M T M P

Volume I: Main Report

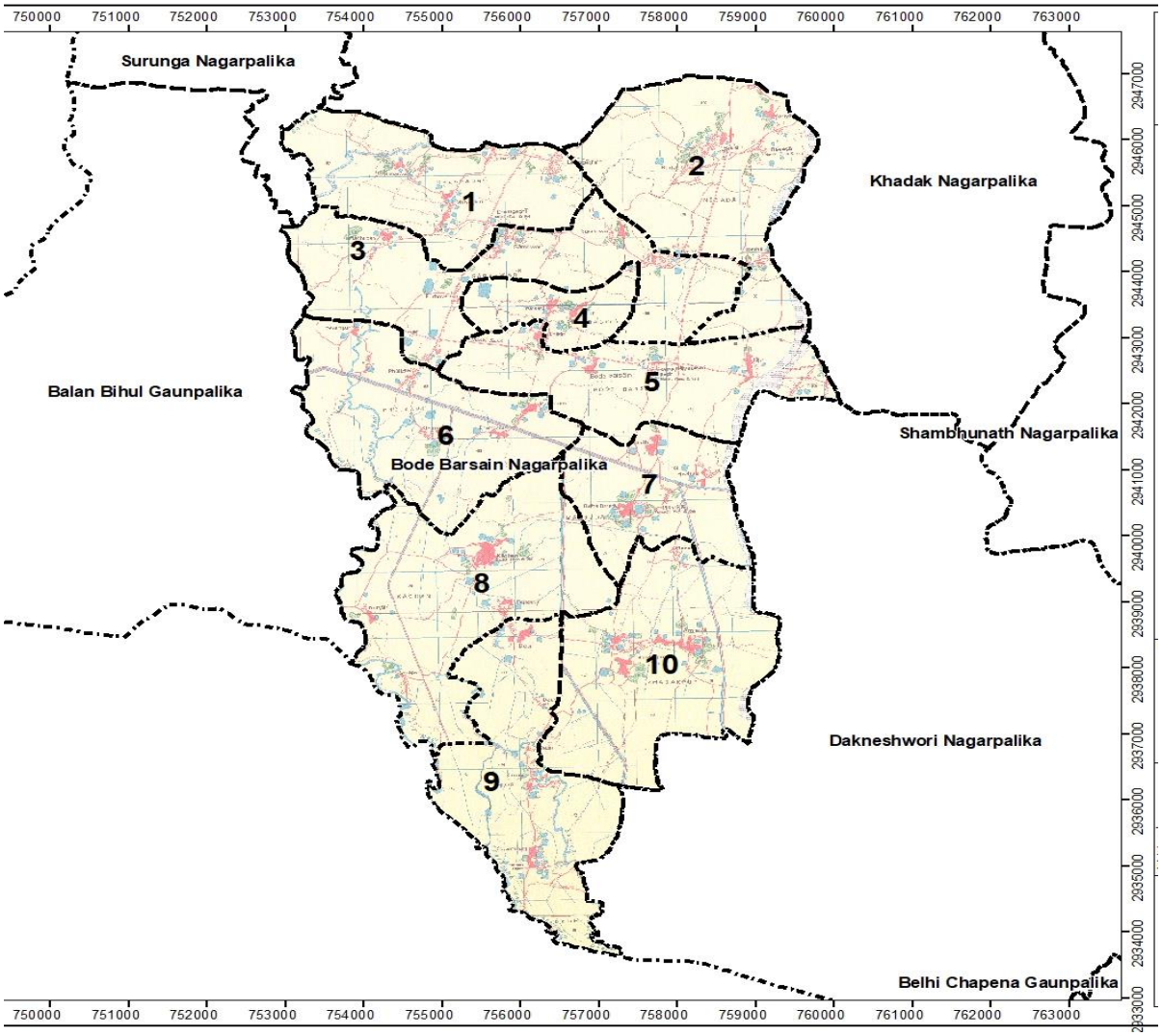
Muncipal Transportation Master Plan (MTMP)

Of

BODEBARSAAIN MUNCIPALITY

Saptari, Madhesh Province

Final Report



2081/82

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Acknowledgement

The team would like to express sincere gratitude to the Mayor of BodeBarsaain Municipality Mr. Atish Kumar Singh and Chief Administrative Officer of the Office of Municipality, Mr. Gajendranath Sharma, and all other staffs of Municipality Office and members of Municipality Executive Body and the staffs of BodeBarsaain Municipality for the valuable co-operation and suggestions that guided us to accomplish the agreed task up to this level.

We are also thankful to the local people and social mobilizers of BodeBarsaain Municipality for their help and suggestion for the selection and identification of the roads. We hope this ongoing process of preparation of Municipal Transport Master Plan (MTMP) of BodeBarsaain Municipality will be very helpful and a valuable guideline for the planning and development of effective and systematic transport network within BodeBarsaain Municipality.

The study team.

Executive Summary

Transport facilities help in developing access with the rural-urban linkages. Road accessibility can reduce isolation, stimulate crop production and marketing activities, encourage public services and help to transfer technology. Road building has been seen to bring about notable enthusiasm and visible changes in rural life. Road infrastructure is considered as "the infrastructure for infrastructure". However, in the absence of notable criteria and rational guidelines, road construction is carried out in adverse manner resulting in haphazard use and wastage of limited resources. Municipal Transport Master Plan is prepared for assessing and planning the present road and transport infrastructures and facilities within the municipality and the surrounding local bodies.

BodeBarsaain Municipality is located in Sapatari district of Madhesh Province in Nepal. The rural municipality is located at 92 m to 121 m altitude from mean sea level. On 27th Falgun 2073, the government of Nepal implemented a new local administrative structure, with the implementation of the new local administrative structure, VDCs have been replaced with municipal and Village Councils. BodeBarsaain is one of these 753 local units. It was formed by merging then existing BodeBarsaain, Phulkanhi, Manraja, Khadakpur, Kachan, Deuri, Saraswor, Dhangadhi (1-8) and Negda village development committees. Municipality is divided into 10 wards, covers 58.93 km^2 area.

Municipality is populated with different castes and religions with population of 46,017. Among them 23,099 (50.2%) are women and remaining 22,918 (49.8%) are men. It consists of 9,722 households with population density of 781 persons per sq.km and 4.73 people per household.

MTMP started with the setup of Municipal Road Coordination Committee (MRCC) and the collection of demand and inventory of road within the municipality. Road inventory survey was done and length of the roads collected is about 146.58 km where all roads are Municipal Roads. Among the municipal roads, 23.23 km are Class A roads, 12.94 km are Class B roads, and 41.13 km are Class C roads whereas remaining 69.28 km are Class D roads. 146.58 km of roads in the municipality 19.73 km are Blacktop(Asphalt/Premix), 42 km are RCC, 59.44 km are Gavel and remaining roads are Earthen Road. From the sample data it is found that nearly 11% of the mode of transportation is shared by active road users hence footpath is proposed on the roads. Similarly the average time to reach the nearest bus stop is about half an hour for this municipality and due to lack of proper public transportation; mobility mostly relies on private vehicles though nowadays public transport condition is increasing at a slow pace.

Visionary city development and Indicative Development Potential Plan is prepared basically showing the existing and potential market center/service centers (key growth centers) and the areas having various development potentials such as agro-based industries, high value cash crops and tourism.

This study also formulated the road hierarchy for the various roads namely Class A, B, C and D. Class C and D basically deals with access while Class A and B basically deal with mobility and accessibility to higher servics.

Due to the limitation of the municipality budget, the roads are ranked hierarchy wise based on the Demand priority of wards, Proposed Road class, Total existing width, Population served, Road surface condition, Road density, Settlement density, Service provided by the road such as Recreational(R), Agricultural (A), Market(M) and Service centre(S) (RAMS), Access to poor and minor. And five year implementation plan is prepared. This shows the budget required for the first five year is one billion five hundred ninety three million thirty five thousand eight hundred twenty four rupees.

Acronyms/abbreviations

CBS	Central Bureau of Statistics
MDC	Municipality Development Committee
MTMP	Municipality Transport Master Plan
GIS	Geographic Information System
GPS	Global Positioning System
IDPM	Indicative Development Potential Map
MIM	Municipality Road Inventory Map
MRCC	Municipality Road Coordination Committee
NMT	Non- Motorized Transport
MTMP	Municipality Transport Master Plan
MTPP	Municipality Transport Perspective Plan
VDC	Village Development Committee
MTPP	Municipality Transport Perspective Plan
PCU	Passenger Car Unit
DOLIDAR	Department of Local Infrastructure Development and Agricultural Roads
GPS	Global Positioning System
OD	Origin and Destination
ToR	Terms of Reference
SRN	Strategic Road Network
HH	Household
VDCs	Village Development Committees
PT	Public Transport
Min.	Minute
Km.	Kilometre
RM	Rural Municipality
Sq. Km	Square Kilometre
Ha	Hectare
DCC	District Coordination Committee

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SECTION A: INTRODUCTION

This chapter briefly explains the background for preparation of transport master plan, objectives of study, scope of work to be performed for preparation of master plan and limitations of the study thereof.

1. Background

Rapid urbanization has led formation of rural areas to urban areas in short time. The presence of goods, services and facilities attracts people from rural areas to live in urban areas. While in past policy were made to encourage people to reside on their native area due to haphazard urbanization, recent study from economics and market theories supports dense population over urban areas based upon agglomeration and scale economies. Agglomeration economies are amplified by density and attenuated by distance. While in rural areas accessibility has been focused as major criteria in transportation, urban areas need better mobility with accessibility.

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

Ministry of Federal Affairs and Local Development stepped up to bring forward proposal to create additional new municipalities from those urban and semi-urban settlements by combining prevalent Village Development Communities. BodeBarsaain Municipality was established on 27th Falgun 2073. It was formed by merging then existing Nine Village Development Committees of BodeBarsaain, Phulkanhi, Manraja, Khadakpur, Kachan, Deuri,Saraswor,Dhangadhi (1-8) and Negda.

After being designated as a municipal area, it will attract more population as socio-economic growth and other infrastructure development will gain pace. The municipality and its surrounding VDCs will see a rapid increase in housing, infrastructure and urban services demand. In this regard, under the coordination of Muncipality Development Committee, Sapatari and as per the decision of Infrastructure Development Division and its technical and Institutional support, is initiating the formulation of Municipal Transport Master Plan for assessing the present road and transport infrastructures and facilities within the municipality, metropolitan & Rural Development. So as to be presented as proper municipality or a city, it

must have a very good mobility and accessibility by public and private means of transportation.

2. Objectives

The prime objective of this study is to prepare the Municipality Transport Master Plan (MTMP/MTPP) for BodeBarsaain Municipality. The planning approach is participatory and bottom-up from the settlement level. It will include a constructive plan to incorporate all the transportation needs and facilities for now and tomorrow. The specific objectives of the MTMP are mentioned below:

- Prepare the Municipality Inventory (MIM) of all road networks.
- Identify the major road networks linking the municipality with the surrounding areas.
- Prepare Indicative Development Potential Map (IDPM).
- Prepare visionary city development plan
- Collection of demands for new/rehabilitation transport linkages from Municipalities/settlements based on city development plan.
- Analyse the present mobility and accessibility situation.
- Identify and prioritize the interventions based on mobility and accessibility situation.
- Develop scoring criteria and its approval from Rural Municipality.
- Prepare the Perspective Plan of transport services and facilities (Municipal Transport Perspective Plan)
- Prepare physical and financial implementation plan of prioritized roads for the MTMP period.
- Prepare a five years Municipality Transport Master Plan (MTMP).

3. Scope of work

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

- Accessibility data Collection and Analysis.

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

- Analyze Mobility status of the municipality

  Mobility status is studied. This is important especially because the road network has not provided accessibility to all the population. The question then arises on how efficiently; economically and safely can the goods and passengers be transported, which is indicated by mobility.

- Assess the condition of public transportation

- Data on different public transportation routes and their operation characteristics, which operate within the municipal area and to other adjoining area, is collected and studied.
- Assess safety status and issues

  Road safety status and issues is accessed. For this, roadside condition survey during road inventory survey and other accident data is reviewed. Possible interventions to make the roads safer are proposed and recommended.
- Prepare the Indicative Municipality Development Potential Map (IDPM)

  IDPM is prepared using topographical base maps and digitized GIS maps. In the IDPM, potential areas for development are identified and prioritized through ranking.
- Prepare Municipality Inventory Map (MIM) of existing roads within BodeBarsaain Municipality.

  Municipality Inventory Map linking to strategic road networks such as national highways, district core road network, main trails is prepared. The inventory map has included the road names, total length and breadth of the roads, surface type, existing condition, Right of way, vehicular traffic and pedestrian traffic flow etc.
- Collection of demands for New/Upgrading/Rehabilitation transport Linkages from Wards/Settlements
- Data regarding the construction, maintenance or rehabilitation of roads according to the existing condition and demand is done. Such data was collected through ward meeting or community level discussion. The demand data was collected in priority order for each ward. The roadside conditions of all the linkages were noted during the road inventory survey.
- Scoring criteria

  Scoring criteria to screen and prioritize all interventions potential interventions for proper allocation of limited budget is developed and approved by the municipality.
- Road classification and Nomenclature

  Metric system of nomenclature is used and applied the same classification throughout the data collection.
- Preparation of perspective plan of interventions of services and facilities.

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

- Prepare a realistic physical and Financial Implementation Plan of Prioritised Roads for the MTMP period Resources required for the implementation of the MTMP is assessed and the financial plan (required) for the next five years is prepared.

- Prepare Municipal Transport Master Plan (MTMP) of BodeBarsaain Municipality

  Municipal Transport Master Plan (MTMP) is prepared with due consideration to the existing situation of: vehicular parking, travel routes, modes of transport, etc. and purpose for future urban growth. A base scenario of the existing road and transport network and management based on the O-D survey and O-D matrix, and prepare road inventory map and transport infrastructure network and management plan based on the travel demand forecast, population growth forecast, and growth rate of vehicular and transport infrastructure is prepared.

- Medium term and long-term planning

  The scope of work demands a detailed work plan for five years period (short term). Forecast/estimate of the demand for medium term (10 years) and long term (20 years) is done and recommended a framework to guide future interventions and planning processes.

4. Limitations

- Lack of Comprehensive Town Development Plan, Proper Land Use Policy and Drainage Network Master Plan, which could have affected the future overall development pattern, and hence future development of these policy need to be based on the proposed MTMP.

- Lack of base year data for traffic and the trip

5. Organization of report

- Section 1 presents the concept and context of MTMP and lists out the objectives and scope of the same.

- Section 2 briefly explains the method used to conduct the study, analyse the data and presentation of the findings.

- Section 3 presents the basic profile of the study area through the available census data and sample data collected and the existing scenario of the study municipality with reference to transport in the municipality.

- Section 4 gives the comprehensive forecast of the population, transport and other development scenario. It also gives the picture of the implications that may arise and the transport infrastructure to meet the demand and accelerate the development. It also describes the short term, medium term and long term plan.

- Section 5 describes the formulation of road hierarchy and name and description of different classes of roads
- Section 6 is dedicated to the five year (short term) municipality transport master plan (MTMP). It gives the comprehensive strategic framework, perspective plan of the municipal roads, budget expenditure, financial institution, capital investment plan and the staging implementation plan.
- Section 7 summarizes the report and gives necessary recommendations**.**

SECTION B: STUDY METHOD

Municipal roads are supposed to provide both access and mobility to all possible and potential areas. MTMP will helps to assist the planning of such roads to fulfil the stated objective. Better planning is incomplete without relevant quality data and quality data can only be acquired by use of properly selected survey methods. The chapter deals with the methodological framework adopted for data collection covering all used survey method, sampling techniques, quality and quantity of data along with data processing, analysis and presentation methods.

1. Approach

Municipality Transport Master Plan has been prepared using participatory bottom-up approach and differs from conventional practices of trickle-down approach. Techno-Political interface has been incorporated in the planning process, where active participation from representatives of political parties, line agencies, municipality officials is crucial. The Municipality Road Coordination Committee (MRCC) has been constituted as authorized legislative body of municipality. This body, comprising all political parties' representatives and concerned technical officials, helps in necessary policy decisions during the MTMP preparation and implementation process. Both primary and secondary data were collected.

2. Methodological framework

The study started with preliminary planning or desk study where basic background of municipality is studied with help of secondary data including census data, GIS data. The study got acceleration with formation of MRCC and inspection report. Various field surveys have been carried out with objective of collecting primary data on transportation network, trip characteristics and service facilities. Along with the primary data, demands for various transportation projects (construction/upgrading/maintenance) have been obtained from each ward. Also, potential areas/location for various facilities have also identified based on interaction with local people and MRCC. The scoring criteria for prioritizing road network has been identified based on ToR and has approved by municipality. Then, the hierarchy of road has been purposed and perspective plan of various interventions has been purposed and has been analysed based on available fund and finally physical and financial implementation plan of prioritized roads for MTMP period. After analysis, the study has been come up with potential roads, that need immediate intervention and roads that need to be given consideration for effective future planning.

All the above-mentioned strategy adopted for data collection, processing and analysis is summarized in the following chart Figure 1

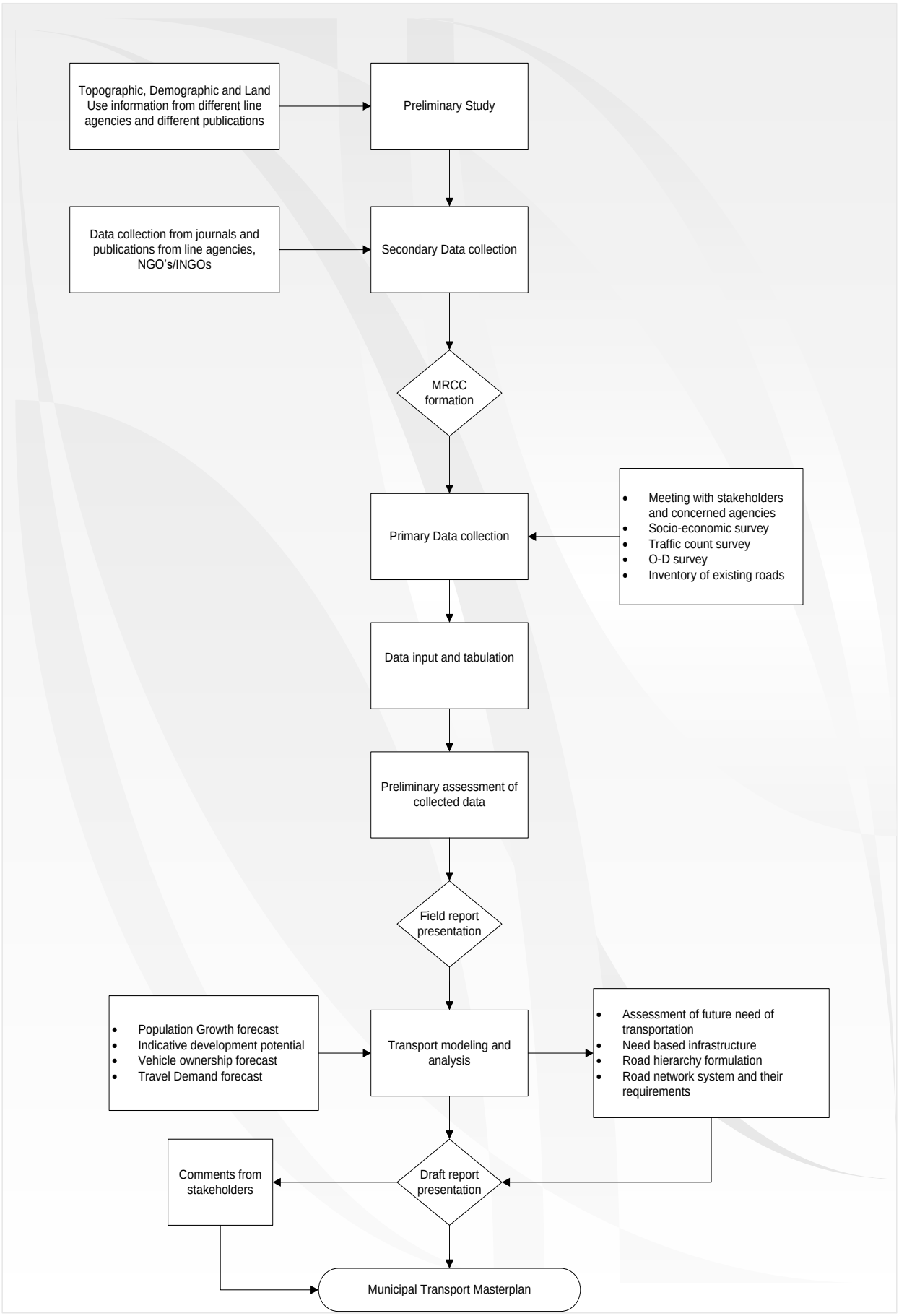


Figure 1 : Methodological Framework

3. Secondary Data Collection

Any sorts of data that are collected from secondary sources are called secondary data. These data have been collected from annual report published by district level offices and consultation with various concerned stakeholders. Municipal Road Coordination Committee (MRCC), which compromises people from various fields and political parties, is the next source for various secondary data. Field study was also carried out for general socio-economic assessment of the municipality that includes collection of data regarding high development potential areas such as extensive agriculture, horticulture, livestock farming, high value cash crops, cottage and agro-based industries, centre for business/commerce/markets places, information about demographic data of municipality, various maps showing service centres, transport infrastructure inventory, past plans and sector study reports, sector standards and policy targets were collected from the secondary sources, which includes Bureau of Statistics, Survey Department, Local NGOs, line agencies, DCC, municipality etc. Digitized topographic maps, administrative map of municipality, strategic road network map prepared by DoR, etc. were some other secondary data that were used during the study.

4. Primary Data Collection

Primary information on present household and trip characteristics, traffic characteristics, existing accessibility and mobility level of settlements, prioritized road network required for each ward has been obtained via various reliable methods. Tracking of the existing road network along with detail information of its width, surface type and possible intervention required for the effectiveness of services is also carried out.

The primary data collection methods carried out in the field were:

- Origin and Destination (OD) Survey
- Road Inventory Survey
- Demand Survey
- Classified Vehicle Count Survey
- Public Transport and Services Study

Origin and Destination (OD) Survey Household questionnaire method is used to conduct OD survey which gave number of information reflecting, personal, household and trip making characteristics. This survey has also helped to visualize the accessibility and mobility scenario of road network and to public transportation from the settlement/wards. As all the household can't be covered a realistic and statistically significant sample size was calculated based on probabilistic method.

Road inventory survey was conducted to collect data on its condition of road, road linkage, road safety status and issues that need to be highlight. It helped in field validation of base maps and also assisted in the preparation of road inventory map, nomenclature and coding of the road linkages and proposed various interventions.

Road Demand survey comprised of interaction session with the members of ward committee followed by ward level workshop to fill up demand survey form, which included demand of new facility or interventions to improve existing roads based on priority.

Classified vehicle count was conducted so as to reflect the usage of various vehicles in the certain route, especially where maximum volume occurs. Twelve hour count has been done at required location and the vehicles have been classified to different types and finally traffic volume have been converted to passenger car unit (PCU) to visualize the exact condition.

Public Transport and Services Study highlighted the services provided by public transportation and location of various services and facilities. It was carried out by directly interviewing the route operators.

5. Data Processing and Analysis

Data collected at field were first entered at MS office tools (MS excel and word) and GIS database. All the complete and reliable sets of data were transformed into useable information and the present scenario of municipality are shown through graphs, figures and tables. Similarly, those which were entered into GIS database provide various types of maps. Population and traffic were forecasted for the MTMP and MTPP time period. Various transportation models were used for interpretation and forecasting. And, finally various intervention were purposed and their economic analysis were also performed.

6. Preparation of Indicative Development Potential Map (IDPM)

IDPM is basically the indication of the existing and potential market/service centres (key growth centres) and the areas having various development potentials such as high value cash crops, agro-based industries and tourism. Thus, IDPM shows the areas of high value cash crops, tourism potential, extensive agriculture, extensive horticulture, livestock farming, fisheries, hydropower location and the other social service centres areas such as hospital, post office, telecommunication, school, campus, VDC centres, security offices and large settlements, important historic and religious places. Finally, it has indicated the grading of various markets of the district thus providing the basis of network planning.

7. Scoring Criteria for Prioritization

A network consists of several links. It is not possible to construct all roads at a time due to resource and time constraint. Therefore, each link in a network needs to be prioritized. After

developing a municipal level network, the cost estimate of the road has been prepared. Existing population within the zone of influence, priority of road demand, road class, width of road, road density, density of settlement, type of service provided by the road and the service to minority were taken as the indicators for prioritization. The scoring criteria has been finalized after rigorous study and set in front of municipality and MRCC for its approval. Scoring criteria has been discussed detail in section 5 and appended in Volume II of the report.

8. Presentation of results

The results obtained can only be perceived well by the readers if presented properly. Presentation tools such as charts, graphs, maps and reports have been used to present the analysis and results obtained. The specific presentations of results are summarized below:

- **Reports**: The analysed results have been properly explained in the reports. Report of the analysis has been presented at different levels as inception report, field report, draft report and final report. Any questions raised or clarifications demanded after the submission of draft report have been included in the final report.
- **Charts and graphs**: Relevant type of charts, tables and graphs have been used in the reports to present the information. Charts are especially useful to deliver the information more effectively.
- **Maps**: As the ToR demands, maps of road inventory, indicative development potential map, land use map and municipality transport prospective plan map has been prepared.
- In addition to the reports, the obtained results have been shared via presentation and electronic copy of GIS maps.

The analysed data and obtained results in the form of numbers/ tables and maps have been collected in and presented as final report in two volumes. The results have been presented and discussed among the municipality authorities and other stakeholders before preparing the final report.

SECTION C: STUDY AREA PROFILE

The method of data collection described in chapter two was adopted in BodeBarsaain Municipality. Traffic count has been conducted at various places of Satrudhan Chowk of BodeBarsaain Municipality. Household data is collected from different wards. Based on the collected data, study area profile has been mapped.

1. Location (Put on Study Area)

BodeBarsaain Municipality is located in Sapatari district of Madhesh Province in Nepal. The municipality is located at 92 m to 121 m altitude from mean sea level. BodeBarsaain Municipality was established on 27th Falgun 2073. It was formed by merging then existing BodeBarsaain, Phulkanhi, Manraja, Khadakpur, Kachan, Deuri, Saraswor, Dhangadhi (1-8) and Negda village development committees. Municipality is divided into 10 wards, covers 58.93 km^2 area.

BodeBarsaain Municipality has a mild, generally warm and temperate type of climate with deciduous forest type. Average rainfall of the area is about 1900 mm. The summers here have a good deal of rainfall, while the winter have very little. The BodeBarsaain Municipality has the connected boarder, India to the south and Dakneshwori and khadak municipality to the East, Balan Bihul Rural Municipality to the West and Surunga and Khadak Municipality to the North.

The municipality has subtropical to temperate climate. There are four distinct seasons occuring in this area namely, spring (pre monson) occurs from March-May, summer (monsoon) from June-August, fall (post-monsoon) from September-November and winter Season Occurs from December-Ferbruary.The Spring or Pre-Monsoon season is hot and dry while monsoon or rainy season is hot and humid. In the post –monson season days are warm and nights are cool.the winter season is regarded cool and foggy. The maximum temperature rises up to 40 degree Celsius and falls down as low as 4 degree Celsius. The rainfall is mainly due to the southern-eastern monsoon. The monsoon, generally starts from the mid of June and ends by the mid of October. More than 80% of the annual rainfall takes place between June and September. The average annual rainfall is generally 1900 mm.

Municipality is populated with different castes and religions with population of. Among them 23,099 (50.2%) are women and remaining 22,918 (49.8%) are men. It consists of 9,722 households with population density of 781 persons per sq.km and 4.73 people per household. The municipality is divided into 10 wards. Among them, the maximum nos. of population is in ward 5 with 6,163 number individuals & lowest in ward 4 with 1,713 number.

