Local Government

Gangajamuna Rural Municipality

Office of the Rural Municipal Executive

Phulkharka, Dhading

Bagamati Province, Nepal

Rural Municipality Transport Master Plan (RMTMP)

Volume- I-Main Report Final Draft

Submitted By

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Office of the Rural Municipal Executive

Bagmati Province, Dhading district

This document is the draft report prepared for the project, “Rual Municipality Transport Master Plan (RMTMP)” undertaken by Gangajamuna Rural Municipal Office, Dhading district. This document has been prepared by Sarthak Engineering Consultancy Pvt. Ltd. for Gangajamuna Rural Municipality, Office of the Rural Municipal Executive, Dhading district. The opinions, findings and conclusions expressed herein are those of the Consultant and do not necessarily reflect those of the Rural Municipality.

Data Sources and Credits

Data sets, drawings and other miscellaneous data are produced/ developed by Sarthak Engineering Consultancy Pvt. Ltd. for the project during 2019/2020. These data are owned by Gangajamuna Rural Municipality, Office of the Rural Municipal Executive, Dhading. Authorization from the owner is required for the usage and/or publication of the data in part or whole.

Name of the Project	Rural Municipality Transport Master Plan (RMTMP) of Gangajamuna Rural Municipality
Project Executing Agency	Gangajamuna Rural Municipality Office of the Rural Municipal Executive Bagmati Province, Dhading district
Implementing Agency	Gangajamuna Rural Municipality Office of the Rural Municipal Executive Bagmati Province, Dhading district
Name of the Consultant	Sarthak Engineering Consultancy Pvt. Ltd. Baneshwor, Kathmandu
Project Commencement Date	
Date of Project Completion	
No. of Volumes	Two Volume I: Main Report Volume II: Maps
Version No	1.0
Date of Submission	
Submission Type	Hard Copy
Copies Produced	For Client : 2 (Two) For Consultant : 1 (one)
Prepared By	
Checked By	
Reviewed By	
Official Stamp	

Acknowledgements

This Rural Municipal Transport Master Plan (RMTMP) Report for Gangajamuna Rural Municipality has been prepared on the basis of Municipality Transport Master Plan Preparation Guidelines and terms of reference prepared by the then Ministry of Federal Affairs and Local Development, Infrastructure Development Division, (IDD), Singhadurbar, Kathmandu, November 2014. The job was entrusted to Sarthak Engineering Consultancy Pvt. Ltd, Baneshwor, Kathmandu. This report is prepared and submitted as Draft report.

The consultants' team would like to express its appreciation to the officials from Gangajamuna Rural Municipality. We are highly grateful for their help and co-operation. We are very grateful to the Chairperson, Vice Chairperson and Chief Administrative Officer and other personnel's of the Municipality and local people who directly and indirectly contributed during this study and the field survey.

Finally, the project team would like to express thanks to all staffs and colleagues for their anxious support during the study period.

Declaration Letter

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

Executive Summary

Gangajamuna Rural Municipality is located in Dhading district, Bagmati Province. It has been established merging the then five VDCs viz. Ri, Gumdi, Fulkharka, Budathum and Baseri. Currently, it is divided into 7 wards where former two VDCs Ri and Gumdi have been divided into two wards each i.e Ward No 1and 2 and ward no 3 and 4 respectively. The total population of this Rural Municipality as per 2068 Census was found to be 21784 from some

4864 HHs and the present household survey as held by the Rural Municipality itself calculates its total population as 25872 from 5718 HHs. This shows the positive growth tendency in the population growth. Total area of this Rural Municipality is 144.09 square kilometers in which ward no 5. (35.71 sq km) and ward no. 1 (35.60 sq km) together shares almost half of the total area of this ward.

The current population density of 178.32 person per square kilometer which has been increased significantly in 8 year period from 2011 to 2019. Ward wise ward no. 7 holds the highest population density with 341.12 person per sq km. The combined total of forest cover and arable land is calculated two third of the total land use pattern and shows positive indications. The center of this Rural Municipality is Fulkharka which used to be the centre of former Fulkharka VDC previously before this sort of administrative division. Some 64% of the total populace has been recorded as economically active ones in this RM.

Though this Rural Municipality retains a huge scope in sectors like agriculture, tourism, and small scale industries, it has not been able to maintain a good pace of development mainly due to lack of sectoral plans and their proper executing mechanism. Still a huge population of this Rural Municipality happen to fight against social maladies like poverty, illiteracy, backwardness and fatalism. The abundance of natural resources like forest, plants, herbs, wild life, water resources, moderate climate and unique geo-physical structure is the back bone of agricultural and tourism development in this RM. The proper utilization, and promotion of these resources is likely to transform the overall livelihood situation of the people of this Rural Municipality.

This Rural Municipality borrows its name after one of its popular destinations called Gangajamuna Water Fall (Gangajamuna Mai) and is quite rich in terms of natural heritage. Tamang community dominates this area and there is also signigicant number of Brahmin, Chettri, Dalit and other indigenous people besides native Tamang. The RM is also rich in terms of bio-diversity as it is blessed with varieties of flora and fauna. There is also a big potentiality of citrus and other fruit species like apples and kiwi in the available altitude. The area equally retains a big prospect for agricultural tourism as it is also a popular destination

for seasonal and off seasonal vegetables. This Rural Municipality also retains high potentiality to be developed as homestay hubs due to high tourism prospects and accessible trekking routes passing through the periphery. The straight bus service from Balaju Machapokhari is available to get to its centre. Similarly, local bus and jeep service also prevails up to local destinations like Arughat, Dhadingbesi and Salyantar.

The topography of this Rural Municipality (RM) consists of several undulations having peaks, ridges, hills, inner valleys/gorges, along with extensive forest cover. This RM retains a moderate Climatic condition. Agriculture and livestock contributes almost 20% of entire income portfolio and they retain high potentiality to absorb significant number of youth populace if modernization in agricultural system gets in place. People also follow other chores as well for their sustenance besides agriculture for e.g. the contribution of remittance from Gulf countires and Malaysia remains vital in this RM as well.

This Rural Municipality has no air transport service to complement the surface transport facilities. Inner mobility and other development activities fully depend on expansion of road network within the district. The Rural Municipality has limited number of all-weather road facilities. Because most of the municipal roads are earthen in nature, it requires lots of adventure during the rainy season to shuttle from one place to another.

Gangajamuna Rural Municipality inventory has identified 108 rural municipal roads with total length of 261.54 Km. All of these roads fall under earthen category without any gravel and black top stretch. A total of 132.88 km road falls under new demand road. Considering this road stretch as well, the total road length from the inventory becomes approx. 394.42 km. Likewise, among different classes of roads 4 roads fall under Class “A”, 29 under Class “B”, 28 roads under Class “C” and 43 roads under Class “D” where Class A, Class B, Class C and Class D constitutes 36.50 km, 80.90 km, 43.22 km and 34.54 km stretches respectively. Likewise 66.39km falls under district roads.

Based on investment plan, some RMTMP roads will be improved and prepared for upgrade up to gravel road standard including widening and maintaining longitudinal and cross drainage system. This intervention ensures to bring into all-weather road for maintainable stage. During the RMTMP period, approx. a total of NPR 452 Million will be invested including the base line budget of NPR 58.7 Million. In this total figure, some NPR 317.03 will be invested for construction while NPR 135.87 Million is expected to spend on maintenance within the period of RMTMP. Additional length of road section could also be upgraded with focus on black top in some particular sections depending upon the need and necessity if additional fund is available during this RMTMP period.

कार्यकारी सारांश

गंगाजमुना बाग्मति प्रदेश स्थित धादिङ् जिल्लामा अवस्थित एक गाउँपालिका हो जसको निर्माण साविकका पांच गाविसहरू(री, गुम्दी,फूलखर्क,, बुडाथुम, र बसेरीलाई मिलाएर भएको हो जसमा हाल ७ वटा वडाहरू पर्दछन् । साविकको "री" गाविसलाई विभाजन गरी वडा नं १ र २ बनाईएको छ भने "गुम्दी" गाविसलाई विभाजन गरी वडा नं ३ र ४ बनाईएको छ। बांकी तिनवटा गाविस फूलखर्क, बुडाथुम, र बसेरीलाई मिलाएर क्रमशः वडा नं ५, ६ र ७ बनेका हुन् । वि सं २०६८ को जनगणनानुसार यस गापा को जनसंख्या २१७८४ र घरधूरी ४८६४ देखिन्छ र विसं २०७६ मा गापाले गराएको घरधूरी सर्भेक्षण मुताविक यस गापामा ५७१८ घरधुरीबाट २५८७२ जनसंख्या देखिन्छ जसले यहांको जनसंख्या वृद्धिदर अन्य पहाडी क्षेत्रका तुलनामा सकारात्मक हिसाबले बढेको पाइन्छ । यसैगरी यस गापाले १४४.०९ वर्ग कि मी क्षेत्रफल ओगटेको छ जसमा वडा नं ५ (३५.७१ वर्ग कि मी) र वडा नं १ (३५.६ वर्ग कि मी) को क्षेत्रफल सम्पूर्ण गापाको क्षेत्रफलको झण्डै आधा हुन्छ । यहांको जनघनत्व १७८.३२ प्रति वर्ग कि मी छ जुन पछिल्लो ८ वर्षमा महत्वपूर्ण रुपमा बढेको पाईन्छ । वडागत हिसाबमा वडा नं ७ सबैभन्दा बढी जनघनत्व भएको वडा हो जसको जनघनत्व पछिल्लो वर्षमा ३४१.१२ प्रति वर्ग कि मी रहेको छ ।

यस गापाको मध्ये वनजंगल र खेती योग्य भूमिको जम्मा योग सम्पूर्ण भू(उपयोग क्षेत्रको करीब दुई तिहाई हुन आउंछ जसले यसको सकारात्मक भविष्यको संकेत गर्दछ । साविकको फूलखर्क गाविसको केन्द्रनै यस गंगा जमूना गापाको केन्द्र रहेको छ । यस गापाको कूल जनसंख्याको करीब ६४५ ऊमेरगत हिसाबले आर्थिक रुपमा आत्मनिर्भर वर्गमा पर्दछन् । कृषि, पर्यटन, घरेलु तथा साना कुटीर उद्योगको व्यापक सम्भावना हुँदाहुँदै पनि विषयगत र क्षेत्रगत योजनाका अभाव र कार्यान्वयन पक्षमा देखिएका कमी कम्जोरी स्वरूप यस गा का ले सोचेअनुरुपको विकासको फड्को मार्न सकेको देखिंदैन । यस गा पा का बृहत जनसंख्या अझै गरीबी, अशिक्षा, पछ्रोटेपना, भाग्यवादी सोच लगायतका सामाजिक विकृतिका शिकार हुन वाध्य छन् । प्रचुर मात्रामा विध्यमान जंगल, बोट विरूवा, जडीबुटी, जंगली जनावर,, जल सम्पदा, मध्यम चरित्रको हावापानी र मोलिक भोगोलिक बनावटनै यस गापाको कृषि र पर्यटन विकासका पूर्वाधार हुन् । यी माथि उल्लिखित सम्पदाहरुको यथोचित प्रयोग र प्रवर्धनबाट मात्रै यहांका वासिन्दाको जीवनस्तरमा उल्लेखनीय परिवर्तन ल्याउन सकिन्छ ।

यस गाउँपालिकाको नाम गापामा अवस्थित गंगा जमूना झरना (देवी) को नामबाट रहन गएको हो जुन यस यस क्षेत्रकै प्रख्यात प्राकृतिक सम्पदामा पर्दछ । यो गापामा तामाङ समुदायको बाहुल्यता छ भने ब्राम्हण, क्षेत्री, दलित तथा अन्य जनजाति समेतको बसोवास पाइन्छ । विविध बन्यजन्तु र बोट विरुवाले भरिपूर्ण यो गापा जैविक विविधताका हिसाबले पनि ज्यादै धनी रहेको पाइन्छ । खासगरी अनुकूल हावापानी र उचाइका कारणले यस क्षेत्रमा अमिलो प्रजातिका फलफूल (कागती, सुन्ताला आदि) र अन्य फलफूल जस्तै स्याउ, किवीको राम्रो संभावना देखिन्छ । यसैगरी मोसमी र बेमोसमी जातका तरकारी फलाउन सकिने यो क्षेत्रमा कृषि पर्यटनको पनि राम्रो संभावना रहन्छ । महत्वपूर्ण पर्यटन पदमार्गहरू यस गापाको छेउछाउबाट जाने हुंदा पर्या पर्यटन र ग्रामीण पर्यटनसमेतको राम्रो गुञ्जायस रहन पुग्छ । काठमाण्डोंको बालाजु स्थित माछापोखरीबाट गंगाजमूना गा पाको केन्द्रसम्मकै लागि बस सेवा रहेको छ । यसैगरी स्थानीय बस र जिप सेवा मार्फत् नजीकैको धादिङ् बेंसी, आरूघाट, सल्यानटार, बुडाथुम पुग्न सकिन्छ ।

यस गापाको भू-आकृति (स्थलाकृति) विविध उबडखाबड सहितका अग्ला भिरपाखा, डाँडा, स-साना भित्री उपत्यका, खोंच, बाक्लो वन र वनस्पति मिलेर बनेको छ जहां समशीतोष्ण जलवायु पाइन्छ । यस गापाको आर्थिक गतिविधिमा कृषि, पशुपालनको समेत उल्लेखनीय भूमिका रहेको छ जसको योगदान कूल आम्दानीको करिब २०५ देखिन्छ र बहुसंख्यक परिवार विप्रेशणमै निर्भर देखिन्छन् । यदि कृषि प्रणालीको आधुनिकीकरणमा जोड दिन सक्ने हो भने यस क्षेत्रले धेरै हदसम्म स्थानीय युवालाई रोजगारी प्रदान गर्न सक्ने देखिन्छ ।

यस गाउँपालिकामा सतही यातायातलाई टेवा दिन हवाई यातायातको नियमित सुविधा छैन र सडक यातायात संजाल मात्र यस क्षेत्रमा पहुंच, आन्तरिक परिचालन र विकासको लागि एकमात्र बिकल्प रहन्छ । यस गापामा केही मात्र बाह्रैमास यातायात चल्ने सडक छन् । बहुसंख्यक ग्रामीण सडकहरू धुले कच्ची सडक भएकाले खासगरी वर्षायाममा यात्रा गर्दा बढी चुनोति रहन्छ । यस गंगाजमूना गाउँपालिकामा गरिएको वडा स्तरीय ईन्भेन्ट्री अध्ययनका आधारमा यहां ३०० मी वा सो भन्दा लामा जम्मा १०८ सडक देखिन्छ जसको कूल लम्बाई २६१.५४ कि मी हुन आएको छ र सडक सतहका आधारमा सबै कच्ची सडक अन्तर्गत पर्दछन् । करीब १३२.८८ किमी सडक चाहिं नयां माग अन्तर्गत पर्दछन् र यो समेतलाई समावेश गर्दा यस गा पा को सडकको कूल लम्बाई ३९४.४२ कि मी हुन आउँछ । माथि ईन्भेन्ट्री गरिएका सडकलाई नगर स्तरीय वर्गीकरणका आधारमा जम्मा ४ भागमा क(A), ख(B), ग(C), र घ(D) वर्गमा विभाजन गरिएको छ भने र जिल्ला सडक समेत गरी जम्मा ५ वर्गमा बाँडिएका छन् जस अनुसार ६६.३९ कि मी जिल्ला सडकमा पर्दछ भने (क(A), ख(B), ग(C), र घ(D) वर्गमा क्रमशः ३६.५० कि मी, ८८.९० कि मी, ४३.२२ कि मी र ३४.५४ कि मी पर्दछन् । यस गापा यातायात गुरू योजना अन्तर्गतको लगानी योजनामा गा पा वा नगर स्तरीय सडकहरूलाई प्राथमिकताका आधारमा कच्चीबाट ग्राभेल गरी, थप चोडा पारी, सडक सतहको पानी निकाशका लागि पानी ढलको निर्माण आदि मार्फत् स्तरोन्नति गर्ने लक्ष्य राखिएको छ । यसैगरी बाहैमासे सडकका हकमा पनि आवश्यकतानुसार मर्मत संभार गर्ने गरी तिनलाई चलायमान अवस्थामा राख्न मर्मत कोषमा पनि हुन सक्नेसम्मको वजेटको व्यवस्था गरिएको छ । यस अनुरूप गापा यातायात गुरू योजना अवधिभरका लागि जम्मा जम्मी ४५ करोड २९ लाख ६ हजार ३ सय ७ रूपैँया बराबरको बजेटको परिकल्पना गरिएको छ जसमा आधार वर्षको ५ करोड सतासी लाख समेत समावेश छ । कूल बजेटमा निर्माण तर्फ ३१ करोड सत्र लाख र मर्मत संभार तर्फ १३ करोड ५८ लाख को हाराहारीमा प्रस्ताव गरिएको छ । यदि परिकल्पना गरिएको भन्दा वढी वजेट यस गापा यातायात गुरू योजना अवधिभरमा संकलन हुन सकेको खण्डमा केही निश्चित खण्डमा आवश्यकता हेरी कालोपत्रे गरिनेछ ।

Table of Content

Chapter - 1: Introduction

1.1 Background

The Constitution of Nepal has envisioned Federal Democratic Republicanism as the essence of its governance system. Rights of the local government have been enlisted on Annex -8 of the constitution. Local Government Operation Act 2074 elaborates and specifies those rights to be exercised by the local government. Article 11, Sub-Articles 2(G) and (K) specify the rights of the local government to devise and implement policies and plans regarding roads, transportation and other relevant development projects directly concerned with the local level.

As a local government, Gangajamuna Rural Municipality had allocated fund, endorsed by the Village Assembly, for the preparation of Rural Municipal Transport Master Plan (RMTMP). Therefore, this report is the product of an extensive field study and study of relevant documents, interactions with the villagers, people representatives and stakeholders in the Municipality and ward levels for the preparation of Rural Municipal Transport Master Plan (RMTMP).

Physical infrastructure development has been extremely sluggish esp. in rural level in Nepal since long due to extended political turmoil and transition. Development of transportation infrastructure is one of the most essential groundworks for initiating other avenues of development. Proper development of transportation system opens accessibility of the people to larger markets, service centers and overall economic sectors. Development of roads also leads to the development of urban centers with amenities like hospitals, schools, markets, services etc. Roads establish significant linkages with the large neighboring cities with vibrancy of economy, human activities and transactions. This sort of linkage is a key for the development of rural areas. Therefore, development of transportation basically through the development of road linkages is a fundamental necessity of this Rual Municipality. It has prioritized the development of sustainable Rural Municipal Transport Master Plan which requires inception of avenues of all kinds of development in general through easy access to people's mobility in particular.

Chiefly this RMTMP aims to assess the present status of roads and transportation within the Municipality through extensive field survey making an inventory of the details of existing roads and transport situation. The study has also unfolded the problems and genuine necessities on road and transportation along with the recommendation of key interventions to be made for the sustainable development of road and transportation network. Planning approach adopted by the consultant is fundamentally bottom up and participatory. Study and analysis of existing road status and need assessment have been the basis for this overall planning.

(R)MTMP is a long-term visionary plan which aims to systematize the road and transport development processes within the Rural Municipality. It identifies the roads and creates a complete inventory of the roads. It categorizes the roads into four classes A, B, C, and D according to their importance. It prioritizes the interventions and allocates the estimated budget for the necessary interventions. Above all, it systematizes the process of road and transportation development according to the need of the Rural Municipality. The consultant has followed all the prevailing norms and standards for the planning. It is based on the Approach Manual prepared by DOLIDAR and (R) MTMP guidelines prepared by MoFAGA. It has determined the Municipal Road Core Network as practical in planning process of DTMP and has identified the key linkages with other road network. A complete road network has been identified to make a basis for future development of roads which primarily helps to develop the transport access to all the settlements in the Municipality meeting the national standard of nominal duration to reach the core road network or all weather roads.

1.2 Objective

The key objective of this project is to prepare (Rural) Municipality Transport Master Plan which would be a road map for the systematic development of road network and transportation within the Rural Municipality. Other specific objectives pertaining to the key objective are:

- identify all the existing roads
- analyze the current accessibility situation
- determine Municipality Roads Core Network
- develop indicative Development Potential Map
- prepare Municipality Road Inventory Map
- Collection of demands for new roads and necessary interventions
- Road categorization through standard scoring method
- Road Nomenclature
- Preparation of Perspective Plan of Interventions of Services and Facilities
- Recommendation of fund management
- Finalization of financial Implementation Plan of Prioritized Roads for the (R)MTMP period (Year wide Budget Distribution)

1.3 Scope of the Work

The scope of the consulting service includes:

- Preliminary presentation of overall planning process in the Rural Municipality level

- Assist the formation of (Rural) Municipality Roads Coordination Committee (R) MRCC
- Field survey and data collection in ward levels
- Collection of demands
- O-D Survey
- GIS work for the finalization of all sorts of maps
    - Preparation of Indicative (Rural) Municipality Development Potential Map
    - Preparation of (Rural)Municipality Road Inventory Map
    - Preparation of Base Map
- Study of all relevant secondary data and information including previous (R)MTMP (If any)
- Prepare field report
- Road classification coding and nomenclature
- Categorization of roads according to standard criteria
- Collect feedback and necessary corrections from the stakeholders Prepare the final report of (R)MTMP
- Recommend for the approval from the village Assembly for the implementation

1.4 Limitation

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

1.5 Approach and Methodology

The consultant has gone through the general procedures well defined in the ToR for the completion of the project. Participatory Rural Appraisal approach has been the core of the planning approach. A preliminary presentation was made in the Municipality among the village executive members, related officials, and stakeholders for the clarification of how (R) MTMP is prepared. The final outcome is the result of consultations with the villagers, ward chairman, ward members and other informed persons from the locality who hadhelped during the phase of data collection regarding roads and transportation sector as mentioned in

the DOLIDAR guideline. After the completion of the ward level meeting and field survey, O-D survey, demand collection, field data were organized to finalize IDPM, (Rural) Municipality Inventory Map of Road Network and base map. On the basis of the IDPM and other maps and data (R) MTMP draft report was prepared. Furthermore, the draft report was referred to the Rural Municipality for the necessary correction and feedbacks. After incorporating the correction and feedback, the final report was prepared for the approval from the village assembly for the implementation.

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

1.5.1 General Methodological Overview

S. N.	Task Description	Activities	Outcomes
1.	Preliminary Presentation on Bethanchowk Rural Municipality	Expert team conducted initial presentation among the village executive members and all related stakeholders	Stakeholders sensitized
2.	Study of secondary resources on roads and transportation related to the Rual Municipality	Study and review of all relevant laws, by-laws, best practices, norms and standard of planning Review of previous (R)MTMP (if any)	Expert team got familiarized with existing information regarding (Rural) Municipality Transport Infrastructures and previous efforts for the development
3.	Ward level meeting	Participatory Rural Appraisal method adopted during ward level meetings in all wards for data collection demand survey; O-D survey, traffic count-survey and all other necessary information	Primary data collected from the ward level formed strong ground for the necessary interventions to be made in the future
4.	Data Management and analysis	Data obtained from the field were tabulated; GIS work done to develop base map, IDPM, inventory map and other maps; and nomenclature, coding and grading of roads completed	Data organized and maps prepared

S. N.	Task Description	Activities	Outcomes
5.	IDPM and RMRIM Preparation	As the part and product of data management, Indicative Development potential Map(IDPM) and a complete Rural Municipality Road Inventory Map (RMRIM) was prepared	IDPM and RMRIM developed
6.	Perspective Plan	After identification and preparation of the existing status of all the roads IDPM and RMRIM were prepared and prioritization of key interventions finalized	Perspective plan helped to prioritize and systematize the planning process
7.	RMTMP Preparation	After analysis of all the existing infrastructures 5 years' RMTMP was prepared , Implementation plan prepared Fund availability and access to funds recommended	RMTMP was prepared
8.	Approval	After all necessary correction and feedbacks, final report of the RMTMP was submitted to village assembly for the approval and implementation	RMTMP was approved from the village assembly ensuring the ownership of the villagers

1.5.2 Comprehensive Task Description

1.5.2.1 Rural Municipal Level Initial Presentation

Expert team conducted a day-long presentation and workshop to clarify the village executive members and stakeholders about the holistic process of preparing RMTMP.

1.5.2.2 Ward Level Meeting for Primary Data Collection

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

1.5.3 Data Collection

1.5.3.1 Primary Data

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

1.5.3.2 Secondary Data

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

1. The constitution of Nepal.
2. Local Government Operation Act 2074.
3. DOLIDAR's Approach Manual
4. Nepal Rural Road Standard
5. Nepal Urban Road Standard
6. Municipal Profile
7. Demographic Data from CBS
8. Previous (R)MTMP (if any)
9. Relevant Plans and policies (Federal Provincial, Local)
10. SDGs
11. Yearly Plans, Policies and Programs of the Municipality
12. RMTMP/MTMP of adjoining Municipalities or Rural Municipalities
13. Annual reports and policies of line agencies
14. Land use plan and policy
15. Agricultural Plan and Policy
16. Traffic data (if available)
17. All other relevant documents
18. Maps:
    - Topographical maps of 1:25,000 scale
    - Rural Municipality administrative map
    - Arial Photographs
    - Rural Municipality trail map
    - National Highways, SRN maps
    - Land use map
    - Other thematic maps

Data Sources

- Office of the Sitganga Municipality
- District Coordination Committee
- Government Line Agencies
- All related Sect oral Offices (Agriculture, Education, Irrigation, Forest, etc.)
- Chamber of Commerce
- Road Division Office

- Local and National NGOs and INGOs
- Department of Survey
- National Planning Commission
- Provincial Planning Commission

1.5.4 Data Analysis

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

1.5.5 Base Map with Indicative Development Potential Map

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

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

2. Future development potential zones include: (IDPM)
    - Areas with extensive agriculture and future expansion
    - Areas with forest and future expansion
    - Areas with business activities or marketplace
    - Areas with touristic importance
    - Areas with industry and future expansion
    - Watershed areas
    - Potential service sector expansion areas
    - Areas with open space, recreation, stadium, parks, etc.
    - Disaster prone area

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

1.5.6 Preparation of (Rural) Municipal Road Inventory Map (RMRIM)

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

1.5.7 Perspective Plan

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

1.5.8 Preparation of Rural Municipaity Transport Master Plan (RMTMP)

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

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

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

Chapter- 2: Review of Existing Infrastructure Situation

2.1 General Overview

The Rural Municipal as well as ward level surveys held within Gangajamuna Rural Municipality have revealed that the overall transport infrastructure, primarily road network appears to be in fairly weak condition in this Rural Municipality. Geographically Gangajamuna Rural Municipality is scattered in the area of 144.09 sq. km covering mainly the hilly areas. Because of being located in geographically less accessible region, this Rural Municipality lags far behind in terms of road infrastructures chiefly due to inferior road quality characterized by muddy and dusty features.

These roads will ensure reliable access in terms of social services, livelihood measures and also help contribute in opening up new avenues of micro enterprises and tourism promotion both from the long term and short term perspectives. At present, except two major roads linking the district headquarter remaining roads are fair weather (FW) roads. Even these two roads are difficult to pass through during theheavy rains and need Excavator support to pass the vehicles.

Most of the roads in this Municipality do not have basic road furniture and also lack basic structural components like culverts, cross structures (cause ways), check dams, chutes, side drains and the like so as to retain environment friendly physiognomies of the road. The slope cutting of the roads are basically done through heavy equipment viz. dozers and excavators without proper management of the slopes though the Rural Municipality envisions environment friendly road construction practices. No balance of cut and fill was observed in the construction practices posing high risk of landslides and soil erosion in different road sections of the Rural Municipal roads. Provision of check dams, chutes, bioengineering etc. play vital role for mass balance which ultimately helps to maintain the essence of green road technology essential to be introduced in the municipal level road construction measures. All of these facts indicate that the overall development of road transportation is at the elementary stage in Gangajamuna Rural Municipality that requires proper interventions along with prioritized and meaningful investment.

2.2 Agriculture and livestock

Agriculture sector is the most potential sector in this Rural Municipality from the aspect of long term prosperity. The provision of irrigation, scientific technology, fertilizer, seeds and efficient storage system along with good market system will all help consume thousands of

youthful human resources in these sectors assuring best utilization of the existing barren lands. Moreover, cash generating activities like Chicken farming/hatchery, goat keeping, cow-farming, bee-keeping, off-seasonal vegetable production, horticulture, herb production, collection and processing, are some of the prospective areas in line with agriculture and livestock.

2.3 Forestry (linked) ventures

Since the forest coverage is more than half of the entire area, these is high scope of forest based economic ventures in this Rural Municipality. The inception of activities like horticulture, herbal productions, agro forestry etc as components of scientific forest management, is likely to bring revolutionary shift in economic term in the near future. There is also potentiality of utilizing shrubs and other forest areas into productive sector. The pre-feasibility level information gathered from our study team indicates that some part of forest could be developed as pocket areas of *Amala, Chiraito, Ganegurji Dalchini Harro Barro, Paanch Aule, Kaljiro, Kurilo, Dardare, Pipla, Balajor* and so. The foremost requirement to harness this potentiality needs proper services of transportation. For this purpose, this RMTMP will be a bench mark to go further.

2.4 Industries (Agro based, forest resource based and tourism based)

Industries based on locally available agro and forest based resources will lead to employment generation at one hand and export based growth at the other. Gangajamuna being the pocket area of various agricultural, horticultural and dairy products, there is a good scope of food based processing and grading related micro/medium industries. Likewise, there is also a good prospect of launching modern chicken industries as well as other livestock related industries in different road corridors within the RM. As this area is popularly known for milk and diary related products, there is scope of such industries having potentiality to diversify and upgrade the dairy products as such. For e.g. micro level chocolate industries and so.

The coverage of forest area is nearly 60 per cent of the total land type in Bethanchowk and the numerous herbs and medicinal plants sustain in its rich bio diversity. Thus, the processing units of number of valuable herbs could be established in the local level to link to the broader value chain of medicines (drugs) and cosmetic products which will have significant impact in the local economy. The RM could initiate some ventures with private parties in win win modality/approach as well.

