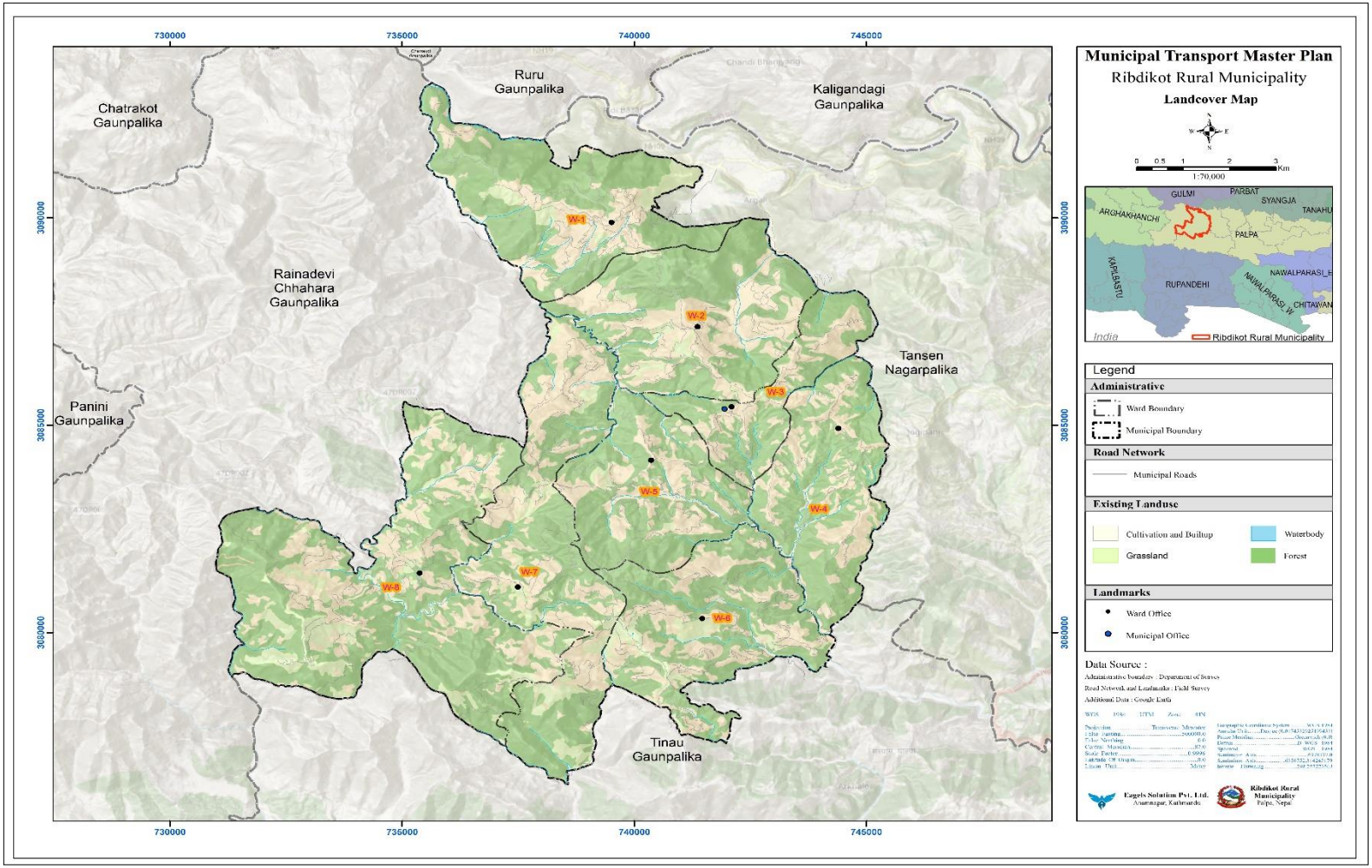

Figure 2-7: Land Use Map of Ribdikot Rural Municipality

2.9 Bridges/Culverts

Bridges, suspension bridges, and culverts are the most essential components of road and trail transport. Any road is incomplete without bridges/cross drainages in a country like Nepal where we encounter rivers and brooks every few kilometers. However, as compared to other hilly areas, the roads along this municipality passes through small streams and rivers. Thus, instead of big bridges even small culverts and cause ways also work substantially

2.10 Drainage System

Good drainage system is an internal part of road management. Often hilly areas in the Municipality provide natural drainage of water but if it is not installed and maintained according to the standard specifications, chances of massive soil erosion and even landslides are extremely high. Similarly, lack of drainage triggers damages in the roads increasing the cost of maintenance. Such unsustainable development leads to environmental destruction and regular obstacles during vehicular movement. Almost all of the roads in the municipality except the feeder road lack side drains. Therefore, construction and maintenance of drainage is equally important as the construction and maintenance of roads.

2.11 Road Furniture

Different sorts of objects which are installed in several places of a road to improve smoothness of travel and ensure safety are collectively called road furniture. They include objects like street light, lane signs, zebra crossing, all kinds of traffic signals, milestones, traffic barriers, bus stands, and passenger's lot etc. These objects enhance the aesthetic dimension of the roads in one hand and improve the safety of travel on the other. They equally provide comfort to pedestrian and control and regulate the traffic. Even very basic road furniture is seem to be missing in most of the roads in this Municipality. Therefore, installing road furniture after the completion of major construction is essential.

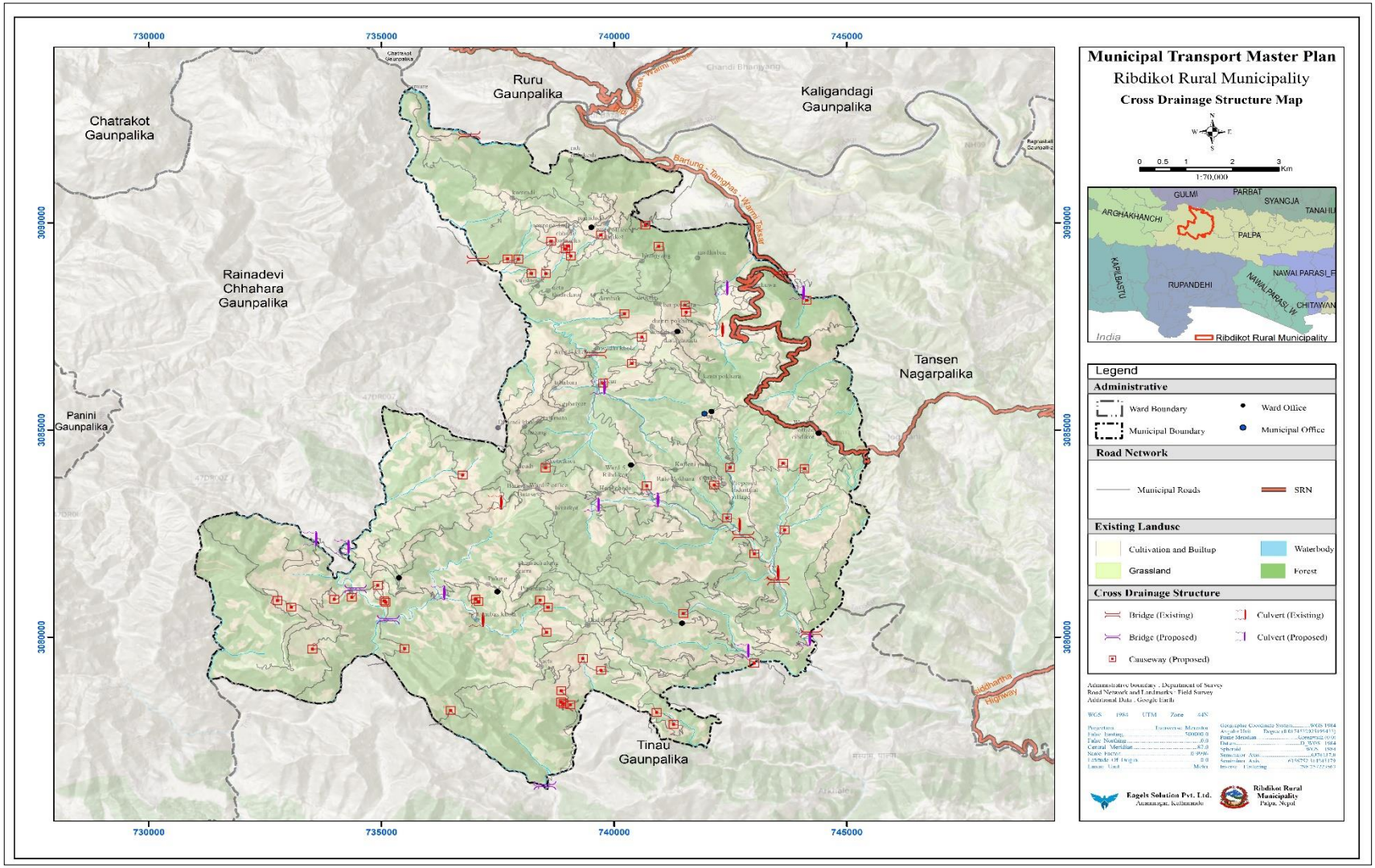

Figure 2-8: Cross Drainage

CHAPTER 3: EXISTING SITUATION ANALYSIS

3.1 Field Work

3.1.1 Orientation Workshop

The preliminary preparedness includes a meeting for formally initiating the preparation of MTMP and its field works. An orientation meeting and workshop were organized in the municipality office hall. It was participated by stakeholders from different sectors including political parties, line agencies, ward officials, social mobilizers, and municipal officials.

During the workshop, the study team presented a PowerPoint slide informing the stakeholders on the study topic, its objectives and scope of work, and detailed work methodology. Different surveys to be administered were described along with their need and use in the planning process. The road network hierarchy and standards were also presented. The planning methodology and road standards were discussed, with a major focus on the road standards. It was followed by a short workshop where details on the existing infrastructures were collected.

3.2 Survey Methods

The task of selecting of survey method is crucial for the efficiency and effectiveness of the overall survey effort. Pertaining to the specific objectives and overall objectives of the project, following specific surveys were identified to be conducted in the field.

- Road Inventory Survey
- Demand Survey
- Origin-Destination (OD) Survey

3.2.1 Road Inventory Survey

The inventory included information relating to Road length, Carriage Width, Right of Way (ROW), Surface Type, Surface Condition, Drainage Condition, Vehicular Traffic, Pedestrian Traffic, Type of Cross Structure etc. A Road Inventory form was prepared and the consultant team or the trained personal conducted the survey in the study area.

A. Surface Type

Table 3-1: Road Surface Types

Surface Type	Road Length
Earthen	259.97
Gravelled	83.89
Metalled	32.03
Grand Total	**375.91**

The transportation infrastructure of Ribdikot Rural Municipality is predominantly composed of earthen roads, which account for 69.16% of the total road length of 375.91 kilometers. Gravelled roads constitute about 22.32%, while metalled roads make up 8.52%. The heavy reliance on earthen roads highlights significant challenges, particularly during adverse weather conditions, impacting accessibility and connectivity. Gravelled roads provide better travel conditions but still require regular maintenance. The limited presence of metalled roads indicates a critical need for infrastructure development to enhance transportation efficiency and resilience. Public transportation is the most widely used mode of travel, underscoring its importance in the local transit system. The data also reveals a substantial number of residents relying on walking and motorcycles, reflecting the diverse transportation needs of the community. To address these issues, there is a pressing need for strategic investment in upgrading and maintaining the existing road network, expanding durable road surfaces, and implementing effective management practices. These efforts will not only improve mobility and accessibility but also support economic activities and enhance the overall quality of life for the residents of Ribdikot Rural Municipality.

B. Road Length

Table 3-2: Road Length according to wards

Ward	Road Length
1	51.59
2	41.32
3	30.24
4	30.44
5	31.66
6	75.47
7	53.67
8	61.50
Grand Total	**375.91**

The road inventory survey of Ribdikot Rural Municipality reveals a detailed distribution of road lengths across its various wards, highlighting significant variations in infrastructure development. Ward 6 stands out with the longest road network, totaling 75.47 km, indicating a high level of accessibility and infrastructure support for economic activities. Ward 8 follows with 61.50 km of roads, also reflecting extensive infrastructure development. Conversely, Wards 3, 4 and 5 have relatively shorter road networks, with 30.24 km, 30.44 km and 31.66 km respectively, suggesting a need for further development to enhance connectivity and accessibility. Ward 1 has 25.56 km of roads, Ward 2 has 41.32 km and Ward 7 has 53.67 km, each indicating varying levels of infrastructure that require regular maintenance and potential upgrades. The data underscores the importance of strategic planning and targeted investment to ensure equitable access and balanced development across all wards. By focusing on improving road conditions and expanding the network, particularly in less developed wards, Ribdikot Rural Municipality can enhance mobility, support economic growth, and improve the overall quality of life for its residents.

C. *Road Width*

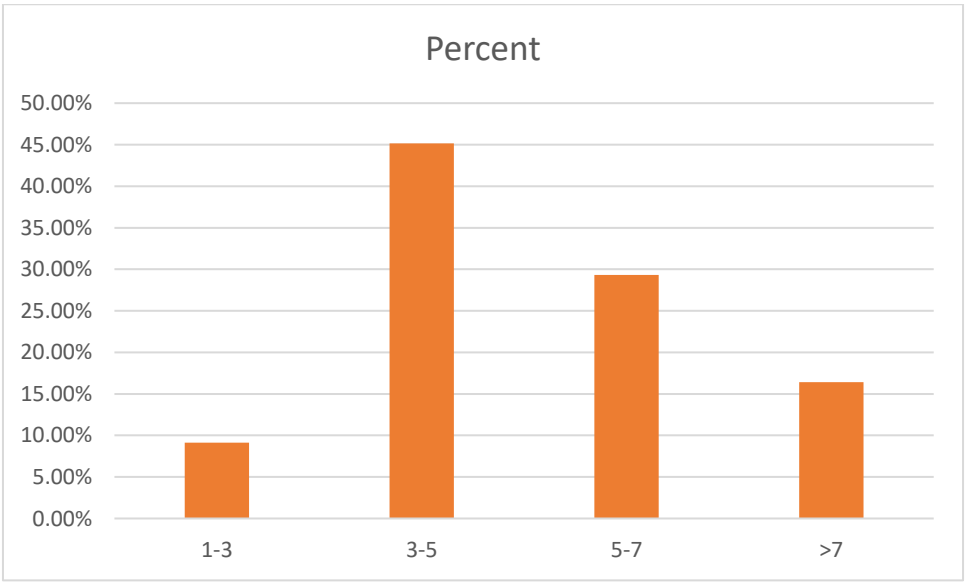

Figure 3-1: Bar graph representation of Road width

The road width distribution across Ribdikot Rural Municipality indicates a significant variation, impacting the overall accessibility and functionality of the transport network. The majority of the roads fall within the 3-5-meter range, accounting for around 45% of the total road network. This suggests that most roads are moderately wide, suitable for standard vehicular traffic but potentially challenging for larger vehicles or two-way traffic in busier

areas. Approximately 30% of the roads fall within the 5-7-meter range, providing better capacity for traffic flow and safer passage for larger vehicles and emergency services. About 9% of roads are within the 1-3-meter range, highlighting the scarcity of extremely narrow roads, which might be present in less developed or more remote areas. There are about 16% roads wider than 7 meters, indicating a lack of major thoroughfares or highways that could support high-capacity or high-speed traffic.

This distribution highlights the need for strategic planning to widen existing roads, particularly in high-traffic areas, to improve safety and efficiency. Enhancing road widths in key areas can also support the introduction of reliable public transportation services and facilitate better connectivity within the municipality. Prioritizing the expansion of narrower roads will address potential bottlenecks and improve overall traffic management, contributing to the sustainable development of Ribdikot Rural Municipality's transport infrastructure.

Table 3-3: Inventory sheets Road Width

Inventory Sheet: Road Width

SN	Code	Length (in km)	Total Width (in m)			Carriageway Width (in m)
			Maximum	Minimum	Average	
1	M5060601A	17.15	8.0	4.5	7.66	3.85
2	M5060601B	5.36	8.0	8	8.00	4.00
3	M5060601C	2.35	6.0	3	5.67	3.00
4	M5060601D	2.91	3.0	2	2.82	2.82
5	M5060602A	7.58	6.0	6	6.00	.01
6	M5060602B	16.93	8.0	3	5.82	4.76
7	M5060602C	2.14	6.0	6	6.00	4.00
8	M5060602D	0.43	3.0	3	3.00	3.00
9	M5060603A	12.38	6.0	6	6.00	.00
10	M5060603B	10.16	6.0	6	6.00	.00
11	M5060603C	3.19	8.0	6	6.18	.00
12	M5060603D	3.90	3.0	3	3.00	3.00
13	M5060604A	4.98	5.0	5	5.00	.00
14	M5060604B	11.93	6.0	3	5.19	2.77
15	M5060604C	2.36	6.0	6	6.00	3.98
16	M5060604D	0.35	6.0	6	6.00	4.00

17	M5060605A	9.31	8.0	4	5.23	4.87
18	M5060605B	6.59	3.0	2	2.35	2.35
19	M5060605C	2.23	6.0	6	6.00	2.00
20	M5060605D	1.29	2.0	2	2.00	2.00
21	M5060606A	9.31	7.5	7.5	7.50	.00
22	M5060606B	6.06	3.0	3	3.00	3.00
23	M5060606C	2.84	3.0	3	3.00	3.00
24	M5060606D	2.86	6.0	4	4.20	4.00
25	M5060607A	7.34	8.0	8	8.00	4.96
26	M5060607B	7.53	5.0	3	4.10	4.10
27	M5060607C	4.18	3.0	3	3.00	3.00
28	M5060607D	0.80	4.0	4	4.00	4.00
29	M5060608B	10.68	5.0	3	5.00	5.00
30	M5060608C	3.43	7.5	3.5	5.26	5.26
31	M5060608D	0.59	1.0	1	1.00	1.00
32	M5060609B	9.66	4.0	2	2.85	2.85
33	M5060609C	1.19	4.2	3	3.18	3.18
34	M5060609D	2.24	4.0	4	4.00	4.00
35	M5060610B	4.69	3.5	2	.92	.92
36	M5060610C	3.08	7.5	7.5	7.50	7.50
37	M5060610D	4.02	4.0	4	4.00	4.00
38	M5060611B	5.30	8.0	8	8.00	4.06
39	M5060611C	1.76	3.5	3.5	3.50	3.50
40	M5060611D	2.48	4.0	4	4.00	4.00
41	M5060612B	4.85	5.0	2	4.46	4.46
42	M5060612C	3.35	3.0	3	3.00	3.00
43	M5060612D	0.62	3.0	3	3.00	3.00
44	M5060613B	2.28	7.5	4.2	4.58	4.58
45	M5060613C	3.70	4.0	4	4.00	4.00
46	M5060613D	2.11	4.0	4	4.00	4.00
47	M5060614B	4.43	3.0	2	2.37	2.37
48	M5060614C	3.27	3.5	3	3.30	3.30
49	M5060614D	1.01	4.0	4	4.00	4.00
50	M5060615B	2.78	6.0	6	6.00	3.00
51	M5060615C	2.58	5.0	5	5.00	5.00
52	M5060615D	0.70	8.0	3	5.43	5.43
53	M5060616B	4.07	4.2	4	4.01	4.01
54	M5060616C	2.09	5.0	5	5.00	3.13
55	M5060616D	0.39	3.0	3	3.00	3.00
56	M5060617C	3.43	4.0	4	4.00	2.72
57	M5060617D	1.27	3.0	3	3.00	3.00
58	M5060618C	3.64	5.0	5	5.00	3.01
59	M5060618D	1.18	3.0	3	3.00	3.00

60	M5060619C	2.90	2.0	2	2.00	2.00
61	M5060619D	1.53	4.0	4	4.00	4.00
62	M5060620C	3.99	3.0	3	3.00	3.00
63	M5060620D	2.00	4.0	3	3.12	3.00
64	M5060621C	4.65	4.0	4	4.00	4.00
65	M5060621D	0.62	3.0	3	3.00	3.00
66	M5060622C	4.04	4.5	3	3.55	3.55
67	M5060622D	1.67	3.0	3	3.00	3.00
68	M5060623C	2.63	3.2	3.2	3.20	3.20
69	M5060623D	1.04	3.0	3	3.00	3.00
70	M5060624C	3.77	4.0	4	4.00	4.00
71	M5060624D	0.26	3.0	3	3.00	3.00
72	M5060625C	1.81	4.0	4	4.00	4.00
73	M5060625D	1.56	2.0	2	2.00	2.00
74	M5060626C	4.74	4.0	4	4.00	4.00
75	M5060626D	1.94	2.0	2	2.00	2.00
76	M5060627C	3.12	3.0	3	3.00	3.00
77	M5060627D	1.48	3.0	2	2.06	2.06
78	M5060628C	6.60	6.0	6	6.00	.00
79	M5060628D	0.13	3.5	3.5	3.50	3.50
80	M5060629C	8.38	6.0	6	6.00	4.00
81	M5060629D	0.14	6.0	6	6.00	2.00
82	M5060630C	2.16	5.0	3.5	3.90	3.90
83	M5060630D	0.61	8.0	8	8.00	3.00
84	M5060631D	0.98	4.0	4	4.00	4.00
85	M5060632D	0.62	3.0	3	3.00	3.00
86	M5060633D	0.30	2.0	2	2.00	2.00
87	M5060634D	0.42	3.5	3.5	3.50	3.50
88	M5060635D	0.32	3.0	3	3.00	3.00
89	M5060636D	0.51	3.0	3	3.00	3.00
90	M5060637D	4.00	8.0	5.5	6.88	6.88
91	M5060638D	1.43	5.0	5	5.00	5.00
92	M5060639D	2.43	4.0	2	3.12	3.12
93	M5060640D	1.64	4.0	3	3.12	3.12
94	M5060641D	0.94	4.0	3	3.42	3.42
95	M5060642D	0.33	2.5	2.5	2.50	2.50
96	M5060643D	0.42	3.5	3	3.20	3.20
97	M5060644D	0.24	3.0	3	3.00	3.00
98	M5060645D	1.02	2.5	2.5	2.50	2.50
99	M5060646D	0.16	3.0	3	3.00	3.00
100	M5060647D	0.22	3.0	3	3.00	3.00
101	M5060648D	1.51	6.0	6	6.00	6.00
102	M5060649D	0.55	3.0	3	3.00	3.00