Source: National Population and Housing Census (2021)

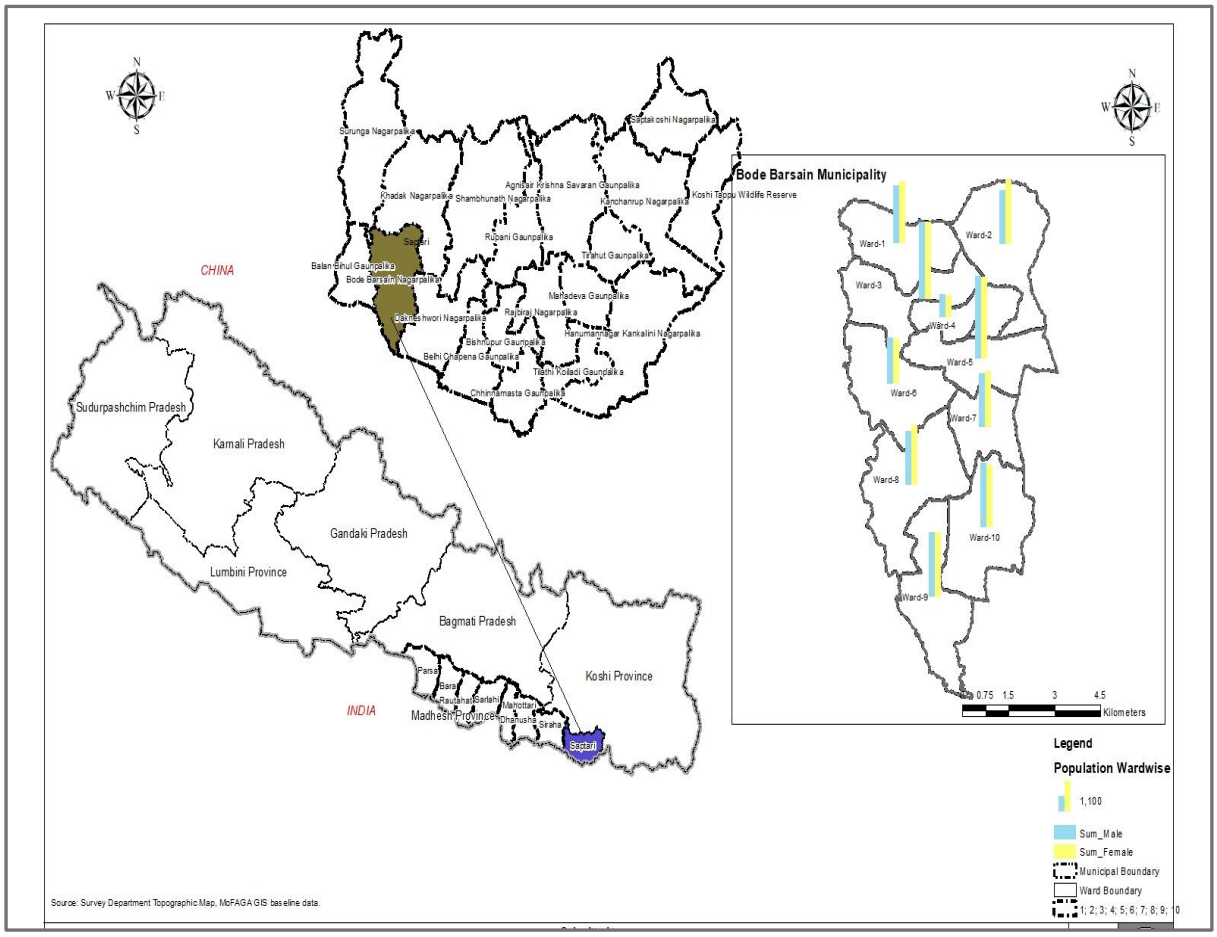


Figure 2: Location map of BodeBarsaain Municipality

Socio-economic and demographic status

Wikipedia (7/06/2016) describes socio-economic as "Socioeconomics is the social science that studies how economic activity affects and is shaped by social processes. In general it analyzes how societies progress, stagnate, or regress because of their local or regional economy, or the global economy " Demographics, according to Merriam-Webster " is or relating to the study of changes that occur in large groups of people over a period of time". Population data were taken from census data available at census CBS 2078 BS. Area data were obtained from GIS satellite image.

2. Population and Population Density

Municipality is populated with different castes and religions with population of 46,017. Among them 23,099 (50.2%) are women and remaining 22,918 (49.8%) are men. It consists of 9,722 households with population density of 781 persons per sq.km and 4.73 people per household. Density of ward 5 is highest with 6,163 people living in per sq. km of land while density of ward 6 is lowest with 2032 people living per square kilometer of land.

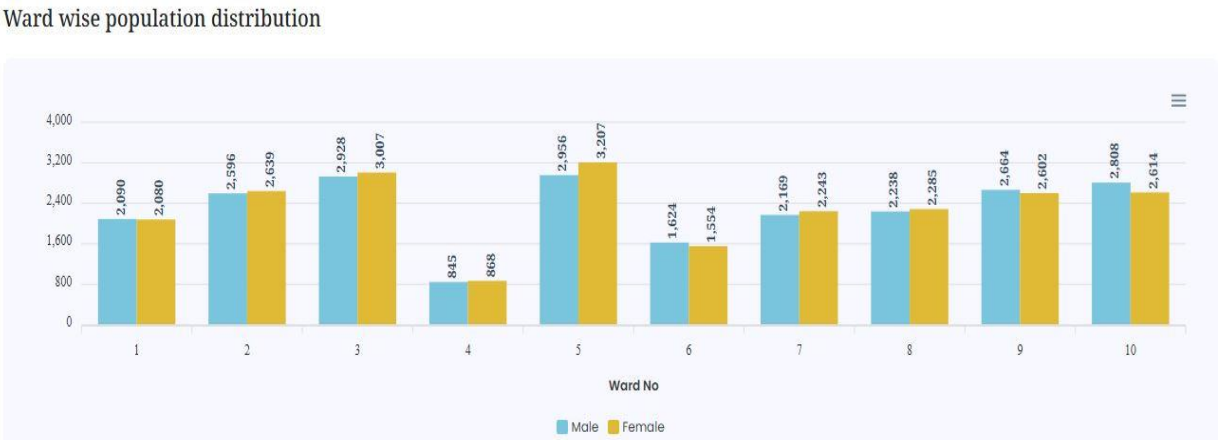


Table 1: Population and Population Density of BodeBarsaain Municipality

Household structure

Out of total population of 46,017 in Municipality, 23,099 (50.2%) are women and remaining 22,918 (49.8%) are men. It consists of 9,722 households with population density of 781 persons per sq.km and 4.73 people per household.

Ward 5 has the highest household size of 1303 nos whereas ward 4 has the lowest household size of 362 nos.

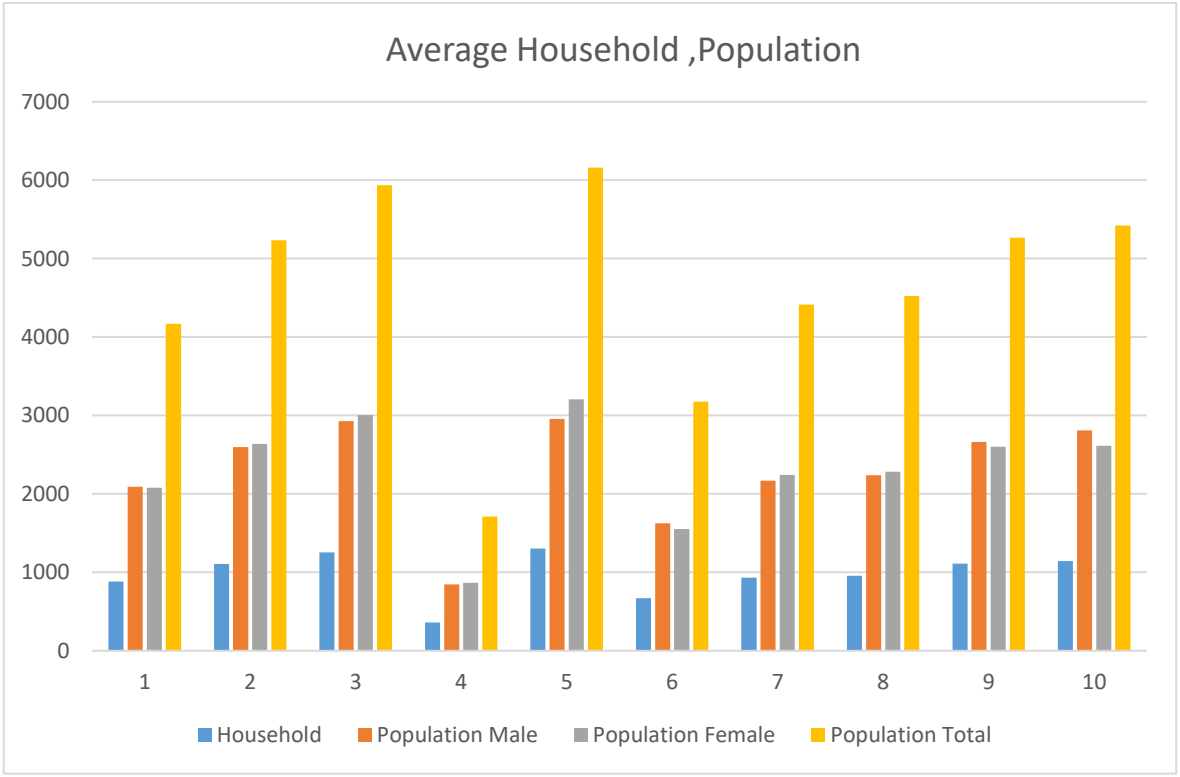


Chart 1 :- Household and Population Size of Municipality

Education

Out of total 46,017 population between the age of 5 and 25 as of 22,346 population in BodeBarsaain Municipality, total 5,765 males and 5,061 females were attending the school.

Same as, out of total of the same age group who were not attending the school, total 2,734 male and 3,938 female were not attending the school. The ratio of male and female who were going toschool was 1.13 while the ratio for those who were not attending the school was 0.69.

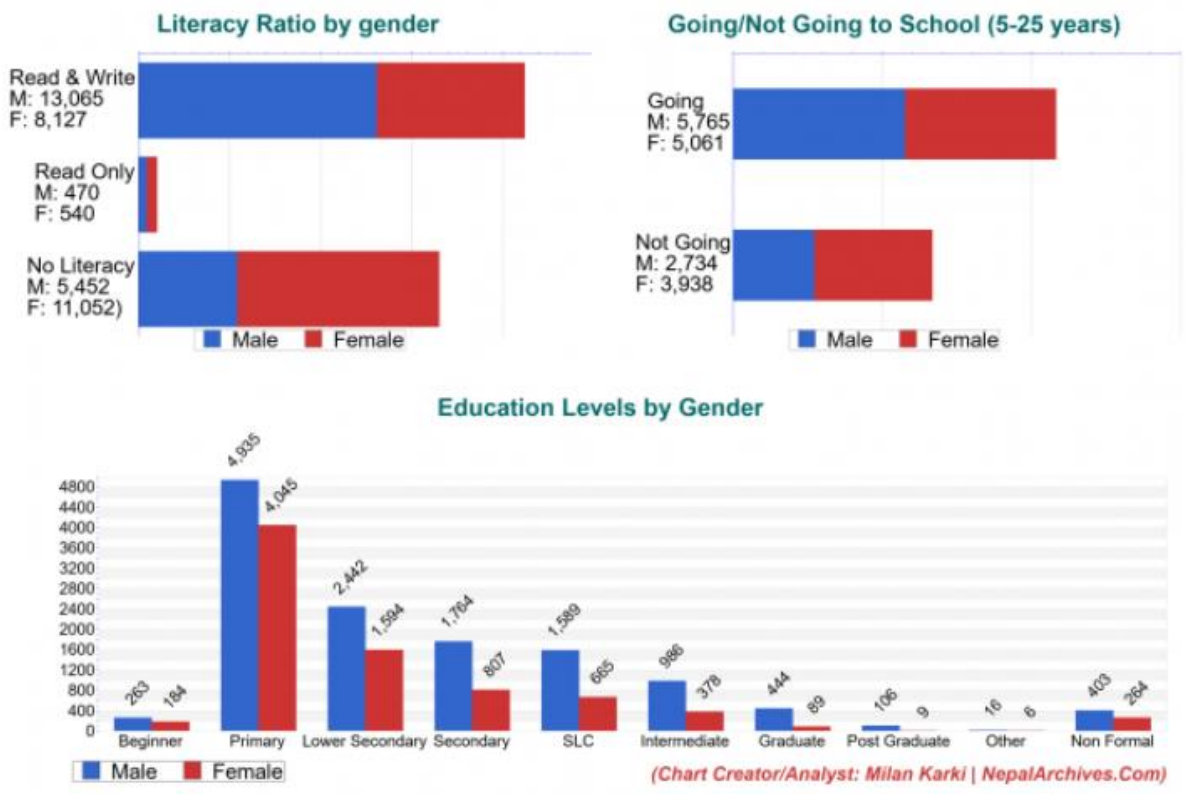


Chart 2 : Education Status (Municipal Household Survey, 2019)

3. Land use pattern

The land use distribution of BodeBarsaain Municipality shows that 45.82 sq. km (77.76%) of the land area is used for cultivation purpose. About 6.795 sq. km (11.53%) of land is covered by forest and 4.23 Sq.km of land is builtup area, 0.37 % of land is bare land not in use, 2.075 % of land is covered with water bodies such as river, ponds and remining 0.01 % of land is cover by sand or other. (Ref. Chart. 4)

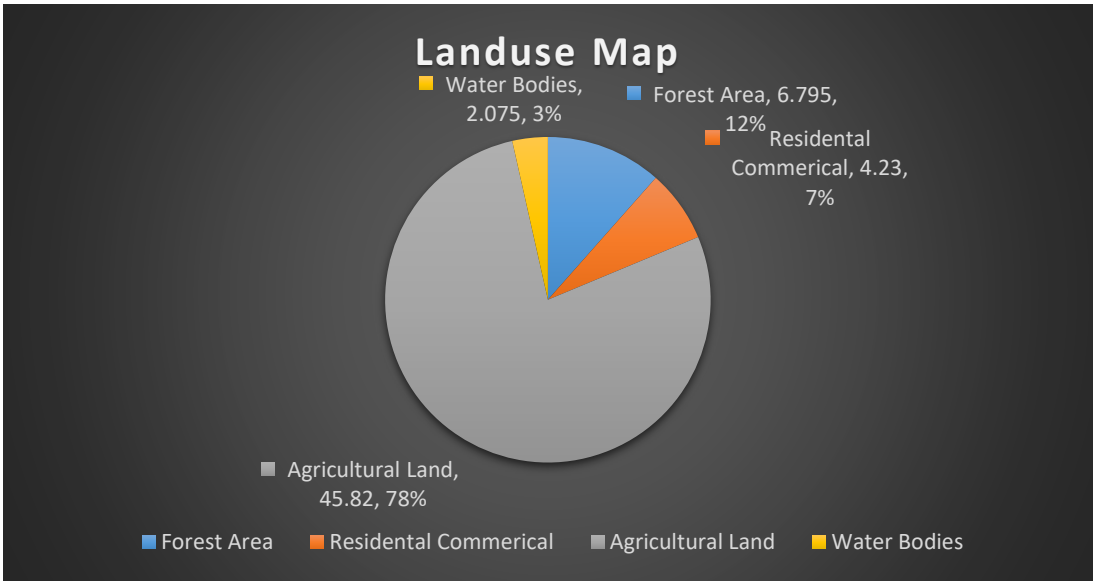


Chart 3 : Land use of Municipality

4. Road and traffic

Surface transport is the major mode of transport in BodeBarsaain Municipality. The Airport, Rajbiraj Airport is a domestic airport located in Sapatari servig Sapatari in Madhesh Province is about 20 km from BodeBarsaain Municipality. Roads are the main road transport in BodeBarsaain Municipality and constitute main proportion of traffic within the municipality. The entire road network contains all blacktop, Rcc, gravelled and earthen roads where ratio of Blacktop is less and gravel is high & most of the municipal roads are gravel and earthen. While the access situation in Municipality is good, mobility is a problem in present traffic situation.

Road inventory

Road inventory survey was done and details of all the roads and cross structures were collected. Total length of all the roads is 146.58 km where all roads are Municipal Roads. Among the municipal roads, 23.23 km are Class A roads, 12.94 km are Class B roads, and 41.13 km are Class C roads whereas remaining 69.28 km are Class D roads. 146.58 km of roads in the municipality 19.73 km are Blacktop (Asphalt/Premix), 42 km are RCC, 59.44 km are Gavel and remaining roads are Earthen Road for detail refer Annex.

From the table below, it is found that Ward 2 has the maximum length of road (20.45 km) whereas ward 4 has the minimum road length (5.68 km).

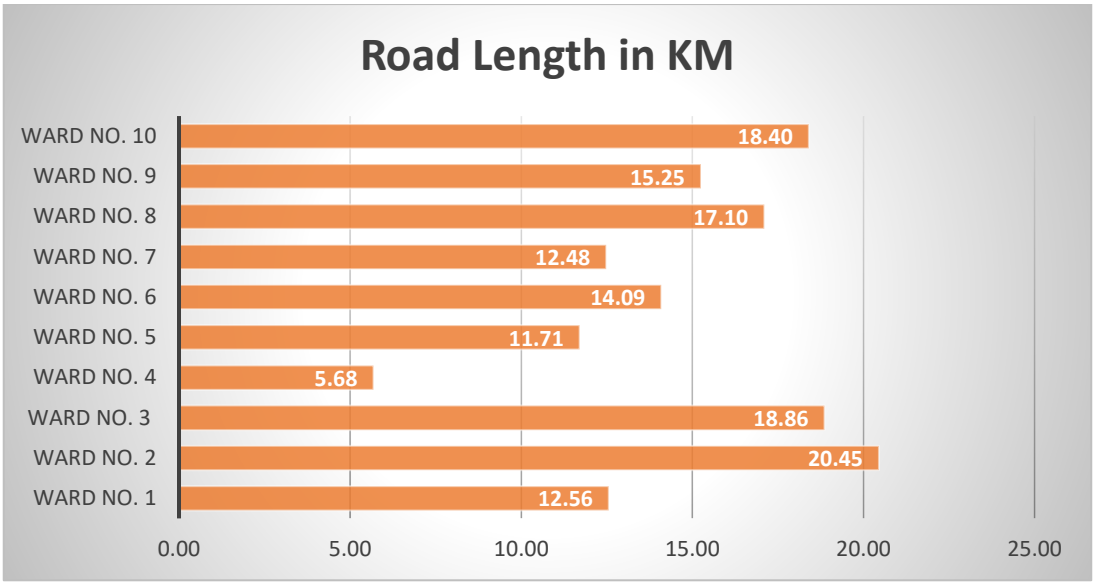


Chart 4 : Inventory of roads ward-wise

At present the road density of about 2.563 Km per square km for the municipality. From the given chart below it is clear that road density per unit area is maximum at ward 4 whereas that is lowest at ward 5.

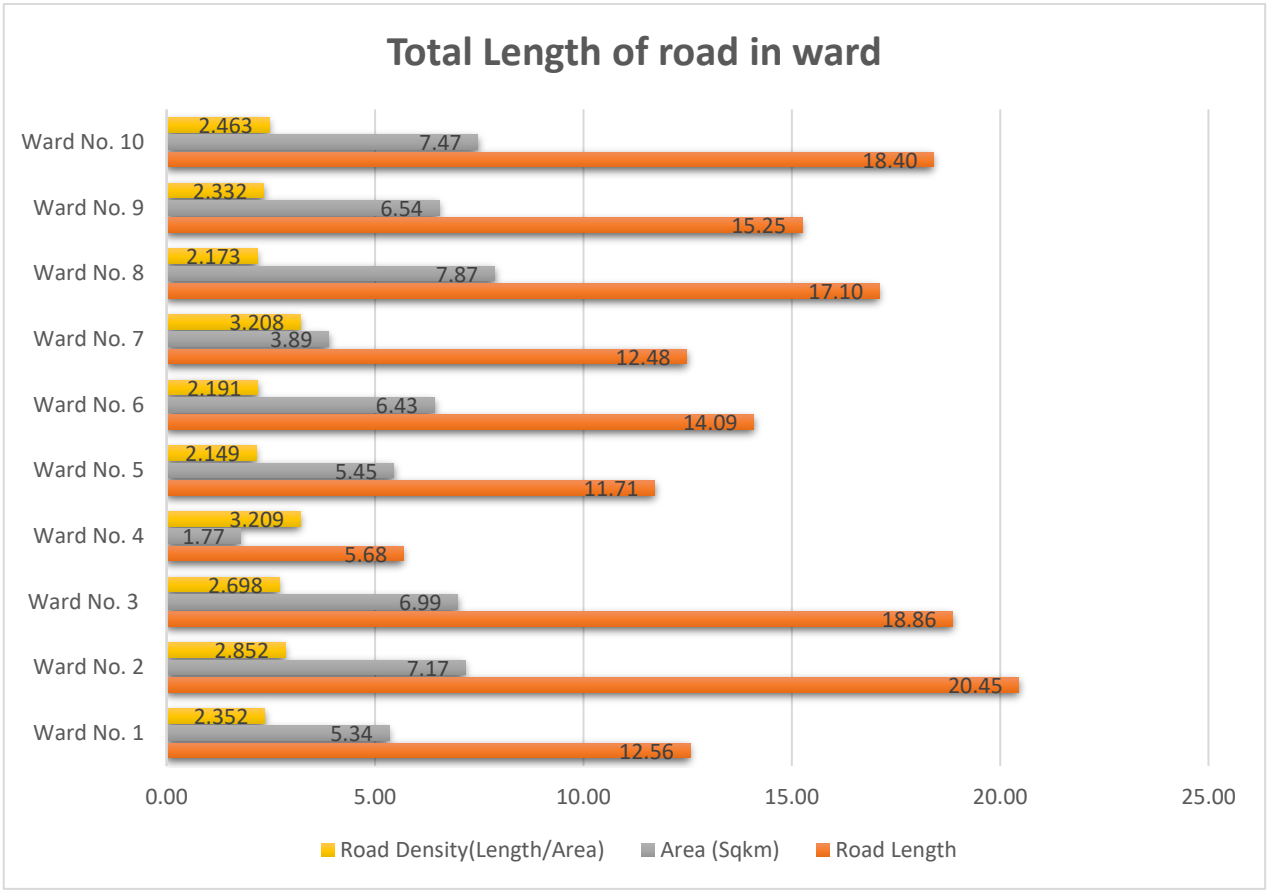
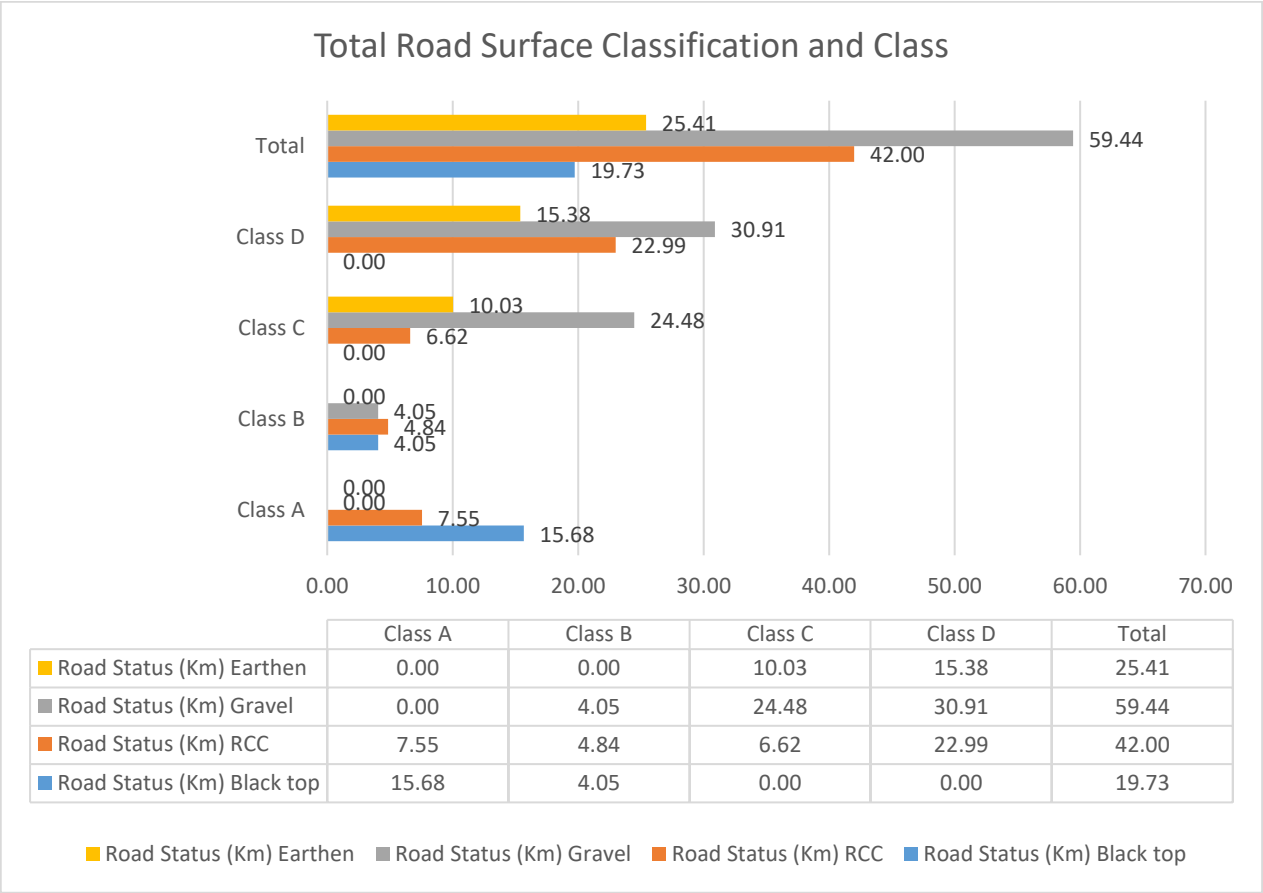


Chart 5 : Road Density in BodeBarsaain Muncipality

Among the total length of 146.58 km where all roads are Municipal Roads. Among the municipal roads, 23.23 km are Class A roads, 12.94 km are Class B roads, and 41.13 km are Class C roads whereas remaining 69.28 km are Class D roads. 146.58 km of roads in the municipality 19.73 km are Blacktop(Asphalt/Premix), 42 km are RCC, 59.44 km are Gavel and remaining roads are Earthen Road.



	Class A	Class B	Class C	Class D	Total
Road Status (Km) Earthen	0.00	0.00	10.03	15.38	25.41
Road Status (Km) Gravel	0.00	4.05	24.48	30.91	59.44
Road Status (Km) RCC	7.55	4.84	6.62	22.99	42.00
Road Status (Km) Black top	15.68	4.05	0.00	0.00	19.73

Chart 6 Surface wise Road Classification

Vehicle Composition

The composition of vehicle shows that the major vehicle that plies on the roads of BodeBarsaain Municipality is Motorcycle (53%). Other than this, Buses and trucks has a share around 6%. Similarly, tractors are 25% and Cars/Jeep/Auto constitutes 15%.

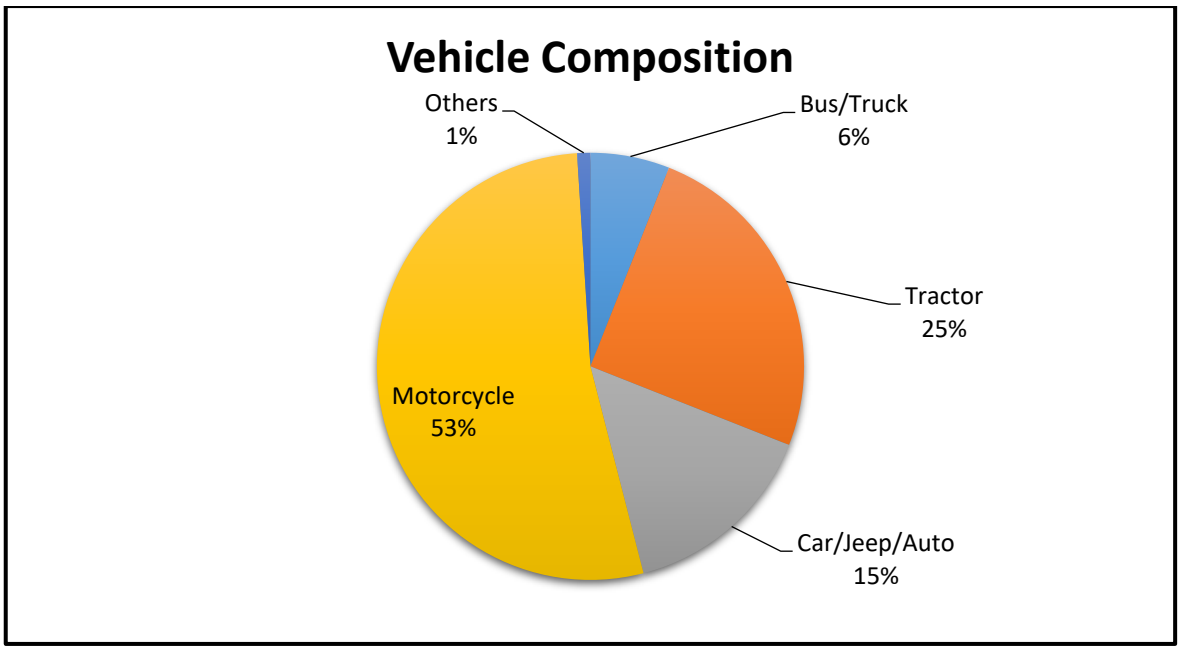


Chart 7 Vehicle Composition in Roads

Vehicle ownership

Motorcycle owners in the BodeBarsaain Municipality are 45 % whereas household having Tractor and car/jeep/auto are 17% and 12% respectively. Buses and Trucks weigh around 6% of total population composition. 39% people own no vehicle as shown in the following chart 4.

Motorcycle ownership is about 750 per 1000 sample population.

