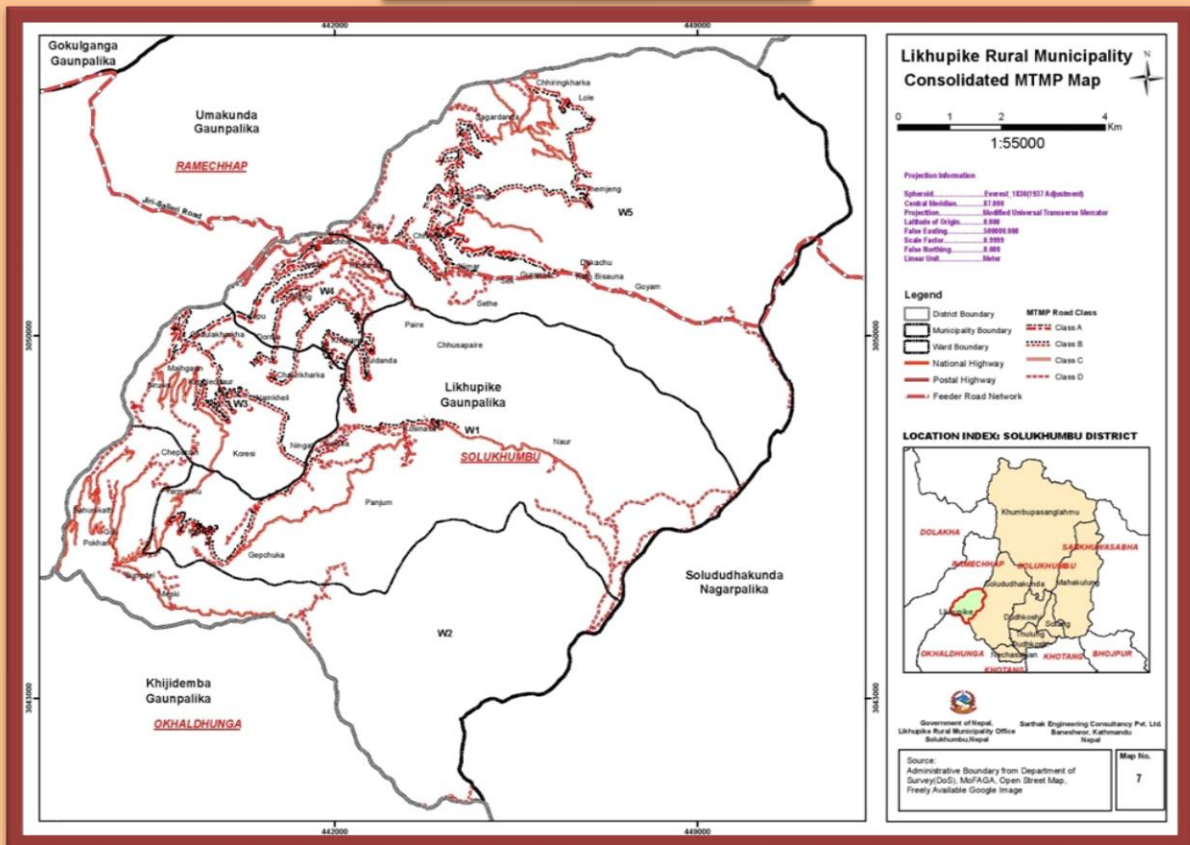




Likhupike Rural Municipality
Office of the Rural Municipal Executive
Chaulakharka, Solukhumbu
Koshi Province, Nepal

Preparation of Rural Municipality
Transport Master Plan (RMTMP)

FINAL REPORT



SUBMITTED BY:

Sarthak Engineering Consultancy Pvt.Ltd.
Baneshwor, Kathmandu

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मेरो भनाई

मानव सभ्यता विकासको सुरुवात सँगै मानविय सुविधाहरूको विकासलाई प्राथमिकता दिएको पाइन्छ। सायद यस अर्थमा मानविय सुविधा र सुखको विकास नै मानव सभ्यता विकासको एक अभिन्न अंग हो। आधारभूत भौतिक विकासका पूर्वाधारहरूद्वारा प्राप्त हुने मानविय सुविधाहरू मध्ये सडक यातायातको विकास समग्र विकासका आयामहरू मध्ये एक अपरिहार्य आयाम हो भन्ने कुरा निर्विवाद छ। यसर्थ यस गाउँपालिकाले विकासका योजना तर्जुमा गर्ने सन्दर्भमा सडक यातायात गुरुयोजना निर्माणलाई समग्र विकासका योजनाहरू मध्ये प्राथमिकतामा राखी यो गुरुयोजना तयार पारिएको हो।

नेपाल जस्तो भौगोलिक विषमता भएको देशमा यातायातका वैकल्पिक माध्यमहरू जस्तै जल परिवहन, रोपवे वा हवाई यातायातका सम्भावनहरू न्यून तथा बढी खर्चिला भएका कारण सडक यातायातलाई प्राथमिकतामा राख्नुपर्ने हुन्छ। यद्यपी, भौगोलिक संरचना र बजेटका कारण सडक यातायातको पर्याप्त विकास गर्ने कार्य समेत कठिन र खर्चिलो नै छ। यस अवस्थामा सडक यातायातको योजनाबद्ध विकास नगरी अगाडि बढ्दा त्यो भन्ने खर्चिलो, अव्यवहारिक र असंगठित हुन जाने भएकोले यसलाई योजनाबद्ध र दिगो तरिकाले अगाडि बढाई कालान्तरमा समग्र गाउँपालिकाको योजनाबद्ध विकासमा समेत सहयोग होस् भन्ने हेतुले यो सडक यातायात गुरुयोजना निर्माण गरिएको छ।

यो गुरुयोजना निर्माणका क्रममा गाउँपालिकालाई सहयोग गर्नुहुने उपाध्यक्षज्यू, प्रमुख प्रशासकिय अधिकृत, सम्पूर्ण वडा अध्यक्षज्यूहरू, समग्र गाउँ कार्यपालिकाका सदस्यहरू, वडा सचिवहरू तथा सम्पूर्ण कर्मचारीहरू, प्राविधिकहरू, सम्पूर्ण सरोकारवालाहरू र परामर्श सेवा प्रदान गरी सडक गुरुयोजना निर्माण कार्य सम्पन्न गर्ने परामर्शदाता सार्थक इन्जिनियरिङ्ग कन्सल्टेन्सी प्रा.लि., बानेश्वर, काठमाडौंलाई हार्दिक धन्यवाद ज्ञापन गर्न चाहन्छु।

मिना कार्की वस्नेत

अध्यक्ष

भनाई

आधारभूत तथा दैनिक मानविय कृयाकलाप संचालनमा आवत-जावतको अहम् भूमिका हुन्छ । आवत-जावतमा सुगमता र सहजता वृद्धि हुँदा समुदाय बीचको सम्पर्क र समन्वयमा अभिवृद्धि हुन्छ । यसले प्रत्यक्ष रुपमा आर्थिक तथा सामाजिक कारोबार वृद्धि गर्न मद्दत पुऱ्याउँछ । तसर्थ आवत-जावतलाई सुगम र सहज बनाउन वैज्ञानिक सडक यातायात योजना निर्माण गर्नु अनिवार्य हुन्छ । अन्यथा अवैज्ञानिक तवरले विकसित भएको सडक सञ्जालले सहजताको विपरित जटिलता थप्ने गर्दछ ।

बृहद् ऐतिहासिक तथा राजनैतिक परिवर्तन पश्चात संविधानले हामीलाई मौलिक हक तथा जनता केन्द्रित शासन व्यवस्थाको प्रत्याभूति गरेको सन्दर्भमा, यस गाउँपालिका एक स्वायत्त स्थानीय सरकार समेत भएकोले, गाउँपालिकाको वस्तुगत अवस्थालाई मध्यनजर गरी यहाँका प्राथमिकतालाई निर्धारण गर्ने कार्य स्वयं गाउँपालिकाले नै गर्नुपर्ने हुँदा सम्पूर्ण विकासको आधारभूत पूर्वाधारको रुपमा रहने सडक यातायातको दिगो विकास नै समग्र विकासको पूर्व सर्त भएकोले यस गाउँपालिकाले सडक यातायात गुरुयोजना निर्माणलाई प्राथमिकता दिएको हो । यो गुरुयोजना अन्य विकास निर्माणको समेत कोशेढुङ्गा सावित हुनेछ भन्ने मैले विश्वास लिएकी छु ।

अन्तमा यस गुरुयोजना निर्माणमा सहयोग पुऱ्याउनु हुने अध्यक्षज्यू, प्रमुख प्रशासकिय अधिकृतज्यू, सम्पूर्ण वडा अध्यक्षज्यूहरु, सचिव तथा सम्पूर्ण कर्मचारीहरु, प्राविधिकहरु, गाउँपालिकावासीहरु तथा परोक्षरुपमा सहयोग पुऱ्याउने सम्पूर्ण महानुभावहरुमा म धन्यवाद दिन चाहन्छु । साथै प्राविधिक पक्षको जिम्मेवारी लिई यो योजना तयार पार्ने परामर्शदाता सार्थक इन्जिनियरिङ्ग कन्सल्टेन्सी प्रा.लि.लाई समेत धन्यवाद दिन चाहन्छु ।

डवाड ल्हाम्पा शेर्पा

उपाध्यक्ष

मेरो भन्नु

करिब सात दशक लामो राजनैतिक संक्रमण पार गर्दै नेपाल राजनैतिक तथा सामाजिक हिसाबले एक नयाँ युगमा प्रवेश गरेको छ। संघिय लोकतान्त्रिक गणतन्त्रात्मक शासन व्यवस्थाको पूर्ण कार्यान्वयनको यस ऐतिहासिक घडीमा आइपुग्दा स्थानिय सरकारहरूले संविधानले प्रदान गरेका अधिकारहरूको उपयोग गरिरहेका छन्। यसै सन्दर्भमा नेपालको संविधानको अनुसूची ८ र स्थानिय सरकार सञ्चालन ऐन २०७४ को भाग ३ को उपदफा २ को (ट) ले स्थानिय सडक, ग्रामीण सडक तथा कृषि सडक निर्माण सम्बन्धी योजना तर्जुमा गर्ने कार्यको अधिकार स्थानिय सरकारलाई प्रदान गरेकोले विकासको प्राथमिक पूर्वाधारको रूपमा रहेको सडकको गुरुयोजना निर्माण कार्यले यस गाउँपालिकामा अन्य विकासका क्रियाकलापहरू अगाडि बढाउन मार्ग प्रसस्त गर्नेहुँदा यो सडक यातायात गुरुयोजना निर्माण गरिएको हो।

नेपालको कोशी प्रदेश अर्न्तगत सोलुखुम्बु जिल्लाका ८(आठ) स्थानीय तह मध्ये एक लिखु पिके गाउँपालिका हो। संघीय राज्य व्यवस्था लागु गरिएको राज्यको नविन व्यवस्था र नवगठित स्थानीय निकायहरूको र आगामी दिनहरूमा गाउँपालिकामा व्यवस्थित आवासको विकास, पर्यटन उद्योगको विकास र अन्य सबै प्रकारका विकासको प्रसस्त सम्भावनाहरू रहेकोले समयमै समग्र विकासको आधारशिलाको रूपमा रहेको सडकको विकास गर्नु अपरिहार्य छ। तसर्थ, गाउँपालिकाले यो सडक यातायात गुरुयोजना तयार गर्ने निर्णय गरेको हो। यो सडक यातायात गुरुयोजनाले आगामी दिनहरूमा गाउँपालिकाको व्यवस्थित र वैज्ञानिक विकासमा दिर्घकालिन रूपमा सहयोग पुऱ्याउने छ भन्ने विश्वास लिएको छ।

यस गुरुयोजना निर्माणमा प्रत्यक्ष वा परोक्ष रूपमा सहयोग पुऱ्याउनु हुने गाउँपालिका अध्यक्षज्यू, उपाध्यक्षज्यू, सम्पूर्ण वडाअध्यक्षज्यूहरू, गाउँपालिकाबासीहरू, सम्पूर्ण प्राविधिक तथा कर्मचारी साथीहरूप्रति म हार्दिक धन्यवाद दिन चाहन्छु। साथै, यो गुरुयोजना तयार पार्ने पराशर्मदाता सार्थक इन्जिनियरिङ्ग कन्सल्टेन्सी प्रा.लि., काठमाडौँलाई समेत धन्यवाद दिन चाहन्छु।

काजीमान राई

प्रमुख प्रशासकिय अधिकृत

DECLARATION LETTER

We hereby declare that we have conducted the study for Rural Municipality Transport Master Plan (RMTMP) of *Likhupike Rural Municipality* professionally using MoFALD guidelines and other acceptable standard methodologies. To the best of our knowledge, study findings are correct. Rural Municipality Transport Master Plan has been prepared as per standard Engineering tools, norms and practices. The visionary city development plan has been finalized on the basis of the discussion with stakeholders. We would like to assure you that the RMTMP is reliable, practicable and adequate to the overall development of Rural Municipality transport system. We shall be accountable for any misleading information in any part of this report in respective area of study.

**Managing director,
Sarhak Engineering Consultancy Pvt. Ltd.
Baneshower, Kathmandu**

ABBREVIATIONS

| | |
|---------|---|
| DDC | District Development Committee |
| DOLIDAR | Department of Local Infrastructure Development and Agricultural Roads |
| DTMP | District Transport Master Plan |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| Ha | Hectare |
| HH | Household |
| IDPM | Indicative Development Potential Map |
| Km. | Kilometer |
| MIM | Municipal Road Inventory Map |
| Min. | Minute |
| MoFALD | Ministry of Federal Affairs and Local Development |
| MRCC | Municipal Road Coordination Committee |
| RMTMP | Rural Municipal Transport Master Plan |
| MTPP | Municipal Transport Perspective Plan |
| NMT | Non- Motorized Transport |
| O-D | Origin and Destination |
| PCU | Passenger Car Unit |
| PT | Public Transport |
| ROW | Right of Way |
| Sq. km | Square Kilometer |
| SRN | Strategic Road Network |
| ToR | Terms of Reference |
| VDCs | Village Development Committees |

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CHAPTER ONE: INTRODUCTION

This section presents the context and concepts of RMTMP. It also briefly states the objectives along with the scopes and study area. The end of this section layout the contents of the later.

1.1 Background

Transport, which is simply defined as movement of people and goods covering some geographical space is one of the major components to improve people's access to services. It not only increases the accessibility to the remote places, but also increases the mobility scenario, and hence results in better linkages with market centers, tourist places, agricultural production pocket areas and other opportunities in the district as well as Rural Municipality.

Transport facilities help in developing access with the rural-urban linkages. Road accessibility can reduce isolation, stimulate crop production and marketing activities, encourage public services and help to transfer technology other opportunities in the district as well as Rural Municipality. Road building has been seen to bring about notable enthusiasm and visible changes in rural life. Road infrastructure is considered as “the infrastructure for infrastructure”. However, in the absence of notable criteria and rational guidelines, road construction is carried out in adverse manner resulting in haphazard use and wastage of limited resources.

Municipal Transport Master Plan (RMTMP) is primarily a reflection of existing transport infrastructure situation and future potential ones in consistent with the resources available in the Rural Municipality. It offers long term perspective for the planned development of the roads network in the Rural Municipality. The RMTMP preparation strongly advocates meaningful participation of all key stakeholders of municipal roads in the planning process, which makes RMTMP more acceptable and ensure ownership. A comprehensive Municipal Transport Master Plan is being developed in the Rural Municipality to support investments in transport development with appropriate guideline and criteria for rational and transparent decision making process. RMTMP becomes an authoritative document of the Rural Municipality as well as district to negotiate possible grant and loan assistance from donor agencies. Proper planning and sustainability are the key issues for development of municipal transport network.

1.2 Objectives

The prime objective of this study is the preparation of Rural Municipality Transport Master Plan (RMTMP). The planning approach is participatory and bottom-up from the settlement level. It includes a constructive plan to incorporate all present and tomorrow's transportation needs. The specific objectives of the RMTMP covered during the study with reference to ToR are mentioned below:

1. Preparation of the Rural Municipality Road Inventory Map (MIM) of all road networks

2. Identification of the major road networks linking the Rural Municipality with the surrounding areas.
3. Preparation of Indicative Development Potential Map (IDPM)
4. Finalization of visionary city development plan if Comprehensive Town Development Plan is not prepared.
5. Collection of demands for new/rehabilitation transport linkages from Municipalities/settlements based on city development plan.
6. Analysis of the present mobility and accessibility situation.
7. Identification and prioritization of the interventions based on mobility and accessibility situation.
8. Development of scoring criteria and its approval from Rural Municipality.
9. Preparation of Municipal Transport Perspective Plan for transport services and facilities.
10. Preparation of physical and financial implementation plan of prioritized roads for the RMTMP period.
11. Preparation of five years Rural Municipality Transport Master Plan.

1.3 Scope and Limitation of RMTMP

The scope of this work and service the consultant will provide for the project is given below:

a. Accessibility data Collection and Analysis.

The accessibility situation shall be evaluated from the settlement level and data shall be collected using a GPS. Various surveys may be carried out to gain such data including their travel patterns, questionnaire surveys and origin-destination survey.

b. Analyze Mobility status of the rural municipality

The consultant will also conduct mobility study, incorporated in the O-D survey. This is important especially because the road network in capital has provided access to majority of the population. The question then arises on how -efficiently, economically and safely the goods and passengers are transported, which is indicated by mobility.

c. Access the condition of public transportation

The consultant will collect data on different public transportation routes and their operation characteristics, which operate within the municipal area and to other adjoining area.

d. Access safety status and issues

The consultant shall also access the road safety status and issues. For this, roadside condition survey during road inventory survey and other accident data will be reviewed. Possible interventions to make the roads safer will be proposed and recommended.

e. Prepare the Indicative Rural Municipality Development Potential Map (IDPM)

The consultant shall prepare IDPM using topographical base maps and digitized GIS maps. In the IDPM, the consultant shall identify potential areas for development and prioritize through ranking. The consultant shall validate the IDPM from the MRCC and Rural municipality.

f. Prepare Rural Municipality Inventory Map (RMIM) of existing roads within Rural municipality.

The consultant will prepare the Rural Municipality Inventory Map linking to strategic road networks such as national highways, district core road network, main trails and bridges. This shall be done by walkover surveys using enumerators. The inventory map shall include the road names, total length and breadth of the roads, surface type, existing condition, Right of way, vehicular traffic and pedestrian traffic flow etc.

g. Collection of demands for New/Upgrading/Rehabilitation transport Linkages from Wards/Settlements

The consultant shall collect data regarding the construction, maintenance or rehabilitation of roads according to the existing condition and demand. The consultant will also seek to collect these data through ward meeting or community level discussion. The demand data shall be collected in priority order for each ward. The roadside condition of all the linkages will be noted during the road inventory survey.

h. Scoring criteria

The consultant shall develop scoring criteria to screen and prioritize all interventions potential interventions for proper allocation of limited budget. Scoring and prioritization criteria shall be checked with all linkages and interventions and approved by the rural municipality.

i. Road classification and Nomenclature

The consultant shall use metric system of nomenclature and apply the same classification throughout the data collection.

j. Preparation of perspective plan of interventions of services and facilities.

The data collected through accessibility survey, demand survey and inventory maps shall be used to prepare a perspective plan of interventions of services and facilities. All the identified interventions shall be screened and rated on the basis of approved criteria and forwarded to rural municipality council meetings. The final perspective plan shall be shown in GIS maps.

k. Prepare a realistic physical and Financial Implementation Plan of Prioritised Roads for the RMTMP period

The consultant shall collect information on the resources that can be spent on the construction or rehabilitation of transportation infrastructures by the rural municipality. The consultant may also carry out studies to project the resources to fund the transport infrastructures for the next five years. From the total projected resources, the consultant shall discuss with the rural municipality to find out the appropriate proportion to be spent on ongoing roads and new interventions proposed. The projected resources should be able to cope with the total number of roads and new interventions proposed.

l. Prepare Rural Municipal Transport Master Plan (RMTMP) of Rural municipality

The consultant shall prepare Rural Municipal Transport Master Plan (RMTMP) for Rural municipality with due consideration to the existing situation of: vehicular parking, travel routes, modes of transport, etc and propose for future rural urban growth. The consultant shall prepare a base scenario of the existing road and transport network and management based on the O-D survey and O-D matrix and prepare road inventory map and transport infrastructure network and management plan based on the travel demand forecast, population growth forecast, and growth rate of vehicular and transport infrastructure.

m. Prepare framework for medium term and long-term planning

The consultant shall also forecast the demand for medium term (10 years) and long term (20 years) and recommend a framework to guide future interventions and planning processes. The long-term plan shall consider the proposed East-West Railway and other major transport sector interventions in the long term.

1.5 Organization of report

Chapter 1 presents the concept and context of RMTMP and lists out the objectives, scope and limitations of the same.

Chapter 2 deals with the methodology adopted while data collection and data analysis process

Chapter 3 covers the existing situation, scenario and basic profile of the Rural Municipality, which includes the socioeconomic and household characteristics with road services and facilities within the locality. It also covers how these factors are contributing in the development.

Chapter 4 deals with Indicative Development Potential of the Rural Municipality.

Chapter 5 discusses about formulation of road hierarchy along with detail of various classes of roads.

Chapter 6 deals with Prioritization criteria and prioritized road network.

Chapter 7 is dedicated to the five year (short term) Municipal Transport Master Plan (RMTMP). It gives the comprehensive strategic framework, perspective plan of the municipal roads, budget expenditure, financial institution, capital investment plan and the staging implementation plan.

Chapter 8 summarizes the report and gives necessary recommendations.

CHAPTER TWO: METHODOLOGY

Municipal roads are supposed to provide both access and mobility to all possible and potential areas. RMTMP will prepare the plan of such roads to fulfill the stated objective. Better planning is incomplete without relevant quality data which can only be acquired by use of properly selected survey methods. This section gives the methodological framework adopted for data collection including survey methods conducted, sampling techniques, quality and quantity of data along with data processing, analysis and presentation methodology. Both primary and secondary data are collected based on participatory bottom-up approach.

2.1. General approach

The Consultant has gone through the objective and ToR for Consultancy Services for preparation of the Rural Municipality Transport Master Plan (RMTMP). The ToR was itself sufficient for the execution of the work.