103	M5060650D	0.81	3.0	3	3.00	3.00
104	M5060651D	1.64	3.0	3	3.00	3.00
105	M5060652D	1.59	3.5	3.5	3.50	3.50
106	M5060653D	0.78	8.0	8	8.00	8.00
107	M5060654D	1.06	3.0	3	3.00	3.00
108	M5060655D	0.77	3.5	3.5	3.50	3.50
109	M5060656D	0.13	3.0	3	3.00	3.00
110	M5060657D	0.38	3.5	3	3.15	3.15
111	M5060658D	0.18	3.0	3	3.00	3.00
112	M5060659D	0.20	3.0	3	3.00	3.00
113	M5060660D	0.33	3.0	3	3.00	3.00
114	M5060661D	0.58	3.0	2.5	2.65	2.65
115	M5060662D	1.20	3.0	3	3.00	3.00
116	M5060663D	0.83	3.0	3	3.00	3.00
117	M5060664D	3.32	3.0	3	3.00	3.00
118	M5060665D	0.34	3.0	3	3.00	3.00
119	M5060666D	1.96	3.0	3	3.00	3.00
120	M5060667D	1.73	1.5	1.5	1.50	1.50
121	M5060668D	0.37	2.0	2	2.00	2.00
122	M5060669D	1.60	4.0	3	3.50	3.50
123	M5060670D	0.73	3.0	3	3.00	3.00
124	M5060671D	2.58	3.5	2.5	2.95	2.95
125	M5060672D	1.42	3.0	3	3.00	3.00
126	M5060673D	0.96	2.5	2.5	2.50	2.50
127	M5060674D	1.27	3.0	3	3.00	3.00
128	M5060675D	1.89	3.0	2.5	2.68	2.68
129	M5060676D	1.38	4.0	4	4.00	4.00
130	M5060677D	1.91	2.5	2.5	2.50	2.50
131	M5060678D	0.67	4.0	4	4.00	4.00
132	M5060679D	0.58	3.0	3	3.00	3.00
133	M5060680D	0.52	4.0	4	4.00	4.00
134	M5060681D	0.64	2.5	2.5	2.50	2.50
135	M5060682D	0.44	6.0	6	6.00	4.00

Table 3-4: Inventory Sheet Road Surface Type

SN	Code	Length (in km)	Surface Type		
			Earthen	Gravelled	Metalled
1	M5060601A	17.15	7.35	9.31	0.49
2	M5060601B	5.36	-	5.02	0.33
3	M5060601C	2.35	2.35	-	-
4	M5060601D	2.91	2.91	-	-
5	M5060602A	7.58	0.02	-	7.56
6	M5060602B	16.93	6.15	10.47	0.30
7	M5060602C	2.14	2.14	-	-
8	M5060602D	0.43	0.43	-	-
9	M5060603A	12.38	2.01	8.63	1.74
10	M5060603B	10.16	3.34	6.82	-
11	M5060603C	3.19	2.91	0.28	-
12	M5060603D	3.90	3.90	-	-
13	M5060604A	4.98	-	-	4.98
14	M5060604B	11.93	11.63	0.19	0.10
15	M5060604C	2.36	2.28	0.08	-
16	M5060604D	0.35	0.35	-	-
17	M5060605A	9.31	8.85	0.34	0.11
18	M5060605B	6.59	6.59	-	-
19	M5060605C	2.23	2.23	-	-
20	M5060605D	1.29	1.29	-	-
21	M5060606A	9.31	-	1.19	8.12
22	M5060606B	6.06	6.06	-	-
23	M5060606C	2.84	2.84	-	-
24	M5060606D	2.86	2.57	0.23	0.06
25	M5060607A	7.34	4.08	2.39	0.87
26	M5060607B	7.53	6.76	0.64	0.13
27	M5060607C	4.18	3.72	0.28	0.17
28	M5060607D	0.80	0.80	-	-
29	M5060608B	10.68	9.49	1.19	-
30	M5060608C	3.43	1.92	1.51	-
31	M5060608D	0.59	0.59	-	-
32	M5060609B	9.66	6.60	3.06	-
33	M5060609C	1.19	1.09	-	0.10
34	M5060609D	2.24	0.87	1.33	0.04
35	M5060610B	4.69	3.89	-	0.80
36	M5060610C	3.08	-	3.08	-
37	M5060610D	4.02	4.02	-	-
38	M5060611B	5.30	2.59	2.69	0.02
39	M5060611C	1.76	1.76	-	-

40	M5060611D	2.48	2.48	-	-
41	M5060612B	4.85	2.05	2.80	-
42	M5060612C	3.35	3.35	-	-
43	M5060612D	0.62	0.62	-	-
44	M5060613B	2.28	-	2.28	-
45	M5060613C	3.70	3.70	-	-
46	M5060613D	2.11	1.97	-	0.14
47	M5060614B	4.43	4.43	-	-
48	M5060614C	3.27	2.51	0.16	0.60
49	M5060614D	1.01	1.01	-	-
50	M5060615B	2.78	2.78	-	-
51	M5060615C	2.58	2.58	-	-
52	M5060615D	0.70	0.20	0.06	0.43
53	M5060616B	4.07	-	4.07	-
54	M5060616C	2.09	1.44	0.22	0.43
55	M5060616D	0.39	0.39	-	-
56	M5060617C	3.43	3.43	-	-
57	M5060617D	1.27	1.27	-	-
58	M5060618C	3.64	3.60	-	0.04
59	M5060618D	1.18	1.18	-	-
60	M5060619C	2.90	2.90	-	-
61	M5060619D	1.53	-	1.53	-
62	M5060620C	3.99	3.99	-	-
63	M5060620D	2.00	2.00	-	-
64	M5060621C	4.65	4.65	-	-
65	M5060621D	0.62	0.62	-	-
66	M5060622C	4.04	2.87	1.16	-
67	M5060622D	1.67	1.67	-	-
68	M5060623C	2.63	2.63	-	-
69	M5060623D	1.04	1.04	-	-
70	M5060624C	3.77	3.57	-	0.19
71	M5060624D	0.26	0.26	-	-
72	M5060625C	1.81	1.81	-	-
73	M5060625D	1.56	1.56	-	-
74	M5060626C	4.74	4.08	0.66	-
75	M5060626D	1.94	1.94	-	-
76	M5060627C	3.12	1.49	1.64	-
77	M5060627D	1.48	1.39	-	0.08
78	M5060628C	6.60	6.60	-	-
79	M5060628D	0.13	-	0.13	-
80	M5060629C	8.38	6.34	1.87	0.16
81	M5060629D	0.14	0.14	-	-
82	M5060630C	2.16	1.20	-	0.96

83	M5060630D	0.61	0.61	-	-
84	M5060631D	0.98	0.98	-	-
85	M5060632D	0.62	0.44	0.18	-
86	M5060633D	0.30	0.30	-	-
87	M5060634D	0.42	-	0.42	-
88	M5060635D	0.32	0.32	-	-
89	M5060636D	0.51	0.51	-	-
90	M5060637D	4.00	-	3.98	0.01
91	M5060638D	1.43	-	1.43	-
92	M5060639D	2.43	1.71	0.72	-
93	M5060640D	1.64	1.06	0.58	-
94	M5060641D	0.94	0.55	0.40	-
95	M5060642D	0.33	0.33	-	-
96	M5060643D	0.42	0.26	0.17	-
97	M5060644D	0.24	0.24	-	-
98	M5060645D	1.02	1.02	-	-
99	M5060646D	0.16	0.16	-	-
100	M5060647D	0.22	0.22	-	-
101	M5060648D	1.51	-	-	1.51
102	M5060649D	0.55	0.55	-	-
103	M5060650D	0.81	0.81	-	-
104	M5060651D	1.64	1.64	-	-
105	M5060652D	1.59	1.59	-	-
106	M5060653D	0.78	-	-	0.78
107	M5060654D	1.06	1.06	-	-
108	M5060655D	0.77	0.72	-	0.05
109	M5060656D	0.13	0.13	-	-
110	M5060657D	0.38	0.38	-	-
111	M5060658D	0.18	0.18	-	-
112	M5060659D	0.20	0.20	-	-
113	M5060660D	0.33	0.33	-	-
114	M5060661D	0.58	0.58	-	-
115	M5060662D	1.20	1.20	-	-
116	M5060663D	0.83	0.42	0.41	-
117	M5060664D	3.32	3.32	-	-
118	M5060665D	0.34	0.34	-	-
119	M5060666D	1.96	1.96	-	-
120	M5060667D	1.73	1.73	-	-
121	M5060668D	0.37	0.37	-	-
122	M5060669D	1.60	1.60	-	-
123	M5060670D	0.73	-	-	0.73
124	M5060671D	2.58	2.31	0.27	-
125	M5060672D	1.42	1.42	-	-

126	M5060673D	0.96	0.96	-	-
127	M5060674D	1.27	1.27	-	-
128	M5060675D	1.89	1.89	-	-
129	M5060676D	1.38	1.38	-	-
130	M5060677D	1.91	1.91	-	-
131	M5060678D	0.67	0.67	-	-
132	M5060679D	0.58	0.58	-	-
133	M5060680D	0.52	0.52	-	-
134	M5060681D	0.64	0.64	-	-
135	M5060682D	0.44	0.44	-	-

3.2.2 Demand survey

To collect demand of interventions from the local people, demand survey was conducted in each ward. The platform was used to share the information on the preparation process of MTMP, the objectives and scope, and the road standards and its infrastructures with the local people. The meeting was organized individually in each ward. The demand survey includes filling up a form by the local ward representatives. The form includes demand for five major roads of the ward based on priority and their details. It also includes details of other development plans and projects in the ward. The form also asks to highlight possible involvement of the local people in developing the demanded roads. The demand form highlighted major roads and their necessity in terms of priority given by the wards. The priority order resembles the necessity for immediate interventions in some roads as they are in bad condition or some roads are for new construction. The form also asks to explain why the road was prioritized with possible benefits from the proposed interventions. The map showing different roads demanded are attached in the annex.

Figure 3-2:Ward meeting

Ward	Priority	Road
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रिब्दीकोट नगर/गाँउ पालिका

यातायात गुरु योजना माग फारम

सडकका लागि अनुरोध
वडाले भर्ने

१. वडा नं : १ रुप्याहा स्थान: शान्तिचौर

२. प्राथमिकताका आधारमा तालिका भर्नुहोस :

कोड	सडक कार्यक्रम			चौडाई	बाटोको प्रकार				प्राथमिकता क्रम.
					नया बाटो खोल्ने	स्तरोन्नति गर्ने	पुनरुत्थान गर्ने	आवधिक मर्मत	
क	नाम: देउराली पौरखा रेखी शान्तिचौर सालझुरे			८		✓		✓	१
	देखि: देउराली पौरखा	हुदै: शान्तिचौर	सम्म: सालझुरे						
ख	नाम: कुर्गौली रुम्याहा राधाकृष्ण भुलखेला डाक कृषि सडक			८		✓		✓	४
	देखि: कुर्गौली	हुदै: रुम्याहा राधाकृष्ण	सम्म: भुलखेला डाडा						
ग	नाम: चैरडाँडा जोरपोखरी कुदेनी शान्तिचौर रिङरोड			८		✓		✓	५
	देखि: चैरडाँडा जोरपो.	हुदै: जोरपोखरी कुदेनी	सम्म: शान्तिचौर रिङ रोड						
घ	नाम: बमौपाने डाँडा चेपु कौंया डाँडा			६		✓			३
	देखि: बमौपाने डाँडा	हुदै: चेपु	सम्म: कौंया डाँडा						
ङ	नाम: डाडा ठूला चौर बिन्द्राबन प्रभात हुदै लम्कीखेला रिङरोड			६		✓			२
	देखि: डाडा	हुदै: लम्कीखेला	सम्म: रिङरोड						

३. माथिको प्राथमिकता .... मितीमा बसेको वडा बैठकबाट तोकिएको हो।

[illegible]

५. लाभको प्रकार र प्राथमिकताका कारण :

कोड **	कस्तो किसिमको फाइदा पुग्छ लेख्नुहोस
क	एक ठाउँ बाट अर्को ठाउँमा जान कृषि लगायत बिक्री वितरण ओसार पसार गर्न।
ख	बजार बाट नजीक हुनको लागी उत्पादित कृषि तथा अन्य सामाग्री बिक्री वितरण साथै पर्यटकिय स्थानहरु अवलोकन गर्न।
ग	गुल्मी जिल्ला बाट उत्पादित सामाग्री साथै मानिसहरु आवत जावत गर्न र सदरमुकाम बाट नजीक पुग्नको लागी उपयोगी
घ	स्थानीय ठाउँ मा रहेको स्कूल स्वास्थ्य चौकी साथै पुल साथै बजारको पहुँच बाट नजीक त्यार/सहज बनाउनको लागी बढी उपयोगी।
ङ	कृषि सडक कृषि जन्य उत्पादित सामाग्री बिक्री वितरण साथै सहज तरिकाले आवत जावत गर्न लागी पर्यटकिय स्थान अवलोकन

** २ न. तालिका अनुसार भर्नुहोस्

६. अरु संस्थाहरुको संलग्नता :

कोड	अरु संस्थाहरु कुनै पनि project मा संलग्न भएको (बाह्य donor, NGOs, INGOs, नेपाल सरकारको संस्थाहरु) भए उल्लेख गर्नुहोस ? वा नजिकैको कुनै पालिकाले अनुरोध गरको भए उल्लेख गर्नुहोस ? तिनीहरुको संलग्नता र प्रकार समेत उल्लेख गर्नुहोस
क	सदरमुकाम संग जोड्ने बाटो पालिका प्रवेशको लागी
ख	—
ग	ता.न.पा. बहुर र रिब्दीकोट वरपाहा मो सहज पहुँच मार्ग ... ग्राम रिडीको लागी सहज तानसेन न.पा रिब्दीकोट गा.पा को लागी
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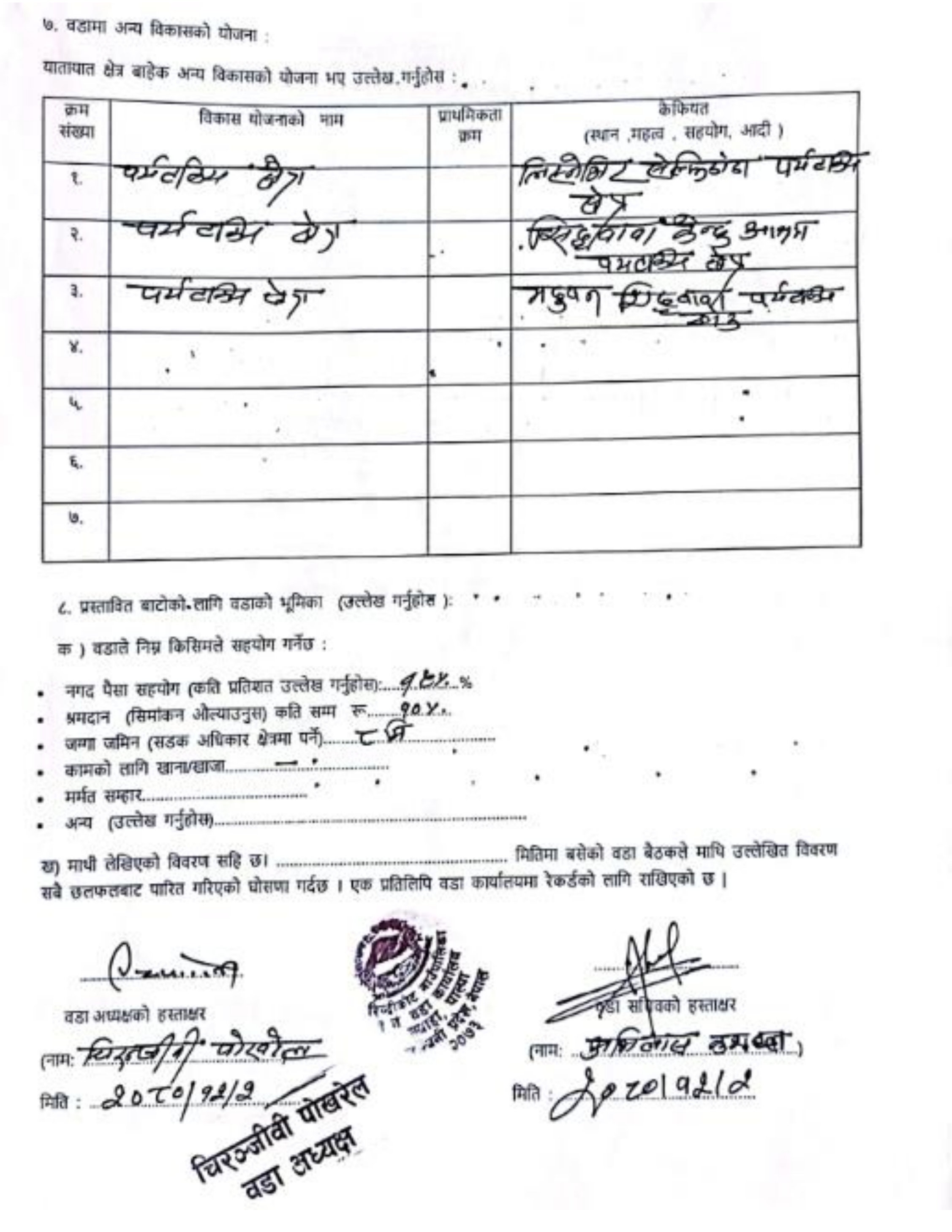
ङ	

** २ न. तालिका अनुसार भर्नुहोस्

४. लाभान्वित बस्ती :

कोड **	बस्तीको नाम	घरधुरी	जनसंख्या
क	ठेराडाँडु झाक्रिचौर, कराम्ती, जोगिधुम, सालमुरे, गुल्मी	४५०	१२००
ख	परपेरवा, कौरनी, छत्रबिन, टाटीपोखरी, झाक्रिचौर	२२८	६५०
ग	फुर्लानी, ख्याहा, ठेरगाउँ, ~~कुवास~~खोला, च्याउपाने डाँडा, मुलखोला, सानी, ठान्टा	३५०	१०००
घ	ठेरगाउँ, झाक्रीचौर, अमराई, सप्तौरी, फामडाँडा, पाल्पा रोड, छडे, कराम्ती	२००	५००
ङ	उल्लक, डल्लीचौर, ख्याहा, छिवडाम, अमराई, लामखोला, कोलेनी, छडे, रिडी	२६८	६००

** २ न. तालिका अनुसार भर्नुहोस्



७. वडामा अन्य विकासको योजना :

यातायात क्षेत्र बाहेक अन्य विकासको योजना भए उल्लेख गर्नुहोस :

क्रम संख्या	विकास योजनाको नाम	प्राथमिकता क्रम	कैफियत (स्थान ,महत्व , सहयोग, आदी)
१.	पर्यटकिय क्षेत्र		[illegible] पर्यटकिय क्षेत्र
२.	पर्यटकिय क्षेत्र		सिद्धबाबा केन्द्र आश्रम पर्यटकिय क्षेत्र
३.	पर्यटकिय क्षेत्र		[illegible] सिद्धबाबा पर्यटकिय [illegible]
४.			
५.			
६.			
७.			

८. प्रस्तावित बाटोको लागि वडाको भूमिका (उल्लेख गर्नुहोस):

क) वडाले निम्न किसिमले सहयोग गर्नेछ :

- नगद पैसा सहयोग (कति प्रतिशत उल्लेख गर्नुहोस):...१.६५...%
- श्रमदान (सिमांकन औल्याउनुस) कति सम्म रू.......१०%..
- जग्गा जमिन (सडक अधिकार क्षेत्रमा पर्ने).......८ मि.......
- कामको लागि खाना/खाजा.........—.........
- मर्मत सम्हार.........
- अन्य (उल्लेख गर्नुहोस).........