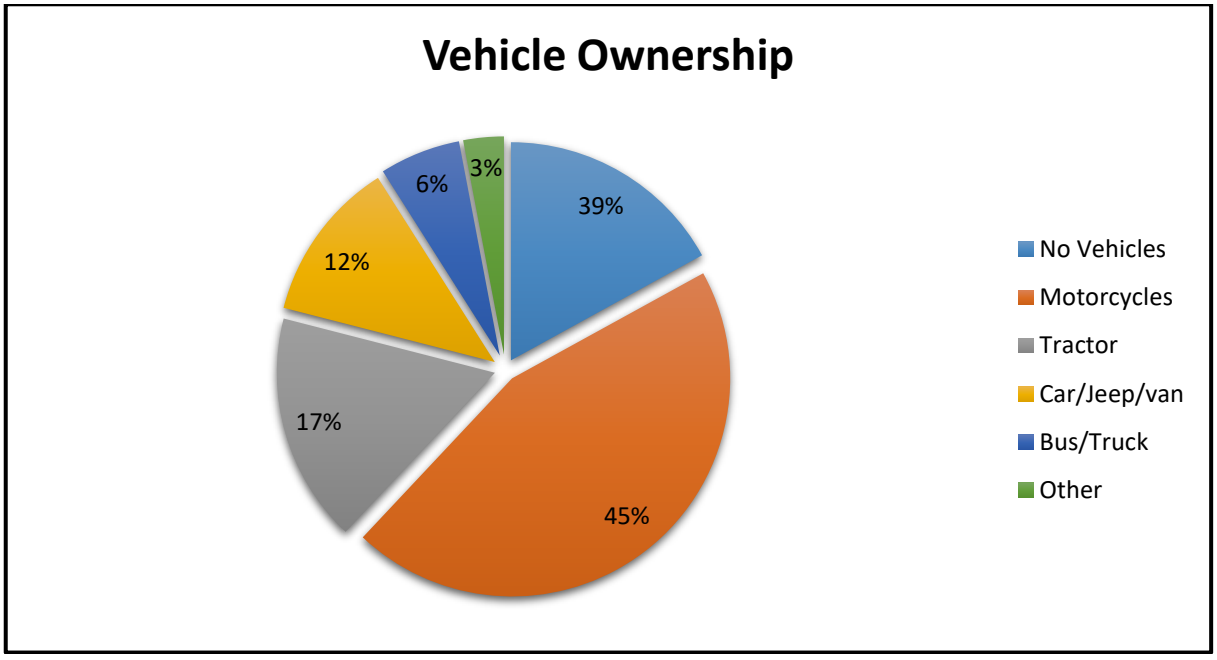


Chart 8 Vehicle Ownership of sample population

Origin and destination survey

From the origin and destination survey carried out the following places are found to be major destination points:

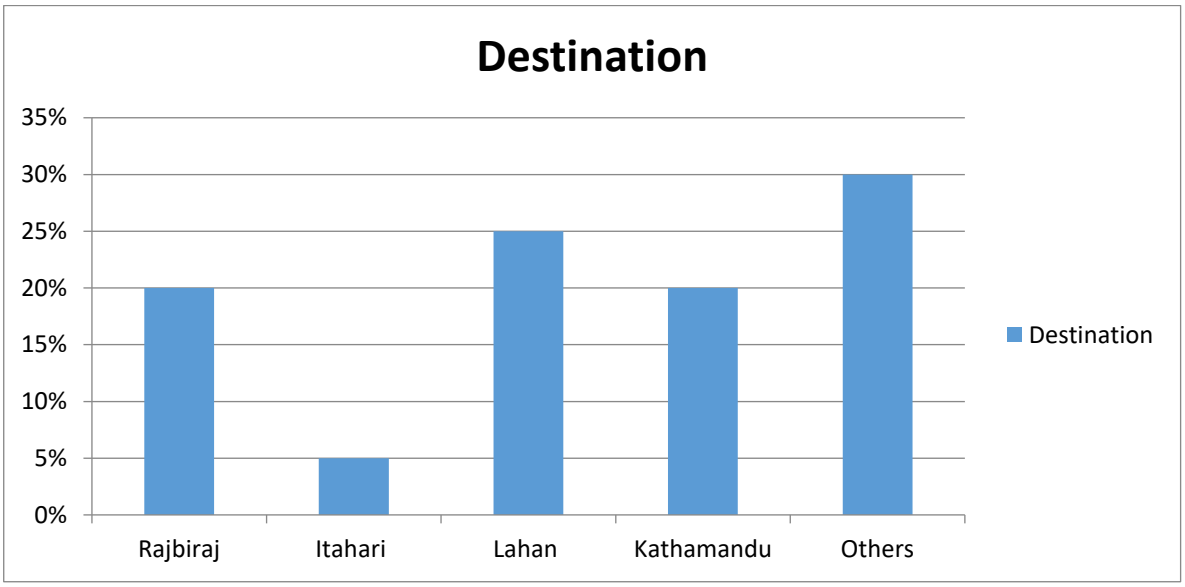


Chart 9 Major destination places

5. Accessibility and mobility

Ward 1,2,9,10 suffers the most in terms of accessibility to public vehicles i.e. 15 minutes in average. The population of ward 3,4,5,6,7,8 have more easy access to public transportation service. The access of public vehicle on those wards with more time to reach bus stop needs a consideration. The mobility of more accessible wards for public vehicles needs consideration as well.

Average travel time taken to travel to destination follows dissimilar trend to time to bus park. More or less people travel 30 minute to get to their destination in other wards. In the past couple of years, availability of three wheeled auto rickshaw has made the life and travel of the residents fairly easy reducing the time to board vehicle but since the fare is quite high than the other public transport, not everyone can afford to travel in such auto rickshaw.

The proportion of trips of specific length (in minutes) made by different means is shown in the figure below.

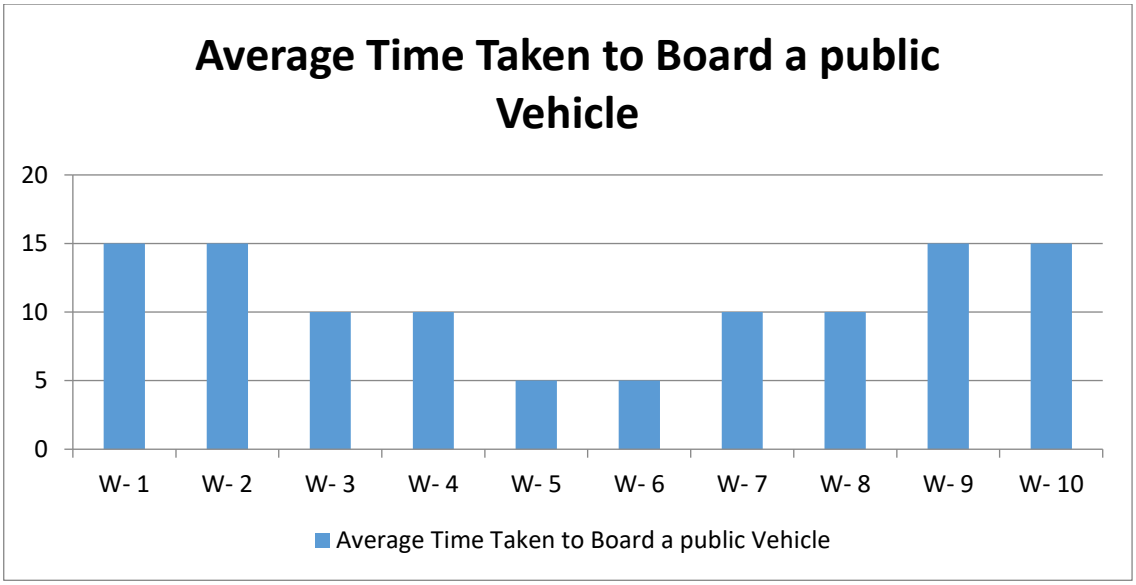


Chart 10 Average time to board a public vehicle

The figure below shows that a majority of trips made are by public vehicles (25%) followed by motorcycles (55%) and then walking/bicycle (20%). This shows that public vehicles are the most used means of transportation. In the past recent years, introduction of small auto rickshaws and jeeps has had a vast impact on the transportation sector. Now people can easily reach their destination since these small vehicles can cover almost every road in the Municipality which was impossible with heavy vehicles. So not due to the good road conditions but due to the road friendly vehicles, the residents of BodeBarsaain Municipality are now facing less hardship to board a public vehicle now than they were a couple of years back. Distance of travel is variable based on the mode of transportation and the destination. Still, Motorcycles are the best mean of mechanical transportation since they can reach almost all corners and roads.

Due to the bad condition of the existing roads and high price to board small public vehicles, some people are still compelled to walk on foot. This has been identified as major problem in mobility and access. So identifying the most used destination and upgrading the road standard to imply more public vehicles in a convenient fare is recommended in order to facilitate the people.

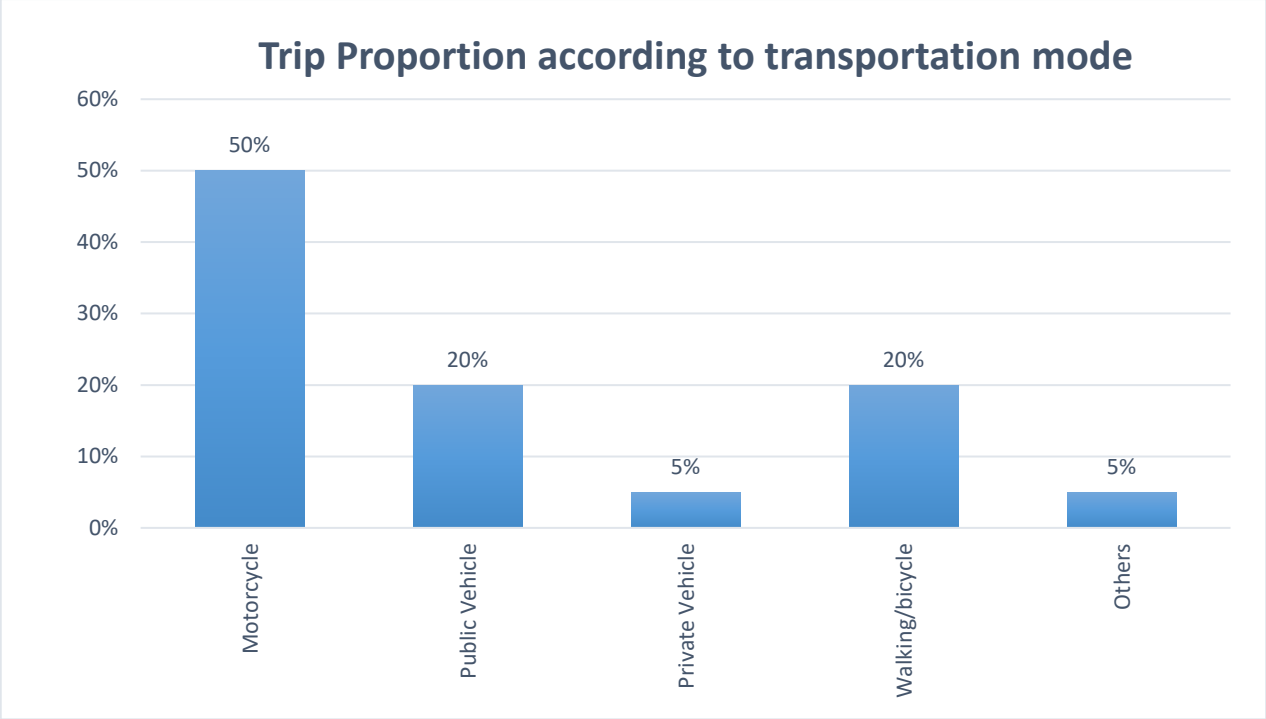


Chart 11 Proportion of Trips made by different transportation modes

6. Active and passive transport users

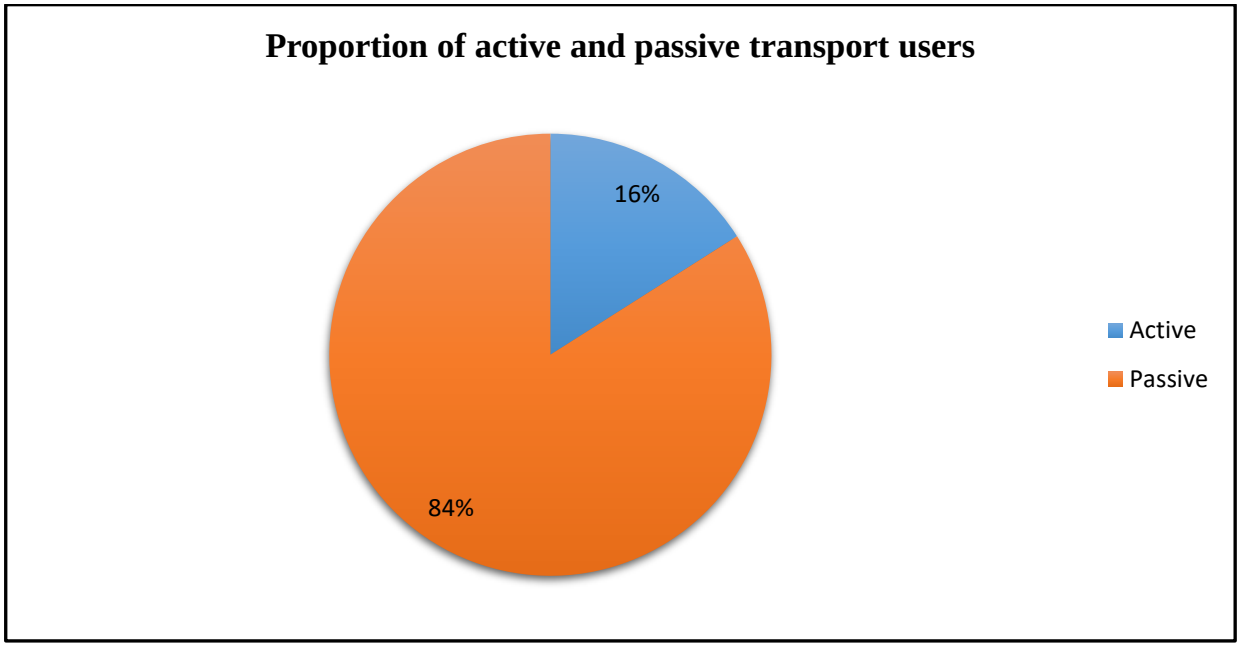


Chart 12 Proportion of active and passive transport users

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 (Litman, 2015). The sample household survey shows that nearly 16% 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 the municipality we find that the passive mode of transportation is more extensively used (84%) than active mode. So this implies that the number of people travelling by motorised means of transportation is quite more than non motorised means of transportation on daily basis. This leads us to a fact that there is a growing urbanisation in the municipality which should be tackled as soon as possible in order to create a planned transportation network in future. By doing so we can avoid the chaotic, unsafe and unplanned road networks and facilitate people with a well distributed network of roads.

Public Transport and Road Safety

A couple of year back, the use of public transportation for daily trips was limited to very few municipal roads while no public transport was plying along majority of municipal road sections. But introduction of small public vehicles has been a blessing in transportation sector and now most of the roads have access to public vehicle. Since the majority of settlement is along the Class A road of muncipal, it serves as the backbone to the municipal road network. Many municipal roads are planned according to the alignment of Class A and the places it connects. More than 50% of the vehicles running in the municipality are through these Class A.

Mobility relies on the privately owned vehicles, small public vehicles or walking. Due to the introduction of small public transport vehicles and services, a satisfactory public transportation system has been established. However not everyone can afford it on a daily basis.

The municipal roads are mainly used by motorcycle users. Use of motorized vehicles is very limited as the ownership of motor vehicles is low. Thus, with majority of pedestrians plying in the municipal roads, the roads are safe till this date but increase in vehicle ownership since past few years has raised the risk and so proper interception should be taken in order to stop increase in risk in future.

The existing municipal roads are not maintained periodically and vehicles face difficulties. Also, during the rainy seasons, the movement is restricted. Hence BodeBarsaain Municipality faces quite some problem in public transportation.

Location of main market areas along the SRN has exacerbated the risk. There are no proper footpaths along the paved section. Due to the modest volume of traffic in the municipality, pedestrians may not be at high risk of meeting accidents at this time but the chances are

increasing with each passing period. So preparing a planned public road network now is very essential to tackle the problems that will arise in the future.

7. Summary and findings

Literacy is moderate, but sample shows that education level above plus two level is very low. Unemployment among the non-student sample is very high only about one fourth of the sample population are involved in earning jobs of business and service. Most of the population are involved in agriculture. In any sector of occupation, people with only school level education are dominant. Service sector has employed most of the people with Bachelor level education. As the monthly income level of households increases, the proportion of family members pursuing education is seen to increase and so does the proportion of individuals involved in business and service.

Road transport is major transport mode for movement in BodeBarsaain Municipality and facilitated mainly through Class A Road. Built up area is quite middling so there is still probability for settlement expansion in the rural municipality. Vehicle ownership is satisfactory among the people of the municipality. Almost entire roads are earthen with intermediate carriageway. The vehicle composition shows that most of the vehicles that ply along the roads are motorbikes.

SECTION D: PERSPECTIVE PLANNING

This section discusses about the future anticipated population and the traffic and the planning road infrastructure to cater this traffic in short, medium and long term.

1. Projection of population

The underlying assumption for the preparation of MTMP is that, the recently designated municipal area has a growing population and has also fulfilled the population criteria (one of many criterion to be a municipality) to be a municipality. As such the municipality is an urban area or an urbanizing area. One of the characteristics of an urban area is higher population densities and corresponding higher demand for services and facilities all of which directly demands proper transport infrastructure. For sustainable supply of transport infrastructure, it is pertinent to forecast the population in the future so that the infrastructures can be planned and constructed accordingly.

A population forecast requires certain information on historic population counts, births, deaths, other rates which affect population change. Population forecasting is essentially a matter of judgment in selecting the kind of forecast to present, in determining the procedures for making it, and in appraising effects of the factors that induce population changes. The problem, of course, is much simpler for areas which have shown marked stability in the size of their populations for several decades, and for which no great change in the economic and social conditions of the locality seems likely. On the other hand it may be extremely difficult and complex for areas which have had sharp fluctuations in the direction or rate of population change in the past, and which may continue to have them.

The main factors affecting the population projection are birth rate, death rate and migration to the city/town concerned. Out of these factors, the migration is chief factor. The factors for migration may be the desire for better economic opportunities, desire for better living or housing conditions (this applies particularly to short distance migration within the same general locality), movement for reasons of health, education, or retirement etc. The level of national economic activity also affects the direction of migration. When employment is high or rising, the movement is generally from rural areas and small towns to the medium-size and larger cities, because of the relatively larger rate of wages and economic opportunities in urban areas.

In the present time the urban population is increasing in high rate although the proportion of it is very small. To forecast the population in the municipality for the preparation of MTMP the geometric method have been used considering the rapid urbanization of the area. For this the following formula is used:

Pn = P (1+ IG/100)n

Where, IG = geometric mean (%)

P = Present population

n = no. of decades.

Pn=population at the end of nth decade

By using this method, we found that the average growth rate of population in this municipality is on average 0.59% as shown in table 2 which indicates rapid urbanization. This may be due inter district migration and migration from other local bodies of Sunsari and Siraha. Based on this trend, the average projected population of this municipality on the year 2031 will be 51,352

Municipality	Population of Year		Growth Rate (%)	Present Year Population (2023 AD)	Remarks	
	2011 AD	2021 AD				
BodeBarsaain	43293	46,017	0.59%		Avg. growth rate	

Table 2 Population growth rate and base year population

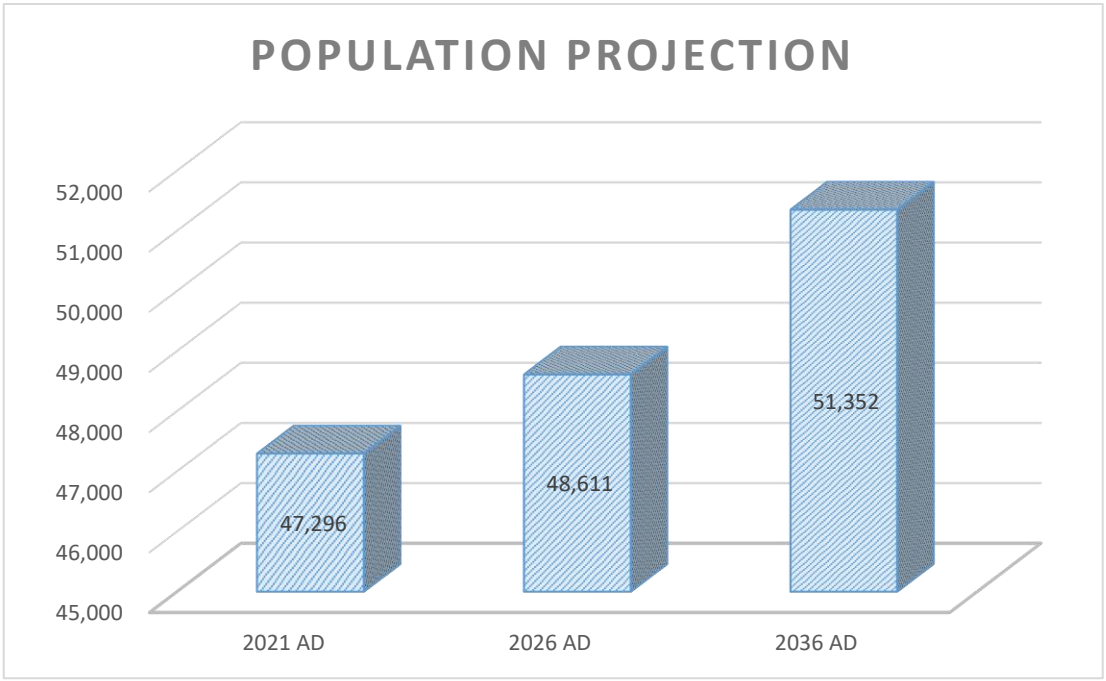


Chart 13 Projected Populations for BodeBarsaain Municipality

2. Projection of road traffic

Transportation forecasting is the process of estimating the number of people or vehicles that will use a specific transportation facility in the future. Forecasts explain what the needs of the future might be and provide benchmarks for from developing overall transportation policy, to planning studies, to the engineering design of specific projects, and efficient transportation system operation. At the same time, the transport infrastructure and facilities paves the path for the development of the area. Thus, the existing trend in the development of the economy and change in land use along with the planned development and land use are considered to plan the transport facilities requirements in the future. In the planning process of the transport infrastructures, projection of the traffic is the most crucial factor. Traffic forecasting for planning projects determines the required number of lanes and road width to meet the future anticipated traffic demands. Future transportation demand will depend upon demographic and geographic factors, including population size and age, economic and employment growth, transportation network and operating conditions and transportation and land use policy, including cost of travel.

In case of BodeBarsaain Municipality, there is no traffic data from past. Lack of proper city development plan and land use plan further restricts the use of complex models for reliable traffic forecast. Thus, the use of primary data collected during the study is used to forecast the traffic.

3. Indicative development potential

IDP is basically the indication of the existing and potential market center/service centers (key growth centers) and the areas having various development potentials such as agro-based industries, high value cash crops and tourism. Thus, IDP shows high value cash crops, tourism area, and area of service centers such as hospital, post office, telecommunication, school, campus, security offices and large settlements, important historic and religious places. Finally it prepares the ranking of the markets of the rural municipality as the basis of network planning.

S.N.	Development Potential	Area
1	Institutional	Satrudhan Chowk,Gaura, Madhuban,Belha
2	Market Area	Satrudhan Chowk
3	Medical Hub	Satrudhan Chowk,Kanchan,Fulkahi,Dhangadi

4. Visionary city development plan

Lead sectors for visionary development of BodeBarsaain Municipality are:

1. Health/Sanitation
2. Environmental Concern

3. Irrigation
4. Employment Training
5. Tourist and Religious Destination
6. Business/Trade
7. Transport
8. Agriculture

1. Health/sanitation

- Access to quality health services and education for everyone in Municipality.
- Upgrading of every Health Posts in the Municpality.
- Establishment of a well facilitated Health Office in every ward.
- Strict rules to be implemented on Tobacco and Alcohol products.
- Deny consumption of Alcohol and Smoking in public places.
- Building Public Toilets in various places within the Municipality.
- Ensuring good services in Health Posts in the Municipality.
- Fixing location of Dumping Site in the Municipality.
- Community clinics and free vaccination programs.
- Drainage management in different wards of Municipality**.**

2. Environmental Concern

- Strict rules and programs to be implemented to conserve the Forest in the Municipality.
- Conserving the drinking water sources within the Municipality.
- Forestation and Plantation programs in various wards.
- Introduction of various kinds of programs to protect the biodiversity**.**

3. Irrigation and Drinking Water

- Providing drinking water facility in every house of the rural municipality in near future.
- Facilitate the agricultural lands within the rural municipality with irrigation.
- Establishing Drinking Water facilities in rural municipality.
- Encouraging cleanliness by rewarding the cleanest tole committee.
- Conserving all the water sources within the Municipality**.**

4. Employment Training

- Self Employment programs to be conducted focussing the youths.

- Creating a Medium grade Technical Manpower in the Municipality.
- Vocational Trainings to the unemployed youths within the Municipality.

5. Tourist and Religious Destination

- Recognizing the places with tourist, religious and cultural importance.
- Establishing the recognised sites as major tourist destination.
- Establishing co-operation among various Sector to develop the Municipality as an important touristic destination in the district.
- Recognizing and Establishing Home Stays within the Municipality.
- Develop Tourism activities of the Municipality**.**

6. Business/Trade

- Market Management within the Municipality.
- Expand the Taxable areas to increase the internal income of the Municipality.
- Development and management of the market centers within the Municipality.
- Request the Provincial Government to extract the various mineral ore in the Municpality.
- Encouragement programs in establishing Small and Medium Cottage Industries in the Rural Municpality.

7. Transport

- To enforce the traffic laws and regulations in the Municipality.
- Regulating programs aiding Periodic maintenance and upgrading of the Municipal roads.
- Development and implementation of Municipal Transport Master Plan.
- Cross Drainage Structure and Bridges to be built in different transport linkages.

8. Agriculture

- Encouraging agricultural activities by introducing various programs regarding non seasonal agricultural products, commercializing agriculture and upgrading the agriculture sector.
- Establishing Organic farming area within the rural municipality and rebate of 50% on organic composts to discourage increasing use of chemical fertilizers.
- Develop and implement Agriculture programs to attract the foreign returnees and involve them in agricultural sector**.**

5. Transport and land use

Land-use potential is a measure of the scale of socioeconomic activity that takes place on a given area of land. A unique property of land use is its ability to generate traffic. The connection between transportation and land use is a fundamental concept in transportation.

Everything that happens to land use has transportation implications and every transportation action affects land use. Actions by transportation agencies shape land use by providing infrastructure to improve accessibility and mobility.

Planning of any land-use and transportation system is to ensure that there is an efficient balance between land-use activity and transportation capability. Trip generation provides the linkage between land use and travel as depicted in the below cycle.

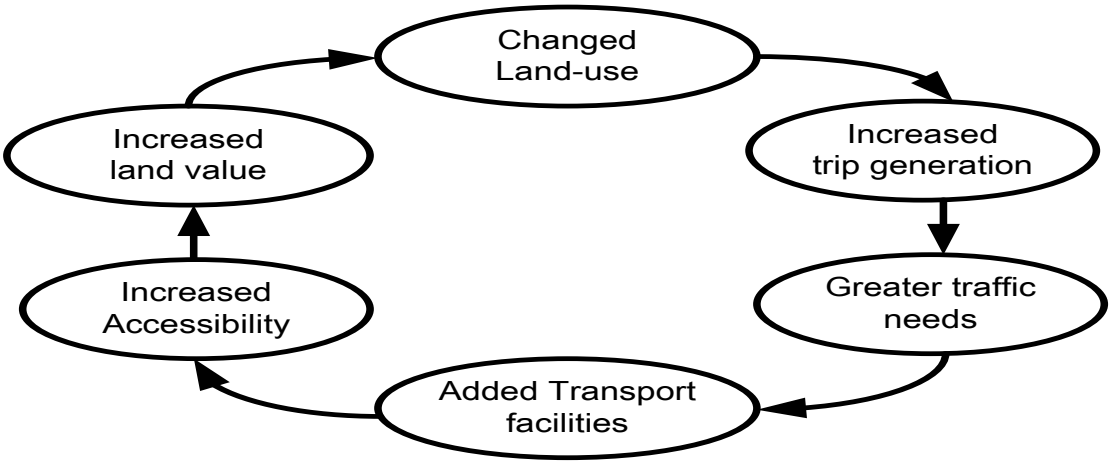


Figure 3 Land use and Transportation Interaction

6. Accessibility and mobility scenario

Transportation system most often needs to trade-off between accessibility and mobility. Need of travel is a derived demand, not being end in itself but a means. Accessibility is the ease with which goods, services, people and opportunities can be reached. In the context of BodeBarsasin Municipality with core market centres as epicentre of all goods, services and facilities, people lying on the peripheral regions need accessibility.

Mobility is efficient movement of goods and people. Mobility is more focused on trips and distance covered. Mobility values transportation as end rather than means, but still in outlying areas accessibility requires a lot of mobility, while central population need smaller trip lengths. While we provide space for active mode users and public transits as a means of enhancing accessibility, we are trading a part of road space from the mobility sector, and when we provide more road space for private vehicles to move efficiently, we trade part of road space associated with accessibility.

Present scenario of BodeBarsaain reflects the access to bus stop on an average about 15 minutes, Class “C” and “D” roads that are planned for public vehicle to ply are expected to reduce this time to within 20 minutes. People will have access to either Class “B” or Class “A” roads designed for more mobility within 5 minutes on an average walking distance that are designed for greater mobility. Planning work has focused on reducing access directly to highways, subsequent developments are recommended for national authority to develop required infrastructures. The map showing the desire line has been appended in Annex.