Likewise, many avenues in the name of Temples, Gumba and Shrines, and water falls, along with natural scene sceneries, growing number of hospitality industries (homestay/hotel) etc are in place to develop tourism as another lucrative industry. The development of good transport facilities, qualitative accommodations including provision of homestay services (with basic facilities) will all contribute in the rapid growth of this sector. Within tourism industry, this Rural Municipality could be a trade mark in terms of religious tourism.

In this way there remain potentiality of agriculture, livestock and forestry based production to processing related ventures in this Rural Municipality. In order to secure expected growth in this sector, fair investment has to be made in the transportation sector. Without easy and good quality transportation, it is difficult to sustain other economic ventures too. That is why the preparation of Rural Municipality Transport Master Plan (RMTMP) is the first point to start with.

2.5 Existing Transportation Infrastructure Situation

Khaniyabas Rural Municipality of Dhading district lies to the east of Gangajamuna Rural Municipality and Arughat of Gorkha lie to the west of this Rural Municipality. Similarly, Rubi Valley Municipality and some parts of Gorkha district lie towards the north whereas Tripura Sundari Municipality and Netrawati Rural Municipality lie towars the south of this Rural Municipality.

The major roads of this RM includes Dhadingbesi-Todke-Charange-Fulkharka, Arughat-Salyantar-Fulkharka, Salyantar-Budathum which are pliable during the winter and also during the rainy season with additional effort

There are basically three options to get to the district headquarter from this RM. 1- Dhading Salyantar route contitues up to Budathum and the major settlements of ward no 6 and 7 are facilitated through this road. Likewise, the major settlements from ward no 3, 4 and 5 are facilitated via Salyantar or Charange routes. Belung – Dhadingbesi route that as well as Salyantar route to get to Dhadingbesi as well as Kathmandu and other cities. People from ward no 1 and 2 follow the Gumdi route to get to Dhadingbesi.

Some stretch of Prithvi Highway upto Malekhu, Malekhu - Dhading Besi Feeder Road, and some proposed sections of Mid-Hill Highway and parts of district road links this RM centre with other outer destination. Different roads traverse from Belun-Fulkharka and Salyantar – Budathum routes and have been considered two major rural municipal level roads and covers majority of the wards of this Rural Municipality. Some of the major roads of this Municipality

include: Siktar-budhathum-baseri-manbu-lapa road; Jagarbote-baskharka-sukbhanjyang road; Belung Banjyang - Gargare - sukbhanjyang - tinkhande - phulkharka - bhumesthan - yarsha-chimchok -Latap - dhuseni tawal - tuttalbesi – chunuwa;Manpangbesi-odare-lapudanda road; Bharyangdanda-dandagaun-Deurali - Lapsi bot; Sdan gaun - naya chautara- mantari - katikke - kami tole - kholkhet – chaupkuna;Dolpa-choke-ibi-richet-kichet road; Baskharka-Ghorle - majuwabesi-marauti – Sukbhanjyang;

The Salyantar and Charange are the important points of this RM and could be considered as the life line of the roads of this Rural Municipality. There is black top road upto Taribesi and further approx. 2.5 drive takes up to Fulkharka, the RM centre of this Gangajamuna Rural Municipality. Almost 5 hr drive is required up to Salyantar from Kathmandu and from there 2-2.5 hr drive in the off road is required to reach Ful Kharka as well as Budathum. As compared to other rural quarters of the country's off roads, these roads are relatively better ones though little improvements are required to shuttle easily during the rainy seasons.

Out of seven wards, four ward centres of this RM has been linked with motorable roads under regular operations and much to be done to connect the other ward centres in the motorable road network.

The Rural Municipality seems to be serious about the quality transport system within its territory. The effort to develop Rural Municipal Transport Master Plan (RMTMP) indicates RM's commitment in this pursuit. The level of commitment as shown by the Rural Municipal Executive bodies also indicate that they are up for a big shift in the transportation sector.

The major roads as prioritized by the local stakeholders' consultation meeting in different wards are mentioned below. These roads are suggested by the local stakeholders within their respective premises. In fact, the quality of basic infrastructures like all weather roads, comfortable and clean hotels and homestay facilities are some of the fundamental requirements to promote the tourism sector. In totality approx. 102 km –"**A"** Class (59km) +1/2 of "B" Class=42km) road is urgently required to upgrade and maintain properly for the smooth road operations which will also facilitate other social as well as economic ventures which will have long term implications in terms of catering quality social services (for e.g. better health, education and other services). However, the sustainable road and other infrastructure construction practices need to be encouraged so as not to disturb the present environment and geological topography as such.

Excessive practice of terrace farming, deforestation, haphazard collection of construction materials from the near by natural quarries, etc. may induce hazards like floods, and landslides if not given timely attention.

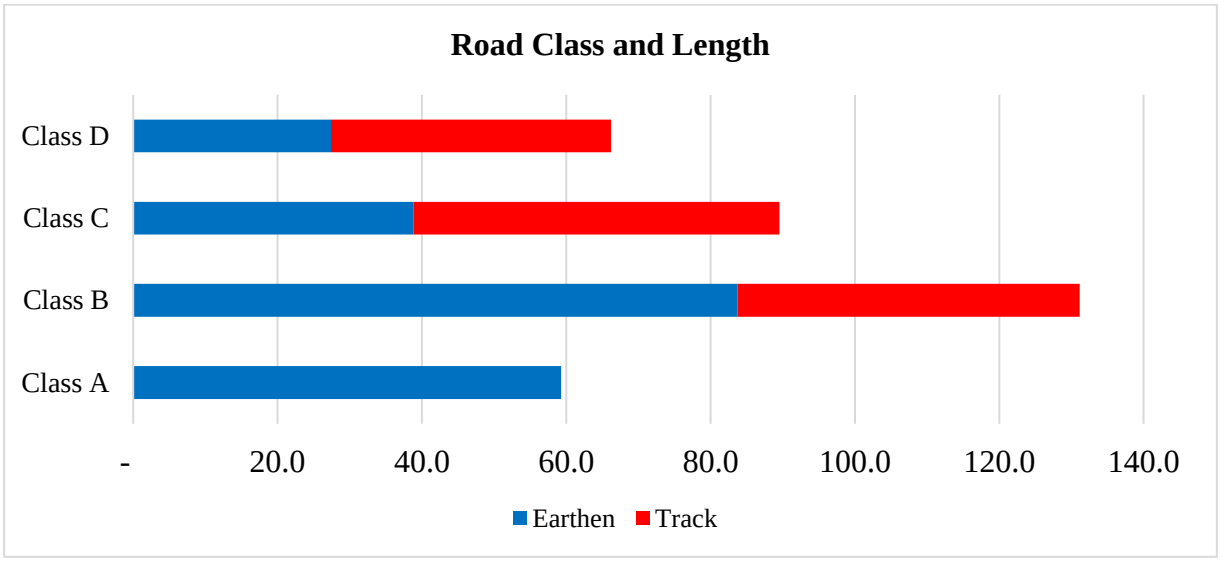
The basic features about the transportation sector has been represented in tables and figures as below and described accordingly.

Table No. 1: *Composition of road by surface type in Gangajamuna Rural Municipality*

Road Category	Black top	Gravel	Earthen	Track	Total
Class A	-	-	59.29	-	59.29
Class B	-	-	83.73	47.43	131.16
Class C	-	-	38.85	50.72	89.57
Class D	-	-	27.40	38.83	66.24
SRN	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**209.28**	**136.98**	**346.26**

Source: Field Survey 2019

Figure 1: *Composition of road by surface type in Gangajamuna Rural Municipality*



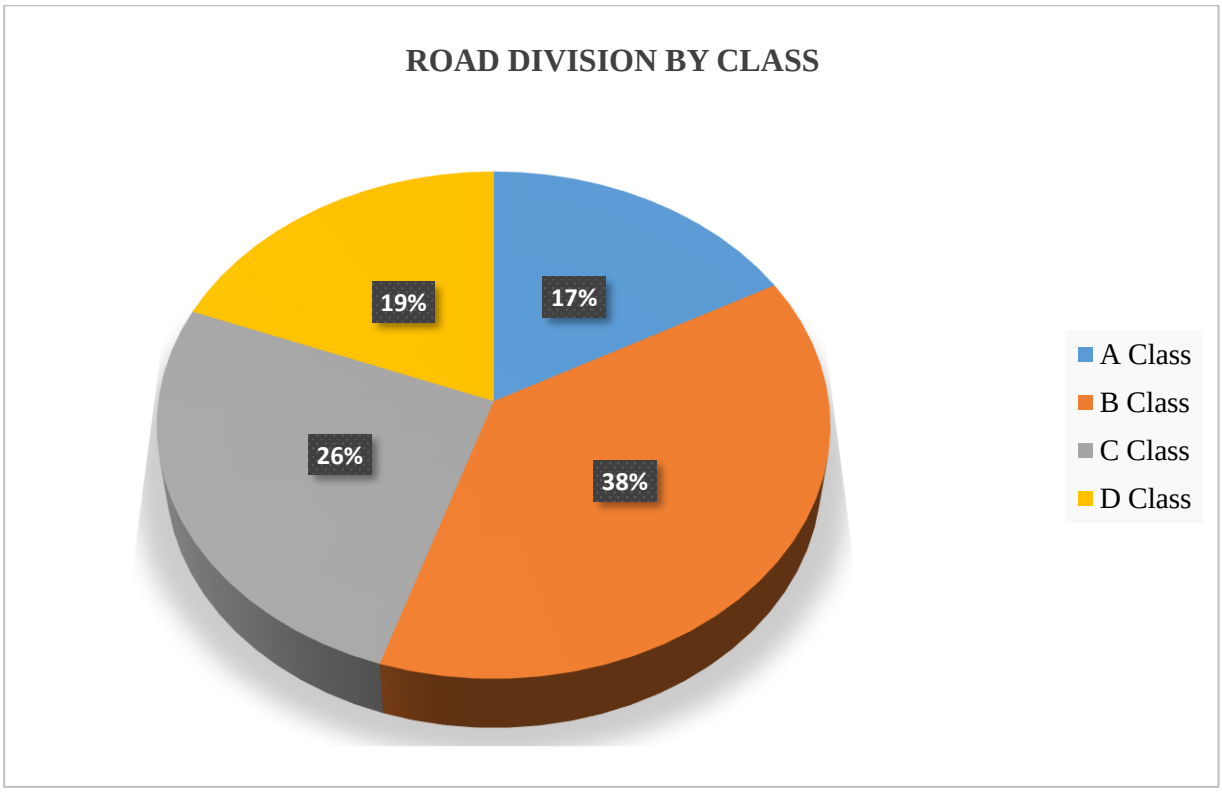
Source: Field Survey 2019

The field survey indicates that a total of 346.26 km of road serves the entire population of this Rural Municipality in which the share of black top road and gravel is almost nil in the totality. The share of earthen road is 209.28 km and stands to be 60.44% in total road length constitution. The portion of new trail opening in the total road portfolio remains as 136.98 km i.e. 39.56% in the total road length portfolio considering all classes of roads. The weightage of Class A road in new track opening is nil while its weightage in Class B, Class C and Class D

roads are 47.4 km (34.60%), 50.7 km (37%) and 38.8 km (28.32%) respectively. The earthen roads come under easy operations only during the fair weather and difficult to pass through due to deep muddy reels, and excessive slippery in extreme seasons.

The earthen roads pass through all of the wards of Gangajamuna Rural Municipality. For the purpose of RMTMP, the entire roads of this Rural Municipality have been classified into four categories viz. Class 'A', Class 'B', Class 'C' and Class 'D' where the total length of all class of road combined is calculated as 346.26 km. From this total, the road stretch of Class A is calculated as 59.29 km (17.12%) as per the field level assessment while Class "B" holds 131.16 km (37.87%) ; Class "C" holds 89.57 km (25.86%) and the share of Class "D" road is only 66.24 km (19.13%) in the total road length portfolio.

Figure 2: *Road division by class in Gangajamuna Rural Municipality*



Source: Field Survey

Class "A" Road: Class "A" roads pass through all of the six wards of Gangajamuna Rural Municipality except ward no 1. Ward no. 3 holds the longest road stretch among Class "A" road i.e. 14.05 km followed by Ward no. 7 (13.90 km) and Ward no. 5 (12.66km) respectively. Similarly, Ward. No. 4, 2, and 6 hold their respective portion as 7.18 km, 5.87km, and 5.63 km respectively where ward no. 6 holds the shortest stretch of all. In total, 59.29 km earthen road constitutes the total portfolio of Class "A" road.

Table No. 2: *Road division by class in all wards of Gangajamuna Rural Municipality*

Ward No	Class A	Class B	Class C	Class D
1		16.34	24.71	4.56
2	5.87	19.96	4.95	1.24
3	14.05	14.00	7.05	7.12
4	7.18	12.38	11.92	6.39
5	12.66	32.36	19.63	15.64
6	5.63	19.41	11.70	12.77
7	13.90	16.72	9.61	18.51
Total	**59.29**	**131.16**	**89.57**	**66.24**

Source: Field Survey

Class "B" Road: Class "B" type roads also pass through all of the wards of this Rural Municipality. The longest road span has been recorded in Ward No. 5 (32.36km) followed by Ward. No. 2 (19.96 km) whereas the shortest road length has been recorded in Ward No. 4 within Class B category and the rest is as shown in the table above. In total, 83.73 km earthen and 47.43 km of new track opening constitutes the total portfolio of Class "B" type road the combined of both makes a total of 131.16 km. The entire length of Class "B" type roads fall under earthen category.

Class "C" Road: Class "C" type roads pass through all of the wards of this Rural Municipality and Ward no. 1 holds the longest stretch among Class "C" type road with 24.71 km followed by Ward. No. 5 that holds 19.63 km and so on. Ward no. 2 carries the shortest span of all the wards with a total of 4.95 km road length. The remaining three wards 4, 6, 7 and 3 holds 11.92 km, 11.70 km, 9.61 km and 7.05 km respectively. In totality some 89.57 km has been recorded as Class "C" type roads in this Rural Municipality out of which 38.85 km falls under earthen road and 50.72 km under new trail construction category.

Class "D" Road: Class "D" roads also pass through all of the wards of Gangajamuna Rural Municipality. The longest stretch has been recorded in Ward No. 7 (18.51 km) followed by Ward No. 5 (15.64 km). The shortest of all in this category has been recorded in Ward. No 2 with 1.24 km road length. In the total road length of 66.24 km falls in this category and the the share of earthen road and new track opening are 27.40 km and 38.83 km respectively.

Table No. 3: *Division of Road by Category in Gangajamuna Rural Municipality*

S.N.	Road Class	Pavement Type(KM)			Trail	Total (KM)
		BT	GR	ER		
1	Strategic Road	0.00	-	-	-	0.00
2	Urban Road	-	-	-	-	-
3	District Road	-	-	-	-	-
4	Municipal Road	0.00	0.00	209.28	136.98	346.26
Total		**0.00**	**0.00**	**209.28**	**136.98**	**346.26**

Source: Field Survey 2019

In terms of categorical distribution, no strategic, urban and district road has been recorded except the municipal roads in which 209.28 km is earthen and 136.98 km is new trail construction.

2.6 Visionary City Development Plan

Gangajamuna Rural Municipality, in its current policy and budget program, has focused on the physical infrastructures. The annual plan and programs of fiscal year 2076/2077 envisions optimum utilization of natural as well as human capitals and foresee partnership amongst different stakeholders including the municipal staff and bodies, local people, national and international non-government organizations, central and provincial government agencies to materialize its long term vision of safe, beautiful and prosperous Ganga Jamuna with due focus upon major sectors like agriculture, tourism and herbs. The Rural Municipality retains a big faith in these priority sectors and intends to promote these sectors with adequate commitment. In terms of transportation and road infrastructure, this Rural Municipality has given due focus on the life line road upto the RM centre of this Rural Municipality from other cities and municipalities/rural municipalities and roads linking the ward centres chiefly to link three wards with smooth motorable connection. Since the entire RM body is fully aware of the scope of sustainable development, it has given prirority to make transport master plans along with building by laws which are the life line of development of other avenues too and are likely to trigger planned development so far. This RM also gives priority to drinking water supply and connection of individual water supply pipe line to each and every household is also one of its visions which is undergoing in institutional partnership with different partners. Additional 1202 pipe line connection has been possible in the past year. The RM has managed to construct 29.5 kilometers of new road and also managed to maintain and upgrade some 80 kilometers as per its current achievement. Apart from delivering physical

development, the social development also requires reliable transport system otherwise there is no significance of those services. Safe, reliable and smooth road net work, provision of sewerages, side drains and cross drainage structures, individual pipe line connection for proper health and sanitation, provision of soild waste management, electrification through national grid and or installing alternative sources of energy etc. have direct impact upon the level of other social services like education, health, security along with balanced development for different marginalized sections of the society like women, children, differently able people, and pro poor Dalits and others.

Apart from these the RM intends to implement land use policy in its territory by the establishment of a land use committee. The first and foremost task of this committee will be to make an inventory of the public land in its territory and initiate conservational activities of those areas afterwards. The RM intends to seek technical assistance from the partner agencies in this regard. Ultimately it will work in Public Private Partnership modality. In order to discourage the factored projects, focus will be given to contrete and sustainable/integrated projects worth above 5 lakhs. While selecting the projects, inclusion of each and every ward will be given due priority with focus upon RM's *Gauravsali* projects. In terms of tax, this RM has a vision of extending the avenues of tax horizon by including different strata of society rather than increasing the tax rate. The statistics of tax payers (individual/institutional) will be maintained and an easy procedure and methods will be devised to pay the tax without any hassles. In order to promote Gangajamuna as key tourism destination, the status of cleanliness matters a lot. In this regard, the RM will collaborate with partners both local and outer and try to declare it Fully Clean Zone in the near future.

In its own vision, the RM is all set to upgrade all of the roads linking the ward centres to the Rural Municipality Centre in the fastest possible manner and at the same time it intends to upgrade all of the on going rural roads in to the immediate next level at nominal. The Rural Municipality also seems to be cautious on the part of the environment friendly sustainable development measures too. While developing and utilizing its physical infrastrucutres including transport infrastructures, adequate attention will be given in terms of balancing or sustaining the local environment to some extent. The sources of water, forest, settlements, local streams and channels, all need to be conserved or protected while undergoing new constructions as per the working approach as suggested by this very Rural Municipality. Likewise, conservation of religious and cultural heritage sites, sites important from eco-agro-forest-organic tourism and all those having significant values from tourism point of view will

be given due priority. In short the aim is to give due attention while undergoing construction, rehabilitations or maintenance related works. The total discouragement in haphazard use of dozer, vibrator and other heavy equipment takes palce in this connection. The compliance to environment friendly measures in the construction related task will be given due priority as a whole. At the same time the infrastructure works also require to comply with various other standard for e.g. disabled friendly measures, children friendly measures, senior citizen friendly measures, women friendly /girl child friendly measures. In the same way the physical structures to be developed in the field level in contemporary period need to comply with post earthquake formats or requirements. In this regard, all of the newly structures to be erected are required to fulfil the core standard developed after the earthquake of 2072 BS. As per this standard, the strutures are required to comply with the latest format of the building and other codes that have already come into effect. It may also need to have the proper work procedures regarding safer and resilient structures viz. building, bridge, hospital, schools, irrigation canals etc.

The Rural Municipality also seems positive regarding the features and concept of Planned City to develop managed market centres and settlements all having services of at least the basic standard. In the same way, introduction of the building codes in the Rural Municipality along with approval of the basic code of conducts or general requirements is equally an important task in itself in terms of regulating and streamlining the entire Rural Municipality towards the direction of planned town or village development. The management of integrated development of settlement also requires working procedure to channelize the Building Code into effective. action. It will kick off the process of seeking prior approval of the building design and plans from the respective authority i.e Municipality or Rural Municipality before the construction takes places. This Rural Municipality also retains potentiality regarding integrated model settlement, embracing features like disabled friendly measures within government and community building structures and in utilizing the use of the internet and the digitized cable upto the grass root level. Likewise, the road access up to the land fill site will be proposed for efficient management of the soild waste produced witin the RM premises. The Rural Municipality of Gangajamuna being fully aware of the scope of the forest and the environment sector, seems to be bit committed regarding conservation of forest and natural flora and fauna as it foresees Ecotourism as its game changer in terms of big economic shift. That is why it is quite serious in terms of implementing the provisions as set by the federal government regarding environment conservation and the balanced development measures. As

per Environment Protection Act (EPA) and Environment Protection Rule (EPR), there are different provisions of Environmental Impact Assessment (EIA) and Initial Environmental Examination (IEE) and this RM is fully committed towards their compliances while undergoing infrastructures in the local level. Moreover, it is likely to introduce policies regarding the conservation of forest, environment and water bodies along with plantation of trees and fruit plants, inception of plastic avoidance strategies etc. These activities will help transfer Gangajamuna Rural Municipality as eco friendly destination within a short span of time. The RM has also a plan to fix the river corridors in order to discourage the river side encroachment as prevalent in most of the parts of the country.

Apart from these all, the RM intends to invest on agriculture, livestock, agro based and forest based industry, commerce and tourism sectors (religious, trekking, homestay, eco-tourism, agro-tourism and others) to attain its long term goal of the safe, beautiful and prosperous Gangajamuna as mentioned earlier. The Rural Municipality cannot ignore its basic social services deliveries like health and education as well to achieve this long term goal. However, development of road and transportation sector is the foremost condition to attain all these goals and vision.

2.7 Major Plans, Policies and Programs in terms of visionary city development

Since this RM has not yet developed its Comprehensive Master Plan it lacks precise documentary evidence about the concrete outlook of this Rural Municipality as a whole but the cursory study of its current plans, policies and the trend of budget program of past couple of years, all indicate that it has given due emphasis on core sectors like agriculture and tourism for its economic prosperity on the basis of which it has envisioned a wealthy and prosperous Gangajamuna in the near future.

This RM also envisions the ultimate use of human capital as it is the only resource that integrates the other resources like natural resources, capital resources and the human resources itself and help materialize the long term vision as seen by the local stakeholders mainly the RM executive body of this Rural Municipality.

Like other Municipalities and Rural Municipalities of the country, this particular Rural Municipality is also backward in terms of development of physical infrastructures and gives due priority in these aspects. The long term prosperity of this Municipality has been linked in the foundation footings of modern agriculture as well as promotion of tourism destinations by making reasonable investment and conducive environment in these prospective sectors.

2.7.1 Transportation Sectors

Policies and programs set for the past fiscal year (fiscal-year 2075/076) have taken the agenda of upgrading the existing roads that connect the Rural Municipality Centre with all of its ward centers; connection of Rural Municipality Centre with strategic roads like District or Feeder roads or so. Similarly, emphasis was also given for upgrade of those roads that connect ward centers with the Rural Municipality Centre. This Rural Municipality is committed to join major settlements in its territory with reliable road network in short span of time and it intends to develop Gangajamuna into a smart Rural Municipality with quality infrastructures in the near future. The Rural Municipality has already developed strategy to negotiate with the transport entrepreneurs to run public transport services from its Centre to different wards connecting different important settlements and social services as such. It is also in the process to develop a mechanism of rapid responses to release the blockade in the main roads during rainy season or at the event of severe hazard so that those roads could be developed into all-weather roads. Preparation of Rural Municipal Transport Master Plan is also one of the key steps taken by the Municipality to move ahead sustainably for the sake of road and transportation development. The key objectives taken by the long term plans include:

- Upgrade of all the major roads in the Rural Municipality into safe and smooth all weather roads
- Increase an easy access of this Rural Municipality in National Highway Network so that access to large cities will be ensured
- Further upgrade and improvement of the current road linking the National Highway or other Strategic Road Network will be given due priority and preferences
- Install and maintain basic road furniture in the prioritized roads
- Explore possibilities of mutual cooperation and partnership with private sectors in order to ensure safe, economic and reliable transport services and overall management of public transportation in an efficient manner
- Conduct feasibility studies to check the viability of other modes of alternative transportation like rope ways/cable cars, and air shuttle (chopper servcies) during emergencies
- Establish a mechanism that ensures routine maintenance keep continued
- Make transportation system easy, safe and smooth from all aspects
- Opening up of new tracks will be given due priority considering their respective significances in terms of serving the communities however sustainability and environmental measures will be the basis while finalizing such project schemes
- construction of essential cross drainages like culverts and bridges etc. as per the need

The provision of Planning Norms and Standard 2015 as developed by Urban Development and Building Construction Department indicates that 90 per cent of households in the municipality level should have reach over motor able road within access of 2 km periphery will also be given due priority while making investment in the transport sector. Both of these statistics indicate the compliance/fulfilment of the minimum thresh hold level. Despite this very fact, it's pity mentioning that the condition of most of the roads are quite pathetic and weak in terms of service quality. The proper maintenance, upgrading and linkage of current roads to the network of road are the only ways forward to attaining easy, secure and reliable road transportation services in the long term plan of next 15 years while the short term plan needs to focus on the completion of maximum no. of all-weather roads through this RMTMP. Hence, the development of this Rural Municipal Transport Master Plan (RMTMP) will be the key in order to prioritize, improvise and upgrade the roads as per the MTMP guideline.

2.7.2 Land Use Pattern

As per the present land cover status arable land covers 6185 hectare area which is 43.06% of the total area while forest area covers the area of 3606.60 hectare which is 25.11% of the entire land use pattern. Similarly, the constitution of settlement area remains as 291 hectare (2.03%) while grass land and pasture area covers 22.40 hectare (0.16%), sand and water occupied area covers 40.47 hectare (0.28%), rocky and steep area covers 5.69 hectare (0.04%) of the entire land pattern and others remain as 4212.19 hec (29.33%) respectively. The land scattered at the bank of different rivers and rivulets have been found to be relatively fertile ones. The current land use pattern and the distribution of the land in terms of different uses gives a guideline regarding the optimum and efficient use of land type for overall social and economic developmet of this region as a whole. The table below gives the detail about the land use pattern of Gangajamuna Rural Municipality.

Table No. 4: *Land Use Status of Gangajamuna Rural Municipality*

Land Type	Area (hectare)	Percentage
Residential -settlement area	291.0	2.03
Steep Terrain and Rock	5.69	0.04
Arable Land	6185.00	43.06
Forest cover	3606.60	25.11
Pasture and Grass Land	22.40	0.16
Sand occupied area, River, Stream, Lake, pond	40.47	0.28
Others	4212.29	29.33
Total	14363.76	100.00

Source: RM Profile 2076

2.7.4 Prospective areas for future settlement

Agriculture and Tourism have been considered as the two major prospective areas capable enough to shift the discourse of development of this particular Rural Municipality. In terms of agriculture key focus areas will be buck wheat, millet, maize, potato in core cereal items whereas orange, and other citrus fruits like lemon, have big prospects regarding horticulture where as the scope of other fruits like kiwi and apple can not be ignored in higher belts.

Agricultural production

The major cereals, lentils and raw seeds for edible oil are produced in some 75544 ropani of land in this RM as per the current RM profile. The gross production of 58955 quintal of cereals, 693quintal of lentils and 119 quintal of mustard and other species for edible oil have been recorded in this RM out of which nearly 2600 ton of cereals are sold every year. From the agricultural perspective ward no. 7 purely dominates others as more than 40% of the cultivable area remains here along with share of at least 25% of total cereal production in this RM. Ward no. 1 and 3 are relatively weaker in terms of production of cereals. Even the combined production of both wards merely stands up to 12% of the entire production. The detail picture of major agricultural production (Cereals, lentils, oil species) is as mentioned in the table below:

Table No. 5: *Agricultural production status of Gangajamuna RM*

Ward no	Cereals			Lentils			Oil species		
	Area in ropani	Production in quintal	Sale in quintal	Area in ropani	Production in quintal	Sale in quintal	Area in ropani	Production in quintal	Sale in quintal
1	2495	4129	228	345	65	0	7	2	0
2	3552	11158	44	0	0	0	3	12	40
3	2826	2773	112	0	0	0	0	0	0
4	6707	7728	145	40	81	0	27	62	0
5	12460	10399	138	103	13	0	2	7	0
6	10459	9309	251	553	186	1	105	18	0
7	32742	13459	1605	3059	348	3	59	18	23
Total	71241	58955	2523	4100	693	4	203	119	63

Source: HH Survey 2019

Similarly, from the total of approx. 6150 ropani of land, the production of vegetables, fruits and other cash crops have been recorded as 3400 quintals. In the total production portfolio of vegetables and cash crops also, ward no 7 dominates the other wards as nearly half of contribution belongs to ward no. 7 in the entire production portfolio of vegetables and cash crops. Ward no 1, 2 and 3 produce negligible quantity of vegetables and fruits as compared to other wards.

Livestock and Dairy

There is also a big scope of livestock related ventures in this RM. Out of 5178 houseolds, some 72 per cent are found to be involved in livestock keeping. Likewise, in totality, 1137 cow/ox and 4940 buffaloes have been recorded in this Rural Municipality which produce some 4886 liter of ghee in annual basis.

Likewise, in terms of meat production, there is scope of motton, ham and chicken in general. The total number of goats available in the RM is calculated as 16474 from which approximatey 26 ton of motton is produced. Likewise, the total no. of swines and chicken/ducks recorded in this RM stand to be 79 and 21400 respctively from which the net chicken production is calculated as approx. 32 ton. Chicken production is relatively better in ward 1, 5 and8 where as motton production is the best in ward no 7 followed by ward no 4 and 5. Some 1585 household (28 per cent of the total households) somehow manage to sale the products related to livestock (including chicken/birds). The gross producton from this livestock sector has been recorded roughly NRs. 213 million in annual basis.

Simialrly, in terms of other small scale agro based ventures, number of fish ponds and bee-hives have been recorded in this RM. There are also some public ponds in community level which are used for fish production. Tentatively some 10500 ropani of land in Budathum (ward no 7) and Baseri (ward no 5) have been used for fish farming. There is also scope of silk farming in this RM.