ख) माथी लेखिएको विवरण सहि छ। .... मितिमा बसेको वडा बैठकले माथि उल्लेखित विवरण सबै छलफलबाट पारित गरिएको घोसणा गर्दछ । एक प्रतिलिपि वडा कार्यालयमा रेकर्डको लागि राखिएको छ ।

वडा अध्यक्षको हस्ताक्षर
(नाम: चिरञ्जीवी पोखरेल
मिति : २०८०/११/२

वडा सचिवको हस्ताक्षर
(नाम: [illegible])
मिति : २०८०/११/२

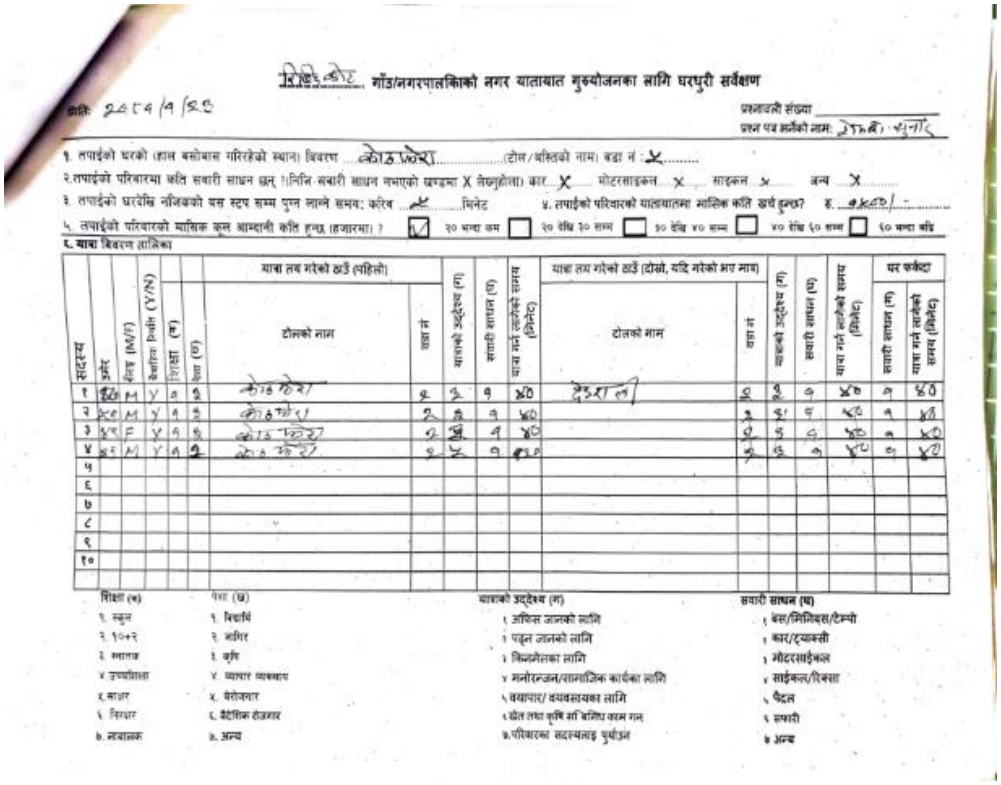
चिरञ्जीवी पोखरेल
वडा अध्यक्ष

Figure 3-3:Sample of Demand form ward 1

3.2.3 Origin destination (O-D) survey

A sample questionnaire was prepared to know the exact origin and destination of the trip. Simple random sampling was done to carry out an Origin-Destination survey to determine the travel behavior of residents within the municipality and to project future travel demand both Origin Origin-based survey (household O-D survey, Household member Trip log etc) and destination-based survey method were used. For this, Home interview survey method was adopted. The selected households were interviewed to fill up the questionnaires. The O-D survey was carried out following the sampling Method. The questionnaire consisted of questions related to the socio-economic and demographic characteristics of individual households. The socio-economic data included vehicular ownership, monthly family income and expenditure on transport, and occupation of the individual. It also included the trip details of the reason for travel, use of vehicle, time taken, and destination of travel.

Figure 3-4: O-D survey being conducted



रिब्दिकोट गाँउ/नगरपालिकाको नगर यातायात गुरुयोजनका लागि घरधुरी सर्वेक्षण

मिति: २०८१/१/२९

प्रश्नावली संख्या _____

प्रश्न पत्र भर्नेको नाम: [illegible]

१. तपाईको घरको (हाल बसोबास गरिरहेको स्थान) विवरण ...कोठेपोखरा... (टोल/बस्तिको नाम) वडा नं :...५...

२.तपाईको परिवारमा कति सवारी साधन छन् ?(निजि सवारी साधन नभएको खण्डमा X लेख्नुहोला) कार...X... मोटरसाइकल...X... साइकल...X... अन्य...X...

३. तपाईको घरदेखि नजिकको बस स्टप सम्म पुग्न लाग्ने समय: करिब ...५... मिनेट ४. तपाईको परिवारको यातायातमा मासिक कति खर्च हुन्छ? रु. ४५००/-

५. तपाईको परिवारको मासिक कुल आम्दानी कति हुन्छ (हजारमा) ? ☑ २० भन्दा कम ☐ २० देखि ३० सम्म ☐ ३० देखि ४० सम्म ☐ ४० देखि ५० सम्म ☐ ५० भन्दा माथि

६. यात्रा विवरण तालिका

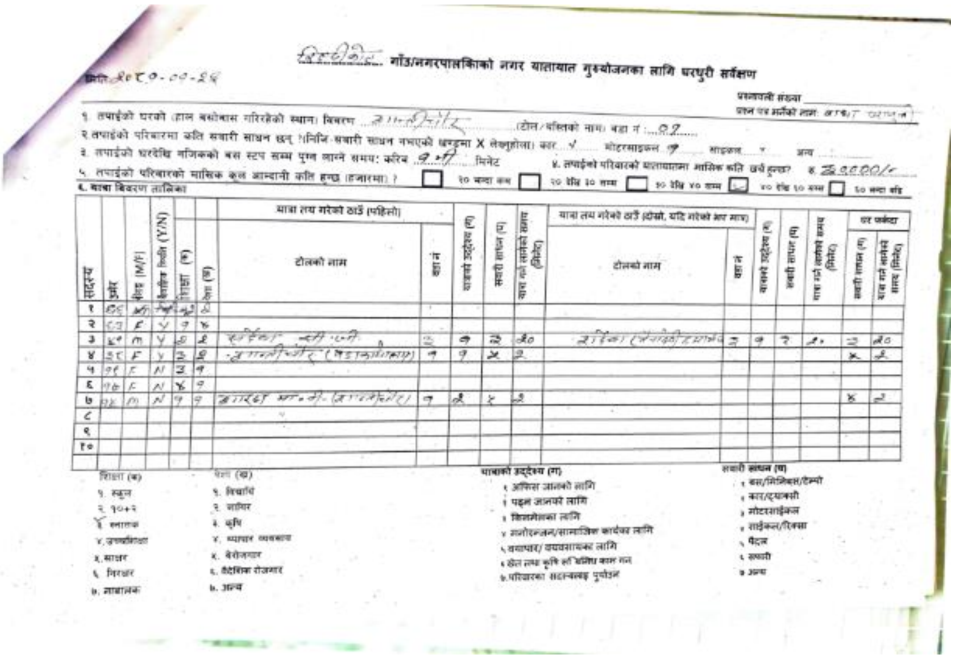
सदस्य	उमेर	लिंग (M/F)	बैंकिङ सिर्जना (Y/N)	शिक्षा (क)	पेशा (ख)	यात्रा तय गरेको ठाउँ (पहिलो) टोलको नाम	यात्रा तय गरेको ठाउँ (पहिलो) वडा नं	यात्राको उद्देश्य (ग)	सवारी साधन (घ)	यात्रा गर्न लाग्ने समय (मिनेट)	यात्रा तय गरेको ठाउँ (दोस्रो, यदि गरेको भए मात्र) टोलको नाम	यात्रा तय गरेको ठाउँ (दोस्रो, यदि गरेको भए मात्र) वडा नं	यात्राको उद्देश्य (ग)	सवारी साधन (घ)	यात्रा गर्न लाग्ने समय (मिनेट)	घर फर्केटा सवारी साधन (घ)	घर फर्केटा यात्रा गर्न लाग्ने समय (मिनेट)
१	[illegible]	M	Y	८	९	कोठेपोखरा	५	३	९	४०	दोस्रो ठा	५	४	७	४०	७	४०
२	[illegible]	M	Y	९	३	कोठेपोखरा	५	३	९	४०		५	४	७	४०	७	४०
३	[illegible]	F	Y	९	९	कोठेपोखरा	५	४	९	४०		५	४	७	४०	७	४०
४	[illegible]	M	Y	९	३	कोठेपोखरा	५	४	९	४०		५	४	७	४०	७	४०
५																	
६																	
७																	
८																	
९																	
१०																	

शिक्षा (क)
१. स्कुल
२. १०+२
३. स्नातक
४ उच्चशिक्षा
५. नाङ्गर
६. विद्यार
७. निरक्षर

पेशा (ख)
१. विद्यार्थि
२. जागिर
३. कृषि
४. व्यापार व्यवसाय
५. बेरोजगार
६. घैटोलिक हेरचाह
७. अन्य

यात्राको उद्देश्य (ग)
१ आर्थिक जानको लागि
२ पढ्न जानको लागि
३ किनमेलका लागि
४ मनोरन्जन/सामाजिक कार्यका लागि
५ व्यापार/ व्यवसायका लागि
६ खेत तथा कृषि सँ बन्धित काम गर्न
७.परिवारका सदस्यलाइ पुर्याउन

सवारी साधन (घ)
१ बस/मिनिबस/ट्रेम्पो
२ कार/ट्याक्सी
३ मोटरसाईकल
४ साईकल/रिक्सा
५ पैदल
६ सवारी
७ अन्य



गाँउ/नगरपालिकाको नगर यातायात गुरुयोजनाका लागि घरधुरी सर्वेक्षण

मिति

प्रश्नावली संख्या

प्रश्न पत्र भर्नेको नाम

१. तपाईंको घरको (हाल बसोबास गरिरहेको स्थान) विवरण .... (टोल/बस्तिको नाम) वडा नं :

२. तपाईंको परिवारमा कति सवारी साधन छन् ? (निजि सवारी साधन नभएको खण्डमा X लेख्नुहोला) कार ...... मोटरसाइकल ...... साइकल ...... अन्य ......

३. तपाईंको घरदेखि नजिकको बस स्टप सम्म पुग्न लाग्ने समय: करिब ...... मिनेट

४. तपाईंको परिवारको यातायातमा मासिक कति खर्च हुन्छ? रु

५. तपाईंको परिवारको मासिक कुल आम्दानी कति हुन्छ (हजारमा) ? ☐ २० भन्दा कम ☐ २० देखि ३० सम्म ☐ ३० देखि ४० सम्म ☐ ४० देखि ५० सम्म ☐ ५० भन्दा बढि

६. यात्रा विवरण तालिका

सदस्य	उमेर	लिङ्ग (M/F)	वैवाहिक स्थिति (Y/N)	शिक्षा (क)	पेशा (ख)	यात्रा तय गरेको ठाउँ (पहिलो): टोलको नाम	वडा नं	यात्राको उद्देश्य (ग)	सवारी साधन (घ)	यात्रा गर्दा लाग्ने समय (मिनेट)	यात्रा तय गरेको ठाउँ (दोस्रो, यदि गरेको भए मात्र): टोलको नाम	वडा नं	यात्राको उद्देश्य (ग)	सवारी साधन (घ)	यात्रा गर्दा लाग्ने समय (मिनेट)	घर फर्कदा: सवारी साधन (घ)	घर फर्कदा: यात्रा गर्दा लाग्ने समय (मिनेट)
१																	
२																	
३																	
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५																	
६																	
७																	
८																	
९																	
१०																	

शिक्षा (क)
१. स्कुल
२. १०+२
३. स्नातक
४. उच्चशिक्षा
५. साक्षर
६. निरक्षर
७. नाबालक

पेशा (ख)
१. विद्यार्थी
२. जागिर
३. कृषि
४. व्यापार व्यवसाय
५. बेरोजगार
६. वैदेशिक रोजगार
७. अन्य

यात्राको उद्देश्य (ग)
१. अफिस जानको लागि
२. पढ्न जानको लागि
३. किनमेलका लागि
४. मनोरञ्जन/सामाजिक कार्यका लागि
५. व्यापार/ व्यवसायका लागि
६. खेत तथा कृषि को विभिन्न काम गर्न
७. परिवारका सदस्यलाई पुर्याउन

सवारी साधन (घ)
१. बस/मिनिबस/टेम्पो
२. कार/ट्याक्सी
३. मोटरसाईकल
४. साईकल/रिक्सा
५. पैदल
६. सवारी
७. अन्य

Figure 3-5: O-D survey filled by residents of wards

3.2.3.1 Travel Behaviors Analysis

A. Trip characteristics

Transport is demanded to fulfil other needs and services. *Transport is a service rarely in demand for its own characteristics* (Cole, 2005). Most individuals travel because they wish to benefit from the social, recreational, educational, employment and other opportunities which become accessible with movement. Similarly, *freight transport opens up opportunities for greater efficiency in production and permits extensive geographical specialization with the accompanying benefits of increased division of labour* (Elgar, 2002). The demand depends on the spatial distribution and location of various infrastructures such as educational institutions, market and business centers, customer service outlets, industries etc. The trips are characterized by the reason for which it is made, trip distance, the choice of available mode options, etc. The following data are based on the field survey conducted in the rural municipality.

a. Trip Purpose

From the survey performed, among the total daily trips most of the daily trips about 37% were made by people going to buy certain goods as shopping, About 18% go for office and work purpose. Education trips are about 23%, with trips for social/recreational being around 3%. Trips made for agricultural purpose is 3% and business purpose were 6% and others 6%

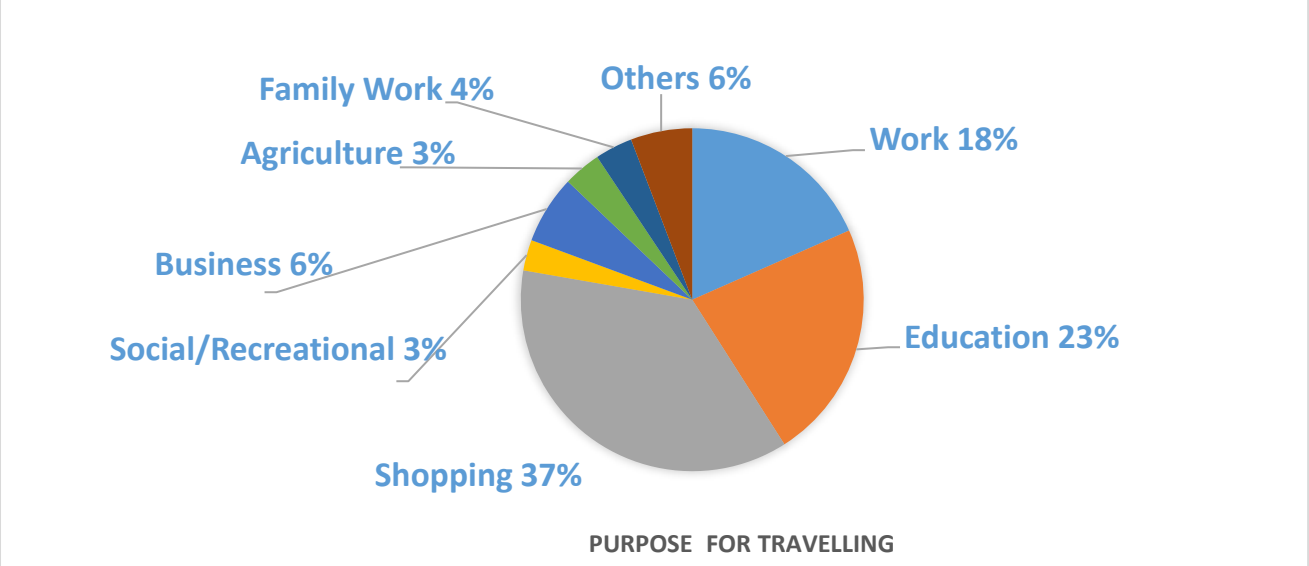


Figure 3-6: Proportions of Trip Purpose

b. Travel Expenditure

The ward-wise analysis of average monthly transportation expenditure in Ribdikot Rural Municipality reveals that Ward 5 have the highest costs, above 8,000 NPR, indicating frequent

or long-distance travel or expensive transport modes. Wards 3, 4, and 7 show lower expenditures, ranging from 3,000 to 5,500 NPR, suggesting shorter or less frequent travel. Wards 1, 2 have moderate costs between 5,500 to 7,000 NPR. For the MTMP preparation, high-expenditure areas might benefit from improved public transportation and cost-reduction programs, while moderate-expenditure areas could enhance existing services and promote shared rides. Low-expenditure areas should be assessed for transport accessibility and continue supporting economical transport modes. These insights should guide resource allocation, community engagement, and sustainable transport solutions to ensure efficient and cost-effective transportation for all wards.

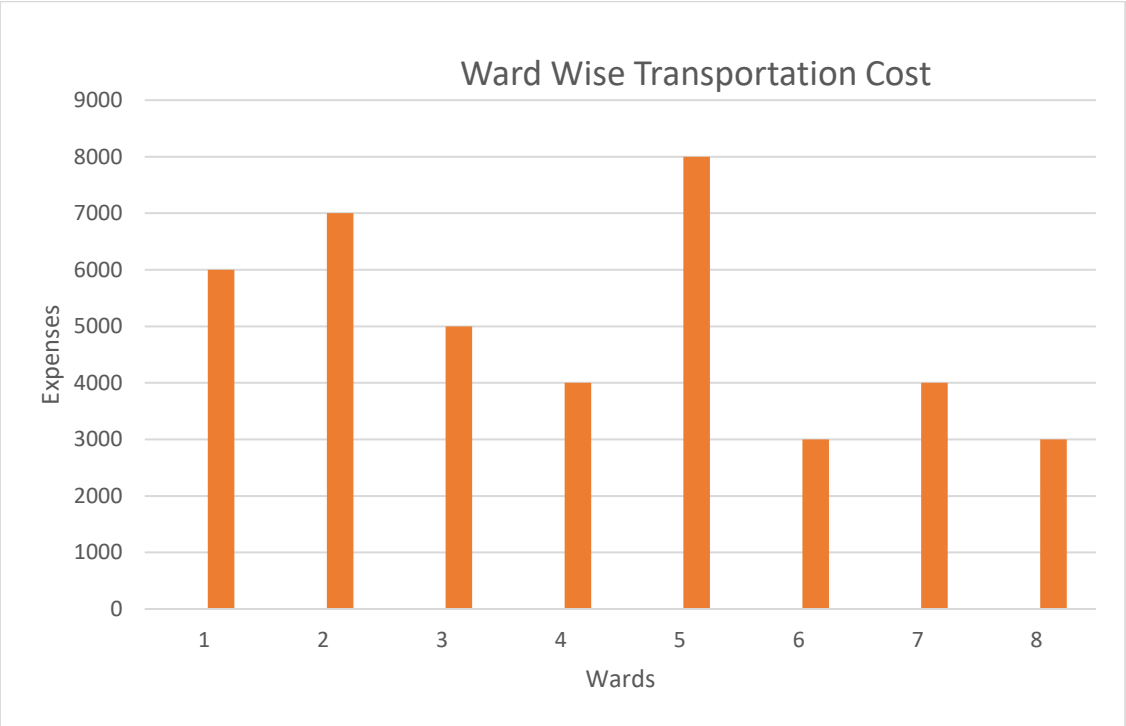


Figure 3-7: Travel Expenditure according to wards

c. Mode sharing

This indicates a heavy reliance on public transportation, suggesting that a large portion of the population prefers or depends on these modes for their daily travel needs. Following public transport, motorcycles are the common mode, used by 19% of the population. This reflects a preference for private, flexible transport options that likely offer quicker and more direct routes compared to public transport. Walking is also prevalent mode of transportation, with 34% of the residents opting for it. This substantial percentage indicates that a considerable number of people travel on foot, which could be due to shorter distances between destinations or difficult

topography. Other modes such as cars/taxis, cycles/rickshaws, and safaris are used by smaller fractions of the population, at 5%. The minimal use of cars/taxis suggests either a lower affordability or availability of these services. Similarly, the low percentage for cycles/rickshaws might indicate a preference for faster or more convenient modes like motorcycles

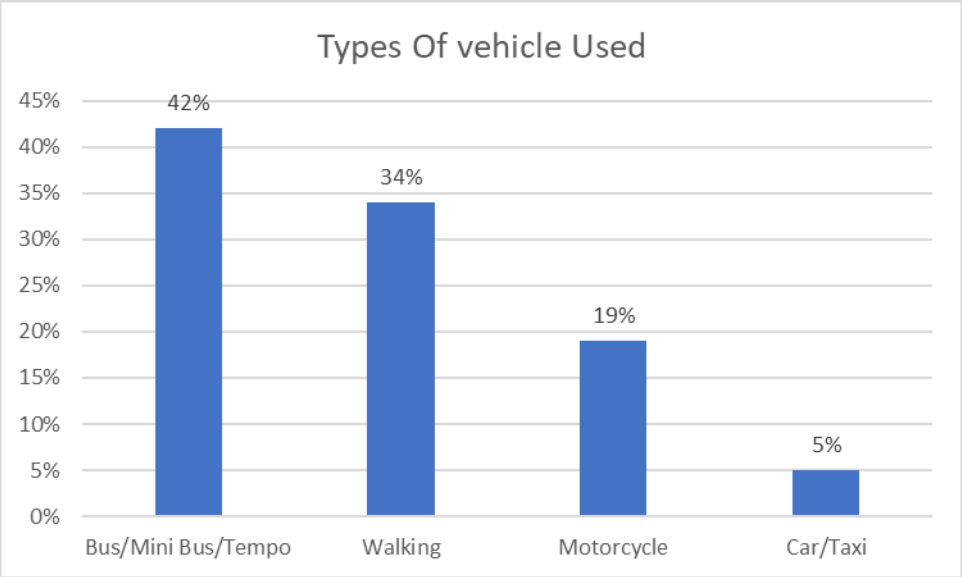


Figure 3-8: Mode of Transport

d. Trip destination

Based on the O-D analysis it is evident that Tansen and Butwal are the primary travel destinations from Ribdikot, accounting for 34% and 32% of the total travel, respectively. This indicates that these locations serve as major hubs, likely offering significant attractions, services, or economic opportunities that draw people from Ribdikot. Secondary destinations include Khasauli (9%), Kathmandu (6%), and Batase (7%), which still hold notable importance but not as much as Tansen and Butwal. Meanwhile, Dumri (5%), Kusumkhola (4%), Sangja (2%), and Navatole (1%) are less frequented, suggesting these areas might be less developed, less accessible, or offer fewer incentives for travel.

This distribution implies that infrastructure and services in Tansen and Butwal need to be prioritized to accommodate the high influx of travelers. The concentration of travel to these areas may also highlight economic or employment disparities, encouraging movement towards more developed regions. Conversely, the lower travel percentages to destinations like Kusumkhola, Sangja, Navatole, and Dumri suggest a need for targeted development projects to balance travel patterns and provide more localized opportunities. This analysis underscores

the necessity for strategic urban planning and resource allocation to manage travel demands effectively and support regional development.