7. Transport infrastructure planning

Land use and transport, developed road hierarchy, accessibility and mobility scenario are the policy level guidelines for development and planning of transport infrastructures.

Nearly 41% of household do not own any type of vehicle, whereas around 33% of people own motorcycle. Thus, from the perspective of sustainable transport also, we need to protect the peoples' utilization of motorcycle in planning works.

While 11% of the trips made as of today is on foot, the planning works has incorporated footpaths for pedestrians segregated from carriage-way width.

With projection of population at present growth rate of 0.59%, population would rise above 48,611 in 10 years which will certainly grow in economic size and have better income scenario. People will aspire to have private vehicles of their own to increase mobility, requiring greater road space width which will be provisioned by class A and class B roads but the aim of sustainable transport and accessibility policy will be to check private ownership of vehicles under control.

Class A and Class B road would have provision of bus-bay to facilitate public transit riders. Green belts would be developed for aesthetic purpose and noise reduction purpose as well as segregation of pedestrians from road traffic. Road side furniture would be installed as deemed necessary.

8. Short term Municipality Transport Master Plan (Five years)

The short term municipality transport master plan has been developed to guide the municipal investments on road infrastructure through 2022-2026. This short term plan will mainly focus on the demand by the people and for the accessibility of the people in the first step. The plan will advance the municipality towards the medium and long term plan as outlined in the later topics.

Short term planning elements generally known as transportation system management (TSM) are basically meant for efficient use of existing and proposed infrastructure **(Verma & Ramanayya, 2015)**. Short term MTMP refers to maintenance and upgrading of the existing road networks to the proposed standards to support the present and future (5 years) transport demand paving the demand for the implementation of medium term and long term plan. It also includes construction of new road linkages which are necessary to support the current road network and the envisaged road network for the future. The interventions are applied to the road sections based on their priorities (based on the developed scoring criteria) and the annual budget. The transport infrastructure envisaged at the end of five years plan is for the development and maintenance of access road linkages and collector roads that maintains a road hierarchy (as formulated above) and justifies the construction and development of higher hierarchy roads in the medium and long term (in short term if justified).

As such, short term plan focuses on the accessibility of all the settlements, moving towards mobility to increase the access to wider services, thus paving the way for development of proper sustainable public transport services within and around the municipality. The strategy and investment plans for short term municipality transport master plan is elaborated in the next section.

9. Medium term Municipality Transport Master Plan (Ten years)

The development of the road network in medium term plan includes opening of the track and clearing the right of way (ROW) along the Class B roads. The period of short-term plan controls the encroachment and urban sprawl growth along the ROW of the Class B roads.

Medium term and long-term municipality transport plan gives the layout for the development of higher hierarchy road corridors with higher mobility and limited direct access. During the short term (first five years) development of local access roads and collector roads develops the concept and culture of wide roads among the locals. This facilitates in creating the demand for expansion of the roads to their designated class width during the medium term (five to ten years). Medium term plan continues the development and maintenance of the access roads and, expansion and maintenance of collector roads to their respective standard layout. Class “B” roads will also be constructed and expanded during the medium-term plan depending upon the necessity/demand of road hierarchy.

All the roads of Class “C” will be constructed and maintained at their designated standard layout at the end of medium-term plan. Class “B” and Class “A” roads will also be constructed wide enough to address the demand generated during this period. Few Class “B” roads will be constructed to their full width with designated pedestrian paths and cycle tracks. For other Class “B” roads, the medium-term time period will allow opening of the track by shifting the existing structures and stopping further construction of other structures within the designated ROW.

10.Long term Municipality Transport Master Plan (Twenty years)

The development of Class A roads is necessary in the long run of the municipality for the structured development of the road network hierarchy and thus the proper development of the trips and the municipality as a whole. The period of short term and medium term plan controls the encroachment and urban sprawl growth along the ROW of the Class “A” roads.

Long term municipality transport master plan envisages the development of the roads of all hierarchy within the municipality as depicted by the perspective plan whose demand is set out by the indicative potential development of the municipality.

Short term period (first five years) identifies the higher hierarchy roads necessary for the municipality in the long run and set necessary bylaws. It also implements those higher hierarchy roads in the policy level by controlling the development of other structures within the proposed ROW and shifting of the existing structure away. It will facilitate clearing of the

ROW and track opening during the medium term time period (five to ten years). During medium term plan, these roads will be developed to certain level as per the existing demand.

This time period (first ten years) is critical in developing proper implementation policies, tools and plans for the construction and implementation of the standards of these roads in the long term time period of ten to twenty years. Plans to integrate other service facilities such as electricity, drainage and drinking water pipes should be developed during this period. Other plans such as land use plan, city development plan (if not developed), drainage network master plan should be developed in compliance with the municipality transport master plan. Depending upon these plans, MTMP may also be revised. During the long term plan of ten years to twenty years, the higher hierarchy roads will be constructed in full phase.

SECTION E: : FORMULATION OF ROAD HIERARCHY

Roadways serve a variety of functions, including but not limited to the provision of direct access to properties, pedestrian and bicycle paths, bus routes and catering for through traffic that is not related to immediate land uses. Many roads serve more than one function and to varying degrees, but it is clear that the mixing of incompatible functions can lead to problems. Thus it is important to distinguish road in different class or type based on various criteria. A road hierarchy is a means of defining each roadway in terms of its function such that appropriate objectives for that roadway can be set and appropriate design criteria can be implemented. It is an important tool of road network and land use planning to asset management.

Road hierarchy restricts or reduces direct connections between certain types of links, for example residential streets and arterial roads, and allows connections between similar order streets (e.g. arterial to arterial) or between street types that are separated by one level in the hierarchy (e.g. arterial to highway and collector to arterial.) These hierarchical distinctions of road types become clearer when considering the recommended design specifications for the number of through lanes, design speed, intersection spacing and driveway access.

A well-formed road hierarchy will reduce overall impact of traffic by concentrating longer distance flow onto routes in less sensitive locations, ensuring land uses and activities that are incompatible with traffic flow are restricted from routes where traffic movement should predominate and preserving areas where through traffic is discouraged.

The road hierarchy principles will assist planning agencies via orderly planning and provision of public transport routes, pedestrian and bicycle routes. It also identifies the effects of development decisions in and on surrounding areas and roadways within the hierarchy and also facilitates urban design principles such as accessibility, connectivity, efficiency, amenity and safety. Further, it also identifies treatments such as barriers, buffers and landscaping to preserve amenity for adjacent land uses.

This study also formulates the road hierarchy for the various roads. After going through large number of literatures, the study has proposed four level hierarchy roads namely Class A, B, C and D. Class C and D basically deals with access while Class A and B basically deals with mobility and accessibility to higher services.

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 roads; and also Provide alternative connection routes between Class A	Connects higher order roads and mobility to local trips	Connect local trips to higher level roads
	High network coverage	Support through movement of traffic	Access to property	direct access to property
	Segregated NMT facilities and Bus lay bys	Segregated NMT facilities and Bus lay bys	Segregated NMT facilities	Local NMT movement
	Complete access to public transport	High access to Public transport	Limited access to public transport	
Maintenance Responsibility	Municipality	Municipality	Municipality & 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	Limited access to public transport	No public transportation
Right of Way	Minimum 30m	20-29	19-Oct	6*-10

Table 3 Criterion of Road hierarchy

* The roads fulfilling the minimum width of road criteria set by the municipality

1. Sub Artery Road

A Sub-arterial Road is a type of road that is designes to carry intermediate Volumes of traffic between arterial roads (high-capacity roads) and local roads. Sub Arterial roads typically have lower speed limits and may have fewer lanes than arterial roads. They are often used for travel within a city or region, and may provide access to neighborhoods, commercial areas, and public facilities such as schools and hospitals. Sub-arterial roads are an important component of a transportation network, as they provide an intermediate level of connectivity and mobility between higher-capacity roads. Row for Sub arterial roads is 30m with total Carriageway of 7.5m on both side of Median which is of 2m, Verge of 2m on both side with cycle track of 2m on both side & foothpath of 2.5m on both side. Setback of 2m is adopted in both sides.

List of Sub Artery Road is given below and detail map is present in Annex. Typical Cross section of Sub Arterial Road is given and the detail is given in Annex

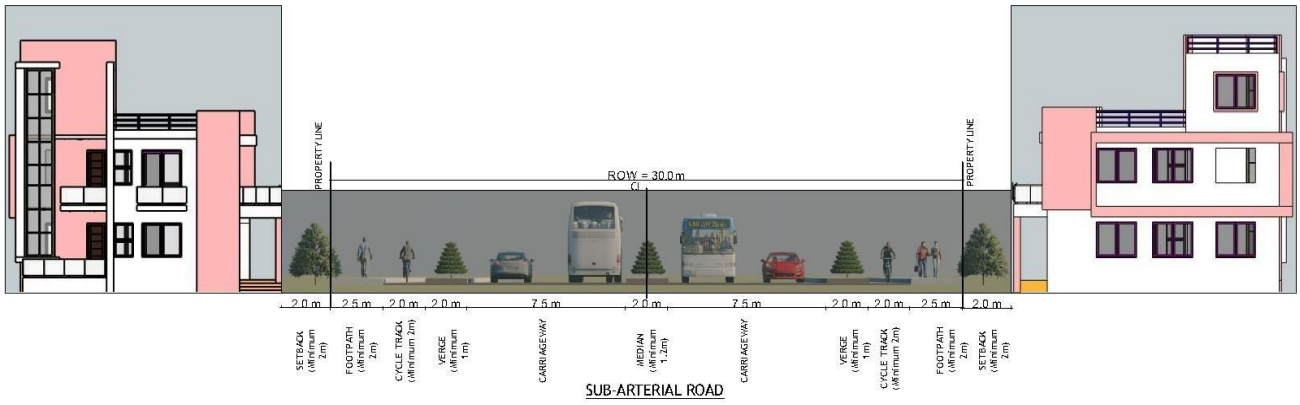


Figure 4 Typical Cross section of SRN road

S.No.	Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
1	NH05	Hulaki Rajmarga	Khadk Bridge, Satrughan Chowk, Betaha Bridge, Kushamahar Chowk	NH	BT	50	6.88	5, 4, 6, 3

2. Class ‘A’ road

All major roads which connect major Growth Centres (market, tourism Centre, industry, etc.) or several Wards with high network coverage, connected directly or through the National Strategic Road Network or district road falls on the road class A. ROW for Class A road is 12m with total carriageway of 7m having shoulder 1 m each on both sides. Sidewalks for pedestrians are adopted 1.5 m each on both sides with drains flowing below them. Setback of 1.52m is adopted.

List of class A road is given below and the detail map is presented in Annex. Typical cross section of class ‘A’ road is as given and the detail is given in Annex

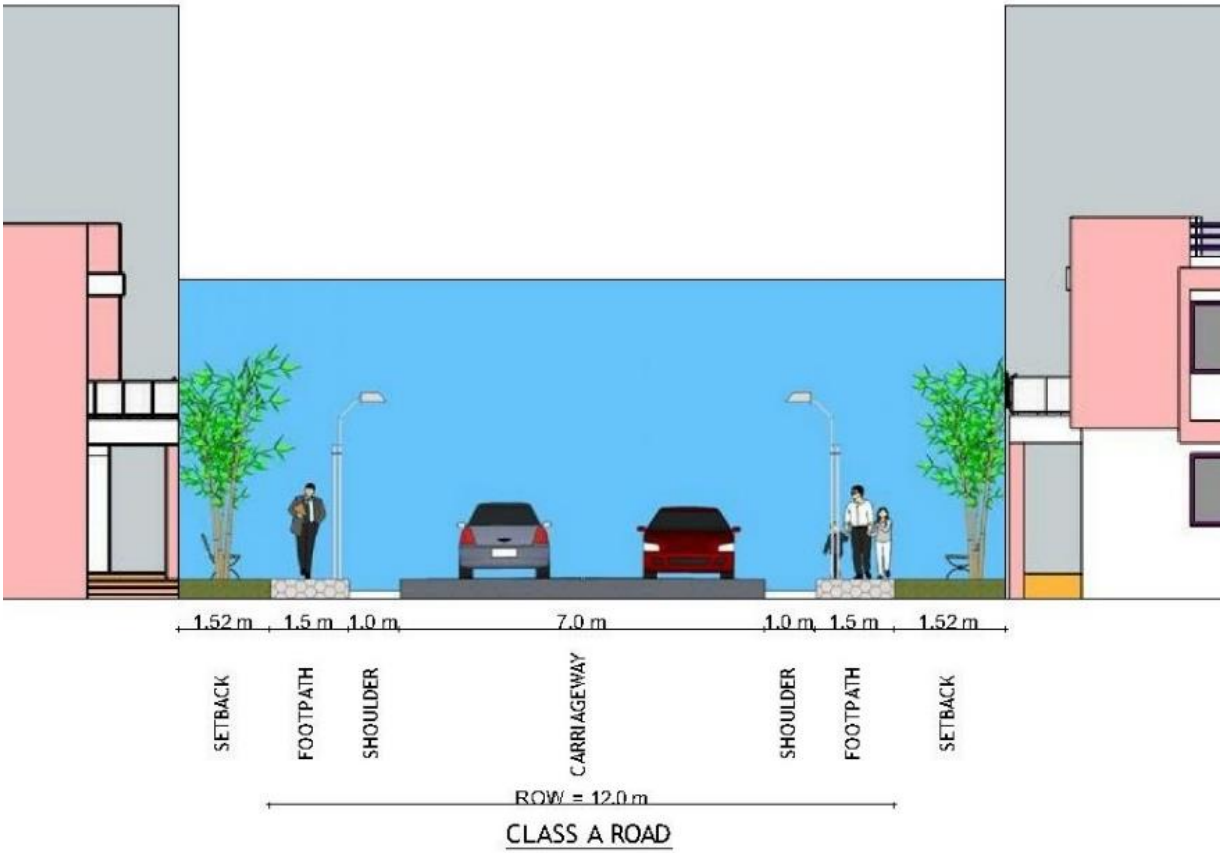


Figure 5 Typical Cross section of A Class road

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04A001	Bisanpur Highway (Khadak Nagarpalika) - Belha - Satrughan Chowk - Swarnpatti - India	Belha, Gaura, Manraja, Khadakpur, Deuri, Swarnapatti	A	BT	12	13.44	2, 3, 5, 7, 10, 9
215M04A002	Pump Nahar (Dakneshwori Gaupalika - Manraja - Fulkahi - Sabarna River - Balan Bihul Gaupalika	Manraja, Khamgara, Fulkahi,	A	BT	12	5.70	7, 6
215M04A003	Fulkahi - Kushamahar - Dhangadhi - Khadak Nagarpalika	Fulkahi, Kushmahar, Dhangadhi	A	BT, RCC	12	4.09	1, 3, 6

3. Class ‘B’ road

All roads which connect to a major road network and other roads of similar hierarchy with a road connecting major Growth Centre of the same or neighbouring wards which provide access between Class A and class C road falls on the category of Class B. For BodeBarsaain Municipality, ROW of Class B is adopted 10m with immediate carriageway of 5.5 m with extra 0.75m shoulder each on both sides. Walking pavements are provided on both side of width 1.5 m on both sides with drain flowing below them. Setback of 1.52 m is adopted.

List of class B road is given below and the detail map is presented in Annex. Typical cross section of class ‘B’ road is as given and the detail is given in Annex.

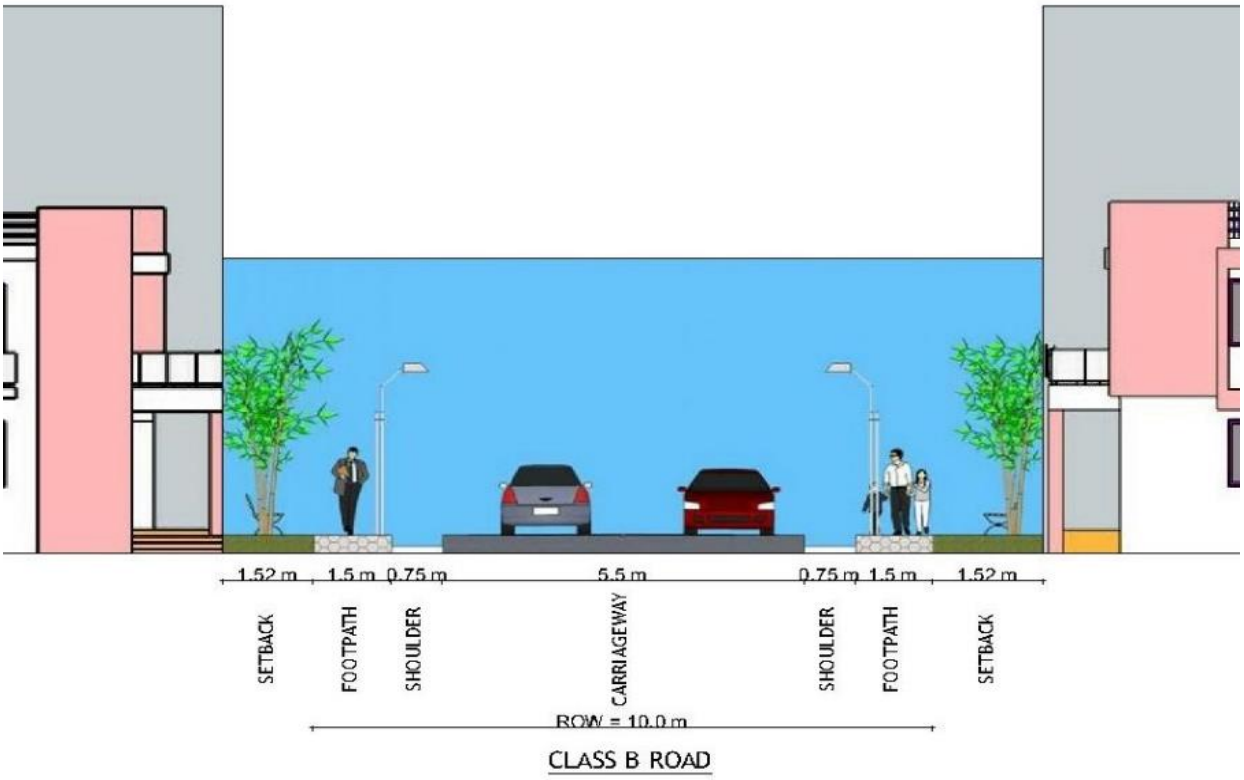


Figure 6 Typical Cross section of B Class road

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04B001	Gaura - Sarashwar - Dhangadhi	Gaura Tole, Sarashwar Tole, Dhangadhi Tole	B	BT, Gravel	10	2.91	1, 3
215M04B002	Manraja - Kachan -Bairyahi - Balan Bihul Gaupalika	Manraja, Kachan, Bairyahi, Maa Laxmi Temple	B	RCC, Gravel	10	4.93	8, 7
215M04B003	Manraja - Shripur - Khadgapur - Dakneshwori Gaupalika	Manraja, Shripur, Hanuman Manir, Khadgapur, Amraiya Tole	B	BT, RCC, Gravel	10	5.10	7, 10

4. Class ‘C’ road

All roads which provide connection to higher order roads with all agricultural roads which connect a farm with a mini-market Centre or a agro-based production Centre and means for mobility of local trips are understood as road Class C. For BodeBarsaain Municipality, ROW of Class C is adopted 8m with immediate carriageway of 5m having shoulder 0.5m each on both sides.. Walking pavements are provided on both side of width 1m each on both sides with drain flowing below them. Setback of 1.52m is adopted.

List of class C road is given below and the detail map is presented in Annex. Typical cross section of class ‘C’ road is as given and the detail is given in Annex.

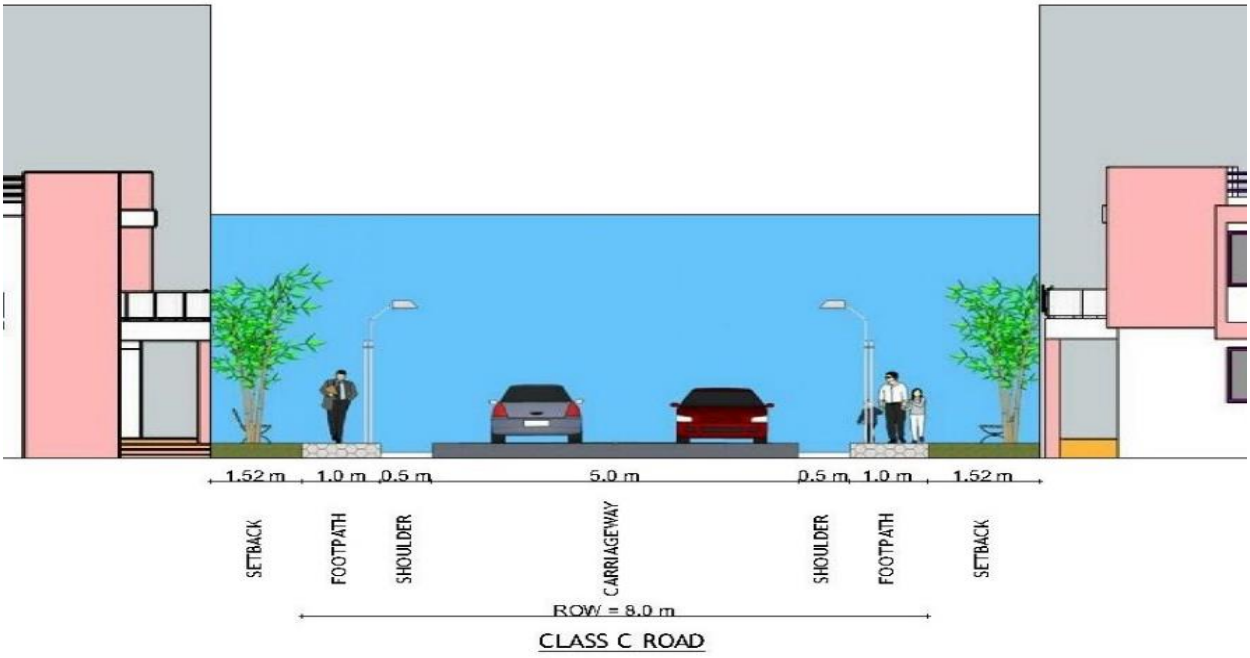


Figure 7: Typical Cross section of C Class road

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04C001	Kachan - Rajapatti - Deuri	Deuri, Rajapatti, Deuri, Hanuman Mandir	C	RCC, Gravel	8	3.55	8, 9
215M04C002	Barsain Shiv Chowk - Kamgadi	Barsain Shiv Chowk - Kamgadi	C	RCC, Gravel	8	1.69	5, 6
215M04C003	Main Road, Gaura - Baraha Tole - Khadak Nagarpalika	Gaura, Baraha Tole	C	RCC, Gravel	8	1.66	2, 3
215M04C004	Main Road, Negada - Baraha Tole	Negda Tole , Baraha Tole	C	RCC, Gravel, Eathen	8	1.81	2
215M04C005	Nengda Ward Office - Yogiya Tole - Main Road	Negda Tole, Yogiya Tole	C	RCC, Gravel	8	1.70	2
215M04C006	Nengda Tole Road	Negda Tole	C	RCC, Gravel	8	1.39	2
215M04C007	Dhangadhi - Sarashwar	Dhangadhi, Sarashwar	C	RCC, Gravel	8	2.01	3, 1
215M04C008	Main Road, Belha - Dina Bhadri Mandir - Dhangadhi	Belha Tole , Dina Bhadri Mandir, Dhangadhi	C	RCC, Gravel, Earthen	8	3.75	1, 2
215M04C009	Dhangadhi Chowk - Debahari - Sarsar - Madhuban - Hulaki Rajmarg	Dhangadhi Chowk, Shree Hanuman Mandir, Debahari Tol, Saharwa, Mahanauri, Madhubani	C	RCC, Gravel, Earthen	8	5.53	1,3
215M04C010	Dhangadhi - Mahanauri	Dhangadhi, Mahanauri	C	Gravel	8	0.69	1
215M04C011	Hulaki Rajmarga - Laxminarayan Mandir	Kushmahar, Laxminarayan Mandir	C	Earthen	8	1.41	3
215M04C012	Main Road, Khadakpur - Deuri	Khadakpur, Deuri	C	RCC, Gravel	8	1.18	9, 10
215M04C013	Deuri - Bop Apf Camp - Sonapur - Bairyahi	Deuri, Bop Apf Camp, Sonapur, Bairyahi	C	RCC, Gravel, Earthen	8	2.96	9, 8
215M04C014	Barsain Bazar Tole Road	Barsain Tole	C	RCC	8	0.21	5
215M04C015	Barsain Bazar Tole Road	Barsain Tole	C	RCC	8	0.22	5
215M04C016	Barsain Bazar Tole Road	Barsain Tole	C	RCC	8	0.19	5
215M04C017	Basain Tole Road to Satrughan Hospital	Barsain Tole	C	Gravel	8	0.12	5

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04C018	Simraha - Swarnpatty - Ram Tole	Simraha, Swarnpatty, Ram Tole	C	RCC, Grravel	8	2.07	9
215M04C019	Main Road to Ward Office 09	Deuri	C	Gravel	8	0.12	9
215M04C020	Nahar Road (Fulkahi - Sonapur)	Fulkahi, Bairyahi, Sonapur	C	Earthen	8	4.32	6, 8
215M04C021	Manraja Tole Road	Manraja	C	RCC	8	0.73	7
215M04C022	Fulkahi - Khamgara - Kachan	Fulkahi, Khamgara, Kachan	C	Gravel	8	3.22	6, 8
215M04C023	Main Road - Yogiya Tole	Yogiya Tole	C	RCC, Gravel	8	0.60	2

5. Class 'D' road

All roads which provide connection to higher order roads with individual household for mobility of local trips are understood as road Class D. For BodeBarsaain Municipality, ROW of Class D is adopted 6m with immediate carriageway of 4m with extra 0.5m shoulder each on both sides. Walking pavements are provided on one side of width 1m with drain flowing below it. Setback of 1.52 m is adopted.