Integrated Rural Accessibility Planning (IRAP) is an integrated approach to solving problems by combining transport as well as non-transport interventions. It is participatory and bottom-up approach. Active involvement of community people and local authorities in every step is essential. The consultant facilitated the community people and local authorities in their needs identification, project prioritization and visionary development planning process.

The accessibility is function of distance and traveling time, frequency of travel, transport infrastructure difficulty factor, physical facilities of Socially Oriented and Responsibility (SOR), and management of SOR provision and viability of service provision. The degree of accessibility problem was assessed in terms of accessibility index of the settlements to concerned SOR sector. Accessibility Indicator is measurement of accessibility.

The required interventions shall identified for improving accessibility of every settlements based on easing and reducing travel time, improving physical facilities for SOR and improving management of SOR provision in an integrated fashion.

2.2. Methodology

The methodology comprises with the Integrated Rural Accessibility Planning (IRAP) tools for the accessibility planning and DoLIDAR's Approach manual for the roads for the preparation of the RMTMP with some modification as per Rural Municipality situation and based on the ToR provided by the Rural Municipality and as directed by the project in-charge of the client.

The Consultant's efforts were comprehensively streamlined to meet the objectives of the assignment by covering scope of services outlined in the prescribed Terms of Reference. The consultant has followed the following specific process to accomplish the assignment as specified in the objectives and scopes of work in the TOR.

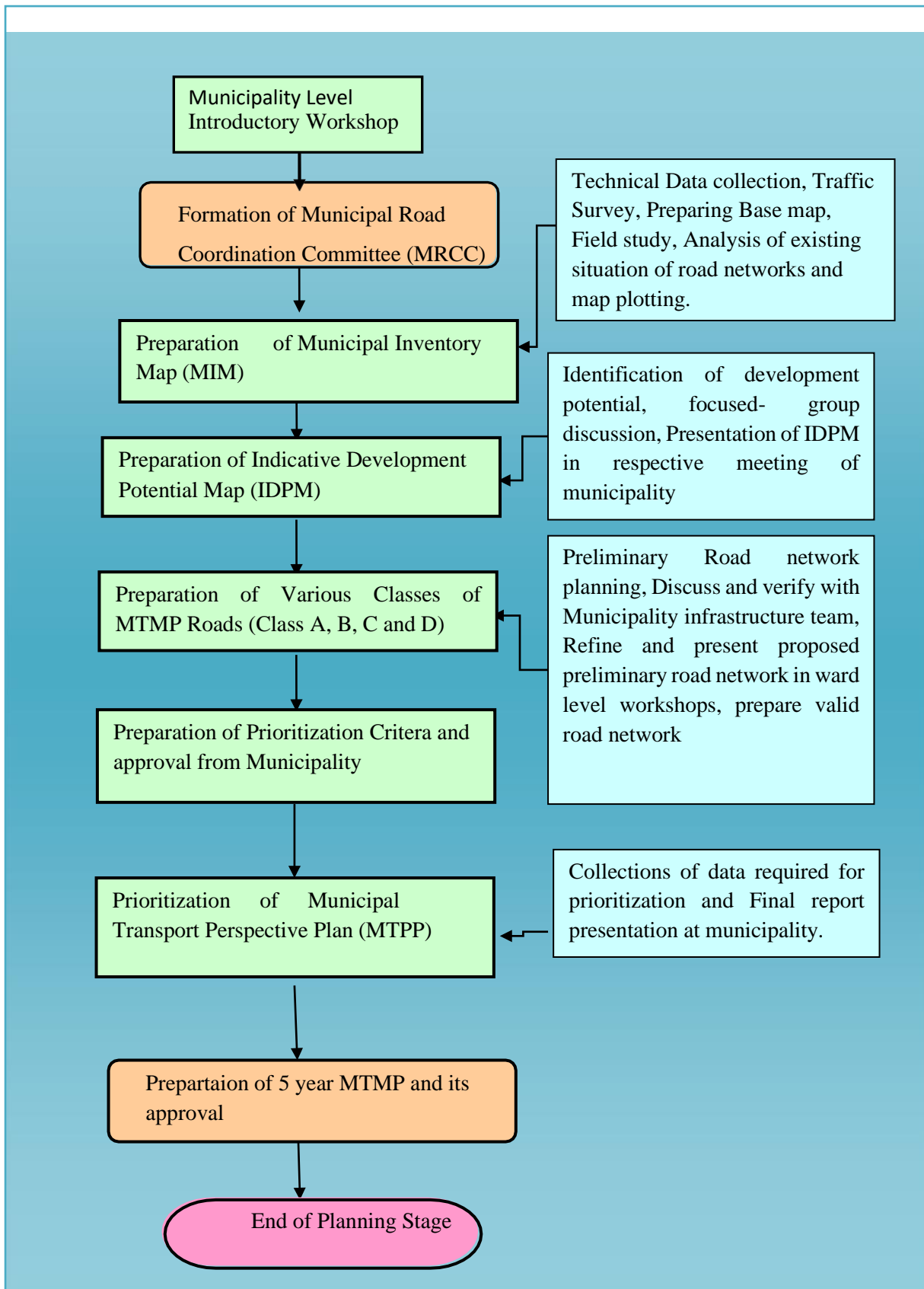


Figure 1.1 Methodological frameworks for planning RMTMP

2.3. Desk Study

After signing the contract, the consultant has arranged a meeting of the proposed team and orient towards the objectives and scope of the work along with the working and manning schedules so that all the personnel will work as a team. The consultant has proposed a study team consisting of Transport Planner as a Team Leader, Socio-economist, who is competent and established professionals in their field of work. The study team was mobilized for further study

Task 1: Data Collection

a) Collection and Review of Secondary Information

The information about demographic data of Rural Municipality, maps, service flow pattern, various maps showing service centers or the location of SOR facilities, transport infrastructure inventory, past plans and sectoral study reports, sectoral standards and policy targets were collected from the secondary sources like DoLIDAR, Rural Municipality, line agencies of Rural Municipality, central Bureau of Statistics, Kathmandu, Topographical Survey Branch, Local NGOs. The details are given below:

List of documents/information will be collected and reviewed

- Previous reports of RMTMP prepared by the Municipalities (if any)
- RMTMP of neighboring Rural Municipality (if available).
- Rural Municipality periodic plan prepared by the Rural Municipality
- Annual reports /publications of line agencies of Rural Municipality
- District/Rural Municipality profile of the Rural Municipality
- Traffic data of the Rural Municipality rural roads and strategic roads (if available)
- Annual plan, Programmed and Budgetary allocations of last 5 years
- Expenditure in infrastructure development including roads in last 5 years
- Report on settlement pattern and market centers of the Rural Municipality
- Rural road statistics of neighboring Municipalities and strategic road Networks
- Financial and technical data of on-going rural road projects in the Municipalities and schedule including bilateral and multilateral funded projects.
- Demographic Statistics and socio-economic feature of the Rural Municipality
- Other relevant reports

Collection of Maps

- Topo maps the 1:25000 scales, which will be used as base map.
- Rural Municipality administrative map of Rural Municipality
- Arial photographs
- Rural Municipality Trail Map
- Map of strategic road Networks of Nepal
- Other Thematic maps

The main agencies for sources of information are

- Rural Municipality

- Line agencies/office of the district about road, Rural Municipality Soil Conservation office, Forest, Agriculture Development, Livestock Service, Irrigation, Health, Education, Water Supply and sanitation, cottage industries, Rural Municipality Technical Office, Rural Municipality Chamber of Commerce and Industries office etc.
- National or Rural Municipality Research Organizations,
- Local and national NGO and INGO's working in development fields,
- District /Rural Municipality Chamber of Commerce and Industries office
- National Bureau of Statistics.
- Department of survey
- Other relevant office

The secondary information collected from above mentioned sources has been critically reviewed. The data were verified by and Cross checking of information of various sources and discussion with informants and local community people at unofficial and official meetings, workshops on the process of primary data collection.

The consultant has reviewed the available existing RMTMP and assesses the achievements during the last RMTMP period.

b) Primary Data collection

The scope of applying IRAP has been defined based on TOR. The relevant SOR sectors have been identified as per purpose of study. Primary information was taken from concerned community people, and schoolteachers about real accessibility situation of settlements in special format developed for this purpose.

c) Rural Municipality IRAP and RMTMP Orientation

One-day orientation program has been carried out in the Rural Municipality for the IRAP and RMTMP preparation. The participants were Rural Municipality body, ex-Rural Municipality body, line agencies, stakeholders, and representatives of national political parties and representatives from women, Dalit, local NGO. The field visit of enumerators has been arranged to:

Verify the secondary data in the field.

Collect data of access situation of every settlement in prescribed format

Task 2 Analysis of Data

The input data has been properly stored in the Excel sheets and used as per necessity and requirements. Microsoft Excel and GIS software were used to analyze and manage the data. The analysis rendered the available data into valuable information. Data analysis involved calculation of different attributes for different clusters and for the project area. It includes basis analysis of average values such as average time to nearest bus stop, access to nearest all-weather road, percentage of respondents using specific type of vehicle for daily commute, etc., forecasting the population and demand for transport infrastructures and furniture developing land use and transport models

Task 3 Formulation of Municipal Roads Coordination Committee

The consultants assisted the Rural Municipality in the formulation of the Rural Municipality Roads Coordination Committee (RMRCC). The committee is to provide support to the Rural Municipality in formulating, managing and monitoring Rural Municipality road, transport infrastructure policies, rules and regulations.

Task 4 Indicative Development Potential Map (IDPM) preparation

The development potential of the Rural Municipality in agriculture, horticulture, livestock, cottage and small industries, other potentiality of the Rural Municipality has been compiled and prepared on the base map 1:25000 scale.

a) Rural Municipality base map has been prepared showing:

- Administrative/political boundaries of Rural Municipality/Ward.
- Large settlement
- National strategic roads, Rural Municipality roads, rural roads, trails, bridges.
- Important historical, cultural, religious and preserved places
- Important water bodies, forest and other lands.

b) The Consultant has analyzed the potentiality of the Rural Municipality from secondary information collected from Rural Municipality line agencies. The development potential area has been defined as:

- Areas with extensive agriculture,
- Areas with extensive horticulture,
- Areas with extensive Livestock farming,
- Areas with extensive fisheries,
- Areas with extensive high value cash crops,
- Areas with extensive business markets,
- Potential Areas with tourism development,
- Potential Areas with development of large industries like hydropower, mining develop,
- Potential service centre
- And other potential development areas

c) Plotting of the development potential areas on the Rural Municipality base map has been done and the finalized map was prepared on GIS.

Task 5 Preparation of MIM

The consultant has plot the trail, bridge and road network of the Rural Municipality in 1:25000 and GIS maps from Rural Municipality level secondary sources. The consultant then carry out reconnaissance survey in the trails, bridges and roads with the help of checklist and update the map. The consultant has also prepared indicative cost estimates of improvements (Routine maintenance, recurrent maintenance & upgrading) and new construction of representative trails, bridges and road in the Rural Municipality. The consultant has prepared a support document of MIM and validates the MIM and the

document in RMRCC.MIM has been prepared with reference to Annex (Reference to Annex 3). The economic data was collect by conducting PRA.

The consultant has prepared list of all existing transport linkage under the category of routing maintenance, recurrent maintenance, periodic maintenance and upgrading. These lists have been prepared separately for various classes of roads. The consultant then prepared indicative cost estimate for improvement.

On the basis of linkage inventory and condition of the linkage, easy linkage has been subdivided into maximum four types of section i.e.

- Section requiring routine maintenance
- Section requiring periodic maintenance
- Section requiring rehabilitation
- Unordered section (new construction)

All roads have been plotted under separate legends category by intervention type in MIM. List of roads having graveled road streetcars has been prepared separately. Information regarding inter Rural Municipality road /trails also be included and used drawing planning process.

Task 6 Perspective Plan

The required of interventions of services and facilities has been identified from the accessibility analysis and compilation of ward level workshops. During the final Rural Municipality level workshop, the Rural Municipality standard of time and quality accessibility for every service and facilities has been decided. The required intervention of every services and facilities has been identified and finalized on workshop on the basis of accessibility indicator. The Prioritized sector of services and prioritization of wards for every sector was done at Rural Municipality level based on AI.

In transportation sector, list of roads, bridges and required interventions for respective roads and bridges has been identified to improve accessibility to goods and services within the Rural Municipality. The perspective plan of Rural Municipality road has been prepared for 20-25 years. All the identified interventions screened and graded on the basis of criteria 'B' of the approach manual. The interventions of services and facilities for the improvement of the access situation was discussed first with the Rural Municipality technical team and the MRCC, and only upon their recommendation it was forwarded to Rural Municipality Council meetings, hence the final perspective plan of Rural Municipality roads has been developed. The perspective plan has been shown in GIS maps also.

Task 7 RMTMP Preparation

Considering the Perspective Plan, the prioritization of the Perspective Plan has been done according to the DoLIDAR Approach Manual. Subsequently, the updated five year RMTMP of the Rural Municipality was prepared by selecting interventions (maintenance,

upgrading and new construction of main trails, trail bridges and roads) that have top priority in the Perspective Plan and that could be implemented in the next five years period, based on cost estimates of maintenance, upgrading, rehabilitation and new construction of main trails, trail bridges and roads and available financial resources.

2.4 Process and Activities in detail:

The Consultant has listed out all transport linkages given in the Perspective Plan, under the following categories;

- a. New construction
 - b. Upgrading
 - c. Rehabilitation
 - d. Recurrent maintenance
 - e. Periodic maintenance
- These lists have been prepared separately for various classes (Rural Municipality Road, Village Road, Main Trail, and Village Trail).
 - On the basis of Criteria (for prioritization), the consultant has ranked all the above projects
 - The financial resources of Rural Municipality on road sector has been analyzed first
 - The Consultant has prepared next Five Year's Projected Financial Plan by accounting all possible financial resources of Rural Municipality and concerned wards and VDCs.
 - The consultant has prepared Five Year Financial Plan of the Rural Municipality based on likely availability of financial resources in next five year. (All consolidated financial resource has been projected based on the past 3- 5 years data.
 - The Consultant will determine the tentative lengths that could be under taken by each year, in each category and under each class. These lengths shall be documented and presented.
 - The Consultant has prepared all ranked lists of transport linkages to the Rural Municipality development Committee for the selection of year - wise priority lists which should be implemented in the first, second and fifth year.
 - All ranked lists of transport linkages; the Consultant has selected the year-wise priority lists to be included in the "Five Year Master Plan".
 - Based on the approved year-wise priority lists, the Consultant has prepared Five Year Municipal Road Master Plan.
 - Synchronizing of the Draft Perspective Plans with adjoining Rural Municipality was done
 - The Final Report of RMTMP was presented on Rural Municipality and MRCC in a workshop. Incorporating the suggestions and recommendations from the Rural Municipality and MRCC, the final report has been prepared. Subsequently, the Rural Municipality will present the final RMTMP report to the Rural Municipality council for formal approval

2.5 Organization of Workshop

Following workshop was organized

1) Rural Municipality IRAP and RMTMP Orientation

One day orientation program was carried out in the Rural Municipality for the IRAP and RMTMP preparation. The participants were Rural Municipality body, ex- Rural Municipality body, line agencies, stakeholders, representatives of national political parties and representatives from women, Dalit, local NGO.

2) IRAP Data collection training

One day orientation training for enumerators was organized for them about efficient data collection using IRAP tools at the consultant's office.

3) Ward/ VDC/cluster level workshop

The consultant has organized ward/ cluster level workshop in each ward in which ward secretaries, representatives of political parties, women, NGO's, disadvantaged peoples representations, davits, traders, industries were presented. The workshop primarily focused on following aspects.

- Access situation within the area
- Validation of accessibility data
- Identification of interventions of every services and facilities.
- Access situation within the area
- Assess the local prioritization

4) Final workshop at Rural Municipality level

The final validation workshop at Rural Municipality level will be organized at Rural Municipality. The workshop will primarily focus on following aspects:

- Verification and update of secondary information and data's
- Finalizing IDPM, MIM, Accessibility profiles.
- Standardize accessibility indicator.
- Finalization of intervention required and prioritized at Rural Municipality level.
- Identifying new viable transportation linkages and standard.
- Problem identification in the rural transport linkage and required intervention on this.
- Identifying required intervention (i.e. routine maintenance, periodic maintenance, rehabilitation and upgrading length) for each transportation linkages and bridges.

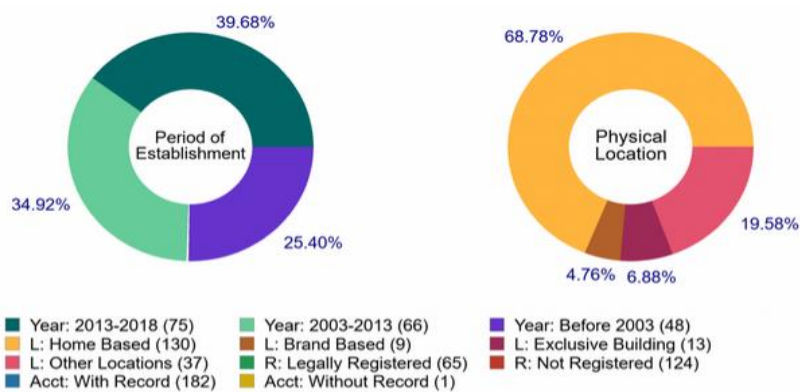
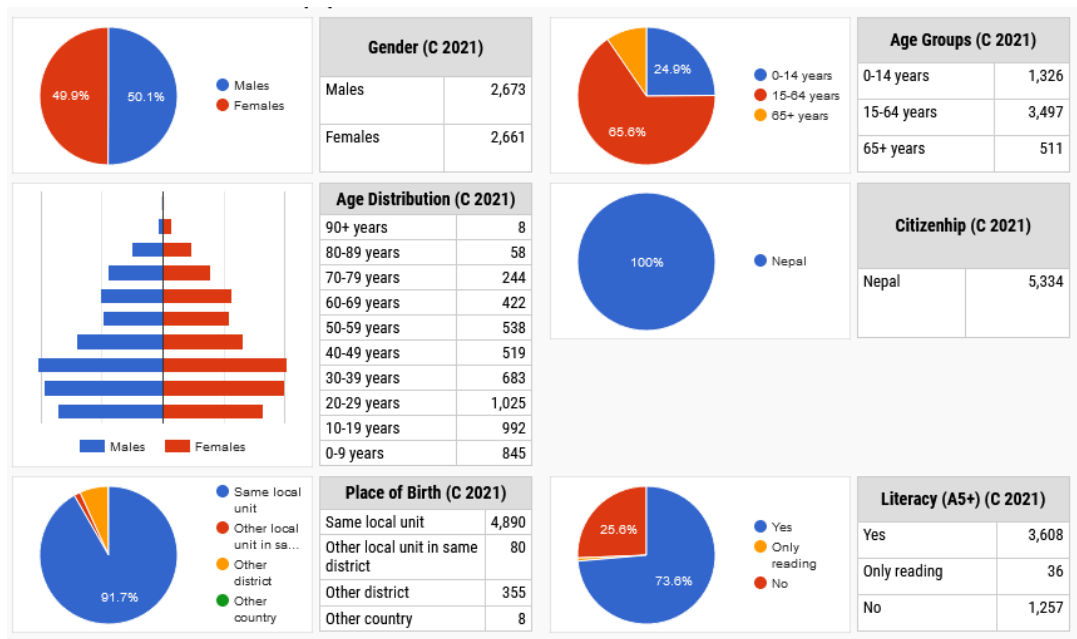
- Responsibility of ward and Rural Municipality regarding maintenance, rehabilitation and upgrading works.
- Financial recourse mobilization for the achievement of the set target.

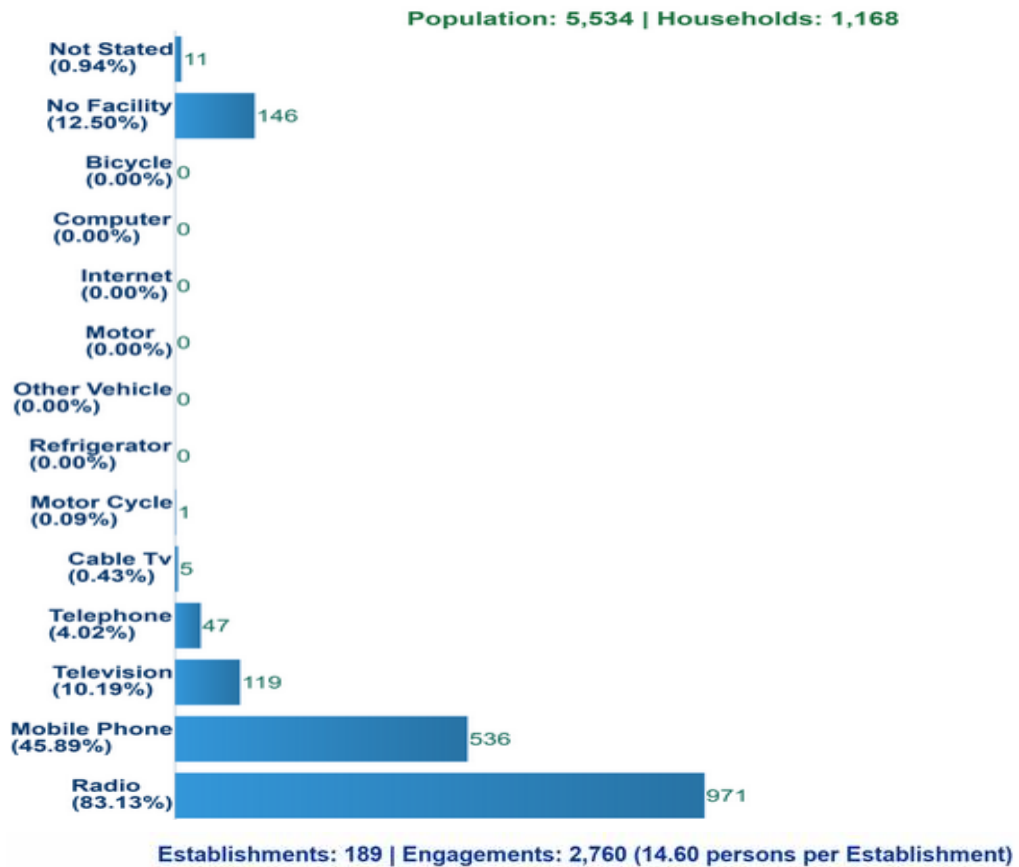
CHAPTER THREE: REVIEW OF EXISTING SOCIO-ECONOMIC & INFRASTRUCTURE SITUATION

The chapter deals with the present condition and scenario of the rural municipality based on various primary and secondary data sources. Socio-economic, trip, land use and transportation characteristics are basically dealt in this chapter along with analysing accessibility and mobility scenario within the rural municipality. The basic data source of the analysis is the collected primary data.