Food Security Status

In the total houseold constitution, those having food sufficieny round the year is identified as 1047 (approx. 18%), those 9-12 months food sufficient households remain 854 (approx. 15%), those 7-9 months stand as 1277 (22.33%), 4-6 months food sufficient households are identified as 1707 (29.85%) and those merely food suffice households for 3 months have been identified as 833 (14.57%). The ward wise distribution is as shown below:

Table No. 6: *Food sufficiency status of the households from Bethanchowk RM (ward wise)*

Ward No.	Upto 3 months	4 -6 months	7-9 months	9-12 months	12 months of more	Total
1	13	124	291	143	81	652
2	2	316	268	60	4	650
3	122	243	165	19	126	675
4	31	18	40	110	454	653
5	106	261	210	284	77	938
6	337	323	118	88	212	1078
7	222	422	185	150	93	1072
Total	833	1707	1277	854	1047	5718
%	14.57	29.85	22.33	14.94	18.31	100

Source: RM Profile 2019

Some 15 irrigation canals facilitate irrigation in approx. 156 hectare of land in this RM benefiting some 1515 households. Remaining households rely on monsoon rain and lack reliable irrigation facilities.

This RM is also rich in terms of herbs and other medicinal plants. The rich biodiversity and existence of range of climates i.e. temperate and subtemperate favors the growth of varieties of plants of high value in this region. Agriculture has been understood in terms of its broader sense in this particular study in which besides cultivation of cereals, seasonal/off seasonal vegetables it also delves into the issues of horticulture, livestock keeping, chicken farming, silk farming (Cere culture), bee culture (honey producing), dairy related production, agro based forestry, agro processing and so. In this way the agriculture sector retains a huge scope of work. The area wide potentiality of various agricultural productions and major highlights of agricultural tourism has been given in the table below.

Tourism Development

This RM also retains better prospect in tourism sector. A large number of tourism focused activities are possible in this beautiful RM ranging from eco tourism to trekking, hiking, rock climbing, cycling, agriculture tourism and all. It is likely that local clubs and tourism related local entrepreuneurs from different wards can also promote homestay and diverse tourism related activities in their respective areas keeping their unique identity in the food they serve, the lifestyle they maintain and the indigenous costumes/attires they carry on. The formation of

cultural committees in prospective areas along with advertisement and promotion of major touristic destinations of this particular Municipality seems to be an urgent activity to start immediately.

The orientation to the local indigenous community about the inception of home stay facilities in their respective communities, preparation of Tourism Master Plan for the development of Gangajamuna Rural Municipality, Marketing and promotion of major annual activities held in different religious/cultural destinations within the Rural Municipality through calendar publications, and display of various *jhakis* during major national festivals are some of the fundamental activities for tourism promotion in the Rural Municipality while other specific activities to enhance tourism include improvement and upgrade of roads linking tourism destinations to start with. It is only after the reliable and safe access to those destinations can tourism be flourished substantially.

A total of 13 spots have been marked as important religious/cultural sites with broader significance of tourism promotion. Religiously important Gangajamuna Spring retains the highest scope among all which is positioned in the premises of Gangajamuna Mandir. The name and brief description about some important tourism destinations in this RM is as follows:

Ward	Name of spots	Physical infrastructure			Ownership status (private, public and community)	Special significance (religious, cultural, tourism)	Yearly tourist arrival in number
		Road Access	No. of hotel, lodge, restaurant	Distace upto near market centre (km)			
1	Paragang	Inaccessible	0	5	Community	Religious	600
1 / 2	Pasang Chowk	Inaccessible	0	1	Community	Religious/Tourism	6000
2	Chyang Chyang Kuna	Inaccessible	0	2	Community	Religious	3000
	Gorgng	Accessible	0	4	Community	Religious	1500
3	Pokhara dadi	Inaccessible	0	4	Community	Tourism	4000
4	Kalika Devi	Accessible	0	4	Community	Religious	300
5	Gangajamuna Mai	Accessible	No (available in Fulkharka only)	2	Community	Religious	5000
	Pokhari Danda	Accessible	0	4	Community	Tourism	2000
6	Chaturthala	Accessible	0	1	Community	Religious	3000

Ward	Name of spots	Physical infrastructure			Ownership status (private, public and community)	Special significance (religious, cultural, tourism)	Yearly tourist arrival in number
		Road Access	No. of hotel, lodge, restaurant	Distace upto near market centre (km)			
	Mai						
	Sivlaya Mandir	Accessible	0	3	Community	Religious	4000
7	Pashupati Mandir	Accessible	0	4	Community	Religious	600
	Mahadev Mandir	Accessible	0	2	Community	Religious	500
	Kalika Mandir	Inaccessible	0	5	Community	Religious	1200

Source: RM Profile 2076

There are altogether 4 residential hotels and resort, 8 restaurants and 1 homestay to accommodate the internal as well as external tourist in this RM.

Religious/cultural significance

Hindu festivals like *Dashain, Tihar, Teej, Holi, Ram Nawami, Chaite Dashain, Nag Panchami, Mata Tirtha Ausi, Thulo Ekadasi, Kushe Aunshi, New Year, Maghe Sangranti* etc are celebrated in this Rural Municipality whereas different kinds of *Lhosar, Buddha Jayanti and Saraswati Pooja* is celebrated by the Buddhist communities from this RM. The Christian community celebrates Christmas day as well.

In terms of local rituals Birth, Marriage and Death are important rituals in all of the caste while *Bratabhandha, Shraddha (Hindus), Ghewa (Tamang-similar to Bratabandha of Hindus)* are equally important. *Belbibaha, Ihi, Jankhu* are some typical Newari rituals. The local traditional institutions like *Guthi* and modern youth clubs remain significant not only in terms of protecting and documenting their intangible religious and cultural heritages but also in terms of maintaining religious harmony by mutually exploring and marking different feasts and festivals in order to promote tourism holistically.

2.8 Constraints in the Implementation of MTMP

Road network is believed to be the lifeline of infrastructure. The doors of other physical as well as social development possibilities are unlocked through the proper development of roads and transportation. Since the existing condition of roads in the Rural Municipality is not that encouraging, large portion of budget is required to address the problem of road upgrade and maintenance. This budgetary problem is truly a major obstacle for the timely implementation of the (R) MTMP. Besides this, the other constraints are:

- Problem of connecting the sparse settlements with roads which is expensive
- Rugged topography with steep slope
- Natural hazard (Landslides and soil erosion) and man made hazard triggered fuel and energy crisis
- Finalization of standard RoW from the base level remains problematic in several occasions
- Lack of technology and stability crisis in terms of working environment
- Lengthy procurement process for hiring construction work/contractors
- Lack of qualified manpower, and lack of accountability in terms of different level of stakeholdership along with labor force
- Lack of smooth supply of construction materials

Types of activities	Potential destinations and major attraction
Major local festivals	Lhosar (Tamang , Gurung , Ghale), Christmas (Christian community), Maghe sankranti (Magh 1), Dashain and Tihar , Teej, Holi, Thuli ekadasi (Mela at Gangajamuna temple), Mela at Mahadev mandir in kichet (Bhadau purnima), Mela at Pasang Chowk (Bhadau), Ekadashi mela in chhyang chhyang kuna.
Major Agro-production	Millet, Maize, Barley, Cardamom, coffee, Local potato, Tea, Bamboo products like Doko- Thunse- Doko, Paddy, Wheat,
Major local cuisines	Dhido (Millet and Buck wheat), Gundru, Maize and Soyabean (Makai Bhatmas), Tomato, Rice, Dal and Curry of local green vegetables and local chicken, Honey (home made/domestic), Sishnu, varieties of Skus
Homestay	Mantari Homestay (proposed), Homestay at Deurali,Pokhara(proposed) Syangsyang Bardan bhir, Chilaune bisan (proposed),
Eco Tourism	**Flora:** Pachaule, Chiraito, Kafal, Kurilo , Gopre salla, Pani salla, Uttis, Chaap Katus, Chilaune, sakhuwa, Rupi, Saal . Nigalo, Jatamasi, Hiramasi, Seto Boruwa, Lali guras, Siris,Paiyu,Bakaino,Khaniyo, Badahar, Anggher, Satuwa, Tinaule, Harro, Barro, Banlasun. Fauna**:** Monkey, Fox, Procupine, Squirrel, Wild cat, Deer, Pangolin(salak), Naemorhedus (Ghoral), Chital , Leopard, Bear, , Dove, Nighingale(jureli),Pigeon, Sparrow, Crow, Quail(battai), Cuckoo (koile), Eagle, Partridge(Titra), Owl, Saarau,Chibe, Kalchauda,
MajorTrekking routes	Kitang fedi- Satdobato- Pokhara- Tinsure ; Odare- Bhaise- Thulo Naange- Tinsure; Mandali- Payukharka- Gangajamuna- Tinsure; Sadhpipal- Kalika- Dadhagaun- Tinsure; Latap- Langyurechet-Kichet- Ganesh Himal
Major View Points	Parogang, Pasangchowk , Gangajamuna, Manang Ban, Tinsure, Lakuwa dadha, Pokhara
Major Financial Institutions	Ward 1- Rigaun Agriculture Co-operative, Himali Jadibuti Co-operative. Ward 2- Namaste Mahila Bewasaye Saving and Credit Co-operative, Pasang Chowk Agriculture Co-operative. Ward 4- Sana Kishan Co-operative, Agriculture Credit and Co-operative, Maitri Credit and Co-operative. Ward 5-SBI Bank, Sungavaa Sana Kishan Agriculture Co-operative, Chhahari Saving and Credit Co-operative, Chetansil Rural Lighting Co-operative, Gangajamuna Agriculture Co-operativ . Ward 6- Shree Baseri Sana Kishan Agriculture Co-operative Ward 7- Shree Sodim Saving and Credit Co-operative, Ugra Chandi Sana Kishan Agriculture Co-operative, Shree Samaj Multipurpose Co-operative , Saadhana Laghubitta.
Market centres	Ward 1-Tajimarang, Rigaun, Choke. Ward 2- Tawal gaun, Latab gaun . Ward 3- Gumdi, Chimchowk, Chelang, Pokhara. Ward 4-Satdobato. Ward 5- Dhap Bazzar (Tinkhande), Phulkharka, Sukabhanjyang, Maajuwa, Dangsingh, Deurali. Ward 6- Bhadaure, Mahalaxmi Area (sano baseri) , Bhaise. Ward 7- Budathum Bazar .
Major Transportation	Ward 1: Siktar- Phulkharka-Chimchowk- Ri – Lapa (2/3 trip) . Ward

Types of activities	Potential destinations and major attraction
Routes	2:Ghyangsang- Kutaal- Salleri (2 trip), Satdobato- Chimchowk- Tawal- Salleri (1 trip) Ward 3: Gumdi – Chellang – Chimchowk(4 trip), Kitaangfedi – Gumdi (1 trip), Pokhara- Chimchowk (1 trip), Lungri Khola – Bhirkuna – Nebi-Chimchowk (truck only). Ward 4: Baguwa- Raatmate- Satdobato (1 trip), Baguwa-Phalanghe-Satdobato (1 trip), Salmetar- Shaldhum- Satdobato (truck only). Ward 5: Belung Bhanjyang – Suka Bhanjyang- Phulkharka (3trip), Balauta-Dhadkharka (2 trip), Balauta- Mathillo Danghsingh – Paiyukharka- Dumla-Sadan- Pokhara –Chimchowk(1 trip), Dhading besi- Sangkosh – Lapang fedi-Kalleri- Dhadkharka- Majuwa (2 trip). Ward 6- Dhading- Salyantar- Budathum-Mahalaxmi (1 trip), Dhading- Salyantar- Budathumbesi- Odare- Piple – Hatiya (1 trip), Dhading- Salyantar- Budathumbesi- Piple- Laphudadha- Manbu (1 trip). Ward 7: Siktar- Budathum- Baseri (2 trip), Budathum- Baashkharka-Sukabhanjyang (1 trip), Aal dadha – Bhorle- Gaikharka (1 trip).
Bus Station and Bus Park	Ward 1 :Proposed at Gharchet Buspark (10- 12 vehicles), Ward 2: Proposed at Tawal (5- 6), Ward 3: Proposed at Chhelang(5 Vehicle)- Chimchowk (4-5 Vehicle), Gumdi (3 vehicle). Ward 4: Proposed at Satdobato (20 vehicle), Ward 5: Phulkharka (3 bus), Dadhkharka (3 bus) . Ward 6: Sanu baseri Bus park (2 bus), Hatiya Bu spark (2 bus). Ward 7: Budathum Bus park (3-4).
Picnic and park related destinations	Melechet, Dangchet chaur, Kimichet chaur, Pokhara dadha, ThulNaange, Gangajamuna,
Local music and dance	Tamang selo, Damfu nach, Jhakri Nach, Naumati Paanche Baja, Hindu Slok, Ghale and gurung community dance
Major Rivers/rivulets	Ward 1: Pase khola, Deung khola, Somang khola. Ward 4: Baguwa khola, Sisne khola, Syaladu khola. Ward 5: Paire khola, Baguwa khola. Ward 2: Kalsyong khola, Afal khola, Sayaaktale khola. Ward 3- Arjang khola, Masyung khola, Gaire khola,Mewa khola ,Puwang khola, Taki khola .Ward 6: Budi khola, Kapre khola,Sadhi khola. Ward 7: Ghyang khola, Mohare khola.Manpang khola.

Chapter - 3: Indicative Development Potential Map (IDPM)

3.1 Municipal Profile

Gangajamuna Rural Municipality, geographically, is located in dhading district of Bagmati Province. It lies in the mid hill region of the country and is extended from 28º 1' 0" N to 28º 10' 0" N and 84º 49' 0" E to 85º 1' 0" E. Khaniyabas Rural Municipality lies in the east; Arughat Bazar, Gorkha lies in the west; Rubi Valley Rural Municipality lies in the north and Netrawati and Tripurasundari RM lies in the south of this Rural Municipality. Most of the land parcels of this Rural Municipality extends from mid hill to high alpine areas and is blessed with biodiversity, natural resources retaining huge tourism potentialities. This RM retains number of river rivulets, forest, herbs and wild flora and fauna. The temperature of this RM varies from 7.7 degree centrigrade to 42 degree centigrade in general and the average rain fall recorded in this area is 1050 mm. The total area of this RM is 144.09 sq km. This Rural Municipality was established by merging then five Village Development Committees (VDCs) i.e. Ri, Gumdi, Fulkharka, Baseri and Budathum. Ward no 5. (35.71 sq km) and ward no. 1 (35.60 sq km) shares almost half of the toal area of this ward. Ward no. 4 is the smallest of the all with 12.53 sq km. Ganaga Jamuna Rural Municipality is named after one of the popular water falls of Dhading District i.e. Gangajamuna Jharana which is religiously and culturally an important desination where thousands pay visit every year during the *Ekadasi Mela* in the month of Mangsir. This RM has been formed by merging the prior five VDCs namely Ri, Gumdi, Fulkharka, Baseri and Budathum and there are 7 wards in this RM at present.

The formation of this Rural Municipality along with the new composition of wards, population and area has been shown in the table below:

Table No. 7: *Gangajamuna Rural Municipality with its respective wards, population and area by wards*

SN	Former VDCs and wards	Present Municipal Ward	Population	Area in sq. km.	Ward centre
1	Ri (4,5 7 and 9)	Ward No. 1	2425	35.60	Taul Vede Danda
2	Ri (1,3,6 and 8)	Ward. No. 2	2859	14.77	Tajimrang
3	Gumdi (1-5)	Ward No. 3	2777	13.39	Gumdi
4	Gumdi (6-9)	Ward. No. 4	3162	12.53	Satdobato

SN	Former VDCs and wards	Present Municipal Ward	Population	Area in sq. km.	Ward centre
5	Fulkharka (1-9)	Ward No. 5	4423	16.60	Fulkharka
6	Baseri (1-9)	Ward No. 6	4942	24.8	Baseri
7	Budathum (1-9)	Ward No. 7	5284	15.39	Budathum
	Total		25872	144.09	

Source: Profile of Gangajamuna RM

As mentioned in the table, wardwise, Ward No. 1 holds the largest area i.e. 35.60 sq km. followed by Ward No. 6 with area of 24.80 sq km and Ward No. 5 (16.60 sq km) respectively as shown in the table whereas Ward No. 4 holds the smallest area of the all with an area of 12.53 sq. km and the remaining wards hold the area in between as shown in the table. Population wide, ward no. 7 holds the highest population with 5284 (20.42%) followed by ward no. 6 with 4942 (19.10%) while the smallest population prevails in ward no. 1 which is only 2425 (9.37%). The ward wise population constitution of other wards of this RM is also given in the table above.

3.2 Demographic Status

3.2.1 Population Description

The population of an area serves the two fold of development i.e. in terms of means and modes. As human resources rationally mobilizes both fiscal and physical resources it is the most important resources of the all in order to secure growth and development. According to household survey 2076, the total population of this Gangajamuna Rural Municipality is 25782. Wardwise, ward no. 7 accommodates the highest population of 5284 whereas the lowest population is hosted by ward no. 1 with 2425. The recorded current family size and male to female ratio is 4.52 and 105.48 respectively. The data of CBS 2068 BS and Household survey of 2076 BS has been tabulated as following. This shows that there has been significant growth of population by gross 18.76% in 8 years' time period. The number of households have also increased by some 17.55% in this duration. The population growth has been recorded in all wards of Gangajamuna Rural Municipality except in ward no 1 where the households seem to have increased from 543 (CBS 2011) to 652 (HH Survey 2019) but the population size has decreased from 2709 (CBS 2011) to 2425 (HH survey 2019) with almost 10.48% decrease. As shown in the table below all off the remaining wards show the increasing population trend in this interval of 8 years.

Table No. 8: *Population distribution as per CBS 2011 and HH survey 2019*

Ward	CBS 2011					HH Survey 2019				
	Household	Population			Avg Family size	Household	Population			Avg Family Size
		Male	Female	Total			Male	Female	Total	
1	543	1283	1426	2709	4.99	652	1288	1137	2425	3.72
2	567	1188	1537	2725	4.81	650	1467	1392	2859	4.40
3	542	1041	1301	2342	4.32	675	1430	1347	2777	4.11
4	567	1094	1397	2491	4.39	653	1629	1533	3162	4.84
5	920	1769	2356	4125	4.48	938	2238	2185	4423	4.72
6	859	1609	2051	3660	4.26	1078	2576	2366	4942	4.58
7	866	1543	2189	3732	4.31	1072	2652	2632	5284	4.93
Total	4864	9527	12257	21784	4.48	5718	13280	12592	25872	4.52

Source: CBS 2011 and HH survey 2019

Population Density

The population density as per the CBS 2068 BS has been recorded as 150.14 person per square kilometer whereas the same for the year 2076 has been recorded as 178.32 person per kilometer area. In terms of current ward level population density suggest that ward no 1 as the least populated area with 68.12 person per square kilometer whereas ward no 7 retains the highest population density with 341.12 person per square kilometer as shown in the table below. The ward wise distribution is as follows:

Table No. 9: *Comparative table for population density*

Ward no	CBS 2011			HH survey 2076 (2019)			Area Details	
	Family member	%	Popn Density	Family Member	%	Popn Density	Area (sq km)	%
1	2709	12.44	76.10	2425	9.37	68.12	35.60	24.54
2	2725	12.51	184.50	2859	11.05	193.57	14.77	10.18
3	2342	10.75	174.91	2777	10.73	207.39	13.39	9.23
4	2491	11.43	184.11	3162	12.22	233.70	13.53	9.33
5	4125	18.94	115.51	4423	17.10	123.86	35.71	24.61
6	3660	16.80	220.48	4942	19.10	297.71	16.60	11.44
7	3732	17.13	240.93	5284	20.42	341.12	15.49	10.68
Total	21784	100	150.14	25872	100	178.32	145.09	100.00

Source: CBS 2011 and HH survey 2019

Population in terms of age and sex

The total population under 5 has been recorded as 2101 (8.12%) whereas 6-15 yrs age group category has been calculated as 3825 (14.78%). Likewise, the total population of above 60

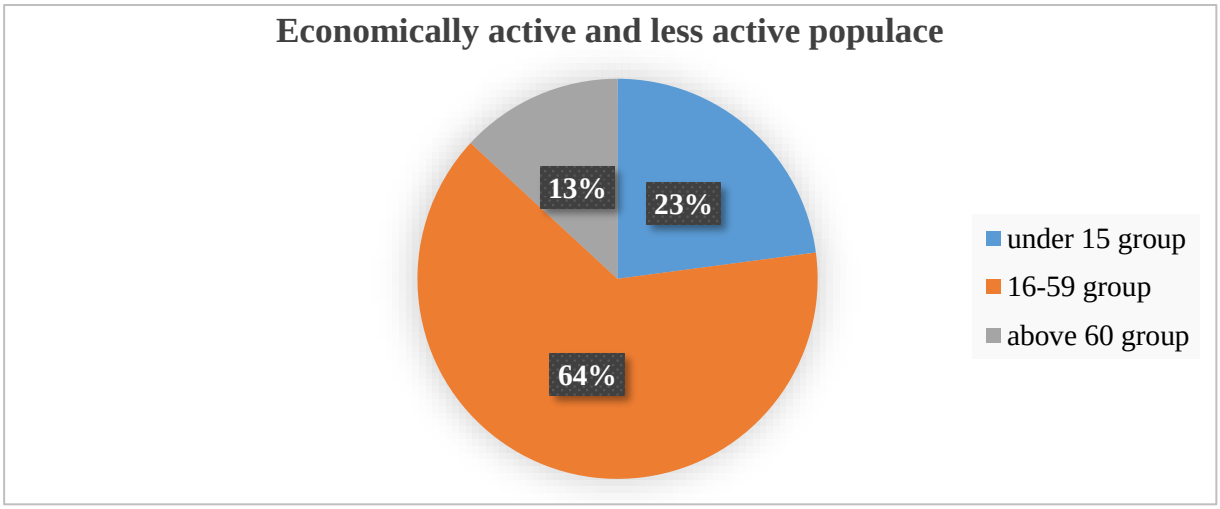
categories (i.e. combined of 60-69 years category and above 70 category) has been calculated as 3395 (13.12%) respectively. All of these categories represent the economically non active or say less active populace and the total of all constitutes approx.36 %. This also refers that the total of economically active populace remains close to 64% as per the total population constitution.

Table No. 10: *Table : Age wide distribution of the populace*

Wards	Population of differnt age group															
	Before 5 yrs		6-15 yrs		15-18 yrs		19-24 yrs		25-49 yrs		50-59 yrs		60-69 yrs		70 above	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	133	114	214	181	99	110	404	356	159	141	89	83	100	87	90	65
2	140	121	195	214	138	130	481	439	178	196	137	109	91	88	107	95
3	119	109	200	197	126	106	463	428	193	176	134	133	104	96	91	102
4	111	98	248	218	145	133	616	567	182	186	130	123	102	93	95	115
5	180	163	356	313	172	194	757	734	284	295	180	192	149	145	160	149
6	238	190	384	340	227	183	920	820	315	301	196	194	161	190	135	148
7	208	177	394	371	228	255	969	958	319	308	234	226	167	165	133	172
Total	1129	972	1991	1834	1135	1111	4610	4302	1630	1603	1100	1060	874	864	811	846

Source: HH Survey 2076

Figure 3: *Population distribution in terms of contribution in economy*



Source: HH Survey 2019

3.2.2 Population distribution by Caste/Ethnicity

The social structure of Gang Jamuna Rural Municipality indicates that it is a multilingual, multi religious and multi ethnic Rural Municipality with pure domaninance of indigenous (Tamang) community. Ethnicity wide, in the total households of 5718, the households comprising hill indigenous community is calculated as 3609 (63.61 %). Similarly, the total

households that belong to Hill Brahmin and Chetri community including Sanyasi and Thakuri have been recorded as 1512 (26.65%). The total households that belong to Dalit community have been recorded as 509 (8.97%). Tamang, Brahmin, Chettri, Magar, Gurung, Newar, Rai, Gharti-Bhujel, Damai, Kami, Sarki are commonly observed caste in this RM with pure dominance of Tamang community.

Detail about the caste wide distribution is given in the table as below.

Table No. 11: *Population distribution in terms of caste*

Ward no	Households division by Caste							Total
	Hill Brahmin	Terai Brahmin	Hill Indiginous	Terai Indiginous	Hill Dalit	Muslim	Others	
1	0	1	640	0	11	0	0	652
2	0	0	636	1	13	0	0	650
3	42	1	605	0	27	0	0	675
4	214	3	335	2	71	1	20	646
5	356	4	456	3	116	0	1	936
6	443	2	486	0	113	0	0	1044
7	457	3	451	2	158	0	0	1071
Total	1512	14	3609	8	509	1	21	5674
%	26.65	0.25	63.61	0.14	8.97	0.02	0.37	100

Source: HH Survey 2019

Ethnic composition also affects the mobility of people. Past history shows that indigenous population have lesser mobility in comparison to other ethnic groups.

3.2.3 Division of Households by Mother Tongue

Majority of the populace speak Nepali and Tamang language in this RM. Nepali spoken by some 17689 people (68%) whereas Tamang is spoken by 8101 i.e. approx. 31% and the remaining speak other mother tongues. Likewise, some Rai, Magar, Newar families also speak in their own mother tongue. Since this RM is literally dominated by Tamang community, it is important to conserve their respective culture and language through the introduction of multiple effective programs. There is also a provision set by the constitution of Nepal regarding language and culture. Article 32 of the Present Constitution (2072) has established the right to language and culture as the fundamental right. Similarly, the present constitution gives right to every citizen to pursue education in their mother tongue and secures right to establish schools and educational institutions and operate the same. The division of pppoulation in terms of mother tongue is given in the table as below.

Table No. 12: *Distribution of population in terms of Mother Tongue*

Ward no.	Population according to Mother Tongue			Total
	Nepali	Tamang	Others	
1	49	2374	2	2425
2	77	2781	1	2859
3	1802	975	0	2777
4	3122	5	35	3162
5	3759	655	9	4423
6	3602	1311	29	4942
7	5278	0	6	5284
Total	17689	8101	82	25872
%	68.37	31.31	0.32	100

Source: HH survey 2076

3.2.4 Division of households by religion:

Distribution of population by Religion

Majority of the populace believe in Hinduism in this RM the total population of which is 15736 (60.82%) followed by Buddhist the total population of which is 5813 (22.47%). Likewise, the population of Christian community appears to be 4283 (16.55%) and the remaining as others. As shown in the table below. Almost 75% of the entire population belong to Christianity in ward no. 1 while ward no. 2 is the Buddhist dominant ward where more than two third populace belongs to Buddhist. Likewise ward no. 4, 5, 6 and 7 are Hindu dominat wards as shown in the table.

Table No. 13: *Distribution of population by Religion*

Ward no	Population as per major religion					*Total*
	Hindu	Bouddha	Musalman	Christian	Others	
1	6	602	2	1809	6	2425
2	9	1518	4	1328	0	2859
3	633	2004	4	136	0	2777
4	2621	525	6	10	0	3162
5	3518	28	2	875	0	4423
6	4097	804	1	31	9	4942
7	4852	332	6	94	0	5284
Total	15736	5813	25	4283	15	25872
%	60.82	22.47	0.10	16.55	0.06	100

Source: HH Survey 2019

3.2.5 Population distribution in terms of occupation

The total population reliant on agriculture and livestock is calculated as 5039 (19.48%) followed by daily wage workers which comprises 3055 (11.81%), foreign employment 1732 (6.69%), service sector (5.05%), commerce and industry 631 (2.44%). The combined population of student and housewife is calculated as 8375 (32.37%), underage is 3828(14.80%) and remaining others as shown in the table below which also segregates the data in terms of wards

Table No. 14: *Population distribution in terms of occupation*

Ward no	Agriculture/ livestock	service	Commerce/ industry	Daily wage labor	Professional work	Foreign Employment	student	House wife	Unemployed	Others	Under age	total
1	197	39	47	696	2	75	466	468	8	19	408	2425
2	228	68	89	1289	0	118	568	7	42	5	445	2859
3	872	99	52	229	20	258	512	84	102	143	406	2777
4	761	159	107	126	12	292	687	355	64	150	449	3162
5	1274	240	107	325	13	205	846	466	78	204	665	4423
6	1019	211	109	199	9	422	1003	642	263	302	763	4942
7	688	490	120	191	9	362	1154	1117	156	305	692	5284
Total	5039	1306	631	3055	65	1732	5236	3139	713	1128	3828	25872
%	19.48	5.05	2.44	11.81	0.25	6.69	20.24	12.13	2.76	4.36	14.80	100

Source: HH Survey 2019

3.2.6 Division of households by income and expenditure

Almost 25% have been recorded as the housheolds whose annual income is less than 50 thousand while some 14% of the housheolds manage to hold income at the range of 5 lakhs or so in annual basis. Similarly, 23 % of the housheolds manage to retain income at the range of 50 thousand to one lakh. The remaining status is as following:

Table No. 15: *Division of households in terms of annual income status*

Ward No	Households as per yearly income (NRs)					
	Less than 50000	50000 - 100000	150000 - 200000	250000 - 300000	More than 500000	Total households
1	216	252	111	53	20	652
2	20	218	243	146	23	650
3	351	117	3	8	196	675

Ward No	Households as per yearly income (NRs)					
	Less than 50000	50000 - 100000	150000 - 200000	250000 - 300000	More than 500000	Total households
4	158	75	138	148	134	653
5	235	265	138	147	153	938
6	278	186	189	276	149	1078
7	164	197	214	368	129	1072
Total	1422	1310	1036	1146	804	5718
%	24.9	22.9	18.1	20.0	14.1	100.0

Source: HH Survey 2019

Households in terms of annual expenses

As per Analysis of the annual expenses of the housholds from Gangajamuna RM those HHs spending less than NRs 50000 has been recorded as 17%, those spending at the range of 50000-10000 stands at 53% those spending at the range of 150000-250000 stands at 15%, those spending at the rage of 250000-500000 stands at 10% and those spending more than 500000 stand at 5%.

Table No. 16: *Distribution of Households by expenses portfolio*

Ward no	Households as per yearly expenses					
	Less than 50000	50000-150000	150000-250000	250000-500000	More than 500000	Total HH No.
1	184	368	69	28	3	652
2	41	589	14	3	3	650
3	170	407	38	7	53	675
4	37	376	194	27	19	653
5	103	579	121	36	99	938
6	195	419	247	158	59	1078
7	242	274	196	315	45	1072
Total	972	3012	879	574	281	5718
%	17.0	52.7	15.4	10.0	4.9	100.0

Source: HH Survey 2019

The total expenses incurred in food, education and health services is 54%, 21% and 19% respectively whereas 6% of the total expenses is allotted for festival observation.