List of class D road is given below and the detail map is presented in Annex. Typical cross section of class D road is as given and the detail is given in Annex. If Any Tole Road is constructed in Future all lies under the Class D Road & adopt the rules followed by Class D Road

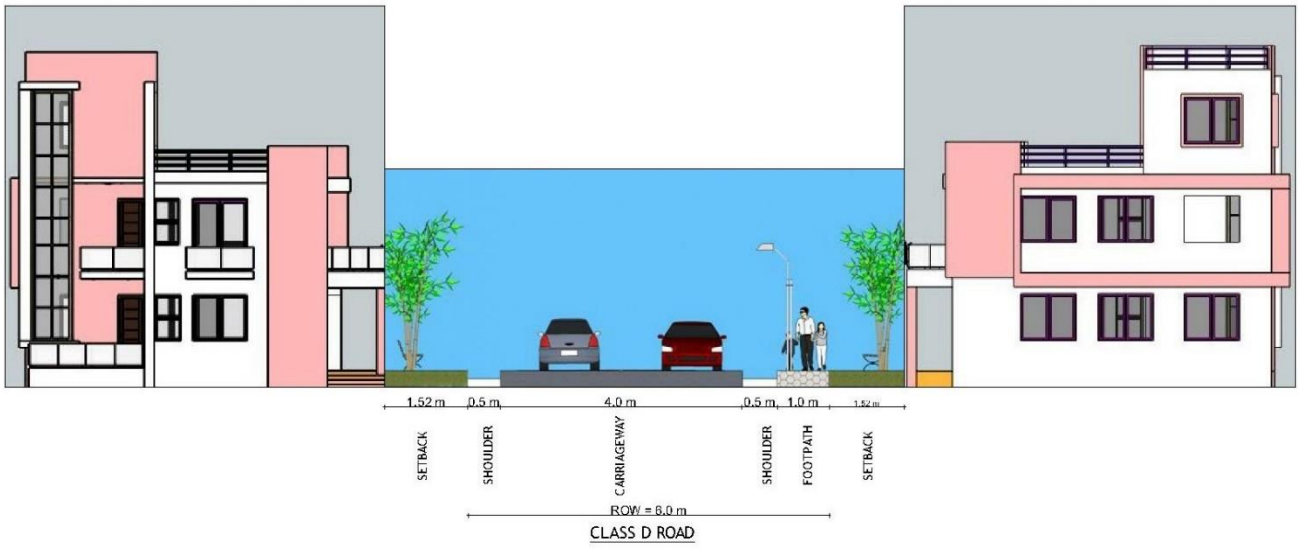


Figure 8 Typical cross section of class D road

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04D001	Belha - Sarashwar, Mushlim Tole	Belha, Sarashwara, Mushlim Tole	D	RCC, Gravel	6	2.24	2, 3
215M04D002	Gaura Tolle - Silahat Prasehi - Hulaki Sadak	Gaura Tole, Silaha Prasehi	D	RCC, Gravel	6	2.25	4, 5

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04D003	Dhanagadi - Manhanauri Mandal	Dhanagadi, Manhanauri Mandal	D	RCC, Gravel	6	1.24	1
215M04D004	Swarnpatty - East - Dakneshwori Nagarpalika	Swarnpatty	D	Gravel	6	0.95	9
215M04D005	Laxmi Mandir, Road Code A003 - West - Madhubani Tole	Kushmahar, Madhubani	D	Gravel	6	1.31	1, 3
215M04D006	Madhubani - Badhaki Tole, Balan Bihul Gaunpalika	Madhubani	D	Earthen	6	0.90	3
215M04D007	Road Code A002, Dihbarni Mai than - West - Road Code C022 (Khamgara Tole Road)	Khamgara Tole	D	RCC, Gravel	6	1.43	6
215M04D008	Manraja - Hullaki Sadak, Jajar	Manraja, Jajar	D	RCC, Gravel	6	2.01	5, 7
215M04D010	Khadakpur Tole Road (Road Code A001 - Ward Office - Road Code B003	Khadakpur Tole, Ward Office	D	RCC	6	0.82	10
215M04D011	Shripur - Nahar Road, Road Code D009	Shripur	D	RCC, Gravel	6	0.35	10
215M04D012	Amraiya - Nahar Road, Road Code D009	Amraiya	D	Gravel	6	0.71	10
215M04D013	Belha Tole Road (Road Code C008 - North, East - Road Code A001)	Belha Tole	D	RCC, Gravel	6	0.72	2
215M04D014	Belha Tole Road (Road Code C008, Mahar Pokhari - North, East - Road Code D013	Belha Tole	D	RCC, Gravel	6	0.31	2
215M04D015	Bairiya Tole Road (Road Code A001 -West - Road Code C008)	Bairiya Tole	D	RCC, Gravel	6	0.41	2
215M04D016	Bairiya Tole Road (Road Code D015 -West - Road Code D001)	Bairiya Tole	D	RCC, Gravel	6	0.49	2
215M04D017	Bairiya Tole Road (Road Code D015 - South - West - Road Code D001)	Bairiya Tole Road	D	Gravel	6	0.34	2
215M04D018	Bairiya Tole Road (Road Code D016 - South - Chaudhari Tole)	Bairiya Tole, Chaudhari Tole	D	Gravel	6	0.41	2
215M04D019	Belha, Road Code C008 - South - Road Code D016, Bairiya Tole)	Belha Tole, Bairiya Tole	D	Gravel, Earthen	6	0.38	2
215M04D020	Bairiya Tole Road (Road Code D017- South - Road Code D016)	Bairiya Tole	D	Gravel	6	0.11	2
215M04D021	Bairiya Tole Road (Road Code D001 - East - Road Code D017)	Bairiya Tole	D	Gravel	6	0.15	2
215M04D022	Yogiya Tole Road (Road Code C005 - West - Road Code C023)	Yogiya Tole Road	D	Gravel	6	0.18	2
215M04D023	Dhangadhi Tole Road (Linking Dhangadhi Ring Road)	Dhangadhi Tole	D	RCC	6	0.13	1
215M04D024	Dhangadhi Bazar, Road COde C009 - Khadak Nagarpalika	Dhangadhi Bazar	D	RCC	6	0.43	1
215M04D025	Debahari, Road Code C009 - North, East - Khadak Nagarpalika	Debahari	D	RCC, Gravel	6	0.34	1
215M04D026	Saharwa Tole Road (Road Code C009 - West - Domuhan River)	Saharwa Tole	D	Gravel	6	0.86	1
215M04D027	Mahanauri Tole Road (Connected to Road Code C009)	Mahanauri Tole	D	RCC	6	0.28	1
215M04D028	Saharawa Tole Road (Connected to Road Code D026)	Saharawa Tole	D	RCC	6	0.21	1

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04D029	Madhuban Tole Road (Connected to Road Code C009)	Madhuban Tole	D	Gravel	6	0.48	3
215M04D030	Sarsar Jagah Tole Road (Road Code B001 - North, West - Road Code A003)	Sarsar Jagah Tole	D	RCC, Gravel	6	0.85	3
215M04D031	Sarsar Jagah Tole Road (Connected to Road Code D030)	Sarsar Jagah Tole Road	D	RCC	6	0.34	3
215M04D032	Sarsar Jagah Tole, Road Code D030 - East - Ram Janaki Mandir)	Sarsar Tole, Ram Janaki Mandir	D	RCC	6	0.09	3
215M04D033	Sarsar Jagah Tole Road (Connected to Road Code C030)	Sarsar Jagah Tole	D	RCC, Gravel	6	0.14	3
215M04D034	Madhuban Tole Road (Connected to Road Code D005)	Madhuban Tole	D	Gravel	6	1.21	3
215M04D035	Hulaki Sadak , Pritampur - South - Road Code A002	Pritampur, Fulkahi	D	RCC, Gravel	6	1.08	6
215M04D036	Pritampur Tole Road (Connected to Road Code D035)	Pritampur Tole	D	RCC, Earthen	6	0.90	6
215M04D037	Fulkahi Tole Road (Road Code A003 - Road Code A002)	Fulkahi Tole	D	RCC	6	0.34	6
215M04D038	Malahani Tole Road (Road Code C002 - West - Ward Office 2)	Malahani Tole , Ward Office 6	D	RCC	6	0.76	6
215M04D039	Malhaniya Tole Road (Conneced to Road Code C002)	Malhaniya Tole	D	RCC	6	0.34	6
215M04D040	Prasahi - Larahi Pokhari - Kushmahar, Road Code A003	Prasahi Tole , Larahi Pokhari, Kushmahar	D	RCC, Earthen	6	1.61	4, 3
215M04D041	Prasahi Tole Road (Connected to Road Code Road Code D002)	Prasahi Tole	D	RCC	6	0.38	4
215M04D042	Prasahi Tole Road (Connected to Road Code Road Code D0041)	Prasahi Tole	D	Gravel	6	0.07	4
215M04D043	Shiv Chowk, Hulaki Sadak - Ward Office 4 - Bhating - Hulaki sadak	Shiva Chowk, Silhat, Bhating	D	RCC, Gravel	6	1.45	4, 5
215M04D044	Road Code D002 - Road COde D043,near By Ward Office 4	Silhat Tole	D	RCC, Gravel	6	0.19	4
215M04D045	Bhating Tole Road (Road Code D002 - East - Road Code D043)	Bhating Tole	D	RCC	6	0.26	4, 5
215M04D046	Bhating Tole Road (Hulaki Sadak - North - Road Code D045)	Bhating Tole	D	RCC	6	0.37	5
215M04D047	Bhating Tole Road (Road Code D002 - Road Code D046	Bhating Tole	D	RCC	6	0.17	5
215M04D048	Bhating Tole Road (Connected to to Road Code D002 in west Direction)	Bhating Tole	D	Gravel	6	0.31	5
215M04D049	Krishi Sadak (Connected to road Code D002, Prasahi)	Prasahi Tole	D	RCC, Earthen	6	0.49	4
215M04D050	Ward Office 03, Road Code B001, Sarashwar - Road Code D002, Near By Water Tank, Silhat)	sarashwar Tole	D	RCC, Gravel	6	1.34	3
215M04D051	Gaura Tole Road (Connected to Road Code A001)	Gaura Tole	D	Earthen	6	0.48	2, 3
215M04D052	Gaura Tole Road (Connected to Road Code B001)	Gaura Tole	D	RCC	6	0.17	3
215M04D053	Gaura Tole Road (Connected to Road Code	Gaura Tole	D	RCC	6	0.37	3

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
	B001)						
215M04D054	Gaura Tole Road (Road Code D051 - Road Code D053	Gaura Tole	D	RCC	6	0.21	3
215M04D055	Barsain Tole Road (Road Code C002 - Dihabar baba Mandir)	Barsaain Tole	D	RCC, Earthen	6	0.93	5
215M04D056	Barsain Tole Road (Road Code C002 - Road Code D055)	Barsaain Tole	D	Gravel	6	0.06	5
215M04D057	Barsain Tole Rode (Hulaki Sadak - Road Code C002)	Barsaain Tole	D	RCC	6	0.33	5
215M04D058	Barsain Tole Road (Hulaki Sadak - Road Code D057)	Barsaain Tole	D	RCC, Gravel	6	0.21	5
215M04D059	Barsain Tole Road (Connected to Road Code D058)	Barsain Tole	D	RCC	6	0.06	5
215M04D060	Barsain - Kamgara (Road Code D058 - Municipality Offiice - Kamgara bazar)	Barsaain Tole , Barsain Bajar, Municipality Office	D	RCC, Gravel	6	0.71	5
215M04D061	Hulaki Sadak - Municipality Office	Municipality Office	D	RCC	6	0.16	5
215M04D062	Hulaki Sadak, Jajar - Baraha	Jajar Tole , Baraha	D	RCC, Gravel	6	2.16	5, 2
215M04D063	Hulaki Sadak, near by Khadak Bridge - Jajar, Road Code D062	Jajar Tole	D	RCC, Gravel	6	0.37	5
215M04D064	Jajar Tole Road (Hulaki Sadak - Road Code D063)	Jajar Tole	D	RCC, Earthen	6	0.11	5
215M04D065	Jajar Tole Road (Connected to Road Code D063)	Jajar Tole	D	RCC	6	0.05	5
215M04D066	Jajar Tole Road (Hulaki sadak - Road Code D062)	Jajar Tole, Shiv Mandir	D	Gravel	6	0.20	5
215M04D067	Road Code A001, Haithi - Shiv Mandir - Malahaniya, Road Code C002	Haithi, Malhaniya	D	RCC, Gravel	6	1.63	7, 5
215M04D068	Haithi Tole Road (Road Code A001 - Shiv Mandir)	Hathi Tole	D	RCC,Gravel	6	0.30	7
215M04D069	Haithi Tole Road (Conected to roa Code A001)	Haithi Tole	D	RCC	6	0.07	7
215M04D070	Manraja Tole Road (Connected to Road Code D008)	Manraja Tole	D	RCC	6	0.35	7
215M04D071	Manraja Tole Road (Road Code D008 - Road Code D070)	Manraja Tole	D	RCC, Gravel	6	0.28	7
215M04D072	Manraja Tole Road (Hulaki Sadak - Road Code D071)	Manraja Tole	D	RCC	6	0.18	7
215M04D073	Manraja Tole Road (Road Code A002 - Road Code B002)	ManrajaTole	D	RCC, Gravel	6	0.69	7
215M04D074	Manraja Tole Road (Road Code A001 - Road Code D073	Chamarahi Tole	D	Gravel	6	0.30	7
215M04D075	Manraja Tole Road (Connected to Road Code B002)	Manraja Tole	D	RCC, Gravel	6	0.69	7
215M04D076	Road Code A001 - Road Code B003	Manraja tole	D	RCC, Earthen	6	0.44	10
215M04D077	Krishi Bato (Connected to Road Code A001 , Manraja Tole)	Manraja Tole	D	Earthen	6	0.72	7
215M04D078	Kanchan Tole Road (Connected to Road Code B002)	Kanchan Tole	D	RCC, Gravel	6	0.62	8
215M04D079	Kanchan Tole Road (Road Code B002 - Road Code D078	Kanchan Tole	D	Gravel	6	0.22	8

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04D080	Kanchan Tole Road (Road Code B002 - Road Code D078	Kanchan Tole	D	Gravel	6	0.24	8
215M04D081	Kachan Tole road (Road Code D078 - Road Code D079)	Kachan Tole	D	Gravel	6	0.22	8
215M04D082	Kachan Tole Road (Road Code B002 - Road Code C001)	Kanchan Tole , Kanchan Bazar	D	Gravel	6	0.53	8
215M04D083	Kachan Tole Road (Road Code B002 - Road Code C001)	Kachan Tole	D	Gravel	6	0.17	8
215M04D084	Kachan Tole Road (Road Code B002 - Road Code D082)	Kachan Tole, Health Post , Police station	D	Earthen	6	0.19	8
215M04D085	Kachan Tole Road (Connected to Road Code B002)	Kachan Tole	D	RCC	6	0.18	8
215M04D086	Kachan Tole Road (Connected to Road Code B002)	Kachan Tole	D	RCC	6	0.09	8
215M04D087	Kachan Tole Road (Conected To Road Code B002)	Kachan Tole	D	RCC	6	0.11	8
215M04D088	Rajapatty Tole Road (Connected to Road Code C001)	Rajapatty Tole	D	RCC, Gravel	6	0.62	8
215M04D089	Rajaipatty Tole Road (Road Code C001 - Road Code D088)	Rajaipatty	D	RCC	6	0.17	8
215M04D090	Rajaipatty Tole Road (Road Code D089 - Road Code D088)	Rajaipatty	D	Gravel	6	0.12	8
215M04D091	Rajaipatty Tole Road (Road Code D088 - Road Code D090)	Rajaipatty Tole	D	Gravel	6	0.09	8
215M04D092	Rajaipatty - Nahar Road	Rajaipatty Tole	D	Gravel	6	0.88	8
215M04D093	Deuri Tole Road (Road Code C012 - Road Code C001)	Deuri Tole	D	RCC, Gravel	6	0.25	9
215M04D094	Deuri Tole Road (Road Code C012 - Road Code D093)	Deuri Tole	D	RCC	6	0.13	9
215M04D095	Khadakpur Tole Road (Road Code A001 - Road Code D010)	Khadakpur Tole	D	RCC, Gravel	6	1.04	10
215M04D096	Road Code D010 - South - Shree Dihbar Than	Khadakpur	D	RCC, Gravel	6	0.75	10
215M04D097	Khadakpur Tole Road (Road Code A001 - Road Code D095)	Khadakpur Tole	D	Gravel	6	0.16	10
215M04D098	Khadakpur Tole Road (Connected to Road Code D096)	Khadakpur Tole	D	RCC	6	0.38	10
215M04D099	Khadakpur Tole Road (Road Code D096 - West, South - Road Code D098)	Khadakpur Tole	D	RCC	6	0.29	10
215M04D100	Khadakpur Tole Road (Road CodeD095 - Connected to Road Code D098 & D099)	Khaakpur Tole	D	RCC, Gravel	6	0.27	10
215M04D101	Road Code D095 - South - Road Code D100)	Khaakpur Tole	D	RCC	6	0.26	10
215M04D102	Khadakpur - Shripur	Khadakpur Tole, Shripur	D	Earthen	6	1.19	10
215M04D103	Ram Tole Road (Connected to Road Code C018)	Ram Tole	D	Gravel	6	0.22	9
215M04D104	Road Code A001 - Ram tole	Ram Tole	D	Gravel	6	0.13	9
215M04D105	Simraha Tole Road (Connected To Road Code C018)	Simraha Tole	D	RCC, Gravel	6	0.35	9
215M04D106	Simraha Tole Road (Road Code A001 - Road Code C018)	Simraha Tole	D	Gravel	6	0.19	9

Digital Name	Road Name	Nodal/Settlement	Class	Surface	Row	Length	Ward Passed
215M04D107	Simraha Tole Road (Road Code A001 - Road Code C018)	Simraha Tole	D	Gravel	6	0.28	9
215M04D108	Simraha Tole Road (Connected to Road Code C018)	Simraha Tole	D	Gravel	6	0.25	9
215M04D109	Road Code A001 - East, South - Road Code D108	Simraha Tole	D	Gravel	6	0.35	9
215M04D110	Simraha Tole Road (Road Code D108 - Sabarna River)	Simraha Tole	D	RCC, Gravel	6	0.44	9
215M04D111	Road Code A001 - South - Sabarna River - Road Code D110	Simraha	D	Gravel	6	1.38	9, 10
215M04D112	Swarnapatty Tole Road (Road Code C018 - East)	Swarnapatty Tole	D	RCC, Gravel	6	0.60	9
215M04D113	Swarnapatty Tole Road (Road Code C018 - East - South - Road Code D112)	Swarnapatty Tole	D	RCC, Gravel	6	0.38	9
215M04D114	Swarnapatty Tole Road (Road Code D112 - Road Code D113	Swarnapatty Tole	D	Earthen	6	0.23	9
215M04D115	Swarnapatty Tole Road (Road Code D114 - Road Code D113)	Swarnapatty Tole	D	RCC	6	0.07	9
215M04D116	Swarnapatty Tole Road (Road Code D112 - south)	Swarnapatty Tole	D	RCC	6	0.12	9
215M04D117	Swarnapatty Tole Road (Road Code C018 - Road Code D004)	Swarnapatty Tole	D	RCC	6	0.28	9
215M04D118	Silhat Tole Road	Silhat Tole , Maijan Pokhari	D	Earthen	6	0.05	4
215M04D119	Barahi Tole Road (Connecting Road Code C003)	Barahi Tole	D	Earthen	6	0.18	2
215M04D120	Road Code C009 - South - Road Code D003	Debahari Tole	D	Gravel	6	0.20	1
215M04D121	Nengda Tole Road (Road Code C006 - Road Code C004)	Nengda Tole	D	Gravel	6	0.30	2
215M04D122	Nahar Road (Road Code C021,Manraja - South - Khadgapur - Dakneshwori Nagarpalika	Manraja , Shripur, Khadgapur	D	Earthen	6	3.74	7, 10
215M04D123	Road Code C013 - Road Code C020	Sonapur Tole	D	Gravel	6	0.19	8
215M04D124	Krishi sadak (Road Code C013 - South)	Sonapur	D	Earthen	6	2.05	8, 9
215M04D125	Janjar Tole Road (Hulaki Sadak - South)	Janjar Tole, Masjid	D	RCC, Gravel	6	1.05	5
215M04D126	Krishi Sadak (Gauda - Bairiya Tol)	Gaura Tole, Bairiya Tole	D	Earthen	6	1.44	2
215M04D127	Road Code A003 - West - Road Code C011	Kushmahar	D	RCC, Gravel	6	0.28	3

SECTION F: FIVE YEARS MUNICIPAL TRANSPORT MASTER PLAN

1. Strategic framework

The framework adopted during the entire planning and how it is compatible with long term vision of transportation planning and economic-social development is described in the underlying headings.

Hierarchy of road

In any urban area, provision of proper hierarchy of roads at proper spacing helps to reduce traffic congestions and increase the mobility along the roads. A well-formed road hierarchy and its network of roads will reduce overall impact of traffic on the land use and at the same time guide the planned change of the land use. Thus, a proper hierarchy of road networks should be provided at proper spacing so that their purpose and functions can be justified.

Hierarchy should be maintained according to the major SRN road (national highway, feeder road) that passes through the municipality or is closest to the municipal area. Urban/municipal roads that open into these SRN should be have proper ROW and spacing so that the traffic that enters the SRN is justified and the purpose of the road is also preserved. The NRS (2070) gives the provision of parallel service (frontage roads) at the spacing of at least 750 meters. Larger spacing creates bottlenecks while closer spacing may be unnecessary.

A well-formed network of Class “A” and “B” roads creates blocks of 1 sq. km. to 2 sq. km. in the urban area and bigger blocks in the sub-urban areas. The hierarchy also provides well connected pedestrian way.

Urban roads

Urban roads are used by all sorts of users including pedestrians, cyclists, motorists and pubic vehicles. Their speed of travel varies significantly. Pedestrians and cyclists move slowly while other motorized vehicles travel at greater speed. Sharing of common roadway by all these users is very unsafe and unpleasant, especially for the active users. Their volume is also very significant and thus cannot be ignored. Thus, proper road infrastructure should be provided to ensure their safety by segregated pedestrian facilities and bicycle tracks.

Public transport

Public transport is a means for enhancing mobility of local people. High proportion of active transport users justifies the necessity of public transport to increase their mobility and thus access to wider services and facilities within the perceived travel time budget. Proper structured public transport routes are vital for sustainable transport development. The existing economy and travel pattern may not sustain on its own. Development of proper roads to facilitate access and (through access) mobility to various services and facilities will create more trips and thus

demand. Strategic development of such roads will not only create demand for public transport (greater mobility) but also develop proper road network where public transport vehicles can ply.

As the demand increases, before well-structured and formal transport is justified economically, the local government should introduce city buses. City buses are government run public vehicles. Their sole purpose is to provide greater mobility to the local people even when the demand is not economically justified. Such provision adds fuel to the overall development of the local economy. It also captures the potential public transport users and retains those users. This is a "pull factor" to increase public transport users in the future and creates an environment to introduce formal public transport services.

Principle guideline of road planning

Change in land use and transport are cause and effect of each other, as depicted by the land use cycle in previous chapter. Thus, current land use and the predicted/planned change in land use in the future is the basic guideline for transport planning. Development of compact settlements and corresponding development scenario has been considered for road planning. The municipality is urbanizing area whose population is expected to rise in the coming years. As the population is added, the settlements grow both horizontally and vertically. Horizontal expansion increases the built up area while vertical expansion increases the population density. With higher road densities, the required width of the transport facilities also increases locally and along the major roads. Increase in built up area demands bigger network of local and collector roads which ultimately demand wider roads of higher hierarchy.

Hierarchy of settlement

A proper hierarchy of settlement should be developed to segregate the commercial and business centres from settlement areas and industrial area. A hierarchy of the market centres should be developed as main market centre and local market centres. Promotion of bi-nuclear or multi-nuclear city is necessary for even development of the settlements within the municipality. These bring many services and facilities closer to the demand and reduce the need to travel to the main market centre.

Introduction of basic road and road side infrastructure

There is a need to redefine the term "road way" among the local people who perceive only paved road surface for motorized vehicles as proper road way. Although, the proportion of active transport users is very high, the road infrastructure necessary to support these users do not fit within the defined road by the locals. Such perception and construction of road infrastructure accordingly will lead to high rate of motorization which creates problem to manage the generated traffic, pollution and other externalities.

In the present context, with very high active users, proper networks of pedestrian way and cycle tracks should fit in the basic road width. It should be planned and implemented as basic road

side infrastructure. Similarly, the landscaping of the road sections with proper greenbelt increases the greenery in the city, provides shade to the active users, segregate different users and a pleasant travelling environment for all the users.

Proper lay bys are necessary elements for proper public transport system. Bus stops should have proper sheltering furniture, seating benches, lighting system, trash boxes, information boards and displays of routes and schedule of buses and proper connected pedestrian ways and zebra crossings.

Urban road discipline

Obeying of proper discipline and enforcement of it is equally important as the provision of the urban road infrastructure itself. Proper discipline not only makes the use of the facility efficient, it also creates a sense of comfort and safety. Segregation of the pedestrian way and cycle track from the main carriageway enforces certain level of discipline among the users. Provision of proper NMT crossing facilities and control of jay walkers is necessary to maintain proper flow of traffic in the Main Street and safety.

Integrated service planning

Integrated service planning is a very important factor for damage minimization during construction and expansion of various facilities. As the road follows, settlement also expands which demands other facilities such as electricity, drainage and drinking water. All these facilities are provided along with road infrastructure, mostly within the ROW of road. Proper integration of these services with road planning is necessary to minimize multiple investments in the individual infrastructure and the damage to other infrastructure during maintenance and/or expansion.

Development phase of roads

The proposed roads cannot be directly implemented at a glance. Proper phases of development of roads of all hierarchy should be envisaged and planned. The first phase is simply the formulation of necessary hierarchy and identification of road sections that serves/ can serve as different hierarchy roads. During this phase, bylaws as demanded by the formulated road hierarchy along the identified roads should be enforced. The next phase is to develop necessary policy and implementation plan for expansion and construction of the road. The phases of construction total road width should also be worked out as development of full road width as demanded by the respective road hierarchy may not be possible. As such, implementation of road hierarchy starts from roads in lowest hierarchy and stage wise expansion of the roads according to the demand and necessity of wider roads and facilities to the higher hierarchy roads.

Grass root institutions

The grass root institutions/committees should be empowered with the provision of local technicians in such institutions. Such institutions include consumers' groups, ward level committees, MRCC and others.

2. Prospective plan of municipal road network

Perspective plan of municipal road network includes the maintenance of the access and collector roads and development of higher hierarchy road corridors supporting mobility of the roads. First five years should focus on development of existing access roads and their maintenance. It also incorporates construction of new road linkages to provide basic access to the settlements. Roads of Class "C" will also be widened to its functional width providing proper cycle tracks and pedestrian ways where permitted by the available road space. During this period formulated road hierarchy will be implemented in terms of policy and enforcement of bylaws. Within 2 years other complementary plans of land use and city development will be developed. In the third year, the MTMP and its perspective plan should be revised in coordination with the other plans formulated and changes captured during this period.

Year five to ten will then implement the higher hierarchy roads in stages of clearing of the required ROW road space and construction of necessary infrastructure. Proper development stages of roads should be planned (construction of Class "A" roads to the standards of Class "C", then gradually upgrading to Class "B" and then to Class "A"). Other implementation strategies should also be developed and finalized at the end of this period. The road network developed during this period shall complete construction of Class "C" roads. This will demand higher class roads to support the local road networks. Gradual upgrading of the higher hierarchy road networks during year ten to twenty will be justified by the traffic generated and level of mobility demanded to support the emerging economy. The detail of perspective plan of road network is given maps in Annex.

3. Financial institution and capital investment plan

To determine how much of the proposed work can be carried out in the 5-year MTMP period, it is necessary to estimate the budget available in this period. This is done by estimating the amount of money available from different sources based on the actual amounts of the current or last financial year, assuming certain growth rates for each funding source.

It is recommended that the planning section of municipality should incorporate funding source from different line agencies as well as NGOs, INGOs, people's contribution fund for proper management, infrastructure development and maintenance of road within the municipality.

4. Five year budget expenditure

One of the final outcomes of this study is to provide annual budget expenditure for proposed intervention (new construction, upgrading, maintenance and rehabilitation).

For the allocation of yearly budget, the total cost required for twenty years is first calculated and this amount is distributed to twenty year assuming that budget spending capacity of municipality is expected to grow at the rate of 10% per year. Total budget required for the 5 years was found to be approximately NRs. One billion five hundred ninety three million thirty five thousand eight hundred twenty four rupees only.

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 road is to be made single lane and lane considered are assumed to be metalled. 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 2m is assumed if existing road width doesn't exist.

MTMP mainly deals with Class A, B and C roads, and it may found that Class D roads are not given any consideration. Interventions on those roads need to be incorporated in annual budget plan. Intervention that need 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.

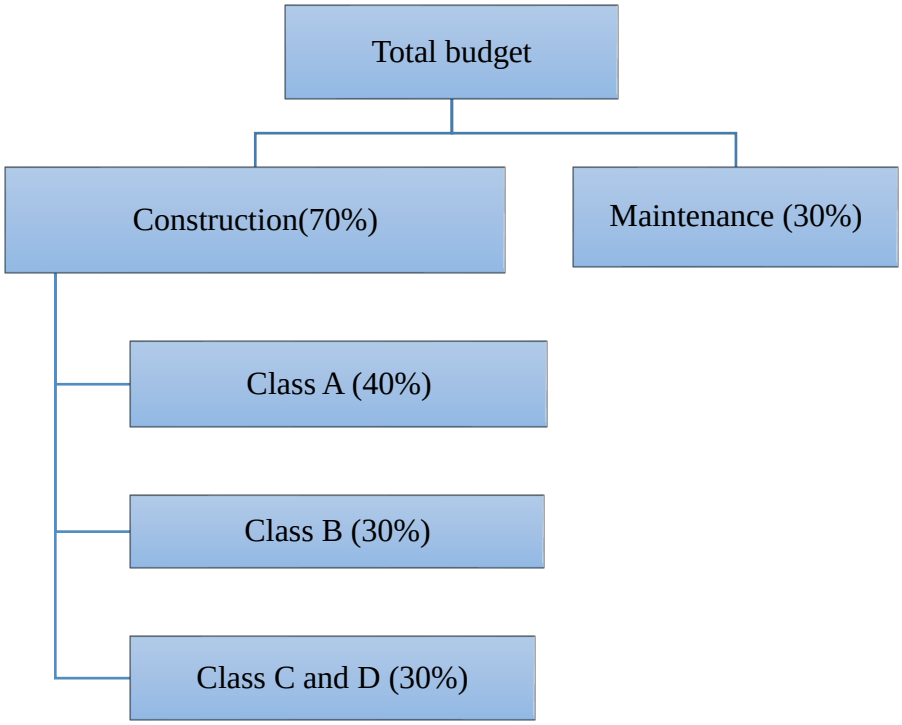
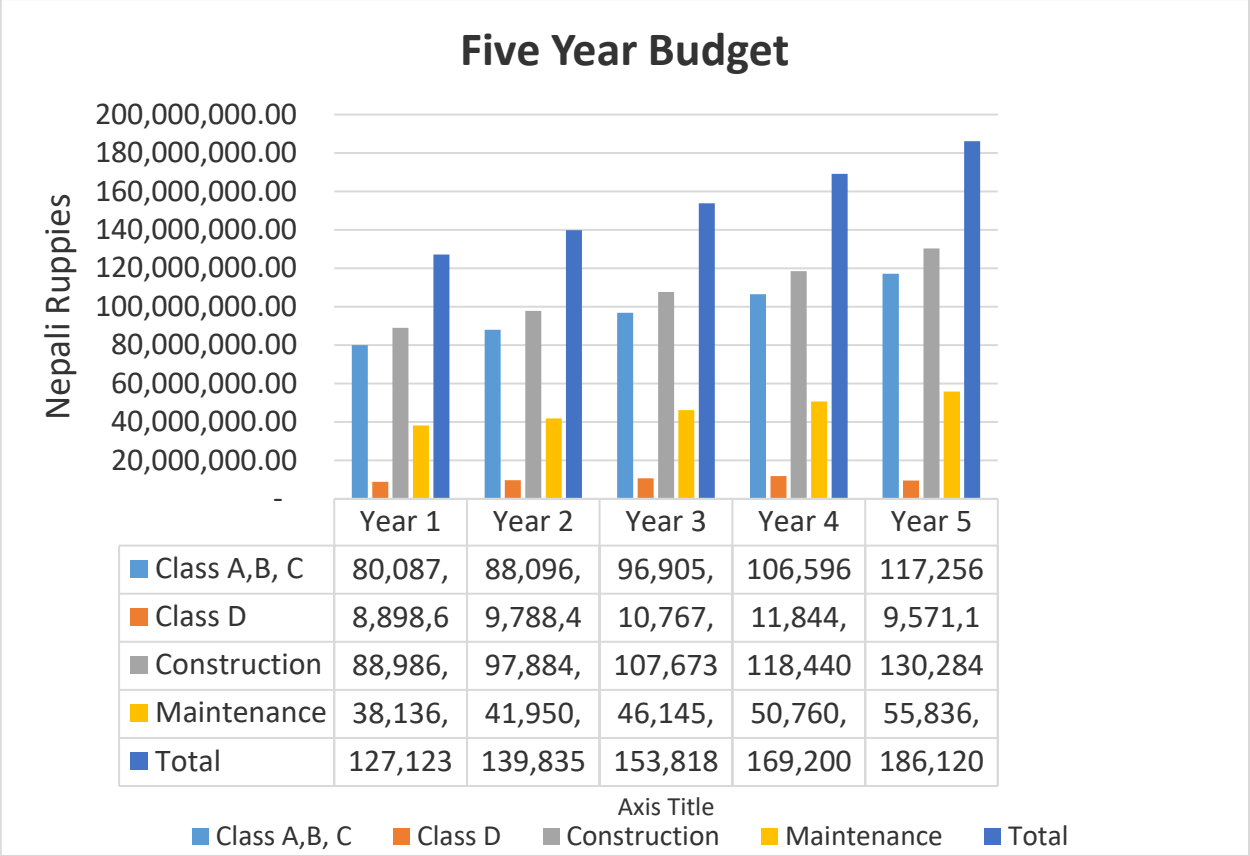


Figure 5: Budget Allocation

Total budget is first broken down to 70% for road construction and 30% for maintenance. Of the total budget available for construction of roads, 40% is allocated for construction of class A roads, 30% is allocated for Class B and remaining 30% is allocated to Class C and D roads.