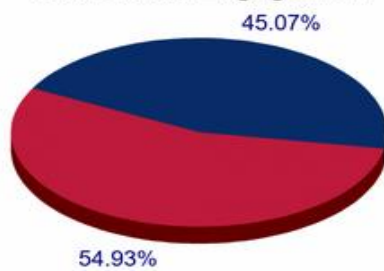
3.1 The population structure:

Figure 3.1: Population Structure of Likhupike Rural Municipality, CBS 2021

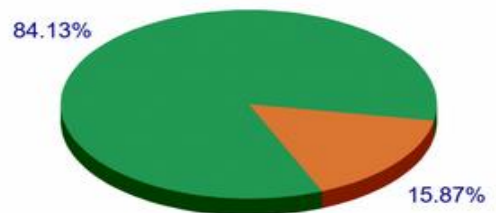




Genderwise Engagement

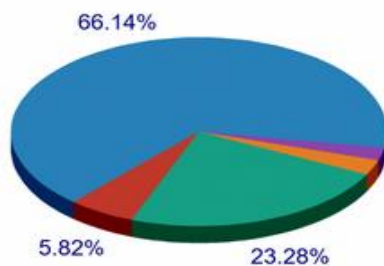


Engagement with Regd. Status

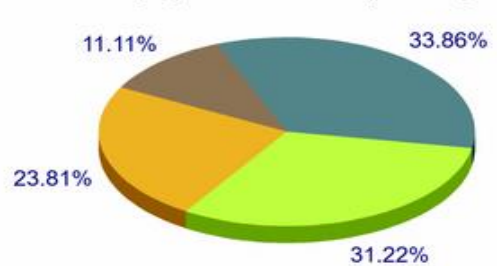


- Persons: 1-4 (125)
- Persons: 5-9 (11)
- Persons: 10-49 (44)
- Persons: 50-99 (5 | 2.65%)
- Persons: 100+ (4 | 2.12%)
- Gender: Male (1,244)
- Eng: Not Registered (438)
- Eng: Registered (2,322)
- Hours: 13+ (59)
- Hours: 10-12 (45)
- Hours: 7-9 (21)
- Hours: 1-6 (64)

of Persons/Establishment



Engagement Hours per Day



According to 2018 Economic Census, there are total 189 establishments in Likhu Pike Rural Municipality that are involved in various economic activities. In those establishments, total 2,760 persons are engaged for the economic activities, as a self-employed or an employee, with total male engagement of 1,244 and female engagement of 1,516 persons. In every business, there were an average of 14.60 people engaged with average males are 6.58 and females are 8.02. The ratios of male to female engagement in the establishments are 0.82, which means as many as 0.82 males are engagement in the economic activities per female.

Similarly, the engagements of males were 45.07 percent while the females are 54.93 percent.

3.2 Facilities

Out of 1,168 households in Likhu Pike Rural Municipality, 146 houses reported of having no any facility in their household while 1,011 households reported of using at least one facility. Households using at least one facility, such as radio, television, internet, etc. have been illustrated in the table below. Radio were used by the maximum households with total users of 971, while MobilePhone was the next mostly used facilities with total household users of 536.

3.3 Origin and Destination Study:

Trip, simply called journey is the process of going from one place to another with some purpose. Thus, trip is characterized by origin (starting point) and destination (ending point). To be more precise, trips are characterized by trip production and trip attraction. Home end is always trip production and the location which attract the produced trips for various causes (job, shopping, and entertainment) are attraction end of trips. Most of the trips are home based trips with different destination. Out of 92 respondent surveyed 55 respondents make trips for some purpose. Trip chaining, going at various destination points in the form of chain in a single day, was rarely found in the study area.

3.4 Transportation

a. Road inventory

For the collection of existing road infrastructure data, GPS survey was used and total length of road surveyed was 290.8 Km, out of which 17.85 Km is Stone soling and Gravelled, 272.95 Km road is earthen.

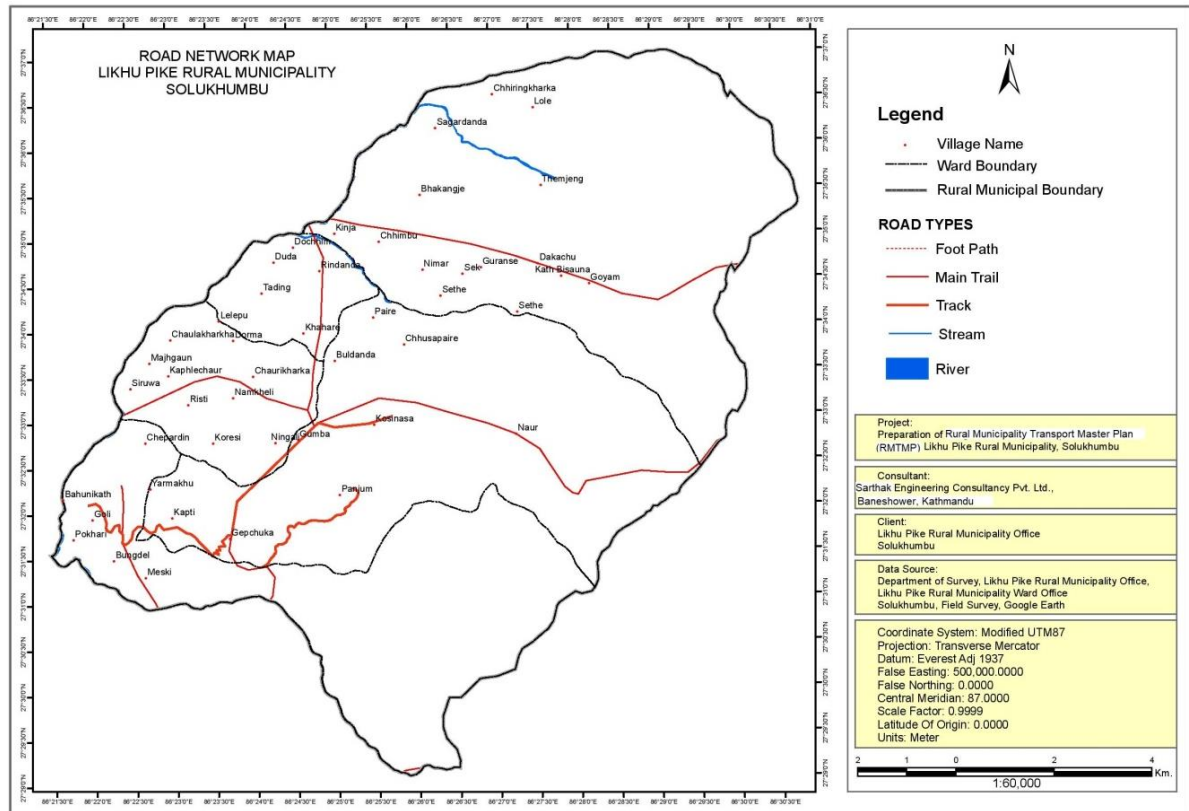


Figure 3.6 Road Inventory Map

Table 3.1: Existing Road condition based on Surface Type (in Km)

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Roads | Intervention type | Ward No. | Remarks |
|------|---|-------------------------|-----------------------|-----------------------------|-------------------|----------|---------|
| 1. | Swami Danda- Dallemane- Lamomane-Gumba ward No. 1 office- Kaapti-Ermakhu Road | 10 | 13 | Earthen/ Stone Soling | Upgrading | 1 | |
| 2. | Gepchuka-Ghurmise- Koshinasa Road | 3 | 7 | Earthen | Upgrading | 1 | |
| 3. | Lamomane-Gumba Road | 0.8 | 7 | Earthen | Upgrading | 1 | |
| 4. | Ramse-Lapduka Road | 1.5 | 7 | Earthen | Upgrading | 1 | |
| 5. | Kaapti Road | 1.5 | 7 | Earthen | Upgrading | 1 | |
| 6. | Kahare-Buldanda-Gumba Road | 7 | 7 | Earthen | Upgrading | 1 | |
| 7. | Himganga-Buddha Ma.Bi.- Maili- Madalu- Agriculture Road | 19 | 13/7 | Earthen/ Stone Soling | Upgrading | 2 | |
| 8. | Jolakhu-Bahunelath- Buddha Ma.Bi. Agriculture Road | 8 | 7 | Earthen/ Stone Soling (3km) | Upgrading | 2 | |
| 9. | Lichu-Dhanemod Road | 8 | 7 | Earthen/ Stone Soling (3km) | Upgrading | 2 | |

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Roads | Intervention type | Ward No. | Remarks |
|------|---|-------------------------|-----------------------|-----------------------------------|-------------------|----------|---------|
| 10. | Jolakhu-Cherbading Road | 3.5 | 7 | Earthen/ Stone Soling (1km) | Upgrading | 2 | |
| 11. | Chandithan-Saaasa Agriculture Road | 4 | 7 | Earthen/ Stone Soling (2km) | Upgrading | 2 | |
| 12. | Takarmo-Ermakhu Road | 3 | 7 | Earthen/ Stone Soling (1km) | Upgrading | 2 | |
| 13. | Ermakhu –Bhotebari Agriculture Road | 2.5 | 7 | Earthen/ Stone Soling (3km) | Upgrading | 2 | |
| 14. | Maili-Jilu Road (Track opening 2km) | 2 | 7 | Earthen | Upgrade/New open | 2 | |
| 15. | Bhedigoth- Damale Agriculture Road | 3 | 7 | Earthen/ Soling (100m) | Upgrading | 2 | |
| 16. | Chyandanda- Rakchhepu-Simalbote-Dhaukhani Road | 4 | 7 | Track open/ Earthen | Upgrading | 2 | |
| 17. | Jolakhu- Pokhari Road | 2 | 7 | Gavian (3m)/Soling | Upgrading | 2 | |
| 18. | Sotipul-Chaulakharka-Kavre Chaur-Gechuka-Gumba-Lamgane Road | 40 | 13 | Earthen | Upgrading | 1/3 | |
| 19. | Kachapu (Maili)- Gaudi-KavreChaur- Khaptel-Dunda-Kinja- Tribeni- Umatirtha Road | 35 | 9 | Earthen | Upgrading | 3 | |
| 20. | Likhukhola- Kaptel Ragnda-Bukudobhan Road | 4 | 7 | Earthen | Upgrading | 3 | |
| 21. | Jogidanda- Chamargaun-Buldanda (Ward no.4) | 2 | 7 | Earthen | Upgrading | 3 | |
| 22. | Mandanda- Namkheli Ropad | 5 | 7 | Earthen | Upgrading | 3 | |
| 23. | Chauki Danda- Okhabote Road | 2.5 | 7 | Earthen | Upgrading | 3 | |
| 24. | Kaptel Khola- Kinja Road | 5 | 7 | Earthen | Upgrading | 4 | |
| 25. | Upchang- Photi- Kundar Road | 4 | 7 | Earthen | Upgrading | 4 | |
| 26. | Jogidanda- Lelapu-Chaurikharka- Khahare Road (Tourism Road) | 10 | 7 | Earthen | Upgrading | 4 | |
| 27. | Lelapu- Majhugaun Road | 2 | 7 | Earthen | Upgrading | 4 | |
| 28. | Dochhim- Dudatar Ropad | 1.5 | 7 | Earthen | Upgrading | 4 | |
| 29. | Lelapu- Rineli – Khamding Road | 3 | 7 | Earthen | Upgrading | 4 | |
| 30. | Dunda- Tading Road | 4 | 7 | New Track opening | New | 4 | |

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Roads | Intervention type | Ward No. | Remarks |
|------|--|-------------------------|-----------------------|--------------------|--------------------------------|----------|---------|
| 31. | Photi- Kalidaha Road | 3 | 7 | New Track opening | New | 4 | |
| 32. | Kichandanda- Dorma- Ga.Pa. office Short Road | 2 | 7 | New Track opening | New | 4 | |
| 33. | Kinja- Bhakanje- Lamjura Road | 35 | 13 | Earthen | Upgrading | 5 | |
| 34. | Sagardanda- Patala chiring – Kharka- - Lole Road | 25 | 7 | Earthen | Upgrading | 5 | |
| 35. | Kinja- Chhimbu- Sere Road | 10 | 7 | Earthen/ New Track | Upgrading (4km)/New Track(6km) | 5 | |
| 36. | Bhakanje- Themjeng Road | 11 | 7 | Earthen | Upgrading | 5 | |
| 37. | Mabu- Odare Road | 4 | 7 | Earthen | Upgrading | 5 | |

Based on the data collected, it can be seen that the road density per 1000 population is 52.9 km per 1000 population and 0.68 km per square kilometre of area. This value is high as compared to national statistics such as 1.91 km per 1000 populations and 0.344 km per square kilometre.

Table 3.2: Road Density ward wise

| Ward Population | Road (Km) | Area (Sq. Km) | Road Per Sq. Km | Road per 1000 Population | |
|-----------------|-------------|---------------|-----------------|--------------------------|-------|
| 1 | 862 | 23.8 | 35.09 | 0.68 | 27.61 |
| 2 | 1954 | 59 | 27.61 | 2.14 | 30.19 |
| 3 | 1673 | 88.5 | 10.03 | 8.82 | 52.90 |
| 4 | 1472 | 34.5 | 5.53 | 6.24 | 23.44 |
| 5 | 1637 | 85 | 45.31 | 1.88 | 51.92 |
| Total | 7598 | 290.8 | 123.57 | | |

In this road inventory survey, it was found that the roads of this rural municipality are narrow and their width is insufficient to cross two vehicles from opposite direction at a time. Also, the actual width of feeder road and district roads is very small in comparison to their right of way. This rural municipality is supported by one National Highway, East-West Mahendra Highway.

These District Roads were under the responsibility of the District Development Committee and now they are under the responsibility of Rural Municipality itself.

b. Road Priority

From the ward level workshop, the most demanding five roads for each ward are collected and these roads will be used for the road priority and while developing road hierarchy.

Table 3.3: Priority road length based on order of priority (in Km)

| Ward No | Priority Roads (in Km) | | | | | Sub Total |
|--------------|------------------------|------------|------------|------------|------------|-----------|
| | Priority 1 | Priority 2 | Priority 3 | Priority 4 | Priority 5 | |
| 1 | 1.72 | 0.87 | 1.18 | 2.55 | 0.52 | 6.85 |
| 2 | 2.54 | 2.66 | 1.08 | 2.62 | 1.05 | 9.96 |
| 3 | 0.78 | 5.35 | 2.28 | 1.28 | 1.07 | 10.76 |
| 4 | 1.97 | 8.06 | 1.66 | 3.16 | 1.17 | 16.04 |
| 5 | 5.85 | 11.86 | 4.43 | 1.49 | 3.88 | 27.52 |
| Total | 32.71 | 46.68 | 19.62 | 18.57 | 14.06 | 131.65 |

Table 3.4: Priority Road length based on intervention required

| Ward No | Upgrading (Km) | New Construction (Km) | Sub-Total |
|--------------|----------------|-----------------------|-----------|
| 1 | 6.06 | 0.79 | 6.85 |
| 2 | 9.71 | 0.25 | 9.96 |
| 3 | 9.83 | 0.93 | 10.76 |
| 4 | 16.04 | | 16.04 |
| 5 | 27.52 | | 27.52 |
| Total | 127.18 | 4.47 | 131.65 |

Table 3.5: Priority Road list

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Roads | Priority List | Intervention type | Ward No. | Remarks |
|------|---|-------------------------|-----------------------|-----------------------------|---------------|-------------------|----------|---------|
| 1. | Swami Danda- Dallemane- Lamomane-Gumba ward No. 1 office- Kaapti-Ermakhu Road | 10 | 13 | Earthen/ Stone Soling | A1 | Upgrading | 1 | A |
| 2. | Himganga-Buddha Ma.Bi.- Maili- Madalu- Agriculture Road | 19 | 13/7 | Earthen/ Stone Soling | A2 | Upgrading | 2 | A |
| 3. | Sotipul-Chaulakharka-Kavre Chaur-Gechuka-Gumba-Lamgane Road | 40 | 13 | Earthen | A3 | Upgrading | 3 | A |
| 4. | Kinja- Bhakanje- Lamjura Road | 35 | 13 | Earthen | A4 | Upgrading | 5 | A |
| 5. | Gepchuka-Ghurmise- Koshinasa Road | 3 | 7 | Earthen | B1 | Upgrading | 1 | B |
| 6. | Lichu-Dhanemod Road | 8 | 7 | Earthen/ Stone Soling (3km) | B10 | Upgrading | 2 | B |
| 7. | Chyandanda- Rakchhepu- Simalbote-Dhaukhani Road | 4 | 7 | Track open/ Earthen | B11 | Upgrading | 2 | B |
| 8. | Likhukhola- Kaptel Ragnda- Bukudobhan Road | 4 | 7 | Earthen | B12 | Upgrading | 3 | B |
| 9. | Upchang- Photi- Kundar Road | 4 | 7 | Earthen | B13 | Upgrading | 4 | B |

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Roads | Priority List | Intervention type | Ward No. | Remarks |
|------|--|-------------------------|-----------------------|--------------------------------|---------------|---|----------|---------|
| 10. | Dunda- Tading Road | 4 | 7 | New Track opening | B14 | New | 4 | B |
| 11 | Bhakanje- Themjeng Road | 11 | 7 | Earthen | B15 | Upgrading | 5 | B |
| 12. | Jolakhu-Cherbading Road | 3.5 | 7 | Earthen/ Stone Soling (1km) | B16 | Upgrading | 2 | B |
| 13. | Mandanda- Namkheli Ropad | 5 | 7 | Earthen | B17 | Upgrading | 3 | B |
| 14. | Jogidanda- Lelapu- Chaurikharka- Khahare Road (Tourism Road) | 10 | 7 | Earthen | B18 | Upgrading | 4 | B |
| 15. | Photi- Kalidaha Road | 3 | 7 | New Track opening | B19 | New | 4 | B |
| 16. | Kahare-Buldanda-Gumba Road | 7 | 7 | Earthen | B2 | Upgrading | 1 | B |
| 17. | Mabu- Odare Road | 4 | 7 | Earthen | B20 | Upgrading | 5 | B |
| 18. | Takarmo-Ermakhu Road | 3 | 7 | Earthen/ Stone Soling (1km) | B21 | Upgrading | 2 | B |
| 19. | Chandithan-Saaasa Agriculture Road | 4 | 7 | Earthen/ Stone Soling (2km) | B22 | Upgrading | 2 | B |
| 20. | Jolakhu-Bahunelath- Buddha Ma.Bi. Agriculture Road | 8 | 7 | Earthen/ Stone Soling (3km) | B3 | Upgrading | 2 | B |
| 21. | Bhedigoth- Damale Agriculture Road | 3 | 7 | Earthen/ Soling (100m) | B4 | Upgrading | 2 | B |
| 22. | Kachapu (Maili)- Gaudi- KavreChaur- Khaptel-Dunda- Kinja- Tribeni- Umatirtha Road | 35 | 9 | Earthen | B5 | Upgrading | 3 | B |
| 23. | Kaptel Khola- Kinja Road | 5 | 7 | Earthen | B6 | Upgrading | 4 | B |
| 24. | Lelapu- Rineli – Khamding Road | 3 | 7 | Earthen | B7 | Upgrading | 4 | B |
| 25. | Sagardanda- Patala chiring – Kharka- - Lole Road | 25 | 7 | Earthen | B8 | Upgrading | 5 | B |
| 26. | Kinja- Chhimbu- Sere Road | 10 | 7 | Earthen/ New Track | B9 | Upgrading (4km)/ New Track (6km) | 5 | B |
| 27. | Lamomane-Gumba Road | 0.8 | 7 | Earthen | C1 | Upgrading | 1 | C |

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Roads | Priority List | Intervention type | Ward No. | Remarks |
|------|--|-------------------------|-----------------------|--------------------------------|---------------|----------------------|----------|---------|
| 28. | Chauki Danda- Okhabote Road | 2.5 | 7 | Earthen | C10 | Upgrading | 3 | C |
| 29. | Dochhim- Dudatar Ropad | 1.5 | 7 | Earthen | C11 | Upgrading | 4 | C |
| 30. | Ermakhu –Bhotebari Agriculture Road | 2.5 | 7 | Earthen/ Stone Soling (3km) | C2 | Upgrading | 2 | C |
| 31. | Jogidanda- Chamargaun- Buldanda (Ward no.4) | 2 | 7 | Earthen | C3 | Upgrading | 3 | C |
| 32. | Kichandanda- Dorma- Ga.Pa. office Short Road | 2 | 7 | New Track opening | C4 | New | 4 | C |
| 33. | Lelapu- Majhugaun Road | 2 | 7 | Earthen | C5 | Upgrading | 4 | C |
| 34. | Jolakhu- Pokhari Road | 2 | 7 | Gavian (3m)/ Soiling | C6 | Upgrading | 2 | C |
| 35. | Maili-Jilu Road (Track opening 2km) | 2 | 7 | Earthen | C7 | Upgrade/ New open | 2 | C |
| 36. | Ramse-Lapduka Road | 1.5 | 7 | Earthen | C8 | Upgrading | 1 | C |
| 37. | Kaapti Road | 1.5 | 7 | Earthen | C9 | Upgrading | 1 | C |

3.5 Visionary city development plan

Planning of any city is based on the analysis of present situational trend, past historic event and future prospective goal to reach. As part of planning process, vision setting executes the participatory approach of setting out inspirational destination of city. This becomes true for any cities, towns or country. But to the newly formed municipalities like Likhupike Rural Municipality, setting out the vision of the Rural Municipality at its initial phase of formation of Rural Municipality is itself an important opportunity to direct municipal goals, plans, and programmes which will direct whole municipal activities towards the focused direction of setting vision. All development activities that would be carried out in the future would be and should be in line with the set municipal vision. As an aspiring city, the newly formed Rural Municipality like Likhupike Rural Municipality has diverse prospects and sectors of development that would drive its future growth but identifying some lead sectors and potential development opportunity of the Rural Municipality based on its own strength and individuality would make Rural Municipality grow better and prosper.