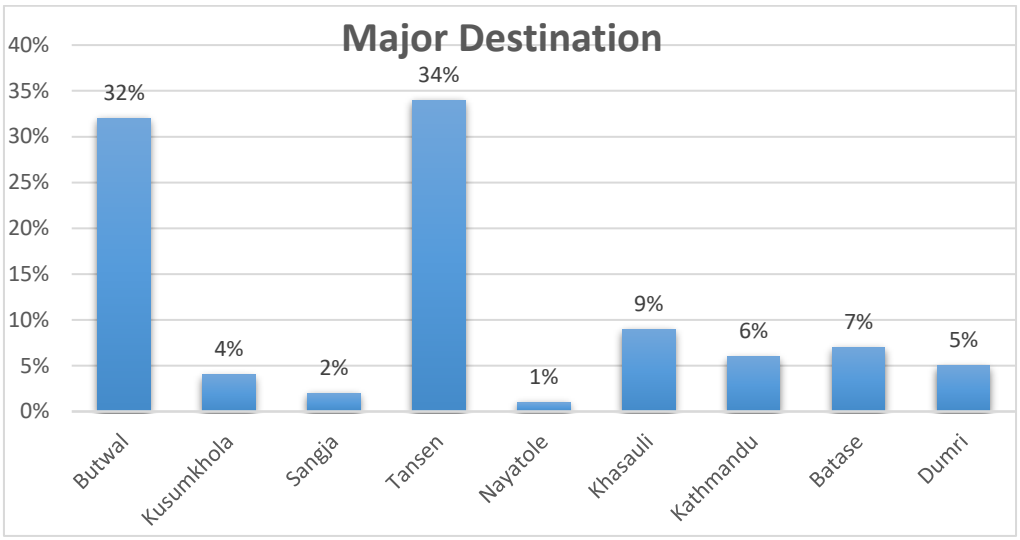


Figure 3-9: Trip destination

e. Vehicle Ownership

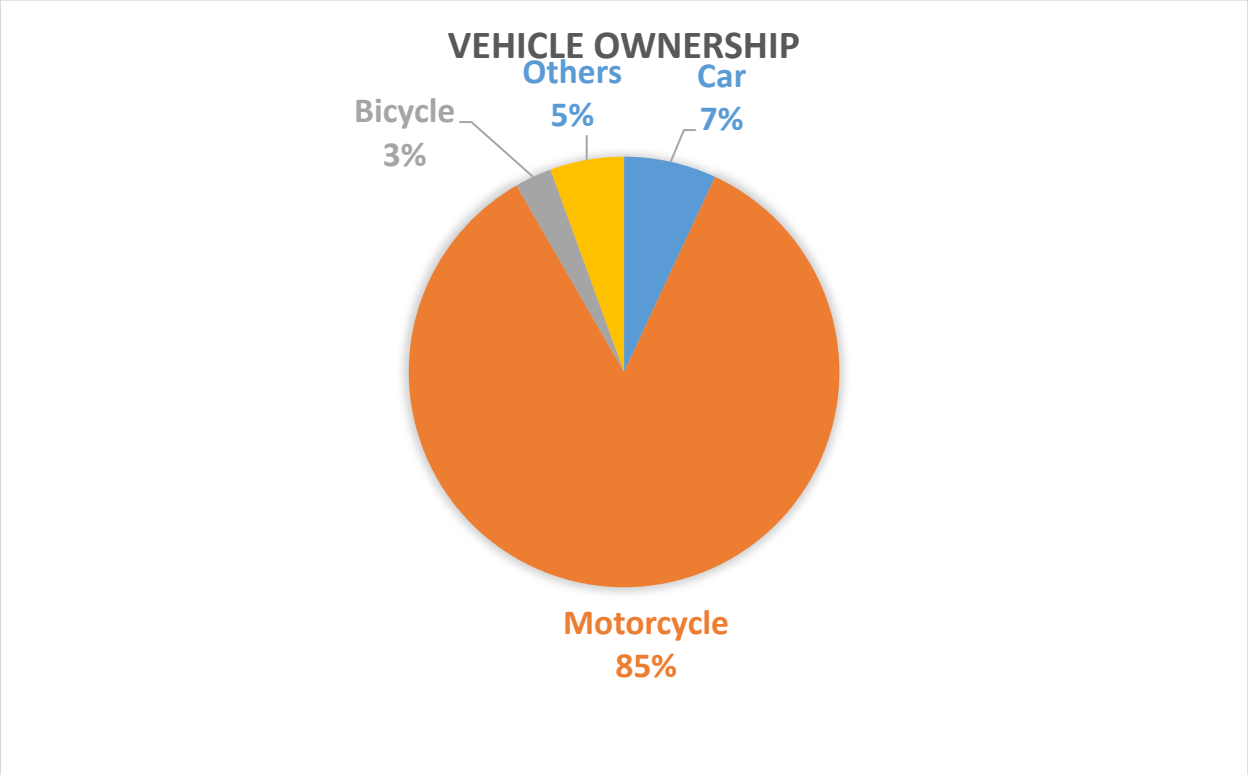


Figure 3-10: Pie representation of vehicle ownership

The survey analysis reveals significant insights into the transportation preferences within Ribdikot Rural Municipality. The chart shows that motorcycles dominate vehicle ownership, comprising 85% of the total, indicating their popularity due to affordability, fuel efficiency, and ease of navigating narrow roads. Cars account for only 7% of vehicle ownership, suggesting higher costs and maintenance requirements may limit their use. Bicycles represent a mere 3%, highlighting a limited reliance on non-motorized transport, potentially due to the terrain and distances in Ribdikot. The "others" category, encompassing various vehicles like trucks and electric scooters, makes up 5% of the total, reflecting some diversity but indicating these types are not widely owned for personal use. This data underscores the necessity for infrastructure supporting motorcycles, such as parking and maintenance services, while also pointing to opportunities for promoting sustainable transport options like bicycles. Understanding these trends is crucial for planning and development efforts aimed at improving transportation within Ribdikot Rural Municipality.

B. Public transport

Public vehicle provides mobility to the general people. The accessibility of the roads does not necessarily guarantee mobility as many people do not have access to private vehicle. Comprehensive reach of public transport is thus important. Further, for sustainability in transport sector, the negative externalities associated with transport sector needs to be addressed. Most of the negative externalities include congestion, pollution, impact on health, etc. Public transport plays a vital role in reducing these externalities as public transport allows transport of higher number of people with lowlevel of emission and space use.

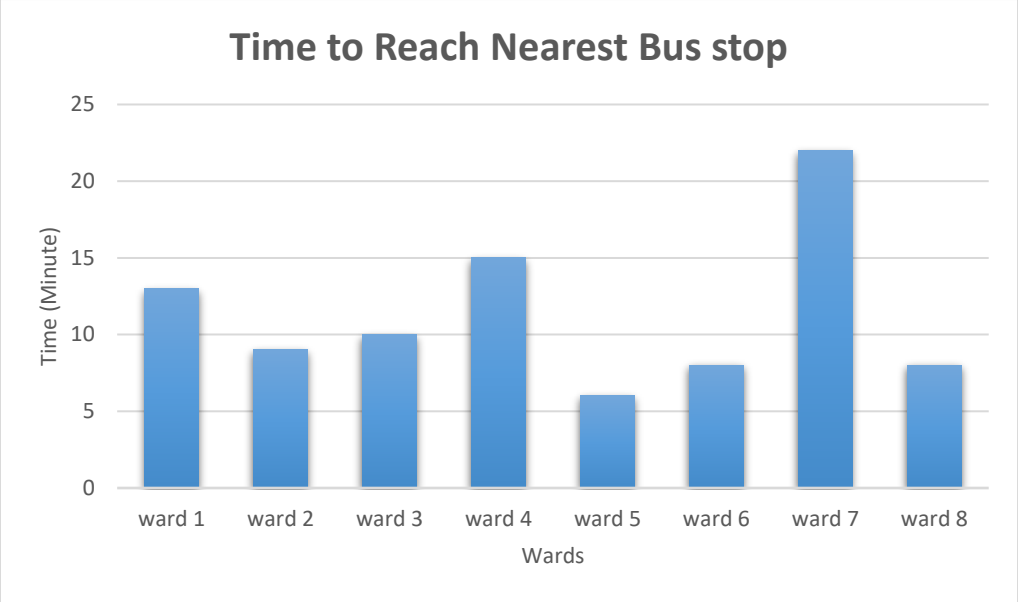


Figure 3-11: Time to reach nearest bus stop

The pie chart titled "Vehicle Ownership" provides significant insights into the transportation preferences within Ribdikot Rural Municipality. The chart reveals that motorcycles dominate vehicle ownership, comprising 85% of the total. This indicates their popularity due to affordability, fuel efficiency, and the ability to navigate narrow roads. Cars account for only 7% of vehicle ownership, suggesting higher costs and maintenance requirements may limit their use. Bicycles represent a mere 3%, highlighting limited reliance on non-motorized transport, potentially due to the terrain and distances in Ribdikot. The "others" category, encompassing various vehicles like trucks and electric scooters, makes up 5% of the total, reflecting some diversity but indicating these types are not widely owned for personal use. This data underscores the necessity for infrastructure supporting motorcycles, such as parking and maintenance services, while also pointing to opportunities for promoting sustainable transport options like bicycles. Understanding these trends is crucial for planning and development efforts aimed at improving transportation within Ribdikot Rural Municipality.

Additionally, the bar chart titled "Time to Reach Nearest Bus Stop" illustrates the average time it takes for residents of different wards in Ribdikot Rural Municipality to reach the nearest bus stop. Ward 7 has the longest travel time, averaging around 20 minutes, indicating significant accessibility issues, while Ward 4 also experiences relatively long travel times of about 15 minutes. These wards require improved transportation infrastructure to enhance accessibility. In contrast, Wards 2 and 5 have the shortest travel times to the nearest bus stop, averaging 8 and 6 minutes, respectively, indicating they are well-served in terms of bus stop accessibility.

Wards 3, 6, and 8 have moderate travel times of around 10 minutes, showing a balanced but improvable situation. This analysis highlights the disparities in transportation accessibility within Ribdikot Rural Municipality and emphasizes the need for strategic planning to enhance connectivity and reduce travel times across all wards, ultimately improving the quality of life for its residents.

To address these disparities and improve overall accessibility to public transportation, the following recommendations should be considered in the Municipal Transport Master Plan:

1. **Increase the Number of Bus Stops:**

- Focusing on Wards 4 and 7, where residents face the longest travel times, by adding more bus stops to reduce the average travel time to a more manageable level.

2. **Enhance Public Transportation Services:**

- Implement additional bus routes and increase the frequency of bus services in areas with longer travel times to improve accessibility and convenience for residents.

3. **Infrastructure Development:**

- Invest in the development of pedestrian-friendly infrastructure, such as sidewalks and safe crossing points, to facilitate easier and safer access to bus stops, particularly in wards with moderate to poor accessibility.

4. **Community Engagement:**

- Engage with residents to gather feedback and identify specific locations where new bus stops would be most beneficial, ensuring that transportation improvements are tailored to the community's needs.

By implementing these recommendations, Ribdikot Rural Municipality can enhance the accessibility of public transportation for all residents, ensuring equitable access and supporting the overall development of the community.

C. Alternative transportation feasibility

There are many ways to measure transportation system feasibility, each reflecting particular perspectives concerning who, what, where, how, when and why. Different methods favor different types of transport users and modes, different land use patterns, and different solutions

to transport problems in the Municipality. Some transportation system may be economic and some may be non-economic and non-beneficial to the users and authorities. However, we do not see any transportation system feasible other than roadway transportation for the present situation in this Municipality until next five years. However, along the harnessing of suffice energy within the country, some other potential mode of transportation like rope way, cable car could be explored so that it will also facilitate religious tourism in the long run for qualitative tourism.

CHAPTER 4 : ROAD HIERARCHY AND PRIORITIZATION

The basis of a road hierarchy is the functional grouping of roads and streets to ensure rational usage (EPPELL OLS EN & PARTNERS, 2003). Each roadway has its own function and characteristics which makes it different from that of other roads that it is linked to, within the road network. The overall road network of such roads of segregated function use and characteristics make up a network of road hierarchy that is vital for safe, efficient and smooth movement from one place to another within and to/from the surrounding municipalities. Therefore, it is vital to segregate each road according to their functions so that their proper development can be achieved for overall accessibility and mobility within the municipality.

Planning and prioritization in the road sector tends to be strongly influenced by political priorities rather than based on objective prioritization criteria and planning procedures. Funding is "shared" between political parties and sprinkled over a large collection of small road projects, with these projects often continuing for several years in order for the works to be completed. This has reduced the effectiveness and efficiency of road sector investment (The World Bank and Government of Nepal, 2013). Adhering to this fact, the municipal transport master plan attempts to minimize this system by introducing predetermined criterion for prioritizing investments in the transport sector. The criterion developed will be discussed at the workshop with the MRCC, municipality and other stakeholders and finalized along with their relative weightage.

4.1 Road hierarchy

Hierarchy of road defines each roadway in terms of its function so that appropriate objectives for that road can be set and appropriate design criteria can be implemented. Road hierarchy principles will assist planning agencies via orderly planning and provision of public transport routes, pedestrian and bicycle routes. It also identifies the effects of development decisions in and on surrounding areas and roadways within the hierarchy and also facilitates urban design principles such as accessibility, connectivity, efficiency, amenity and safety. Further, it also identifies treatments such as barriers, buffers and landscaping to preserve amenity for adjacent land use.

Table 4-1: Road hierarchy based on planning norms and standards, 2015

Type of city	Population criteria	RoW of road (m)				
		Expressway	Arterial	Sub-arterial	Collector	Local
Sub-city	10,000-40,000	-	-	30	20	10
City	40,000-100,000	-	50	30	20	10
Sub-metro city	100,000-300,000	50	30	20	10	10

Source: Planning Norms and Standards 2015, GoN, DUDBC

Similarly, according to the urban road standard 2068 (draft), the road of hierarchy of greatest width is Arterial road with RoW of 50-60 m for any urban area as tabulated below:

Table 4-2: Road hierarchy based on Nepal Urban Road Standard 2068 (Draft)

RoW of Road (m)				
Expressway	Arterial	Sub-arterial	Collector	Local
-	50-60	30-40	20-30	10-20

According to above standards, it is clear that the municipal area needs a higher hierarchy road. Thus, a new set of road hierarchy is proposed. It is summarized as follows:

Table 4-3: Proposed road hierarchy

Class of Road	RoW (m)
A	14 m
B	10 m
C	8 m
D	6 m

4.2 Prioritization

Prioritization is a method of scoring the interventions required in different roads so that they can be prioritized for investment. Such method scores each road based on its characteristics and service it provides, sum of which reflects the relative importance of each road with respect to other roads. It helps to reduce the individual influence in the investment plan. A basic set of prioritization criteria is provided in the guidelines. The study team have modified some of the criterion and proposed it as follows:

Table 4-4: Prioritization Criteria

Prioritization Criteria Approved From Municipal Workshop				
Scoring Criteria		**Scoring unit**	**Score**	**Remarks**
Criteria No 1	Priorty by Ward Demand form		20	
Criteria No 2	Class of Road specified as per MTMP study		10	
Criteria No 3	Existing Road Width		10	
Criteria No 4	Population Serve by the Road		20	
Criteria No 5	Recreational/Agriculture/Market Centre/Service Centre		10	
Criteria No 6	Road Density		10	
Criteria No 7	Settlement Density		10	
Criteria No 8	Existing road Surface Type		10	
Criteria No 9	Backward and poor ethnic		0	

The proposed scoring criteria further explores the existing status of the roads through their existing width and surface type. Basic road parameters have been proposed. As stated by the guidelines, the economic value served by the road cannot be determined in the present context. Thus, basic access has been considered in the proposed road scoring criteria. The proposed road criteria will be discussed with Municipality for their approval and weightage.

Each criteria are described in brief below.

1. Demand priority of wards

It is the one of the major criteria for prioritization. Demand with priority order was collected from each ward during the field surveys. These priorities are based on present need as perceived by the locals. Higher the priority of intervention, higher is the score share. That is, if a road intervention received number 1 priority in any ward, then it will get full marks. Road with corresponding priority are scored accordingly; score received is reduced by 20 % for each lower level priority, i.e. second priority road will receive 80% score. Lowest priority (5^{th} priority) link intervention will get 20% of total score. And all other roads will receive 10% of the total score.

2. Road class based on hierarchy

It is one of the criteria for prioritization. Road hierarchy reflects the importance of the road linkage in the municipality. Higher the road class, high will be the importance of roads and immediate the intervention required. Class D serve at local level whereas Class A road serves in large framework. Class A serves as the access of Class B to D roads and hence it should receive higher rank. Thus, while scoring, Class A roads will receive full score and as class of road decreases the score will reduce accordingly by 10%, i.e. Class B will get 90% and Class D will get 70%.

3. Existing Width

Existing width of the road is also a governing factor for prioritization. The present width of the road is the indicator of the present importance of the road to the locals. The road which is wider among many roads within the municipality has higher importance than other roads. Thus, widest road is given highest priority and thus full score. As the new proposed road doesn't have width at present day giving them zero score will not be realistic and thus new proposed road is given 25% of the total score. Road width within zero and maximum width is given score based on relative scoring to the existing roads.

4. Population served

Population served by the road link is one of the important indicators of prioritization. Higher the population served by the road, higher will be its necessity or importance and thus its need to be constructed/upgraded/maintained first. Thus, highest score is assigned for the road link serving highest population and all other score is based on the relative marking. Thus, the score for road based on population served lies within zero to full score.

5. Access to service and facilities

It is one of the main governing prioritization indicator as it outlines the specific service provided to the locals. The road link may provide access to recreational (picnic spot, historical place, park, cinema hall, playground), agricultural land, market centre and service centre (schools, health post, governmental offices, etc.). A single road link can serve just a single or more function. The proposed road intervention which serves all four facilities has highest importance and given highest (full) score. If the road link only serves any three function/purpose, the score is reduced to 80% of the total final marks. Similarly, link serving any of the two function receives 60% and the road which serve only a single function receives 40% score.

6. Settlement density

Settlement density is defined as population per unit usable area (total area minus forest and water bodies' area) is also a criterion for prioritization. This is necessary because population density (population per unit total area) doesn't reflect the actual occupancy of people in certain locality as presence of non-usable land affects the settlement pattern and possible expansion. The road that serves high settlement density requires immediate attention compared to road just serving small settlement density. The one with maximum settlement density receives full score and with the lowest density receives 50% score. All other roads receive relative score in between them.

7. Existing road surface type

There are two ways to behind which type of road can be prioritized first, one principle says the objective is to provide access first, i.e. first make the road motor-able so that it can be operated in all weather. Another approach says the road importance is dependent on surface type; the road which is bituminous at presents has great importance as it has received high budget to be metalled among other roads and thus should be given highest priority. Both the aspect has significant impact on overall prioritization. As this study puts accessibility in first place, highest priority is given to earthen surface. Thus, earthen surface road receives full marks, gravel road surface receives 80% of total and bituminous/metalled road receives 60% of total score.

8. Road Density

It is expressed either as road length per unit area or road length per 1000 population. Lower the road density, the road network is considered to be less dense and intervention is must in locality

of low road density. Relative road density for each ward is calculated by subtracting municipal road density from each ward level road density. Road link intervention is of immediate necessity if the road densities of the link in terms of both population as well as area is small compared to the average municipal value, as lower values signify lower accessibility. There may be four cases within same scenario, the difference may be both too low, too high, one high and one low as highlighted in table below.

Table 4-5: Different scenario of road densities

	Relative road density (R_w - $R_{m)}$	Comparison of values			
Road density per area	Negative	low	low	high	high
Road density per 1000 population	Negative	low	high	low	high
Rank		**4**	**2**	**3**	**1**
Road density per unit area	Positive	low	low	high	high
Road density per 1000 population	Positive	low	high	low	high
Rank		**5**	**7**	**6**	**8**
Road density per unit area	Positive	low	low	high	high
Road density per 1000 population	Negative	low	high	low	high
Rank		**11**	**9**	**12**	**10**
Road density per unit area	Negative	low	low	high	high
Road density per 1000 population	Positive	low	high	low	high
Rank		**14**	**15**	**13**	**16**
R_w signifies road density corresponding to ward and R_m represents road density corresponding to municipality.					

Positive value of both types of road density is given second priority to promote compact cities, large residents in small area. Compact cities will help in reducing unnecessary trip, investing these investments on these developed areas is justified as these are the location of potential expansion and further investment will help to attract migrants. Similarly, negative relative road density per 1000 population and positive relative road density is given third priority as there is lack of road to people. Finally, road link serving ward with positive relative road density per population and negative value for road density per area is given to the last priority. Then the

road with low rank is given 50% of the total score and road with high rank is given full marks and the road within these two-given scores in relative basis.

9. Social equity

Social equity is also another indicator of road prioritization. Road link that provide the access to the minority peoples (areas inhabited by backward and poor ethnic groups/communities, isolated remote areas) should be given priority. From social equity perspective, the roads that provide access to settlements with large population of minority groups should also be prioritized.