From fund available for construction of A, B, C roads, each year for the next five years from preparation of MTMP, Rs. 1,000,000.00 shall be allocated for study and advocacy of development of road corridor through major road class for clearance of right of way from maintenance fund.

Total budget of BodeBarsaain Municipality for the fiscal year 2081/82 is NRs. 84,51,44,000.00 among which 30% has been allocated for infrastructure development. Taking into consideration that one third of the infrastructure budget will be allotted for road and allied structure, we have prepared a five year budget as presented in chart below.



	Year 1	Year 2	Year 3	Year 4	Year 5
Class A,B, C	80,087,490.00	88,096,239.00	96,905,862.90	106,596,449.19	117,256,094.11
Class D	8,898,610.00	9,788,471.00	10,767,318.10	11,844,049.91	9,571,100.00
Construction	88,986,100.00	97,884,710.00	107,673,181.00	118,440,499.10	130,284,549.01
Maintenance	38,136,900.00	41,950,590.00	46,145,649.00	50,760,213.90	55,836,235.29
Total	127,123,000.00	139,835,300.00	153,818,830.00	169,200,713.00	186,120,784.30

Scoring Criteria and Priorities

A network consists of several links. It is not possible to construct all roads at a time due to resource and time constraint. Therefore, each link in a network needs to be prioritized and various interventions need to be taken based on the prioritization. After developing a municipal level road network, the cost estimate of the road is prepared and benefit of each link in the network is assessed. There might be various criteria of prioritization, which may differ from place to place The basic criteria that is used for prioritization includes existing population within the zone of influence, present road demand, future potential route, accessibility situation, land use pattern, proximity to the market/service centres, religious and tourism places, existing road width and surface type. These criteria are given various weight age and weight age average of all the criteria is summed up to come with a priority of intervention. All type of intervention is provided with same scoring criteria. The finalized scoring criterion based on rigorous study is set in front of municipality and MRCC for its approval.

Each road link is allocated the number of points corresponding to the fulfilment of the particular criteria. The weighted average of score that each intervention receives leads to a ranking/prioritization of the intervention options. Short description of the indicators used is given below and detail discussion is given in Annex of the report.

Demand priority of wards indicates higher the priority order of the road by ward, higher the weight age the road gains.

Proposed road class: higher the road class, higher number of people it serves and it should get more priority.

Total existing width: the road with more width should get higher priority because it indicates the necessity of road and the people's dedication for wide roads.

Population served: the main purpose of the road is to serve people and more a road serves for population it should be given high priority.

Road surface condition: from the point of view of accessibility to mobility, more priority should be given to road of poor surface condition to upgrade to higher condition.

Road density: it may be defined in two ways. In one way it is the length of road per unit area of the settlement and in another way it indicates the length of road per 1000 population it serve.

Settlement density: higher the settlement density, higher will be the road users and hence such area should be given more priority.

Service provided by the road such as Recreational(R), Agricultural (A), Market (M) and Service centre(S) (RAMS): if a road provides more service than another then this road should be given higher priority.

Access to poor and minor: if a road serves for poor and marginalised people then it should be given higher priority.

5. Staging Implementation

Mid period review

In light of present context without proper land use and city development plans of the municipality, the formulated municipal transport plan for five years and long term perspective plan cannot be complete. Comprehensive drainage plan and layout also guides the placement of cross drainage structures along the roads. Therefore, a mid period review is necessary. This review follows the formulation of comprehensive city development plan and land use plan. These plans will bolster the transport master plan and also suggest necessary deviations and revisions. The surveys conducted to prepare this MTMP are baseline survey for future planning. In reference to these surveys, the mid period review will track the changes and its effect on the formulated five year plan and long term perspective plan. Based on the recommendations of land use and city development plan, and the changes during the first two years in the road infrastructure and road traffic the mid period review will guide MTMP in the later stages.

The next MTMP will be prepared in the sixth year which will create a void in continuity of transport infrastructure development during the sixth year. The mid period year shall also formulate implementation and investment plan for that period which will be carried over the next MTMP.

Yearly maintenance plan

According to the yearly progress of transport infrastructure development and construction, yearly maintenance plan should be prepared. This maintenance plan addresses the recurrent maintenance, specific maintenance and emergency maintenance requirements of the municipal roads.

Stages of development of roads

Visualization of stages of development of roads is very important aspect of long term municipality transport master plan (perspective plan). Current land use and road side development may not allow immediate implementation of wider roads. These restrictions should be addressed in various stages. The stages can be visualized in reference to various variables.

The prime stage is the formulation of policy and plans. This stage formulates the hierarchy and their geometric and physical characteristics, purpose and functions along with necessary ROW. With the formulation of road hierarchy, road bylaws will be enforced. It should be followed by formulation of proper implementation strategies for/and use of various tools for land acquisition

and compensation, method and stages of construction of roads and road side infrastructures and enforcement of road discipline and right of users. Development of such policies will support continuous development of the roads. The next stage is to clear the total right of way so that other infrastructures integrated with road can be developed. Until the end of clearing of proper right of way, the policies should be strong and well-informed. This will mark the entry to the next stage which is construction of full phase of all hierarchy roads.

Construction of higher hierarchy roads should be done in stages according to the necessity as guided by the developed lower hierarchy roads and corresponding demand of higher hierarchy roads they generate. The first stage should connect the pedestrian path and cycle tracks along with double lane carriageway for all higher hierarchy roads. The development of Class “A” roads should follow construction of road space to the standard of Class “C” then gradually expanding to Class “B” and finally to Class “A”. Class “B” roads should also follow the same development stages. Construction of well-connected pedestrian way, cycle tracks and green belt along the edges of the ROW restricts any possible encroachment of the road space. For detail, see on Annex of this report.

SECTION G: : CONCLUSION AND RECOMMENDATION

Municipality Transport Master Plan has been prepared for BodeBarsaain Municipality. A series surveys for data collection, series of different level interaction with the locals and various authorities was conducted. The study has identified all the roads of the municipality, their status and interventions required. The map of IDPM, MIM, MTPP and other maps has been prepared. Detail implementation strategy and budged expenditure plans have been prepared. The inventory shows that majority of roads are narrow and needs maintenance and upgrading. This is in line with the demand by the wards. The accessibility of roads has addressed most of the settlements but their mobility is very low. Access to facilities is hindered due to lack of reliable and safe public transport services within the municipality. Introduction of proper city buses and public transport is pertinent to fuel the development process at earliest.

The study has formulated hierarchy of roads which is necessary for long term rapid development of the municipality area. The report presents the necessary functions of the roads and their characteristics. Possible cross sections are also recommended. The study has shown high proportion of active road users which have been addressed thorough provision of pedestrian facilities and bicycle tracks is all roads except access roads. This is necessary to be implemented as the developed cities are having trouble to address the demand of active mode user friendly urban road infrastructures, BodeBarsaain Municipality has the opportunity to sustain the road users and create a sustainable and well-planned urban road network and infrastructure. As the implementation strategy suggests, the municipality needs to develop proper framework and policies for the implementation of the perspective plans, built the capacity of the municipality and the local organizations and committees and proper stages of development of the roads.

This study, being first of its type for this municipality, should be revised and integrated with other plans that will be developed in coming years. Periodic review and update of the plans is necessary according to the change in land use and traffic that occurs in the future. A mid period review in the third year and five yearly MTMP should be prepared every five years.

GLOSSARY

Active 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
Capacity	The maximum number of vehicles that can pass over a given section of a lane or roadway in one direction (or in both directions for a two-lane or three-lane highway) during conditions.
Collector road	Collector roads provide both access and movement within residential, commercial and industrial areas. They are typically discontinuous between residential areas, so as to avoid traffic infiltration through neighbourhoods. Lower density developments and community land uses such as schools and convenience retail are often located on collector streets.
Emergency maintenance	Maintenance works that are to be carried out due to unexpected and sudden blockage of roads that stop vehicular movement due to natural disaster
Forecasting	The process of determining the future values of land use, socioeconomic, and trip making variables within the study area.
Local road	Local roads provide direct property access in residential, industrial, commercial and downtown areas. With local streets connecting primarily to collector roads, travel distances are short, speeds are relatively low and volumes are modest, as their primary function of accommodating traffic from adjacent lands.
Maintenance	The process of preserving the original condition or function of an asset
MTMP	The MTMP is a strategic planning document designed to identify and address the municipality's needs to the year 2020 and beyond. The MTMP is the documents that identify, classify and prioritize the municipal roads; identify possible sources of funds and materials for the construction of the prioritized roads according to their respective standards and scientific mobilization of the available resource.
Network	Set of nodes and connecting links that represent transportation facilities in an area.
New construction	The work of building
Origin	The location of the beginning of a trip or the zone in which a trip begins.
Periodic maintenance	Maintenance works to be carried out in intervals of years and of large-scale

Recurrent maintenance	Small maintenance works not falling under routine maintenance that are carried out a few times a year in all roads to repair minor damage resulting from traffic and rainfall
Routine maintenance	Small maintenance works that are to be carried out in all the seasons on all roads on a regular basis
Specific maintenance	Spot treatments and repairs that do not occur every year or in every road, and which are very specific in nature and location.
Trip	A one-direction movement which begins at the origin at the start time, ends at the destination at the arrival time, and is conducted for a specific purpose.
Upgrading	The process of addition or change that makes something better than it was before

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–Law, BodeBarsaain Muncipality

ANNEX

Annex I
ROAD INVENTORY

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
1	NH05	Hulaki Rajmarga	Khadk Bridge, Satrughan Chowk, Betaha Bridge, Kushamahar Chowk	NH	50	5	6.88	50			6.88				BT	Repairing/Upgrading of Blacktop & Construction of side drain	5, 4, 6, 3
2	215M04A001	Bisanpur Highway (Khadak Nagarpalika) - Belha - Satrughan Chowk - Swarnpatti - India	Belha, Gaura, Manraja, Khadakpur, Deuri, Swarnapatti	A	12	3	13.44	12	10	8	13.44				BT	Repairing/Upgrading of Blacktop & Construction of side drain	2, 3, 5, 7, 10, 9
3	215M04A002	Pump Nahar (Dakneshwori Gaupalika - Manraja - Fulkahi - Sabarna River - Balan Bihul Gaupalika	Manraja, Khamgara, Fulkahi,	A	12	3	5.7	12	8	6		5.70			RCC	Repairing/Upgrading of RCC & Construction of side drain	7, 6
4	215M04A003	Fulkahi - Kushamahar - Dhangadhi - Khadak Nagarpalika	Fulkahi, Kushmahar, Dhangadhi	A	12	3	4.09	12	8	6	2.24	1.85			BT, RCC	Repairing/Upgrading of Blcaktop/RCC & Construction of side drain	1, 3, 6
5	215M04B001	Gaura - Sarashwar - Dhangadhi	Gaura Tole, Sarashwar Tole, Dhangadhi Tole	B	10	2	2.91	10	8	6	0.38		2.53		BT, Gravel	Repairing/Upgrading of Blcaktop/Gravel & Construction of side drain	1, 3
6	215M04B002	Manraja - Kachan -Bairyahi - Balan Bihul Gaupalika	Manraja, Kachan, Bairyahi, Maa Laxmi Temple	B	10	2	4.93	10	8	4.5	3.28	1.65			RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	8, 7
7	215M04B003	Manraja - Shripur - Khadgapur - Dakneshwori Gaupalika	Manraja, Shripur, Hanuman Manir, Khadgapur, Amraiya Tole	B	10	2	5.1	10	8	5	0.39	3.19	1.52		BT, RCC, Gravel	Repairing/Upgrading of Blcaktop/RCC/Gravel & Construction of side drain	7, 10
8	215M04C001	Kachan - Rajapatti - Deuri	Deuri, Rajapatti, Deuri, Hanuman Mandir	C	8	2	3.55	8	6	4		0.11	3.44		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	8, 9
9	215M04C002	Barsain Shiv Chowk - Kamgadi	Barsain Shiv Chowk - Kamgadi	C	8	2	1.69	8	8	5		0.52	1.17		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	5, 6
10	215M04C003	Main Road, Gaura - Baraha Tole - Khadak Nagarpalika	Gaura, Baraha Tole	C	8	2	1.66	8	6	4		0.06	1.60		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2, 3
11	215M04C004	Main Road, Negada - Baraha Tole	Negda Tole , Baraha Tole	C	8	2	1.81	8	7	4		0.15	0.67	0.99	RCC, Gravel, Eathen	Repairing/Upgrading of RCC/Gravel/Earthen & Construction of side drain	2

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
12	215M04C005	Nengda Ward Office - Yogiya Tole - Main Road	Negda Tole, Yogiya Tole	C	8	2	1.7	8	8	5		0.35	1.35		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2
13	215M04C006	Nengda Tole Road	Negda Tole	C	8	2	1.39	8	8	5		0.27	1.12		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2
14	215M04C007	Dhangadhi - Sarashwar	Dhangadhi, Sarashwar	C	8	2	2.01	8	6	4.5		0.45	1.56		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	3, 1
15	215M04C008	Main Road, Belha - Dina Bhadri Mandir - Dhangadhi	Belha Tole , Dina Bhadri Mandir, Dhangadhi	C	8	2	3.75	8	7	5		0.42	1.96	1.37	RCC, Gravel, Earthen	Repairing/Upgrading of RCC/Gravel/Earthen & Construction of side drain	1, 2
16	215M04C009	Dhangadhi Chowk - Debahari - Sarsar - Madhuban - Hulaki Rajmarg	Dhangadhi Chowk, Shree Hanuman Mandir, Debahari Tol, Saharwa, Mahanauri, Madhubani	C	8	2	5.53	8	6	5		1.03	3.77	0.73	RCC, Gravel, Earthen	Repairing/Upgrading of RCC/Gravel/Earthen & Construction of side drain	1,3
17	215M04C010	Dhangadhi - Mahanauri	Dhangadhi, Mahanauri	C	8	2	0.69	8	8	6			0.69		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	1
18	215M04C011	Hulaki Rajmarga - Laxminarayan Mandir	Kushmahar, Laxminarayan Mandir	C	8	2	1.41	8	6	4				1.41	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	3
19	215M04C012	Main Road, Khadakpur - Deuri	Khadakpur, Deuri	C	8	2	1.18	8	6	4		0.32	0.86		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	9, 10
20	215M04C013	Deuri - Bop Apf Camp - Sonapur - Bairyahi	Deuri, Bop Apf Camp, Sonapur, Bairyahi	C	8	2	2.96	8	6	4		0.38	1.37	1.21	RCC, Gravel, Earthen	Repairing/Upgrading of RCC/Gravel/Earthen & Construction of side drain	9, 8
21	215M04C014	Barsain Bazar Tole Road	Barsain Tole	C	8	2	0.21	8	8	6		0.21			RCC	Repairing/Upgrading of RCC & Construction of side drain	5
22	215M04C015	Barsain Bazar Tole Road	Barsain Tole	C	8	2	0.22	8	8	6		0.22			RCC	Repairing/Upgrading of RCC & Construction of side drain	5

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
23	215M04C016	Barsain Bazar Tole Road	Barsain Tole	C	8	2	0.19	8	8	6		0.19			RCC	Repairing/Upgrading of RCC & Construction of side drain	5
24	215M04C017	Basain Tole Road to Satrughan Hospital	Barsain Tole	C	8	2	0.12	8	8	5			0.12		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	5
25	215M04C018	Simraha - Swarnpatty - Ram Tole	Simraha, Swarnpatty, Ram Tole	C	8	2	2.07	8	6	4		1.00	1.07		RCC, Grravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	9
26	215M04C019	Main Road to Ward Office 09	Deuri	C	8	2	0.12	8	8	5			0.12		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9
27	215M04C020	Nahar Road (Fulkahi - Sonapur)	Fulkahi, Bairyahi, Sonapur	C	8	2	4.32	8	7	5				4.32	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	6, 8
28	215M04C021	Manraja Tole Road	Manraja	C	8	2	0.73	8	7	5		0.73			RCC	Repairing/Upgrading of RCC & Construction of side drain	7
29	215M04C022	Fulkahi - Khamgara - Kachan	Fulkahi, Khamgara, Kachan	C	8	2	3.22	8	6	4			3.22		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	6, 8
30	215M04C023	Main Road - Yogiya Tole	Yogiya Tole	C	8	2	0.6	8	6	4		0.21	0.39		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2
31	215M04D001	Belha - Sarashwar, Mushlim Tole	Belha, Sarashwara, Mushlim Tole	D	6	2	2.24	6	6	4		0.75	1.49		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2, 3
32	215M04D002	Gaura Tolle - Silahat Prasehi - Hulaki Sadak	Gaura Tole, Silaha Prasehi	D	6	2	2.25	6	6	4		1.62	0.63		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	4, 5
33	215M04D003	Dhanagadi - Manhanauri Mandal	Dhanagadi, Manhanauri Mandal	D	6	2	1.24	6	6	4		0.23	1.01		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	1
34	215M04D004	Swarnpatty - East - Dakneshwori Nagarpalika	Swarnpatty	D	6	2	0.95	6	5	4			0.95		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
35	215M04D005	Laxmi Mandir, Road Code A003 - West - Madhubani Tole	Kushmahar, Madhubani	D	6	2	1.31	6	6	4			1.31		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	1, 3
36	215M04D006	Madhubani - Badhaki Tole, Balan Bihul Gaunpalika	Madhubani	D	6	2	0.9	6	6	5				0.90	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	3
37	215M04D007	Road Code A002, Dihbarni Mai than - West - Road Code C022 (Khamgara Tole Road)	Khamgara Tole	D	6	2	1.43	6	6	4		0.81	0.17	0.45	RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	6
38	215M04D008	Manraja - Hullaki Sadak, Jajar	Manraja, Jajar	D	6	2	2.01	6	6	4		0.49	1.52		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	5, 7
39	215M04D010	Khadakpur Tole Road (Road Code A001 - Ward Office - Road Code B003	Khadakpur Tole, Ward Office	D	6	2	0.82	6	6	5		0.82			RCC	Repairing/Upgrading of RCC & Construction of side drain	10
40	215M04D011	Shripur - Nahar Road, Road Code D009	Shripur	D	6	2	0.35	6	6	5		0.04	0.31		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	10
41	215M04D012	Amraiya - Nahar Road, Road Code D009	Amraiya	D	6	2	0.71	6	6	5			0.71		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	10
42	215M04D013	Belha Tole Road (Road Code C008 - North, East - Road Code A001)	Belha Tole	D	6	2	0.72	6	6	4		0.25	0.47		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2
43	215M04D014	Belha Tole Road (Road Code C008, Mahar Pokhari - North, East - Road Code D013	Belha Tole	D	6	2	0.31	6	5	4		0.22	0.09		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2
44	215M04D015	Bairiya Tole Road (Road Code A001 -West - Road Code C008)	Bairiya Tole	D	6	2	0.41	6	6	4		0.17	0.24		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2
45	215M04D016	Bairiya Tole Road (Road Code D015 -West - Road Code D001)	Bairiya Tole	D	6	2	0.49	6	6	4		0.30	0.19		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	2
46	215M04D017	Bairiya Tole Road (Road Code D015 - South - West - Road Code D001)	Bairiya Tole Road	D	6	2	0.34	6	6	4			0.34		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	2

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
47	215M04D018	Bairiya Tole Road (Road Code D016 - South - Chaudhari Tole)	Bairiya Tole, Chaudhari Tole	D	6	2	0.41	6	6	4			0.41		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	2
48	215M04D019	Belha, Road Code C008 - South - Road Code D016, Bairiya Tole)	Belha Tole, Bairiya Tole	D	6	2	0.38	6	5	4			0.14	0.24	Gravel, Earthen	Repairing/Upgrading of Gravel/Earthen & Construction of side drain	2
49	215M04D020	Bairiya Tole Road (Road Code D017- South - Road Code D016)	Bairiya Tole	D	6	2	0.11	6	6	4			0.11		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	2
50	215M04D021	Bairiya Tole Road (Road Code D001 - East - Road Code D017)	Bairiya Tole	D	6	2	0.15	6	6	4			0.15		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	2
51	215M04D022	Yogiya Tole Road (Road Code C005 - West - Road Code C023)	Yogiya Tole Road	D	6	2	0.18	6	5	3			0.18		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	2
52	215M04D023	Dhangadhi Tole Road (Linking Dhangadhi Ring Road)	Dhangadhi Tole	D	6	2	0.13	6	4	3		0.13			RCC	Repairing/Upgrading of RCC & Construction of side drain	1
53	215M04D024	Dhangadhi Bazar, Road COde C009 - Khadak Nagarpalika	Dhangadhi Bazar	D	6	2	0.43	6	5	4		0.43			RCC	Repairing/Upgrading of RCC & Construction of side drain	1
54	215M04D025	Debahari, Road Code C009 - North, East - Khadak Nagarpalika	Debahari	D	6	2	0.34	6	5	4		0.09	0.25		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	1
55	215M04D026	Saharwa Tole Road (Road Code C009 - West - Domuhan River)	Saharwa Tole	D	6	2	0.86	6	6	4			0.86		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	1
56	215M04D027	Mahanauri Tole Road (Connected to Road Code C009)	Mahanauri Tole	D	6	2	0.28	6	5	4		0.28			RCC	Repairing/Upgrading of RCC & Construction of side drain	1
57	215M04D028	Saharawa Tole Road (Connected to Road Code D026)	Saharawa Tole	D	6	2	0.21	6	4	3		0.08	0.13		RCC	Repairing/Upgrading of RCC & Construction of side drain	1
58	215M04D029	Madhuban Tole Road (Connected to Road Code C009)	Madhuban Tole	D	6	2	0.48	6	5	4			0.48		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	3

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											BT	RCC	GR	SG/ER			
59	215M04D030	Sarsar Jagah Tole Road (Road Code B001 - North, West - Road Code A003)	Sarsar Jagah Tole	D	6	2	0.85	6	5	4		0.63	0.22		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	3
60	215M04D031	Sarsar Jagah Tole Road (Connected to Road Code D030)	Sarsar Jagah Tole Road	D	6	2	0.34	6	5	4		0.34			RCC	Repairing/Upgrading of RCC & Construction of side drain	3
61	215M04D032	Sarsar Jagah Tole, Road Code D030 - East - Ram Janaki Mandir)	Sarsar Tole, Ram Janaki Mandir	D	6	2	0.09	6	5	4		0.09			RCC	Repairing/Upgrading of RCC & Construction of side drain	3
62	215M04D033	Sarsar Jagah Tole Road (Connected to Road Code C030)	Sarsar Jagah Tole	D	6	2	0.14	6	5	4		0.09	0.05		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	3
63	215M04D034	Madhuban Tole Road (Connected to Road Code D005)	Madhuban Tole	D	6	2	1.21	6	5	4			1.21		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	3
64	215M04D035	Hulaki Sadak , Pritampur - South - Road Code A002	Pritampur, Fulkahi	D	6	2	1.08	6	6	4		0.69	0.39		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	6
65	215M04D036	Pritampur Tole Road (Connected to Road Code D035)	Pritampur Tole	D	6	2	0.9	6	6	4			0.12	0.78	RCC, Earthen	Repairing/Upgrading of RCC/Earthen & Construction of side drain	6
66	215M04D037	Fulkahi Tole Road (Road Code A003 - Road Code A002)	Fulkahi Tole	D	6	2	0.34	6	6	4		0.34			RCC	Repairing/Upgrading of RCC & Construction of side drain	6
67	215M04D038	Malahani Tole Road (Road Code C002 - West - Ward Office 2)	Malahani Tole , Ward Office 6	D	6	2	0.76	6	6	5		0.76			RCC	Repairing/Upgrading of RCC & Construction of side drain	6
68	215M04D039	Malhaniya Tole Road (Conneced to Road Code C002)	Malhaniya Tole	D	6	2	0.34	6	6	4		0.34			RCC	Repairing/Upgrading of RCC & Construction of side drain	6
69	215M04D040	Prasahi - Larahi Pokhari - Kushmahar, Road Code A003	Prasahi Tole , Larahi Pokhari, Kushmahar	D	6	2	1.61	6	5	4		0.25		1.36	RCC, Earthen	Repairing/Upgrading of RCC/Earthen & Construction of side drain	4, 3
70	215M04D041	Prasahi Tole Road (Connected to Road Code Road Code D002)	Prasahi Tole	D	6	2	0.38	6	6	4		0.38			RCC	Repairing/Upgrading of RCC & Construction of side drain	4

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											BT	RCC	GR	SG/ER			
71	215M04D042	Prasahi Tole Road (Connected to Road Code Road Code D0041)	Prasahi Tole	D	6	2	0.07	6	3	3			0.07		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	4
72	215M04D043	Shiv Chowk, Hulaki Sadak - Ward Office 4 - Bhating - Hulaki sadak	Shiva Chowk, Silhat, Bhating	D	6	2	1.45	6	6	4		0.46	0.99		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	4, 5
73	215M04D044	Road Code D002 - Road COde D043,near By Ward Office 4	Silhat Tole	D	6	2	0.19	6	6	4		0.11	0.08		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	4
74	215M04D045	Bhating Tole Road (Road Code D002 - East - Road Code D043)	Bhating Tole	D	6	2	0.26	6	6	4		0.26			RCC	Repairing/Upgrading of RCC & Construction of side drain	4, 5
75	215M04D046	Bhating Tole Road (Hulaki Sadak - North - Road Code D045)	Bhating Tole	D	6	2	0.37	6	5	4		0.37			RCC	Repairing/Upgrading of RCC & Construction of side drain	5
76	215M04D047	Bhating Tole Road (Road Code D002 - Road Code D046	Bhating Tole	D	6	2	0.17	6	5	4		0.17			RCC	Repairing/Upgrading of RCC & Construction of side drain	5
77	215M04D048	Bhating Tole Road (Connected to to Road Code D002 in west Direction)	Bhating Tole	D	6	2	0.31	6	6	4			0.31		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	5
78	215M04D049	Krishi Sadak (Connected to road Code D002, Prasahi)	Prasahi Tole	D	6	2	0.49	6	5	4		0.09		0.4	RCC, Earthen	Repairing/Upgrading of RCC/Earthen & Construction of side drain	4
79	215M04D050	Ward Office 03, Road Code B001, Sarashwar - Road Code D002, Near By Water Tank, Silhat)	sarashwar Tole	D	6	2	1.34	6	6	4		0.39	0.95		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	3
80	215M04D051	Gaura Tole Road (Connected to Road Code A001)	Gaura Tole	D	6	2	0.48	6	5	3				0.48	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	2, 3
81	215M04D052	Gaura Tole Road (Connected to Road Code B001)	Gaura Tole	D	6	2	0.17	6	5	4		0.17			RCC	Repairing/Upgrading of RCC & Construction of side drain	3
82	215M04D053	Gaura Tole Road (Connected to Road Code B001)	Gaura Tole	D	6	2	0.37	6	5	4		0.37			RCC	Repairing/Upgrading of RCC & Construction of side drain	3