As the Planner, we've taken this task as the preparation of long term strategic vision planning, which will basically form the structural guide for the development of the town. It is expected that long term vision set during the project will be considered as the basic development strategy for next 20-30 years' development plan. Major strategic roads, width of road, size of development blocks and land use plan for major lots; are some of

the basics that will define as projects future. Some of the leads sectors are identified with the local participation and with the planning workshop carried out in different stages of time.

The vision of this Likhupike Rural Municipality is to develop an environment friendly and clean city by fostering its cultural and religious history and importance with modern urban facilities. For this the main visionary city development plan of the rural municipality is to develop/preserve the following:

1. Tourism
2. Agriculture

1. Tourism

This rural municipality has high potential for tourism. This rural municipality has different cultural heritages and touristic destinations. Some of them are as follows:

| Ward Touristi Destinations | | Importance |
|----------------------------|--------------------------------|-------------------|
| 1 | Pike Danda | Lovely |
| 1 | Pike Jharana (Pike water fall) | Delightful/Lovely |
| 1 | Organ Sang Holing Gumba | Religious |
| 2 | Bukudobhan | Delightful/Lovely |
| 2 | Kupunga Jharana | Lovely |
| 3 | Pokharitar Chhedugtar | Delightful/Lovely |
| 4 | Uppallokharka | Picnic/Lovely |
| 4 | Chaurikharka | Picnic/Lovely |
| 5 | Chiya Bagan | Lovely/ Touristic |
| 5 | Panmudanda | Lovely/ Touristic |

Likhupike River within this rural municipality. Also, this rural municipality is the gateway to Mt.Everest base camp area of Solukhumbu. Thus, the Likhupike Rural municipality bears a huge potential to develop its economy and uplift the living standards of local peoples, but this needs proper planning and management of touristic areas and routes to those places.

2. Agriculture

This rural municipality has landscape and climate favourable for agriculture and animal husbandry. There is high fertile land in the plain area of south part and hill area with sufficient grazing land and grass land for animal husbandary and fruits. To cash in such potential of agriculture the method of agriculture must be transformed into modern agriculture system. The availability of proper irrigation facility and market is the key to success in agriculture like Aalaichi, Aamriso, and Kiwi etc. which is possible in this rural municipality with proper planning approach.

CHAPTER FOUR: INDICATIVE DEVELOPMENT POTENTIAL MAP

4.1 Location

Likhu Pike is a rural municipality (gaunpalika) out of seven rural municipality located in Solukhumbu District of Koshi Province of Nepal. There are a total of 8 municipalities in Solukhumbu in which 1 is urban and 7 are rural.

According to Ministry of Federal Affairs and Local Development Mahakulung has an area of 124.38 square kilometres (48.02 sq mi) and the total population of the municipality is 5534 as of Census of Nepal 2011.

Goli, Chaulakharka and Bhakanje which previously were all separate Village development committee merged to form this new local level body. Fulfilling the requirement of the new Constitution of Nepal 2015, Ministry of Federal Affairs and Local Development replaced all old VDCs and Municipalities into 753 new local level body (Municipality).

The rural municipality is divided into total 5 wards and the headquarter of this newly formed rural municipality is situated in Chaulakharka.

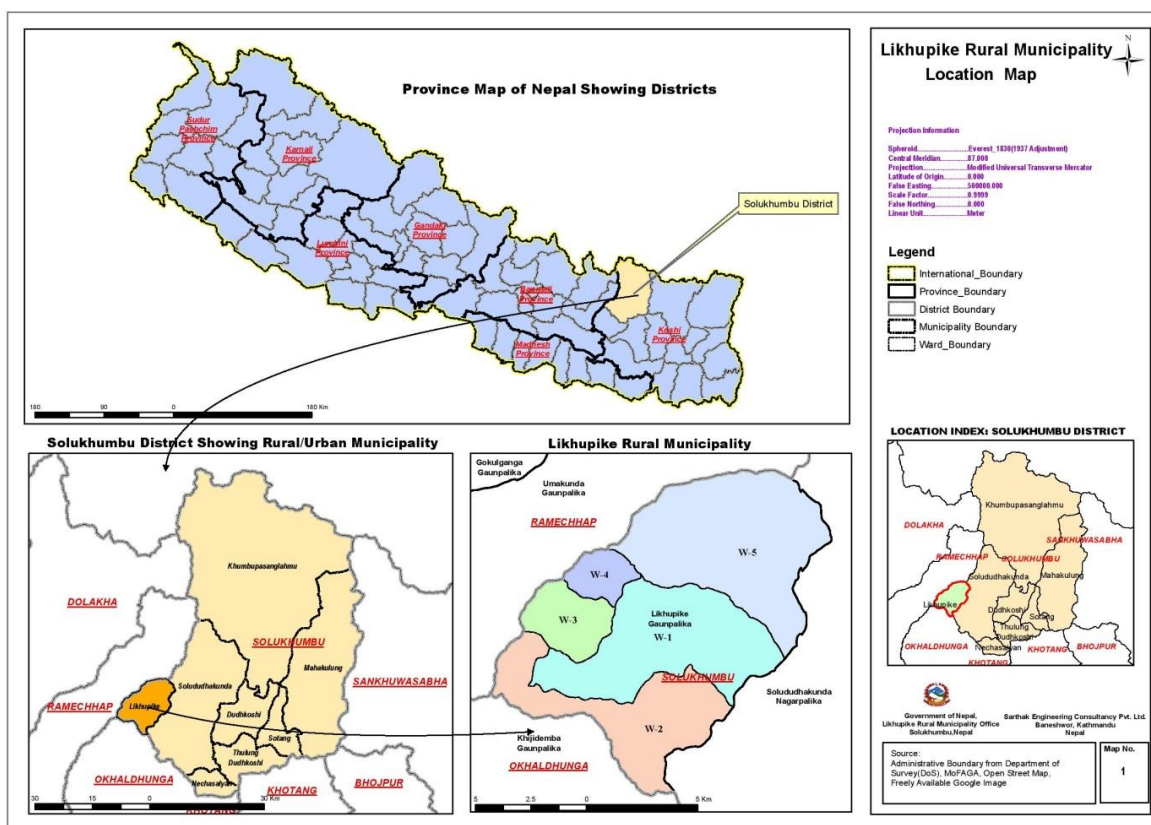


Figure 4.1: Location map of Likhupike Rural Municipality, Solukhumbu

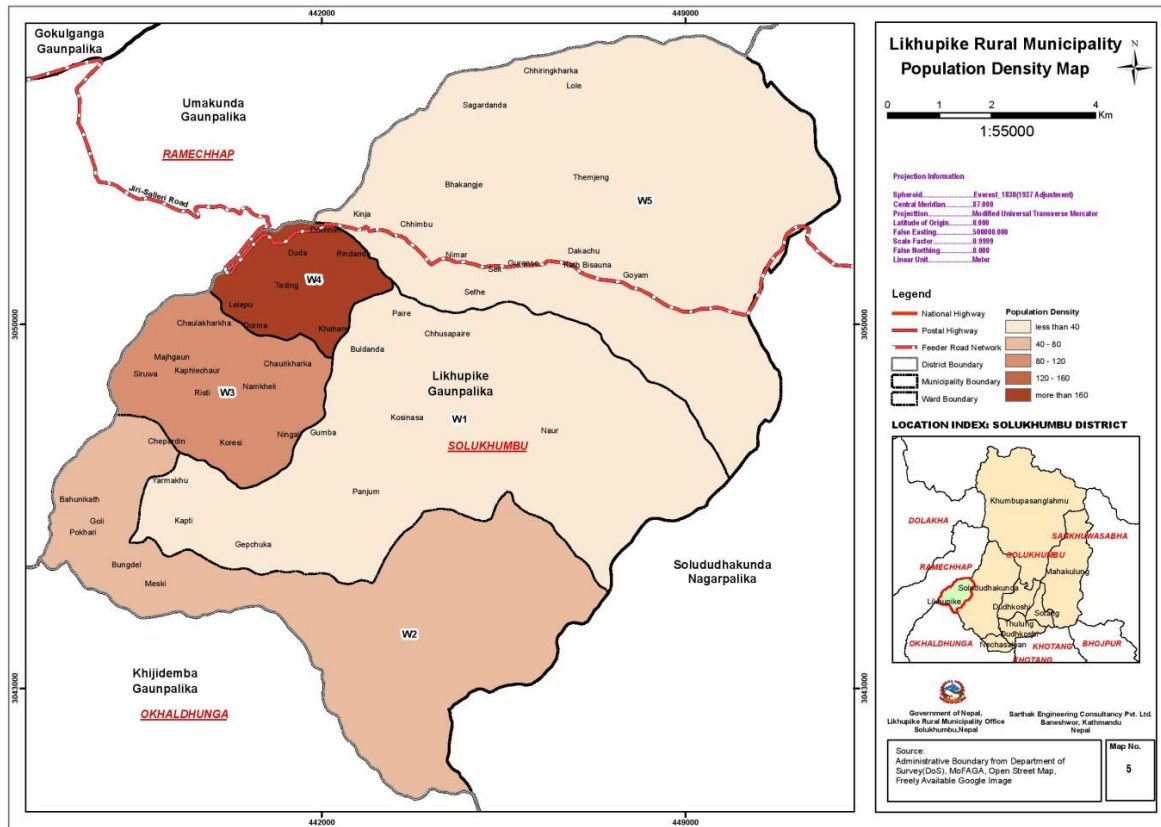


Figure 4.2: Ward division with population density map

4.2 Socio-demographic

Population of this municipality in the year of 2075 was 7598 out of which 3847 are male and 3751 are female. The population of this municipality ward wise is as follows:

| Ward No. | Household | Total Population | Male | Female | Area (Sq. Km) | Population Density (Persons/Sq.km) |
|--------------|-------------|------------------|-------------|-------------|---------------|------------------------------------|
| 1 | 151 | 862 | 447 | 415 | 35.09 | 24.56 |
| 2 | 322 | 1954 | 993 | 961 | 27.61 | 70.77 |
| 3 | 306 | 1673 | 844 | 829 | 10.03 | 166.79 |
| 4 | 273 | 1472 | 750 | 722 | 5.53 | 266.18 |
| 5 | 300 | 1637 | 813 | 824 | 45.31 | 36.12 |
| Total | 1352 | 7598 | 3847 | 3751 | 123.57 | 61.48 |

Table 4.2: Population of Likhupike Rural municipality (Source: Household survey 2075)

The population density of this municipality is 61.48 persons per square kilometre. The rate of increment of population yearly is increasing as people of this Rural Municipality tend to migrate from other places in search of opportunities and better infrastructure facilities

4.3 Indicative development potential

IDP is basically the indication of the existing and potential market center/service centers (key growth centers) and the areas having various development potentials such as

agro- based industries, high value cash crops and tourism. Thus, IDP shows high value cash crops, tourism area, and area of service centers such as hospital, post office, telecommunication, school, campus, security offices and large settlements, important historic and religious places. Finally, it prepares the ranking of the markets of the rural municipality as the basis of network planning.

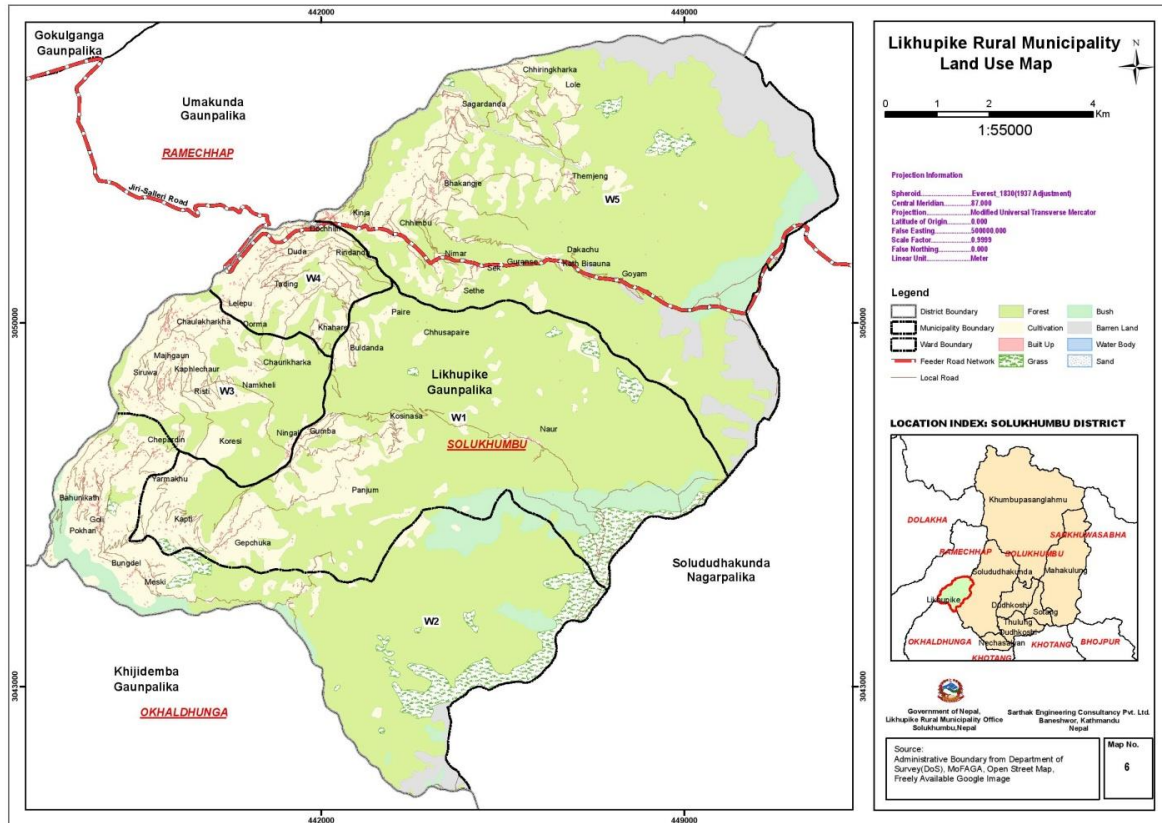


Figure 4.3: Land Use Map

Existing/potential areas are defined as:

- Existing/potential areas for development of small and large industries.
- Area with service centers such as hospital, post office, telecommunication, school, campus, security offices, Bus Park, sport and recreational centers etc.
- Potential areas for tourism development.
- Area with large settlements.
- Area with important historic and religious places.
- Areas with extensive high value cash crops
- Areas with extensive horticulture.
- Areas with extensive livestock farming.

CHAPTER FIVE: ROAD HIERARCHY DEVELOPMENT

5.1 Road Hierarchy:

Road network serve for direct access to the particular land-use by the provision of pedestrian footpaths, bicycle tracks, bus and vehicle routes and cater through traffic that is not related to immediate land uses. Functional provisions of passenger and goods movement mainly define the hierarchy of roads and their classification. On the basis of this concept, roads are classified as per their function. Road class is related to the technical standard and functional requirements. Therefore, road classification should be based on its functional hierarchy. It is important to distinguish roads in different class or type based on various criteria. A road hierarchy is a means of defining each roadway in terms of its function such that appropriate objectives for that roadway can be set and appropriate design criteria can be implemented. It is an important instrument of road network and landuse planning.

There are restrictions of direct linkage between various kinds of road-hierarchy. In other words, direct connections between certain types of road links should be reduced, for example residential streets and arterial roads. Connections between similar order streets should be made (e.g. arterial to arterial) or between street types that are separated by one level in the hierarchy (e.g. arterial to highway and collector to arterial.). This conceptual framework can be seen from Figure 10 and 110, These hierarchical distinctions of road types becomes more clear when considering the recommended design specifications for the number of through lanes, design speed, intersection spacing and driveway access. A well-formed road hierarchy increases the performance and efficiency of the particular type of road as well as of the entire road network. Furthermore, it reduces overall impact of traffic by concentrating longer distance flow onto routes in less sensitive locations, ensuring land uses and activities that are incompatible with traffic flow are restricted from routes where traffic movement should predominate and preserving areas where through traffic is discouraged.

5.1.1 Formulation of Road Hierarchy



Figure 5.1 Road Network Hierarchy

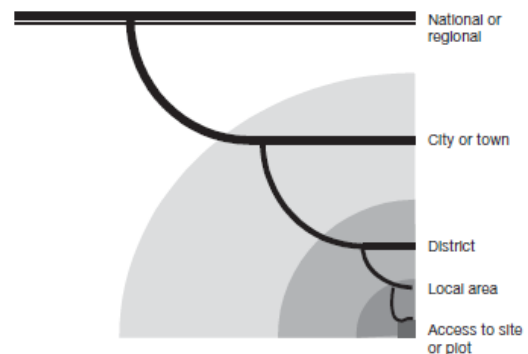


Figure 5.2 Urban Road Hierarchy

Roads under jurisdiction of Municipal authority are referred as urban roads. The concept of road hierarchy assists in planning of overall road network and its transport services.

Different hierarchy of road has different effect in surrounding areas and other roadways. Hierarchy of roads enable 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 uses. Thus, a proper plan should accommodate all users of the urban streets in planning, designing and construction of the road infrastructure and furniture. Rural Municipality road network can be conceptualized by considering the functional hierarchy as arterial, sub-arterial and urban roads of various categories such as Class A, Class B, Class C and Class D.

The DTMP/RMTMP guideline has expected roads under category of National Highway (NH), Feeder Roads (FR) and District Roads (DRCN) within the Rural Municipality area. The RoW of these roads are considered as per respective Guidelines. i.e. the RoW of National Highways, Feeder Roads and District Roads are 50.0 m, 30.0 m and 20.0 m respectively. The guideline has clearly stated about the setback distance for these roads (having RoW \geq 20.0) as 6.0 m on either side. All of these standards shall be applied to the Rural Municipality accordingly.

Based on DTMP guideline, the building line or setback shall be maintained 6.0 m for roads having RoW equal to or more than 20.0 m and 2.0 m for other roads. However, Nepal Road Standards-2070 has considered the setback distance at curved section only and that should be sufficient to provide the adequate sight distance. It is silent about the building line. However, according to Fundamental Guidelines for Settlement development, Urban Planning and Building Construction-2072 (2015 AD), the minimum setback distance for urban roads as 1.5 m on either side. Again, the minimum of Row of roads has set as 6.0 m. i.e. 3.0 m on either side from the centreline.

Table 5. 1: Classification of Municipal Roads

| Road Type | Road Class | Right of way (RoW) |
|----------------------|------------|--------------------|
| Main Collector Road | Class A | 10-14 m |
| Other Collector Road | Class B | 8-10 m |
| Tole Road | Class C | 6 -8m |
| Other Local Road | Class D | 6 m |
| Trail Road | Class E | 2 m |

5.2 High Hierarchical Road Network

Road are classified based on its importance and its area served. Basically, higher hierarchical road network within the Rural Municipality comprises of Strategic Road Network (National Highway and Feeder Roads) and then the local road network, consisting of District Road Core Network (DRCN).

5.2.1 District Road Core Network (DRCN)

This DRCN is the minimum network that allows all former VDC headquarters to be connected with the strategic road network and the district headquarters, either directly or through other VDCs. In selecting the DRCN roads, account was taken of road conditions and existing traffic levels. The identified DRCN roads were subsequently provided with road codes conforming to national standards. Based on District Transport Master Plan (DTMP) report prepared by Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR) there are sixteen DRCN roads within the Rural Municipality which passes through various wards and are of total right of way of 20m as approved by District Development Committee and District Road Coordination Committee.

5.3 Municipal Roads

Different road within the Rural Municipality serves different function, some basically serves the function of access and some serves function of high quality mobility. As described earlier, this RMTMP had formulate four level road hierarchy namely Class A, B, C and D, and are described in subsequent heading. There is fundamental difference between various classes of roads and have been summed up in the form of table as:

Table 5. 2: Comparison of various hierarchies of roads

| Criteria | Class A | Class B | Class C | Class D |
|-----------------------------------|--|--|--|--|
| Purpose | Mobility | Mobility and control access | Access and mobility | Access |
| Function | Through and long distance movement | Connect Class A and C; provide alternative connection routes between Class A | Connects higher order roads & mobility to local trips. | Connect local trips to higher level roads. |
| | High network coverage | Support through movement of traffic | Access to property | direct access to property |
| | Segregated NMT facilities and Bus laybys | Segregated NMT facilities and Bus laybys | Segregated NMT facilities | Local NMT movement |
| Maintenance Responsibility | Rural Municipality | Rural Municipality | Rural Municipality & Community | Community |
| Design Speed (Kmph) | 40 | 30 | 20 | 20 |
| Radius (m) | 30 | 20 | 15 | 15 |
| Minimum RoW (m) | 14 | 10 | 8 | 6* |
| Setback distance (m) | 2 | 2 | 1.5 | 1.5 |
| Access Control | Applicable based on locality | Not Applicable | Not Applicable | Not Applicable |
| Public transport services | Public Transportation | Local Public transport | Small form of public transport | No public transportation |

5.3.1 Class A Roads

Class A roads serve as the major collector roads. These roads start either from the Arterial or Sub-Arterial road. These roads are of relatively long distance which connect big market or settlement areas or two or more wards centers within the Rural Municipality. They provide linkage to SRN & DRCN roads as well as to the nearby Rural Municipality.

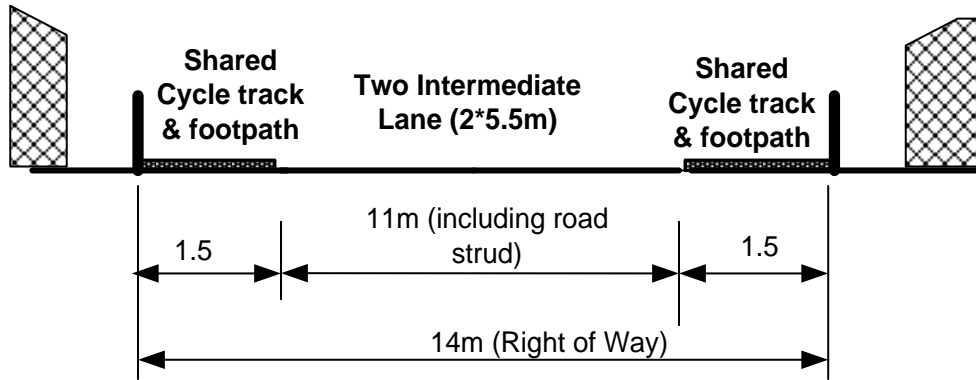


Figure 5.3: Recommended cross section for Class A roads

Nine Class A roads have been proposed so as to support the Indicative development potential as well as interconnectivity. Based on technical study and bottom up participatory approach, following five Class A roads with length 104 km roads and right of way of 10m to 14m has been proposed.