3.3 Basic Services

3.3.1 Education

Educational institutions

Out of total of 48 educational instituions 8 remain as Secondary Schools, 40 remain as Basic schools and 45 remain as Pre primary schools. The detail is as follows:

Table No. 17: *Distribution of educational institutions by wards*

Ward No.	Pre primary school (Child Development Centre)	Basis Schools	Secondary Schools	Total
1	4	4	1	5
2	6	5	1	6
3	5	6	0	6
4	5	4	1	5
5	11	11	1	12
6	8	5	3	8
7	6	5	1	6
Total	45	40	8	48

Source: HH Survey 2076

Curent Literacy Status

Some 73.1% have been identified as literate ones among which 79% male and 67% females are literate. Still 18 % are illiterate ones and 8.7% are under 6 age children. The wardwise detail is as following:

Table No. 18: *Distribution of population by literacy status wards*

wards	Status of security			Illeteracy rate (in %)			Populaton under 6 yrs of age		
	male	female	Total	Male	Female	Total	Boy	Girl	Total
1	60.0	49.2	54.9	29.3	40.4	34.5	10.7	10.5	10.6
2	71.5	62.0	66.9	18.7	28.9	23.7	9.7	9.1	9.4
3	86.4	79.1	82.9	4.1	11.7	7.7	9.5	9.3	9.4
4	82.4	68.4	75.6	9.8	23.9	16.6	7.8	7.8	7.8
5	80.5	65.8	73.2	10.9	25.9	18.3	8.6	8.4	8.5
6	79.3	66.6	73.2	11.2	24.7	17.6	9.5	8.7	9.1
7	85.8	70.3	78.1	6.3	22.8	14.5	7.9	6.9	7.4
Total	79.2	66.7	73.1	11.8	24.9	18.2	9.0	8.4	8.7

Source: HH Survey 2076

Population distribution in terms of education level

In terms of education status of the resident of this RM, the number of pre primary level education holders (up to class 5) is 2944, basic level education holders (upto class 8) is 4409, secondary level education holder is 6176, bachelor level education holder is 1384, master degree holder is 341, technical SLC is 104 as shown in the table below. The status of Ward no. 6 and 7 in terms of higher education is quite better as compared to other wards as the combined total of these two wards above secondary level is almost half of the total numbers in such categories. The detail is as following:

Table No. 19: *Population as per education standard*

Wards	Population as per education standard										
	Pre primary	Basic	Higherr Secondary (up to +2)	Bachelor	Master	MPHIL and above	Technical SLC	Litereate	Illeterate	Under age	Total
1	194	299	306	19	8	0	1	627	836	135	2425
2	406	421	521	142	29	0	0	513	677	150	2859
3	358	352	569	173	35	11	47	852	219	161	2777
4	252	663	1033	95	20	12	40	414	525	108	3162
5	528	806	1152	219	77	5	8	604	809	215	4423
6	725	749	1308	275	85	3	6	755	872	164	4942
7	481	1119	1287	461	87	34	2	933	767	113	5284
Total	2944	4409	6176	1384	341	65	104	4198	4705	1046	25872

Source: HH Survey 2019

Number of students and teachers in government schools

The total number of students pursuing education in 48 government schools of this RM have been recorded as 4517 out of which the share of basic level schools and secondary level schools are 1963 and 2544 respectively. The male to female ratio of the students have been calculated as 1.02. Similarly for these 48 government schools, the government approved quota for the teachers is 192 and currently 333 teachers are mobilized. The percentage of female teachers among the working teachers have been calculated as 38

Physical condition of government schools

Considering the physical condition, some 35% of the government schools operate in vulnerable buildings. The total number of rooms in 48 schools are 381 where 22% are in poor condition. In the total government schools, 35% have their own library, 4% have their own computer labs and some 75% of the schools have enclosed their boundary with either

boundary walls or barbed wire. Almost 90% of the schools have toilets and some 73% have drinking water facilities. In totality some 43 Child Development Centres are in operation in this RM. Similarly, there exist 4 community learning centres in this RM.

3.3.2 Health Services

Gastricitis, gyaenology related diseases, diarrhea, Neumonia, Tuberculosis, Asthama, Blood pressure and sugar related patients visit the health post in their respective wards in this Rural Municipality. The services available in these institutions are safe motherhood, nutrition related services, blood pressure, pharmacy, eye check up etc. Some 66 % of the couples use family palnning techniques in this RM. Among those adopting family planning tools 59% go for temporary means and 41% go for permanent means. Simialrly iodine salt using households have reached 99% while 1 % still use raw salt.

Altogether 9 heath posts are scattered in this RM. The approved quota of staff is 25 in these health posts where 31 are delivering their services. The ward wise status is as follows:

Table No. 20: *Status of health institutions in Gangajamuna Rural Municipality*

Name and address	Ward	Health Staff		Bed no.	Types of services						
		Approved quota	Functional		Delivery	Lab	Clinic	Xray	Family Planning	Vaccinne	SCT LCT
Tajimrang Health Unit	1		2		Yes	No	No	No	Yes	Yes	Yes
Ri- Health Post	2	5	5		Yes	No	No	No	Yes	Yes	Yes
Latav Community Health Unit	2	2	2		Yes	No	No	No	Yes	Yes	Yes
Chimchok Community Health Unit	3		2		Yes	No	No	No	Yes	Yes	Yes
Gumdi Health Post	4	5	5		Yes	No	No	No	Yes	Yes	Yes
Fulkharka Health Post	5	5	7		Yes	No	No	No	Yes	Yes	Yes
Baseri Health Post	6	5	7		Yes	No	No	No	Yes	Yes	Yes
DadagaonCommunity Health Unit	6	2	2		Yes	No	No	No	Yes	Yes	Yes
Budathum Health Post	7		7	1	Yes	No	No	No	Yes	Yes	Yes

Source: HH survey 2019

Distribution of households in terms of their first (initial) consultation while sick

Some 3598 people i.e. 63% visit health post, 26% refers to local pharmacy outlets, 9% visit Vaidyas and 1% go to witch doctors. Ward wise, ward no. 6 retains the highest families who visit to the witch doctors i.e. nearly 5%. The ward wise detail is as following:

Table No. 21: *of households according to their first response while sick*

Ward	HHs. as per their first /foremost consultations					Total
	Witch doctor	Pharmacy	Health post	Vaidya/Herbal Doctor	Others	
1	1	8	631	11	0	1
2	8	4	623	15	0	0
3	13	91	564	5	0	2
4	3	348	197	105	0	0
5	1	249	657	31	0	0
6	51	312	385	329	0	1
7	2	499	541	7	0	23
Total	79	1511	3598	503	1	27
%	1	26	63	9	0	100

Source: HH Survey 2019

Distribution of households in terms of their state of health

Out of the total population of this RM, 298 are chronic patients, 735 are common patients. As per 2019 HH survey, some 96% of the total population arefound normal/healthy. In the total population constitution 444 have done their insurance in which 438 comes under life insurance, 3 under health insurance and 3 others. The ward wise segregation is as follows:

Table No. 22: *Population distribution in terms of their state of health*

Wards	Population according to health condition			
	Healthy	Normal patient	Chronic patient	Total
1	2408	11	6	2425
2	2835	23	1	2859
3	2748	17	12	2777
4	3130	22	10	3162
5	4145	257	21	4423
6	4468	275	199	4942
7	5105	130	49	5284
Total	24839	735	298	25872

Source: HH Survey 2019

Gangajamuna Rural Municipality is fully committed to ensure efficient, affordable and quality health services to its people and intends to launch subsidies to the chronic patients from the ultra-poor communities.

Majority of the populace of this RM lack reliable piped water services and are forced to consume drinking from other different unreliable sources. No further purification of such water is in practice posing high risk of water contamination. The water quality test should be

made mandatory in case of community water supply schemes. The Rural Municipality need to focus upon other activities like rain water harvesting, cleaning of sources of water, and extensive lab testing of drinking water from various wards to minimize water borne diseases in the long run.

Sufficient ambulances, 24 hour health services, proper lab facilities including services of cold chain with energy back up, sufficient no. of quality health professionals, efficient response mechanism in emergency cases, proper water supply and sanitation services in the health centers and provision of basic surgery kits and tools are some of the major shortcomings observed particularly in the health sector. Awareness campaigns against various transmissible diseases, and mobilizing the populace towards Yoga, Pranayama and other physical/mental exercises will have positive implications in health condition of the people in the long run and they should be promoted as well. Likewise, promotion of indigenous Herbal or Ayurveda treatment, Homeopathic treatment etc. should be given due emphasis so as to enhance health tourism in the long run.

3.3.3 Shelter

Some 97% of the entire households reside in their own dwelling units while nearly 1 % reside in the rented housing units and another 1.1 % are internal refugees in this RM. The rental status chiefly exist in areas like Fulkharka, Budathum and Baseri. Mainly teachers and government staff, bankers, security personnel, RM staff, health personnel and some businessmen opt for rental housing.

Households by foundation types

Majority of the housing units are composed of soil and boulder mixed foundation. The total housing units in this category this category appears to be 3868 (67.6%) followed by 1775 housing units (31%) in Cement and boulder mixed category. The remaining is as shown in the table below.

Table No. 23: *Distribution of households according to foundation of the building structure*

Ward No	Households by types of the foundation of their housing units						
	Soil and boulder	Cement and boulder	Frame structure	Load Bearing	Wooden poles	others	Total
1	649	2	0	0	1	0	652
2	644	5	0	0	0	1	650
3	144	531	0	0	0	0	675
4	581	44	26	0	0	2	653
5	605	311	10	7	5	0	938

Ward No	Households by types of the foundation of their housing units						
	Soil and boulder	Cement and boulder	Frame structure	Load Bearing	Wooden poles	others	Total
6	722	347	0	0	9	0	1078
7	523	535	11	0	3	0	1072
Total	3868	1775	47	7	18	3	5718
%	67.6	31.0	0.8	0.1	0.3	0.1	100.0

Source: HH Survey 2019

Households by roof types:

Most of the housing units have corrugated iron sheet for the roofing purpose in this RM and the number of such households have been calculated as 5477 (95.8%). Remaining households go for tiles, slates, RCC slab, wooden roof, soil/thatched roof and others. The ward wise distribution is given in the table below:

Table No. 24: *Distribution of Households by their roof types*

Ward no.	Households according to their roof types							
	Straw roof	CGI sheet	Tile/slate	RCC slab	Wooden roof	Thatched /soil	Others	Total
1	3	646	1	0	0	0	2	652
2	0	645	3	0	0	0	2	650
3	0	671	0	1	0	0	3	675
4	1	620	7	16	0	0	9	653
5	1	875	4	57	1	0	0	938
6	0	1050	0	11	2	0	15	1078
7	1	970	1	98	0	0	2	1072
Total	6	5477	16	183	3	0	33	5718
%	0.1	95.8	0.3	3.2	0.1	0.0	0.6	100.0

Source: HH Survey 2019

Some 97.2 percent of the households take refuge in sheltering units fulfulling the earth quake resilient building codes while the others reside in unsafe buildings.

3.3.4 Drinking water and sanitation

3.3.4.1 Drinking water

As per the source of drinking water, out of the total households some 3782 HHs (66%) rely on water from public tap while only 1643 HHs (29%) have water supply line connected to their housing units. Similarly, 208 families (3.6%) use *Mulko pani* and 85 families rely on other sources including river. The detail division of households is given in the table below.

Table No. 25: *Distribution of households by their source of drinking water*

Ward no.	HHs according to source of drinking water					
	Personal water supply line connection	Public tap stand	Spring water	River	Others	Total
1	60	590	0	0	2	652
2	563	86	0	0	1	650
3	108	556	8	2	1	675
4	236	411	1	0	5	653
5	147	667	122	0	2	938
6	380	656	13	0	29	1078
7	149	816	64	38	5	1072
Total	1643	3782	208	40	45	5718
%	28.7	66.2	3.6	0.7	0.8	100.0

Source: HH Survey 2019

3.3.4.2 Sanitation and use of toilet

Still 180 households are found lacking of toilets in their respective housing units. Among the households having toilets, only 52.4 % have provison of flush water in their respective toilets and 44.5% of the entire households have toilets without provision of flusing water. The wardwise detail is as following:

Table No. 26: *Division of Households by toilets*

Ward no.	State of toilets			Total
	Flushing provision	Without flushing	Lacking toilets	
1	182	444	26	652
2	6	641	3	650
3	674	0	1	675
4	572	79	2	653
5	792	144	2	938
6	380	603	95	1078
7	389	632	51	1072
Total	2995	2543	180	5718
%	52.4	44.5	3.1	100.0

Source: HH Suvey 2019

The major sources of drinking water are *Lam Damar Muhan, Mulkhola Muhan, Gorakhnath Muhan, Baluwa fedi (Shikhar Khola), and so on.*

3.3.5 Energy

Households by their type of cooking fuel

According to distribution of households as per source of cooking energy (Cooking fuel), firewood is widely used in this RM. Some 5123 households (90%) rely on firewood whereas some 437 (7.6%) households rely on LP Gas. Very few households i.e. 112 households (2%) rely on biogas and rest rely on different sources like kerosene oil, electricity and others. Ward wise distribution is as following:

Table No. 27: *Distribution of households by types of cooking fuel*

Ward no.	Households by their types of cooking fuel tupe						
	Firewood	LP gas	Biogas	Electricity	Kerosene	Others	Total
1	650	0	0	0	0	2	652
2	605	2	39	3	0	1	650
3	665	4	2	1	0	3	675
4	518	113	18	0	1	3	653
5	883	34	21	0	0	0	938
6	926	94	28	0	2	28	1078
7	876	190	4	0	1	1	1072
Total	5123	437	112	4	4	38	5718
%	89.6	7.6	2.0	0.1	0.1	0.7	100.0

Source: HH survey 2019

Households by their sources of light

The major sources of light include electricity, kerosene and solar in this Rural Municipality. Electricity is the widely used sources of light among the entire households which is 4005 (70%) followed by Solar using households i.e. 1514 (26.5%). The remaining is as follows:

Table No. 28: *Distribution of households according to sources of light*

Ward No.	Households by sources of light					
	Electricity	Solar	Biogas	Kerosene	Not vailable	Total
1	273	373	0	3	3	652
2	336	313	0	0	1	650
3	329	336	1	9	0	675
4	317	321	1	2	12	653
5	882	7	0	2	47	938
6	900	75	7	5	91	1078
7	968	89	0	8	7	1072
Total	4005	1514	9	29	161	5718
%	70.0	26.5	0.2	0.5	2.8	100.00

Source: HH Survey 2019

The major activities pertaining to energy/electricity include installation of Street lamps/lights, extension of electric lines in villages without connection, provision of three phase lines, development of wooden poles free wards (for safety reason), installation of additional transformers as required, provision of three phase lines in prior electric lines etc are some of the activities to be performed in this connection. In order to complete all these, good quality road services is the primary condition that no one can ignore.

3.4 Traffic Volume Study

Generally, traffic volume study is done to establish a relative importance of any road. This will help to decide the priority of improvement and expansion of road and to allocate fund accordingly. This will also guide to make analysis of traffic pattern. Inventory of road traffic physical features was done with the use of GPS. Also, manual vehicle counting method was carried out as a part of traffic volume survey. By this method traffic volume as well as vehicle classification was held properly.

Walking constitutes an important mode of transport in rural areas. Besides walking, most of the people use cycle as another best options mainly due to less availability and costly public vehicle but bicycles have not been taken into consideration for counting.

3.4.1 Traffic Vehicle Count

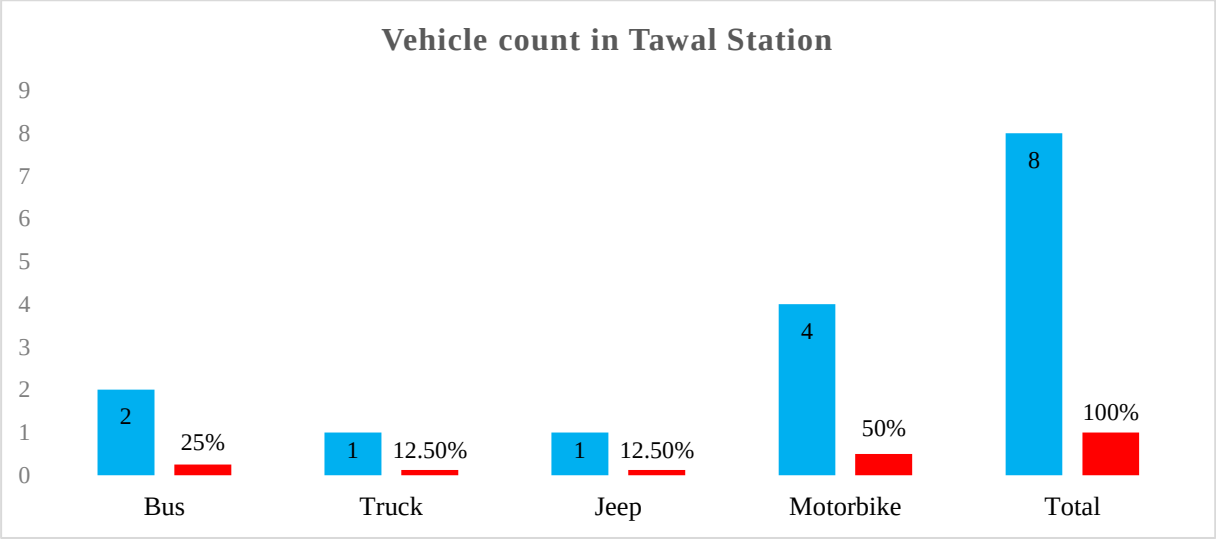
The traffic vehicle count was done at the following stations which are listed in Table below. In all of these vehicle counting points, motorcycles have been recorded as the dominant vehicles among others. The summary of the survey is given through the figures as mentioned below.

Table No. 29: *Vehicle Count Stations*

SN	Count station name	Location	Name of road Linkage
1	Tawal	Ward no 2 , Gangajamuna RM	Satdobato-Chimchowk-Tawal-Salleri Road
2	Gumdi	Ward 3, Gangajamuna RM	Gumdi-Chhelang- Chimchowk
3	Tinkhande	Ward 5, Gangajamuna RM	Belungbhanjyang- Sukabhanjyang-Phulkharka
4	Budathum	Ward 7, Gangajamuna RM	Siktar-Budathum-Baseri Road

The result of traffic survey held in Tawal station, along the route of Satdobato-Chimchowk-Tawal-Salleri Road of Gangajamuna Rural Municipality is as following – Motorcycle -4 (50%), Truck- 1(12.50%), Jeep-1 (12.50%), and Bus- 2 (25%). Head counting of passer by through this route has not been included in this traffic survey.

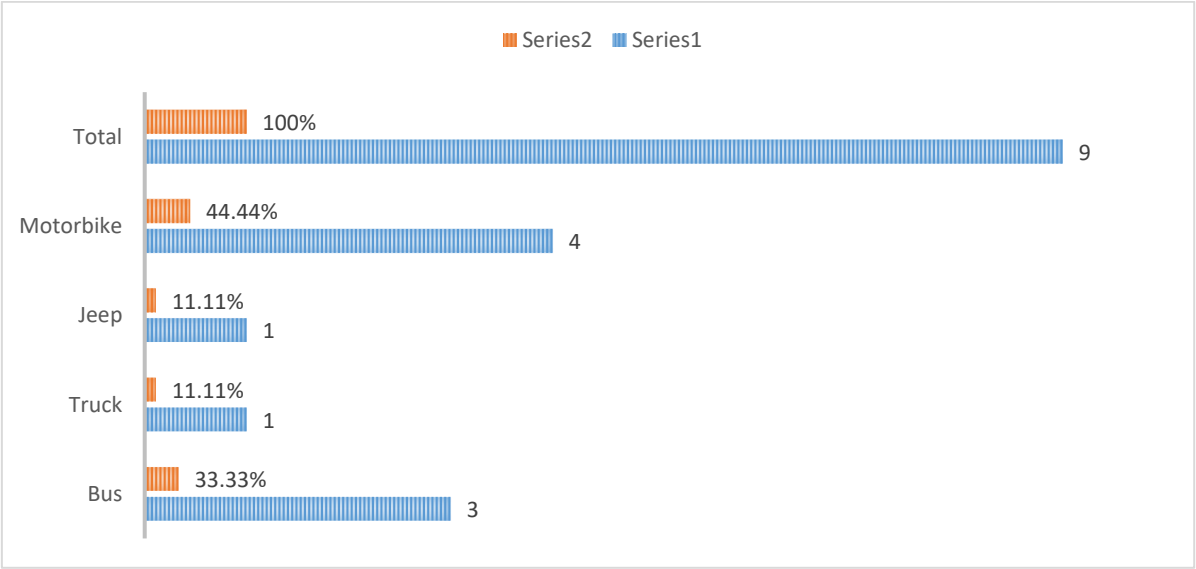
Figure 4: Vehicle count held at Tawal point (ward no.)



Source: Traffic Survey 2019

Similarly, the result of traffic survey held at Gumdi station, along the route of GUMDI-CHHELANG- CHIMCHOWK is as following: Motorcycle - 4 (44.44%), Jeep- (11.11%), Truck- (11.11%) and Bus-3(33.33%) as shown in the figure below. Head counting of people passing through this route has not been included in this traffic survey.

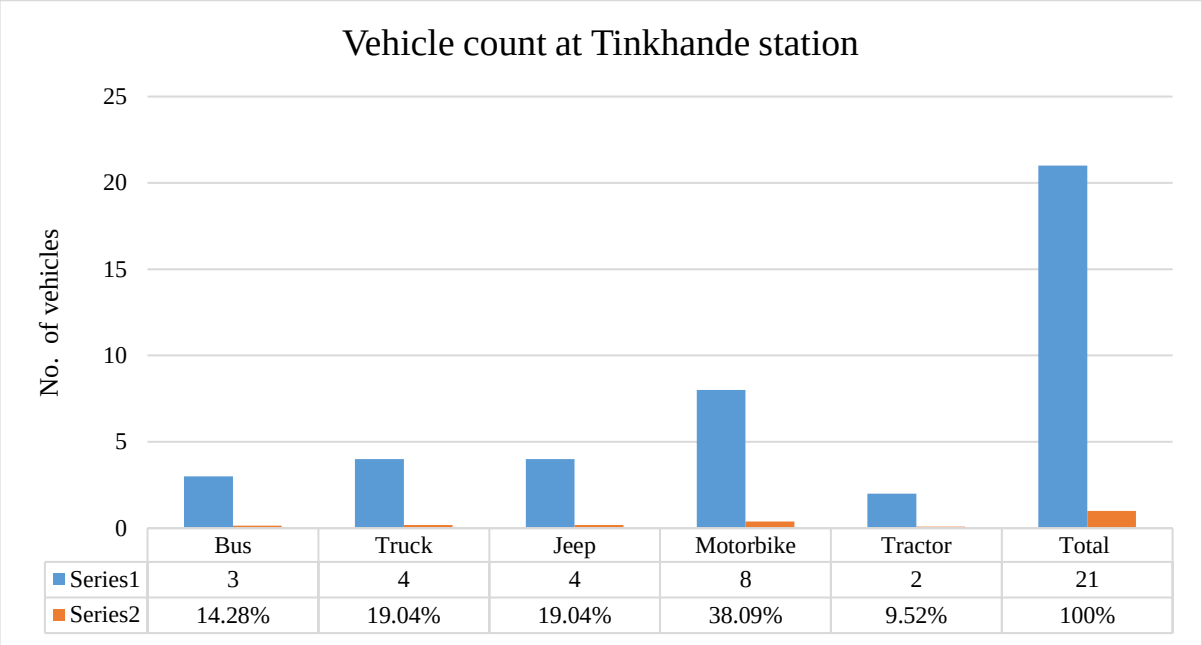
Figure 5: Number and Types of vehicle observed at Gumdi station



Source: Traffic Survey 2019

Likewise, the result of traffic survey held at Tinkhande Station along Belungbhanjyang - Sukabhanjyang - Phulkharka route of Gangajamuna Rural Municipality is as following – Motorcycle -8 (38.09%), Tractor-2 (9.52%), Truck-4 (19.04%), Jeep - 4(19.04%), Bus-3(14.28%), as shown in the figure above. Head counting of passer by through this route has not been included in this traffic survey.

Figure 6: *Traffic count and Types of vehicle observed at Tinkhande Station*

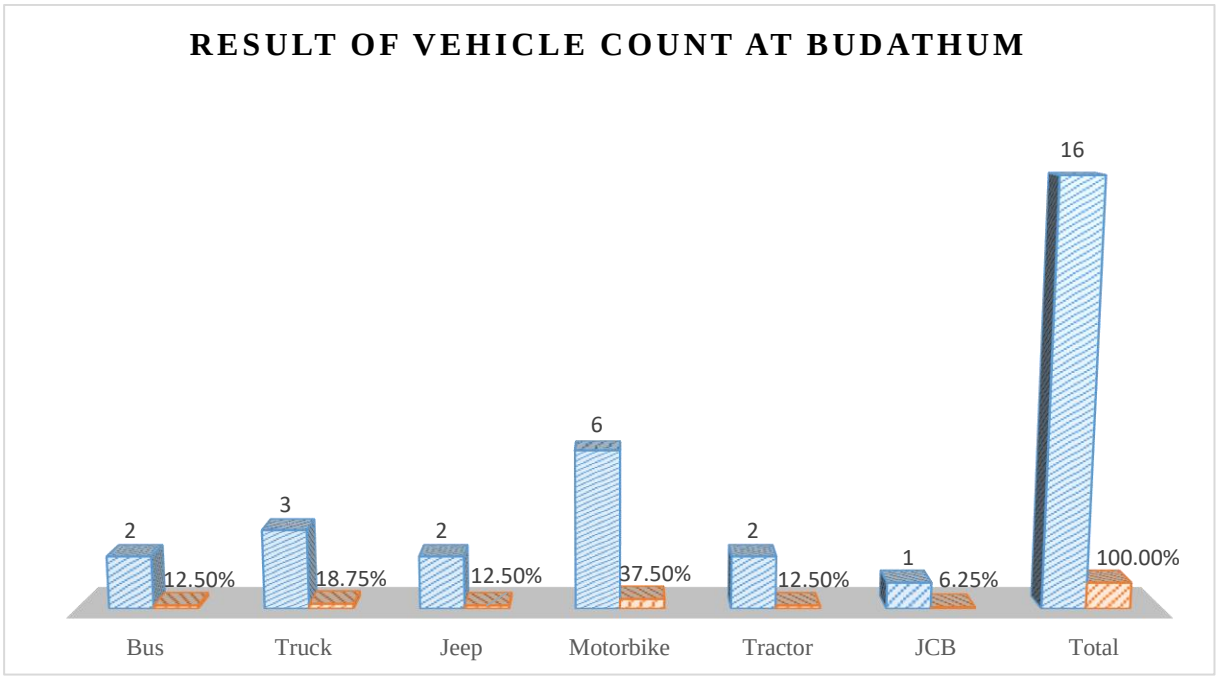


	Bus	Truck	Jeep	Motorbike	Tractor	Total
Series1	3	4	4	8	2	21
Series2	14.28%	19.04%	19.04%	38.09%	9.52%	100%

Source: Field Traffic Survey 2019

In the same way, the result of traffic survey held at Budathum station (Ward No.) along the route of SIKTAR-BUDATHUM-BASERI ROAD of Gangajamuna Rural Municipality is as following – Motorcycle -6 (37.50%), Tractor- 2(12.50%), Jeep 2- (12.50%), Truck- 3 (18.75%), and Bus- (12.50%), JCB -1(6.25%) as shown in the figure below. At this point also, the head counting of passerby through this route has not been included in this traffic survey.

Figure 7: *Traffic count and Types of vehicle observed at Tinkhande Station*



Source: Traffic Survey 2019

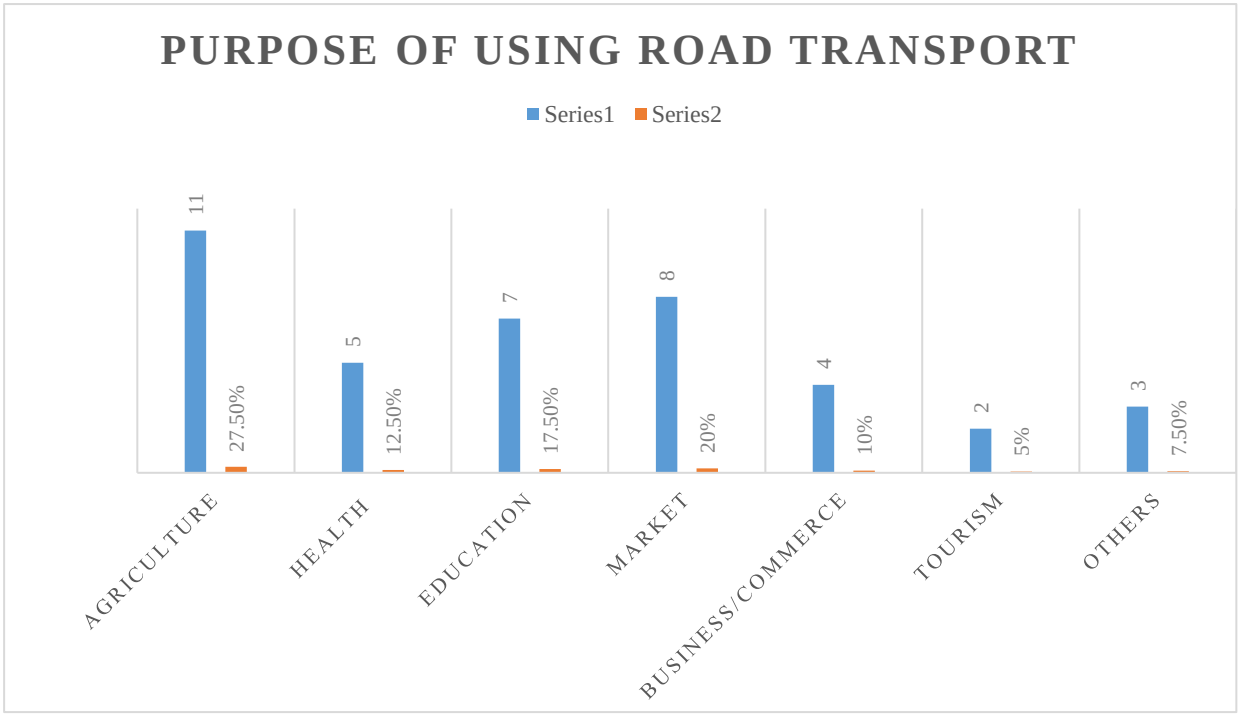
3.4.2 Vehicle Types

Among the types of vehicle, the Indian brands have dominated in terms of motorbikes, bus, jeep (Bolero/TATA), trucks/mini trucks (TATA trippers, EICHER mini truck, Mahendra mini truck) and tractors (Indian and Chinese) for passenger and goods transportation.