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											BT	RCC	GR	SG/ER			
83	215M04D054	Gaura Tole Road (Road Code D051 - Road Code D053	Gaura Tole	D	6	2	0.21	6	5	4		0.21			RCC	Repairing/Upgrading of RCC & Construction of side drain	3
84	215M04D055	Barsain Tole Road (Road Code C002 - Dihabar baba Mandir)	Barsain Tole	D	6	2	0.93	6	5	4		0.34		0.59	RCC, Earthen	Repairing/Upgrading of RCC/Earthen & Construction of side drain	5
85	215M04D056	Barsain Tole Road (Road Code C002 - Road Code D055)	Barsain Tole	D	6	2	0.06	6	6	4			0.06		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	5
86	215M04D057	Barsain Tole Rode (Hulaki Sadak - Road Code C002)	Barsain Tole	D	6	2	0.33	6	5	4		0.33			RCC	Repairing/Upgrading of RCC & Construction of side drain	5
87	215M04D058	Barsain Tole Road (Hulaki Sadak - Road Code D057)	Barsain Tole	D	6	2	0.21		5	4		0.07	0.14		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	5
88	215M04D059	Barsain Tole Road (Connected to Road Code D058)	Barsain Tole	D	6	2	0.06		5	4		0.06			RCC	Repairing/Upgrading of RCC & Construction of side drain	5
89	215M04D060	Barsain - Kamgara (Road Code D058 - Municipality Offiice - Kamgara bazar)	Barsain Tole , Barsain Bajar, Municipality Office	D	6	2	0.71		5	4		0.59	0.12		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	5
90	215M04D061	Hulaki Sadak - Municipality Office	Municipality Office	D	6	2	0.16		5	4		0.16			RCC	Repairing/Upgrading of RCC & Construction of side drain	5
91	215M04D062	Hulaki Sadak, Jajar - Baraha	Jajar Tole , Baraha	D	6	2	2.16		6	4		0.36	1.8		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	5, 2
92	215M04D063	Hulaki Sadak, near by Khadak Bridge - Jajar, Road Code D062	Jajar Tole	D	6	2	0.37		6	4		0.12	0.25		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	5
93	215M04D064	Jajar Tole Road (Hulaki Sadak - Road Code D063)	Jajar Tole	D	6	2	0.11		5	4		0.03		0.08	RCC, Earthen	Repairing/Upgrading of RCC/Earthen & Construction of side drain	5
94	215M04D065	Jajar Tole Road (Connected to Road Code D063)	Jajar Tole	D	6	2	0.05		6	4		0.05			RCC	Repairing/Upgrading of RCC & Construction of side drain	5

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											BT	RCC	GR	SG/ER			
95	215M04D066	Jajar Tole Road (Hulaki sadak - Road Code D062)	Jajar Tole, Shiv Mandir	D	6	2	0.2		6	4			0.2		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	5
96	215M04D067	Road Code A001, Haithi - Shiv Mandir - Malahaniya, Road Code C002	Haithi, Malhaniya	D	6	2	1.63		5	4		0.22	1.41		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	7, 5
97	215M04D068	Haithi Tole Road (Road Code A001 - Shiv Mandir)	Hathi Tole	D	6	2	0.3		5	4		0.17	0.13		RCC,Gravel	Repairing/Upgrading of RCC/Gravel/ & Construction of side drain	7
98	215M04D069	Haithi Tole Road (Conected to roa Code A001)	Haithi Tole	D	6	2	0.07		5	4		0.07			RCC	Repairing/Upgrading of RCC & Construction of side drain	7
99	215M04D070	Manraja Tole Road (Connected to Road Code D008)	Manraja Tole	D	6	2	0.35		6	4		0.35			RCC	Repairing/Upgrading of RCC & Construction of side drain	7
100	215M04D071	Manraja Tole Road (Road Code D008 - Road Code D070)	Manraja Tole	D	6	2	0.28		6	4		0.18	0.1		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	7
101	215M04D072	Manraja Tole Road (Hulaki Sadak - Road Code D071)	Manraja Tole	D	6	2	0.18		6	4		0.18			RCC	Repairing/Upgrading of RCC & Construction of side drain	7
102	215M04D073	Manraja Tole Road (Road Code A002 - Road Code B002)	ManrajaTole	D	6	2	0.69		6	4		0.61	0.08		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	7
103	215M04D074	Manraja Tole Road (Road Code A001 - Road Code D073	Chamarahi Tole	D	6	2	0.3		6	4			0.3		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	7
104	215M04D075	Manraja Tole Road (Connected to Road Code B002)	Manraja Tole	D	6	2	0.69		6	4		0.57	0.12		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	7
105	215M04D076	Road Code A001 - Road Code B003	Manraja tole	D	6	2	0.44		6	4		0.13		0.31	RCC, Earthen	Repairing/Upgrading of RCC/Earthen & Construction of side drain	10
106	215M04D077	Krishi Bato (Connected to Road Code A001 , Manraja Tole)	Manraja Tole	D	6	2	0.72		5	4				0.72	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	7

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
107	215M04D078	Kanchan Tole Road (Connected to Road Code B002)	Kanchan Tole	D	6	2	0.62		5	4		0.4	0.22		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	8
108	215M04D079	Kanchan Tole Road (Road Code B002 - Road Code D078	Kanchan Tole	D	6	2	0.22		5	4			0.22		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
109	215M04D080	Kanchan Tole Road (Road Code B002 - Road Code D078	Kanchan Tole	D	6	2	0.24		5	4			0.24		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
110	215M04D081	Kachan Tole road (Road Code D078 - Road Code D079)	Kachan Tole	D	6	2	0.22		5	4			0.22		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
111	215M04D082	Kachan Tole Road (Road Code B002 - Road Code C001)	Kanchan Tole , Kanchan Bazar	D	6	2	0.53		5	4			0.53		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
112	215M04D083	Kachan Tole Road (Road Code B002 - Road Code C001)	Kachan Tole	D	6	2	0.17		5	4			0.17		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
113	215M04D084	Kachan Tole Road (Road Code B002 - Road Code D082)	Kachan Tole, Health Post , Police station	D	6	2	0.19		5	4				0.19	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	8
114	215M04D085	Kachan Tole Road (Connected to Road Code B002)	Kachan Tole	D	6	2	0.18		5	4		0.18			RCC	Repairing/Upgrading of RCC & Construction of side drain	8
115	215M04D086	Kachan Tole Road (Connected to Road Code B002)	Kachan Tole	D	6	2	0.09		5	4		0.09			RCC	Repairing/Upgrading of RCC & Construction of side drain	8
116	215M04D087	Kachan Tole Road (Conected To Road Code B002)	Kachan Tole	D	6	2	0.11		5	4		0.11			RCC	Repairing/Upgrading of RCC & Construction of side drain	8
117	215M04D088	Rajapatty Tole Road (Connected to Road Code C001)	Rajapatty Tole	D	6	2	0.62		6	4		0.11	0.51		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	8
118	215M04D089	Rajaipatty Tole Road (Road Code C001 - Road Code D088)	Rajaipatty	D	6	2	0.17		6	4		0.17			RCC	Repairing/Upgrading of RCC & Construction of side drain	8

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
119	215M04D090	Rajaipatty Tole Road (Road Code D089 - Road Code D088)	Rajaipatty	D	6	2	0.12		6	4			0.12		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
120	215M04D091	Rajaipatty Tole Road (Road Code D088 - Road Code D090)	Rajaipatty Tole	D	6	2	0.09		5	4			0.09		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
121	215M04D092	Rajaipatty - Nahar Road	Rajaipatty Tole	D	6	2	0.88		6	4			0.88		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
122	215M04D093	Deuri Tole Road (Road Code C012 - Road Code C001)	Deuri Tole	D	6	2	0.25		4	3		0.15	0.1		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	9
123	215M04D094	Deuri Tole Road (Road Code C012 - Road Code D093)	Deuri Tole	D	6	2	0.13		4	4		0.13			RCC	Repairing/Upgrading of RCC & Construction of side drain	9
124	215M04D095	Khadakpur Tole Road (Road Code A001 - Road Code D010)	Khadakpur Tole	D	6	2	1.04		5	4		0.4	0.64		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	10
125	215M04D096	Road Code D010 - South - Shree Dihbar Than	Khadakpur	D	6	2	0.75		5	4		0.41	0.34		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	10
126	215M04D097	Khadakpur Tole Road (Road Code A001 - Road Code D095)	Khadakpur Tole	D	6	2	0.16		5	4			0.16		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	10
127	215M04D098	Khadakpur Tole Road (Connected to Road Code D096)	Khadakpur Tole	D	6	2	0.38		5	4		0.38			RCC	Repairing/Upgrading of RCC & Construction of side drain	10
128	215M04D099	Khadakpur Tole Road (Road Code D096 - West, South - Road Code D098)	Khadakpur Tole	D	6	2	0.29		5	4		0.29			RCC	Repairing/Upgrading of RCC & Construction of side drain	10
129	215M04D100	Khadakpur Tole Road (Road CodeD095 - Connected to Road Code D098 & D099)	Khaakpur Tole	D	6	2	0.27		5	4		0.13	0.14		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	10
130	215M04D101	Road Code D095 - South - Road Code D100)	Khaakpur Tole	D	6	2	0.26		5	4		0.26			RCC	Repairing/Upgrading of RCC & Construction of side drain	10

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
131	215M04D102	Khadakpur - Shripur	Khadakpur Tole, Shripur	D	6	2	1.19		5	4				1.19	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	10
132	215M04D103	Ram Tole Road (Connected to Road Code C018)	Ram Tole	D	6	2	0.22		4	3			0.22		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9
133	215M04D104	Road Code A001 - Ram tole	Ram Tole	D	6	2	0.13		6	4			0.13		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9
134	215M04D105	Simraha Tole Road (Connected To Road Code C018)	Simraha Tole	D	6	2	0.35		6	4		0.16	0.19		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	9
135	215M04D106	Simraha Tole Road (Road Code A001 - Road Code C018)	Simraha Tole	D	6	2	0.19		4	3.5			0.19		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9
136	215M04D107	Simraha Tole Road (Road Code A001 - Road Code C018)	Simraha Tole	D	6	2	0.28		5	4			0.28		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9
137	215M04D108	Simraha Tole Road (Connected to Road Code C018)	Simraha Tole	D	6	2	0.25		5	4			0.25		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9
138	215M04D109	Road Code A001 - East, South - Road Code D108	Simraha Tole	D	6	2	0.35		5	4			0.35		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9
139	215M04D110	Simraha Tole Road (Road Code D108 - Sabarna River)	Simraha Tole	D	6	2	0.44		5	4		0.08	0.36		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	9
140	215M04D111	Road Code A001 - South - Sabarna River - Road Code D110	Simraha	D	6	2	1.38		5	4			1.38		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	9, 10
141	215M04D112	Swarnapatty Tole Road (Road Code C018 - East)	Swarnapatty Tole	D	6	2	0.6		5	4		0.25	0.35		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	9
142	215M04D113	Swarnapatty Tole Road (Road Code C018 - East - South - Road Code D112)	Swarnapatty Tole	D	6	2	0.38		5	4		0.12	0.26		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	9

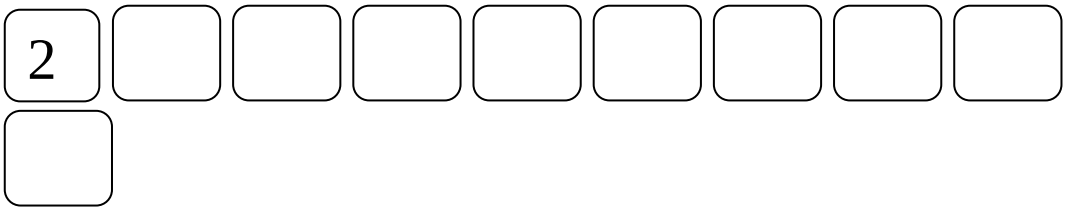
S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
143	215M04D114	Swarnapatty Tole Road (Road Code D112 - Road Code D113	Swarnapatty Tole	D	6	2	0.23		5	4				0.23	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	9
144	215M04D115	Swarnapatty Tole Road (Road Code D114 - Road Code D113)	Swarnapatty Tole	D	6	2	0.07		5	4		0.07			RCC	Repairing/Upgrading of RCC & Construction of side drain	9
145	215M04D116	Swarnapatty Tole Road (Road Code D112 - south)	Swarnapatty Tole	D	6	2	0.12		5	4		0.12			RCC	Repairing/Upgrading of RCC & Construction of side drain	9
146	215M04D117	Swarnapatty Tole Road (Road Code C018 - Road Code D004)	Swarnapatty Tole	D	6	2	0.28		5	4		0.28			RCC	Repairing/Upgrading of RCC & Construction of side drain	9
147	215M04D118	Silhat Tole Road	Silhat Tole , Maijan Pokhari	D	6	2	0.05		4	3				0.05	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	4
148	215M04D119	Barahi Tole Road (Connecting Road Code C003)	Barahi Tole	D	6	2	0.18		6	4				0.18	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	2
149	215M04D120	Road Code C009 - South - Road Code D003	Debahari Tole	D	6	2	0.2		6	4			0.2		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	1
150	215M04D121	Nengda Tole Road (Road Code C006 - Road Code C004)	Nengda Tole	D	6	2	0.3		6	5			0.3		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	2
151	215M04D122	Nahar Road (Road Code C021,Manraja - South - Khadgapur - Dakneshwori Nagarpalika	Manraja , Shripur, Khadgapur	D	6	2	3.74		4.5	3				3.74	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	7, 10
152	215M04D123	Road Code C013 - Road Code C020	Sonapur Tole	D	6	2	0.19		6	4			0.19		Gravel	Repairing/Upgrading of Gravel & Construction of side drain	8
153	215M04D124	Krishi sadak (Road Code C013 - South)	Sonapur	D	6	2	2.05		6	4				2.05	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	8, 9
154	215M04D125	Janjar Tole Road (Hulaki Sadak - South)	Janjar Tole, Masjid	D	6	2	1.05		6	5		0.81	0.24		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	5

S.N	Road Code	Transportation Linkage Name	Nodal Point / Settlements	Class and Category	ROW	Setback (m) Either Side	Total length (km)	Total Width (m)	Existing Total Width	Carriageway width(m)	Road surface(km)				Road Surface	Road Condition (Upgrading and Repairs needed)	Ward Passed
											BT	RCC	GR	SG/ER			
155	215M04D126	Krishi Sadak (Gauda - Bairiya Tol)	Gaura Tole, Bairiya Tole	D	6	2	1.44		5	4				1.44	Earthen	Repairing/Upgrading of Earthen & Construction of side drain	2
156	215M04D127	Road Code A003 - West - Road Code C011	Kushmahar	D	6	2	0.28		6	5		0.08	0.2		RCC, Gravel	Repairing/Upgrading of RCC/Gravel & Construction of side drain	3

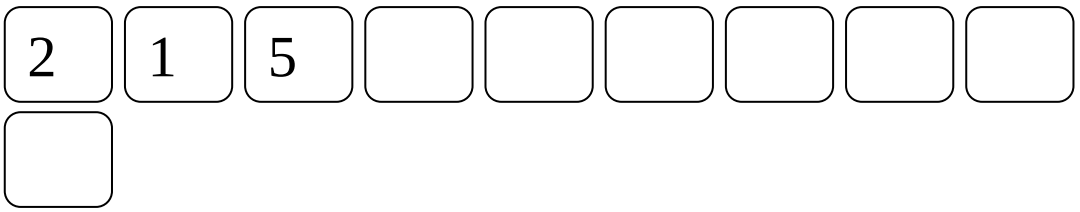
Annex II
MUNICIPAL ROAD CODING

MUNICIPAL NAME CODING

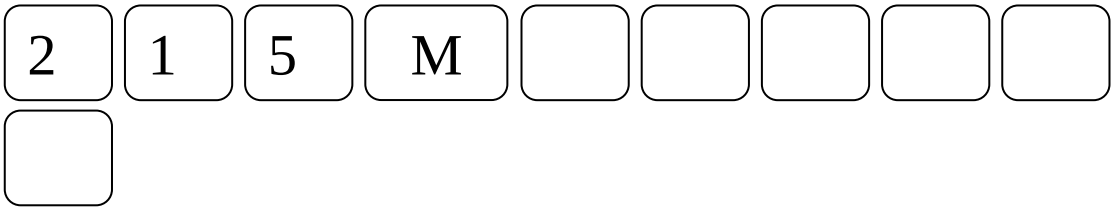
The following guidelines from TOR are followed while coding the Municipal roads. Each transport linkage will have a ten digit code unique for a particular linkage.

- **First (number varying from 1 to 7) represent the Province .**
- 

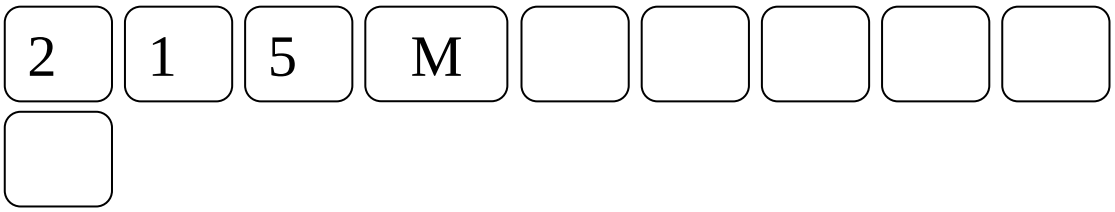
Madhesh Province

- **Second & Third digit (number varying from 01 to 77) represent the District.**
- 

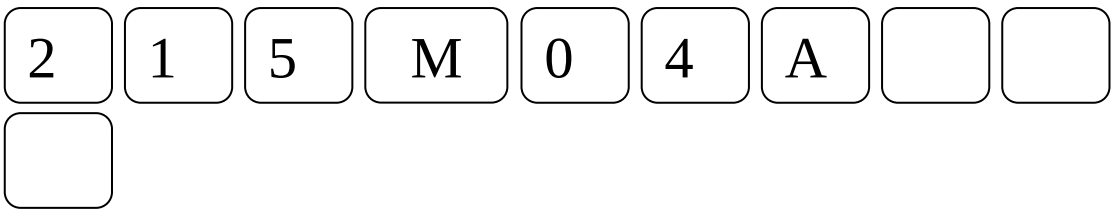
Madhesh Province, Sapatari District

- **Fourth (letter M indicates the Municipality and RM indicates rural municilapity.).**
- 

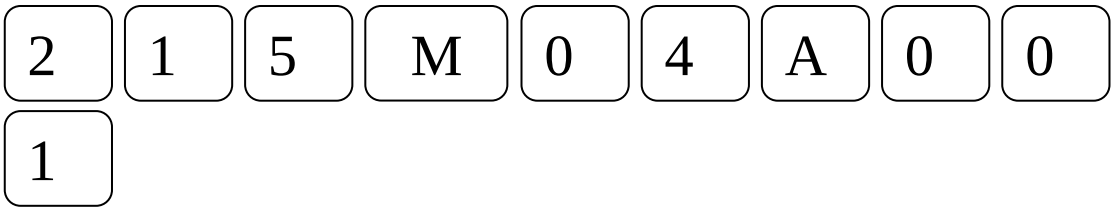
Madhesh Province, Sapatari District, Municipality

- **Fifth & Sixth digit (number varying from 01 to 99.) represent the particular name of municipality in the district.**
- 

Madhesh Province, Sapatari District, BodeBarsaain Municipality

- **Seven digit (a letter varying from A to D) indicates the class of transport linkage.**
- 

Madhesh Province, Sapatari District, BodeBarsaain Municipality Class A Road

- **Next three digits (number varying from 001 to 999) represent the particular transport linkage.**
- 

- Bisanpur Highway (Khadak Nagarpalika) - Belha - Satrughan Chowk - Swarnpatti – India

Annex III
MTMP cost of Municipal Roads

S.No.	Road Code	Name of transport Linkage	Total Length (km)	Road Surface				Cost Nrs. (in 000)			Total Cost (in 00,000)
				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
1	NH05	Hulaki Rajmarga	6.88	6.88	0.00	0.00	0.00	3440	172,000.00	137.6	1755.78
2	215M04A001	Bisanpur Highway (Khadak Nagarpalika) - Belha - Satrughan Chowk - Swarnpatti - India	13.44	13.44	0.00	0.00	0.00	6720	336,000.00	268.8	3429.89
3	215M04A002	Pump Nahar (Dakneshwori Gaupalika - Manraja - Fulkahi - Sabarna River - Balan Bihul Gaupalika	5.70	0.00	5.70	0.00	0.00	2850	142,500.00	114	1454.64
4	215M04A003	Fulkahi - Kushamahar - Dhangadhi - Khadak Nagarpalika	4.09	2.24	1.85	0.00	0.00	2045	102,250.00	81.8	1043.77
5	215M04B001	Gaura - Sarashwar - Dhangadhi	2.91	0.38	0.00	2.53	0.00	1202	78,316.00	58.2	795.76
6	215M04B002	Manraja - Kachan -Bairyahi - Balan Bihul Gaupalika	4.93	3.28	1.65	0.00	0.00	2465	123,250.00	98.6	1258.14
7	215M04B003	Manraja - Shripur - Khadgapur - Dakneshwori Gaupalika	5.10	0.39	3.19	1.52	0.00	2398	130,844.00	102	1333.44
8	215M04C001	Kachan - Rajapatti - Deuri	3.55	0.00	0.11	3.44	0.00	1431	96,318.00	71	978.20
9	215M04C002	Barsain Shiv Chowk - Kamgadi	1.69	0.00	0.52	1.17	0.00	728	44,824.00	33.8	455.86
10	215M04C003	Main Road, Gaura - Baraha Tole - Khadak Nagarpalika	1.66	0.00	0.06	1.60	0.00	670	45,020.00	33.2	457.23
11	215M04C004	Main Road, Negada - Baraha Tole	1.81	0.00	0.15	0.67	0.99	590.5	54,545.00	36.2	551.72
12	215M04C005	Nengda Ward Office - Yogiya Tole - Main Road	1.70	0.00	0.35	1.35	0.00	715	45,470.00	34	462.19
13	215M04C006	Nengda Tole Road	1.39	0.00	0.27	1.12	0.00	583	37,214.00	27.8	378.25
14	215M04C007	Dhangadhi - Sarashwar	2.01	0.00	0.45	1.56	0.00	849	53,682.00	40.2	545.71
15	215M04C008	Main Road, Belha - Dina Bhadri Mandir - Dhangadhi	3.75	0.00	0.42	1.96	1.37	1336.5	108,885.00	75	1102.97
16	215M04C009	Dhangadhi Chowk - Debahari -	5.53	0.00	1.03	3.77	0.73	2205.5		110.6	1546.27

S.No.	Road Code	Name of transport Linkage	Total Length (km)	Road Surface				Cost Nrs. (in 000)			Total Cost (in 00,000)
				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
		Sarsar - Madhuban - Hulaki Rajmarg							152,311.00		
17	215M04C010	Dhangadhi - Mahanauri	0.69	0.00	0.00	0.69	0.00	276	18,768.00	13.8	190.58
18	215M04C011	Hulaki Rajmarga - Laxminarayan Mandir	1.41	0.00	0.00	0.00	1.41	352.5	46,389.00	28.2	467.70
19	215M04C012	Main Road, Khadakpur - Deuri	1.18	0.00	0.32	0.86	0.00	504	31,392.00	23.6	319.20
20	215M04C013	Deuri - Bop Apf Camp - Sonapur - Bairyahi	2.96	0.00	0.38	1.37	1.21	1040.5	86,573.00	59.2	876.73
21	215M04C014	Barsain Bazar Tole Road	0.21	0.00	0.21	0.00	0.00	105	5,250.00	4.2	53.59
23	215M04C015	Barsain Bazar Tole Road	0.22	0.00	0.22	0.00	0.00	110	5,500.00	4.4	56.14
24	215M04C016	Barsain Bazar Tole Road	0.19	0.00	0.19	0.00	0.00	95	4,750.00	3.8	48.49
25	215M04C017	Basain Tole Road to Satrughan Hospital	0.12	0.00	0.00	0.12	0.00	48	3,264.00	2.4	33.14
26	215M04C018	Simraha - Swarnpatty - Ram Tole	2.07	0.00	1.00	1.07	0.00	928	54,104.00	41.4	550.73
27	215M04C019	Main Road to Ward Office 09	0.12	0.00	0.00	0.12	0.00	48	3,264.00	2.4	33.14
28	215M04C020	Nahar Road (Fulkahi - Sonapur)	4.32	0.00	0.00	0.00	4.32	1080	142,128.00	86.4	1432.94
29	215M04C021	Manraja Tole Road	0.73	0.00	0.73	0.00	0.00	365	18,250.00	14.6	186.30
30	215M04C022	Fulkahi - Khamgara - Kachan	3.22	0.00	0.00	3.22	0.00	1288	87,584.00	64.4	889.36
31	215M04C023	Main Road - Yogiya Tole	0.60	0.00	0.21	0.39	0.00	261	15,858.00	12	161.31
32	215M04D001	Belha - Sarashwar, Mushlim Tole	2.24	0.00	0.75	1.49	0.00	971	59,278.00	44.8	602.94
33	215M04D002	Gaura Tolle - Silahat Prasehi - Hulaki Sadak	2.25	0.00	1.62	0.63	0.00	1062	57,636.00	45	587.43
34	215M04D003	Dhanagadi - Manhanauri Mandal	1.24	0.00	0.23	1.01	0.00	519	33,222.00	24.8	337.66
35	215M04D004	Swarnpatty - East - Dakneshwori	0.95	0.00	0.00	0.95	0.00	380		19	262.39

S.No.	Road Code	Name of transport Linkage	Total Length (km)	Road Surface				Cost Nrs. (in 000)			Total Cost (in 00,000)
				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
		Nagarpalika							25,840.00		
36	215M04D005	Laxmi Mandir, Road Code A003 - West - Madhubani Tole	1.31	0.00	0.00	1.31	0.00	524	35,632.00	26.2	361.82
37	215M04D006	Madhubani - Badhaki Tole, Balan Bihul Gaunpalika	0.90	0.00	0.00	0.00	0.90	225	29,610.00	18	298.53
38	215M04D007	Road Code A002, Dihbarni Mai than - West - Road Code C022 (Khamgara Tole Road)	1.43	0.00	0.81	0.17	0.45	585.5	39,679.00	28.6	402.93
39	215M04D008	Manraja - Hullaki Sadak, Jajar	2.01	0.00	0.49	1.52	0.00	853	53,594.00	40.2	544.87
40	215M04D010	Khadakpur Tole Road (Road Code A001 - Ward Office - Road Code B003	0.82	0.00	0.82	0.00	0.00	410	20,500.00	16.4	209.26
41	215M04D011	Shripur - Nahar Road, Road Code D009	0.35	0.00	0.04	0.31	0.00	144	9,432.00	7	95.83
42	215M04D012	Amraiya - Nahar Road, Road Code D009	0.71	0.00	0.00	0.71	0.00	284	19,312.00	14.2	196.10
43	215M04D013	Belha Tole Road (Road Code C008 - North, East - Road Code A001)	0.72	0.00	0.25	0.47	0.00	313	19,034.00	14.4	193.61
44	215M04D014	Belha Tole Road (Road Code C008, Mahar Pokhari - North, East - Road Code D013	0.31	0.00	0.22	0.09	0.00	146	7,948.00	6.2	81.00
45	215M04D015	Bairiya Tole Road (Road Code A001 -West - Road Code C008)	0.41	0.00	0.17	0.24	0.00	181	10,778.00	8.2	109.67
46	215M04D016	Bairiya Tole Road (Road Code D015 -West - Road Code D001)	0.49	0.00	0.30	0.19	0.00	226	12,668.00	9.8	129.04
47	215M04D017	Bairiya Tole Road (Road Code D015 - South - West - Road Code D001)	0.34	0.00	0.00	0.34	0.00	136	9,248.00	6.8	93.91
48	215M04D018	Bairiya Tole Road (Road Code D016 - South - Chaudhari Tole)	0.41	0.00	0.00	0.41	0.00	164	11,152.00	8.2	113.24
49	215M04D019	Belha, Road Code C008 - South - Road Code D016, Bairiya Tole)	0.38	0.00	0.00	0.14	0.24	116	11,704.00	7.6	118.28
50	215M04D020	Bairiya Tole Road (Road Code D017- South - Road Code D016)	0.11	0.00	0.00	0.11	0.00	44	2,992.00	2.2	30.38
51	215M04D021	Bairiya Tole Road (Road Code D001 - East - Road Code D017)	0.15	0.00	0.00	0.15	0.00	60	4,080.00	3	41.43