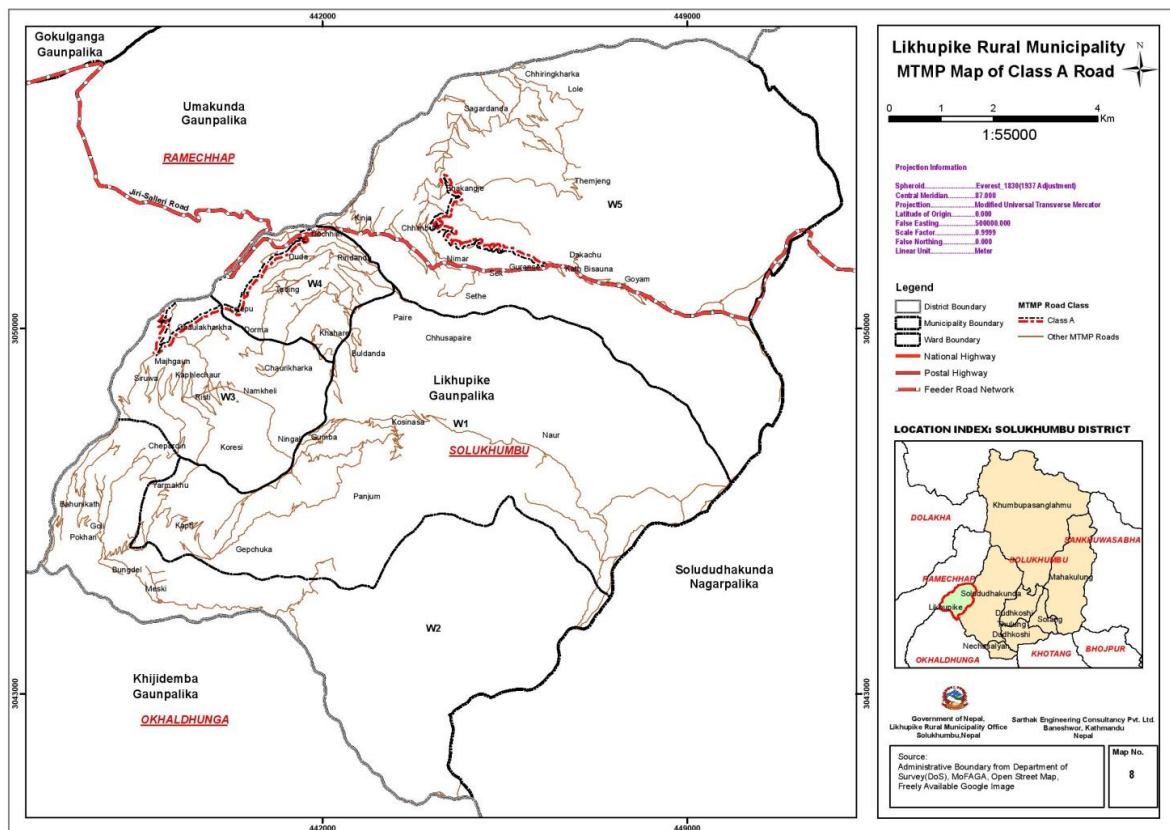


Figure 5.4: Class A roads in map

Table 5. 2 List of Class A roads

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Road | Intervention type | Ward No. | Remarks |
|------|---|-------------------------|-----------------------|----------------------|-------------------|----------|---------|
| 1. | Swami Danda- Dallemane- Lamomane-Gumba ward No. 1 office- Kaapti-Ermakhu Road | 10 | 13 | Earthen/Stone Soling | Upgrading | 1 | A1 |
| 2. | Kinja- Dunda- Hinganga- Buddha Ma.Bi.- Maili- Madalu- Agriculture Road | 19 | 13/7 | Earthen/Stone Soling | Upgrading | 2 | A2 |
| 3. | Kinja- Bhakanje- Lamjura Road | 35 | 13 | Earthen | Upgrading | 5 | A4 |

5.3.2 Class B Roads

These roads serve as a second level of road with total right of way more than 10m and can be considered as Feeder roads of Rural Municipality. These roads connects major road network and other roads of similar hierarchy with either major growth centre or provide access between Class A and class C road. Mobility is the main concern for these roads and it need to be equipped with at least facilities for non-motorized travel. The typical cross section for Class B roads is as:

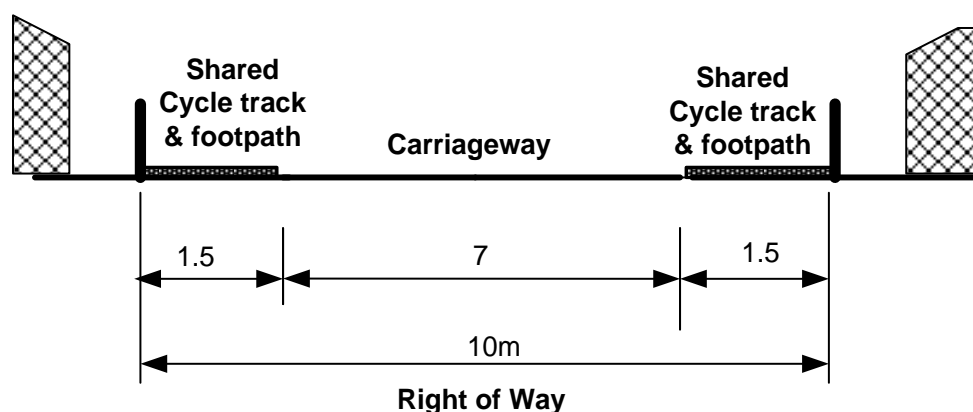


Figure 5.4: Recommended cross section for Class B roads

Thirteen Class B roads have been proposed so as to support the Indicative development potential as well as interconnectivity to Class A roads and DRCN roads. Based on technical study and bottom up participatory approach, 166.5 Km of roads have been proposed as Class B roads as follows:

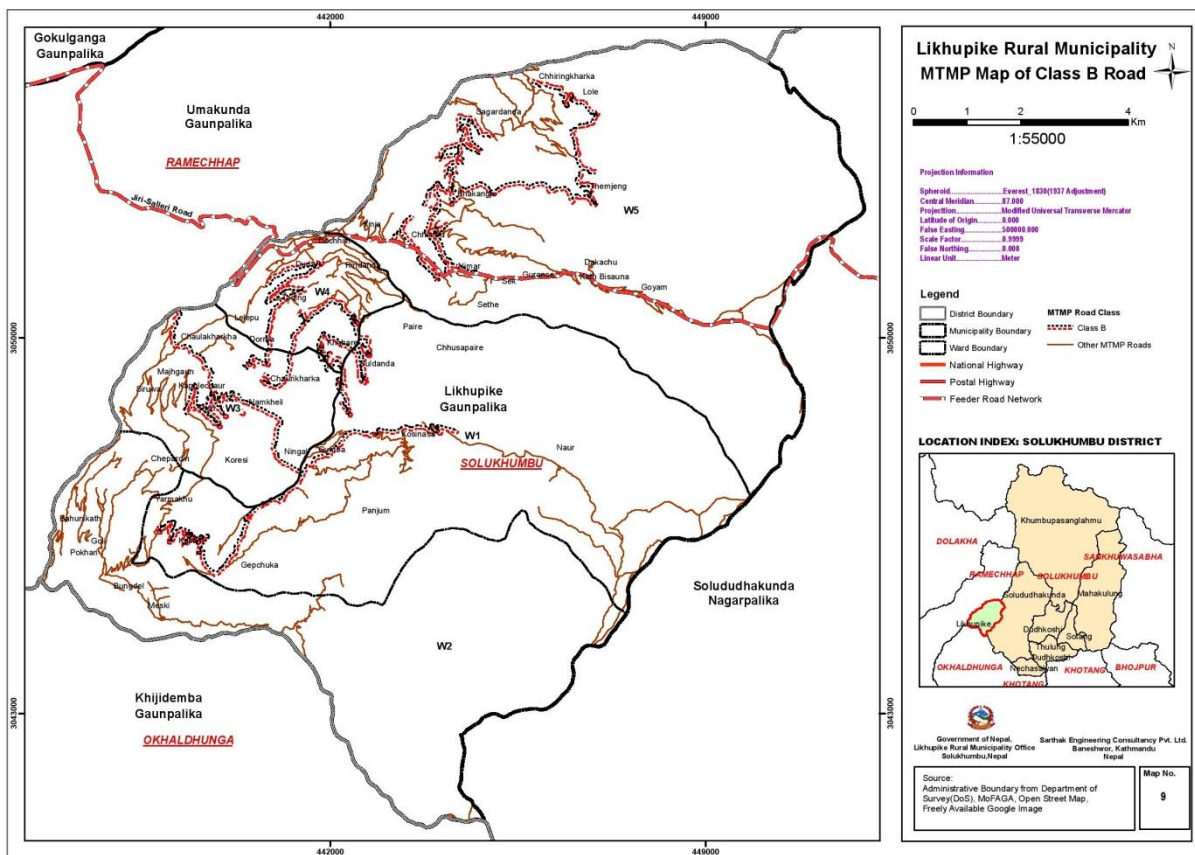


Figure 5.5: Class B roads in map

Table 5. 3 List of Class B roads

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Road | Intervention type | Ward No. | Remarks |
|------|--|-------------------------|-----------------------|----------------------------|--------------------------------|----------|---------|
| 1 | Gepchuka-Ghurmise- Koshinasa Road | 3 | 7 | Earthen | Upgrading | 1 | B1 |
| 2 | Mandanda- Namkheli Ropad | 5 | 7 | Earthen | Upgrading | 3 | B2 |
| 3 | Jolakhu-Bahunelath- Buddha Ma.Bi. Agriculture Road | 8 | 7 | Earthen/Stone Soling (3km) | Upgrading | 2 | B3 |
| 4 | Lelapu- Rineli – Khamding Road | 3 | 7 | Earthen | Upgrading | 4 | B4 |
| 5 | Photi- Kalidaha Road | 3 | 7 | New Track opening | New | 4 | B5 |
| 6 | Sagardanda- Patala chiring – Kharka- - Lole Road | 25 | 7 | Earthen | Upgrading | 5 | B6 |
| 7 | Kinja- Chhimbu- Sere Road | 10 | 7 | Earthen/ New Track | Upgrading (4km)/New Track(6km) | 5 | B7 |
| 8 | Bhakanje- Themjeng Road | 11 | 7 | Earthen | Upgrading | 5 | B8 |
| 9 | Mabu- Odare Road | 4 | 7 | Earthen | Upgrading | 5 | B9 |
| 10 | Kahare-Buldanda-Gumba Road | 7 | 7 | Earthen | Upgrading | 1 | B10 |
| 11 | Dunda- Tading Road | 4 | 7 | New Track opening | New | 4 | B11 |
| 12 | Lichu-Dhanemod Road | 8 | 7 | Earthen/Stone Soling (3km) | Upgrading | 2 | B12 |
| 13 | Jolakhu-Cherbading Road | 3.5 | 7 | Earthen/Stone Soling (1km) | Upgrading | 2 | B13 |
| 14 | Chandithan-Saaasa Agriculture road | 4 | 7 | Earthen/Stone Soling (2km) | Upgrading | 2 | B14 |
| 15 | Takarmo-Ermakhu Road | 3 | 7 | Earthen/Stone Soling (1km) | Upgrading | 2 | B15 |

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Road | Intervention type | Ward No. | Remarks |
|------|--|-------------------------|-----------------------|------------------------|-------------------|----------|---------|
| 16 | Bhedigoth- Damale Agriculture Road | 3 | 7 | Earthen/ Soling (100m) | Upgrading | 2 | B16 |
| 17 | Chyandanda- Rakchhepu- Simalbote-Dhaukhani Road | 4 | 7 | Track open/Earthen | Upgrading | 2 | B17 |
| 18 | Kachapu (Maili)- Gauli-KavreChaur- Khaptel-Dunda- Kinja- Tribeni- Umatirtha Road | 35 | 9 | Earthen | Upgrading | 3 | B18 |
| 19 | Likhukhola- Kaptel Ragnda- Bukudobhan Road | 4 | 7 | Earthen | Upgrading | 3 | B19 |
| 20 | Kaptel Khola- Kinja Road | 5 | 7 | Earthen | Upgrading | 4 | B20 |
| 21 | Upchang- Photi- Kundar Road | 4 | 7 | Earthen | Upgrading | 4 | B21 |
| 22 | Jogidanda- Lelapu- Chaurikharka- Khahare Road (Tourism Road) | 10 | 7 | Earthen | Upgrading | 4 | B22 |

5.3.3 Class C Roads

Class C roads basically serve the function of access to greater extent and mobility to some extent. These are third hierarchy of roads and these provide access to Class D roads. The rights of way for these are recommended to be more than 8m wider roads. Class C roads are residential street and they provide access to the private property and small industrial or public place. These roads provide connection to higher order roads or with agricultural roads which connect a farm with a mini-market centre or an agro-based production centre. These roads serve mainly for small/light vehicular movement for low volume intensity.

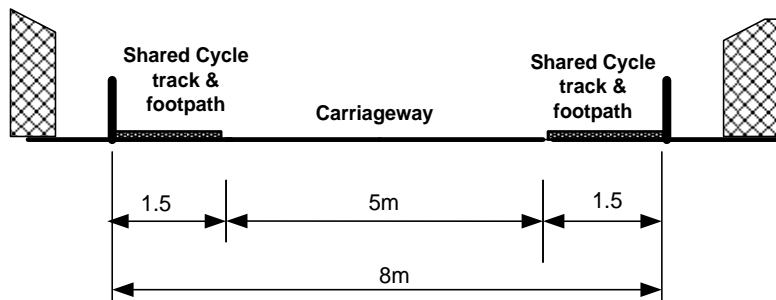


Figure 5.6: Recommended cross section for Class C roads

Thirty four Class C roads of 20.3 km length is approved based on both technical study, on site feasibility as well as Bottom Up approach and been listed as follows:

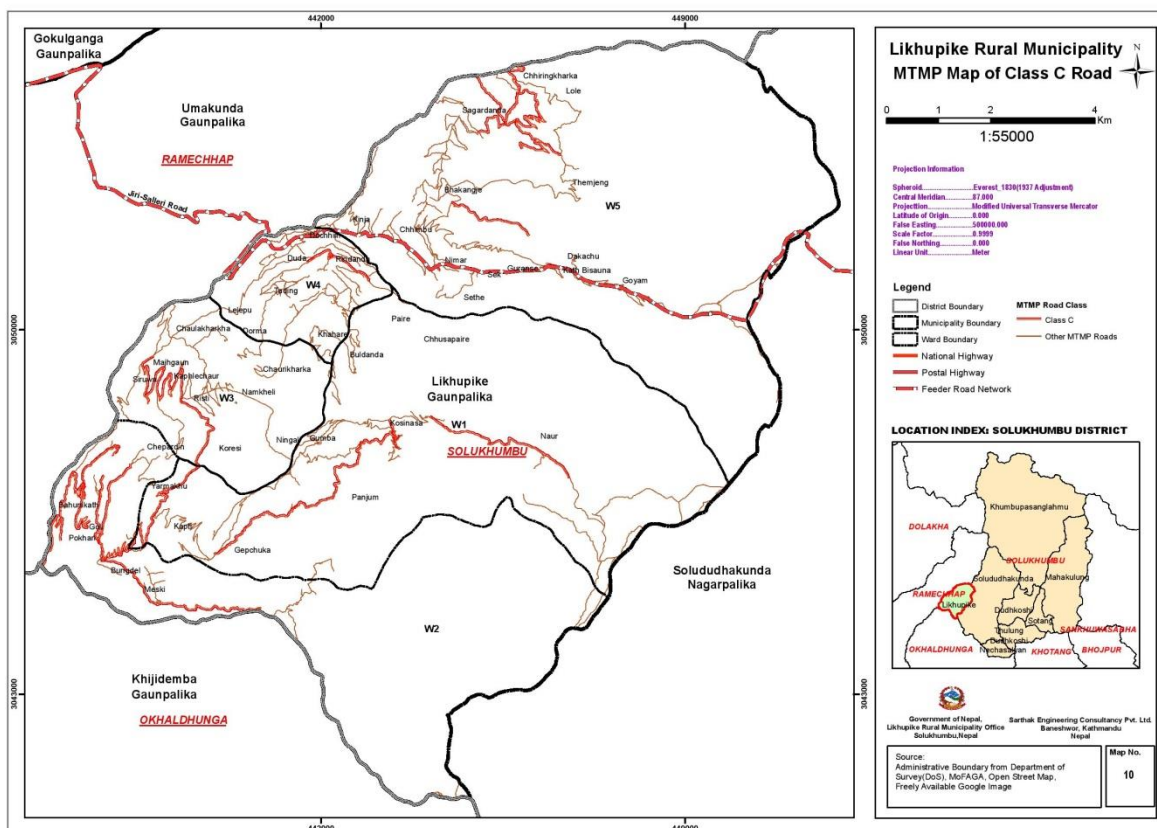


Figure 5.7: Class C roads In map

Table 5. 4 List of Class C roads

| S.N. | Name of the Road | Length of the Road (km) | Width of the Road (m) | Types of Road | Intervention type | Ward No. | Remarks |
|------|--|-------------------------|-----------------------|----------------------------|-------------------|----------|---------|
| 1. | Lamomane-Gumba Road | 0.8 | 7 | Earthen | Upgrading | 1 | C1 |
| 2. | Ermakhu –Bhotebari Agriculture Road | 2.5 | 7 | Earthen/Stone Soling (3km) | Upgrading | 2 | C2 |
| 3. | Jogidanda- Chamargaun- Buldanda (Ward no.4) | 2 | 7 | Earthen | Upgrading | 3 | C3 |
| 4. | Lelapu- Majhugaun Road | 2 | 7 | Earthen | Upgrading | 4 | C4 |
| 5. | Dochhim- Dudatar Ropad | 1.5 | 7 | Earthen | Upgrading | 4 | C5 |
| 6. | Chauki Danda- Okhabote Road | 2.5 | 7 | Earthen | Upgrading | 3 | C6 |
| 7. | Maili-Jilu Road (Track opening 2km) | 2 | 7 | Earthen | Upgrade/New open | 2 | C7 |
| 8. | Ramse-Lapduka Road | 1.5 | 7 | Earthen | Upgrading | 1 | C8 |
| 9. | Kaapti Road | 1.5 | 7 | Earthen | Upgrading | 1 | C9 |
| 10. | Jolakhu- Pokhari Road | 2 | 7 | Gavian (3m)/Soiling | Upgrading | 2 | C10 |
| 11. | Kichandanda- Dorma- Ga.Pa. office Short Road | 2 | 7 | New Track opening | New | 4 | C11 |

5.3.4 Class D Roads

Class ‘D’ roads are all other minor roads which give access to public property. All other roads that fulfill the minimum requirement set by the Rural Municipality and that doesn’t fall under above classes, automatically falls under Class D roads. The cross section can be decided from local level with approval from MRCC, but ensuring all road users are given sufficient rights of sharing the roadway. The community level participation is must for completion of these roads. The Rural Municipality-community share can go from 40% - 60% to 60% - 40% for effectiveness of construction and maintaining the roads. These criterions of investment from local sector depend on Rural Municipality policy.

6m Earthen Road (Seasonal Road)

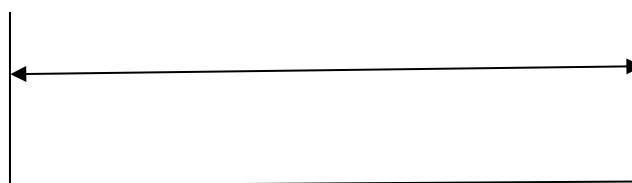


Figure 5.8: Recommended cross section for Class D roads

Twenty Nine Class D roads with length of 59.47 km have been proposed within the Rural Municipality as follows:

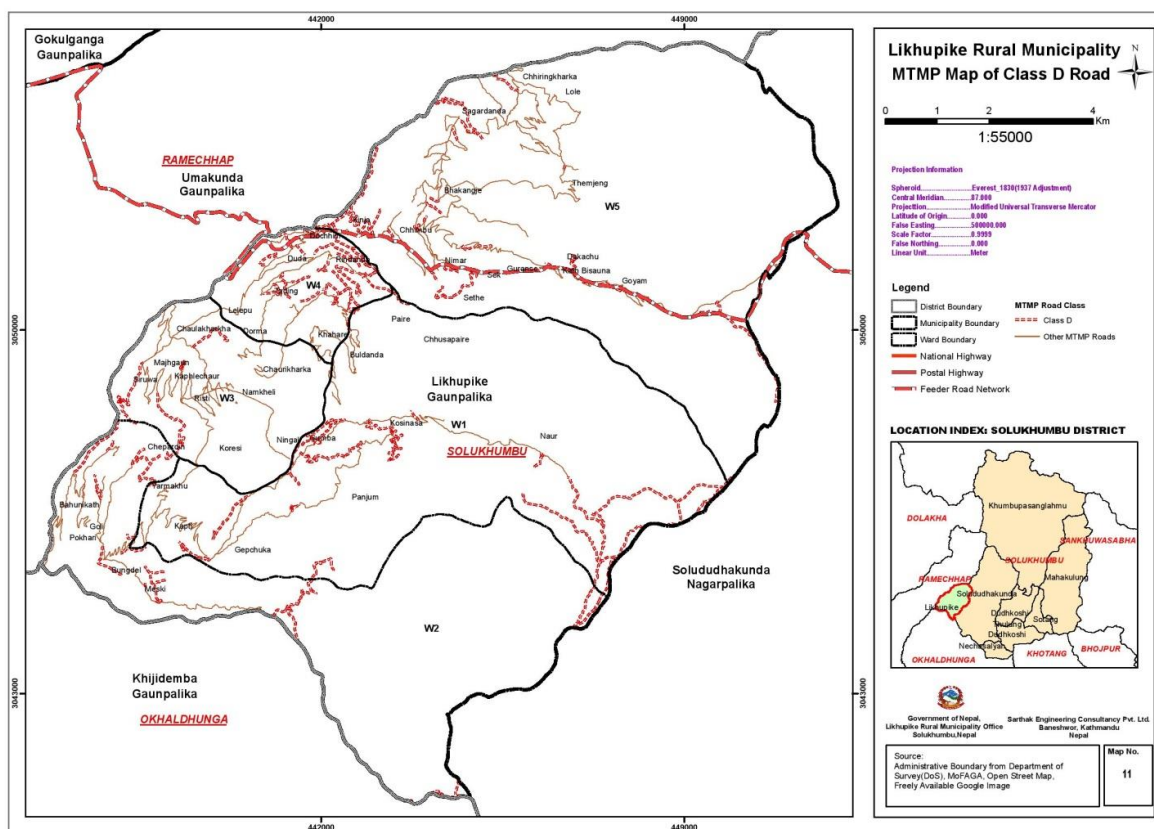


Figure 5.9: Class D roads in map

Table 5. 5 List of Class D roads

1. Trail Road within the municipality =10km (LS Total) = $10 \times 5,000,000 = 50,000,000$ CHAPTER SIX: PRIORITIZATION CRITERIA

CHAPTER SIX: PRIORITIZATION CRITERIA

6.1 Concept of Prioritization

Each road are of importance in some aspect, some serve large population, whereas some serve the purpose of access, while some link the ward with market or service facilities and some link acts as connectors between two wards or Rural Municipality. It is not possible to construct/maintain or upgrade all roads at a time due to various constraints as: time, resources and cost constraint. Looking at the importance of road, some road need intervention immediately and some can be done later on. Thus, each link in a network needs to be prioritized and various interventions need to be taken based on the prioritization. In simple words, rank of each road network need to be assessed based on its importance and the intervention is taken based on the rank. The scoring criteria and their weightage/score remains the same for all road links as well as for all type of intervention.