The above weightage distribution for each ward is summarized in the table below:

Table 4-6: Score Distribution Criteria

Detail Score Distribution Criteria

Criteria No 1	Priorty by Ward Demand form			
			Priorty	Marks
			1	100%
			2	80%
			3	60%
			4	40%
			5	20%
		>5 & 0	6	10%
Criteria No 2	Class of Road specified as per MTMP study.			
			Class	Marks
			A	100%
			B	90%
			C	80%
			D	70%
			other	0%
Criteria No 3	Existing Road Width			
	## Relative Marking Max-100%, 0-width 25%		Max width	100%
			0	25%
Criteria No 4	Population Serve by the Road		Max	100%
	Relative Marking		Min	0%
Criteria No 5	Recreational/Agriculture/Market Centre/Service Centre			
		Digit	4	100%
		Digit	3	80%
		Digit	2	60%
		Digit	1	40%

Criteria No 6	Road Density		
		Max	100%
		Min	50%

Criteria No 7	Settlement Density		
	Relative Marking	Max	100%
		Min	50%

Criteria No 8	Existing road Surface Type		
		Earthen	100%
		Gravel	80%
		Bituminous	60%

Criteria No 9	Backward and poor ethnic

Prioritization Criteria for Municipal Roads

Municipality Road Code	Road Code	Priority Score	Road Class	Existing Width	Population Serve	RAMS	Road Density	Settlement Density	Surface Type	Total Score	Rank
		20.00	**10.00**	**10.00**	**20.00**	**10.00**	**10.00**	**10.00**	**10.00**	**100.00**	
M5060601A	01A	18.25	10.00	9.68	20.00	10.00	6.79	7.68	8.80	91.20	1
M5060601B	01B	16.00	10.00	10.00	6.58	10.00	6.61	6.96	7.88	74.03	3
M5060601C	01C	6.00	10.00	7.81	3.16	8.00	8.00	6.43	10.00	59.40	26
M5060602A	02A	(0.00)	10.00	8.13	16.84	10.00	7.86	6.43	6.01	65.27	14
M5060602B	02B	10.37	9.00	7.96	9.74	10.00	8.04	6.61	8.69	70.40	6
M5060602C	02C	8.00	9.00	8.13	1.58	6.00	5.36	9.64	10.00	57.70	28
M5060603A	03A	20.00	9.00	8.13	3.42	10.00	7.50	6.79	8.05	72.88	4
M5060603B	03B	16.00	9.00	8.13	2.89	10.00	8.57	7.14	8.66	70.39	7
M5060603C	03C	10.00	9.00	8.29	2.11	6.00	9.29	6.79	9.82	61.29	23
M5060604A	04A	(0.00)	9.00	7.19	3.16	10.00	11.43	7.14	6.00	53.92	42
M5060604B	04B	11.26	9.00	7.37	6.32	10.00	5.36	9.64	9.93	68.88	9

M5060604C	04C	4.00	9.00	8.13	1.58	6.00	6.79	6.43	9.94	51.85	47
M5060605A	05A	16.67	8.00	7.40	2.63	10.00	7.14	7.86	9.88	69.58	8
M5060605B	05B	14.67	8.00	4.70	1.84	10.00	6.43	6.67	10.00	62.31	20
M5060605C	05C	(0.00)	8.00	8.13	0.79	6.00	5.71	10.00	10.00	48.63	52
M5060606A	06A	1.11	8.00	9.53	3.68	10.00	7.14	6.19	6.26	51.91	46
M5060606B	06B	20.00	8.00	5.31	1.84	10.00	6.43	5.00	10.00	66.58	12
M5060606C	06C	(0.00)	8.00	5.31	0.79	6.00	7.86	5.71	10.00	43.67	69
M5060607A	07A	20.00	8.00	10.00	2.89	10.00	5.36	9.64	8.88	74.77	2
M5060607B	07B	19.47	8.00	6.34	3.16	10.00	8.57	7.14	9.76	72.44	5
M5060607C	07C	8.00	8.00	5.31	2.11	6.00	8.57	7.14	9.70	54.83	36
M5060608B	08B	14.86	8.00	7.19	2.89	10.00	8.57	7.14	9.78	68.43	10
M5060608C	08C	5.33	8.00	7.43	1.05	6.00	8.57	7.14	9.12	52.65	44
M5060609B	09B	12.00	8.00	5.18	2.63	10.00	9.29	6.79	9.37	63.24	17
M5060609C	09C	4.00	7.00	5.48	0.26	6.00	10.00	6.43	9.67	48.84	50
M5060610B	10B	16.00	7.00	3.36	1.32	10.00	8.57	7.14	9.32	62.71	19

M5060610C	10C	8.00	7.00	9.53	0.53	6.00	7.14	7.86	8.00	54.06	41
M5060611B	11B	16.00	7.00	10.00	1.32	8.00	7.14	7.86	8.97	66.29	13
M5060611C	11C	(0.00)	7.00	5.78	0.53	6.00	7.14	7.86	10.00	44.31	64
M5060612B	12B	5.00	7.00	6.68	1.05	6.00	7.14	7.86	8.84	49.57	49
M5060612C	12C	12.00	7.00	5.31	0.79	6.00	7.14	6.19	10.00	54.44	38
M5060613B	13B	20.00	7.00	6.79	0.53	8.00	8.21	5.71	8.00	64.25	16
M5060613C	13C	12.00	7.00	6.25	1.05	6.00	5.71	7.14	10.00	55.16	35
M5060614B	14B	20.00	7.00	4.72	1.32	8.00	7.14	8.57	10.00	66.75	11
M5060614C	14C	4.00	7.00	5.60	1.05	6.00	5.36	9.64	9.17	47.82	55
M5060615B	15B	12.00	7.00	8.13	0.53	8.00	5.00	9.29	10.00	59.94	25
M5060615C	15C	8.00	7.00	7.19	0.79	6.00	5.71	10.00	10.00	54.69	37
M5060616B	0616B	20.00	7.00	6.25	0.79	8.00	7.50	6.79	8.00	64.33	15
M5060616C	0616C	12.00	7.00	7.19	0.53	6.00	5.71	10.00	8.96	57.39	30
M5060617C	0617C	4.00	7.00	6.25	0.79	6.00	5.00	9.29	10.00	48.33	54
M5060618C	0618C	8.00	7.00	7.19	1.05	6.00	7.14	7.86	9.96	54.20	39

M5060619C	0619C	(0.00)	7.00	4.38	0.53	6.00	8.57	7.14	10.00	43.62	70
M5060620C	0620C	(0.00)	7.00	5.31	0.79	6.00	8.57	7.14	10.00	44.82	62
M5060621C	0621C	3.60	7.00	6.25	0.79	6.00	7.14	7.86	10.00	48.64	51
M5060622C	0622C	(0.00)	7.00	5.83	0.79	6.00	7.14	7.86	9.42	44.04	67
M5060623C	0623C	12.80	7.00	5.50	0.79	6.00	7.14	7.86	10.00	57.09	31
M5060624C	0624C	16.00	7.00	6.25	0.79	6.00	9.29	6.79	9.79	61.90	21
M5060625C	0625C	16.00	7.00	6.25	0.53	6.00	8.57	7.14	10.00	61.49	22
M5060626C	0626C	(0.00)	7.00	6.25	0.53	6.00	10.00	6.43	9.72	45.93	60
M5060627C	0627C	(0.00)	7.00	5.31	0.53	6.00	10.00	6.43	8.95	44.22	65
M5060628C	0628C	8.00	7.00	8.13	0.53	6.00	10.00	6.43	10.00	56.08	34
M5060629C	0629C	5.60	7.00	8.13	0.79	6.00	5.00	9.29	9.47	51.27	48
M5060630C	0630C	12.00	7.00	6.16	0.79	6.00	10.00	6.43	8.22	56.59	32
M5060601D	0601D	(0.00)	7.00	5.14	0.53	6.00	5.00	9.29	10.00	42.95	83
M5060602D	0602D	(0.00)	7.00	5.31	0.26	4.00	6.43	5.00	10.00	38.00	133
M5060603D	0603D	(0.00)	7.00	5.31	0.53	4.00	7.14	7.86	10.00	41.84	102

M5060604D	0604D	4.00	7.00	8.13	0.26	4.00	7.86	5.71	10.00	46.96	56
M5060605D	0605D	(0.00)	7.00	4.38	0.26	4.00	5.00	9.29	10.00	39.92	128
M5060606D	0606D	13.33	7.00	6.44	0.53	4.00	10.00	6.43	9.76	57.48	29
M5060607D	0607D	(0.00)	7.00	6.25	0.26	4.00	6.79	6.43	10.00	40.73	121
M5060608D	0608D	(0.00)	7.00	3.44	0.26	4.00	8.57	7.14	10.00	40.41	122
M5060609D	0609D	(0.00)	7.00	6.25	0.53	4.00	7.14	7.86	8.75	41.53	112
M5060610D	0610D	9.33	7.00	6.25	0.79	4.00	7.14	7.86	10.00	52.37	45
M5060611D	0611D	12.00	7.00	6.25	0.53	4.00	10.00	6.43	10.00	56.20	33
M5060612D	0612D	(0.00)	7.00	2.50	0.26	4.00	10.00	6.43	10.00	40.19	124
M5060613D	0613D	(0.00)	7.00	6.25	0.53	4.00	8.57	7.14	9.74	43.23	75
M5060614D	0614D	(0.00)	7.00	6.25	0.26	4.00	7.14	7.86	10.00	42.51	90
M5060615D	0615D	(0.00)	7.00	7.60	0.26	4.00	10.00	6.43	7.35	42.63	85
M5060616D	0616D	(0.00)	7.00	5.31	0.26	4.00	8.57	7.14	10.00	42.29	92
M5060617D	0617D	(0.00)	7.00	5.31	0.53	4.00	5.00	9.29	10.00	41.12	116
M5060618D	0618D	(0.00)	7.00	5.31	0.53	4.00	7.86	5.71	10.00	40.41	123

M5060619D	0619D	20.00	7.00	6.25	0.53	4.00	7.86	5.71	8.00	59.35	27
M5060620D	0620D	(0.00)	7.00	5.42	0.53	4.00	10.00	6.43	10.00	43.38	71
M5060621D	0621D	(0.00)	7.00	5.31	0.26	4.00	7.14	7.86	10.00	41.58	109
M5060622D	0622D	(0.00)	7.00	5.31	0.53	4.00	10.00	6.43	10.00	43.27	72
M5060623D	0623D	(0.00)	7.00	5.31	0.26	4.00	8.57	7.14	10.00	42.29	92
M5060624D	0624D	(0.00)	7.00	5.31	0.26	4.00	5.71	10.00	10.00	42.29	92
M5060625D	0625D	(0.00)	7.00	4.38	0.53	4.00	9.29	6.79	10.00	41.97	100
M5060626D	0626D	(0.00)	7.00	4.38	0.53	4.00	8.57	7.14	10.00	41.62	107
M5060627D	0627D	(0.00)	7.00	4.43	0.53	4.00	10.00	6.43	9.78	42.16	99
M5060628D	0628D	(0.00)	7.00	5.78	0.26	4.00	8.57	7.14	8.00	40.76	120
M5060629D	0629D	8.00	7.00	8.13	0.26	4.00	10.00	6.43	10.00	53.82	43
M5060630D	0630D	16.00	7.00	10.00	0.26	4.00	8.57	7.14	10.00	62.98	18
M5060631D	0631D	(0.00)	7.00	6.25	0.26	4.00	7.86	5.71	10.00	41.08	118
M5060632D	0632D	(0.00)	7.00	5.31	0.26	4.00	5.71	10.00	9.42	41.71	105
M5060633D	0633D	(0.00)	7.00	4.38	0.26	4.00	8.57	7.14	10.00	41.35	114

M5060634D	0634D	(0.00)	7.00	5.78	0.26	4.00	5.00	9.29	8.00	39.33	132
M5060635D	0635D	(0.00)	7.00	5.31	0.26	4.00	10.00	6.43	10.00	43.00	78
M5060636D	0636D	(0.00)	7.00	5.31	0.26	4.00	10.00	6.43	10.00	43.00	78
M5060637D	0637D	(0.00)	7.00	8.95	0.79	4.00	10.00	6.43	7.99	45.16	61
M5060638D	0638D	(0.00)	7.00	7.19	0.53	4.00	10.00	6.43	8.00	43.14	76
M5060639D	0639D	(0.00)	7.00	5.43	0.53	4.00	10.00	6.43	9.41	42.79	84
M5060640D	0640D	(0.00)	7.00	5.42	0.53	4.00	6.43	5.00	9.29	37.67	134
M5060641D	0641D	(0.00)	7.00	5.71	0.26	4.00	10.00	6.43	9.16	42.56	86
M5060642D	0642D	(0.00)	7.00	4.84	0.26	4.00	7.86	5.71	10.00	39.68	130
M5060643D	0643D	(0.00)	7.00	5.50	0.26	4.00	8.57	7.14	9.21	41.69	106
M5060644D	0644D	(0.00)	7.00	5.31	0.26	4.00	7.86	5.71	10.00	40.15	125
M5060645D	0645D	(0.00)	7.00	4.84	0.26	4.00	7.14	7.86	10.00	41.11	117
M5060646D	0646D	(0.00)	7.00	5.31	0.26	4.00	7.86	5.71	10.00	40.15	125
M5060647D	0647D	(0.00)	7.00	5.31	0.26	4.00	5.71	10.00	10.00	42.29	92
M5060648D	0648D	12.00	7.00	8.13	0.53	4.00	10.00	6.43	6.00	54.08	40

M5060649D	0649D	(0.00)	7.00	5.31	0.26	4.00	10.00	6.43	10.00	43.00	78
M5060650D	0650D	(0.00)	7.00	5.31	0.26	4.00	7.14	7.86	10.00	41.58	109
M5060651D	0651D	(0.00)	7.00	5.31	0.53	4.00	8.57	7.14	10.00	42.55	87
M5060652D	0652D	(0.00)	7.00	5.78	0.53	4.00	7.14	7.86	10.00	42.31	91
M5060653D	0653D	(0.00)	7.00	10.00	0.26	4.00	7.14	7.86	6.00	42.26	98
M5060654D	0654D	(0.00)	7.00	5.31	0.53	4.00	10.00	6.43	10.00	43.27	72
M5060655D	0655D	4.00	7.00	5.78	0.53	4.00	8.57	7.14	9.74	46.76	57
M5060656D	0656D	4.00	7.00	5.31	0.26	4.00	8.57	7.14	10.00	46.29	58
M5060657D	0657D	4.00	7.00	5.45	0.26	4.00	6.79	6.43	10.00	43.93	68
M5060658D	0658D	(0.00)	7.00	5.31	0.26	4.00	8.57	7.14	10.00	42.29	92
M5060659D	0659D	(0.00)	7.00	5.31	0.26	4.00	8.57	7.14	10.00	42.29	92
M5060660D	0660D	(0.00)	7.00	5.31	0.26	4.00	7.14	7.86	10.00	41.58	109
M5060661D	0661D	(0.00)	7.00	4.98	0.26	4.00	7.86	5.71	10.00	39.81	129
M5060662D	0662D	6.00	7.00	5.31	0.53	4.00	8.57	7.14	10.00	48.55	53
M5060663D	0663D	(0.00)	7.00	5.31	0.53	4.00	7.86	5.71	9.02	39.43	131

M5060664D	0664D	4.00	7.00	5.31	0.79	4.00	7.14	7.86	10.00	46.10	59
M5060665D	0665D	(0.00)	7.00	5.31	0.26	4.00	7.86	5.71	10.00	40.15	125
M5060666D	0666D	(0.00)	7.00	5.31	0.53	4.00	8.57	7.14	10.00	42.55	87
M5060667D	0667D	(0.00)	7.00	3.91	0.53	4.00	10.00	6.43	10.00	41.86	101
M5060668D	0668D	(0.00)	7.00	4.38	0.26	4.00	8.57	7.14	10.00	41.35	114
M5060669D	0669D	(0.00)	7.00	5.78	0.53	4.00	8.57	7.14	10.00	43.02	77
M5060670D	0670D	(0.00)	7.00	5.31	0.26	4.00	7.86	5.71	6.00	36.15	135
M5060671D	0671D	(0.00)	7.00	5.26	0.53	4.00	7.14	7.86	9.79	41.58	108
M5060672D	0672D	(0.00)	7.00	5.31	0.53	4.00	7.14	7.86	10.00	41.84	102
M5060673D	0673D	(0.00)	7.00	4.84	0.26	4.00	10.00	6.43	10.00	42.54	89
M5060674D	0674D	(0.00)	7.00	5.31	0.53	4.00	10.00	6.43	10.00	43.27	72
M5060675D	0675D	(0.00)	7.00	5.01	0.53	4.00	10.00	6.43	10.00	42.96	82
M5060676D	0676D	(0.00)	7.00	6.25	0.53	4.00	10.00	6.43	10.00	44.20	66
M5060677D	0677D	(0.00)	7.00	4.84	0.53	4.00	7.14	7.86	10.00	41.37	113
M5060678D	0678D	2.00	7.00	6.25	0.26	4.00	7.14	7.86	10.00	44.51	63

M5060679D	0679D	(0.00)	7.00	5.31	0.26	4.00	10.00	6.43	10.00	43.00	78
M5060680D	0680D	(0.00)	7.00	6.25	0.26	4.00	7.86	5.71	10.00	41.08	118
M5060681D	0681D	(0.00)	7.00	4.84	0.26	4.00	8.57	7.14	10.00	41.82	104
M5060682D	0682D	16.00	7.00	8.13	0.26	4.00	5.71	10.00	10.00	61.10	24

4.3 Class of Road Network

4.3.1 Summary of road class A

These roads are major transport corridors within the municipal territory. These roads are assumed to have higher traffic and they connect major settlements or market areas within the municipality. Functionally these roads carry the traffic from major settlements, tourist areas to the SRN linkages. As per the available RoW, topography and land use pattern, typical cross section may be selected as shown in figure below. Minimum Row for this class of road has been set to 14 m. It is highly recommended to have separate segment for pedestrian and cycle track. At the same time, these roads need to have adequate median strip to segregate vehicles coming from different directions.

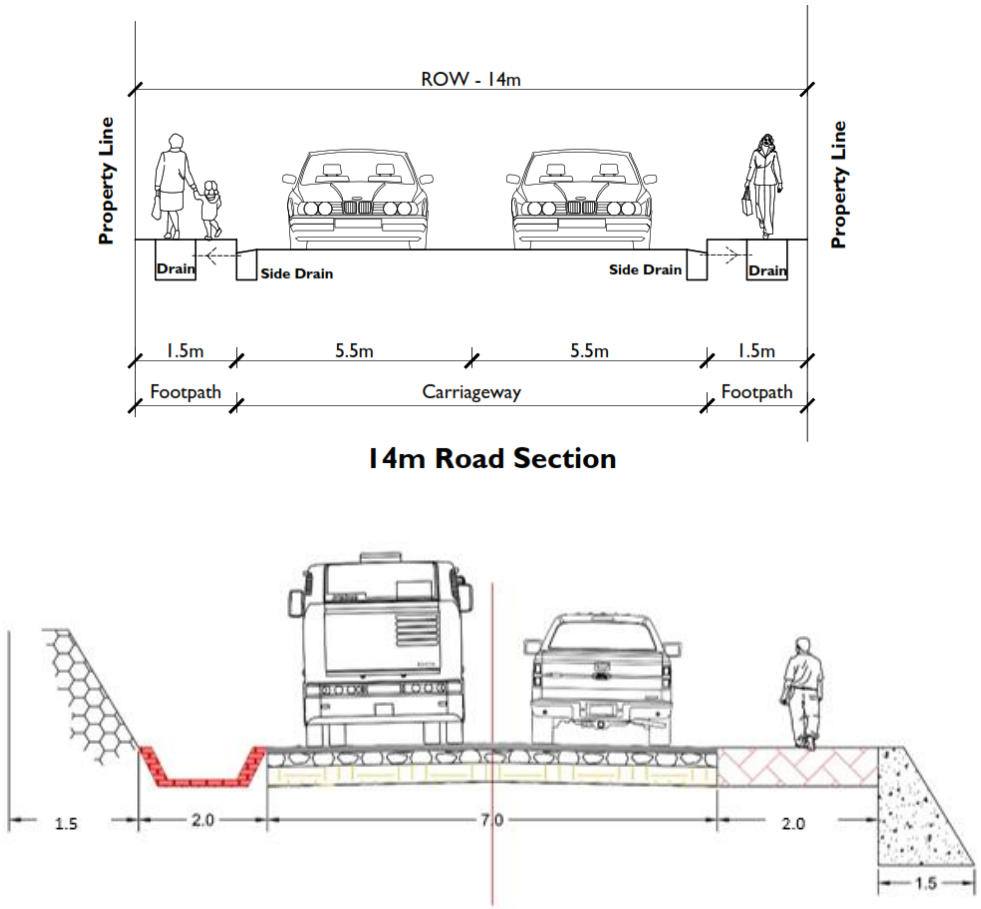
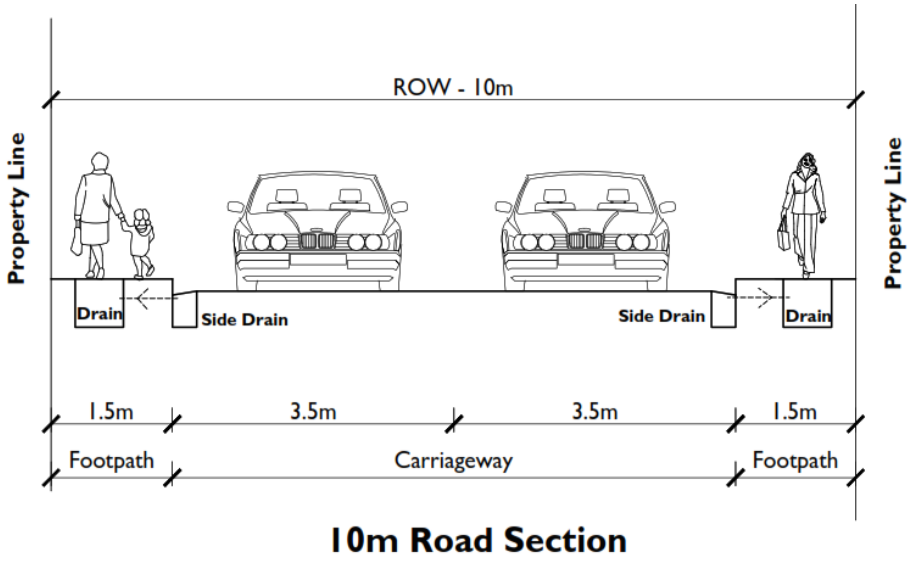


Figure 4-1: Typical Cross Section of class A road

SN	Municipal Code	Class	Road Name	Settlement Passed	Wards Passed	ROW (in m)	Length (in km)
1	M5060601A	A	Satmure - Karamdi - Pairadada - Dumri Pokhara - Kanti Pokhara - Harthok	Satmure, Karamdi, Pairadada, Dumri Pokhara, Kanti Pokhara, Harthok	1, 2	14	17.15
2	M5060602A	A	Batase - Hatti Cheda - Kafleni Gaira - Harthok	Batase, Hatti Cheda, Kafleni Gaira, Harthok	3, 5	14	7.58
3	M5060603A	A	Batase - Phekha - Pelkachaur	Batase, Phekha, Pelkachaur	8	14	12.38
4	M5060604A	A	Batase - Deudi - Chahare	Batase, Deudi, Chahare	7	14	4.98
5	M5060605A	A	Batase - Dhustung - Bebahara - Bhanjyang	Batase, Dhustung, Bebahara, Bhanjyang	6, 7	14	9.31
6	M5060606A	A	Hatti Cheda - Kalitar - Lumbas - Porkani	Hatti Cheda, Kalitar, Lumbas, Porkani	4, 5, 6	14	9.31
7	M5060607A	A	Bhairabsthan - Masure - Bharkot - Dumre Road	Bhairabsthan, Masure, Bharkot, Dumre Road	4	14	7.34

4.3.2 Summary of Road Class B

These roads serve the purpose of collecting from relatively small settlements and having less traffic flow. The RoW for such class of roads is minimum of 10m. The typical cross section of such roads is shown in figure below. These roads serve as linkage to class “A” roads. These roads have been categorized based on public demand as well as keeping in view the future need of municipality. These roads will be served by smaller public transport modes.