S.No.	Road Code	Name of transport Linkage	Total Length (km)	Road Surface				Cost Nrs. (in 000)			Total Cost (in 00,000)
				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
52	215M04D022	Yogiya Tole Road (Road Code C005 - West - Road Code C023)	0.18	0.00	0.00	0.18	0.00	72	4,896.00	3.6	49.72
53	215M04D023	Dhangadhi Tole Road (Linking Dhangadhi Ring Road)	0.13	0.00	0.13	0.00	0.00	65	3,250.00	2.6	33.18
54	215M04D024	Dhangadhi Bazar, Road COde C009 - Khadak Nagarpalika	0.43	0.00	0.43	0.00	0.00	215	10,750.00	8.6	109.74
55	215M04D025	Debahari, Road Code C009 - North, East - Khadak Nagarpalika	0.34	0.00	0.09	0.25	0.00	145	9,050.00	6.8	92.02
56	215M04D026	Saharwa Tole Road (Road Code C009 - West - Domuhan River)	0.86	0.00	0.00	0.86	0.00	344	23,392.00	17.2	237.53
57	215M04D027	Mahanauri Tole Road (Connected to Road Code C009)	0.28	0.00	0.28	0.00	0.00	140	7,000.00	5.6	71.46
58	215M04D028	Saharawa Tole Road (Connected to Road Code D026)	0.21	0.00	0.08	0.13	0.00	92	5,536.00	4.2	56.32
59	215M04D029	Madhuban Tole Road (Connected to Road Code C009)	0.48	0.00	0.00	0.48	0.00	192	13,056.00	9.6	132.58
60	215M04D030	Sarsar Jagah Tole Road (Road Code B001 - North, West - Road Code A003)	0.85	0.00	0.63	0.22	0.00	403	21,734.00	17	221.54
61	215M04D031	Sarsar Jagah Tole Road (Connected to Road Code D030)	0.34	0.00	0.34	0.00	0.00	170	8,500.00	6.8	86.77
62	215M04D032	Sarsar Jagah Tole, Road Code D030 - East - Ram Janaki Mandir)	0.09	0.00	0.09	0.00	0.00	45	2,250.00	1.8	22.97
63	215M04D033	Sarsar Jagah Tole Road (Connected to Road Code C030)	0.14	0.00	0.09	0.05	0.00	65	3,610.00	2.8	36.78
64	215M04D034	Madhuban Tole Road (Connected to Road Code D005)	1.21	0.00	0.00	1.21	0.00	484	32,912.00	24.2	334.20
65	215M04D035	Hulaki Sadak , Pritampur - South - Road Code A002	1.08	0.00	0.69	0.39	0.00	501	27,858.00	21.6	283.81
66	215M04D036	Pritampur Tole Road (Connected to Road Code D035)	0.90	0.00	0.00	0.12	0.78	243	28,926.00	18	291.87
67	215M04D037	Fulkahi Tole Road (Road Code A003 - Road Code A002)	0.34	0.00	0.34	0.00	0.00	170	8,500.00	6.8	86.77
68	215M04D038	Malahani Tole Road (Road Code C002 - West - Ward Office 2)	0.76	0.00	0.76	0.00	0.00	380	19,000.00	15.2	193.95
69	215M04D039	Malhaniya Tole Road (Conneced to	0.34	0.00	0.34	0.00	0.00	170		6.8	86.77

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				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
		Road Code C002)							8,500.00		
70	215M04D040	Prasahi - Larahi Pokhari - Kushmahar, Road Code A003	1.61	0.00	0.25	0.00	1.36	465	50,994.00	32.2	514.91
71	215M04D041	Prasahi Tole Road (Connected to Road Code Road Code D002)	0.38	0.00	0.38	0.00	0.00	190	9,500.00	7.6	96.98
72	215M04D042	Prasahi Tole Road (Connected to Road Code Road Code D0041)	0.07	0.00	0.00	0.07	0.00	28	1,904.00	1.4	19.33
73	215M04D043	Shiv Chowk, Hulaki Sadak - Ward Office 4 - Bhating - Hulaki sadak	1.45	0.00	0.46	0.99	0.00	626	38,428.00	29	390.83
74	215M04D044	Road Code D002 - Road COde D043,near By Ward Office 4	0.19	0.00	0.11	0.08	0.00	87	4,926.00	3.8	50.17
75	215M04D045	Bhating Tole Road (Road Code D002 - East - Road Code D043)	0.26	0.00	0.26	0.00	0.00	130	6,500.00	5.2	66.35
76	215M04D046	Bhating Tole Road (Hulaki Sadak - North - Road Code D045)	0.37	0.00	0.37	0.00	0.00	185	9,250.00	7.4	94.42
77	215M04D047	Bhating Tole Road (Road Code D002 - Road Code D046	0.17	0.00	0.17	0.00	0.00	85	4,250.00	3.4	43.38
78	215M04D048	Bhating Tole Road (Connected to to Road Code D002 in west Direction)	0.31	0.00	0.00	0.31	0.00	124	8,432.00	6.2	85.62
79	215M04D049	Krishi Sadak (Connected to road Code D002, Prasahi)	0.49	0.00	0.09	0.00	0.40	145	15,410.00	9.8	155.65
80	215M04D050	Ward Office 03, Road Code B001, Sarashwar - Road Code D002, Near By Water Tank, Silhat)	1.34	0.00	0.39	0.95	0.00	575	35,590.00	26.8	361.92
81	215M04D051	Gaura Tole Road (Connected to Road Code A001)	0.48	0.00	0.00	0.00	0.48	120	15,792.00	9.6	159.22
82	215M04D052	Gaura Tole Road (Connected to Road Code B001)	0.17	0.00	0.17	0.00	0.00	85	4,250.00	3.4	43.38
83	215M04D053	Gaura Tole Road (Connected to Road Code B001)	0.37	0.00	0.37	0.00	0.00	185	9,250.00	7.4	94.42
84	215M04D054	Gaura Tole Road (Road Code D051 - Road Code D053	0.21	0.00	0.21	0.00	0.00	105	5,250.00	4.2	53.59
85	215M04D055	Barsain Tole Road (Road Code C002 - Dihabar baba Mandir)	0.93	0.00	0.34	0.00	0.59	317.5	27,911.00	18.6	282.47
86	215M04D056	Barsain Tole Road (Road Code C002 - Road Code D055)	0.06	0.00	0.00	0.06	0.00	24	1,632.00	1.2	16.57

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				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
87	215M04D057	Barsain Tole Rode (Hulaki Sadak - Road Code C002)	0.33	0.00	0.33	0.00	0.00	165	8,250.00	6.6	84.22
88	215M04D058	Barsain Tole Road (Hulaki Sadak - Road Code D057)	0.21	0.00	0.07	0.14	0.00	91	5,558.00	4.2	56.53
89	215M04D059	Barsain Tole Road (Connected to Road Code D058)	0.06	0.00	0.06	0.00	0.00	30	1,500.00	1.2	15.31
90	215M04D060	Barsain - Kamgara (Road Code D058 - Municipality Offiice - Kamgara bazar)	0.71	0.00	0.59	0.12	0.00	343	18,014.00	14.2	183.71
91	215M04D061	Hulaki Sadak - Municipality Office	0.16	0.00	0.16	0.00	0.00	80	4,000.00	3.2	40.83
92	215M04D062	Hulaki Sadak, Jajar - Baraha	2.16	0.00	0.36	1.80	0.00	900	57,960.00	43.2	589.03
93	215M04D063	Hulaki Sadak, near by Khadak Bridge - Jajar, Road Code D062	0.37	0.00	0.12	0.25	0.00	160	9,800.00	7.4	99.67
94	215M04D064	Jajar Tole Road (Hulaki Sadak - Road Code D063)	0.11	0.00	0.03	0.00	0.08	35	3,382.00	2.2	34.19
95	215M04D065	Jajar Tole Road (Connected to Road Code D063)	0.05	0.00	0.05	0.00	0.00	25	1,250.00	1	12.76
96	215M04D066	Jajar Tole Road (Hulaki sadak - Road Code D062)	0.20	0.00	0.00	0.20	0.00	80	5,440.00	4	55.24
97	215M04D067	Road Code A001, Haithi - Shiv Mandir - Malahaniya, Road Code C002	1.63	0.00	0.22	1.41	0.00	674	43,852.00	32.6	445.59
98	215M04D068	Haithi Tole Road (Road Code A001 - Shiv Mandir)	0.30	0.00	0.17	0.13	0.00	137	7,786.00	6	79.29
99	215M04D069	Haithi Tole Road (Conected to roa Code A001)	0.07	0.00	0.07	0.00	0.00	35	1,750.00	1.4	17.86
100	215M04D070	Manraja Tole Road (Connected to Road Code D008)	0.35	0.00	0.35	0.00	0.00	175	8,750.00	7	89.32
101	215M04D071	Manraja Tole Road (Road Code D008 - Road Code D070)	0.28	0.00	0.18	0.10	0.00	130	7,220.00	5.6	73.56
102	215M04D072	Manraja Tole Road (Hulaki Sadak - Road Code D071)	0.18	0.00	0.18	0.00	0.00	90	4,500.00	3.6	45.94
103	215M04D073	Manraja Tole Road (Road Code A002 - Road Code B002)	0.69	0.00	0.61	0.08	0.00	337	17,426.00	13.8	177.77

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				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
104	215M04D074	Manraja Tole Road (Road Code A001 - Road Code D073	0.30	0.00	0.00	0.30	0.00	120	8,160.00	6	82.86
105	215M04D075	Manraja Tole Road (Connected to Road Code B002)	0.69	0.00	0.57	0.12	0.00	333	17,514.00	13.8	178.61
106	215M04D076	Road Code A001 - Road Code B003	0.44	0.00	0.13	0.00	0.31	142.5	13,449.00	8.8	136.00
107	215M04D077	Krishi Bato (Connected to Road Code A001 , Manraja Tole)	0.72	0.00	0.00	0.00	0.72	180	23,688.00	14.4	238.82
108	215M04D078	Kanchan Tole Road (Connected to Road Code B002)	0.62	0.00	0.40	0.22	0.00	288	15,984.00	12.4	162.84
109	215M04D079	Kanchan Tole Road (Road Code B002 - Road Code D078	0.22	0.00	0.00	0.22	0.00	88	5,984.00	4.4	60.76
110	215M04D080	Kanchan Tole Road (Road Code B002 - Road Code D078	0.24	0.00	0.00	0.24	0.00	96	6,528.00	4.8	66.29
111	215M04D081	Kachan Tole road (Road Code D078 - Road Code D079)	0.22	0.00	0.00	0.22	0.00	88	5,984.00	4.4	60.76
112	215M04D082	Kachan Tole Road (Road Code B002 - Road Code C001)	0.53	0.00	0.00	0.53	0.00	212	14,416.00	10.6	146.39
113	215M04D083	Kachan Tole Road (Road Code B002 - Road Code C001)	0.17	0.00	0.00	0.17	0.00	68	4,624.00	3.4	46.95
114	215M04D084	Kachan Tole Road (Road Code B002 - Road Code D082)	0.19	0.00	0.00	0.00	0.19	47.5	6,251.00	3.8	63.02
115	215M04D085	Kachan Tole Road (Connected to Road Code B002)	0.18	0.00	0.18	0.00	0.00	90	4,500.00	3.6	45.94
116	215M04D086	Kachan Tole Road (Connected to Road Code B002)	0.09	0.00	0.09	0.00	0.00	45	2,250.00	1.8	22.97
117	215M04D087	Kachan Tole Road (Conected To Road Code B002)	0.11	0.00	0.11	0.00	0.00	55	2,750.00	2.2	28.07
118	215M04D088	Rajapatty Tole Road (Connected to Road Code C001)	0.62	0.00	0.11	0.51	0.00	259	16,622.00	12.4	168.93
119	215M04D089	Rajaipatty Tole Road (Road Code C001 - Road Code D088)	0.17	0.00	0.17	0.00	0.00	85	4,250.00	3.4	43.38
120	215M04D090	Rajaipatty Tole Road (Road Code D089 - Road Code D088)	0.12	0.00	0.00	0.12	0.00	48	3,264.00	2.4	33.14
121	215M04D091	Rajaipatty Tole Road (Road Code D088 - Road Code D090)	0.09	0.00	0.00	0.09	0.00	36	2,448.00	1.8	24.86

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				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
122	215M04D092	Rajaipatty - Nahar Road	0.88	0.00	0.00	0.88	0.00	352	23,936.00	17.6	243.06
123	215M04D093	Deuri Tole Road (Road Code C012 - Road Code C001)	0.25	0.00	0.15	0.10	0.00	115	6,470.00	5	65.90
124	215M04D094	Deuri Tole Road (Road Code C012 - Road Code D093)	0.13	0.00	0.13	0.00	0.00	65	3,250.00	2.6	33.18
125	215M04D095	Khadakpur Tole Road (Road Code A001 - Road Code D010)	1.04	0.00	0.40	0.64	0.00	456	27,408.00	20.8	278.85
126	215M04D096	Road Code D010 - South - Shree Dihbar Than	0.75	0.00	0.41	0.34	0.00	341	19,498.00	15	198.54
127	215M04D097	Khadakpur Tole Road (Road Code A001 - Road Code D095)	0.16	0.00	0.00	0.16	0.00	64	4,352.00	3.2	44.19
128	215M04D098	Khadakpur Tole Road (Connected to Road Code D096)	0.38	0.00	0.38	0.00	0.00	190	9,500.00	7.6	96.98
129	215M04D099	Khadakpur Tole Road (Road Code D096 - West, South - Road Code D098)	0.29	0.00	0.29	0.00	0.00	145	7,250.00	5.8	74.01
130	215M04D100	Khadakpur Tole Road (Road CodeD095 - Connected to Road Code D098 & D099)	0.27	0.00	0.13	0.14	0.00	121	7,058.00	5.4	71.84
131	215M04D101	Road Code D095 - South - Road Code D100)	0.26	0.00	0.26	0.00	0.00	130	6,500.00	5.2	66.35
132	215M04D102	Khadakpur - Shripur	1.19	0.00	0.00	0.00	1.19	297.5	39,151.00	23.8	394.72
133	215M04D103	Ram Tole Road (Connected to Road Code C018)	0.22	0.00	0.00	0.22	0.00	88	5,984.00	4.4	60.76
134	215M04D104	Road Code A001 - Ram tole	0.13	0.00	0.00	0.13	0.00	52	3,536.00	2.6	35.91
135	215M04D105	Simraha Tole Road (Connected To Road Code C018)	0.35	0.00	0.16	0.19	0.00	156	9,168.00	7	93.31
136	215M04D106	Simraha Tole Road (Road Code A001 - Road Code C018)	0.19	0.00	0.00	0.19	0.00	76	5,168.00	3.8	52.48
137	215M04D107	Simraha Tole Road (Road Code A001 - Road Code C018)	0.28	0.00	0.00	0.28	0.00	112	7,616.00	5.6	77.34
138	215M04D108	Simraha Tole Road (Connected to Road Code C018)	0.25	0.00	0.00	0.25	0.00	100	6,800.00	5	69.05

S.No.	Road Code	Name of transport Linkage	Total Length (km)	Road Surface				Cost Nrs. (in 000)			Total Cost (in 00,000)
				BT	RCC	GR	SG/ER	Recurrent Maintenance	Upgrading Cost	Routine Maintenance	
139	215M04D109	Road Code A001 - East, South - Road Code D108	0.35	0.00	0.00	0.35	0.00	140	9,520.00	7	96.67
140	215M04D110	Simraha Tole Road (Road Code D108 - Sabarna River)	0.44	0.00	0.08	0.36	0.00	184	11,792.00	8.8	119.85
141	215M04D111	Road Code A001 - South - Sabarna River - Road Code D110	1.38	0.00	0.00	1.38	0.00	552	37,536.00	27.6	381.16
142	215M04D112	Swarnapatty Tole Road (Road Code C018 - East)	0.60	0.00	0.25	0.35	0.00	265	15,770.00	12	160.47
143	215M04D113	Swarnapatty Tole Road (Road Code C018 - East - South - Road Code D112)	0.38	0.00	0.12	0.26	0.00	164	10,072.00	7.6	102.44
144	215M04D114	Swarnapatty Tole Road (Road Code D112 - Road Code D113	0.23	0.00	0.00	0.00	0.23	57.5	7,567.00	4.6	76.29
145	215M04D115	Swarnapatty Tole Road (Road Code D114 - Road Code D113)	0.07	0.00	0.07	0.00	0.00	35	1,750.00	1.4	17.86
146	215M04D116	Swarnapatty Tole Road (Road Code D112 - south)	0.12	0.00	0.12	0.00	0.00	60	3,000.00	2.4	30.62
147	215M04D117	Swarnapatty Tole Road (Road Code C018 - Road Code D004)	0.28	0.00	0.28	0.00	0.00	140	7,000.00	5.6	71.46
148	215M04D118	Silhat Tole Road	0.05	0.00	0.00	0.00	0.05	12.5	1,645.00	1	16.59
149	215M04D119	Barahi Tole Road (Connecting Road Code C003)	0.18	0.00	0.00	0.00	0.18	45	5,922.00	3.6	59.71
150	215M04D120	Road Code C009 - South - Road Code D003	0.20	0.00	0.00	0.20	0.00	80	5,440.00	4	55.24
151	215M04D121	Nengda Tole Road (Road Code C006 - Road Code C004)	0.30	0.00	0.00	0.30	0.00	120	8,160.00	6	82.86
152	215M04D122	Nahar Road (Road Code C021,Manraja - South - Khadgapur - Dakneshwori Nagarpalika	3.74	0.00	0.00	0.00	3.74	935	123,046.00	74.8	1240.56
153	215M04D123	Road Code C013 - Road Code C020	0.19	0.00	0.00	0.19	0.00	76	5,168.00	3.8	52.48
154	215M04D124	Krishi sadak (Road Code C013 - South)	2.05	0.00	0.00	0.00	2.05	512.5	67,445.00	41	679.99
155	215M04D125	Janjar Tole Road (Hulaki Sadak - South)	1.05	0.00	0.81	0.24	0.00	501	26,778.00	21	273.00

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156	215M04D126	Krishi Sadak (Gauda - Bairiya Tol)	1.44	0.00	0.00	0.00	1.44	360	47,376.00	28.8	477.65
157	215M04D127	Road Code A003 - West - Road Code C011	0.28	0.00	0.08	0.20	0.00	120	7,440.00	5.6	75.66

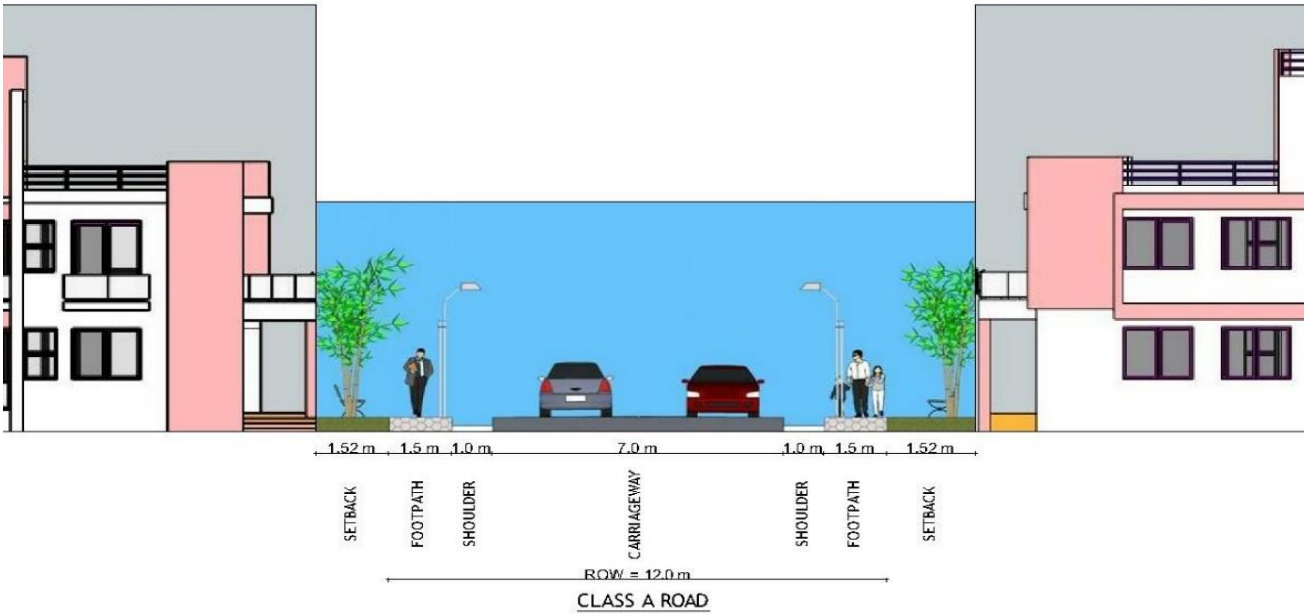
Annex IV
ROAD PRIROTIZATION

Rank	Municipal Road Code	Name of Road	Road Class	Population Served per km (15-20)	Annual Production equivalent to NRs/km (5-10)	Estimated annual transaction in these centres equivalent to Nrs per km (20-25)	Population served by these service centres expressed as persons per km per year (15-20)	Anticipated number of people to be directly benefited by new growth or service centres expressed as persons per km year (5-15)	Anticipated annual financial turn-over from developing the sites expressed as NRs/km (10-20)	areas for special consideration, such as areas inhabited by backward and poor ethnic groups/communities, isolated remote areas, historic sites, religious sites etc (10-15)	Direct link with another linkage (5-10)	Total Score	Marks Obtained
1	NH05	Hulaki Rajmarga	SRN	20	10	24	19	14	20	14	10	131	100.00
2	215M04A001	Bisanpur Highway (Khadak Nagarpalika) - Belha - Satrughan Chowk - Swarnpatti - India	A	20	10	25	19	14	19	14	9	130	99.24
3	215M04A002	Pump Nahar (Dakneshwori Gaupalika - Manraja - Fulkahi - Sabarna River - Balan Bihul Gaupalika	A	20	10	23	19	14	19	14	10	129	98.47
4	215M04A003	Fulkahi - Kushamahar - Dhangadhi - Khadak Nagarpalika	B	19	9	23	18	13	18	13	9	122	93.13
5	215M04B001	Gaura - Sarashwar - Dhangadhi	B	16	7	21	15	7	12	10	6	94	71.76
6	215M04B002	Manraja - Kachan -Bairyahi - Balan Bihul Gaupalika	B	17	8	22	17	13	18	14	8	117	89.31
7	215M04B003	Manraja - Shripur - Khadgapur - Dakneshwori Gaupalika	B	18	7	22	17	12	18	12	8	114	87.02

Rank	Municipal Road Code	Name of Road	Road Class	Population Served per km (15-20)	Annual Production equivalent to NRs/km (5-10)	Estimated annual transaction in these centres equivalent to Nrs per km (20-25)	Population served by these service centres expressed as persons per km per year (15-20)	Anticipated number of people to be directly benefited by new growth or service centres expressed as persons per km year (5-15)	Anticipated annual financial turn-over from developing the sites expressed as NRs/km (10-20)	areas for special consideration, such as areas inhabited by backward and poor ethnic groups/communities, isolated remote areas, historic sites, religious sites etc (10-15)	Direct link with another linkage (5-10)	Total Score	Marks Obtained
8	215M04C001	Kachan - Rajapatti - Deuri	B	16	8	22	17	12	18	13	8	114	87.02
9	215M04C002	Barsain Shiv Chowk - Kamgadi	B	18	9	22	17	12	15	12	8	113	86.26
10	215M04C003	Main Road, Gaura - Baraha Tole - Khadak Nagarpalika	B	20	8	23	16	13	15	11	7	113	86.26
11	215M04C004	Main Road, Negada - Baraha Tole	C	16	7	22	16	12	16	12	7	108	82.44
12	215M04C005	Nengda Ward Office - Yogiya Tole - Main Road	C	18	6	22	16	11	15	11	7	106	80.92
13	215M04C006	Nengda Tole Road	C	15	6	20	15	14	18	11	7	106	80.92
14	215M04C007	Dhangadhi - Sarashwar	C	18	7	22	16	8	14	12	7	104	79.39
15	215M04C008	Main Road, Belha - Dina Bhadri Mandir - Dhangadhi	C	15	7	21	15	12	15	13	6	104	79.39
16	215M04C009	Dhangadhi Chowk - Debahari - Sarsar - Madhuban - Hulaki Rajmarg	C	16	6	21	16	10	17	11	7	104	79.39
17	215M04C010	Dhangadhi - Mahanauri	D	17	6	22	16	10	12	11	8	102	77.86
18	215M04C011	Hulaki Rajmarga - Laxminarayan Mandir	D	17	7	20	15	11	14	11	6	101	77.10

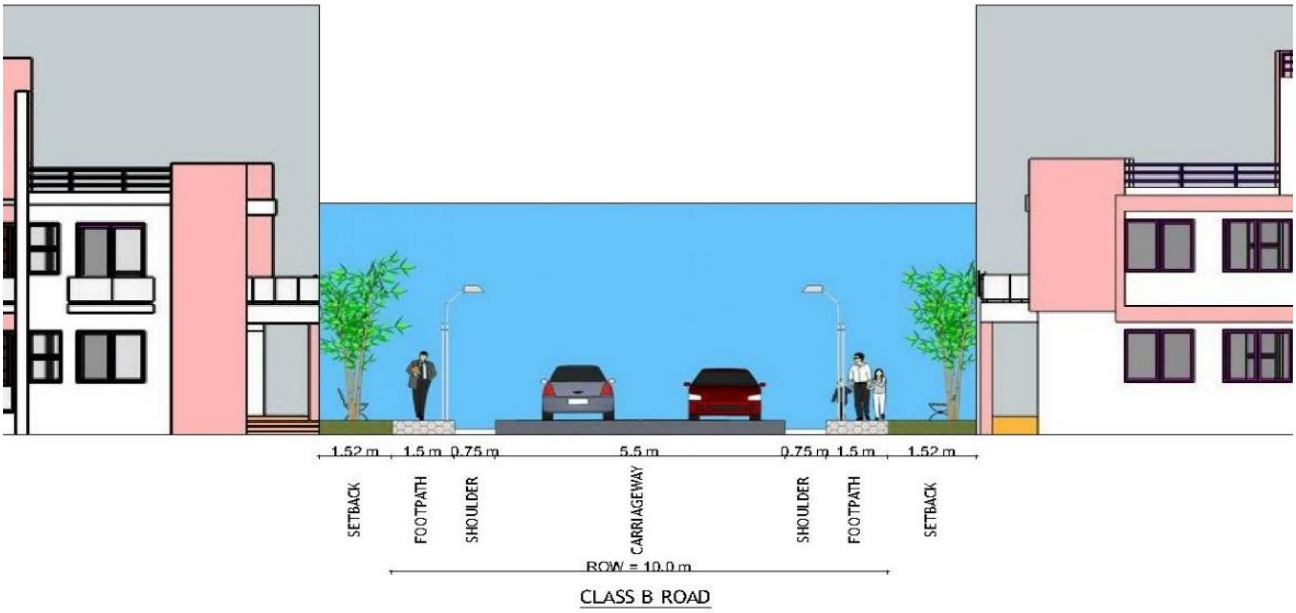
Annex V
ROAD CROSS SECTIONS

Typical cross section of Class A road



Aerial View of Class A road

Typical cross section of Class B road

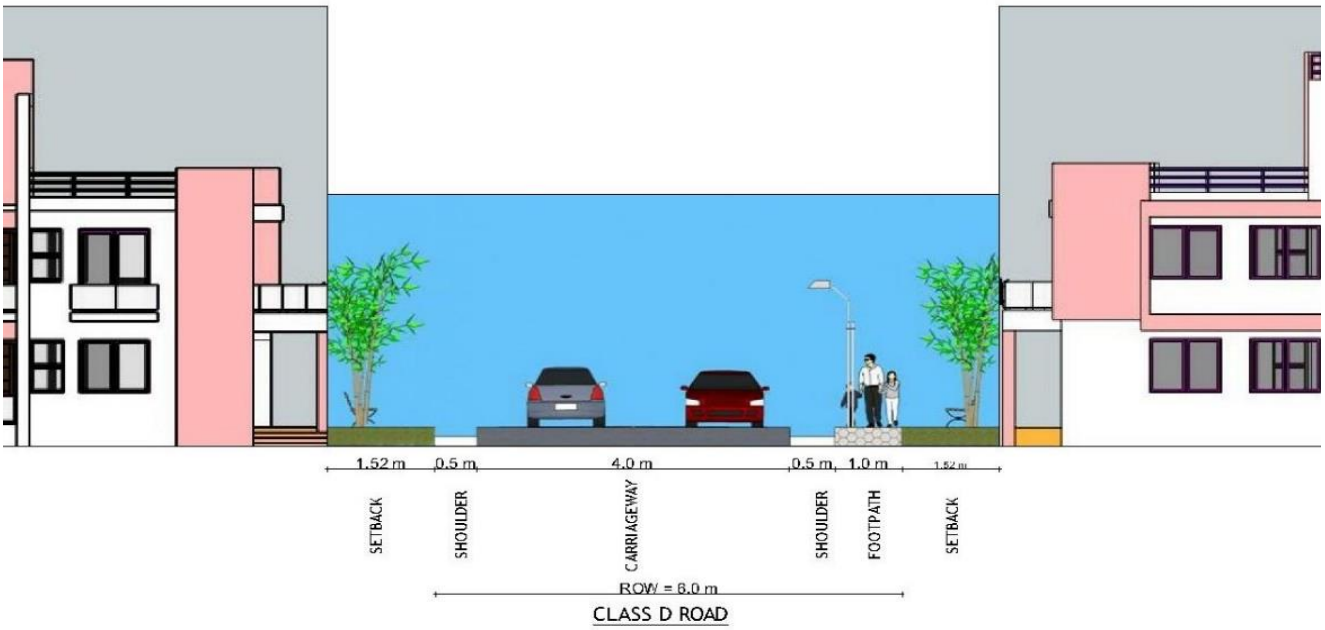


Aerial View of Class B road

Typical cross section of Class C road

Aerial View of Class C road

Typical cross section of Class D road



Aerial View of Class D road

Annex VI
MAPS

Annex VII
PHOTOGRAPHS

Existing Road Condition

Survey


Shot on OnePlus
Bibek
2025.03.06 11:33


Shot on OnePlus
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