6.2 Weightage Scoring Criteria

After rigorous study (literature around the world and past experience) and ToR , following prioritization criteria is published. Eight ranking/prioritization indicator is proposed as prioritization indicator, which includes following:

Table 6. 1 Proposed Scoring Criteria with score for prioritization

| S.N | Scoring Criteria | Scoring Unit | Score |
|-----|---|--------------|-------|
| 1. | Demand Priority of wards | | 20 |
| 2. | Total existing width | Meter | 10 |
| 3. | Population served | | 20 |
| 4. | Road network benefit (access to service centers, recreational centre, agricultural centre and market) | | 20 |
| 5. | Link to future development potential sites | | 10 |
| 6. | Link to other road network (SRN, District roads, Airport) | | 10 |
| 7. | Road Surface | | 10 |

A. Demand priority of wards:

It is the one of the major criteria for prioritization. Each ward has provided intervention in prioritized order during filling demand form from priority order one to five. These priorities is based on actual present ward resident need, i.e. the intervention which is at number 1 priority need to be done first. Higher the priority of intervention, it should get highest score. If certain intervention got highest priority i.e. number 1 priority in certain ward level, then it need to get full marks. Road with first priority will get full marks and the score will reduced by 20 % for each lower level priority; i.e. second priority road will get 80% score. Lowest priority (5th priority) link intervention will get twenty percent of total score. And all other roads will get 10% of the total score. The road link with different priority from different wards will get the average score

B. Existing Width of Road:

Existing width is also the next governing factor for prioritization. The present width of the road is the indicator of the importance. The road which is wider among many roads within the Rural Municipality carries slight more importance than other roads. Thus, wide roads having width more than 6m is given highest priority and thus full score, roads having width between 4.5 meter to 6 meter is provided with 80% of the total score and roads with width less than 4.5 m gets 60% of the 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. The score for road with variable width will be based on weightage width.

C. Population Served

Population coverage by the road linkage is one of the important indicator of prioritization. Higher the population served by the road, higher will be its necessity or importance and it need to be constructed/upgraded/maintained first. Thus, high score is assigned for the road link serving high population and all other score is based on the relative marking. Now the question arises which population can be considered as high population and thus relative score is provided. Among all roads within the Rural Municipality, road serving maximum population is given full marks and the other roads are provided score accordingly. Thus, the score for road based on population served lies within zero to full score.

D. Road Network Benefit (SAMT)

It is one of the main governing prioritization indicators. The road link may provide access to service centre (schools, health post, governmental offices, etc.), agricultural land, market centre and tourism or recreational (picnic spot, historical place, park, cinema hall, playground), and. A single road link can serve just a single function to all above four functions. Simply more the services road link offers more will be the importance of the road link/network. The proposed road intervention which serves all four facilities is regarded as the major intervention which needs immediate attention and thus it is provided with highest full marks. 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 functions is provided with 60% and the road which serves only a single function is provided with 40%.

E. Future Potential Development

It is one of the main governing prioritization indicators. Higher the future potential development, higher will be its necessity or importance and it need to be constructed/upgraded/maintained first. Thus, high score is assigned for the higher

potential road and all other score is based on the relative marking wt. Among all roads within the Rural Municipality, road serving maximum potential development is given full marks and the other roads are provided score accordingly. Thus, the score for road based future potential lies within zero to full score.

F. Link to other road network

It is one of the main governing prioritization indicators. The proposed road intervention which join SRN and Feeder road are is regarded as the major intervention which need immediate attention and thus it is provided with highest full marks and are put in the first prioritization hierarchy followed by the roads joining District road which are given 80% of the total total score and the road which serve from class A road is provided with 60%.

G. Existing Road Surface

Road surface type also governs the scoring and prioritization of the road. There are two principle behind which type of road to prioritize first, one principle says the objective need to be access first, i.e. first make the road motor-able so that it can be operated in all for all weather road. Another approach says the road importance is dependent on surface type; the road which is bituminous at presents has great importance and need to be maintained first compared to upgrading earthen road. Both aspects have significant impact on overall prioritization. Here, this study gives highest priority to earthen surface as we are mainly concern with accessibility first. Earthen surface road acquire full marks, gravel road surface acquire 80% of total and bituminous/metallic road gets 60% of total score. If a single road have different surface at different section, then the weightage average based on length is taken and score is provided accordingly.

6.3 Prioritized Road Network

The road intervention is based on the budget available as well as the importance of the road and based on above prioritization criteria all roads have been prioritized and then the RMTMP plan had been proposed based on the prioritized road network. The prioritized score for various roads have been summed up in the form of table as:

Table 6.2 Prioritization

| Class | Ward demand (20) | Width (10) | Surface Type (10) | Hierarchy & Linkage to SRN (10) | SAMT (20) | IDP (10) | Population (20) | Total | Rank |
|----------------------|---------------------|---------------|----------------------|------------------------------------|-----------|-------------|--------------------|-------|------|
| CLASS A ROADS | | | | | | | | | |
| A001 | 20 | 10 | 9 | 8 | 20 | 10 | 18 | 95 | 1 |
| A003 | 8 | 10 | 8 | 10 | 20 | 10 | 20 | 86 | 3 |
| A004 | 20 | 8 | 10 | 6 | 18 | 10 | 14 | 86 | 4 |
| A002 | 12 | 10 | 10 | 8 | 18 | 10 | 20 | 88 | 2 |
| CLASS B ROADS | | | | | | | | | |
| B012 | 8 | 8 | 10 | 6 | 16 | 8 | 14 | 70 | 12 |
| B005 | 18 | 10 | 10 | 6 | 16 | 8 | 18 | 86 | 5 |
| B008 | 16 | 8 | 10 | 6 | 15 | 8 | 14 | 77 | 8 |
| B003 | 16 | 10 | 10 | 8 | 18 | 9 | 18 | 89 | 3 |
| B010 | 8 | 8 | 9 | 8 | 16 | 8 | 18 | 75 | 10 |
| B004 | 20 | 8 | 10 | 4 | 20 | 8 | 18 | 88 | 4 |
| B001 | 16 | 10 | 10 | 10 | 18 | 9 | 18 | 91 | 1 |
| B007 | 12 | 10 | 6 | 10 | 16 | 8 | 18 | 80 | 7 |
| B009 | 2 | 10 | 8 | 8 | 20 | 10 | 18 | 76 | 9 |
| B006 | 16 | 8 | 6 | 10 | 16 | 7 | 18 | 81 | 6 |
| B013 | 4 | 8 | 10 | 6 | 10 | 5 | 10 | 53 | 13 |
| B011 | 12 | 8 | 6 | 10 | 14 | 6 | 14 | 70 | 11 |
| B002 | 20 | 6 | 10 | 10 | 18 | 7 | 18 | 89 | 2 |

| Class | Ward demand (20) | Width (10) | Surface Type (10) | Hierarchy & Linkage to SRN (10) | SAMT (20) | IDP (10) | Population (20) | Total | Rank |
|----------------------|---------------------|---------------|----------------------|------------------------------------|-----------|-------------|--------------------|-------|------|
| CLASS C ROADS | | | | | | | | | |
| C009 | 16 | 10 | 8 | 4 | 10 | 7 | 16 | 71 | 9 |
| C010 | 16 | 8 | 8 | 4 | 14 | 6 | 14 | 70 | 10 |
| C008 | 20 | 8 | 6 | 10 | 10 | 5 | 12 | 71 | 8 |
| C007 | 20 | 6 | 6 | 10 | 8 | 6 | 16 | 72 | 7 |
| C006 | 12 | 8 | 10 | 10 | 14 | 8 | 12 | 74 | 6 |
| C011 | 8 | 10 | 6 | 4 | 16 | 8 | 18 | 70 | 11 |
| C001 | 16 | 10 | 6 | 10 | 18 | 10 | 20 | 90 | 1 |
| C002 | 12 | 10 | 6 | 10 | 20 | 10 | 20 | 88 | 2 |
| C003 | 20 | 6 | 10 | 6 | 14 | 6 | 14 | 76 | 3 |
| C004 | 16 | 6 | 10 | 10 | 14 | 6 | 14 | 76 | 4 |
| C005 | 16 | 10 | 9 | 6 | 14 | 6 | 14 | 75 | 5 |

CHAPTER SEVEN: MUNICIPAL TRANSPORT MASTER PLAN

This chapter deals with the strategic framework associated with Municipal Transport Master Plan. Alongside, it also covers perspective plan and implementing strategies necessary to achieve the plan followed by budget expenditure plan.

7.1 Perspective Plan of Municipal Road Network

Perspective plan of municipal road network includes the maintenance of the access and collector roads and development of higher hierarchy road corridors supporting mobility of the roads. First five years should focus on development of existing access roads and their maintenance. It also incorporates construction of new road linkages to provide basic access to the settlements. During this period formulated road hierarchy will be implemented in terms of policy and enforcement of bylaws. Within 2 years other complementary plans of land use and city development will be developed. In the third year, the RMTMP and its perspective plan should be revised in coordination with the other plans formulated and changes captured during this period.

Medium term planning will implement the higher hierarchy roads in stages of clearing of the required ROW and infrastructure facilitation. Proper development stages of roads should be planned (construction of Class “A” roads to the standards of Class “C”, then gradually upgrading to Class “B” and to Class “A”). Other implementation strategies should be developed and finalized at the end of this period. The road network developed during this period shall complete construction of Class “C” roads. Gradual upgrading of the higher hierarchy road networks during year ten to twenty will be justified by the traffic generated and level of mobility demanded to support the emerging economy. Land development and management should go parallel with clearance of RoW of higher classes of road. Road corridor development project should be introduced for acquisition of land required to clear RoW for various classes of road.

7.2 Financial Institutions and Capital Investment Plan

The construction work in each year depends on the probable budget. Firstly, the total budget for the current or last financial year needs to be determined. Firstly, the municipal Annual Budget Book is studied for revenues sources as well as expenditure plan on road. 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 the road project. The grass root level involvement in the development of the road sector helps to create an informed and responsible citizen in the society. Thus, it is important to have local people’s participation in the construction works of the local access roads. A majority (if not all) the local access roads should be constructed by the local people in coordination with the Rural Municipality. People’s participation can be achieved in plantation alongside of the roads, cleaning of the road area and other activities.

Rural Municipality has the responsibility of preparing the necessary framework and implementing policies and strategies for the planned development of the municipal roads and thus the Rural Municipality as a whole. Major share of the municipal budget should be used 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.

Rural Municipality has a major role in developing the roads. It has the responsibility of preparing the necessary framework and implementing policies and strategies for the planned development of the municipal roads and thus the Rural Municipality as a whole. Major share of the municipal budget should be used 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 are district and division line agencies such as DoR, DoLIDAR. These institutions are responsible for the development of road corridors that are important to the district or a larger area as a whole. Their contribution may or may not invest in the roads within the Rural Municipality, but wider roads of the Rural Municipality that extends to the boundary to other Rural Municipality/districts may draw investment beyond the municipal boundary. This will ultimately help in the development of the local municipal market centre.

7.3 Intervention Categories

After the finalization of perspective plan through the categorization of municipal road, required interventions of municipal road, required interventions should be decided according to the priority and necessity of the roads. Only few Km graveled/stone soling in this Rural Municipality, therefore, almost all roads need improvement or upgrading in the first phase parallel with conservation intervention. A considerable length of new linkage to remote areas requires new construction as well. For the reference of the Rural Municipality the categories of the interventions are defined below 97

7.3.1 Conservation

Conservation refers to the actions required to repair a road and keep it in good and passable condition. Conservation activities include:

1. **Emergency maintenance** - Basic repairs aimed at removing landslides and repairing damage to the road that inhibit the proper use of the road and make it impassable. This mainly takes place during and after the rainy season. A provisional lump sum is reserved for the entire district road core network based on the network length. Allocation to specific road sections is based on the actual need for clearing landslides or repairing washouts and cuts in the road.

2. **Routine maintenance** - General maintenance of the road aimed at preventing damage by ensuring the proper working of the different road elements (retaining walls, drainage system, carriageway, etc.) and cutting vegetation. This is carried out each year on a more or less continuous basis. Routine maintenance is required for the entire district road core network. The specific requirements for routine maintenance are determined on an annual basis through the road condition survey and defined in the Annual Road Maintenance Plan (ARMP).
3. **Recurrent maintenance** - Repairs of minor damage to the road surface and road structures to bring them back to good condition. This is generally carried out once or twice a year. Recurrent maintenance is required for the entire district road core network, whereby distinction is made according to the surface type. The specific requirements for recurrent maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.
4. **Periodic maintenance** - Larger repairs to the road largely aimed at renewing the road surface through re-gravelling, resealing or overlays. It is generally carried out with several years interval. Although periodic maintenance is only required for specific sections of the district road core network, a lump sum allocation is made for the entire district road core network based on average annual requirements, distinguishing between different surface types. The specific periodic maintenance requirements are determined on an annual basis through the annual road condition survey and defined in the ARMP. 98

The length of roads to be included under each conservation type for the first year is indicated below. This is basically the entire district road core network as far as it does not require rehabilitation.

7.3.2 Improvement

Improvement refers to actions required to improve a road to bring it to a maintainable all-weather standard. It includes the following actions, which are described briefly as following:

1. **Rehabilitation** - Significant repairs required to bring a very poor road back to a maintainable standard. This does not include any changes to the original surface type.
2. **Gravelling** - Placement of gravel layer to make it all-weather and ensure that the road remains passable during the rainy season.
3. **Cross drainage structures**- Placement of suitable cross-drainage structures with the aim of making the road all-weather and ensuring that the road remains passable even during the rainy season
4. **Protective structures** - Placement of retaining walls and lined side drains has to avoid excessive damage to the road during the rainy season and bring it to a maintainable standard.

5. **Blacktopping** - Placement of a blacktop layer in roads with traffic volumes exceeding 50 passenger car units (PCU) to reduce damage to the road surface.
6. **Widening** - Increase of the road width in roads with traffic volumes exceeding 500 passenger car units (PCU) to ensure the proper flow of traffic.

7.3.3 New Construction

New construction refers to construction of new road linkage according to the necessity of the Rural Municipality especially in those places where roads have not linked. This includes opening of new track and establishment connectivity to the new area.

7.4 Five Year Budget Expenditure

Provision of annual budget expenditure for proposed intervention (new construction, upgrading, maintenance and rehabilitation) is one of the final outcomes of the study. The budget plan is based on realistic approach and takes consideration of annual allocated budget of Rural Municipality. Intervention that can't be completed in preceding year should be the next priority in coming year. If a certain road, which was targeted to complete in first year could not be finished in first year, need to be given first priority in next year expenditure plan. If there is deficit in annual expenditure, Rural Municipality needs to incorporate that particular heading in next year at any cost. They can look for grant, assistance from district or even central level or they can incorporate them by shifting budget from less importance item/heading. Budgeting of roads has been divided according to interventions:

7.4.1 Construction and upgrading (70%)

7.4.2 Maintenance (30%)

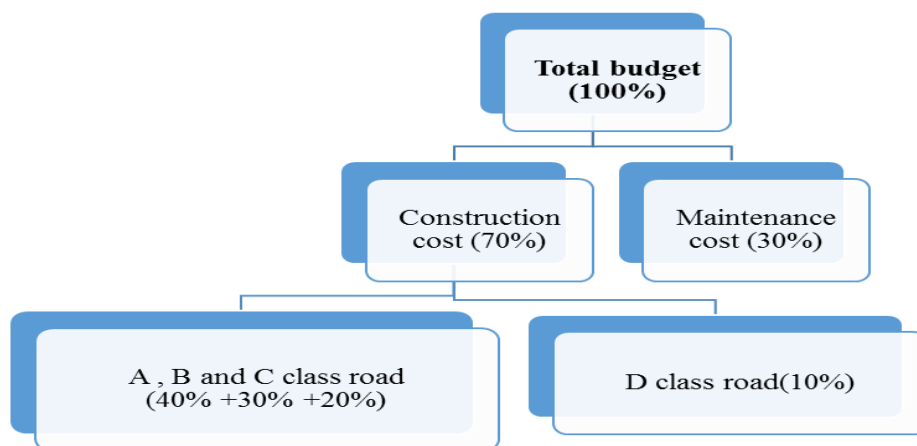


Figure 7.1: Expenditure Breakdown based on to RMTMP Guidelines “A” Annex 5.

Budgeting of municipal road has been calculated based on present budget and certain growth rate. The capacity enhancement of the Rural Municipality is assumed by 20% increment each year. Maintenance cost has been allocated 30% of fund available for

municipal road. Yearly maintenance plans according to need based assessment of required maintenance has to be prepared and cost allocation needs to be done through this plan. In absence of specific fund granted for special project, all other fund available to Rural Municipality for construction of road should come through one window system collected in under single basket and allocated to the roads based on ranking of roads.

The total budget for 5 years period is estimated to be at Rs. **1,586,574,900**. The budget for roads is expected to be increased at 10% per year. The total budget allocated for 1st year is Rs. 14, 00, 00,000 which will increase by 10% each year and at the 5th year; the budget is expected to be Rs.1,041,824,000. The total budget required for 5 years MTPP period is susceptible to change depending on the revised RMTMP every 5 years.

Table 7.1: Budget Allocation for Upgrading and Maintenance

| FY | Class A | Class B | Class C | Total In ('000) |
|-----------------|---------|---------|---------|-----------------|
| 2082/083 | 104000 | 41905 | 56050 | 201955 |
| 2083/084 | 104000 | 49530 | 63983.3 | 217513.3 |
| 2084/085 | 104000 | 45030 | 85033.3 | 234063.3 |
| 2085/086 | 104000 | 49542.5 | 62033.3 | 215575.8 |
| 2086/087 | 104000 | 39367.5 | 54100 | 197467.5 |

The cost of construction and upgrading of road of class “D” is subjected to 10% of total cost of construction and upgrading. Class A road owes 40%, Class B 30% and Class C 20% according to RMTMP Guidelines “A” annex 5.

Table 7.2: Budget Allocation for various Classes of Roads

| FY | Class A | Class B | Class C | Total In ('000) |
|-------------------|---------|---------|---------|-----------------|
| 2082/083 | 104000 | 41905 | 56050 | 201955.0 |
| 2083/084 | 104000 | 49530 | 63983.3 | 217513.3 |
| 2084/085 | 104000 | 45030 | 85033.3 | 234063.3 |
| 2085/086 | 104000 | 49542.5 | 62033.3 | 215575.8 |
| 2086/087 | 104000 | 39367.5 | 54100 | 197467.5 |
| Gap Budget | 520000 | 0 | 0 | 520000.0 |

This budget need to be increased to provide intervention to all road network, if it is to be designed to desired level of full Right of way and hence they are constructed to acceptable level in next five years and is dealt in next subheading.

Gap budget will support by provincial government and Federal Government as well as doner agencies.

7.5 Five Year Implementation Plan

Provision of annual budget expenditure for proposed intervention (new construction, upgrading, maintenance and rehabilitation) is one of the final outcomes of the study. The budget plan is based on realistic approach and takes consideration of annual allocated

budget of Rural Municipality. Intervention that can't be completed in preceding year should be the next priority in coming year. If a certain road, which was targeted to complete in first year could not be finished in first year, need to be given first priority in next year expenditure plan.

For the preparation of implementation plan one intervention for each road was considered to be intervening. However, if budget remains, then it shall be used for the preparation of second level of interventions considering the same priority. For example, if a road is earthen at present, it will first be upgraded to gravel road and then the next ranked road is provided with intervention and if the budget remains only then it will be upgraded to bituminous/metallic road. At short run all the Class A and B roads will be upgraded to two lane roads, whereas Class C and D roads to single lane roads

For track opening and gravelling full length (RoW) was used for intervening. In case of blacktopping within RMTMP period (i.e. 5 years) double lane for Class A and B, single lane for Class C and Class D roads has been taken under considerations. The difference of RoW and existing width was taken for determining the cost for widening. In each of these calculations, the rate given in guideline was for single lane and the necessary multiplication was made for respective number of lanes. Drainage calculation was made for both side drains as well as cross drains. Cross drain was considered at every 500 meter intervals. Most often double side drain was considered within the city area.

Based on the budget projection of the Rural Municipality for next five year and budget allocation for various classes of roads and surface type, the implementation strategy for the major hierarchical road network has been proposed.