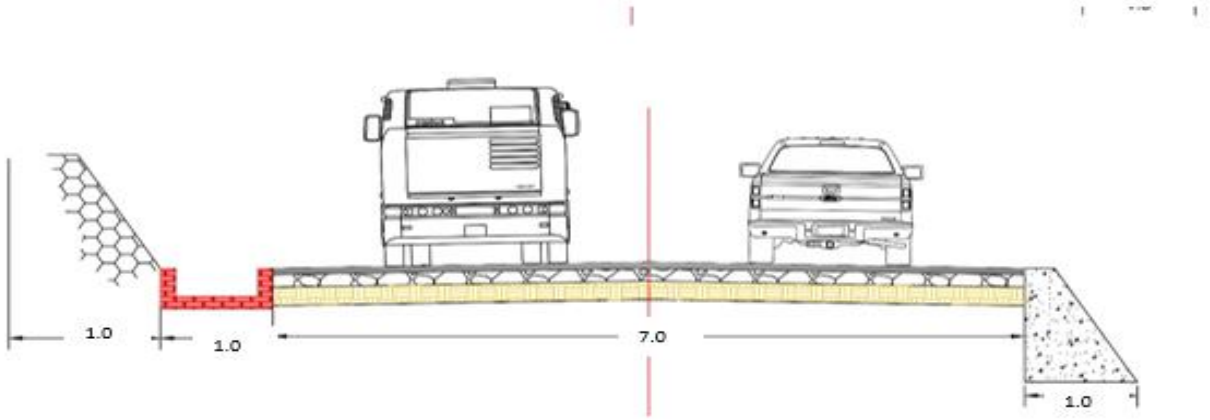


Figure 4-2: Typical Cross Section of class B road

SN	Municipal Code	Class	Road Name	Settlement Passed	Wards Passed	ROW (in m)	Length (in km)
1	M5060601B	B	Pairadada - Argeli	Pairadada	1	10	5.36
2	M5060602B	B	Neupane Dada - Neta Thulachaur - Dambak - Ratamata - Deudi	Neupane Dada, Neta Thulachaur, Dambak, Ratamata, Deudi	1, 2, 7	10	16.93
3	M5060603B	B	Phekaphant - Jaithan - Patichaur - Deulidanda	Phekaphant, Jaithan, Patichaur, Deulidanda	8	10	10.16
4	M5060604B	B	Chustung - Neta - Palung - Phekha	Chustung, Neta, Palung, Phekha	6, 7, 8	10	11.93

5	M5060605B	B	Neta - Berauli - Ghustung	Neta, Berauli, Ghustung	6	10	6.59
6	M5060606B	B	Deurali - Kachal	Deurali, Kachal	6	10	6.06
7	M5060607B	B	Kafleni Gaira - Rato Pokhara - Nai Tola - Palun Deurali	Kafleni Gaira, Rato Pokhara, Nai Tola, Palun Deurali	5, 6	10	7.53
8	M5060608B	B	Porkani - Porkhandanda - Ghorli kharka - Palun Deurali	Porkani, Porkhandanda, Ghorli kharka, Palun Deurali	6	10	10.68
9	M5060609B	B	Ghustung - Omsrang - Mohandi	Ghustung, Omsrang, Mohandi	6	10	9.66
10	M5060610B	B	Khasyauli - Chakaldi	Khasyauli, Chakaldi	3	10	4.69
11	M5060611B	B	Harthok - Rani Thati	Harthok, Rani Thati	4	10	5.30
12	M5060612B	B	Ratamata - Hatti Cheda	Ratamata, Hatti Cheda	5, 7	10	4.85
13	M5060613B	B	Durmi Pokhara - Thati Ghimti	Durmi Pokhara, Thati Ghimti	2	10	2.28
14	M5060614B	B	Harthok - Malmul	Harthok, Malmul	3	10	4.43
15	M5060615B	B	Ward Office 1 - Pairadanda	Ward Office 1, Pairadanda	1	10	2.78
16	M5060616B	B	Thati Ghumti - Laghuwa	Thati Ghumti, Laghuwa	2	10	4.07

4.3.3 Summary of road class C

These types of urban roads are for the purpose of residential access. Residential streets are designed for lower traffic volumes for especially private transport. Therefore, RoW for this class is designed for single lane pavement. Minimum RoW for such class of roads is allocated as 8m. Typical cross section of such roads is shown below.

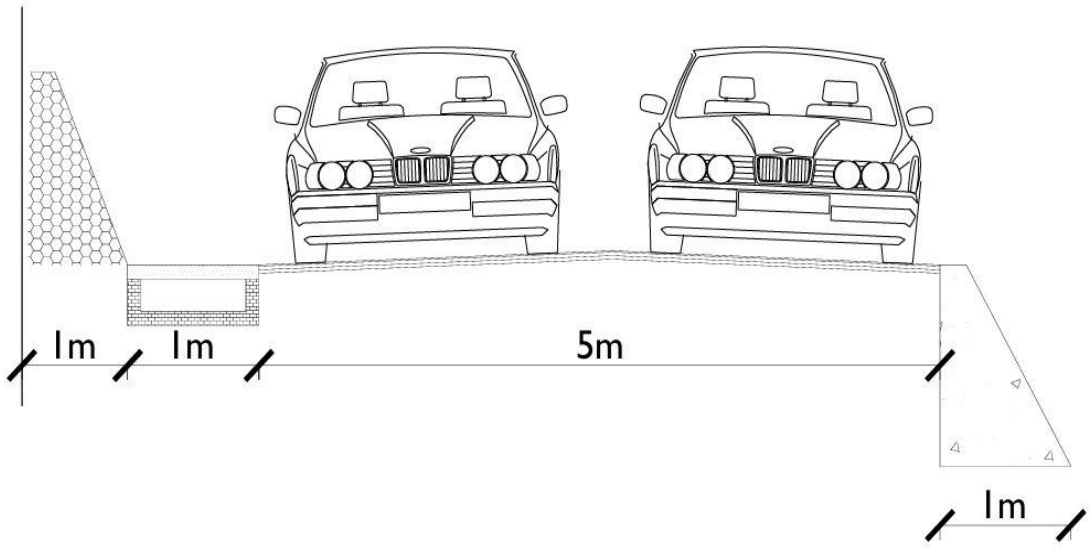


Figure 4-3: Typical cross section of class C road

SN	Municipal Code	Class	Road Name	Settlement Passed	Wards Passed	ROW (in m)	Length (in km)
1	M5060601C	C	Karamdi - Neupane dada	Karamdi, Neupane dada	1	8	2.35
2	M5060602C	C	Neupane Dada - Chhadi Bagaicha	Neupane Dada, Chhadi Bagaicha	1	8	2.14
3	M5060603C	C	Neta Thulachaur - Pairadada	Neta Thulachaur, Pairadada	1	8	3.19
4	M5060604C	C	Neupande Dada - Ridi Rishikesh	Neupande Dada, Ridi Rishikesh	1	8	2.36
5	M5060605C	C	Bhanjyang - Bar Pokhara	Bhanjyang, Bar Pokhara	1	8	2.23
6	M5060606C	C	Bar Pokhara - Dambak	Bar Pokhara, Dambak	2	8	2.84
7	M5060607C	C	Sirukharka - Jorte	Sirukharka, Jorte	3	8	4.18

8	M5060608C	C	Triveni - Dumri Pokhara	Triveni, Dumri Pokhara	2	8	3.43
9	M5060609C	C	Thati Ghumti - Bhutuka	Thati Ghumti, Bhutuka	2	8	1.19
10	M5060610C	C	Kanti Pokhara - Masahar	Kanti Pokhara, Masahar	2	8	3.08
11	M5060611C	C	Tallabari - Gahatyar	Tallabari, Gahatyar	7	8	1.76
12	M5060612C	C	Triveni - Lami Pokhari	Triveni, Lami Pokhari	5	8	3.35
13	M5060613C	C	Triveni - Kuseni Kharka	Triveni, Kuseni Kharka	3	8	3.70
14	M5060614C	C	Triveni - Kuseni Kharka	Triveni, Kuseni Kharka	3	8	3.27
15	M5060615C	C	Rato Pokhara - Mare Danda	Rato Pokhara, Mare Danda	5	8	2.58
16	M5060616C	C	Ward 4 Office - Ghekuldanda	Porkani , Porkhandanda , Ghorli kharka, Palun Deurali	4	8	2.09
17	M5060617C	C	Rani Thati - Masure	Rani Thati, Masure	4	8	3.43
18	M5060618C	C	Lumbas - Masure	Lumbas, Masure	4	8	3.64
19	M5060619C	C	Lumbas - Bagarga	Lumbas, Bagarga	6	8	2.90
20	M5060620C	C	Ghorlikharka - Porokani	Ghorlikharka, Porokani	6	8	3.99
21	M5060621C	C	Bhudhi Khatirkot – Gundratung	Bhudhi Khatirkot, Gundratung,	6	8	4.65

			Lulibhatti - Ujwal Danda - Pani Factory	Lulibhatti, Ujwal Danda, Pani Factory			
22	M5060622C	C	Timure - Ritung	Timure, Ritung	6	8	4.04
23	M5060623C	C	Hatti Cheda - Kana Kharka	Hatti Cheda, Kana Kharka	5	8	2.63
24	M5060624C	C	Palung - Biyarkpt	Palung, Biyarkpt	7	8	3.77
25	M5060625C	C	Palung - Lumbas	Palung, Lumbas	7	8	1.81
26	M5060626C	C	Deurali Bhanjyang - Bagkhor	Deurali Bhanjyang, Bagkhor	7, 8	8	4.74
27	M5060627C	C	Arephan - Pelkachaur	Arephan, Pelkachaur	8	8	3.12
28	M5060628C	C	Pheka - Daindanda	Pheka, Daindanda	8	8	6.60
29	M5060629C	C	Dhuwanpani – Phekha Gausala - Dansindanda - Dedu	Dhuwanpani, Phekha, Gausala, Dansindanda, Dedu	8	8	8.38
30	M5060630C	C	Kuseni - Kharka - Chakaldi	Kuseni, Kharka, Chakaldi	3	8	2.16

4.3.4 Summary of road class D

These types of urban roads have access to settlement level connected to class C roads. Residential streets are designed for comparatively lower traffic volumes for especially private transport. Right of Way (RoW) for this class is designed for single lane pavement. Minimum RoW for such class of roads is allocated as 6 m.

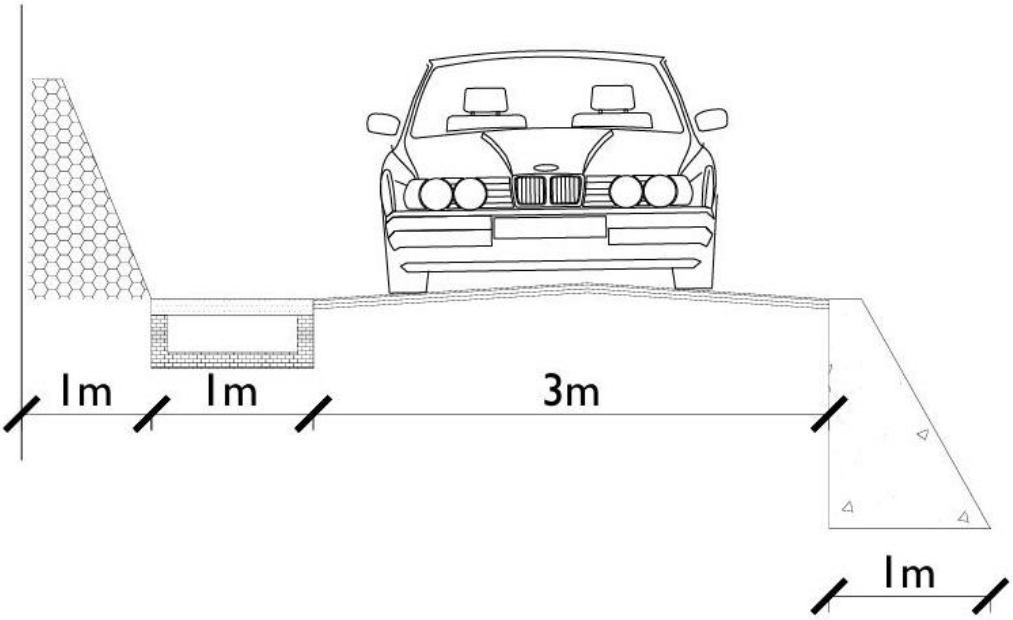


Figure 4-4: Typical cross section of class D road

Road List and Hierarchy

SN	Municipal Code	Road Code	Class	Road Name	Settlement Passed	Wards Passed	ROW (in m)	Length (in km)
1	M5060601A	01A	A	Satmure - Karamdi - Pairadada - Dumri Pokhara - Kanti Pokhara - Harthok	Satmure , Karamdi , Pairadada , Dumri Pokhara , Kanti Pokhara, Harthok	1, 2	14	17.15
2	M5060601B	01B	B	Pairadada - Argeli	Pairadada	1	10	5.36
3	M5060601C	01C	C	Karamdi - Neupane dada	Karamdi, Neupane dada	1	8	2.35
4	M5060602A	02A	A	Batase - Hatti Cheda - Kafleni Gaira - Harthok	Batase , Hatti Cheda , Kafleni Gaira , Harthok	3, 5	14	7.58
5	M5060602B	02B	B	Neupane Dada - Neta Thulachaur - Dambak - Ratamata - Deudi	Neupane Dada, Neta Thulachaur , Dambak , Ratamata , Deudi	1, 2, 7	10	16.93
6	M5060602C	02C	C	Neupane Dada - Chhadi Bagaicha	Neupane Dada, Chhadi Bagaicha	1	8	2.14
7	M5060603A	03A	A	Batase - Phekha - Pelkachaur	Batase, Phekha, Pelkachaur	8	14	12.38
8	M5060603B	03B	B	Phekaphant - Jaithan - Patichaur - Deulidanda	Phekaphant, Jaithan , Patichaur , Deulidanda	8	10	10.16
9	M5060603C	03C	C	Neta Thulachaur - Pairadada	Neta Thulachaur , Pairadada	1	8	3.19
10	M5060604A	04A	A	Batase - Deudi - Chahare	Batase , Deudi , Chahare	7	14	4.98

11	M5060604B	04B	B	Chustung - Neta - Palung - Phekha	Chustung , Neta , Palung , Phekha	6, 7, 8	10	11.93
12	M5060604C	04C	C	Neupande Dada - Ridi Rishikesh	Neupande Dada , Ridi Rishikesh	1	8	2.36
13	M5060605A	05A	A	Batase - Dhustung - Bebahara - Bhanjyang	Batase , Dhustung , Bebahara , Bhanjyang	6, 7	14	9.31
14	M5060605B	05B	B	Neta - Berauli - Ghustung	Neta , Berauli , Ghustung	6	10	6.59
15	M5060605C	05C	C	Bhanjyang - Bar Pokhara	Bhanjyang , Bar Pokhara	1	8	2.23
16	M5060606A	06A	A	Hatti Cheda - Kalitar - Lumbas - Porkani	Hatti Cheda , Kalitar , Lumbas , Porkani	4, 5, 6	14	9.31
17	M5060606B	06B	B	Deurali - Kachal	Deurali , Kachal	6	10	6.06
18	M5060606C	06C	C	Bar Pokhara - Dambak	Bar Pokhara , Dambak	2	8	2.84
19	M5060607A	07A	A	Bhairabsthan - Masure - Bharkot - Dumre Road	Bhairabsthan , Masure , Bharkot , Dumre Road	4	14	7.34
20	M5060607B	07B	B	Kafleni Gaira - Rato Pokhara - Nai Tola - Palun Deurali	Kafleni Gaira , Rato Pokhara , Nai Tola , Palun Deurali	5, 6	10	7.53
21	M5060607C	07C	C	Sirukharka - Jorte	Sirukharka , Jorte	3	8	4.18
22	M5060608B	08B	B	Porkani - Porkhandanda - Ghorli kharka - Palun Deurali	Porkani , Porkhandanda , Ghorli kharka , Palun Deurali	6	10	10.68
23	M5060608C	08C	C	Triveni - Dumri Pokhara	Triveni , Dumri Pokhara	2	8	3.43
24	M5060609B	09B	B	Ghustung - Omsrang - Mohandi	Ghustung , Omsrang , Mohandi	6	10	9.66
25	M5060609C	09C	C	Thati Ghumti - Bhutuka	Thati Ghumti , Bhutuka	2	8	1.19

26	M5060610B	10B	B	Khasyauli - Chakaldi	Khasyauli , Chakaldi	3	10	4.69
27	M5060610C	10C	C	Kanti Pokhara - Masahar	Kanti Pokhara , Masahar	2	8	3.08
28	M5060611B	11B	B	Harthok - Rani Thati	Harthok , Rani Thati	4	10	5.30
29	M5060611C	11C	C	Tallabari - Gahatyar	Tallabari , Gahatyar	7	8	1.76
30	M5060612B	12B	B	Ratamata - Hatti Cheda	Ratamata , Hatti Cheda	5, 7	10	4.85
31	M5060612C	12C	C	Triveni - Lami Pokhari	Triveni , Lami Pokhari	5	8	3.35
32	M5060613B	13B	B	Durmi Pokhara - Thati Ghimti	Durmi Pokhara , Thati Ghimti	2	10	2.28
33	M5060613C	13C	C	Triveni - Kuseni Kharka	Triveni , Kuseni Kharka	3	8	3.70
34	M5060614B	14B	B	Harthok - Malmul	Harthok , Malmul	3	10	4.43
35	M5060614C	14C	C	Triveni - Kuseni Kharka	Triveni , Kuseni Kharka	3	8	3.27
36	M5060615B	15B	B	Ward Office 1 - Pairadanda	Ward Office 1 , Pairadanda	1	10	2.78
37	M5060615C	15C	C	Rato Pokhara - Mare Danda	Rato Pokhara , Mare Danda	5	8	2.58
38	M5060616B	16B	B	Rani Thati - Masure	Sirukharka , Jorte	2	10	4.07
39	M5060616C	16C	C	Ward 4 Office - Ghekuldanda	Porkani , Porkhandanda , Ghorli kharka , Palun Deurali	4	8	2.09
40	M5060617C	17C	C	Rani Thati - Masure	Triveni , Dumri Pokhara	4	8	3.43
41	M5060618C	18C	C	Lumbas - Masure	Ghustung , Omsrang , Mohandi	6	8	3.64
42	M5060619C	19C	C	Lumbas - Bagarga	Lumbas , Bagarga	6	8	2.90
43	M5060620C	20C	C	Ghorlikharka - Porokani	Ghorlikharka , Porokani	6	8	3.99
44	M5060621C	21C	C	Bhudhi Khatirkot - Gundratung	Bhudhi Khatirkot , Gundratung	6	8	4.65
45	M5060622C	22C	C	Timure - Ritung	Timure , Ritung	6	8	4.04
46	M5060623C	23C	C	Hatti Cheda - Kana Kharka	Hatti Cheda , Kana Kharka	5	8	2.63

47	M5060624C	24C	C	Palung - Biyarkpt	Palung , Biyarkpt	7	8	3.77
48	M5060625C	25C	C	Palung - Lumbas	Palung , Lumbas	7	8	1.81
49	M5060626C	26C	C	Deurali Bhanjyang - Bagkhor	Deurali Bhanjyang , Bagkhor	7, 8	8	4.74
50	M5060627C	27C	C	Arephan - Pelkachaur	Arephan , Pelkachaur	8	8	3.12
51	M5060628C	28C	C	Pheka - Daindanda	Pheka , Daindanda	8	8	6.60
52	M5060629C	29C	C	Dhuwanpani - Phekha	Dhuwanpani , Phekha	8	8	8.38
53	M5060630C	30C	C	Kuseni - Kharka - Chakaldi	Kuseni , Kharka , Chakaldi	3	8	2.16

4.4 Digital Naming of coding (Road Nomenclature)

Once the roads are finalized, each municipal roads are assigned a road code. Coding of road is done based on the guidelines MTMP. Provision of those guidelines have been slightly modified as per the restructuring of the nation into the federal system.