3.5 Origin and Destination Survey

The main purpose of transportation is to connect farm land, market centers and other service centers. Among the total respondents of 40 respondents of Origin and Destination Survey, 11 (27.5%) reported agricultural chores as the primary reason of using roads followed by 7 (17.5%) respondents who mentioned that they chiefly travel for education purposes. Similarly, 5 (7.5%) respondents reported to have used roads to acquire health related services. Likewise, 8 (20%) respondents reported that they regularly travel to go to market for groceries In the same way another 4(10%) respondents happened to use road for business and commerce, 2(5%) for tourism purpose and the remaining 3(7.5%) use roads for other purposes.

Table No. 30: *Purpose of using road transportations in various wards of Gangajamuna Rural Municipality*



Source: ODS Field Survey 2019

From the origin and destination survey, the areas like Dhadingbesi, Kathmandu, Arughat, Budathum, Baseri, Fulkharka, Satdobato, are found to be some of the major destinations of the people referred during the OD survey. The major bus routes in operation are as following:

- Satdobato-Chimchowk-Tawal-Salleri road (Tawal station)
- Gumdi-Chhelang- Chimchowk (Gumdi station)
- Belungbhanjyang- Sukabhanjyang-Phulkharka (Tinkhande station)
- Pokhara -Chimchowk(Pokhara station)
- Siktar-Budathum-Baseri road(Budathum station)
- Kitangfedi – Gumdi road

Routes in demand in Gangajamuna Rural Municipality:

So far no such demand for additional route was noticeable in the ward level meeting.

3.6 Mode choice

People choose the mode of transportation as per their convenience and their requirement. Different factors like purpose and necessity affect the mode choice. In most of cases, people have preferred walking to reach to the market center within wards. Use of modes of public transport like bus and jeep have been used for shuttling purpose from one destination to the other. Trucks and some public/private jeeps are used for transferring day to day commodities including groceries, garments, construction materials etc from the adjoining cites and taking away locally produced agricultural and livestock related goods to other areas while jeeps are used to carry or transfer people as well for private purposes. Motorbikes are the dominant form of transportation in each of the road of this Municipality. Significant number of tractors also facilitate transportation of construction and agricultural goods from the production area/quarries to the nearby market centers or settlements. Different factors affect the mode choice. Some of them are:

- Household characteristics
- Zone characteristics
- Residential density, rate of urbanization
- Accessibility
- Vehicle ownership
- Quality of local public transit
- Purpose of travel, nature of work
- Travel time, cost and distance

3.7 Active and Passive Transport User

Active transport (also called Non-motorized transport, NMT and human powered transport) refers to walking, cycling, and variants such as wheelchair, scooter and handcart use. It includes both utilitarian and recreational travel activity, plus stationary uses of pedestrian

environments such as standing on sidewalks and sitting at bus stops. The sample household survey shows that roughly some above 80% of the daily trips are done via active mode of transport. Active mode of transport is beneficial in many aspects: this mode can be used by people of any age group irrespective of gender and economic status, it consumes human energy and does not depend on fossil fuel, and it is environment friendly and provides many health benefits to the user.

In remaining 20% of the daily trips, there is pure dominance of motorcycle over other motorized vehicles. Motorcycle is used in nearly 60% of the trips and public vehicles in nearly 40% of the trips. 1 motorcycle is owned by every 85/90 people. This leaves the remaining without any vehicle. Without proper access to public vehicles, they are left out with no option but to walk or opt for public facilities.

3.8 Alternative transportation feasibility

There are many ways to measure transportation system feasibility, each reflecting particular perspectives concerning who, what, where, how, when and why. Different methods favor different types of transport users and modes, different land use patterns, and different solutions to transport problems in the Rural Municipality. Some transportation system may be economic and some may be non-economic and non-beneficial to the users and authorities. However, we do not see any transportation system feasible other than roadway transportation for the present situation in this Municipality until next five years. However, along the harnessing of suffice energy within the country, some other potential mode of transportation like rope way, cable car, mono electric rails etc could be explored for the promotion of tourism activities like religious tourism, adventure tourism, sight seeing and all. These could also be a relatively cheaper as well as short cut and environment friendly options by the time Nepal will have its own reserve electricity to divert further in the areas like transport sector too. But it may take at least 10 years or more at earliest to get to that point. Construction of heli-pads will also facilitate religious tourism in the long run for quality Hindu and Buddhist tourists.

3.9 Parking Space

Parking space is one of the major components of transport management. Unlike in urban areas human activities and traffic intensity is not that congested in this Rural Municipality. Therefore, parking space has yet not been a serious problem so far but some sorts of problems have been faced during the major local feasts and festivals (Jatra). However systematic parking spaces and bus bays will be necessary for future expansion zones.

3.10 Bus parks and Bus terminals

As in the case of parking space there are no systematically planned bus terminal as well as bus parks in this RM but at least necessity of systematic bus terminal has been felt strongly. Likewise, where there is possibility of road transport services some stop over, resting sheds, and public toilets need to be constructed. Similarly, following are the proposed bus stop (yatru pratikchyalaya) of various roads across Gangajamuna Rural Municipality.

Table No. 31: *Proposed area for bus parks and traffic units*

Ward	Proposed areas for bus park	Proposed traffic post/unit
1	Gharchet	Tajimarang
2	Tawal	Tawal
3	Chhelang,Chimchowk, Gumdi	Chimchowk
4	Satdobato	Satdobato
5	Phulkharka, Dhadkharka	Tinkhande
6	Sanu baseri	Baseri
7	Budathum	Budathum

Source: Field Survey 2019

Table No. 32: *Proposed bus stop and toilets*

Ward No.	Proposed areas for bus stop along the roads of Bethanchowk Rural Municipality	Proposed areas for public toilets along the roads of Bethanchowk Rural Municipality
1	Tajimarang,salleri, choke,	Tajimarang, choke
2	Latab, Dhuseni, Tawal, kutal	Tawal
3	Gumdi, Chhelang, Bardan, Chimchowk , Pokhara	Chimchowk, gumdi, Pokhara
4	Phalange, Edu, Satdobato, Dhagar chowk,	Satdobato
5	Tinkhande, Phulkharka, Sukabhanjyang, Gargare, Belung bhanjyang,Mathillo dangsingh	Tinkhande
6	Piple , Hattiya, Baseri, Manpung , odare	Sano baseri
7	Thuli besi, Siureni, Budathum, Jagarbot, Lakuwa, Dhudeni	Budathum

Source: Field Survey 2019

3.11 Helipad

At least one Helipad in each ward is required for the emergency cases. The main roads should be accompanied by at least a cycle lane and foot path.

3.12 Bridges/Culverts

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

Table No. 33: *Types and number of bridges in Gangajamuna Rural Municipality*

Ward No.	Bridge no.	Bridge Type	Remarks
1	5	suspension	The longest span bridge remains at Hakangkhola; it is 80m long and all bridges in good condition
2	3	suspension	The longest bridge remains at Tabal, it is also 80m long and all bridges in good condition
3	1	suspension	Bridge remains at Darkhafedi and is 40 m long
4	2	suspension	The longest bridge remains at Kintangfedi and is 55m long; the other one is in vulnerable state
5	3	suspension	The longest bridge remains at Majhuwa Khola and is 80m long; one at devisthan Ratmate is in vulnerable state
6	3	suspension	The longest bridge remains at Adheri Khola and is 130m long; all bridge are new and in good state
7	4	suspension	The longest one remains at BudiGandaki River linking Budathum and Gorkha (267m); one at Manthangbesi (60m) is in vulnerable state

Source: HH Survey 2019

3.13 Drainage System

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

3.14 Road Furniture

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

Indicative Development Potential Map (IDPM)

Developing IDPM is a process of mapping potential developing zones where future growth of services and human activities are likely to increase. According to the nature of the zones and their growth trends, future forecast of transport mechanism can be judged or estimated. This chapter has provided sufficient clues of the zones which are potential from future development prospect and strategically located. Basically, those zones include market centers, agriculture areas, historical and religious areas and so. Indicative Development Potential Map has been attached in Volume-II on the basis of the information on this chapter.

Chapter - 4: Municipality Inventory Map of Road Network

Existing road inventory map has been prepared on the basis of ward wise road survey for the verification of existing roads on GIS for the preparation of maps. Municipal road inventory forms were used to collect the information during road condition survey. The survey was carried out from one nodal point to another in each road collecting information on road type, surface condition, road width, drainage structures, road condition, linkages established by the road. On the basis of these information MRIM (Municipal Road Inventory Map) has been prepared.

4.1 Municipal Roads

Summary of road class A

These roads are major transport corridors within the municipal territory. These roads are assumed to have higher traffic and they connect major settlements or market areas within the municipality. Functionally these roads carry the traffic from major settlements, tourist areas to the SRN linkages. As per the available RoW, topography and land use pattern, typical cross section may be selected as shown in figure below. Minimum RoW for this class of road has been set to 15m. It is highly recommended to have separate segment for pedestrian and cycle track. At the same time, these roads need to have adequate median strip to segregate vehicles coming from different directions. Altogether 4 roads of Class A have been identified in this RM with total length of 36.5 km.

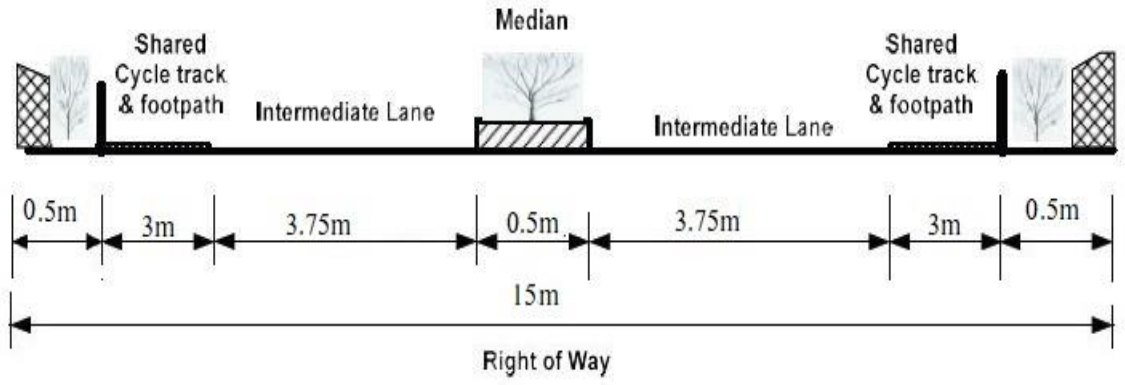


Figure 8: Typical Cross Section of Road class "A"

Table No. 34: *Summary of Road Class "A"*

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06A001	Jagarbote-Baskharka-Sukbhanjyang Road	538	5,7	2421	6			9.9		9.90	-	9.90	Jagarbote-Baskharka-Sukbhanjyang		9.90
330RM06A002	Gumdi Gaun - Tarkule - Simjang - Salmetar-Kintangfedi Road	311	3	1400	7			5.8		5.80	-	5.80	Gumdi Gaun - Tarkule - Simjang - Salmetar-Kintangfedi		5.80
330RM06A003	Salleri-Kutalbesi-Ghyangsyang Road	200	2,3	900	4			5.1		5.10	-	5.10	Salleri-Kutalbesi-Ghyangsyang		5.10
330RM06A004	Mangpangbesi - Sukaura - Odare - Piple - Hatiya - Khirbote- Deurali - Mahalaxmi – Dandagaun Road	1183	6,7	5324	6			15.7		15.70	-	15.70	Mangpangbesi - Sukaura - Odare - Piple - Hatiya - Khirbote- Deurali - Mahalaxmi – Dandagaun Road		15.70

Summary of road class B

These roads serve for the purpose of collectors from relatively small settlements and having less traffic flow. The RoW for such class of roads is minimum of 10m. The typical cross section of such roads is shown in figure below. These roads serve as linkage to class "A" roads. These roads have been categorized based on public demand as well as keeping in view the future need of municipality. These roads will be served by smaller public transport modes. Altogether 29 municipal roads have been identified under Road Class B and the total length of which is accounted as 80.9km.

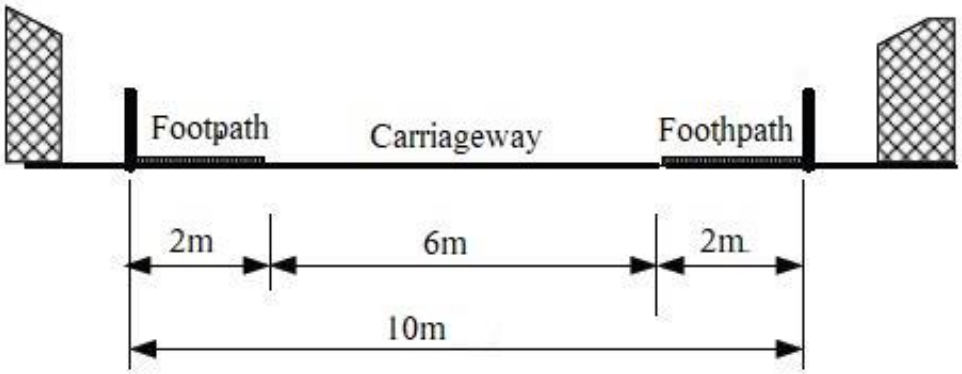


Figure 9: *Typical Cross Section of Road class "B"*

Table No. 35: *Summary of Road class "B"*

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06B001	Manpangbesi-Odare-Lapudanda Road	135	6	608	6			4.4		4.35	-	4.35	Manpangbesi-Odare-Lapudanda		4.35
330RM06B002	Sadhpipal-Hepo-Pithedanda-Odalchaur-Adheri Road	262	7	1179	6			2.5		2.50	-	2.50	Sadhpipal-Hepo-Pithedanda-Odalchaur-Adheri		2.50
330RM06B003	Hepo-Koldanda-Bathalidanda- Rai Gaun-Bange Pipal Road	345	6,7	1553	4			3.0		3.04	-	3.04	Hepo-Koldanda-Bathalidanda-Andheri Gaun - Rai Gaun	0.800	3.84
330RM06B004	Dhaledanda-Hile-Thulonange Road	87	6	392	0			2.2		2.24	-	2.24	Dhaledanda-Hile-Thulonange		2.24
330RM06B005	Aldanda-Bharyang Danda-Danda Gaun-	265	7	1193	6			4.6		4.59	-	4.59	Aldanda-Bharyang Danda-Danda	0.00	4.59

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
	Gaikharka Road												Gaun-Gaikharka		
330RM06B006	Bharyangdanda-Dandagaun-Deurali - Lapsi Bot Road	570	5,6,7	2565	6			8.3		8.26	-	8.26	Bharyangdanda-Dandagaun-Deurali - Lapsi Bot	0.00	8.26
330RM06B007	Dhale Danda - Kattike Gaun - Mansire- Bika Tole Road	233	6	1049	4			3.4		3.42	-	3.42	Dhale Danda - Kattike Gaun - Mansire- Bika Tole	0.00	3.42
330RM06B008	Gauthali Pokhari - Badri Char - Baniya Tole - Thulo Pandhero - Pallo Gaire Tole Road	213	5	959	4			2.9		2.90	-	2.90	Gauthali Pokhari - Badri Chaur - Baniya Tole - Thulo Pandhero - Pallo Gaire Tole	0.00	2.90
330RM06B009	Mathillo Dangsing - Gauthali Pokhari - Khoriya - Ganga Jamuna Road	163	5	734	4			3.9		3.87	-	3.87	Mathillo Dangsing - Gauthali Pokhari - Khoriya - Ganga Jamuna	0.00	3.87
330RM06B010	Dhadkharka-Payukharka-Dumla-Saadan-Pokhara-Chhimchowk	457	3,4,5	2057	5			8.1		8.10	-	8.10	Dhadkharka-Payukharka-Dumla-Saadan-Pokhara-Chhimchowk	0.00	8.10
330RM06B011	Saadan Gaun-Naya Chautara-Mantari-Kattike-Kami Tole-Khola Khet-Chaapekuna Road	367	5	1652	4			8.6		8.57	-	8.57	Saadan Gaun-Naya Chautara-Mantari-Kattike-Kami Tole-Khola Khet-Chaapekuna	0.00	8.57
330RM06B012	Bhaaja-Khola Khet-Devisthan-Kalleri-Sukbhanjyang Road	144	5	648	4			4.8		4.76	-	4.76	Bhaaja-Khola Khet-Devisthan-Kalleri-Sukbhanjyang	0.00	4.76
330RM06B013	Belung Bhanjyang - Mahabir - Chalise Road	90	5	405	4			3.1		3.10	-	3.10	Belung Bhanjyang - Mahabir - Chalise	0.00	3.10

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06B014	Phulkharka - Baguwa Khola- Chandeni Road	370	4,5	1665	6			2.2		2.15	-	2.15	Phulkharka - Baguwa Khola- Chandeni	0.00	2.15
330RM06B015	Satdobato - Saldhum - D Gaun - Salmetar Road	200	3,4	900	4			5.2		5.20	-	5.20	Satdobato - Saldhum - D Gaun - Salmetar	0.00	5.20
330RM06B016	Satdobato - Ratmate - Rato Danda - Sisne Khola Road	240	4	1080	4			2.4		2.44	-	2.44	Satdobato - Ratmate - Rato Danda - Sisne Khola -	0.00	2.44
330RM06B017	Salmetar - Dharke Fedi Corridor Road	23	3	104	0			2.4		2.44	-	2.44	Salmetar - Dharkha Fedi Corridor Road	0.00	2.44
330RM06B018	Lungri - Bhirkuna-Nebidanda-Naya Basti Road	75	3	338	4			3.7		3.65	-	3.65	Lungri - Bhirkuna-Nebidanda-Naya Basti	0.00	3.65
330RM06B019	Chimchowk - Aphal Khola - Dhuseni – Tawalbesi Road	433	3,2,5	1949	0					-	-	-	Chimchowk - Aphal Khola - Dhuseni - Tawalbesi	6.7	6.74
330RM06B020	Latab-Manechang-Dangchet-Manchet-Pasangchet Road	119	1,2	536	0					-	-	-	Latab-Manechang-Dangchet-Manchet-Pasangchet	9.0	8.96
330RM06B021	Chhelang-Aaphang-Tawal Besi-Ri Road	125	2,3	563	0					-	-	-	Chhelang-Aaphang-Tawal Besi-Ri	4.7	4.72
330RM06B022	Kuttalbesi - Tawalbesi - Dhanchet - Dhuseni Besi Road	125	2	563	0					-	-	-	Kuttalbesi - Tawalbesi - Dhanchet - Dhuseni Besi	3.2	3.21
330RM06B023	Tawalgaun - Tarebhir -	332	1,2	149	3			0.1		0.14	-	0.14	Tawalgaun -	5.0	5.14

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
	Sekdeli - Ri Gaun Road			4									Tarebhir - Sekdeli - Ri Gaun		
330RM06B024	Latab-Rigaun-Dangyurechet-Langurchet-Kichet-Lapa Road	192	1	864	0					-	-	-	Latab-Rigaun-Dongyurechet	5.5	5.51
330RM06B025	Hatiya - Lapu Danda Road	252	6	1134	4			0.3		0.29	-	0.29	Hatiya - Lapu Danda	2.2	2.46
330RM06B026	Phalange-Saldhum Road	99	4	446	4			3.0		3.05	-	3.05	Phalange-Saldhum		3.05
330RM06B027	Aarkhet - Andheri - Chipleti - Pithedanda – Healthpost Road	92	7	414	0					-	-	-	Aarkhet - Andheri - Chipleti - Pithedanda - Healthpost	3.0	3.00
330RM06B028	Nebi –Pokhara Road	2	3	9	0			0.7		0.72	-	0.72	Nebi -Pokhara		0.72
330RM06B029	Garang-Kudule-Chhelang-Mambai Road - Yapa Tole - Darkha Fedi Road	297	3	1337	4			1.1		1.10	-	1.10	Garang-Kudule-Chhelang-Mambai Road - Yapa Tole - Darkha Fedi	3.5	4.62

Summary of road class C

These types of urban roads are for the purpose of residential access. Residential streets are designed for lower traffic volumes for especially private transport. Therefore, RoW for this class is designed for single lane pavement. Minimum RoW for such class of roads is allocated as 8m. Typical cross section of such roads is shown below. There are altogether 28 municipal roads which lie in road class C in this RM where the entire road length of Road Class C has been identified as 43.2 km.

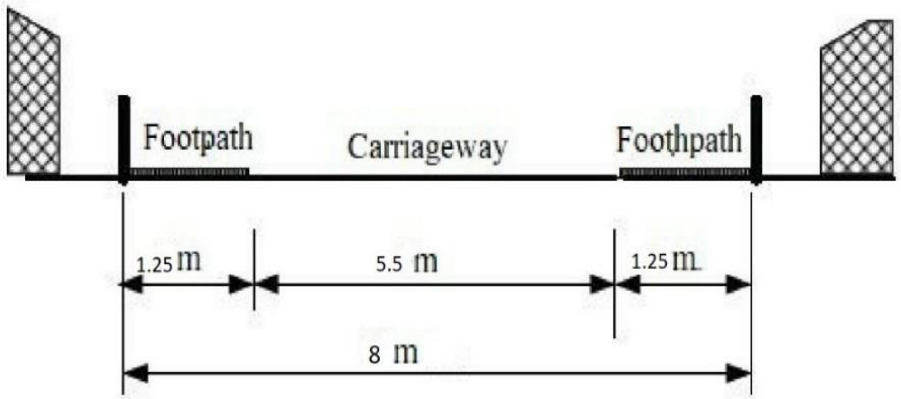


Table No. 36: *Summary of Road class "C"*

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06C001	Bakhrekhola-Banbote-Tarsimle-Sim Chautari Road	78	6	351	0					-	-	-	Bakhrekhola-Banbote-Tarsimle-Sim Chautari	1.1	1.14
330RM06C002	Tari-Gagante-Bhumisthan-Jyamire-Dharapani Krishi Sadak	15	6	68	4			2.5		2.54	-	2.54	Tari-Gagante-Bhumisthan-Jyamire-Dharapani		2.54
330RM06C003	Jamune-Banbote-Bhanjyangi-Lampat Road	212	6	954	0					-	-	-	Jamune-Banbote-Bhanjyangi-Lampat	1.9	1.91
330RM06C004	Dalit Tole - Hariya Khola - Andheri Khola Road	103	6	464	4			1.3		1.30	-	1.30	Dalit Tole - Hariya Khola - Andheri Khola		1.30
330RM06C005	Bhaise-Aarubote-Bandiwara-Tallo Danda Gaun-Mathillo Dandagaun Road	280	6	1260	4			3.0		2.97	-	2.97	Bhaise-Aarubote-Bandiwara-Tallo Danda Gaun-Mathillo Dandagaun		2.97

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06C006	Dolpa-Choke-Ibi-Richet-Kichet Road	261	1,2	1175	4			4.5		4.53	-	4.53	Dolpa-Choke-Ibi-Richet-Kichet	5.6	10.16
330RM06C007	Gharichaur-Saunepani-Bathalidanda Road	172	7	774	6			1.3		1.27	-	1.27	Gharichaur-Saunepani-Bathalidanda		1.27
330RM06C008	Tallo Bhorle - Silinge - Jogidanda	57	7	257	6			2.5		2.46	-	2.46	Tallo Bhorle - Silinge - Jogidanda		2.46
330RM06C009	Baskharka-Ghorle - Majuwabesi-Marauti - Sukbhanjyang	280	5,7	1260	3			1.6		1.60	-	1.60	Baskharka-Ghorle - Majuwabesi-Marauti - Sukbhanjyang	6.0	7.63
330RM06C010	Burchet-Choke-Namsyong-Richet Road	172	1	774	0					-	-	-	Burchet-Choke-Namsyong-Richet	3.0	3.00
330RM06C011	Karkigaun-Ekle-Kalleri-Sukbhanjyang Road	184	5	828	0					-	-	-	Karkigaun-Ekle-Kalleri-Sukbhanjyang	4.5	4.50
330RM06C012	Sukhbhanjyang-Mantari-Hudung-Satdobato-Krishi Sadak	164	5	738	3					-	-	-	Sukhbhanjyang-Mantari-Hudung-Satdobato	6.1	6.10
330RM06C013	Mantari - Kagchet - Danda Swara Road	238	4,5	1071	0					-	-	-	Mantari - Kagchet - Danda Swara	3.5	3.49
330RM06C014	Ekle-Bahundanda-Manekhet-Kalleri Road	113	5	509	3			2.3		2.25	-	2.25	Ekle-Bahundanda-Manekhet-Kalleri		2.25
330RM06C015	Kalleri-Chauti-Kalathoda-Mahabhir Road	114	5	513	3			1.8		1.82	-	1.82	Kalleri-Chauti-Kalathoda-Mahabhir	2.0	3.82
330RM06C016	Mahbhir-Pingdanda-Chihandanda-Kholakhet Road	75	5	338	3			0.6		0.61	-	0.61	Mahbhir-Pingdanda-Chihandanda-Kholakhet	0.5	1.11
330RM06C017	Faprekhet - Baguwa Khola - Bhandari Gaun - Bajhobari - Khola Khet Road	265	4,5	1193	0					-	-	-	Faprekhet - Baguwa Khola - Bhandari Gaun - Bajhobari - Khola Khet	5.2	5.17

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06C018	Bajhobari-Ratodanda Road	51	4	230	4			1.0		1.04	-	1.04	Bajhobari-Ratodanda	1.0	2.04
330RM06C019	Ratmate - Ojaghi – Idu Road	124	4	558	0			1.2		1.15	-	1.15	Ratmate - Ojaghi - Idu	1.5	2.62
330RM06C020	Idu-Khendang-Satdobato Road	87	4	392	0			1.2		1.16	-	1.16	Idu-Khendang-Satdobato		1.16
330RM06C021	Richet-Antar-Cheprang-Karang Road	163	1	734	0			5.8		5.84	-	5.84	Richet-Antar-Cheprang-Karang		5.84
330RM06C022	Pithedanda - Chipleti – Bhirkuna Road	96	7	432	3			1.3		1.30	-	1.30	Pithedanda - Chipleti - Bhirkuna	2.5	3.80
330RM06C023	Simjang-Chilandanda-Dandapari-Chanaute Road	95	3	428	4			2.4		2.41	-	2.41	Simjang-Chilandanda-Dandapari-Chanaute		2.41
330RM06C024	Pasangchowk Ma.Vi.-Tinmane-Tawal Health Centre-Bindu-Kalseng Khola	131	2	590	0			1.7		1.75	-	1.75	Pasangchowk Ma.Vi.-Tinmane-Tawal Health Centre-Bindu-Kalseng Khola		1.75
330RM06C025	Tawalbesi - Ward Office - Dorang - Runi Gaun	193	2	869	0			2.8		2.85	-	2.85	Tawalbesi - Ward Office - Dorang - Runi Gaun		2.85
330RM06C026	Choke-Rigaun-Gumba Road	184	1	828	3			0.5		0.50	-	0.50	Choke-Rigaun-Gumba	1.7	2.15
330RM06C027	Ebi – Tajimarang Road	181	1	815	0			1.5		1.50	-	1.50	Ebi - Tajimarang		1.50
330RM06C028	Richet –Tajimarang Road	255	1	1148	0			2.4		2.39	-	2.39	Richet -Tajimarang		2.39

Summary of road class D

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

class of roads is allocated as 6 m. Altogether 43 roads have been identified as Class D roads in this RM and the total length of this category road is calculated as 34.5 km.