Table 7.3 Five Year Implementation Plan for Class A Roads

| S.N. | Description | Target | | Total Budget ('000) | Implementation Year | | | | | Source of Budget | | Gap Budget |
|--------------|--|--------|------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|---------------------------|-----------------------|-------------------|
| | | Unit | Nos. | | 2082/083 | 2083/084 | 2084/085 | 2085/086 | 2086/087 | Response office | Amount Require ('000) | |
| 1. | Swami Danda- Dallemane-Lamomane-Gumba ward No. 1 office- Kaapti-Ermakhu Road | km | 10 | 100000 | 10000.00 | 10000.00 | 10000.00 | 10000.00 | 10000.00 | Gaupalika office, PG, GoN | 100000 | 50000.00 |
| 2. | Himganga-Buddha Ma.Bi.-Maili- Madalu- Agriculture Road | km | 19 | 190000 | 19000.00 | 19000.00 | 19000.00 | 19000.00 | 19000.00 | Gaupalika office, PG, GoN | 190000 | 95000.00 |
| 3. | Sotipul-Chaulakharka-Kavre Chaur-Gechuka-Gumba-Lamgane Road | km | 40 | 400000 | 40000.00 | 40000.00 | 40000.00 | 40000.00 | 40000.00 | Gaupalika office, PG, GoN | 400000 | 200000.00 |
| 4. | Kinja- Bhakanje- Lamjura Road | km | 35 | 350000 | 35000.00 | 35000.00 | 35000.00 | 35000.00 | 35000.00 | Gaupalika office, PG, GoN | 350000 | 175000.00 |
| Total | | | 104 | 1,040,000.00 | 104,000.00 | 104,000.00 | 104,000.00 | 104,000.00 | 104,000.00 | | 1,040,000.00 | 520,000.00 |

Table 7.4 Five Year Implementation Plan for Class B Roads

| S.N. | Description | Target | | Total Budget ('000) | Implementation Year | | | | | Source of Budget | | Gap Budget |
|------|--|--------|------|---------------------|---------------------|----------|----------|----------|----------|---------------------------|-----------------------|------------|
| | | Unit | Nos. | | 2082/083 | 2083/084 | 2084/085 | 2085/086 | 2086/087 | Response office | Amount Require ('000) | |
| 1. | Gepchuka-Ghurmise-Koshinasa Road | km | 3 | 22500 | 7500.00 | 7500.00 | 7500.00 | | | Gaupalika office, PG, GoN | 22500 | 0.00 |
| 2. | Kahare-Buldanda-Gumba Road | km | 7 | 52500 | 17500.00 | 17500.00 | 17500.00 | | | Gaupalika office, PG, GoN | 52500 | 0.00 |
| 3. | Jolakhu-Bahunelath- Buddha Ma.Bi. Agriculture Road | km | 8 | 60000 | 20000.00 | 20000.00 | 20000.00 | | | Gaupalika office, PG, GoN | 60000 | 0.00 |
| 4. | Lichu-Dhanemod Road | km | 8 | 60000 | | 20000.00 | 20000.00 | 20000.00 | | Gaupalika office, PG, GoN | 60000 | 0.00 |

| S.N. | Description | Target | | Total Budget ('000) | Implementation Year | | | | | Source of Budget | | Gap Budget |
|------|--|--------|------|---------------------|---------------------|----------|----------|----------|----------|---------------------------|-----------------------|------------|
| | | Unit | Nos. | | 2082/083 | 2083/084 | 2084/085 | 2085/086 | 2086/087 | Response office | Amount Require ('000) | |
| 5. | Jolakhu-Cherbading Road | km | 3.5 | 26250 | | 8750.00 | 8750.00 | 8750.00 | | Gaupalika office, PG, GoN | 26250 | 0.00 |
| 6. | Chandithan-Saaasa Agriculture road | km | 4 | 30000 | | 10000.00 | 10000.00 | 10000.00 | | Gaupalika office, PG, GoN | 30000 | 0.00 |
| 7. | Takarmo-Ermakhu Road | km | 3 | 22500 | | | 7500.00 | 7500.00 | 7500.00 | Gaupalika office, PG, GoN | 22500 | 0.00 |
| 8. | Bhedigoth- Damale Agriculture Road | km | 3 | 22500 | | | 7500.00 | 7500.00 | 7500.00 | Gaupalika office, PG, GoN | 22500 | 0.00 |
| 9. | Chyandanda- Rakchhepu-Simalbote-Dhaukhani Road | km | 4 | 30000 | | | 10000.00 | 10000.00 | 10000.00 | Gaupalika office, PG, GoN | 30000 | 0.00 |
| 10. | Kachapu (Maili)- Gaudi-Kavre Chaur- Khaptel-Dunda- Kinja-Tribeni- Umatirtha Road | km | 35 | 262500 | 87500.00 | 87500.00 | 87500.00 | | | Gaupalika office, PG, GoN | 262500 | 0.00 |
| 11. | Likhukhola- Kaptel Ragnda-Bukudobhan Road | km | 4 | 30000 | 10000.00 | 10000.00 | 10000.00 | | | Gaupalika office, PG, GoN | 30000 | 0.00 |
| 12. | Mandanda- Namkheli Ropad | | 5 | 37500 | 12500.00 | 12500.00 | 12500.00 | | | Gaupalika office, PG, GoN | 37500 | 0.00 |
| 13. | Kaptel Khola- Kinja Road | | 5 | 37500 | | 12500.00 | 12500.00 | 12500.00 | | Gaupalika office, PG, GoN | 37500 | 0.00 |
| 14. | Upchang- Photi- Kundar Road | | 4 | 30000 | | 10000.00 | 10000.00 | 10000.00 | | Gaupalika office, PG, GoN | 30000 | 0.00 |
| 15. | Jogidanda- Lelapu- Chaurikharka- Khahare Road (Tourism Road) | | 10 | 75000 | | 25000.00 | 25000.00 | 25000.00 | | Gaupalika office, PG, GoN | 75000 | 0.00 |
| 16. | Lelapu- Rineli – Khamding Road | | 3 | 22500 | | | 7500.00 | 7500.00 | 7500.00 | Gaupalika office, PG, GoN | 22500 | 0.00 |

| S.N. | Description | Target | | Total Budget ('000) | Implementation Year | | | | | Source of Budget | | Gap Budget |
|------|--|--------|--------------|---------------------|---------------------|---------------|---------------|---------------|--------------|---------------------------|-----------------------|-------------|
| | | Unit | Nos. | | 2082/083 | 2083/084 | 2084/085 | 2085/086 | 2086/087 | Response office | Amount Require ('000) | |
| 17. | Dunda- Tading Road | | 4 | 30000 | | | 10000.00 | 10000.00 | 10000.00 | Gaupalika office, PG, GoN | 30000 | 0.00 |
| 18. | Photi- Kalidaha Road | | 3 | 22500 | | | 7500.00 | 7500.00 | 7500.00 | Gaupalika office, PG, GoN | 22500 | 0.00 |
| 19. | Sagardanda- Patala chiring – Kharka- - Lole Road | km | 25 | 187500 | 62500.00 | 62500.00 | 62500.00 | | | Gaupalika office, PG, GoN | 187500 | 0.00 |
| 20. | Kinja- Chhimbu- Sere Road | km | 10 | 75000 | 25000.00 | 25000.00 | 25000.00 | | | Gaupalika office, PG, GoN | 75000 | 0.00 |
| 21. | Bhakanje- Themjeng Road | km | 11 | 82500 | 27500.00 | 27500.00 | 27500.00 | | | Gaupalika office, PG, GoN | 82500 | 0.00 |
| 22. | Mabu- Odare Road | km | 4 | 30000 | | 10000.00 | 10000.00 | 10000.00 | | Gaupalika office, PG, GoN | 30000 | 0.00 |
| | Total | | 166.5 | 1248750 | 270000 | 366250 | 416250 | 146250 | 50000 | | 1248750 | 0.00 |

Table 7.5 Five Year Implementation Plan for Class C Roads

| S.N. | Description | Target | | Total Budget ('000) | Implementation Year | | | | | Source of Budget | | Gap Budget |
|------|-------------------------------------|--------|------|---------------------|---------------------|----------|----------|----------|----------|---------------------------|-----------------------|------------|
| | | Unit | Nos. | | 2082/083 | 2083/084 | 2084/085 | 2085/086 | 2086/087 | Response office | Amount Require ('000) | |
| 1. | Lamomane-Gumba Road | km | 0.8 | 4000 | 1333.33 | 1333.33 | 1333.33 | | | Gaupalika office, PG, GoN | 4000 | 0.00 |
| 2. | Ramse-Lapduka Road | km | 1.5 | 7500 | 2500.00 | 2500.00 | 2500.00 | | | Gaupalika office, PG, GoN | 7500 | 0.00 |
| 3. | Kaapti Road | km | 1.5 | 7500 | 2500.00 | 2500.00 | 2500.00 | | | Gaupalika office, PG, GoN | 7500 | 0.00 |
| 4. | Ermakhu –Bhotebari Agriculture Road | km | 2.5 | 12500 | | 4166.67 | 4166.67 | 4166.67 | | Gaupalika office, PG, GoN | 12500 | 0.00 |

| S.N. | Description | Target | | Total Budget ('000) | Implementation Year | | | | | Source of Budget | | Gap Budget |
|------|---|--------|-------------|-------------------------|---------------------|----------------|----------------|----------------|-----------------------------|------------------------------|---------------------------|---------------|
| | | Unit | Nos. | | 2082/083 | 2083/084 | 2084/085 | 2085/086 | 2086/087 | Response office | Amount Require ('000) | |
| 5. | Maili-Jilu Road (Track opening 2km) | km | 2 | 10000 | | 3333.33 | 3333.33 | 3333.33 | | Gaupalika office, PG, GoN | 10000 | 0.00 |
| 6. | Jolakhu- Pokhari Road | km | 2 | 10000 | | 3333.33 | 3333.33 | 3333.33 | | Gaupalika office, PG, GoN | 10000 | 0.00 |
| 7. | Jogidanda- Chamargaun- Buldanda (Ward no.4) | km | 2 | 10000 | | | 3333.33 | 3333.33 | 3333.33 | Gaupalika office, PG, GoN | 10000 | 0.00 |
| 8. | Chauki Danda- Okhabote Road | km | 2.5 | 12500 | | | 4166.67 | 4166.67 | 4166.67 | Gaupalika office, PG, GoN | 12500 | 0.00 |
| 9. | Lelapu- Majhugaun Road | km | 2 | 10000 | | | 3333.33 | 3333.33 | 3333.33 | Gaupalika office, PG, GoN | 10000 | 0.00 |
| 10. | Dochhim- Dudatar Road | km | 1.5 | 7500 | | 2500.00 | 2500.00 | 2500.00 | | Gaupalika office, PG, GoN | 7500 | 0.00 |
| 11. | Kichandanda- Dorma- Ga.Pa. office Short Road | km | 2 | 10000 | | 3333.33 | 3333.33 | 3333.33 | | Gaupalika office, PG, GoN | 10000 | 0.00 |
| | Total | km | 20.3 | 101500 | 6333.3 | 23000.0 | 33833.3 | 27500.0 | 10833.33 3 | | 101500.0 | 0.0 |

CHAPTER EIGHT: CONCLUSION

8.1 Conclusion

Municipal Transport Master Plan has been prepared for Likhupike Rural Municipality. A series surveys for data collection, series of different level interaction with the locals and various authorities was conducted. The study has identified all the roads of the Rural Municipality, their status and interventions required. The map of IDPM, MIM, MTPP and other maps are prepared.

The study has formulated hierarchy of roads which is necessary for long term rapid development of the Rural Municipality area. The study has shown increased trend of motorized vehicle. This is necessary to be implemented as the developed cities are have trouble to address the demand of active mode user friendly urban road infrastructures. As the implementation strategy suggests, the Rural Municipality needs to develop proper framework and policies for the implementation of the perspective plans, built the capacity of the Rural Municipality and the local organizations and committees and proper stages of development of the roads.

Transport and land use along with nodal development cannot be disintegrated. Preparation of Municipal Transport Master Plan is the first step in the planned development of the municipal area. RMTMP alone cannot circumscribe the potential development of the municipal area. Comprehensive city development plan, land use plan, drainage master plan, etc. are some other plans that needs to be prepared and integrated with Municipal Transport Master Plan. For future nodal development and transport development, land use master plan and comprehensive city development plan should also be prepared. RMTMP should then be revised based on those plans.

8.2 Recommendation

- Unplanned urbanization has rendered many cities unlivable because of the growing pollution and lack of green/open spaces. Road space is most frequently used public space. **Provision of green belt** along the urban roads creates safer and pleasant walking spaces, and acts as median to separate motorists from each other and from the NMT users.
- **Proper structured public transport routes** are vital for sustainable transport development. As the demand increases, before well-structured and formal transport is justified economically, the local government should introduce City Bus to ply at least within the Rural Municipality.
- **A proper hierarchy of settlement** should be developed to segregate the commercial and business centers from settlement areas and industrial area. A hierarchy of the market centers should be developed as main market
- Better provision of **Road and road side infrastructure** is must for effectiveness of planning. Due to very high active users, proper networks of pedestrian way and cycle tracks should fit in the basic road width. Proper bus lay bys are necessary elements for proper public transport system. Adequate lighting system along with proper connected pedestrian ways and zebra crossings is another major road infrastructure.

- Increase private motorized vehicle ownership will have witnessed the need of parking, so **Proper Parking Management** is must. Similarly, parking at the major destinations such as business and market centers, industrial and commercial areas should be managed by the private sector.
- **Integrated service planning** is a very important factor for damage minimization during construction and expansion of various facilities. As the road follows, settlement also expands which demands other facilities such as electricity, drainage and drinking water. All these facilities are provided along with road infrastructure, mostly within the ROW of road. Proper integration of these services with road planning is necessary to minimize multiple investments in the individual infrastructure and the damage to other infrastructure during maintenance and/or expansion.
- The proposed roads cannot be directly implemented at a glance. **Proper phases of development** of roads of all hierarchy should be envisaged and planned.
- **Land acquisition** should go parallel with development phase of roads and possibly concept of land pooling can be adopted for land acquisition.
- **Proper Land Use Plan and Comprehensive city development plan** is must for better effectiveness of this RMTMP and these three need to be correlated with each other.
- It is recommended to adopt **Labour based Environmental friendly and Participatory (LEP)** approach popularly known as Green Roads construction method. Green Road approach aims at reducing scarring by minimizing the amount of cut necessary and by balancing the amount of material cut with the amount of fill required.
- Revised Scoring criteria and Mid Period Review is must to ensure the RMTMP is in accordance with the future developed polices on Land Use and Comprehensive City Development Plan.

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ANNEX A: MAPS

ANNEX B: ROAD INVENTORY DATA (नेपालीमा)

| क्र.स. | सडकको नाम सडकको | लम्बाइ (कि.मि.) | सडकको चौडाई (मि.) | सडक प्राथमिकता | सूचीको प्रकार | हस्तक्षेप प्रकार | वार्ड नं. | टिप्पणी |
|--------|---|--------------------|----------------------|---------------------------|------------------|------------------|-----------|---------|
| १ | स्वामी डाँडा-दल्लेमाने-लमोमाने-गुम्बा वडा नम्बर १ कार्यालय-कासी-एर्माखु रोड | १० | १३ | माटो/स्टोन सोलिड | A1 | स्तरउन्नती | १ | A |
| २ | हिमगंगा-बुद्ध माबी-माइली-मडलु-कृषि मार्ग | १९ | १३/७ | माटो/स्टोन सोलिड | A2 | स्तरउन्नती | २ | A |
| ३ | सोतिपुल-चौलाखर्क-काभ्रे चौर-गेचुका-गुम्बा-लमगाने सडक | ४० | १३ | माटो | A3 | स्तरउन्नती | ३ | A |
| ४ | किन्जा-भकञ्जे-लमजुरा रोड | ३५ | १३ | माटो | A4 | स्तरउन्नती | ५ | A |
| ५ | गेचुका-घुर्मिसे-कोशिनासा सडक | ३ | ७ | माटो | B1 | स्तरउन्नती | १ | B |
| ६ | लिचु-धानेमोड सडक | ८ | ७ | माटो/स्टोन सोलिड (3km) | B10 | स्तरउन्नती | २ | B |
| ७ | च्यानडाँडा-राच्छेपु-सिमलबोटे-धौखानी सडक | ४ | ७ | ड्र्याक खुला/माटो | B11 | स्तरउन्नती | २ | B |
| ८ | लिखुखोला-कसेल रगण्डा-बुकुडोभान रोड | ४ | ७ | माटो | B12 | स्तरउन्नती | ३ | B |
| ९ | उपचाड-फोटी-कुन्दर रोड | ४ | ७ | माटो | B13 | स्तरउन्नती | ४ | B |
| १० | डुन्डा-ताडिड रोड | ४ | ७ | ड्र्याक खुला | B14 | नयाँ ड्र्याक | ४ | B |
| ११ | भकञ्जे-थेमजेड रोड | ११ | ७ | माटो | B15 | स्तरउन्नती | ५ | B |
| १२ | जोलाखु-चेरबादिड सडक | ३.५ | ७ | माटो/स्टोन सोलिड (1km) | B16 | स्तरउन्नती | २ | B |
| १३ | मण्डाडा- नामखेली रोड | ५ | ७ | माटो | B17 | स्तरउन्नती | ३ | B |
| १४ | जोगीडाँडा-लेलापु-चौरीखर्क-खहरे रोड (पर्यटन मार्ग) | १० | ७ | माटो | B18 | स्तरउन्नती | ४ | B |
| १५ | फोटी-कालिदह रोड | ३ | ७ | ड्र्याक खुला | B19 | नयाँ ड्र्याक | ४ | B |
| १६ | कहारे-बुलडाँडा-गुम्बा सडक | ७ | ७ | माटो | B2 | स्तरउन्नती | १ | B |
| १७ | माबु-ओडारे रोड | ४ | ७ | माटो | B20 | स्तरउन्नती | ५ | B |
| १८ | टकर्मो-एर्माखु सडक | ३ | ७ | माटो/स्टोन सोलिड (1km) | B21 | स्तरउन्नती | २ | B |
| १९ | चण्डिथान-सासा कृषि सडक | ४ | ७ | माटो/स्टोन सोलिड (2km) | B22 | स्तरउन्नती | २ | B |

| क्र.स. | सडकको नाम सडकको | लम्बाइ (कि.मि.) | सडकको चौडाई (मि.) | सडक प्राथमिकता | सूचीको प्रकार | हस्तक्षेप प्रकार | वार्ड नं. | टिप्पणी |
|--------|--|--------------------|----------------------|-----------------------------|------------------|--|-----------|---------|
| २० | जोलाखु-बहुनेलथ- बुद्ध मावी। कृषि सडक | ८ | ७ | माटो/स्टोन सोलिड (3km) | B3 | स्तरउन्नती | २ | B |
| २१ | भेदीगोठ-दमले कृषि सडक | ३ | ७ | माटो/स्टोन सोलिड (100m) | B4 | स्तरउन्नती | २ | B |
| २२ | कचापु (माइली)-गौली-काभ्रेचौर-खमेल-डुंडा-किन्जा- त्रिवेणी-उमातीर्थ सडक | ३५ | ९ | माटो | B5 | स्तरउन्नती | ३ | B |
| २३ | कपटेल खोला-किन्जा रोड | ५ | ७ | माटो | B6 | स्तरउन्नती | ४ | B |
| २४ | लेलेपु-रिनेली-खामदिङ रोड | ३ | ७ | माटो | B7 | स्तरउन्नती | ४ | B |
| २५ | सगरडाँडा-पाताला छिरिङ-खर्क--लोले रोड | २५ | ७ | माटो | B8 | स्तरउन्नती | ५ | B |
| २६ | किन्जा-छिम्वु-सेरे रोड | १० | ७ | ट्रयाक खुला/माटो | B9 | स्तरउन्नती (4km)/ नयाँ ट्रयाक (6km) | ५ | B |
| २७ | लमोमाने-गुम्बा सडक | ०.८ | ७ | माटो | C1 | स्तरउन्नती | १ | C |
| २८ | चौकीडाँडा-ओखरबोटे सडक | २.५ | ७ | माटो | C10 | स्तरउन्नती | ३ | C |
| २९ | दोछिम- दुडाटार रोड | १.५ | ७ | माटो | C11 | स्तरउन्नती | ४ | C |
| ३० | एर्माखु-भोटेबारी कृषि सडक | २.५ | ७ | माटो/स्टोन सोलिड (3km) | C2 | स्तरउन्नती | २ | C |
| ३१ | जोगीडाँडा-चमरगाउँ-बुलडाँडा (वार्ड नम्बर ४) | २ | ७ | माटो | C3 | स्तरउन्नती | ३ | C |
| ३२ | किचःाडडाडां डोर्मा- ग.पा. कार्यालय छोटो बाटो | २ | ७ | ट्रयाक खुला | C4 | नयाँ ट्रयाक | ४ | C |
| ३३ | लेलेपु-मझुगाउँ सडक | २ | ७ | माटो | C5 | स्तरउन्नती | ४ | C |
| ३४ | जोलाखु-पोखरी सडक | २ | ७ | गेभियन (3m)/ स्टोन सोलिड | C6 | स्तरउन्नती | २ | C |
| ३५ | मैली-जिलु सडक (ट्रयाक खोल्ने २ किमी) | २ | ७ | माटो | C7 | स्तरउन्नती / नयाँ ट्रयाक | २ | C |
| ३६ | रामसे-लाप्डुका सडक | १.५ | ७ | माटो | C8 | स्तरउन्नती | १ | C |
| ३७ | कासी रोड | १.५ | ७ | माटो | C9 | स्तरउन्नती | १ | C |

| क्र.स. | सडकको नाम सडकको | लम्बाइ (कि.मि.) | सडकको चौडाई (मि.) | सडक प्राथमिकता | सूचीको प्रकार | हस्तक्षेप प्रकार | वार्ड नं. | टिप्पणी |
|--------|----------------------------------|--------------------|----------------------|----------------|------------------|------------------|-----------|---------|
| ३८ | नामखेली गुम्वा सडक | | | | | नयाँ ट्रयाक | ३ र १ | |
| ३९ | किटीखर्क वुल्डांडा सडक | | | | | नयाँ ट्रयाक | ४ र १ | |
| ४० | सुर्वणमेड किचाड डांडा सडक | | | | | नयाँ ट्रयाक | ३ र ४ | |
| ४१ | गून्जेगडेरी लेलपु चमारगाउं सडक | | | | | नयाँ ट्रयाक | ४ र ३ | |
| ४२ | सोती किन्जा सडक | | | | | | ३ र ४ | |
| ४३ | रितेली खाम्दी थेलमा सडक | | | | | | ४ | |
| ४४ | डुडांटार पिलिड तादिड ओखरबोटे सडक | | | | | | ४ र ३ | |