- First code M stands for Municipality
- Second code (1-7) represents the Province Number. Code 5 Stand for Province No. 5 (Lumbini Province) and similarly for other provinces.
- Third code represent particular district. Palpa district is coded by 06.
- Fourth code stands for Municipality code. Ribdikot Rural Municipality is coded as 06
- Fifth code represents the road number (0-99)
- Sixth code indicates letter A-D for particular Class of road.

Table 4-7: Road hierarchy

	M	5	06	06	01	A
M5060401A	Municipality	Province	District	Palika	Road number	RoadClass

Code	Road Name
M5060601A	Satmure - Karamdi - Pairadada - Dumri Pokhara - Kanti Pokhara - Harthok
M5060601B	Pairadada - Argeli
M5060601C	Karamdi - Neupane dada
M5060602A	Batase - Hatti Cheda - Kafleni Gaira - Harthok
M5060602B	Neupane Dada - Neta Thulachaur - Dambak - Ratamata - Deudi
M5060602C	Neupane Dada - Chhadi Bagaicha
M5060603A	Batase - Phekha - Pelkachaur
M5060603B	Phekaphant - Jaithan - Patichaur - Deulidanda
M5060603C	Neta Thulachaur - Pairadada
M5060604A	Batase - Deudi - Chahare
M5060604B	Chustung - Neta - Palung - Phekha
M5060604C	Neupande Dada - Ridi Rishikesh
M5060605A	Batase - Dhustung - Bebahara - Bhanjyang
M5060605B	Neta - Berauli - Ghustung
M5060605C	Bhanjyang - Bar Pokhara
M5060606A	Hatti Cheda - Kalitar - Lumbas - Porkani
M5060606B	Deurali - Kachal

M5060606C	Bar Pokhara - Dambak
M5060607A	Bhairabsthan - Masure - Bharkot - Dumre Road
M5060607B	Kafleni Gaira - Rato Pokhara - Nai Tola - Palun Deurali
M5060607C	Sirukharka - Jorte
M5060608B	Porkani - Porkhandanda - Ghorli kharka - Palun Deurali
M5060608C	Triveni - Dumri Pokhara
M5060609B	Ghustung - Omsrang - Mohandi
M5060609C	Thati Ghumti - Bhutuka
M5060610B	Khasyauli - Chakaldi
M5060610C	Kanti Pokhara - Masahar
M5060611B	Harthok - Rani Thati
M5060611C	Tallabari - Gahatyar
M5060612B	Ratamata - Hatti Cheda
M5060612C	Triveni - Lami Pokhari
M5060613B	Durmi Pokhara - Thati Ghimti
M5060613C	Triveni - Kuseni Kharka
M5060614B	Harthok - Malmul
M5060614C	Triveni - Kuseni Kharka
M5060615B	Ward Office 1 - Pairadanda
M5060615C	Rato Pokhara - Mare Danda
M5060616B	Thati Ghumti - Laghuwa
M5060616C	Ward 4 Office - Ghekuldanda
M5060617C	Rani Thati - Masure
M5060618C	Lumbas - Masure
M5060619C	Lumbas - Bagarga
M5060620C	Ghorlikharka - Porokani
M5060621C	Bhudhi Khatirkot - Gundratung
M5060622C	Timure - Ritung
M5060623C	Hatti Cheda - Kana Kharka
M5060624C	Palung - Biyarkpt
M5060625C	Palung - Lumbas
M5060626C	Deurali Bhanjyang - Bagkhor
M5060627C	Arephan - Pelkachaur
M5060628C	Pheka - Daindanda
M5060629C	Dhuwanpani - Phekha
M5060630C	Kuseni - Kharka - Chakaldi

CHAPTER 5: FORECAST AND PERSPECTIVE PLANNING

5.1 Population forecast

One of the major considerations in preparing plans is the time for which it is prepared. Since the development works will be implemented in the future and the expected results of the plan will be yield in some time in the future, it is necessary to predict the population for the time that the plan will generate desired results. So, for the same purpose, the following formula is used to forecast the population in 2035 A.D.

$$P_n = P\ (1+ I/100)^n$$

Where, I = annual geometric growth rate = -1.9%

P = Present population= 15,473 [2021]

n = no. of year= 15 years

P_n = population at the end of 15^{th} year

The total population of the municipality according to the CBS 2011 is 18,770. The CBS,2021 shows that the population has decreased in 2021 to 15,473. By using this geometric method,

Population at the end of 15 years (P_{15}) $= 15,473\ (1\text{-}1.9/100)^{15}$

$= 11,581$

Table 5-1: Population Projection of Ribdikot Rural Municipality

Population		**Growth Rate (%)**	**Population Projection**		
2011	**2021**		**2026**	**2031**	**2036**
18,770	15,473	-1.9	14048	12755	11581

5.2 Indicative Development Potential Plan

5.2.1 Gap Analysis

The planning norms and standards prepared by DUDBC published in 2013 has set the planning guideline for the urban area of different population size. As per the planning norms and standard, the urban areas with a population between 40,000 and 1,00,000 is considered as a city. Thus, the Ribdikot Rural municipality is considered to be a city on the basis of population also. There are several criteria mentioned in the standards varying from the size of road, water supply and sanitary measures, electric supply, waste management, educational institutions, health institutions, stadiums, university, public library and so on.

A. Educational Sector

As per Planning norms and standards, it is stated that there should be 1 primary school for 3000 population within the distance of 0.4 to 0.8 km and 1 higher secondary school per 7500 population within a distance of 30 minutes by public vehicles. Similarly, there should be at least 1 Campus per 25000 population within a distance of 45 minutes by public vehicles and 1 University per 40,000 population should be within distance of 1 hour by Public Vehicles.

B. Health Institutions

As per Planning Norms, there should be 1 primary health care center per 20,000 population with 5-15 beds capacity, and 1district hospital with 25-50 bed capacity per 50,000 population.

C. Open Space

There should be 5% of open space of the total city area. Accordingly, there should be 1 neighborhood park with play equipment of 0.4-hectare area for 800 population, 1 neighborhood park with play equipment of 1-hectare area for 10000 population, 1 local park of 2-hectare area for 20,000 population and 1 community park for each city.

D. Community Services

According to the standards for a city, one community level Library per 10,000 population of 0.5-hectare area and one Central Level Library is required. So, there will be need of at least 5 community level libraries and 1 central level library in the municipality.

Accordingly, there should be one fire station for a 5 to 7 km radius of a 0.5-hectare area. So, there will be a need of 3 to 4 fire stations. In the case of religious institutions, incineration / Crematorium area / Burial ground should be of 0.5 hectare per site. The national museum and Art Gallery should be of National level with a total area of 0.5 hectares/site.

Regarding Old age people, Orphanage, Centre for differently able people, Sanatorium, there should be 1 for 20,000 people of National or Regional Level of 0.3 hectare per site. For the security, there should be 1 police post per 10,000 population and 1 police station per 40,000 population of 0.1 ha/site and 0.5 ha/site respectively. And there should be one Exhibition Centre of National Level for 50,000 population of 4 ha/site.

5.2.2 Indicative Development Plan

Ribdikot Rural Municipality, situated in between rolling hills and lush valleys of Nepal, has the potential for various socio-economic development such as education, health, agriculture and tourism. Alongside the breathtaking nature, heritage and existing infrastructures, this

development plan helps enhance the living standards, sustainable growth and economic opportunities for the residents of the municipality.

Ribdikot Rural Municipality offers a variety of religious places. Some of the main cultural attractions of the area include *Bhairabsthan Temple, Deurali Mandir, Devisthan, Hirapokhara Ganesh Temple, Madure Radha Krishna Temple,* etc. Other sites such as *Pipal Pokhari, Lisne Bhir View Point, Selfiedada, Siddha Gufa, Dhustung Deurali*, etc are also the major tourist attractions of Ribdikot Rural Municipality. *Kachal Chun Dhunga Khani* is one of the resources present in the area.

Several key markets play a crucial role in the local economy and community life. Bhairavasthan Bazaar stands out as a significant commercial hub within the municipality, offering a variety of goods and services to residents, while Harthok Bazaar and Malmool Bazaar are known for being a focal point for local traders and farmers to sell their produce and goods. Khasyauli Bazaar serve the community with essential goods and services due to its strategic location and diverse range of products. Jorte Bazaar and Deurali Bazaar are prominent market area recognized for the variety of goods available, attracting traders and buyers from neighboring regions. Collectively, these markets contribute to the economic vitality of Ribdikot Rural Municipality by providing essential goods and services, creating employment opportunities, and supporting local agricultural and commercial sectors, underscoring the importance of infrastructure development in these areas to sustain and boost the local economy.

Furthermore, major business areas such as Dadabari and Dhuwapani Dada are integral to the municipality's development framework. *Kachal Chun Dhunga Khani* and *Himal Natural Spring Water* are some of the industrial points of the municipality. These areas contribute to the economic vitality of Ribdikot Rural Municipality by providing essential goods and services, creating employment opportunities, and supporting local agricultural and commercial sectors, underscoring the importance of infrastructure development in these areas to sustain and boost the local economy. Playgrounds like *Bhedichaur Cricket Ground, Bharkot Tudikhel* and *Mujhung Cricket Ground* hold the potential to support the economy of the area.

Specific areas have been identified for their significant agricultural potential, playing a vital role in the local economy and food security. The lowland of Laghuwa is the major highlight for the agricultural sector. This area is characterized by fertile land and favorable climatic conditions, making it ideal for cultivating a variety of crops. Agriculture center, Orange farm

and Kebal Falful tatha Krishi Farm are the major locations for the agricultural business. The agricultural activities not only contribute to the sustenance of the local population but also generate income through the sale of surplus produce. The development of these agricultural zones is crucial for enhancing food production, ensuring food security, and supporting the livelihoods of the farming communities.

Additionally, Ribdikot Rural Municipality is assessed with educational institutions. Most of the institutions are secondary level schools, ensuring the provision of basic education. Shree Adarsh Higher Secondary School provides the higher education to the population. These educational institutions are integral to the overall development of the municipality, fostering a knowledgeable and skilled workforce. The development and integration of these agricultural zones and educational institutions are essential for boosting agricultural productivity, improving market access, and fostering sustainable economic growth within the Municipality.

The healthcare services of the municipality are accessed throughout the municipality. Among the services, Khaseuli Primary Health Care (PHC), Phekha Health Post and Thimure Sub-Health Post have been identified as the vital centers. The health services ensure the well-being of the population and supporting a healthy workforce.

Ongoing and proposed projects, such as the Municipal Transport Master Plan, will focus on balanced growth, infrastructure development, and sustainable urban planning. Prioritizing transportation infrastructure projects will enhance connectivity and support economic activities. By implementing this indicative development plan, Ribdikot Rural Municipality can unlock its potential, fostering sustainable development and improving the quality of life for its residents.

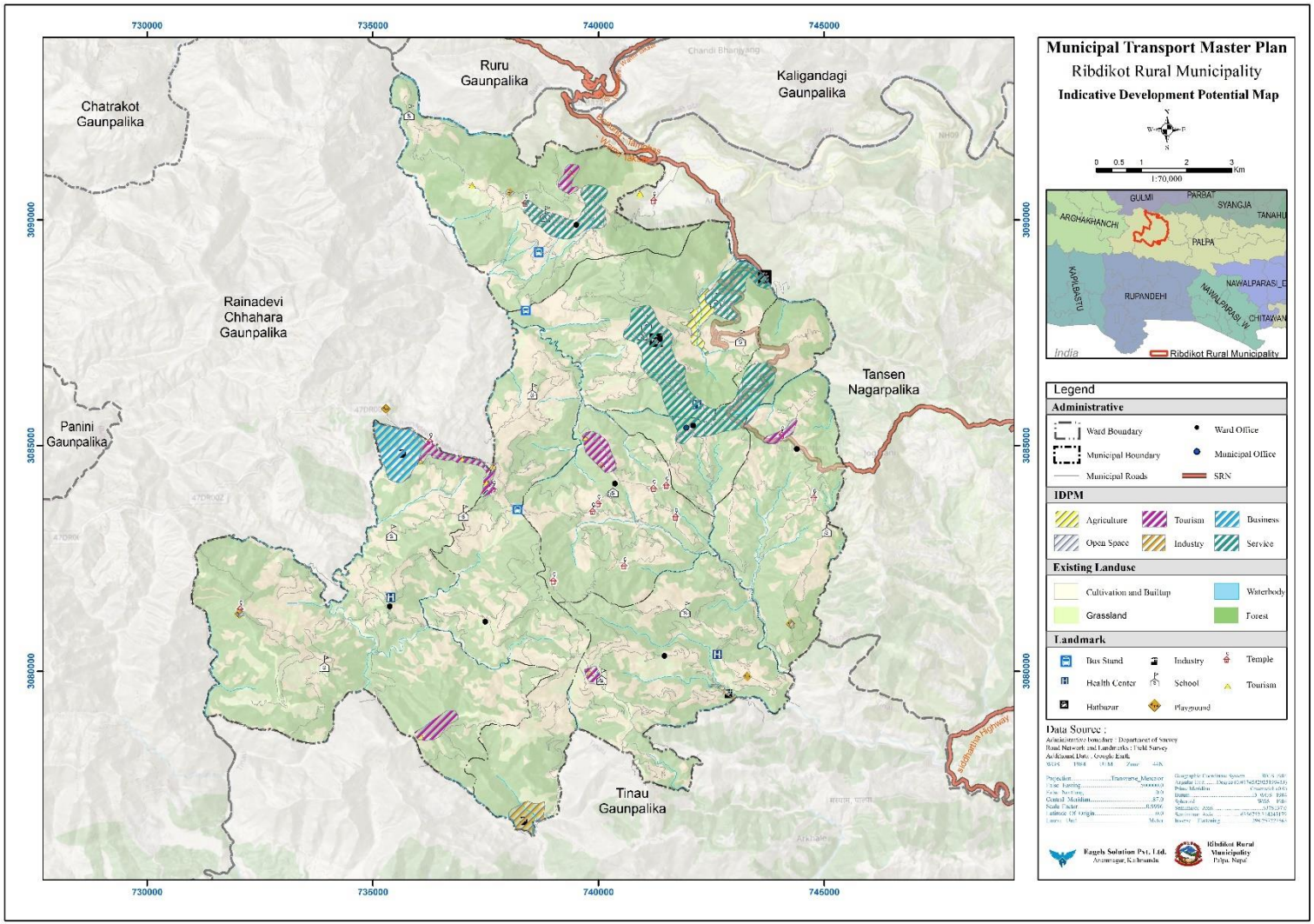


Figure 5-1: Indicative Development Potential Map

CHAPTER 6: MUNICIPAL TRANSPORT MASTER PLAN

This section presents the municipal transport master plan. The first heading sets the perspective plan for the transport infrastructures showing the roads of different class and possible new linkages for the future expansion and development. The next, different funding agencies and their possible contribution is explored. The next heading describes the proposed and approved prioritization criteria adopted for this MTMP. Finally, the details of the budget estimate and allocation to different road projects is presented along with the different possible sources of funding.

6.1. Financial institutions

The road space is a public space and is also the infrastructure that drives the economy of any area or region. Therefore, it is the responsibility of the government to provide the necessary road infrastructure for the uninterrupted and smooth movement of economic activities. But the government alone cannot finance or fund the investments as road investments are huge. Therefore, it is necessary to explore other possible financial institutions who can invest in the road infrastructure. Planning of the investment is essential to support local government in developing good and best practice in construction, upgrading, overall asset management and especially operation and maintenance of the road projects. The most common sources of funding which are investing in the road sectors in Ribdikot Rural Municipality and other cities in Nepal are listed and summarized below:

- Users' participation
- Municipality office
- District and divisional line agencies
- DoLIDAR
- Donor agencies, NGO, INGO, etc.
- Town Development Fund (TDF)
- Department of Urban Development and Building Construction

The local users are the end beneficiaries of the road projects and interventions. Their involvement helps to create informed and responsible citizens in the community. It also generates a sense of ownership and thus promote preservation and proper use of the

infrastructure and the facilities. Such practice is gaining pace in the local projects in Nepal. Such involvement is essential to construct and maintain the local roads if not higher hierarchy roads. People's participation can be ensured through different methods – direct investment, free labour, maintenance, tree plantation, cleanliness, etc.

Municipality has the major role in developing the overall infrastructure within the municipal boundary. It is the local government responsible of preparing the necessary framework and implementing policies and strategies for the planned and sustainable development of the necessary infrastructures and facilities. As road supports other infrastructure and facilities, the role of municipality in the development and maintenance of the road infrastructure is further pronounced. A major share of the municipal budget should be allocated to maintain the roads and construction of wider roads to meet the planned class and ROW. The annual program should address the local need and the need of emergency and specific maintenance. Specific roads should be constructed as a whole and not in parts for longer period of time.

Other institutions and line agencies working in the field of development of local and regional roads also play important role in the development of the municipal roads. Normally, these institutions invest in the roads that are important in a regional context, rather than local small area context. DDC and DoLIDAR are such institutions. DDC are responsible for most of the DRCN roads and few local roads as well. DoLIDAR also invests in agricultural and other local roads.

Like the line agencies, there are many donor funded projects run by NGOs and INGOs in the sector of road and other infrastructure development. The development of wider roads of higher hierarchy required greater amount of investment and, technical and administrative capacity which may be lacking with the local body and institutions. Such projects are implemented through donor funded projects. SNRTP, RAP, etc. are examples of such projects. They can be important sources of investment for major roads of the municipality.

6.2. Five year projected financial plan

For the preparation of the financial implementation plan for the period of five years, the first task is to project the possible funds available for investment. For this, the available budget of the past years is taken as reference. The budget detail of Ribdikot of 2080-81 has been considered for the projection. Budget spent in construction, maintenance of road and road side

drains has been considered. A moving year budget method has been used to project the budget for next five years. The available budget detail is tabulated below:

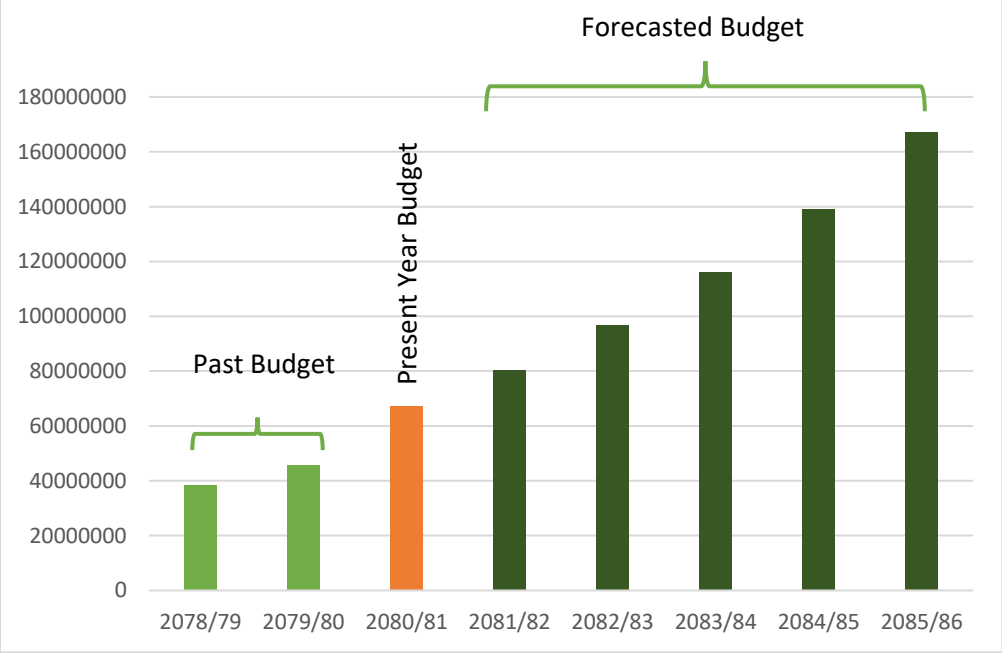
6.2.1 Municipal budget: trend and projection

The past budget for road infrastructure in fiscal year 2078/79 was NPR 38350000 with a modest increase in the following year, reaching NPR 45790000 in 2079/80. The present year budget for 2080/81 saw a significant rise, jumping to NPR 67135000, marking a substantial increase compared to previous years. This indicates a renewed focus or priority on road infrastructure development.

Table 6-1: Municipal budget

Year	Amount	Increment
2078/79	38350000	
2079/80	45790000	19%
2080/81	67135000	47%
2081/82	80562000	20%
2082/83	96674400	20%
2083/84	116009280	20%
2084/85	139211136	20%
2085/86	167053363	20%

This robust growth trajectory reflects a long-term commitment to improving road infrastructure, driven by factors such as economic development plans, urbanization, or increased demand for better transportation networks.