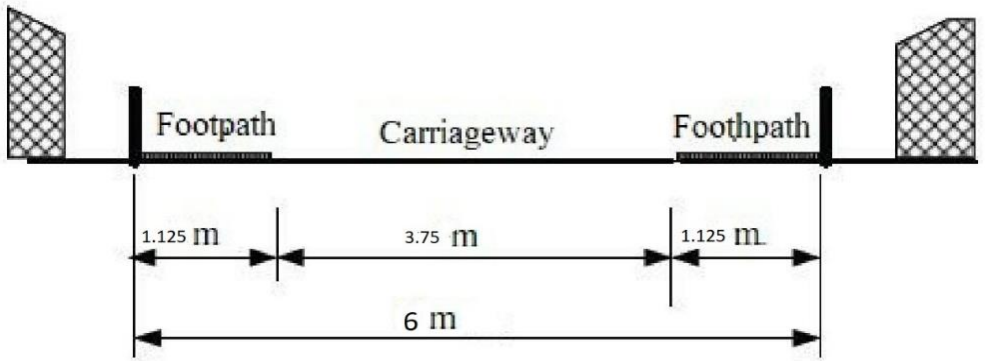


Table No. 37: *Summary of Road class "D"*

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06D001	Kacheri-Piple Khanyabote Road	28	6	126	0					-	-	-	Kacheri-Piple Khanyabote	0.4	0.38
330RM06D002	Ghodedanda-Ramchandre-Pokhari Road	69	6	311	0					-	-	-	Ghodedanda-Ramchandre-Pokhari	0.5	0.46
330RM06D003	Hariyo Khola -Namuna Tol-Khirbote Road	191	6	860	4			1.1		1.14	-	1.14	Hariyo Khola -Namuna Tol-Khirbote		1.14
330RM06D004	Deurali-Dalit Tol Road	128	6	576	0					-	-	-	Deurali-Dalit Tol	0.4	0.39
330RM06D005	Kichet-Diung Khola Road	119	1	536	4					-	-	-	Kichet-Diung Khola	0.9	0.94
330RM06D006	Sallaghari-Dhadkharka Road	170	6	765	0			1.5		1.47	-	1.47	Sallaghari-Dhadkharka		1.47
330RM06D007	Lingedanda-Hastetol-Pangraphedi Road	122	6	549	0					-	-	-	Lingedanda-Hastetol-Pangraphedi	0.5	0.53

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06D008	Bhainse School-Bhorlekhola-Sirantole Road	12	6	54	0					-	-	-	Bhainse School-Bhorlekhola-Sirantole	0.7	0.70
330RM06D009	Ghaledanda-Hile-Thulonange Road	108	6	486	4					-	-	-	Ghaledanda-Hile-Thulonange	3.4	3.39
330RM06D010	Sano Nange-Hile-Chaurthala-Tinsure Gumba Road	54	6,7	243	0			2.6		2.57	-	2.57	Sano Nange-Hile-Chaurthala-Tinsure Gumba	1.3	3.89
330RM06D011	Aarubote-Katike-Hile Road	133	6	599	6					-	-	-	Aarubote-Katike-Hile	1.1	1.08
330RM06D012	Koldanda-Mahendraratna School-Chakachuli-Agrung Road	15	7	68	0			1.6		1.62	-	1.62	Koldanda-Mahendraratna School-Chakachuli-Agrung		1.62
330RM06D013	Ward Office -Hepo Road	100	7	450	6			0.6		0.55	-	0.55	Ward Office -Hepo	0.2	0.75
330RM06D014	Mahendraratna-Kalimati-Ward Karyalaya-Baseri Road	67	7	302	0			0.6		0.64	-	0.64	Mahendraratna-Kalimati-Ward Karyalaya-Baseri		0.64
330RM06D015	Namuna Bhawan(Gangajamuna Building)-Dandathok-Hepo Road	159	7	716	4			0.6		0.60	-	0.60	Namuna Bhawan(Gangajamuna Building)-Dandathok-Hepo		0.60
330RM06D016	Halogadhe-Sadhpipal Sadak	111	7	500	3			1.0		0.99	-	0.99	Halogadhe-Sadhpipal Sadak		0.99
330RM06D017	Giddhedanda-Chainpur-Kamigaun,Chainpur-Tudikhel-Sarkigaun-Devithan Road	134	7	603	0			1.4		1.40	-	1.40	Giddhedanda-Chainpur-Kamigaun,Chainpur-Tudikhel-Sarkigaun-Devithan	1.0	2.40
330RM06D018	Debisthan-Tallo Besare-Bagmare Road	72	7	324	4					-	-	-	Debisthan-Tallo Besare-Bagmare	1.7	1.66

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06D019	Jhapre Danda- Musure-Chuchedhunga Road	75	7	338	6			0.3		0.31	-	0.31	Jhapre Danda- Musure-Chuchedhunga	0.7	1.04
330RM06D020	Jagarbote-Amale Road	121	7	545	3			2.6		2.56	-	2.56	Jagarbote-Amale		2.56
330RM06D021	Ambote-Dhamiswara Road	50	7	225	4			2.2		2.20	-	2.20	Ambote-Dhamiswara		2.20
330RM06D022	Chihandanda-Simle-Sillinge Road	125	7	563	0			1.3		1.31	-	1.31	Chihandanda-Simle-Sillinge		1.31
330RM06D023	Deurali-Dhaje-Dhaje Bhanjyang-Bhogate Ghari Road	93	5,7	419	0			5.4		5.40	-	5.40	Deurali-Dhaje-Dhaje Bhanjyang-Bhogate Ghari	1.5	6.90
330RM06D024	Swamikachautara-Ghartipani Chaur-Kuwapani-Keradhaap-Majhuwabesi Road	133	5	599	3					-	-	-	Swamikachautara-Ghartipani Chaur-Kuwapani-Keradhaap-Majhuwabesi	3.9	3.88
330RM06D025	Tallo Padhero-Chaubato-Tallo Gangajamuna Road	117	5	527	3			0.6		0.56	-	0.56	Tallo Padhero-Chaubato-Tallo Gangajamuna		0.56
330RM06D026	Deurali –Dhadkharka Road	84	5	378	3			1.6		1.57	-	1.57	Deurali Dhadkharka-		1.57
330RM06D027	Dhadkharka-Sanikhor Sadak	119	5	536	0			1.7		1.66	-	1.66	Dhadkharka-Sanikhor		1.66
330RM06D028	Balauta-Lapsibot-Mathillo Tole-Payukharka Road	54	5	243	0					-	-	-	Balauta-Lapsibot-Mathillo Tole-Payukharka	2.9	2.86
330RM06D029	Chhelang-Mammai-Darkhaphedi Road	87	3	392	0					-	-	-	Chhelang-Mammai-Darkhaphedi	1.5	1.51
330RM06D030	Tallo Kalleri-Swara-Mahabhir Road	67	5	302	3			0.8		0.80	-	0.80	Tallo Kalleri-Swara-Mahabhir		0.80
330RM06D031	Saadangaun-Nichet Padhero Road	134	5	603	0			0.5		0.48	-	0.48	Saadangaun-Nichet Padhero		0.48

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
330RM06D032	Yarsha-Chilaune Bisan-Sadan Road	118	3,4	531	4			2.4		2.36	-	2.36	Yarsha-Chilaune Bisan-Sadan		2.36
330RM06D033	Dharchok-Dasminda Tol Road	106	3	477	0			0.7		0.74	-	0.74	Dharchok-Dasminda Tol		0.74
330RM06D034	Simjang-Satdobato Road	63	3,4	284	0					-	-	-	Simjang-Satdobato	3.1	3.06
330RM06D035	Idu-Kogaling-Saldhum Road	81	4	365	0					-	-	-	Idu-Kogaling-Saldhum	2.0	2.00
330RM06D036	Badarswara - Kaswara – Dadkhiket Road	169	3	761	0					-	-	-	Badarswara - Kaswara - Dadkhiket	1.1	1.10
330RM06D037	Yarsha - Kamigaun – Lungri Road	110	3,4	495	0					-	-	-	Yarsha - Kamigaun - Lungri	0.7	0.73
330RM06D038	Chhelang Gaun -Tallo Chhelang Road	68	3	306	6					-	-	-	Chhelang Gaun -Tallo Chhelang	0.7	0.66
330RM06D039	Mahendraratna-Kalimati-Vdc Building-Besare Road	20	7	90	4			1.0		1.00	-	1.00	Mahendraratna-Kalimati-Vdc Building-Besare		1.00
330RM06D040	Bardandanda-Arukhet Road	84	3	378	0			1.8		1.83	-	1.83	Bardandanda-Arukhet		1.83
330RM06D041	Serachet-Dursaang-Pasangchowk- Krishi Sanstha Road	49	2	221	0					-	-	-	Serachet-Dursaang-	0.5	0.53
330RM06D042	Sallari-Prunung-Gamrang Road	170	1,2	765	0			0.8		0.79	-	0.79	Sallari-Prunung-Gamrang	2.0	2.79
330RM06D043	Shitaladanda-Nanglung-Langurchet Road	6	1	27	0					-	-	-	Shitaladanda-Nanglung-Langurchet	3.5	3.53

4.2 District Roads

A total of 73.38km road falls under district road in this RM out of which some 7.00 km falls under the new demand which is not yet constructed. Thus, only 66.39 km road belongs to District Road Core Network excluding 7 km that falls under new demand. In total there are 4 roads that fall under DCRN in this RM. As per the new criteria, the minimum RoW for the DRCN has been proposed as 20m and is under the process of approval by the government.

Code	Road name	HHs	Ward pass	Popn.	Avg width (m)	Existing Road, Km					Road Condition, Km		Settlement	New demand	Total length, Km
						BT	GR	ER	Trail	Total	AW	FW			
30DR001	Siktar-Budhathum-Baseri-Manbu-Lapa Road	1040	6,7	4680	7			18.0		18.00	-	18.00	Siktar-Budhathum-Baseri-Manbu-Lapa		18.00
30DR002	Thulibesi - Muchowk - Sukhabhanjyang (Mulpani) Sadak	45	5	202.5	6			0.8		0.79	-	0.79	Thulibesi - Muchowk - Sukhabhanjyang (Mulpani)		0.79
30DR003	Belung Bhanjyang-Phulkharka - Yarsha-Gumdi - Chhelang - Chhimchok -Latap - Tawal - Tamjimrang-Kichet-Lapa Road	2950	1,2,3,4,5	13275	7			40.0		39.99	-	39.99	Belung Bhanjyang-Phulkharka - Yarsha-Gumdi - Chhelang - Chhimchok -Latap - Tawal -Tajimrang-Kichet-Lapa	7	46.99
30DR004	Dhagarchowk-Idu-Phalange-Hydro Road	568	3,4	2556	5			7.6		7.60	-	7.60	Dhagarchowk-Idu-Phalange		7.60

The RMTMP inventory survey has identified that this Municipality has altogether 394.4 Km roads including municipal roads and DRCN. Within this, the total length of all categories of roads has been calculated as 261.54 km while some 132.88km road has been identified as road under new demand. Similarly, the distribution of road by surface type from the inventory is as follows: 0 Km - black top road, 0 Km - gravel road, 261.54Km- Earthen road and 0 km - trail. Most of the roads fall under fair-weather road. The major challenge in transportation sector is upgrading of fair-weather roads and budgetary management to cover all required intervention. Other relevant figures on road class as well as ward wise distribution have been shown in the tables below:

Table No. 38: *General summary according to road type (in km)*

Road Category	Black top Km	Gravel km	Earthen km	Track km	Total km	New demand km
Class A	-	-	36.50	-	36.50	0.00
Class B	-	-	80.88	-	80.88	43.65
Class C	-	-	43.22	-	43.22	46.11
Class D	-	-	34.54	-	34.54	36.12
DRCN	0.00	0.00	66.39	0.00	66.39	7.00
SRN	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**261.54**	**0.00**	**261.54**	**132.88**

Source: Field Survey 2019/2020

Table No. 39: *Ward wise road dsistribution*

Ward No	Class A	Class B	Class C	Class D	Total
1	11.1	8.2	25.7	3.0	48.1
2	14.3	18.9	4.8	0.9	38.9
3	16.8	15.7	3.4	8.0	43.9
4	10.0	16.9	8.6	5.9	41.4
5	13.6	34..3	29.8	25.4	103.2
6	19.3	15.6	8.7	10.1	53.7
7	24.7	14.9	8.3	17.3	65.1
Total	109.9	124.5	89.30	70.70	394.4

Source: Field Survey 2019/2020

In terms of Class A road, ward no. 7 holds the largest stretch of 24.7 km followed by ward no. 6 with 19.3 km long stretch in which ward no. 4 holds the smallest stretch of 10.0 km. Similarly in case of Class B road, ward no. 5 holds the longest stretch of 34.3km while ward

no. 1 retains the shortest stretch of 8.2 km and the rest remains in between these two wards. Likewise, in case of Class C road, ward no. 5 holds the longest road span of 29.8 km and ward no. 3 the shortest with 3.4 km respectively. The remaining wards hold in between. Finally, regarding Class D type road, ward no. 5 holds the longest stretch of 25.4km while ward no. 2 holds the shortest span of 0.9 km. The remaining wards hold the length in between as shown in the table above.

Note: This length is excluding new track demand

Digital Naming ro coding (Road Nomenclature)

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

- First digit (1-7) represents the Province Number. Code 3 Stand for Bagmati Province and similarly for other provinces.
- Second and third digits represent particular district (1-77). Dhading district is coded by 30.
- M stands for Municipality and RM stands for Rural Municipality
- Fifth and sixth digits represents the particular municipality/rural municipality in that district. Gangajamuna Rural Municipality is coded by 06.
- Letter A-D indicates for particular Class of road; DR indicates district road and SR indicates strategic roads
- Next three digits (000-999) represents the particular transport linkage.

3	30	RM	06	A	001	Sample Coding

Table No. 40: *Various methods of road classification are as follows:*

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	Connection between Class A and C road; also provide mobility to local trips	Connects higher order roads and alternative connection	Connect local trips to higher level roads

Criteria	Class A	Class B	Class C	Class D
	High network coverage	Support through traffic movement of	Access to property	Direct access to property
	Segregated NMT facilities and Bus lay bays	Segregated NMT facilities and Bus lay bays	Segregated NMT facilities	Local NMT movement
	Complete access to public transport	High access public transport	Access limited to public transport	
Maintenance Responsibility	Municipality	Municipality	Municipality and local people	Local people
Speed (kmph)	80-100	60-80	50-60	40-50
Capacity(PCU/ Hr.)	4000-4800	2400-3600	1500-2400	Less than 1500
Access Control	Full control	Partial control	No	No
Public transport services	Mass transit facilities	Mass transit, Local public transport	Access to public transport	No public transportation
Right of way	Minimum 15m	Minimum 10m	Minimum 8m	Minimum 6m

Here for the classification of road, guideline has been followed i.e. Right of way has been considered for road classification.

4.3 Right of Way for Roads of different Classes

The DTMP/MTMP guideline (former DoLIDAR) has expected roads under category of National Highway (NH), Feeder Roads (FR) and District Roads (DRCN) within the 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 Municipality/Rural Municipality accordingly.

Table No. 41: *Road Class and Features*

Road Class	Descriptions	Minimum RoW (m)	Minimum Set-back Distance (m)
NH	National Highways	As prescribed	As Prescribed
FR	Feeder Roads		
DRCN	District Roads		
A	Main Collector	15	3.0
B	Other Collector	10	Minimum 2.5
C	Main Tole Road	8	Minimum 2.0
D	Other Tole Road	6	Minimum 2.0

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 3.0 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.

१४.३१ अब निर्माण हुने सडकको कुनै पनि बाटोको न्यूनतम चौडाई ६ मी. हुनु पर्नेछ र नापी तथा मालपोत कार्यालयहरुलाई सोही बमिजिमले सेस्ता, नक्सा तथा अभिलेखहरुमा बाटो कायम गरी यस व्यवस्थाको कार्यन्वयन गर्न लेखि पठाउनु पर्नेछ। । यस्ता बाटोमा भवन निर्माण स्वीकृत दिंदा केन्द्रबाट कम्तिमा ३ मीटर सडकको क्षेत्राधिकार (RoW) र सडक क्षेत्राधिकार सिमाबाट १.५ मीटर सेट ब्याक छाडेर मात्र निर्माण स्वीकृति दिनु पर्नेछ । तर हिमाली/पहाडी जिल्लाका उपत्यका (valley) एवं समथल भू-भाग देखि बाहेकका भिरालो क्षेत्रमा प्राविधिकरुपमा उक्त ६ मिटर चौडाई कायम गर्न सम्भव नभएमा प्राविधिकको प्रतिवेदनको आधारमा सम्बन्धित स्थानीय निकायको परिषद्को निर्णयबाट ४ मिटरमा नघट्ने गरी निर्धारण गर्न सक्नेछ।

१४.३६ नगरपालिका क्षेत्रमा सडक सम्बन्धी ऐन लगायत प्रचलित कानूनले तोकेमा सोही अनुसार र सो नभएमा नगर यातायात गुरुयोजनाले निर्धारण गरे अनुरुप सेटब्याक कायम हुनेछ। तर नगरपालिकाले यस्तो सेटब्याक सडक किनारबाट १.५ मिटर भन्दा कम हुने गरी निर्धारण गर्न छैन।

१४.३८ नयाँ बाटोको घुम्ति वा मोडको न्यूनतम अर्धव्यास बाटोको चौडाई भन्दा २०% ले बढी चौडा भएको हुनु पर्नेछ।

(Source: - Fundamental Guidelines for Settlement Development, Urban Planning and Building Construction - 2072 (2015 AD))

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 been set as 6.0 m. i.e. 3.0 m on either side from the centreline. A portion of this guideline has presented herewith.

4.4 Urban Road Classification

Roads under jurisdiction of Municipal authority are referred as urban roads. The classification practices of urban roads basically are guided by the functional hierarchy of roads. In the context of Nepal, Department of Roads (DoR) has classified urban roads as Arterial, Sub-arterial, Collector and Local/Residential Street in its Urban Road Standard 2068 (draft). The ToR provided for the preparation of MTMP has formulated the class of roads into A, B, C and D.

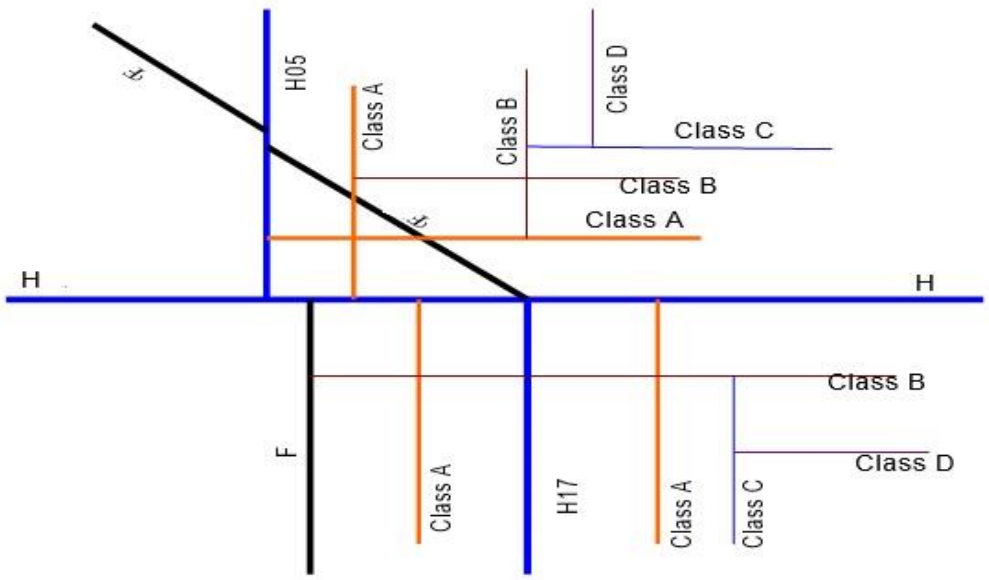


Figure 10: Detail description of Road class

Municipality has a road network hierarchy consisting of National Highways, Feeder Roads, District Roads and Urban Roads or Rural Roads of all four classes. The conceptual layout based on the functional hierarchy of the entire road network is shown in Figure 19.

National Highways

Arterial roads in Municipality are taken as the links of National Highways. The technical standards of these roads are taken from the DoR directives for Right of Way (RoW) and other features.

Feeder Roads

Feeder roads are taken as the sub-arterial road in Municipality. The technical standards for this category are taken as mentioned by the DoR road Standard. These roads have relatively higher traffic with through movement of local vehicles.

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 centres within the Municipality.

Class “B” Roads

Class B roads are of secondary type of collector roads. These may serve as the collector to the Class A roads with the relatively lower geometric standard. Intersection and other parameters may be taken as similar as Class A roads.

Class “C” and Class “D” Roads

Class C roads are residential street and they provide access to the private property and small industrial or public place. These roads serve mainly for small/light vehicular movement for low volume intensity. If these roads connect one or more residential blocks then they are taken as Class C. If they collect from or end to the single residential block then they are referred as Class D roads. These serve for internal traffic movement without through traffic movement.

Municipality Road Inventory Map (MRIM) has been attached in Volume II.

Chapter - 5: Perspective Plan of Municipality Transport Network

(Rural) Municipality Transport Perspective Plan is a visionary plan which aims to improve transport linkages and accessibility to goods and services via different types of trip patterns. Feasibility of air service in the municipality is almost nill except emergency services through helicopters. If we could find the assurance of fruitful investment return, ropeways are viable in the Rural Municipality since hills and hillocks are favorable for ropeways in the future. Water-transportation or navigations are impossible since there are no navigable rivers or waterways in our adverse river profile. Feasibility of railways cannot be denied in this scope.

This means, road transportation is the most primary medium of transportation in this Rural Municipality (RM). Therefore, the RM does not have any alternative except the improvement of road network in a sustainable way. This chapter deals with the prioritization of municipal roads for the necessary interventions to be made in the succeeding years to improve the road network and enhance the accessibility condition of people's mobility. According to Todd Litman, 2003 (Measuring Transportation: Traffic, mobility and accessibility) the following factors determine the patterns of mobility of people from one place to other.

1. *Density* (number of people or jobs per unit of land area) increases the proximity of common destinations, and the number of people who use each mode, increasing demand for walking, cycling and transit.
2. *Land use mix* (locating different types of activities close together, such as shops and schools within or adjacent to residential neighborhoods) reduces the amount of travel required to reach common activities.
3. *Non-motorized conditions*. The existence and quality of walking and cycling facilities can have a major effect on accessibility, particularly for non-drivers.
4. *Network connectivity* (more roads or paths that connect one geographic area with another) allows more direct travel.

There are many ways to measure transportation system performance, each reflecting particular perspectives concerning who, what, where, how, when and why. Different methods favor different types of transport users and modes, different land use patterns, and different solutions to transport problems. Traffic flow is easiest to measure, but this approach only considers a narrow range of transportation problems and solutions. Mobility is more difficult to measure, since it requires tracking people’s travel behavior. It still considers physical movement an end in itself, rather than a means to an end, but expands the range of problems and solutions considered to include alternative modes such as transit, ridesharing, cycling and walking. Accessibility is the most difficult to measure, because it requires much effort for

taking into account of land use, mobility and mobility substitutes, but most accurately reflects the ultimate goal of transportation, and allows widest range of transport problems and solutions to be considered. For example, an accessibility perspective may identify low-cost solutions to transportation problems, such as improving local walkability; encouraging land use mix so common destinations such as stores, schools and parks are located near residential areas; and improving communications services for isolated people and communities (Litman Todd, 2003).

5.1 Procedure for collecting demands from wards

Ward level meeting in every ward or ward cluster is done where information on MTMP are collected. Demand form for each ward are provided which are later on collected after the form are duly filled in given time. As road demand from the settlement level is collected bottom up approach of planning is applied.

5.1.1 Data Analysis and Field Verification of the Roads from Demand Form

Analysis of data regarding the accessibility situation in each settlement, population forecasting for each sector, major road linkages has been done. Similarly, all the roads demanded in demand form are verified in field by the survey team.

5.2 Scoring System for Screening

Development of the scoring criteria and prioritization criteria based on the provided guidelines are prepared and its approval from the municipality and Municipal Road Coordination Committee (MRCC) is accomplished during first workshop meeting.

Transport linkage in an urban area has greater importance for its overall development. The development of road transport linkages to each plot of land or each residential unit is ideal approach for transport planner. Various types of land use pattern require different category of road transport linkage. The development of road linkage requires tremendous amount of public fund at the same time; however, the public authorities doesn't have adequate amount of funding. For better transportation infrastructure development, prioritization approach is only one approach to be adopted for the rational allocation of limited funds for all types covering the whole length. The investment activities are new construction, maintenance and rehabilitation of various categories of road linkage. Conventionally, each construction or maintenance projects are justified on the basis of cost-benefit ratio. This conventional approach disregards the benefit due to non-monetary aspects of the transport projects. Therefore, a multi-criteria approach for the selection of transport linkage is adopted as a justified approach for the project selection.

Transportation services are highly demanded infrastructure for urban as well as rural areas. The objective of the transport linkage is to provide accessibility for the given degree of mobility. Accessibility and mobility requirements are guided by the people's demand for better living standard and economic opportunities. The objectives and importance of individual roads should guide the development of scoring criteria for the project selection for implementation. A term of Reference (ToR) for the preparation of MTMP has formulated the criteria and their respective weights for the evaluation. Consultant has worked out the following weights for the criteria for the prioritization of road links. These scores for the particular criteria are needed to be discussed and approved by MRCC.

Criteria for Prioritization

S.N.	Criteria	Scoring Unit	Score
1	Link providing service to large settlement areas/population	Population served/km	20
2	Link providing service to existing, a) Commerce and business b) Market sites (local haat) c) Tourist attraction d) Agro based and cottage industries e) Other obligatory centres decided by Municipality/Rural Municipality	Discretely based on existence. Each facility is given 20% weightage.	10
3	Link providing service to high potential for agriculture, horticulture and livestock production	Annual transaction in these centres (NPR/Km)	20
4	Link providing service to service centres (Government offices, educational centres, health centres etc.)	Number of population served by these service centres (Person/Km)	15
5	Link providing service to the potential future development sites	Anticipated annual turnover (NPR/Km)	10
6	Potential growth service center	Population served/Km	10
7	Link providing service to the areas recognised by the municipality	Very important-10 Important-5 Less important-1	10
8	Linkages with other transport Linkages	National Highway- 10 Feeder Road- 8 District Road- 6 Neighbouring Municipality/District-4	5
	Total		100

These criteria are described in brief below:

1. Population Served

Population served by the road link is one of the important indicators of prioritization. Higher the population served by the road, higher will be its necessity or importance. Thus, such road needs to be upgraded/maintained/constructed first. Scoring is done relatively. Highest score is assigned for the road link serving highest population and is relatively reduced. Thus, the score for road based on population served lies within zero to full score.

2. Access to services and facilities

It is one of the main governing prioritization indicators as it outlines the specific services provided to the locals. The road link may provide access to Recreation (picnic spot, historical place, park, cinema hall, and playground), Agricultural land, Market center and Service center (School, Health Centers, government offices etc.). A single road link can serve just a single function or more function. The proposed road interventions which serves all four facilities has higher importance and given highest score. Each facility is given 20% weightage. Thus, a road link serving all of these facilities will get full score while the road link serving three facilities will get 80 % and so on.

3. High potential for agriculture

High potential for agriculture, horticulture, poultry, livestock play crucial role for prioritization of road.

4. Service centers

- Road linkage is directly proportional to how far the road can serve number of population served to have access to government service centers such as educational centers, health centers, government offices etc.

5. Potential future development sites

Road is prioritized based on future development sites of town such as such as potential town development, land pooling; potential industrial area and or forming ring road to municipality etc. as indicated in the Indicative Development Potential Map of the municipality.

6. Potential growth service center

Link providing service to the potential growth or service centers identified by the municipality and shown in the Indicative Development Potential Map of the municipality, Waste Management Site

7. Special Consideration

- Link providing service to the areas recognized by the municipality as areas for special consideration, such as areas inhabited by backward and poor ethnic groups/communities, isolated remote areas, historic sites, religious sites etc.

8. Linkages with other transport linkages

It is also one of the criteria for prioritization. Road linkages reflects the importance of the road in the municipality. Road linking with higher class road will be more important and immediate the intervention required. Road linking with National highways will receive full score. Road linking with feeder road will receive 80% score and road linking with district road will receive 60% score. Similarly, road linking with neighboring district or municipal will receive 40% score and remaining others road will be scored zero.

5.3 Perspective Plan Framework for the RM roads

Perspective plan of the Municipality is the development plan that includes the plan of development of all road's hierarchy within the Municipality. MTMP/RMTMP is short term Municipality Transportation Master Plan generally of 5 years which includes the prioritized road demands whereas perspective plan is a long-term plan which includes the overall road demand of the Municipality.

Perspective plan identifies all the transport infrastructure demands of the Rural Municipality. The proposed road networks and road infrastructure will help to enhance the overall transportation network of the Rural Municipality which will eventually result in increased accessibility and mobility. The visionary development plan i.e. the municipal development plan will help to develop other sectors of the Rural Municipality along with the development of transportation sector. The well facilitated and well-connected road will facilitate safe, comfortable and efficient trips to the road user. Moreover, increase in transportation facility will help to boost the economic development of that particular Rural Municipality which will eventually contribute to overall economic development of the nation.

The first five-year financial plan is prepared based on the assumption that each year budget will increase by 10% from previous year budget. All the roads included in perspective plan along with their score, rank and class are given below:

The framework of the perspective plan of the municipal roads has been presented below which has been categorized according to the scoring system mentioned before.