ANNEX B PHOTOGRAPHS





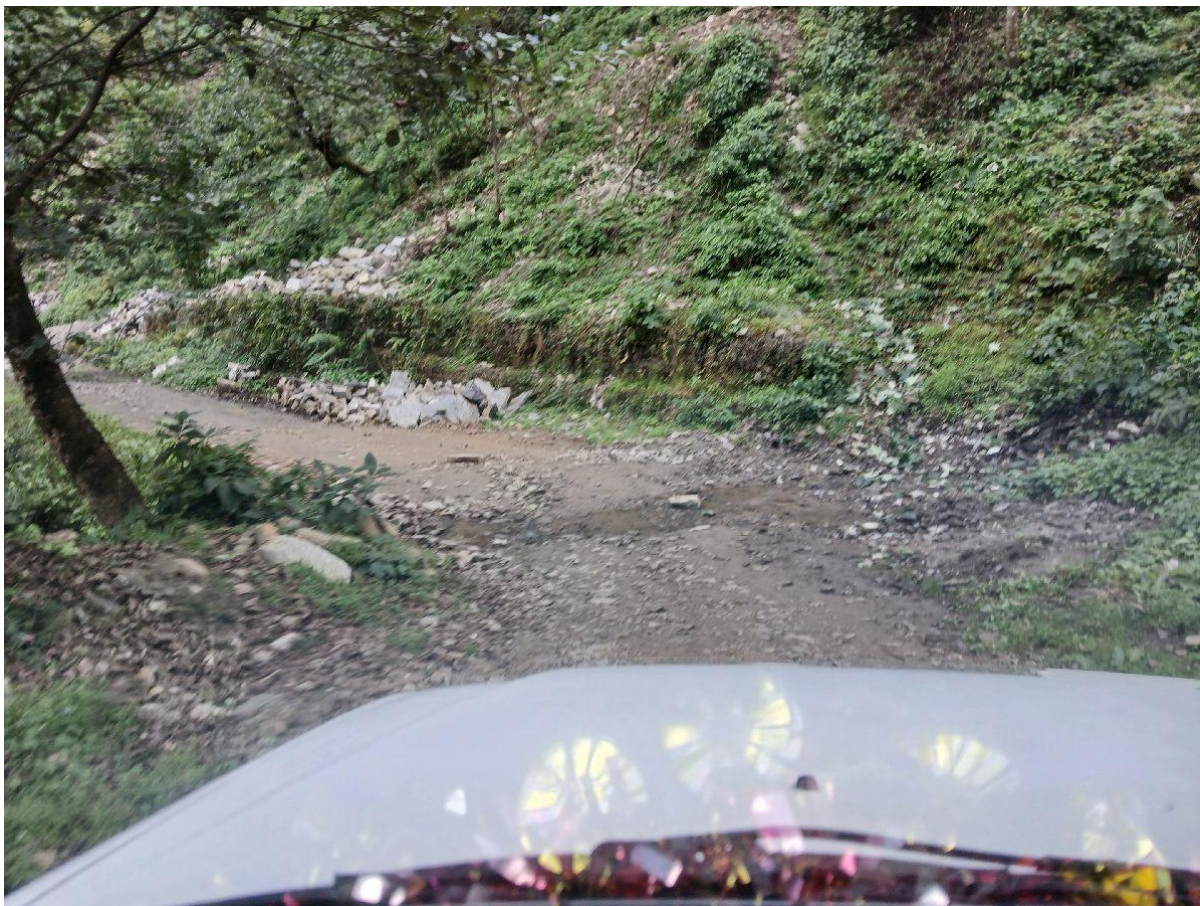




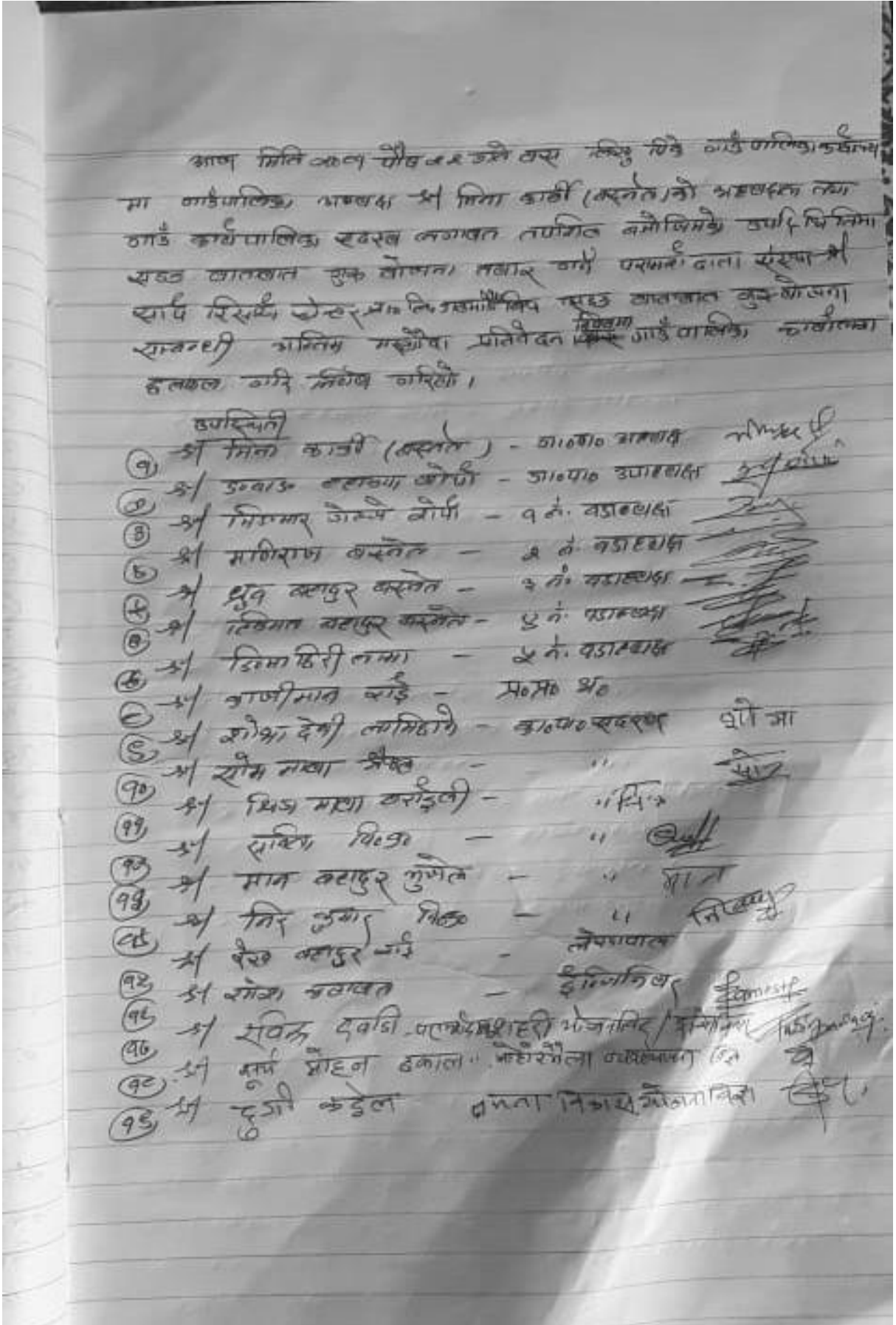








ANNEX C: MEETING MINUTES



ANNEX D: FIELD FORMS

माग फारम

बाटोकालागि अनुरोध
वार्डले भर्ने

१. वार्ड न. :

२. प्राथमिकताका आधारमा तालिका भर्नुहोस :

| Code | बाटोको नाम | चौडाई | बाटोको प्रकार | | | | प्राथमिकता न. * |
|------|------------|-------|--------------------|---------------------|---------------------|----------------|-----------------------|
| | | | नया बाटो खोल्ने | स्तरोन्नति गर्ने | पुनरुत्थान गर्ने | अबधिक मर्मत | |
| क | | | | | | | |
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| ड | | | | | | | |

पहिलो प्राथमिकताका लागि १, दोस्रोका लागि २ भर्नुहोस्

३. माथिको प्राथमिकता मितिको वडा बैठक बाट तोकिएको छ ।

४. लाभान्वित बस्ती :

| कोड** | बस्तीको नाम, घरधुरी, जनसंख्या |
|-------|-------------------------------|
| क | |
| ख | |
| ग | |
| घ | |
| ड | |

५. लाभको प्रकार र प्राथमिकताका कारण :

| कोड** | कस्तो किसिमको फाइदा पुग्छ लेख्नुहोस |
|-------|-------------------------------------|
| क | |

| कोड** | कस्तो किसिमको फाइदा पुग्छ लेख्नुहोस |
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** २ न. तालिका अनुसार भर्नुहोस्

६. अरु संस्थाहरुको संलग्नता :

| कोड | अरु संस्थाहरु कुनै यो project मा संलग्न भएको (बाह्य donor, NGOs, INGOs, नेपाल सरकारको संस्थाहरु) भए उल्लेख गर्नुहोस ? वा नजिकैको कुनै गा. वि. स. ले अनुरोध गरेको भए उल्लेख गर्नुहोस ? तिनीहरुको संलग्नता र प्रकार समेत उल्लेख गर्नुहोस |
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** २ न. तालिका अनुसार भर्नुहोस्

७. वडामा अन्य विकासको योजना:

यातायात क्षेत्र बाहेक अन्य बिकासको योजना भए उल्लेख गर्नुहोस :

| S.No. | विकास योजनाको नाम | प्राथमिकता क्रम | कैफियत (स्थान , महत्व , सहयोग, आदी) |
|-------|-------------------|-----------------|---|
| १. | | | |
| २. | | | |
| ३. | | | |
| ४. | | | |
| ५. | | | |
| ६. | | | |
| ७. | | | |

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

a) वडाले निम्न किसिमले सहयोग गर्नेछ :

- नगद पैसा सहयोग (कति प्रतिशत उल्लेख गर्नुहोस:.....%)
- श्रमदान (सिमांकन औल्याउनुस) कति सम्म रू.....
- जग्गा जमिन दान.....
- खानाका लागि काम.....
- मर्मत कार्य सहयोग.....
- अन्य (उल्लेख गर्नुहोस)

- b) मितिमा बसेको वडा बैठकले माथि उल्लेखित विवरण सबै छलफलबाट पारित गरिएको घोसणा गर्दछ | एक प्रतिलिपि वडामा रेकर्डमा राख्नुहोस |

वडा संयोजकको हस्ताक्षरसडक समितिको संयोजकको हस्ताक्षर

(नाम:) (नाम:)

मिति : मिति :

माग फारम सडकका लागि अनुरोध बाडले भने

1. वार्ड न. : ०१
2. प्राथमिकताका आधारमा तालिका भर्नुहोस :

| प्राथमिकता न. | सडकको नाम | चौडाई | सडकको प्रकार | | | | |
|---------------|--|--------|----------------|------------------|------------------|-------------|--------|
| | | | नया सडक खोल्ने | स्तरोन्नति गर्ने | पुनरुत्थान गर्ने | अवधिक मर्मत | |
| १. | रत्नपुर डाँडा - डल्लेपानी - लाफमान - गुम्बा - ०५ करालम - १- काली - रत्नपुर सडक | १३ फी. | | ✓ | | | १० km |
| २. | गेल्लुका - सुर्जित - कोशीताल सडक | ७ फी. | | ✓ | | | ३ km |
| ३. | लाफमान - गुम्बा सडक | ७ फी. | | | | | ०.८ km |
| ४. | राम्पै - लाफमान सडक | ७ फी. | | ✓ | | | १.६ km |
| ५. | काली जाने सडक | ७ फी. | ✓ | | | | १.६ km |

१. रत्नपुर - कुलडाँडा - गुम्बा सडक ७ फी. पहिलो प्राथमिकताका लागि १. दोस्रोका लागि २ भर्नुहोस १० km लेन्बा - स्तरोन्नति गर्ने

3. माथिको प्राथमिकता मितिको वडा बैठक बाट तोकिएको छ ।
4. लाभान्वित बस्ती :

| कोड** | बस्तीको नाम, घरधुरी, जनसंख्या |
|-------|-------------------------------|
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5. लाभको प्रकार र प्राथमिकताका कारण :

| कोड** | कस्तो किसिमको फाइदा पुग्छ लेखुहोस |
|-------|---|
| क | पिक डाँडा / गुम्बा / राम्पै स्थल / View of Himalaya cheese factory |

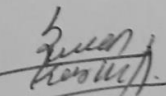
| | | | |
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| 3. | | | |
| 4. | | | |
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8. प्रस्तावित बाटोको लागि वडाको भूमिका (उल्लेख गर्नुहोस) :

a) वडाले निम्न किसिमले सहयोग गर्नेछ :

- नगद पैसा सहयोग (कति प्रतिशत उल्लेख गर्नुहोस:.....%)
- श्रमदान (सिमांकन औल्याउनुस)कति सम्म रू.....
- जग्गा जमिन दान.....
- खानाका लागि काम.....
- मर्मत कार्य सहयोग.....
- अन्य (उल्लेख गर्नुहोस).....

b) २०८१/०८/०९ मितिमा बसेको वडा बैठकले माथि उल्लेखित विवरण सवै छलफलबाट पारित गरिएको घोसणा गर्दछ । एक प्रतिलिपि वडामा रेकर्डमा राख्नुहोस ।

संयोजकको हस्ताक्षरसडक समितिको संयोजकको हस्ताक्षर (कृषि प्राविधिक) 

म: (नाम: सुमन खार्की)

ति: मिति : २०८१/०८/०९

माग फारम सडकका लागि अनुरोध चाडले गर्ने

1. वार्ड नं. : ...०२.....
2. प्राथमिकताका आधारमा तालिका भर्नुहोस :

| प्राथमिकता नं. | सडकको नाम | चौडाई | सडकको प्रकार | | | |
|----------------|--|------------|----------------|------------------|------------------|-----------------|
| | | | नया सडक खोल्ने | स्तरोन्नति गर्ने | पुनरुत्थान गर्ने | अर्बधिक मर्मत |
| १. | दिपकगा - लुब्धमानि - मैली - साप्लु कृषि सडक - १.९ km | १.२ m / ७m | | ✓ | - Soling All | available 4/5 m |
| २. | जौलु - खाटुकाठ - पुष्पगोत्री कृषि सडक - ८ km | ७m | | ✓ | - " 1/2 | |
| ३. | लिपु - धनेमोड सडक - ८ km | ७m | | ✓ | - " 1/2 | |
| ४. | जौलु - चेकादिडा - सडक - ३.२ km | ७m | | ✓ | - " 1/2 | |
| ५. | चेकाधान - साउमाला कृषि सडक - ४ km | ७m | | ✓ | 1/2 Soling | |

पहिलो प्राथमिकताका लागि १, दोस्रोका लागि २ भर्नुहोस

६. टाकाभौ - सरमालु सडक - ३ km - ७m - upgrade - 1/2 Soling

3. माथिको प्राथमिकता मितिको वडा बैठक बाट तोकिएको छ ।
4. लाभान्वित बस्ती :

| कोड** | बस्तीको नाम, घरधुरी, जनसंख्या |
|-------|--|
| क ७. | देवगालु - श्रेष्ठकृषि कृषि सडक - २.५ km - ७m - 40x Soling |
| ख ८. | मैली - जिलु सडक - प्रालेक opening - २ km - ७m - No any Soling |
| ग ९. | भेडिगाठ - दागले कृषि सडक - ३ km - ७m - (१००m Soling) |
| घ १०. | चेपानडाडा - रक्सेपु - सिमलकोट - धाउरानी सडक - ४ km - ७m - प्रालेक open - |
| ड ११. | जौलु - पौरवरी सडक - २ km - ७m - 60x Soling (3/4 m) @ 10/12 |

5. लाभको प्रकार र प्राथमिकताका कारण :

| कोड** | कस्तो किसिमको फाइदा पुग्छ लेख्नुहोस |
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 कुल-य, किनि, खेती (नगरी)

** २ न. तालिका अनुसार भर्नुहोस्

स्थाहरूको संलग्नता :

अरु संस्थाहरू कुनै यो ००००००० मा संलग्न भएको (बाह्य ०००००, ~~NGO~~ II
 संस्थाहरू) भए उल्लेख गर्नुहोस ? वा नजिकैको कुनै गा. वि. स. ले अनु
 गर्नुहोस ? तिनीहरूको संलग्नता र प्रकार समेत उल्लेख ग

माग फारम सडकका लागि अनुरोध बाईले भर्ने

- वाडै नं. : ०३
- प्राथमिकताका आधारमा तालिका भर्नुहोस्

| प्राथमिकता नं. | सडकको नाम | चौडाई | सडकको प्रकार | | | |
|----------------|--|-------|----------------|-------------------|------------------|-------------|
| | | | नया सडक खोल्ने | स्तरोमज्जति गर्ने | पुनरुत्थान गर्ने | अवधिक मर्मत |
| १ | सोती पुल - चोलेखर्क | १३m | | ✓ | | |
| २ | काभ्रेकोट - जोरचुवा - गुम्का लाम्खाने सडक - ४०km | ५m | | ✓ | | |
| ३ | काभ्रेकोट (मैली) - खारेल - ५km | ५m | | ✓ | | |
| ४ | काभ्रेकोट - खारेल - ५km | ५m | | ✓ | | |
| ५ | जोशीडाँडा - बलडाँडा (४५डाँडा) २km - ७m - | ७m | | ✓ | | |
| ६ | मानडाँडा - नामरेकोट सडक - २km - ७m | ७m | | ✓ | | |

पहिलो प्राथमिकताका लागि १, दोस्रोका लागि २ भर्नुहोस्

- माथिको प्राथमिकता २०८१/०८/०९ मितिको वडा बैठक बाट तोकिएको छ ।
- लाभान्वित वस्ती :

| कोड** | वस्तीको नाम, घरधुरी, जनसंख्या |
|-------|--|
| क | सिदिम - जोशीडाँडा - १.२km - ७m upgrade |
| ख | |
| ग | वैद्य स्तुम्बा (चर्चटोच डेढ) - ३ नं. सडक |
| घ | भलेसी, डिदि, जुगा, सुन्तला, कागती, सिमा |
| ङ | |

- लाभको प्रकार र प्राथमिकताका कारण :

| कोड** | कस्तो किसिमको फाइदा पुग्छ लेख्नुहोस् |
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पुन्य के. वस्नेत
रक वडा अध्यक्ष

पुन्य के. वस्नेत
वडा अध्यक्ष

माग फारम सडकका लागि अनुरोध वार्डले भने

1. वार्ड न. : ०४.....
2. प्राथमिकताका आधारमा तालिका भर्नुहोस :

| प्राथमिकता न. | सडकको नाम | चौडाई | सडकको प्रकार | | | |
|---------------|--|-------------|----------------|------------------|------------------|-------------|
| | | | नया सडक खोल्ने | स्तरोन्नति गर्ने | पुनरुत्थान गर्ने | अवधिक मर्मत |
| १. | खापेल खापेल जिंजा सडक | २ km / 7m | | ✓ | | |
| २. | डौली - कुडाँडा सडक | ४ km / 7m | | ✓ | | |
| ३. | जोगी डाँडा - लेलपु सडक - योशिलर्ड - खड्गे सडक | १० km / 7m | | ✓ | | |
| ४. | लेलपु - माइजुगाँव सडक | २ km / 7m | | ✓ | | डिभि |
| ५. | दोदिगा - कुडाँडा सडक | १.५ km / 7m | | ✓ | | |

पहिलो प्राथमिकताका लागि १, दोस्रोका लागि २ भर्नुहोस

3. माथिको प्राथमिकता मितिको वडा बैठक बाट तोकिएको छ ।
4. लाभान्वित बस्ती :

| कोड** | बस्तीको नाम, घरधुरी, जनसंख्या |
|-------|---|
| क | लेलपु - रिठेला खाभादिङ्ग सडक - ३ km / 7m - upgrade |
| ख | गाँव सडक |
| ग | कुडाँडा - तादिङ्ग सडक - ४ km - Trace जाल्पु गाँव - 7m |
| घ | डौली - कलिङ्ग सडक - ३ km - " " " - 7m |
| ङ | दिशनडाँडा - डौली - शा.पा. कार्यालय गाँव (दोटी काली) २ km 7m |

5. लाभको प्रकार र प्राथमिकताका कारण :

| कोड** | कस्तो किसिमको फाइदा पुग्छ लेख्नुहोस |
|-------|-------------------------------------|
| क | |

माग फारम सडकका लागि अनुरोध वाईले भर्ने

1. वाई न. : ०५.....
2. प्राथमिकताका आधारमा तालिका भर्नुहोस :

| प्राथमिकता न. | सडकको नाम | चौडाई | सडकको प्रकार | | | | |
|---------------|-------------------------------------|-------|----------------|------------------|------------------|-------------|------|
| | | | नया सडक खोल्ने | स्तरोन्नति गर्ने | पुनरुत्थान गर्ने | अवधिक मर्मत | |
| १. | त्रिज्या भञ्जो लामुडा | १३m | | ✓ | | | ३५km |
| २. | पातल खण्डा गेहिरिडा रुडा लोले | ७m | | ✓ | | | २५km |
| ३. | त्रिज्या दिवु खरे | ७m | ✓ ६km | ४km | | | |
| ४. | भञ्जो हेमुरेडा | ७m | | ✓ | | | ११km |
| ५. | माबु आजार | ७m | ४km | | | | |

पहिलो प्राथमिकताका लागि १, दोस्रोका लागि २ भर्नुहोस्

3. माथिको प्राथमिकता मितिको वडा बैठक बाट तोकिएको छ ।

4. लाभान्वित बस्ती :

| कोड** | बस्तीको नाम, घरधुरी, जनसंख्या |
|-------|-------------------------------|
| क | |
| ख | |
| ग | |
| घ | |
| ङ | |

5. लाभको प्रकार र प्राथमिकताका कारण :

| कोड** | कस्तो किसिमको फाइदा पुग्छ लेख्नुहोस |
|-------|-------------------------------------|
| क | |

वडाध्यक्ष - त्रिज्या दिवुडा लामा