Budgeting Sheet

Rank	Code	Year 1			Year 2			Year 3			Year 4			Year 5		
		Length	Amount	Budget Cumulative	Length	Amount	Budget Cumulative	Length	Amount	Budget Cumulative	Length	Amount	Budget Cumulative	Length	Amount	Budget Cumulative
1	M5060601A	0.50	9674489.80	9674489.80	0.50	9674489.80	9674489.80	0.50	9674489.80	9674489.80	0.22	4160030.61	4160030.61			
2	M5060607A	0.50	3356948.23	13031438.02	0.23	1571051.77	11245541.57									
3	M5060601B	0.41	11326956.78	24358394.80	0.50	13649347.01	24894888.58	0.50	13649347.01	23323836.81	0.19	5270649.19	9430679.80			
4	M5060603A				0.20	4335185.18	29230073.76	0.50	10732633.28	34056470.09	0.50	10732633.28	20163313.08	0.04	773548.26	773548.26
5	M5060607B							0.11	1019618.43	35076088.52	0.50	4546281.54	24709594.62	0.50	4546281.54	5319829.80
6	M5060602B										0.50	8466154.75	33175749.38	0.50	8466154.75	13785984.55
7	M5060603B										0.29	8915556.84	42091306.22	0.50	15131643.70	28917628.25
8	M5060605A													0.43	2499661.12	31417289.37
9	M5060604B													0.50	3886378.88	35303668.25
10	M5060608B													0.50	3646161.05	38949829.30
11	M5060614B													0.50	2784988.71	41734818.01
12	M5060606B													0.30	8774749.46	50509567.47

Preliminary Cost Estimate Details for Municipal Roads

Cost in '000								'00,000
Municipality Road Code	**Road Code**	**Total Road Length (Km)**	**General Maintenance**	**Recurrent Maintenance**	**Improvement Cost**	**Cross Drainage Structure**	**Cost of Protection Structure**	**Total Cost '00,000**
M5060601A	01A	17.15	12,930	19,920	534,200	-	129,470	6,965
M5060601B	01B	5.36	2,360	3,680	145,060	8,800	55,170	2,151
M5060601C	01C	2.35	1,040	1,550	5,180	-	17,770	255
M5060602A	02A	7.58	3,340	3,340	46,640	-	57,260	1,106
M5060602B	02B	16.93	5,320	8,260	216,320	18,860	174,340	4,231
M5060602C	02C	2.14	670	1,010	2,400	12,570	22,050	387
M5060603A	03A	12.38	3,890	5,840	180,800	223,140	127,540	5,412
M5060603B	03B	10.16	3,190	5,000	139,430	223,140	76,680	4,475
M5060603C	03C	3.19	1,000	1,510	8,820	-	24,060	354
M5060604A	04A	4.98	1,560	1,560	20,140	-	37,580	608
M5060604B	04B	11.93	3,750	5,610	17,290	25,140	90,040	1,418

M5060604C	04C	2.36	740	1,110	4,060	-	24,270	302
M5060605A	05A	9.31	2,340	3,510	12,110	-	95,880	1,138
M5060605B	05B	6.59	1,660	2,490	4,730	10,060	49,760	687
M5060605C	05C	2.23	560	840	1,600	5,030	16,820	249
M5060606A	06A	9.31	2,340	2,520	43,740	10,060	70,280	1,289
M5060606B	06B	6.06	1,520	2,290	4,360	183,540	62,460	2,542
M5060606C	06C	2.84	710	1,070	2,040	-	21,470	253
M5060607A	07A	7.34	1,850	2,720	43,160	-	55,400	1,031
M5060607B	07B	7.53	1,890	2,840	15,250	5,030	77,530	1,025
M5060607C	07C	4.18	1,050	1,560	7,600	5,030	31,530	468
M5060608B	08B	10.68	2,690	4,060	25,590	5,030	80,640	1,180
M5060608C	08C	3.43	860	1,330	25,140	15,090	25,930	684
M5060609B	09B	9.66	2,430	3,720	52,870	5,030	72,950	1,370
M5060609C	09C	1.19	230	330	660	-	9,010	102
M5060610B	10B	4.69	880	1,250	3,330	7,540	35,400	484

M5060610C	10C	3.08	580	930	35,880	-	23,260	606
M5060611B	11B	5.30	1,000	1,550	32,350	-	39,990	749
M5060611C	11C	1.76	330	500	710	-	13,250	148
M5060612B	12B	4.85	910	1,420	33,450	3,770	36,620	762
M5060612C	12C	3.35	630	950	1,350	3,770	25,310	320
M5060613B	13B	2.28	430	690	26,550	-	17,220	449
M5060613C	13C	3.70	700	1,050	1,500	-	27,940	312
M5060614B	14B	4.43	840	1,250	1,790	-	33,460	373
M5060614C	14C	3.27	620	870	4,240	3,770	24,710	342
M5060615B	15B	2.78	520	790	1,120	-	20,980	234
M5060615C	15C	2.58	490	730	1,040	-	19,510	218
M5060616B	16B	4.07	770	1,230	47,370	3,770	30,720	839
M5060616C	16C	2.09	400	560	4,140	-	15,820	209
M5060617C	17C	3.43	650	970	1,390	7,540	25,930	365
M5060618C	18C	3.64	690	1,030	1,540	3,770	27,500	345

M5060619C	19C	2.90	550	820	1,170	-	21,870	244
M5060620C	20C	3.99	750	1,130	1,610	3,770	30,100	374
M5060621C	21C	4.65	880	1,320	1,880	-	35,140	392
M5060622C	22C	4.04	760	1,160	14,700	7,540	30,470	546
M5060623C	23C	2.63	500	740	1,060	3,770	19,860	259
M5060624C	24C	3.77	710	1,050	1,870	-	18,090	217
M5060625C	25C	1.81	340	510	730	7,540	8,670	178
M5060626C	26C	4.74	890	1,350	9,330	3,770	22,750	381
M5060627C	27C	3.12	590	910	19,670	-	15,000	362
M5060628C	28C	6.60	1,250	1,870	2,670	7,540	31,700	450
M5060629C	29C	8.38	1,580	2,390	24,740	3,770	40,220	727
M5060630C	30C	2.16	410	520	2,610	-	10,370	139
M5060601D	01D	2.91	550	820	1,180	-	13,970	165
M5060602D	02D	0.43	80	120	180	-	2,080	25
M5060603D	03D	3.90	730	1,100	1,570	3,770	18,700	259

M5060604D	04D	0.35	70	100	140	-	1,670	20
M5060605D	05D	1.29	240	360	520	-	6,170	73
M5060606D	06D	2.86	540	810	3,810	-	13,720	189
M5060607D	07D	0.80	150	230	320	-	3,830	45
M5060608D	08D	0.59	110	170	240	-	2,850	34
M5060609D	09D	2.24	420	650	15,860	-	10,730	277
M5060610D	10D	4.02	760	1,140	1,620	-	19,290	228
M5060611D	11D	2.48	470	700	1,000	-	11,920	141
M5060612D	12D	0.62	120	180	250	-	3,000	35
M5060613D	13D	2.11	400	580	1,100	3,770	10,120	160
M5060614D	14D	1.01	190	280	410	-	4,830	57
M5060615D	15D	0.70	130	160	1,780	-	3,360	54
M5060616D	16D	0.39	70	110	160	-	1,890	22
M5060617D	17D	1.27	240	360	510	-	6,100	72
M5060618D	18D	1.18	220	340	480	-	5,690	67

M5060619D	19D	1.53	290	460	17,780	-	7,330	259
M5060620D	20D	2	380	560	810	-	9,590	113
M5060621D	21D	0.62	120	180	250	-	2,980	35
M5060622D	22D	1.67	310	470	670	-	8,000	95
M5060623D	23D	1.04	200	290	420	-	5,000	59
M5060624D	24D	0.26	50	70	110	-	1,260	15
M5060625D	25D	1.56	290	440	630	-	7,480	88
M5060626D	26D	1.94	370	550	780	-	9,290	110
M5060627D	27D	1.48	280	410	740	-	7,080	85
M5060628D	28D	0.13	20	40	1,530	-	630	22
M5060629D	29D	0.14	30	40	60	-	680	8
M5060630D	30D	0.61	110	170	240	3,770	2,910	72
M5060631D	31D	0.98	180	280	390	-	4,680	55
M5060632D	32D	0.62	120	180	2,280	-	2,980	56
M5060633D	33D	0.3	60	80	120	-	1,420	17

M5060634D	34D	0.42	80	130	4,930	-	2,030	72
M5060635D	35D	0.32	60	90	130	-	1,520	18
M5060636D	36D	0.51	100	140	210	-	2,450	29
M5060637D	37D	4	750	1,200	46,420	11,310	19,190	789
M5060638D	38D	1.43	270	430	16,610	3,770	6,850	279
M5060639D	39D	2.43	460	700	9,040	7,540	11,670	294
M5060640D	40D	1.64	310	480	7,220	3,770	7,880	197
M5060641D	41D	0.94	180	270	4,860	-	4,540	98
M5060642D	42D	0.33	60	90	130	-	1,580	19
M5060643D	43D	0.42	80	120	2,040	-	2,030	43
M5060644D	44D	0.24	40	70	100	-	1,140	14
M5060645D	45D	1.02	190	290	410	3,770	4,890	96
M5060646D	46D	0.16	30	40	60	-	750	9
M5060647D	47D	0.22	40	60	90	-	1,070	13
M5060648D	48D	1.51	280	280	3,330	-	7,240	111

M5060649D	49D	0.55	100	160	220	-	2,640	31
M5060650D	50D	0.81	150	230	330	-	3,900	46
M5060651D	51D	1.64	310	470	660	-	7,890	93
M5060652D	52D	1.59	300	450	640	-	7,640	90
M5060653D	53D	0.78	150	150	1,710	-	3,730	57
M5060654D	54D	1.06	200	300	430	-	5,070	60
M5060655D	55D	0.77	150	210	400	-	3,700	45
M5060656D	56D	0.13	20	40	50	-	630	7
M5060657D	57D	0.38	70	110	150	-	1,810	21
M5060658D	58D	0.18	30	50	70	-	860	10
M5060659D	59D	0.2	40	60	80	-	940	11
M5060660D	60D	0.33	60	90	140	-	1,600	19
M5060661D	61D	0.58	110	160	230	-	2,770	33
M5060662D	62D	1.2	230	340	490	-	5,760	68
M5060663D	63D	0.83	160	240	4,920	-	3,990	93

M5060664D	64D	3.32	630	940	1,340	-	15,930	188
M5060665D	65D	0.34	60	90	140	-	1,610	19
M5060666D	66D	1.96	370	550	790	-	9,390	111
M5060667D	67D	1.73	330	490	700	-	8,310	98
M5060668D	68D	0.37	70	110	150	-	1,780	21
M5060669D	69D	1.6	300	450	650	-	7,680	91
M5060670D	70D	0.73	140	140	1,610	-	3,500	54
M5060671D	71D	2.58	490	740	4,120	-	12,400	177
M5060672D	72D	1.42	270	400	570	-	6,820	81
M5060673D	73D	0.96	180	270	390	-	4,620	55
M5060674D	74D	1.27	240	360	510	-	6,090	72
M5060675D	75D	1.89	360	540	760	-	9,090	107
M5060676D	76D	1.38	260	390	560	3,770	6,610	116
M5060677D	77D	1.91	360	540	770	-	9,150	108
M5060678D	78D	0.67	130	190	270	-	3,240	38

M5060679D	79D	0.58	110	160	230	-	2,790	33
M5060680D	80D	0.52	100	150	210	-	2,510	30
M5060681D	81D	0.64	120	180	260	-	3,060	36
M5060682D	82D	0.44	80	120	180	-	2,090	25

Tentative Structural Quantity Estimates

Municipality Road Code	Road Code	Masonry Walls (m3)	Gabion Walls (m3)	Drainage (m3)	Total Road Length (Km)	Average Width (Existing in m)
M5060601A	601A	900.00	4,300.00	13,700.00	17.15	7.70
M5060601B	601B	500.00	2,700.00	4,300.00	5.36	8.00
M5060601C	601C	100.00	600.00	1,900.00	2.35	5.70
M5060602A	602A	400.00	1,900.00	6,100.00	7.58	6.00
M5060602B	602B	1,700.00	8,500.00	13,500.00	16.93	5.80
M5060602C	602C	200.00	1,100.00	1,700.00	2.14	6.00
M5060603A	603A	1,200.00	6,200.00	9,900.00	12.38	6.00
M5060603B	603B	500.00	2,500.00	8,100.00	10.16	6.00
M5060603C	603C	200.00	800.00	2,500.00	3.19	6.20
M5060604A	604A	200.00	1,200.00	4,000.00	4.98	5.00
M5060604B	604B	600.00	3,000.00	9,500.00	11.93	5.20
M5060604C	604C	200.00	1,200.00	1,900.00	2.36	6.00
M5060605A	605A	900.00	4,700.00	7,400.00	9.31	5.20
M5060605B	605B	300.00	1,600.00	5,300.00	6.59	2.40
M5060605C	605C	100.00	600.00	1,800.00	2.23	6.00
M5060606A	606A	500.00	2,300.00	7,400.00	9.31	7.50
M5060606B	606B	600.00	3,000.00	4,900.00	6.06	3.00
M5060606C	606C	100.00	700.00	2,300.00	2.84	3.00
M5060607A	607A	400.00	1,800.00	5,900.00	7.34	8.00
M5060607B	607B	800.00	3,800.00	6,000.00	7.53	4.10
M5060607C	607C	200.00	1,000.00	3,300.00	4.18	3.00
M5060608B	608B	500.00	2,700.00	8,500.00	10.68	5.00
M5060608C	608C	200.00	900.00	2,700.00	3.43	5.30
M5060609B	609B	500.00	2,400.00	7,700.00	9.66	2.90
M5060609C	609C	100.00	300.00	1,000.00	1.19	3.20

M5060610B	610B	200.00	1,200.00	3,800.00	4.69	0.90
M5060610C	610C	200.00	800.00	2,500.00	3.08	7.50
M5060611B	611B	300.00	1,300.00	4,200.00	5.30	8.00
M5060611C	611C	100.00	400.00	1,400.00	1.76	3.50
M5060612B	612B	200.00	1,200.00	3,900.00	4.85	4.50
M5060612C	612C	200.00	800.00	2,700.00	3.35	3.00
M5060613B	613B	100.00	600.00	1,800.00	2.28	4.60
M5060613C	613C	200.00	900.00	3,000.00	3.70	4.00
M5060614B	614B	200.00	1,100.00	3,500.00	4.43	2.40
M5060614C	614C	200.00	800.00	2,600.00	3.27	3.30
M5060615B	615B	100.00	700.00	2,200.00	2.78	6.00
M5060615C	615C	100.00	600.00	2,100.00	2.58	5.00
M5060616B	616B	200.00	1,000.00	3,300.00	4.07	4.00
M5060616C	616C	100.00	500.00	1,700.00	2.09	5.00
M5060617C	617C	200.00	900.00	2,700.00	3.43	4.00
M5060618C	618C	200.00	900.00	2,900.00	3.64	5.00
M5060619C	619C	100.00	700.00	2,300.00	2.90	2.00
M5060620C	620C	200.00	1,000.00	3,200.00	3.99	3.00
M5060621C	621C	200.00	1,200.00	3,700.00	4.65	4.00
M5060622C	622C	200.00	1,000.00	3,200.00	4.04	3.50
M5060623C	623C	100.00	700.00	2,100.00	2.63	3.20
M5060624C	624C	-	-	3,000.00	3.77	4.00
M5060625C	625C	-	-	1,400.00	1.81	4.00
M5060626C	626C	-	-	3,800.00	4.74	4.00
M5060627C	627C	-	-	2,500.00	3.12	3.00
M5060628C	628C	-	-	5,300.00	6.60	6.00
M5060629C	629C	-	-	6,700.00	8.38	6.00
M5060630C	630C	-	-	1,700.00	2.16	3.90

M5060601D	601D	-	-	2,300.00	2.91	2.80
M5060602D	602D	-	-	300.00	0.43	3.00
M5060603D	603D	-	-	3,100.00	3.90	3.00
M5060604D	604D	-	-	300.00	0.35	6.00
M5060605D	605D	-	-	1,000.00	1.29	2.00
M5060606D	606D	-	-	2,300.00	2.86	4.20
M5060607D	607D	-	-	600.00	0.80	4.00
M5060608D	608D	-	-	500.00	0.59	1.00
M5060609D	609D	-	-	1,800.00	2.24	4.00
M5060610D	610D	-	-	3,200.00	4.02	4.00
M5060611D	611D	-	-	2,000.00	2.48	4.00
M5060612D	612D	-	-	500.00	0.62	-
M5060613D	613D	-	-	1,700.00	2.11	4.00
M5060614D	614D	-	-	800.00	1.01	4.00
M5060615D	615D	-	-	600.00	0.70	5.40
M5060616D	616D	-	-	300.00	0.39	3.00
M5060617D	617D	-	-	1,000.00	1.27	3.00
M5060618D	618D	-	-	900.00	1.18	3.00
M5060619D	619D	-	-	1,200.00	1.53	4.00
M5060620D	620D	-	-	1,600.00	2.00	3.10
M5060621D	621D	-	-	500.00	0.62	3.00
M5060622D	622D	-	-	1,300.00	1.67	3.00
M5060623D	623D	-	-	800.00	1.04	3.00
M5060624D	624D	-	-	200.00	0.26	3.00
M5060625D	625D	-	-	1,200.00	1.56	2.00
M5060626D	626D	-	-	1,500.00	1.94	2.00
M5060627D	627D	-	-	1,200.00	1.48	2.10
M5060628D	628D	-	-	100.00	0.13	3.50

M5060629D	629D	-	-	100.00	0.14	6.00
M5060630D	630D	-	-	500.00	0.61	8.00
M5060631D	631D	-	-	800.00	0.98	4.00
M5060632D	632D	-	-	500.00	0.62	3.00
M5060633D	633D	-	-	200.00	0.30	2.00
M5060634D	634D	-	-	300.00	0.42	3.50
M5060635D	635D	-	-	300.00	0.32	3.00
M5060636D	636D	-	-	400.00	0.51	3.00
M5060637D	637D	-	-	3,200.00	4.00	6.90
M5060638D	638D	-	-	1,100.00	1.43	5.00
M5060639D	639D	-	-	1,900.00	2.43	3.10
M5060640D	640D	-	-	1,300.00	1.64	3.10
M5060641D	641D	-	-	800.00	0.94	3.40
M5060642D	642D	-	-	300.00	0.33	2.50
M5060643D	643D	-	-	300.00	0.42	3.20
M5060644D	644D	-	-	200.00	0.24	3.00
M5060645D	645D	-	-	800.00	1.02	2.50
M5060646D	646D	-	-	100.00	0.16	3.00
M5060647D	647D	-	-	200.00	0.22	3.00
M5060648D	648D	-	-	1,200.00	1.51	6.00
M5060649D	649D	-	-	400.00	0.55	3.00
M5060650D	650D	-	-	600.00	0.81	3.00
M5060651D	651D	-	-	1,300.00	1.64	3.00
M5060652D	652D	-	-	1,300.00	1.59	3.50
M5060653D	653D	-	-	600.00	0.78	8.00
M5060654D	654D	-	-	800.00	1.06	3.00
M5060655D	655D	-	-	600.00	0.77	3.50
M5060656D	656D	-	-	100.00	0.13	3.00

M5060657D	657D	-	-	300.00	0.38	3.10
M5060658D	658D	-	-	100.00	0.18	3.00
M5060659D	659D	-	-	200.00	0.20	3.00
M5060660D	660D	-	-	300.00	0.33	3.00
M5060661D	661D	-	-	500.00	0.58	2.60
M5060662D	662D	-	-	1,000.00	1.20	3.00
M5060663D	663D	-	-	700.00	0.83	3.00
M5060664D	664D	-	-	2,700.00	3.32	3.00
M5060665D	665D	-	-	300.00	0.34	3.00
M5060666D	666D	-	-	1,600.00	1.96	3.00
M5060667D	667D	-	-	1,400.00	1.73	1.50
M5060668D	668D	-	-	300.00	0.37	2.00
M5060669D	669D	-	-	1,300.00	1.60	3.50
M5060670D	670D	-	-	600.00	0.73	3.00
M5060671D	671D	-	-	2,100.00	2.58	2.90
M5060672D	672D	-	-	1,100.00	1.42	3.00
M5060673D	673D	-	-	800.00	0.96	2.50
M5060674D	674D	-	-	1,000.00	1.27	3.00
M5060675D	675D	-	-	1,500.00	1.89	2.70
M5060676D	676D	-	-	1,100.00	1.38	4.00
M5060677D	677D	-	-	1,500.00	1.91	2.50
M5060678D	678D	-	-	500.00	0.67	4.00
M5060679D	679D	-	-	500.00	0.58	3.00
M5060680D	680D	-	-	400.00	0.52	4.00
M5060681D	681D	-	-	500.00	0.64	2.50
M5060682D	682D	-	-	300.00	0.44	6.00

CHAPTER 7: CONCLUSION AND WAY FORWARD

The restructuring of the country has transformed the planning and implementation of development activities, empowering local levels with greater authority and budget. This shift necessitates that newly formed local levels, like Ribdikot Rural Municipality, provide maximum input for implementing prepared plans and supporting infrastructure development. Our study included extensive surveys for data collection and interactions with locals and various authorities. This process identified all the roads in the municipality, assessed their current status, and determined necessary interventions. We have prepared detailed maps, including the Municipality Infrastructure Map (MIM) and the Municipal Transport Planning Project (MTPP) maps, along with comprehensive implementation strategies and significant plans.

The inventory revealed that the majority of roads are narrow and require upgrading and maintenance, aligning with the demands from the wards. Although road accessibility addresses most settlements, mobility remains low due to the lack of reliable and safe public transport services. Introducing proper city buses and public transport is essential to accelerate the development process. The study formulated a hierarchy of roads, crucial for the long-term rapid development of the municipality. This report details the necessary functions and characteristics of these roads. The high proportion of active road users has been addressed through the provision of pedestrian facilities on all roads, except access roads.

As suggested by the implementation strategy, the municipality needs to develop a proper framework and policies for the execution of perspective plans. Building the capacity of the municipality and local organizations and committees is essential, along with following proper stages of road development. Strengthening the institutional capacity of the municipality with technical experts, such as urban planners and GIS specialists, is crucial for effectively understanding and implementing the prepared plans. To ensure the sustainability of the transport sector, a more rigorous study to prepare local-level traffic management plans is necessary. Furthermore, coordination among stakeholders for various development activities needs to be strengthened to ensure the effective implementation of these plans.

The institutional capacity of the Municipality needs to be strengthened with technical experts such as urban planar, GIS experts and others to effectively understand and implement the plans

prepared. To make the transport sector sustainable, a more rigorous study that prepares plans at local level for the management of traffic at local level should be done. Further, the coordination among the stakeholders for different kind of development activities need to be strengthened to ensure effective of such plans prepared.

ANNEX