Table No. 42: *List of roads for (Rura)l Municipality Perspective Plan*

SN	Municipal code	List of Roads for Municipality Perspective Plan	Ward Pass	Road Length, Km	Total score	Over all Rank	Rank in Class
1	30DR001	Siktar-Budhathum-Baseri-Manbu-Lapa Road	6,7	18.00	51	2	2
2	30DR002	Thulibesi - Muchowk - Sukhabhanjyang (Mulpani) Road	5	0.79	34	9	6
3	30DR003	Belung Bhanjyang-Phulkharka - Yarsha-Gumdi - Chhelang - Chhimchok -Latap - Tawal - Tamjimrang-Kichet-Lapa Road	1,2,3, 4,5	46.99	55	1	1
4	30DR004	Dhagarchowk-Idu-Phalange-Hydro Road	3,4	7.60	39	5	5
5	330RM06A001	Jagarbote-Banskharka-Khabhanjyang Road	5,7	9.90	49	3	3
6	330RM06A002	Gumdi Gaun - Tarkule - Simjung - Salmetar-Kintangfedi Road	3, 4	5.80	41	4	4
7	330RM06A003	Salleri-Kutalbesi-Ghyangsyang Road	2	5.10	32	12	7
8	330RM06A004	Mangpangbesi - Sukaura - Odare - Piple - Hatiya - Khirbote- Deurali - Mahalaxmi – Dandagaun Rtoad	6,7	15.70	31	13	8
9	330RM06B001	Manpangbesi-Odare-Lapudanda Road	6	4.35	36	6	1
10	330RM06B002	Sadhpipal-Hepo-Pithedanda-Odalchaur-Adheri Road	7	2.50	32	11	5
11	330RM06B003	Hepo-Koldanda-Bathalidanda- Rai Gaun-Bange Pipal Road	6,7	3.84	35	8	3
12	330RM06B004	Dhaledanda-Hile-Thulonange Road	6	2.24	36	7	2
13	330RM06B005	Aldanda-Bharyang Danda-Danda Gaun-Gaikharka Road	7	4.59	33	10	4
14	330RM06B006	Bharyangdanda-Dandagaun-Deurali - Lapsi Bot Road	5,6,7	8.26	30	16	8
15	330RM06B007	Dhale Danda - Kattike Gaun - Mansire- Bika Tole Road	6	3.42	27	21	13
16	330RM06B008	Gauthali Pokhari - Badri Char - Baniya Tole - Thulo Pandhero - Pallo Gaire Tole Road	5	2.90	30	15	7
17	330RM06B009	Mathillo Dangsing - Gauthali Pokhari - Khoriya - Ganga Jamuna Road	5	3.87	26	25	16
18	330RM06B010	Dhadkharka-Payukharka-Dumla-	3,4,5	8.10	30	14	6

SN	Municipal code	List of Roads for Municipality Perspective Plan	Ward Pass	Road Length, Km	Total score	Over all Rank	Rank in Class
		Saadan-Pokhara-Chhimchowk					
19	330RM06B011	Saadan Gaun-Naya Chautara-Mantari-Kattike-Kami Tole-Khola Khet-Chaapekuna Road	5	8.57	28	17	9
20	330RM06B012	Bhaaja-Khola Khet-Devisthan-Kalleri-Sukbhanjyang Road	5	4.76	27	20	12
21	330RM06B013	Belung Bhanjyang - Mahabir - Chalise Road	5	3.10	24	28	19
22	330RM06B014	Phulkharka - Baguwa Khola-Chandeni Road	4,5	2.15	28	18	10
23	330RM06B015	Satdobato - Saldhum - D Gaun - Salmetar Road	3,4	5.20	28	19	11
24	330RM06B016	Satdobato - Ratmate - Rato Danda - Sisne Khola Road	4	2.44	24	27	18
25	330RM06B017	Salmetar - Dharke Fedi Corridor Road	3	2.44	26	22	14
26	330RM06B018	Lungri - Bhirkuna-Nebidanda-Naya Basti Road	3	3.65	23	30	21
27	330RM06B019	Chimchowk - Aphal Khola - Dhuseni – Tawalbesi Road	3,2	6.74	26	24	15
28	330RM06B020	Latab-Manechang-Dangchet-Manchet-Pasangchet Road	1,2	8.96	23	31	22
29	330RM06B021	Chhelang-Aaphang-Tawal Besi-Ri Road	2,3	4.72	24	29	20
30	330RM06B022	Kuttalbesi - Tawalbesi - Dhanchet - Dhuseni Besi Road	2	3.21	20	42	25
31	330RM06B023	Tawalgaun - Tarebhir - Sekdeli - Ri Gaun Road	1,2	5.14	25	26	17
32	330RM06B024	Latab-Rigaun-Dangyurechet-Langurchet-Kichet-Lapa Road	1	5.51	20	43	26
33	330RM06B025	Hatiya - Lapu Danda Road	6	2.46	21	39	24
34	330RM06B026	Phalange-Saldhum Road	4	3.05	20	44	27
35	330RM06B027	Aarkhet - Andheri -Chipleti - Pithedanda – Healthpost Road	7	3.00	20	45	28
36	330RM06B028	Nebi –Pokhara Road	3	0.72	18	54	29
37	330RM06B029	Garang-Kudule-Chhelang-Mambai	3	4.62	22	35	23

SN	Municipal code	List of Roads for Municipality Perspective Plan	Ward Pass	Road Length, Km	Total score	Over all Rank	Rank in Class
		Road - Yapa Tole - Darkha Fedi Road					
38	330RM06C001	Bakhrekhola-Banbote-Tarsimle-Sim Chautari Road	6	1.14	22	33	1
39	330RM06C002	Tari-Gangate-Bhumisthan-Jyamire-Dharapani Krishi Sadak	6	2.54	18	52	13
40	330RM06C003	Jamune-Banbote-Bhanjyangi-Lampat Road	6	1.91	17	57	15
41	330RM06C004	Dalit Tole - Hariyo Khola - Andheri Khola Road	6	1.30	15	68	22
42	330RM06C005	Bhaise-Aarubote-Bandiwara-Tallo Danda Gaun-Mathillo Dandagaun Road	6	2.97	16	62	18
43	330RM06C006	Dolpa-Choke-Ibi-Richet-Kichet Road	1,2	10.16	16	67	21
44	330RM06C007	Gharichaur-Saunepani-Bathalidanda Road	7	1.27	18	53	14
45	330RM06C008	Tallo Bhorle - Silinge – Jogidanda Road	7	2.46	19	49	11
46	330RM06C009	Baskharka-Ghorle - Majuwabesi-Marauti – Sukbhanjyang Road	5,7	7.63	13	77	27
47	330RM06C010	Burchet-Choke-Namsyong-Richet Road	1	3.00	14	74	25
48	330RM06C011	Karkigaun-Ekle-Kalleri-Sukbhanjyang Road	5	4.50	21	40	6
49	330RM06C012	Sukhbhanjyang-Mantari-Hudung-Satdobato- Krishi Sadak	5	6.10	17	59	16
50	330RM06C013	Mantari - Kagchet - Danda Swara Road	4,5	3.49	22	34	2
51	330RM06C014	Ekle-Bahundanda-Manekhet-Kalleri Road	5	2.25	21	37	4
52	330RM06C015	Kalleri-Chauti-Kaalthoda-Mahabhir Road	5	3.82	20	46	8
53	330RM06C016	Mahbhir-Pingdanda-Chihandanda-Kholakhet Road	5	1.11	15	71	24
54	330RM06C017	Faprekhet - Baguwa Khola - Bhandari Gaun - Bajhobari - Khola Khet Road	4,5	5.17	14	75	26
55	330RM06C018	Bajhobari-Ratodanda Road	4	2.04	20	48	10

SN	Municipal code	List of Roads for Municipality Perspective Plan	Ward Pass	Road Length, Km	Total score	Over all Rank	Rank in Class
56	330RM06C019	Ratmate - Ojaghi – Idu Road	4	2.62	21	38	5
57	330RM06C020	Idu-Khendang-Satdobato Road	4	1.16	19	51	12
58	330RM06C021	Richet-Antar-Cheprang-Karang Road	1	5.84	16	63	19
59	330RM06C022	Pithedanda - Chipleti – Bhirkuna Road	7	3.80	20	47	9
60	330RM06C023	Simjang-Chiandanda-Dandapari-Chanaute Road	3	2.41	20	41	7
61	330RM06C024	Pasangchowk Ma.Vi.-Tinmane-Tawal Health Centre-Bindu-Kalseng Khola Road	2	1.75	12	80	28
62	330RM06C025	Tawalbesi - Ward Office - Dorang - Runi Gaun Road	2	2.85	15	70	23
63	330RM06C026	Choke-Rigaun-Gumba Road	1	2.15	16	66	20
64	330RM06C027	Ebi – Tajimrang Road	1	1.50	21	36	3
65	330RM06C028	Richet –Tajimarang Road	1	2.39	17	60	17
66	330RM06D001	Kacheri-Piple Khanyabote Road	6	0.38	26	23	1
67	330RM06D002	Ghodedanda-Ramchandre-Pokhari Road	6	0.46	12	82	17
68	330RM06D003	Hariyo Khola -Namuna Tol-Khirbote Road	6	1.14	13	78	14
69	330RM06D004	Deurali-Dalit Tole Road	6	0.39	23	32	2
70	330RM06D005	Kichet-Diung Khola Road	1	0.94	10	84	19
71	330RM06D006	Sallaghari-Dhadkharka Road	6	1.47	14	76	13
72	330RM06D007	Lingedanda-Hastetol-Pangraphedi Road	6	0.53	17	61	7
73	330RM06D008	Bhainse School-Bhorlekhola-Sirantole Road	6	0.70	4	106	41
74	330RM06D009	Ghaledanda-Hile-Thulonange Road	6	3.39	4	103	38
75	330RM06D010	Sano Nange-Hile-Chaurthala-Tinsure Gumba Road	6,7	3.89	5	101	36
76	330RM06D011	Aarubote- Hile- Katike-Road	6	1.08	18	56	5
77	330RM06D012	Koldanda-Mahendraratna School-Chakachuli-Agrung Road	7	1.62	3	108	43

SN	Municipal code	List of Roads for Municipality Perspective Plan	Ward Pass	Road Length, Km	Total score	Over all Rank	Rank in Class
78	330RM06D013	Ward Office -Hepo Road	7	0.75	18	55	4
79	330RM06D014	Mahendraratna-Kalimati-Ward Karyalaya-Baseri Road	7	0.64	9	91	26
80	330RM06D015	Namuna Bhawan(Gangajamuna Building)-Dandathok-Hepo Road	7	0.60	19	50	3
81	330RM06D016	Halogadhe-Sadhpipal Sadak	7	0.99	9	88	23
82	330RM06D017	Giddhedanda-Chainpur-Kamigaun,Chainpur-Tudikhel-Sarkigaun-Devithan Road	7	2.40	6	98	33
83	330RM06D018	Debisthan-Tallo Besare-Bagmare Road	7	1.66	9	90	25
84	330RM06D019	Jhapre Danda- Musure-Chuchedhunga Road	7	1.04	7	95	30
85	330RM06D020	Jagarbote-Amale Road	7	2.56	9	87	22
86	330RM06D021	Ambote-Dhamiswara Road	7	2.20	8	92	27
87	330RM06D022	Chihandanda-Simle-Sillinge Road	7	1.31	16	65	9
88	330RM06D023	Deurali-Dhaje-Dhaje Bhanjyang-Bhogate Ghari Road	5,7	6.90	3	107	42
89	330RM06D024	Swamikachautara-Ghartipani Chaur-Kuwapani-Keradhaap-Majhuwabesi Road	5	3.88	5	102	37
90	330RM06D025	Tallo Padhero-Chaubato-Tallo Gangajamuna Road	5	0.56	15	69	10
91	330RM06D026	Deurali Dhadkharka Road	5	1.57	6	99	34
92	330RM06D027	Dhadkharka-Sanikhor Sadak	5	1.66	14	72	11
93	330RM06D028	Balauta-Lapsibot-Mathillo Tol-Payukharka Road	5	2.86	8	93	28
94	330RM06D029	Chhelang-Mammai-Darkhaphedi Road	3	1.51	6	97	32
95	330RM06D030	Tallo Kalleri-Swara-Mahabhir Road	5	0.80	8	94	29
96	330RM06D031	Saadangaun-Nichet Padhero Road	5	0.48	17	58	6
97	330RM06D032	Yarsha-Chilaune Bisan-Sadan Road	3,4	2.36	6	100	35
98	330RM06D033	Dharchok-Dasminda Tole Road	3	0.74	11	83	18
99	330RM06D034	Simjang-Satdobato Road	3,4	3.06	4	104	39

SN	Municipal code	List of Roads for Municipality Perspective Plan	Ward Pass	Road Length, Km	Total score	Over all Rank	Rank in Class
100	330RM06D035	Idu-Kogaling-Saldhum Road	4	2.00	10	86	21
101	330RM06D036	Badarswara - Kaswara – Dadkhiket Road	3	1.10	16	64	8
102	330RM06D037	Yarsha - Kamigaun – Lungri Road	3,4	0.73	12	81	16
103	330RM06D038	Chhelang Gaun -Tallo Chhelang Road	3	0.66	6	96	31
104	330RM06D039	Mahendraratna-Kalimati-Vdc Building-Basari Road	7	1.00	4	105	40
105	330RM06D040	Bardandanda-Arukhet Road	3	1.83	9	89	24
106	330RM06D041	Serachet-Dursang- Pasangchowk Krishi Sanstha Road	2	0.53	12	79	15
107	330RM06D042	Salleri-Prunung-Gamrang Road	2	1.00	14	73	12
108	330RM06D043	Sitaldanda-Nanglung-Langurchet Road	1	1.83	10	85	20

5.4 Intervention Categories

After the finalization of perspective plan through the categorization of rural municipal road, required interventions should be decided according to the priority and necessity of the roads. As only earthen road and tracks prevail in this RM, 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 require new construction as well. For the reference of the Rural Municipality the categories of the interventions are defined below.

5.4.1 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.

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.

5.4.2 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 a gravel layer to make it all-weather and ensure that the road remains passable during the rainy season.

3. **Cross drainage -** 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 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.

5.4.3 New Construction

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

5.4.4 Sharing of Fund

The financial plan and the finalization of the RMTMP shall be done based on terms of reference as given by ministry. During preparation of RMTMP, the investment from total available resources under road sector for different classes of the road can be distributed as Apportion 30% for maintenance at first and remaining 70% shall be distributed. The MoFALD guidelines has set different view for budget distribution in different class of road:

- Class A road, ≥ 50%
- Class B road, ≤ 30%
- Class C road, ≤ 20%
- Class D road, ≤ 10%

Although, MoFALD has set guidelines for the distribution of budget, it was adjusted by making discussion with local authorities based on local condition and requirement of Municipality. Ganga Jamuna Rural Municipality has decided to invest the 70% in construction and 30% in Maintenance of road for next 5 fiscal year. The construction sector Budget shall be invested with 45% in A-Class, 30% in B-class, 20% in C-class and 5% in D-class.

The estimate of budget required for the five years is prepared based on the assumption that the Class A road is to be made two lane, Class B road is to be made intermediate lane and Class C and Class D road is to be made single lane and lane considered are assumed to be gravelled as possible. Due to limitation of budget, the roads are assumed to have simple cross drainage structures within this period whereas cross drainage structures such as Bridges are not

included in this budget and expected to be completed within this time period by external sources. For approximate costing, the construction rate of road appurtenances is assumed to be equal to that of gravelling cost and for short term the minimum width of 3m is assumed if existing road width doesn't exist. Similarly, longitudinal drainage on both side of roadway is not considered in this plan.

RMTMP mainly deals with Class A, B and C roads, and Class D roads but private owned Roads are not given any consideration. Interventions on those roads need to be incorporated in annual budget plan. As compared to the present budget of Municipality, the estimated budget is more and the deficit amount should be managed from outer sources.

Intervention that can't be completed in predetermined 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, municipality need 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.

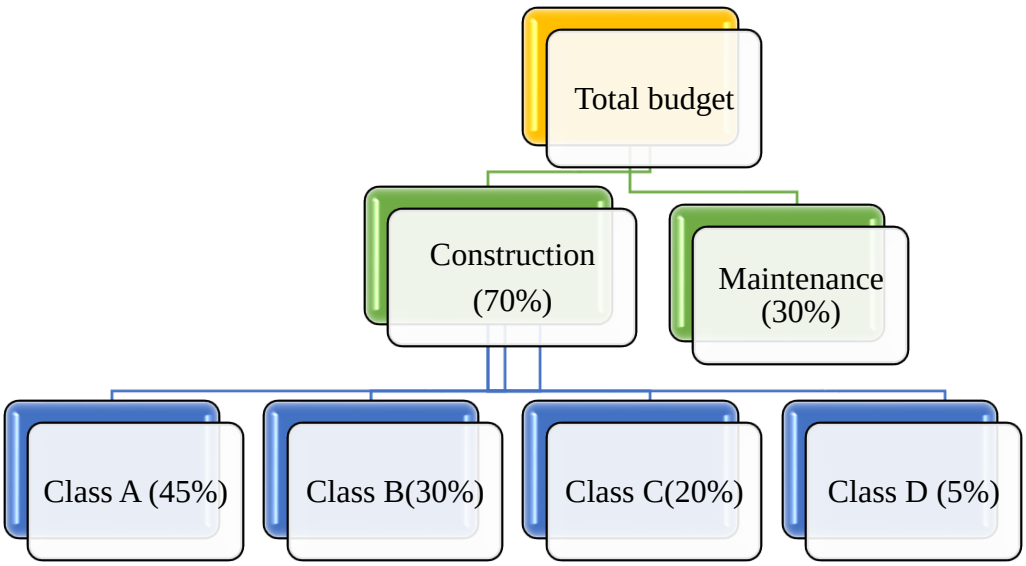


Figure 11: *Budget Allocation as Per Interest of Local Authorities over Planning of Municipal Road*

Chapter - 6: First Five Years Municipal Transport Master Plan

This chapter deals with the interventions to be made in road and transport sectors for first five years according to the road priority finalized in the perspective plan

6.1 Prioritized Municipality Road for RMTMP

Rural Municipality Transport master Plan (MTMP) of this Rural Municipality includes the following 40 prioritized roads for upcoming five years. All 4 District roads ; 4 Class "A" roads; 15 class "B" roads, 12 class "C" roads and 5 Class "D"roads will be implemented as conservation, improvement and new construction in this five year period.

Table No. 43: *List of prioritized Roads in RMTMP*

SN	Municipal code	Road Name	Ward Pass	Road Length, Km	Total score	Overall Rank	Rank in Class
1	30DR003	Belung Bhanjyang-Phulkharka -Yarsha-Gumdi - Chhelang -Chhimchok -Latap - Tawal -Tamjimrang-Kichet-Lapa Road बेलुङभञ्ज्याङ्-फूलखर्क-यार्सा-गुम्दी-छेलाङ्-छिमचोक-लताप-तावल-ताम्जिम्राङ्-किचेत-लापा सडक	1,2,3, 4,5	46.99	55	1	1
2	30DR001	Siktar-Budhathum-Baseri-Manbu-Lapa Road शिकटार-बुडाथुम-बसेरी-मान्बु-लापा सडक	6,7	18	51	2	2
3	330RM06A001	Jagarbote-Banskharka-Khabhanjyang Road जगरबोटे-बांसखर्क-खभञ्ज्याङ् सडक	5,7	9.90	49	3	3
4	330RM06A002	Gumdi Gaun - Tarkule - Simjung - Salmetar-Kintangfedi Road गुम्दी गाउँ-तारकुले-सिमजङ्-साल्मेटार-किन्ताङ्फेदी सडक	3	5.8	41	4	4
5	30DR004	Dhagarchowk-Idu-Phalange-Hydro Road धागार्चोक-ईदु-फलांगे-हाइड्रो सडक	3,4	7.6	39	5	5
6	30DR002	Thulibesi - Muchowk -Sukhabhanjyang (Mulpani) Sadak ठूलीबेसी-मुचोक-सुखभञ्ज्याङ् (मूलपानी) सडक	5	0.7922055	34	9	6
7	330RM06A003	Salleri-Kutalbesi-Ghyangsyang Road सल्लेरी-कुतालवेसी-घ्याङस्याङ सडक	2,3	5.1	32	12	7
8	330RM06A004	Mangpangbesi - Sukaura - Odare - Piple - Hatiya - Khirbote- Deurali - Mahalaxmi – Dandagaun Road माङपाङ्वेसी-सुकौरा-ओडारे-पिप्ले-हटिया-खिरबोटे-देउराली-महालक्ष्मी-डाँडागाउँ सडक	6,7	15.701693	31	13	8
9	330RM06B001	Manpangbesi-Odare-Lapudanda Road माङपाङ्वेसी-ओडारे-लापुडाँडा सडक	6	4.35	36	6	1
10	330RM06B004	Dhaledanda-Hile-Thulonange Road ढलेडाँडा-हिले-ठूलोनाङ्गे सडक	6	2.244557	36	7	2

SN	Municipal code	Road Name	Ward Pass	Road Length, Km	Total score	Overall Rank	Rank in Class
11	330RM06B003	Hepo-Koldanda-Bathalidanda- Rai Gaun-Bange Pipal Road हेपो-कोलडाँडा- बाथलीडांडा-राई गाउँ-बाङ्गे पिपल सडक	6,7	3.841387	35	8	3
12	330RM06B005	Aldanda-Bharyang Danda-Danda Gaun-Gaikharka Road आलडांडा-भर्याङ्डांडा- डांडागाउँ-गाईखर्क सडक	7	4.587566	33	10	4
13	330RM06B002	Sadhpipal-Hepo-Pithedanda-Odalchaur-Adheri Road सांधपिपल-हेपो-पिठेडांडा-ओडालचौर-अंधेरी सडक	7	2.500068	32	11	5
14	330RM06B010	Dhadkharka-Payukharka-Dumla-Saadan-Pokhara-Chhimchowk Road डाँडाखर्क-पयुंखर्क-दुम्ला-सादन-पोखरा छिमचोक सडक	3,4,5	8.1	30	14	6
15	330RM06B008	Gauthali Pokhari - Badri Char - Baniya Tole - Thulo Pandhero - Pallo Gaire Tole Road गोंथली पोखरी-बद्रीचर-बांनिया टोल-ठूलो पंधेरो-पल्लो गैरे टोल सडक	5	2.9	30	15	7
16	330RM06B006	Bharyangdanda-Dandagaun-Deurali - Lapsi Bot Road भर्‍याङ्डाँडा- डाँडागाउँ-देउराली-लप्सिबोट सडक	5,6,7	8.255764	30	16	8
17	330RM06B011	Saadan Gaun-Naya Chautara-Mantari-Kattike-Kami Tole-Khola Khet-Chaapekuna सादन गाउँ-नयां चौतारा-मन्तरी-कात्तिके-कामी टोल-खोला खेत-चापेकुना	5	8.57	28	17	9
18	330RM06B014	Phulkharka - Baguwa Khola- Chandeni Road फूलखर्क-बगुवा-चन्देनी सडक	4,5	2.151357	28	18	10
19	330RM06B015	Satdobato - Saldhum - D Gaun - Salmetar Road सातदोबाटो-साल्धुम-डी गाउँ-साल्मेटार सडक	3,4	5.2	28	19	11
20	330RM06B012	Bhaaja-Khola Khet-Devisthan-Kalleri-Sukbhanjyang Road भाजा-खोला खेत-देविस्थान-कल्लेरी-सुखभञ्ज्याङ सडक	5	4.758321	27	20	12
21	330RM06B007	Dhale Danda - Kattike Gaun - Mansire-Bika Tole Road ढलेडाँडा-कात्तिके गाउँ-मंसिरे-बिक टोल सडक	6	3.42	27	21	13
22	330RM06B017	Salmetar - Dharke Fedi Corridor Road साल्मेटार-धार्केफेदी करिडोर सडक	3	2.443441	26	22	14
23	330RM06B019	Chimchowk - Aphal Khola - Dhuseni – Tawalbesi Road चिमचोक-आफलखोला-धुसेनी-तावलवेसी सडक	3,2,5	6.7408556	26	24	15
24	330RM06C001	Bakhrekhola-Banbote-Tarsimle-Sim Chautari Road बाख्रेखोला-बनबोटे-तारसिम्ले-सिम चौतारी सडक	6	1.135542	22.21 0912	33	1

SN	Municipal code	Road Name	Ward Pass	Road Length, Km	Total score	Overall Rank	Rank in Class
25	330RM06C013	Mantari - Kagchet - Danda Swara Road मन्तरी-काग्चेत-डांडा स्वारे सडक	4,5	3.491803	22.178419	34	2
26	330RM06C027	Ebi – Tajimrang Road इबि-ताजिम्राङ् सडक	1	1.5	21.39728	36	3
27	330RM06C014	Ekle-Bahundanda-Manekhet-Kalleri Road एक्ले-बाहुनडांडा-मानेखेत-कल्लेरी सडक	5	2.253087	21.074576	37	4
28	330RM06C019	Ratmate - Ojaghi – Idu Road रात्माटे-ओजाघी-ईदु सडक	4	2.622929	20.898143	38	5
29	330RM06C011	Karkigaun-Ekle-Kalleri-Sukbhanjyang Road कार्कीगाउँ-एक्ले-कल्लेरी- सुखभञ्ज्याङ् सडक	5	4.5	20.506629	40	6
30	330RM06C023	Simjang-Chilandanda-Dandapari-Chanaute Road सिमजाङ्-चिहानडाडा-डाडापारी-चनौटे सडक	3	2.407159	20.419377	41	7
31	330RM06C015	Kalleri-Chauti-Kalathoda-Mahabhir Road कल्लेरी-चौटी-कालठोडा-महाभिर सडक	5	3.82	19.829474	46	8
32	330RM06C022	Pithedanda - Chipleti – Bhirkuna Road पिठेडांडा-चिप्लेटी-भिरकुना सडक	7	3.8	19.548718	47	9
33	330RM06C018	Bajhobari-Ratodanda Road बांझोबारी-रातोडांडा सडक	4	2.04025	19.532398	48	10
34	330RM06C008	Tallo Bhorle - Silinge – Jogidanda Road तल्लो भोर्ले-सिलिङ्गे-जोगिडांडा सडक	7	2.458242	19.421461	49	11
35	330RM06C020	Idu-Khendang-Satdobato Road ईदु-खेन्दाङ-सातदोबाटो सडक	4	1.158722	18.602828	51	12
36	330RM06D001	Kacheri-Piple Khanyabote Road कचेरी-पिप्ले खन्याबोटे सडक	6	0.3799701	26.01745	23	1
37	330RM06D004	Deurali-Dalit Tole Road देउराली –दलित टोल सडक	6	0.3923419	22.5	32	2
38	330RM06D015	Namuna Bhawan(Gangajamuna Building)-Dandathok-Hepo Road नमूना भवन (गंगा जमूना भवन)-ढांडाथोक –हेपो सडक	7	0.6	18.745407	50	3
39	330RM06D013	Ward Office -Hepo Road वडा कार्यालय- हेपो सडक	7	0.7541404	18.128914	55	4
40	330RM06D011	Aarubote-Katike-Hile Road आरूबोटे-हिले-कात्तिके सडक	6	1.075037	18.084255	56	5

6.2 RMTMP Output

Based on imvestment plan, altogether 40 roads has been considered as prioritized roads. It includes, all of the district roads i.e. 4 district roads; 4“**A”** CLASS roads, 15 “B” CLASS roads, 12 “C” CLASS roads and 5 “D” CLASS roads will be considered for the

implementation within the RMTMP period of 5 years along with the base year. The base year budget is also expected to spend in line with current RMTMP fomat.

RMTMP roads will be improved by widening and maintaining longitudinal and cross drainage system with nominal intervention as gravel road. This intervention intends to bring all weather road for maintainable stage and new track will be opened especially for some Class "C" and majority of Class "D" roads and be brought into vehicle pliable condition (full design width and side drain construction) during the RMTMP period as projected budget.

During the RMTMP period, approx. a total of NPR 452 Million will be invested including the base line budget of NPR 58.7 Million. In this total figure, some NPR 317.03 Million will be invested for construction while NPR 135.87 Million is expected to spend on maintenance. Within construction works, NPR 142.66 Million (45% of total budget of construction) will be spent on Class A roads and District roads. Similarly, NPR. 95.11 Million (30%) will be spent on Class B roads. Likewise NPR 63.40 Million (25%) will be spent on Class C roads and NRs 15.84 (5%) will be spent on Class D roads.

In the sameway NPR 41.09 Million will be spent in the base year in the construction part while the investment in the first year of the MTMP period will be NPR 45.19 Million and the investment in successive years in the construction part will be as follows: NPR 49.71 Million in the second year, NPR. 54.69 Million in the third year, NPR 60.15 Million in the fourth year and NPR 66.17 Million in the fifth year budget.

Likewise in maintenance sector, the allotment in the base year has been estimated as NPR 17.61 Million while the investment in the first, second, third , fourth and fifth year of the RMTMP period has been estimated as NPR 19.37 Million, NPR 21.30 Million , NPR 23.43 Million, NPR 25.78 Million and NPR 28.36 Million respectively.

In totality, in the first year of RMTMP, the widening work (earthen road construction or back cutting) will be held in some 118.50 km stretch out of which the drainage construction will take place only in some 57.20 km stretch. Likewise, the widening work will take place in some 100 km stretch in the second year out of which the drainage construction will take place only in some 48.31 km portion. Similarly, in the third year, fourth and the fifth year the widening work will be completed in some 98.5 km, 85.45 km and 60.56 km stretches respectively while the drainage construction proposed in those years will be 38.53 km, 38 km and 37.34 km respectively. The drainage construction work has been proposed for DR and Class A roads only.

The gravel road has not been proposed for Class D roads and quite a few stretch i.e. only 2 km has been proposed for Class C as well. In totality, approx. 17 km of Class B road has been proposed for gravelling in the five year period while for remaining classes. Similarly, roughly 77 km of earthen road from the remaining classes has been proposed for gravelling in the total five year period. In this way a total of apprx.96 km stretch of earthen road has been proposed for gravelling within this five year RMTMP period.

Additional length would be upgraded or improved (given priority for black top or concreting work chiefly) if additional fund is available during this RMTMP period. The worst section of the prioritized roads will be imporved to make them operatable all the season upon the availability of any additional funds.

Summarizing the intervention, in the RMTMP period, basically widening of the existing municipal roads (Class A) and Distrcit Roads will be held along with construction of drainage. Likewise, upgrading (gravelling of the existing district and municipal roads) have also been proposed. Similarly in terms of Class B roads basically widening and upgrading (gravelling) has been proposed during the RMTMP period. Finally Class C and D type roads are expected to be intervened with activities like widening, upgrading and new track opening.

RMTMP Output

Table No. 44: *Estimated budget for 5 years' RMTMP period along with base year in Gangajamuna Rural Municipality*

Forecasted Budget for Municipality								
BUDGET	**Probable Budget**	**Construction (70%)**	**Maintainance (30%)**	**Class A (45%)**	**Class B (30%)**	**Class C (20%)**	**Class D (5%)**	**Total Cost For Construction**
Base Year	58700000	41090000	17610000	18490500	12327000	8218000	2054500	41090000
Year-1	64570000	45199000	19371000	20339550	13559700	9039800	2259950	45199000
Year-2	71027000	49718900	21308100	22373505	14915670	9943780	2485945	49718900
Year-3	78129700	54690790	23438910	24610856	16407237	10938158	2734539.5	54690790
Year-4	85942670	60159869	25782801	27071941	18047960.7	12031974	3007993.5	60159869
Year-5	94536937	66175855.9	28361081.1	29779135	19852756.8	13235171	3308792.8	66175855.9
Total	**452906307**	**317034414.9**	**135871892.1**	**142665487**	**95110324.5**	**63406883**	**15851721**	**317034414.9**

Source: Field Study 2019/2020

Table No. 45: *Year wise budget forecast for construction and maintenance in Gangajamuna Rural Municipality*

Forecasted Financial Plan of the Municipality in Road Sector							
Base Year		**Forecasted Year (Amount in NRs.)**					
Year		**0**	**1**	**2**	**3**	**4**	**5**
f/y		**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Amount		58700000	64570000	71027000	78129700	85942670	94536937
Intervention Type	Construction	**41090000**	**45199000**	**49718900**	**54690790**	**60159869**	**66175856**
	Maintanence	**17610000**	**19371000**	**21308100**	**23438910**	**25782801**	**28361081**

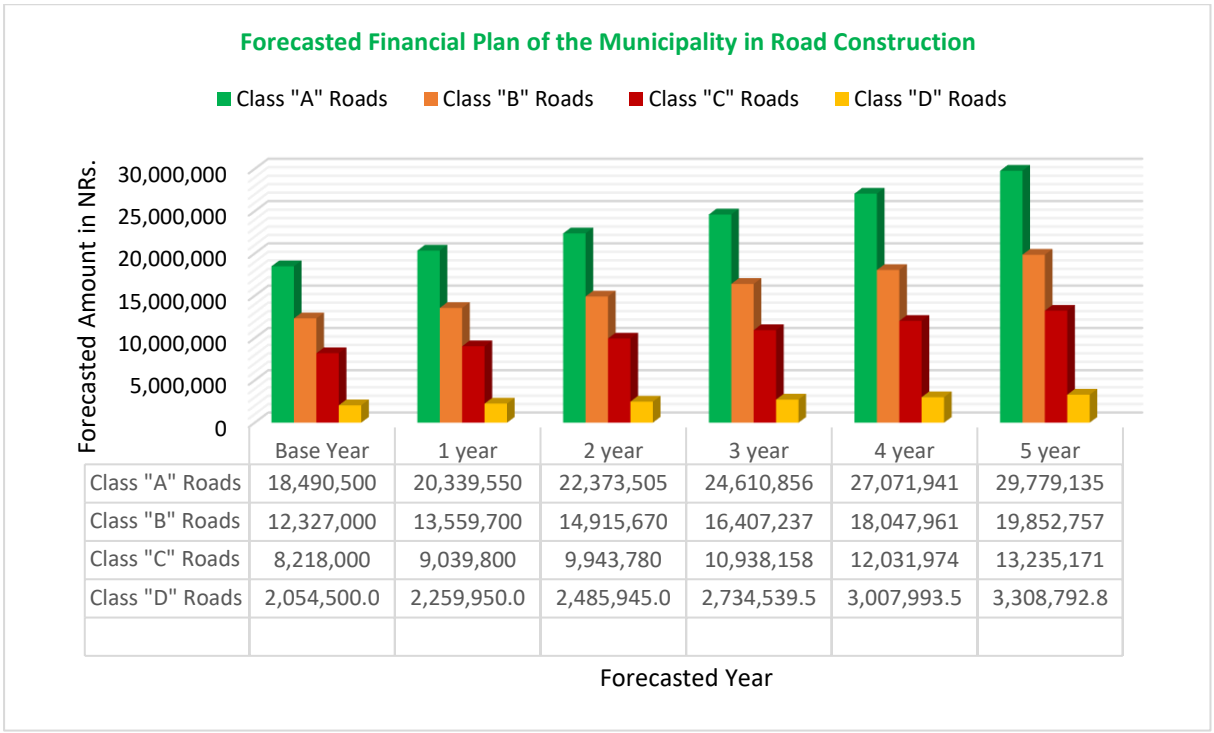
Source: Field Survey 2019/2020

Table No. 46: *RMTMP Budget for construction phase*

Forecasted Financial Plan of the Municipality in Road Construction						
	Forecasted Year (Amount in NRs.)					
Road Type for the Construction Work	**Base Year**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
	2019/20	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Class "A" Roads	18,490,500	20,339,550	22,373,505	24,610,856	27,071,941	29,779,135
Class "B" Roads	12,327,000	13,559,700	14,915,670	16,407,237	18,047,961	19,852,757
Class "C" Roads	8,218,000	9,039,800	9,943,780	10,938,158	12,031,974	13,235,171
Class "D" Roads	2,054,500.0	2,259,950	2,485,945	2,734,540	3,007,993	3,308,793
Total	**41,090,000**	**45,199,000**	**49,718,900**	**54,690,790**	**60,159,869**	**66,175,856**

Source: Field Survey 2019/2020

Note: The Cost of 4 District Roads have also been incorporated in Class "A" Roads category



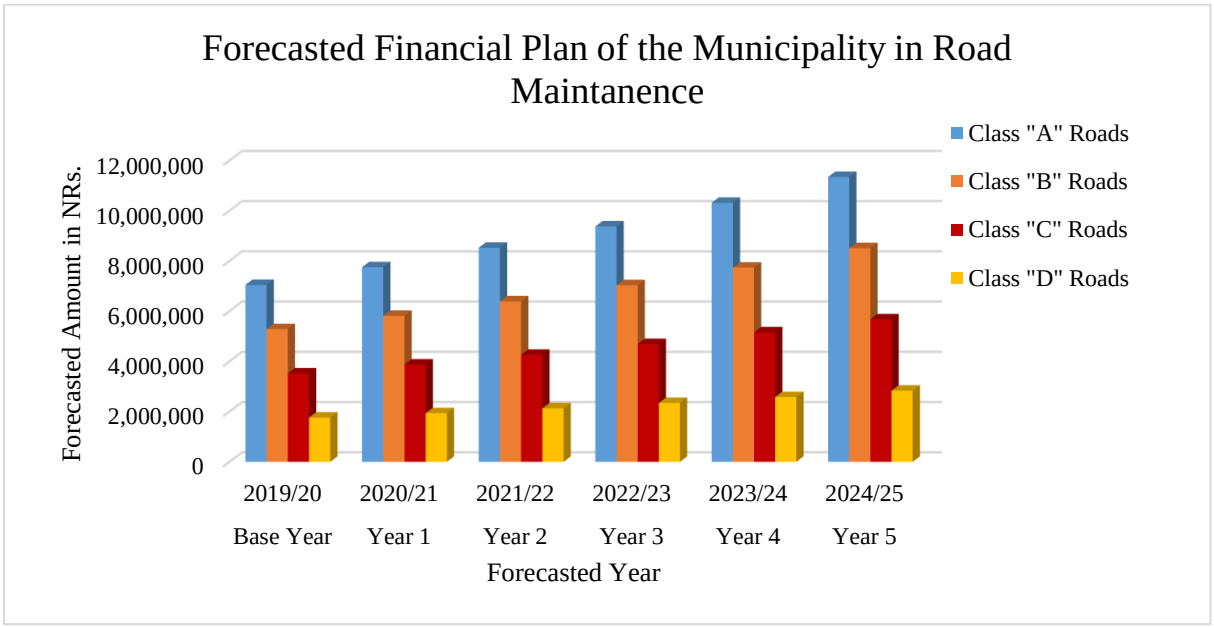
Note: The Cost of 4 District Roads have also been incorporated in Class "A" Roads category

Table No. 47: *RMTMP Budget for maintenance phase*

Forecasted Financial Plan of the Municipality in Road Maintanence						
Road Type for the Maintenance Work	Forecasted Year (Amount in NRs.)					
	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5
	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Class "A" Roads	7,044,000	7,748,400	8,523,240	9,375,564	10,313,120	11,344,432
Class "B" Roads	5,283,000	5,811,300	6,392,430	7,031,673	7,734,840	8,508,324
Class "C" Roads	3,522,000	3,874,200	4,261,620	4,687,782	5,156,560	5,672,216
Class "D" Roads	1,761,000	1,937,100	2,130,810	2,343,891	2,578,280	2,836,108
Total	**17,610,000**	**19,371,000**	**21,308,100**	**23,438,910**	**25,782,801**	**28,361,081**

Source: Field Survey 2019/2020

Note: The Cost of 4 District Roads have also been incorporated in Class "A" Roads category



Note: The Cost of 4 District Roads have also been incorporated in Class "A" Roads category

Annex-1 (List of roads for Rural Municipality Perspective Plan in Nepali)

SN	Municipal code	List of Roads for Municipality Perspective Plan (सडकका नामावली)	Ward Pass	Road Length, Km	Total score	Overall Rank	Rank in Class
1	30DR001	Siktar-Budhathum-Baseri-Manbu-Lapa Road शिकटार-बुडाथुम-बसेरी-मान्बु-लापा सडक	6,7	18.00	51	2	2
2	30DR002	Thulibesi - Muchowk -Sukhabhanjyang (Mulpani) Sadak ठूलीबेसी-मुचोक-सुखभञ्ज्याङ् (मूलपानी) सडक	5	0.79	34	9	6
3	30DR003	Belung Bhanjyang-Phulkharka -Yarsha-Gumdi - Chhelang -Chimchok -Latap - Tawal -Tajimrang-Kichet-Lapa Road बेलुङ्भञ्ज्याङ्-फूलखर्क-यार्सा-गुम्दी-छेलाङ्-छिमचोक-लताप-तावल-ताम्जिम्राङ्-किचेत-लापा सडक	1,2, 3,4,5	46.99	55	1	1
4	30DR004	Dhagarchowk-Idu-Phalange-Hydro Road धागार्चोक-ईदु-फलांगे-हाइड्रो सडक	3,4	7.60	39	5	5
5	330RM06A001	Jagarbote-Baskharka-Sukbhanjyang Road जगरबोटे-बांसखर्क-खभञ्ज्याङ् सडक	5,7	9.90	49	3	3
6	330RM06A002	Gumdi Gaun - Tarkule - Simjang - Salmetar-Kintangfedi Road गुम्दी गाउँ-तारकुले-सिमजङ्-साल्मेटार-किन्ताङ्फेदी सडक	3, 4	5.80	41	4	4
7	330RM06A003	Salleri-Kutalbesi-Ghyansang Road सल्लेरी-कुतालवेसी-घ्याङस्याङ सडक	2	5.10	32	12	7
8	330RM06A004	Mangpangbesi - Sukaura - Odare - Piple - Hatiya - Khirbote- Deurali - Mahalaxmi – Dandagaun Road माङपाङ्वेसी-सुकौरा-ओडारे-पिप्ले-हटिया-खिरबोटे-देउराली-महालक्ष्मी-डाँडागाउँ सडक	6,7	15.70	31	13	8
9	330RM06B001	(Manpangbesi)Odare-Lapudanda Road माङपाङ्वेसी-ओडारे-लापुडाँडा सडक	6	4.35	36	6	1
10	330RM06B002	Sadhpipal-Hepo-Pithedanda-Odalchaur-Adheri Road सांधपिपल-हेपो-पिठेडांडा-ओडालचोर-अंधेरी सडक	7	2.50	32	11	5
11	330RM06B003	Hepo-Koldanda-Bathalidanda- Rai Gaun-Bange Pipal Road हेपो-कोलडाँडा- बाथलीडांडा-राई गाउँ-बाङ्गे पिपल सडक	6,7	3.84	35	8	3
12	330RM06B004	Dhaledanda-Hile-Thulonange Road ढलेडाँडा-हिले-ठूलोनाङ्गे सडक	6	2.24	36	7	2
13	330RM06B005	Aldanda-Bharyang Danda-Danda Gaun-Gaikharka Road आलडांडा-भर्याङ्डांडा- डांडागाउँ-गाईखर्क सडक	7	4.59	33	10	4
14	330RM06B006	Bharyangdanda-Dandagaun-Deurali - Lapsi Bot Road भञ्याङ्डाँडा- डाँडागाउँ-देउराली-लप्सिबोट सडक	5,6,7	8.26	30	16	8
15	330RM06B007	Dhale Danda - Kattike Gaun - Mansire- Bika Tole Road ढलेडाँडा-कात्तिके गाउँ-मंसिरे-बिक टोल सडक	6	3.42	27	21	13
16	330RM06B008	Gauthali Pokhari - Badri Chaur - Baniya Tole - Thulo Pandhero - Pallo Gaire Tole Road गोंथली पोखरी-बद्रीचोर-बांनिया टोल-ठूलो पंधेरो-पल्लो गैरे टोल सडक	5	2.90	30	15	7
17	330RM06B009	Mathillo Dangsing - Gauthali Pokhari - Khoriya - Ganga Jamuna Road माथिल्लो दाङ्सिङ-गोंथली पोखरी-खोरीया-गंगाजमूना सडक	5	3.87	26	25	16

SN	Municipal code	List of Roads for Municipality Perspective Plan (सडकका नामावली)	Ward Pass	Road Length, Km	Total score	Overall Rank	Rank in Class
18	330RM06B010	Dhadkharka-Payukharka-Dumla-Saadan-Pokhara-Chimchowk Road डाँडाखर्क-पयुंखर्क-दुम्ला-सादन-पोखरा छिमचोक सडक	3,4,5	8.10	30	14	6
19	330RM06B011	Saadan Gaun-Naya Chautara-Mantari-Kattike-Kami Tole-Khola Khet-Chaapekuna Road सादन गाउँ-नयां चोतारा-मन्तरी-कात्तिके-कामी टोल-खोला खेत-चापेकुना	5	8.57	28	17	9
20	330RM06B012	Bhaaja-Khola Khet-Devisthan-Kalleri-Sukbhanjyang Road भाजा-खोला खेत-देभिस्थान-कल्लेरी-सुखभञ्ज्याङ सडक	5	4.76	27	20	12
21	330RM06B013	Belung Bhanjyang - Mahabir - Chalise Road बेलुङ्भञ्ज्याङ – महाबिर-चालिसे सडक	5	3.10	24	28	19
22	330RM06B014	Phulkharka - Baguwa Khola- Chandeni फूलखर्क-बगुवा-चन्देनी सडक	4,5	2.15	28	18	10
23	330RM06B015	Satdobato - Saldhum - D Gaun - Salmetar Road सातदोबाटो-साल्धुम-डी गाउँ-साल्मेटार सडक	3,4	5.20	28	19	11
24	330RM06B016	Satdobato - Ratmate - Rato Danda - Sisne Khola Road सातदोबाटो-रात्माटे-रातोडांडा-सिस्ने खोला	4	2.44	24	27	18
25	330RM06B017	Salmetar - Dharkha Fedi Corridor Road साल्मेटार-धार्केफेदी करिडोर सडक	3	2.44	26	22	14
26	330RM06B018	Lungri - Bhirkuna-Nebidanda-Naya Basti Road लुंग्री-भिरकुना- नेबिडांडा-नयां वस्ती सडक	3	3.65	23	30	21
27	330RM06B019	Chimchowk - Aphal Khola - Dhuseni – Tawalbesi Road चिमचोक-आफलखोला-धुसेनी-तावलवेसी सडक	3,2	6.74	26	24	15
28	330RM06B020	Latab-Manechang-Dangchet-Manchet-Pasangchet Road लाताब-मानेचाङ्-दाङ्चेत-मान्चेत-पासाङ्चेत सडक	1,2	8.96	23	31	22
29	330RM06B021	Chhelang-Aaphang-Tawal Besi-Ri Road छेलाङ्-आफाङ्-तावलवेसी-री-सडक	2,3	4.72	24	29	20
30	330RM06B022	Kuttalbesi - Tawalbesi - Dhanchet - Dhuseni Besi Road कुट्टालवेसी-तावलवेसी-धानचेत-धुसेनी सडक	2	3.21	20	42	25
31	330RM06B023	Tawalgaun - Tarebhir - Sekdeli - Ri Gaun Road तावलगाउँ-तारेभिर-सेकदेली-रिगाउँ सडक	1,2	5.14	25	26	17
32	330RM06B024	Latab-Rigaun-Dangyurechet-Langurchet-Kichet-Lapa Road लताब-रिगाउँ-डाङयुरेचेत-लङ्गुरचेत-किचेत-लापा सडक	1	5.51	20	43	26
33	330RM06B025	Hatiya - Lapu Danda Road हटिया-लापुडांडा सडक	6	2.46	21	39	24
34	330RM06B026	Phalange-Saldhum Road फलाङ्गे-साल्दुम सडक	4	3.05	20	44	27
35	330RM06B027	Aarkhet - Andheri -Chipleti - Pithedanda – Healthpost Road आर्खेत-अँधेरी-चिप्लेटी-पिठेडाँडा-स्वास्थ्य चौकी सडक	7	3.00	20	45	28
36	330RM06B028	Nebi –Pokhara Road नेबी-पोखरा सडक	3	0.72	18	54	29
37	330RM06B029	Garang-Kudule-Chhelang-Mambai Road - Yapa Tole - Darkha Fedi Road गराङ्-कुडुले-छेलाङ्-मम्बई रोड-यापा टोल-दार्केफेदी सडक	3	4.62	22	35	23

SN	Municipal code	List of Roads for Municipality Perspective Plan (सडकका नामावली)	Ward Pass	Road Length, Km	Total score	Overall Rank	Rank in Class
38	330RM06C001	Bakhrekhola-Banbote-Tarsimle-Sim Chautari Road बाख्रेखोला-बनबोटे-तारसिम्ले-सिम चौतारी सडक	6	1.14	22	33	1
39	330RM06C002	Tari-Gangate-Bhumisthan-Jyamire-Dharapani Krishi Sadak टारी-गंगटे-भूमिस्थान-ज्यामिरे-धारापानी कृषि सडक	6	2.54	18	52	13
40	330RM06C003	Jamune-Banbote-Bhanjyangi-Lampat Road जामुने-बनबोटे-भन्ज्याङी-लाम्पात सडक	6	1.91	17	57	15
41	330RM06C004	Dalit Tole - Hariyo Khola - Andheri Khola Road दलित टोल-हरियो खोला-अँधेरी खोला सडक	6	1.30	15	68	22
42	330RM06C005	Bhaise-Aarubote-Bandiwara-Tallo Danda Gaun-Mathillo Dandagaun Road भैसे-आरूबोटे-बन्दिवारा-तल्लो डाँडागाउँ-माथिल्लो डाँडागाउँ सडक	6	2.97	16	62	18
43	330RM06C006	Dolpa-Choke-Ibi-Richet-Kichet Road डोल्पा-चोके-इबी-रिचेत-किचेत सडक	1,2	10.16	16	67	21
44	330RM06C007	Gharichaur-Saunepani-Bathalidanda Road घारीचोर-साउनेपानी-बाथलीडांडा सडक	7	1.27	18	53	14
45	330RM06C008	Tallo Bhorle - Silinge – Jogidanda Road तल्लो भोर्ले-सिलिङ्गे-जोगिडांडा सडक	7	2.46	19	49	11
46	330RM06C009	Baskharka-Ghorle - Majuwabesi-Marauti – Sukbhanjyang Road बाँसखर्क-घोर्ले-मजुवावेंसी-मरउती-सुखभञ्ज्याङ् सडक	5,7	7.63	13	77	27
47	330RM06C010	Burchet-Choke-Namsyong-Richet Road बुरचेत-चोके-नामस्योङ्-रिचेत सडक	1	3.00	14	74	25
48	330RM06C011	Karkigaun-Ekle-Kalleri-Sukbhanjyang Road कार्कीगाउँ-एक्ले-कल्लेरी- सुखभञ्ज्याङ् सडक	5	4.50	21	40	6
49	330RM06C012	Sukhbhanjyang-Mantari-Hudung-Satdobato- Krishi Sadak सुखभञ्ज्याङ्-मन्तरी-हुडुङ्-सातदोबाटो कृषि सडक	5	6.10	17	59	16
50	330RM06C013	Mantari - Kagchet - Danda Swara Road मन्तरी-काग्चेत-डांडा स्वारे सडक	4,5	3.49	22	34	2
51	330RM06C014	Ekle-Bahundanda-Manekhet-Kalleri Road एक्ले-बाहुनडांडा-मानेखेत-कल्लेरी सडक	5	2.25	21	37	4
52	330RM06C015	Kalleri-Chauti-Kalathoda-Mahabhir Road कल्लेरी-चोटी-कालठोडा-महाभिर सडक	5	3.82	20	46	8
53	330RM06C016	Mahbhir-Pingdanda-Chihandanda-Kholakhet Road महाभिर-पिङडांडा-चिहानडांडा-खोलाखेत सडक	5	1.11	15	71	24
54	330RM06C017	Faprekhet - Baguwa Khola - Bhandari Gaun - Bajhobari - Khola Khet Road फाप्रेखेत-बगुवाखोला-भण्डारी गाउँ-बांझोबारी-खोला खेत सडक	4,5	5.17	14	75	26
55	330RM06C018	Bajhobari-Ratodanda Road बांझोबारी-रातोडांडा सडक	4	2.04	20	48	10
56	330RM06C019	Ratmate - Ojaghi – Idu Road रात्माटे-ओजाघी-ईदु सडक	4	2.62	21	38	5

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57	330RM06C020	Idu-Khendang-Satdobato Road ईदु-खेन्दाङ-सातदोबाटो सडक	4	1.16	19	51	12
58	330RM06C021	Richet-Antar-Cheprang-Karang Road रिचेत-अन्तर-चेप्राङ्- कराङ सडक	1	5.84	16	63	19
59	330RM06C022	Pithedanda - Chipleti – Bhirkuna Road पिठेडांडा-चिप्लेटी-भिरकुना सडक	7	3.80	20	47	9
60	330RM06C023	Simjang-Chiandanda-Dandapari-Chanaute Road सिमजाङ्-चिहानडाडा-डाडापारी-चनोटे सडक	3	2.41	20	41	7
61	330RM06C024	Pasangchowk Ma.Vi.-Tinmane-Tawal Health Centre-Bindu-Kalseng Khola Road पासाङचोक मा वि-तिनमाने-तावल स्वास्थ्यचौकी-विन्दु-काल्सेङ कोला सडक	2	1.75	12	80	28
62	330RM06C025	Tawalbesi - Ward Office - Dorang - Runi Gaun Road तावलबेसी-वडा कार्यालय-दोराङ-रुनी गाउँ सडक	2	2.85	15	70	23
63	330RM06C026	Choke-Rigaun-Gumba Road चोके-रीगाउँ-गुम्बा सडक	1	2.15	16	66	20
64	330RM06C027	Ebi – Tajimarang Road इबि-ताजिम्राङ् सडक	1	1.50	21	36	3
65	330RM06C028	Richet –Tajimarang Road रिचेत- ताजिम्राङ् सडक	1	2.39	17	60	17
66	330RM06D001	Kacheri-Piple Khanyabote Road कचेरी-पिप्ले खन्याबोटे सडक	6	0.38	26	23	1
67	330RM06D002	Ghodedanda-Ramchandre-Pokhari Road घोडेडांडा-रामचन्द्रे-पोखरी सडक	6	0.46	12	82	17
68	330RM06D003	Hariyo Khola -Namuna Tol-Khirbote Road हरियो खोला-नमूना टोल-खिरबोटे सडक	6	1.14	13	78	14
69	330RM06D004	Deurali-Dalit Tol Road देउराली –दलित टोल सडक	6	0.39	23	32	2
70	330RM06D005	Kichet-Diung Khola Road किचेत-दिउङ खोला सडक	1	0.94	10	84	19
71	330RM06D006	Sallaghari-Dhadkharka Road सल्लाघारी –ढाडखर्क सडक	6	1.47	14	76	13
72	330RM06D007	Lingedanda-Hastetol-Pangraphedi लिङ्गेढांडा-हस्तेटोल-पाङ्राफेदी सडक	6	0.53	17	61	7
73	330RM06D008	Bhainse School-Bhorlekhola-Sirantole भैंसे स्कूल-भोर्लेखोला-सिरानटोले सडक	6	0.70	4	106	41
74	330RM06D009	Ghaledanda-Hile-Thulonange Road घलेडांडा-हिले-ठुलोनाङ्गे सडक	6	3.39	4	103	38
75	330RM06D010	Sano Nange-Hile-Chaurthala-Tinsure Gumba Road सानो नाङ्गे-हिले-चोरथला-तिनसुरे गुम्बा सडक	6,7	3.89	5	101	36
76	330RM06D011	Aarubote-Katike-Hile Road आरूबोटे-हिले-कात्तिके सडक	6	1.08	18	56	5
77	330RM06D012	Koldanda-Mahendraratna School-Chakachuli-Agrung Road कोलडांडा-महेन्द्र रत्न स्कूल-चाकाचूली-आग्रुङ सडक	7	1.62	3	108	43
78	330RM06D013	Ward Office -Hepo Road वडा कार्यालय- हेपो सडक	7	0.75	18	55	4

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79	330RM06D014	Mahendraratna-Kalimati-Ward Karyalaya-Baseri Road महेन्द्र रत्न-कालिमाटी- वडा कार्यालय-बसेरी सडक	7	0.64	9	91	26
80	330RM06D015	Namuna Bhawan(Gangajamuna Building)-Dandathok-Hepo Road नमूना भवन (गंगा जमूना भवन)-ढांडाथोक –हेपो सडक	7	0.60	19	50	3
81	330RM06D016	Halogadhe-Sadhpipal Sadak हालोगधे-सांधपिपल सडक	7	0.99	9	88	23
82	330RM06D017	Giddhedanda-Chainpur-Kamigaun,Chainpur-Tudikhel-Sarkigaun-Devithan Road गिद्देडांडा-चैनपुर-कामीगाऊं, चैनपुर-टुंडीखेल-सार्कीगाउँ-देवीथान सडक	7	2.40	6	98	33
83	330RM06D018	Debisthan-Tallo Besare-Bagmare Road देवीस्थान-तल्लोबसेरी-बाघमारे सडक	7	1.66	9	90	25
84	330RM06D019	Jhapre Danda- Musure-Chuchedhunga Road झाप्रे डांडा-मुसुरे-चुच्चेढुंगा सडक	7	1.04	7	95	30
85	330RM06D020	Jagarbote-Amale Road जगरबोटे-अमले सडक	7	2.56	9	87	22
86	330RM06D021	Ambote-Dhamiswara Road आमबोटे-धामिस्वारा सडक	7	2.20	8	92	27
87	330RM06D022	Chihandanda-Simle-Sillinge Road चिहानडांडा-सिम्ले-सिलिङ्गे-सडक	7	1.31	16	65	9
88	330RM06D023	Deurali-Dhaje-Dhaje Bhanjyang-Bhogate Ghari Road देउराली-धाजे-धाजे भञ्ज्याङ्-भोगटेघारी सडक	5,7	6.90	3	107	42
89	330RM06D024	Swamikachautara-Ghartipani Chaur-Kuwapani-Keradhaap-Majhuwabesi Road स्वामी चौतारा-घर्तीपानी चौर-कुवापानी-केराधाप-मझुवाबेसी सडक	5	3.88	5	102	37
90	330RM06D025	Tallo Padhero-Chaubato-Tallo Gangajamuna Road तल्लो पंधेरो-चोबाटो-तल्लो गंगाजमूना सडक	5	0.56	15	69	10
91	330RM06D026	Deurali –Dhadkharka Road देउराली- ढाडखर्क सडक	5	1.57	6	99	34
92	330RM06D027	Dhadkharka-Sanikhor Sadak ढाडखर्क-सानीखोर सडक	5	1.66	14	72	11
93	330RM06D028	Balauta-Lapsibot-Mathillo Tol-Payukharka Road बलोटा-लप्सिबोट-माथिल्लो टोल-पयुखर्क सडक	5	2.86	8	93	28
94	330RM06D029	Chhelang-Mammai-Darkhaphedi Road छेलाङ्-मम्मै-दरखाफेदी सडक	3	1.51	6	97	32
95	330RM06D030	Tallo Kalleri-Swara-Mahabhir Road तल्लो कल्लेरी-स्वारा-महाभिर सडक	5	0.80	8	94	29
96	330RM06D031	Saadangaun-Nichet Padhero Road सादन गाउँ-निचेत पधेरो सडक	5	0.48	17	58	6
97	330RM06D032	Yarsha-Chilaune Bisan-Sadan Road यार्सा-चिलाउनेबिसन-सादन सडक	3,4	2.36	6	100	35
98	330RM06D033	Dharchok-Dasminda Tole Road धारचोक-दसमिन्दा टोल सडक	3	0.74	11	83	18
99	330RM06D034	Simjang-Satdobato Road सिमजाङ्-सातदोबाटो सडक	3,4	3.06	4	104	39

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100	330RM06D035	Idu-Kogaling-Saldhum Road ईदु-कोगालिङ-साल्धुम सडक	4	2.00	10	86	21
101	330RM06D036	Badarswara - Kaswara – Dadkhiket Road बांदरस्वारा-कस्वारा-दाद्खिकेत सडक	3	1.10	16	64	8
102	330RM06D037	Yarsha - Kamigaun – Lungri Road यार्सा-कामीगाउँ-लुङ्री सडक	3,4	0.73	12	81	16
103	330RM06D038	Chhelang Gaun -Tallo Chhelang Road छेलाङ् गाउँ-तल्लो छेलाङ सडक	3	0.66	6	96	31
104	330RM06D039	Mahendraratna-Kalimati-Vdc Building-Basari Road महेन्द्ररत्न-कालिमाटी-गाविस भवन-बसेरी सडक	7	1.00	4	105	40
105	330RM06D040	Bardandanda-Arukhet Road बर्दानडांडा-आरूखेत सडक	3	1.83	9	89	24
106	330RM06D041	Serachet-Dursang- Pasangchowk Krishi Sanstha Road सेराचेत-दुरसाङ्-पासाङ्चोक कृषि संस्था सडक	2	0.53	12	79	15
107	330RM06D042	Salleri-Prunung-Gamrang Road सल्लेरी-प्रुनुङ्-गाम्राङ् सडक	2	1.00	14	73	12
108	330RM06D043	Sitaldanda-Nanglung-Langurchet Road शितलडांडा-नाङ्लुङ्-लंगुरचेत सडक	1	1.83	10	85	20

Annex-2 Photo glimpses from the field

MTMP discussion at ward 1

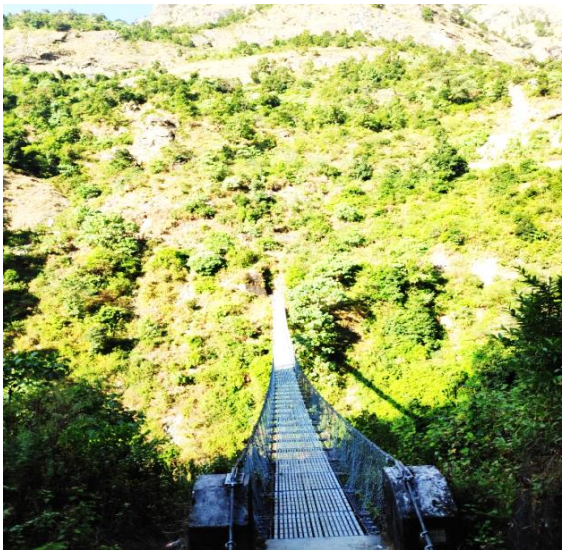
MTMP Discussion at ward 2

MTMP Discussion At Ward 4

MTMP Discussion at Ward 5

MTMP Discussion at Ward 6

Office Building of Ward 7



A suspension bridge at Gangajamuna RM

A river from Gangajamuna Rural Municipality

Local products from the RM

Typical school at the RM

One of the mode of transportations

A typical mode of transportation

A typical road section at ward no.

Road section from ……

One of the road sections from RM

A typical road section from the RM

Some part of road section from the RM

A typical road section from the field

One of the temples from the RM

A healthpost from the RM